The Socio-Economic Impact of Gambling (SEIG) Framework

An Assessment Framework for Canada: In Search of the Gold Standard

Prepared for:
Inter-Provincial Consortium for the Development of Methodology to Assess the Social and Economic Impact of Gambling

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- Nova Scotia Gaming Foundation
- Ontario Problem Gambling Research Centre
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Executive Summary

Searching for the Best Method

This report deals with the question of what is the best method to measure the social and economic impact of legalized gambling in an early 21st Century society. The specific impact referred to is one that touches the individual gambler, the family or household, and the community, region or province.

The authors have developed a framework to address the complex and wide-ranging impact question of what is the positive and negative impact of legalized gambling and, in particular, what are the preventable negative consequences. The construct presented in this report is called **The Socio-Economic Impact of Gambling (SEIG) Framework**. It is designed to help guide researchers and policy makers to measure, assess and report on the social and economic impact – both positive (benefits) and negative (costs) – of gambling in Canada.

Over the last decade, there has been a growing need for a consensus-based and acceptable standard for measurement methodology that will objectively gauge the true impact of legal gambling as a business enterprise and leisure activity. Since the mid-1990s, the gaming industry has flourished in this country, growing extensively throughout the Canadian provinces and territories, consuming significant investment funds and annually harvesting substantial profit. It is a multi-billion dollar industry that generates much consumer interest, and its business footprint is felt by many. Because of the nature of this business enterprise, finding a true snapshot of its actual, authentic and unbiased worth to the general common weal is of critical importance.

The SEIG Framework represents the highest standard yet attained for a measurement methodology of assessment. It is expected that, with wide application and further refinement, the framework will assume the recognized and accepted position as the preferred methodology when assessing the gaming industry's impact on the individual and society.

The SEIG Framework reflects the interdisciplinary and complex nature of gambling and takes a broad and integrated systems approach to measuring impact. It uses the best and most relevant analytical tools, ranging from quantitative and qualitative research methods to conventional economic analysis tools. In addition, it applies new social welfare economic analysis tools in order to facilitate the development of an objective profile of legalized gambling's impact.

The SEIG Framework is designed as an "open architecture" construct. This means that the utility of the framework is expected to evolve through ongoing application of the analytic tools, the development of specific impact indicators, and the analysis and interpretation of the impact results.

While the SEIG Framework does contain some methods for estimating impact of gambling, it is not a "one-size-fits-all" universal framework and it allows for considerable flexibility. Several areas will require new research and development, while others will need ongoing refinement and improvement. It is anticipated that an efficient and effective mix of tools will emerge through this iterative process.

Snapshot of an Emerging Measurement Standard

The SEIG Framework consists of six impact themes, each of which has its own associated variables and accompanying indicators that address the question of positive and negative impact. The entire SEIG Framework can be concisely summed up in the chart immediately below.

SEIG Framework Chart[1]

Impact Theme One:

Health and Well-Being	
Health and Well-being variable	**Indicator**
Benefit	
Entertainment pleasure	Level of enjoyment in time spent gambling
	Citizen positive or negative attitudes toward gambling
Cost	
Problem gambling prevalence	Problem gambling prevalence and incidence rates in a region or community Number of gamblers who seek help through community-based and residential treatment services
Problem gambling and co-morbidity	Prevalence of problem gambling and co-morbid disorders: • Mental health • Depression and mood disorders • Physical (e.g. gastric problems, high blood pressure, etc.)
	Prevalence of problem gambling and substance abuse
Mortality	Deaths from natural causes attributed to problem gambling
Suicide	Suicides attributed to problem gambling
Social relationships	Family breakdown: separation and divorce due to gambling impacts
	Impact on children, spouses and other family members of problem gamblers
	Social isolation
	Psychological impacts on family and friends of gamblers
	Domestic violence

Impact Theme Two:

Economic and Financial	
Economic and Financial Variable	**Indicator**
Benefit	
Contribution to economic growth	Contribution gambling sector makes to provincial Gross Domestic Product
	Changes in investment, housing starts, value of residential and commercial building permits, hotel and commercial starts

[1] This chart is an excerpted version. The full chart appears as Table 1 in Section 2.1.1.

Economic and Financial	
Economic and Financial Variable	**Indicator**
Personal gambling expenditures	Net gambling expenditures as a percentage of household income Changes in disposable household income, as potential proxy driver of gambling activity
Personal entertainment satisfaction benefit	Consumer surplus
	Distance surplus
Gaming industry benefit	Producer surplus Revenues by industries on which gambling may have a large impact on such as: leisure, hotel, restaurant, and traditional gambling
	Net growth in revenues/sales and employment in other sectors that benefit from gaming industry development
Government revenues	Government revenues from gambling, including incremental tax revenues (GST, PST, corporate income taxes) related to gaming activity as a percentage of total revenues
Capital gains	Capital gains to consumers, including increases in private and commercial property values related to gambling venues and development
Cost	
Bankruptcy	Personal bankruptcy rates attributable to problem gambling
Financial problems (gambling debts)	Self-reported financial problems, including gambling debts, borrowing or financing of gambling activity and debts Changes in personal savings rates and liquidation of assets (e.g. RSPs, RESPs, home equity)
Value of losses in quality of life time	The value of volunteer time spent by households to work charity gambling venues to raise money for community programs and infrastructure; time that would not otherwise have to be invested if other government general revenues were available for fully funding these community needs
Public sector cost	Government expenditures allocated for problem gambling treatment, education and prevention
	Government regulatory costs (government expenditures) related to gambling industry
	Public infrastructure costs related to gaming industry development
	Government subsidies to the gaming industry

Impact Theme Three:

Employment and Education	
Employment and Education Variable	**Indicator**
Benefit	
Job creation	Direct employment (job creation) in gaming industry
	Indirect employment related to gaming industry
	Annual and hourly wages for gambling industry employees
	Job intensity: Gambling-related jobs created per $1 million of gambling income (or Gross Domestic Product), *compared with other sectors in the economy*
Unemployment and underemployment	Changes in unemployment and underemployment rates resulting directly from gaming industry development
Cost	
Work performance	Productivity losses, absenteeism due, and increased likelihood of unemployment to problem gambling activity by employees
Employment cost	Retraining and other employment cost impacts sustained by in other industries

Impact Theme Four:

Recreation and Tourism	
Recreation and Tourism Variable	**Indicator**
Benefit	
Gambling tourism	Gambling tourist rate Percentage of patrons/visitors from outside the region/community/province making day or overnight trips to a local gaming venue Tourists citing gambling as primary reason to visit region; as a contributing factor Overnight trips made by local residents to other regions with gaming venues. Average tourist/visitor expenditures on gambling venues
Cost	
Negative impact on other recreational industries	Income and employment losses sustained by traditional forms of entertainment and recreation in the community

Impact Theme Five:

Legal and Justice	
Legal and Justice Variable	**Indicator**
Benefit	
Reduced illegal gambling	Reduction in illegal gambling activities using court proceeding statistics as a proxy
Crime rates related to gambling	Decreased crime rates related to gambling (e.g. embezzlement, fraud) as a result of legalization of gambling activities Benefits (or costs) of crimes related to problem gambling in a legalized gambling context
Decreased crime, judiciary and policing cost	Reduced policing and court costs associated with illegal gambling
Cost	
Crime rates related to gambling	Violent crimes (homicides, attempted murders, assaults, robberies, harassment/stalking) attributed to gambling Non-Violent crimes--break and enter, vehicle theft, fraud, theft over/under $5,000
Criminal cost	Negative crime impacts including losses to other businesses from gaming-related crime (e.g. fraud and theft, money laundering and loan sharking)
Judiciary and policing cost	Policing and court cost related to gambling-related crime, total and as a percentage of total policing and court cost
Security cost	Increased security (private and public) costs related to gambling activities

Impact Theme Six:

Culture	
Culture Variable	**Indicator**
Benefit	
Community benefits from gaming activity	Local charities and non-profit sector who derive income from gaming revenue transfers from government
Public sector benefits from gaming activity	Gambling revenue contributions to government social program spending, grant programs, and organizations (e.g. schools) that come from gaming revenues
Sense of safety from gaming venues	Increased sense of personal safety because of gaming venues

Culture	
Culture Variable	**Indicator**
Cost	
Non-gambling charitable sector impact	Changes in the amount and value of non-gambling charitable donations and grants
Loss of social cohesion (i.e. sense of community; social capital) in a community due to legalized gambling development	Loss (or gain) in community social capital (i.e. sense of cohesion, trust, belonging)

Challenges and Limitations

As with any initiative, many limitations, challenges and issues surfaced during the creative process. This section identifies conceptual, theoretical, and methodological measurement challenges and data limitations with respect to socio-economic analysis.

The stumbling blocks in developing and using the SEIG Framework are summarized as follows:

- First and most important key challenge: The general absence of adequately robust data for the various impact domains, variables and indicators. New research and a commitment to rigorous analysis of existing societal health, social and economic indicators and data sets will be required with a special focus on gambling impact.

- Second key challenge: The issue of causality, namely, the difficulty in determining the degree to which gambling is a key contributing factor to a change in a given measure of well-being, especially in relation to health indicators.

- Third key challenge: The challenge of estimating the full monetized cost and benefit of gambling on society. While conventional cost-benefit analysis tools may be beneficial, there is still considerable disagreement among economists as to the right taxonomy of cost and benefit for gambling and how to measure this impact.

To address the third challenge directly, the SEIG Framework proposes the use of the Genuine Progress Indicator (GPI) full-cost-benefit accounting model as a practical tool to account for and weigh the broadest possible scope of impact (positive and negative) of gambling expressed in economic or monetary terms.

A review of the literature on the socio-economic analysis of gambling, as a form of economic development, shows the inconsistencies and problems in theoretical and methodological issues as well as inconsistency in the use of terminology in defining

well-being impact, cost, and benefit. In order to develop a meaningful framework for well-being impact analysis, clear definitions and methodological concepts need to be spelled out. The SEIG Framework achieves significant progress in this respect.

There is also a lack of consensus and a misuse of economic theory on how conventional cost-benefit analysis should be used in assessing welfare effects of public policy. The key issue of political and theoretical debate is what to count in a cost-benefit analysis, which is often influenced by what the researcher wants to study.

A Consensus-Building Tool

Ideally, the SEIG Framework will function as a consensus-building tool to permit stakeholders to reach a point of agreement concerning whether or not a particular impact of gambling warrants further investigation. Typically, agreement emerges from a research community as a form of consensus, or a common sense of what is supported by the balance of evidence. The SEIG Framework will enable this emergence of research consensus and let individuals, communities, governments and decision makers reach a similar consensus and make informed decisions.

The authors of this report hope for the following outcomes as a direct result of the SEIG Framework:

- An interdisciplinary research consensus concerning an appropriate set of tools for understanding the issue of legalized gaming in a concise, clear, intuitive, and theoretically appealing way; and

- Individuals, communities, governments and other decision makers will have a basis upon which to reach consensus regarding knowledge bases, recognizing that such consensus may vary from region to region or even community to community.

In relation to its underlying values, the SEIG Framework is intended to be both flexible and transparent. It is not intended to divert intellectual energy into “us vs. them” disputes, but to facilitate consensus, as mentioned above, by providing a practical, intuitive,, and theoretically appealing tool that frames and resolves such disputes (i.e. maximizing agreement).

A true standard has been launched with this report, and users of the SEIG Framework will, over time, help to evolve the construct into a robust approach to measurement.

New Emerging Research in Canada

A number of research initiatives are currently underway in several Canadian provinces to examine the social and economic impact of gambling; some of these initiatives are already experimenting with the SEIG Framework outlined in this report. A complete list of these research initiatives is provided in Appendix 10. Some key initiatives include:

- a socio-economic study of gambling in Nova Scotia
- the measurement of the socio economic impact of a new gambling venue (gaming room) in Trois-Rivières, Quebec
- a longitudinal study of the socio-economic impact of the new slots-at-racetrack facility in Belleville, Ontario
- the use of the SEIG framework assess the social and economic impact attributable to the construction and operation of First Nations casinos in Manitoba
- a study of the social and economic impact of gambling to commence in 2008 in Alberta
- the study of the social and economic effects of casinos and slot machines in the Lower Mainland communities of British Columbia that began in 2004

Conclusion

The SEIG Framework represents a first step in building consensus on methodologies for conducting reliable and comparable impact studies to inform responsive and responsible decisions. It is focused on addressing the first two of four basic questions that could help policy makers arrive at well-informed decisions on gambling issues; that is:

- What is the positive and negative impact of legalized gambling?
- What are the preventable forms of negative impact?
- Where should investments be made to avoid preventable negative impact?
- How well are these investments achieving their objectives over time?

The sponsors of this initiative will undertake the necessary steps to support the research and testing required to refine the SEIG Framework and to answer the foregoing questions. It is their hope that researchers and policy makers will do likewise, as will others in jurisdictions outside Canada. In this context, the funding partners are actively considering the staging of a second SEIG Symposium in 2010 to review progress made to date, refine the Framework, and reach broad agreement on next steps.

Sommaire

À la recherche de la meilleure méthode

Ce rapport porte sur la question à savoir quelle est la meilleure méthode pour mesurer l'impact économique et social du jeu légalisé dans une société du début du 21e siècle. Cet impact concerne plus précisément le joueur, la famille ou le ménage, ainsi que la communauté, la région ou la province.

Les auteurs ont développé un cadre conceptuel afin d'aborder la question complexe et étendue à savoir quel est l'impact positif et négatif du jeu légalisé et particulièrement, quelles sont les conséquences négatives pouvant être évitées. Le concept présenté dans ce rapport s'appelle le **Cadre conceptuel de l'impact socio-économique du jeu (ISEJ).** Il est conçu pour guider les chercheurs et les décideurs à mesurer et à évaluer l'impact économique et social du jeu – tant positif (avantage) que négatif (coût) – au Canada.

Au cours de la dernière décennie, on remarque un besoin croissant d'avoir une méthode de mesure acceptable et qui fait consensus, pour évaluer l'impact réel du jeu légal en tant qu'entreprise commerciale et activité de loisir. Depuis le milieu des années 1990, l'industrie du jeu a prospéré dans ce pays, grandissant considérablement à travers les provinces et les territoires canadiens, consommant des fonds d'investissements considérables et récoltant annuellement des profits substantiels. Il s'agit d'une industrie de plusieurs milliards de dollars, générant beaucoup d'intérêt chez les consommateurs et plusieurs sont sensibles à son empreinte commerciale. En raison de la nature de cette entreprise commerciale, il est d'une importance cruciale de trouver une image réelle de sa valeur actuelle, authentique et impartiale pour le bien public.

Le cadre conceptuel de l'ISEJ représente la méthode d'évaluation la plus complète à ce jour. Avec une application élargie et de nouvelles améliorations, il est attendu que le cadre conceptuel devienne la méthode recommandée pour l'évaluation de l'impact du jeu sur l'individu et la société.

Le cadre conceptuel de l'ISEJ tient compte de la nature complexe et interdisciplinaire du jeu et adopte une approche globale et intégrée des systèmes afin d'en mesurer l'impact. Il a recours aux meilleurs et aux plus pertinents outils analytiques, allant des méthodes de recherche quantitative et qualitative jusqu'à des outils d'analyse économique conventionnels. De plus, il applique de nouveaux outils d'analyse économique du bien-être collectif, afin de faciliter le développement d'un profil objectif de l'impact du jeu légalisé.

Le cadre conceptuel de l'ISEJ est conçu comme un concept à « architecture ouverte ». Cela signifie que l'on s'attend à ce que le cadre conceptuel, ainsi que son utilité, évolue à travers une application continue des outils analytiques, du développement d'indicateurs spécifiques d'impact et de l'analyse et de l'interprétation des résultats de l'impact.

Bien que le cadre conceptuel de l'ISEJ comporte des méthodes pour estimer l'impact du jeu, il ne s'agit pas d'un cadre conceptuel unique et universel et il permet une flexibilité importante. Plusieurs domaines nécessiteront de nouvelles recherches et de nouveaux développements, alors que d'autres auront besoin d'améliorations et de raffinements continus. Il est attendu qu'à travers ce processus d'itération, il y aura émergence d'une combinaison d'outils efficaces.

Aperçu d'une nouvelle norme d'évaluation

Le cadre conceptuel de l'ISEJ se compose de six thèmes d'impact, où chacun a ses propres variables associées et ses indicateurs qui les accompagnent, abordant la question de l'impact positif et négatif. Tout le cadre conceptuel de l'ISEJ peut se résumer succinctement dans le tableau ci-dessous.

Tableau du cadre conceptuel de l'ISEJ[2]

Premier thème d'impact :

Santé et bien-être	
Variables de la santé et du bien-être	**Indicateurs**
Avantages	
Plaisir du divertissement	Le niveau de plaisir lors du temps passé à jouer
	Les attitudes positives ou négatives des citoyens à l'égard du jeu
Coûts	
Prévalence du jeu problématique	La prévalence du jeu problématique et les taux d'incidence dans une région ou une communauté Le nombre de joueurs qui demandent de l'aide auprès des services de traitements communautaires et résidentiels
Jeu problématique et comorbidité	La prévalence du jeu problématique et les troubles comorbides : • Santé mentale • Dépression et troubles de l'humeur • Physique (p.ex., problèmes gastriques, hypertension, etc.)
	La prévalence du jeu problématique et l'abus de substance
Mortalité	Les décès de causes naturelles attribuables au jeu problématique
Suicide	Les suicides dus au jeu problématique
Relations sociales	L'éclatement de la famille : les séparations et divorces attribuables aux impacts du jeu
	L'impact sur les enfants, les conjoints et les autres membres de la famille des joueurs problématiques
	L'isolement social
	Les impacts psychologiques sur la famille et les amis des joueurs
	La violence familiale

[2] Ce tableau constitue un extrait du cadre conceptuel. Le tableau complet apparaît dans le Tableau 1 de la Section 2.1.1.

Deuxième thème d'impact :

Économique et financier	
Variables économiques et financières	**Indicateurs**
Avantages	
Contribution à la croissance économique	La contribution du secteur du jeu au Produit intérieur brut provincial
	Les changements au niveau des investissements, des mises en chantier d'habitations, de la valeur des permis de construction résidentielle et commerciale, des mises en chantier d'hôtels et de commerces
Dépenses personnelles au jeu	Les dépenses nettes au jeu sous forme de pourcentage du revenu familial Les changements au niveau du revenu net du ménage en tant qu'agent conducteur potentiel de l'activité du jeu
Bénéfices de la satisfaction du divertissement personnel	Excédent de consommation
	Excédent de distance
Bénéfices de l'industrie du jeu	Excédent de production Les revenus des industries sur lesquelles le jeu pourrait avoir un impact important, comme : le loisir, l'hôtellerie, la restauration et le jeu traditionnel
	La croissance nette des revenus/ventes et de l'emploi dans d'autres secteurs qui bénéficient du développement de l'industrie du jeu
Revenus gouvernementaux	Les revenus gouvernementaux provenant du jeu, ce qui comprend les revenus d'impôts marginaux (TPS, TVP, impôts sur les bénéfices des sociétés) reliés aux activités du jeu en tant que pourcentage des revenus totaux
Gains en capital	Les gains en capital des consommateurs, ce qui comprend les augmentations des valeurs des propriétés privées et commerciales reliées aux établissements de jeux et au développement du jeu
Coûts	
Faillite	Les taux de faillite personnelle attribuables au jeu problématique
Problèmes financiers (dettes de jeu)	Les problèmes financiers rapportés par les individus, ce qui comprend les dettes de jeu, l'emprunt ou le financement des activités du jeu et des dettes Les changements des taux d'épargne personnelle et de la liquidation des biens (c.-à-d., les RÉR, les REEE, la valeur nette de la propriété)
Valeur des pertes en terme de qualité de temps de vie	La valeur du temps bénévole passé par les ménages à travailler dans des sites de jeu dans le cadre d'une œuvre de bienfaisance, afin de recueillir des fonds pour des programmes communautaires et des infrastructures; temps qui ne serait pas investi si d'autres revenus généraux du gouvernement étaient disponibles pour financer en totalité ces besoins communautaires
Coût pour le secteur public	Les dépenses gouvernementales allouées au traitement du jeu problématique, à l'éducation et à la prévention
	Les coûts des réglementations gouvernementales (les dépenses gouvernementales) reliés à l'industrie du jeu
	Les coûts d'infrastructure publique reliés au développement de l'industrie du jeu
	Les subventions gouvernementales à l'industrie du jeu

Troisième thème d'impact :

Emploi et éducation	
Variables de l'emploi et de l'éducation	**Indicateurs**
Avantages	
Création d'emplois	Les emplois directs (création d'emplois) dans l'industrie du jeu
	Les emplois indirects reliés à l'industrie du jeu
	Les salaires annuels et horaires des employés de l'industrie du jeu
	L'intensité de l'emploi : les emplois reliés au jeu créés pour chaque million de dollars en revenu provenant du jeu (ou Produit intérieur brut), *comparé à d'autres secteurs de l'économie*
Chômage et sous-emploi	Les changements au niveau des taux de chômage et de sous-emploi, résultant directement du développement de l'industrie du jeu
Coûts	
Rendement au travail	Les pertes de productivité, l'absentéisme et la probabilité accrue de chômage, attribuables à des activités de jeu problématique chez les employés
Coût de l'emploi	Le recyclage et autres impacts du coût de l'emploi soutenus par d'autres industries

Quatrième thème d'impact :

Loisir et tourisme	
Variables du loisir et du tourisme	**Indicateurs**
Avantages	
Tourisme associé au Jeu	La proportion de touristes du jeu Le pourcentage de clients/visiteurs provenant de l'extérieur de la région/communauté/province pour passer une journée ou une nuit dans un établissement de jeu local Les touristes qui nomment le jeu comme principale raison pour visiter la région, à titre de facteur contributif Les résidents locaux séjournant plus de vingt-quatre heures dans d'autres régions où il y a des établissements de jeux. Les dépenses moyennes des touristes/visiteurs dans les établissements de jeux
Coûts	
Impact négatif sur d'autres industries récréatives	Les pertes de revenus et d'emplois subies par des formes traditionnelles de divertissement et d'activités récréatives dans la communauté

Cinquième thème d'impact :

Légalité et Justice	
Variables légales et judiciaires	**Indicateurs**
Avantages	
Réduction du jeu illégal	La réduction des activités de jeu illégales en se basant de façon indirecte sur les statistiques des procédures judiciaires
Taux de crimes reliés au jeu	La diminution des taux de crimes reliés au jeu (c.-à-d., détournement de fonds, fraude) résultant de la légalisation des activités de jeu Les avantages (ou les coûts) des crimes reliés au jeu problématique, dans un contexte de jeu légalisé
Diminution des crimes, des coûts judiciaires et des services policiers	La diminution des coûts judiciaires et des services policiers associés au jeu illégal

Légalité et Justice	
Variables légales et judiciaires	**Indicateurs**
Coûts	
Taux de crimes reliés au jeu	Les crimes violents (homicides, tentatives de meurtre, agressions, vols, harcèlements) attribués au jeu Les crimes non-violents--introductions par effraction, vols de véhicules, fraudes, vols de plus/moins de 5 000 $
Coûts associés aux crimes	Les impacts négatifs du crime, incluant les pertes au profit d'autres activités d'affaires associées aux crimes reliés au jeu, (c.-à-d., fraude et vol, blanchiment d'argent et prêts usuraires)
Coûts judiciaires et des services policiers	Les coûts judiciaires et des services policiers en lien avec le crime relié au jeu; coût total et pourcentage du total des coûts judiciaires et des services policiers
Coûts associés à la sécurité	L'augmentation des coûts de sécurité (privée et publique) reliés aux activités du jeu

Sixième thème d'impact :

Culture	
Variables associées à la Culture	**Indicateurs**
Avantages	
Bénéfices communautaires issus des activités de jeu	Les œuvres de bienfaisance et les secteurs à but non-lucratif qui tirent des revenus à partir des transferts gouvernementaux de revenus provenant du jeu
Bénéfices du secteur public, issus des activités de jeu	Les contributions des revenus du jeu aux dépenses pour des programmes sociaux du gouvernement, des programmes de subventions et des organismes (p.ex., les écoles)
Sentiment de sécurité associé aux établissements de jeu	Un sentiment accru de sécurité personnelle grâce aux établissements de jeu
Coûts	
Impact sur le secteur de bienfaisance non-relié au jeu	Les changements au niveau du montant et de la valeur des dons et des subventions aux organismes de bienfaisance n'étant pas reliés au jeu
Perte de cohésion sociale (c.-à-d., le sentiment d'appartenir à une communauté, le capital social) dans une communauté, en raison du développement du jeu légalisé	La perte (ou le gain) du capital social dans une communauté (c.-à-d., le sentiment de cohésion, de confiance, d'appartenance)

Défis et limites

Plusieurs obstacles, défis et difficultés ont été rencontrés lors de l'élaboration de cet outil. Cette section identifie les défis conceptuels, théoriques et méthodologiques de la

mesure ainsi que les limites des données en ce qui concerne l'analyse socio-économique.

Les obstacles du développement et de l'usage du cadre conceptuel de l'ISEJ se résument de la façon suivante :

- Le premier et le plus important des obstacles : L'absence générale de données suffisamment robustes pour les divers domaines d'impact, les variables et les indicateurs. De nouvelles recherches et un engagement à une analyse des indicateurs sociaux, économiques et sanitaires ainsi que des banques de données seront nécessaires, mettant spécialement l'accent sur l'impact du jeu.

- Le deuxième obstacle : L'enjeu de la causalité, plus précisément, la difficulté à déterminer dans quelle mesure le jeu constitue un facteur-clé contribuant au changement d'une quelconque mesure de bien-être, surtout lorsqu'il s'agit d'indicateurs reliés à la santé.

- Le troisième obstacle : La difficulté d'estimer le coût total monétaire et les avantages du jeu pour la société. Alors que les outils conventionnels d'analyse des coûts-bénéfices peuvent être avantageux, il existe encore des désaccords importants chez les économistes lorsqu'il s'agit de la taxonomie appropriée des coûts et des avantages du jeu et la manière de mesurer cet impact.

Pour aborder directement le troisième obstacle, le cadre conceptuel de l'ISEJ propose d'utiliser le modèle comptable des coûts-bénéfices de l'Indicateur de progrès véritable (IPV) comme outil pratique pour pondérer et tenir compte de toute l'ampleur possible de l'impact du jeu (positif ou négatif), exprimé en termes économiques ou monétaires.

Une recension des écrits sur l'analyse socio-économique du jeu, en tant que forme de développement économique, démontre les incohérences et les problèmes des enjeux théoriques et méthodologiques ainsi que le manque de cohérence dans l'usage de la terminologie, lorsqu'il s'agit de définir l'impact sur le bien-être de même que les coûts et les avantages. Afin de développer un cadre conceptuel significatif pour l'analyse de l'impact sur le bien-être, il est nécessaire d'établir des définitions et des concepts méthodologiques clairs. Le cadre conceptuel de l'ISEJ réalise des progrès importants à cet égard.

Il existe également un manque de consensus et un mauvais usage de la théorie économique concernant la manière d'utiliser l'analyse conventionnelle des coûts-bénéfices, lorsqu'il s'agit d'évaluer les effets des politiques publiques sur le bien-être social. Le problème clé du débat politique et théorique est de déterminer ce qu'il faut intégrer dans une analyse de coûts-bénéfices, ce qui est souvent influencé par ce que le chercheur veut étudier.

Outil de Consensus

Idéalement, le cadre conceptuel de l'ISEJ fonctionnera comme un outil pour arriver à un consensus, permettant aux parties prenantes de s'entendre sur le fait qu'un impact particulier du jeu justifie ou non une enquête supplémentaire. Habituellement, un accord a lieu dans un milieu de recherche sous forme de consensus, ou par le sens commun en fonction de la prépondérance de la preuve. Le cadre conceptuel de l'ISEJ facilitera l'émergence des consensus de recherches et permettra aux individus, aux communautés, aux gouvernements et aux décideurs d'arriver à un consensus similaire et de prendre des décisions éclairées.

Les auteurs de ce rapport espèrent que le cadre conceptuel l'ISEJ contribuera à produire directement les résultats suivants :

- Un consensus de recherche interdisciplinaire concernant un ensemble d'outils appropriés pour comprendre la question du jeu légalisé de manière concise, claire, intuitive et théoriquement attrayante, et

- Les individus, les communautés, les gouvernements et les décideurs auront une base sur laquelle ils pourront arriver à un consensus concernant les bases de connaissances, tout en reconnaissant qu'un tel consensus peut varier de région en région ou même de communauté en communauté.

En lien avec ses valeurs sous-jacentes, le cadre conceptuel de l'ISEJ se veut à la fois flexible et transparent. Il vise à faciliter le consensus, comme mentionné ci-dessus, en fournissant un outil pratique, intuitif et théoriquement valide.

Les utilisateurs du cadre conceptuel de l'ISEJ pourront, avec le temps, aider à faire évoluer le concept en une approche robuste de mesure.

Les nouvelles recherches au Canada

Bon nombre de projets de recherche sont en cours dans plusieurs provinces canadiennes afin d'examiner l'impact social et économique du jeu. Certains de ces projets font déjà l'expérimentation du cadre conceptuel de l'ISEJ décrit dans ce rapport. Une liste complète de ces projets de recherche se trouve à l'annexe 10. Voici quelques-uns de ces projets-clés :

- une étude socio-économique du jeu en Nouvelle-Écosse

- la mesure de l'impact socio-économique d'un nouvel établissement de jeu (salle de jeu) à Trois-Rivières, au Québec.

- une étude longitudinale de l'impact socio-économique du nouvel établissement de jeu à Belleville, en Ontario, où se trouvent des machines à sous et des courses de chevaux.

- l'utilisation du cadre conceptuel de l'ISEJ pour évaluer l'impact socio-économique attribuable à la construction et à l'exploitation des casinos des Premières Nations au Manitoba

- une étude sur l'impact socio-économique du jeu sera entreprise en 2008 en Alberta

- l'étude des effets socio-économiques des casinos et des machines à sous dans les communautés du Lower Mainland de la Colombie-Britannique, entreprise en 2004

Conclusion

Le cadre conceptuel de l'ISEJ représente un premier pas vers l'établissement d'un consensus sur les méthodologies pour mener des recherches d'impact fiables et comparables permettant de guider des décisions sensibles et responsables. Il se concentre à traiter les deux premières questions de base sur quatre qui pourraient aider les décideurs à prendre des décisions éclairées sur les questions du jeu, c'est-à-dire :

- Quel est l'impact positif et négatif du jeu légalisé?

- Quelles sont les formes d'impact négatif pouvant être évitées?

- Dans quel domaine doit-on investir pour éviter les impacts négatifs?

- Jusqu'à quel point ces investissements atteignent-ils leurs objectifs au fil du temps?

Les commanditaires de cette initiative verront à poursuivre les efforts nécessaires pour soutenir la recherche afin de peaufiner le cadre conceptuel de l'ISEJ et de répondre aux questions précédentes. Ils espèrent que les chercheurs et les décideurs feront de même, ainsi que d'autres dans des juridictions à l'extérieur du Canada. Dans ce contexte, les partenaires financiers planifient activement l'organisation d'un deuxième symposium sur l'ISEJ en 2010, afin de réviser les progrès réalisés jusqu'à maintenant, de raffiner le cadre conceptuel et de s'entendre de façon générale sur les prochaines étapes.

1.0 Introduction – Analytical Framework Needed

There is a growing need to measure accurately the full range of positive and negative impact as well as social and economic cost and benefit of legalized gambling in Canada. This situation is not unique to Canada but applies to other countries as well where a vigorous gambling industry exists.

Canada's experience with legalized gambling, specifically casinos and slot machines/Video Lottery Terminals, began in the early 1990s. Since then, internal pressures to account for the positive and negative effects of gambling have been steadily growing. Canada's domestic interest is in-step with Australia, to name one example, where gambling's impact has become a growing social issue with increasing pressure on governments, particularly at the local level, to demonstrate that gambling is a net benefit to a community.

The academic world is also beginning to grapple with this issue, as witnessed most recently by Eric L. Grinols' seminal treatise, *Gambling in America –Cost and Benefits*, published in 2004. Four years earlier, in September 2000, a ground-breaking meeting took place in the form of the Whistler Symposium held in Banff, Alberta, which began examining issues on the social and economic impact of gambling. This was followed in April 2006 with yet another international conference in Banff, Alberta, on the social and economic impact of gambling and sponsored by the Alberta Gaming Research Institute. Many who attended had also been at the Whistler 2000 symposium.[3]

The current report is an outgrowth of the original Whistler International Symposium and builds on the symposium's solid work.

A specially assembled Inter-Provincial Consortium for the Development of Methodology to Assess the Social and Economic Impact of Gambling funded the research for this report, which is titled *The Socio-Economic Impact of Gambling (SEIG) Framework – "An Assessment Framework for Canada: In Search of the Gold Standard"*. The consortium is composed of problem gambling research funding agencies and resources from Alberta, British Columbia, Manitoba, Nova Scotia, New Brunswick, Ontario and Québec.

1.1 Research Priority

Canada's provincial gambling agencies and research institutes identified the development of an analytic framework for measuring and reporting on the socio-economic impact of gambling as a priority for gambling research and as a practical tool for policy analysis. The original research questions proposed, which this report addresses, included:

[3] See *Appendix One* for more historical background.

1. What is the preferred methodology to assess the socio-economic impact of gambling?

2. Given an ongoing scenario of legalized gambling, what is the best way of measuring negative social impact, particularly the realistically avoidable impact?

3. How can Cost-Benefit Analysis or similar full-cost accounting methodologies be used to inform decisions related to gambling expansion and regulation?

This document presents **The Socio-Economic Impact of Gambling (SEIG) Framework** for addressing the above research questions. The SEIG Framework, like an architect's blueprint for a house, is a guide to assist policy makers to construct measures and reports on the social and economic impact—both the benefit (positive) and cost (negative)—of gambling in Canada. The intention is to assess the range of impact on the individual, family or household and community scale-of-analysis; and to provide a guide for describing and reporting on the quantitative and qualitative impact, and where feasible, dollar or monetary estimates of each impact.

The SEIG Framework reflects the interdisciplinary and complex nature of gambling and takes a systems and integrated approach to measuring impact by using the:

- Best and most relevant analytic tools from conventional economics (e.g. cost-benefit analysis),

- Social welfare economics (e.g. Genuine Progress Indicator full-cost-benefit accounting);

- Public health science [e.g. epidemiological studies]; and

- New methods being developed by human geographers to assess impact on communities on a spatial level.

The proposed open architecture of the framework means that the framework will evolve and be continuously improved through each application by end-users. While the SEIG Framework does contain some "cook-book" tips for estimating the various impacts of gambling, there are several areas that will require new research and development, while others will see ongoing refinement and improvement. This can only happen through the application of the SEIG Framework, especially on the community scale of analysis. For the evolution to take place, users of the framework are encouraged to share their experiences, information and impact estimates in the spirit of continuous improvement of the utility of this analytical framework.

This report also identifies theoretical and methodological measurement challenges with respect to socio-economic analysis.

2.0 Socio-Economic Impact of Gambling (SEIG) Framework

This section of the report defines the basic components of the SEIG Framework – the practical starting-off point for a socio-economic analysis that seeks an accurate and impartial assessment of the exact benefit and cost of legal gambling. It outlines impact domains, the various preferred indicators, the data required, general concepts, methods, units of analysis, and operating definitions, which are to be employed in the gathering of the information needed to measure the true impact of gambling within a community, region or province.

2.1 The SEIG Framework

The Social and Economic Impact of Gambling (SEIG) Framework provides a guide for assessing the quantitative (statistical), qualitative (perceptional) and monetary cost and benefit of gambling covering six impact domains:

- Health/Well-being
- Economic/Financial
- Employment/Education
- Recreation/Tourism
- Legal/Justice
- Culture

As indicated earlier, the impact of gambling – from recreational, non-problem gambling to problem gambling – can be evaluated at the individual, household or family, community, regional or provincial level.

Impact assessments should distinguish impact according to taxonomy of gambling types, from the non-gambler to the problem gambler, though most impact analysis will likely focus on problem gambling. Assessments should also differentiate impact by the type of game of chance being played; for example, Video Lottery Terminals/Electronic Gaming Machines/ Slot Machines may have greater deleterious effects than playing bingo or buying lottery tickets.

The SEIG Framework is constructed on some of the best attributes of other impact analysis frameworks, models and tools including, but not exclusively:

a) Genuine Progress Indicator (GPI) Atlantic's[4] proposed social and economic impact of legalized gambling framework, which is based on Australia's *Social and Economic Impacts of Gaming: A Framework for Research* developed by SERC (Social and Economic Research Centre);

b) *Community Impacts of Electronic Gaming Machine Gambling* (2005) prepared SA Centre for Economic Studies, Australia, which uses a multi-method or triangulation approach, applying quantitative and qualitative methods, primary and secondary data sources, assessment of impact of gaming on local service

[4] GPI Atlantic is a non-profit organization based in Halifax, Nova Scotia which has been developing the Genuine Progress Indicator (GPI) as alternative measures of sustainable development to the Gross Domestic Product (GDP).

providers and by community workers, and the involvement of local communities through the use of focus groups.

c) The *International Guidelines for Estimating the Cost of Substance Abuse* by Single et al. (2001);

d) The public health model proposed by Korn, Gibbins, Azmier (2003) at the 2000 Whistler Symposium;

e) The Genuine Progress Indicator accounting (full-cost-benefit analysis)[5] for measuring the economic, social and environmental well-being of communities, and for public policy societal well-being evaluation; and

f) Conventional cost-benefit analysis approaches proposed by several economists, including Grinols (2004), Walker (2006), and others;

By drawing together quantitative, qualitative and monetary impact analyses tools, the SEIG Framework is intended to satisfy the broadest possible suite of user-needs from government policy analysts, researchers, local governments, and the general public who are interested in understanding the impact of gambling on society. The SEIG Framework is thus general, comprehensive and flexible enough so that it can be customized according to each jurisdictional or end-user need.

2.1.1 Concise Snapshot of Proposed Framework and Six Impact Domains

Two visual representations, in the form of Figure 1 and Table 1 immediately below, provide a concise snapshot of the proposed SEIG Framework, and the six identified impact domains mentioned at the start of *Section 2.1* that are to be informed by specific indicators, which require unique sources of information that are aimed at defined units of analysis. Table 1's column headings indicate the:

- Data required
- Data source
- Data collection method
- Unit of analysis

This snapshot is intended to help the reader conceptualize the main principles as presented in Figure 1 and Table 1. A detailed explanatory analysis begins in Section 2.1.2, which aims at drilling deeper into the focus, concepts, methods and operating definitions of the SEIG Framework, related to the six impact domains and their indicators.

[5] Developed by Anielski (2001).

Figure 1: Assessment Framework for the Social and Economic Impact of

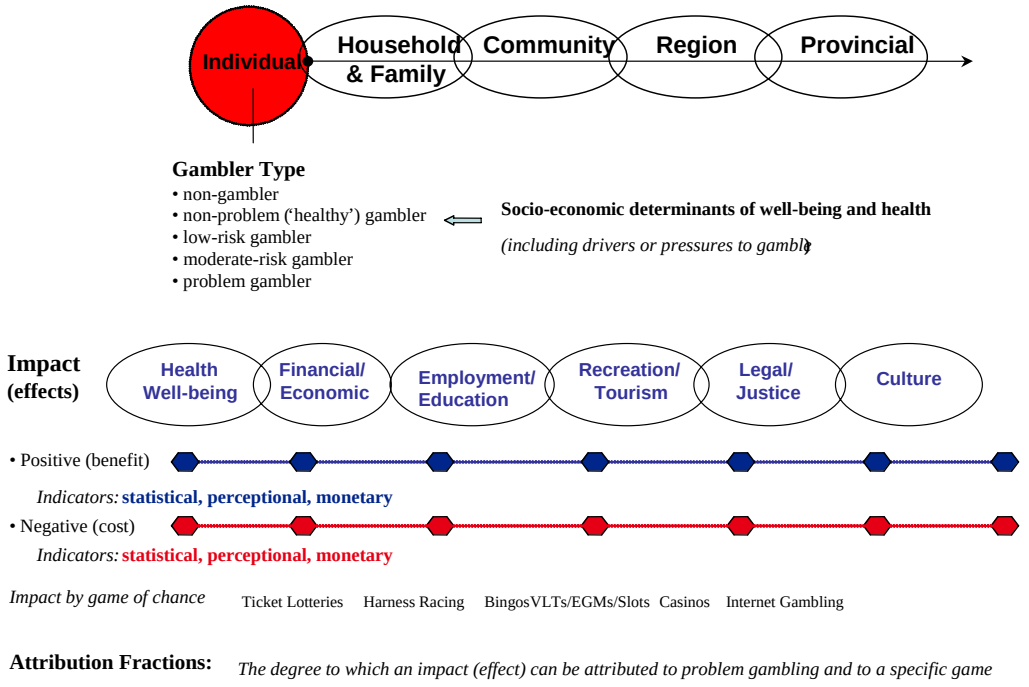


Table 1: Framework for the SEIG Assessment and Indicators

1. Health and Well-being

Health and Well-being Variable	Indicator	Data Required	Data Source	Data Collection method	Unit of Analysis
Benefit					
Entertainment pleasure	Level of enjoyment in time spent gambling	Gambler self-rated enjoyment in spending time gambling	There is no known source of research into self-rated personal enjoyment of gambling (see also *SEIG: A Literature Review*: Perceptions and Attitudes and Surveys Towards Gambling studies).[6]	New surveys of gambler levels of personal enjoyment would have to be constructed.	Individual
	Citizen positive or negative	Community member perceptions	There is no known source of statistical	Public opinion polling and/or	Individual/ Community

[6] *The Social and Economic Impacts of Gambling (SEIG): A Literature Review, Annotated Bibliography, and Synthesis*. Prepared by Mark Anielski and Aaron Braaten, December 19, 2005.

Health and Well-being Variable	Indicator	Data Required	Data Source	Data Collection method	Unit of Analysis
	attitudes toward gambling		research into public attitudes towards gambling across Canada though individual communities or other organizations in respective provinces may have conducted studies that may exist in grey literature, independent research reports or possibly public opinion polls by private polling agencies. (see also *SEIG: A Literature Review*: Perceptions and Attitudes and Surveys Towards Gambling studies).	focus group dialogue would have to be conducted at the local community level, regionally, and provincially.	
Cost					
Problem gambling (PG) prevalence	PG prevalence/incidence rate in a region or community Number of problem PG who seek help through community-based and residential treatment services	PG prevalence study survey data Provincial agency case load data Private agency case load data Surveys/estimates from mutual support groups (e.g. Gamblers Anonymous) Distribution and follow-up records (self-directed training manuals)	In many cases, provincial statistics (e.g. Canadian Community Health Survey) and studies of the incidence of problem gambling using various gambling typologies (e.g. CPGI) have been conducted over the years in Canada. (see also Literature Review: Health, Public Health, or Epidemiology Impacts as well as Attribution, Determinants and Co-morbidity of Gambling studies).	Review existing survey data sets/reports Conduct new surveys as required to update problem gambling incidence. Also consult with government gambling addictions agencies, EAPs, Gamblers Anonymous and other private agencies,	Community/ Provincial
Problem gambling and co-morbidity	Prevalence of PG and co-morbid	Co-morbid disorders in PG populations and PG disorders in co-	Most provincial deaths and hospitalization data are collected at	Attribution analysis is ultimately	Community/ Provincial

Health and Well-being Variable	Indicator	Data Required	Data Source	Data Collection method	Unit of Analysis
	disorders: • Mental health • Depression and mood disorders • Physical (e.g. gastric problems, high blood pressure, etc.)	morbid populations Level of depression and mood disorders in PG population	hospitalization release but do not necessarily identify PG as cause of morbidity. Special attention must be paid to attribution fractions. Only a few provincial studies exist (e.g. Saskatchewan) that may be useful benchmarks (see also *SEIG : A Literature Review*: Health, Public Health, or Epidemiology Impacts as well as Attribution, Determinants and Co-morbidity of Gambling studies).	needed to determine co-morbidity. This will require new epidemiologic al research, forensic analysis of provincial morbidity statistics and clinical trials and surveys will be required. Surveys and anecdotal evidence from interviews with problem gamblers and their families would be useful.	
	Prevalence of PG and substance abuse	Substance abuse in PG populations and vice-versa	Some studies have been conducted provincially though co-morbidity statistics on the relationship of PG and substance abuse are generally poor in Canada (see also *SEIG: A Literature Review*: Health, Public Health, or Epidemiology Impacts studies).	Attribution analysis is required using new epidemiologic al research, clinical trials and surveys of problem gamblers.	Community/ Provincial
Mortality	Deaths from natural causes attributed to PG	Deaths by cause in a population Deaths by cause in a PG population	Provincial vital statistics do not generally identity PG as the primary or even secondary cause of death (see also *SEIG : A Literature Review*: Health, Public Health, or Epidemiology Impacts as well as Attribution,	Detailed attribution analysis of vital statistics, including examination of corner reports, will be required, complimented with anecdotal	Individual

Health and Well-being Variable	Indicator	Data Required	Data Source	Data Collection method	Unit of Analysis
			Determinants and Co-morbidity of Gambling studies).	evidence from interviews and surveys of PGs and family interviews	
Suicide	Suicides attributed to PG	Deaths by suicide in a population Deaths by suicide in a PG population	As with other morbidity statistics, the precise number of suicide (both attempted and successful) are generally lacking in evidence of attribution to PG. see also *SEIG: A Literature Review*: Health, Public Health, or Epidemiology Impacts as well as Attribution, Determinants and Co-morbidity of Gambling studies).	Detailed attribution analysis of suicide statistics through a forensic review of police and coroner records, as well as suicide help-organizations. In addition, some data can be collected anecdotally through interviews of problem gamblers and their families.	Individual
Social relationships	Family breakdown: separation and divorce due to gambling impacts	Divorce and separation in a population Divorce and separation in a PG population Family members' perceptions of impact of divorce or separation	Divorce and separation vital statistics that attribute PG as either the major or a secondary driver of separation and divorce may exist in some provincial statistics, however, such evidence is generally lacking (see *SEIG: A Literature Review*).	Attribution analysis is required to examine vital statistics on divorce and separation as to whether PG is identified as a driver or cause. This statistical evidence could be supported by anecdotal evidence from interviews with PGs and family	Individual

Health and Well-being Variable	Indicator	Data Required	Data Source	Data Collection method	Unit of Analysis
				members.	
	Impact on children, spouses and other family members of problem gamblers	Perceptions of problem gambler family members, including loss of quality time with family, friends, and community Perceptions of gamblers and others directly impacted by gambler behaviour.	As with the impacts of PG on separation and divorce, data is generally lacking either statistical or qualitative data (see also *SEIG: A Literature Review*: "Youth, Adolescents and Children" (p.172-185).	This is a new area of qualitative research that would require careful design of surveys, focus group dialogue processes to examine impacts on children and family members from PG.	Individual
	Social isolation	Perceptions of gamblers and others directly impacted by gambler behaviour.	Some studies may be available (see Literature Review) however; few qualitative studies of the loss of personal and community social capital due to social isolation attributed to gambling behaviour exist (see also *SEIG: A Literature Review*: Perceptions and Attitudes and Surveys Towards Gambling studies).	This is a new area of qualitative research into the impacts of gambling on the loss of social capital for both the individual and the community.	Individual/ Community
	Psychological impacts on family and friends of gamblers	Perceptions of gamblers and others directly impacted by gambler behaviour.	Some psychological and sociological research studies may be helpful (see *SEIG : A Literature Review*: Psychological Impact studies and studies in Perceptions and Attitudes Towards Gambling) although there is no common national approach to this analysis.	This requires psychological research and profiling, along with using surveys and interviews with PGs and their families	Individual
	Domestic violence	Domestic violence population statistics	Statistical evidence of the relationship of PG and domestic violence,	Primary research and forensic	Individual

Health and Well-being Variable	Indicator	Data Required	Data Source	Data Collection method	Unit of Analysis
		Domestic violence prevalence in a PG population Family members' perceptions of impact of domestic violence	like other health and well-being indicators is generally scarce if non-existence across Canada. However, some data may be available from local and provincial police records and court files (see also studies in the *SEIG : A Literature Review*: Crime and Gambling and Gambling Impacts section).	examination/review of police and court records is required complimented with interviews with PGs and the PG family members, who identify instances of PG-related domestic violence.	

2. Economic/Financial

Economic and Financial Variable	Indicator	Data Required	Data Source	Data Collection method	Unit of Analysis
Benefit					
Contribution to economic growth	Contribution gambling sector makes to provincial Gross Domestic Product (GDP)	Estimates of various components, which make up GDP for gambling: • personal consumption expenditures • business investment; • government expenditures	While GDP estimates for gambling, as an economic sector, do not currently exist, the necessary data for the components to derive GDP estimates is available from Statistics Canada.	According to Statistics Canada estimates of gambling GDP could be constructed from the respective components of the GDP formula with respect to gambling as an economic activity tracked in the national income accounts.	Provincial/ National
	Changes in investment, housing starts, value of residential and commercial building permits, hotel	Regional and local community investment, housing starts, value of residential and commercial building permits, hotel and commercial starts	The relationship between legalized gambling development, as a sector in the economy, and key economic growth indicators is generally lacking and	This would require data collection and detailed analysis of real estate development records and	Community/ Provincial

Economic and Financial Variable	Indicator	Data Required	Data Source	Data Collection method	Unit of Analysis
	and commercial starts		would require new analysis.	experts as to how real estate development has been related to gaming venue development. Possible data sources include municipal government statistics, Statistics Canada statistics (community profiles data), and real estate industry statistic	
Personal gambling expenditure	Net gambling expenditures as a percentage of household income Changes in disposable household income, as potential proxy driver of gambling activity	Official government statistics or estimates of net "games of chance" annual gaming expenditures (distinguish between adult gross expenditures and losses) Personal disposable income trend statistics by socio-economic cohort	Statistics Canada: annual and quarterly accounts of data on household expenditure data on "games of chance" but limited to CMA[7] level of analysis. Statistics Canada data must be compared to reported net (after payouts) gambling revenues by provincial governments and gambling agencies divided by adult gambler population. Statistics Canada: FAMEX data.[8] Alternative source: Canadian Gambling	Statistics Canada household expenditure surveys. Expenditure diaries	Individual/ Household

[7] CMA: Census Metropolitan Area.
[8] Starting in 1996, FAMEX introduced four additional questions which already included a question on government-run lotteries expenditures are now available for casinos and slot machines, and raffles, and winnings from games of chance.

