Appendix 1:

Provincial, Regional, and Local Population and Demographic Trends and Analysis.

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[1] Background and Introduction

In late September 2023, Statistics Canada released population growth estimates for Canada and the provinces for the year ending July 1, 2023.[1] According to those estimates, the country experienced record high population growth, growing at a rate of 2.9%. As Statistics Canada writes, this was the highest "growth rate recorded for a 12-month period since 1957 (+3.3%), during the Hungarian refugee crisis and at the height of the baby boom."[2] From July 1, 2022, to June 30, 2023, they estimate that Canada added about 1.16 million persons in one year, roughly the size of Saskatchewan.

Virtually all the country's population growth came from net international migration (about 98%) while the remaining came from the natural increase component, that is, births minus deaths.[3] Fertility rates in Canada have reached record lows resulting in lower rates of natural growth.[4] Much of the growth in net international immigration is attributed to non-permanent residents, a 46% increase year over year, or almost 700,000 people. Most of these were temporary foreign workers and students.[5]

Turning to the provinces, Alberta led the country with a 4.0% population growth rate (+56,000 net new residents) due to robust net international migration and net interprovincial migration. Record population growth was also observed in Saskatchewan (+30,685) although its growth rate (+2.6%) was in the bottom third of the provinces.

Most of the net population growth in Saskatchewan came from international immigration (+34,949) accounting for 114% of the population growth. About 31 % of Saskatchewan's population growth came from non-permanent residents. Conversely, Saskatchewan had its lowest level of population growth from the natural increase component in the last 20 years (+2,124). It also saw a net outflow of people to other provinces (-6,388) although this number is below trend.

Given these national and provincial statistics, how does this population growth translate to Saskatoon? At the time of writing, population estimates for subprovincial areas, that is Census Metropolitan Areas (CMAs) or Census Subdivisions (CSDs), have yet to be released.[6] Despite that gap, and based on the provincial population components, we apply statistical techniques and Statistics Canada's population estimates methodology to the Saskatoon CMA and then the Saskatoon CSD (the incorporated municipality) to estimate the area's population growth for the period. Based on the model, we estimate that:

- the Saskatoon CMA added between 15,500 and 18,600 persons with a midpoint estimate of 17,150 persons.

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[1] For details see: https://www150.statcan.gc.ca/n1/daily-quotidien/230927/dq230927a-eng.htm
[2] See note 1.
[3] Population growth or total growth in Canada is equal to natural increase (births minus deaths) plus international migration (immigrants plus net non-permanent residents minus net emigration). At the provincial and territorial levels, total population growth also includes interprovincial migratory increases. At the municipal level, a fourth component intrapovincial migration is added as people move from community to another inside a province.
[4] See https://www.statcan.gc.ca/o1/en/plus/960-fewer-babies-born-canadas-fertility-rate-hits-record-low-2020
[5] See note 1.
[6] For definitions of these terms refer to the glossary at the end of the document.

- For the Saskatoon CSD, we estimate that it added between 12,500 to 15,300 persons in 2023, with a midpoint estimate of 14,100, for annual growth rate of 4.9%, the highest on record.
- Based on these estimates, the Saskatoon CMA population surpassed 364,000 while Saskatoon CSD population eclipsed 300,000 as of June 30,2023.
- We expect population growth to moderate in 2024 and return to more normal growth rates, albeit at the upper bound.

This document provides an analysis of Saskatchewan's and Saskatoon's population and demographic trends for the period of 2006 to 2023. It includes analysis on various components and sub-components of population growth for both Saskatchewan and the Saskatoon CMA.

Methodology and Assumptions

Outside of the Census of the Population, conducted once every five years, Statistics Canada releases population estimates for Canada and the provinces and territories for each quarter, four times per year. They also release annual demographic estimates for Canada, the provinces and territories, and various geographies at the sub-provincial level once per year. The population year means the period beginning July 1 of a given year and ending June 30 of the following year.[7] That is, the annual population change for 2023, is the difference between the population on July 1, 2022, and July 1, 2023.

