

2023-05-03

# Decade of Turmoil: A Characterization of a Specialized Refugee Health Clinic 2011-2020

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Norrie, E. C. (2023). Decade of turmoil: a characterization of a specialized refugee health clinic 2011-2020 (Master's thesis, University of Calgary, Calgary, Canada). Retrieved from <https://prism.ucalgary.ca>.  
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UNIVERSITY OF CALGARY

Decade of Turmoil: A Characterization of a Specialized Refugee Health Clinic 2011-2020

by

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A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES  
IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE  
DEGREE OF MASTER OF SCIENCE

GRADUATE PROGRAM IN COMMUNITY HEALTH SCIENCES

CALGARY, ALBERTA

MAY, 2023

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## Abstract

**Background:** Canadian refugee healthcare has been impacted by periodic upheavals including federal funding cuts, Syrian and Yazidi resettlement programs, and COVID-19. These upheavals will have undoubtedly led to changes in clinic use, shifts in clinic demographics, or clinic policy. Refugees are a vulnerable population with specific physical health, mental health, and social needs. One model of care that can address these needs is a specialized refugee health clinic. Understanding the impacts of recent upheavals on a specialized refugee health clinic's utilization, its staff and clinicians is critical for future planning.

**Methods:** We used a mixed methods sequential explanatory case study design to investigate changes (including patient demographic characteristics, clinic utilization, and care adaptations), at a specialized refugee health clinic in Calgary from 2011 to 2020, across five time periods: *Pre-Interim Federal Health Program (IFHP) Cuts* (January 2011 – June 2012), *IFHP Cuts* (July 2012 – October 2015), *Syrian Surge* (November 2015- January 2017), *Yazidi Period* (February 2017 – February 2020), and *COVID-19* (March 2020 – December 2020). We used segmented linear regression (SLR), Kruskal-Wallis, and chi-square analyses to assess quantitative changes to utilization and demographics following these time periods. Then we conducted semi-structured interviews with clinic leadership which we analyzed with thematic analysis through both inductive and deductive lenses. Finally, we integrated our quantitative and qualitative findings by assessing which of our qualitative themes converged with our quantitative findings during each time period.

**Results:** We included 10,661 patients in our quantitative analysis; 48.2% were female and the mean age was 24.4 years (SD: 17.0). The most common countries of origin were Eritrea, Syria, and Iraq. Total monthly appointments increased 576% from 478/month to 2752/month over 10 years. The mean appointments/month increased significantly ( $p < 0.05$ ) during each time period, but the rate of increase varied. Key themes that emerged from qualitative interviews included: strain on clinic staff and providers' wellness, challenges and successes of patient acculturation, clinic resources increased in amount and type over time, providers excelled in caring for patients physical health but sometimes struggled to meet patients' psychological and social needs, factors mitigating stress and challenges, the importance of understanding lived experience, and suggestions for future upheavals. Our integrated findings indicated that health system upheavals are a reasonable framework to understand the changes at the clinic over the 2011-2020 decade, as they were often chaotic and stressful times, however not each impact of these upheavals can be understood through quantitative analysis of utilization alone.

**Conclusion:** Utilization increased greatly over different policy changes and a pandemic, at a specialized refugee clinic over ten years. These upheavals challenged clinic leadership and providers to adapt. Qualitative participants consistently indicated that the stress of these upheavals negatively impacted staff wellness and patient care. Canada and other countries of resettlement should consider how health policies and other upheavals may have downstream consequences. Understanding how health and immigration policy changes affect care, especially at specialized refugee clinics, is critical for being able to anticipate and thrive through future upheavals as turmoil globally seems to continue.

## Acknowledgements

I dedicate this thesis to staff and patients of the Calgary Refugee Health Program/Mosaic Refugee Health Clinic. When I was first hired by the clinic in October 2011 I was lost, depressed, and without purpose. The staff and providers showed me the same love, care, and patience that they do to all who come through its doors, and over time and with many second chances they empowered me to not only heal, but to thrive. My healing journey was not as long nor nearly as arduous as some, but it was a journey nevertheless, and I am filled with gratitude for all who supported me on this path. My story echoes those of many who come to the clinic looking for new beginnings. I am honored and humbled to be able to do my small part in telling the story of those brave, resilient people, and the clinic that serves them.

This thesis would not have been possible without the persistent support and encouragement of my incredible support system: my friends (including but certainly not limited to the group sometimes referred to as “The Badgers”), my family, coworkers, counsellors, and mentors. Thank you all for what you’ve contributed to my life.

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## List of Abbreviations

AHS Alberta Health Services

EMR Electronic Medical Records

FTE Full Time Employment

GP General Practitioner

IFHP Interim Federal Health Program

LPN Licensed Practical Nurse

MDT Multidisciplinary Team

MRHC Mosaic Refugee Health Clinic

RN Registered Nurse

SLR Segmented Linear Regression

UN United Nations

UNHCR United Nations High Commission for Refugees

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# CHAPTER ONE: BACKGROUND AND RATIONALE

## 1.1 Why Study Refugee Healthcare Utilization?

The number of forcibly displaced people worldwide has increased each year for the last ten years (1). According to the United Nations High Commission for Refugees (UNHCR), there are now approximately 103 million forcibly displaced people worldwide, including 25.4 million refugees, highest number ever recorded (1). The definition of a refugee has remained unchanged since the 1951 United Nations (UN) convention in Geneva, as people who have fled their country of citizenship due to “fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion” (2). Recently, as always, refugees have been seeking a better life than the turmoil that has affected them in countries such as Ukraine, Afghanistan, Venezuela, Myanmar, and Syria to name only a few (1). Among the twenty-six officially recognized UNHCR countries of resettlement, Canada is seen as a world leader, and ranked first of the twenty-six countries according to a 2019 UNHCR report (3). Canada’s federal government seeks to continue as a leader in refugee resettlement; (4) however, previous resettlement initiatives may have had unexpected downstream consequences.

## 1.2 Canada’s Tradition of Refugee Resettlement

The Canadian government’s website details Canada’s long history of providing sanctuary to those displaced by war, persecution, and disaster. In 1891, 170 000 Ukrainians fled to Canada to escape the oppression of Austro-Hungarian rule in the first of three waves of Ukrainian immigration (5). Later, Canada welcomed 250 000 displaced peoples from Europe who were fleeing the Nazi and Communist regimes (5). Canada also resettled 37 000 Hungarians in 1956.

This is considered to be Canada's first large-scale resettlement initiative of the modern age (5). Since 1956, more refugees have sought a better life in Canada, including 11 000 Czech refugees between 1968 and 1969, 7 000 Ugandan Asian refugees in 1972, and over 60 000 Indochinese "Boat People" in the late 1970s (5). Canada continued its humanitarian efforts by admitting 20 000 Soviet Jews between 1970 and 1990, providing refuge to 5 000 Bosnian Muslims fleeing genocide in 1992, and air-lifting more than 5 000 Kosovars to safety in 1999 (5). In the 2000s, Canada resettled 3,900 Karen refugees from refugee camps in Thailand and more than 5,000 Bhutanese refugees (5). Following the Syrian civil war and the rise of the terrorist organization calling itself the Islamic State of Iraq and Syria (ISIS), Canada had resettled more than 23 000 Iraqi refugees by 2015 and welcomed 25 000 Syrian refugees in 2016. Most recently Canada resettled over 1 300 Yazidis fleeing ISIS, who had held them in captivity (5). It should be noted that these numbers are mostly government assisted refugees. When taken together with total numbers of privately sponsored refugees and refugee claimants, the total number of refugees Canada has resettled since 1956 is close to 1 million (67). Through all of this, Canada demonstrated its dedication to offering humanitarian assistance. This tradition continues today, with the Canadian government's commitment to resettle 40 000 Afghan refugees following the collapse of the Afghan government in 2020 and to provide support for refugees fleeing the Russian invasion of Ukraine (5). Through each of these migration events, academics and policy makers have considered refugee policy mostly absent of broader context and the potential for downstream effects.

### 1.3 Specialized Refugee Health Clinics

Refugee populations have unique and specific health needs, which often differ from those of the general population in their countries of resettlement. These needs stem from their experiences of migration, including exposure to violence, poverty, and limited access to healthcare (6-8). Specialized refugee health clinics have been established in countries like Canada to address these health and social concerns. These clinics offer comprehensive primary care with specific training, resources, and providers tailored to the needs of refugees (6-8). Specialized refugee health clinics often employ two types of care providers: embedded specialists and multidisciplinary teams (MDT). Embedded specialists are physician specialists in various disciplines such as internal medicine, OBGYN, psychiatry, infectious disease, or pediatrics (6-7). The MDT consists of non-physician care providers such as social workers, psychologists, dietitians, and registered nurses, who work collaboratively to address the multifaceted health needs of refugees beyond physical health (6-8). Additionally, refugee healthcare often demands an understanding of the different categories of refugees (e.g., government-assisted refugees, privately sponsored refugees, and refugee claimants), the funding options and support available to each, knowledge of infectious diseases and exposures endemic to refugee countries of origin and transit, access to interpretation services, and familiarity with resettlement services and how to coordinate and collaborate these services effectively (6-7). Although care protocols and processes may vary across specialized refugee health clinics, the focus on multidisciplinary care ensures that refugees receive comprehensive, coordinated care that addresses their complex health issues. Despite ongoing studies to improve the understanding of specialized refugee health clinics, there is currently no research on how immigration policy may impact their delivery of care (8). Studies are in progress to better understand specialized

refugee health clinics, but no study currently exists that seeks to understand how immigration policy might affect a specialized refugee health clinic (8).

## 1.4 Mosaic Refugee Health Clinic

In Calgary, the Mosaic Refugee Health Clinic (MRHC, formerly the Calgary Refugee Health Program) has operated continuously since 2003 and Canada's longest continually active and largest operationally, specialized refugee health clinic (9). Since its inception, MRHC has provided multidisciplinary healthcare to newly arrived refugees and asylum claimants in Calgary for the first two years after arrival. It expanded its services in 2013 when it joined the Mosaic Primary Care Network (9). Today, some see MRHC as a model clinic for refugees (10). MRHC is a multidisciplinary care home (12) that, in addition to general practitioners, also includes embedded specialist physicians, and a multidisciplinary team (MDT). The specialists cover five fields of study: pediatrics, obstetrics/gynecology, psychiatry, internal medicine, and infectious disease. The MDT includes nurses, social workers, psychologists, dietitians, and two roles that are unique to MRHC; health liaisons and transition coordinators, which assist in external collaborator coordination and in the transition from refugee care to primary care by family physicians, respectively. All MRHC physicians are trained in tropical medicine and stay informed of the current events that result in forced displacement globally (7). MRHC accepts health coverage provided by the Interim Federal Health Program (IFHP) which provides coverage for refugees and asylum claimants, which we will describe in further detail below. Therefore, MRHC is sensitive to changes to this federal program (7).

Understanding how this clinic and its patients were affected by sudden health and immigration policy changes, and how it responded to them, will enable Canada and other refugee

resettlement countries to understand the downstream effects of large and sudden policy changes. Lastly, over the last decade MRHC has coordinated with local and federal organizations to facilitate resettlement programs. For example, MRHC provided and coordinated healthcare for refugees who arrived through the *Syrian Refugee Resettlement Initiative* and the *Survivors of Daesh Program* two events we will describe below as health system upheavals (13).

### 1.5 Refugee Health System Upheavals

Over the last decade MRHC experienced many changes. Some were local, minor, or occurred over a long period of time; however, some were large, sudden changes that affected refugee health as a whole. We define these sudden system-wide changes as “refugee health system upheavals.” The timeline of these upheavals can be seen in Figure 1 below. The first example of a policy change with significant downstream consequences was the 2012 federal government decision to impose major cuts to the Interim Federal Health Program.

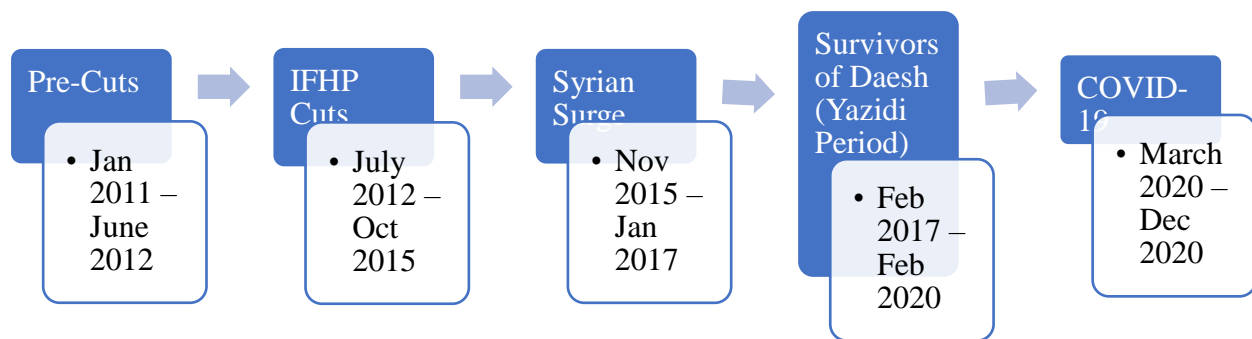


Figure 1. One upheaval consistently led into another.

## 1.6 The Interim Federal Health Program (July 2012 – Oct 2015)

Canada has a specific health insurance program for refugees, asylum claimants, and protected persons called the Interim Federal Health Program (IFHP). The IFHP has existed since it was created by the federal Government of Canada in 1957. The IFHP provides health temporary insurance coverage for refugees and protected persons during their period of ineligibility for provincial and territorial health insurance (16). This period of ineligibility varies between provinces, but provinces often require 3 months of residence and/or permanent residence status to be eligible for health insurance. The exception to this are refugee claimants, as they make their claim of refugee status at the port of entry. Then the judicial system accepts or denies their claim. Therefore, claimants' period of ineligibility tends to be much longer, and they are reliant on IFHP for longer on average than sponsored refugees (17).

On June 16, 2012, the Government of Canada cut funding to the Interim Federal Health Program through Bill C-31, based on the belief that this would be a cost saving decision (18). However, these cuts produced several negative outcomes. First, they immediately restricted the services provided to several categories of refugees and refugee claimants (18). This caused an increase in refugees and claimants delaying or foregoing medical treatment, even in emergency situations (18). Many who did seek medical treatment incurred significant medical bills that they were unable to afford (16). Additionally, studies have found that these changes did not have the cost-saving effect that were intended (16, 18, 19). Instead, costs were often “downloaded” to the hospitals, as patients were unable to receive less-expensive, preventative primary care, but they were covered for emergency medicine (18). In 2015 the newly elected government reversed the IFHP cuts to facilitate the Syrian Refugee Resettlement Initiative, in response to the humanitarian crisis caused by the Syrian Civil war that erupted in March 2011 (20).



## 1.7 The Syrian Refugee Resettlement Initiative (Nov 2015 – Jan 2016)

A major event that increased the number displaced people today was the Syrian civil war, which began in 2011 (21). This conflict forced an estimated 6.8 million Syrians to flee and seek refuge elsewhere, not including the 5.5 million internally displaced Syrians remaining in the country (21). Countries around the world, including Canada, attempted to aid this humanitarian crisis, but the largest burden was felt by its neighboring countries Turkey, Lebanon, and Jordan. By 2015, Turkey hosted the largest population, 1 552 839 registered refugees, and Lebanon, a country with a population of only 4.8 million people hosted 1 146 405 registered Syrian refugees (21). To contribute to this aid effort, the Government of Canada began the *Syrian Refugee Resettlement Initiative* after the election on November 4<sup>th</sup>, 2015, resettling over 25 000 refugees in the first 118 days, and so far, has settled over 44 620 (22). A study by Marshall and Béland (2019) characterized this program as successful but challenging due the pressure exerted on a system that had not been built for such a sudden change. Marshall and Béland describe the Syrian resettlement in Saskatoon, as chaotic in the beginning, which was soon followed by problem-solving, creativity, and coordination (23).

## 1.8 Survivors of Daesh Program (Feb 2017 – Feb 2020)

The conflict in Syria destabilized not only Syria, but neighboring Iraq as well (24). This allowed the emergence of the terrorist organization known as the Islamic State of Syria and the Levant (ISIS or ISIL), or Daesh (24). The Yazidi are an ethnocultural and religious minority population from Northern Iraq and Syria (24). In August 2014, ISIS advanced to the northern Iraqi province of Sinjar and committed what the United Nations has called a genocide against the Yazidi people (25). ISIS executed men, kidnapped and enslaved women and girls, and placed

boys as young as 10 years old into ISIS indoctrination schools and training camps to become fighters (25). In response, in February 2018 the Government of Canada began the *Survivors of Daesh* Program, which resettled over 1300 Yazidi refugees who had been recently freed from ISIS captivity to four Canadian cities: Toronto, Calgary, London and Winnipeg (25). Yazidi refugees survived the unimaginable at the hands of ISIS, and this often resulted in complex mental health issues (14). One study of 116 Yazidi refugees to Germany found that 93% had probable post-traumatic stress disorder (PTSD) (24). A report summarizing the health of Yazidi refugees to Canada concluded that trauma affects all aspects of the resettlement experiences of the Yazidi in Canada (26). These mental health needs would likely require increased healthcare utilization, especially access to mental health providers such as psychologists and psychiatrists.

### 1.9 COVID-19: A Global Pandemic (March 2020 – Present)

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is the virus that caused the global COVID-19 pandemic. COVID-19 has affected health and health systems around the world. Given their limited fiscal and social resources upon arrival, refugees were especially vulnerable and have been disproportionately affected compared to the general population (27, 28). Not only do refugees experience lower socioeconomic status than the general population, but refugees may be less likely to seek help, out of fears of deportation, inability to navigate complex medical systems, or due to language barriers (29). The virus itself has not been the only stressor during this uncertain time. A study by Sundarasan et al. 2019 of 983 university students found more than 30% of their participants reported some amount of anxiety (30). The main stressors were financial constraints, remote learning, and uncertainty of the future (30). Each of these stressors are likely to be found among refugee patients. Indeed, a study by Jenkins et al.

(2021), of the mental health impacts of COVID-19 in Canada which surveyed over 3000 Canadians found that the most likely to experience a deterioration in mental health are those who experience health, social, or structural vulnerabilities (31). Due to the increased risk of contracting SARS-CoV-2, as well as decreased likelihood to seek help, and less economic means to survive the hardships imposed, understanding the relationship between refugee primary care and COVID-19, both as a virus affecting changes in refugee health utilization, and as the impetus for changes in local policy which may have downstream impacts on the mental health of patients and providers, is of critical importance.

### 1.10 Refugee Primary Care Utilization

Recently, refugee healthcare utilization has been studied in countries responding to the global refugee crisis. A 2018 study in Germany by Sebastian Bauhoff and Dirk Gopffarth compared healthcare utilization by 3 639 asylum seekers to 18 191 regularly insured individuals (32). Bauhoff and Gopffarth found that asylum seekers had twice as much primary care and acute care utilization compared to the controls (32). Bauhoff and Gopffarth concluded that improving access to specialized multidisciplinary refugee care could improve health outcomes for refugees and reduce costs as well (32). Another recent study in Virginia, USA also compared refugee healthcare utilization to non-refugee controls (33). Contrary to the findings of Bauhoff and Gopffarth, this study by Guess et al. (2018) found that refugees were significantly less likely to use the emergency department, compared to non-refugee controls (33). They also found that refugees were slightly less likely to utilize primary care services, but this association was not significant. Guess et al. speculated that this result that deviates from most of the literature on refugee healthcare utilization could be due to barriers to access including the need for insurance

within the American healthcare system, and the cost of the American healthcare system disproportionately affecting populations that are less able to afford care, such as refugees (33). Both Bauhoff and Gopffarth and Guess et al. concluded that refugee-specific primary care services could both improve health outcomes for refugees, as well as reduce unnecessary emergency department use (32, 33).

In Canada, Gurunge et al. conducted a qualitative study in 2018 on the healthcare needs and health service utilization by Syrian refugees in Toronto (34). They found that the IFHP was an enabling factor to access services, while social disconnection and language difficulties were barriers. That study was informed by the Yang and Hwang (2016) immigrant health utilization framework, an American framework that builds upon previous health utilization frameworks by adding immigrant specific factors (35). To our knowledge, no refugee health utilization framework currently exists, Canadian or otherwise.

Perhaps the most relevant quantitative study to understanding refugee health utilization is a 2011 study by Kiss et al. (36). In their study they matched a sample of 2 280 refugees seen at MRHC (known then as “Calgary Refugee Health Program”) between 2002 to 2007, to 9 120 non-refugee controls whose health services utilization data was collected from Alberta Health and Wellness (AHW) provincial administrative health data. Their study found that refugees utilized health services (general practitioners, emergency department, and hospital inpatient services) significantly more (5%, 2%, and 4% respectively) than the non-refugee controls. This finding was consistent across age and sex groups though was especially true of females and patients aged 20-29. Kiss et al. concluded that primary care clinics specializing in refugee care could benefit this population (36). Although this study was useful in establishing the need in

Canada for specialized refugee care, it did not account for how clinic utilization was affected by refugee health system upheavals.

### 1.11 Impact of Policy Changes on Healthcare Workers, Physicians and Staff

While resettlement policy papers such as Marshall and Béland (2019) describe the stress on systems imposed by a rapid and mass refugee resettlement program, they did not investigate the impact this has on the health system and the people who work in that system (25). Similarly, while Wilkinson et al. (2018) described in detail the challenges faced in caring for a resilient but extremely traumatized population, they did not conceptualize the challenges faced as being the predictable consequence of a federal policy decision (26). By contrast, the consequences of the IFHP cuts, as described by Antonipillai et al. (2017), are seen as resulting from a policy decision, but do not examine them as part of a pattern of sudden policy changes having widespread effects (16). As the effects of COVID-19 dissipate, we see that the virus was not the only cause of stress during the pandemic era (31) – policy decisions can have profound and unexpected consequences downstream and worthy of investigation.

### 1.12 Study Rationale

Taken together, the above findings reveal a clear knowledge gap and need for additional study. Studies to date indicate differences between refugee and non-refugee healthcare utilization. Each study concludes that specialized refugee healthcare, especially multidisciplinary care, may improve health outcomes for refugees, and the two most recent studies speculate that this may decrease costs as well. However, none of the above studies explain or examine how specialized refugee healthcare utilization is related to health system upheavals, or how the care processes

and structures of these clinics adapt to these upheavals. The four health system upheavals outlined above each produced unique challenges for specialized refugee care; however, how these health system upheavals relate to patient demographics, clinic utilization, and process and structure adaptation of specialized refugee health clinics have not yet been quantified or explained. Understanding these relationships is foundational research that may inform how specialized clinics across Canada and beyond may adapt to health system upheavals.

## CHAPTER TWO: METHODS

### 2.1 Research Question

Given the knowledge gap stated above, our research question is “how do health system upheavals affect a specialized refugee clinic, including its utilization, patient demographics, clinic adaptations, and leadership experience?”

### 2.2 Study Design and Setting

Robert Yin is widely regarded to be the definitive expert of case study design (37, 38). Yin (2009) describes the case study design as an empirical method used to investigate a contemporary phenomenon (the “case”) in depth and in its real-world context, especially where the distinction between phenomenon and context is ill defined (39). According to Yin, there are four types of case designs that can be considered using a 2x2 matrix (Figure 2). Case studies either include single cases or multiple cases and are either holistic (one unit of analysis) or embedded (multiple units of analysis) (39). He describes five rationales for choosing single case study for a research design: critical, unusual, common, revelatory, or longitudinal (39). The case of MRHC from 2011-2020 is unusual, as it is operationally among the largest specialized refugee health clinic in Canada (6,7). However, while MRHC is unusual, it is a specialized refugee health clinic, and specialized refugee clinics are becoming more common, with between 50 and 65 in Canada that have not yet been characterized (8). The rationale that most aligns with ours, however, is our study is a longitudinal case study. Yin specifically mentions that these are useful when examining a case at specific time intervals, such as before or after a critical event. In a 1999 paper about enhancing the quality of case studies in health services research, Yin states that data collection should involve a variety of techniques. He emphasizes that the goal of using

multiple sources of evidence (such as interviews and archival records) is to collect converging evidence and to triangulate them over a given fact (40).

