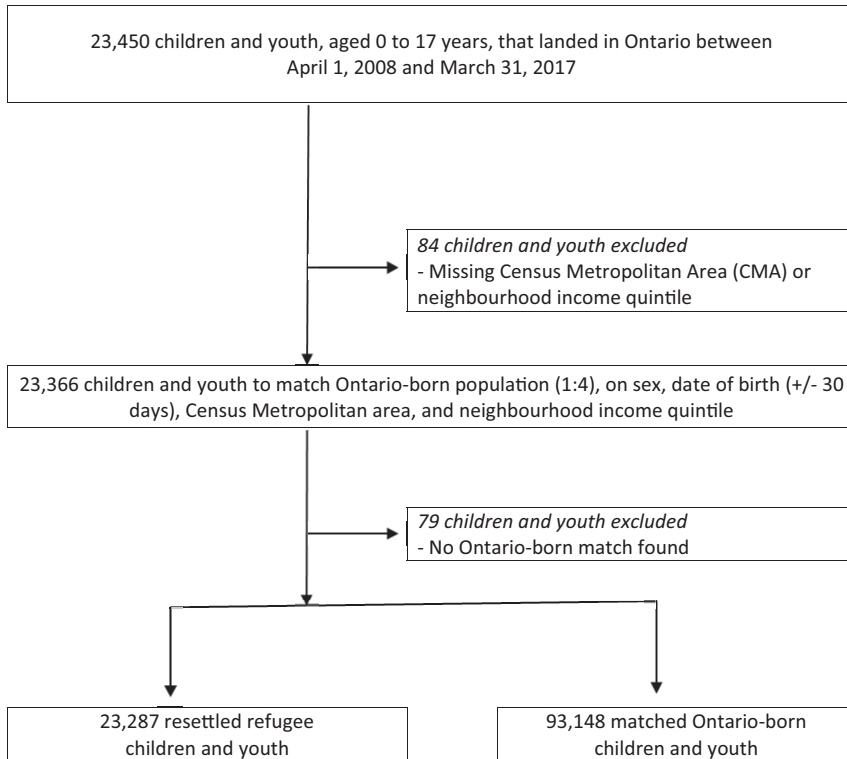


Supplemental Information



SUPPLEMENTAL FIGURE 3

Flow chart for cohort selection/eligibility.

SUPPLEMENTAL TABLE 5 Baseline Demographic Characteristics of Resettled Refugees Aged 0 to 17 y Who Landed in Ontario Between April 1, 2008 and March 31, 2017 Compared to Matched Ontario-Born Youth and All Ontario-Born Youth

