**Mental health care use for non-psychotic conditions by immigrants and refugees in Ontario, Canada**

Ms. Anna Durbin is a PhD candidate in the Institute of Health Policy, Management and Evaluation at the University of Toronto, Toronto, Ontario Email: anna.durbin@gmail.com

Dr. Elizabeth Lin is an Assistant Professor at the Department of Psychiatry at the University of Toronto and a scientist in the Provincial System Support Program, Centre for Addiction and mental health, Rm T314, 33 Russell Street, Toronto, ON M5S 2S1. Telephone 416535-8501, x 4102, fax 416-979-4703, e-mail elizabethbetty.lin@camh.ca

Dr. Rahim Moineddin is an Associate Professor at the Department of Family and Community Medicine

of at the University of Toronto and a Scientist at Institute of Clinical Evaluative Sciences.

Telephone (416) 946-5860. Email: [rahim.moineddin@utoronto.ca](mailto:rahim.moineddin@utoronto.ca)

Dr. Leah S. Steele is an Assistant Professor in the Department of Family and Community Medicine at the University of Toronto and a scientist in the Department of Family and Community Medicine and Keenan Research Institute of the Li Ka Shing Knowledge Centre at St. Michael’s Hospital, Toronto, Ontario. She is an Adjunct Professor at the Institute of Clinical Evaluative Sciences, Sunnybrook Hospital, Toronto, Ontario. Email: [lssteele@gmail.com](mailto:lssteele@gmail.com)

Dr. Richard H. Glazier is a Professor in the Department of Family and Community Medicine at the University of Toronto and St. Michael’s Hospital. He is also a Scientist at the Keenan Research Unit of the Li Ka Shing Knowledge centre and the Director of Population Health at the Institute of Clinical Evaluative Sciences, Sunnybrook Hospital, Toronto, Ontario. Email: [rick.glazier@ices.on.ca](mailto:rick.glazier@ices.on.ca)

**Criteria for authorship:**

Each of these authors:

1. made substantial contributions to: the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work;
2. drafting the work or revising it critically for important intellectual content;
3. has given a final approval for this version to be published; and
4. has agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

**Funding:**

This study was supported by the Institute for Clinical Evaluative Sciences (ICES), which is funded by an annual grant from the Ontario Ministry of Health and Long-Term Care (MOHLTC). The opinions, results and conclusions reported in this paper are those of the authors and are independent from the funding sources. No endorsement by ICES or the Ontario MOHLTC is intended or should be inferred.

**Corresponding author:**

Anna Durbin

Master of Public Health; PhD candidate, Institute for Health Policy, Management and Evaluation, University of Toronto

[Anna.durbin@gmail.com](mailto:Anna.durbin@gmail.com)

(416) 783 7797

**ABSTRACT**

**Background.** Most Canadian newcomers are admitted in one of the following visa classes: 1) Economic/business–persons with needed skills; 2) Family reunification-family of Canadians or permanent resident; and 3) Refugees-persons in need of protection. The latter group reportedly has a greater risk of anxiety disorders and depression, but service use practices are not known. This study compared service use for non-psychotic mental disorders by newcomers in different visa classes and sex groups to long term residents in Ontario.

**Methods.** This population-based cross-sectional study linked several health service use databases to the Ontario Citizenship and Immigration Canada database. Mental health service use outcomes were visits to: 1) primary care physicians, 2) psychiatrists, and 3) emergency department visits or hospital admissions. The sample included recent immigrants (less than five years) who had arrived in Ontario from 2002 to 2007 (n=359,594). Service use by immigrants in different visa classes was compared to use by age and sex matched long term residents (i.e., Canadian-born persons or immigrants from pre-1985). For each of the three outcomes, likelihood of access and intensity of use was examined using conditional logistic regression models and negative binomial models, respectively. Models were stratified by visa class and sex.

**Results.** Compared to long term residents, refugees were more likely (Males--odds ratio:1.14, 95% confidence interval 1.09,1.19) or as likely (Females-1.04, 95% confidence interval 1.00,1.09) to use primary care, while economic and family class newcomers were less likely to use primary care. All immigrant visa class groups were less likely to use psychiatry or hospital services, and used less of all three service types than long term residents.

**Interpretation.** Recent newcomers in all visa classes generally used less mental health care for non-psychotic disorder than long term residents. One exception was that refugees were more likely than long term residents to access primary care.

**Text word count:** 3110

**Abstract word count:** 302

**Tables:** 1

**Figures:** 2

**References:** 80

**Key words:** Health care use, hospital care, immigrants, mental health, primary care, psychiatry, refugees, service use, sex, visa class

**INTRODUCTION**

Policy debates on immigrants and health insurance are ongoing internationally. Advocates of reduced health coverage for groups of immigrants often cite concerns that immigrants over-use services, including mental health services. (1-3) Over the past half-decade legislation restricting health coverage for specific immigrant groups has been passed in countries such as England and Wales, Spain, Australia. (4-6) These policy changes have largely not been based on evidence since there is a paucity of empirical research on immigrant mental health service use patterns, particularly in Canada. (7, 8) Moreover immigrants are often studied as one group, despite wide variation in many areas, such as visa class. (9) Research on immigrant status and pathways to care is less developed in Canada compared to other countries that have even lower percentages of immigrants, such the United Kingdom and the USA. (10-13)

Most Canadian newcomers are admitted in one of the following visa classes: 1) economic/business; 2) family reunification; and 3) refugees (See Appendix A for Statistics Canada visa class definitions and categories). Economic immigrants are selected based on their ability to become economically established, and must meet stringent admission criteria for health and occupational skills to help them contribute to the economy post migration. The other two classes (family reunification immigrants and refugees) are exempt from these criteria. Family reunification immigrants are selected because they are the relatives of Canadians and permanent residents. Refugees are admitted since they are in need of protection, often after suffering unusual stresses and traumas in past countries (e.g., war, torture, and natural disasters). (9, 14)Differences in context of exit, entrance conditions and re-settlement experiences across visa classes may affect post migration health and health service use. (15) For example, refugees may be more likely than newcomers in other visa classes to experience socioeconomic disadvantage and worries about their family in their previous country, and have limited social support. (16-20) Despite this variation, there is a lack of literature documenting health care use patterns across visa classes. Improved information would optimally inform debates about immigration policy and provision of health services post migration.

The present study aims to: 1) describe characteristics of adult recent immigrants to Ontario by visa class and sex, and 2) compare mental health service use (primary care visits, psychiatry visits and hospital use) for non-psychotic mental disorders by recent immigrants in different visa classes and sex groups to matched long term residents (LTRs) in Ontario. Given the potential for economic immigrants to have lower health needs on arrival, we hypothesized that immigrants in the economic class would have lower use of all mental health services than LTRs. Given the potential for family reunification immigrants and refugees to have greater health needs but also face more barriers to access, we hypothesize their use of mental health hospital care would be the same or higher than LTRs.

This study was conducted in a single payer health care system where access to physician and hospital services is not directly affected by ability to pay.

**METHODS**

This population-based cross-sectional study uses administrative data accessed through a research agreement with Ontario’s Ministry of Health and Long-Term Care. The protocol was approved by Research Ethics Boards at the University of Toronto and Sunnybrook Health Sciences Centre in Toronto. Analyses were conducted using SAS version 9.3 (SAS Institute Inc., Cary, NC, USA).