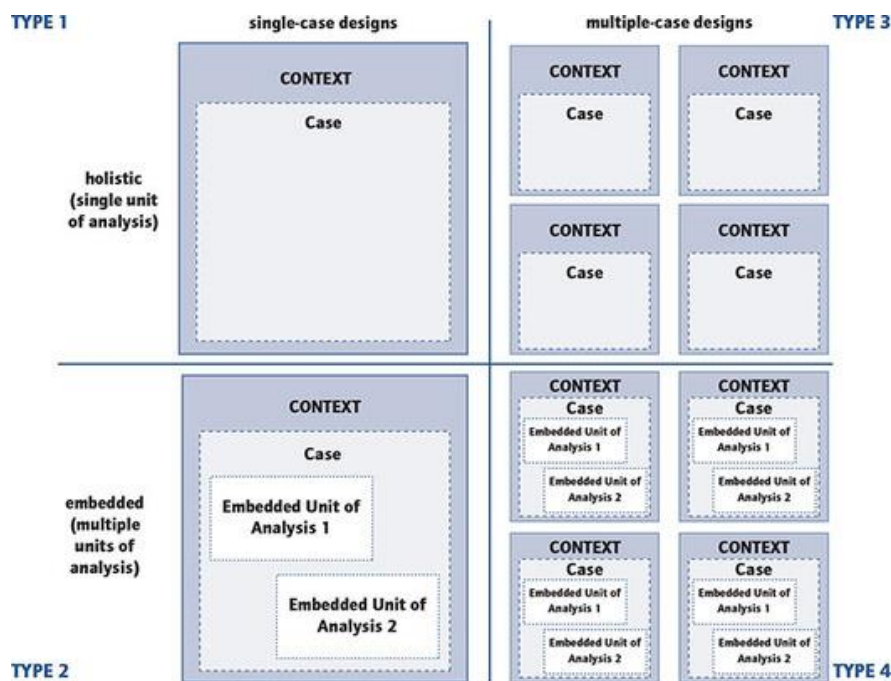


Figure 2. Yin's 2x2 Matrix of Case-Study Types

SOURCE: Yin, 2009

For our study, the student had extensive familiarity with MRHC's EMR software, giving him access to archival data. Additionally, he had insider knowledge and working relationships with clinic staff, providers, and leadership, giving him access to rich qualitative data through interviews. The impacts of the upheavals may be quantitative or qualitative, thus fully understanding them likely requires a combination of the two. Therefore, the student argued to his supervisors that mixed methods study design was the best method to understand these changes. A sequential explanatory mixed methods embedded case study, where the qualitative findings explain and contextualize the quantitative findings, was ideal to understand changes at the clinic over 10 years and four health system upheavals (41).



We conducted an embedded case study that utilized a sequential explanatory mixed method design to investigate changes in demographics and clinic utilization by refugees and claimants who received care at a specialized refugee clinic, the Mosaic Refugee Health Clinic (MRHC), between January 1<sup>st</sup>, 2011, and December 31<sup>st</sup> 2020. Through our qualitative phase and data integration, we aimed to understand how these changes were experienced, and adapted to, by clinic leadership. We prioritized the quantitative data, as is typical of such analyses (41). The MRHC represents our “case” which we studied through three units of analysis: The patients (their utilization patterns and demographics), providers (changes to their capacity measured as fulltime employment hours, FTE, over time), and clinic leadership (thematic analysis of interviews regarding their experiences at the clinic). Thus, our study consisted of three phases; 1) first, the quantitative phase; 2) second, the qualitative phase; and finally, 3) a data integration phase that merged data from the previous phases.

## 2.3 Quantitative Phase

The research literature utilizes various definitions of healthcare/clinic utilization and related terms. In this study we define clinic utilization as clinic use by patients, which when measured, is sometimes referred to as “activity”. This is distinct from “supply” (provider capacity usually measured in FTE hours or in number of patients if appointment lengths are uniform), or “demand” (the quantification of patient need). In this thesis we will use the terms “utilization” to refer to activity, or use, and the term “capacity” to refer to provider supply, how many hours they have available for patient appointments and charting.

We assembled a retrospective cohort of archival data to quantify changes to clinic patient demographics and utilization between, each of five time periods: January 2011 to June 2012, the

“Pre-Cuts” period. June 2012–November 2015, the “IFHP Cuts” period, December 2015 to January 2017, the “Syrian Surge” period, “February 2017 to February 2020” the “Yazidi” period, and March 2020 to December 2020, “the COVID-19” period. To achieve this, we extracted archival sociodemographic data from the clinic’s electronic medical records (EMR) including age at intake, sex, and region of origin, for all patients who attended the clinic for one or more appointments between January 1<sup>st</sup>, 2011, and December 31<sup>st</sup>, 2020. We also extracted archival utilization data: The number of appointments each patient attended in aggregate and segmented by provider type. Providers were categorized as general practitioners (GPs), multidisciplinary team members (MDT), or embedded specialists. We then aggregated these data into the number of appointments per month for each provider type. To quantify changes in monthly utilization rates, we used a segmented linear regression analysis with five segments, and we assessed differences in mean level or slope between trend lines across segments for each provider type. We describe the statistical analyses in greater detail in the Data Analyses section below.

## 2.4 Qualitative Phase

In the second, qualitative phase, we investigated how clinic structure and processes may have changed or adapted throughout the five time periods, changes in clinic utilization, changes in patient demographics, as well as the impacts to staff and providers. We conducted semi-structured interviews with current and former clinic leadership to understand their perspectives of changes and adaptations during each of the health system upheavals that they experienced, and the challenges and successes during these periods. We used purposive sampling, leveraging the connections the student and his supervisor had established with clinic leadership over a decade. Specifically, we selected participants based on their leadership roles and their ability to

provide rich and diverse experiences of the changes that occurred at the clinic over the ten-year study period. We contacted participants through email or telephone and invited them to participate in the study. The student obtained written informed consent from each participant prior to the interview. The student conducted interviews in person or over Zoom, according to the participant's preferences. To facilitate the interview process in accordance with the sequential explanatory mixed methods design, the student shared line graphs depicting clinic utilization and patient demographics with the participant via email before the interview (see appendix B). These visual aids helped guide the qualitative interview so that it would explain the quantitative data.

The student's interview guide can be found in appendix C. The student followed the interview guide for each interview using a conversational interview method. First, the student thanked the participant and informed them that they may choose not to answer any question and may withdraw the study at any time within 3 months of giving their interview. Then the student asked permission to record the interview and after obtaining consent began the interview.

## 2.5 Data Sources

Our data consisted of two sources. Electronic medical records (EMR) data from MRHC and their server on the Mosaic Primary Care Network's computer system, and the qualitative data generated through semi structured interviews. MRHC uses Telus Practice Solutions EMR software (TELUS Health, Montreal, QC). These data provided sociodemographic information for our patients: age, sex, refugee category, and country of origin, as well as their clinic utilization data (which providers they saw and when they saw them). The interviews served as our qualitative data source to explain and contextualize the findings of our quantitative analysis.

The student asked questions during the interview that included the participants experience, successes, challenges, adaptations, and anything else they found noteworthy about the time periods they experienced. Additionally, the student collected participants demographic characteristics including ethnicity, gender identity, sex, and age or date of birth.

## 2.6 Data Analyses

### 2.6.1 Quantitative Analyses

We used segmented linear regression (SLR) analysis to evaluate clinic utilization. A tutorial by Bernal, Cummins, and Gasparini (43) describe interrupted time series (ITS), a type of analysis that uses SLR which can be used when an outcome of interest that is used to establish a trend is interrupted at a known point of time. While our study is similar to an ITS, it does not measure changes immediately after the interruption, and thus is not an ITS. Our study included monthly data over ten years, with segmented by four splines, one at the onset of each upheaval. Prior to analysis we confirmed that this gave us sufficient statistical power to detect an effect if one were present in the difference between the level and slope of the regression line of any two time periods. We used Stata/IC version 16 (StataCorp LLC; College Station, TX, USA) statistical analysis software to perform this analysis. For each analysis we considered two-tailed p-values of less than 0.05 significant.

The decision of which type of regression line was the most appropriate fit for our data was a complicated matter. To answer this, we used scatter plots of the data and plots of residuals relative to linear and parabolic lines of best fit to assess the feasibility of comparing segments of our data using linear and quadratic regressions. First, we defined the part of our research question we wanted to answer through this analysis: How did monthly appointment utilization

change over time? We determined that merely looking at the mean appointments per month would not be sufficient. We needed to understand how the utilization changed over time. We then considered which parts of the line we were comparing. Since we had five time periods of different lengths, we decided to compare the mean levels of appointments (which on the regression lines exist at the median time point of each time period) during each time period to the following time period. Next, we evaluated different degrees of polynomial curves, including linear, quadratic, and cubic functions. We plotted the data using each method, and we found that cubic functions would overfit the data. Overfitting is a phenomenon where a model is too complex and tries to fit too closely to the existing data, causing it to perform poorly when applied to new data (44). We considered using quadratic fits, which would have resulted in a curved line for each segment instead of a straight line. However, the kurtosis of these curves would have partly reflected the size of our segments, which were not standardized as they reflected real world events (the upheavals). Further, whether these curves were concave or convex was not information that we could meaningfully interpret, and this was confirmed by consultation with a statistician affiliated with our institution. We concluded that linear regression, instead of polynomial regression, was the best choice for our analysis. Using segmented linear regression, we fit a regression line to each data segment (time period) and calculated the difference in level and slope from each segment to the following segment. This allowed us to quantify the changes in utilization over time and compare them across time periods.

To assess changes in monthly utilization rates, we aggregated the data into the number of appointments per month for each provider type and conducted a segmented linear regression (SLR) analysis with five segments. We applied a multi-intervention SLR analysis to estimate the

level and slope changes in monthly appointments for all clinic providers across different periods. Our approach, a type of SLR, is similar but distinct from an ITS, as we measure the level change at the median time point of each segment, rather than immediately (at the first time point) after each intervention. We constructed the regression model as follows:

$$Y_t = \beta_0 + \beta_1 * \text{time} + \beta_2 * \text{int}_1 + \beta_3 * (\text{time} * \text{int}_1) + \beta_4 * \text{int}_2 + \beta_5 * (\text{time} * \text{int}_2) + \beta_6 * \text{int}_3 + \beta_7 * (\text{time} * \text{int}_3) + \beta_8 * \text{int}_4 + \beta_9 * (\text{time} * \text{int}_4) + \beta_{10} * \text{int}_{bl} + \beta_{11} * (\text{time} * \text{int}_{bl}) + \varepsilon_t$$

In this model,  $Y_t$  refers to the number of monthly appointments for all clinic providers at time  $t$ , with time being a continuous variable representing the month from 1 (January 2011) to 120 (December 2020).  $\beta_0$  is the intercept (the level at the start of the pre-cuts period).  $(\beta_1 * \text{time})$  is the slope during the pre-cuts period.  $\beta_1$  to  $\beta_{11}$  are the coefficients to be estimated, and  $\varepsilon_t$  is the error term at time  $t$ . The coefficients associated with the int variables ( $\beta_2$ ,  $\beta_4$ ,  $\beta_6$ ,  $\beta_8$ , and  $\beta_{10}$ ) represent the level changes following the upheavals, while the coefficients associated with the interaction terms between time and int variables ( $\beta_3$ ,  $\beta_5$ ,  $\beta_7$ ,  $\beta_9$ , and  $\beta_{11}$ ) represent slope changes.

The upheavals are represented by dummy variables ( $\text{int}_1$ ,  $\text{int}_2$ ,  $\text{int}_3$ ,  $\text{int}_4$ , and  $\text{int}_{bl}$ ) coded as 1 when the observation falls within the respective period and 0 otherwise. These upheavals occurred in the 18th month (IFHP Cuts, June 2012), the 59th month (Syrian Resettlement Initiative, November 2015), the 74th month (Survivors of Daesh Program, February 2017), and the 111th month of the study period (COVID-19, March 2020).

When coding the model, we chose to center the time variable at the median time points of each period for several reasons. Firstly, because there were five segments in our analysis, there was no standard way of performing this analysis. Secondly, using median time points reduced

the number of levels needed to measure from nine (level at the start and end of each of the first four time periods and the start of the fifth time period) to five for each of the regressions we included. Third, the mean level of each line will be at the median time point, thus comparisons of level at median time point are simultaneously comparisons of mean level. Therefore, this approach simplifies the analysis and makes the results more easily interpretable.

The median time points for each time period are as follows: 10 months for the Pre-Cuts period, 38 months for the IFHP Cuts period, 66 months for the Syrian Surge period, 92 months for the Yazidi period, and 115.5 months for the COVID-19 period. For the combined baseline period, which includes the Pre-Cuts and IFHP Cuts periods, the median time point is at 30.5 months from the beginning of the study period.

To assess whether patient region of origin varied by time period of the patient's intake, we conducted a Chi-square test of independence. This test is used to determine whether occurrence of one categorical variable affects the probability of occurrence of another categorical variable. According to McHugh, (2013) there are six assumptions of a Chi-square: 1. the data in the cells should be frequencies; 2. the categories of the variables are mutually exclusive; 3. Each subject may contribute data to one and only one cell; 4. the study groups must be independent; 5. there are 2 variables, both are measured as categories, at the nominal or ordinal level; and, 6. the expected value of each cell should be 5 or more in at least 80% of cells (45). Because of assumptions 2-4, we use time period of patient's intake so that individual patients could only be counted in one time period each. By organizing our data this way, we met each of the assumptions to perform the analysis, with time period of intake being ordinal, and region of origin being nominal data. The null hypothesis was that the distribution of patients' region of origin was independent of time period. The alternative hypothesis was that patients' region of

origin was dependent on time period. We considered a one-tailed p-values less than 0.05 to be significant.

For our penultimate quantitative analysis, we sought to analyze changes in age at intake over time. Given our framework of five time periods separated by four upheavals we first considered using a one-way analysis of variance (ANOVA). However, normality is one of the assumptions necessary for an ANOVA. When we created histograms of the age data, we saw that it was bimodal and skewed to the right. Therefore, we selected an analysis that did not assume normality. We used a Kruskal-Wallis test to assess whether age at intake varied by intake time period. For the Kruskal-Wallis our null hypothesis was that mean age of intake would be equal for each of the five time periods. The alternative hypothesis was that at least one of the means would be different from the others. We decided to use Dunn pairwise comparisons if the Kruskal-Wallis was significant to test which of the means were different. It is important to consider  $\alpha$ , the Type 1 error rate (the probability of incorrectly claiming an effect). Typically, this is set as 0.05, meaning there is a one-in twenty chance that the observed difference is due to random chance. However, the more comparisons one makes, the greater the chance of making a Type 1 error. As described in Dinno, 2015, the Dunn test redefines  $\alpha$  to reduce the familywise error rate. The familywise error rate is the probability of making at least one Type 1 error in a set of multiple comparisons. The Dunn test achieves this by dividing  $\alpha$  by the total number of tests, which requires a much smaller p-value to reject the null hypothesis of any test (46). This leaves the rejection region,  $\alpha$ , numerically intact but multiplies the p-value (46).

After completing the above analyses, the student brought the findings to the supervisory committee. A committee member highlighted the fact that what we had completed so far was an assessment of clinic's utilization, we needed more context to better understand how the clinic



changed. Quality improvement principles indicate that a measurement of demand, such as time until third next available appointment or other measurements of delay, would be the preferred balancing metric for utilization (referred to as activity in the domain of quality improvement, 47). However, there was no feasible way of retrospectively measuring demand using data pulled from the clinic's EMR software. Therefore, the student completed a basic analysis of clinic capacity for GPs, MDT, and specialists.

To conduct this analysis first, the student created a list of all schedules in the EMR from January 2011 to December 2020. He then categorized these schedules as either provider schedules or non-provider schedules. Non-provider schedules are created by clinic staff for keeping track of schedules of external partners, such as patient lab appointments or vaccination appointments by public health nurses who coordinate with the clinic but are not affiliated with the clinic or the primary care network. The student then categorized each provider schedule as GP, MDT, or specialist. Then the student manually reviewed EMR data to collect the monthly hours worked by each provider for each of the 120 months that consist of the study period. Finally, the student averaged these numbers averaged for each provider category to obtain a mean number of "full time equivalent hours" (FTE hours) for each time period.

### 2.6.2 Qualitative Analyses

Our qualitative analysis attempted to explain the findings of our SLR. We analyzed the data using thematic analysis. Thematic analysis is a qualitative method that involves identifying patterns and themes in data (37). The student transcribed the recorded interviews using Otter.ai software (Otter. ai Software 2020 [software]. AISense. Los Altos, California) and coded them using NVivo for Mac software (NVivo 12 [software]. QSR International Pty Ltd.; 2020.). After

AI transcription the student listened to the transcript and deidentified it and corrected transcription errors where necessary. The student asked a colleague of his to independently assess the transcripts to verify the coding and improve credibility. We assessed the qualitative data for themes both inductively and deductively. In accordance with our framework of health system upheavals, we first assessed the data deductively to see what themes pertained to each period. Next, we used open coding of the transcripts to inductively identify major topics, specific themes, and sub-themes. We further reviewed and refined the themes through discussion with the research team during weekly lab meetings to ensure the themes' validity. Then we deidentified and corrected transcripts where necessary. Lastly, to enhance the rigour of our qualitative findings, we emailed our qualitative participants after our analysis for member checking. Following practices suggested by Birt et al., 2016, we sent an email to ask the qualitative participants to state whether the themes, subthemes and narratives resonated with them (38).

## 2.7 Data Integration

We integrated our data primarily through merging. Data merging occurs when the qualitative and quantitative datasets are brought together for analysis and compared with each other (48). Our quantitative data was prioritized in this study, as is typical for sequential explanatory mixed methods studies, and our study is structured longitudinally around five time periods. Therefore, we assessed the qualitative data for convergence or divergence with the level and slope of each time period and for convergence or divergence with the statistical significance of the comparison of these two metrics with those of the following time period. In doing so, we gained new insights into how the health system upheavals affected patients' clinic use, and how they were adapted to through the clinic's changes to policy and structure, and their impact to

clinic staff and providers. Our reporting of our mixed methods findings was influenced by O’Cathain et al., 2008, who suggest six Guidelines for Reporting a Mixed Methods Study (GRAMMS) (42):

1. Describe the justification for using a mixed methods approach to the research question
2. Describe the design in terms of the purpose, priority and sequence of methods
3. Describe each method in terms of sampling, data collection and analysis
4. Describe where integration has occurred, how it has occurred and who has participated in it.
5. Describe any limitation of one method associated with the present of the other method
6. Describe any insights gained from mixing or integrating methods

## 2.8 Ethics and Privacy

This study had several ethical considerations. Although the Health Information Act gave us the legal ability to access patient information to use for research purposes, we had an ethical responsibility to be considerate custodians of these data. Therefore, anonymization of patient and provider data was of paramount importance. Identifiers such as name, address, and date of birth were not included in our dataset. Additionally, we did not analyze the quantitative data using clinic-assigned patient numbers that could be traced back to the patient. Instead, we assigned each patient a unique “Study ID” which was associated with the patient’s clinic patient number in a secure file behind the Mosaic Primary Care Network firewall, to ensure patient confidentiality. Patients at MRHC are informed of the Health Information Act during their intake appointment at either clinic. We obtained study approval from the research ethics board of the

University of Calgary (REB 19-1029). Each interview participant gave their consent through email or telephone correspondence and reiterated their consent verbally at the beginning of each interview. All interview audio recordings were transcribed and anonymized to protect participant confidentiality. Participants were informed that they were able to withdraw from the study at any time up until three months after they gave their interviews.

## CHAPTER THREE: RESULTS

### 3.1 Quantitative Results

#### 3.1.1 Cohort Characteristics

Table 1 summarizes our cohort characteristics. From January 1<sup>st</sup>, 2011, to December 31<sup>st</sup>, 2020, a total of 10 669 patients attended 107 642 appointments with clinic providers (doctors and multidisciplinary team). Of the 10 669 patients, 5 094 (47.8%) were female, 5 567 (52.2%) were male, and 8 patients (<0.1%) were missing sex data. These 8 patients were excluded from our analysis of cohort characteristics.

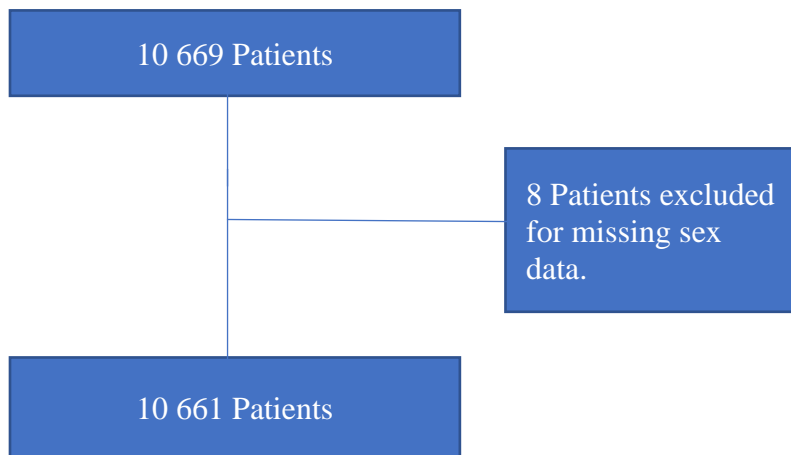


Figure 3. Flow Diagram

The mean age at first appointment was 24.49 (SD 17.1). For the patients with region of origin data, (missing for 595 [5.5%]), the top five regions of origin were East Africa (n=3 330, 31.2%), West Asia (n=3 007, 28.2%), South Asia (n=938, 8.8%), North America (n=556, 5.2%), and North Africa (n=479, 4.5%).

Table 1. Cohort Characteristics by Time Period

Characteristic	Patients Pre-Cuts Jan 2011 to May 2012 n=1710 (%)	Patients IFHP Cuts Jun 2012 to Oct 2015 n=3391 (%)	Patients during Syrian Surge Nov 2015 to Jan 2017 n=3191 (%)	Patients during Yazidi Phase Feb 2017 to Feb 2020 n=5377 (%)	Patients during COVID-19 Phase Mar 2020 to Dec 2020 n= 1608 (%)	Patients All Time Periods n=10661 (%)
Mean Age at Intake (SD)	26.5 (16.8)	25.5 (16.7)	25.0 (16.9)	24.9 (17.5)	24.3 (18.1)	24.5 (17.1)
Sex						
Female	886 (51.8)	1669 (49.2)	1481 (46.4)	2538 (47.2)	794 (49.4)	5094 (47.8)
Male	824 (48.2)	1722 (50.8)	1709 (53.6)	2832 (52.7)	814 (50.6)	5567 (52.2)
Region of Origin						
Central America	50 (2.9)	36 (1.1)	51 (1.6)	180 (3.3)	80 (5.0)	276 (2.6)
East Africa	480 (28.1)	1224 (36.1)	1070 (33.5)	1652 (30.7)	377 (5.0)	3231 (30.3)
Europe	44 (2.6)	68 (2.0)	19 (0.6)	27 (0.5)	6 (0.4)	114 (1.1)
Middle and South Africa	19 (1.1)	154 (4.5)	91 (2.9)	211 (3.9)	57 (3.5)	387 (3.6)
North Africa	52 (3.0)	139 (4.1)	127 (4.0)	287 (5.3)	109 (6.8)	470 (4.4)
North America	24 (1.4)	148 (4.4)	117 (3.7)	309 (5.7)	110 (6.8)	512 (4.8)
South America	30 (1.8)	73 (2.2)	80 (2.5)	175 (3.3)	34 (2.1)	278 (2.6)
South Asia	173 (10.1)	485 (14.3)	199 (6.2)	287 (2.1)	96 (6.0)	843 (7.9)
South-East Asia	70 (4.1)	150 (4.4)	115 (3.6)	112 (2.1)	25 (1.6)	309 (2.9)
Stateless	0 (0.0)	57 (1.7)	29 (0.9)	12 (0.2)	0 (0.0)	58 (0.5)
West Africa	32 (1.9)	62 (1.8)	44 (1.4)	200 (3.7)	62 (3.9)	276 (2.6)
West Asia	265 (15.5)	441 (13.0)	1122 (35.2)	1737 (32.3)	572 (35.6)	2925 (27.4)
Missing	471 (27.5)	354 (10.4)	127 (4.0)	188 (3.5)	80 (5.0)	990 (9.3)

### 3.1.2 Demographic Analyses

Our Chi-square analysis of region of origin by time period yielded a test statistic of  $\chi^2(44) = 1600.0$  ( $p < 0.001$ ), indicating a statistically significant difference between the expected distribution and the outcome distribution. Therefore, we rejected the null hypothesis and concluded that the distribution did change over time. We then conducted a post-hoc analysis of the adjusted Pearson residuals to understand which specific regions of distribution varied independently of time period. As seen in table 2, during the pre-cuts phase, every region of origin except East Africa, West Africa, and South America, differed significantly in observed results from what the expected results would be if the null hypothesis were true. This suggests that there were particular shifts in the distribution of patients from different regions across the different time periods. During the cuts period, every region differed significantly except for North Africa and South America. During the Syrian period, every region differed significantly except for East Africa, North Africa, and South-East Asia. During the Yazidi period, the observed results of every region of origin differed significantly. Lastly, during the COVID-19 period regions of origin that differed significantly were Central America, East Africa, North America, South-East Asia, and Unknown. Therefore, the distribution of patients' region of origin is not uniform across different time periods, indicating that certain regions were more likely to be represented in specific time periods. Therefore, it is possible that region of origin may confound our utilization analyses if patients from certain regions are more complex than others.