| Variable | All Resettled Refugees | Matched Ontario-Born Children and Youth* | All Refugees vs Matched Ontario-Born (SD) | Ontario-Born Children and Youth |
|---|------------------------|--|---|---------------------------------|
| <i>n</i> | 23 287 | 93 148 | | 2 340 301 |
| Age, mean ± SD | 8.30 ± 4.92 | 8.30 ± 4.92 | 0.00 | 8.29 ± 5.19 |
| Age group, <i>n</i> (%) | | | | |
| <1 y | 859 (3.7) | 3390 (3.6) | 0.00 | 138 908 (5.9) |
| 1–4 y | 5445 (23.4) | 21 859 (23.5) | 0.00 | 546 673 (23.4) |
| 5–12 y | 11 325 (48.6) | 45 296 (48.6) | 0.00 | 1 031 001 (44.1) |
| 13–17 y | 5658 (24.3) | 22 603 (24.3) | 0.00 | 623 719 (26.7) |
| Sex | | | | |
| Female | 11 203 (48.1) | 44 808 (48.1) | 0.00 | 1 139 768 (48.7) |
| Male | 12 084 (51.9) | 48 340 (51.9) | 0.00 | 1 200 533 (51.3) |
| Neighborhood income quintile, <i>n</i> (%) | | | | |
| Missing | 0 (0.0) | 0 (0.0) | 0.00 | 10 999 (0.5) |
| Q1 (lowest) | 12 802 (55.0) | 51 208 (55.0) | 0.00 | 419 431 (17.9) |
| Q2 | 4362 (18.7) | 17 448 (18.7) | 0.00 | 427 609 (18.3) |
| Q3 | 3422 (14.7) | 13 688 (14.7) | 0.00 | 474 426 (20.3) |
| Q4 | 2021 (8.7) | 8084 (8.7) | 0.00 | 514 203 (22.0) |
| Q5 (highest) | 680 (2.9) | 2720 (2.9) | 0.00 | 493 633 (21.1) |
| Material deprivation quintile, <i>n</i> (%) | | | | |
| Missing | 18 (0.1) | 149 (0.2) | 0.02 | 26 638 (1.1) |
| Q1 (lowest) | 792 (3.4) | 6862 (7.4) | 0.18 | 485 349 (20.7) |
| Q2 | 1133 (4.9) | 8722 (9.4) | 0.18 | 488 092 (20.9) |
| Q3 | 3313 (14.2) | 11 328 (12.2) | 0.06 | 450 215 (19.2) |
| Q4 | 5569 (23.9) | 17 842 (19.2) | 0.12 | 422 909 (18.1) |
| Q5 (highest) | 12 462 (53.5) | 48 245 (51.8) | 0.03 | 467 098 (20.0) |
| Rurality, <i>n</i> (%) | | | | |
| Missing | 9 (0.0) | 0 (0.0) | 0.03 | 2739 (0.1) |
| Urban | 23 002 (98.8) | 91 946 (98.7) | 0.01 | 2 066 769 (88.3) |
| Rural | 276 (1.2) | 1202 (1.3) | 0.01 | 270 793 (11.6) |
| Census metropolitan area, <i>n</i> (%) | | | | |
| Toronto | 9640 (41.4) | 38 560 (41.4) | 0.00 | 1 001 045 (42.8) |
| Ottawa, Gatineau | 3172 (13.6) | 12 688 (13.6) | 0.00 | 155 961 (6.7) |
| Hamilton | 2541 (10.9) | 10 164 (10.9) | 0.00 | 131 446 (5.6) |
| Kitchener, Cambridge | 2098 (9.0) | 8392 (9.0) | 0.00 | 91 263 (3.9) |
| London | 2023 (8.7) | 8092 (8.7) | 0.00 | 85 747 (3.7) |
| Windsor | 2113 (9.1) | 8452 (9.1) | 0.00 | 60 686 (2.6) |
| Other | 1700 (7.3) | 6800 (7.3) | 0.00 | 814 153 (34.8) |

SUPPLEMENTAL TABLE 6 Most Common Primary ED Discharge Diagnoses Among Resettled Refugees, Aged 0 to 17 y Who Landed in Ontario Between April 1, 2008 and March 31, 2017 and Matched Ontario-Born Youth, by Resettlement Model