Economic and Financial Variable	Indicator	Data Required	Data Source	Data Collection method	Unit of Analysis
			Digest (www.cprg.ca)[9] Also, estimated per household gambling expenditures based on government reported net gaming revenues.		
Personal entertainment satisfaction benefit	Consumer surplus	Economic research estimates of consumer surplus (i.e. willingness to pay more for existing legal gambling opportunities) and elasticity of demand for gambling empirical estimates	Consumer surplus estimates for gambling for Canada do not exist; Australia is the only jurisdiction to have conducted studies but these estimates are questionable. CS studies require estimates of how much more the gambler would have been willing to pay for the good or service of gambling, which is requires new primary economic research. (see studies in *SEIG: A Literature Revie*w Economic(s), Economic Impacts and Economic Development).	This would require new primary economic research and analysis by professional economists using willingness-to-pay surveys to derive consumer surplus estimates.	Individual/ Community/ Provincial/l National
	Distance surplus	Distance surplus empirical estimates	Measuring distance surplus would require special economic research of the willingness of gamblers to pay incremental costs of travel from their home to specific gaming venues. (see studies in *SEIG: A Literature Revie*w: Economic(s), Economic Impacts and Economic Development).	New economic research would be required using travel cost surveys and analysis to derive distance surplus estimates.	

[9] Dr. Harold Wynne suggests that gambling expenditure data is more reliable from the Canadian Gambling Digest data base than Statistics Canada household expenditure surveys which he argues underestimates the actual net expenditures on games of chance.

Economic and Financial Variable	Indicator	Data Required	Data Source	Data Collection method	Unit of Analysis
Gaming industry benefit	Producer surplus Revenues by industries on which gambling may have a large impact on such as: leisure, hotel, restaurant, and traditional gambling	Gaming industry profits Revenues of businesses most affected by gambling	Gaming ministry, commissions or other agency annual reports. Statistics Canada with special analysis. Statistics Canada: The Annual Survey of Arts, Entertainment and Recreation data.	Because producer surplus estimates have not been derived for gambling, primary economic research would be required. This would include examining reported entertainment industry revenues along with anecdotal information as who how would have to be examined to derive producer surplus estimates.	Community/ Provincial
	Net growth in revenues/sales and employment in other sectors that benefit from gaming industry development	Business sales/revenues statistics for other sectors and employment statistics of sectors that benefit directly or indirectly from gaming industry (e.g. food services, retail sales and construction activity)	Statistics Canada; labour force data by industry sector from *Canadian Business Patterns;* also from Statistics Canada Canada's Business Register for occupational data base using Standard Occupational Classifications. *Note: There is a general lack of data examining both the positive and negative regional impacts of gaming, which must be inferred indirectly*	This would require new economic research Employment surveys.	Community/ Provincial

Economic and Financial Variable	Indicator	Data Required	Data Source	Data Collection method	Unit of Analysis
			from special analysis.		
Government revenue	Government revenues from gambling, including incremental tax revenues (GST, PST, corporate income taxes) related to gaming activity as a percentage of total revenues	Government gaming revenues (gross sales, gross profits, net profits); a) obtained from local spending; b) obtained from tourist spending; c) spending on charities and community programs)	Provincial government accounts and gaming commissions/ministries (see also studies in the *SEIG: A Literature Review*: Economic(s), Economic Impacts and Economic Development - Government, Regulation, Public Policy, Tax Policies	This would require new detailed/forensic analysis of provincial and federal Government public accounts.	Provincial
Capital gains	Capital gains to consumers, including increases in private and commercial property values related to gambling venues and development	Increase (or decrease) in average residential and commercial property values adjacent to gaming venues	There are no known studies of capital gains on private or commercial property attributed to gambling industry development.	Capital gains analysis has not been conducted in the past related to gambling which would require new research.	Individual/ Household
Cost					
Bankruptcy	Personal bankruptcy rates attributable to problem gambling	Bankruptcies attributable to gaming and gaming-related bankruptcies as a percentage of total personal bankruptcies	Bankruptcy files (government, financial institutions) as sources but do not necessarily identify PG as a key driver of personal or business bankruptcy or financial difficulties.	Detailed analysis of bankruptcy files would be required to determine whether the bankruptcies were due to an "over-extension of credit" that can be attributed to problem gambling.	Individual/ Household
Financial problems (gambling debts)	Self-reported financial problems, including gambling debts,	Level of gambling related debt and debt servicing costs, including estimated cost of recovering bad debts	There is no known source of data on self-reported financial problems that may include PG as an identifiable cause.	New self-reported surveys could be a source of indirect evidence and	Individual/ Household

Economic and Financial Variable	Indicator	Data Required	Data Source	Data Collection method	Unit of Analysis
	borrowing or financing of gambling activity and debts Changes in personal savings rates and liquidation of assets (e.g. RSPs, RESPs, home equity)	Statistics on personal saving rates and changes statistically attributed to gambling activity		anecdotal information from self-reports of borrowing money to finance gaming. Discerning changes in personal savings and investment rates related to gambling activity would be difficult to collect expect through experiential information from problem gamblers.	
Value of losses in quality of life time	The value of volunteer time spent by households to work charity gambling venues to raise money for community programs and infrastructure; time that would not otherwise have to be invested if other government general revenues were available for fully funding these community needs	Volunteer time contributed (total time and "reluctant" time) by individuals and households in the community to working bingos, casinos and other charity gaming venues to help raise revenues for non-profit organizations, schools and other social economy enterprise	While time use studies are conducted every 5 years by Statistics Canada, which include analysis of changes in leisure time, family time and other household time-use, it is not known whether these statistics account for gambling as an individual or household time-use activity. Moreover, it is not known whether Statistics Canada examines causes or drivers in changes in leisure time or voluntary time-use.	Statistics Canada time-use survey statisticians would have to be consulted to inquire into whether gambling, as an activity, is accounted for in time-use diaries and whether analysis has been done to examine the key drivers of changes (including gambling as an activity) in time-use over study periods dating back to 1981. Special	Individual/ Household

Economic and Financial Variable	Indicator	Data Required	Data Source	Data Collection method	Unit of Analysis
				analysis of time-use statistics may be possible.	
Public sector cost	Government expenditures allocated for problem gambling treatment, education and prevention	Government incremental health, welfare, and social service program expenditures allocated to problem gambling impacts	Analysis of provincial government public accounts should reveal the amount and share of revenues that support government departments/ministry expenditures that come from net gambling revenues.	Special fiscal analysis of government program spending would be required to determine how changes in government program spending are related to changes in problem gambling behaviour and impact.	Provincial
	Government regulatory costs (government expenditures) related to gambling industry	Government regulatory costs related to gambling industry	Provincial government public accounts	Special fiscal analysis of government program spending would be required to determine how changes in government program spending are related to changes in problem gambling behaviour and impact.	Provincial
	Public infrastructure costs related to gaming industry development	Additional public infrastructure development or replacement costs (as long as the province pays for a portion	Provincial government public accounts	Special fiscal analysis of government program spending would be required to	Provincial

Economic and Financial Variable	Indicator	Data Required	Data Source	Data Collection method	Unit of Analysis
				determine how changes in government program spending are related to changes in problem gambling behaviour and impact.	
	Government subsidies to the gaming industry	Direct and indirect subsidies (e.g. public infrastructure benefits to casinos) provided by governments that benefit the gaming industry	Provincial government public accounts and special analysis	Special analysis of government program and capital spending would be required to determine how these public expenditures have benefited the gaming industry.	Provincial

3. Employment/Education

Employment and Education Variable	Indicator	Data Required	Data Source	Data Collection method	Unit of Analysis
Benefit					
Job creation	Direct employment (job creation) in gaming industry	Employment statistics for gaming industry (number of employees; percentage employed full time) Other socioeconomic characteristics of gaming industry employees Estimates of the economic value of direct employment	Statistics Canada; labour force survey, a household survey collected monthly by Statistics Canada. Data on number of employees by industry sector from *Canadian Business Patterns;* also from Statistics Canada occupational data base using Standard Occupational Classifications.	Data is most likely available on the gaming industry, both provincially and possibly at the municipal level, from the national Labor Force Survey. Compilation of the data would be required.	Community/ Provincial

Employment and Education Variable	Indicator	Data Required	Data Source	Data Collection method	Unit of Analysis
			Special analysis		
	Indirect employment related to gaming industry	Indirect employment resulting from gaming industry development. Employment statistics of sectors that benefit directly or indirectly from gaming industry (e.g. food services, retail sales and construction activity) Estimates of the economic value of indirect employment	Input-Output tables or analysis from provincial statistical/government agencies and Statistics Canada. *Note: There is a general lack of data examining both the positive and negative regional impacts of gaming, which must be inferred indirectly from special analysis.*	Input-Output analysis is likely the best approach to measuring the indirect employment impacts related to the gaming sector.	Provincial
	Annual and hourly wages for gambling industry employees	Annual and hourly wage data	Statistics Canada should contain data on annual and hourly wages generated by the gambling industry.	Labour force survey should provide annual salaries and hourly wage data for gaming industry workers.	Provincial/ National
	Job intensity: Gambling-related jobs created per $1 million of gambling income (or GDP), *compared with other sectors in the economy*	Gambling-sector employment statistics Gambling income Gambling GDP	As with estimates of gambling GDP, estimates would have to be derived at the provincial level by building a GDP formula working with Statistics Canada economists, then comparing GDP estimates with statistics of employment in the gambling industry.	Estimates of GDP for the gaming sector would have to be derived from Statistics Canada national income accounts data. Industry revenue data should be available from provincial gaming agencies. Employment data should be available from the Labour	Provincial

Employment and Education Variable	Indicator	Data Required	Data Source	Data Collection method	Unit of Analysis
				Force surveys from Statistic Canada.	
Unemployment and underemployment	Changes in unemployment and underemployment rates resulting directly from gaming industry development	Special analysis of the number of new employees in the gaming sector who were previous unemployed or underemployed	Analysis of changes in unemployment and underemployment rates attributed to changes in legalized gambling do not likely exist in Canada (see SEIG: A *Literature Review*: Economic(s), Economic Impacts and Economic Development).	Special statistical trend analysis of Statistics Canada unemployment and underemployment in the gaming and entertainment industries would be required.	Provincial/ Community
Cost					
Work performance	Productivity losses, absenteeism due, and increased likelihood of unemployment to problem gambling activity by employees	Estimated losses of productive work time and absenteeism by employees who are problem gamblers	Statistical and anecdotal data on losses in work productivity due to PG behaviour by employees may be spotty or generally unavailable.	Interviews with PGs, employers of PGs and family members, including self-reported surveys, indirect evidence and anecdotal information from self-reports of borrowing money to finance gaming.	Individual/ Household
Employment cost	Retraining and other employment cost impacts sustained by in other industries	Employment retraining and other unexpected labour costs incurred by businesses affected by gambling industry development	Studies of the economic estimates of the costs of retraining and labour productivity losses attributed to gambling development are not available in	Employment retraining cost information would have to be collected from firms who are impacted	Business

Employment and Education Variable	Indicator	Data Required	Data Source	Data Collection method	Unit of Analysis
			Canada (see Literature Review: Economic(s), Economic Impacts and Economic Development).	by gaming industry development. Much of the information will be anecdotal.	

4. Recreation and Tourism

Recreation and Tourism Variable	Indicator	Data Required	Data Source	Data Collection method	Unit of Analysis
Benefit					
Gambling tourism	Gambling tourist rate Percentage of patrons/visitors from outside the region/community/province making day or overnight trips to a local gaming venue Tourists citing gambling as primary reason to visit region; as a contributing factor Overnight trips made by local residents to other regions with gaming venues. Average	Tourism statistics including visits to gambling venues from outside the immediate community Tourist expenditures at gaming venues	Some provinces may collect tourism data (e.g. visitation rate statistics) that identify gambling venues as a primary reason for visitation, though such evidence has not yet been examined. It is not known whether gaming venues or provincial government gaming agencies identify expenditures according to the gambler's place of origin (e.g. out-of-province or community)	Tourist surveys maintained by provincial tourism ministries or agencies could be a source of information on visitation rates related to gaming venues.	Individual

Recreation and Tourism Variable	Indicator	Data Required	Data Source	Data Collection method	Unit of Analysis
	tourist/visitor expenditures on gambling venues				
Cost					
Negative impact on other recreational industries	Income and employment losses sustained by traditional forms of entertainment and recreation in the community	Economic and financial losses sustained by traditional forms of entertainment and recreation that existed prior to the introduction of gaming venues	There are no known studies of the impacts (positive or negative) of legalized gambling on other recreation sectors (see also Economic(s), Economic Impacts and Economic Development).	It may be possible to infer losses in income and employment in terms of determining how much money is now spent on games of chance (e.g. VLTs or slots) that might otherwise have been spent in the community on other forms of recreation and entertainment.	Provincial/ Regional

5. Legal/Justice

Legal and Justice Variable	Indicator	Data Required	Data Source	Data Collection method	Unit of Analysis
Benefit					
Reduced illegal gambling	Reduction in illegal gambling activities using court proceeding statistics as a proxy	Court statistics on gambling related hearings and convictions	It is unlikely that current court statistics are robust enough to help assess a trend in illegal gambling activity that can be attributed to the increased availability	Custom research and analysis.	Provincial

Legal and Justice Variable	Indicator	Data Required	Data Source	Data Collection method	Unit of Analysis
			of legalized gambling		
Crime rates related to gambling	Decreased crime rates related to gambling (e.g. embezzlement, fraud) as a result of legalization of gambling activities Benefits (or costs) of crimes related to problem gambling in a legalized gambling context	Policy records and court statistics Economic analysis	While police and provincial court statistics may provide general crime rates that may relate to PG activity, however, it is unlikely that they identify legalized gambling as a key driver of reduced crime rates. Economic analysis would be required to examine the full benefits and costs of legalized gambling.	Much of the information about positive effects of legalized gambling on crime rates would have to be anecdotal information or experiential information from police and court officials, and government gambling addiction agencies. Full cost accounting of the monetary value of reduced crime rates attributed to legalized gambling.	Individual/ Provincial
Decreased crime judiciary and policing cost	Reduced policing and court costs associated with illegal gambling	Reduction in illegal gambling related charges, convictions or court proceedings	The same commentary as above applies to data on reductions in judiciary and policing costs.	Special detailed analysis of all police and court records that cites illegal gambling as a cause of criminal activity along with supporting anecdotal evidence from police and court official	Individual

Legal and Justice Variable	Indicator	Data Required	Data Source	Data Collection method	Unit of Analysis
				interviews.	
Cost					
Crime rates related to gambling	Violent crimes (homicides, attempted murders, assaults, robberies, harassment/stalking) attributed to gambling Non-Violent crimes--break and enter, vehicle theft, fraud, theft over/under $5,000	Policy records and court statistics, which cite gambling as a motivating factor	While police and provincial court statistics may provide general crime rates that may relate to PG activity, however, it is unlikely that they identify PG as a key driver or co-contributing factor in changes in crime rates. As with health impacts, data analysis must be sensitive to attribution fractions. (See also studies in SEIG: A *Literature Review*: Crime and Gambling and Law and Gambling).	Special detailed analysis of all police and court records that cites illegal gambling as a cause of criminal activity along with supporting anecdotal evidence from police and court official interviews. Some government problem gambling services ask clients if they were involved in the criminal justice system, if so why, and if the crime was related to gambling	Individual/ Provincial
Criminal cost	Negative crime impacts including losses to other businesses from gaming-related crime (e.g. fraud and theft, money laundering and loan sharking)	Gambling-related criminal activity, arrests and convictions as well as analysis of what percentage of the net change in crime rates in a region or province that can be attributed to gaming industry development Perceived negative impacts (crime, fraud, theft, money	It is unlikely that studies exist or data on the losses sustained by businesses impacted negatively by crime due to increased legalized gambling. (See also studies in SEIG: A *Literature Review*: Crime and Gambling and Law and Gambling).	Special detailed analysis of all police and court records that cites illegal gambling as a cause of criminal activity along with supporting anecdotal	Provincial/ Regional

Legal and Justice Variable	Indicator	Data Required	Data Source	Data Collection method	Unit of Analysis
		laundering, loan sharking) by other businesses impacted by gaming venues		evidence from police and court official interviews Stakeholder interviews and perception surveys and analysis of businesses impacted by gaming venues	
Judiciary and policing cost	Policing and court costs related to gambling-related crime, total and as a percentage of total policing and court costs	Total number of police and court cases and related program expenditures that are problem gambling-related. Cost of gambling-related crime regulation (policing) and prevention programs	Police and court statistics may provide some evidence that a case or file is attributed to problem gambling, however, this is highly unlikely across Canada. (See also studies in SEIG: A *Literature Review*: Crime and Gambling and Law and Gambling).	Special fiscal analysis of police and court program expenditures that are related to problem gambling activity would be required.	Individual
Security cost	Increased security (private and public) costs related to gambling activities	Statistics on private and public security system expenditures related to gambling development	It is uncertain whether any analysis exists of security cost data that focuses on changes in legalized gambling in communities.	Special economic research and analysis of security industry expenditures related to gambling activity would be required.	Individual/ Business

6. Culture

Culture Variable	Indicator	Data Required	Data Source	Data Collection method	Unit of Analysis
Benefit					
Community benefit from gaming activity	Local charities and non-profit sector who derive income from gaming	Total number of gambling-related charitable donations, value and number of grants	Provincial gaming ministry statistics and public accounts should provide necessary statistics on which	This would require research and analysis if various	Provincial

Culture Variable	Indicator	Data Required	Data Source	Data Collection method	Unit of Analysis
	revenue transfers from government	Number, type and size of charities that receive gambling revenue donations and grants Percentage of revenues to community organizations that come from gaming	community organizations benefit from legalized gaming revenues and by how much, however, more detailed analysis of how the revenue mix has changed for these organizations (e.g. losses in charitable giving) would likely require special studies and detailed analysis .	community organizations as to the income they derive from gaming revenue sources (e.g. charity bingos, casinos).	
Public sector benefit from gaming activity	Gambling revenue contributions to government social program spending, grant programs, and organizations (e.g. schools) that come from gaming revenues	Financial information on the total dollars of revenues and percentage of revenues to other government/public sector organizations that come from gaming	Provincial public accounts should contain data that identify gaming revenues as a source of revenue for funding respective government departments, ministries or agencies.	Detailed fiscal analysis would be required to determine what, if any, specific amount and percentage of general venues that goes to support government programs comes from gambling revenues. This may be difficult to verify.	Provincial
Sense of safety from gaming venues	Increased sense of personal safety because of gaming venues	Sense of personal safety surveys related to the existing of legalized gaming venues	There are no known studies of individual gamblers increased sense of safety.	This would require perceptional surveys augmented with focus group interview input.	Individual
Cost					
Non-gambling charitable sector impact	Changes in the amount and value of non-gambling charitable donations and	Charitable donations, giving and grants statistics	While changes in charitable giving at the provincial level can be assessed from Statistics Canada and the non-profit sector	Tax filer data could be source, if available, for assessing changes in	Individual

Culture Variable	Indicator	Data Required	Data Source	Data Collection method	Unit of Analysis
	grants		statistics, attributing these trends to the development of legalized gambling opportunities may be problematic without anecdotal evidence from interviews with tax filers as to changes in their charitable giving behaviour.	charitable giving but determining whether these changes related to the impacts of expenditures on games of chance would require new research and anecdotal information through PG and gambling stakeholder interviews.	
Loss of social cohesion (i.e. sense of community; social capital) in a community due to legalized gambling development	Loss (or gain) in community social capital (i.e. sense of cohesion, trust, belonging)	Perceptional survey statistics	There are no known studies of changes in social capital that can be attributed to changes in legalized gambling development in communities.	This would require primary research, special perceptional surveys, and supported by citizen dialogue.	Individual

2.1.2 Focus, Concepts, Methods and Operating Definitions

The SEIG Framework focuses first and foremost on development of quantitative (statistical) and qualitative (perceptional) impact indicators and statistics. These statistics form the foundation of assessing the monetary or full cost and benefit impact of gambling[10]. For most indicators in the SEIG Framework, a monetary attribute is possible using various economic valuations or costing methodologies. Ideally, a full monetary analysis of gambling impact, like the Genuine Progress Indicator (GPI) accounting, should be the goal, providing the most robust economic analysis possible[11].

[10] See *Section 3.4* of this report for a full description of measurement methodologies.

[11] The real utility of the SEIG Framework will reveal itself through its application in impact analysis at the provincial scale. This will require a commitment by various stakeholders, including governments, gambling industry, and problem gambling groups, to identify, validate and collect statistics on the relevant suite of gambling impact indicators from the SEIG Framework that are appropriate to their community. Only by using the framework domestically and internationally can its strengths and weaknesses be identified in a spirit of continuous improvement.

The menu of impact variables and indicators in Table 1 can be used by analysts for assessing gambling impact – both the benefit [positive] and cost [negative][12] – for any particular game of chance being analyzed. Most of the indicators start from the individual gamblers experience or perspective, but could then be scaled up to the community or provincial scale, depending on the nature of statistics and statistical methods used to gather the data. Like any menu, users are free to choose those indicators from the list that are meaningful for the intended purposes of impact assessment. This will vary by community, region and province.

The SEIG Framework data requirements, potential data sources, and possible data collection methods are not meant to be an exhaustive list of data sources or methodological methods. The framework is intended to function as a guide for Canadian jurisdictions – primarily to serve as an initial starting point for conducting a SEIG assessment at the provincial, regional and/or community-scale of analysis.[13]

Indicators are meant to provide a portrait of changes in well-being conditions, at the individual to the community level. Any indicator is only as good as the underlying data that supports it. Table 1 identifies those indicators that will require new research, attribution analysis, or more in-depth analysis of existing data sets for conducting meaningful impact analysis.

What should be clear is that many gambling impact indicators currently lack concrete data sources or will require more forensic analysis of global or general community well-being statistics (e.g. health and crime statistics), as well as more complex attribution fraction analysis to provide the kind of impact assessment that can be statistically defensible[14]. Analyzing existing statistics to the degree to which problem gambling is a key driver will take new research and studies. In addition, as was indicated earlier, new data will have to be collected for those indicators where data does not exist. It should also be clear that the actual analysis of gambling impact using the SEIG Framework is seen as a long-term work-in-progress across Canada.

Indicator data sources may also vary by provinces or communities[15]. To make the SEIG Framework functional, the majority of the impact indicators in the framework require the development of a new gambling impact statistical data-base, detailed and specialized studies into the connection of gambling and general socio-economic, health and well-

[12] This distinction is often normative.
[13] Researchers and other users of the SEIG Framework are encouraged to examine and use *The Social and Economic Impacts of Gambling: A Literature Review, Annotated Bibliography, and Synthesis* (Anielski Management Inc., 2005), which contains over 1200 citations for assessing the social, health and economic impacts of gambling that are used in the SEIG Framework.
[14] *Section 3.4* of this report (*Measuring the Monetary Economic Benefit and Cost of Gambling*) may provide analysts with some useful measurement tips and ideas as well as important benchmark studies and data on the prevalence and estimated monetary costs (and benefits) of certain socio-economic and health impacts among problem gamblers.
[15] Users of the SEIG Framework across Canada are encouraged to share their data sources, statistical methods, special analyses and impact assessment experiences to help complete the construction of impact analyses and subsequently refine the gold standard methodology.

being indicators, statistical sampling of impact from the general population and gambling population, some clinical trials and, ultimately, a sustained commitment of resources dedicated to this effort.

The SEIG Framework will only be useful through this sustained experimentation in measurement and analysis across Canada.[16]

It should be acknowledged that the SEIG Framework recognizes that a definitive and objective "bottom line" (whether monetary or a quantitative index) that reveals the "net impact" of gambling may be, at times, both unlikely and impractical given sometimes hard stakeholder realities. For this would require a full consensus as to the impact indicators selected and whether the impact constitutes a genuine benefit or cost to the well-being of individuals and communities. Those critical decisions, of weighing benefit and cost, and assigning attribution fractions to impact, must ultimately be left to communities and decision makers – activities sometimes outside the control of researchers. However, the good news is that the SEIG Framework is easily capable of reaching the true "bottom line" if the political will is there to do so, precise measurement is truly wanted, and honest consensus is obtained. The SEIG Framework is the foundational document for evolving the best practices in gambling impact measurement.

2.1.3 Terminological Primer

The SEIG Framework focuses first and foremost on the development of quantitative (statistical) and qualitative (perceptional) impact indicators and statistics. These statistics form the foundation of assessing the monetary or full-cost and benefit impact of gambling.[17] The sections that follow offer a detailed, narrative description and illustrative mapping of the SEIG Framework's themes, terminology and structure.

2.1.3.1 Impact Themes Defined

As was noted earlier, six impact themes or categories[18] are identified in the SEIG Framework.

1. **Health and Well-Being**: These impacts include the effects that gambling can have on physical, psychological and social health and well-being of the individual and family. They can include social isolation, stress increases or

[16] Users of the SEIG Framework are encouraged to experiment with a variety of methodological approaches including:

a) Examination of statistical trends in global or community profile statistics in relationship to changes in gambling behaviour and legalized gaming venue accessibility;
b) New statistical studies and sampling of the general population as to specific gambling impact in sample communities and then generalizing these statistics to other communities across a province;
c) Longitudinal cohort studies that tracks a group of gamblers over time; and
d) Full cost accounting analysis (e.g. GPI accounting) [see Section 3.4 of this report].

[17] A full description of monetary or full cost-and-benefit impact of gambling can be found in *Section 3.4*.

[18] These are drawn from the Australian Productivity Commission's model.

reduction, depression, anxiety, thoughts of suicide, attempted suicide, suicide, divorce and other health and wellness related impact.

2. **Economic and Financial**: Economic impact includes macro-economic impact such as the contribution of gambling to provincial and local GDP, overall increases in economic activity, and positive (or negative) impact of gambling industry development on other sectors. Financial impact includes gambling-related revenues collected by governments, government regulatory expenditures as well as the financial impact on individuals (e.g. increasing levels of debt, bankruptcy).

3. **Employment and Education:** This impact includes the effects on the workplace, including work productivity, absenteeism, business profit, job gains and losses (net job formation), and unemployment rates. In terms of education, estimates of time lost for study due to gambling addiction are an indicator.

4. **Recreation and Tourism**: This impact on well-being includes the effects on the entertainment, food, beverage and recreation industries as well as consideration of the economic and financial impact (cost or benefit) on these industries or firms.

5. **Legal and Justice:** These include the impact of gambling on crime rates, organized crime and the criminal justice system. Crime includes domestic abuse and violence, and perceptions of a safe community before and after gaming industry development.

6. **Culture:** This impact include effects on public opinion, attitudes, social cohesion and a sense of belonging to community, values and beliefs toward gambling and toward how gambling activities and government involvement affects quality of life. This also includes impact on both demographic and cultural groups, including aboriginal people, women, visible minorities, ethnic minorities, youth and seniors.

2.1.3.2 Units of Analysis

The SEIG Framework, previously shown in Figure 1 and Table 1, is meant to apply at all levels of impact analysis. Impact can be assessed by various scales as indicated before – from the individual gambler, the gambler's family or household, the community, the regional or province, or even a national level of analysis. The following illustrations, Figures 2, 3 and 4, which appear in the immediately succeeding pages, show how the impact could be stratified from individual, family, community, regional or provincial scales. Ultimately the impact is scalable, moving from the impact sustained by the individual problem gambler, to community, and ultimately the province.

Let's now look at each stratum:

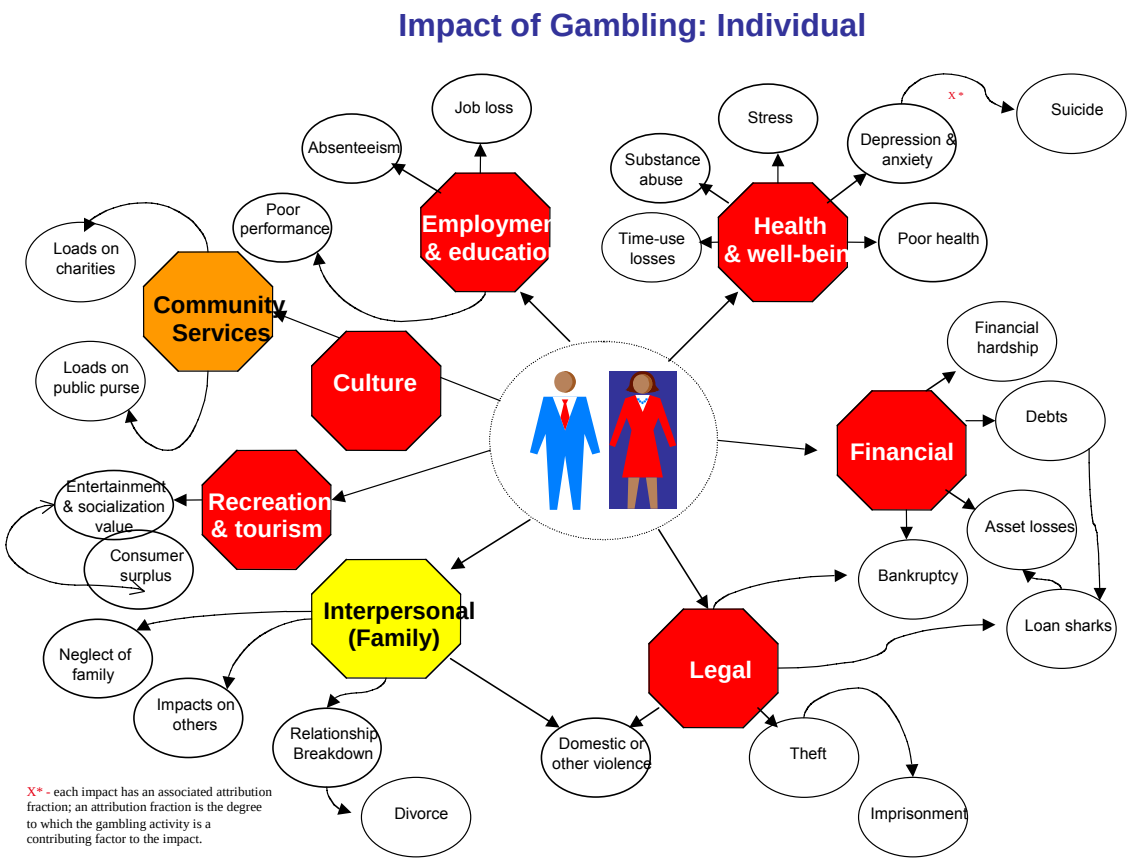
1. **Individual:** The person who engages in the gambling activity and whose well-being is directly affected by the benefit and cost, or positive and negative impact. Hayward (2004) notes that most of the research at the level of individual impact has focused exclusively on the negative impact on problem gamblers. Very little research has examined well-being impact on a broader spectrum of gamblers from the no-risk recreational gambler, to the at-risk gambler, to the problem gambler. One of the key methodological challenges relates to the attribution fractions or deciphering what portion of the well-being impact can be attributed to gambling. Another relates to measuring the intangible impact that relate to quality of life and general well-being, which very few studies have addressed or quantified.

2. **Family (Household):** Those in the individual's household, as well as close friends and relatives, whose well-being may be affected by the individual's gambling activities. Hayward (2004) notes that as with individual impact analysis, measurement of impact on families and households from gambling faces the same methodological challenges, including the fact that most of the research has focused on problem gamblers and the impact on their families. Much of the impact at the individual level is similar or extends also to family members.

   Individual and family or household impact is the primary unit of analysis in the SEIG Framework. Figure 2 (directly below) shows how impact experienced by the individual gambler is connected to the direct and indirect impact sustained by a gambler's family or household. As indicate previously, much of the impact at the individual level is similar at the family or household level of analysis, though the nature and degree of this impact will differ according to who is impacted. Both positive and negative well-being impact can be experienced; impact indicators can be measured in statistical, perceptional and monetary terms.

   Figure 2 is an illustration of impact stratification by individual and family or household.

Figure 2: Individual and Family/Household Socio-economic Impact of Gambling



Source: partially adopted from Productivity Commission 1999. *Australia's Gambling Industries* , Report No. 10, Ausinfo, Canberra. P 7-3

3. **Communities**: The well-being impact on a spatial or geographic community (e.g. neighbourhood, town or city). This includes primarily households, but could also consider a "community of interest" (e.g. clubs, interest groups, youth, seniors, women, ethnic or visible minorities, or aboriginal communities). Impact is generally social in nature related to quality of life, social cohesion and other attributes of social capital. Hayward (2004) notes that there are very few studies that examine such community well-being impact with the exception of some studies of impact on adolescents, cultural or community groups, and women or aboriginal communities. One of the challenges faced is that groups within spatial communities might experience different well-being impact; for example, low-income and socially disadvantaged households have different experiences and well-being impact than higher income households.[19]

[19] Smith, G.J. and H.J. Wynne. (2000). *A review of gambling literature in the economic and policy domains*. Alberta Gaming Research Institute.

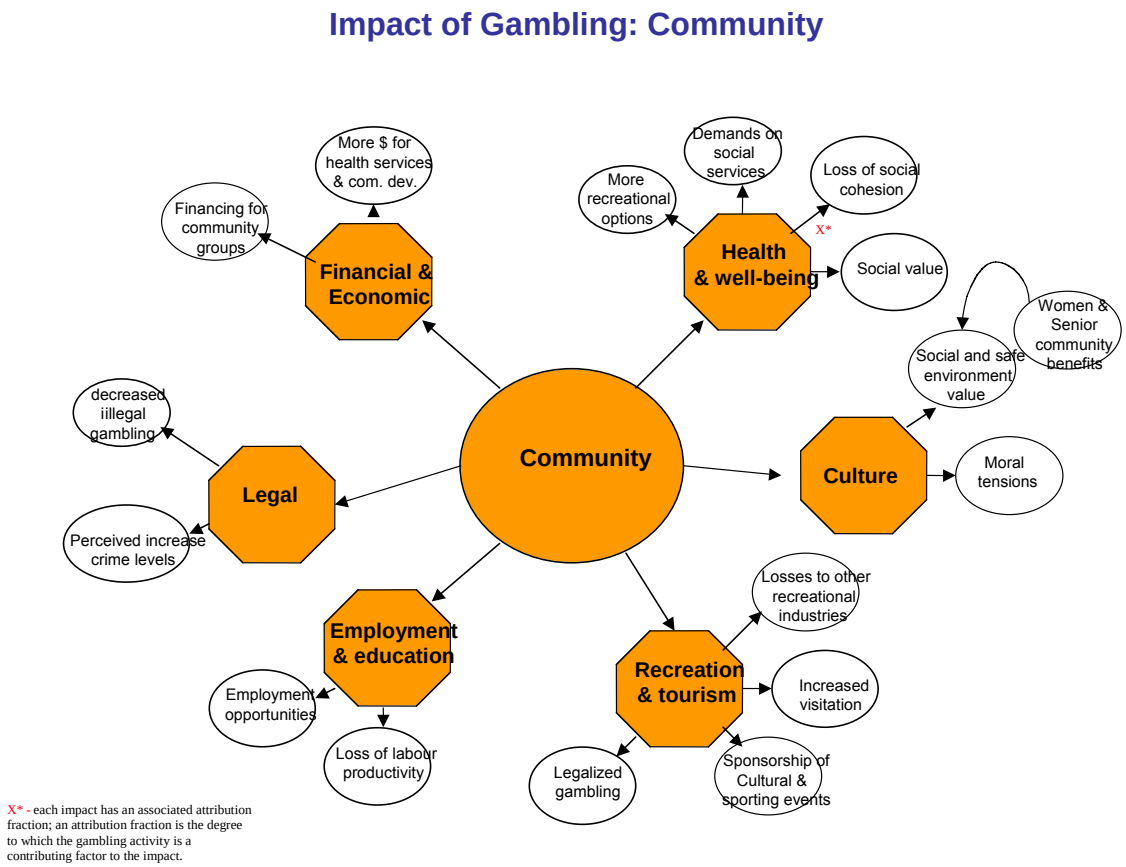
Community socio-economic impact is ultimately the sum total of positive and negative impact experienced by the sum total of all gamblers in a community, particularly problem gamblers. Like individual impact, community impact can use statistical, perceptional and monetary indicators.

The impact on the community relates either to a geographically defined community (such as a neighbourhood, town, or city) or a community of interest such as an ethnic group. Special communities of interest include Aboriginal communities, youth, women or socially disadvantaged groups of households.

These unique clusters of individuals can be analyzed using the SEIG Framework with sensitivity to their unique cultural and socio-economic characteristics.

Below is an illustration of impact stratification by community.

Figure 3: Community Socio-economic Impact of Gambling



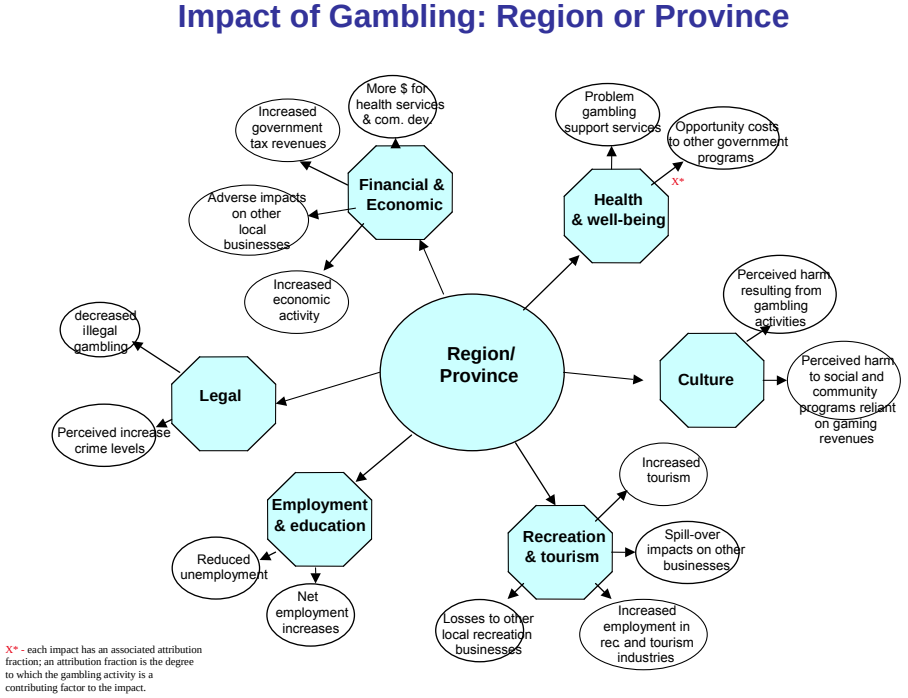
Community impact is further scalable up to the regional and provincial scale of impact as shown in Figure 4, a more detailed illustrative mapping that follows below.

4. **Regions**: Larger geographic areas than communities that may or may not have regional governance structure or services, but nevertheless are the base of a local economy.[20] As Hayward (2004) notes, regional analysis is complicated by statistics that are often obscured in provincial or national aggregates. Another challenge is the issue of variance in the nature of regional administrative boundaries and reporting; for example, health regions may have different boundaries than tourism or economic regions in a given province (or state).

5. **Province**: Includes analysis of impact on provincial governments related to taxes, support services, gambling industry regulatory activities, and other macro-economic and social policy issues. In Canada, the regulation of gambling activities is a provincial matter.

   Below is an illustration of impact stratification by region or province.

Figure 4: Regional/Provincial Socio-economic Impact of Gambling



[20] Hayward, K. (2004). *The Costs and Benefits of Gaming: A Literature Review with Emphasis on Nova Scotia*. A report prepared by GPI Atlantic for the Nova Scotia Gaming Foundation, July 2004.

One of the key challenges for measuring impact is the interconnectivity of each of the impact scales. For example, determining how far the effects of a problem gambler's activities extend to his or her family, household or community can be complex. Also, determining such effects as distance consumer surplus or the effects of gaming venues on various socio-economic cohorts in a community can pose complex human geography challenges. New tools are being developed to do this, including the use of spatial analysis (e.g. Geographical Information Systems) in Australia for assessing the distribution of socio-economic effects of gambling in communities relative to the location of a gaming venue.

2.1.3.3 Gambler Types

Before discussing the various categories of gamblers, it is useful to obtain a sense of what constitutes "healthy" gambling. Healthy gambling is said to entail informed choice on the probability of winning, a pleasurable experience in low-risk situations, and wagering in sensible amounts. Healthy gambling sustains or enhances a gambler's state of well-being. Conversely, unhealthy gambling refers to various levels of gambling problems. (Korn et al., 2003)[21]

Similarly, from a public health perspective, the World Health Organization's definition of healthy people, families and communities can be used to define the concept of healthy and unhealthy gambling at the individual, family and community level (Korn, et al, 2003). A "healthy gambler" may be described at the individual level as a person whose general conditions of well-being are enhanced or sustained as a result of her or his choice to play games of chance. At a societal level, a healthy population of gamblers might be defined in terms of gaming activities that enhance the overall conditions of well-being of the community or society.

Conversely, some gambling behaviour can become problematic leading to the regrettable reductions, damage or disruption of personal, family or community well-being. Impact on well-being can be mild, moderate or severe. Distinguishing between healthy and unhealthy gambling should be a key attribute of a social and economic well-being impact assessment framework.

The SEIG Framework uses the Canadian Problem Gambling Index's (CPGI) Problem Gambling Severity Index (PGSI) to categorize gamblers from non-gamblers to problem-gamblers[22]. The five PGSI categories and their measurement scores are identified as follows:

- *Non-Gambling:* **No score** on the CPGI;
- *Non-Problem Gambling:* **Score of 0**;

[21] Korn, D., R. Gibbons and J. Azmier. 2003. *Framing public policy: towards a public health paradigm for gambling*.
[22] See *Appendix Two* for more discussion on what is a problem gambler and additional references to CPGI.

- *Low Risk Gambling:* **Score of 1–2**;
- *Moderate Risk Gambling:* **Score of 3–7**; and
- *Problem Gambling:* **Score 8 and over**.

The use of the CPGI as a screening tool or taxonomy of problem gambling is appealing due to the definitions underlying the terminologies used.[23] By examining the underlying components, each progressive stage of at-risk gambling behaviour is associated with a more nuanced meaning. The CPGI is structured as a telephone survey, with most of the resulting answers of a yes/no variety.

2.1.3.4 Game Types

The SEIG Framework distinguishes gambling's impacts by the type of game of chance: lotteries, charity bingos, Video Lottery Terminals, Electronic Gaming Machines, slot machines, other casino games (i.e. blackjack, poker, roulette, Keno), and internet gambling. The framework also recognizes that each game will have a:

- Unique impact profile associated with the nature of the game;
- Relative entertainment value it provides the user;
- Relative risk associated with each play;
- Relative negative impacts of each game; and
- Overall utility the game provides both the user and the owner of the game.

Any analysis should take into consideration the relative probability or risk to the gambler of winning or losing. Treating all gambling opportunities as homogenous will tend to underestimate the impact of games preferred by problem gamblers and overestimate the impact of games not preferred by them.

Each type of gambling differs in terms of the odds of play (set by "the house", which includes both the venue and governments in Canada), or the built-in long-run loss (in this case the price) associated with the specific game. This situation has relevance to the distribution of impact, cost and benefit of various games of chance. Differences in these built-in percentages of defeat reflect differences in the long-run prices of play.[24]

2.1.3.5 Indicator Types

Indicators are measures of the effect or impact, either positive (benefit) or negative (cost or harm) attributed to gambling as an activity. Indicators can be measured either in quantitative or statistical terms, qualitative or perceptional terms, or monetary (full-cost

[23] *Appendix Two* provides a detailed explanation of each CPGI category.

[24] For a more complete discussion, please see Appendix Nine: *Methodological Issues in Socio-Economic Impact Analysis of Gambling, 6. What Types of Gambling Activities Should be Analyzed and How Should Expected Odds of Losing be Factored?*

accounting) terms. They can be used to provide a point-in-time portrait of gambling's impact or to account for long-term trends in gambling activity and respective impact. Trend data can also be used to potentially assess statistical relationships or correlations between various impact indicators and other gambling-related statistics.

1. **Statistical (Quantitative) indicators** could be drawn from conventional statistical sources (e.g. Statistics Canada – Community Profile data, regional and local health statistics), and using customized surveys to gather relevant information needed to populate the indicators in the SEIG Framework. Statistical time-series data are particularly useful for determining trends over time and assessing potential correlations between gambling activity and key socio-economic and health indicators. Such information is vital for assessing potential causality and deriving attribution fractions[25] that might be applied in assessments in other benchmark communities.

2. **Perceptional (Qualitative) indicators** of well-being impact are derived from people's experiences and opinions about gambling using opinion polls, focus groups or other qualitative research methods. Perceptional data must generally be collected at the community level to ensure it is relevant to the values and life circumstances of the citizens of the community.

3. **Monetary (Economic) indicators** can be derived using many of the economic analysis tools described earlier in this report, namely:

    - GPI full-cost-benefit accounting;
    - Conventional cost-benefit analysis;
    - Cost-utility analysis; and
    - Cost-effectiveness analysis.[26]

    The goal of monetary impact analysis of gambling is to derive estimates of the full monetary costs or benefits for each of the impact variables and statistical indicators.

Each approach identified above to measuring and reporting impact has its strengths and weaknesses. Monetized benefit and cost has the potential benefit of aggregation, given money is a common unit of measurement.

Statistical and perceptional indicators, while useful in revealing actual quantitative and qualitative impact, cannot be easily aggregated across indicators. However, the value of using a multiple suite of measurement and reporting methods lies in the potential for a

[25] *Section 3.3* of this report describes how attribution fractions might be derived. Also see *Appendix Nine: Methodological Issues in Socio-Economic Impact Analysis of Gambling, 15. Attribution Fractions (Causality) Analytic Framework: Challenges and Approaches*.

[26] How to conduct a GPI full cost-benefit accounting of gambling is described in *Section 3.4*.

comprehensive well-being assessment tool for decision making around gambling development.[27]

3.0 Using the SEIG Framework

The following section provides a guide for using the SEIG Framework for assessing the broadest suite of socio-economic impact of gambling. These guidelines are not a detailed "how-to-book," although the framework does contain some "cook-book" tips. The guidelines for the most part provide a "general" guide and suggestions to researchers and analysts – like a blueprint or a medical check-up list – for constructing a socio-economic impact profile of gambling using statistical and perceptional impact indicators, complemented by economic valuation analysis (e.g. Genuine Progress Indicator (GPI) full-cost-benefit accounting).

The objective of this section is to delve much deeper through narrative into the practical aspects of the SEIG Framework and provide users with ideas and examples of how to select, develop and use data that are needed to populate the SEIG Framework's components. The end-goal is to show how to achieve meaningful and robust measurement results.

The following four key areas will now be discussed within their relevant section or subsection numbers under the appropriate topic headings. They are critical to understanding a number of fundamental points.

3.1 Indicator Selection [What gambling impact indicators could be measured?];

3.2 Data Collection [What are the options for developing a statistical data base for impacts and what are some of the methodological challenges?];

3.3 Using Indicators [How to use and organize the indicators to measure impacts?]; and

3.4.1 Genuine Progress Indicator (GPI) Full-cost-Benefit Accounting.

It should be noted that there are three remaining discussion areas related to measurement, which need to be acknowledged and reflected upon. They are Cost-Benefit Analysis, Government Budgetary Impact Analysis, and Other Impact Analysis Tools. These topics are dealt with in the relevant Appendices, away from the main text of this report to allow for a convenient follow-up or delayed reading should further micro-

[27] See *Appendix Three* for more comments on benefits, challenges and areas for specific care.

exposure be wanted, especially from the historical perspective. The three areas are located in the following Appendices:

Appendix Six, 1. *Costs-Benefit Analysis*
Appendix Seven 1. *Government Budgetary Impact Analysis*
Appendix Seven 2.-to-7. *Other Impact Analysis Tools*

Overall, the proposed method of specific subject-matter analysis represents a step-wise approach to using the SEIG Framework, which was first conceptually outlined in Figure 1 and Table 1 in the form of a concise snapshot of the full SEIG Framework and its six impact domains.[28]

3.0.1 Limitations Identified Upfront – Challenges and Further Work

The key challenge in using the SEIG Framework – for its express purpose of measuring the positive and negative impact of gambling – is the availability of the proper statistical and qualitative data to populate the recommended indicators. As identified in Table 1, the SEIG Framework contains many proposed indicators for which new research and data collection efforts are required. To recap, these efforts include such activities as:

- Conducting customized impact analysis surveys;
- Executing a detailed examination of existing global or community-based well-being indicator data bases to ascertain gambling's specific impact; and
- Using perceptional surveys for qualitative data and focus groups.

In addition, considerable research work is required in order to complete a Genuine Progress Indicator full-cost-benefit accounting of gambling. There are many options for collecting data on impact.[29] The greatest challenge in using the SEIG Framework is to provide a balanced, transparent and objective accounting of the fullest possible range of impact.

What is clear from the *The Social and Economic Impacts of Gambling (SEIG): A Literature Review, Annotated Bibliography and Synthesis* (Anielski and Braaten, 2005) is that there is no singular "one-size-fits-all" analytic framework or consensus on methodological methods for analysis that will satisfy all needs or expectations for the ideal analytic tool(s). Instead, there are a number of analytic tools and indicators from various research fields and disciplines that can be synthesized into an open architecture for conducting socio-economic impact assessments of gambling.

[28] See *Subsection 2.1.1* for Table 1.
[29] The respective strengths, weaknesses and other points are discussed in *Section. 3.2 Data Collection* below.

While common frameworks do not automatically lead to common approaches to measurement, nor to coordinated action, they are important components of an enabling environment and governance mechanism, through which cooperative action can emerge. In practice, each community, region and province will have to develop their own analytic framework, focusing on relevant economic, social and other policy conditions and issues, using the SEIG Framework as a foundational guide.