We also conducted a Chi-square goodness of fit test to assess whether patient sex varied by time period of intake. Our analysis yielded a test statistic of  $\chi^2(4) = 20.6$  ( $p < 0.01$ ). Post-hoc analysis of residuals indicated a significant difference between observed and expected distributions during the pre-cuts period and Syrian surge period only.

Finally, we assessed whether mean age at intake varied significantly by time period. First, we investigated the distribution of the data through creating and visually inspecting histograms. For each period and overall, age at intake was bimodal, and skewed to the left. Because of this, instead of a one-way analysis of variance, we used a Kruskal-Wallis test. Our analysis yielded a test statistic of  $\chi^2(4) = 42.2$  ( $p < 0.001$ ). We then used Dunn pairwise comparisons to evaluate which time periods saw significant changes in patient's age of intake. Each of our comparisons were significant ( $p < 0.05$ ). Age decreased slightly over time, from 26.4 mean years of age at intake during the Pre-Cuts period ( $SD=16.8$ ), to 23.5 mean years of age during the Syrian period ( $SD=16.8$ ). There was one exception to this downward trend; the age of intake during the Yazidi phase did not change significantly when compared to the age of intake during the Syrian phase ( $p=0.13$ ). Lastly, the mean age at intake during COVID-19 was 21.7 ( $SD=17.1$ ), however we should note that there were only 35.8 intakes per month during this time compared to 102.1 during the Yazidi period, and therefore newborn children are likely overrepresented during this period, driving down the mean age at intake for this time period.



Table 2. Demographic Analysis Results

	Intake Period										
	Pre-Cuts		Cuts		Syrians		Survivors of Daesh		COVID-19		Total
Region of Origin	n=1710 (%)	Residual	n=2567 (%)	Residual	n=2232 (%)	Residual	n=3802 (%)	Residual	n=358 (%)	Residual	n=10661 (%)
Central America	81 (4.7)	<b>4.5</b>	21 (0.8)	<b>-7.3</b>	43 (1.9)	<b>-3.2</b>	143 (3.8)	<b>3.8</b>	24 (6.7)	<b>4.3</b>	312 (2.9)
East Africa	562 (32.9)	1.6	970 (37.8)	<b>8.3</b>	679 (30.4)	-0.9	1032 (27.2)	<b>-6.6</b>	84 (23.5)	<b>-3.2</b>	3327 (31.2)
Europe	50 (2.9)	<b>7.6</b>	41 (1.6)	<b>2.5</b>	16 (0.7)	<b>-2.1</b>	13 (0.3)	<b>-5.8</b>	1 (0.3)	-1.6	121 (1.1)
Middle and South Africa	25 (1.5)	<b>-5.4</b>	149 (5.8)	<b>-5.4</b>	50 (2.2)	<b>6.3</b>	159 (4.2)	<b>-4.2</b>	17 (4.7)	1.0	400 (3.7)
North Africa	61 (3.6)	<b>-2.0</b>	111 (4.3)	-0.5	85 (3.8)	-1.8	210 (5.5)	<b>3.8</b>	12 (3.4)	-1.1	479 (4.5)
North America	33 (1.9)	<b>-6.7</b>	161 (6.3)	<b>2.8</b>	79 (3.5)	<b>-4.0</b>	254 (6.7)	<b>5.1</b>	29 (8.1)	<b>2.5</b>	556 (5.2)
South America	49 (2.9)	0.1	63 (2.5)	-1.3	46 (2.1)	<b>-2.5</b>	131 (3.4)	<b>2.9</b>	13 (3.6)	0.9	302 (2.8)
South Asia	206 (12)	<b>5.2</b>	441 (17.2)	<b>17.2</b>	77 (3.4)	<b>-10.0</b>	192 (5.1)	<b>-10.1</b>	21 (5.9)	<b>-2.0</b>	937 (8.8)
South-East Asia	95 (5.6)	<b>6.0</b>	124 (4.8)	<b>5.3</b>	69 (3.1)	-0.4	53 (1.4)	<b>-7.9</b>	2 (0.6)	<b>-2.9</b>	343 (3.2)
Unknown	179 (10.5)	<b>9.6</b>	116 (4.5)	<b>-2.7</b>	89 (4)	<b>-3.6</b>	159 (4.3)	<b>-4.4</b>	48 (13.4)	<b>6.6</b>	591 (5.6)
West Africa	41 (2.4)	-0.8	40 (1.6)	<b>-4.0</b>	20 (0.9)	<b>-5.9</b>	179 (4.7)	<b>9.7</b>	6 (1.7)	-1.2	286 (2.7)
West Asia	328 (19.2)	<b>-9.0</b>	330 (12.9)	<b>-19.8</b>	978 (43.8)	<b>18.5</b>	1270 (33.4)	<b>8.9</b>	101 (28.2)	0.0	3007 (28.2)

Sex											
Female	886 (51.8)	<b>3.6</b>	1226 (47.8)	-0.0	995 (44.6)	<b>-3.4</b>	1810 (47.7)	-0.1	177 (49.4)	0.6	5094 (47.8)
Male	824 (48.2)	<b>-3.6</b>	1341 (52.2)	0.0	1236 (55.4)	<b>3.4</b>	1985 (52.3)	0.1	181 (50.6)	-0.6	5567 (52.2)

\*Adjusted residuals greater than  $\pm 1.96$  are highlighted in bold as they are more extreme than what would be expected if the null hypothesis of independence was true.

### 3.1.3 Clinic Utilization

We summarized unadjusted clinic utilization in Table 3. The first two months of utilization data were incomplete as the clinic's EMR was starting during that time. As such, we excluded January 2011 and February 2011 utilization data from our analyses. During the study period, 64 893 (60.3%) of the 107 642 appointments were with general practitioners. 37 752 (35.1%) of appointments were with the multidisciplinary team, and 4 997 (4.6%) were with the clinic's embedded specialists.

Table 3. Absolute clinic utilization within each health system upheaval.

Provider Type	Clinic Appointments Pre-Cuts Jan 2011 to May 2012 n=7104 (%)	Clinic Appointments IFHP Cuts Jun 2012 to Oct 2015 n=21288 (%)	Clinic Appointments during Syrian Surge Nov 2015 to Jan 2017 n=14268 (%)	Clinic Appointments during Yazidi Phase Feb 2017 to Feb 2020 n=47870 (%)	Clinic Appointments during COVID-19 Phase Mar 2020 to Dec 2020 n=17112 (%)	Clinic Appointments All Time Periods n=107642 (%)
General Practitioner Appointments	6110 (86.0)	16371 (76.9)	9011 (63.2)	24865 (51.9)	8536 (49.9)	64893 (60.3)
Multidisciplinary Team Appointments	527 (7.4)	3741 (17.6)	4559 (32.0)	20683 (43.2)	8242 (48.2)	37752 (35.1)
Specialist	467 (6.6)	1176 (5.5)	698 (4.9)	2322 (4.9)	334 (2.0)	4997 (4.6)

### 3.1.4 Segmented Linear Regression Results

We conducted six segmented linear regressions to analyze our utilization data. Detailed results of these analyses are found in Tables 5a and 5b. For each of these analyses we examined the difference between the mean level of appointments, and the slope (the rate that appointments

increased or decreased) from each period to each subsequent time period. We divided the time periods as seen in Figure 1. Finally, as we will discuss further in our integrated results, several qualitative participants saw the first two time periods as representing a “baseline” level of utilization. Taking this finding into consideration during our quantitative analysis, we analyzed the first two time periods both separately and as a single combined period from March 2011 to October 2015, inclusive.

Overall utilization (See Figure 4): Significant level changes were observed between all time periods, except for the Pre-Cuts to Cuts period. Significant slope changes occurred between the Cuts to Syrian and Yazidi to COVID-19 periods. Comparing the baseline period (average level of 504.6 appointments per month and slope of 2.8 additional appointments per month) to the COVID-19 period (average level of 1 711.2 appointments per month and slope of 110.4 additional appointments per month) revealed significant changes in both level ( $p<0.01$ ) and slope ( $p<0.01$ ).

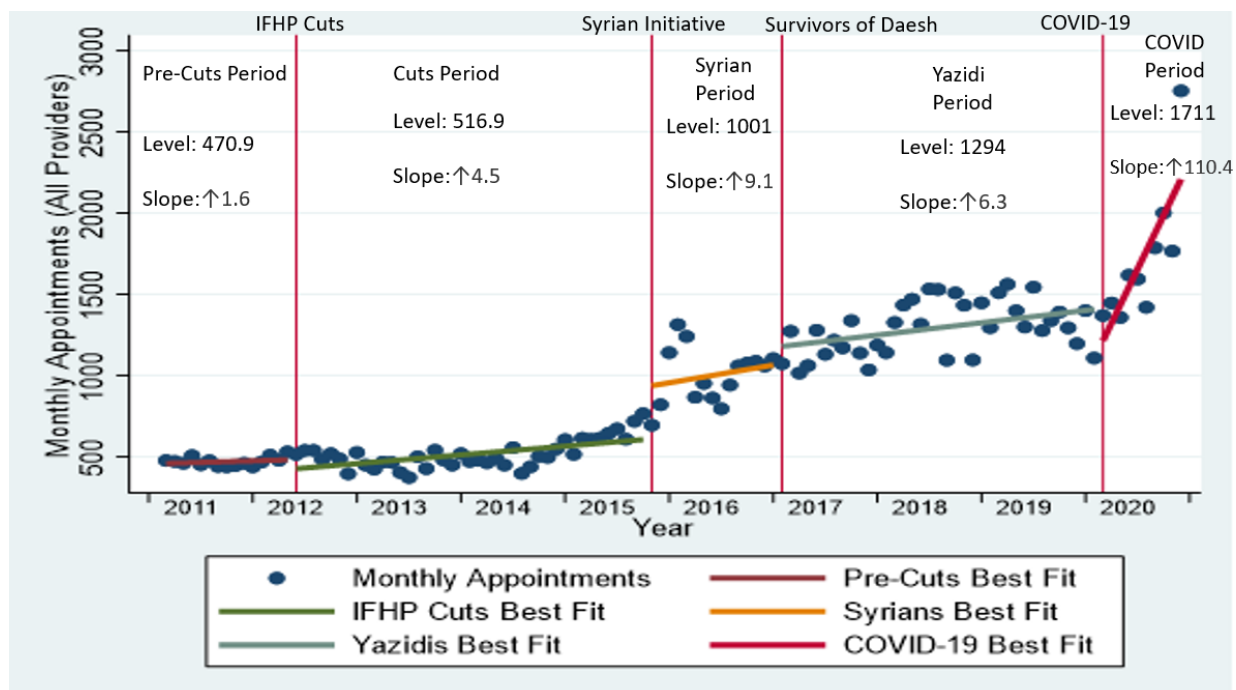


Figure 4. Level and slope were similar from Pre-Cuts to Cuts, then increased dramatically.

General practitioners (See Figure 5): Significant level changes occurred between the Cuts to Syrian and Yazidi to COVID-19 periods. Comparing the baseline period (average level of 401.2 appointments per month and slope of 0.3 additional appointments per month) to the COVID-19 period (average level of 853.6 appointments per month and slope of 64.6 additional appointments per month) showed significant changes in both level ( $p<0.01$ ) and slope ( $p<0.01$ ).

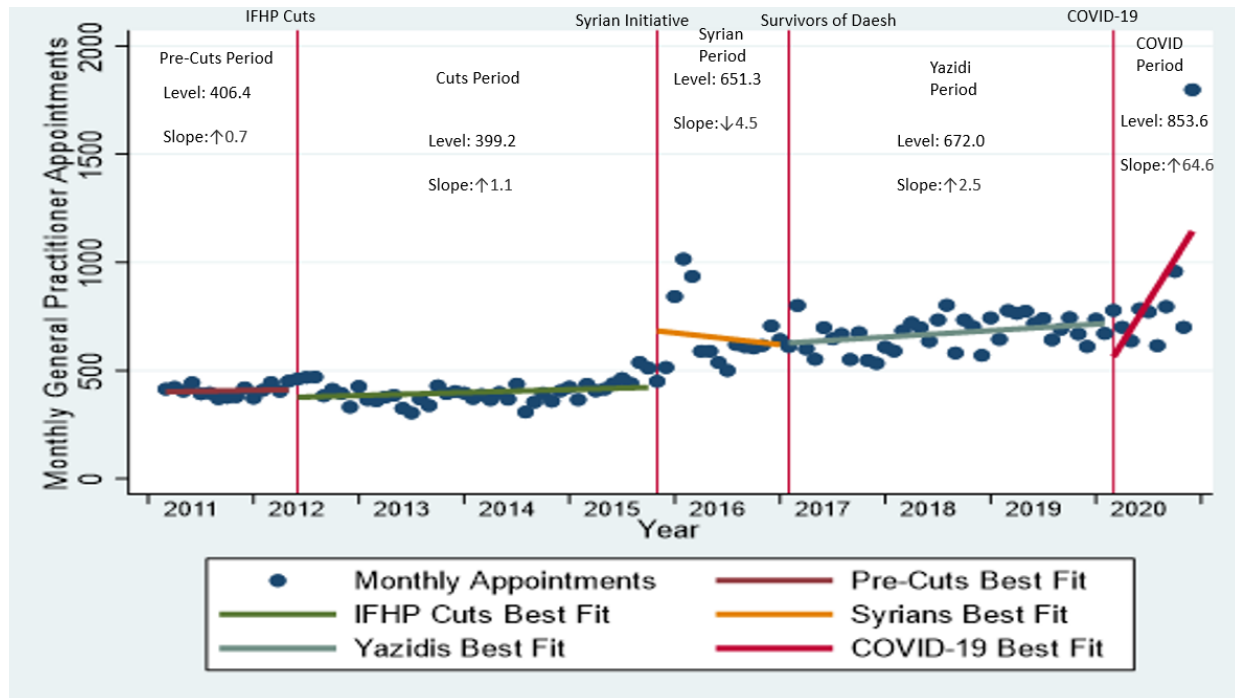


Figure 5. General practitioner appointments spiked during the Syrian period and during COVID.

Multidisciplinary team (See Figure 6): Significant level changes were observed between all time periods. Significant slope changes occurred between the Cuts to Syrian and Yazidi to COVID-19 periods. Comparing the baseline period (average level of 76.1 appointments per month and slope of 2.47 additional appointments per month) to the COVID-19 period (average level of 824.2 appointments per month and slope of 45.7 additional appointments per month) revealed significant changes in both level ( $p<0.01$ ) and slope ( $p<0.01$ ).

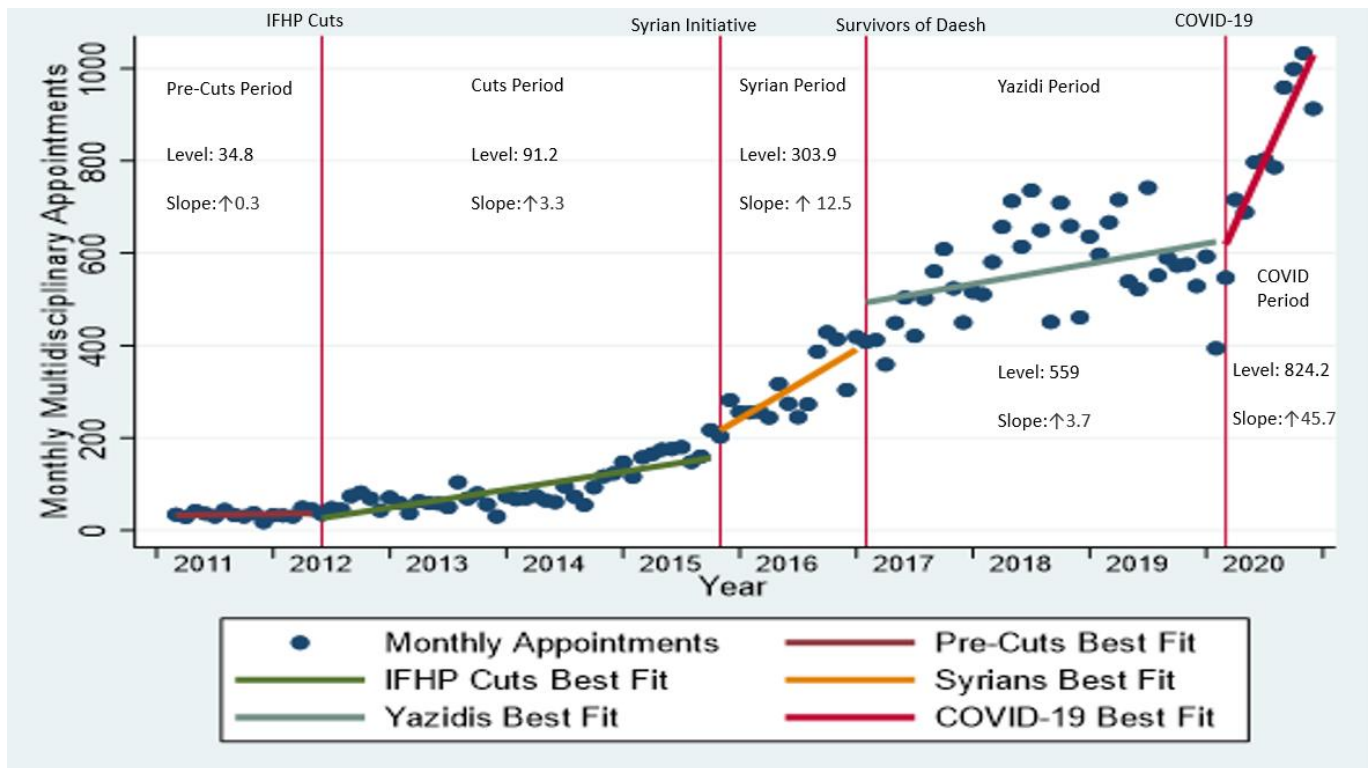


Figure 6. Multidisciplinary appointments increased significantly each period.

Specialists (See Figure 7): Significant level changes occurred between the Cuts to Syrian, Syrian to Yazidi, and Yazidi to COVID-19 periods. No significant slope changes were observed. Comparing the baseline period (average level of 29.3 appointments per month and slope of 0.05 additional appointments per month) to the COVID-19 period (average level of 33.4 appointments per month and slope of 0.12 additional appointments per month) indicated no significant difference in level ( $p=0.09$ ) or slope ( $p=0.93$ ).

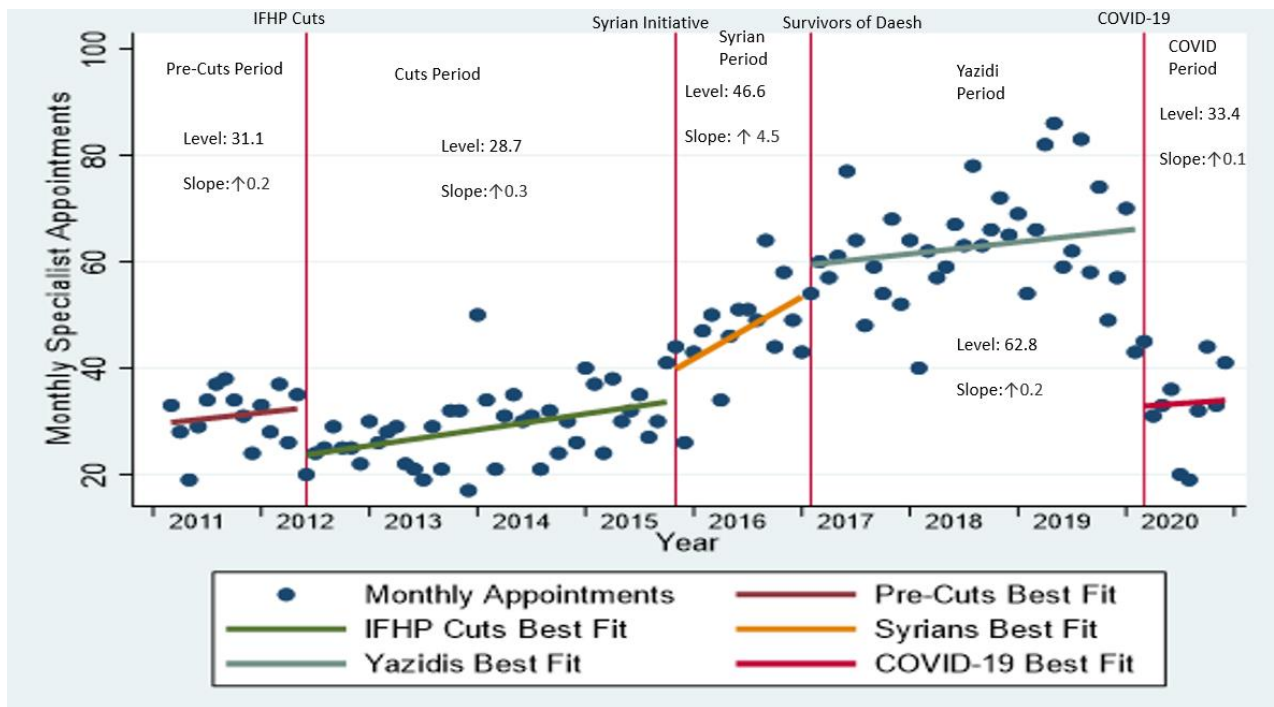


Figure 7. Specialist appointments varied over time.

Table 5a. Level of Each Time Period and Significance of Difference Compared to Following

Measurement	Pre-Cuts Level (SD)	Cuts Level (SD)	Pre-Cuts versus Cuts Level P-Value	Syrian Surge Level (SD)	Cuts versus Syrian Surge Level P-Value	Yazidi Phase Level (SD)	Syrian Surge versus Yazidi Level P-Value	COVID-19 Level (SD)	Yazidi versus COVID-19 P-Value
Mean Monthly Appointments for All Providers	470.9 (27.8)	516.9 (87.4)	<b>0.02</b>	1001.4 (172.7)	<b>&lt;0.01</b>	1293.8 (162.3)	<b>&lt;0.01</b>	1711.2 (420.9)	<b>&lt;0.01</b>
Mean Monthly General Practitioner Appointments	406.4 (26.4)	399.2 (50.4)	0.60	651.3 (160.7)	<b>&lt;0.01</b>	672.0 (75.9)	0.52	853.60 (345.6)	<b>&lt;0.01</b>
Mean Monthly Multidisciplinary Team Appointments	34.8 (7.8)	91.24 (47.8)	<b>&lt;0.01</b>	303.9 (73.0)	<b>&lt;0.01</b>	559 (102.9)	<b>&lt;0.01</b>	824.2 (152.6)	<b>&lt;0.01</b>
Mean Monthly Specialist Appointments	31.1 (5.4)	28.7 (6.7)	0.19	46.6 (8.9)	<b>&lt;0.01</b>	62.8 (10.5)	<b>&lt;0.01</b>	33.4 (8.9)	<b>&lt;0.01</b>
Mean Monthly Appointments by Females	267.3 (23.5)	304.1 (48.1)	<b>&lt;0.01</b>	527.2 (78.8)	<b>&lt;0.01</b>	739.1 (107.2)	<b>&lt;0.01</b>	917.9 (243.0)	<b>&lt;0.01</b>
Mean Monthly Appointments by Males	203.6 (12.5)	212.8 (42.8)	0.34	474.4 (96.2)	<b>&lt;0.01</b>	554.5 (70.1)	<b>&lt;0.01</b>	793.3 (182.0)	<b>&lt;0.01</b>

Bold values denote statistical significance in difference of mean level ( $p < 0.05$ ) at two-tailed alpha level of 0.05.