| ICD-10-CA Chapter | <i>n</i> | % |
|---|----------|------|
| Government-assisted refugees (<i>n</i> = 3825) | | |
| Injury, poisoning, and certain other consequences of external causes (S00–T98) | 1124 | 29.4 |
| Diseases of the respiratory system (J00–J99) | 655 | 17.1 |
| Symptoms, signs, and abnormal clinical and laboratory findings not elsewhere classified (R00–R99) | 636 | 16.6 |
| Fever of unknown origin (R50) | 154 | — |
| Abdominal and pelvic pain (R10) | 124 | — |
| Nausea and vomiting (R11) | 57 | — |
| Certain infectious and parasitic diseases (A00–B99) | 425 | 11.1 |
| Viral infection of unspecified site (B34) | 196 | — |
| Diarrhea and gastroenteritis of presumed infectious origin (A09) | 91 | — |
| Viral and other specified intestinal infections (A08) | 38 | — |
| Diseases of the digestive system (K00–K93) | 193 | 5.0 |
| Other functional intestinal disorders (K59) | 56 | — |
| Diseases of pulp and periapical tissues (K04) | 30 | — |
| Other disorders of teeth and supporting structures (K08) | 14 | — |
| Diseases of the ear and mastoid process (H60–H95) | 132 | 3.5 |
| Factors influencing health status and contact with health services (Z00–Z99) | 128 | 3.3 |
| Blended-visa office referred program (<i>n</i> = 544) | | |
| Injury, poisoning, and certain other consequences of external causes (S00–T98) | 164 | 30.2 |
| Diseases of the respiratory system (J00–J99) | 111 | 20.4 |
| Symptoms, signs, and abnormal clinical and laboratory findings not elsewhere classified (R00–R99) | 83 | 15.3 |
| Fever of unknown origin (R50) | 20 | — |
| Abdominal and pelvic pain (R10) | 19 | — |
| Nausea and vomiting (R11) | 10 | — |
| Certain infectious and parasitic diseases (A00–B99) | 49 | 9.0 |
| Viral infection of unspecified site (B34) | 15 | — |
| Diarrhea and gastroenteritis of presumed infectious origin (A09) | 14 | — |
| Unspecified malaria (B54) | 6 | — |
| Diseases of the ear and mastoid process (H60–H95) | 40 | 7.4 |
| Diseases of the digestive system (K00–K93) | 21 | 3.9 |
| Diseases of pulp and periapical tissues (K04) | 6 | — |
| Factors influencing health status and contact with health services (Z00–Z99) | 19 | 3.5 |
| Privately sponsored refugees (<i>n</i> = 1577) | | |
| Injury, poisoning, and certain other consequences of external causes (S00–T98) | 526 | 33.4 |
| Symptoms, signs, and abnormal clinical and laboratory findings not elsewhere classified (R00–R99) | 273 | 17.3 |
| Abdominal and pelvic pain (R10) | 63 | — |
| Fever of unknown origin (R50) | 51 | — |
| Nausea and vomiting (R11) | 22 | — |
| Diseases of the respiratory system (J00–J99) | 272 | 17.3 |
| Certain infectious and parasitic diseases (A00–B99) | 131 | 8.3 |
| Viral infection of unspecified site (B34) | 59 | — |
| Diarrhea and gastroenteritis of presumed infectious origin (A09) | 25 | — |
| Viral and other specified intestinal infections (A08) | 17 | — |
| Diseases of the ear and mastoid process (H60–H95) | 69 | 4.4 |
| Diseases of the digestive system (K00–K93) | 68 | 4.3 |
| Other functional intestinal disorders (K59) | 18 | — |
| Acute appendicitis (K35) | 11 | — |
| Diseases of pulp and periapical tissues (K04) | 9 | — |
| Diseases of the skin and subcutaneous tissue (L00–L99) | 51 | 3.2 |
| All resettled refugees (<i>n</i> = 5946) | | |
| Injury, poisoning, and certain other consequences of external causes (S00–T98) | 1814 | 30.5 |
| Diseases of the respiratory system (J00–J99) | 1038 | 17.5 |
| Symptoms, signs, and abnormal clinical and laboratory findings not elsewhere classified (R00–R99) | 992 | 16.7 |
| Fever of unknown origin (R50) | 225 | — |
| Abdominal and pelvic pain (R10) | 206 | — |
| Nausea and vomiting (R11) | 89 | — |
| Certain infectious and parasitic diseases (A00–B99) | 605 | 10.2 |
| Viral infection of unspecified site (B34) | 270 | — |
| Diarrhea and gastroenteritis of presumed infectious origin (A09) | 130 | — |