The realistic but avoidable limitation on reaching a definitive and objective "bottom line" has already been discussed in *Section 2.1.2*, page 27, of this report and does not need to be repeated here.

3.1 Indicator Selection

The first step in using the SEIG Framework is deciding which indicators from the proposed list of indicators in Table 1 will be used to measure gambling impact. SEIG indicators are meant to provide a comprehensive menu of measurement options. In practice, not all of these indicators can be nor should necessarily be measured, depending on the needs of each community, jurisdiction or province using the framework.

The ultimate choice of which indicators to apply must be defined by each user-group in accordance with the desired outcome or purpose of the impact-measurement exercise and policy objectives.

There are many factors that will influence the suite of indicators selected, most importantly:

- Availability of data;
- Effort and cost of data collection; and
- Methodological challenges of data collection.

Because the process of indicator selection is inherently subjective, the impact indicators chosen should reflect stakeholder values, preferences, and the desired outcome or purpose of the indicators for decision making. The challenge during this process is to balance the subjective and normative perspective conveyed by stakeholders with a more objective perspective represented by experts.

Most importantly, a clear vision, values, goals and strategies for measuring gambling's impact should be established by each user-group. Thereafter, indicators should be developed, which provide a meaningful proxy for measuring progress towards the desired vision, values and goals.[30] [31]

[30] Community Impacts of Electronic Gaming Machine Gambling (Victoria and Western Australia) study accessible at www.justice.vic.gov.au/wps/wcm/connect/DOJ+Internet/Home/Gambling+and+Racing/Research+and+Statistics/JUSTICE+-+Community+Impacts+of+Electronic+Gaming+Machine+Gambling+%28PDF%29 .

The following are general conceptual issues to be considered in developing an indicator or measurement system that are applicable to assessing gambling impact:

- Choice of a conceptual organizing framework;
- Anchoring the indicator systems in shared theory, methods and terminology;
- Identifying useful indicators and data gaps;
- Ensuring indicator comparability and data gathering methods across communities or jurisdictions;
- Choice of policy targets related to each indicator;
- Choice of aggregating indicators and, if so, the methodology to establish a normalized (dimensionless) performance score for every indicator;
- Weighting scheme for the indicator; and
- Display for visually presenting the score of indicators and the index.

3.2 Data Collection

3.2.1 Developing a Baseline of Data:

The second step in using the SEIG Framework is to develop a data base for the proposed indicators. This will require establishing a SEIG data base of statistical, perceptional and monetary (cost and benefit) data for each of the impact variables and indicators.

There are several different methodological approaches to developing an indicator data-base, including:

[31] One of the best examples for how community gambling impact analysis might be conducted and how indicators might be selected is provided by an Australian study, *Community Impacts of Electronic Gaming Machine (EGM) Gambling,* conducted by research economists at the South Australian Centre for Economic Studies in Melbourne, Australia. Released in December 2005, this Australian study compared the impacts of different gambling environments within Victorian and Western Australian communities of EGM gambling on key socio-economic characteristics. A socio-economic impact profile using common impact indicators was used drawing from:

- Previous research in various prevalence rates of various impacts of problem gambling;
- A survey of community leader views as to the key impacts of gaming venues on the community; and
- A survey of resident views of the impacts of gaming venues on their community.

The strength of the Australian study is that it combined a number of methodological methods to conduct the gambling impact assessment ensuring that the gambling impact indicators analyzed were relevant to the community needs and values.

- Drawing from existing statistical data sets;
- Detailed analysis of global indicator data bases;
- Conducting qualitative research (surveys, focus groups); and
- Gambling cohort research studies.

The development of impact indicators should begin with the development of a statistical data-base for each impact indicator, complemented with perceptional impact data (where possible) and, finally, a full cost-benefit economic (monetized) analysis of those indicators for which a meaningful economic valuation can be conducted.

Statistical indicator data should be collected and stratified according to the SEIG Framework by the:

- Six SEIG impact domains;
- Game of chance;
- Gambler type (using the CPGI taxonomy); and [where possible];
- Scaling up from the micro (individual gambler) unit of analysis, to the household, community and, ultimately, macro or provincial scale.

By focusing on the relative impact of each respective game of chance should, in principle, help make the most efficient use of analytic resources.[32]

The SEIG Framework, as outlined in Table 1, identifies potential data required, data sources, and data collection methods. What is immediately apparent from Table 1 is that many indicators lack data – statistical, perceptional or economic cost-benefit – that are specific to gambling as a driver or determinant. This is especially true of the health and well-being indicators.

In the process of data collection, data gaps should be identified and priorities established for whether and how those data gaps might be filled.

Many of the statistical impact indicators could be sourced from traditional data sources, such as:

- Statistics Canada (e.g. community-profile statistics, gambling GDP, household expenditures on gambling);

- Provincial government statistics (e.g. government treatment and prevention expenditures related to gambling); and

[32] For example, gambling research literature suggests that some games, like playing VLTs and EGMs, may have a greater deleterious impact than playing bingo or ticket lotteries.

- Health statistics, including those from the Canadian Institute for Health Information (CIHI), and regional and local health authorities.[33]

To add to a further understanding of value of indicators, a brief discuss is now called for concerning their strengths, weakness, opportunities, and in establishing a baseline of data, perceptional indicator data, and experiential data.

Strengths: Global community-well-being-scale indicators (e.g. health indicators) and data sets are useful because they provide a macro portrait of the social, health, and economic conditions of a community within which gambling, as an economic activity, exists. Changes in these macro well-being conditions can be tracked over time and with trend analysis. Moreover, changes in gambling activity and the general gaming environment in communities can be assessed in relationship with these macro well-being trends to ascertain a potential relationship or statistical correlation of these trends with key drivers such as gambling. However, this is often more complicated statistically then it may first appear.

Weaknesses: One of the key challenges in using macro community indicators for health and well-being, crime and many financial/economic indicators to discern changes in well-being indicators that can be attributed to problem gambling, is a challenge, as problem gamblers tend to represent a small percentage of the general population and, thus, a small percentage of the sample size. The relative negative impact they sustain as a result of problem gambling may not show up in key health indicators. Yet problem gamblers may be more likely than other adults in the non-problem-gambling population to experience the strongest negative well-being impact. This relative impact on a specific population cohort (problem gamblers) would tend to be lost in the statistical "noise" of surveys of the general population from which community well-being indicators are derived. Whether or not the impact of gambling on these global indicators of community well-being can be discerned, even if problem gambling appears to be statistically significant drivers of change, will be challenging and will ultimately depend on the nature of each jurisdiction's data base.

Opportunities: There are several alternatives to this challenge. These include:

- Evaluating the detailed files, records and statistics of problem gamblers (e.g. micro-file analysis of health statistics or crime statistics) from a sample community, an entire region or province with respect to the positive and negative impact of gambling, and then potentially extrapolating the result to other communities or to the macro (provincial) scale;

[33] Examples of methods of data collection and impact analysis can also be found among the numerous pieces of research and other reports that are identified in Anielski and Braaten (2005) The *Social and Economic Impacts of Gambling: A Literature Review, Annotated Bibliography and Synthesis.* document.

- Conducting longitudinal cohort studies, including epidemiology studies, by tracking the experiences and changes in the health, well-being and economic profile of a subset of the general population over time who range from the non-gambler to the suspected problem gambler and, thus, potentially derive attribution fractions for gambling consequences; and;

- Improving the robustness of general social surveys, economic surveys, health surveys and other surveys conducted by statistical gathering agencies, like Statistics Canada, to include questions about gambling activity and behaviour to determine whether gambling is a key statistical driver of indicators.

While each of the three options above may appear ideal and would provide greater intelligence on the actual extent of problem gambling effects on the population of a community, they have many shortcomings. In the case of conducting micro-level analysis of individual files, such work can be extremely time consuming and costly. The same is true for conducting longitudinal cohort studies, in addition to the challenge of retaining and monitoring the same cohort throughout the study period (i.e. many studies suffer from attrition of the cohort population). There is also the challenge of generalizeability of the results of the cohort population analysis to the general population.

The third option is feasible but would take time and more resources to improve existing statistical gathering efforts, as well as the development of customized surveys and data collection efforts; for example, Wynne (2002) studied the health status by Canadian Problem Gambler Index gambler-type for Saskatchewan gamblers.

What is clear at this juncture is that developing a meaningful gambling impact data base that serves as the strong foundation of the SEIG Framework will take considerable time and resources to develop. It should also be understood that all methodological techniques will require further development and experimentation and that, ultimately, an efficient and effective mix of tools will emerge through trial and error.

Establishing a baseline of data: In order to evaluate the impact of gambling on various impact domains requires the establishment of a baseline (e.g. a common benchmark year) for statistical, perceptional and monetary indicators to help measure and monitor trends over time. Establishing a time-series data-base for each impact indicator facilitates tracking trends over time, across communities by gambling activities. Longitudinal studies allow researchers and policy analysts to identify trends, potential statistical correlations between indicators, to test hypotheses, identify potential attribution fractions related to, for example, health impact associated with problem gambling, and to ascertain potential lagged impact linked with problem gambling (impact that may take several years to manifest into a measurable impact).

Benchmarking also allows for the kind of data indexing of indicators where raw data can be converted into a normalized index facilitating more direct comparison of indicators across each of the six SEIG domains, and the potential aggregation of indicators into composite indices by domain. A good example of indexing and use of composite indices is the Alberta Genuine Progress Indicator accounting system[34] in which composite economic, social-health and environmental indices were constructed by normalizing a 40-year statistical data-set for 51 well-being indicators. For example, it would be possible to create composite impact indices for each of the six SEIG impact domains at various units of analysis and by game of chance. The challenge is how to assign weights to each indicator when constructing composite indices.

In examining gambling's impact across communities in Canada, it may be useful to construct a national community profile, socio-economic data base using information already collected by Statistics Canada in the National Census along with health information collected by the Canadian Institute for Health Information (CIHI). Community profile data would provide a comparable and historical baseline of key socio-economic data that could be evaluated in terms of the testing hypothesis of gambling's impact on key community well-being indicators and evaluating trends.

Perceptional indicator data can complement the statistical indicator data by providing a qualitative attribute to the more objective statistical impact analysis. Often perceptions may differ from statistical reality (e.g. a person's perception of personal safety from criminal activity may differ considerably from actual crime rates). Contrasting a statistical indicator of gambling impact with a perceptional indicator could reveal a gap between objective reality and subjective well-being. Perceptional information can be collected by consulting with problem gamblers, experts in problem gambling, family members, members of a community who experience gambling impact, opinion surveys, focus groups and other forms of stakeholder consultation to collect information on the perceived gambling impact experienced by individuals, households, families and communities. Perceptional data is generally scarce compared to statistical data. Choices will have to be made as to how much effort and resources should be dedicated to perceptional indicator development.

There are respective strengths and weaknesses to using perceptional indicators and to the methods used for qualitative research and data collection. Most weaknesses surround the inherent subjectivity of those participating in the qualitative research, but also the manner in which subjective information is collected, organized and reported.

Experiential data: Another form of data input is experiential data; i.e. data based on the direct experience of both problem gamblers and also those who are directly affected by the problem gambler's behaviour, including spouse, family/household members, and counselors. This kind of input can be invaluable in augmenting statistical data and is

[34] Anielski, 2001

particularly relevant at the local community level where impact is felt most poignantly. Experiential data should be collected through focus groups and interviews in the form of documented stories and testimonies. Gathering experiential information, while providing important contextual information, may suffer from the same weaknesses of collecting perceptional indicator data, including the challenge of the veracity of individual memories and inherent subjectivity.

3.2.2 Challenge of Measuring Causality (Attribution Fractions)

One of the greatest challenges in measuring the impact of gambling on individual and societal well-being is determining the relative causality or attribution fraction that problem gambling has on a given impact variable and indicator; particularly for assessing the causality of various health outcomes, including morbidity (mental and physical), disease, stress and, ultimately, death. How much of an attempted or successful suicide, for example, can be attributed to the effects of problem gambling in an individual's life? Making such determinations is complex and controversial.

It may be possible, in some cases, to determine a possible statistical relationship between changes in the legalized gambling environment and the incidence of problem gambling on a given impact indicator – where a statistically discernable change (trend) in an impact indicator can be statistically correlated to problem gambling. However, in many cases, the relative impact of problem gambling that affects a relatively small percentage of the adult gambling population cohort may be imperceptible statistically with most impact indicators.

Understanding the attribution fractions of gambling, for example the degree of impact of problem gambling on health/wellbeing variables and indicators (e.g. depression, suicide, or divorce), is critical when determining the relative weight or impact problem gambling is having on both individual and societal well-being conditions or the relative societal benefit and cost of gambling.

Again, it should be made clear that determining the exact number of cases of a well-being impact attributed to problem gambling will require a sustained commitment of new resources for research, development of a longitudinal data-base and evaluation for virtually every indicator in the SEIG Framework. For the most part, virtually every indicator in the SEIG Framework in Table 1 has an attribution analysis challenge; though the health/well-being impact indicators are particularly sensitive to attribution analysis.

In addition to the attribution analysis challenge, is a similar measurement challenge of co-morbidity, that is where there may be more than one driver affecting a well-being condition – for example, where addiction to alcohol and drugs combine with a problem gambling habitat that affects personal health.

The SEIG Framework encourages users to understand and examine the various socio-economic drivers or conditions that may contribute to or motivate problem gambling activity.[35]

3.3 Using Indicators to Measure Impact

How can the SEIG Framework indicators as expressed in Table 1 be used to assess the impact of gambling? How should indicator development and data collection resources be allocated to provide the most efficient yet meaningful analysis of the most significant positive and negative impact of gambling? How should indicators be monitored and tracked over time? How can the indicators be used in a meaningful way in policy analysis and decision making? All these questions need to be addressed.

Based on a review of the gambling impact analysis literature there is no clear roadmap to how comprehensive impact analysis of gambling should best proceed. However, a few case studies, one of the relative socio-economic impact of EGMs in two Australian benchmark communities, and the second, the emerging study of the impact of a raceway/slot machine development in Belleville, Ontario, are both instructive for how the SEIG Framework could be used to assess gambling impact.

3.3.1. Australia – Impact Indicators Combined

The Australian[36] study is a good example of combining statistical impact indicators with perceptional indicators complemented by experiential information gathered from problem gamblers, those impacted by their behaviour, and experts.

The Australian example also provides a good benchmark for how the SEIG Framework might be used for comparing gambling impact across Canada. One of the challenges, however, is that very few communities in Canada could serve as a counterfactual or control community against which other communities might be compared.

Notwithstanding these limitations, the Australian example provides a good model for how relevant gambling impact can be identified at the community level, while working towards a common gambling data base and a suite of key indicators for comparison across Canada. This would set the stage for longitudinal monitoring of gambling's impact over time as legalized gambling venues develop.

3.3.2 Belleville – Longitudinal Cohort

The SEIG Framework could be used when comparing pre- and post-gambling development impact in terms of community level well-being indicators, particularly in

[35] For a more complete discussion of attribution fraction analysis, see *Appendix Nine: Methodological Issues in Socio-Economic Impact Analysis of Gambling, 15. Attribution Fractions (Causality) Analytic Framework: Challenges and Approaches.*

[36] *Appendix Four* offers details of the2005 Australian case study (two communities) of use to the SEIG Framework.

situations where, for example, one community may currently have no VLTs, EGMs or casinos while another does.

The Belleville initiative is a good example of a longitudinal cohort socio-economic impact study, which will assess the impact over time of the development of the Quinte Exhibition Raceway and its racetrack slot-machine operation over the period of 2006–to–2011.[37] This five-year study will serve as an important benchmark for assessing the pre-development and post-development impact of gambling, so that the changes in numerous socio-economic and health conditions of a cohort gambling population can be tracked over time as the raceway and slot-machine facility develops and becomes operation.[38]

The indicators that will be examined provide a useful benchmark for conducting similar analyses in other communities in Canada and are consistent with the proposed SEIG Framework. In addition to statistical indicators, qualitative analysis will be conducted using the input from focus groups and key-informant interviews during the course of the five-year study. Classical cost-benefit analysis will be used to quantify and combine all of the impacts where there are clear monetary costs or gains (benefits). Where impact cannot be monetized, it will simply be reported as is. Conceptual definitions of "cost" and "benefit" will be developed and applied to the results to arrive at an aggregate cost/benefit analysis. This is very similar to the Genuine Progress Indicator full cost-accounting approach. One of the unique attributes of the Belleville study is that impact is being examined on a regional spatial scale using geospatial Geographical Information Systems (GIS) plotting of casino patronage and problem gamblers, and spending patterns of patrons and problem gamblers over time. GIS and human geography tools are also being used in Australia to determine the spatial distribution of socio-economic impact of gambling.[39]

This longitudinal Belleville study should provide excellent data for deriving attribution fractions associated with the introduction of gambling in a community previously without a legalized gaming venue such as a casino. The knowledge gained from this study should help to conduct more meaningful SEIG assessment in the future.

[37] For some preliminary information on this Belleville study, visit the Ontario Problem Gambling Research Centre's web site.

[38] The study is being conducted by researchers from the University of Lethbridge (Robert Williams and Robert Wood) and consultant Bob Hahn of Toronto. See Appendix Five for more details on longitudinal impact variables being studied, which could be applied to the SEIG Framework.

[39] Jan McMillen and other researchers in Australia are the use of geospatial or GIS mapping of gambling impacts across communities or regions. See McMillen, J. and B. Doran. (2006). Problem Gambling and Gaming Machine Density: Socio-spatial Analysis of Three Victorian Localities. *International Gambling Studies*, Vol. 6, No. 1, 5–29, June 2006

3.3.3 Impact Assessments Using Spatial Distributional Analysis

The geographic or spatial impact should be examined as part of the SEIG Framework. This would involve estimating both community-specific costs/benefits and macro, regional impact.[40] It is important to recognize that gambling harm and benefit will vary when the sample population is analyzed along socio-spatial lines, versus socio-demographic lines alone (McMillen, 2006). Socio-economic "effects"[41] often differ at the community level and gambling effects will also vary according to the "fit" between gambling venues and the community (McMillen, 2006).

Communities are often defined in terms of social and cultural categories and not necessarily spatial ones. Therefore, it is critical to consider gambling impact on the individual gambler in the context of socio-spatial characteristics of the gaming venue (location) in the community. It is also critical to distinguish the relative effects on well-being of different forms of gambling activities and venues. As with individual gamblers, communities may be more or less vulnerable or resilient to the effects of gambling.

Spatial impact analysis is only in its infancy. Australian researchers are beginning to discover the benefits of such analysis in assessing the distribution of impact of gambling's footprint. In a recent paper, McMillen and Doran (2006)[42] examine the debate about possible relationships between problem gambling and accessibility to EGMs, in the context of the Victorian Government's policy that imposed a cap on EGMs in disadvantaged communities.[43] This research raises questions about the limitations of conventional impact methodologies and regulatory strategies based on simple measures such as gaming machine density.

3.4 Measuring Monetary Economic Benefit and Cost of Gambling

In addition to measuring the quantitative (statistical) and qualitative (perceptional) impact of gambling, the SEIG Framework is a guide to assessing the monetary or economic benefit and cost of gambling. For virtually every statistical indicator in the SEIG Framework there is an associated economic benefit or cost expressed in monetary terms, with some indicators more difficult to monetize than others.

Users of the SEIG Framework are encouraged to examine the fullest possible suite of economic cost and benefit analysis associated with gambling that must be preceded by, and founded on, a robust statistical indicator data-base. As noted before, the monetized

[40] This is similar to what is planned for analyzing the socio-economic and well-being impact of the Belleville, Ontario, slots-at-racetrack development.

[41] McMillen prefers the term "effects" because "an impact implies the community is passive (with respect to gambling), but in reality they're active" (McMillen, 2006).

[42] McMillen, J. and B. Doran. (2006). Problem Gambling and Gaming Machine Density: Socio-spatial Analysis of Three Victorian Localities. *International Gambling Studies*, Vol. 6, No. 1, 5–29, June 2006

[43] Using Geographical Information Systems, the spatial distribution of social disadvantage in three capped localities were compared with the spatial distribution of gaming venues and patterns of concentrated EGM expenditure during 2001–2005.

expression of the statistical impact of gambling will only be as good as the veracity of the underlying data.

There are a number of possible economic valuation methods or tools available to the analyst. These include the following:

- Genuine Progress Indicator full-cost-benefit accounting;
- Cost-benefit analysis (CBA) ;
- Government budgetary impact analysis;
- Net financial benefit analysis;
- Net social benefit analysis;
- Cost utility analysis (CUA);
- Cost-effectiveness analysis; and
- Cost of illness approach used in health economics.

The Genuine Progress Indicator accounting framework holds, perhaps, the greatest potential as a comprehensive accounting tool for assessing a full range of societal benefit and cost of gambling from the perspective of an economy or society.

Each of the evaluation methodologies referred to above has a particular utility for socio-economic impact analysis. Each methodological approach also has its respective strengths and weaknesses. However, the primary focus now is to describe the first and preferred method, outlining how a Genuine Progress Indicator full-cost-benefit accounting would be conducted.[44]

The sections that follow provide a detailed description of the taxonomy of the respective benefit and cost of gambling, and, to help guide the analyst, they show how these impact attributes might be evaluated for a Genuine Progress Indicator accounting framework.[45]

3.4.1 Genuine Progress Indicator (GPI) Full-Cost-Benefit Accounting

GPI is a macro-economic full-cost-benefit accounting used to estimate a wide range of monetary economic, social and environmental costs and benefits that are either ignored or misleadingly treated as “progress” in national/provincial income accounts and the Gross Domestic Product (GDP) – the key measure of economic progress. GPI was originally developed over 10 years ago by US economists who were interested in measuring economic well-being (welfare) more comprehensively by specifically identifying and distinguishing between those expenditures and activities in the economy

[44] The remaining seven economic valuation methods or tools available to the analyst are discussed in *Appendices Six* and *Seven*. Where appropriate, contrasts are provided with the more traditional economic cost-benefit analysis (CBA). *Appendices Eight* and *Nine* offer more micro-detail for those wishing an even more in-depth understanding and comprehensive review, especially those interested in methodological issues in socio-economic impact analysis.
[45] They could also be used for a conventional CBA framework.

(and which get counted in the current GDP statistic) that contribute to “genuine” improvements in societal well-being and those that represent an erosion of well-being. GPI also estimates the economic value of unaccounted benefit, such as unpaid work (e.g. volunteerism, housework) that is not measured in the national income accounts.

As a relevantly new methodology for measuring societal welfare, Genuine Progress Indicator accounting is unique in that it attempts to address the shortcomings of over 60 years of national income accounting practices. Economists have long agreed that the Gross Domestic Product is not a measure of societal welfare, though few have offered an alternative accounting approach.

The GPI accounting system is not only relevant for measuring societal welfare at the national and provincial scale, it has also been applied to measure the full cost and benefit associated with the Gross Domestic Product of various sectors in the economy. The GPI accounting approach could thus be used for assessing the impact of gambling at the societal or provincial scale. For the purposes of the SEIG Framework, a customized Genuine Progress Indicator accounting framework (Table 2, below) has been developed, aligned with the six impact domains of the SEIG Framework and key indicators, which have monetary or economic value attributes attached to them.

GPI accounting uses many of the same taxonomy of societal benefit and cost as traditional cost-benefit analysis (CBA), but differs in several important ways. The GPI is an accounting of societal welfare or net sustainable economic welfare and is founded on national income accounting conventions from which measures of economic progress such as the GDP is derived. From a GPI accounting perspective gambling GDP already captures the majority of benefits to the economy from gambling activity, expenditures and investments. Thus many attributes of a CBA, such as consumer surplus and producer surplus are not considered in the GPI accounting.

GPI accounting also attempts to unbundled or unpack other expenditures made in the economy related to gambling that society would consider “regrettable” or “avoidable” expenditures or social depreciation costs (e.g. expenditures on health care treatment of problem gamblers). The term “genuine” is used to help distinguish between expenditures or economic activities that actually improved societal well-being and those that constitute a loss in well-being.

The other key difference between GPI and CBA is that CBA is generally used for assessing specific economic development alternatives or projects while the GPI accounting is an alternative national and provincial income accounting tool for assessing the economic, social and environmental benefits and costs of either an entire economy or a specific economic sector (e.g. gambling industry) or with a public policy issue (e.g. the impact of gambling) or comparing the relative socio-economic impact of different economic development policy alternatives to legalized gambling.

The desired result of a GPI analysis is a full-cost-benefit accounting of either positive or negative attributes of economic growth or the impact of a specific economic sector on society and the environment. GPI analysis could address some of the challenges of CBA, which some economists have noted (Walker, 2006); namely, the detailed and transparent accounting of a comprehensive taxonomy of cost and benefit associated with gambling without the need to derive ratios or aggregate bottom lines.

For each cost and benefit identified in Table 2, a reference number is identified; these numbers direct the reader to a more detailed description and ideas (in subsequent sections of this report) for how each benefit or cost could be estimated within the Genuine Progress Indicator accounting framework.

Table 2 below provides a framework for the construction of a GPI Full-cost-Benefit Accounting statement for gambling using relevant various monetary costs and benefits associated with key impact indicators and attributes identified in the SEIG Framework in Table 1. This cost and benefit list is not necessarily complete.[46]

Table 2: A GPI Full-cost-Benefit Accounting Framework for Gambling

Genuine Progress Indicator Account Attributes*	Estimates (Reference in Section 3.4.2 and 3.4.3)
Benefit	
GDP of gambling = personal expenditures on games of chance + gambling industry business investments + government gambling-related program expenditures + exports – imports	3.4.2.1
+ Personal expenditures on games of chance (wagers net of payouts)	3.4.2.2
Societal Cost	
- Costs of problem gambling (net personal expenditures of problem gamblers in excess of non-problem gambler expenditures)	3.4.2.3
+/- Change in income and wealth inequality in a community due to the impacts of gambling (measured using the Gini coefficient or other inequity indicators)	3.4.2.4
Health and Wellness Cost	
- Cost of illness related to disease due to gambling	3.4.3.1
- Cost of suicide (thoughts, attempts and actual suicide) due to gambling	3.4.3.2
- Cost of premature mortality due to gambling	3.4.3.1
- Cost of lost productivity due to stress, anxiety and depression related to gambling	3.4.3.9
- Cost of substance abuse (alcohol, drugs, tobacco) related to	5.4.3.3

[46] There are debates among economist as to whether these are the appropriate costs and benefits.

Genuine Progress Indicator Account Attributes*	Estimates (Reference in Section 3.4.2 and 3.4.3)
gambling	
- Cost of psychological distress on family (spouse, children) and friends	5.4.3.4
- Cost of family breakdown (separation, divorce, impact on children)	5.4.3.5
- Cost of domestic violence due to gambling	3.4.3.5
Economic and Financial Cost	
- Government defensive expenditures related to problem gambling, including incremental health, welfare and social service program expenditures	3.4.3.6
- Cost (benefit) in property values associated with gambling industry development	3.4.3.7
- Cost of bad debts, bankruptcy due to gambling	3.4.3.8
Employment and Education Cost	
- Cost of reduced productivity and absenteeism due to gambling	3.4.3.9
- Cost (benefit) of unemployment and underemployment related to gambling	3.4.3.9
Legal and Justice Cost	
- Cost of crime related to gambling (policing, incarceration, judiciary and incremental security expenditures), or expenditure savings due to legalization	3.4.3.10
Cultural Cost	
- Intangible cost of loss of community social cohesion due to gambling	3.4.3.11
TOTAL COST	

* + equals “plus”; – equals “minus”

3.4.1.1 Constructing GPI Full-Cost-Benefit Accounting

Constructing a Genuine Progress Indicator full-cost-benefit accounting of gambling would start with the personal expenditure on games of chance figure; household expenditures are a major portion of national and provincial GDP. This opening line would constitute the “gross” economic value of gambling in purely consumption or expenditure terms. The Genuine Progress Indicator accounting then proceeds by identifying the unaccounted benefits of gambling, which are not counted in the system of national accounts (GDP) and societal cost, which reflect the depreciation of human, social and environmental or natural capital attributed to the activity of gambling. For the most part, personal expenditures on games of chance, in theory, would account for the maximum amount of potential utility benefit (e.g. entertainment value) derived from playing games of chance for the adult gambling population.

The challenge is determining which other expenditures related to gambling constitute a genuine improvement in individual, household and societal welfare (well-being), and those that detract or diminish from welfare. Counting all household voluntary net expenditures (net of payouts or prizes) on games of chance as additions to GDP implies that every voluntary dollar spent by all gamblers contributes to improved economic well-being for society as a whole. It also implies that non-problem gamblers place a greater value on their purchases of gambling services than they do on the money spent on alternative goods or services, or other uses. This is not the case with problem gamblers where excessive levels of gambling expenditures are viewed as "harm" to both the gambler, his or her family, and possibly to the community. In the case of problem gamblers, their expenditures and their gambling losses in excess of the amount voluntarily expended and lost by the average recreational gambler may be viewed as a societal cost and deducted from the GDP.[47]

Many other expenditures associated with other sectors in the economy (e.g. health care), which get counted as "progress" in the GDP, may be considered "regrettable" expenditures, i.e. expenditures that, either as individuals, families or as a society, one would rather avoid. Another term for such societal cost imposed on others is "externalities", where the societal cost is borne by more than only the gambler but is felt or experienced by her/his family or community. One of the challenges in Genuine Progress Indicator accounting is trying to avoid double-counting of cost, and to treat any estimate of "intangible" or non-monetized cost or benefit as a separate accounting entry.

Many of the societal costs in the Genuine Progress Indicator accounting framework have been estimated from other studies in Canada, the US and Australia. These societal cost estimates are discussed in *Sections 3.4.2 (Taxonomy of Societal Benefits)* and *3.4.3 (Taxonomy of Societal Costs)* and are specifically referenced according to sub-header numbers in Table 2. These guidelines and estimates provide a range of possible benchmark estimates for GPI accounting for gambling, though it is clear that many information gaps currently exist. Much of the societal cost shown in the GPI accounting framework is also used in the cost-benefit analysis (CBA) framework discussed in *Appendix Six*.

Another key strength of the Genuine Progress Indicator accounting framework, which differs from conventional economic analysis like cost-benefit analysis, is its attempt to account for the economic transfer of benefit and cost within a society resulting from gambling, including accounting for the impact of in income and wealth inequality. In the case of gambling, while this distributional impact on welfare cannot be monetized, per se, it can be assessed (e.g. the percentage of government gaming revenues that can be attributed to problem gamblers) and described in non-monetary terms.

[47] In the Australian GPI (Hamilton, 2000) and Alberta GPI (Anielski, 2001) studies of the cost of problem gambling, this excessive spending by problem gamblers was estimated and netted out of the GDP as a proxy for societal cost of problem gambling.

Caution must be exercised to avoid double counting when estimating the suite of societal benefit and cost. Some societal cost may already be accounted for in another category. This is similar to the challenge of attribution fractions, causality and sorting out co-morbidity issues in gambling impact research.

Another potential use of Genuine Progress Indicator accounting is in pre- and post-gambling development impact analysis, such as the longitudinal social and economic impact analysis of the slots-at-racetrack development in Belleville, Ontario. The full-cost-benefit accounting attribute of GPI accounting is another key feature for assessing the monetary or economic effect on gambling to local, regional and provincial economies.

3.4.2 Taxonomy of Societal Benefit

The following sections (3.4.2 and 3.4.3) provide a taxonomy of societal benefit and cost, following the SEIG Framework outlined in Table 1, to populate a Genuine Progress Indicator full-cost-benefit accounting and, in some cases, a Cost-Benefit Analysis for gambling. This section offers only a preliminary set of measurement guidelines with some empirical research examples, methodological tips and data sources.[48] The intent is to provide a starting point for future analysis of the social and economic impact of gambling. The immediate section begins with a description of societal benefit followed by societal cost that aligns with both the GPI accounting and CBA frameworks.

3.4.2.1 Gambling Gross Domestic Product

A Genuine Progress Indicator accounting for gambling would begin with an estimate of the "gross" contributions that gambling makes to the economy, that is, a "gambling GDP" at the national, provincial, or potentially municipal level of analysis.[49] The Gross Domestic Product for an economy is calculated on either the basis of expenditure or output of households, businesses and governments combined (expenditure-based GDP), or based on the income generated by households, businesses and governments.

While there currently is no official "gambling GDP" estimate produced by Statistics Canada, either at the national or provincial scale of accounting, it would be possible to derive such a figure for the gambling sector by using the conventional GDP formula.

The GDP-expenditure-based formula is:

PCE [personal/household consumption expenditures]
plus business investments
plus government expenditures
plus exports

[48] For a comprehensive and excellent review of methods and empirical estimates, see GPI Atlantic's *The Costs and Benefits of Gambling: A Literature Review with Emphasis on Nova Scotia* (Hayward, 2004).
[49] Generally, GDP figures are not available at the municipal level of analysis and would need to be derived.

less imports
(**plus** a change in inventory)[50]

A gambling GDP estimate would begin with personal consumption "net" expenditure on games of chance (i.e. wagers, net of payouts), a gambling industry investment based on government-reported gambling net revenue statistics, and government expenditures on gambling related activities in the economy at the national and provincial level.[51]

Of the three, personal consumption expenditures by households on games of chance are the most important statistic, and opening entry in the Genuine Progress Indicator full-cost-benefit account. Industry GDP and government expenditures related to gambling could be accounted separately since the focus of GPI accounting is on societal welfare at the level of the individual and household.

Statistics Canada reports personal and household expenditures on "games of chance" (one of the data series in household and personal expenditure profiles) based on the difference between the amounts wagered by gamblers net of payouts for government controlled slot machines, VLTs, casinos, lotteries and bingos. There is also a second series of data for pari-mutuel betting that includes wagers net of payouts on horse racing.

The data used to estimate personal gambling expenditure are not based on household expenditure surveys but rather are derived using confidential data on gross gambling receipts and gross payouts or prizes that are taken from confidential provincial government data for the gaming industry.[52] These statistics are reported on a monthly, quarterly and annual basis at a national and provincial level. Statistics Canada also reports on the distribution of net gambling expenditures according to the following categories: casinos, VLTs, bingos, and lotteries.

Statistics Canada generates monthly gaming industry "GDP" estimates using a value-added accounting approach measuring the net economic value of the output (revenues) **less** intermediate input (expenditures) to derive a net output (equivalent to profit estimates) or the GDP figure. This figure is not a true GDP for gambling but rather is simply a gambling industry-specific measure of net economic output or value-added.

3.4.2.2 Personal Expenditures on Games of Chance

The primary building block of Gross Domestic Product expenditure-based statistics is personal expenditure or household expenditure that generally makes up 50%-to-60% of

[50] Gross Domestic Product expenditure method can be found online, cited December 2, 2007 http://en.wikipedia.org/wiki/Gross_Domestic_Product

[51] Statistics Canada http://www.statcan.ca/cgi-bin/IPS/display?cat_num=15-001-XIE ; site provides links to GDP by industry, Economic Accounts and other data**.**

[52] Alberta Gaming is the only provincial gaming ministry to issue publicly available statistics (annual reports on the Alberta Gaming and Liquor Commission) on gross revenues (amount wagered) and payouts (prizes) from gambling according to each game of chance, with the exception of charity gaming.

GDP estimates. In the Genuine Progress Indicator full-cost-benefit accounting framework, the opening gross benefit line item is personal consumption expenditure that is derived from household surveys. From this point forward, unaccounted societal benefit is added while societal cost associated with gambling as a household activity is deducted.

To estimate a GPI for gambling, statistics are needed on personal expenditures on games of chance, net of payouts or winnings. Statistics Canada reports net expenditure data for games of chance (wagers **less** payouts or winnings) annually by province and nationally, and with a time series from 1992-2005.[53] Data are based on wagers net of payout for government-controlled slot machines, lotteries, casinos, video lottery terminals, and bingos. Expenditure on games of chance controlled by non-profit or charitable organizations is not included. Because expenditure data are derived from government gaming agencies and not from household expenditure surveys, net expenditure data are unavailable at a sub-provincial or municipal accounting level.

As a visual example, Table 3 below shows statistics for 2005 by province for both games of chance and pari-mutuel betting. These statistics can form the basis of a Genuine Progress Indicator analysis at the provincial level.

Table 3: Provincial and National Personal Expenditures on Games of Chance and Pari-mutuel betting, 2005, $ millions

Province / Territory	Games of chance (JT185) net personal expenditures: Wagers net of payouts for government-controlled slot machines, lotteries, casinos, video lottery terminals and bingos	Pari-mutuel betting (JT186): Wagers net of payouts on horse racing
Newfoundland	202	0
Prince Edward Island	37	2
Nova Scotia	362	3
New Brunswick	211	2
Quebéc	2,946	44
Ontario	4,697	254

[53] Based on personal communication with Jackie Maisonneuve of Statistics Canada on July 18, 2006. Statistics Canada collects confidential statistics from provincial gambling agency sources on gross amounts wagered and prizes or payouts for games of chance (JT185), which include government-controlled slot machines, lotteries, casinos, video lottery terminals, and bingos. They also collect similar data for pari-mutuel betting (JT186): wagers net of payouts on horse racing. This expenditure data excludes games of chance controlled by non-profit organizations, in other words, charitable gaming. According to Maisonneuve, Statistics Canada does not include the charitable gaming from Alberta, which might represent the biggest amount of charity gaming. In Ontario, the charity casinos are government controlled. There is a foundation that distributes money to charities. In B.C., the casinos, which were run by charities until approximately 1998, are now government controlled. B.C. has agreed to distribute a certain amount to charities, but the proceeds first go to the provincial coffers. Québec has some smaller-scale charities (bingos, etc.), but unlike Alberta, the three casinos are government-controlled. Much of the information is drawn from the annual reports of provincial gaming commissions and ministries.

Province / Territory	Games of chance (JT185) net personal expenditures: Wagers net of payouts for government-controlled slot machines, lotteries, casinos, video lottery terminals and bingos	Pari-mutuel betting (JT186): Wagers net of payouts on horse racing
Manitoba	538	10
Saskatchewan	479	1
Alberta	1,865	36
British Columbia	1,513	48
Yukon	4	0
NWT	1	0
Nunavut	1	0
Canada	**12,859**	**400**

Personal expenditures on gambling might be seen as the crudest estimate of the economic benefit or utility realized by the gambling population in a society, although clearly tangible societal cost needs to be fully accounted for in a more accurate Genuine Progress Indicator-type accounting.

3.4.2.3 Cost of Problem Gamblers

The Australian Productivity Commission (1999) derived a negative consumer surplus for problem gamblers by taking the difference between the net expenditures of problem gamblers and the average net expenditures of recreational (non-problem) gamblers. This excess spending was treated as a deficit or negative consumer surplus and used to discount the consumer surplus (net spending) of recreational or non-problem gamblers. This negative consumer surplus estimate could also serve as a proxy for an initial cost estimate of problem gambling that would be included in a Genuine Progress Indicator accounting.

In a GPI analysis for Australia, Hamilton (2000) estimated the cost of gambling using "expenditures" by problem gamblers as a proxy for societal costs.[54] This gross expenditure figure is then deducted from personal consumption expenditures in the GPI net income calculations.[55]

Using the same logic as the Australian Productivity Commission, excessive spending by problem gamblers for Alberta in 2005 could be estimated at $2,890 per problem gambler, or a total estimated cost of problem gambling (or negative consumer surplus)

[54] Hamilton, C. and R. Denniss. 2000. Tracking Well-being in Australia The Genuine Progress Indicator 2000. The Australia Institute.

[55] Australian estimates show that around 290,000 people are considered to be problem gamblers (2.1% of the adult population). This group lost A$3.5-billion in 1999 – approximately one-third of the total expenditure on gambling. The cost of gambling in the Australian GPI is thus estimated as the amount lost by problem gamblers – A$3.5-billion in 1999-2000 or A$578.95 per Australian.

of $326 million. This figure could be applied to the GPI accounting line-item for the economic cost of problem gambling.[56]

In order to conduct these calculations, information on the percentage of problem gamblers (using the Canadian Problem Gambling Index classifications) and an estimate of the average net expenditures (wagers **less** payouts) of the problem gambler population are required. These estimates can then be compared with the average net expenditures of non-problem or recreational gamblers. The difference (like the Australian Productivity Commission study of 1999) would provide a crude proxy of a more genuine or net consumer surplus.

3.4.2.4 Change in Income and Wealth Inequality in a Community due to Gambling

A key attribute of a Genuine Progress Indicator accounting is the inclusion of the effects of income and wealth transfers and inequality in society. The U.S., Alberta and Australian GPI estimates adjust personal consumption expenditures for changes in income inequality measured by the Gini coefficient: a measure of inequality of distribution of either income or monetary wealth. Because the Gini coefficient is expressed as a ratio (the higher the Gini coefficient, the greater the income inequality in society), it has no monetary expression.

In GPI accounting, personal consumption expenditures are adjusted according to a change in the Gini coefficient from a benchmark year – an increasing Gini coefficient means that personal consumption expenditures are adjusted downwards or discounted. The Gini coefficient for income is reported by Statistics Canada at the national and provincial level. It serves as a rough proxy, or shadow price, for the cost to overall societal well-being of rising income inequality.

Although economists generally consider the question of distributional equity to be important, they regard it as a separate issue from the magnitude of economic welfare. There are conceptual problems involved in including a distributional component in Genuine Progress Indicator accounting, but continuing to ignore the societal cost associated with the distribution of income and wealth devalues its importance in the

[56] For discussion purposes, applying the Australian methodology to Alberta, Anielski (2001) estimated the cost of problem gambling to Alberta's economy at $2.167 billion based on an average gross wager of $19,360 (1998$) per problem gambler, as a proxy for the cost of problem gambling. This earlier estimate was high since it was not a true estimate of negative consumer surplus. To estimate the contribution that problem gamblers made to Alberta's gambling net expenditures in 2005, Statistics Canada reported net expenditures on games of chance ($1,865 million) would be divided by the estimated Alberta adult gambling population (2,053,374) to calculate an average net expenditure of $908 per capita. If one applies the estimate by Williams and Woods (2004: 445-46) that the average province derives 23% of its gambling revenues from problem gamblers, and that roughly 5.5% of the adult gambling population are problem gamblers, then the estimated total net expenditures on games of chance by problem gamblers would be $429 million, or an average net expenditure per Alberta problem gambler of roughly $3,798. Taking the difference between net expenditures of the average Alberta adult gambler and the estimated average net expenditure of a problem gambler would approximate an estimate of excessive spending (beyond recreational value), or a proxy for the cost of problem gambling, or a crude proxy for negative consumer surplus.

analysis of economic welfare. It is therefore made an integral part of measuring genuine economic and societal well-being.

The challenge of using the Gini coefficient in a Genuine Progress Indicator accounting for gambling is to determine how income and wealth distribution and inequality can be attributed to the impact of gambling. This is a complex but important area of research into the economic impact of gambling.

3.4.3 Taxonomy of Societal Cost

What follows is a brief overview of previous research and empirical studies of the societal cost of gambling that could be employed in the Genuine Progress Indicator analytic framework for gambling.[57] The overview will assist the reader in understanding the possibilities, categories, measures or tools needed to focus on various key social, economic and environmental determinants of human health to secure measurable impact results. It will also become clear how complex this effort can become, and, depending on the parameters, how measured outcomes could differ between researchers, underlining the need for a gold standard of analysis.

One of the key shortcomings of most of these studies is that the cost is estimated for problem gamblers only. Ideally, societal cost estimates should consider the impact on all types of gamblers rather than problem gamblers alone. However, these data are not available.

The primary focus of previous societal cost estimates has been on four types of cost:

- Crime-related;
- Health-related;
- Job-related; and
- Cost incurred by families of gamblers.

Another key challenge is proper accounting of the causality for problem gambling. The development of attribution fractions associated with problem gambling is critical to the utility of the SEIG Framework.

3.4.3.1 Cost of Illness, Health and Wellness

The impact of gambling can include depression, stress-related illness, chronic or severe headaches, anxiety, moodiness, irritability, intestinal disorders, asthma, cognitive distortion, and cardiovascular disorders.[58] Other impact can also include intangible benefit, such as improved personal well-being through reduced stress or escape from

[57] This wealth of research could also be applied to informing the traditional cost-benefit analysis (CBA) analytic framework for gambling.

[58] Grinols, E. and D.B. Mustard. (2001). Business Profitability versus Social Profitability: Evaluating Industries with Externalities, the Case of Casinos. *Managerial and Decision Economics*; 22:143-162.

life's troubles. There is tangible and intangible cost or impact on health and wellness. Gambler-borne cost is tangible to the extent that the gambler would be willing to eliminate the problem.

There is other wellness impact that relates to unintended impact on the gambler's family, friends and relations, including the impact of relational breakdown, conflict and divorce, as well as neglect of family and domestic violence. Many of these latter impacts on others largely represent intangible cost.

The impact of gambling through a public health lens is recognized by epidemiologists and public health experts (Korn et al., 2003). The World Health Organization (WHO) and Health Canada have identified key social, economic and environmental determinants of human health, many of which are part of the proposed SEIG Framework. These determinants include:

- Income and social status;
- Social support networks;
- Education;
- Employment and working conditions;
- Physical environment;
- Biology and genetic endowment;
- Personal health practices and coping skills;
- Healthy child development; and
- Health services.

Korn et al. (2003) note that in the population health model, "… empirical data are used to analyze the relationship of income, employment, poverty, social status and community economic development to the health status of geographic communities and other population groups".[59] They also propose that the term "gambling problems" would:

> "…create a public health focus on gambling that emphasizes the spectrum of gambling behaviours, prevention and harm reduction. This phrase reflects all patterns of gambling behaviour that compromise, disrupt or damage personal, family or vocational pursuits, and that lead to adverse consequences. Gambling problems may be mild, moderate or severe. In addition, the new public health concept of healthy and unhealthy gambling is incorporated, one that builds upon the WHO definition of health and complements the terminology of healthy people, families and communities. Healthy gambling entails informed choice on the probability of winning, a pleasurable gambling experience in low-risk situations, and wagering in sensible amounts. **Healthy gambling** sustains or enhances a

[59] Korn, D., R. Gibbins and J. Azmier, (2003). Framing Public Policy: Towards a Public Health Paradigm for Gambling. Presented at the First International Symposium on the Economic and Social Impacts of Gambling, September 23-27, 2000. Journal of Gambling Studies, 19(2), 235-256

> gambler's state of well-being. Conversely, **unhealthy gambling** refers to various levels of gambling problems."[60]

Most of the gambling literature devoted to health and wellness impact focuses on the negative effects of gambling on problem gamblers and their families. In terms of impact, there are many tangible and intangible costs on health and wellness, including poor health or morbidity, stress, depression and anxiety, suicide or other premature mortality, substance abuse (alcohol, tobacco and illicit drugs related to gambling), and quality time-use loses (e.g. loss of value of time with family and friends).

Many physical health conditions (impact) have been associated with gambling problems, including high blood pressure, ulcers, migraine headaches, intestinal problems, serious heart problems resulting from chronic stress (Wenger, McKechnie, and Wiebe, 1997), as well as repetitive movement disorders, orthopedic distress, and sexual dysfunction (Petry, 2000). Problem gamblers also experience higher risks of alcohol, drug and tobacco abuse (Stewart and Kushner, 2003), as well as increased risk of mental health problems such as dysthymia, major depression, anti-social personality disorder, phobias, or anxiety (Potenza et al., 2002). Some extreme cases of problem gambling have resulted in suicides. Youth or adolescents with problem gambling parents are more likely to be anxious, insecure, subject to mood disorders, twice as likely to attempt suicide, and at risk of becoming problem gamblers (Potenza et al., 2002).

The most comprehensive study of gambling and problem gambling health impact was conducted in Saskatchewan (Wynne, 2002). The study provided important insights into the correlation between problem gambling and several health status indicators. For example, 39.1% of problem gamblers have emotional problems compared to 3.7% of non-problem gamblers, and 34% of problem gamblers have problems with alcohol compared with 0.9% of non-problem gamblers. For depression, 56.5% of problem gamblers felt depressed for two or more weeks compared with 13.3% of those without gambling problems. Forty-three percent (43.5%) of problem gamblers had serious thoughts of suicide compared with only 5.7% of non-problem gamblers; both depression and suicide were statistically significant.

Specific chronic physical health problems that were not statistically significant with respect to problem versus non-problem gamblers included heart disease, hypertension and diabetes. However, 26.1% of problem gamblers did report experiencing long-term illness compared to 13.2% of non-problem gamblers.

Many of these impacts can be reported simply as statistics or used to estimate the probability or likelihood of the problem gambling cohort in a community experiencing these negative health impacts. Many of these impacts can be monetized using cost-of-

[60] ibid.

illness methods related to the economic value of illness, morbidity and premature mortality. Some benchmark estimates of cost of illness for gambling may be applied from the cost of morbidity and premature mortality estimates related to substance abuse estimated by the Canadian Centre on Substance Abuse (2006). The study, for example, estimated the direct health care and criminal justice cost and indirect cost due to productivity losses from disability and premature death from substance abuse in Canada at $39.8 billion or $1,267 per Canadian (based on 2002 data).

The U.S. study by Gerstein et al. for the National Opinion Research Center estimated an average physical health care cost of US$700 per pathological gambler.[61] A study by Vaillancourt and Roy (2000) for Canada estimated mental health-care cost of Cdn$384 per pathological and problem gambler for 1995 and physical health-care cost of $768 per pathological gambler in 1995, based on applying the U.S. National Opinion Research Center figures[62] to Canada and adjusting for differences in U.S. and Canadian health care sectors. These figures were then multiplied by the number of pathological and problem gamblers. These numbers assume that none of these costs would arise if gambling were illegal.

In the Australian Productivity Commission study, the cost of gambling-related depression ranged in value from A$5,000 (low estimate)-to-A$15,000 (high estimate) for each problem gambler who reported being "often" or "always" depressed because of gambling in the previous 12 months. An estimated 49,400 problem gamblers reported being depressed "often" and 21,200 reported being "always" depressed because of gambling. The estimated cost of gambling-related depression was A$231 million-to-A$692 million per year.