**Data Sources**

Immigrants were identified from the Ontario Citizenship and Immigration Canada (CIC) database, which contains individual-level demographic information recorded on the date of issue of the landing visa for Ontario’s permanent residents with landing dates from 1985-2010.  The CIC includes demographic and immigration characteristics including age, sex, visa category, and education level and language speaking abilities.  Ontario residents are eligible for the province’s single universal health care plan, Ontario Health Insurance Plan (OHIP), and they were determined from Ontario’s health care registry (Registered Persons Database), which includes their age, sex and postal code. OHIP insures medically necessary care delivered by physicians and in hospital settings without user fees, co-payments or deductibles. Immigrants are eligible for this coverage after residing in Ontario for 3 months. For refugees this time is more variable, and often longer. Physician visits were determined from the OHIP database which identifies type of physician visited using specialty codes. Hospital admissions were determined from the Canadian Institute for Health Information’s Discharge Abstract Database and the Ontario Mental Health Reporting System. Mental health emergency department visits were determined from the National Ambulatory Care Reporting System. To ascertain emergency department data prior to 2002, we used the location variable in OHIP claims data which identifies services delivered in the emergency department. Urban residence and income quintile were identified using Statistics Canada’s Postal Code Conversion File to link patients’ postal codes to census data. (21) These databases were linked in an anonymous fashion using encrypted individual identifiers.

**Study populations**

The immigrant sample was drawn from individuals in the CIC who arrived from 2002 to 2007. This period was chosen because starting in 2002 Canada eliminated the burden-of-illness barrier for refugees who fled their countries of origin because of well-grounded fears of persecution. (22) The consequence of this policy change was that Canada could no longer choose not to admit specific refugees. Other eligibility requirements for the immigrant sample included being Ontario residents with OHIP coverage, aged 18-105 years, who lived in metropolitan areas. Rural populations were excluded as most immigrants settle in urban areas. (23) We also excluded those who lived in more than one country prior to immigration to Canada, whose country of origin could not be classified, who were in the ‘other’ visa class (~<5%), (19) or had missing data on income quintile.

Eligible LTRs were Ontario residents with OHIP coverage, aged 18-105 years, who lived in metropolitan areas, and were not listed in the CIC. LTRs were mostly Canadian-born, and also included newcomers who settled in Ontario prior to 1985.

Only those whose intended province of settlement was Ontario were included in the available CIC data. To avoid misclassifying immigrants who were not in the Ontario CIC as LTRs, individuals not in the CIC who first became eligible for OHIP after 1993 were excluded from the study.

The immigrant sample was matched to the LTR sample 1:1 on sex and birthdate. Our final sample included 359, 594 immigrants (males: 163,268; females: 196,326) of whom 99.9% were matched to LTR pairs.

**Independent variables**

*Visa class.* Most people are admitted in one of the following classes: 1) Economic class and business class are persons who bring needed skills; 2) Family reunification class are spouses, common-law partners, dependent children, and parents of Canadians or permanent resident; and 3) Refugees are persons in need of protection (See Appendix A).

*Sex.* All analyses were stratified by sex because females are more likely to experience depressive symptoms (24-26) and more likely use mental health services. (24, 26-29) In addition, while males are more commonly admitted as economic class immigrants, women often migrate as dependents of male relatives (e.g., in the family reunification class).

*Income quintile.* Neighbourhood income quintile was included as a covariate because immigrants are over-represented in disadvantaged areas, (9, 30, 31) which, in turn, are associated with lower access to mental health care. (32-34)

**Service Use Outcomes**

For immigrants and their age-matched LTRs, three mental health service use outcomes were measured over the same five-years following the immigrant’s eligibility for OHIP: 1) visits to primary care physicians, 2) visits to psychiatrists, and 3) a composite of ED visits or hospital admissions. Short-term mental health admissions (i.e., 72 hours or less) were excluded because of limitations in the available diagnostic information. The codes in Appendix B were used to identify non-psychotic mental health primary care visits. The codes have been used in previous studies and have shown a sensitivity of 81% and a specificity of 97% for identifying mental health visits to primary care physicians. (35, 36)    The OHIP database records one diagnostic code per visit. Emergency departments and hospital admission databases allow up to 16 and 25 diagnostic codes respectively, with the first being the diagnosis most responsible for the visit or admission. In the primary analysis ED visits and hospital admissions were included if any diagnosis field was related to non-psychotic mental disorders based on International Classification of Disease codes (See Appendix B). A sensitivity analysis examined hospital use where only the most responsible diagnosis was a mental health code (See Appendix C).

**Statistical Analysis**

Demographic characteristics were calculated for immigrants in different visa class groups and for LTRs, stratified by sex.

We modelled access (i.e., any use) using conditional logistic regression models (37) and utilization among those with any access using negative binomial models with Generalized Estimating Equations (used because of matched data). We selected negative binomial models instead of other count models after calculating predicted probabilities and comparing them to observed data. Negative binomial models best fit the data and demonstrated that the frequencies of zeroes were not beyond the fitted regression models. (38)

Sex-stratified models, adjusted for income quintile, compared care use by newcomers to use by their age-matched LTRs. These models were run for each of the following visa class groups: economic immigrants, family reunification immigrants, and refugees.

**RESULTS**

Among immigrants in this study (n=359,673), most entered under economic class (47.5%), with 38.2% admitted as family reunification immigrants and 14.3% admitted as refugees. Compared to females, males were more likely to enter under the economic class (53.2% versus 42.7%) and refugee class (16.1% vs 12.8%). Women were more likely to enter under family reunification class (44.5% vs 30.6%).

Those who entered in the economic class were more commonly male and had more than high school education (Tables 1a, 1b). Family reunification immigrants were generally older, female, and least likely to speak English or French. Refugees were most commonly in the most disadvantaged income quintile. Compared to immigrants, LTRs were more commonly in the most affluent income quintile.

After adjusting for income quintile, immigrants of all visa classes and sexes were generally less likely than their matched LTRs to use all types of mental health services (primary care, psychiatry, and hospital care)(Figure 1). The exceptions were male refugees, who were more likely to use primary care than LTRs (1.14 (1.09, 1.19)) and female refugees, whose likelihood of primary care use was not statistically different from LTRs (1.04 (1.00, 1.09)).

Regarding intensity of use, immigrants in all visa classes used less of each service than LTRs (Figure 2). For primary care, estimates of intensity of use were highest for refugees and lowest for economic class immigrants. For psychiatric care and hospital care, estimates were similar across visa class groups.

In the sensitivity analysis, results were compared for when mental health hospital admissions were defined using only most responsible diagnosis (sensitivity analysis) versus admissions in which mental health were responsible for any, diagnosis (primary analysis). Sensitivity analysis results were mostly consistent with all diagnoses (primary analysis). While all odds ratios were lower than those in the primary analysis, as with the primary analysis, all immigrant visa class groups were significantly different from LTRs (all p-values< 0.002). Rate ratios for intensity of visits were also similar to the primary analysis for most groups, with two exceptions -- male economic class immigrants: 0.90 (0.78, 1.04) p=0.170; male family class immigrants: 0.80 (0.61, 1.06) p=0.135) (See Appendix C for results of the sensitivity analysis.)