Table 5b. Rate of Change and Significance of Difference in Rate of Change

Appointment Type	Pre-Cuts Period Slope (additional appointments per month)	Cuts Period Slope	Pre-Cuts versus Cuts Rate of Change P-Value	Syrian Surge Period Slope	Cuts versus Syrian Surge Rate of Change P-Value	Yazidi Period Slope	Syrian Surge Versus Yazidi Period Rate of Change P-Value	COVID-19 Period Slope	Yazidi versus COVID-19 Rate of Change P-Value
All Providers	1.6	4.5	0.49	9.1	<b>&lt;0.01</b>	6.3	0.12	110.4	<b>&lt;0.01</b>
General Practitioner	0.7	1.1	0.89	-4.5	0.32	2.5	0.45	64.6	<b>&lt;0.01</b>
Multidisciplinary Team	0.3	3.3	0.05	12.5	<b>&lt;0.01</b>	3.7	0.10	45.7	<b>&lt;0.01</b>
Specialists	0.2	0.2	0.86	1.0	0.86	0.2	0.21	0.1	0.96
Appointments by Females	2.1	2.4	0.89	3.8	0.67	4.1	0.96	64.2	<b>&lt;0.01</b>
Appointments by Males	-0.6	2.0	0.18	5.3	0.36	2.2	0.52	46.6	<b>&lt;0.01</b>

**Bold** values denote statistical significance in difference of slope ( $p < 0.05$ ) at two-tailed alpha level of 0.05.

### 3.1.5 Provider Capacity Analysis

To add further context to our analysis of clinic use, we assessed provider capacity by determining the average monthly hours of available clinic time for each provider type for each time period. Between January 2011 and December 2020 there were 83 schedules that contained patient appointments. Twenty-two were general practitioner schedules, though because the general practitioners rotate, and instead of individual physician names, generic “general practitioner” (GP) schedules were used by the clinic beginning in 2013, these twenty-two schedules do not reflect the number of unique general practitioners. There were 33 unique multidisciplinary team members who worked in seven different disciplines: Chronic disease management (CDM), nutrition, social work, psychology, pharmacology, and two roles unique to MRHC transition coordinators, who assist patients with their transition from the clinic to family doctors in the community, and health liaisons who assist patients to understand and attend their health appointments external to the clinic. The most common MDT discipline was CDM, with 14 CDM nurses, followed by nutrition and social work, with seven providers of each. For more information on number of providers by MDT sub-type see Appendix B. There were thirteen embedded specialists across 5 specialties: Obstetrics/Gynecology, Infectious Disease, Internal Medicine, Pediatrics, and Psychiatry. Obstetrics was the most represented specialty with four OBGYNs and one obstetric internal medicine specialist. There were two other internal medicine specialists, three psychiatry specialists, three pediatrics specialists, and one infectious disease specialist. Several general practitioner providers worked during the entire duration of the study period. A pediatrician had the longest duration having scheduled appointments during each of the 120 months of the study period (including the first two months which had little data). The shortest duration at the clinic were two CDM nurses, who each stayed for 2 months during

January and February of 2016, the height of the Syrian surge. A social worker had the largest total number of hours of any provider, working approximately 5 514 hours from October 2013 to December 2020, 63.4 hours/month on average (SD=21.4). Monthly averages during each time period for each of the three provider types are in table 4 below.

Table 4. Provider FTE Hours

Provider Type	Pre-Cuts Mean Monthly Hours (SD)	Cuts Mean Monthly Hours (SD)	Syrian Surge Mean Monthly Hours (SD)	Yazidi Period Mean Monthly Hours (SD)	COVID-19 Mean Monthly Hours (SD)
GPs	320 (0.0)	332 (42.7)	554.4 (158.5)	622.8 (118.0)	736.0 (82.6)
MDT	59.5 (13.1)	152.8 (66.8)	366 (48.5)	691.5 (99.6)	871.4 (89.8)
Specialist	37.2 (4.8)	37.5 (6.2)	54.6 (8.0)	78.6 (7.6)	41.9 (7.6)

Overall, GP capacity more than doubled on average from the first time period to the last, increasing from 320 mean hours per month (SD = 0.0) to 736 mean hours per month (SD = 82.6). MDT capacity increased fifteen-fold during this time, from 59.5 mean monthly hours (SD=13.1) during the pre-cuts period, to 871.4 mean monthly hours (SD=89.8) during the COVID-19 period. Specialist hours had doubled from the pre-cuts (37.2 SD = 4.8) to the Yazidi period (78.6 mean hours per month, SD = 7.6), but then fell again to 41.9 mean hours per month (SD=7.6) during COVID-19. As can be seen in the above table and below figures, specialist and general practitioner hours were similar from the pre-cuts to cuts period, while MDT hours increased greatly. Hours for each provider type increased during the Syrian surge, and into the Yazidi period. During the COVID-19 period there was a decrease in the number of employment hours for specialists, while MDT and general practitioner hours continued to increase.

In Figures 8, 9, and 10, the red line represents the estimated monthly full-time employment (FTE) hours of each specialist type. This adds context to the monthly appointment numbers, which is the scatter plot that the estimated FTE hours overlays. In these overlays we see that supply consistently was filled by activity, and that both increased significantly over time.

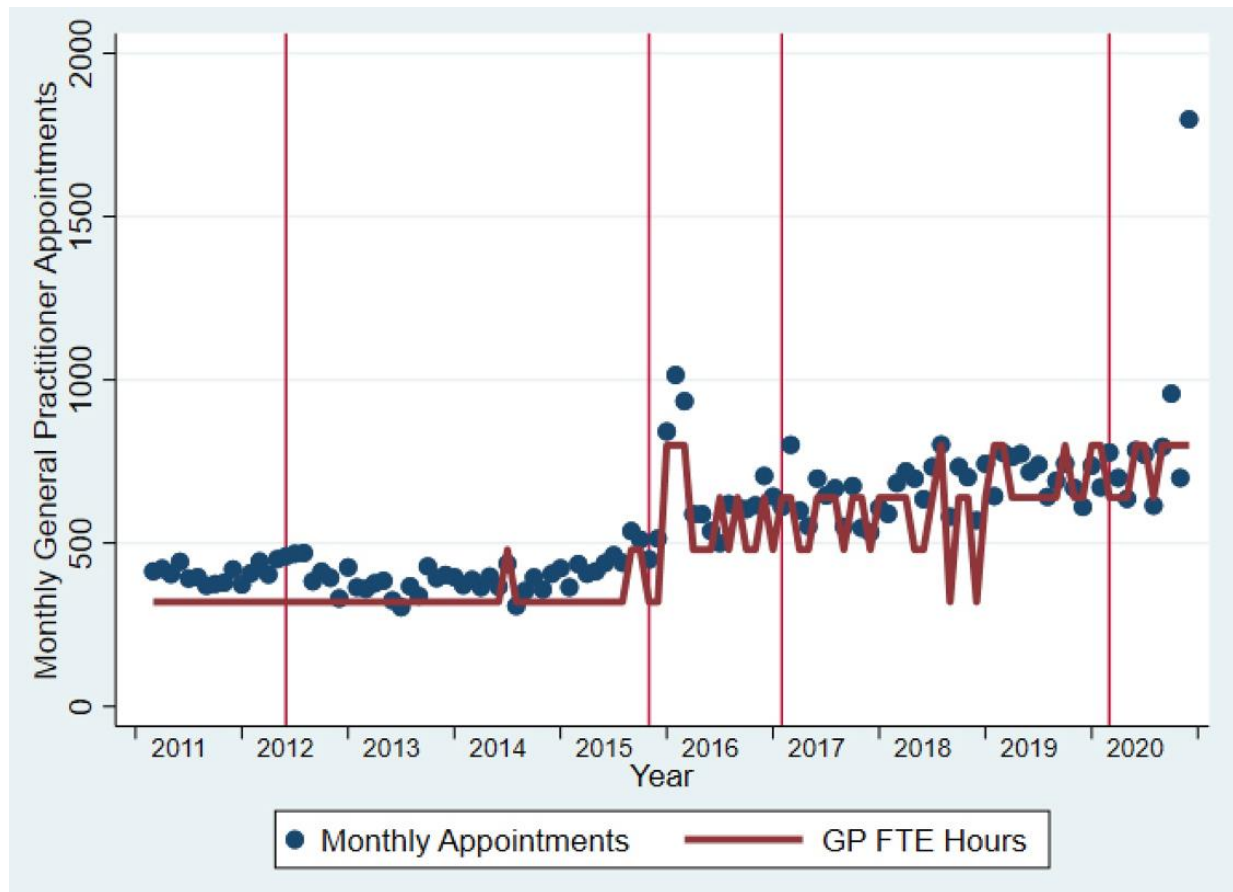


Figure 8. Monthly general practitioner FTE spiked during the Syrian phase and never consistently returned to baseline.

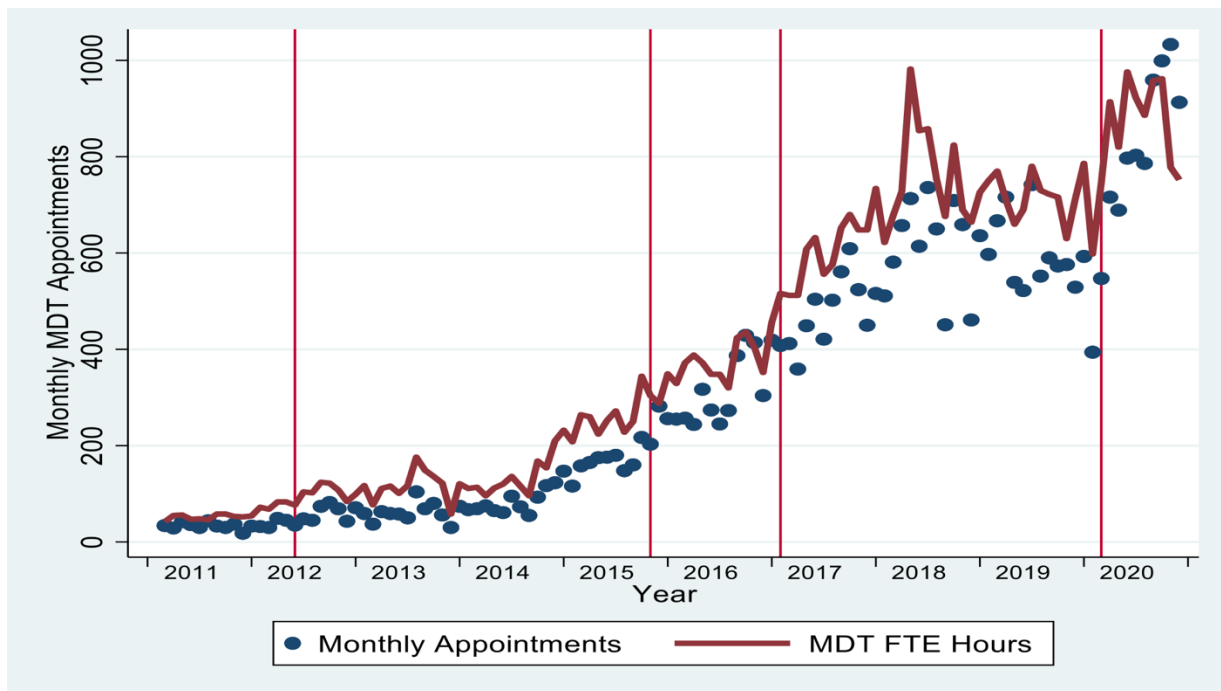


Figure 9. Monthly multidisciplinary team FTE began increasing in late 2014 and continued throughout the study period.

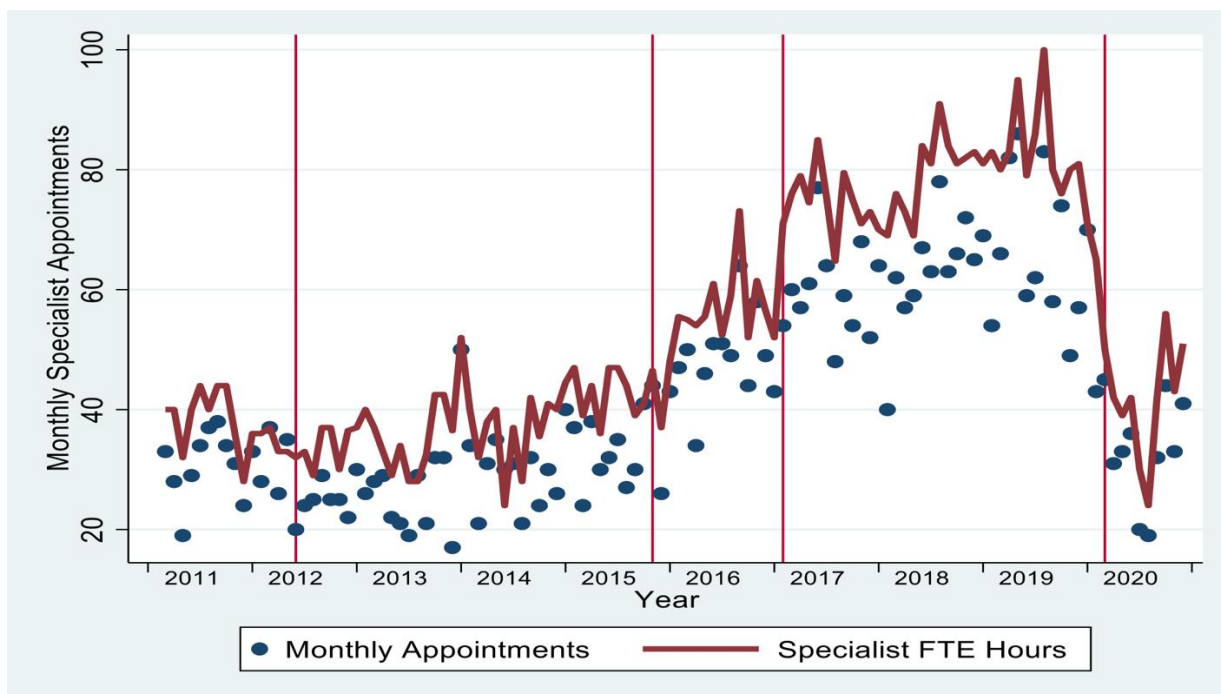


Figure 10. Specialist hours saw a sudden decrease during the COVID-19 pandemic.

## 3.2 Qualitative Results

### 3.2.1 Qualitative Participant Characteristics

From June 1<sup>st</sup>, 2022, to August 17<sup>th</sup>, 2022, we interviewed eight past and present members of clinic leadership. Interview participants demographic characteristics are seen in Table 6. Two were Mosaic CEOs, three were medical directors, one was a clinic coordinator and two were clinic managers.

Table 6. Qualitative Participant Demographic Characteristics

Characteristic	Number of Participants (n=8)
Sex*	
Female	7
Male	1
Ethnicity	
Afghani	1
Filipina	1
White	6
Age	
35-49	4
50-64	2
65+	2
Role	
CEO	2
Medical Director	3
Clinic Coordinator	1
Manager	2

\*All participants stated or implied that their gender identity matched their sex.

Interview lengths varied between 27.5 to 55 minutes. In addition to themes relating to each of the health system upheavals, the student identified six themes, and verified these themes with a colleague with expertise in qualitative methods. These themes were: 1) wellness of clinic staff and providers; 2) patient acculturation; 3) clinic resources; 4) the biopsychosocial health of patients; 5) mitigating factors and adaptations of the clinic and its patients; 6) importance of lived experience; and, 7) suggestions for future upheavals (Table 7). After completion of the

qualitative analysis participants were emailed a copy of Table 7 for member checking. Four of eight participants responded, each of those who responded sent short emails indicating that themes in Table 7 matched their experiences.

Table 7. Qualitative Themes, Sub-Themes, and Narratives

Theme	Sub-Theme	Narrative
Timeline of Refugee Health System Upheavals	Pre-Cuts Phase	Pre-Cuts period was a time of creating and standardizing clinic practices.
	IFHP Cuts Phase	The IFHP cuts did not affect utilization, however they were nevertheless a challenging time. Due to financial restraints, necessary medications such as cancer treatments were no longer accessible to some patients.
	Syrian Phase	The Syrian period was described as a challenging time due to the sudden increase in volume of appointments. Successfully overcoming this challenge was seen as a success.
	Yazidi Phase	The complex mental health of the Yazidi patients, and the resulting vicarious trauma was challenging. However, there were success stories, especially due to activism and family reunification.
	COVID-19 Phase	There were many reports of fatigue and burnout among staff, leadership, and providers during this time. However, the clinic's team and its patients also rose to the occasion in inspiring ways.
Wellness of Providers	Sustainability of care	Maintaining a sustainable level of care created a challenge for providers. A balance needed to be struck between providing quality of care, while preparing patients for the realities of family physician healthcare outside of refugee-specialized practice.
	Burnout	Burnout among providers seemed to result from increased stress such as the volume of appointments especially during COVID-19, but also during the Syrian period, or the increased exposure to mental health trauma during the Survivors of Daesh period.
	Vicarious Trauma	During the Survivors of Daesh upheaval, providers found themselves ill equipped to respond to the needs of a heavily traumatized population
Acculturation	The Language Barrier	Although there are many ways that patient acculturation could pose a challenge, in our study it came up primarily in terms of the language barrier. The language barrier was identified as an issue during each of the time periods.
	Health and Digital Literacy	This challenge of digital literacy and health literacy came up often in our conversations, but especially during COVID-19 where the challenges of digital literacy exasperated other health challenges.



	Transition to Community	A consequence of the difficulty of learning health system literacy was that patients received such high-quality care that they wouldn't want to go to another clinic and receive not as good care.
Resources	Volume	Although excess volume of patients always results in an issue of resources, not all issues of resources result from patient volume, in fact patient volume seems to result in specific issues which can be addressed separate from the issue of resource scarcity.
	Finances	Our qualitative participants noted that throughout the ten years, finances often were a problem. We noted above how this appeared during the IFH Cuts Period, but it continued during the Syrian surge as well.
	Technology	Technology is also a resource that is important to the clinic's function. Two technologies that were mentioned are phone language interpretation, and a patient portal.
Biopsychosocial Health	Physical/Biological Health	Although the physical/biological health needs of refugees were often described as different from that of the general population, the qualitative participants consistently described ways they were able to meet the needs of patients, as early as during the pre-cuts phase, and in as complex an environment as COVID-19.
	Social Health	Refugees also have unique social needs when they arrive in Canada such as housing and transportation. Multiple participants commented that these needs were difficult to meet during the COVID-19 pandemic.
	Mental Health	<p>The need that most frequently was mentioned by qualitative participants was the mental health of patients. This was mentioned during all time periods, but especially during the Yazidi period.</p> <p>This theme was also mentioned frequently during COVID-19, as that was a time of great uncertainty which was further complicated by the increased social needs at the time.</p>

Mitigating Factors	Adaptability	Following health system upheavals, participants described how the clinic needed to adapt to newly imposed needs, and it consistently managed to do so. During the IFHP cuts, the donation account was created to help offset the cost of medication. During the Syrian surge, providers worked out of hotels and the transition coordinator role was created to assist with transition from the refugee clinic to local family doctors. During the Yazidi period, providers and staff dealing with vicarious trauma attended courses to help manage this affliction. During the COVID-19 period the physicians were credited for quickly adapting to the changing physical health needs of the pandemic.
	Resilience	When discussing factors that contribute to the clinic's success, or allows the clinic's staff, leadership, and providers to endure through the difficult times, the fact of the patients' incredible resilience was mentioned often. The resilience of the patients reinforced the resilience and resolve of the clinic's leadership, staff, and providers.
	Innovation	One of the strengths of the clinic that participants discussed was the ability of the clinic to innovate. To solve the problem of patients being lost to follow up, a tool called the booking slip was created to communicate to medical office assistants (MOAs) which tasks to complete at the patient's checkout. A larger scale innovation was the creation of the transition program to help tackle the problem of panel management during the Syrian surge.
	Passion	During our interviews there were countless stories of extraordinary passion among staff, providers, and leadership that allowed them to push on through adversity.
Importance of Contextual Data	Importance of Contextual Data	When discussing the run charts of the data (see Appendix B), with the qualitative participants, a prominent theme that arose was that the quantitative graphs of utilization don't tell the whole story. Participants described the discrepancy between the quantitative data and their personal experiences on the ground. They described the inability of the graphs to capture the impact of each upheaval on the quality of care they were able to provide. They emphasised that we need to look at more than just utilization and changing demographics to appropriately assess how the clinic was impacted by each upheaval.
Planning for Future Upheavals	Planning for Future Upheavals	To plan for future upheavals policy makers, should consider the downstream consequences of their actions. Researchers should create a playbook that applies the hard-won wisdom from our participants, that can be scaled up or down to respond to these events.

### 3.2.2 Qualitative Themes

#### 3.2.2.1 Timeline of Health System Upheavals

The theme of health system upheavals was identified deductively, as we asked each participant about each of the time periods that they experienced. Specifically, we asked them about their experience, challenges, successes, and how they adapted to challenges during these times.

##### 3.2.2.1.1 Pre-Cuts

###### 3.2.2.1.1.1 Experience

Before the first incident that we identified as a health system upheaval during our study period was the “pre-cuts phase”. In our study we defined this as being from January 2011 until June 2012. However, multiple participants spoke of it as being a time period much larger in their minds, going back to the founding of the clinic in 2003.

*We started with two rooms and where it is today is astonishing to see what made the difference every step of the way.*

- LISA2

###### 3.2.2.1.1.2 Challenges

The challenge that was most frequently mentioned by participants when describing the pre-cuts phase was the language barrier, which we will describe in further detail below. During the pre-cuts phase this challenge was resolved primarily with in-person interpreters, usually international medical graduates.

#### 3.2.2.1.1.3 Successes

The success that was most frequently mentioned by participants when describing the pre-cuts phase was the creation of programs to meet a variety of patient needs.

*We would always go to the executive director and say, “our needs are expanding in this area”, as identified by the docs, and the staff who were trying to make appointments. And we're booking weeks and weeks and weeks out. And Mosaic would usually come up with some support. Half day a week, initially, and then and then more.*

- SUSAN4

#### 3.2.2.1.1.4 Adaptation

Providers and staff worked together to identify and address expanding needs, leading to the growth of the clinic.

#### 3.2.2.1.2 Cuts

##### 3.2.2.1.2.1 Experience

We found that most participants did not tend to see the IFHP cuts as an upheaval affecting utilization, as unlike the other ones it did not affect the volume of appointments, only patient quality of care.

##### 3.2.2.1.2.2 Challenges

Despite the lack of significant change in utilization, the IFHP cuts remained a difficult period due to the challenges posed by financial constraints on patients, and the downstream effect that had on patients.

*The IFH cuts, I would say, are, were the most difficult of times, because a lot of our patients lost their coverage for health services. And so of course, that made our lives very difficult... In fact, one patient eventually died because of that lack of care.*

- AMY5

#### 3.2.2.1.2.3 Successes

Advocacy and innovation in helping meet patients' needs given this new constraint were the most frequently mentioned successes during this period.

*There was a lot of advocacy, I think it was a great opportunity to highlight refugee health within the system, a great opportunity to highlight like, the inherent racism within, you know, our government policies, and things like that. So that was great. Bringing those issues to life.*

- JANET7

#### 3.2.2.1.2.4 Adaptation

Providers at the clinic created a donation account to help lessen the financial burden on patients who could not afford medicine.

#### 3.2.2.2.3 Syrian Surge

##### 3.2.2.1.3.1 Experience

The Syrian Surge was described as a chaotic and overwhelming time.

##### 3.2.2.1.3.2 Challenges

The most frequently mentioned challenge was the volume of appointments.

*I repressed a lot of it. It was crazy. It was like my first introduction into refugee health, it was just very overwhelming at the time.*

- CANDACE6

### 3.2.2.1.3.3 Successes

Collaboration with external partners and diverting more providers from within the primary care network to MRHC, which aided in the successful care and resettlement of many in a short amount of time.

*I do think just the amount of care we were able to provide, it's just such a like, you know, short period of timeframe like to have everyone assessed, you know, within 24, to, you know, 24 hours, up to seven days of arrival, and then, you know, start managing, getting the care they needed, I think was incredible. Like, it truly was incredible.*

- CANDACE6

### 3.2.2.1.3.4 Adaptation

Leadership created the role of transition coordinator to assist with the sudden increase in the clinic's panel size.

### 3.2.1.2.4 Yazidi Period

#### 3.2.2.1.4.1 Experience

Themes of mental health trauma came up repeatedly during the Yazidi phase.

#### 3.2.2.1.4.2 Challenges

The severe mental health complications the Yazidi faced affected staff and providers in the form of vicarious trauma were the most frequently mentioned challenge.

*To be honest it felt awful in a way. You know, I think that's the only way I can describe it... I get teary thinking about I think the trauma is still there for so many, right. And I don't know if we ever or could have ever been prepared to deal with it.*

- MARY1

#### 3.2.2.1.4.3 Successes

Advocacy for Yazidi patients, especially family reunification, was the largest success during this time.

*They were very desperate to have their family members who they were separated from join them here in Canada, and we wrote all those advocacy letters, we advocated very hard for some families ... We advocated for their family reunification. And those families were reunited. I think that built a tonne of trust, where they finally sort of recognised that we as a health team are on their side... I think that was the success with the Yazidi.*

- AMY5

#### 3.2.2.1.4.3 Adaptation

Providers and staff attempted to meet the need for mental health support through vicarious trauma training.