SUPPLEMENTAL TABLE 6 Continued

| ICD-10-CA Chapter | <i>n</i> | % |
|---|----------|------|
| Viral and other specified intestinal infections (A08) | 59 | — |
| Diseases of the digestive system (K00–K93) | 282 | 4.7 |
| Other functional intestinal disorders (K59) | 79 | — |
| Diseases of pulp and periapical tissues (K04) | 45 | — |
| Other disorders of teeth and supporting structures (K08) | 22 | — |
| Diseases of the ear and mastoid process (H60–H95) | 241 | 4.1 |
| Factors influencing health status and contact with health services (Z00–Z99) | 193 | 3.3 |
| Matched Ontario-born (<i>n</i> = 32 850) | | |
| Injury, poisoning, and certain other consequences of external causes (S00–T98) | 10332 | 31.5 |
| Diseases of the respiratory system (J00–J99) | 5769 | 17.6 |
| Symptoms, signs, and abnormal clinical and laboratory findings not elsewhere classified (R00–R99) | 5555 | 16.9 |
| Abdominal and pelvic pain (R10) | 1214 | — |
| Fever of unknown origin (R50) | 1062 | — |
| Nausea and vomiting (R11) | 610 | — |
| Certain infectious and parasitic diseases (A00–B99) | 3068 | 9.3 |
| Viral infection of unspecified site (B34) | 1245 | — |
| Diarrhea and gastroenteritis of presumed infectious origin (A09) | 849 | — |
| Viral and other specified intestinal infections (A08) | 382 | — |
| Diseases of the ear and mastoid process (H60–H95) | 1737 | 5.3 |
| Diseases of the digestive system (K00–K93) | 1079 | 3.3 |
| Other functional intestinal disorders (K59) | 359 | — |
| Gastritis and duodenitis (K29) | 82 | — |
| Acute appendicitis (K35) | 78 | — |
| Diseases of the skin and subcutaneous tissue (L00–L99) | 1052 | 3.2 |

ICD-10-CA, *International Classification of Diseases 10th Revision*

SUPPLEMENTAL TABLE 7 Morbidity Among Resettled Refugees, Aged 0 to 17 y That Arrived in Ontario Between April 1, 2008 and March 31, 2017 and Matched Ontario-Born Children and Youth