These estimates are referred to as "Postcensal" estimates, which are produced by using data from the 2021 census adjusted for census net undercoverage and the components of demographic growth since the last census.[8] To estimate the population change over a period, Statistics Canada uses the "component" method, meaning it estimates the population by two main components: (1) natural increase and (2) net migration.[9] The natural increase is births minus deaths while net migration at the national level is net international immigration, which includes permanent (immigrants) and non-permanent residents. It adds up the net differences between them to obtain the total annual population estimate. This is simply an estimate of inflows and outflows.

At the provincial level, net migration is divided into two sub-components: (a) net international migration and (b) net interprovincial migration. The first estimates the difference in people moving from (inflow) other countries (including permanent and non-permanent residents) versus those moving to (outflow) other countries. The second estimates the difference in people moving to a particular province (inflow) versus those moving to another province (outflow).

Statistics Canada's population estimates rely on administrative data from several partner agencies to calculate the inflows and outflows of the population. For example, preliminary estimates of migration between provinces (and territories) are produced using Canada child

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[7] See note 1.
[8] See https://www150.statcan.gc.ca/n1/pub/91-528-x/2011001/app-ann-eng.htm for definitions of this and other related terms.
[9] See note 1, methodology section.

benefit (CCB) data. Final estimates of interprovincial migration are produced using personal income tax data obtained from the Canada Revenue Agency.[10]

At the sub-provincial level, these components and sub-components are used to estimate population change, but an additional sub-component is added: net intraprovincial migration. This refers to the difference of people moving into a given region versus those moving out to a different region inside a province. In this context, a region can be referred to as a Census Metropolitan Area (CMA). Thus, to estimate the annual population in the Saskatoon CMA, Statistics Canada's methodology produces the following equation:

Total Population = Natural increase + Net International Immigration + Net Interprovincial migration + Net Intraprovincial migration

Each year, Statistics Canada publishes the estimated population components for each CMA. The Saskatoon CMA is a broader geographic area that includes the city of Saskatoon and a collection of neighbouring cities, towns, villages, and rural municipalities. The incorporated city of Saskatoon is referred to as a Census Subdivision (CSD) and it accounts for about 83% of the Saskatoon CMAs total population.

The components of population growth are not published at the CSD level, as Statistics Canada relies exclusively on fiscal data (e.g., tax returns and benefits as described earlier) to estimate population at this level. The method consists of using tax files and other administrative datasets to calculate the change in the population of CSDs between two annual periods.[11]

With those base methods and assumptions in mind, the 2023 population estimates for the Saskatoon CMA and Saskatoon CSD rely on Statistics Canada's methodology with some caveats. Because we do not have access to the administrative data, we thus rely on the provincial estimates as the foundation for our projections. We apply some descriptive statistical and regression techniques to historical provincial and Saskatoon CMA population estimates by each component.

For example, we apply historical weights to each sub-component and component to estimate the Saskatoon CMA's actual and predicted share of each. Although the intraprovincial migration component is not counted at the provincial level, it tends to add between 1,100 and 2,000 new residents per year to the Saskatoon CMA and a corresponding share to the Saskatoon CSD.

Because immigration is the key driver of population growth, we estimate the share of new immigrants or non-permanent residents to Saskatchewan that come to the Saskatoon CMA. We find that the Saskatoon accounts for about 44% of all new immigrants to Saskatchewan and about 51% of all new net non-permanent residents, although this is much higher in recent years. Looking at other data sources such as the Census, we find that the Saskatoon CMA accounted for about 66% of all net new population growth in the province between 2016 and 2021.[12] More analysis on these variables is contained in the subsequent pages of this document.

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[10] See https://www150.statcan.gc.ca/n1/pub/91-214-x/2023001/section02-eng.htm
[11] See note 10 for source. These changes, expressed as a percentage, are then applied to the adjusted census populations of the CSDs. The process is repeated for subsequent years.
[12] See for example, https://www12.statcan.gc.ca/census-recensement/2021

[3] Saskatchewan Population and Demographics

Before analyzing Saskatoon's population and demographic trends, we begin by providing a review of the data and trends in Saskatchewan. This is important context because the total population growth in a province is distributed to the communities (or groups of communities) within it. As explained in the previous section, the components of population growth are crucial for understanding the nature of population growth and especially to determine the sources of net growth. We explore those next.