#### 3.2.1.2.5 COVID-19

##### 3.2.2.1.5.1 Experience

COVID-19 was often described as the most difficult time by participants.

##### 3.2.2.1.5.2 Challenges

The two biggest challenges faced during this time were the volume of appointments, and mental health.

*So much burnout. COVID is, like the last thing that made me, you know, leave completely and it wasn't anyone's fault. It was just unbelievably taxing.*

- MARY1

##### 3.2.2.1.5.3 Successes

Patients and their providers rose to the physical health challenges posed by COVID-19.

*There was a fun part, like originally, we were worried like “how we could educate this population?” Because we’re thinking that our clients usually don’t know like, the exact health system and everything. We were surprised like; they were so amazing. They had their mask on, they had their gloves on. And then they were following all the rules and regulations. So that was so impressive, like you will see. In the beginning, it did not hit our population... Because like everybody was so careful.*

- SARAH8

### 3.2.2.1.5.3 Adaptation

The clinic adapted to the challenges of COVID-19 by implementing infection prevention and control measures.

*Well, there was lots I mean, you know, we didn’t have we didn’t have any outbreaks within the clinic, we did a great job of our IP&C [infection prevention and control].*

- JANET7

### 3.2.2.2 Wellness of Providers

A challenge that came up frequently during the interviews was the mental well-being of clinic staff and providers. This challenge showed up in slightly different ways during different time periods. It sounded most severe during the Yazidi period and the COVID-19 period, but the chaotic nature of Syrian surge, the financial stress during the cuts period, and the initial struggles to standardize during the pre-cuts period were each mentioned as well. Participants described the wellness of providers as a key theme throughout the various health system upheavals. Concerns for provider wellness were raised regarding sustainability of care, burn out, and vicarious trauma.



Maintaining a sustainable level of care during the IFH cuts created a challenge for providers. Due to financial restraints, necessary medications such as cancer treatments were no longer accessible to patients. In some instances, providers themselves donated funds to off-set the cost of medications for their patients. The inability to meet patient needs created a “moral injury” for physicians, who could no longer provide the quality of care that their patients deserved:

*“And so, trying to meet the minimum standard, and to achieve a good outcome was challenging. And then with our cancer patients...we did have patients where they had chronic hepatitis, and some of them developed hepatocellular carcinoma as a result of that, and then we had no way of treating it. [I]n fact, one patient eventually died because of that lack of care. That’s incredibly difficult for us as physicians and health care providers, and of course, for the patients and their families. I think we all suffered a bit of a moral injury because the injustice of that was felt by all of the providers, and I think we couldn’t believe that something like that would happen in Canada.”*

- AMY5

Participants also described the challenges with sustainability of care and patient transition to the wider health system. While unsustainable, this stemmed from a lack of trust in the care that patients would receive once they left the refugee clinic:

*We look after our refugees better than they get looked after at any other clinic. And as all people would think like it, so they don’t want to leave. Yeah, understandable. Yeah. And that balance of holding the line and making them move on? Is a difficult one to achieve.*

– SUSAN4

*Oh, my goodness, the Syrians came last year, the Yazidis came this year, who's coming next year, right? And then it was that again, that TTNA (time until third next available appointment, a measurement of delay) kept rising. We just felt like at overcapacity, people were feeling burnt out, there was all the vicarious trauma and then this like, how are we going to take care of ourselves? How are we going to continue to care for this population... we can't hang on to everyone forever.*

- CANDACE6

While burnout among providers was common across various upheavals, it peaked during the COVID-19 pandemic. This stems from the personal risk to their own safety, responding to the changing pandemic, and the increased volume of appointments, leading to longer hours:

*I thought I worked hard in the Syrian refugee, you know, weekend's evenings. I don't think I've ever worked so many hours as in COVID, you know, and it just so it burns people out. I burnt out.*

– MARY1

Finally, during the Survivors of Daesh upheaval, providers found themselves ill equipped to respond to the needs of a heavily traumatized population:

*So, I remember a physician coming out of a room and she was shaking. And she had just heard a story from one of the Yazidis. And she's like, I know, I'm not supposed to tell you*

*the details. But it's sitting right here. And then she told me the story. And I was standing at the back by the physician charting room and I'm like, well, now I have it. So, she had given her trauma to me. And this is what we were trying to learn how not to traumatize each other. And this horrible, horrible story that I will never forget... Like, we just stood there by the sink and cried and hugged.*

– CANDACE 6

They described attending workshops to learn how to cope with the vicarious trauma they experienced, including how to avoid traumatizing fellow providers. Despite these efforts, many still struggled, and felt that support for vicarious trauma needs to be an ongoing investment.

*But we I don't know if we ever learned how to truly like not traumatize each other and like how to how to prevent the vicarious trauma. We did so many wellness workshops, we learned about the cartoons triangle and not being a martyr. And like, I remember us having maybe these fleeting moments of insight and like how to take care of ourselves. But I think that's what I remember from that period. Yeah, because it was such a horror of like, the stories that we've heard, and what was being shared with us. It just highlighted this true evil that exists in the world....*

- CANDACE6

### 3.2.2.3 Acculturation

#### 3.2.2.3.1 The Language Barrier

Although there are many ways that patient acculturation could pose a challenge, in our study it came up primarily in terms of the language barrier. The language barrier was identified as an issue during each of the time periods. One participant was asked what some of the challenges during the pre-cuts phase were, the participant replied:

*Yeah, because we didn't have language line ... Therefore, we could use international medical graduates. We used them to run, you know, for interpretation, but also for helping us do basic assessments, to do education, to do so many things. That but it was a huge challenge. Once we got language line, it was still a challenge. We didn't even have speaker phones. So, we used headsets and that was at or passed a form back and forth to the patient and to the doctor.*

- LISA2

This sentiment was echoed by other participants, during all time periods. Even during the Yazidi period, where the Yazidi participants had very complicated mental health difficulties as a result of the trauma they faced, language was still one of the major issues of the time. For the Yazidis, not only was there a specific dialect of Turkish that was difficult to find translators for (Kurmanji), but though many of the Yazidi were able to speak Arabic, that language was not appropriate as one participant remarked:

*But they identified [Arabic] as the language of their oppressors. And those that tortured them, so then it became this language that they didn't converse in, which was like, so understandable...*

- CANDACE6

Issues related to language barriers do not stay limited to communication, but instead lead to other negative outcomes:

*It's when language barriers exist, that leads to like increased medical diagnoses and increased medical errors, and decreased patient and provider satisfaction.*

- CANDACE6

This was especially the case during COVID-19, as the effects of language barrier were amplified through the necessity of virtual appointments and through the challenges of digital literacy:

*The other issue that I would say happened during COVID-19, as we were trying to do things virtually, but we didn't have a virtual platform that we could use for patients. So, we didn't have zoom that we could use with patients or the equivalents. So, we couldn't physically see patients and the reason we couldn't do that is because Mosaic didn't have a virtual platform that they approved for us. And our patients also face barriers in terms of digital literacy.*

-AMY5

### 3.2.2.3.2 Health and Digital Literacy

This challenge of digital literacy and health literacy came up often in interviews, but especially during COVID-19 where the challenges of digital literacy exasperated other health challenges.

*Even if we had [a virtual platform] I suspect many of them would find it difficult to access. And so, we did a lot of patient care over the phone. But the difficulty with working on the phone over, you know, through language barriers and other you know, cultural barriers, etc., is that it was often very hard to assess without physically seeing the patient and doing a physical exam.*

- AMY5

### 3.2.2.3.3 Transition to Community

A consequence of the difficulty of learning health system literacy was that interview participants perceived patients received such high-quality care that they wouldn't want to go to another clinic and receive lower quality care. One participant referred to this as the "Cadillac service".

*One of the big things that I also noticed was transitioning patients out of the clinic is a huge issue. We finally had to put a full-time person to do that. Even so, it is extremely difficult. And it is difficult ... A study was done by Alberta Health to look at whether or not the Mosaic refugee clinic was providing the same level of service as the Calgary Refugee Health [Program] had provided. Okay, so, and they found that it was a "Cadillac" in quotation marks service provided. We, we look after our refugees better*

*than they get looked after at any other clinic. And, as all people would, they like it, so they don't want to leave. Understandable. That balance of holding the line and making them move on is a difficult one to achieve.*

- SUSAN4

#### 3.2.2.4 Resources

A prominent theme that emerged was the challenges faced by providers and leadership resulting from limited resources to address patient needs. In particular, the three resources that were most frequently mentioned was the clinic's capacity being strained due to the sheer volume of patients during some times, especially during the Syrian Refugee Initiative and the COVID-19 pandemic.

##### 3.2.2.4.1 Volume

Although excess volume of patients always results in an issue of resources, not all issues of resources result from patient volume, in fact patient volume seems to result in specific issues which can be addressed separate from the issue of resource scarcity. There were two time periods where resources were an issue, the Syrian Refugee Initiative and the COVID-19 pandemic.

*There were too many new refugees that were coming at once. It didn't need to be that fast. It was just this political fucking thing that they just wanted to make the headlines. They committed to welcoming 25,000. And it wasn't helpful for anyone. It wasn't helpful for the refugees; it wasn't helpful for the staff on the ground ... It didn't benefit anyone for us to have like, done it in such a short time period. I remember that. That was just heartbreaking.*

- CANDACE6

*So they were in fact, sick with COVID 19. And then that required, like daily check-ins, because we were following that primary care pathway for COVID-19. The other thing too, is we moved to virtual, and then there was a lot of uncertainty, like we couldn't feel comfortable with our virtual diagnosis, because virtual was just over the phone with our patients... So you'd have the phone appointment and then an in-person appointment shortly thereafter, just to make sure you're not missing like an appendicitis, so you're kind of doubling up on appointments. So, it's either like two virtual appointments back-to-back, or it's a virtual then an in-person in fairly short order. So, I think that's why you're seeing that exponential growth, because our panel size didn't change.*

- AMY5

#### 3.2.2.4.2 Finances

Our qualitative participants noted that throughout the ten years, finances often were a problem. We noted above how this appeared during the IFH Cuts Period, but it continued during the Syrian surge as well, as exemplified by the following quote which came after a participant being asked to describe the challenges during the Syrian refugee initiative.

*Financial, right, it was hugely taxing financially for the organisation, and we were so very fortunate to have the support that we did. I just-- it was a very, very challenging time. I think it just again, I go back to everyone pulled together to do what we could and to think outside the box, you know, innovate as we as we went, you know, like, how can*



*we best do this? How can we best prepare, and again, nothing really prepares you, but it all helped us really get through it.*

- MARY1

#### 3.2.2.4.3 Technology

As seen in some of the quotes above, technology is also a resource that is important to the clinic's function. Two of these technologies that were mentioned are phone language interpretation, and virtual appointments or a patient portal. However, one participant remarked that it's not enough to simply have the technology, the patients need to be able to understand and use the technology.

*I mean, during the pandemic, we didn't even have an approved platform by [the company that owns the clinic]. So, I think that's our failure. But moving forward, now that we do have a virtual platform, we need people to be able to teach newly arrived refugees those skills, if they do not have those skills, so setting people up with emails, because many don't have email, they just use WhatsApp. So, we need to set people up with emails and teach people how to access like a zoom link.*

-AMY5

*We did not have language line; the South Sudan doctor spoke Arabic. They left as lost boys and girls... So there was about 25 of these doctors, they spoke English, they spoke Spanish, they spoke Arabic, they spoke Dinka, some spoke Nuer. Another, one other woman spoke another tribal language. When I had these doctors working with me, we didn't need other interpreters, because they could cover all of our needed languages.*

-LISA2

### 3.2.2.5 Biopsychosocial Health:

Participants often discussed the physical, social, and psychological health of patients. Although the physical/biological health needs of refugees were often described as different from that of the general population, the qualitative participants consistently described ways they were able to meet the needs of patients, as early as during the pre-cuts phase, and in as complex an environment as COVID-19.

During the pre-cuts phase, programmes were being created often in order to help meet the physical health needs of patients. One participant listed all of the programs she was instrumental in helping create during the pre-cuts period: Sexually transmitted disease screening, tuberculosis testing, and she shared one story of what prompted her to create a hepatitis B programme.

*At one point, a woman came, who was from one of the African countries. And she her husband looked familiar to me, it was her fifth pregnancy, she was pregnant now. And her husband looked familiar, but I couldn't figure it out. But at that point, we did have medical record. So, it would have been sometime after 2011. And he gave me his name. And when I looked it up, he was a hepatitis B, positive patient, and the woman was not immune to hepatitis B. So, and pregnant, so how she managed to get through five pregnancies and not catch it was interesting for me... So that's when we moved the hepatitis program for our patients into our own program [from the local hepatitis clinic].*

- LISA2

That sort of thinking continued through the decade, into the COVID-19 pandemic.

*I just don't even think we knew what was coming. And I actually commend the physicians at the clinic because they're used to, I think they they're used to seeing infectious disease, right there all that like, or being mindful of it. And so, when we were starting to think about what, how did we need to prepare, I felt like they were early adopters, in trying to innovate in terms of the response. So specifically, to the refugee clinic, I think that was immensely helpful.*

- MARY1

Refugees also have particular social needs when they arrive in Canada such as housing and transportation. Multiple participants commented that these needs were exasperated during the COVID-19 pandemic, and the social situation of refugees was further complicated by politicians using them as scapegoats.

*The other challenge was, if somebody's positive or symptomatic, you want to send them for a COVID test? But the taxis were not taking anybody. And then you don't want the client to go on the bus and expose so many other people for that. You were thinking, "I'm driving, so it's okay, I'll simply drive and go." But like, people who do not drive. If they go on the bus? They would expose so many other people. And then it's not fair for the taxi driver. And then there was a time the taxi driver said "no, if anybody has symptoms, we're not taking them." They were stuck.*

- SARAH8

The need that most frequently was mentioned by qualitative participants were the mental health needs of patients. This was mentioned during all time periods, but especially during the Yazidi period:

*I immediately thought this is like going to be a challenge like no other and having just come from the Syrian, you know, we like I thought, "how can we not be prepared", but we weren't.*

- MARY1

*Psychogenic Non-Epileptic Seizure... That you can't ever unsee... And we would have these meetings of focusing on youth mental health for the refugees. And our questions at the time, like, how do you how do you help a child who's been trained to be a child soldier? Or a child who was like sold in sexual slavery, to overcome that trauma?*

- CANDACE4

Interestingly, this did not only arise during the very mentally complex Yazidi period, but it was also mentioned frequently during COVID-19, as that was a time of great uncertainty which was further complicated by the increased social needs at the time.

*Early on in the pandemic, there was a tonne of anxiety, fear, stigma, that you'd have to negotiate. We had patients who were evicted, just because they worked at a workplace that was impacted by COVID-19. And so there was all these social issues that went along with COVID-19 that had to be addressed to ensure to protect the public health, right, like*

*so if you're, if people have to isolate or quarantine, there was a huge number of social determinants that you have to address to ensure that the patients are supported to follow the required you know, health and safety protocols like you, you have to meet those needs. So, I think it just became challenging that way.*

- AMY5

*The stigma that our patients face ... even our premier was blaming them for getting COVID-19. It had to do with their family situations, ... it was a lot of victim blaming, it was unfair, and it didn't recognise that people are working in essential work at the grocery stores, in meatpacking plants, and that's putting them at risk. The reason they live together is because that's how they can survive financially, because they need the parents with them to be able to look after the children while they're working. But really, they were acquiring COVID-19 at their workplace and bringing it home. Then because they live in multi-generational families, it spread within the family. That's not their fault. That's what economics sort of require.*

- AMY5.

### *3.2.2.6 Mitigating Factors*

When describing solutions to challenges that the clinic faced, qualitative participants frequently described four factors which mitigated these challenges: The passion of the clinic staff and providers, their adaptability, their innovation, and the resilience of the patients.

#### 3.2.2.6.1 Passion

During our interviews there were countless stories of extraordinary passion among staff, providers, and leadership that allowed them to push through adversity.

*Heck, we even fundraised to get money to pay for the extra things that are for the uncovered benefits that our patients have. That's just part of the ethos of the clinic.*

- SUSAN4

#### 3.2.2.6.2 Innovation

One of the clinic's strengths that participants discussed was its ability to innovate. To solve the problem of patients being lost to follow up, a tool called the booking slip was created to communicate to medical office assistants (MOAs) which tasks to complete at the patient's checkout. A larger scale innovation was the creation of the transition program to help tackle the problem of panel management during the Syrian surge.

*So, one of our first committees was the booking slip committee. So, we'd have an MOA present and a doctor and a nurse. Like, "okay, what's working with this booking slip?" This is a very A simple example of the committees that we would form, but you'd have multiple perspectives. So, I think that was the beautiful thing of having everyone in the room, and the doctor saying, "no, I never checked that off". You know, "well, why do we have it on a booking slip?" Or the MOAs are like "the doctors never use this, or they always use this wrong". And so, then that feedback- I think that was like when we started to gel and just create like these little pods of little teams. So that worked really well,*

*again, just recognising, hey, we're on the same team, doctors, the MDT everything. I think Mosaic, the PCN, was very supportive.*

- CANDACE6

*I remember how she would explain it to people that were resistant to that transition. I think it was a whole bunch of that and just recognising that it wasn't sustainable to keep this constant influx without a way out. I also remember [names redacted] and I sitting in the [building where the clinic is located] food court. And we were thinking about those streams and [a researcher at the clinic] said like we have lots of streams for in, and we have no streams out. And that's not sustainable. So, the idea of this transition program, its best thing that the clinic could have done also to really focus our efforts in those first two years, right.*

- CANDACE6

### 3.2.2.6.3 Adaptability

Following health system upheavals, participants described how the clinic needed to adapt to newly imposed needs, and it consistently managed to do so. During the IFHP cuts, the donation account was created to help offset the cost of medication. During the Syrian surge, providers worked out of hotels and the transition coordinator role was created to assist with transition from the refugee clinic to local family doctors. During the Yazidi period, providers and staff dealing with vicarious trauma attended courses to help manage this affliction. During the COVID-19 period the physicians were credited for quickly adapting to the changing physical health needs of the pandemic.

*Most of our most of our patients live in poverty and can't afford basic medications. So as a result of that we developed our donation account with the Calgary Health Trust. From the donation account, we were able to provide coverage for our patients. So, we develop the relationships with a couple of pharmacies. So, they knew that when we added to the prescription donation account that they would send the clinic the bill, rather than bill a patient, and then we would directly compensate the pharmacy.*

- AMY5

*Our success was creating like a remote, on site, sort of clinic at the hotel, to meet those needs, and triage. The other success was engaging with AHS to provide them on-site, vaccination at the hotel.*

- AMY5

#### 3.2.2.6.4 Resilience

Not all of the credit for the clinic's success was attributed to providers, staff, and leadership. Qualitative participants frequently mentioned how inspired and grateful they were for the resilience of patients at the clinic.

*I know that there's like amazing, amazing, again, stories, because our patients are so resilient. So, on one hand, you feel like, just so totally disheartened by society, like these crimes and atrocities could happen. And then you look at how are these people still*



*going, you know, how do they come? And yes, they have to get through, and we assist them in trying to get through.*

- MARY1

### *3.2.2.7 The Importance of Contextual Data*

When discussing unadjusted SLR graphs (Appendix B) with the qualitative participants, a prominent theme that arose was that the quantitative graphs of utilization don't tell the whole story. Participants described the discrepancy between the quantitative data and their personal experiences on the ground. They described the inability of the graphs to capture the impact of each upheaval on the quality of care they were able to provide. They emphasised that we need to look at more than just utilization and changing demographics to appropriately assess how the clinic was impacted by each upheaval.

*I don't want to belittle [the line graphs], but it's basically telling me volume. As in clinic volume, not, maybe not specifically to physicians, I don't know if that's indicative of basically people being more sick, or basically opportunity to see more team [members].*

- JUAN3

### *3.2.2.8 Planning for Future Upheavals*

Lastly, qualitative participants often described the need to prepare in advance for future upheavals. There have been enough lessons learnt from the past decade that leadership is beginning to call for the creation of a “playbook” so that the processes used during these past events can be replicated or improved upon as necessary.

*I feel like for future upheavals --God knows what that is, but maybe it's monkey pox. I don't know... But we need sort of a playbook that we can turn to that we can scale up scale down. We need to formalise, you know, like the great thing with the Syrian resettlement is it brought all these different people to the table. And I think we should, we should have a playbook that calls all those people to the table to deal with whatever the upheaval is in the future, the lesson learned is that crises will continue to happen.*

- AMY5

*I think the clinic has proven its immense value, in terms of diverting patients from emergency departments, urgent care centres, for concerns that are best handled within a primary care setting. And so, I think supporting that is essential in terms of this, but it's also I think, not fair to expect the province to just shoulder that when these are federal decisions being made, spending needs to flow.*

-JANET7

*The more information we have about health services that were accessed prior to arrival, especially arrivals that have perhaps moved around within Canada or the United States prior to coming here to Calgary, specifically, information that can be sent. So, work doesn't have to be redone, which is exceptionally frustrating for patients as well.*

- JANET7

### 3.3 Data Integration

After analyzing our data quantitatively and qualitatively, we merged our results and assessed for data convergence and divergence. Specifically, the student created a table of significant quantitative findings, and for each time period he assessed the qualitative interviews for instances where the interviews corroborated or notably diverged from the quantitative results. See our integration matrix below for details. Lastly, the student created joint display tables for each time period to highlight some of the notable mixed method findings for each period.

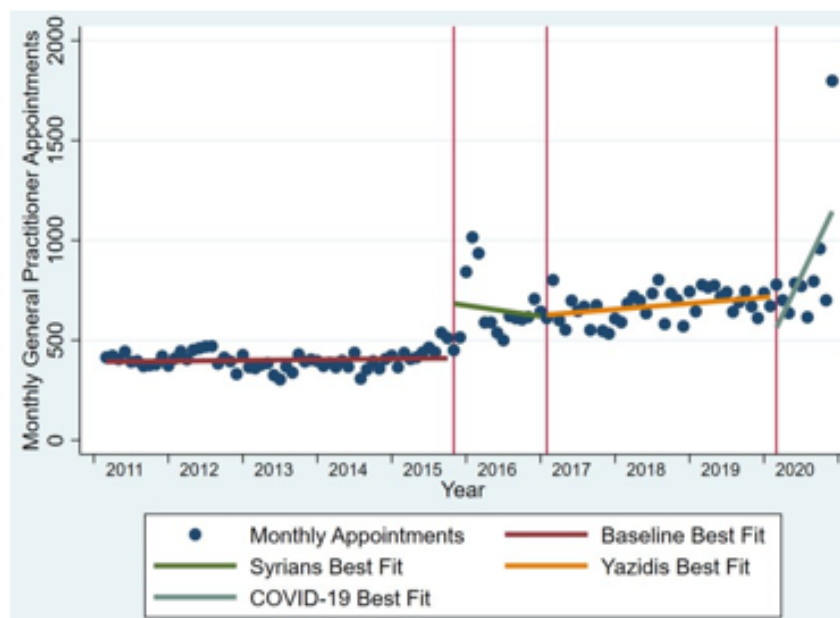
Table 8. Integration Matrix

Integration Matrix						
Upheaval	Quantitative Data			Qualitative Data		Integration (Enhanced meaning from adding qualitative data)
	Utilization All Providers Mean Level (SD), Slope	P-Values of Difference in Level, Slope	Interpretation	Quote	Interpretation	
Pre-Cuts	470.9 (27.8), 1.6	.	The pre-cuts phase was the beginning of recorded data.	<i>Everyone saw the need and did what was needful in any way possible to improve care. That ethic is still what drives the refugee health clinic to me.</i> LISA2	The clinic was establishing itself during the pre-cuts phase.	Increases in appointments during the pre-cuts phase may be due to more patients, or more providers and programs being added to care for patients.
IFHP Cuts	516.9 (87.4), 4.5	0.02, 0.49	While there was a significant level change there was not a significant change in slope. Increase is likely driven by MDT.	<i>The IFHP cuts didn't actually impact us directly for the clinic operations. They impacted the refugees.</i> SUSAN4	The IFHP Cuts had an effect, but it was not necessarily seen in the utilization data.	Changes to clinic utilization as a result of the IFHP cuts were minor, however this doesn't mean that the IFHP cuts did not have an effect, only that effects of IFHP cuts were not captured in utilization data.