| ICD-10-CA Chapter | <i>n</i> | % |
|---|----------|------|
| Government-assisted refugees (<i>n</i> = 527) | | |
| Diseases of the respiratory system (J00–J99) | 92 | 17.5 |
| Symptoms, signs, and abnormal clinical and laboratory findings not elsewhere classified (R00–R99) | 48 | 9.1 |
| Lack of expected normal physiologic development (R62) | 10 | — |
| Abdominal and pelvic pain (R10) | 6 | — |
| Nausea and vomiting (R11) | 6 | — |
| Injury, poisoning, and certain other consequences of external causes (S00–T98) | 45 | 8.5 |
| Diseases of the nervous system (G00–G99) | 43 | 8.2 |
| Factors influencing health status and contact with health services (Z00–Z99) | 43 | 8.2 |
| Diseases of the digestive system (K00–K93) | 42 | 8.0 |
| Acute appendicitis (K35) | 14 | — |
| Congenital malformations, deformations, and chromosomal abnormalities (Q00–Q99) | 34 | 6.5 |
| Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism (D50–D89) | 29 | 5.5 |
| Certain infectious and parasitic diseases (A00–B99) | 26 | 4.9 |
| Plasmodium falciparum malaria (B50) | 6 | — |
| Diseases of the genitourinary system (N00–N99) | 24 | 4.6 |
| Mental and behavioral disorders (F00–F99) | 20 | 3.8 |
| Endocrine, nutritional, and metabolic diseases (E00–E90) | 19 | 3.6 |
| Diseases of the skin and subcutaneous tissue (L00–L99) | 17 | 3.2 |
| Diseases of the circulatory system (I00–I99) | 16 | 3.0 |
| Blended-visa office referred program (<i>n</i> = 68) | | |
| Injury, poisoning, and certain other consequences of external causes (S00–T98) | 16 | 23.5 |
| Symptoms, signs, and abnormal clinical and laboratory findings not elsewhere classified (R00–R99) | 7 | 10.3 |
| Diseases of the respiratory system (J00–J99) | 6 | 8.8 |
| Other | 39 | 57.4 |
| Privately sponsored refugees (<i>n</i> = 128) | | |
| Diseases of the respiratory system (J00–J99) | 21 | 16.4 |
| Diseases of the digestive system (K00–K93) | 19 | 14.8 |
| Acute appendicitis (K35) | 12 | — |
| Injury, poisoning, and certain other consequences of external causes (S00–T98) | 15 | 11.7 |
| Certain infectious and parasitic diseases (A00–B99) | 12 | 9.4 |
| Factors influencing health status and contact with health services (Z00–Z99) | 10 | 7.8 |
| Symptoms, signs, and abnormal clinical and laboratory findings not elsewhere classified (R00–R99) | 10 | 7.8 |
| Congenital malformations, deformations, and chromosomal abnormalities (Q00–Q99) | 7 | 5.5 |
| Diseases of the nervous system (G00–G99) | 7 | 5.5 |
| Mental and behavioral disorders (F00–F99) | 7 | 5.5 |
| Endocrine, nutritional, and metabolic diseases (E00–E90) | 6 | 4.7 |
| Other | 14 | 10.9 |
| Resettled refugees (<i>n</i> = 723) | | |
| Diseases of the respiratory system (J00–J99) | 119 | 16.5 |
| Injury, poisoning, and certain other consequences of external causes (S00–T98) | 76 | 10.5 |
| Symptoms, signs, and abnormal clinical and laboratory findings not elsewhere classified (R00–R99) | 65 | 9.0 |
| Lack of expected normal physiologic development (R62) | 12 | — |
| Abdominal and pelvic pain (R10) | 9 | — |
| Nausea and vomiting (R11) | 7 | — |
| Diseases of the digestive system (K00–K93) | 63 | 8.7 |
| Acute appendicitis (K35) | 27 | — |
| Factors influencing health status and contact with health services (Z00–Z99) | 56 | 7.8 |
| Diseases of the nervous system (G00–G99) | 54 | 7.5 |
| Congenital malformations, deformations, and chromosomal abnormalities (Q00–Q99) | 44 | 6.1 |
| Certain infectious and parasitic diseases (A00–B99) | 43 | 6.0 |
| Plasmodium falciparum malaria (B50) | 7 | — |
| Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism (D50–D89) | 38 | 5.3 |
| Mental and behavioral disorders (F00–F99) | 28 | 3.9 |
| Diseases of the genitourinary system (N00–N99) | 27 | 3.7 |
| Endocrine, nutritional, and metabolic diseases (E00–E90) | 26 | 3.6 |
| Matched Ontario-born (<i>n</i> = 2277) | | |
| Diseases of the respiratory system (J00–J99) | 441 | 19.4 |
| Mental and behavioral disorders (F00–F99) | 291 | 12.8 |
| Injury, poisoning, and certain other consequences of external causes (S00–T98) | 218 | 9.6 |