The key issue with respect to costing the impact of problem gambling on health and well-being is the causality or attribution fractions associated with impact. Research such as Wynne (2002) for Saskatchewan (see Table 4 immediately below) and Wildman and Chevalier (2002) for Ontario provides an important starting point for future attribution research. The full details of Wynne's analysis are shown in Table 5 (see pp 58-59). This table presents correlations between problem gambling and health status indicators among four gambler sub-types: non-problem gamblers, low-risk, moderate-risk, and problem gamblers.

These kinds of studies could provide necessary attribution fractions for the health-problem gambling relationship that would be important in full costing of gambling's impact on various health conditions.

[61] Gerstein, D., S. Murphy, M. Toce, R. Volberg, H. Harwood, A. Tucker, E. Christiansen, W. Cummings, S. Sinclair. (1999). Gambling impact and behavior study: report to the National Gambling Impact Study Commission. National Gambling Impact Study Commission, (1 April).

[62] Gerstein, D. R., J. Hoffmann and C. Larison. (1999). Gambling impact and behavior study. National Opinion Research Center. The University of Chicago.

Table 4: Health Status by Gambler Sub-type in Saskatchewan

	Non-problem gamblers		Low-risk gamblers		Moderate risk gamblers		Problem gamblers	
	N	%	N	%	N	%	N	%
General Health Problems								
Long-term illness	174	13.2	21	12.4	8	9.3	6	26.1
Ongoing effects of an injury	136	10.3	19	11.1	10	11.6	6	26.1
Disability or handicap	79	6.0	10	5.8	4	4.7	4	17.4
Difficulty seeing	578	43.8	73	42.7	36	41.9	9	39.1
* Difficulty hearing	83	6.3	17	9.9	10	11.6	0	0.0
Difficulty walking or getting around	103	7.8	13	7.6	10	11.6	4	17.4
Difficulty using both hands or all fingers	52	3.9	8	4.7	3	3.5	3	13.0
Persistent pain and discomfort	203	15.4	29	17.0	17	19.8	5	21.7
Problems reading and writing	27	2.0	6	3.5	2	2.3	2	8.7
* Learning disability	15	1.1	4	2.3	0	0	3	13.0
* Emotional problem	49	3.7	6	3.5	6	7.0	9	39.1
* Psychological condition/emotional illness	34	2.6	4	2.3	5	5.8	5	21.7
* Problem with alcohol	12	0.9	4	2.3	5	5.8	8	34.8
* Problem with drugs	2	0.2	3	1.8	0	0.0	3	13.0
Specific Health Problems/Conditions								
None	1153	87.3	155	90.6	77	89.5	19	83.6
Heart problems	19	1.4	1	0.6	0	0.0	0	0.0
High blood pressure	25	1.9	3	1.8	2	2.3	0	0.0
Arthritis	24	1.8	2	1.2	0	0.0	0	0.0
Asthma/lung trouble	12	0.9	1	0.6	1	1.2	1	4.3
Diabetic	13	1.0	5	2.9	0	0.0	0	0.0
Cancer, tumors or lymphoma	10	0.8	0	0.0	0	0.0	1	4.3
Thyroid problems	9	0.7	1	0.6	0	0.0	0	0.0
Hip, back or joint problems	4	0.3	1	0.6	2	2.3	1	4.3
Stomach or bowel problems	8	0.6	0	0.0	0	0.0	0	0.0
Neurological disorders	6	0.5	1	0.6	0	0.0	0	0.0
High cholesterol	7	0.5	0	0.0	2	2.3	0	0.0
Allergies or sinus problems	5	0.4	0	0.0	0	0.0	0	0.0
Other	19	1.4	0	0.0	2	2.3	1	4.3

	Non-problem gamblers		Low-risk gamblers		Moderate risk gamblers		Problem gamblers	
Depression								
* Sad/blue/depressed for 2 weeks or more	175	13.3	26	15.2	15	17.4	13	56.5
Take medication during this time	52	29.7	4	15.4	4	26.7	5	38.5
* Seriously thought about suicide	74	5.6	11	6.4	12	14.0	10	43.5
Attempted suicide (of N above who have suicidal thoughts)	16	21.6	3	27.3	3	25.0	3	30.0

*Statistically significant

Source: Wynne, H. J. (2002). *Gambling and Problem Gambling in Saskatchewan*. Final Report. Saskatchewan Health. p. 69

3.4.3.2 Cost of Suicide and Emotional Distress

While many studies conclude that problem and pathological gamblers have higher rates of suicide than the general public, the literature has not provided sufficiently reliable social cost estimates (Grinols and Mustard: 151). Some instances of suicide have been associated with gambling, but it is difficult to discover whether gambling, per se, led to the suicide or if other financial, legal, social or physical problems were the primary cause.

In a detailed systematic evaluation of suicide intent, Blaszczynski and Farrell found that 40% of a sample of 85 problem gamblers in treatment had suicidal thoughts or intentions. However, the Australian Productivity Commission study found that only 4.2% of lifetime problem gamblers had seriously considered suicide. Yet, U.S. studies of suicide deaths found that deaths in Las Vegas are 2.5 times more likely to be the result of suicide than deaths in comparably sized metropolitan areas.[63]

In general, attempted suicides range between 17% and 24% of pathological gamblers.[64] However, according to a report cited in a Gamblers Anonymous study, roughly 48% of pathological gamblers had considered suicide and 13% had attempted it.[65] In a study of Québec college students, 26.8% of pathological gamblers had attempted suicide

[63] Phillips D.P., Welty W.R., and Smith M.M. 1997. Elevated suicide levels associated with legalized gambling. *Suicide and Life-Threatening Behavior* 27: 373–378.

[64] Potenza, M. N., D. A. Fiellin, G. R. Heninger, B. J. Rounsaville and C. M. Mazure. (2002). Gambling: An Addictive Behavior with Health and Primary Care Implications. JGIM: *Journal of General Internal Medicine*, 17(9), 721-732.

[65] National Council of Welfare. (1996). Gambling in Canada. National Council of Welfare.

compared with 7.2% of college students with no gambling problems.[66] In an Edmonton study, 13.3% of lifetime pathological gamblers had attempted suicide.[67]

Studies estimating the number of completed suicides related to gambling are rare. Lesieur reported that pathological gamblers have a suicide rate 5 to 10 times higher than the general population[68] and that their spouses have suicide attempt rates three times higher than the general population.[69] In Nova Scotia, between 2000 and 2002, gambling was found to be related to 6.3% of suicides, representing 10 of 159 cases.[70]

Future Canadian statistics on gambling-related suicide should improve over the coming years after Canada's coroners made a commitment in 2004 to begin recording all cases in which gambling is cited as a factor in suicide, whether or not gambling is an obvious primary cause.

The Australian Productivity Commission examined the percentage of regular, non-problem gamblers versus problem gamblers (with or without counselling) that had emotional problems that could lead to thoughts of suicide, suicide attempts, or successful suicide.[71] The results appear in Table 5 immediately below.

Table 5: Emotional Consequences of Gambling (Australian Productivity Commission)

Emotional Consequences of Gambling	Non-problem, regular gambler (% reporting consequence)	Problem gambler (SOGS 5+) (% reporting consequence)	Problem gambler *in counselling* (SOGS 5+) (% reporting consequence)
"Often" depressed in the last 12 months	0.1	16.4	na
"Always" depressed in the last 12 months	0.3	5.8	na
Seriously considered suicide due to gambling	0.0	9.2	57.8
Seriously considered suicide due to gambling in last 12 months	0.0	4.4	na
Attempted suicide	na	na	13.6

[66] Ladouceur, R., J. Boisvert, M. Pepin, M. Loranger and C. Sylvain. (1994). Social cost of pathological gambling. *Journal of Gambling Studies*, 10(4), 399-409.
[67] Bland, R., S. Neuman, H. Orn and R. Stebelsky. (1993). Epidemiology of pathological gambling in Edmonton. *Canadian Journal of Psychiatry*, 38, 108-112.
[68] Lesieur, H. (1992). Compulsive gambling. Society, May/June, 43-50.
[69] Lesieur, H. (1998a). Costs and treatment of pathological gambling. ANNALS, AAPSS, 556,(March), 153-159.
[70] Responsible Gambling Council (Ontario). (2003 February 27). Suicides linked to gambling. Newscan, 5(9).
[71] Australian Productivity Commission. (1999). Australia's Gambling Industries. Commonwealth of Australia.

The conventional economic analysis would count the cost of suicide only if the victim is employed and then not replaced by someone else who is employed.[72] However, taking such a conventional approach would mean that a successful suicide would actually count as a benefit to the economy since that person would no longer be consuming more medical and hospital resources as he or she ages.

Several economic studies have estimated the societal cost associated with depression, thoughts of suicide, attempted suicide and the cost of successful suicides. The Australian Productivity Commission estimated a range of values (lower cost and higher cost) for a single year (1997-98) assigned to the emotional cost of problem gambling where there is not direct physical injury involved. The Commission used 1997-98 AU dollars per person with estimates based mainly on the lower range of payments for victims' compensation in use in New South Wales and Queensland. However, values for thoughts of suicide and suicide attempts were based on the higher range of payments for compensation. Estimates of the societal cost ranged as follows:

- Emotional cost for the immediate family of severe problem gamblers: $5,000–$15,000;
- Emotional cost for the parents of severe problem gamblers: $0–$5,000;
- Depression "often to always": $5,000–$15,000;
- Seriously thought of suicide: $15,000–$30,000; and
- Attempted suicide for the:
    - Gambler: $30,000–$50,000;
    - Immediate family: $15,000–$30,000; and
    - Parents: $0–$5,000.

The Australian national gambling survey indicated that 4.4% of problem gamblers *had seriously thought of suicide in the past 12* months, or an estimated 8,000 gamblers. The Commissions used information on compensation payments in Australia for psychological and psychiatric disorders to estimate the cost from A$15,000-to-A$30,000 per problem gambler. The total estimate represented an annual **cost** for those problem gamblers who had seriously contemplated suicide as A$120 million-to-A$239 million.

In terms of the cost of attempted suicide, the *Survey of Clients of Counselling Agencies* found that about 28% of males with serious thoughts of suicide had attempted suicide, compared with 19% of females in 1997-98. The Commissions estimated that 2,935 problem gamblers, which they adjusted to 2,348 using the causality adjustment of 20%, had attempted suicide in that time period because of gambling-related problems. The cost placed on these attempts was from A$30,000 to A$50,000, the low and high estimates. The results indicated the cost for gambling-related suicide attempts per year to be from A$70 million-to-A$117 million.

[72] Henriksson, L. (2001). Book Review: Vaillancourt, F., & A. Roy. (2000). Gambling and governments in Canada, 1969-1998: How much? Who plays? What payoff? Toronto: Canadian Tax Foundation. eGambling, May (4).

The estimated cost to family members from a problem gambler's attempted suicide range from A$15,000-to-A$30,000. For the gambler's parents, the range was from A$0-to-A$5,000 each. The same numbers, used previously of 2.3 immediate family members per problem gambler (excluding the problem gambler) and 1.8 parents per problem gambler, were used here. In 1997-98, 2,348 suicide attempts (adjusted for causality) resulted in an estimated cost to family members of A$81 million-to-A$161 million.

Cost estimates of successful suicides are rare. In New Brunswick, a report on the cost of suicide deaths was published by Health Canada in 2000, the first of its kind to estimate both the direct and indirect cost of suicide. It provides a reference for new cost-of-suicide study comparisons.[73]

Using a human capital loss approach to estimate future productivity losses, the estimated cost of the 94 suicide deaths reported in New Brunswick in 1996 was $535,158 in direct costs and $79,353,354 in indirect cost, or 99% of the total cost. The mean total cost per suicide death was therefore assessed at $849,877.

These estimates are based on the direct cost associated with a suicide, including ambulance, hospital, physician, and autopsy cost, as well as the cost of funeral/cremation services and police investigations. Indirect cost used potential years of life lost before age 75 and calculated lost future earnings for both labour force work and the value of unpaid labour, using a discount rate of 4%. This is consistent with valuations of lost productivity due to premature mortality in the cost of substance abuse study.[74]

3.4.3.3 Cost of Substance Abuse (Alcohol, Drugs, Tobacco)

The Whistler Symposium in 2000 identified empirical research to establish direct causal links between gambling and specified outcomes, including substance abuse. Valid impact and co-morbidity analysis requires "attribution fractions" that link gambling as a cause of positive or negative outcomes. These fractions establish what proportion of the impact can be attributed directly to gambling and what proportion can be associated indirectly with gambling, but is caused by another source such as alcohol. The Whistler Symposium concluded that without gambling attribution factors that connect problems directly to gambling, "it is not possible to produce meaningful estimates of costs and benefits".[75]

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[73] Clayton, D. and A. Barceló. (2000). The Cost of Suicide Mortality in New Brunswick, 1996. *Chronic Diseases in Canada*, 20(3).

[74] Single, E. (2003). Estimating the Costs of Substance Abuse: Implications to the estimation of the costs and benefits of gambling. Presented at the First International Symposium on the Economic and Social Impacts of Gambling, September 23-27, 2000. *Journal of Gambling Studie*s, 19(2), 215-233.

[75] Wynne, H. J. and M. Anielski. (2001). The Whistler Symposium Report. Ottawa: Canadian Centre on Substance Abuse , p.27.

In a 1998 review of the literature, Crockford and el-Guebaly found a large proportion – between 25% and 63% – of pathological gamblers also have had (or have) a substance disorder. In addition, 9%-to-16% of substance abusers are "probable" pathological gamblers.[76] Crockford and el-Guebaly report that the lack of consistency of results reflects use of small sample sizes, generalizing from studies that use gamblers in treatment, use of different instruments, and lack of adequate descriptions of demographic variables such as age and ethnicity, and other potentially confounding variables such as severity of the gambling problem.

Whatever portion of a particular outcome cannot be directly attributed to gambling also cannot be considered a cost of gambling (Hayward, 2004). If alcohol is the primary cause of the outcome under consideration (e.g. suicide), then the cost associated with that outcome must be attributed to substance abuse rather than to problem gambling. Rather than dismissing the cost because gambling might be a secondary and not a primary factor, a portion of the outcome that may properly be attributed to gambling needs to be estimated, ideally for different ages and by gender.[77] Attribution fractions can be derived from surveys or interviews.[78]

Following the Whistler Symposium, Wildman and Chevalier (2002) produced *Problems Associated with Gambling: A Preliminary Investigation into Health, Social and Psychological Aspects*, which is a literature review oriented to measuring the economic concept of negative externalities or adverse consequences of gambling behaviour to persons other than the gambler.[79] Their research resulted in a chart (Table 6) that estimates causality based on the literature examined.

Table 6: Estimates of Causality of Gambling as Potential Cause by Criteria for Associated Morbidity, States and Situations

	Associations	Yes	Temporarily	Biological gradient	Plausibility
Socialization	n.a.[80]	Yes	None but	None	Yes
Entertainment	n.a.	Yes	None but	None	Yes
Alcohol	Strong	Yes	Some	None	n.a.
Drugs	Strong	Yes	Some	None	n.a.
Tobacco	Strong	Yes	None	None	n.a.
Antisocial personality	Fair	Yes	Yes	None	n.a.

[76] Crockford, D. N. and N. el-Guebaly. (1998). Psychiatric co-morbidity in pathological gambling: A critical review. *Canadian Journal of Psychiatry*, 43, 43-50.
[77] Single, E., D. Collins, B. Easton, H. Harwood, H. Lapsley, P. Kopp and E. Wilson. (2001). International Guidelines for Estimating the Costs of Substance Abuse – Second Edition. Canadian Centre on Substance Abuse.
[78] Pernanen, K., S. Brochu, M.-M. Cousineau, L.-G. Cournoyer and F. Sun. (2000). Attributable fractions for alcohol and illicit drugs in relation to crime in Canada: conceptualization, methods and internal consistency of estimates. *Bulletin on Narcotics*, LII (1 & 2), United Nations Office on Drugs and Crime.
[79] Wildman, R. W. I. and S. Chevalier. (2002). Problems Associated with Gambling: A Preliminary Investigation into Health, Social and Psychological Aspects. Ontario Problem Gambling Research Centre.
[80] n.a.: not available

	Associations	Yes	Temporarily	Biological gradient	Plausibility
Mood disorder	Fair	Yes	None	None	n.a.
Depression	Strong	Yes	None	n.a.	n.a.
Anxiety	Strong	Yes	None	n.a.	n.a.
Impulsivity	Fair	No	Yes	None	n.a.
Sensation seeking	Fair	Yes	Yes	None	n.a.
Suicide (ideations or attempts)	Strong	n.a.	n.a.	n.a.	Yes
Financial problems	Strong	Yes	None or bidirectional	n.a.	Yes
Domestic problems	Fair	n.a.	None	n.a.	Yes
Job/school related problems	Fair	n.a.	None	n.a.	Yes
Crime	Weak	No	Yes	None	n.a.

Source: Wildman, R. and S. Chevalier. (2002). *Problems Associated with Gambling: A Preliminary Investigation into Health, Social and Psychological Aspects*: Ontario Problem Gambling Research Centre, p. 31.

Despite the potential value of such attribution analysis, Wildman and Chevalier conclude that currently, even though many conditions have been associated with gambling, none seem to fully reach the minimal requirements of causality.

In terms of what societal cost estimates of substance abuse, using a cost-of-illness model, can teach us about gambling societal cost estimates, research on both gambling and substance abuse societal cost is relatively new, although the substance abuse studies are further advanced. There are still no universally acceptable models for both issues, while both share causality problems and the same challenges of co-morbidity. One of the main weaknesses in both cases is the lack of robust attribution fractions.

The cost of substance abuse research takes a cost-of-illness approach, estimating both direct and indirect societal cost. Cost-of-illness studies of substance abuse emphasize tangible, external costs such as health care and law enforcement, but a large percentage of the estimates are based on indirect costs such as productivity losses due to absenteeism and premature death. Gambling impact studies need to look at many of the same issues, and can potentially use existing smoking and substance abuse cost-of-illness studies as models.

3.4.3.4 Cost of Family Breakdown, Psychological Distress and Domestic Violence
Families of problem gamblers bear the gambling-related cost of divorce, separation, spousal abuse, and child neglect. This type of cost is generally manifested as a psychological consequence such as depression, pain and suffering, and can extend to spousal abuse and domestic violence. This cost are tangible and real, and can be

quantified in terms of the amount of money an individual would be willing to pay to remove the problem.

In practice, such cost is rarely measured. When social services or other government or community services deal with the effects of problem gambling, these service expenditures represent resources lost to other uses in society and can be measured by the cost of the services provided.[81]

There are no Canadian estimates of the economic cost associated with loss of well-being by gamblers' family and friends due to problem gambling behaviour. Estimates of divorce and counselling cost associated with gambling do not include the loss of well-being of families of problem gamblers. Vaillancourt and Roy (2000) arbitrarily assumed a cost of Cnd$1,000 per problem gambler for the loss of well-being of these gamblers' families that is attributable to the gambling behaviour.

The Australian Productivity Commission estimated the financial cost per divorce or separation in that country to be A$1,100, which represented filing and legal fees. This is a conservative estimate since it does not include the cost of enforcing child support orders, transaction cost of house sales, and separate household set-up cost. Moreover, it excluded long-term human capital cost relating to impact on children's education that might translate to lower earnings later in life. The total annual cost for divorce and separation as a result of gambling was estimated to be A$2.8 million in 1997-98.

The Australian Productivity Commission also estimated other emotional cost, including the emotional costs of relationship breakdowns due to problem gambling, which was estimated for both partners at between A$5,000 and A$15,000. The total annual cost was A$288 million-to-A$864 million, based mainly on the lower range of payments for victims' compensation in New South Wales and Queensland.

The estimated emotional cost of divorce and separation for immediate family members of problem gamblers was between A$15,000 and $30,000, or an annual total cost of between A$126 million and A$864 million.

The estimated cost of emotional distress caused by gambling on the immediate family and parents of severe problem gamblers was between A$5,000 and A$15,000 for immediate family members, and A$0-to-A$5,000 for parents. The total annual cost was estimated at A$756 million-to-A$2.3 billion for immediate family members, and A$0-to-A$666 million for parents.

Estimated cost of domestic violence related to problem gambling was at between A$5,000 and A$15,000 per incident. The incidence of gambling-related violence was

[81] Single, E. (2003). Estimating the Costs of Substance Abuse: Implications to the estimation of the costs and benefits of gambling. Presented at the First International Symposium on the Economic and Social Impacts of Gambling, September 23-27, 2000. *Journal of Gambling Studie*s, 19(2), 215-233.

estimated from a survey of problem gamblers in counselling, which indicated that 13.1% of the severe problem gamblers reported having participated in a violent activity at some point during the period of gambling. The total cost for the harm caused by gambling-related violence was estimated to be between A$2.8 million and A$8.3 million.

3.4.3.5 Government Defensive Expenditures: Avoidable Health, Welfare and Social Service Cost and Incremental Public Infrastructure Cost

The social service, health care and welfare cost associated with gambling, and borne mostly by government and other non-profit entities, includes problem gambling therapy, treatment and counseling cost, unemployment, and other costs. Expenditures would also include those incurred by public gaming institutions, ministries and commissions, including marketing and regulatory cost.

In addition, public funds expended on infrastructure (e.g. roads, bridges, lighting, sewage and water) in support of privately-owned gaming venues should be accounted for in a Genuine Progress Indicator analysis as either avoidable public expenditures or indirect subsidies to the private sector (whose full cost is not borne directly by the gaming venues, but by the public at large). This cost is known in Genuine Progress Indicator accounting as defensive government expenditures or “avoidable costs” that are deducted from gross benefits. Government expenditures are considered defensive if they are incurred either to protect against the erosion of quality of life or to repair the harm or regrettable social and environmental cost borne by society as a whole.[82]

In a review of pathological gambling-related service cost, a US study by Grinols and Mustard (2001) reported a range of social service cost estimates as shown in Table 7.

Table 7: Annual Social, Health and Welfare Service Costs (US$) per Pathological Gambler in the U.S.

	Study Author and State						
Social Service Cost	Thompson et al. (1996) WI	Thompson et al. (1998),CT	Leg. Research Council (1998-99) SD	Ryan et al. (1999) LA	Gerstein et al. (1999) US	Thompson and Quinn (1999) SC	**Average**
Therapy/treatment cost	437	114	74	396	30	83	189
Unemployment and social service cost (e.g. welfare)	606	971	549	60	145	318	442

[82] Anielski, M. (1998). The 1998 U.S. Genuine Progress Indicators: Methodology Handbook. Redefining Progress, San Francisco.

Similar analysis for Canada has not been conducted although such full-cost accounting of government or public expenditures is possible based on forensic analysis of public accounts. One of the challenges is attributing the correct proportion of these expenditures specifically to gambling.

3.4.3.6 Government Direct Regulatory Cost

Social service and government direct regulatory cost related to the gaming industry is paid primarily through the government. Social service cost transfers resources from one segment of society to another, consuming resources in the process. Social cost that would not be incurred in the absence of gambling should be included in a complete cost-benefit analysis and assessment of the effect of gambling.[83] Regulatory cost will differ by province, by the type of gaming venue (casinos, bingos), and by the extent of the responsibilities of the regulatory agencies.

3.4.3.7 Property Value

Another potential cost or benefit of gambling industry development is a change in the property value of residents living next to or in the vicinity a gambling venue. Unfortunately there are no empirical estimates of changes in property value due to gambling industry developments in communities.

3.4.3.8 Cost of Bad Debt and Bankruptcy

Empirical studies show that problem gamblers consistently have high rates of debt and declare bankruptcy at much higher rates than lower-risk gamblers and non-problem gamblers (Hayward, 2004:134). Problem gamblers typically exhaust their personal financial resources by selling possessions, acquire multiple credit cards that are often used to their limit, and often “borrow” from family and friends to fund their gambling habits. These habits often lead to bankruptcy in the case of problem gamblers, resulting in cost to creditors attempting to collect and cost to the legal system in court time and resources.

In a Canadian study by Ladouceur, problem gamblers in Gamblers Anonymous in Canada were found to have had debt at bankruptcy averaging from Cdn$75,000t-$150,000.[84] In U.S. studies, average gambling-related current debt levels of treated problem gamblers ranged from US$39,000 in Wisconsin[85] -to-$114,000 in Illinois.[86] In these same U.S. studies, between 18% and 28% of males in treatment for problem gambling and 8% of females in treatment had declared bankruptcy. Grinols (2001)

[83] Grinols, E. and D.B. Mustard. (2001). Business Profitability versus Social Profitability: Evaluating Industries with Externalities, the Case of Casinos. *Managerial and Decision Economics*; 22:143-162.
[84] Ladouceur, R. (1996). The Prevalence of Pathological Gambling in Canada. *Journal of Gambling Studies*, 12(Summer), 129-142.
[85] Thompson, W. N., R. Gazel and D. Rickman. (1996). The Social Costs of Gambling in Wisconsin. Wisconsin Policy Research Institute Report, 9(6), 1-44.
[86] Lesieur, H. R. and C. W. Anderson. (1995). Results of a 1995 Survey of Gamblers Anonymous Members in Illinois (N=184): Illinois Council on Problem and Compulsive Gambling.

found that 20% of problem gamblers had filed for bankruptcy as a result of gambling losses.[87]

Gerstein et al.'s National Opinion Research Center study also found almost 19% of pathological gamblers and 10% of problem gamblers had declared bankruptcy, versus a rate of 5.5% and 4.2% respectively among low-risk and non-problem gamblers.[88] A 2004 U.S. study showed that between 1990 and 1999, the cumulative growth rate in individual bankruptcies in 250 US counties with casinos was more than double the growth rate of bankruptcies in non-casino counties with similar household incomes, population and population densities.[89]

The Australian Productivity Commission's extensive study revealed the following results (seen Table 8 below), showing the percentage of regular, non-problem gamblers, problem gamblers not in counselling and problem gamblers in counselling (using the SOGS classification system) who reported a number of financial consequences of gambling.[90] The Australian study found that the average value of lifetime debt per problem gambler in counselling was A$10,045 ("lifetime estimates" assume that gambling problems last 8.9 years) for a total gambling-related debt transfer of A$26 million annually.

Cost per bankruptcy, which represents fees to the Insolvency and Trustees Service, was estimated at A$4,000 for a total cost of gambling-related bankruptcies of $1.3 million each year. In Genuine Progress Indicator accounting, such cost would be deducted from the gross benefit from gambling.

Table 8: Australian Productivity Commission – Financial Consequences of Gambling

Financial Consequences of Gambling	Non-problem, regular gambler (% reporting consequence)	Problem gambler (SOGS 5+) (% reporting consequence)	Problem gambler *in counseling* (SOGS 5+) (% reporting consequence)
Owed money to pay for gambling	4.6	51.4	n.a.
Borrowed money without paying back	0.7	18.7	53
Borrowed from loan sharks	0.1	5.8	8.4
Declared bankruptcy	0.03	1.4	8.4
Lost house	n.a.	n.a.	7.9

[87] Grinols, E. and D.B. Mustard. (2001).
[88] Gerstein, D. R., J. Hoffmann and C. Larison. (1999). Gambling impact and behavior study. National Opinion Research Center. The University of Chicago.
[89] Goss, E. and E. Morse. (2004). The Impact of Casino Gambling on Bankruptcy Rates: A County Level Analysis. Creighton University.
[90] Productivity Commission. (1999). Australia's Gambling Industries. Commonwealth of Australia.

Sold property to gamble	0.3	10.8	36.7
Use of pawnbrokers to get gambling funds	0.5	13.1	n.a.

The connection between gambling and bankruptcy rate is not always clear partly because gamblers often do not report gambling as a cause of their bankruptcy, as it could affect their bankruptcy status. In 1997-1998, the Nova Scotia Alcohol and Gaming Authority interviewed bankruptcy trustees and found that the majority of them could not definitively identify gambling problems as a cause of bankruptcy, since many other factors, such as job loss and unemployment, over-extension of credit, poor financial management skills, marital problems, and alcohol and drug use, could be contributing factors. Nevertheless, between 5% and 10% of all personal bankruptcy cases could be attributed to gambling problems.[91]

Economists do not agree on how the cost of bad debts and bankruptcy should be treated in economic analysis. Some argue that unpaid debts and bankruptcies should be considered as transfers from the creditor to the debtor and therefore not a social cost. However, money spent to recover the bad debt or process the bankruptcy (e.g. legal costs, court time, and bill-collector fees) is considered a social cost since that money could have had an alternative use.[92]

Other economists point out that, while bad debt and bankruptcy may not enter into traditional economic analysis, they should still be measured and tracked in order to inform gambling policy.[93] Some economists argue against traditional economic logic and suggest that unrecoverable debt of problem gamblers in bankruptcy court proceedings should be considered as a social cost, particularly since evidence shows that many problem gamblers actually pay little of their debts.[94]

In addition to data on unpaid debt and bankruptcy, other financial indicators would be useful to collect when examining the financial implications of problem gambling, including gaming expenditures (losses), the ratio of net gaming expenditures to income, the debt created by gambling, and the amount of money borrowed to gamble, based on indirect evidence from surveys.[95] One approach proposed by Gerstein et al. (1999) for determining the negative impact of gambling on financial problems (or any other negative impact of gambling) is to first determine the "expected" rate of this impact among non-problem gamblers, then determine the rate experienced by problem

[91] Citizens' Committee on Destination Gaming and D. Bourgeois (Chairperson). (2001). The Potential Economic, Social, and Image Impacts of a Casino in Moncton. Moncton [New Brunswick] City Council.
[92] Walker, D. and H. Barnett. (1999). The Social Costs of Gambling: An Economic Perspective. *Journal of Gambling Studies*, 15(3), 181-212.
[93] Azmier, J. J., R. Kelley and P. Todosichuk. (2001). Triumph, tragedy or trade-off?: Considering the impact of gambling. Canada West Foundation.
[94] Thompson, W. N., R. Gazel and D. Rickman. (1996). The Social Costs of Gambling in Wisconsin. Wisconsin Policy Research Institute Report, 9(6), 1-44.
[95] Goss, E. and E. Morse. (2004). The Impact of Casino Gambling on Bankruptcy Rates: A County Level Analysis. Creighton University.

gamblers, and finally determine whether the difference is larger than might be expected due to chance or confounding demographic and socio-economic variables.[96] Excess rate for problem gamblers can then be attributed to gambling.

3.4.3.9 Cost of Reduced Work Productivity, Unemployment and Underemployment

Business and employment-related cost includes lost productivity on the job and the value of lost time and unemployment, including, sick days off for gambling, extended lunch hours, leaving early to gamble, and returning late after gambling (Grinols and Mustard, 2001). According to Lesieur (1998), between 21% and 36% of problem gamblers in treatment reported losing a job because of gambling. The cost to employers from firing an employee and subsequent re-hiring and training is a direct cost to human capital. The loss of work productivity due to gambling behaviour is also a form of human capital depreciation for the individual worker, workplace and employer. These costs associated with gamblers of all types can be estimated based on the time spent playing games of chance during productive work hours.

In a U.S. study, Grinols and Mustard (2001) provided a range (Table 9) of estimates from previous studies of lost productivity at work and the value of lost time and unemployment, which included an average annual cost of $2,913 for lost work time per pathological gambler and $1,082 for lost productivity.

Table 9: Annual Labour Productivity Losses per Pathological Gambler in the U.S.

	Study Author and State (Productivity Loss (US$)/pathological gambler/annum)						
Business and Employment Cost	Politzer et al. (1981)[97] MD	Thompson et al. (1996)[98] WI	Thompson et al. (1998)[99] CT	Ryan et al. (1999) [100] LA	Gerstein et al. (1999)[101] US	Thompson and Quinn (1999),[102] SC	**Average**
Lost productivity on						$1,082	$1,082

[96] Gerstein, D. R., J. Hoffmann and C. Larison. (1999). Gambling impact and behavior study. National Opinion Research Center. The University of Chicago.
[97] Politzer, R.M., Morrow, J.S., Leavey, S.B. (1981). Report on the societal cost of pathological gambling and the cost–benefit: effectiveness of treatment. The Johns Hopkins Compulsive Gambling Counseling Center, Presented at Fifth National Conference on Gambling and Risk-Taking.
[98] Thompson, W.N., Gazel, R., Rickman, D. (1996). The social costs of gambling in Wisconsin. Wisconsin Policy Research Institute Report 9(6): 1–44.
[99] Thompson, W.N., Gazel, R., Rickman, D. (1998). Social costs of gambling: A comparative study of nutmeg and cheese state gamblers. Twelfth National Conference on Problem Gambling, NV 1998. *Gaming Research and Review Journal* 5(1): 1–15.
[100] Ryan, T.P., Speyrer, J.F., with Beal, S.T., Burckel, D.V., Cunningham, B.R., Kurth, M.M., Scott, L.C., Wall, J.L., Westphal, J.R.. (1999). Gambling in Louisiana: a benefit: cost analysis. Prepared for the Louisiana Gaming Control Board, Louisiana State University Medical Center (April).
[101] Gerstein, D., Murphy, S., Toce, M., Volberg, R., Harwood, H., Tucker, A., Christiansen, E., Cummings, W., Sinclair, S. (1999). Gambling impact and behavior study: report to the National Gambling Impact Study Commission. National Gambling Impact Study Commission, (1 April)
[102] Thompson, W.N., Quinn, F.L. (1999). An economic analysis of machine gambling in South Carolina. The Education Foundation of the South Carolina Policy Council, May 1999.

job							
Lost time and unemployment		$2,717	$3,436	$5,936	$320	$2,913	$2,913
Total Cost	**$11,265**	**$2,717**	**$3,436**	**$5,936**	**$320**	**$3,995**	**$4,611**

In another U.S. study of gambling cost in Wisconsin, which included lost income as a social cost, Thompson, Gazel, and Rickman estimated that each pathological gambler misses 7.4 hours of work a month and costs Wisconsin US$1,328 in lost work productivity.[103]

In Canada, Ladouceur et al. found that 66% of gamblers in Gamblers Anonymous had missed work to gamble, that half of those had left work more than five times a month to gamble, and that 14% had missed whole days to gamble. [104] In another study in Québec, Ladouceur estimated the cost of lost time to employers from problem gamblers at Cnd$5 million a year, based on 50% of pathological gamblers with an average wage of $15 per hour, missing five hours of work a month by being late.[105] The same study estimated that 36% of problem gamblers lose their jobs because of gambling-related problems. In a literature review, Lesieur found that 69%-to-76% had missed work to gamble, and 21%-to-36% had lost their jobs due to gambling problems.[106]

Vaillancourt and Roy (2000), in their social and economic cost study of gambling in Canada, considered the loss or reduced income attributable to gambling as a transfer or private cost, and therefore did not calculate it. The authors assumed that the employee who missed work was not replaced, so they calculated the tax revenue lost by government assuming that the pathological gambler missed 10 hours of work each month. Based on Statistics Canada data, they used an average Canadian wage rate of $15 per hour in 1990 and $18 per hour in 1995, less an assumed tax rate of 40%, Canada pension plan contributions, and employment insurance contributions. The net result was an estimated government tax revenue loss due to gambling-related income losses of $720 per problem gambler in 1990 and $864 in 1995.

Single et al. (2001) suggest that the valuation of lost production as a result of gambling by the employed should be the loss of wages attributable to gambling problems, **plus** the associated loss of unpaid output, **plus** the value of life or the quality of life.[107] For the unemployed workforce, the net cost is the loss of unpaid output **plus** the value of life. The value of unpaid work is calculated based on the replacement cost (cost of

[103] Thompson, W. N., R. Gazel and D. Rickman. (1996). The Social Costs of Gambling in Wisconsin. Wisconsin Policy Research Institute Report, 9(6), 1-44

[104] Ladouceur, R., J. Boisvert, M. Pepin, M. Loranger and C. Sylvain. (1994). Social cost of pathological gambling. *Journal of Gambling Studies*, 10(4), 399-409.

[105] Ladouceur, R. (1996). The Prevalence of Pathological Gambling in Canada. *Journal of Gambling Studies*, 12 (Summer), 129-142.

[106] Lesieur, H. (1998b). Costs and treatment of pathological gambling. The Annals. *American Academy of Political and Social Sciences* (AAPSS), 556(March), 153ñ159.

[107] Single, E., D. Collins, B. Easton, H. Harwood, H. Lapsley, P. Kopp and E. Wilson. (2001). International Guidelines for Estimating the Costs of Substance Abuse-Second Edition. Canadian Centre on Substance Abuse.

hiring a replacement and benefits) of activity purchased from an outside source such as childcare, domestic activities, purchasing of goods and services, and volunteer and community work.

Compensation for unemployment is sometimes considered as a social cost, as the cost is borne by taxpayers. The consensus among economists, however, is that this represents an income transfer from the employed to the unemployed, and therefore should not be counted as a social cost.[108]

There are no known studies of the cost of unemployment or underemployment related to gambling. However, the Alberta Genuine Progress Indicator (Anielski and Taylor, 2001) [109] accounts, the Australian GPI estimates (Hamilton, 2000) and the U.S. GPI estimates (Anielski and Rowe, 1999) include estimates of the societal cost of unemployment and underemployment. The cost of unemployment appears in several forms, and in this component of the GPI accounting, it is important to avoid double-counting cost from other cost categories. The cost of unemployment is seen as follows:

- Loss of output in the economy due to underutilization of factors of production;
- Loss of human capital due to declines in levels of skills, especially as a result of long-term unemployment;
- Declining levels of health and increasing suicide among the unemployed;
- Increasing levels of crime associated with higher unemployment;
- Increasing rate of family breakdown;
- Psychological impact on the families of unemployed people; and
- Trauma, stress and loss of self-esteem associated with being unemployed.

3.4.3.10 Crime, Illegal Gambling and Internet Gambling Cost

Crime cost relates to real resources being allocated or reallocated for the apprehension, adjudication, incarceration and rehabilitation of criminals, or the police costs that result from the need for increased presence in areas of greater gambling activity (Grinols and Mustard, 2001: 149). Gambling-related crime occurs in three major areas:

- Problem gamblers commit crimes such as theft, forgery, drug dealing, domestic violence, and white-collar crime in order to pay for continued gambling and related debt;

- Gaming venues can be locations for criminal acts such as theft and money laundering; and

[108] Walker, D. and H. Barnett. (1999). The Social Costs of Gambling: An Economic Perspective. *Journal of Gambling Studies*, 15(3), 181-212.
[109] Anielski, M. and A. Taylor. (2001). The Alberta GPI: Employment. Pembina Institute for Appropriate Development, Edmonton.

- Organized crime impact the gaming industry mainly through loan sharking, money laundering, and counterfeiting.[110]

When measuring the impact of gambling on crime, it is important not simply to count new crimes associated, for example, with opening a casino, but also to count whether crime was reduced in other locales as a result of the casino. How much crime is attributed directly to gambling has been difficult to discern. According to Smith and Wynne (1999), in a study of gambling-related crime in Western Canada, it was "virtually impossible" to assess the extent of crime that is gambling related because:

1. Official police records seldom specify a gambling connection;

2. Monitoring and controlling illegal gambling is a low priority for municipal police forces; and

3. In some instances, gambling-related economic crimes are not reported to police agencies, but are handled internally by bank, corporation, or gambling industry security personnel.[111]

In an even more extensive analysis of gambling-related crimes in Edmonton in 2003, Smith, Wynne and Hartnagel (2003) found that gambling and crime are related in three ways:

1. Many of the gambling-related family disputes and suicides, and over half of the gambling- related frauds where charges were laid, were precipitated by one person's problem gambling behaviour;

2. Major gambling venues attract opportunistic criminals looking to exploit the situation via activities such as cheating at play, counterfeiting, money laundering, theft, and fraud; and they also deal with undesirables who disrupt play through vandalism, fighting and public intoxication; and

3. The existence of popular forms of illegal gambling such as Internet wagering, bookmaking, and common gaming houses, which constitute criminal activity.[112]

In other Canadian studies, 68% of Québec members of Gamblers Anonymous reported having participated in criminal activities. These offences were broken down as follows:

- 10% had falsified documents or forged signatures;

[110] Hayward, 2004: 100.
[111] Smith, G. and H. Wynne (1999). Gambling and Crime in Western Canada: Exploring Myth and Reality (summary report). Canada West Foundation.
[112] Smith, G. J., H. J. Wynne and T. F. Hartnagel. (2003). Examining Police Records to Assess Gambling Impacts: A Study of Gambling-Related Crime in the City of Edmonton. Alberta Gaming Research Institute.

- 23% embezzled;
- 33% passed bad checks;
- 18% filed false income tax returns or neglected to pay income tax; and
- 3% made false statements to insurance companies.[113]

In a Manitoba study, one in six, or 17%, of problem gamblers stole to finance gambling.[114]

Grinols et al. (2000) estimated that in U.S. counties with casinos over a 20-year period, an average of 8%-to-10% of crime in 1996 could be attributed to the presence of the casino, resulting in a cost of $63 per adult annually. Bordering counties were also found to have increased crime rates.

The cost of insurance fraud associated with gambling was estimated at US$6.61 per adult annually or $1.3 billion per year. In a study by the Maryland Department of Health and Mental Hygiene (1990), 62% of gamblers in treatment committed illegal acts as a result of gambling, 80% committed civil offences and 23% were charged with criminal offences. Gerstein et al. (1999) estimated a total lifetime crime cost of US$2,950 for pathological gamblers and US$1,630 for problem gamblers in 1997 dollars. Grinols and Mustard (2001: 153) provide the following range (Table 10) of annual crime cost associated with gambling based on seven previous studies.

Table 10: Annual Crime Costs (US$) per Pathological Gambler in the U.S.

	Study Author and State							
Crime Cost	Politzer et al. (1981) MD	Executive Office of Governor (1994) FL	Thompson et al. (1996) WI	Thompson et al. (1998, CT	Leg. Research Council (1999) SD	Ryan et al. (1999) LA	Thompson and Quinn (1999) SC	**Average**
Apprehension & increased police cost			44	71	1,000	53	116	257
Adjudication (criminal & civil justice cost)	1,788		1,234	994	27	649	476	676
Incarceration & supervision cost	2,828	15,221	758	889	382	690	451	3065

[113] Ladouceur, R., J. Boisvert, M. Pepin, M. Loranger and C. Sylvain. (1994). Social cost of pathological gambling. *Journal of Gambling Studies*, 10(4), 399-409.
[114] Patton, D., D. Brown, J. Dhaliwal, C. Pankratz and B. Broszeit. (2002). Gambling involvement and problem gambling in Manitoba. Addictions Foundation of Manitoba.

In a Canadian study by Vaillancourt and Roy (2000), crime-related government expenditures were estimated based on police services, tribunals, and correctional services for adults and for the young, and legal expenditures. There are no reliable estimates for the percentage of crimes in Canada related to gambling. Vaillancourt and Roy extrapolate from the National Opinion Research Center U.S. study by Gerstein et al. (1999) to estimate Canadian figures. The authors assume that 25% of pathological and problem gamblers would have committed crimes if gambling were illegal. Therefore, they reduce the total cost of legalized gambling crime by 25%. To arrive at annualized Canadian estimates, the lifetime amounts for the U.S. were divided by 40. The resulting annualized crime cost was Cdn$88 (1990) and Cdn$95 (1995) for pathological gamblers and Cdn$49 (1990) and Cdn$52 (1995) for problem gamblers.[115] These amounts were then multiplied by the number of problem gamblers to estimate gambling crime-related costs.

Illegal Gambling Cost: Studies suggest that illegal gambling can cost economies significantly. According to the *Annual Report on Organized Crime in Canada 2002* from the Criminal Intelligence Service Canada (CISC), illegal gaming is one of organized crime's most popular sources of income. Proceeds are used to finance drug trafficking and enterprise crime offences comprising a wide range of activities, including extortion, loan sharking, money laundering, and illegal gaming activities that include traditional backroom gaming, sports betting involving the Internet, and illegal lottery gaming terminals.[116] A Canadian government report on the impact of organized crime uses a "rule of thumb" from the International Monetary Fund that, on average, the amount of money laundered in a country is approximately 2% of GDP.[117]

Internet Gambling Cost: While internet gambling is not illegal, per se, the potential for illegal activities such as sports betting is formidable. Internet gaming is growing quickly. A 1999 survey by the Canada West Foundation found that less than 0.5% of gamblers had gambled online, and by 2001 that figure had jumped dramatically to 85%.[118] In a U.S. report, estimated revenues for 2003 from internet gambling were between US$4.2 billion and US$5 billion – approximately 4.3% of the total US$116 billion in business-to-consumer global e-commerce.[119] Internet gambling remains difficult to measure,

[115] A pathological gambler is a US term that refers to a gambler whose persistent and recurrent maladaptive gambling behavior disrupts personal, family, or vocational pursuits. The descriptive level of pathological gambler is based on a different measurement instrument and score than the Canadian Problem Gambling Index (CPGI). There is no universally accepted definition of problem gambling, however, a problem gambler is defined by the CPGI taxonomy of gambling as a gambler who has experienced adverse consequences from gambling and may has lost control of her/his behaviour. In the US, the term pathological gambler is used instead of problem gambler.

[116] Criminal Intelligence Service Canada. (2002). Annual Report on Organized Crime in Canada 2002. Criminal Intelligence Service Canada.

[117] Porteous, S. D. (1998). Organized Crime Impact Study. Public Works and Government Services of Canada.p. 17.

[118] Lipton, M. D., Q.C. (2002). Internet Gaming: A Look at Online Gambling in Canada. The International Masters of Gaming Law.

[119] United States General Accounting Office (GAO). (2002). Report to Congressional Requesters. Internet Gambling: An Overview of the Issues. United States General Accounting Office.

monitor, regulate and constrain, yet the potential for social and economic cost, especially involving youth and problem gamblers, is potentially large.

Attribution Fractions of Gambling and Crime: There are currently no studies or research to guide analysts with regards to attribution fractions for gambling and crime. However, recent studies of the association of illegal drugs, alcohol abuse and criminal acts may serve as a useful benchmark. A Canadian study by Pernanen, Cousineau and Brochu (2002) Proportions of Crimes Associated with Alcohol and Other Drugs in Canada,[120] found that alcohol and drug use were strongly related to the commission of crimes. Their research estimated that the proportion of crimes committed by federal and provincial inmates that can be attributed to the use of alcohol and/or illicit drugs in Canada was between 40% and 50%. Between 10% and 15% of crimes are attributed to illicit drugs only, between 15% and 20% are attributed to alcohol only, and 10% to 20% are attributed to both alcohol and illicit drugs.

The Pernanen et al. methodology used to examine causality links may be useful for future problem gambling-crime attribution analysis. They applied the following two methods:

1. The proportion of violent crimes attributable to alcohol or drugs was estimated by taking the percentage of inmates convicted of a crime who reported that they:
    a. Were intoxicated at the time of the crime; and
    b. Would not have committed the crime had they not been under the influence of alcohol or drugs at the time; and

2. A proportion of crime attributable to alcohol or drug-use was estimated from the percentage of inmates convicted of a crime who reported that they:
    a. Had committed the crime to obtain drugs or alcohol; and
    b. Were rated as alcohol- or drug-dependent.

The researchers acknowledge that despite this important attribution fraction analysis, conceptual problems remain with the approach and that the research methodology can always be improved. They point out the challenges of using self-reported data and recommend that, in addition to the event-based methodology, longitudinal studies are the best way to examine how the volume of crimes varies with the use and abuse of psychoactive substances.

The Drug Use Monitoring in Australia (DUMA) program, established in 1999, prepares quarterly reporting on drug use and criminal activity (based on police detainee questioning).[121] This provides vital information on long-term trends in the relationship

[120] Pernanen, K., M-M. Cousineau and S. Brochu (2002). Proportions of Crimes Associated with Alcohol and Drugs in Canada. Canadian Centre on Substance Abuse, April 2002.
[121] Makkai, T. and K. McGregor. (2003). *Drug Use Monitoring in Australia (DUMA): 2002 Annual Report on Drug Use Among Police Detainees*. Australian Institute of Criminology Research and Public Policy Services. No. 47.

between drugs and crime. This kind of inventorying and monitoring could potentially be extended to include detainee questioning related to problem gambling activities.

3.4.3.11 Community Social Cohesion Cost

One of the potential societal costs associated with gambling is the loss of a sense of community, or the loss of social cohesion or social capital. These costs are, by their nature, psychic and intangible and cannot be easily monetized. Yet their impact on the community can take on many different forms. These may include a sense of powerlessness or loss of community autonomy when the only source of public revenue for community works and renewal is government gambling revenue. This type of cost has rarely been analyzed in the context of gambling although it is increasingly important given the significant role that gambling revenue from government-regulated casinos, bingos and lotteries has on community economic well-being.

3.4.3.12 Environmental Cost

The Whistler Symposium in 2000 identified potential environmental cost associated with gambling, including the impact of gambling development on air, land and water. In the GPI full-cost/benefit accounting Framework (Wynne and Anielski, 2001a) two environmental cost attributes are identified:

- Loss of aesthetic values of the community due to gambling venues; and
- Cost (value of time) associated with increasing traffic congestion due to gambling venues in a community.

These two types of environmental cost have not been estimated in the literature and represent new frontiers for research. However, this potential environmental cost has not been included in the SEIG Framework since it is considered to be a very weak impact variable. Future research may consider the impact attributes to determine validity of the two types mentioned.

4.0 Discussion and New Research Priorities

The utility of the SEIG Framework, as a tool for the holistic and integrated assessment of gambling's impact on a number of social, economic, health and other well-being domains, will only be revealed through:

- Research, testing and application of the SEIG Framework across Canada;
- Construction of impact indicators and data sets according to each game of chance; and

- Estimation of the key costs and benefits of at least the most significant known impacts of gambling.

Measuring the quantitative and then qualitative impact of gambling on societal well-being, according to the six SEIG impact domains, should be the first priority followed with monetization of the cost and benefit of this impact as well. The second priority should be a commitment of resources for determining the attribution fractions or causality of key well-being impact variables and indicators that can be attributed directly or indirectly to problem gambling behaviour. Of particular interest are health and crime/legal variables. However, virtually every indicator in the SEIG Framework has an attribution analysis challenge.