Syrian Surge	1001.4 (172.7), 9.1	<0.01, <0.01	The Syrian surge was a significant spike quantitatively.	<i>With the Syrian surge, we too experienced the surge at the clinics. So, you can see that in that spike. And so, you know, to me, that makes sense.</i> AMY5	The Syrian Surge was a significant change from what came before.	The findings converge on the notion that the Syrian surge was unprecedented in terms of volume at the clinic.
Survivors of Daesh/Yazidi	1293.8 (162.3), 6.3	<0.01, 0.12	There was a significant change in level, but not slope. Although monthly appointments increased it was not as rapid a change as the Syrian surge. A lack of significant change also indicates that the Yazidi period was similarly busy to the Syrian period.	<i>I am surprised that the numbers did not go up when you got the Survivors of Daesh. Certainly, they created a great deal more work for us. But we may not have had the psych support, because we didn't increase our psych support exponentially to, to meet that.</i> SUSAN4	The mental health of the Yazidi patients created more work for providers at the clinic. However, there was only limited amounts of mental health support and therefore the numbers did not increase.	The qualitative data generates a quantitative hypothesis for the reason the slope of appointments was not significantly different: mental health supply (capacity) was capped, and demand was exceeding supply.

COVID-19	1711.2 (420.9), 110.4	<0.01, <0.01	High variance and rapidly changing, utilization growth during COVID-19 dwarf everything that came before.	<i>Due to the language barrier usually, you need to be half an hour. In some cases, if it's a family then we will put one person as half an hour, then other people [family members] like 15 minutes [each] in order to accommodate them.</i> SARAH8	The language barrier creates a minimum appointment time for patients.	The large spike in appointments doesn't mean that the duration of appointments shrinks as much as one might think.
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### Joint Display: Clinic Baseline (Cuts + Pre-Cuts).



GP appointments remained stable throughout the "baseline" period despite events such as the Calgary flood, clinic renovation, and the IFHP cuts. During this period there were 0.3 additional appointments per month.

**Convergence:** Qualitative participants confirmed that the IFHP cuts did not impact attended clinic appointments. Quantitative analysis also indicates little overall change in general practitioner appointments during this time.

**Divergence:** Quantitative data does not capture the decrease in quality of care that leadership reports.

*The IFH cuts, didn't really have an impact on our attended clinic appointments. It didn't really affect the number of patients that we saw, because we would see people whether or not they were covered by IFH, or Alberta Health. We saw people, irrespective of their coverage. We continued to see our refugee claimants and in fact, new refugee claimants who had no coverage at all.*

AMY5

Figure 11. The pre-cuts and cuts periods, together the "baseline" period, was relatively stable.

### 3.3.1 Baseline (Pre-Cuts + Cuts)

The first piece of quantitative and qualitative convergence was the lack of statistically significant change resulting from the IFHP cuts. Participants often referred to the cuts and pre-cuts period as similar from a utilization perspective, and that was borne out by our quantitative data. As discussed in our quantitative results section, overall, there was a statistically significant change in level, from 470.9 appointments per month to 516.9 ( $p=0.02$ ) however there was not a significant level change among general practitioners (406.4 to 399.2 appointments per month) or specialists (31.1 to 28.7 appointments per month). This indicates that the observed change was driven by the nearly three-fold increase in multidisciplinary team appointments (34.8 to 91.2 appointments per month,  $p<0.01$ ). Additionally, there were no statistically significant changes in slope between the two periods, although difference between the multidisciplinary team rate of change did approach significance ( $p=0.05$ ). Additionally, the data visualisations seem to indicate that the increase in multidisciplinary appointments was not resulting from the IFHP cuts but rather it began in late 2013, and this conclusion is corroborated by the qualitative data:

*I think the [Summer, 2013] floods for me were significant, just because that was also a transition and who actually operated the clinic right and funding there was, and it didn't necessarily feel like it but there was a massive investment in funding for the clinic and the clinical operations. And, you know, the staff and the multidisciplinary team that we ended up putting towards that clinic during that time period.*

- MARY1

Therefore, one may consider the pre-cuts and cuts periods together to be the baseline period of the clinic.



Summary: The pre-cuts period was a time of building the clinic's foundation and culture so it could become what it is today.



Monthly appointments stayed around 500 throughout the pre-cuts period and into the cuts period. Eventually this number would rise to 2758 appointments, an overall slope of 19.0 appointments per month increase.

Successes: Innovations, services provided, collaboration, passion

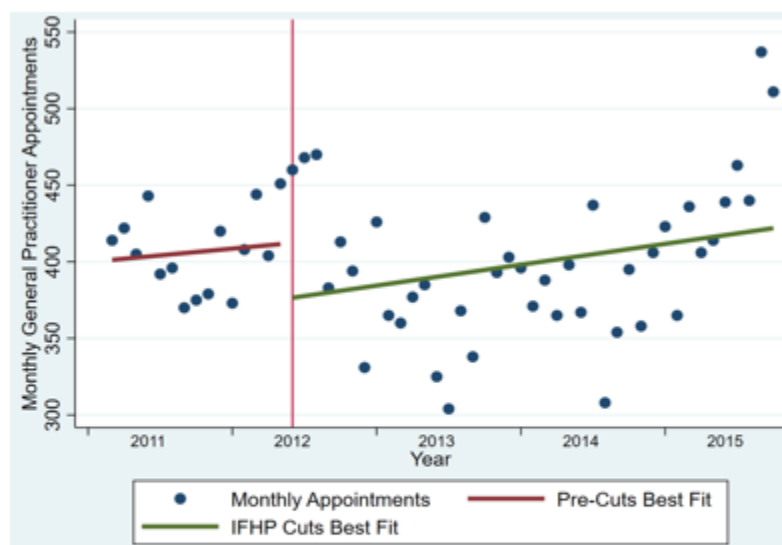
Challenges: Acculturation (language barrier, health system navigation), limited resources (space, interpretation services).

*[One of the OBGYNs] joined our team and carried our high-risk patients over to the [A local hospital]. So that story isn't captured in numbers... We started in two rooms. We didn't have language line. We used volunteer interpreters who are international medical graduates.*

– LISA2

Figure 12. Clinic utilization has increased substantially over time.

### Joint Display: IFHP Cuts



Although there was not significant changes to utilization, the IFHP cuts were considered a difficult time.

Successes: Adaptations to respond to cuts (resilience, collaboration, services provided, donation account created).

Challenges: Financial resource strain, tech resources, burnout pf providers, sustainability of level of care, limited scope of programs/limited ability to address social determinants of health.

*The cuts phase was terrible... Just the inability to provide such essential services like labour and delivery for pregnant women. The well-talked-about one is the cancer case ... Just the inability to provide services to patients, but only specific patients based on their country of origin. It was just it was such an awful feeling. It was no longer services based on patient need. It was purely "what country did you happen to be born in, that you happened to leave?" It was nerve wracking watching the list of designated countries of origin because they would grow all the time.*

- JANET7

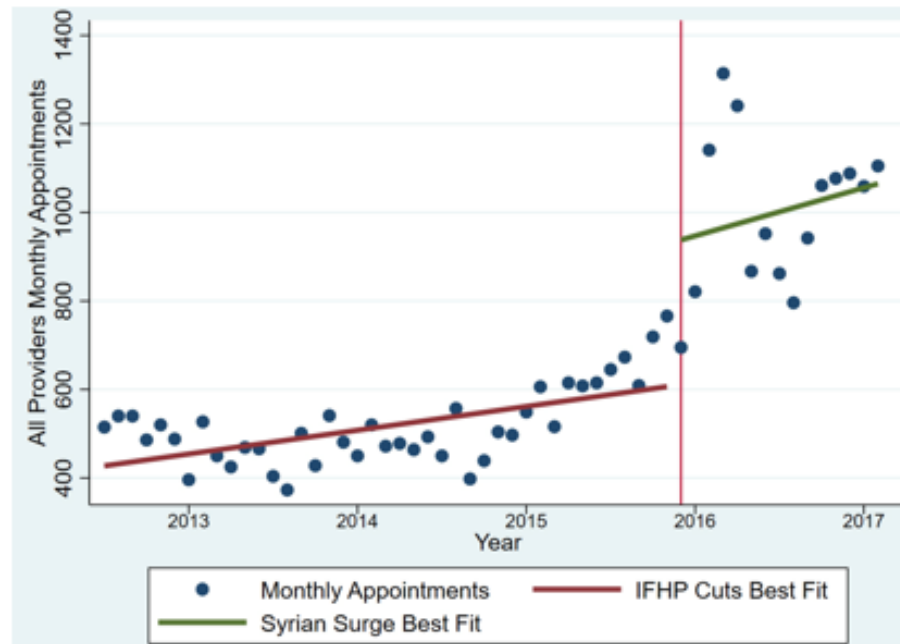
Figure 13. There was not a significant change in GP appointments from pre-cuts to the IFHP cuts.

### 3.3.2 The Syrian Period

Each of the six analyses of differences between mean level of appointments during the IFHP Cuts phase and the Syrian period were statistically significant ( $p < 0.01$ ). Appointments per month for all providers almost doubled from 516.9 to 1004. Appointments per month for general providers increased from 399.2 to 651.3. Appointments per month for MDT tripled from 91.2 to 303.9. Appointments per month for specialists increased from 28.7 to 46.6. Additionally, two of our analyses of differences in rates of change between the cuts phase and the Syrian phase. The rate of change for all providers doubled from 4.5 additional appointments per month to 9.1 additional appointments per month ( $p < 0.01$ ). The rate of change for MDT nearly quadrupled from 3.25 to 12.5 ( $p < 0.01$ ).

A point of divergence was that the rate of change of appointments for general practitioners did not significantly change. However, this may be because the initial spike in appointments was so sudden that the level changed but then the number of appointments per month did not change significantly from that high start point. This is consistent with what our qualitative patients told us.

Joint Display: Syrian Resettlement Initiative.



Monthly appointments almost tripled for three months at the start of the Syrian Resettlement Initiative.

Successes: Adaptations (collaboration, innovation, services provided, resilience); Integrated delivery of biopsychosocial health model

Challenges: resource strain (volume), Wellness of providers (burnout, sustainability of level of care), Acculturation (language barrier, health system navigation)

*Chaos, chaos... You know, we tried to prepare, we had a couple months to prepare, but nothing can prepare you... It was absolute chaos.*

- MARY1

*With the Syrian surge, we too experienced the surge at the clinics. So, you can see that in that spike. And so, you know, to me, that makes sense.*

AMY5

Figure 14. The “Syrian Surge” was a significant utilization increase.

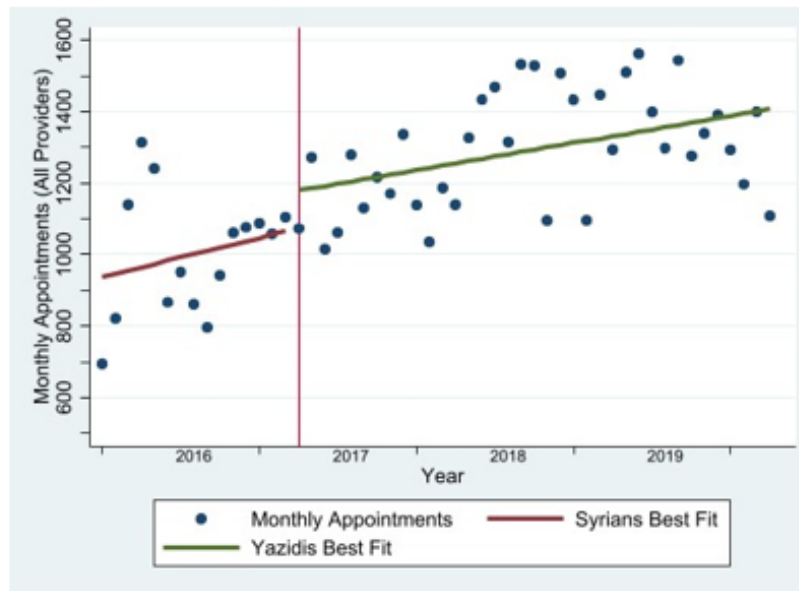
### 3.3.3 Yazidi Period

During the Yazidi phase, the mean levels of appointments significantly increased ( $p < 0.05$  for each measurement). However, contrary to what we had expected, the rate of change over time did not significantly change for any provider type from the Syrian period. This has some convergence and some divergence from our qualitative data.

*You know, how [name redacted] did a focus group with the Yazidi, ... none of our mental health services were meeting the needs. So, they, you know, they recorded they wanted things in group. Like, you know, how I like I completely agree with the Yazidi, like our-the mental health services that we offer in the western world or in Canada? They don't meet the needs of every group, and things have to be tailored a little bit.*

- AMY5

Joint Display: Yazidis/Survivors of Daesh.



Appointments did not overall decrease from the Syrian period to the Yazidi period.

Successes: Post-Traumatic Growth, Family Reunification

Challenges: Mental health of patients, wellness of providers (sustainability, burnout, vicarious trauma)

*We had [name redacted] going, "this isn't normal, like what can we do?" And I don't think any of us knew at that moment in time. To what extent you know, it would have on everyone. And I just think I, like I get teary thinking about I think the trauma is still there for so many, right. I don't know if we ever could have ever been prepared to deal with it.*

– MARY1

Figure 15. The volume of appointments from the Syrian period continued and new mental health concerns emerged during the Yazidi period.

### 3.3.4 COVID-19

During the COVID-19 pandemic each our comparisons of utilization to the Yazidi period were significantly different, with one exception: The rate of change over time for specialists (0.12 additional appointments per month) was extremely similar to what it was during the Yazidi period (0.18 additional appointments per month,  $p=0.96$ ).

*We would get clusters of COVID Positive families or, you know, kind of small, small social circles. And that could easily lead to 15 appointments in a physician schedule, on any given day, all of which are marked as done. So I'm wondering if that is, is kind of creating that, that spike that, you know, you call and maybe you actually only talk to one person, but they talk about, you know, their, their spouse and their eight children as well within an hour, and those appointments would be happening, because we were following the primary care pathway in terms of COVID management you know, those calls could be happening on a daily basis.*

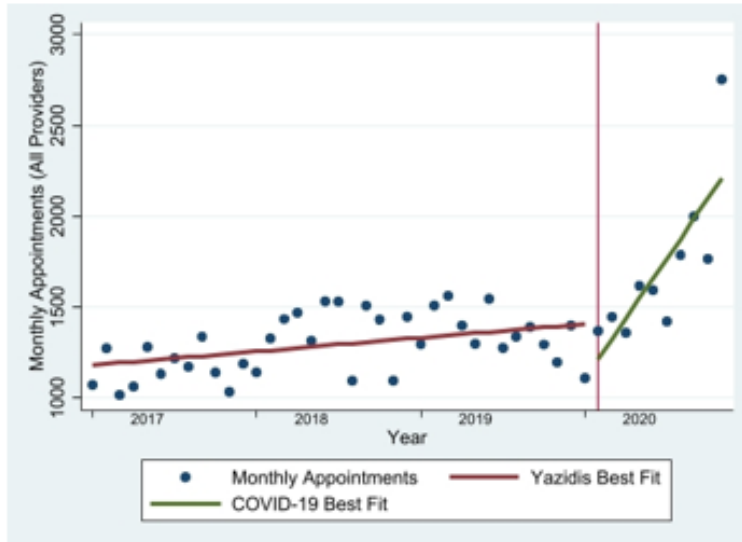
- JANET7

*EN: What's happening with that huge spike in winter 2020? Were all of those half hour appointments? Or were they mostly smaller appointments?*

*You know, due to the language barrier usually you need to be half an hour. In some cases, if it's a family then we will put one person as half an hour, then other people [family members] like 15 minutes [each] in order to accommodate them.*

- SARA H8

## Joint Display: COVID-19



COVID-19 saw an increase that was described by some participants as “exponential growth”.

Successes: Adapting to physical health challenges.

Challenges: Volume of appointments, mental health, health literacy.

*This is what's reflected in that sort of exponential growth. Because again, at this time, during COVID-19, we didn't have a lot of new refugees arriving. So, it's not newly arrived refugees, it's like looking, it's our same panel, but more frequent follow up. And I think that's because of the whole issue with telephone appointments and working through language barriers and cultural barriers and health literacy barriers.*

- AMY5

Figure 16. COVID-19 resulted in a large and sudden increase in appointments.



## CHAPTER 4: DISCUSSION

### 4.1 Key Findings

The purpose of this thesis was to identify changes to the clinic over ten years, including utilization, demographics, and the adaptations and experiences of clinic leadership, and the first key finding is that the clinic changed significantly. In fact, from the first month of recorded data, to the last, the number of monthly appointments increased 5.8-fold. This increase in utilization reflected an equally impressive increase in capacity. There was a 4-fold increase in GP capacity from the first time point (80 hours) to the last (200 hours), and a 17.9-fold increase in MDT capacity from first time (42 hours) point to last (752 hours). Also, our findings suggest upheavals experienced at the clinic had a massive impact on the wellness of healthcare workers (HCWs), resulting in stress and burnout. Participants described harrowing tales of experiencing the vicarious trauma of patients who had survived ISIS captivity, but the greatest challenges to some were the stress, uncertainty, and constant change of COVID-19.

Our most important integrated finding was that although each of the upheavals we considered were experienced by clinic leadership and had a perceived impact on quality of care, not all the impacts were captured in utilization data. The IFHP cuts were remembered by qualitative participants as a challenging time that affected perceived quality of care, even resulting in the death of one patient as a result of lack of access to necessary treatment. However, this time period was not associated with increased utilization of GPs or specialists and increases in MDT utilization were regarded by leadership as resulting changes in the clinic's ownership. Additionally, the immigration policy changes that were considered by federal policy makers to be a one-time event were associated with lasting changes in clinic use which greatly affected the experience of leadership, who often remarked that since the Syrian surge in 2016 there has been

no reprieve. Lastly, clinic leadership has recommendations to prepare for, and mitigate the effects of, future upheaval events. Clinic leadership suggested improving coordination between refugee policy makers and healthcare organizations so that healthcare can better prepare for future refugee programs, and that there should be a model or “playbook” that can scaled up or scaled down in proportion to the anticipated changes in healthcare resulting from immigration or health policy changes.

Some of our findings were paradoxical and unexpected. For example, otherwise similar refugees are not as similar as they would appear, technology designed to facilitate care can make it more challenging, a sudden increase in capacity and utilization for some is a decrease in capacity and a return to baseline for others, even trauma is not always traumatic, and finally health is not health. We resolve each of these paradoxes through appreciation of their nuance. First, although both the Syrian surge and Yazidi periods were characterized as challenging events that were unlike what came before, there were over 1200 Syrians that came through the clinic over three months and by contrast there were 278 patients that came through the Survivors of Daesh program over two years. However, the unimaginable horrors the Yazidis had endured at the hands of a terrorist organization resulted in different care needs. Thus, two demographically similar refugees may have different care needs due to a variety of factors, especially among them, the post-departure experience of refugees must be appreciated. Second, video and telephone appointments were designed to improve safety and facilitate care by making it easier for patients and providers to connect without risking exposure and having to travel. However, as described by our qualitative participants, due to the need for interpretation, and differences in health and digital literacy, virtual and phone appointments resulted in challenges of their own.

Third, a sudden increase in utilization and capacity is not a sudden increase for all. Although GP and MDT utilization and capacity increased greatly during COVID-19, the decrease in specialist utilization and capacity during COVID-19 was the only significant decrease in level and in rate of change over time. This decrease resulted in both a level and slope that were not significantly different from the level and slope during baseline. This finding highlights the fact that it is possible for decreases in utilization, but the decade of turmoil was characterized by relentless increases, emphasizing the commitment to care that the qualitative participants said embodies the ethic of the clinic.

Although HCW participants experienced many challenges including vicarious trauma, the story does not always end there, trauma is not only trauma. Jayawickreme et al. 2021, describe enduring positive psychological change as a result of adversity, trauma, or challenging life circumstances as “post-traumatic growth” (66). Through exposure to traumatized individuals and the turmoil of the clinic, some of the clinic’s HCWs participants may have experienced post traumatic growth, where they developed a deeper understanding of their own strengths and coping mechanisms, ultimately leading to personal and professional growth (66). This is exemplified by participants’ remarks that Mosaic Refugee Health Clinic was the model for care for the entire Mosaic Primary Care Network during the early stages of COVID-19 because its providers and leadership were so accustomed to constant change and adaptation.

The final and most important paradox that we found; health is not health. When describing the experience during COVID-19, leadership spoke of MRHC and its patients excelling with managing the risks to physical health. However, COVID-19 was a challenging time because health is more than physical health, especially for refugees. Our participants described that throughout each time period as physical health needs of patients rose, clinic

leadership introduced programs to meet those needs. The most challenging issues described by interview participants consistently were the psychological and social needs of patients, and the intersections of multiple types of needs. Therefore, health is not limited to only physical health, and limiting one's framework of health to the physical is not healthy. Instead, the biopsychosocial model of health is a more complete model of health.

## 4.2 Contextualizing our Findings

In contextualizing our findings, it is important to note that our study both confirms and extends previous research on refugee health utilization. Specifically, our findings are consistent with those of Kiss et al. (2011) and Truppa et al. (2019), who compared refugee patients to non-refugees in Canada and Lebanon, respectively (36, 49). However, our study goes beyond these earlier investigations by examining clinic utilization patterns of refugees at a specialized refugee clinic over a decade, rather than comparing them to non-refugees cross-sectionally. One of the key findings of our study that aligns with Truppa et al. (2019) is the strain that refugee influxes can place on local healthcare systems. We observed a sudden increase in appointments during the Syrian refugee initiative strained local resources and was a stressful time for providers, similar to Truppa et al.'s findings in Lebanon in 2019, (49). Our study also supports the notion that health literacy can be a significant challenge for newly arrived refugees, a finding that is consistent with Truppa et al. (2019, 49). Schober and Zocher (2022) provide an important point to consider (50). In their analysis, they studied refugees for five years after arrival in Austria (50). They found that although refugee healthcare use was at first higher than non-refugee population, use decreased over time (50). One-year post-resettlement this difference was no

longer significant (50). MRHC's mandate is to see refugee patients for up until two years post arrival (9), therefore MRHC may be disproportionately seeing patients at their most complex.

Our findings regarding the personal impact of these upheavals are consistent with and extends other findings in the literature. In a survey of caregivers working with women and children who suffered at the hands of the "Islamic State", Denkinger et al. (2018) found that secondary traumatization was present in 22.9% of the participating caregivers (51). Bhattacharyya et al. (2020) conducted narrative interviews with 35 Yazidi participants in four Canadian cities (52). Echoing the words of our qualitative participants, Bhattacharyya et al. concluded it is evident that this population is different from any recent refugee group that has come to Canada (52). Vicarious trauma was not the only personal impact reported by clinic leadership. They also described burnout and stress from COVID-19, a finding that is replicated in several studies of Canadian healthcare workers, including de Wit et al. (2020), Khan et al. (2021), and Guimond and Hogue (2021) (53-55).

Physician burnout associated with COVID-19 is ubiquitous worldwide, as reported in a review by Amanullah and Shankar (2020) which noted that burnout not only affects the physician's life, but potentially may affect patient care (56). A study by Papa et al., 2021, noted the back-to-back effects of the strain of a sudden wave of refugees followed by the COVID-19 pandemic (57). Papa et al. conducted a multi-center cross sectional study to assess the levels of depression, and burnout in Greece (57). They found more than half of their study of 464 healthcare workers experienced at least mild mental health difficulties (57). Their situation resembled that of MRHC's in some ways, as they reported that the Greek public healthcare system was facing serious challenges before COVID-19 began, following a decade of economic recession and the Syrian refugee crisis. Various studies describe each of what we deemed

“Health System Upheavals” to be challenging (16, 25,26,31). Our study differed from some studies of the IFHP cuts such as Antonipillai et al., 2017, which claimed that the cuts created barriers to health care access (16). However, we should note that our case study is of a specialized refugee health clinic which provided care to patients even if they did not have coverage, therefore patients in our study will have better access to care than refugee patients who do not have access to a specialized refugee health clinic. Nevertheless, we agree with Atonipillai et al. regarding the challenging nature of the IFHP Cuts time period. Our study closely matched the findings of Marshall and Béland, 2019, as they described the Syrian Resettlement process as chaotic, but ultimately rewarding once coordination between stakeholders had been established (25). Our findings also resemble the conclusions of Wilkinson et al., in their 2018 report on Yazidi resettlement to Canada, who found that themes of trauma arose in any discussion with Yazidi participants (26). Lastly, a 2022 survey by the Canadian Medical Association found that more than half of Canadian physicians they surveyed experienced burnout during COVID-19 (68). Our findings echo this result as well.