SUPPLEMENTAL TABLE 7 Continued

| ICD-10-CA Chapter | <i>n</i> | % |
|---|----------|-----|
| Diseases of the digestive system (K00–K93) | 209 | 9.2 |
| Acute appendicitis (K35) | 96 | — |
| Other functional intestinal disorders (K59) | 13 | — |
| Crohn disease (regional enteritis) (K50) | 11 | — |
| Symptoms, signs, and abnormal clinical and laboratory findings not elsewhere classified (R00–R99) | 145 | 6.4 |
| Convulsions, not elsewhere classified (R56) | 24 | — |
| Abdominal and pelvic pain (R10) | 23 | — |
| Fever of unknown origin (R50) | 22 | — |
| Factors influencing health status and contact with health services (Z00–Z99) | 139 | 6.1 |
| Certain infectious and parasitic diseases (A00–B99) | 131 | 5.8 |
| Viral and other specified intestinal infections | 34 | — |
| Diarrhea and gastroenteritis of presumed infectious origin | 29 | — |
| Viral infection of unspecified site | 20 | — |
| Diseases of the nervous system (G00–G99) | 110 | 4.8 |
| Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism (D50–D89) | 78 | 3.4 |
| Endocrine, nutritional, and metabolic diseases (E00–E90) | 73 | 3.2 |

ICD-10-CA, *International Classification of Diseases 10th Revision*

SUPPLEMENTAL TABLE 8 Most Common Outpatient Specialist Diagnoses Among Resettled Refugees Aged 0 to 17 y Who Arrived in Ontario Between April 1, 2008 and March 31, 2017 and Matched Ontario-Born Youth, by Resettlement Model

| Diagnosis | OHIP Diagnosis Code | <i>n</i> | % |
|---|---------------------|----------|-----|
| Government-assisted refugees | | | |
| Other infectious or parasitic diseases | 136 | 1007 | 7.0 |
| Specified delays in development (eg, dyslexia, dyslalia, motor retardation) | 315 | 792 | 5.5 |
| Other ill-defined conditions | 799 | 557 | 3.9 |
| Asthma, allergic bronchitis | 493 | 421 | 2.9 |
| Acute nasopharyngitis, common cold | 460 | 344 | 2.4 |
| Cerebral palsy | 343 | 319 | 2.2 |
| Anorexia, nausea and vomiting, heartburn, dysphagia, hiccup, hematemesis, jaundice, ascites, abdominal pain, melena, masses | 787 | 317 | 2.2 |
| Blended-visa office referred program | | | |
| Other ill-defined conditions | 799 | 58 | 4.1 |
| Specified delays in development (eg, dyslexia, dyslalia, motor retardation) | 315 | 54 | 3.8 |
| Asthma, allergic bronchitis | 493 | 39 | 2.8 |
| Other congenital anomalies | 759 | 37 | 2.6 |
| Chromosomal anomalies (eg, Down syndrome, other autosomal anomalies, Klinefelter's syndrome, Turner's syndrome, other anomalies of sex chromosomes) | 758 | 35 | 2.5 |
| Immunization, all types | 896 | 35 | 2.5 |
| Habit spasms, tics, stuttering, tension headaches, anorexia nervosa, sleep disorders, enuresis | 307 | 34 | 2.4 |
| Hypertrophy or chronic infection of tonsils and/or adenoids | 474 | 33 | 2.4 |
| Anorexia, nausea and vomiting, heartburn, dysphagia, hiccup, hematemesis, jaundice, ascites, abdominal pain, melena, masses | 787 | 31 | 2.2 |
| Behavior disorders of childhood and adolescence | 313 | 29 | 2.1 |
| Privately sponsored refugees | | | |
| Other ill-defined conditions | 799 | 186 | 4.2 |
| Acute nasopharyngitis, common cold | 460 | 160 | 3.6 |
| Specified delays in development (eg, dyslexia, dyslalia, motor retardation) | 315 | 154 | 3.5 |
| Asthma, allergic bronchitis | 493 | 137 | 3.1 |
| Radius and/or ulna | 813 | 107 | 2.4 |
| Epistaxis, hemoptysis, cough, dyspnea, masses, shortness of breath, hyperventilation, sleep apnea | 786 | 106 | 2.4 |
| Hypertrophy or chronic infection of tonsils and/or adenoids | 474 | 106 | 2.4 |