**DISCUSSION**

This study found that recent immigrants in all visa class groups generally used less mental health care than LTRs. No visa class group had greater use (access or intensity) of psychiatry or mental health hospital care – the most costly, specialized mental health service - than LTRs. The present finding that refugees had an increased or similar likelihood of use of primary care than LTRs may be viewed as positive given that primary care is generally the preferred first line of mental health services. For example, stepped care models advise earlier use of delivery of less costly, less intense community-based services, such as primary care. (39, 40) Moreover, although this study could not assess mental health need, this group likely had more mental health need than immigrants in other groups. It is documented that compared to other immigrant groups refugees have elevated risks of non-psychotic disorders including anxiety disorders (mainly post-traumatic stress disorder) and depression. (18-20, 41, 42)

Higher levels of need among refugees likely contribute to the higher levels of initial access of primary care visits observed among males and females in this visa class. However, if need is higher, it is somewhat surprising there was not also greater use of specialty mental health services by this group. This pattern may reflect barriers to access and/or a poor understanding of specialty mental health care in Ontario. (43-50) For example in non-industrialized countries, mental health services are less numerous than in industrialized countries. They can also be more stigmatized and invasive. (51) In parts of Africa mental illness is often linked to spiritual attacks and ‘treatment’ can include physically harmful tactics (e.g., beating, cutting, starvation, etc.) (52-54)  It is also possible that refugees feel less entitled than others to express negative opinions of care, or to advocate for referrals from primary care physicians to specialist care (55) who are often hard to access. (56) Future research should examine the follow-up of refugees who present in primary care with mental health needs after they accessed primary care.

This study found that economic class immigrants used less care than LTRs. Their estimates of use were generally the lowest among all visa class groups. This is expected given that economic class immigrants usually arrive with a health advantage after meeting screening criteria. In Canada, eligibility for economic class immigrants is linked to employability, education, facility in official languages, and health.[[1]](#footnote-2) (57) Individuals can be deemed inadmissible if there is potential for them to cause, “excessive demand on health or social services.” (22) In addition, this group also includes higher percentages of males. Male immigrants and LTRs routinely who use less care than females.(58) This is one reason why it is recommended that research on mental health and care use address females separately from their male counterparts, as was done in the present study. (59)

The distribution of economic class immigrants and family class immigrants across income quintiles was generally similar, although economic class immigrants were more likely to be the in the least affluent quintile. While admission for economic class immigrants is linked to education level, experience, and arranged employment, these factors often do not equate with immediately residing in an affluent area. In fact, even though immigrants who have been in Canada for five years or less tend to be better educated than native-born persons, finding employment can be challenging -- their unemployment rate is significantly higher than that of the Canadian-born population (12.7% versus 7.4%). (60, 61) In contrast, for family class immigrants admission is linked to the sponsor’s financial fitness and the immigrant’s relationship to the sponsor. Sponsors for immigrants admitted in this class commit to assisting the individual until they become successfully established. In cases where the immigrant is admitted in a sub-class that requires them to cohabitate with their sponsor (i.e., for spouses, common-law relationships, or live-in care-givers), (22, 62) their income quintile is the same as their sponsor.

The high rates of English and French language speaking abilities observed among refugees may be driven mostly by two factors. First, the majority of refugees apply in the ‘landed in Canada’ refugee category, meaning they applied while already in Canada (Males: 76.0% of refugees, Females: 64.7% of refugees). Accordingly, they may have learned some English or French prior to this application to CIC. Second, many refugees come from former British colonies (e.g., Nigeria, Ghana, and Kenya) or French colonies (e.g., [Algeria](http://en.wikipedia.org/wiki/French_Algeria), [Morocco](http://en.wikipedia.org/wiki/French_protectorate_of_Morocco), Guinea). (63) Individuals in these countries tend be educated in English or French since most curricula were developed before countries become politically independent. (64)

**Limitations.** Explanations of observed findings were limited by the absence of some desired data (e.g., on ethnicity, and mental health need/severity). This report was limited to non-psychotic conditions, and its findings cannot be extrapolated to psychoses.

Important sources of support, for example from non-physician counsellors or from religious leaders, (65-67)could not be measured. Similarly, use of Community Health Centres (CHCs) in Ontario was not included. Although CHC clients have direct access to mental health community-based services without physician referrals, (68) CHCs serve a relatively small proportion of the Ontario population so their exclusion likely did not significantly bias results.

A related limitation is that mental health service use was only tracked when persons were covered by OHIP. For immigrants this coverage begins after 3 months in Ontario. However, for refugees this period is often longer, (69) meaning that for refugees the first 5 years of OHIP coverage may not immediately follow their arrival in Ontario. However, according to the healthy immigrant effect, differences between immigrants and non-immigrants diminish with increased time in the host country, and immigrant use of services increases. If the same applies to refugees, the proposed studies may under-estimate differences between recent refugees and LTRs**.**

The CIC does not include immigrants who entered Ontario from a different province; refugee claimants who have not been accepted or are appealing; other temporary residents/workers/visitors; or ‘non-status’ residents. In addition, this study analyses did not account for heterogeneity within visa classes. Future research should examine immigrants excluded from this study using different data sources, and examine drivers of heterogeneity within visa class groups.

In spite of these limitations, the study has a number of strengths. The use of population-level health services data linked to immigration data allowed examination of mental health care use by immigrants in different visa groups relative to standard comparators (LTRs). Matching immigrants to LTRs on matched on age and sex helped control for two important sources of variation in mental health care use. In addition, this study used standard inclusion criteria, methodology, and outcome definitions across different visa classes. Use of administrative data sources distinguished this study from most work on immigrant mental health that uses survey-derived data. In addition to including missing information, self-report data can be affected by recall, reporting and selection biases. (70-73) Under-reporting of service use is particularly common among individuals with mental health disorders. (74, 75) Another strength was that this study focused on immigrants within their first five years after arrival. During this period immigrants routinely deal with re-settlement challenges (e.g. missing country of origin, underemployment, and language difficulties).

**Conclusion**

While examining immigrants by visa class, this study found no evidence of excessive use of care for non-psychotic mental health conditions by recent newcomers in any visa class. These findings address a knowledge gap related to use of health care by immigrants in different visa class groups, and particularly refugees–an issue that has garnered policy attention worldwide. (2, 5-6, 76-78)

References

1. Chavez LR. Undocumented immigrants and their use of medical services in Orange County, California. *Soc Sci Med* 2012;74(6):887-93.

2. Bhui K, Audini B, Singh S, Duffett R, Bhugra D. Representation of asylum seekers and refugees among psychiatric inpatients in London. *Psychiatr Serv* 2006;57(2):270-2.

3. Ortega AN, Fang H, Perez VH, Rizzo JA, Carter-Pokras O, Wallace SP, Gelberg L. Health care access, use of services, and experiences among undocumented Mexicans and other Latinos. *Arch Intern Med* 2007;167(21):2354-60.

4. Australian government. <http://www.immi.gov.au/skilled/457-health-insurance-faq-visa-holder.htm> [Internet].

5. BBC News. Migrants to face NHS emergency care charges in England [Internet]. Available from: <http://www.bbc.com/news/health-25529636>

6. Benítez I. Health Care for Immigrants Crumbling in Spain [Internet]. Available from: <http://www.ipsnews.net/2013/05/health-care-for-immigrants-crumbling-in-spain/>

7. Yu S, Ouelle E, Warmington A. Refugee integration in Canada: A survey of empirical evidence and existing services. *Refuge:* *Canada's Periodical on Refugees* 2007;24(2):17-34.