Table 1 in Appendix A provides Saskatchewan's population estimates as reported by Statistics Canada and are then transformed for annual growth and growth rates. In 2023, Saskatchewan's population surpassed 1.2 million adding 30,685 net new residents for a growth rate of 2.6%. The estimated annual growth in persons in 2023 was almost double that of the next highest year (2009) in the time series. The average annual growth rate over the period was 1.2% so the 2023 growth rate was more than double the long run average (see charts below for illustrations).
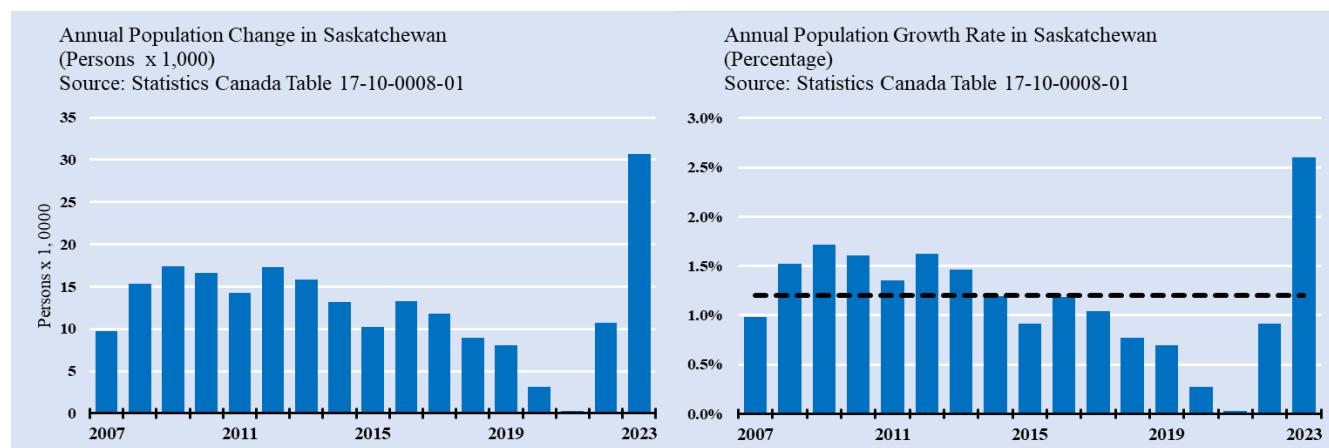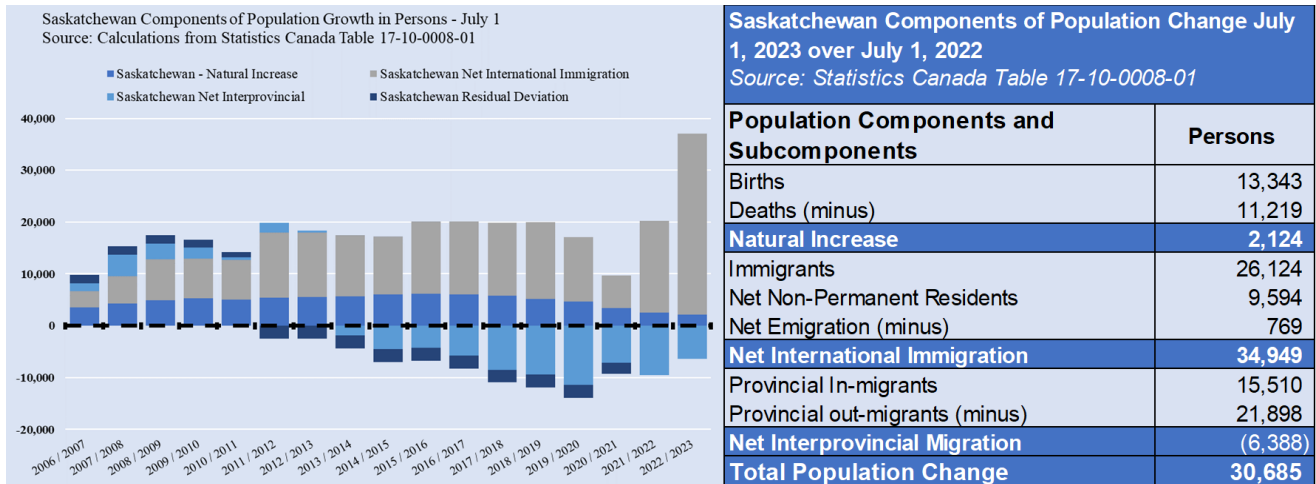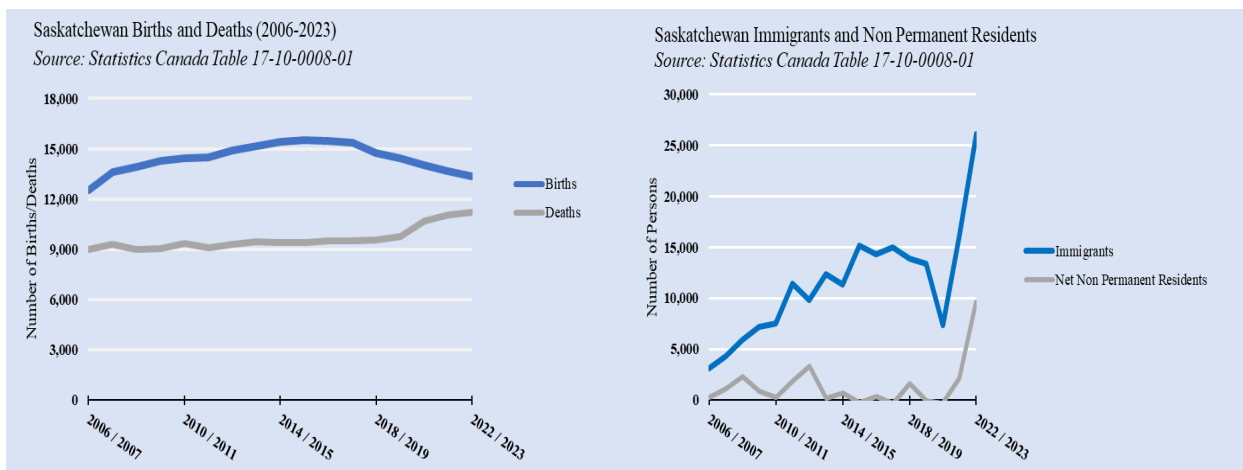