Special attention should be given to stratifying impact variables and indicators according to the relative degree of impact that gambling, in general, and each game of chance, in particular, has on each respective well-being variable and indicator. In addition, attention must be paid to the degree to which the condition or a change in the condition of the societal well-being indicator can be attributed to a change in legalized gambling activity, in general, and problem gambling, in particular. This will help researchers and analysts quantify which particular games of chance have the greatest impact, both negative and positive, on a particular gambling population with given socio-economic characteristics.

The relative cost (negative impact) and benefit (positive impact) of each game of chance can then be contrasted with the relative financial or economic benefit (e.g. government revenue) generated by each game. The deleterious impact can then be stratified in order of significance, both in quantitative and monetary terms. It may then be possible to identify harm prevention strategies or other harm-reduction investments that might mitigate or reduce the most harmful impact on both the individual gambler and societal well-being.

In practical applications, the SEIG Framework should help decision makers understand and weigh the most significant negative and positive impact of legalized gambling on societal well-being. This could facilitate policies, strategies, programs and other actions that might mitigate the most destructive impact, while sustaining a healthy level of recreational gambling and commensurate economic benefit.

New research, data collection and analysis investment will be required to populate the SEIG Framework indicators with meaningful data and to determine attribution fractions for key impact indicators. Prioritizing research and data development needs should be based on stratification of the key positive and negative impacts so that a small subset of key impact indicators might be the focus. Determining this subset of key impact indicators should be based on an examination of previous research,[122] both in Canada

[122] See Anielski and Braaten (2005) *SEIG: A Literature Review*.

and internationally, through expert and stakeholder consultations, or as an outcome of examining existing historical statistical data-sets for the role gambling activity may have played on changes in key well-being conditions or variables.

What is clear from the SEIG Framework in Table 1 is that data gaps exist in virtually every impact domain and for the majority of impact variables. To fill these data gaps will require a commitment of resources, including new research and detailed data analysis. Research resources should be focused on some of the key known impact domains and variables where data is still lacking. For example:

- Financial and economic domain –
  - Financial problems experienced by problem gambling,
  - Bankruptcy rates experienced by problem gambling;

- Employment –
  - Work performance and productivity losses;

- Health and well-being –
  - Prevalence of problem gambling and co-morbid health disorders (e.g. mental health, depression, and other physical ailments),
  - Deaths attributed to problem gambling,
  - Suicides attributed to problem gambling,
  - Prevalence of problem gambling and substance abuse,
  - Social Impacts:
    - family breakdown,
    - impacts on the children of gamblers,
    - domestic violence;

- Legal/justice –
  - Violent and non-violent crimes related to problem gambling.

Data for many of the economic and financial benefits of gambling are available from most provincial government and provincial gaming agency sources, with the exception of estimates of the contribution gambling makes to the Gross Domestic Product and indirect employment impact statistics, which would require special analysis. The domain with the most data gaps is the culture domain. It would need considerably new quantitative and qualitative research into the impact of gambling on communities in general.

5.0 Conclusion

Assessing the wide range of positive and negative socio-economic impact of gambling on society is complex and fraught with many conceptual, theoretical and methodological challenges and data limitations. The SEIG Framework is intended to provide policy makers and researchers with an analytic framework for evaluating the impact of gambling (both positive and negative) using a comprehensive suite of statistical, perceptional and monetary (cost/benefit) indicators, and possibly using both new and conventional economic valuation tools.

The SEIG Framework attempts to combine the best attributes of other analytic frameworks and tools from several disciplines to yield a useful framework for measuring impact in both qualitative and quantitative terms. The intended outcome of using the SEIG Framework is to produce a profile of gambling's impact from the individual gambler to the community, regional and provincial scale of analysis.

The SEIG Framework is an open and flexible architecture that can be modified and improved over time through each application in Canada and internationally. It is neither a complete "cook-book"[123] nor a "one-size-fits-all" universal framework. Indeed, the SEIG Framework is intended to be used on an experimental basis and customized according to the needs of each community or jurisdiction applying the framework.

There are several challenges with using the SEIG Framework. The most important is the general absence of robust enough impact data for the various impact domains, variables and indicators. New research and a commitment to forensic analysis of existing societal health, social and economic indicators and data sets will be required with a special focus on gambling impact. As the Australians have noted, a comprehensive integrated framework risks double-counting since, in theory, there are overlaps, interdependence, and multiple effects in many aspects of a framework. While the levels of impact analysis, from individual to provincial impact, are conceptually distinct, there are natural connections that cannot easily be unbundled. This will present some challenges to interpreting any impact analysis results using the SEIG Framework.

A second key challenge is the issue of causality, namely, the difficulty in determining attribution fractions (i.e. the issue of causality or attribution of well-being impact to both the type and intensity of the gambling activity). There are several different methodological approaches to determining causality of various socio-health-economic conditions and problem gambling, including:

- Accounting for all inventoried impacts that can be attributed to gambling;

[123] It does, however, contain some "cook-book" tips for estimating impact of gambling.

- Using statistical sampling methods of a population of gamblers and generalizing these results to the larger population; and

- Using longitudinal cohort studies to assess whether trends in various societal well-being conditions can be attributed to a change in problem gambling and the availability of gambling.

Because gambling raises important moral and ethical issues, research is often coloured by these biases, either for or against gambling. Thus, it is difficult to imagine a truly objective and unbiased analysis. However, the SEIG Framework is designed to come closest to the desired neutrality that is required to obtain straightforward and unblemished measurement.

There are significant data challenges with many gaps that will need to be filled with new research, surveys and other statistical analyses. There are challenges in measuring the distributional implications in society, including impact on minority groups. In order to improve the utility of the SEIG Framework, research resources need to be committed to addressing these challenges, especially through a national commitment to socio-economic research into gambling and its impact.

A third challenge is how far to extend a true full-cost-benefit accounting of gambling's impact from an economic perspective. While conventional cost-benefit analyses tools may be beneficial, there is still considerable disagreement among economists familiar with gambling, as a public policy issue, to the right taxonomy of cost and benefit, and how to measure this impact. Genuine Progress Indicator (GPI) full-cost accounting applied to gambling does hold promise particularly since it is a modified national income accounting tool for measuring economic welfare at the national, provincial and municipal level. However, the tool has not yet been fully developed or tested in Canada (or elsewhere).

The authors conclude that, given the real challenges facing the foundational blueprint outlined in this report, future resources, research efforts and policy analyses be focused collectively and nationally on using and improving the SEIG Framework, and, ideally, constructing a national gambling impact data-base and problem gambling cohort analysis at the community level of analysis. This work would facilitate a richer understanding of the cross-community and inter-provincial impact and trends, and facilitate a greater understanding of the key impacts to be monitored regularly over time. Sorting out how to weigh and compare these respective impacts will ultimately remain part of the political and democratic process of society.

The SEIG Framework can be likened to a next-generation research starting point through which, with time, appropriate resources and a sincere effort in seeking out the truth, a robust and evolved framework will emerge to become the gold standard in measuring the impact of gambling and problem gambling in modern-day society.

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Glossary of Terms and Definitions

Benefit and cost: Based on the definition of wealth (see below), "benefit" to society increases well-being and quality of life and "cost" decreases well-being and quality of life. Some indicators are non-controversial. For example, it is accepted that good health is beneficial. However, other indicators are more contentious. Which indicators to use in an expanded cost-benefit study of gaming will be decided at a later date, depending on data availability, the advice of experts, Genuine Progress Indicator accounting methods, and the results of *SEIG: A Literature Review* (Anielski and Braaten, 2005).

Consumer Surplus: Benefit to consumers from lower prices, measured as the difference between what consumers would be willing to pay for a good or service and the market value they are actually required to pay.

Cost-Benefit Analysis (CBA): An important technique used by economists for project appraisal – the process of weighing the total expected cost against the total expected benefit of one or more actions in order to choose the best or most profitable option.

Gambling: Risking money or something of value on the outcome of an event involving chance when the probability of winning or losing is less than certain.

Gaming: A term used most often by the gaming industry since, presumably, it does not carry the same stigma as “gambling” often does. It includes all legal forms of gambling regulated by government and is intended to invoke entertainment and recreation. "Gaming" is often used interchangeably with gambling in the literature.

Genuine Progress Indicator (GPI) Accounting: An alternative measure of economic progress that measures the net sustainable economic welfare of a society by accounting for a full suite of social and environmental benefit and cost, which results in a “genuine” improvement in the welfare (or well-being) of the people in the country or community. The GDP vs the GPI is analogous to the difference between the Gross Profit of a company and the Net Profit; the Net Profit is what determines the long-term health of the company.

Gross Domestic Product (GDP): The market value of all final goods and services produced within a country in a given period of time.

Pathological Gambler: A pathological gambler is a US term that refers to a gambler whose persistent and recurrent maladaptive gambling behavior disrupts personal, family, or vocational pursuits. The descriptive level of “pathological gambler” is based on a different measurement instrument and score than the Canadian Problem Gambling Index.

Problem Gambler: There is no universally accepted definition of problem gambling, however, a problem gambler is defined by the Canadian Problem Gambling Index taxonomy of gambling as a gambler who has experienced adverse consequences from gambling and may has lost control of her/his behaviour. The problem gambler's involvement in gambling can be at any level, but the key is that this player cannot adhere to pre-set time or spending limits. (In the US, the term pathological gambler is used instead of problem gambler – see definition immediately above.)

Producer Surplus: In economic theory, producer surplus is the difference between what producers actually receive when selling a product and the amount they are willing to accept for a unit of the good.

Wealth: Rather than referring only to strictly monetary wealth, the authors of this report use the Old English original definition of "conditions of well-being" that includes the health, education, spirituality, food/shelter/clothing, clean environment, and other non-monetary factors contributing to the well-being and quality of life of individuals, families, and communities.

Appendix One: Historical Developments

The first call for a socio-economic analytic framework came out of the first international symposium on the socio-economic impact of gambling held in Whistler, B.C. in 2000. While a preliminary analytic framework emerged out of the symposium (see Wynne and Anielski, 2001), no formal commitment existed to developing a framework for Canada until 2005 when the **Inter-Provincial Consortium for the Development of Methodology to Assess the Social and Economic Impact of Gambling** funded the work on the current report.

GPI Atlantic—an economic policy think-tank based in Nova Scotia—produced in 2004 an excellent literature review and synopsis (*The Costs and Benefits of Gaming: A Literature Review with Emphasis on Nova Scotia*) of the state of research into the costs and benefits of gaming, building on the Whistler symposium results. This review is an important benchmark and is the source of much of the information that helped shape this proposed SEIG Framework. In addition, the *International Guidelines for Estimating the Costs of Substance Abuse*, published in 2003 by the World Health Organization, also provide an excellent benchmark and foundation on which the SEIG Framework is constructed.

More recently, on April 21-22, 2006, a conference was held in Banff, Alberta, on the Social and Economic Impact of Gambling. Sponsored by the Alberta Gaming Research Institute, the conference brought together a number of the world's leading researchers (representing Canada, the U.S., Australia, the U.K., New Zealand, and South Africa) on the socio-economic impact of gambling, many of whom had attended the Whistler symposium. The outcome of the conference was a growing consensus that conventional cost-benefit analysis may be inadequate for assessing the full extent of the impact of various forms of gambling at various scales or domains.

The Banff conference attendees felt that taking a more open-architecture approach to developing a dynamic blueprint for gambling impact – including physical, perceptional and monetary cost and benefit – would be the most effective tool for revealing and elucidating the impacts or effects of gambling. Taking this approach would entail developing taxonomy of impact not unlike the framework developed in Australia (The Social and Economic Research Centre's *Social and Economic Impacts of Gaming: A Framework for Research)* – similar to the framework proposed by GPI Atlantic. It would also encompass multiple disciplines, involving, for example, economists, epidemiologists, psychologists, sociologists, human geographers, and criminologists.

Many obstacles exist for constructing a pragmatic framework for impact analysis of gaming, including data limitations, methodological challenges, lack of attribution fractions, and, perhaps most importantly, a lack of consensus within the small research

community on the most effective methodologies and indicators to use.

1. State of Impacts of Gambling Research

Based on *The SEIG: A Literature Review, Annotated Bibliography, and Synthesis (2005)* that examined more than 1,200 research and other papers related to the socio-economic impacts of gambling, the state of prior research into the impact of gambling can be summarized as inconsistent, inadequate, biased, or confused in its use of terminology, theory and methods. The conclusions of the authors are supported by the most recent literature review by Stevens and Williams (2004) in their study, *Socio-economic Impacts Associated with the Introduction of Casino Gambling: A Literature Review and Synthesis*.

While the authors' literature review found a plethora of pieces of the puzzle that could make up a comprehensive framework for evaluating the social and economic outcomes or impact of gambling activities in Canada, there are very few papers or studies that attempt to examine this complex issue from either a conventional neoclassical economic perspective, a welfare economic perspective, or a total well-being impact perspective.

The 2000 Whistler Symposium raised and helped to begin closing some of the conceptual and methodological gaps in assessing the social and economic impact, benefit and cost of gambling. However, rather limited progress has been made since the Whistler Symposium on the fundamental lack of consensus on major issues identified at that meeting.[124]

2. Whistler Symposium Socio-Economic Impact Framework

Wynne and Anielski (2001a; 2001b) proposed a gambling impact framework based on the work done at the Whistler Symposium. The framework uses a synthesis of the best models presented at the Symposium and also builds on the original Genuine Progress Indicator (GPI) work in the U.S. by Redefining Progress (1995), Anielski and Rowe (1999), and in Alberta by Anielski et al. (2001) and Anielski and Taylor (2001). The Wynne-Anielski analytic framework identified both benefit and cost of gambling, along with an initial suite of impact indicators, and also identified various measurement methods and analyses outcomes that would result from using their proposed framework. Their framework is an important foundation or starting point for construction of the SEIG Framework.

In the Wynne-Anielski framework (see Table 1), the benefit and cost of gambling is organized according to domains; domains represent a scale of analysis comprising the individual (including personal health), the household or family, the community, the

[124] For a more complete review of the papers presented at Whistler, please see *Appendix Nine: Methodological Issues in Socio-Economic Impact Analysis of Gambling, 1. State of Gambling Research.*

workplace, the regional and provincial macro-economy, and the natural environment. The framework also provides finer resolution of the domains by identifying sub-domains; for example, the community domain might include groups of people (family unit, ethnic, and religious), business and industry, and social institutions (schools, churches). As part of the macro-economy domain, one sub-domain includes government (health, education).

The Wynne-Anielski framework proposed a set of indicators of both the benefit and cost of gambling that could be measured and reported quantitatively, qualitatively, or monetarily (full cost and benefit). Whether the cost or benefit impact can be monetized depends on the capacity or veracity of methodologies to determine the true tangible and intangible cost and benefit.

Table 11: Cost-Benefit Impact Framework and Indicators from the Whistler Symposium

Domain	Cost	Benefit
Individual	*Cost according to who is gambling (age, sex, education, income, nationality/culture, residential locality)* o Income, debt and personal bankruptcy o Use of time impacts (work; leisure; family). o Educational attainment	*Benefit according to who is gambling (age, sex, education, income, nationality/culture, residential locality)* o Consumer surplus (improved economic well-being) o Perceptions of improved well-being, personal pleasure, social and entertainment value
Personal Health	o Suicide o Substance abuse (drugs, alcohol, tobacco) o Mental illness and health o Stress o Disease and physical health o Self-rated health	o Relaxation, stress relief o Intellectual challenge o Greater insights into the workings of chance, randomness, and the ability to predict future outcomes
Household/Family	o Domestic violence o Financial stress, increased debt, loss of disposable income o Bankruptcy o Property values o Marital breakdown- divorce o Loss of family quality of life o Legal problems	o Socialization opportunities within the family or group structure related to game-playing
Community	o Crime, loan sharking, money laundering	o Creation of common “community objectives” i.e.

Domain	Cost	Benefit
	o Loss of social cohesion and general community wellbeing o Reductions in charitable giving o Loss of voluntary time for community work o Reduction in property values o Pawn shops and fast-credit/money businesses o Problem gambling and addiction treatment and services o Public regulatory costs and welfare program costs	support of sports teams reinforces via wagering markets on those teams o Monies for charitable and worthy causes o Tourism
Workplace	o Job/labour productivity losses o Absenteeism o Loss of workplace social cohesion	o New jobs o Stimulating interest while at the workplace
Regional/Provincial macro-economy	o Loss of GDP in other industries/sectors due to gambling industry development. o Loss of business sales and producer surplus impacts and distributional affects o Loss of employment and unemployment and distributional (transfer) affects o Changes in wealth and income distribution and inequality o Labour productivity o Government tax revenue and program spending redistribution and transfers. o Government (public) regulatory costs, costs associated with problem gambling/addiction remediation program costs, and increased welfare costs	o GDP growth, economy-wide and in tourism industry sector o Increased business sales and producer surplus impacts and distributional affects o Increased employment and reduced unemployment due to gambling industry development o Increased government tax revenues; efficiency of tax instruments and economic rent collection o Redistributive benefits for designated stakeholders, i.e. First Nations bands, good causes, charities

Domain	Cost	Benefit
Environmental Well-being	o Air quality o Noise o Land use	Gambling may not be as resource intensive as other hobbies, i.e. off-road vehicles

Source: Wynne, H. J., & M. Anielski. (2001). *The Whistler Symposium Report*. Canadian Centre on Substance Abuse, p. 21. Available at: http://www.ccsa.ca/docs/whistler_final.doc .

In addition, Wynne and Anielski (2001a) proposed a potential suite of measurement methods or tools for determining aggregate benefit and cost or well-being impact. These include:

- Net financial benefit (NFB) analysis;
- Net economic benefit (NEB) analysis and cost-benefit analysis (CBA);
- Net social benefit (NSB) analysis;
- Cost-effectiveness analysis (CEA);
- Cost-utility analysis (CUA); and
- Genuine Progress Accounting (GPA) methods (or GPI full-cost-benefit accounting).

These methods are described in greater detail in their paper.[125]

Wynne and Anielski (impact 2001a) also proposed how these analytical methods can be used to assess the full range of gambling impact. They suggested that "the outcome of the impact analysis of the benefit and cost of gambling might be the construction of a Genuine Progress Indicator (GPI) well-being account, and statements for gambling activities that would include a:

- Statement of the condition (assets and liabilities) of gambling and its impact (i.e. a GPI gambling balance sheet) reported at various domains and sub-domains;

- Net benefit income statement for gambling that shows the full monetary cost and benefit associated with gambling activity in society, including highlighting dimensions of cost-utility analysis (CUA) and CEA cost-effectiveness analysis (CEA)on various scales (i.e. domains and sub-domains); and

- Indicators of physical, qualitative and monetary impact of gambling, derived from the GPI balance sheet and income statements, and used in an impact report framework.

[125] Wynne, H. and M. Anielski. (2001a). *Building on the Whistler Symposium: A Framework for Assessing the Socio-Economic Impacts of Gambling*. July 2001. Unpublished report as an outcome of the 2000 Whistler Symposium on the socio-economic impacts of gambling.

These statements or reports could become the basis for reporting on the full and integrated impact (qualitative and monetary indicators) of gambling in a balanced and integrated well-being accounting framework. The authors suggest that this might resemble a kind of triple-bottom-line (economic, social, environmental) report by various agents involved in the gaming sector, including governments, gaming commissions and gambling venues or businesses. These reports might resemble corporate social responsibility and sustainability reports being produced by many corporations (e.g. Suncor Energy, B.C.Hydro, VanCity, Shell International, and Nike).

3. GPI Full-Cost-Benefit Accounting of Gambling

The Genuine Progress Indicator model was first presented at the 2000 Whistler Symposium (Wynne and Anielski, 2001a) as a tool for examining the full social and economic cost and benefit of gambling. The GPI model is described as follows:

> "A holistic impact tool for assessing the full range of physical, qualitative and monetary costs and benefits on the well-being of individuals, households, communities, the economy, and the environment. GPI accounting could in principle provide a comprehensive impact analysis tool that embraces virtually all existing methodological impact analysis tools, including those posited."[126]

At the April 2006 Alberta conference on the social and economic cost of gambling, clarification was provided on how GPI accounting could be used as a tool for measuring the well-being impact of gambling at the community and provincial level.[127]

The Genuine Progress Indicator or GPI – and its predecessor, the ISEW (Index for Sustainable Economic Welfare) – was originally developed in the U.S. in the mid-1990s as a new measure of net sustainable economic welfare (Cobb, Halstead and Rowe, 1995; Anielski and Rowe, 1999). The GPI is effectively a full cost-benefit accounting of the economic, social and environmental impact of economic growth. The GPI was developed as an alternative to the Gross Domestic Product.

The GPI explicitly attempts to distinguish between economic activities that genuinely add to the well-being of a nation, region or community, and those that detract from it. For example, the private and public expenditures related to auto crashes, problem gambling, or cleaning up oil spills currently contribute to GDP in the national income accounts, whereas society may intuitively consider these expenditures as a regrettable social or environmental cost that should either be identified as such or actually deducted from the official GDP statistics.

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[126] Wynne, H. and M. Anielski. (2001a). *Building on the Whistler Symposium: A Framework for Assessing the Socio-Economic Impacts of Gambling*. July 2001. Unpublished report as an outcome of the 2000 Whistler Symposium on the socio-economic impacts of gambling.

[127] Mark Anielski elaborated on the GPI at the conference.

The original U.S. GPI accounting framework begins with the GDP, specifically the expenditures by individuals and households (which generally make up more than 50% of the GDP figure), then identifies about 24 various social, environmental and economic cost and benefit that could be added to or subtracted from the opening GDP figure to yield a new GPI bottom line. The GPI includes unaccounted benefit such as the value of unpaid work (e.g. volunteerism, housework, parenting, and leisure time) as well as numerous social costs (e.g. the full cost of auto crashes) and several environmental depreciation costs (e.g. the cost of air pollution and the value loss of wetlands). The result is a more complete account of societal welfare, expressed in economic or monetary terms, and a legitimate attempt to address the key shortcoming of the GDP and national or provincial income accounting systems.[128]

4. Substance abuse guidelines as a basis for gambling impact analysis

The development of *the International Guidelines for Estimating the Costs of Substance Abuse* by a group of economists, epidemiologists and public health researchers published in 2001 provides a useful benchmark for developing similar guidelines for estimating at least the full cost of problem gambling. For example, the *Guidelines* were used by the Canadian Center for Substance Abuse in estimating societal cost associated with alcohol, illegal drugs and tobacco abuse. However, the *Guidelines* provide no instruction on how to account for the benefit of substance abuse. Nor do they provide guidance on how to examine the non-monetary effect of substance abuse on well-being at the individual or societal level. In spite of such shortcomings, the *Guidelines* present an important starting point for developing a comprehensive well-being impact analysis framework for gambling in Canada.

5. Theoretical and Methodological Issues

Many unresolved and complex theoretical and methodological issues abound in the study of the socio-economic impact of gambling on individuals and society. Previous research into the cost and benefit of gambling can be summed up as lacking in theoretical, conceptual and analytic agreement in terms of both what to measure and how to measure the impact of gambling on well-being (what economists like to refer to as ‘’wealth’). Many studies have conceptual, empirical or data problems that are contentious and unresolved. Accusations of economic research that is “seriously flawed”, “biased” or “estimates are of limited usefulness” are typically found in the literature among the few economists who study gambling.[129] [130] Wynne notes that the

[128] For a more detailed examination of GPI Full-cost-Benefit Accounting, please see *Appendix Nine: Methodological Issues in Socio-Economic Impact Analysis of Gambling, 16. An Example of GPI Full-Cost-Benefit Accounting in Alberta*.

[129] Eadington, W. R. (2003). Measuring Costs from Permitted Gaming: Concepts and categories in evaluating gambling’s consequences. Presented at the First International Symposium on the Economic and Social Impacts o Gambling, September 23-27, 2000. *Journal of Gambling Studies*, 19(2), 185-213;Walker, D. M. (2000). A Simple

quality of gambling research suffers from a scarcity of good research, research that is not scientifically rigorous, and little agreement as to the conceptual or analytical frameworks and methodologies that are best suited for cost-benefit analysis of gambling policy decisions.[131]

Many of these methodological issues will only be clarified and potentially resolved through a long-term commitment to both theoretical research and empirical studies.[132]

Appendix Two: Definition of Problem Gambler and the CPGI Measurement

What is a problem gambler? The proportion of a population diagnosed or identified as problem gamblers depends on the definition used to first categorize and then estimate this group of people. A definitive categorization of problem gambling (or national consensus) does not exist in Canada. To confuse matters more, the United States uses the term "pathological gambler" [133] to describe those gamblers who exhibit excessive or unhealthy levels of gambling behaviour. In the Canadian Inter-Provincial Task Force on Problem Gambling's report, *Measuring Problem Gambling in Canada* (Ferris, Wynne & Single, 1999: 57)[134], problem gambling is defined as "gambling behavior that creates negative consequences for the gambler, others in his or her social network, or for the community".

Operationally, in general population surveys, respondents qualify as problem gamblers if they score above a predetermined threshold on one of the commonly used problem gambling screens or indexes; for example, answering yes to five or more of the ten DSM IV "persistent and maladaptive gambling behaviors" or scoring 8 or higher on the Canadian Problem Gambling Index (CPGI). The CPGI is calculated differently than the DSM IV in that there are four possible answers to the nine problem gambling severity questions. An answer of "never" = 0, "sometimes" = 1, "most of the time" = 2, and "almost always" = 3. Based on this scoring method, a respondent's index can range from 0-to-27, and the cutoff point for registering as a problem gambler is a score of 8 or above.

Model to Explain and Illustrate the Definition of "Social Cost". International Symposium on the Economic and Social Impact of Gambling (1st : 2000, 23 - 27 September : Whistler, BC). Canadian Centre on Substance Abuse.

[130] Eadington, W. R. (1999). The Economies of Casino Gambling. *Journal of Economic Perspectives*, 13(3), 173-192. p. 188.

[131] Wynne, H. J. and H. J. Shaffer. (2003). The Socio-economic Impact of Gambling: The Whistler Symposium. *Journal of Gambling Studies*, 19(2), 111-121.

[132] Several of these theoretical and methodological issues are discussed in *Appendix Nine* of this SEIG Framework report.

[133] The word *pathological* has at its root a *pathos* or hatred for all things logical and rational; therefore, a pathological gambler is one who is not doing so out of logic and rational choice.

[134] Ferris, J., Wynne, H. & Single, H. (1999). *Measuring Problem Gambling in Canada. Phase I final report to the Canadian Inter-Provincial Task Force on Problem Gambling*. Ottawa, ON: Canadian Centre on Substance Abuse.

In clinical settings, a determination of problem gambling behavior is made by a health-care professional after a thorough intake interview that customarily includes administering one or more problem gambling instruments.

As was stated earlier in the main text of this report, the SEIG Framework uses the Canadian Problem Gambling Index (CPGI), an instrument developed and validated in Canada through an inter-provincial consortium of funders, to categorize gamblers from non-gambling to problem-gambling. The five categories are as follows:

1. *Non-Gambling:* This group has not gambled in the past 12 months and registers **no score** on the CPGI.

2. *Non-Problem Gambling:* Most have responded "never" to most of the indicators of problem gambling behavioural problems. They may be a frequent gambler with heavy involvement in terms of time or money, but have not experienced any adverse consequences of gambling. They **score 0**.

3. *Low Risk Gambling:* These respondents will have one or more "sometimes" or "more often" responses to indicators of problem gambling behaviour problems, but are not likely to have experienced any adverse consequences from gambling. They may be at risk if they are heavily involved in gambling and respond to at least two correlates of problem gambling. They **score between 1 and 2**.

4. *Moderate Risk Gambling:* These respondents will have one or more "most of the time" or "always" responses to indicators of behaviour problems and may or may not have experienced any adverse consequences from gambling. They may be at risk if they are heavily involved in gambling and respond to at least three or four correlates of problem gambling. They **score between 3 and 7**.

5. *Problem Gambling:* This group has experienced adverse consequences from their gambling and may have lost control of their behaviour. Their involvement in gambling can be at any level but the key is these players cannot adhere to pre-set time or spending limits. They **score 8 and over**.

Since the CPGI is structured as a telephone survey and most of the resulting answers are of the yes/no variety, this survey feature is of great use to those interested in conducting logit and probit analyses of the data. It could potentially help to locate some of the key drivers of addictive behaviour through examining the marginal effect of each driver.

The CPGI methodology first categorizes people according to their level of involvement, or frequency of gambling. It then examines certain at-risk behaviours such as perceptions of a loss of control or tendency to borrow money. The next level of analysis

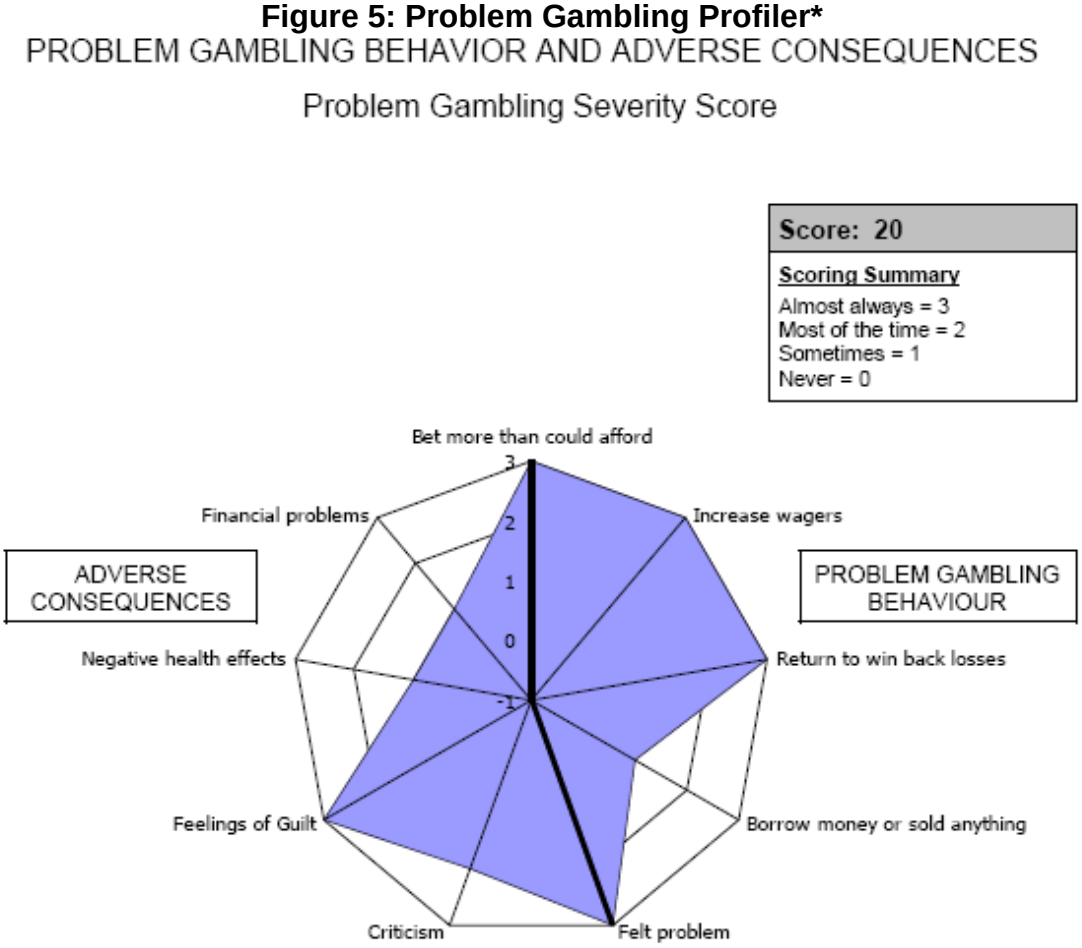
has to do with the consequences of these at-risk behaviours, which are likely the source of most the indirect gambling cost. The concept of cost associated with problem gambling, in its broadest sense, relates to a burden incurred by one individual, usually unforeseen or undesirable, due to the actions or activities of another individual. The CPGI has already outlined several problem gambling correlates, such as faulty cognition patterns (having a "winning system" of betting, for example), which could synthesize with other "attribution fractions" as well.

The CPGI instrument is most useful in the sense that it can clarify the demographic differences among the various categories of gamblers. Possibly the most exciting aspect is the ability to construct profiles of each type of gambler to establish general tendencies or attribution fractions based on demographic data such as income, age, marital status, history of substance dependencies, and substitutability of other gaming opportunities. For example, the existence of substitutes for VLT gambling could be elucidated by asking problem gamblers which type of gambling they would most likely engage in if VLT gaming were not available to them.

The data from the CPGI instrument can be worked into a spider web or flower graph showing the adverse consequences resulting from a person's gambling behaviour. Each subject area is reflected as a pedal with its relative size (relative to the severity score) indicating the severity of the condition (see **Figure 5** immediately following). [135]

[135] A similar spider-web or flower-graph concept is used to illustrate the Alberta GPI Sustainability Circle Index for 1999 found in *Appendix Nine, Figure 7*.

Figure 5: Problem Gambling Profiler*



***** The above problem gambling profiler is for a problem gambler named Amber from Alberta.[136]

Appendix Three: Comments on Benefit and Challenges Related to Subsection "2.1.3.5"

A key benefit of collecting both statistical and perceptional indicators for any given well-being impact is that statistical indicators (objective measures) can be contrasted with perceptional indicators (subjective measures) identifying potential gaps between what quantitative analysis reveals and how people in communities perceive or feel about the well-being impact in question.

[136] The profile was taken on September 18, 2003. Amber's demographic data is as follows: a) Date of Birth: 01/02/1978; b) Marital Status: Single, Never Married; c) Highest Level of Education: Some Technical School: d) Ethnic Origin: Canadian; e) Job Status Employed Full-time (30 or more hours/week); f) Occupation: Pipeline Maintenance; and g) Household Income: More than $150,000. The spider web presented courtesy of Dr. Harold Wynne.

One of the challenges of using statistical indicators is that care must be taken to assign the right degree of attribution to the specific effect of gambling. To arrive at a reliable attribution fraction for gambling with respect to domestic violence, suicide or premature mortality, for example, it is first necessary to sort out to what extent these phenomena may stem from other causes. This is true across all six impact domains in the SEIG Framework.[137]

Care should be taken to distinguish between direct and indirect cost and benefit, and to ensure that both the tangible (monetized) and intangible (non-monetized) effect is identified within an economic analysis framework.

In theory, each statistical indicator (and in some cases, perceptional indicators) could have a monetary value or proxy, although methodological challenges in economic valuation will preclude many indicators from being expressed in monetary terms.

Estimates of the monetized benefit and cost associated with gambling can be useful since, like statistical indicators, they should provide an objective measurement. Another benefit is that monetized cost/benefit can, in theory, be aggregated or summed into a common money unit of measurement.

Appendix Four: Australian Case Studies of EGMs Impact Analysis

The 2005 Australian study *Community Impacts of Electronic Gaming Machine Gambling* conducted by research economists at the SA Centre for Economic Studies in Melbourne, Australia, serves as a good example of how key gambling impact indicators were identified and how these indicators were used to measure the longitudinal impact of Electronic Gaming Machines *(*EGMs) in two separate Australian communities – one (Western Australia) without EGMs (counterfactual case) and the other (Victoria) with EGMs.

The researchers undertook consultations through interviews, focus groups and surveys with the:

- Local community;
- Leaders in business;
- Government;
- Residents; and
- Other stakeholders.

[137] Section 3.3 describes how attribution fractions might be derived.

The focus of the study was not simply the difference between the gambling environments, but the result or impact of the difference. Key areas of the report compare:

- Gambling industries and expenditure;
- Key features of different gambling environments;
- Employment in gaming and industry sectors;
- Community attitudes and awareness;
- Incidence of problem gambling, use of financial counseling and the gambling environment;
- Gambling and health issues;
- Gambling and crime;
- Broader community impact and service; and
- How to assess impact on the local community.

The strength of the Australian socio-economic study is that it used a multi-method or triangulation approach applying quantitative and qualitative methods, primary and secondary data sources, previous research, assessment (using surveys and focus groups) of the impact on local service providers and by community workers, and the involvement of local communities through the use of focus groups.

Relevant literature and research on the potential relationship between casinos and other gambling activities, and problem gambling community-based impact were first reviewed to identify key factors. Gambling experts were also consulted as to their knowledge of these relationships. The researchers then focused their attention on identifying and testing a smaller subset of individual factors.

The following key economic impact was tested: financial problems and work performance. Impact on the individual gambler was also evaluated, including health, depression and suicide. Impact on others including family breakdown, and impact on the children of gamblers. Violence and crime were also examined.

To complement the literature review feedback from the community (including community organizations, local councils, helping agencies, gambler counselors), the gaming industry and other researchers were sought, thereby, identifying another list of possible indicators to assess community impact in the areas of financial, workplace performance, health, depression, violence, and social capital. Positive and negative impact was identified. In addition, experiential information was sought from the stakeholders. In other words, the incidence of tangible impact either witnessed or experienced was identified.

This process helped to validate the indicators identified through the literature review but also ensured the relevancy of the indicators selected. For example, the literature for

Australia has found no significant statistical relationship between family breakdown (divorce rates) and suicide rates, so that these indicators were not closely examined.

A community socio-economic baseline and historical socio-economic statistics for each of the two Australian communities were established to help identify key differences between the two communities, which may be attributed to the existence of Electronic Gaming Machines in one community and not the other. The historical data-base was particularly useful for assessing how communities changed over time as casinos and Electronic Gaming Machines/Video Lottery Terminals were introduced in Australia, and for comparing communities with different gaming venue characteristics.

Such historical statistics and community comparisons would be useful for testing the link, or potential link, between gambling and various forms of social/community impact to potentially help resolve attribution fraction challenges. Moreover, such relational analysis could also lead to projecting future impact in other communities that are considering gaming-industry development.

The results of this study showed the value of a multiple analytic approach. For example, while the academic literature identified negative financial impact related to problem gambling (including bankruptcy), the feedback from counseling agencies and other community organizations identified additional types of financial impact, including:

- Significant personal debt levels;
- Clients unable to meet the basic cost of living;
- Reductions in savings and sale of assets;
- Loss of housing and homelessness; and
- Increased levels of bankruptcy.

Experiential data of this nature complimented and validated (or invalidated) the literature, statistical data or hypotheses. The Australian Electronic Gaming Machines impact study concluded that the existence of EGMsin Victoria (and not in Western Australia) accounted for a higher rate of problem gambling and associated socio-economic impact in Victoria.

What is unique about the Australian study is that, although it was conducted by economists, it did not use conventional economic analyses tools like cost-benefit analysis to assess the full cost or benefit of gambling impact of Electronic Gaming Machines and casinos. This dismissed, for example, the relevancy of consumer surplus analysis, arguing that it is only a relevant measure of utility at the individual gambler unit and not the community.

Appendix Five: The Belleville Study – Longitudinal Cohort Impact

The overall goal of the Belleville, Ontario, study is to assess the social and economic impact resulting from an increase in gambling opportunities in Belleville and local area, namely, as a result of the new slots-at-racetrack facility.

The study is not simply a conventional economic cost-benefit study but will examine a wide range of impact variables, including perceptions of citizens and stakeholders that are both of a strategic and operational nature.

The analysis of impact on social well-being will examine:

- Impact on Physical and Mental Health;
- Public Safety;
- Social Services;
- Population Growth and Distribution;
- Family Formation/Dissolution;
- Recreational Activities;
- Charities and Non-Profit Services; and
- General Community Well-Being.

The analysis of impact on economic well-being will examine:

- Travel and Hospitality Industry;
- Casinos, Horse Racing, Lotteries and Other Government Gambling Industry;
- Other Gambling (e.g. bingos, raffles);
- Other Industries;
- General Economic Well-Being of Community;
- Municipal Revenues and Expenditures.

The study will examine a number of key impact variables from a pre- and post-development perspective using mostly descriptive statistical indicators (see Table 12 directly below).

1. Socio-Economic Impact Variables

Table 12: Belleville Racetrack/Slot-Machine Operation – Socio-Economic Impact Variables

Socio-Economic Impact Variables
1. Direct employment change resulting from slot machine introduction
2. Pre- and post-development employment level in industries in the region most typically

Socio-Economic Impact Variables
affected by the introduction of new gambling establishments
3. Pre and post general rate of unemployment and welfare in the region
4. Pre- and post- revenue in the new raceway/slot-machine gaming facility
5. Origin and cost of supplies and servicing for the new venue
6. Disposition of gambling revenue
7. Pre- and post- revenue in industries in the region most typically affected by the introduction of new gambling establishments
8. Changes in actual number of businesses in the sectors most typically affected by the introduction of new gambling establishments in the region
9. Gambling patronage
10. Taxation change in the region
11. Direct government gambling revenue
12. Pre- and post- infrastructure cost in the region
13. Pre-, post- and control community property values for the region
14. Pre-, post- and control community rental cost for the region
15. Utilization rate of this new form of entertainment
16. Pre- and post- general populace attitudes concerning the introduction of the gaming facility
17. Pre- and post- general populace attitudes concerning gambling generally
18. Pre- and post- crime rate by category in the region
19. Pre- and post- change in problem gambling prevalence rate in the region
20. Changes in treatment provision for problem gambling in the region
21. Pre- and post- personal and commercial bankruptcy rate in the region
22. Pre- and post- suicide rate in the region
23. Pre and post divorce rate in the region
24. Direct reports from problem gamblers concerning their financial, psychological, familial, employment, legal, and health impact of their gambling
25. Individual characteristics mediating impact

Appendix Six: The Conventional Cost-Benefit Analysis of the Impact of Gambling

In his book, *Gambling in America: Costs and Benefits,* Grinols (2004) provides a useful starting point for constructing a taxonomy of societal benefit and cost related to the valuation of gambling impact. Grinols (2004: 95) points out that "properly done, cost-benefit analysis is a precise process for measuring the increase or decrease in household well-being attendant on a change in economic circumstances. Cost-benefit analysis identifies and separates the components of utility (well-being) change so that

they are exhaustive and mutually exclusive." Moreover, "cost benefit analysis measures citizen well-being in common units (dollars) that can be added and compared…the theory generates a taxonomy of costs and benefits that is exhaustive, internally consistent, utility-based, and theoretically sound" (Grinols, 2004: 97).

Grinols' proposed evaluation framework would help answer the most fundamental question: Is a society better or worse off, in terms of net well-being (measure in economic terms) of all citizens, as result of increased supply of gambling opportunities in communities? Accordingly, the cost-benefit economic test of any economic activity is as follows: "Activities that create more social harm than good, and therefore, fail a cost-benefit test need to be regulated, monitored and, in some cases, altered or banned to achieve greater social well-being. Rational agents will not choose to engage in an activity where social costs exceed social benefits and the costs are inflicted on the agents themselves" (Grinols, 2004:11).

A theoretically sound and comprehensive cost-benefit analysis framework emerges that identifies (and in some cases shows empirical estimates) various social and economic costs and benefits (both tangible and intangible) associated with gambling. The list is combined with some of the social costs identified for substance abuse in the *International Guidelines for Estimating the Costs of Substance Abuse* (Table 13), and provides a reasonable cost-benefit analytic framework suitable for estimating the socio-economic impact of gambling.

Table 13: Societal Benefits and Costs of Gambling

Tangible SOCIETAL BENEFIT Tangible societal benefit would include the benefit from gambling that can be monetized and contributes to a general improvement in societal wealth or well-being.	Tangible SOCIETAL COST Tangible societal cost or externality cost includes those harmful effects or byproducts of gambling that detract or reduce societal wealth or well-being and can be monetized.
1. **Producer Surplus**: Net increase in **profits** measured across all businesses	1. **Crime: law enforcement and criminal justice cost**: penalties, fines, enforcement, apprehension, court, and incarceration cost; victim's time (productivity loss) related to problem gamblers crimes, net of reductions in these expenditures that resulted from the legalization of gambling
2. **Consumer surplus**: benefits to consumers from lower prices; measured as the difference between what consumers would be willing to pay for a	2. **Business and employment cost (or benefit)**[138]: lost or reduced productivity, absenteeism, unemployment-related employer cost such as search and retraining

[138] Employment cost or benefit from gambling are complicated by the fact that contractual issues are at play between the employer and the employee, which represent transfer payments between the two parties. To the extent that the market is efficient, it results in lower pay for such employees (reflecting lower productivity). Also, in some communities, average wages might actually increase as a result of higher wages paid to casino workers compared to other entertainment and recreational sectors in society.

Tangible SOCIETAL BENEFIT Tangible societal benefit would include the benefit from gambling that can be monetized and contributes to a general improvement in societal wealth or well-being.	Tangible SOCIETAL COST Tangible societal cost or externality cost includes those harmful effects or byproducts of gambling that detract or reduce societal wealth or well-being and can be monetized.
good or service and the market value they are actually required to pay	
3. **Distance consumer surplus**: consumer benefits from nearer access to a casino	3. **Bankruptcy:** related specifically to problem gambling debt
4. **Gains from relaxation or elimination of non-price constraints** on consumer choices (i.e. public good effect)	4. **Suicide:** lost productivity due to premature mortality
5. **Capital gains** to consumers induced by the activity	5. **Illness**: stress-related sickness, cardiovascular disorders, anxiety, depression, and cognitive disorders linked to problem gambling
6. Net increase in **taxes** measured across all taxpayers	6**. Health, Welfare and Social Service System Cost:** treatment for problem gambling; hospital cost; costs of medication, plus other health cost multiplied by appropriate attribution fractions; welfare; prevention, research and health services
	7. **Direct regulatory cost**: government spending related to the gambling industry, including regulatory cost
	8. **Family breakdown cost**: divorce, separation, child abuse and neglect, domestic violence
	9. **Abused dollars:** money improperly obtained from relatives or friends
	10. **Property values**: reduction or increases in real estate values related to gambling venue location
Intangible SOCIETAL BENEFIT Intangible societal benefit would include the benefit from gambling but cannot be easily measured or monetized; it contributes to a general improvement in societal wealth or well-being.	Intangible SOCIETAL COST Intangible societal cost or externality cost include those harmful effects or byproducts of gambling that detract or reduce societal wealth or well-being but cannot be easily measured or monetized.
	1. **Pain** and **suffering** to the gambler, dependents; **user quality of life years lost**
	2. **Community social cohesion**: loss of sense of community
	3. **Environmental cost (or benefit):** increase noise pollution, losses in community esthetic values and other intangible land-use impact

Using cost-benefit-analysis (CBA) methodology, the tangible societal benefit and cost listed in Table 13 would be totalled and, if the cost exceeds the benefit (expressed either as a net monetary figure or as a ratio of cost-to-benefit), then the proposed or actual development fails a cost-benefit test. The question of whether society is better off or worse off with or without the development of a casino in a given geographic area can be assessed where the cost-benefit analysis is based on analyzing individual and household well-being and utility.

Unfortunately, such a complete cost-benefit analysis for gambling is rare. Grinols (2004: 182) estimated the cost and benefit of casino gambling in America, since its legalization and rapid expansion in the early 1990s, found that the cost-benefit test failed by a wide margin with societal cost exceeding societal benefit by a ratio of 3:1. He notes that there are still relatively few estimates of some of the key components of social cost and benefit of gambling. Walker (2006) notes that there are still no meaningful estimates of consumer surplus related to gambling although Grinols (2004) does estimate consumer distance surplus. Grinols' work points clearly to data deficiencies that will have to be addressed before comprehensive cost-benefit analysis can be conducted.

Vaillancourt and Roy (2000) provide a rare Canadian example of a cost-benefit analysis for gambling.[139] In fact, this is the only study in the Canadian research literature to examine the cost and benefit for Canada as whole, including consumer surplus and various societal cost estimates associated with gambling. Benefit includes government revenue, consumer surplus, and employment. Employment creation is considered a transfer and is only a benefit of gambling if it is an import, substitute, and/or export generating. Cost includes crime, health costs (but not suicide), loss of revenue, and loss of welfare by non-gamblers.

However, in a review of the Vaillancourt and Roy study, Henriksson criticizes the study for not including the impact of transfers on societal well-being, and concludes that their conclusions – that gains from gambling exceed losses – must be interpreted with extreme caution. Henriksson's critique of conventional economic cost-benefit analysis indicators helps to strengthen the case for a Genuine Progress Indicator approach that aims to account for a full suite of social benefit and cost of economic activity, bringing economic analysis into line with social reality.

Table 14 directly below shows a partially constructed Cost-Benefit Analysis with estimates of some of the societal cost associated with US pathological gambling. These estimates, drawing from Grinols' (2001) research, are expressed in terms of average annual cost per pathological gambler based on eight previous U.S. studies on the social cost of gambling. Among these cost estimates, abused dollars and crime cost related to incarceration are by far the highest costs associated with problem gambling. While

[139] Vaillancourt, F. & A. Roy. (2000). Gambling and governments in Canada, 1969-1998: how much? who plays? what payoff? Toronto, Ontario: Canadian Tax Foundation.

some of these estimates may be dated and U.S.-based, they nevertheless serve as some of the few benchmarks for potential replication or application in Canadian studies.

Table 14: Preliminary CBA Showing Societal Costs of US Pathological Gambling

Tangible SOCIETAL BENEFIT Average benefit (US$) per adult gambler[140]	Tangible SOCIETAL COST Average annual cost per US pathological Gambler (in U.S. dollars, averaged from eight 1994-1997 U.S. studies, which contain original research that ties social cost directly to pathological gamblers.)[141]
1. **Producer Surplus**: ??	1. **Crime: law enforcement and criminal justice costs**: o Apprehension, increased police cost: $257 o Adjudication: $676 o Incarceration, supervision cost: $3,065
2. **Consumer surplus**: $0-??	2. **Business and employment cost**: o Lost productivity: $1,082 o Lost time and unemployment: $2,913 o Bankruptcy: ?? o Illness: ??
3. **Distance consumer surplus**: $34-50	3. **Bankruptcy:** $316
4. **Gains from relaxation or elimination of non-price constraints** on consumer choices ??	4. **Suicide:** $700
5. **Capital gains** to consumers induced by the activity ??	5. **Illness**: $700
6. Net increase in **taxes** measured across all taxpayers ??	6**. Health, Welfare and Social Service Costs:** o Therapy and treatment cost: $189 o Unemployment and social services: $442

[140] Based on Grinols, E. and D.B. Mustard (2001). Business Profitability versus Social Profitability: Evaluating Industries with Externalities, the Case of Casinos. Managerial and Decision Economics; 22:143-162.