8. Vasilevska B, Simich L. A review on the international literature on refugee mental health practices. [Internet].

9. Beiser M. The health of immigrants and refugees in Canada*. Can J Public Health* 2005;96 Suppl 2:S30-44.

10. Bao Y, Fisher J, Studnicki J. Racial differences in behavioral inpatient diagnosis: Examining the mechanisms using the 2004 Florida inpatient discharge data. *J Behav Health Serv Res* 2008;35(3):347-57.

11. Commander MJ, Cochrane R, Sashidharan SP, Akilu F, Wildsmith E. Mental health care for Asian, black and white patients with non-affective psychoses: Pathways to the psychiatric hospital, in-patient and after-care. *Soc Psychiatry Psychiatr Epidemiol* 1999;34(9):484-91.

12. Cole E, Leavey G, King M, Johnson-Sabine E, Hoar A. Pathways to care for patients with a first episode of psychosis. A comparison of ethnic groups. *Br J Psychiatry* 1995;167(6):770-6.

13. Merritt-Davis OB, Keshavan MS. Pathways to care for African Americans with early psychosis. *Psychiatr Serv* 2006;57(7):1043-4.

14. Citizenship and Immigration Canada. OP 6 Federal Skilled Workers – Applications received before February 27, 2008 [Internet]. Available from: http://www.cic.gc.ca/english/resources/manuals/op/op06-eng.pdf

15. Brown TN, Donato KM, Laske MT, Duncan EM. Race, Nativity, Ethnicity, and Cultural Influences in the Sociology of Mental Health. In: Handbooks of Sociology and Social Research; 2013; p. 255-276.

16. Bernardes D, Wright J, Edwards C, Tomkins H, Dlfoz D, Livingstone A. Asylum seekers' perspectives on their mental health and views on health and social services: Contributions for service provision using a mixed-methods approach. *International Journal of Migration, Health and Social Care* 2010;6(4):3-19.

17. Eisenbruch M. From post-traumatic stress disorder to cultural bereavement: Diagnosis of Southeast Asian refugees. *Soc Sci Med* 1991;33(6):673-80.

18. Hansson E, Tuck A, Lurie S, McKenzie K. Improving mental health services for immigrant, refugee, ethno-cultural and racialized groups: Issues and options for service improvement. [Internet]. Task Group of the Services Systems Advisory Committee, Mental Health Commission of Canada

19. Porter M, Haslam N. Predisplacement and postdisplacement factors associated with mental health of refugees and internally displaced persons: A meta-analysis. *JAMA* 2005 Aug 3;294(5):602-12.

20. Fazel M, Wheeler J, Danesh J. Prevalence of serious mental disorder in 7000 refugees resettled in western countries: A systematic review. *Lancet* 2005 Apr 9-15;365(9467):1309-14.

21. Kralj B. Measuring Rurality - RIO2008\_BASIC: Methodology and Results. [Internet]. Available from: <https://www.oma.org/Resources/Documents/2008RIO-FullTechnicalPaper.pdf>

22. Immigration and Refugee Protection Act (S.C. 2001, c. 27) [Internet]. Department of Justice Canada. 2011-06-30. Available from: <http://laws.justice.gc.ca/eng/acts/I-2.5/>

23. Creatore MI, Booth GL, Manuel DG, Moineddin R, Glazier RH. Diabetes screening among immigrants: A population-based urban cohort study. *Diabetes Care* 2012;35(4):754-61.

24. Piccinelli M, Wilkinson G. Gender differences in depression. Critical review. *Br J Psychiatry* 2000;177:486-92.

25. Muntaner C, Eaton WW, Miech R, O'Campo P. Socioeconomic position and major mental disorders. *Epidemiol Rev* 2004;26:53-62.

26. Bracke P. The three-year persistence of depressive symptoms in men and women. *Soc Sci Med* 2000;51(1):51-64.

27. Vasiliadis HM, Lesage A, Adair C, Boyer R. Service use for mental health reasons: Cross-provincial differences in rates, determinants, and equity of access. *Can J Psychiatry.* 2005;50(10):614-9.

28. Lin E, Goering P, Offord DR, Campbell D, Boyle MH. The use of mental health services in Ontario: Epidemiologic findings. *Can J Psychiatry* 1996;41(9):572-7.

29. Leaf PJ, Bruce ML, Tischler GL, Freeman DH,Jr, Weissman MM, Myers JK. Factors affecting the utilization of specialty and general medical mental health services. *Med Care* 1988;26(1):9-26.

30. Beiser M, Hou F, Hyman I, Tousignant M. Poverty, family process, and the mental health of immigrant children in Canada. *Am J Public Health* 2002;92(2):220-7.

31. Weiser M, Werbeloff N, Vishna T, Yoffe R, Lubin G, Shmushkevitch M, Davidson M. Elaboration on immigration and risk for schizophrenia. *Psychol Med* 2008;38(8):1113-9.

32. Steele LS, Glazier RH, Lin E. Inequity in mental health care under Canadian universal health coverage. *Psychiatr Serv* 2006 ;57(3):317-24.

33. Steele LS, Glazier RH, Agha M, Moineddin R. The gatekeeper system and disparities in use of psychiatric care by neighbourhood education level: Results of a nine-year cohort study in Toronto. *Healthc Policy* 2009;4(4):e133-50.

34. Houle J, Beaulieu M, Lesperance F, Frasure-Smith N, Lambert J. Inequities in medical follow-up for depression: A population-based study in Montreal. *Psychiatr Serv* 2010;61(3):258-63.

35. Steele LS, Glazier RH, Lin E, Evans M. Using administrative data to measure ambulatory mental health service provision in primary care. *Med Care* 2004;42(10):960-5.

36. Steele LS. Ambulatory mental health service use in an inner city setting: Measurement, Patterns and Trends [Dissertation]. Chapter 2, Measuring ambulatory mental health services using administrative data. [Doctoral]. University of Toronto; 2003 41 p.

37. McNutt LA, Wu C, Xue X, Hafner JP. Estimating the relative risk in cohort studies and clinical trials of common outcomes. *Am J Epidemiol* 2003;157(10):940-3.

38. Long, JS. Regression Models for Categorical and Limited Dependent Variables (pages 242-248). Thousand Oaks, California: Sage Publications; 1997.

39. National Institute for Health and Clinical Excellence. Stepped care models [Internet]. Available from: http://www.nice.org.uk/usingguidance/commissioningguides/cognitivebehaviouraltherapyservice/steppedcaremodels.jsp

40. Andrews G, Tolkien II team. Tolkien II: a needs-based, costed, stepped-care model for mental health services. [Internet]. Sydney, Australia: World Health Organization Collaborating Centre for Classification in Mental Health

41. Hermansson AC, Timpka T, Thyberg M. The mental health of war-wounded refugees: An 8-year follow-up. *J Nerv Ment Dis* 2002;190(6):374-80.

42. Marshall GN, Schell TL, Elliott MN, Berthold SM, Chun CA. Mental health of Cambodian refugees 2 decades after resettlement in the united states. *JAMA* 2005;294(5):571-9.