Table 2 in Appendix A provides time series data on the components and sub-components of population growth each year from 2006 to 2023 for Saskatchewan. Some key observations from the data are:

- The natural increase component peaked in 2015/16 and its numbers have fallen consistently and are now one-third of what they were in 2015/16. This is primarily due to falling birth rates. Births and deaths have converged in recent years, reducing the natural increase (see chart below).
- Net international immigration has grown substantially as a share of total population and accounts for all the net population growth in Saskatchewan, especially since 2014/15. In 2023, net international immigration was almost double that of the previous year.
- One quarter of the net international immigration in 2023 came from net temporary residents (see chart below).
- Since 2013/14 Saskatchewan started losing people to other provinces on a net basis. Negative interprovincial migration peaked in 2019/2020 but has fallen substantially in recent years, with the 2023 estimate the lowest in six years.

The stacked column chart below provides a graphical representation of the time series trends for each major population component. The table shows the components and subcomponent changes for 2023.

Saskatchewan Components of Population Growth in Persons - July 1
Source: Calculations from Statistics Canada Table 17-10-0008-01

Saskatchewan Components of Population Change July 1, 2023 over July 1, 2022 *Source: Statistics Canada Table 17-10-0008-01*	
Population Components and Subcomponents	**Persons**
Births	13,343
Deaths (minus)	11,219
Natural Increase	**2,124**
Immigrants	26,124
Net Non-Permanent Residents	9,594
Net Emigration (minus)	769
Net International Immigration	**34,949**
Provincial In-migrants	15,510
Provincial out-migrants (minus)	21,898
Net Interprovincial Migration	**(6,388)**
Total Population Change	**30,685**

The line charts below show (a) trends of the natural increase subcomponent where the gap between births and deaths have converged and (b) the immigrant and non-permanent resident sub-component population growth. Here, the line kinks sharply in 2023 for both immigrants and non-permanent residents.