One policy paper echoed the same recommendations that clinic leadership had, in Zimmerman, Kiss, and Hossain’s 2011 article “Migration and Health: A Framework for 21<sup>st</sup> Century Policy Making” (58). Zimmerman, Kiss, and Hossain concluded that migration and health sector policy makers need to coordinate to improve the safety and health of all (58). Our study exemplifies the point made by Davies, Basten, and Frattini in their 2009 paper for the International Organization for Migration, which argued that the migration experience should be considered a social determinant of health of migrants and refugees (59). This argument helps explain the distinction between the Yazidi refugees and the Syrians, who are demographically similar, but the differences in exposure to trauma results in different care profiles. This finding

was also mentioned by the aforementioned study by Schober and Zocher (50). They highlighted the importance of differentiating between groups of migrants when analyzing healthcare utilization. Our finding of challenges associated with the sudden transition to phone and virtual appointments was consistent with the findings of Benjamin et al., 2021, who described major limitations due to the language barrier, digital literacy, and privacy concerns (60). Lastly, the importance of the biopsychosocial model to appreciate refugee health has been gaining support for years. A 2007 meta-analysis by Matthew Porter makes the case well by summarizing global evidence for a biopsychosocial understanding of refugee acculturation (61).

## 4.3 Implications: Hard Won Wisdom

### 4.3.1 Local and Provincial Implications

Our findings reveal the challenges faced by MRHC in maintaining its sustainability and reducing its reliance on the goodwill of providers. The increases in utilization and capacity indicate a growing need for refugee healthcare services, which continue to strain the existing resources and infrastructure. To address these needs and maintain quality care, MRHC should consider strengthening its coordination with local partners and securing additional funding from both local and provincial sources. This may involve working closely with Alberta Health and other relevant stakeholders to identify funding opportunities, assess resource allocation, and share best practices for healthcare delivery. Collaboration with provincial health authorities such as Alberta Health and federal health and immigration partners would help predict changes in clinic utilization, allowing MRHC to anticipate and manage potential challenges.

Developing protocols for future refugee health system upheavals is essential for long-term sustainability. MRHC should leverage partnerships with local and provincial health

authorities, taking into consideration the findings of this thesis, to create a comprehensive plan for managing future changes in refugee populations and healthcare needs. This plan should include strategies for staff training and development, resource allocation, and communication between healthcare providers and policymakers. Implementing such protocols would not only help to ensure the long-term sustainability of the clinic but also improve access to healthcare services for refugees while providing a blueprint for other healthcare organizations in the region.

The paradoxical finding that refugees with seemingly similar backgrounds can have different care needs underscores the importance of individualized and culturally sensitive care and migration policies. This requires healthcare providers and health and immigration policymakers to consider the unique experiences and needs of distinct refugee populations, including their migration history, culture, and language. Local and provincial authorities should invest in cultural training and support resources that facilitate understanding of refugee experiences and social determinants of health. This approach will help healthcare providers deliver more effective, tailored care to diverse refugee populations.

#### 4.3.2 Federal Implications

At the federal level, our study has implications for Canada's national refugee policy. Canada continued to expand its refugee policies in 2021 and 2022 (61, 62). In 2022 Canada accepted over 90 000 asylum claimants, a historic number of this category of refugee for Canada (63). This doesn't include the refugees coming from Afghanistan through newly created Government of Canada programs (64), or those fleeing the conflict in Ukraine, who meet the 1951 UNHCR definition of Refugee (65, 2). With an increasing number of refugees being



accepted into Canada it is important to consider the downstream consequences of this increase on healthcare systems. To ensure that all refugees receive the care they need, a biopsychosocial model of refugee health should be adopted nationally. Additionally, healthcare providers and immigration policymakers should work together to ensure that healthcare services are coordinated, and effective, and address all dimensions of refugee health and well-being.

#### 4.3.3 Global Implications:

Globally, the need for comprehensive understanding of refugee care is increasing. In 2021 the UNHCR recorded the largest number of displaced persons since at least WWII, 89.1 million (37). The estimate for 2022 is 103 million (37). Therefore, our study arguably has implications for refugee healthcare utilization worldwide. The increasing number of displaced persons highlights the need for comprehensive and effective healthcare services for refugees in all countries of resettlement. As the number of refugees continues to grow, we need a coordinated global response to ensure that refugees receive the care they need. To best understand that need, we suggest health entities strive to employ a model of refugee health that recognizes the importance of multidisciplinary care to address of social, psychological, and biological factors that impact the health of refugees.

As the global refugee crisis continues to evolve, the importance of understanding and addressing the unique healthcare needs of refugees becomes increasingly critical. By adopting a comprehensive, collaborative approach to refugee health, local, provincial, federal, and global stakeholders can work together to ensure that refugees receive the care they need to thrive in their new communities.

#### 4.4 Knowledge Translation

Our knowledge translation (KT) plan has specific strategies at the clinic, regional, and federal levels. At the clinic level our study has integrated KT as we can pass our findings directly onto the healthcare providers who work within the clinic itself. Some current clinic leadership and providers have expressed interest in the results of this study and have committed to sharing aspects of the study that they deem interesting to the rest of the clinic's staff and providers. At the regional level, MRHC has an agreement with the local sponsorship agreement holder, the Calgary Catholic Immigration Society, which can also help disseminate findings to refugee specialized stakeholders in the Calgary region. At the macro level the research group that the student is a member of, Refugee Health YYC, has previously worked with a variety of partners at the national and international related to immigration, refugees, and health. We plan to use these connections to further extend our KT through networking and presenting at various conferences including at the 2023 North American Refugee Health Conference in Calgary, and a pre-conference which includes many refugee health and migration experts and policymakers (8). Lastly, the researchers hope to employ traditional KT to spread this work to interested scholars globally, by publishing these findings as up to three studies in academic journals to explore the quantitative utilization, quantitative demographic, and qualitative interview analyses with more precision and detail.

#### 4.5 Limitations

Our study has several limitations to consider. First, our study does not include measurements of health outcomes. Therefore, we were unable to quantitatively analyze how changes to clinic structure or processes may relate to patient health or quality of care. However,

as a master's degree thesis project such analysis however would be beyond the scope of this study. Further, our study has provided a critical foundational description of structures and processes that a future study may use when analyzing these outcomes. Additionally, the depth of the data we did collect should not be understated. Our study has made use of a wealth of data unparalleled in case studies of refugee health clinics. Ten years of data on over 10,000 patients often with multiple appointments each, in our quantitative phase provided us with sufficient power to find effects and to stratify our analysis by provider type more than previous studies in specialized refugee primary care to date.

Second, over such a large study period there will be secular trends, changes to clinic use and demographics that are unrelated to the health system upheavals. Thus, we are unable to claim causation, merely correlation. However, in our qualitative phase we asked participants what they thought were the reasons behind changes that we found in our quantitative data, and we analyzed themes emerging from those answers, thus mitigating the risk that we ascribe causation erroneously to the four health system upheavals. Additionally, this limitation would be a greater hinderance to a purely quantitative study which would have to speculate as to why these changes occurred. However, as a mixed methods study, we have offered informed explanations for why these changes may have occurred through our qualitative interviews. Lastly, when analyzing changes to data over time it is important to have a baseline that is unaffected by the interventions one is trying to understand such the health system upheavals. This is a strength of our study as we analyzed data starting from March 2011, almost 18 months before the first health system upheaval of the IFHP cuts.

Third, the student has worked at the clinic for ten years, and thus has created relationships with the qualitative participants, and is related to one. This risks bias in

interpretation of these results as the student and the student's supervisor have both worked at MRHC. However, this limitation is simultaneously a strength, as this establishes trust and relatability between the student and the qualitative participants. In fact, the student has arguably the most familiarity with the clinic of anyone among the committee, having worked as a medical office assistant at the clinic from November 2011 until January 2021, increasing the richness of data collected as an interviewer through having firsthand knowledge of the events and phenomena he is asking about as well as strong rapport with the qualitative participants. Additionally, qualitative research is an inherently a subjective undertaking, and there will always be some amount of interpretation involved. The student has attempted to mitigate his biases, when possible, by verifying his qualitative results with neutral third-party coworkers.

A final limitation of our study is that we only interviewed clinic leadership and did not include perspectives from patients or clinic staff. While this is a limitation, it was appropriate for the scope of a master's degree thesis, especially a mixed methods study that prioritized the quantitative data. Future studies could benefit from including perspectives from a broader range of stakeholders, including patients, clinic staff, and non-leadership providers (general practitioners, multidisciplinary team, and embedded specialists) to gain a more complete understanding of the factors that impact refugee healthcare and refugee health utilization.

#### 4.6 Future Research

In addition to examining primary care utilization, future research should also investigate the use of acute care services during times of upheaval. This could include investigating administrative datasets for ambulatory, emergency department, or hospital admissions for

refugee patients during times of health and immigration policy changes, funding cuts, or other disruptions to the healthcare system, including the specific upheavals described in this thesis. Additionally, it would be valuable to investigate patient outcomes beyond healthcare utilization, including satisfaction with care, quality of life, and physical and mental health outcomes. This would enable a more holistic understanding of the impact of refugee health policies and practices on the lives of refugees. This could be achieved through conducting surveys or interviews to gather information about patient experiences and perspectives, as well as analyzing diagnostic EMR data.

Lastly, future research should aim to develop a comprehensive model of refugee health utilization that considers the various biological, social, cultural, and economic factors that impact the health of this vulnerable population. Such a model should incorporate the variables we have identified in this study, which include language barriers, challenges with acculturation in and limited access to care. In addition, it should consider the potential impact of "refugee health system upheavals," events such as changes in policy or funding that can have an immediate and detrimental effect on the health systems serving refugees. By developing such a model, researchers will be better equipped to understand the complexities of refugee health utilization and to identify strategies for improving the health outcomes of this vulnerable population.

## 4.7 Conclusion

Our mixed methods case study of refugee health utilization at a specialized primary care medical home over ten years has detailed the incredible changes that have occurred during what we have dubbed “The Decade of Turmoil.” From humble beginnings, MRHC has grown to be a beacon of refugee health and has earned hard-won wisdom along the way. Our study has

important implications at the clinic, regional, federal, and global levels of health policy, so they can learn from our turbulent past. At the clinic level, our study underscores the importance of taking a biopsychosocial approach to refugee health, which recognizes the complex interplay of social, psychological, and biological factors that impact the health of refugees. At the regional level, our study highlights the importance of coordinated and comprehensive healthcare services for refugees at the community level. At the federal and global level, our study has implications for refugee policies at the national and global levels, particularly as the number of refugees worldwide continues to grow.

As Canada strives to be a leader in refugee resettlement, it is my hope that this thesis contributes in some small way to understanding how to achieve that goal. By learning from the experiences and insights gained at MRHC, we can strive towards creating a more inclusive and equitable healthcare system, ensuring that refugees not only survive but thrive in their new communities. The lessons learned from MRHC's journey serve as a testament to the resilience, adaptability, and compassion required to meet the ever-evolving demands of refugee healthcare and lay the foundation for a brighter future for those seeking refuge in our global community.

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## Appendix A

Table 9. Top 20 Countries of Origin

Country of Origin	Patients (%)
Eritrea	1857 (17.4)
Syria	1578 (14.8)
Iraq	1017 (9.5)
Ethiopia	803 (7.5)
Unknown	591 (5.5)
Canada	490 (4.6)
Sudan	392 (3.7)
Somalia	350 (3.3)
Afghanistan	329 (3.1)
Congo	267 (2.5)
Nigeria	199 (1.9)
Burma	196 (1.8)
Pakistan	193 (1.8)
Turkey	172 (1.6)
Mexico	171 (1.6)
Colombia	167 (1.6)
Kenya	150 (1.4)
India	125 (1.2)
Venezuela	118 (1.1)
Iran	116 (1.1)
Bhutan	104 (1.0)