SUPPLEMENTAL TABLE 8 Continued

| Diagnosis | OHIP Diagnosis Code | <i>n</i> | % |
|--|---------------------|----------|-----|
| Anorexia, nausea and vomiting, heartburn, dysphagia, hiccuph, hematemesis, jaundice, ascites, abdominal pain, melena, masses | 787 | 100 | 2.3 |
| Primary tuberculous infection, including recent positive TB skin test conversion | 10 | 90 | 2.0 |
| Resettled refugees | | | |
| Other infectious or parasitic diseases | 136 | 1049 | 5.2 |
| Specified delays in development (eg, dyslexia, dyslalia, motor retardation) | 315 | 1000 | 4.9 |
| Other ill-defined conditions | 799 | 801 | 4.0 |
| Asthma, allergic bronchitis | 493 | 597 | 3.0 |
| Acute nasopharyngitis, common cold | 460 | 526 | 2.6 |
| Anorexia, nausea and vomiting, heartburn, dysphagia, hiccuph, hematemesis, jaundice, ascites, abdominal pain, melena, masses | 787 | 448 | 2.2 |
| Matched Ontario-born | | | |
| Behavior disorders of childhood and adolescence | 313 | 3912 | 5.3 |
| Asthma, allergic bronchitis | 493 | 3865 | 5.3 |
| Anxiety neurosis, hysteria, neurasthenia, obsessive compulsive neurosis, reactive depression | 300 | 2653 | 3.6 |
| Anorexia, nausea and vomiting, heartburn, dysphagia, hiccuph, hematemesis, jaundice, ascites, abdominal pain, melena, masses | 787 | 2028 | 2.8 |
| Serous otitis media, eustachian tube disorders | 381 | 2014 | 2.7 |
| Eczema, atopic dermatitis, neurodermatitis | 691 | 1875 | 2.5 |
| Specified delays in development (eg, dyslexia, dyslalia, motor retardation) | 315 | 1835 | 2.5 |
| Other ill-defined conditions | 799 | 1827 | 2.5 |
| Acute nasopharyngitis, common cold | 460 | 1692 | 2.3 |
| Hyperkinetic syndrome of childhood | 314 | 1691 | 2.3 |
| Allergic rhinitis, hay fever | 477 | 1538 | 2.1 |

OHIP, Ontario Health Insurance Plan

SUPPLEMENTAL TABLE 9 Morbidity Among Resettled Refugees Aged 0 to 17 y That Arrived in Ontario Between April 1, 2008 and March 31, 2017 and Matched Ontario-Born Children and Youth

| | At Least 1 Major ADG | No Major ADG | <i>P</i> |
|------------------------------------|----------------------|---------------|----------|
| <i>n</i> | 2039 | 21 248 | |
| Resettlement model, <i>n</i> (%) | | | <.001 |
| GARs | 1332 (10.0) | 12 028 (90.0) | |
| BVORs | 152 (9.8) | 1392 (90.2) | |
| PSRs | 555 (6.6) | 7828 (93.4) | |
| Country of origin, <i>n</i> (%) | | | <.001 |
| Afghanistan | 104 (6.9) | 1399 (93.1) | |
| Other African countries | 59 (9.0) | 598 (91.0) | |
| Bhutan | 40 (9.0) | 403 (91.0) | |
| Congo | 62 (7.7) | 744 (92.3) | |
| Eritrea | 38 (4.8) | 761 (95.2) | |
| Ethiopia | 30 (8.3) | 331 (91.7) | |
| Iran | 37 (9.2) | 366 (90.8) | |
| Iraq | 458 (8.3) | 5074 (91.7) | |
| Myanmar | 36 (5.6) | 611 (94.4) | |
| Somalia | 117 (9.0) | 1182 (91.0) | |
| Syria | 936 (10.2) | 8249 (89.8) | |
| Other | 122 (7.4) | 1530 (92.6) | |
| Matched Ontario-born, <i>n</i> (%) | 7142 (7.7) | 86 006 (92.3) | <.001 |