43. Perez C. Health status and health behaviour among immigrants. *Health Rep* 2002(13 (Suppl)):89-100.

44. Sanmartin C, Ross N. Experiencing difficulties accessing first-contact health services in Canada: Canadians without regular doctors and recent immigrants have difficulties accessing first-contact healthcare services. Reports of difficulties in accessing care vary by age, sex and region. *Healthc Policy.* 2006;1(2):103-19.

45. Newbold B. The short-term health of Canada’s new immigrant arrivals: Evidence from LSIC. *Ethn Health* 2009;14(3):315-36.

46. Chen J, Ng E, Wilkins R. The health of Canada’s immigrants in 1994-95. *Health Rep* 1996;7(4):33,45, 37-50.

47. Chen J, Wilkins R, Ng E. Health expectancy by immigrant status, 1986 and 1991. *Health Rep* 1996;8(3):29,38(Eng); 31-41(Fre).

48. Woloshin S, Schwartz LM, Katz SJ, Welch HG. Is language a barrier to the use of preventive services? J *Gen Intern Med* 1997;12(8):472-7.

49. Ali JS, McDermott S, Gravel RG. Recent research on immigrant health from statistics Canada’s population surveys. *Can J Public Health* 2004 ;95(3):I9-13.

50. Wu Z, Schimmle CM. The healthy migrant effect on depression: Variation over time? *Canadian Studies in Populatio*n 2005;33(2):271-95.

51. Vlassoff C. Gender differences in determinants and consequences of health and illness. *J Health* *Popul Nutr* 2007;25(1):47-61.

52. Alem A. Human rights and psychiatric care in Africa with particular reference to the Ethiopian situation. *Acta Psychiatr Scand* 2000;399:93-6.

53. Read UM, Adiibokah E, Nyame S. Local suffering and the global discourse of mental health and human rights: An ethnographic study of responses to mental illness in rural Ghana. *Global Health* 2009;5:13,8603-5-13.

54. Thornicroft G, Tansella M. Components of a modern mental health service: A pragmatic balance of community and hospital care: Overview of systematic evidence. *Br J Psychiatry* 2004;185:283-90.

55. Evans GM. The built environment and mental health. *Journal of Urban Health* 2003;80:536–555.

56. Goldner EM, Jones W, Fang ML. Access to and waiting time for psychiatrist services in a Canadian urban area: A study in real time. *Can J Psychiatry 2011*;56(8):474-80.

57. Gushulak BD, Pottie K, Roberts JH, Torres S, Desmeules M, on behalf of the Canadian Collaboration for Immigrant and Refugee Health. Migration and health in Canada: Health in the global village. *CMAJ* 2011;183(12):E952-8.

58. Durbin A, Steele LS, Moineddin R, Lin E, Glazier RH. Examining the relationship between material deprivation and mental health service use for recent male and female immigrant and non-immigrants in Ontario, Canada. (In submission)

59. Khanlou N. Immigrant Mental Health Policy Brief. Strategic Initiatives and  Innovations Directorate (SIID) of the Public Health Agency of Canada [Internet]. Available from: <http://w.ocasi.org/downloads/Immigrant_Mental_Health_Policy_Brief_Final.pdf>

60. Lockhead C. The transition penalty: unemployment among recent immigrants to Canada. CLBC Commentary. Ottawa: Canadian Labour and Business Centre [Internet].

61. Martin Prosperity Institute. Recent immigrants are the most educated and yet underemployed in the Canadian Labour Force [Internet].

62. Government of Canada. Immigration and Refugee Protection Regulations (SOR/2002-227) [Internet]. Available from: <http://laws-lois.justice.gc.ca/eng/regulations/sor-2002-227/FullText.html>

63. Tadesse S. The education of African refugee preschoolers: Views of parents toward appropriate practices, experiences of parent/teachers and encouragement/barriers to greater parent involvement. Dissertation abstracts international (UMI no. 3297054). 2007

64. Association for the Development of Education in Africa (ADEA). Optimizing Learning and Education in Africa – the Language Factor. A Stock-taking Research on Mother Tongue and Bilingual Education in Sub-Saharan Africa [Internet]. Available from: <http://www.adeanet.org/adeaPortal/adea/downloadcenter/Ouga/B3_1_MTBLE_en.pdf>

65. Snowden LR. Ethnic minority populations and mental health outcomes. In: Staeinwachs DM, Flynn LM, editors. *New Directions for Mental* *Health Services*. Jossey-Bass Inc: San Fransisco; 1996; p. pp 78–87.

66. Wells KB, Golding JM, Hough RL, Burnam MA, Karno M. Acculturation and the probability of use of health services by Mexican Americans. Health Serv Res. 1989;24(2):237-57.

67. Fenta H, Hyman I, Noh S. Health service utilization by Ethiopian immigrants and refugees in Toronto. *J Immigr Minor Health* 2007 ;9(4):349-57.

68. Glazier RH, Zagorski BM, Rayner J. Comparison of Primary Care Models in Ontario by Demographics, Case Mix and Emergency Department Use, 2008/09 to 2009/10. Toronto: Institute for Clinical Evaluative Sciences; 2012 Available from: [http://www.ices.on.ca/file/ICES\_Primary%20Care%20Models%20English.pdf](http://www.ices.on.ca/file/ICES_Primary Care Models English.pdf)

69. Citizenship and Immigration Canada. Interim Federal Health Program [Internet].

70. Breslau J, Aguilar-Gaxiola S, Borges G, Kendler KS, Su M, Kessler RC. Risk for psychiatric disorder among immigrants and their US-born descendants: Evidence from the national comorbidity survey replication. *J Nerv Ment Dis.* 2007;195(3):189-95.

71. Fuller-Thomson E, Noack AM, George U. Health decline among recent immigrants to Canada: Findings from a nationally-representative longitudinal survey. *Can J Public Health* 2011;102(4):273-80.

72. Rotermann M. The impact of considering birthplace in analyses of immigrant health (Catalogue no. 82-003-XPE). [Internet]Statistics Canada; 2011.

73. Edge S, Newbold B. Discrimination and the health of immigrants and refugees: Exploring Canada’s evidence base and directions for future research in newcomer receiving countries. *J Immigr Minor Health* 2013;15(1):141-8.

74. Drapeau A, Boyer R, Diallo FB. Discrepancies between survey and administrative data on the use of mental health services in the general population: Findings from a study conducted in Quebec. *BMC Public* Health 2011;11:837.

75. Palin JL, Goldner EM, Koehoorn M, Hertzman C. Primary mental health care visits in self-reported data versus provincial administrative records. *Health Rep* 2011 ;22(2):41-7.

76. Lindert J, Schouler-Ocak M, Heinz A, Priebe S. Mental health, health care utilisation of migrants in Europe. *Eur Psychiatry.* 2008;23 Suppl 1:14-20.