Saskatchewan Births and Deaths (2006-2023)
Source: Statistics Canada Table 17-10-0008-01

Saskatchewan Immigrants and Non Permanent Residents
Source: Statistics Canada Table 17-10-0008-01

[4] Saskatoon Population and Demographics.

Understanding the provincial population and demographic component trends is useful to help estimate population at the CMA and CSD levels. As noted, the component method is used only at the CMA level and only population totals are reported at the CSD level. Because the CMA and CSD populations have not been adjusted by Statistics Canada they may not fully match with the provincial estimates and thus some CMA population counts and shares may be slightly higher or lower.[13] To address this, we apply some statistical techniques to smooth out the data in those years for which outliers exist. We then estimate the inflows (positive) and outflows (negative) based on the population components for the Saskatoon CMA. The table below show
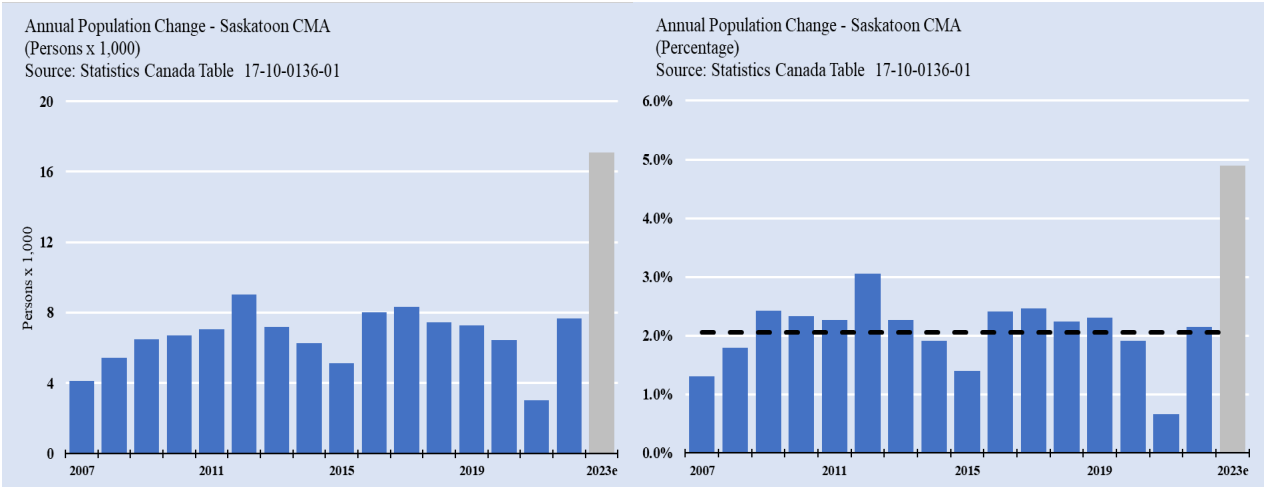
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[13] This is because the most recent sub-provincial estimates have not undergone a revision process like the provincial ones have.
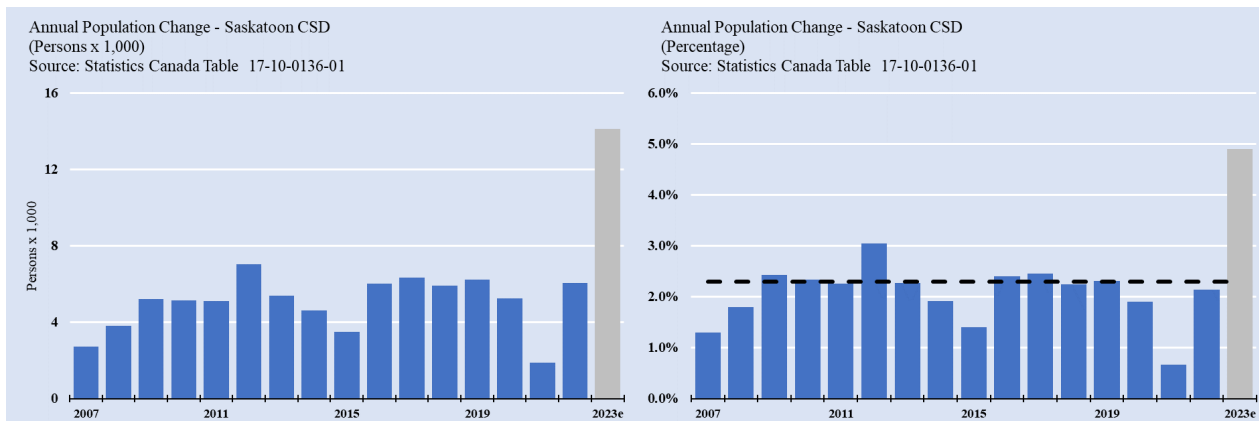
the results for the average (mean) lower and upper bound estimates. The mean is the midpoint estimate resulting from the assumptions in the model.