[141] Adapted from Grinols, E. L. (2001). Business profitability versus social profitability: Evaluating the social contribution of industries with externalities, the case of the casino industry. Managerial & Decision Economics, 22(1-3), 143-162. Eight previous study estimates are used to derive the average annual social cost figure used by Grinols. These previous studies would provide a range of cost estimates useful for this kind of analysis; however, many of these studies have been subject to major criticism within the academic community.

Tangible SOCIETAL BENEFIT Average benefit (US$) per adult gambler[140]	Tangible SOCIETAL COST Average annual cost per US pathological Gambler (in U.S. dollars, averaged from eight 1994-1997 U.S. studies, which contain original research that ties social cost directly to pathological gamblers.)[141]
	7. **Government direct regulatory cost**: n.a.
	8. **Family breakdown cost**: o Divorce and separation: $111
	9. **Abused dollars:** lost gambling money acquired from family, friends, or employers under false pretenses: $3,834
	10. **Property values**: n.a.
	Tangible Societal Cost Subtotal: $13,585
Intangible SOCIETAL BENEFIT	**Intangible SOCIETAL COST**
1. **Entertainment or recreational value** of gambling. ??	1. **Pain** and **suffering** to the gambler, dependents; **user quality of life years lost** n.a.
	2. **Community social cohesion**: n.a.
	3. **Environmental costs:** n.a.

Table 14 clearly shows with the sporadically inserted ”n.a.” (not available) the data gaps in constructing a complete CBA for gambling. The following section provides a brief guide to estimating some of the benefit and cost associated with gambling.

1. CBA Methodological Issues

The following sections deal with some of the methodological issues and challenges with conducting cost-benefit analysis for gambling. The methodological issues discussed follow the order of benefit and cost in Table 14 directly above and Table 15 further below. Benefit analysis methods unique to CBA are discussed while most of the cost (with the exception of abused dollars) has already been discussed in the main body of the report, *Sub-section 3.4.2, Taxonomy of Societal Benefits*, in the Genuine Progress Indicator Full-Cost Benefit Accounting discussion.

2. Consumer Surplus

Consumer surplus is the economic gain, increased utility or entertainment value the individual gambler enjoys from having access to a wider range of legalized gambling

choices. Some economists might argue that consumer surplus estimates belongs in the GDP formula, however, since it constitutes a hypothetical willingness to pay over and above the actual gaming expenditure, it is not included in the GPI accounting system though it is relevant in conventional CBA.

In economic terms, consumer surplus is the difference between the additional money a gambler would be willing to pay over what they actually pay in order to participate in the same gambling activity. The Australian Productivity Commission [APC] (1999) and Walker (2006) suggest that consumer surplus, in the form of the enjoyment consumers receive from the activity of gambling, is the greatest potential benefit from legalized gambling.

Consumer surplus is one of the key attributes in a CBA, although there is controversy among economists as to whether it should be included and how it should be estimated. Some economists (Eadington, 1996; APC, 1999; Walker and Barnett, 1999; and Collins, 2003) believe that consumer surplus from gambling exists and is greater than the benefit from tax revenue or employment growth benefit, while other economists (e.g. Grinols and Mustard, 2001; Grinols, 2004) either discount or ignore consumer surplus in cost-benefit analysis.

Walker (2006) theorizes that legalized gambling provides a benefit for consumers and possibly the local economy while problem gamblers impose cost on society. He contends that consumers benefit from increased competition (i.e. more casinos) and from greater product variety (i.e. an expansion of gambling venues and games). The first benefit assumes that markets are free – that there are no barriers to free entry and exit by both casinos and gamblers. This is not the case with government-regulated gaming in Canada.

As for the “variety benefit”, Walker acknowledges that this is difficult to measure. He is critical of Grinols (2004) for apparently ignoring the potential benefit from gambling to consumers and instead focusing only on “distance consumer surplus”. However, he provides no empirical evidence of consumer benefit or consumer surplus, acknowledging that the largest consumer benefit may defy measurement.

Grinols (2004) suggests that no consumer surplus exists, particularly on the economy-wide or societal scale, but does acknowledge that distance consumer surplus exists. This is defined as the benefit a consumer enjoys from greater access and proximity to gaming venues. In other words, there may be utility gains to the gambler from having greater access to gambling venues that are partly revealed in terms of their willingness to pay to travel to those venues and expend disposable, after-tax income.

Logically, distance benefits decrease the further the distance from a consumer’s home to the gambling venue. Grinols (2004) provides empirical estimates of these distance benefits, discussed in the following benefit section. Eadington disagrees with Grinols’

narrow view of consumer surplus, noting that there has to be consumer surplus from gambling given the fact that non-problem gamblers exist and there are, thus, healthy gambling consumers, where gambling is viewed through the same lens as other experienced goods.[142]

In practical terms, few empirical estimates of consumer surplus are available. In one of the most comprehensive studies of the social and economic benefits, APC (1999) derived a consumer surplus estimate for gambling by taking the net expenditure of recreational (non-problem) gamblers or direct dollar amounts spent on gambling and deducting excessive spending by the problem gamblers. For example, in Australia in 1997-98, regular gamblers spent A$1,496 each as opposed to the A$12,200 each that problem gamblers spent. Therefore, excessive spending per problem gambler was A$10,704. This excess spending was treated as a deficit or negative consumer surplus and was used to discount the consumer surplus of recreational or non-problem gamblers.[143]

The APC (1999) study yielded a low estimate of consumer surplus of 37% of net gambling revenue and a high estimate of 66% of net gambling revenue. In 1997, for example, the low estimate of consumer surplus was A$4.212 billion, compared to A$11.300 billion in net gambling revenues, and a high consumer surplus of A$7.425 billion. A range of low and high estimates for the consumer surplus of gambling (which does not exclude problem gamblers) are made based on an assumption that a proportion of the net revenue from gambling represents the ”price” or consumer surplus enjoyed by gamblers. The APC assumes that the rate of return (net revenue) for any particular form of gambling can serve as a proxy value for the ”price” that gamblers are willing to pay for the utility gained from gambling (i.e. consumer surplus). Net revenue is effectively net profit: the amount taken in minus winnings paid back, which in theory should match surveys of consumer expenditures on gambling.

In a Canadian study, Vaillancourt and Roy (2000), using the APC approach, estimated that the consumer surplus from gambling in Canada in 1995 ranged from a low of Cnd$1.929 billion-to-a-high-of Cnd$3.441 billion based on Cnd$5.214 billion in net gambling revenue. Since Canada has no data on the price of gambling in casinos or on VLTs, Vaillancourt and Roy estimated consumer surplus for gambling using government statistics on net government revenue from gaming (the amount of gambling money taken in from gamblers net of winnings or payouts).[144] However, they did not net out

[142] Based on commentary received by Bill Eadington in his review of the October 12, 2006 draft of the SEIG Framework document.

[143] Bill Eadington challenges the logic of this approach (based on comments received on the October 12, 2006 draft of the SEIG Framework document) noting: The logic of this approach is not defensible. They should be using elasticity estimates to measure consumer surplus for normal gamblers, and then re-conceptualize social or personal costs for “irrational” gamblers (plus legitimate externalities).

[144] Eadington notes that there are various studies on the elasticity of gambling that could provide insight into the shape of the demand curve and therefore consumer surplus for future Canadian studies (based on Eadington’s comments on the October 12, 2006 draft of the SEIG Framework document).

negative consumer surplus of problem gamblers and did not account for net revenue from charity casinos or bingos, or revenue from pari-mutuel betting (horse racing).

With this approach to consumer surplus estimation (i.e. using net gambling revenue statistics), caution should be exercised to avoid double counting with producer surplus estimates, particularly if the same government gaming net revenue data are used to calculate both surpluses.

While the APA (1999) work provides a benchmark for measuring consumer surplus, there are shortcomings in its estimates of consumer surplus for Australia. Masterman-Smith et al. (2001) note that the estimates include net revenue attributed to problem gamblers as well as recreational gamblers. If problem gamblers are seen as acting irrationally, then the concept of consumer surplus becomes irrelevant. Moreover, if a large portion of net gambling revenue comes from a small number of problem gamblers, as in Alberta, for example, where Williams (2005) estimated that 39% of gambling revenue may come from problem gamblers, then the consumer surplus estimates for both Australia and Canada should be considerably lower.

A second shortcoming is the assumption that the rate of return on gambling (i.e. net revenue) serves as a reasonable proxy for the "price" measure[145] of a person's willingness to pay for gambling. Masterman-Smith et al. (2001) note that for most gambling products, the "price" is not known to the gambler and its derivation as a concept after the fact does not help in measuring the consumer surplus.

In conclusion, measuring consumer surplus related to gambling is both complex and controversial. While it may be true that "consumers vote on their favourite goods and services with their money" (Walker, 2006), this assumes various economic and market conditions, including a perfectly competitive and "free" gambling market. Since the gambling market is largely regulated by monopoly provincial government agents, and since the assumption that gamblers behave rationally in their choice to gamble can be questioned, estimating a genuine consumer surplus of gambling in Canada is questionable. This may be why some researchers have either discounted or ignored these consumer benefits or consumer surplus (e.g. Grinols and Mustard, 2001; Grinols, 2004). Also, there is no empirical or perceptional evidence that gamblers realize a genuine net improvement in their well-being. Yet some economists would argue that the demonstrated willingness of a high proportion of consumers to purchase gambling products in spite of obvious evidence that there is a distinct "house advantage" (price) is fairly clear empirical evidence.[146]

[145] The price of any given game of chance (e.g. slot machine) is inferred to be the difference between every dollar put into the slot (gross expenditures or outlay) and the gross returns (winnings returned), namely the net expenditure (i.e. losses).
[146] Based on Eadington's comments on the October 12, 2006 draft of the SEIG Framework document).

3. Distance Consumer Surplus

Distance consumer surplus is the benefit of improved access and proximity (distance) to the venue for a consumer of games of chance. Measuring distance consumer surplus addresses the question: How much would you (a gambler) be willing to pay each year to have the opportunity to gamble in a venue (e.g. casino) nearby, compared with having to travel to an alternative venue a greater distance from your home? The closer the venue, the lower the gambler's distance travel and time-use cost and, thus, the greater his or her distance "benefit" due to the location of the gaming venue.

Distance benefits have been little studied even though they constitute a primary direct benefit of casinos (Grinols and Mustard, 2001: 149). Grinols (1999)[147] estimated an upper limit for direct consumer distance benefits of casinos of US$50 per adult gambler when no allowance is made for the significant portion of revenues from problem and pathological gamblers.[148] When these revenues from problem gamblers are netted out, then the consumer distance benefit falls to US$34 per adult gambler.

4. Producer Surplus (Industry Profit)

A key benefit of gambling is the producer surplus or gambling industry profit that is earned by the gaming industry, and additional profit earned by other associated industries that benefit directly or indirectly from the existence of the gaming industry. In economic theory, producer surplus is the difference between what producers actually receive when selling a product and the amount they are willing to accept for a unit of the good. How should industry profit or producer surplus be measured?

Grinols and Mustard (2001: 148) argue that while casino profit and tax are highly visible, they are an invalid measure of social benefit because they generally do not adjust for the impact of lost profit and tax of competing businesses on the entire economy. Another challenge is that for a legitimate producer surplus, or profit, to exist, a fully free and competitive gambling market is necessary. However, the gambling industry in Canada and the U.S. is not a free and open market. In Canada, provincial governments act as monopolies, regulating the gambling industry, controlling entry and exit, and setting the odds on all games of chance from VLTs to casino games. Monopolies tend to have greater producer surplus (in this case, the casino operator and government regulator) and a smaller amount of consumer surplus. This makes estimating producer surplus for gambling in Canada complex.

Moreover, casinos and other gaming industries do not report their revenue, cost or profit as part of the regulated nature of gambling in Canada by provincial governments. Total and per-capita gambling revenues are reported by most provincial gambling industries, but it is difficult to account for the portion of these revenues that are attributed to the producers; that is to casinos and other gambling businesses.

[147] Grinols, E. (1999). Distance effects in consumption. *Review of Regional Studies* 29(1):63-76.
[148] Grinols assumes that 32% of gambling revenues comes from problem and pathological gamblers.

In the absence of publicly available gaming industry financial statements and net profit figures, there are a few options available for estimating producer surplus. Grinols and Mustard (2001) use gambling revenue (profit before tax) reported by gaming commissions, which are effectively the net losses incurred by gamblers (gross wagered less payout), as a basis for gross profit. The same approach could be used for Canadian estimates using financial data on gross profit (before redistribution to casino operators, general government revenue and other charitable organizations) from provincial gaming commissions or government departments responsible for gaming. For example, for 2005-06, Alberta Gaming reported gross "revenues" (i.e. gross amount wagered) of Cnd$22,027 million, "prizes and cost of products (i.e. payouts) of Cnd$20,076 million, and "gross profit" of Cnd$1,951million)[149]. In this example, gross profit is a proxy for producer surplus, notwithstanding the complexities of imperfect market conditions.

Another less desirable approach is to use GDP estimates of Canada's gambling industries as a crude proxy for producer surplus. The GDP for the gambling industries is reported by Statistics Canada under the North American Industry Classification System (NAICS)[150] code 7132 on a monthly, quarterly and annual basis for the nation and provincially. For example, for the second quarter of 2006, Statistics Canada reported a GDP for Canada's gambling industries of Cnd$1,958 million. Provincial gambling industry GDP estimates should also be available. Using GDP for gambling industries as a proxy for producer surplus may be questionable, but it does provide a starting point.

5. Health Benefit: Gains from Relaxation and Entertainment Value

There is very little literature devoted to the positive impact of gambling on health and wellness, much less the monetary benefit. For some healthy gamblers, playing games of chance may represent an escape from life's hardships and troubles and relief from loneliness or boredom, or may result in a genuine enhanced state of well-being. Most of this benefit is intangible although economists view entertainment value as a form of consumer surplus.

Unfortunately, there is little empirical research into the positive impact of gambling. Wildman and Chevalier (2002) found only one article dedicated solely to the beneficial therapeutic impact on individuals of playing bingo. In Australia, some of the intangible positive impact of gambling has been researched looking mainly at motivation for gambling (SERC, 2001). The suggested benefit of gambling to families includes improved social interaction, escape from routine, and the hope for financial gains (MPM

[149] The figures are reported for Alberta Gaming and Liquor Commission statement of operations report (p. 80) for 2005-06 in the *Alberta Gaming 2005-2006 Annual Report*.

[150] NAICS stands for the North American Industry Classification System, which is used to classify various industries in North America for economic statistical reporting purposes. The NAICS code for "gambling industries" is 7132, a subset of the "Amusement, gambling and recreation industries" (NAICS 713).

Gaming Research, 1996).

6. Tax Benefit

Tax benefit to governments from legalizing gambling is undoubtedly one of the greatest benefits of gaming to the public sector. However, gambling tax revenue is effectively a transfer of wealth from the consumer to the government. While tax revenue should be accounted for in terms of government budgeting and decision making, from an economic perspective it is technically not a net economic benefit, notwithstanding that a portion of household expenditures on games of chance collected by governments are ultimately redistributed back to the community in the form of grants, contributing to the well-being of organizations or groups in the community. Therefore, in theory, these tax benefit to governments should not be included in cost-benefit analysis.

To the extent that problem gamblers typically contribute more to gambling losses (and harm) than other gambling cohorts, their relative share of gaming tax revenue is disproportionately higher. This implies an inequity in society and may constitute a regressive form of taxation on those most at-risk for unhealthy gambling behaviour. Another potential inequity, which is not discussed in the literature in Canada, is the potential negative impact on the well-being of households in communities that are forced to become dependent on gaming revenues redistributed through grants by governments. For example, some households and community organizations in Canada may have no alternative but to volunteer to work at casinos or bingos to “earn” the revenues needed to support their community well-being interests. The value of this “voluntary” time and an estimate of the potential “regrettable” and intangible cost of relying on gaming revenue should ultimately be considered as a negative effect of government-regulated legalized gambling.

7. Capital Gains to Consumers

While capital gains to consumers from gambling activities have been identified in the literature as a potential benefit of gambling, there are no empirical estimates of this potential societal benefit.

8. Income and Employment Benefit

Income and employment benefit is generally not included in conventional cost-benefit analysis. On the surface, the introduction of gaming venues to a community results in an apparent increase in the number of jobs and, thus, income in a community. However, when assessing this impact, only the incremental, marginal or net employment and income growth should be counted. The question becomes: Did the casino (for example) result in a genuine increase in employment or simply a transfer of workers from one sector to another? Grinols (2004) notes that too often development of one sector comes

at the expense of cannibalizing workers from another sector in the community, implying that there may be no net benefit.

Grinols (2004) does not include jobs as an economic benefit in his cost-benefit analysis, if gambling development does not create "new" jobs. Grinols as well as McMillen (2006) note that most jobs involved drawing workers away from other sectors in the economy or from other communities (migrant workers). Thus, it is critical in economic analysis to be careful how we measure jobs as an impact; jobs are a means to an end, but not an end in themselves. The end is ultimately improved well-being.

Walker (2006) disagrees, suggesting that employment created by building a new casino should count if that new casino creates new, better and higher-paying jobs (a qualitative improvement in the labour market) than the industry or firm that the casino may have displaced. Moreover, Walker argues that the new gaming establishment must be creating better employment opportunities than existed before or workers would seek other employment options. Walker, however, ignores the possibility that the new gaming facility has reduced workers' access to more meaningful employment opportunities by squeezing out those employers from a community.

Net employment and income impact analysis is key to determining the net societal benefit of gambling even if it does not formally enter into a CBA. Care should, however, be taken when calculating these net employment effect to avoid double counting and to recognize the challenges of economic transfers that may be at work.

9. Abused Dollars

Abused dollars represent lost gambling money acquired from family, friends, or employers under false pretenses. Two examples are: stealing that is never reported because the thief is a relative; and money '"loaned" under duress that is never repaid. Abused dollars represent cost to the non-gambling population. According to Grinols and Mustard (2001), to the extent that abused dollars represent purchases of gambling services that are inefficiently sub-optimal from the gambler's perspective or create market inefficiencies, a significant portion represents social cost to society as a whole, even allowing for gains by the gambler or gambling sector. Some economists would disagree with the inclusion of abused dollars, noting that they are technically redistributions among individuals in a household or community and should not therefore be included as a cost. However, there is a legitimate cost associated with the loss of goodwill and trust.

Grinols and Mustard (2001) show a range of abused dollar estimates from several US studies (Table 15) from a low of US$240 per problem gambler (Leg Research Council, SD) to a high of US$14,354 per problem gambler by Politzer et al. (1981).

Table 15: Annual Abused Dollars Cost (US$) per Pathological Gambler in the US

	Study Author and US State						
	Politzer *et al.* (1981), MD	Thompson *et al.* (1996) WI	Thompson *et al.* (1998) CT	Leg. Research Council (1998-99) SD	Ryan *et al.* (1999) LA	Thompson & Quinn (1999) SC	**Average**
Abused dollars	**14,354**	**3,802**	**9,519**	**240**	**3,175**	**2,436**	**3,834**

There are similar comparable estimates for Canada in the literature. This is clearly an area for new research.

10. The Pros and Cons of Cost-Benefit Analysis

Cost-benefit analysis (CBA) should, in principle, provide a theoretically and methodological sound framework for policy analysis and for evaluating at least the monetary cost and benefit associated with gambling. However, given the complexity of problem gambling, measuring benefit and cost is difficult. Moreover, it is only one of many potential tools for measuring the effect (positive and negative) on the well-being of individuals and communities affected by legalized gambling development.

Historically, CBA applied to gambling has been fraught with complexity, controversy and vociferous disagreement among the few economists who have studied the economics of gambling. Most economic analysis in the gambling literature has suffered methodological weaknesses, lack of systematic data, and untested assumptions, many of which are unacknowledged by researchers.[151] Much of the controversy in the CBA of gambling surrounds the definition, determination and inclusion of certain costs (e.g. private cost versus social cost) and benefits. Much of the dispute surrounds how social cost should be treated in CBA and how to separate private cost from social cost. Unfortunately, there are few objective guides in the economics literature or among economists outside of gambling research on how to construct a theoretically valid cost-benefit analytic framework for gambling.

So, how should one proceed? How should, for example, consumer surplus be estimated or intangible, non-monetary effects of gambling ("harm") be considered and included in a more comprehensive societal well-being impact assessment framework that goes beyond monetary metrics of wealth and beyond conventional cost-benefit analysis? How should well-being impact be measured, compared, added or balanced without a common unit of measurement such as dollars? What impact should be considered valid

[151] Committee on the Social and Economic Impact of Pathological Gambling. (1999*) Pathological gambling: A critical review*. National Research Council, National Academy of Sciences Press. Chapter 5: Social and Economic Effects, p. 162.

in a well-being impact framework? How should this non-monetary impact be measured, evaluated, and weighted in contrast to monetary estimates of cost and benefit?

At best, one should proceed, as Walker (2006) and Grinols both agree, with accounting for a taxonomy of societal benefit and cost while avoiding the temptation for calculating a net societal economic welfare "bottom line" or cost/benefit ratio using CBA. What is clear is that any use of conventional CBA should acknowledge its inherent theoretical and methodological shortcomings; that is, CBA is incomplete since it fails to account for non-monetary qualitative social impact (i.e. intangible cost and benefit and harm) on community well-being. CBA should be viewed as simply one among many analytic tools for assessing well-being impact where valid monetary estimates can be determined.[152]

Appendix Seven: Other Economic Valuation Methods or Tools

What follows is a brief review of the remaining six economic valuation methods or tools that were listed in *Section 3.4 "Measuring Monetary Economic Benefit and Cost of Gambling"*.[153] They are presented with the view of understanding some of the other valuation methods that are used for assessment purposes. The six methods are:

- Government Budgetary Impact Analysis;
- Net Financial Benefit Analysis;
- Net Social Benefit Analysis;
- Cost Effectiveness Analysis;
- Cost-Utility Analysis; and
- Cost of Illness Approach.

1. Government Budgetary Impact Analysis

Legalized gambling as a form of economic development has important fiscal (budgetary) and public policy effects on governments. This impact is both positive (increased tax revenues from gambling) and negative (increased costs of health and social programs and law enforcement). The development of legalized gambling revenue also places demands on government capital budgets, including the need for new or improved public infrastructure. Calculation of this direct or indirect impact on both expenditure and revenue of governments represents another analytic lens through which to measure gambling's effects on society.

[152] For a more detailed discussion of the pros and cons of cost-benefit analysis, please see *Appendix Nine: Methodological Issues in Socio-Economic Impact Analysis of Gambling, 17 "The Pros and Cons of Cost-Benefit Analysis".*

[153] The reader will recall that there were eight methods or tools in total. The main text of this report in *Section 3.4.1.1* dealt with CPI full cost-benefit accounting, the preferred methodology, while *Appendix Six* discussed CBA in detail.

On the revenue side, there are clearly significant gains from the government's share of gaming revenues. Indeed, the success of governments in raising revenue from gaming activities makes the development of legalized gambling a key instrument for both fiscal policy and economic development policy. Measuring the net gaming revenue (gross receipts less payout and operating cost) is straightforward and can be drawn from public accounts or annual reports of gaming ministries or commissions. While the revenue gains are significant, there are also potential losses in other forms of government revenue from reduction in tax revenue from businesses or enterprises negatively impacted by legalized gambling activities.

On the expenditure side, there is direct impact related to problem gambling such as the education and treatment of problem gamblers as well as gambling-related research. There is also expenditure borne by other government authorities such as the police, the justice system, and public health institutions, who use a portion of their budgets to deal with problems related to gambling. The challenge is one of attributing portions of these other organizational budgets directly to problem gambling. Rarely is such policy- or issue-specific attribution costing done by organizations indirectly affiliated with a policy issue such as gambling. Estimating this cost is nevertheless an important component of a full cost-benefit government budgetary accounting related to gambling.

There will also be some "savings" in reduced expenditure resulting from an increase in premature mortality that can be attributed to problem gambling. An increase in premature mortality results in reduced welfare and health expenditure in the economy. It is most likely that the net expenditure related to problem gambling will be positive after these forgone expenditure related to premature mortality is netted out.

As with CBA, caution must be taken when considering government budgetary analysis since not all costs that are imposed on society are considered, including the cost of loss of life, pain, suffering and productivity by the individual gambler and those directly or indirectly impacted by their behaviour. Nevertheless, these external costs should ultimately be considered as addendums in budgetary and policy decision making within a framework for the full cost and benefit of legalized gambling as an instrument for economic development and even fiscal policy. This approach is similar to the GPI full cost-benefit accounting approach of public policy.

Some governments (e.g. Alberta's *Measuring Up*) have adopted business planning and performance measurement systems as part of a comprehensive government accountability system and as a tool for measuring the outcome (using indicators) of policies and programs. Such systems, in principle, provide room for GPI-type accounting and the inclusion of a broader range of non-monetary well-being impact indicators associated with legalized gambling. To date, no government has conducted a full GPI accounting of gambling as an economic development policy. Provinces that do issue annual reports of gaming ministries (e.g. Alberta) provide only a limited number of

program-specific performance indicators and lack a more comprehensive set of well-being indicators that could be used in decision making when considering the overall net impact on societal well-being of public policies.

2. Other Analytic Tools

In addition to conventional economic Cost-Benefit Accounting mentioned in the previous *Appendix Six*, other economic analyses tools might be considered when assessing the social and economic effect of legalized gambling.[154]

3. Net Financial Benefit Analysis

Net financial benefit (NFB) analysis is used primarily in the private sector and is concerned with measuring the monetary (cash flow) benefit and cost outcome of private sector or business decisions in the evaluation of projects. Standard financial analysis tools such as the financial income statement, balance sheet and cash flow tables are used to calculate the NFB for a given project (Nas, 1996, p. 198). The expected revenue and cash from an activity is viewed as benefit while the payments for production (labour, land, and fixed capital) is seen as cost regardless of their impact elsewhere in the economy or on the environment. Governments use NFB in conjunction with CBA to evaluate the impact of projects and economic development.

4. Net Social Benefit Analysis

Net social benefit (NSB) analysis is a third stage of analysis that converts the net economic benefit (NEB) efficiency measures derived from CBA into net social benefit by considering the equity or distributional impact of a project. That is, NSB considers the distribution of benefit and cost. This may be an important tool for examining the distributional effects on income and wealth associated with gambling activity in society.

NFB, CBA and NSB are the three methodologies conventionally used for impact analyses when evaluating projects, and in government for policy impact analysis. It is also used by large institutions such as the United Nations (e.g. UNIDO) and the World Bank (Nas, 1996: p. 200).

5. Cost Effectiveness Analysis

Cost-effectiveness analysis (CEA) refers to the "evaluation of alternatives according to both their costs and their effects with regard to producing some outcome or set of outcomes" (Levin, 1983: p.17). Alternatives can be ranked by their outcomes or impact,

[154] Just to review, Wynne and Anielski (2001a) explored a potential suite of measurement methods or tools, in addition to CBA, that included net financial benefit (NFB) analysis, net social benefit (NSB) analysis, cost-effectiveness analysis (CEA), cost-utility analysis (CUA), and GPI full cost-benefit accounting. Many of these tools may be suited to policy analysis (e.g. CEA, CUA), although they are relatively unknown to most decision makers.

as well as in terms of their cost. CEA is useful in cases where the output of a project is undefined or cannot be monetized (as with CBA). In CEA, the various elements that enter into the assessment of the outcomes of a project (or policy) are defined and quantified (through indexing or simple ratios), and can then be aggregated to form an overall "effectiveness index" (Nas, 1996: p. 65). This is very similar to the Genuine Wealth model developed by Anielski (2006).

6. Cost-Utility Analysis

Cost-utility analysis (CUA) is a method of evaluating alternatives according to a comparison of their cost and the estimated utility or value of their outcomes (Levin, 1983: p. 26). CUA might be used in cases where subjective evaluation of qualitative and quantitative outcomes is required, as, for example, in assessing educational outcome or the qualitative impact of problem gambling on the quality of family life. However, because of the subjective nature of CUA, results from various studies may be less comparable than CBA and CEA impact analysis results.

The gambling research literature is mostly silent on these alternative methods or tools for policy analysis with the primary focus on CBA. The utility of CEA is examined in the *International Guidelines for Estimating the Costs of Substance Abuse*. The strength of the CEA for evaluating substance abuse effects is that a detailed comparison of cost of alternative techniques for achieving the same predetermined outcomes is possible. Moreover, with CEA there is no need to value output benefit. The disadvantage of CEA is that the policy objective is predetermined rather than arising from the analysis and it is, therefore, of little assistance in determining policy objectives.

CUA in the context of substance abuse cost estimation can calculate the cost per specified health effect and express the outcomes in uniform units of health. The unit of health is either:

- Quality Adjusted Life Years (QALY): a measure of the value of extended years lived with a measure of its incremental worth; or

- Disability Adjusted Life Years (DALY): a measure that combines healthy life years lost because of premature mortality with healthy life years lost because of a disability.

Each unit of health is assumed to have similar value across all conditions, although health effects are weighted to reflect individual or societal preferences for different health outcomes. CUA is a special application of CEA that can contribute to societal decision making.

There is growing recognition and interest, particularly by large institutions such as the United Nations and the World Bank, in more holistic and comprehensive total wealth

accounting (e.g. the World Bank's total wealth accounts for nations) and human well-being measurement tools (e.g. the UN Human Development Index). There is also a growing interest in measuring well-being and quality of life to evaluate the potential impact of various policy options. New tools are required for a holistic, comprehensive, life-cycle accounting of impact of public policy options – tools that have the capacity to analyze integrated systems of interactions or relationships that define well-being and quality of life. Some potential tools have been identified, both from the historical impact analysis literature and from new research into well-being accounting systems.

7. Cost-of-Illness Approach

The cost-of-illness (COI) approach used to measure the cost of substance abuse (alcohol, tobacco and illicit drugs) by Single et al. (2001) is also potentially applicable to measuring the cost of problem gambling. Single et al. provide the following explanation of the approach:

> "The impact of substance abuse on the material welfare of a society is estimated by examining the social costs of treatments, prevention, research, law enforcement, and lost productivity plus some measure of the quality of life years lost, relative to counterfactual scenarios in which there is no substance abuse."[155]

The premise of COI is that an illness or social problem imposes a cost on society when resources are redirected as a result of the illness or problem from purposes to which they would have otherwise been devoted (these resources include both goods and services and productive time). In this regard, COI is similar to the concept of opportunity cost in economic analysis. Walker (2006) notes that the concept of opportunity cost or the counterfactual scenario is common to both economic analysis and COI analysis.

The COI approach to problem gambling is useful since it has its foundation in substance abuse studies or other addictive behaviours; so the application, in part, does not require the "reinvention of the wheel" (Walker, 2006), although there are differences in how worker productivity losses and certain other expenditures are treated. COI is not without its critics (Reuter, 1999; Kleiman, 1999) and is focused on cost alone without considering the potential benefit side of the ledger.

The most suitable benchmark and guidelines for applying COI analysis to problem gambling would be the *International Guidelines for Estimating the Costs of Substance Abuse* developed by Single et al. (2001). Attributes of these guidelines and application to problem gambling are discussed within the proposed SEIG Framework.[156]

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[155] Single, E., D. Collins, B. Easton, H. Harwood, H. Lapsley, P. Kopp and E. Wilson. (2001). *International Guidelines for Estimating the Costs of Substance Abuse*. Second edition. World Health Organization

[156] See *Appendix Seven, 5.7.5, Cost-of-illness Approach* and *Appendix Nine, 3: What can Cost Estimates of Substance Abuse Teach Us About Problem Gambling Impact Analysis?*

Appendix Eight: Alberta Genuine Progress Indicators

1. The Alberta GPI Accounts

Table 16: The Alberta GPI Accounts for Economic, Personal-Societal & Environmental Well-being

Capital Accounts	Well-being Themes	Genuine Progress Indicators
Economic Accounts	Economy	• GDP (gross domestic product) and its components • Trade balance: exports less imports of goods and services
	Livelihood	• Disposable income • Personal consumption expenditures • Debt (household, government, business, farm, student) and net worth • Savings (households, government) • Employment, unemployment, underemployment
	Infrastructure (Produced Capital)	• Household infrastructure • Public infrastructure
	Transportation	• Private, public and commercial transportation (commuting)
Social-Human Health Accounts	Human Capital	**Time Use Accounts** • Paid work • Unemployment • Unpaid work-time • Unpaid housework, parenting and eldercare Volunteerism • Leisure time • Commuting time
		Health and Wellness • Life expectancy (and self-rated health) • Premature mortality and disease • Suicide (mental health) • Obesity • Auto crashes • Infant mortality and low birth-weight babies • Substance abuse (drugs, alcohol, tobacco) • Problem gambling
	Knowledge Capital	• Educational attainment, knowledge and skills
	Social Capital	• Poverty • Income and wealth inequality (and distribution) • Crime and violence • Family breakdown (divorce)

Capital Accounts	Well-being Themes	Genuine Progress Indicators
		• Democracy
Environmental Accounts	Ecological Footprint Analysis	• Ecological Footprint accounts (food, energy, clothing, transportation) • Material and energy flow analysis
	Natural Capital Accounts	• Non-renewable energy resources and use (oil, gas, coal) • Renewable energy capacity (wind, solar, hydro) • Minerals • Forest sustainability • Wetlands and peat lands • Agriculture sustainability (soil productivity) • Carbon budget • Fish and wildlife • Parks and wilderness
	Ecosystem Services Accounts	• Ecosystem integrity • Air quality • Greenhouse gas emissions and ozone depleting chemicals • Water quality and flow (surface and ground water) • Noise pollution • Hazardous waste • Landfill waste

Source: Anielski, M., M. Griffiths, D. Pollock, A. Taylor, J. Wilson, S. Wilson. (2001). *Alberta Sustainability Trends 2000: Genuine Progress Indicators Report 1961 to 1999*. Pembina Institute for Appropriate Development. http://www.pembina.org/green/gpi/ April 2001.

2. Alberta GPI – Net Sustainable Welfare

Table 17: Accounting Results – Alberta GPI (net sustainable welfare) for 1999

(million 1998$)	million (1998$)	% of GDP
Gross Domestic Product (expenditure-based)	109,708.43	
Personal consumption expenditure	52,838.59	48.2%
Consumption expenditures adjusted for income distribution	47,957.49	43.7%
Non-defensive government expenditures	7,727.89	7.0%
Value of services of consumer durables	5,532.50	5.0%

Value of public infrastructure services			1.5%
		1,660.96	
Net capital investment			-0.8%
		(864.64)	
Cost of household and personal debt servicing			-5.9%
		(6,433.77)	
Value of unpaid time use			
Value of housework	32,907.30		30.0%
Value of parenting and eldercare	3,291.54		3.0%
Value of volunteer work	2,631.30		2.4%
Value of free time	0.06		0.0%
			35.4%
		38,830.19	
Social Cost			
Cost of consumer durables	(7,998.17)		-7.3%
Cost of unemployment and underemployment	(3,823.98)		-3.5%
Cost of auto crashes	(3,026.43)		-2.8%
Cost of commuting	(4,406.03)		-4.0%
Cost of crime	(1,833.23)		-1.7%
Cost of family breakdown	(147.96)		-0.1%
Cost of suicide	(2.43)		0.0%
Cost of gambling	(2,167.50)		-2.0%
			-21.3%
		(23,405.73)	
Environmental Cost			
Cost of non-renewable resource use	(10,656.30)		-9.7%
Cost of non-timber forest values due to change in productive forest	(23.78)		0.0%
Cost of unsustainable timber resource use (loss in pulp production value)	(14.60)		0.0%
Cost of erosion on bare soil on cultivated land (on-site only)	(12.78)		0.0%
Cost of reduction in yields due to salinity on dry land and irrigated cropland	(58.15)		-0.1%
Cost of air pollution	(3,666.00)		-3.3%
Cost of greenhouse gases (damage of climate change)	(4,073.33)		-3.7%
Cost of loss of wetlands	(7,682.01)		-7.0%
Environmental cost of human wastewater pollution	(0.57)		0.0%
Non- market cost of toxic waste liabilities	(4.71)		0.0%
Non-market cost of municipal waste landfills	(190.10)		-0.2%
			-24.0%
		(26,382.33)	
GPI (Net Beneficial Output), with debt servicing cost		36,999.62	
GPI (Net Beneficial Output), without debt servicing cost		*43,433.40*	
GPI (with debt) per capita		12,480.10	

GDP per capita	37,005.04

Source: Anielski, M., M. Griffiths, D. Pollock, A. Taylor, J. Wilson, S. Wilson. (2001). *Alberta Sustainability Trends 2000: Genuine Progress Indicators Report 1961 to 1999*. Pembina Institute for Appropriate Development. http://www.pembina.org/green/gpi/ April 2001.

Appendix Nine: Methodological Issues in Socio-Economic Impact Analysis of Gambling

1. State of Gambling Research

While some progress has been made in the past five years, the following methodological issues raised at the 2000 Whistler Symposium are still relevant today, namely:

- Research into the social and economic impacts of gambling;
- Definitions of 'private costs' versus 'social costs' attributable to gambling;
- What costs and benefits should be counted in socio-economic impact analyses; and
- Best methods for measuring gambling benefit and cost.

The Symposium raised the following key list of recommendations and major methodological issues[157] that the SEIG Framework will hope to address:

- Distributional effect of transfers and 'pecuniary' cost should be looked at in the context of a "holistic total wealth (well-being) impact and monetary total cost-benefit analysis of gambling";
- Intangible and qualitative impacts of gambling should be considered despite difficulties of measurement;
- Difficulty of identifying causality of drivers and impact outcome was noted;
- Importance of identifying attribution factors was recognized;
- Limitations of sparse literature and research were noted;
- Need for transparency of data, funding, and methods;

[157] Wynne, H. J. and M. Anielski. (2001). The Whistler Symposium Report. Canadian Centre on Substance Abuse.

- Need to recognize the importance of qualitative measurements;
- Measurements of quality of life issues are important;
- Considering problem gambling in the context of concurrent disorders;
- Examining high-risk populations;
- Considering gambling behaviours not considered as problems;
- Separating problem gambling impact from regular gambling impact;
- Need to examine an impact framework using socio-economic, age-sex profiles, population health, and social determinants of health to determine distribution of impact, including assessment of prevalence;
- Indicators need to be repeatable, comparable at the provincial and national levels, and show rate of change (i.e. trend) from a baseline; and
- Need to assess gambling by type of gambling and by the different types and structures of cost and benefit impact, avoiding simplified aggregation that can conceal these differences.

2. Benefit (Positive Effect) of Gambling

There are a number of potential private and social benefits that result from gambling as an economic activity including consumer surplus, producer surplus (industry profit), tax benefit to governments, employment and income benefit, and distance benefit. Walker (2006) points out that more attention has been devoted to estimating private and social cost of gambling; not enough attention has been paid to the potential benefit of gambling, particularly the recreational and entertainment benefit (consumer surplus) to low-risk gambler. There is as much methodological controversy surrounding cost of gambling estimates as there is with accounting for the benefit of gambling.

The estimation of benefit or positive effect of gambling depends on the nature of the stakeholder examining the effects. Industry studies tend to focus on the direct effect that includes counting new jobs, casino profit, employee income and increased government tax. Other studies have focused on the benefit to government tax revenue (Vaillancourt and Roy, 2000). Very few studies have actually estimated the full breadth of possible economic benefit from gambling.

Grinols and Mustard (2001: 148-150) developed a “theoretically correct costs-benefit computation” and estimated a number of benefits from gambling including: industry

profit, government tax, consumer distance benefit, and net employment benefit. Most researchers acknowledge the benefits from legalized gambling would include net employment growth, higher average wages, capital inflows, increased tax revenues and consumer entertainment value (i.e. consumer surplus), and more choices for leisure and entertainment activities. The debate, as with estimating and attributing cost to gambling, is how these benefits should be measured, attributed to gambling, and balanced with estimated cost.

3. What Can Cost Estimates Of Substance Abuse Teach Us About Problem Gambling Impact Analysis?

Single et al.' s 2001 *International Guidelines for Estimating the Costs of Substance Abus*e appears to provide a more useful theoretical reference point than they do a benchmark for evaluating gambling addiction or "abuse" due to certain differences between the abuse of gambling, drugs, alcohol or tobacco. The primary differences between substance and gambling abuse are between the rates of morbidity and the amount of resources diverted to sustaining an addiction until morbidity is "attained".

For example, a person could be functionally addicted to narcotics, gambling or alcohol and could divert a substantial amount of income, wealth or other available resources to servicing these addictions over time. The main difference is that an individual could overdose and "attain morbidity" through the ingestion of $200 worth of alcohol or narcotics, but would not likely be killed or commit suicide over a $200 gambling debt, although it is possible. The main difference is that a person cannot realistically drink their home's equity away in one weekend whereas, given the right conditions, they could potentially gamble it away.

Under Single's definition of abuse, the use of a substance reaches a critical "abuse" stage when its use affects the well-being of the user or others negatively; in simpler terms, abuse is associated with a diminishing or decrease in overall well-being. This definition relates to a core concept of welfare economics or the economics of law – that of Pareto Optimality, or the impossibility of making any person better off without making at least one other worse off. More nuanced versions of this concept allow for one party to be made worse off if it is possible for the gaining party to compensate them for their loss. In other words, where transfers from parties gaining from a new allocation can offset the losses incurred by parties losing under the new allocation (adjusting for administration cost of the judicial system, enforcement or treatment), then this new allocation may be considered Pareto Optimal.

With drugs, abuse occurs if the community incurs net cost as a result of drug use. All tobacco use, on the other hand, can be considered to be abusive since it diminishes health status; however, within the limitations or parameters of economic analysis, users could have strong preferences for immediate gratification or a high discount rate concerning the benefit of living a long life. Abuse is said to occur where society has to

either bear the cost of treatment or divert resources away from other uses to treat the effect of tobacco use. As for alcohol, not all alcohol use is abusive or even addictive.

All forms of abuse are associated with:

- Premature mortality;
- Cost to the user in terms of health status;
- Cost to society in terms of lost production; and
- Cost to others in terms of physical or emotional traumas due to another's abuse.

There is also a distinction between abuse and addiction. A person could abuse alcohol by consuming too much of it in one sitting and generate costs to society by driving while inebriated, picking fights with random passers-by or disrupting the peace by yelling in a quiet neighborhood. A person does not need to be addicted to alcohol in order to abuse it. The definition of addiction used within the SA Guidelines comes from a 1991 editorial in the British Journal of Addiction.[158] Ellemen-Jensen's 1991 definition of addiction involves:

- Highly compulsive use;
- Use despite harmful effects;
- Relapse following abstinence; and
- Recurrent cravings.

Within this definition, the objective of drug consumption is to avoid the unpleasant effects of withdrawal rather than gaining any positive benefit. Physiologically, there may be commonalities between drug or alcohol withdrawal and gambling withdrawal. Where gambling is associated with changes in adrenal levels or some other physiological or psychological state, it can be said that the abuser is potentially not addicted to gambling specifically, but to the effect it has on their state of mind or body. If, for example, gambling is used to escape from domestic troubles or work stresses, a real question remains whether or not the abuse would exist if stresses or troubles were dealt with in a perhaps more appropriate or less expensive fashion. In summary, gambling may not be the cause of domestic strife or other cost associated with drug or alcohol abuse, but a means of escape from consequences caused by these other stresses.

The net cost concept examines the increase in cost attributable to substance abuse relative to cost incurred in the absence of abuse, and relates to the opportunity cost, or the benefit derived from the next-best alternative use of resources. Two criticisms of this approach are its:

[158] Elleman-Jensen, P. (1991) The Social Costs of Smoking Revisited. *British Journal of Addiction* 87: 957-966

- Tendency to over-estimate the cost of substance abuse by comparing the present situation of substance abuse to an ideal one where substance abuse does not exist; and

- Relative ignorance of substitute substances available for abuse.

The net cost of drug abuse, for example, is contingent upon the portion of drug use considered to be abusive. If all marijuana use is considered to be abusive on the grounds that it is illegal, then the net cost concept will yield figures higher than if only a small portion of marijuana use is considered to be abusive. Furthermore, assuming it were cost-effective for a government to enforce some outcome where all marijuana use was monitored for abuse and all forms of abuse were somehow *de facto* eliminated, it is entirely possible for people with abusive tendencies to shift to other substances such as alcohol, other narcotics, gasoline, glue, gambling, or even shopping, and food.

4. Focus on Well-Being Impact

From an conventional "economic" perspective, the concern is about the overall level of aggregate wealth in a society; if an action decreases the overall amount of wealth, then it is a social cost (Walker (2006). However, with some exceptions (Walker, 2006) conventional economists tend to use the term "wealth" loosely, failing to note that the word originates in the old English, which means "the conditions of well-being." Therefore, to speak about and measure genuine wealth would require a more comprehensive set of measurement tools that would measure the overall well-being conditions and changes in conditions of individuals, households, and firms in society associated with economic development. This would imply measuring units that could be not only monetary but also statistical and perceptional indicators of well-being. Therefore, a true assessment of the welfare impacts on society of policy options should consider well-being in its broadest sense.

Economists also employ the word "utility", which ultimately refers to well-being of the individual or household. The onus of genuine economic analysis should be to demonstrate that the net impact of any proposed activity or development on the well-being (i.e. utility) of citizens in society or a community is positive, neutral, or negative. For the government, as steward of the common wealth or public good, to be utilitarian in both policies and actions necessitates accountability for the conditions of well-being and for the potential regrettable or harmful impact on well-being of various policy options and decisions.

The onus is on government to demonstrate, for example, that the expansion of gambling opportunities will lead to a "genuine" improvement in the overall well-being or net benefit to society. Governments, by their nature, must also be concerned with the distributional impact on various cohorts in society of policies whereby no one cohort is harmed or their well-being affected inequitably. In other words, that society is made

relatively better off. This requires an examination of the well-being impact, both pre- and post-development, of the impact, for example, of introducing or expanding gambling industry development in a community where government is the monopoly regulator. The onus is also on governments to be accountable to the citizens for well-being impact in accordance with the values of the citizenry.

Genuine economic analysis of government policies should ultimately be designed to measure changes in well-being using a number of indicators or proxies. A coherent evaluation process, to weigh and compare the impact, benefit (positive effect) and cost (negative effect), is critical to avoid decisions being made in response to political pressures applied from any side of the debate.

What is evident in the review of the literature on the socio-economic analysis of gambling, as a form of economic development, is the inconsistency and problems in theoretical and methodological issues as well as inconsistency in the use of terminology in defining well-being impact, cost and benefit. In order to develop a meaningful framework for well-being impact analysis, clear definitions and methodological concepts need to be clarified.

When examining gambling as a form of economic development, the focus of analysis should be on whether changes in the economy resulting from legalized gambling lead to increased well-being per citizen. Cost-benefit analysis is a tool for measuring the change in well-being from a change in the economy using monetized metrics. Properly done, cost-benefit analysis should measure all of the relevant elements of the effects (positive, negative, increases or decreases) on the well-being of the individuals making up society using quantifiable and common units (monetized cost and benefit) within a comprehensive analytic framework that avoids double counting. One of the key shortcomings of cost-benefit analysis has been that the analysis does not sufficiently include or consider all of the relevant welfare or well-being effects.

If the SEIG Framework is grounded in the theory of welfare economics, then the concern is measuring the well-being (welfare) impact of the individual, as opposed to the collective community. Welfare economics assumes that the individual is the best judge of whether or not an economic activity or choice will lead to greater or lesser welfare (well-being) and that these impacts can be measured either in monetary terms or as a relative preference for one activity over another.[159] Welfare economics uses micro-economic techniques to determine the economic efficiency of the allocation of resources within an economy and the income distribution consequences of that allocation. One of the greatest challenges in analysis of well-being at the community scale is that of aggregation that makes the results doubtful.

[159] Source: http://en.wikipedia.org/wiki/Welfare_economics accessed May 25, 2006.

Using a welfare economic approach, one would begin the analysis of the impact of gambling on individual well-being by asking the individual gambler to report on how much money he or she would need to spend to achieve the state of well being they desire (i.e. expected utility). In theory, welfare (well-being) can be measured in "utils" (units of well-being), monetary terms or in relatively utility terms. This would get to the heart of the driving forces, expectations or motivations behind playing games of chance, for both the healthy gambler and problem gambler. One would then ask for information, in the form of money metric utility, which represents the utility in terms of money it would take the individual to reproduce his or her level of well-being, if the money were spent at specified prices.

From the review of the literature and knowledge of government accountability systems, a framework for assessing genuine well-being impact is largely missing. Moreover, there is a lack of consensus and misuse of economic theory on how conventional cost-benefit analysis should be used in assessing welfare effects of public policy. The key issue of political and theoretical debate is what to count in a cost-benefit analysis, which is often influenced by what the researcher wants to study. Unfortunately, "…it is rare if ever that a valid framework of analysis is adopted, its elements understood relative to the overall question of well-being of the **citizens**, the information successfully acquired to fill the elements of the framework to undergo evaluation, and then evaluated" (Grinols, 2004: 7). As a starting point in any analysis there should be a focus on the well-being (or utility, in economic terms) of the people (households) living in an area that will be impacted (positively or negatively) by gambling industry development.

The authors of this report agree with Grinols (2004:1) that "Knowing how to evaluate **economic development** requires a comprehensive framework to compare benefits and costs that is theoretically grounded and established prior to any choice being made"[160] and that, in general, procedures that have typically been used to evaluate casinos, for example, "as a means of economic development suffer from two deficiencies: lack of a valid framework, and lack of complete and trustworthy information" (Grinols, 2004:1) Grinols notes that in the absence of a valid and sound methodological framework for analysis; the question of whether gambling contributes to the well-being of citizens, as an economic development policy by governments cannot be honestly assessed. In an ideal world, Grinols (2004:5) envisions that "policy would be determined by commissions and members of government dispassionately evaluating the alternatives, debating their merits, selecting the best, and then implementing them."