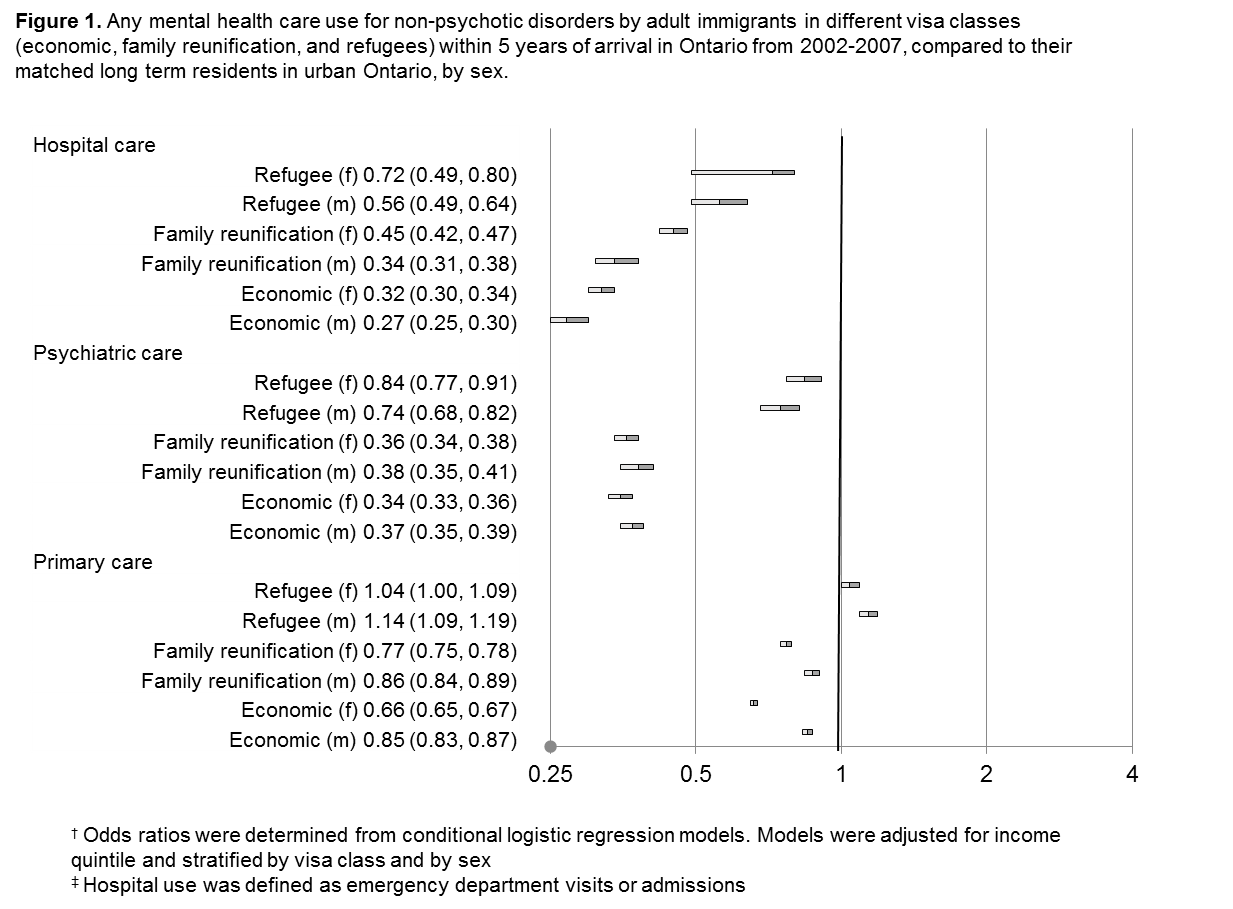
77. Wei Z, Hu C, Wei X, Yang H, Shu M, Liu T. Service utilization for mental problems in a metropolitan migrant population in china. *Psychiatr Serv* 2013;64(7):645-52.

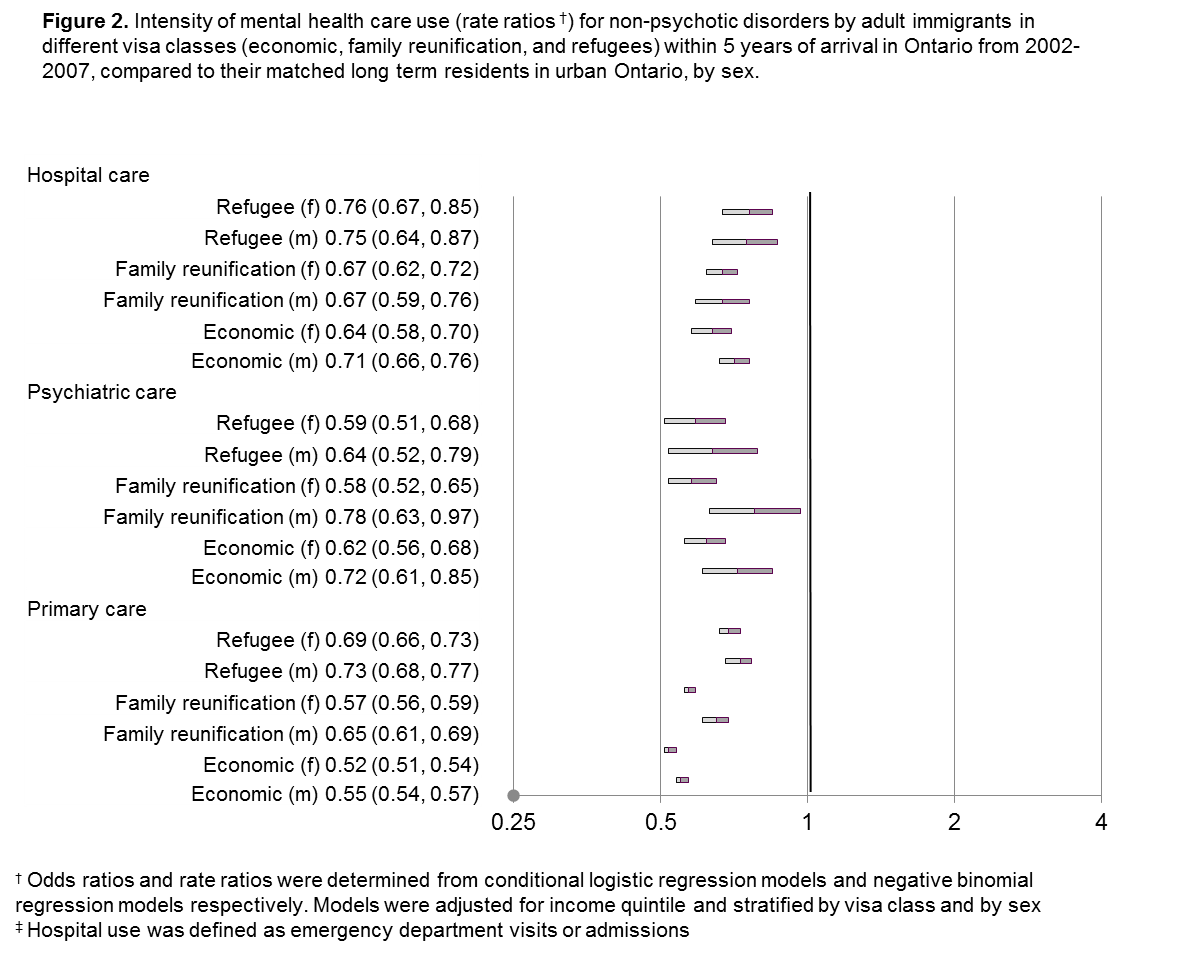
78. Uiters E, Deville WL, Foets M, Groenewegen PP. Use of health care services by ethnic minorities in the Netherlands: Do patterns differ? *Eur J Public Health* 2006;16(4):388-93.