## Appendix B

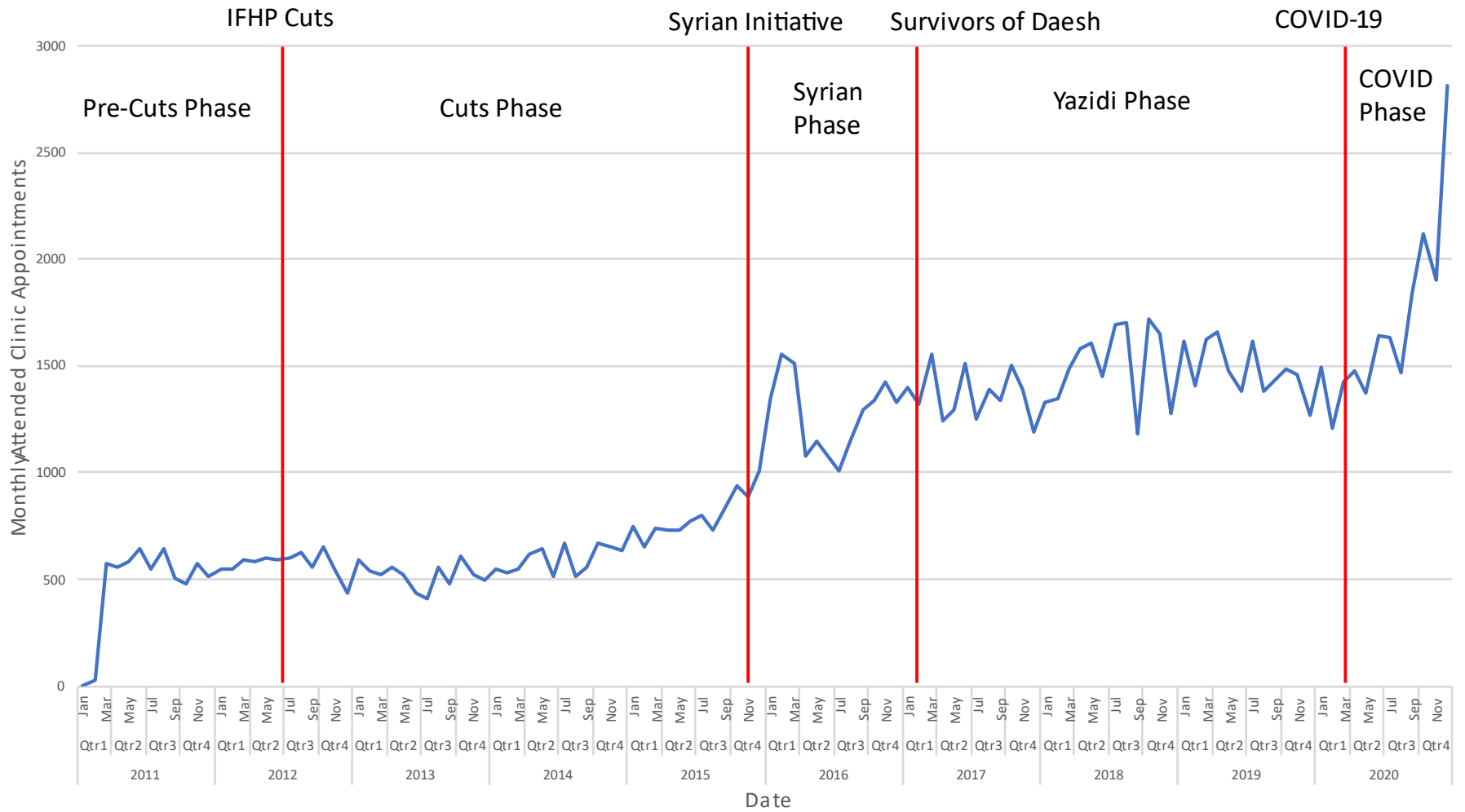


Figure 17. Basic Overall SLR Graph Discussed with Participants

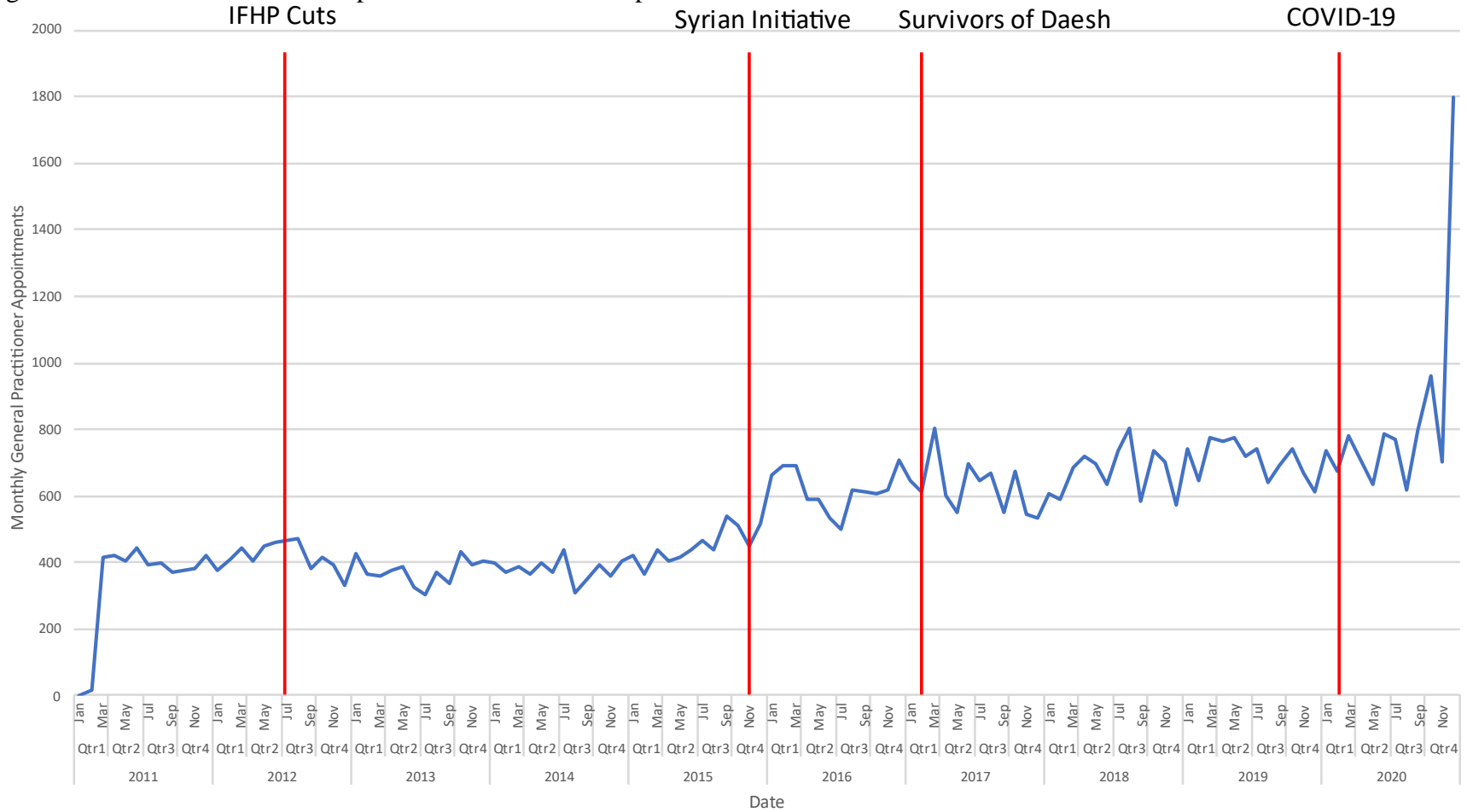


Figure 18. Basic GP SLR Graph Discussed with Participants

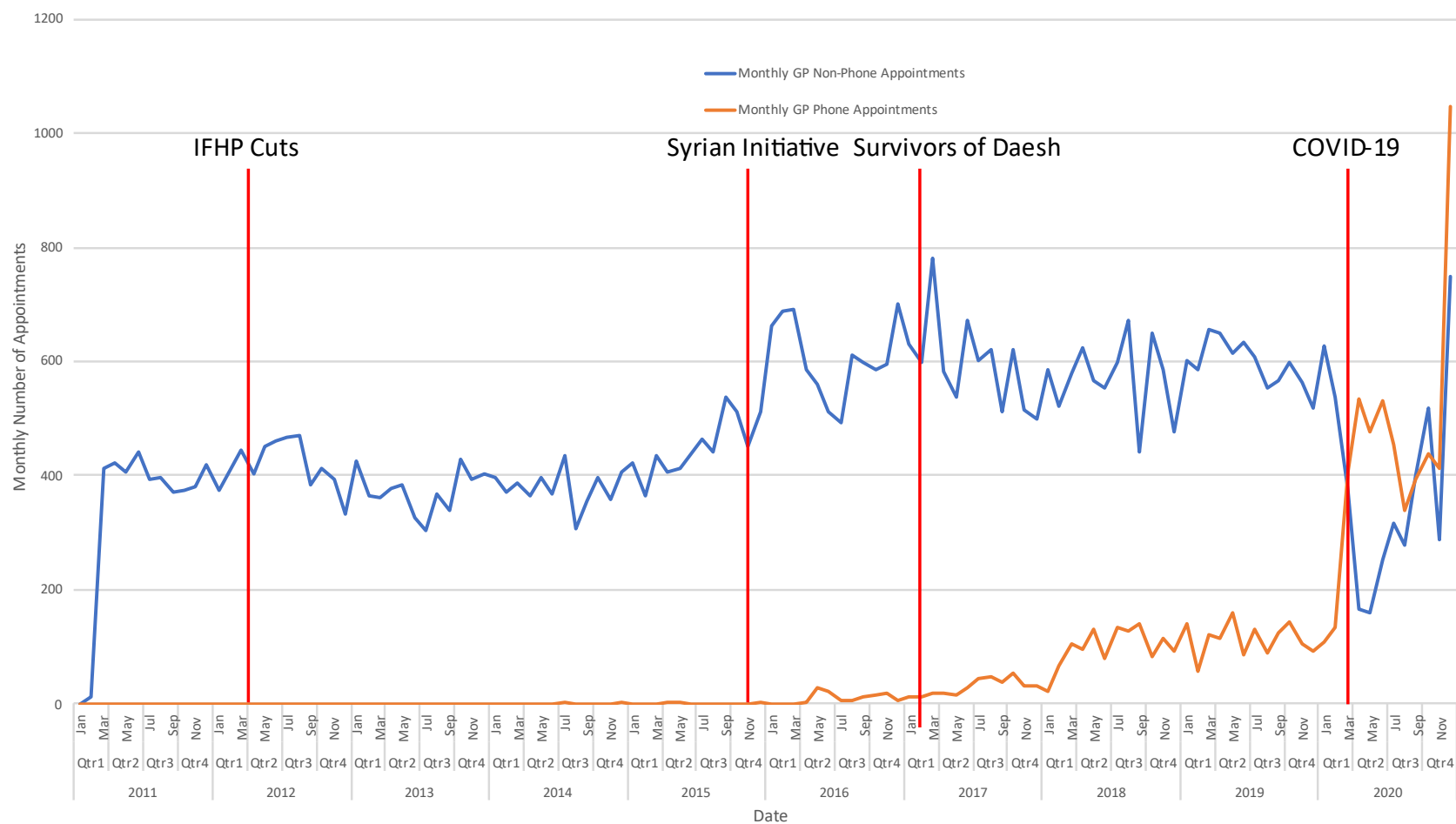


Figure 19. Direct and Indirect GP SLR Graph Discussed with Participants

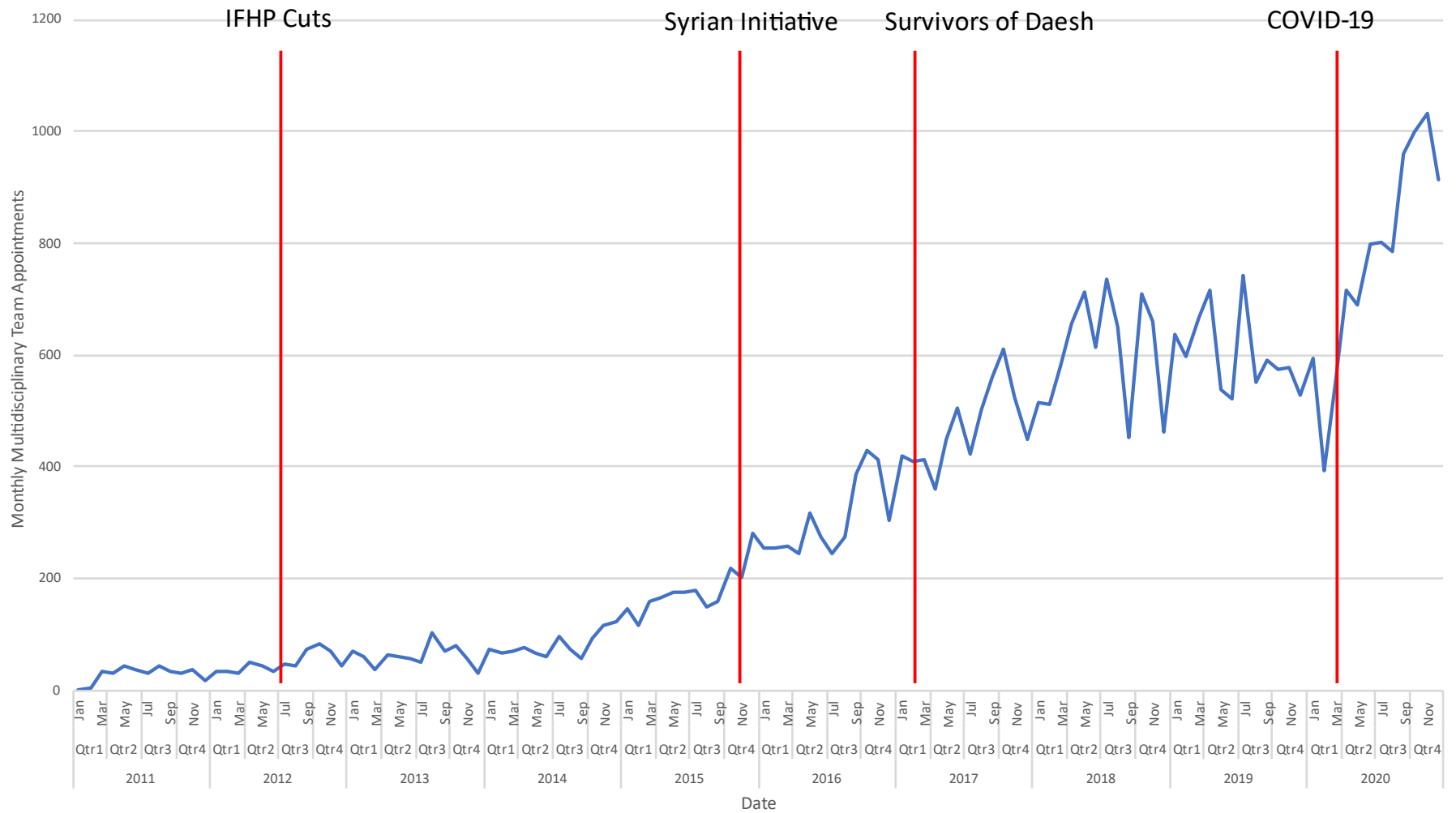


Figure 20. Basic MDT SLR Graph Discussed with Participants

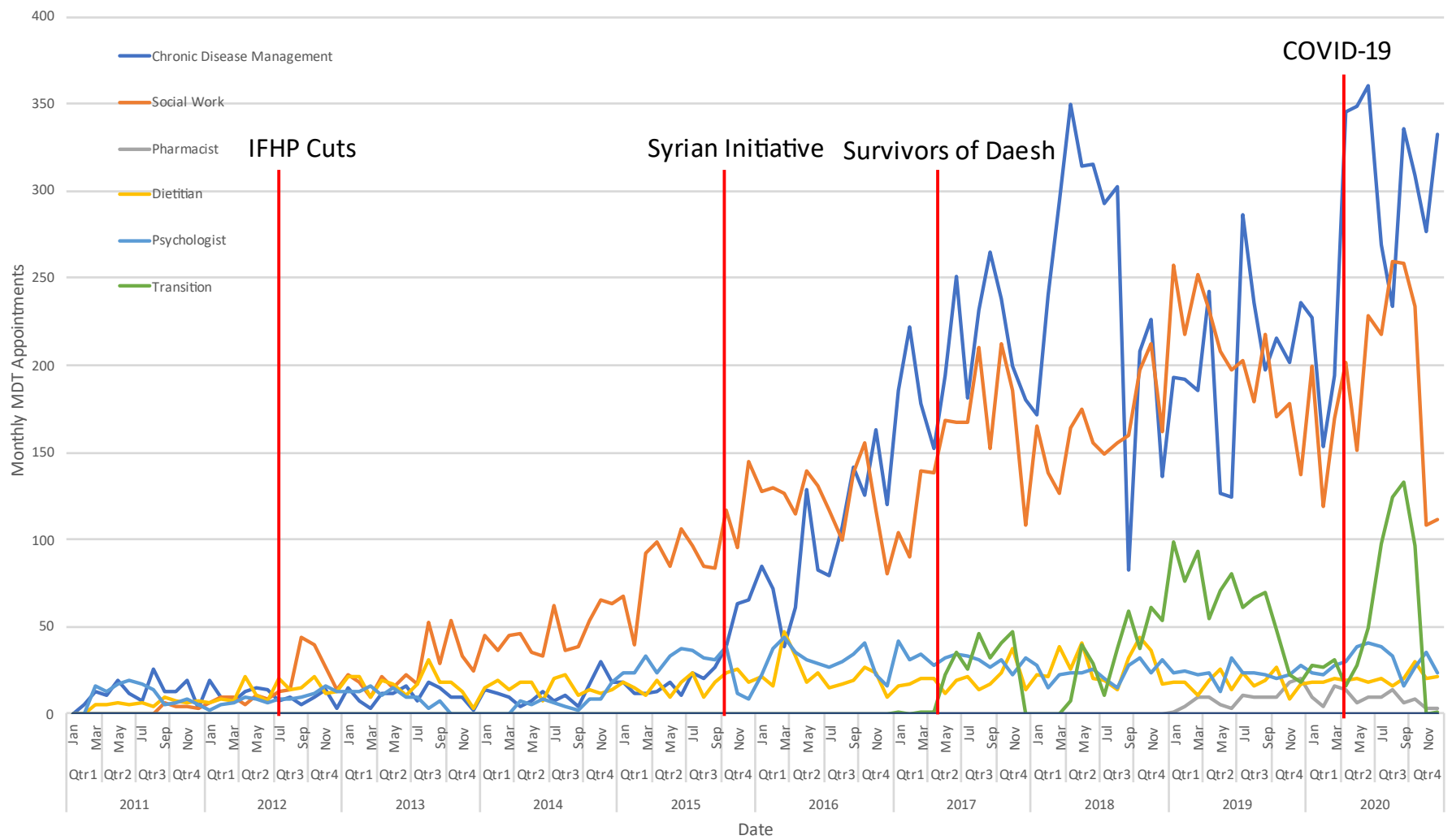


Figure 21. SLR Graph of MDT by Type Discussed with Participants

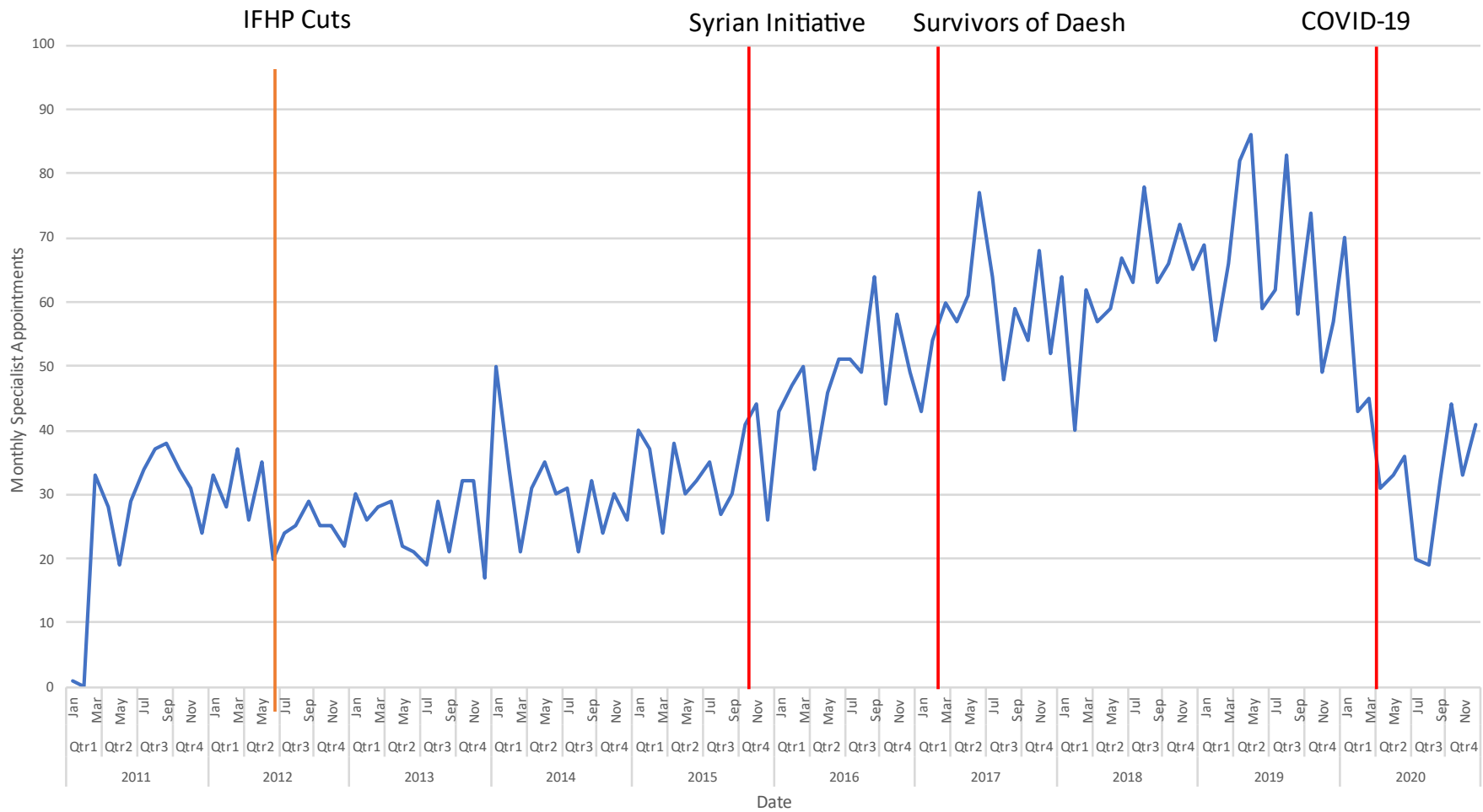


Figure 22. Basic Specialist SLR Graph Discussed with Participants

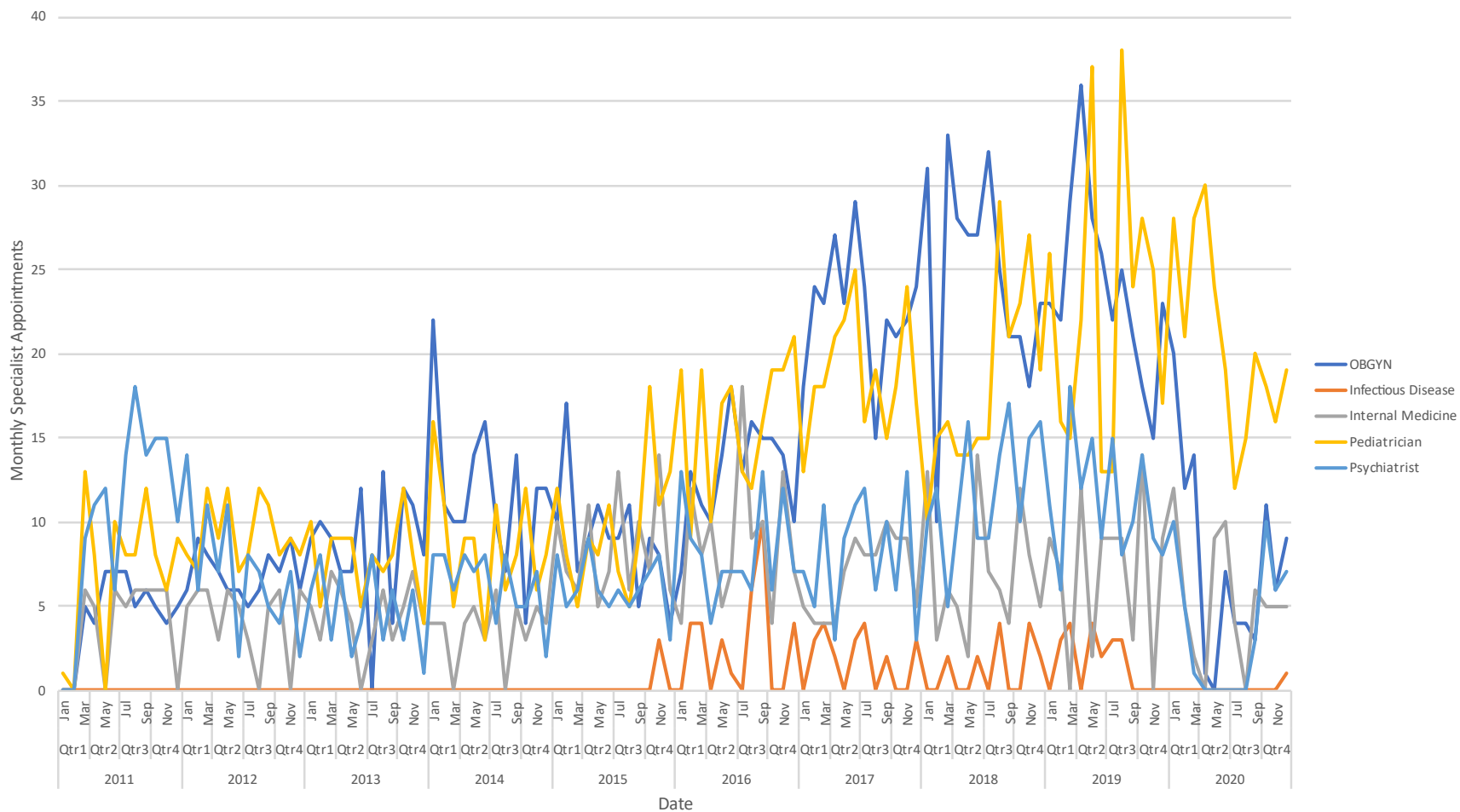


Figure 23. SLR Graph of Specialists by Type Discussed with Participants



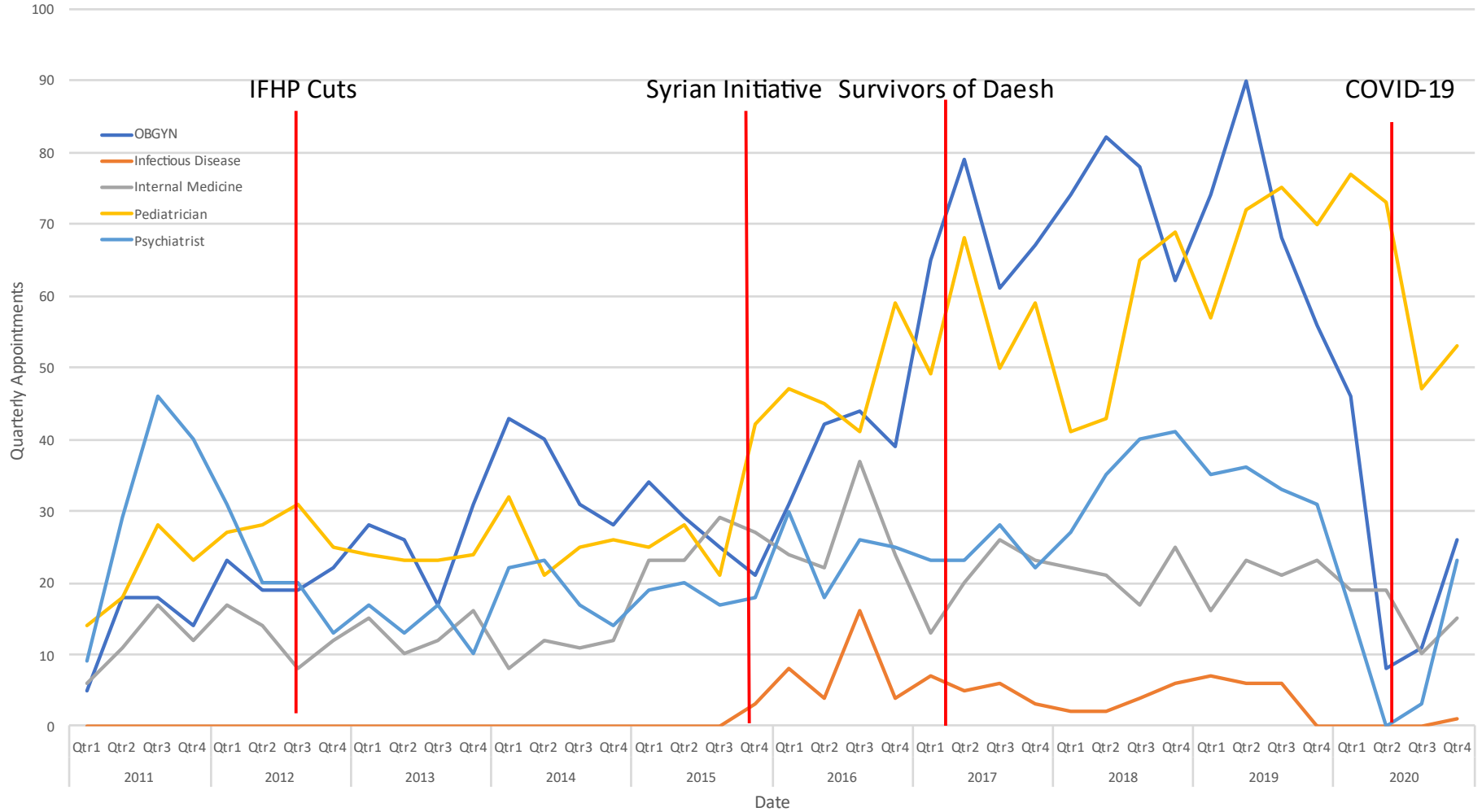


Figure 24. SLR Graph of Specialists by Type per Quarter Discussed with Participants

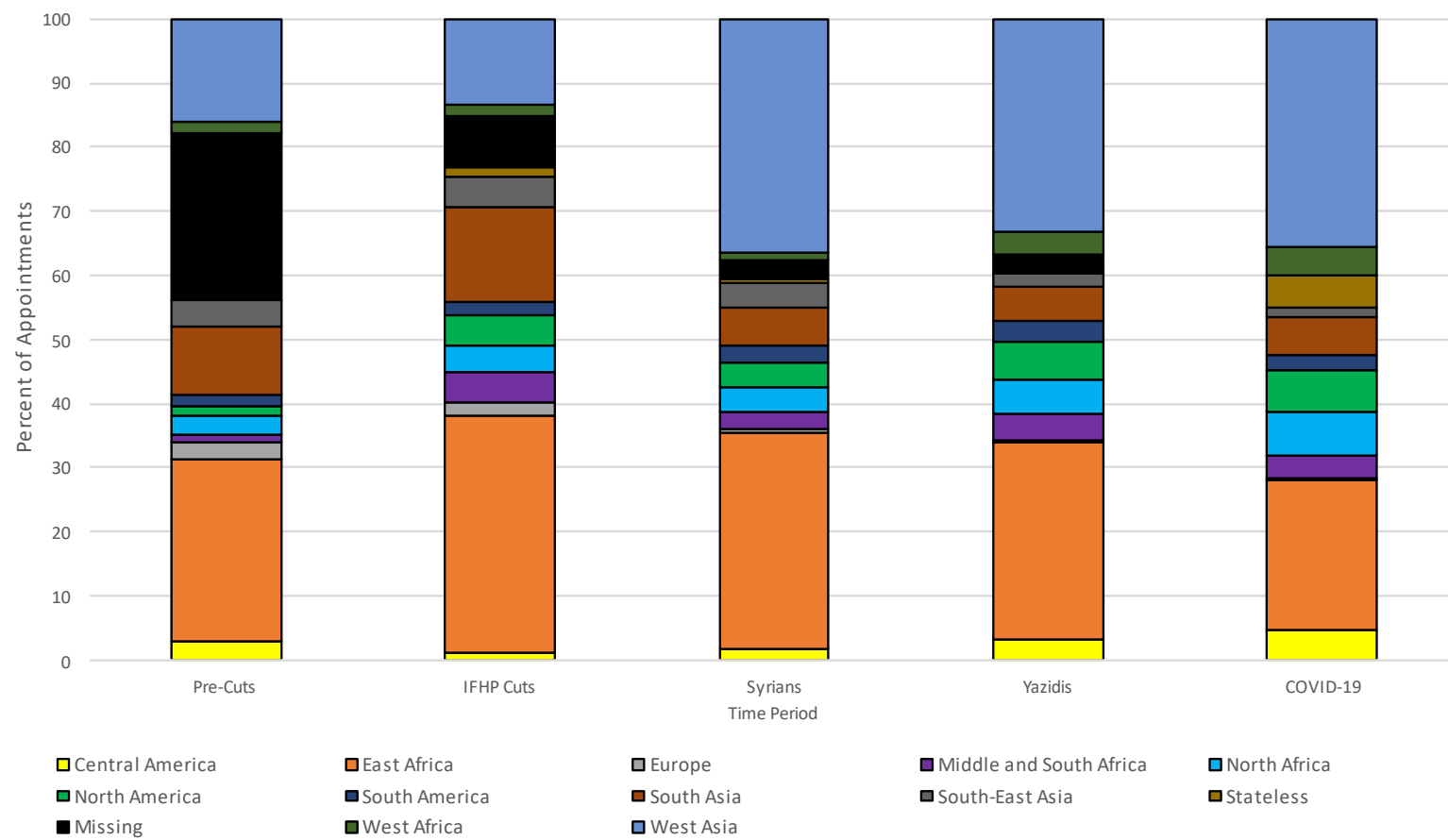


Figure 25. Patient Region of Origin by Time Period

## Appendix C

Interview Guide (07-June-2022 Version)



**UNIVERSITY OF CALGARY**  
O'Brien Institute for Public Health



**Refugee Health YYC**

Decade of Turmoil:  
A Characterization of a Specialized Refugee Primary Health Care Clinic 2011-2020

### Interview Guide

Date: \_\_\_\_\_

Time: \_\_\_\_\_

Interviewer: Eric Norrie

### **Preamble to participants**

Thank you, [participant's name] for agreeing to participate in this interview. As you know, I am Eric. I am here today in the role of a mixed methods researcher conducting an interview for my thesis which aims to understand changes that occurred at the clinic from 2011 to 2020. My main objective is to understand the clinic as enduring through a series of health system upheavals. The graphs we'll be using to guide our discussion cover five time periods separated by four of these upheavals: the interim federal health program cuts beginning June 2012, the Syrian Resettlement initiative beginning November 2015, the Yazidis brought through the Survivors of Daesh Initiative beginning February 2017, and the COVID-19 pandemic beginning March 2020.

There are no right or wrong answers to these questions. I am interested in your perspective as a part of the clinic's leadership. The interview will take approximately between thirty to sixty minutes depending on how much information you would like to share. With your permission, I'd like to record the interview because I don't want to miss anything you say. Your responses will be kept confidential and I will de-identify the transcript I will create after recording. You may decline to answer any question or stop participating in the interview at any time and for any reason. Lastly, you may withdraw for any reason at any time within the first three months after the interview. May I turn on the recorder?

### **Interview questions and probes**

**Question 1:** Hi [participant's name], I was hoping we could we start with a short introduction, can you tell us what years did you work associated with the clinic?

- Potential probes: what role or roles did you have?

**Question 2:** I've put in chat the graphs I sent you before this interview.

As you know, for each of these the X axis is the Date, and the Y axis is the number of monthly appointments, with a spline at each of the aforementioned health system upheavals.

I'll give you a few minutes to look at each so you can decide which you're most interested in, that you have experience with. Let me know if you have any questions about them. After you've taken a look at them we can proceed with the interview.

2A. Overall, what story do you see emerging from the graphs?

2B. Is there a specific graph or graphs you'd like to discuss?

- If no specific graph then use all appointments graph.

2C. What do you think of the way I've separated these time periods here?

Probe: Are there any you think I'm missing?

**Question 3:** Which time periods do you most want to discuss during our interview so I can properly pace this discussion?

**Question 4:**

For [Time Period] :

- How did it feel, tell me about your experience during this time?
  - Potential probe: discuss any similarities or differences between your experience and the graph.
  - Potential Probe: Is there anything you see as significant during this time that isn't emerging from the graphs.
- What were the success stories during this period?
- What was challenging during this time?
- How did the clinic adapt to challenges that arose?

Is there anything specific about this period you'd like to discuss before we move on:

**Question 5:** What suggestions do you have to prepare for future upheavals.

**Question 6:** So, wrapping up, I'd like to ask some quick questions to get your demographic information. In short phrases how would you describe your:

- Ethnicity
- Gender identity
- Sex
- Age/DoB

**Question 7:** Is there anything else that you'd like to share?

**Conclusion:**

If you need to contact me you may reach me by email, [eric.norrie2@ucalgary.ca](mailto:eric.norrie2@ucalgary.ca). You may also reach Refugee Health YYC through our website, [www.refugeehealthyy.ca](http://www.refugeehealthyy.ca)

And with that, we'll conclude the interview, I'm going to turn off the recording and I'll transcribe this data sometime this week so that I'm working with the text data rather than the recording for anonymity purposes.