5. Researcher Bias and Value Differences

A key concern in the review of the literature on the analysis socio-economic impact of gambling is lack of consensus in what should or should not be counted or measured as impact. This may reflect the political, ethical and moral nature of gambling as a social

[160] Text in **bold** font appears in the original quote.

issue where differences in values of those conducting the research are often revealed. The challenge is how to judge the objectivity of a researcher's work. Unfortunately, the use of economic analysis tools such as conventional cost-benefit analysis do not ensure objective analytic results; indeed there are considerable differences in what cost and benefit to include and how to measure them within a CBA framework. How then can citizens and policy makers trust the data, analysis and output that may be coloured by values and opinions?

In relation to gambling research, the above words essentially mean that researchers tend to find what they expect to find. The gambling industry, for example, generally believes there to be a net welfare gain from their business, and so one would expect industry-sponsored studies to have a greater tendency to reflect this belief. Other studies from anti-gambling lobby groups tend to reflect an opposite belief structure. The two groups often appear to be engaged in a sort of "values war" armed with published studies citing numerical figures at opposite ends of a spectrum large enough to cast the validity of both into doubt. The ironic result is that the research aimed at resolving the externalities generated by gambling actually *becomes* an externalized cost to other researchers in the form of biased and flawed studies.

Many of the methodological flaws gambling studies seem to stem from the tendency for researchers to engage in "filtering", or seeing what they want to see in the data, scenario or experiment results. Flawed studies tend to be based, in turn, on older flawed studies, which is evidence that sometimes researchers will pre-set their defined outcome and filter their references, data selection and methods through this belief structure. They fail to cite reputable studies showing results opposite to theirs, or go out of their way to cite less than reputable studies if it bolsters their arguments or views.

A primary challenge within the area of study known as "social science" is that of personal biases and perceptions and how they relate to interpretation of facts, where facts may be defined as an agreement to cease further inquiry into a particular matter. If it were generally believed that none of the facts related to the issue of legalized gambling were disputable, there would likely be no need for inquiry into the subject of the net impact of legalized gambling. One researcher may establish what she or he believes is a fact, only to find it disputed by another researcher with a different data set, level of sophistication in tools, or area of expertise. Facts emerge from a research community as a form of consensus, or a common sense of what is "really" going on. Not only will this theoretical framework emerge as a form of research consensus, but the framework itself is intended to allow individuals, communities, governments and decision makers to also reach a similar consensus regarding "the facts" and make informed choices based upon them. Ideally, it would function as a consensus-building tool to allow people to reach a point of agreement concerning whether or not a particular issue warrants further investigation.

Two potential outcomes of this project are:

- An interdisciplinary research consensus concerning an appropriate tool or set thereof for understanding the issue of legalized gaming in a concise, clear, intuitive and theoretically appealing way; and

- To provide the basis for individuals, communities, governments and other decision makers to reach their own consensus regarding “facts”, where this consensus may vary from region to region or even community to community.

One tool for elucidating the full range of well-being impact of gambling is the Genuine Wealth model, which is essentially a map or blueprint for eliciting the values of a particular group of people (both gamblers and non-gamblers) with the intent of providing a picture of their current conditions of well-being (with or without gambling in their life) as well as measuring changes in individual and collective well-being with increased access to legalized gambling opportunities. As a product of much research consensus-building, it would facilitate the same sort of consensus-building among people concerned with the impact, effect or drivers associated with the issue of legalized gambling.

In summary, the intent of the SEIG Framework that is proposed is not to contribute intellectual energy into an “us vs. them” paradigm of dispute, but to reach a consensus regarding such disputes and to provide a practically intuitive and theoretically appealing tool for defining, outlining and resolving disputes (i.e. maximizing agreement) in an effort to understand what is “really” going on.

While the authors recognize the difficulty for any researcher to engage in objective “value-neutral” inquiry, the intent of the SEIG Framework is to be “value-flexible” and “value-transparent”. The distinction lies in the difference between “positive” and “normative” analysis, where positive analysis attempts to describe a world that “is” and normative analysis describes as world that “should be”. A framework that aspires to be as positive as possible in its analysis can at the same time be flexible enough to allow people of different belief structures to gain meaning from it, or transparent enough to allow other researchers to input their own data or assumptions for the purposes of building “what if” scenarios, or to examine the robustness of the framework when its assumptions begin to break down.

An ideal theoretical framework would go beyond simply telling people what they want to hear, or showing them what they want to see; rather, it would allow for a diversity of assumptions to be made, it would reveal some things previously hidden or left unconsidered, and it would facilitate a meaningful consensus-building dialogue with agreement concerning “facts” on the impacts to individual and societal well-being associated with gambling, not divisiveness over how to approach them as its goal.

6. What Types of Gambling Activities Should Be Analyzed and How Should Expected Odds of Losing Be Factored?

In theory, all types of games of chance should be analyzed in terms of their impact on well-being from the individual level to the provincial scale of impact analysis. This would include: lotteries, charity bingos, VLTs (video lottery terminals), EGMs (electronic gaming machines), slot machines, other casino games (blackjack, poker, roulette, Keno), and internet gambling. An impact profile should be established for each type of gambling activity by game of chance to determine the relative impact on well-being using the analytic framework.

Each type of gambling differs in terms of the odds of play, or the built-in long run loss (in this case the price) associated with the specific game, which has relevance to the distribution of well-being impact, cost and benefit of various games of chance. Differences in these built-in percentages of defeat reflect differences in the long-run prices of play. Problem gamblers appear to have a stronger preference for games with a higher percentage of defeat (e.g. VLTs). Some researchers attribute this to differences in "cognitive deficiencies" related to their abilities to evaluate probabilities, but it could simply reflect a stronger preference for risk by problem gamblers. Not only do games have differences in the percentages of defeat, but games may also differ in terms of the maximum allowable bet per play, which relates to the level of "throughput" or the ability of a gambler to cycle through a given amount of money in a certain number of plays or period of time.

The statistical house edges describe the long-run loss function or percentage of defeat built into each game. These statistical edges for the house winning are the statistical likelihood of the gambler losing a portion of every dollar he or she gambles at any given game. The *2005 Casino & Gaming Market Research Handbook* provides a benchmark of statistical edges against a player by type of game. For example, the odds at losing at Keno are roughly 29.5 percent. That means that if a bettor is wagering $100 per unit of analysis (per visit, day, hour or play) on Keno, they will lose an average of $29.50 per unit of analysis. This is the built-in percentage of defeat inherent in the game. Another way to examine this is to consider it as the price per relevant unit of analysis to engage in a particular form of gambling activity. From this vantage point the relative long-run percentages of defeat reflect the relative prices of various gambling opportunities.

It is interesting to consider what would happen if each lottery ticket, VLT or gaming table explicitly listed the odds of winning in addition to the expected rate of gambling return over an infinite number of plays. Would the gambler act any differently or more "rationally" if he or she was fully informed of the odds of losing? Presumably, if fully aware of the odds of losing a portion of each unit of money wagered, the gambler's willingness to lose (i.e. forgo disposable income) is effectively the price (i.e. entertainment value or utility) he or she is willing to pay for the chance of winning.

The expected rate of gambling return is simply the amount of money paid out as a percentage of money taken in. If, for example, a VLT machine explicitly stated that out of every dollar put into it, it kept nine cents and gave 91 cents back, whereas a gaming table stated that it took 8 cents and paid out 92 cents for every dollar, it would be rational for a gambler to choose the gaming table over the VLT, at least in a strictly financial sense. Even if such odds were made explicit, it is likely that a substantial number of people would continue to gamble because they do not think the long-run odds apply to them. Where such odds are identical across several games, differences in preference must, at least rationally, be attributed to some other more subjective factors such as the variance, or peaks and valleys of winning patterns within the game, or they may be attributed to different preferences related to the gambling experience in its entirety, such as a preference for playing alone at a VLT or in a group at a blackjack table.

In Las Vegas-area casinos, these relative odds are well-known to the savviest gamblers, who subscribe to online web forums and mail-out coupon flyers from casinos in their area offering “double odds” on a particular hand of video poker not offered by another casino. Where casinos have exhausted all opportunities to compete in terms of property attributes (guest “comps” & perks, local spa facilities, venues, shops, perception of exclusivity), they are able to compete for customers on this basis. However, it does reveal that casinos are capable of price competition though manipulation of the built in percentages of defeat, or “loss functions”.

Evidence of a relationship between the price of play (built-in loss function) and gambling activity preference can be seen in some of the output from the 2001 Queensland study (p. 17)[161]. The various types of gamblers are ordered according to the percentages of each type that engages in a specific gambling form. The distributions for all gamblers who play instant scratch-tickets and raffle tickets are more evenly distributed (i.e. less skewed) than the distributions for gaming machines, Keno and casino table games. These differences potentially stem from the technical differences between lottery/raffle ticket and other games of chance, where the per-play bets are higher. For example, it is probably more burdensome than enjoyable to purchase 200 lottery tickets for a dollar apiece at the convenience store than it is to place $200 on one hand of blackjack at the local casino with a drink in hand and friendly company at one’s side.

The main question has to do with the homogeneity of gambling opportunities, and the ability or inability for one type of gambling to substitute for another type. Gambling activities differ in terms of objective and subjective attributes, and problem gamblers may have a common preference for “higher-priced “gambling activities. Objective attributes include the maximum bet allowed per play, the number of potential plays per

[161] Social and Economic Research Centre (SERC) University of Queensland. (2001). *The Social and Economic Impacts of Gaming: A framework for research*. Gambling Research Panel. Victorian Casino and Gaming Authority [Australia].

unit of time in addition to the "house odds" or the long-run loss function associated with the particular type of gambling.

For example, a lottery ticket has a maximum "allowable bet" per play, and the frequency of play is limited by a vendor's ability (or willingness) to print off or sell as many tickets as possible in a unit of time. Subjective attributes include the differences between the experience offered by playing Video Lottery Terminals alone at the back of a bar or throwing the dice on a roulette table surrounded by cheers and praise from other gamers present at the table.

The purpose or intent of using a gambling screening tool to first categorize gamblers and then separate them by activity type is to locate a preference by problem gamblers for specific games. Based on the Queensland results, high-risk gamblers may be attracted to higher-priced forms of gambling associated with a higher amount of monetary "throughput", or the ability to "burn" through X amount of dollars in a given unit of time (or some other metric of analysis). To make this clearer, if the loss percentage of Keno is 29.5% and the loss percentage of playing perfect strategy blackjack is 2%, then in the long run, a Keno player will bankrupt an hypothetical initial budget faster than a blackjack player will.

Both the Queensland study and the 2001 report by the Canadian Centre on Substance Abuse and Responsible Gaming Council on problem gambling in Ontario found evidence of a broad trend that more severe gambling problems are associated with a stronger belief that playing a certain strategy increases the odds of winning or that playing after losing increases the probability of a win.[162] The language used to describe these differences is a "cognitive deficiency", but cognitive differences or preferences can also suffice. Both studies cite the need for cognitive research from the psychology community into the perceptions and understanding of risk related to problem gambling, but some insight could be gained from the literature on experimental economics related to time preference and reward structures. For example, if given a choice between $100 with certainty or a 1-in-2 shot at winning $200 by calling the face of a coin, a risk-loving person may prefer the latter over the former, and vice versa for risk averse individuals.

Further to the previous mention of monopolies and literature on industrial organization is the possibility that a plethora of gambling opportunities with different prices allows gamblers to "self select" into an implicit price discrimination scheme, with the highly inelastic demand gamblers choosing the "higher priced" gambling opportunities with more risk, and the more price responsive and potentially risk averse gamblers choosing lower priced gambling opportunities associated with less risk. Highly inelastic demand curves are relatively unresponsive to changes in price, which gives the seller of the product a greater ability to set price above the competitive level and therefore capture more surplus. One method of establishing such elasticity would be to allow casinos to

[162] Canadian Centre on Substance Abuse and Responsible Gambling Council (Ontario), 2001, *Measuring Gambling and Problem Gambling in Ontario*

change their "prices" or the level of built-in loss percentages and compare this percentage change in price to its associated percentage change in quantity demanded assuming gamblers were aware of the price changes.

Under the Canadian Problem Gambling Index criteria, one driver of problem gambling is the need to gamble with higher and higher amounts to feel the same "high" associated with winning. Using the results from the Queensland study, many problem gamblers have strong memories of their initial "big win", and, when combined with the rationale that playing through a losing streak increases the odds of winning, it seems more apparent why a problem gambler would migrate towards games with a higher variance of play, or potential to realize large gains. However, there are more "valleys" than "peaks" in such games, as reflected in the larger built-in loss percentages of the games.

The economic perspective can provide useful, albeit limited insight into the nature of addictive behavior through an examination of the relative elasticity of demand for specific forms of gambling. A high elasticity of demand for VLTs, for example, could stem from potentially more addictive properties inherent in this form of gambling. The goal is to determine which forms of gambling have the most appeal to problem gamblers and establish what it is about these games that has so much appeal, whether it is the maximum potential payoff, the rate or amount of monetary throughput needed to cycle through a "losing streak" and recoup lost earnings, or the structure of the payoffs within the game. Treating all gambling opportunities as homogenous in nature will tend to underestimate the impact of games preferred by problem gamblers and over-estimate the impact of games not preferred by them.

7. The Purpose of Economic Cost Estimates

The *International Guidelines for Estimating the Costs of Substance Abuse* developed by Single et al. provides a good description of the purpose of economic cost estimation as it relates to the subject of addictions – abuse of substances or activities. The adverse social and health consequences from alcohol, drugs and tobacco may be similar to gambling, though gambling, as a free-choice activity, has unique attributes.

Estimating the social and economic cost of gambling or substance abuse is important for public policy analysis since these estimates help set fiscal and policy priorities and help determine the allocation of both public resources.[163] Secondly, estimating the full cost of such social and health policy issues can help appropriately target specific regrettable impacts or effects of an activity. For example, a recent 2006 study by the Canadian Centre on Substance Abuse estimated the socio-economic cost of substance abuse in Canada at $39.8 billion per annum, with the hope that such an estimate will put pressure on governments to deal with this regrettable societal cost in devising new

[163] Single, E., David C., Brian E., Henrick H., Helen L., Pierre K. and Wilson, E. (2003)l. *International Guidelines for Estimating the Costs of Substance Abuse, Second Edition*. World Health Organization.

policy responses.[164] Such estimates are useful in constructing more comprehensive or full cost-benefit assessments, like Genuine Progress Indicator (GPI) full cost-benefit accounting, for complex social issues like problem gambling. This should lead to meaningful measures of net economic welfare that take into consideration these regrettable human and social capital depreciation cost. Thirdly, economic cost studies can help to identify information gaps, research needs and can provide important cost information for the revision of national statistical reporting systems, to include human and social capital elements.

Single et al. point to the potential for positioning such social and economic cost estimates within a revised System of National Accounts (SNA) from which Gross Domestic Product is derived. By expanding the SNA to include human and social capital elements with respect to the effects of substance abuse and problem gambling is a distinct possibility. Statistics Canada has been pioneering the development of satellite natural capital accounts to compliment the current SNA for Canada and has identified opportunities for expanding the accounting into human and social capital, similar to what the five-capital framework of the Genuine Wealth model[165] and consistent with GPI full cost-benefit accounting.

The inclusion of human and social capital depreciation costs associated with gambling and substance abuse within Canada's framework of the SNA would be an important step in improving measures of economic progress such as GDP making national accounting systems more useful and relevant. Finally, estimating the cost of problem gambling or substance abuse would provide an important baseline of information to help determine the effectiveness of problem gambling policies and programs that are intended to mitigate or reduce the harm caused by problem gambling.

8. What Constitutes A Cost? – Social vs. Private Cost

The economist's definition of a cost relates to the loss, sacrifice, suffering or effort involved in doing something with scarce resources. This sacrifice (what someone is giving up for an expected benefit) is called an opportunity cost, which is a measure (usually expressed in monetary terms) of the benefit, which would be derived from the best alternative use of a particular resource. For example, the alternative use of a bare hectare of land, which is currently being used for growing wheat, is the next most valuable crop, which could be produced on that land. In terms of gambling, which generally consumes a person's free or leisure time, the opportunity cost of gambling is the value of the loss of a person's free time that was previously spent recreating with their family.

[164] Canadian Centre for Substance Abuse. 2006. *Costs of Substance Abuse in Canada 2002*. April 26, 2002.

[165] The Genuine Wealth model is comprised of five forms of capital: human (people), social (relationships), natural (the environment), built (manufactured) and financial capital. All five capitals are seen as complimentary and thus integrated into a single balance sheet.

In the context of gambling, consider the counterfactual scenario where only healthy, legalized gambling existed with no problem gambling, neither currently or historically. We are assuming that current gaming opportunities are consumed in a healthy and responsible manner without any net loss in societal well-being or welfare. However, when gambling behaviour becomes an addiction or where the activity becomes abusive in nature, cost or regrettable negative impact is experienced by both the gambler (private decision cost) as well as externalized impact or cost on family, friends and the community at large (social cost).

A great deal of attention is paid to distinguishing between private and social costs and benefits in the economics of gambling literature and how to measure them (Walker, 2006). Stevens and Williams (2004: 3) note that "although several authors have attempted estimates of the social costs attributable to problem gamblers, none has actually defined the term social cost, and many of the economic constructs applied to these social effects often seem artificial and inappropriate to non-economists." Eadington (1998) notes that social cost and benefit are particularly problematic since their impact, while fairly apparent, is difficult to measure and quantify in monetary terms for comparison with conventional monetary economic terms. No standardized social cost methodology currently exists for problem gambling, though there is considerable debate about the proper methodological approach.

Walker and Barnett (1999) argue that a social cost exists only when an action reduces the total wealth (well-being) in a society, implying that any transfers of wealth resulting from gambling (e.g. gambling losses) cannot be considered social cost. Some economists challenge this narrow interpretation of social cost since it effectively leaves out many of the negative impacts or harm from gambling (Hayward, 2004; Thompson, *et al.*, 1999). Others (Thompson et al., 1997) count almost all negative impacts of gambling as a social cost. Grinols and Mustard (2001) define social cost suitable for a cost-benefit analysis framework as any cost-creating activity associated with both problem gambling as well as recreational gambling, in general. They include the following taxonomy of social cost activities tied to gamblers:

- Crime
- Business and employment costs
- Bankruptcy
- Suicide
- Illness
- Social service cost
- Government direct regulatory cost
- Family cost
- Abused dollars

Walker (2006) is helpful in sorting out this debate, noting that the economics definition of a social cost is based on the idea that these costs would reduce the overall wealth, or the well-being conditions (not just material wealth) of a community. This is consistent with a public health perspective. Walker (2006) argues that because private decision costs are associated with the costs of the activity of the individual gambler; these net

private costs (or benefits) need to be set off against the social costs. However, Single et al., (2004) note that from a public policy analysis point of view, it is social cost that is relevant, not private cost.

Applying the logic of some researchers (e.g. APC, 1999; Colins & Lapsey, 2003; Single, 2003), which is based on Markandya & Pearce (1989), for a cost to be private requires that the gambler (for example) has full knowledge about the potential cost or impact on his or her well-being of consuming the good or service. In the case of gambling, it implies that the gambler is not fully informed about the possible financial, health and other risks to his or her well-being of gambling and proceeds to gamble too much. The result is a social cost even if the well-being impact is experienced only by the gambler. Of course, gamblers are never fully informed about the potential consequences of gambling.

In normal economic terminology, social cost **equal** private decision cost **plus** external cost (Single et al., 2001: 13-14). In the case of problem gambling, the focus is on the net private benefit set off against the social cost where net private benefit is defined as the difference between private benefit (consumer surplus) and private cost (negative impact to health and personal well-being).

In conventional economic analysis (e.g. cost-benefit analysis) the overall effects on society from gambling must be divided into private and social costs and benefits. Cost-benefit analysis should typically only include social benefit and cost with private benefit and cost dealt with separately. So too in cost-of-illness (COL) studies; only the social cost should be considered (Single *et al.*, 2001:16). However, measuring the social cost of either substance abuse or gambling is no easy matter.

From the perspective of public policy, social cost is the relevant metric, not private cost. Governments are ultimately interested in the appropriate levels of any activity for society that either improves the overall conditions of well-being of the society or leaves the society no worse off than it was without the activity. Governments are interested in the cost that an activity imposes on the rest of the community. For example, in determining the appropriate level of pollution or violence in society, society does not take into account the private benefit or interest of the perpetrator (the polluter or criminal), rather is concerned with the well-being and interest of the community as a whole being impacted by these activities. In this sense, the social cost of gambling as well as substance abuse should estimate only the *net social* cost.

The *International Guidelines for Estimating the Costs of Substance Abuse* (Single et al., 2001) provides some guidance for assessing the private and social costs of substance abuse that are relevant to problem gambling. Using these guidelines, a **private cost** exists where the cost of providing gambling opportunities and gambling activity (i.e. consumption) is knowingly and freely borne by the producer (e.g. casino) or consumer (i.e. gambler) as a result of a rational decision-making process (with the gambler fully aware of the odds of winning or losing and potential well-being impact). Private cost is associated only with the people engaged in the activity of gambling. Technically, where

the cost of a commodity, product or service is limited to private cost (or benefit), the economic impact to a society or community is approximately zero. However, several conditions may preclude the possibility of a private cost:

- The gambler may not be aware of the full possible effects of gambling on his or her well-being (i.e. incomplete information);
- The gambler may not make a *rational* decision based on the cost of problem gambling, which must be borne by the user; and
- There may be no mechanism by which the cost, which the problem gambler's actions imposes on the community (i.e. externalities), as a whole, can be directly borne or internalized by the gambler.

Using the international cost of substance abuse guidelines, three rules could be used to determine whether private cost exists for problem gambling:

- Gamblers are fully informed as to the effect or impact (both positive and negative, benefit and cost) their gambling activity imposes upon themselves;
- The gambler is required to bear the full (internal and external) cost (i.e. negative effect) of problem gambling activity; and
- The gambler makes rational consumption decisions about gambling in light of information available to them.

Single et al. (2001) argue that *if* these stringent guidelines are not met in full, then it is justifiable, from a conventional economic analysis perspective, to treat gambling abuse cost (cost of problem gambling by the individual gambler) as social cost. That is, to the extent that the cost of problem gambling by an individual is not limited exclusively to the individual, there are both private and social costs associated with problem gambling. For example, if the negative effects of a problem gambler's behaviour are felt or experienced by family members (e.g. family violence resulting from financial stress due to problem gambling debts), then practically speaking such cost imposed as an externality cost should be considered a social cost not solely private cost.

So what is a social cost? **Social cost** may be simply defined as cost or harm imposed on the rest of society. Walker and Barnett (1999) note that "the social cost of an action is the amount by which that action reduces aggregate societal real wealth."[166] Another term for social cost is harmful "externalities"[167] or "external cost" that takes the form of direct cost imposed on the innocent portion of the population that does not operate through the pecuniary mechanism of prices and markets. That is, external cost (refe**rs** to the cost that is external to the individual making the consumption decision, such as

[166] If "wealth" is defined in terms of its original meaning ("the conditions of well-being"), this use of the word in useful for purposes of the SEIG Framework.
[167] Externalities can also be positive.

the cost that problem gambling causes non-problem gambler citizens or family members. External cost tends to generally constitute virtually all of the total cost in economic analysis because private decision cost is usually offset by private benefit (Single et al. 2001: 14). In economic terminology, social cost usually **equals** private net cost ***plus*** external cost.[168]

There are, however, complications with respect to the net private cost of both problem gambling and substance abuse, since much of the private decision cost involves addictive consumption and assumes there are genuine private benefits from addictive consumption, which is questionable. The onus is on analysts to demonstrate that problem gamblers experience a genuine improvement in their overall well-being from the over consumption of gambling opportunities (i.e. they become problem gamblers) and, therefore, a genuine private benefit exists.

A private decision cost assumes the individual is a rational and fully informed consumer about the potential positive and negative impact on their well-being when problem gambling arises. Rationale behaviour by problem gamblers, as well as substance abusers, can be questioned. When a consumer becomes addicted or dependent on the activity of gambling, then many of these costs become redistributed or imposed throughout the gambler's family or household, the community and society as a whole through a variety of mechanisms and institutions. As with substance abuse, the case can be made that at least some of the private decision cost associated with problem gambling is not offset by private benefit (if it in fact exists) and can therefore be included as part of the social cost estimates of problem gambling. As Single et al. (2001:14) conclude, in theory there is a difference between social and external costs, but in most economic analysis, external cost constitutes all or virtually all of the social cost. As with substance abuse, the cost of problem gambling is mostly external cost but the inclusion of some private decision cost can be justified.

From a government perspective, private cost and benefit are less important than social cost and benefit. This is because individual or private actions are considered to be the purview of each individual who, if adequately informed about the risks to his or her well-being from gambling, makes a rational and informed decision. Only to the extent that private cost or benefit is seen by governments to be in conflict with society's views of fairness (a concern about distributional impact), might this justify government intervention.[169]

It would appear that the resolution of how to define and measure private decision cost and social cost ultimately depends on a genuine reading of the consumption actions of the individual gamblers, whether they are acting rationally or not and whether or not their individual problem gambling behaviour is deemed to result in no real negative impact on the well-being of society. In part, these decisions must be guided by common sense. The authors of this report believe that adopting the *International Guidelines for*

[168] Single, E., David C., Brian E., Henrick H., Helen L., Pierre K. and Wilson, E. (2003)l. *International Guidelines for Estimating the Costs of Substance Abuse, Second Edition*. World Health Organization.
[169] Ibid., p.14

Estimating the Costs of Substance Abuse for distinguishing between private and social costs is appropriate for problem gambling.

9. Determining Opportunity Cost: Counterfactual Scenario

The basic tenet of cost-benefit analysis is that in order to determine a cost or impact of a particular action or policy, one must compare this action or policy with a situation in which the action or policy does not exist. For example, comparing the effects of gambling in a community without legalized gambling or no casino with a community with legalized gambling or a casino. The former scenario (without gambling) is called the *counterfactual scenario*[170] and it is comparing the counterfactual scenario with a scenario in which gambling is present that economists can estimate the *opportunity cost* of an action or policy. Opportunity cost refers to those resources that would have been used for some other purpose, depending on the counterfactual scenario.

In other words, the opportunity cost is the cost of an economic activity foregone by the choice of another activity. For example, if there was no legalized gambling or casino, then there may be fewer problem gambling effects and, therefore, no need to spend money on prevention or treatment. This money would have otherwise been spent somewhere else in the economy, possibly resulting in a genuine improvement in well-being. Therefore, there is a tangible opportunity cost to sector or activities in an economy that may have benefited had money not been spent on gambling activities and dealing with their regrettable effects.

Such counterfactual scenario analysis requires answers to complex questions. For example: Was it the gaming venue (e.g. casino) that was primarily responsible for the loss of well-being to the individual or community? In other words: How much of the effect can be attributed to gambling or problem gambling? Moreover: Might the problem gambler have resorted to another form of addiction in the absence of gambling opportunities? These are key issues of attribution or causality of the effects of gambling.

10. Indirect and Direct Effect (Benefit and Cost)

The effects of a gambling venue (e.g. casino) on a community can be both direct and indirect. Direct effect represents net addition to the community's overall well-being. Direct effect would include the *net* increase in income (e.g. wages earned by casino employees) and *net* employment (e.g. new jobs created by the casino that drew from unemployed labour) associated with operating the gambling venue. One of the key challenges is determining whether or not this is a genuine direct effect. For example: Were the new jobs created making use of otherwise unemployed (or underemployed) skilled labour in the community? If not, then this direction effect may be questioned.

[170] Single, E. 2003. Estimating the Cost of Substance Abuse: Implications to the estimation of the costs and benefits of gambling. Presented at the First International Symposium on the Economic and Social Impacts of Gambling. September 23-27, 2000. *Journal of Gambling Studies*, 19(2), 185-213.

Indirect effect refers to the secondary effect of gaming venues in the community. For example: the purchases by visitors to the casino who reside outside the community, or the purchases made by casino employees within the community. Economists commonly use input-output models to estimate indirect effect tracing the indirect ripple effect (using multipliers) of a change in a regional economy resulting from a new development (e.g. casino). Using input-output models, it is possible, in theory, to account for the change in the output, earnings and employment level of an industry or industries affected by the development. Many provincial governments use input-output modeling for examining "what-if" potential impact of various economic development scenarios. Statistics Canada also uses input-output models in various capacities.

One of the key challenges for using input-output analysis applied to gambling is that genuine gambling multipliers have not yet been developed for Canada or the US.[171] The second challenge is that input-output models are best suited for small changes to a community's economic structure; the construction of a casino in a smaller centre can have a large and significant socio-economic ripple effect. A third challenge is that an indirect effect is based on a direct effect; if the direct effect has not been properly measured, then the indirect effect will be in error. Finally, as noted previously, there is the challenge of proper attribution of both the direct and indirect effect from legalized gambling development. Caution must be taken in ensuring that the effects are not merely transfers of human and other resources within a community or imports from outside the community, but utilize otherwise unemployed resources.

11. Tangible and Intangible Benefit and Cost

In conventional cost-benefit analysis, benefit comes in two types: tangible and intangible. Tangible cost and benefit represents that which can be measured and assigned some monetary value such as the direct and indirect effect discussed above. For example, a tangible effect is more jobs and additional income generated in the local economy. Tangible cost, when reduced, can yield resources that are then available to the community for other consumption or investment purposes (Single, et al. 2001).

Intangible cost and benefit is difficult or impossible to measure quantitatively; nor can it be monetized. An intangible benefit may include the perceptions or feelings of positive or improved well-being one experiences that result from gambling. An intangible cost includes pain, suffering, feelings of despair, anxiety, stress or the gambler's quality of life-years lost as a result of gambling losses which cannot be measured nor monetized. When intangible cost is reduced or eliminated, it does not yield resources available for other uses (Single et al., 2001). Intangible cost, while important to assessing well-being impact, is often difficult to quantify in monetary terms and is usually omitted from gambling-related analysis studies, which is a clear shortcoming.

[171] Commission on Behavioral and Social Sciences and Education. (1999). Pathological Gambling: A Critical Review, Chapter 5 (Social and Economic Effects).

However, considerable effort is being made to measure this formerly intangible cost in either monetary terms or in measures that reflect changes in well-being conditions (e.g. GPI-type accounting and full cost accounting of policy issues). These include measuring the monetized value of an individual's loss of quality time (recreational or free time) and the cost of illness associated with lost productivity due to premature death, disability, absenteeism, pain, suffering, or stress. There are real economic and societal well-being losses associated with illness-related lost days of work and with work performed, as well as reduced "potential" work time/productivity, by those who have long-term or short-term impairments or disabilities. These should be accounted for in assessing the effects of problem gambling on society.

Estimating productivity cost is complicated, however, since it requires robust estimates of premature mortality and morbidity that can be attributed to problem gambling or substance abuse. It also requires clear assumptions about what value proxies (e.g. real wage rate or income) are assigned to productivity losses. Moreover, monetizing the effect of premature mortality due to problem gambling or substance abuse requires assumptions about the value of life-time lost and a social discount rate over which the net present value of the loss of life is calculated. Placing a monetary value on premature death can be controversial from an ethical perspective.

The challenge for conventional cost-benefit analysis is how to treat and measure the intangible effect on well-being, either in monetary or qualitative terms. One approach may be to simply itemize this impact and give it equal prominence alongside the tangible and monetized benefit and cost. Another approach is to take a full cost-benefit accounting approach like GPI accounting (using the Genuine Wealth model) to show both the non-monetized and monetized effects of gambling on societal well-being.

12. Marginal Cost and Benefit

In economics, the concept of marginal cost is central to determining the relative incremental change in cost or benefit associated with an increase in an economic activity. In the case of gambling, the critical issue is determining the incremental benefit or cost attributable to gambling after netting out cost or benefit that would have otherwise been incurred in the absence of gambling opportunities being legally available. The actual determination of net the effect or marginal cost or benefit is often more difficult than what is conceptually conceived. The greatest challenge is one of attribution of the gambling behaviour to a change or effect, at the margin, to well-being impact measured in monetary terms. This is critical to assigning weightings to various effects (positive and negative, benefit and cost) of gambling at the margin, for example, the effects of incremental additions to legalized gambling opportunities (e.g. an additional casino or additional VLT in community). Too often in economic analysis, there is a tendency to avoid the difficult estimation of marginal benefit or cost in favour of the more easily calculated average cost or benefit.

13. Welfare Cost: Real vs. Pecuniary (Transfer Payment)

One of the most complex issues and source of measurement errors in estimating the welfare cost and economic impact attributed to both substance abuse and problem gambling is the care needed in distinguishing between which effect is real and which is merely a transfer (i.e. pecuniary cost).[172] [173] What may appear to be a cost may in fact be a transfer from one person or entity in society to another.

For example, when a person borrows money to take a trip to gamble recreationally, the money borrowed is not a cost to society rather a transfer of consumption from the future, when the debt will be repaid, to the present. Conversely, what appears to be a benefit may also be a transfer. For example, the money spent by recreational gamblers at a casino is an indication of income generated in the community as a result of the casino. However, only if the gambler lives outside of the community in which the casino resides is it considered a real benefit of the casino to the community. Money spent in the casino by local residents is not an economic benefit to the local community or economy but merely a transfer within the community. If the casino did not exist, then residents would have spent their disposable income on other locally available entertainment or recreation.

However, transfer effect is difficult to identify and resolve in economic analysis. McMillen (1991)[174] points out that economic impact studies often fail to explain the potential for one expenditure to displace another. For example, the construction of a casino and subsequent gambling expenditure is often treated as a net addition or benefit to the community when the real question to be addressed is how else those resources or money would have been invested had the casino not been built. If those resources would have been expended elsewhere in the community, the construction of the casino is a mere transfer, not new dollars entering the community. McMillen notes that examining gambling impact could use the same evaluation lens as when examining the benefit of foreign trade. If a casino imports most of its supplies and human resources from outside the community, does not make use of available (unemployed) and otherwise uncommitted human capital and other resources, and sends the profit from the casino to owners who live outside the community, then there are less benefits to the community had the resources come from the community itself.

In economic analysis it is important to distinguish between real cost and transfer cost or pecuniary cost. Collins and Lapsey (2003) note that *real costs* are those that reduce a society's total welfare because they represent a withdrawal of resources that could have other potential uses (i.e. opportunity cost). *Pecuniary costs* are externalities that take the form of transfers of cost from one person to another or a redistribution of income but with no net cost or welfare impact to society as a whole.

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[172] Collins, D. and H. Lapsley (2003). The Social Costs and Benefits of Gambling: An Introduction to the Economic Issues. Presented at the First International Symposium on the Economic and Social Impacts of Gambling, September 23-27, 2000. *Journal of Gambling Studies, Summer*, 19(2), 123-148.

[173] Single, E., David C., Brian E., Henrick H., Helen L., Pierre K. and Wilson, E. (2003)l. *International Guidelines for Estimating the Costs of Substance Abuse, Second Edition*. World Health Organization. P. 64-65.

[174] McMillen, J. 1991. The impact of casinos in Australian cities. Pp. 87-102 in *Gambling and Public Policy: International Perspectives*, William R. Eadington and Judy A. Cornelius, eds. Reno: Institute for the Study of Gambling and Commercial Gaming, University of Nevada.

Collins and Lapsey (2003) give several examples of pecuniary cost:

- When a gambler steals in order to gamble, the value of the stolen goods is a transfer. However, real cost includes those incurred by police investigating the theft along with the cost of the judicial and penal system, insurance, time and effort for the original owner to replace the stolen objectives, and the owner's trauma.

- Revenue governments raise from tax is pecuniary since its does not create new resources, except when the profit comes from outside the community or would have been spent outside the community.

- If an employee loses his/her job and can't be replaced, there is a loss of production which represents a real cost. If the employee can be replaced or he/she collects unemployment insurance, the cost of considered pecuniary or transfer and is not private or social cost.

Collins and Lapsey (2003) advise that only real cost should be included in cost-benefit analysis. Classical cost-benefit analysis does not include "transfers" such as theft and social welfare payments, since no money or utility is increased or decreased on a societal level. However, if one takes a sociological perspective, transfers such as theft and bankruptcy would be treated as a cost to individuals and emphasizes the importance of such an intangible cost such as psychic cost.[175] Furthermore, welfare payments to persons unable to work because of gambling problems would be considered a transfer or pecuniary cost to the economy in a "cost-of-illness" approach and would be included in a budgetary impact analysis focused on impact to government revenue.[176]

According to Walker (2003) government expenditure related to gambling may or may not be a transfer or social cost, depending on whether or not societal welfare increases or not. However, Walker (2003) does state that "bailout costs" (from family members), bad debt, and government welfare cost are all transfers of wealth that benefit the gambler and cause others to lose money.

According to Collins and Lapsey (2003) health care cost in Canada associated with problem gambling is social cost. However, government expenditures that are discretionary, for example money spent on educating the public about the well-being risks associated with gambling, should not be considered social cost.

One can use the *International Guidelines on Estimating the Costs of Substance Abuse* as a guide for determining which real welfare cost should count with respect to problem

[175] Hayward, Karen. (2004). *The Costs and Benefits of Gaming: A Literature Review with Emphasis on Nova Scotia*. A report prepared by GPI Atlantic for the Nova Scotia Gaming Foundation, July 2004; p. 23.
[176] Wildman, R. W. I. and S. Chevalier (2002). *Problems Associated with Gambling: A Preliminary Investigation into Health, Social and Psychological Aspects*. Ontario Problem Gambling Research Centre.

gambling. For example, a welfare cost that would count as a real cost would include payments borne by the state to individual problem gamblers (e.g. sickness benefits or invalid pensions) as well as payments to the victims of problem gamblers, their care-givers, family and dependents. Welfare cost calculations should also incorporate some estimate of the proportion of the total administrative cost of the social welfare system that is attributable to substance problem gambling-related welfare dependence. According to the *Guidelines*, the administrative cost is a real resource cost and should always be counted.

The *Guidelines* caution against double counting of cost or benefit. For example, if a gambler who was previously a productive member of the workforce receives welfare benefits resulting from problem gambling behaviour, it would be double counting to include both the productivity losses (a real resource loss) and the direct cost of welfare benefits (a welfare payment representing a redistribution of consumption ability from the rest of the community to the problem gambler) in social cost estimates. The former is a real resource loss while the latter is a pecuniary cost or transfer.

Deciding on what kind of cost it represents depends on whether the individual gambler is rational or not in her/his behaviour. If the gambler is rational and fully informed about the potential impacts of her/his gambling behaviour, the private resource cost will be fully internalized and should not be counted as part of social cost. On the other hand, under these circumstances, the welfare cost represents an externality imposed on the whole community and should be incorporated as a social cost. According to the *Guidelines*, all welfare cost associated with substance abuse (or problem gambling) should be incorporated in estimates of budgetary impact.

14. The Challenge of Attribution: Who Bears the Social Cost and Benefit Of Gambling?

In addition to distinguishing between real and pecuniary cost, gambling, like substance abuse, presents complex methodological challenges when it comes to measuring the well-being impact of wealth and income redistribution and transfers that result from gambling. For example: How should social and economic analysis, from the perspective of a change in net well-being, treat gambling as a form of wealth transfer from the gambler (all gamblers) to the general population through government regulation, taxation and redistribution of gaming revenue? Moreover: How and to whom is the cost and benefit of legalized gambling being distributed in society? What segment or socio-economic cohort in society is bearing the majority of the private costs of problem gambling? Which cohort in society spends the most on legalized gambling?

How should we treat the distribution of income or wealth? Intuitively, any change in the distribution of income and wealth in a society can have both tangible and intangible impact on the social capital or social cohesion of a community. While such impact may be difficult to monetize in conventional cost-benefit terms, the impact on a community's overall well-being and cohesion are real if intangible from an economic perspective. For example, a growing gap between rich and poor households can lead to social tension that can lead to increasing conflict between socio-economic groups resulting in

additional legal, justice and policing cost. The full economic, social and environmental cost of increasing inequity in society is largely ignored in measures of economic progress like the GDP or national income accounting, in general.

Conventional economic analysis and national income accounts tend to discount or ignore welfare and income distribution impact or cost to society. However, some welfare economists, including those who developed the Genuine Progress Indicator (GPI) (Cobb, Halstead and Rowe, 1995)[177] argued that while a change in income distribution could not be monetized, the relative change (i.e. a rising gap between rich and poor) in income inequality, using a change in the Gini coefficient (a measure of income inequality) could be used to adjust the GDP as a proxy for the social cost of rising income inequality. This approach is based on the theory that an increase in inequality (a growing gap between rich and poor) ultimately erodes the social cohesion and overall well-being of society and can lead to real socio-economic class conflicts, loss of trust, and associated costs. Classical economists might challenge this premise calling for evidence of real costs associated with changes in income inequality.

The issue of who bears the cost (and benefit) of gambling is a valid issue in analyzing the well-being impact of gambling to society as a whole, even if it does not formally enter into a cost-benefit analysis framework. Key issues must be addressed, including:

- How should the redistribution impact of government collecting gambling revenues be treated?

- If problem gamblers contribute a disproportionately larger share of gaming revenues to the public accounts, how should this wealth distribution impact be measured?

At the very least, analysts should account for the degree and amount of gaming revenues contributed by the type of gamblers, by gambling venue, and by the respective game of chance to measure and attribute the relative effect or impact of gambling. For example, the knowledge that in Canada an estimated 32 percent of gaming revenues comes from problem gamblers (Williams and Wood, 2004) and roughly 33 percent in Australia (Australia Productivity Commission, 1999), with the majority of revenues coming from VLTs (Canada) and EGMs (Australia), is vital information for assessing the distribution of negative effects of legalized gambling, and for determined where resources and efforts should be focused on mitigating problem gambling impact. This kind of analysis might be defined as incidence or distributional full cost-benefit analysis.

This approach is supported by *International Guidelines for Estimating the Costs of Substance Abuse* (2001), which notes that it would be desirable to indicate, which community groups are bearing the social cost of substance abuse. Namely, that the incidence of impact and cost should be accounted for where determining distributional

[177] Cobb, C., T. Halstead and J. Rowe. (1995). The Genuine Progress Indicator: Summary of Data and Methodology (San Francisco: Redefining Progress).

impact and allocating abuse cost. As with estimating substance abuse cost, the aggregate cost of problem gambling can be analyzed according to various community groups:

- Gambler (abuser);
- Other individuals;
- Business;,
- Government; or
- Others outside of the immediate community to whom exported or transferred.

It is possible to pass this cost on from one group to another. However, such transfer analysis is fraught with problems making it difficult, if not impossible, to track how cost is "shifted." Furthermore, all costs of problem gambling initially borne by business or government must eventually be borne by individuals (as citizens, households, workers, shareholders or taxpayers) either at home or abroad. Thus, incidence analysis should be confined to examining the initial burden of abuse cost among the community groups enumerated above.

15. Attribution Fractions (Causality) Analytic Framework: Challenges and Approaches

As with substance abuse, the uncontrolled consumption of gambling as a recreational activity has been linked to numerous health problems including higher rates, among problem gamblers, of long-term illness, learning disabilities, emotional problems, psychological disorders or emotional illness, problems with alcohol and drugs, depression and thoughts and attempts of suicide (Wynne, 2002).

There are two challenges for the socio-economic analyst in determining the effect or economic cost attributed to problem gambling or substance abuse. First, it is necessary to estimate the actual health expenditures that are problem gambling related. Secondly, it is necessary to determine what proportions of this cost is plausibly attributable to problem gambling. This depends on the robustness of health care data at the provincial and local level, as well as nationally.[178] Unfortunately, it is rare that health care systems break out program expenditures along the lines of problem gambling or substance abuse, and there is general lack of detailed epidemiological data or studies to assess the causal roles of various "risk factors."

Stevens and Williams (2004: 2) note the difficulty in isolating the effect of gambling among a number of other forces; that is, the issue of determining the magnitude of attribution fractions and causality makes socio-economic impact analysis more complicated. They argue that most socio-economic impact studies "simply examine the

[178] Grinols (2004) argues that the challenge of attribution is less problematic when a theoretically sound cost-benefit analytic framework is used to evaluate net societal well-being impact (i.e. the totality of economic benefit/cost and social benefit/cost) of gambling as an economic development option. What is required is rigor in the proper identification, classification, measurement and evaluation of each of the components of a cost-benefit evaluation model, which avoids moral or other value biases that may be problematic in other well-being analytic frameworks and previous impact analyses and research by governments, industry and academics.

pre and post changes in a community after the introduction of a new gambling venue", and suggest that a "much stronger methodology is a matched control comparison where changes in the community receiving the gambling establishment are compared against changes in an economically, socially, and demographically similar community that did not receive a new gambling establishment."

A number of studies, particularly epidemiological studies, have assessed the rate of impact or consequences of assorted impact associated with various types of gambling behaviour from low-risk gamblers to problem gamblers. These risk profiles may be useful in assigning attribution fractions to various impact indicators, particularly statistical indicators, in an analytic framework sensitive to ensuring the proper weighting of impact associated with problem gambling. Such attribution fractions could be useful for assessing the potential odds or risks of a given impact or outcome due to problem gambling. It is also useful for assessing the potential frequency of impact and the consequences of a reduction in problem gambling in a community. Unfortunately, little analysis is available at the provincial level on attribution fractions associated with gambling, with exception of some of the health impact attribution analysis for Saskatchewan by Wynne (2002).

Table 18 below provides an example of how statistical indicators and impact data related to health and well-being indicators (based on research conducted by Wynne (2002) in Saskatchewan and two US studies[179]) could be constructed, stratified according to the SEIG Framework impact domains and by gambler type. This is a good example of how attribution fractions could be derived in which the rate (percentage) of consequences (impact) per gambler type are examined.

The table shows the rate of likelihood of various health problems by gamblers sub-type using the Canadian Problem Gambling Index classification system for gamblers. Both the Wynne and Gerstein et al. examples suggest that it is possible to derive attribution fractions, prevalence rates, and resolving co-morbidity challenges for gambling, though new provincial and community-based studies will be required to provide meaningful benchmarks.

Table 18: Statistical Indicators of Gambling Impact by Gambler Type Using Attribution Fractions (percentage of gamblers with impact or percentage rate of consequences)

Impact Domain and Impact Indicators	Non-gambler/ Never gambled	Non-problem gamblers	Low-risk gamblers	Moderate-risk gamblers	Problem gamblers
1. Health and Well-being					
Health poor or fair[2]		13.9%			16.4-31.1%
Long-term illness[1]		13.2%	12.4%	9.3%	26.1%

[179] Gerstein, D. R., J. Hoffmann and Larison, C. (1999) and The US Gambling Impact Study Commission (1997-99).

Impact Domain and Impact Indicators	Non-gambler/ Never gambled	Non-problem gamblers	Low-risk gamblers	Moderate-risk gamblers	Problem gamblers
Ongoing effects of an injury[1]		10.3%	11.1%	11.6%	26.1%
Learning disability[1]		1.1%	2.3%	0%	13.0%
Emotional problem[1]		3.7%	3.5%	7.0%	39.1%
Psychological condition or emotional illness[1]		2.6%	2.3%	5.8%	21.7%
Mental health, currently troubled[3]		10.7%	15.9%	26.5%	41.9-42.3%
Mental health utilization[2]			6.5%		12.8-13.3%
Sad/blue/depressed for two weeks or more[1]		13.3%	15.2%	17.4%	56.5%
Depressieon[3]			27.3%	36.7%	44.2-69.5%
Mania[3]				11.3%	16.8-32.5%
Seriously thought about suicide (Canada)[1]		5.6%	6.4%	14.0%	43.5%
Suicidal thoughts (US)[3]				3.9%	10.3-12.7%
Attempted suicide (% of above who have suicidal thoughts) [1]		21.6%	27.3%	25.0%	30%
Suicide attempts[3]				1.2%	7.1%
Problem with alcohol[1]		0.9%	2.3%	5.8%	34.8%
Problem with drugs[1]		0.2%	1.8%	0%	13.0%

Impact Domain and Impact Indicators	Non-gambler/ Never gambled	Non-problem gamblers	Low-risk gamblers	Moderate-risk gamblers	Problem gamblers
NODS risked relationship[3]				14.3%	29-56%
Family arguments[2]			0.1%	0.8%	15.2-53.8%
Divorced ever[2]		18.2%	29.8%	36.3%	39.5-53.6%
2. Financial and Economic					
Welfare benefits[2]			1.3%		4.6-7.3%
Personal bankruptcy[2]			5.5%	4.6%	10.2-19.3%
3. Employment and Education					
Job loss, past year[2]			3.9	5.5	10.8-13.8%
Unemployment insurance[2]			4.0		10.9-15.0%
5. Legal & Justice					
Arrested ever[2]			11.1%		32.3-35.3%
Incarcerated ever[2]			4.0%		10.5-21.4%

Sources: **1**) Wynne, H.J. 2002. Gambling and Problem Gambling in Saskatchewan. Final Report. Saskatchewan Health. P. 69; **2**) Gerstein, D. R., J. Hoffmann and C. Larison. (1999). Gambling impact and behavior study. National Opinion Research Center. The University of Chicago. p. 57-58; **3**) U.S. National Gambling Impact Study Commission 1997-99. The footnote numbers in the table – **1**, **2** & **3** – reflect the "Source" information.

The development of a comprehensive matrix of attribution fractions, based on studies such as Wynne's (2002), which assessed relative health effects attributed to problem gambling in Saskatchewan, is an important step toward mapping out and understanding the *relative* impact of problem gambling across socio-economic, cultural, gender and gambler cohorts, and, thereby, weighting impact indicators accordingly. Such studies provide insights into the "risk factors" to health outcomes that might be expected in other communities that experience an increase in problem gambling related to gambling expansion. Such relative risk factors can potentially be assigned to a tangible and intangible effect and their monetary cost and benefit.

Studies of the association of illegal drugs and alcohol abuse and criminal acts may serve as a useful benchmark for deriving attribution fractions for gambling. For example, a Canadian study by Pernanen, Cousineau and Brochu (2002) *Proportions of Crimes Associated with Alcohol and Other Drugs in Canada*, found that alcohol and drug use were strongly related to the commission of crimes. Their research estimated that the proportion of crimes committed by federal and provincial inmates that can be attributed to the use of alcohol and/or illicit drugs in Canada was between 40% and 50%. Between 10% and 15% of crimes are attributed to illicit drugs only, between 15% and 20% are attributed to alcohol only, and 10% to 20% are attributed to both alcohol and illicit drugs.