79. Government of Canada. Citizenship and Immigration Canada Help Centre [Internet]. Available from: [http://www.cic.gc.ca/english/helpcentre/glossary.asp#r](http://www.cic.gc.ca/english/helpcentre/glossary.asp" \l "r)

80. Immigrants [Internet]. City of Toronto cited 06/01/2012] Available from: [http://www.toronto.ca/socialservices/Policy/Immigrants.htm#determination](http://www.toronto.ca/socialservices/Policy/Immigrants.htm" \l "determination)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Table 1.** Characteristics of male and female adult immigrants to Ontario Canada who arrived from 2002-2007 and were admitted in the economic/business, and family reunification classes and as refugees and characteristics of their matched long term residents‡ in urban Ontario, by sex. | | | | | | | |
|  |  | **Immigrant visa class groups†** | | | |  | **Long term residents**‡ |
|  |  | **Economic/ Business** | **Family Reunification** | **Refugee** | **Total immigrants§** |  |
| Males | | | | | | | |
|  | N (%) | 86,933 (53.2) | 50,015 (30.6) | 26,350 (16.1) | 163,298 (100.0) |  | 163,268 |
| Age at arrival | Mean ± SD | 35.48 ± 8.33 | 39.88 ± 16.79 | 34.75 ± 11.12 | 36.71 ± 12.15 |  |  |
|  | Median (IQR) | 35 (30-41) | 33 (26-55) | 33 (26-42) | 34 (28-43) |  |  |
| Income quintile | 1 (least affluent) | 33,624 (38.7) | 15,317 (30.6) | 13,487 (51.2) | 62,428 (38.2) |  | 29,151 (17.9) |
| 2 | 20,381 (23.4) | 12,878 (25.7) | 6,456 (24.5) | 39,715 (24.3) | 32,680 (20.0) |
| 3 | 14,520 (16.7) | 10,089 (20.2) | 3,434 (13.0) | 28,043 (17.2) | 33,356 (20.4) |
| 4 | 10,649 (12.2) | 7,138 (14.3) | 1,985 (7.5) | 19,772 (12.1) | 34,282 (21.0) |
| 5 (most affluent) | 7,759 (8.9) | 4,593 (9.2) | 988 (3.7) | 13,340 (8.2) | 33,794 (20.7) |
| Highest level of education | More than high school | 76,694 (88.2%) | 23,844 (47.7%) | 10,623 (40.3%) | 111,161 (68.1%) |  |  |
| High school | 9,321 (10.7%) | 24,467 (48.9%) | 14,988 (56.9%) | 48,776 (29.9%) |
| None | 918 (1.1%) | 1,704 (3.4%) | 739 (2.8%) | 3,361 (2.1%) |
| Language speaking abilities | English or French | 67,420 (77.6%) | 29,631 (59.2%) | 20,921 (79.4%) | 117,972 (72.2%) |  |  |
| Neither | 19,513 (22.4%) | 20,384 (40.8%) | 5,429 (20.6%) | 45,326 (27.8%) |  |
| Females | | | | | | | |
|  | N (%) | 83,809 (42.7) | 87,370 (44.5) | 25,196 (12.8) | 196,375 (100.0) |  | 196,326 |
| Age at arrival | Mean ± SD | 34.13 ± 7.82 | 37.10 ± 15.88 | 35.96 ± 12.15 | 35.69 ± 12.62 |  |  |
|  | Median (IQR) | 34 (29-39) | 30 (25-50) | 34 (27-43) | 33 (27-42) |  |  |
| Income quintile | 1 (least affluent) | 31,628 (37.7) | 28,634 (32.8) | 13,336 (52.9) | 73,598 (37.5) |  | 35,087 (17.9) |
| 2 | 19,207 (22.9) | 22,550 (25.8) | 5,820 (23.1) | 47,577 (24.2) | 38,898 (19.8) |
| 3 | 13,933 (16.6) | 16,608 (19.0) | 3,170 (12.6) | 33,711 (17.2) | 39,912 (20.3) |
| 4 | 10,529 (12.6) | 12,033 (13.8) | 1,917 (7.6) | 24,479 (12.5) | 41,439 (21.1) |
| 5 (most affluent) | 8,512 (10.2) | 7,545 (8.6) | 953 (3.8) | 17,010 (8.7) | 40,990 (20.9) |
| Highest level of education | More than high school | 68,614 (81.9%) | 42,911 (49.1%) | 9,104 (36.1%) | 120,629 (61.4%) |  |  |
| High school | 13,951 (16.6%) | 39,530 (45.2%) | 14,206 (56.4%) | 67,687 (34.5%) |
| None | 1,244 (1.5%) | 4,929 (5.6%) | 1,886 (7.5%) | 8,059 (4.1%) |  |
| Language speaking abilities | English or French | 57,877 (69.1%) | 47,113 (53.9%) | 17,234 (68.4%) | 122,224 (62.2%) |  |  |
| Neither | 25,932 (30.9%) | 40,57 (46.1%) | 7,962 (31.6%) | 74,151 (37.8%) |  |
| **†** P-values assessed the differences in across immigrants from different visa class groups, and compared total immigrants to long term residents. All p-values were <0.001  ‡ Long term residents were Canadian-born or immigrants who arrived in Ontario prior to 1985  § Immigrants who were in the ‘other’ visa class (~<5%) were excluded. | | | | | | | |





|  |  |  |  |
| --- | --- | --- | --- |
| **Appendix A:** Statistics Canada visa class definitions and categories (79)  **Economic class:** A category of immigrants selected for their skills and ability to contribute to Canada’s economy.  *Categories:*Skilled Workers, Provincial Nominees, Live-in Caregivers, and Business immigrants – Entrepreneurs, Investors and Self-employed  **Family class:** An immigration category that includes any family members sponsored to come to Canada by a Canadian citizen or permanent resident.  *Categories:*Parents and Grandparents and Spouses and Partners  **Refugees:** A refugee is someone who has been forced to flee his or her country because of persecution, war, or violence. A refugee has a well-founded fear of persecution for reasons of race, religion, nationality, political opinion or membership in a particular social group. Most likely, they cannot return home or are afraid to do so. War and ethnic, tribal and religious violence are leading causes of refugees fleeing their countries.  *Categories:*Government-assisted Refugee, Privately Sponsored Refugees, Refugees Landed in Canada, and refugee dependants  **Other immigrants:** Humanitarian and Compassionate/Public Policy Considerations **(excluded)** | | | |
| **Immigration class** | **Category 2** | **Statistics Canada code and classification** | |
| Family Class (FC) | FC Spouses | FC1 | Spouse |
| FCC | Common Law Partner |
| FCE | Conjugal Partner |
| SP1 | Husband or Wife - 1952 Act 31(1)(a) |
| FC Parents and Grandparents | FC4 | Parents and Grandparents |
| FC8 | Parent of Canadian Citizen |
| AR3 | Parent |
| AR2 | Grandparent |
| SP4 | Par./Grndpar. over 60, or inc.,Wid if und. 60 |
| FC Others | FC2 | Fiance(e) |
| FC3 | Son or Daughter |
| FC5 | Orphan |
| FC6 | Child to be adopted |
| FC7 | Other Relative |
| FC9 | Child adopted by Canadian |
| SP2 | Fiance(e) & acc. Unmar. Child under 21 31(1)(b) |
| SP3 | Unmar. son or Daughter under21 31(1)(c) |
| SP5 | Orp. Nep., Niece, Grndchld, Brot., Sis., under 18 |
| SP6 | Unm. Adop. Chil. under 21 who were adop. under 18 |
| SP7 | Aband. Child or Orp. under 13 to be adopted |
| SP8 | Rel. & Acc. Fam. other than 31(1)(c) ro (1)(f) |
| FCA | Simple Adoption |
| FCB | Guardianship |
| FCD | De facto |
| Public Policy | FCH | Family Relationships - Humanitarian and Compassionate |
| Economic | Business | NV1 | Private Business Individual |
| NV2 | Private Business Group |
| NV3 | Private Syndicate |
| NV4 | Venture Capital Fund |
| NV5 |  |
| EN2 | Entrepreneur |
| PR2 | Entrepreneur, provincial sponsor |
| EN3 | Entrepreneur and Acc. Dep. 1952 Act 32(3) |
| SE2 | Self-Employed |
| Skilled Workers | SW1 | Skilled Worker |
| ND2 | Independent |
| ND3 | Independent with Canadian Relative |
| ND3 | Independent with Canadian Relative |
| AR1 | Brother or Sister |
| AR4 | Son or Daughter |
| AR5 | Unmarried Niece or nephew under 21 |
| AR6 | Married Niece, Nephew, Aunt or Uncle over 21 |
| AR7 | Other Assisted Relative |
| NR1 | Son, Daug. over 21 & Acc. Imm. Family 33(1)(a) |
| NR2 | Married son, Daug. under 21 and Acc. Family |
| NR3 | Brot. & Sis. & Accom. Imm. Family |
| NR4 | Par. & Grndpar. under 60 & Accom. Imm. Faily |
| NR5 | Nep.,Niece, Unc., Aunt, Grndchld & Accom. Imm. Family |
| LC1 | Live-in Caregiver |
| LC2 | Dependant Abroad of LCP |
| Canadian Experience Class | CE1 | Canadian Experience Class - Worker |
| CE2 | Canadian Experience Class - Student |
| Provincial Nominees | PV2 | Provincial Nominees Overseas |
| Permit Holders | PH1 | Permit holders applying for perm. residence |
| Resettlement | Gov't-assisted Refugees | CR1 | Government Assistance Required |
| CR5 | Special Needs |
| DC1 | Government Assistance Required |
| DC5 | Special Needs |
| RS1 | Government Assistance Required |
| RS5 | Special Needs |
| RA5 | Special Needs |
| PTR | Protected Temporary Resident |
| Private Refugees | CR2 | Convention Refugee Family |
| CR3 | Convention Refugee Private |
| CR4 | Convention Refugee Self Supporting |
| CRX | Convention Refugee private (24 months) |
| DC2 | Designated Class Family |
| DC3 | Designated Class Private |
| DC4 | Designated Class Self Supporting |
| RS3 | Reset. Source Private |
| RS4 | Reset. Source Self Supporting |
| RSX | Reset. Source Private (24 months) |
| RA3 | Reset. Asylum Private |
| RA4 | Reset. Asylum Self Supporting |
| RAX | Reset. Asylum Private (24 months) |
| CRS | Convention Refugee Abroad sponsored by SAH |
| CRC | Convention Refugee Abroad with Community Sponsorship |
| CRG | Convention Refugee Abroad sponsored by Group of five |
| RSS | Source Country sponsored by SAH |
| RSC | Source Country with a Community Sponsorship |
| RSG | Source Country sponsored by Group of five |
| RAS | Country of Asylum sponsored by SAH |
| RAC | Country of Asylum with a Community Sponsorship |
| RAG | Country of Asylum Sponsored by Group of Five |
| Refugee Dependants | Refugee Dependants | CR6 | Dependant of New CR1 |
| CR7 | CR by RSAC or IRB |
| CR9 | Dependant of Convention Refugee |
| DC6 | Dependant of New CR1 |
| DR1 | Dependant of CR8 Refugee in Canada |
| DR2 | Dependant of CR8 Refugee Abroad |
| In-Canada Refugees | CR8 | In-Canada Refugees |
| Other | H & C / Public Policy | HC1 | Humanitarian and Compassionate Case |
| PP1 | Public Policy |
| HC2 | Sponsored H & C Application outside the Family Class |
| Retired | RE2 | Retired |
| Post-determination Refugee Claimant | PD1 | Post-determination Refugee Claimant |
| PD2 | Dependant abroad of Post-determination Refugee Claimant |
| Deferred Removal Order Class | RM1 | Deferred Removal Order Class |
| RM2 | Dependant Abroad of Deferred Removal Order Class |
| Backlog | Backlog | DC8 | Backlog |

**APPENDIX B:**

**OHIP Diagnostic Codes (International Classification of Disease** **-9) Non Psychotic Disorders**

300 anxiety neurosis, hysteria, neurasthenia, obsessive – compulsive neurosis, reactive depression, 301 personality disorders, 302 sexual deviations, 303 alcoholism, 304 drug dependence, 306 psychosomatic illness, 307 tics, anorexia nervosa 309 adjustment reaction, 311 depressive disorder, 897 economic problems, 898 marital difficulties, 899 parent- child problems 900 problems with aged parents or in-laws, 901 family disruption/ divorce, 902 education problems, 903 ilegitimacy, 904 social maladjustment, 905 occupational problems, 906 legal problems ,909 other problems of social adjustment

|  |  |  |  |
| --- | --- | --- | --- |
| **APPENDIX C:** Results of the sensitivity analysis – predicting hospital admissions or Emergency Department admissions with most responsible diagnosis | | | |
|  | | Primary analysis (any diagnosis) | Sensitivity analysis **(**most responsible diagnosis) |
| Odds ratios of any hospital use | | | |
| Refugee | Male | 0.56 (0.49, 0.64) | 0.38 (0.23, 0.62) |
| Female | 0.72 (0.49, 0.80) | 0.83 (0.75, 0.93) |
| Family | Male | 0.34 (0.31, 0.38) | 0.26 (0.17, 0.91) |
| Female | 0.45 (0.42, 0.47) | 0.32 (0.25, 0.40) |
| Economic | Male | 0.27 (0.25, 0.30) | 0.16 (0.11, 0.22) |
| Female | 0.32 (0.30, 0.34) | 0.22 (0.17, 0.28) |
| Rate ratios for intensity of hospital uses among users | | | |
| Refugee | Male | 0.75 (0.64, 0.87) | 0.80 (0.65, 0.98) |
| Female | 0.76 (0.67, 0.85) | 0.56 (0.41, 0.79) |
| Family | Male | 0.67 (0.59, 0.76) | 0.80 (0.61, 1.06) |
| Female | 0.67 (0.62, 0.72) | 0.82 (0.70, 0.97) |
| Economic | Male | 0.71 (0.66, 0.76) | 0.90 (0.78, 1.04) |
| Female | 0.64 (0.58, 0.70) | 0.84 (0.72, 0.99) |

1. Potential immigrants to Canada, including refugees, undergo an Immigrant Medical Examination (IME) before arrival in Canada. The results of these exams are considered when determining their eligibility for admission. The IME for adults consists of a detailed medical history and physical examination that includes a chest radiography, urinalysis for protein, syphilis, and testing for HIV, and a review of mental state. (82) [↑](#footnote-ref-2)