The *International Guidelines for Estimating the Costs of Substance Abuse*[180] provides some guidance for estimating attribution fractions for problem gambling. Economic cost estimates in cases where problem gambling both causes and prevents morbidity and mortality can:

- Either subtract out the number of cases prevented, thus presenting a *net* effect of the number of hospitalizations or deaths directly or indirectly due to problem gambling; or

- Simply present the gross number of hospitalizations or deaths and ignore the potential cases prevented due to problem gambling.

In estimating an "attributable risk" factor, the analyst should be careful in assessing the statistical rigor and depth of the research to avoid conclusions based on simple associations (e.g. the proportion of problem gamblers who were drug users). The use of rigorous statistical standards in identifying whether or not risk factors (including problem gambling) are causally related to health outcomes is important. However, as yet, there is no single analytic methodology that is appropriate for causal analysis.

The methodology used by Pernanen et al. (2005)[181] to examine the causality links may be useful for future problem gambling-crime attribution analysis. They used two methods:

- The proportion of violent crimes attributable to alcohol or drugs was estimated by taking the percentage of inmates convicted of a crime who reported that they:
  - Were intoxicated at the time of the crime; and
  - Would not have committed the crime had they not been under the influence of alcohol or drugs at the time;

- A proportion of crimes attributable to alcohol or drug use were estimated from the percentage of inmates convicted of a crime who
  - Reported that they had committed the crime to obtain drugs or alcohol; and
  - Were rated as alcohol- or drug-dependent.

The researchers acknowledge that despite this important attribution fraction analysis, conceptual problems remain with the approach, and the research methodology can always be improved. They point out the challenges of using self-reported data and recommend that in addition to the event-based methodology, longitudinal studies are the best way to examine how the volume of crimes varies with the use and abuse of psychoactive substances.

[180] See page 53, The *International Guidelines for Estimating the Costs of Substance Abuse*.
[181] Pernanen, K., S. Brochu, M.-M. Cousineau, L.-G. Cournoyer, & F. Sun. (2005). "Attributable fractions for alcohol and illicit drugs in relation to crime in Canada: conceptualization, methods and internal consistency of estimates." *Bulletin on Narcotics*, LII (1 & 2),United Nations Office on Drugs and Crime. Volume: 2; September 16 Issue.

The Drug Use Monitoring in Australia (DUMA) program, established in 1999, provides quarterly reporting on drug use and criminal activity (based on police detainee questioning). This provides vital information on long-term trends in the relationship between drugs and crime. This kind of inventorying and monitoring could potentially be extended to include detainee questioning related to problem gambling activities.

What other empirical evidence exists? In a benchmark health impact study, Marshall (2003)[182] found that problem gamblers had significantly higher rates of alcohol dependence (15%) versus non-problem gamblers (2%); psychological stress (29% versus 6% for non-problem gamblers); family problems due to gambling (49% versus 0%); and financial problems due to gambling (70% versus 0%). In a study by Marshall and Wynne (2004)[183], 25% of problem gamblers reported major clinical depression and 20% reported having contemplated suicide in the previous year.

The risk of harm caused by a specific game of chance can also be evaluated. For example, according to McMullan (2005), buying lottery tickets is the most popular form of gambling (65% participation rate of Canadians who gamble) but results in the least likely harm to players (6.5%).[184] There is growing evidence that, not only are a larger portion of government gambling revenues derived from a small number of gamblers who play continuously and excessively, but that the majority of gambling expenditures are on VLTs and slot machines.

For example, in a 2003 study of VLT gambling in Alberta, it was found that only 13.4% of adult Albertans played a VLT machine at least once the previous year, yet this form of gambling produced nearly 60% of the $1.1 billion in gambling profits – six thousand VLT's yielded gross profits to the Alberta government of $584 million or $97,000 per machine[185] (Smith and Wynne, 2004).

Data based on patron-intercept interviews from the same study, using the Canadian Problem Gambling Index, showed that 22% of the sample self-identified as problem gamblers, while 39% identified themselves as being moderate-risk gamblers. The problem VLT players, when compared to non-problem gamblers, were more likely to play alone, longer, more frequently, spend more money per gambling session, lose control over their time and money spent gambling, use on-site ATM's to get more money to gamble, and know less about VLT machine payout percentages.

Attribution analysis can also benefit from knowing the "typical" problem gambler and their socio-economic profile, since many of the social and economic costs of gambling are disproportionately incurred by the problem gambling cohort. For example, in an Ontario study by Williams and Woods (2004), the "at risk" or "problem" gamblers

[182] Marshall, K. (2003). "Fact Sheet on Gambling." *Perspectives on Labour and Income.* 14 (4):1-5.
[183] Marshall, K. and H. Wynne. (2004). "Fighting the Odds." *Perspectives on Labour and Income.* 16:1, 7-15.
[184] McMullan, John L. (2005). *The Gambling Problem and Problem Gambling: Research, Public Policy and Citizenry.* Paper presented at the 4th Annual Alberta Conference on Gambling Research, Public Policy Implication of Gambling Research, University of Alberta, March 31 and April 1, 2005.
[185] Based on 2004-05 data from the Alberta Gaming and Liquor Commission, the estimated gross profits from VLTs in Alberta was $759 million or roughly $126,538 per each of the 6,000 VLT machines.

gambled either daily (30.3%) or weekly (14.3%) and were more likely to be male, of aboriginal descent, single or divorced, with lower family income, and less formal education than were their non-problem gambling counterparts. This kind of socio-economic profiling of at-risk and problem gamblers would be useful for identifying the potential societal costs of this cohort of gambling population in any given community where various gambling venues are present or under development. Ultimately, as Hann, Simpson, and Williams (2006) note, an estimate of the economic and social impact of cost and benefit is of little use without knowing who felt that benefit and cost, and how it came about.

In summary, while attribution fraction analysis would be ideal in weighting various gambling impact, especially for health impact and areas where co-morbidity exists, even with relatively robust empirical analysis and epidemiological studies, many researchers believe that there will be enough significant methodological challenges that may never reveal robust enough causality statistics. This should not, however, thwart efforts to move incrementally closer to statistically valid attribution fractions for assessing gambling impact.

16. An Example of GPI Full Cost-Benefit Accounting in Alberta

In 2001, a team of economists at the Pembina Institute for Appropriate Development in Alberta, with a research grant from the Canadian Government (Western Economic Diversification), expanded the US (GPI) accounting model to include an accounting of the quantitative (statistical) and qualitative (perceptional) conditions of three primary forms of societal capital: economic [including built infrastructure], social [including human health] and environmental. This three-capital model was later expanded to a five-capital model to encompass human, social, natural, built and financial capitals.[186]

The Alberta GPI Sustainable Well-being Accounting System was developed as a prototype sustainability measurement and reporting system (see Figure 6 below). The result was a comprehensive system of measuring economic, social, and environmental well-being using 51 indicators. Trends in each of the 51 indicators for Alberta were examined over the period from 1961 to 1999 (see Table 19 below).

In addition, the Alberta GPI accounts included a full cost-benefit accounting of Alberta's progress, adjusting GDP by various unaccounted social and environmental cost and benefit otherwise ignored or incorrectly counted as "progress" in provincial and national income accounts. The Alberta GPI full-cost-benefit accounting methods were based on the original US GPI methodologies.

[186] One of the authors of this SEIG Framework report, Mark Anielski, worked on the 2001 project and later expanded the three-capital model to five-capitals.

Figure 6: Alberta GPI Sustainable Well-being Accounting System

GPI Sustainable Well-being Accounting System:

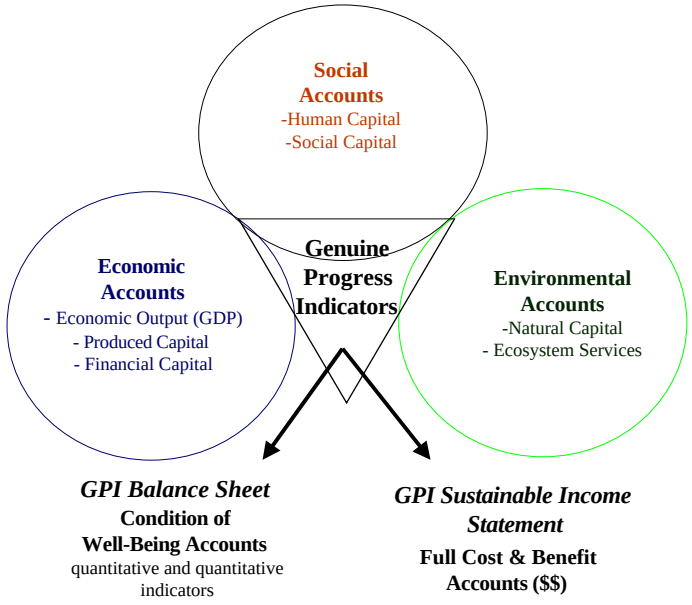


Table 19: The Alberta GPI Accounts for Economic, Personal-Societal and Environmental Well-being

Capital Accounts	Well-being Themes	Genuine Progress Indicators
Economic Accounts	Economy	• GDP (gross domestic product) and its components • Trade balance: exports less imports of goods and services
	Livelihood	• Disposable income • Personal consumption expenditures • Debt (household, government, business, farm, student) and net worth • Savings (households, government) • Employment, unemployment, underemployment
	Infrastructure (Produced Capital)	• Household infrastructure • Public infrastructure
	Transportation	• Private, public and commercial transportation (commuting)
Social-Human Health Accounts	Human Capital	<u>Time Use Accounts</u> • Paid work • Unemployment • Unpaid work-time • Unpaid housework, parenting and eldercare <u>Volunteerism</u> • Leisure time • Commuting time
		<u>Health and Wellness</u>

Capital Accounts	Well-being Themes	Genuine Progress Indicators
		• Life expectancy (and self-rated health) • Premature mortality and disease • Suicide (mental health) • Obesity • Auto crashes • Infant mortality and low birth-weight babies • Substance abuse (drugs, alcohol, tobacco) • Problem gambling
	Knowledge Capital	• Educational attainment, knowledge and skills
	Social Capital	• Poverty • Income and wealth inequality (and distribution) • Crime and violence • Family breakdown (divorce) • Democracy
Environmental Accounts	Ecological Footprint Analysis	• Ecological Footprint accounts (food, energy, clothing, transportation) • Material and energy flow analysis
	Natural Capital Accounts	• Non-renewable energy resources and use (oil, gas, coal) • Renewable energy capacity (wind, solar, hydro) • Minerals • Forest sustainability • Wetlands and peat lands • Agriculture sustainability (soil productivity) • Carbon budget • Fish and wildlife • Parks and wilderness
	Ecosystem Services Accounts	• Ecosystem integrity • Air quality • Greenhouse gas emissions and ozone depleting chemicals • Water quality and flow (surface and ground water) • Noise pollution • Hazardous waste • Landfill waste

The GPI accounting system is built on the traditional financial accounting model, i.e. taking an inventory of the physical, qualitative and monetary conditions of a society's key assets that contribute to well-being. Data is organized according to well-being "capital" or "wealth" accounts comprised of well-being ledgers that are then reported in the form of a balance sheet (showing the conditions of well-being indicators as assets, liabilities or related to the distribution of wealth in a society). The GPI accounts or ledgers of well-being are like ledgers for an enterprise providing information on the

physical (quantitative) and qualitative (perceptional) conditions of economic, social, health, or environmental conditions in a society.

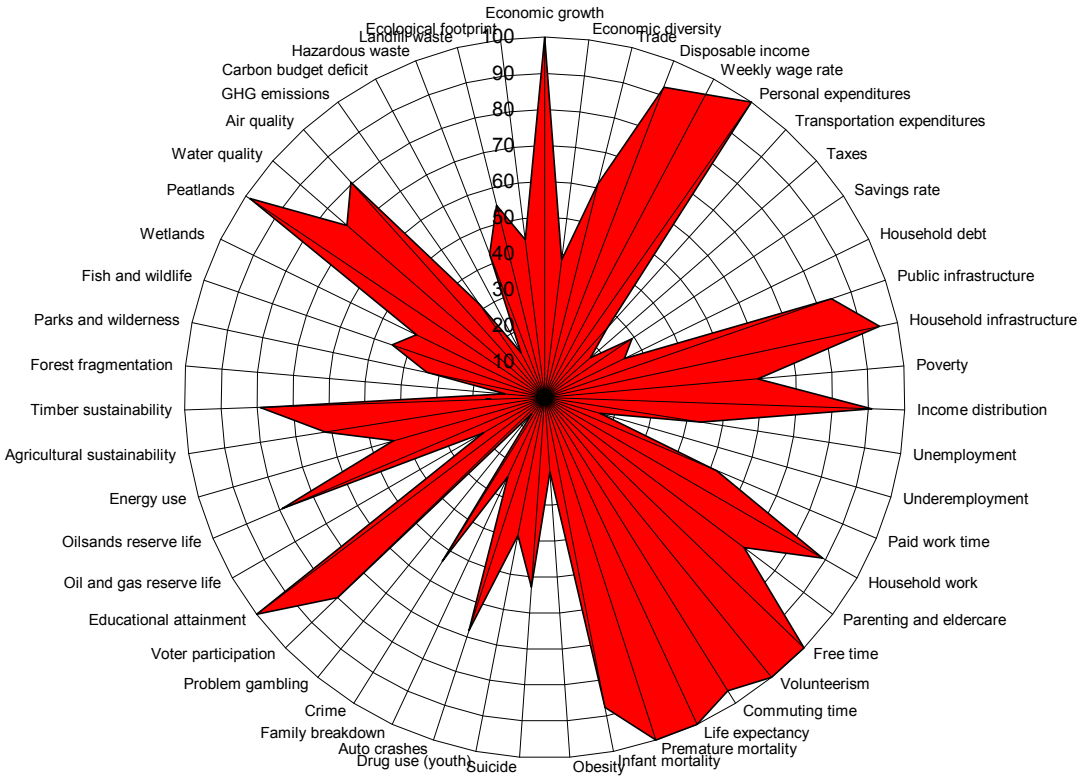
Indicators are reported in their original data form but are also converted to a common numeric index, using various benchmarking methods to “normalize” the entire suite of genuine progress indicators allowing for relatively easy aggregation into composite or sub-composite indices. This is a particularly useful attribute of the GPI accounting model. Finally, GPI accounting includes a full cost-benefit analysis. Results are reported in a GPI-type net sustainable income statement where GDP (the opening line in the statement) is adjusted for the cost and benefit to economic welfare, which the GDP either ignores or treats as societal progress when they may represent regress or regrettable activities that detract from societal well-being; i.e. the GPI accounts for social and environmental depreciation cost associated with economic progress and treats these as deductions against the GDP as one would depreciation cost of produced or built capital assets in financial accounting practice.

The purpose of GPI accounting is to provide decision makers with a more accurate, full-cost-benefit account of economic progress overcoming some of the inherent weaknesses in national income accounting that have long been acknowledged by economists. It is meant to answer fundamental questions about the long-term sustainability of economic, social and environmental policies. GPI analysis helps answer the question of GDP: More growth of what and for whom? The GPI accounting is consistent with the system of national (income) accounting (SNA) conventions from which the GDP is derived.

The Alberta GPI accounting project, conducted by researchers at the Pembina Institute for Appropriate Development in Alberta and funded by Western Economic Diversification, was the first prototype sustainable well-being accounting system of its kind in the world. Using the GPI accounting framework shown above, the Alberta GPI results showed the condition of 51 sustainable well-being indicators for Alberta over the time frame of 1961-1999.

A unique feature of the GPI accounting was the conversion of raw statistical data to indices by taking the original raw data set then normalizing the data on a scale from 1 to 100. A score of 1 suggests the poorest condition over time and a score of 100 suggests the best condition. In benchmarking the Alberta GPI data set, the focus was on an examination of Alberta only. This allows for the comparison of all 51 indicators in a single snap-shot or portrait of well-being; a kind of “balance sheet” that shows the strengths and weaknesses of Alberta’s economic, social and environmental conditions. These results were presented in the following Figure 7 (see below) for the year 1999. The image is a kind of spider web or flower graph showing each well-being indicator as a pedal, its relative size (relative to the indices score) reflecting the indicators condition.

Figure 7: Alberta GPI Sustainability Circle Index for 1999



To interpret this composite well-being index, those GPI indicators that reflect an optimal state of well-being would score a perfect 100 points, thus their performance would be plotted at the outer edge of the circle. Indicators with a less-than-perfect score would be plotted along an axis from 1 (worst performance, near the centre of the circle) to 100. A perfect GPI Index would be where each of the 51 indicators was optimal (i.e. 100 points) and thus completely filled to the outer edges of the circle.

This approach to showing visually the conditions of societal well-being is a powerful tool for communicating what is otherwise a complex measurement and reporting challenge. Individual GPI Indices or flower graphs can be constructed for any given year in a longitudinal data series allowing users to show changes in well-being conditions over time. Such indices could be constructed for specific policy issues showing how various well-being conditions change in a society with policy changes or other drivers of societal change.

GPI Full-Cost-Benefit Accounting: Another unique attribute of the GPI accounting model is that it helps policy makers account for the full cost and benefit of economic progress. The Alberta GPI was modeled after the original US GPI work (Cobb, Halstead and Rowe, 1995; Anielski and Rowe, 1999) and the Australian GPI (Hamilton and Denniss, 2000); both use a full cost approach to measuring sustainable economic welfare. Such analysis allows decision makers to identify the cost (or expenditure) of, for example, crime, auto crashes, oil and gas depreciation, climate change, and

unsustainable agricultural or forestry practices that either count as contributions to GDP or are ignored as a potential regrettable cost of economic growth. Benefits such as the value of unpaid housework, parenting and volunteer time can also be estimated, then added to or compared with the GDP.

Methodologically, the GPI starts with the GDP and, specifically, the personal consumption expenditures component of GDP (which usually makes up over 50% of a nation's GDP) as the opening figure that reflects total economic output (a component of GDP). The personal consumption expenditure portion of the GDP is used because the focus of the GPI is to measure the effects of economic, social and environmental conditions and policies on household well-being and, ultimately, sustainability. The GPI accounting then makes an adjustment to the personal consumption expenditure portion of GDP for changes in income inequality (measured by the Gini coefficient, a measure of inequality). The higher the income inequality (i.e. the higher the Gini coefficient), the greater is the adjustment to GDP as a proxy for the potential economic cost of loss of social cohesion in society. Then, a number of unaccounted benefits to society, which are otherwise ignored in the national income accounts and GDP, are added. These are mostly the value of unpaid work (volunteerism, parenting, eldercare) and the value of services from both public and private infrastructure. Then, a number of societal and health costs are identified, valued and deducted as a "social capital depreciation cost" proxy. In addition, a number of environmental or natural capital depreciation costs are estimated and used to adjust the original GDP figure.

The results of this GPI full-cost-benefit accounting are shown in the following Table 21 (see below) for Alberta, for the year 1999. Included in the Alberta GPI estimates, and distinct from the original US GPI work, is an estimate for the societal costs of problem gambling.

Table 21: Accounting Results –Alberta GPI (net sustainable welfare) for 1999

(million 1998$)	**million (1998$)**	**% of GDP**
Gross Domestic Product (expenditure-based)	109,708.43	
Personal consumption expenditure		48.2%
	52,838.59	
Consumption expenditures adjusted for income distribution		43.7%
	47,957.49	
Non-defensive government expenditure		7.0%
	7,727.89	
Value of services of consumer durable		5.0%
	5,532.50	
Value of public infrastructure service		1.5%
	1,660.96	
Net capital investment		-0.8%
	(864.64)	
Cost of household and personal debt servicing		-5.9%
	(6,433.77)	

Value of unpaid time use			
Value of housework	32,907.30		30.0%
Value of parenting and eldercare	3,291.54		3.0%
Value of volunteer work	2,631.30		2.4%
Value of free time	0.06		0.0%
			35.4%
		38,830.19	
Social Cost			
Cost of consumer durables	(7,998.17)		-7.3%
Cost of unemployment and underemployment	(3,823.98)		-3.5%
Cost of auto crashes	(3,026.43)		-2.8%
Cost of commuting	(4,406.03)		-4.0%
Cost of crime	(1,833.23)		-1.7%
Cost of family breakdown	(147.96)		-0.1%
Cost of suicide	(2.43)		0.0%
Cost of gambling	(2,167.50)		-2.0%
			-21.3%
		(23,405.73)	
Environmental Cost			
Cost of non-renewable resource use	(10,656.30)		-9.7%
Cost of non-timber forest values due to change in productive forest	(23.78)		0.0%
Cost of unsustainable timber resource use (loss in pulp production value)	(14.60)		0.0%
Cost of erosion on bare soil on cultivated land (on-site only)	(12.78)		0.0%
Cost of reduction in yields due to salinity on dryland and irrigated cropland	(58.15)		-0.1%
Cost of air pollution	(3,666.00)		-3.3%
Cost of greenhouse gases (damage of climate change)	(4,073.33)		-3.7%
Cost of loss of wetlands	(7,682.01)		-7.0%
Environmental cost of human wastewater pollution	(0.57)		0.0%
Non- market cost of toxic waste liabilities	(4.71)		0.0%
Non-market cost of municipal waste landfills	(190.10)		-0.2%
			-24.0%
		(26,382.33)	
GPI (Net Beneficial Output), with debt servicing cost			
		36,999.62	
GPI (Net Beneficial Output), without debt servicing cost			
		43,433.40	
GPI (with debt) per capita			
		12,480.10	
GDP per capita			
		37,005.04	

Source: Anielski, M., M. Griffiths, D. Pollock, A. Taylor, J. Wilson, S. Wilson. (2001). *Alberta Sustainability Trends 2000: Genuine Progress Indicators Report 1961 to 1999*. Pembina Institute for Appropriate Development. http://www.pembina.org/green/gpi/ April 2001.

This new income (or expenditure) statement then identifies the magnitude of the real cost or expenditure that contribute to a rising GDP but might otherwise be identified as a regrettable cost and detraction from genuine progress. These could include, for example, the cost of:

- Crime;
- Family breakdown;
- Problem gambling; and
- Depletion of finite stocks of non-renewable energy resources.

A single account for the year 1999 of Alberta's GPI showed that while Alberta's official GDP in 1999 was $110 billion, a net GPI of $43 billion (without debt servicing cost) was calculated based on adding the unaccounted value of unpaid work (+$38.8 billion) and deducting a range of social cost ($23.4 billion) and environmental cost ($26.4 billion), as well as the adjustment to GDP for a change in income inequality.

The Alberta GPI includes an estimate of the societal cost of problem gambling in 1999 estimated at $2.167 billion (the equivalent of 2.1% of Alberta's GDP) on the basis of the proportion of all gambling money wagered by the problem gamblers (an estimated 17 percent of the total monies wagered), which equated to $19,360 (1998$) per problem gambler.[187] The rationale is that the contributions problem gamblers are making to Alberta's GDP through their gambling losses is a regrettable contribution to Alberta's economic progress. The cost of problem gambling is a proxy for negative consumer surplus associated with problem gamblers versus genuine consumer surplus of non-problem, recreational gamblers and their expenditures on games of chance. The Alberta preliminary estimate of the societal cost of problem gambling was based on methods developed by Hamilton and Denniss (2000) for Australia, whereby the annual estimated net losses sustained by problem gamblers are used as a proxy for problem gambling cost.

GPI accounting is an attractive tool for full cost and benefit accounting of social, economic or environmental policy issues. However, identifying which unaccounted benefits and which social and environmental costs to included in a GPI estimate can be controversial since many issues may have strong societal or cultural values assigned to them (for example, including an estimate for the full cost of divorce raises moral issues about whether divorce improves an individual's well-being or detracts from the social cohesion in society).

Thus, the challenge is to provide a full-cost-benefit accounting which is relatively objective or value-neutral; the ultimate solution[188] is to couch the GPI accounting in the context of revealed societal values and well-being priorities. The "Genuine Wealth" accounting and assessment model[189] responds to this challenged. The model helps

[187] Anielski, Mark. 2001. The Alberta GPI Accounts: Gambling. Report #15. Pembina Institute for Appropriate Development. Edmonton, Alberta.
[188] As Anielski (2000) argues.
[189] Developed by Anielski (2005).

communities, businesses and other organizations assess their overall conditions of economic, social and environmental well-being that are explicitly aligned with quality of life values and priorities.

Some might criticize GPI for providing a simplistic societal welfare "bottom-line" to replace the GDP. However, the GPI accounting framework was developed not to replace the GDP, per se, but to open up the GDP "books" so that policy makers could discern which contributions to the GDP might constitute regrettable expenditures that detract from societal well-being rather than contribute to genuine improved well-being conditions, as well as the value of unaccounted benefits such as the value of unpaid work or the value of ecosystem services. The ultimate purpose of the GPI accounting is to provide a full cost-benefit profile of an economy as a whole or if applied to a policy, such as legalized gambling, to account for the fullest possible range of benefit and cost from the household to the community and to the provincial scale of analysis.

17. The Pros and Cons of Cost-Benefit Analysis

Cost-benefit analysis (CBA) has traditionally been used as a second stage in project evaluation (e.g. in the United Nations Industrial Development Organization (UNIDO) approach developed by Dasgupta, Sen and Marglin, 1972) in tandem with financial analysis to calculate the discounted net economic benefit (NEB) of the outputs of a project based on economic efficiency factors (Nas, 1996: p. 198). CBA is a standard neoclassical economic analysis method to evaluate alternatives according to a comparison of both their cost and benefit, each measured in monetary terms (Levin, 1983: p. 65). CBA is an effective tool for evaluating the output effects of a project measured in monetary units.

CBA impact analysis involves:

1. Identification of relevant cost and benefit;
2. Measurement of costs and benefit;
3. Comparison of cost and benefits streams accruing during the lifetime of a project; and
4. Project selection.[190]

A CBA involves the assessment of prices (monetary units) associated with the benefit and cost of social utility gains rather than only cash flow as in financial analysis. In CBA, results are measured and reported in money terms using prices that are usually adjusted for market distortions. CBA is useful when the output of a project can be defined in monetary units, however, it is less effective at measuring the outcomes or

[190] Nas, 1996: p. 60

overall impact, including unquantifiable intangible and qualitative impact, which often go unaccounted for in project evaluation or economic valuation of public policy.[191] Notwithstanding these limitations, CBA can accommodate the derivation of quantitative measures to account for intangibles but is less robust in considering the qualitative measures associated with outcome (versus output) of projects.

Grinols (2004: 11) notes that "there is a pervasive lack of understanding among legislators and the business community – and even among the ranks of some economists – about what economic development is and how to evaluate it… [and]… little or no understanding on how to construct the elements of cost-benefit analysis and how to validate its components once they have done so." Grinols is critical of much of the work by economists on the economics of gambling in North America, particularly in the US.[192]

Stevens and Williams (2004: 2) note that "there currently does not exist an agreed-upon methodology for performing socio-economic studies of the casino gambling industry." The literature suggests considerable confusion and misplaced concreteness among gambling analysts, both economists and non-economists, in how cost-benefit analyses should be constructed and used in evaluation of well-being impact. The absence of a commonly agreed upon evaluation approach to cost-benefit analysis in assessing economic development opportunities such as gambling is problematic though not an insurmountable obstacle, so long as economists are involved in developing a common evaluation tool have a solid grounding in the theoretical, methodological, and practical aspects of cost-benefit analysis when applied to public policy formulation and decision making.

Stevens and Williams (2004: 2) point out that Walker and Barnett (1999) "have been particularly critical of many existing cost-benefit studies that have been attempted by authors such as Goodman, Grinols, Kindt, Thompson, and others." In place of arbitrary monetary estimates of gambling's social cost, Walker and Barnett argue for a rigorous application of a classical welfare economics definition of social cost: a social cost is defined as the amount by which that action reduces aggregate societal real wealth. McGowan (1999) believes that this typical utilitarian definition depends upon two assumptions:

1. The welfare or "happiness" that results from an action such as gambling is the only thing that is intrinsically valuable; and

2. The happiness or cost that results from every action can be measured.

McGowan concludes that not all of the effects of pathological gambling are measurable (in monetary terms) – especially the "psychic cost."

[191] Nas, 1996; p. 65
[192] Personal conversation with Earl Grinols, January 27, 2006

Grinols (2004) has attempted to provide some clarity of the technical and methodological issues surrounding genuine cost-benefit analysis applied to an economic development question related to gambling industry expansion. In his work *Gambling in America: Costs and Benefits*, Grinols provides some of the only concrete examples of both social benefit and social cost within a conventional CBA framework. Grinols identifies from other studies a range of social benefit estimates that include profits (producer surplus), consumer surplus, capital gains, and distance surplus. Social cost includes such cost as labour productivity losses, divorce, bankruptcy and suicide. Grinols concludes that there is a general absence of genuine and methodologically sound economic cost-benefit analysis of gambling throughout the literature; though Australia and to some degree, Canada, are exceptions.

McMillen in Australia has concluded that CBA, at least in Australia, should largely be abandoned since it is fraught with inherent contradictions and cannot avoid being accused of being value-biased by the very nature of what cost and benefit is considered valid for assessment.[193] Moreover, McMillen notes that because CBA cannot measure the harm associated with gambling effects, it is of limited utility for decision making on a complex social, health and economic policy issue.[194] McMillen (2006) argues that because CBA fails to account for the "harm" effects of gambling's impact, assumes consumer sovereignty and is not value-neutral, it should be effectively abandoned as a tool for determining whether gambling results in a net benefit to a community.[195]

Douglas Walker also acknowledges the failure to agree on how to conceptualize and quantify the effect, cost and benefit of gambling are regrettable.[196] Walker points to the huge variance in social cost estimates that put into the question the utility of such work. He has also criticized the failure to take into account the consumer benefits from gambling in cost-benefit analysis. However, while Walker is critical of Grinols' work and estimates of consumer surplus, he does not himself offer his own empirical estimates from his research.

GPI Atlantic's review of the socio-economic impact of gambling literature also points to the lack of comprehensive cost-benefit analysis noting:

> "Although there are many studies that investigate particular aspects of gambling, there are very few comprehensive cost-benefit analyses. In 1999, Vaillancourt and Roy, who produced the first such study for Canada, identified only four: a 1999 national study from the United States, one from Australia also published in 1999, and two studies from Manitoba published in 1995 (see Cyrenne, 1995). They criticize the two studies from Manitoba as being weak since they 'rely on assumptions and outside information in order to estimate key numbers.' The U.S. national study, while massive, does not include intangible costs and could come to no definite conclusion about the amount of costs (Vallaincourt and Roy,

[193] Based on remarks made by Jan McMillen during her presentation to the Banff workshop Social and Economic Impacts of Gambling April 21-22, 2006 in Banff, Alberta.
[194] Ibid.
[195] Ibid.
[196] Walker, Douglas. 2006.*Quantification of the Social Costs and Benefits of Gambling*. Paper presented at the workshop on Social and Economic Impacts of Gambling April 21-22, 2006 in Banff, Alberta

2000)[197]. Researchers are passionate and emphatic about the need to develop, improve, and refine cost-benefit studies in Canada in order to gain a reliable understanding of the relationship between costs and benefits." (Henriksson, 2001).

Appendix Ten: Provincial Socio-Economic Impacts of Gambling Research Initiatives

The following are a current list of research into the social and economic impacts of gambling that is either ongoing or is being initiated in 2008 by various provinces. Some of this research will be built upon the framework of the national SEIG framework while other research will help to provide new empirical data to populate the various indicator domains of the SEIG framework.

1. Socio-economic Study of Gambling in Nova Scotia

In May 2007, Nova Scotia Environment and Labour engaged Anielski Management, of Alberta, to conduct a $212,000 socio-economic study of gambling in Nova Scotia. The study stems from government's commitment to increase social responsibility and accountability of gaming in the province, and will provide an analytical, factual, and objective snapshot of the social and economic impacts associated with gambling in the province. Using the SEIG Framework as a starting point, Anielski Management will describe and analyze bingo, casinos, harness racing, ticket and video lotteries, and on-line gambling. Each form of gambling will be examined from a societal perspective, and will examine the impacts on individuals, households, communities, business, government and the economy. In Nova Scotia, Anielski Management is adapting the SEIG analytical framework to suit the province's gaming types, and is currently identifying and collecting data for analysis. The project is scheduled to be completed in May 2008.

2. Québec research projects relevant to SEIG

Since 2001, Québec's ministère de la Santé et des Services sociaux (MSSS) has been funding several research projects focused on the socio-economic impact of gambling, in collaboration with Fonds québécois de la recherche sur la société et la culture (FQRSC). The MSSS has funded 28 projects that could contribute to the implementation and future enhancement of the SEIG Framework.

The following is a partial list of these projects; the titles and English summaries have been liberally translated for the purposes of this document. Complete French descriptions of the projects are available at: http://www.msss.gouv.qc.ca/sujets/prob sociaux/jeu pathologique.html, under the heading "Études et recherches sur le jeu", or at http://www,fqrsc.gouv.qc.ca.

[197] The work of Vaillancourt & Roy (2000) is one of the few cases of a cost-benefit analysis of gambling in Canada for the years 1990 and 1995.

- *Crime associated with gambling* – proportion of crimes attributable to gambling 2006-2008. (Cousineau, M.-M., Brochu, S., Ladouceur, R.). The project involves the development of gambling/crime profiles for 500 inmates (400 males and 100 females) in both provincial and federal prisons located in Québec.

- *Measurement of the socio economic impact of a new gambling venue – a longitudinal study of the launch of a gaming room in Trois-Rivières* 2007-2010 (Alain, M., Brunelle, N., Dessureault, D.). The specific objectives are to measure the impact of the launch of the gaming room as regards: the fluctuation of VLT utilization and the prevalence of problems associated with excessive gambling, the fluctuation of criminality and calls to the police associated with the launch of the gaming room and, the evolution of public perception of the positive and negative effects of the gambling venue.

- *Precursors and correlates of gambling pathways at the onset of adolescence* 2006-2009 (Vitaro, F. et al.). The study is focused on the establishment of joint developmental pathways for gambling behaviours and associated problems from pre-(10-12 years)-to mid-adolescence (14-16 years).

- *Personal, family, social and school risk factors associated with gambling problems among adolescents: an integrated development model* 2005-2007 (Brendgen, R.M. et al).

- *Attitudes and behaviours associated with the sale of lottery products* 2006-2008 (Martin, I., Derevensky, J. L., Gupta, R.). This study aims to identify the underlying reasons for adolescent participation in state run lotteries.

- *Pathological gambling among VLT players, including youth (16-20 years)* 2005-2008 (Valerand, R.J., Losier, G.F., Pelletier, L.). Three studies, including 2 longitudinal, are being conducted in to enhance knowledge of: VLT players, male-female comparisons, predictive factors for the development of pathological gambling among youth 16-20 years in 3 provinces, vulnerability and protective factors among gamblers as regards relapse in external treatment.

- *Research team infrastructure support – International Centre for Youth Gambling* 2005-2009 (Derevensky, J.L. et al.). The Centre is focused on increasing knowledge of: characteristics of gamblers, etiology of gambling problems, risk and protective factors, the nature and extent of gambling consequences.

- *Comparison of life pathways among persons experiencing gambling problems: consequences and life problems?* 2007 (Séguin, M. et al.). The project will document and examine the relationships between the development of personal, family and social problems and those related to pathological gambling (project completed).

- *Integrative approach to hazard and money games* 2006 (Kairouz, S. et al.). The project consists of two parts. The first is focused on gambling behaviours and concurrent substance use or abuse among secondary school students. The second examines co-morbidity between pathological gambling and problem substance use in the adult population (project completed).

3. Ontario Research related to the SEIG Framework, being led by the Ontario Problem Gambling Research Centre

Final Report Rec'd/Due	Sponsor Org.	Investigator	Title	Amount	Project Description	Sample
14-Dec-05	Robert Hann & Associates Limited	Robert Hann and Joan Nuffield	Local Community Impacts of the Charity Casinos	Unknown	**NOTE: Funded directly by the Ministry of Health and Long Term Care**: This study examined the local social and economic impacts on four Ontario communities in which charity casinos and one racetrack slot operation were opened in 1999 and 2000. The communities were the Village of Point Edward and Sarnia in Lambton County (home of the Point Edward Charity Casino and the slots at Hiawatha Horse Park), Sault Ste. Marie in Algoma County (Sault Ste.Marie Charity Casino), Brantford in Brant County (Brantford Charity Casino), and Thunder Bay (Thunder Bay Charity Casino)	Charity Casino host communities
28-Feb-12	Robert Hann & Associates Limited	Dr. Robert Williams & Mr. Robert (Bob) Hann	Examining the Impact of a Race Track Slots Facility in the Belleville, Ontario Area	3,100,000.00	The study will cover a 5-year period before and after the opening of the new gambling site. Researchers will follow 4,000 adults living within 70 km of Belleville, with 1,000 of these individuals oversampled for factors that make them 'at risk' for problems. The Belleville site, possibly the last new gambling facility in Ontario, offers a unique opportunity to study the attendant impact on people who gamble and the community at large.	Adult General Population, Host community

General Prevalence						
15-Jul-02	Canadian Centre on Substance Abuse AND Responsible Gambling Council (Ontario)	Single/ Wiebe	Measuring Gambling and Problem Gambling in Ontario	209,187.00	This study determined the prevalence of gambling and problem gambling among Ontario adults, to describe the characteristics of individuals experiencing gambling-related problems, to describe the relationship between problem gambling and substance abuse, and to discuss the implications for treatment and prevention programming.	Adult General Population
31-Aug-05	Responsible Gambling Council	Jamie Wiebe	Gambling and Problem Gambling in Ontario: A Replication Study Three Years Later	210,000.00	The objectives of this study were to determine the prevalence of gambling and problem gambling, describe the characteristics of people experiencing gambling-related problems, and compare trends with the 2001 Ontario gambling prevalence study (Wiebe, Single, & Falkowski-Ham, 2001) with regards to levels of gambling and problem gambling. A telephone survey was conducted with a sample of 3,604 adults, 18 years of age and older from Ontario. Levels of gambling and problem gambling were assessed through the Canadian Problem Gambling Index (CPGI; Ferris & Wynne, 2001). Data collection was conducted by the Hitachi Survey Research Center at the University of Toronto. The study yielded an 82.5% response rate.	Adult Problem Gamblers
31-Dec-07	Factz Research	Jamie Wiebe	Gambling Patterns & Problem Gambling Service Utilization by Ontario Local Health Integration Networks	37,752.00	The first objective is to analyze the two most recent gambling and problem gambling prevalence studies in Ontario by LHIN to examine whether gambling patterns and the extent of problems vary across the province and have changed between 2001 and 2006. The second is to examine the prevalence data in relation to service utilization, specifically problem gambling help-line calls and utilization of	Adults - Ontario

					problem gambling counselling services, by LHIN.	
23-Jun-04	University of Lethbridge, Alberta	Williams & Wood	The Demographics of Ontario Gambling Revenue	170,396.00	The present study investigated the revenue contributions of problem gamblers in Ontario. The researchers endeavoured to exclude out-of-province expenditures by Ontario residents and revenues from non-Ontario residents. Also, refined methods were introduced to establish the prevalence rate for problem gambling and to obtain self-reported net gambling expenditures. Finally, various methods were used to validate self-reported expenditures, including comparison with actual Ontario gambling revenues collected during the time period of the study.	Adult Problem Gamblers
28-Feb-08	University of Lethbridge, Alberta	Robert Wood & Robert Williams	Gambling on the Internet: Prevalence, Demographics, and Behaviour		This study is intended to be a comprehensive investigation of the nature and prevalence of Internet gambling among the Ontario populace. The researchers will explore the prevalence of Internet gambling and problem gambling, the nature and characteristics of Internet gamblers, the prevalence of Internet gambling by prohibited individuals, the general game play behaviours and experiences of Internet gambling, and the causal connection (if any) between Internet gambling and problem gambling.	Adult Internet Gamblers

1-Mar-06	University of Toronto	Mary Chipman, Richard Govoni and Michael Roerecke	The Distribution of Consumption Model: An Evaluation of its Applicability to Gambling Behaviour	36,964.80	The goal of this project was to assess the applicability of the Distribution of Consumption Model to gambling. This epidemiological model has been successful in describing population-level drinking; it focuses on the relationship between the average level of consumption and the proportion of heavy drinkers in a population, as well as the attendant problems of heavy drinking (i.e., cirrhosis). This model has produced recommendations for the overall reduction of alcohol consumption in a population, which may be relevant to a public health approach to problem gambling.	Adult gamblers
Prevalence in sub-populations						
19-Mar-07	COSTI Immigrant services	John McCready	Gambling and Ethnicity: Sociodemographic and Mental Health Factors Associated with Problem Gambling in Members of Ethno-cultural Groups in Ontario	42,000.00	This secondary analysis of data from the Canadian Community Health Survey - Mental Health and Well-being (CCHS 1.2) examined the prevalence and nature of gambling and gambling problems in ethno-cultural groups in Ontario, as well as whether sociodemographic and mental health factors (including alcohol and drug dependence) are associated with gambling problems.	Adult - Ethnocultural populations
12-Aug-04	Responsible Gambling Council AND Canadian Centre on Substance Abuse	Wiebe & Kelly	Gambling Behaviour Among Older Adults	145,476.00	This study examined the gambling activities, problem gambling behaviour, negative consequences, and related social and personal factors within a province-wide sample of adult Ontarians 60 years and older. Also, awareness of treatment services and barriers to seeking help were identified. This study is based on data from "Measuring Gambling and Problem Gambling in Ontario."	Older Adults

5-Aug-05	Community Outreach Programs in Addictions	John McCready	Seniors and Gambling: Sociodemographic and Mental Health Factors Associated with Problem Gambling in Older Adults in Ontario	42,000.00	This study was an exploratory, secondary analysis of data from the Canadian Community Health Survey - Mental Health and Well-being (CCHS 1.2) the prevalence and nature of gambling and gambling problems among older adults in Ontario, as well as the predictive value of sociodemographic, health and mental health factors	Older Adults
14-Jun-04	CAMH	Edward Adlaf (Turner)	Schools, Students, and Adolescent Gambling in Ontario	53,145.00	Data on problem gambling collected as part of the Ontario Student Drug Use Survey were analyzed to describe the nature and extent of gambling and problem gambling, and to relate results to other alcohol and drug behaviours.	Adolescent School Population
20-Jul-07	Trent University	James Parker	Pathological gambling and addiction-related problems in an adolescent clinical sample	168,212.84	This study explored whether existing mental health problems predispose youth to problem gambling. A clinical population of adolescent outpatients [with current diagnosis of attention deficit/hyperactivity disorder (ADHD) or mood disorders] was used to examine whether problem gambling and substance abuse are higher in the clinical sample than in community-based samples; whether specific clinical groups are more at risk for problem gambling than others; and whether emotional, social, and cognitive factors predict problem gambling and substance abuse.	Adolescent - High Risk
30-Sep-08	University of Guelph	Scott Miatland	Developmental Transitions and the Impact of Gambling in Adolescence and Emerging Adulthood	174,156.00	This one-year study is the first step toward focusing on the nature of problem gambling in adolescence by establishing the sample and determining the characteristics of adolescent gambling in the Waterloo region, with the intention to extend it to a prospective study to examine developmental transitions in emerging adulthood. The latter goal will be accomplished by employing our baseline sample in a longitudinal study	Adolescent

					to measure concomitant predictors of and transitions in the progression of gambling behaviour, using multi-level data. A cohort of 1080 students, in grades 9 - 12, will be randomly sampled from 10 schools (both public and separate boards) in the Waterloo region.	
31-Aug-07	Mood Disorders Society	Sidney Kennedy	Frequency and Correlates of Gambling Problems in Depressed and Bipolar Outpatients	208,950.00	This study investigated the frequency of gambling in patients who were seeking treatment for mood disorders – major depressive disorder (MDD) and bipolar disorder (BD). Consecutively assessed outpatients at seven Mood Disorder Clinics across Canada and the United States participated.	Co-morbid population - Depression
20-Mar-07	CAMH	Nigel Turner	Problem Gambling in Canadian federal offenders:" Prevalence, co-morbidity, and correlates	206,440.00	Dr. Nigel Turner of the Centre for Addiction and Mental Health explored problem gambling among new federal offenders. Information on criminal history, gambling practices, and psychological health were obtained in order to assess levels of gambling problems and thereby shed more light on the links between problem gambling and crime.	Adult Offenders
31-Aug-10	CAMH	Nigel Turner	Problem gambling inside & out: The assessment of community and institutional problem gambling in the Canadian correctional system	450,404.00	This three-year study is to determine the prevalence of problem gambling in the Canadian correctional system and to examine the correlates of problem gambling in this population. The first year and a half of the study will determine if results from the Millhaven Assessment Unit of the Correctional Service of Canada (Turner, Preston, McAvoy, & Saunders, 2007) can be replicated in “parent” federal institutions. Samples will be taken from maximum (n = 100), medium (n = 100), and minimum-security institutions (n = 100).	Adult Offenders

6-Jul-07	CAMH	Lorne Korman	Problem Gambling and Domestic Violence: Examination of the Prevalence of Problem Gambling among Individuals in Domestic Violence Treatment	42,000.00	This study sought to examine the prevalence and severity of problem gambling among individuals attending programs for perpetrators of intimate partner violence. 182 domestically violent individuals attended study interviews (145 men and 37 women). Problem gambling (PGSI≥8) was reported by 9.9% of participants, moderate risk gambling by 8.2% of participants and low-risk gambling by 11.5% of participants.	Co-mobid population - Domestic violence
27-Feb-07	CAMH	Lorne Korman	Domestic Violence and Problem Gambling: Examination of the Prevalence of Domestic Violence among Problem Gamblers.	42,000.00	This study sought to examine the prevalence and severity of intimate partner violence (IPV) among male and female problem gamblers in an Ontario context. Physical Intimate Partner violence (IPV) was reported by 40.7% (101 of 248) of problem gamblers, 40% (82 of 205) of males and 44.2% (19 of 43) of females. These rates are considerably higher than those reported in earlier US and Canadian surveys of IPV in the general population. Problem gamblers also reported considerably higher rates of severe IPV (17.3%) than those reported in earlier American and Canadian general population surveys (3%, 2.3%).	Co-mobid population - Domestic violence

4. Manitoba's contribution to the SEIG Framework

Manitoba is undertaking several projects that will contribute to developing the SEIG framework:

The Manitoba Gaming Control Commission (MGCC), the Addictions Foundation of Manitoba (AFM) and Manitoba Lotteries Corporation are collaborating to conduct the Manitoba Longitudinal Study of Young
Adults. The study was launched in 2007 and will follow a cohort of 18 to 20 year olds over five years to explore how arrays of biological, psychological and sociocultural variables are linked to changing
gambling behaviours.

The MGCC will be using the SEIG framework to design its own project to assess the social and economic impacts attributable to the construction and operation of the Aseneskak and South Beach Casinos. In 2001, before these casinos were built, the MGCC documented social and economic benchmarks for the two First Nations on which they are located. The MGCC will be able to compare current measures to these earlier ones as one component of its SEIG study.

The AFM conducts regular prevalence research and collects data about clients who seek treatment for their gambling. This research could be used to build upon many areas of the SEIG framework, including the number of problem gamblers who seek help through community-based and residential treatment services; the prevalence of problem gambling and co-morbid disorders: mental health, depression and mood disorders, and physical problems; the prevalence of problem gambling and substance abuse; attribution of self-reported past year suicide ideation/attempts to problem gambling; social relationships and problem gambling; and self-report financial problems due to gambling.

The MGCC conducts cross-sectional studies every two to three years to analyze Manitobans' attitudes, awareness, knowledge and behaviours related to gambling. This research could be used to assess some questions about the entertainment pleasure that people find from gambling and how gambling impacts social relationships.

5. Alberta Gaming Research Institute's contribution to the SEIG framework

The Alberta Gaming Research Institute is co-funding several research projects that relate to assessing the social and economic impacts of gambling; this research will be helpful for populating several of the impact domains in the SEIG framework. The following is a partial list of some of these research initiatives:

- *The social and economic impact of gambling in Alberta*: a Request for Research Proposal for the study on 'social and economic impact of gambling in Alberta' was issued in the summer of 2007 with the study expected to commence in 2008.

- *Proportion of Gaming Revenue Derived from Problem versus Non-Problem Gamblers (*by R. Williams and R. Wood), examines the proportion of gaming revenues in Alberta, Ontario and other provinces that come problem gamblers.

- *Association Between Pathological Gambling and Suicide Attempt/Ideation* (by S. Newman) which will determine whether a lifetime history of pathological gambling is associated with suicide attempt/ideation;

- *Examining gambling and problem gambling in Albertan Aboriginal communities* (by R. Williams) one of the largest studies of Aboriginal gambling in Alberta.

- *The Effect of Culture on Gambling (*by G. Walker) examines the prevalence of gambling among Chinese/Canadians residing in Edmonton in comparison with Anglo/Canadians in the same community.

- *Using On-line Survey Techniques to Profile the Internet Gambler* (by R. Wood), the largest study yet of Internet gamblers.

- U*sing Police Files to Assess Gambling Impacts* (by G. Smith) examining police files for linkages between gambling and criminal behaviour.

- *'What is a Crime?'* (by G. Smith) is an interprovincial study to develop a framework for understanding the processes that underlie and inform response to unwanted behaviour.

- *An Exploratory Study into the Influence of Gaming Revenue on Alberta Amateur Sport Organizations* (by I. Reade) explores how reliance upon gaming revenue has affected Alberta's provincial amateur sport organizations.

6. British Columbia study of social-economic effects of casino gaming

In 2004, the Province of British Columbia commissioned a study of several Lower Mainland communities where slot machines were being introduced for the first time, to determine the social and economic effects of casino gaming. Study communities included the Cities of Vancouver, Surrey, Langley and the Township of Langley. The baseline report was released in fall 2005. The first full report was published in May 2006 and the final report in July 2007. The Province plans to update this socio-economic study in 2009/10.