Saskatoon CMA Population Estimates by Components July 1 2023 over 2022 (Inlfows and Outflows)			
Inflows	**Lower**	**Mean**	**Upper**
Births	3,523	3,603	3,683
Immigrants	11,024	11,495	11,965
Net Non-Permanent Residents	4,423	5,756	7,090
Net Intraprovincial Migration	1,050	1,220	1,280
Sub Total	20,020	22,074	24,017
Outflows	**Lower**	**Mean**	**Upper**
Deaths	2,244	2,356	2,378
Net Emigration	255	268	282
Net Interprovincial Migration	1,872	2,299	2,779
Sub Total	4,370	4,923	5,439
Net Population Estimate	**15,650**	**17,150**	**18,578**

Tables 3A and 3B in Appendix A provides the Saskatoon CMA and the Saskatoon CSD population estimates as reported by Statistics Canada up to 2022 and estimated by our model for 2023. In them, we show the estimated population, the annual growth in persons and the annual growth rate for each geographic classification. We also include the Saskatoon CSD's share of the total CMA population and the share of annual population growth.
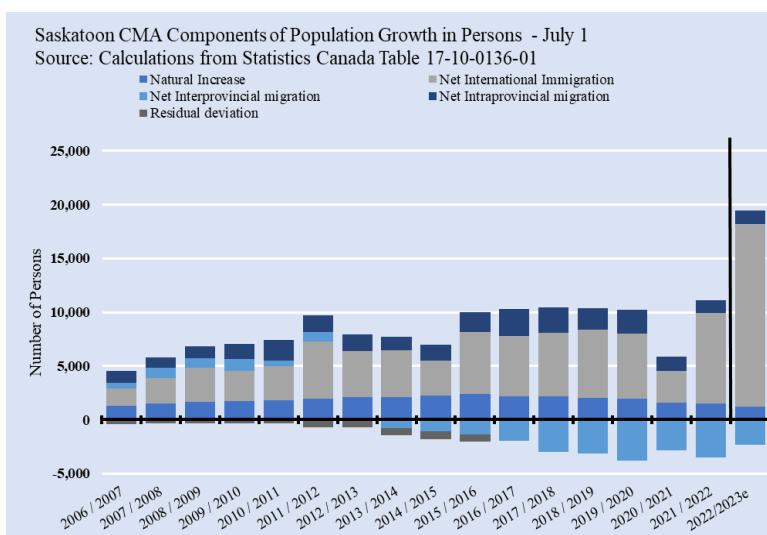
The annual growth data is also illustrated in the charts below. The grey bars are the 2023 midpoint predicted values based on the estimates described earlier. We also provide a stacked column time-series chart showing how each component contributes to population growth in the CMA and individual line charts to show trends for the other main components.

Annual Population Change - Saskatoon CMA
(Persons x 1,000)
Source: Statistics Canada Table 17-10-0136-01

Annual Population Change - Saskatoon CMA
(Percentage)
Source: Statistics Canada Table 17-10-0136-01

Annual Population Change - Saskatoon CSD
(Persons x 1,000)
Source: Statistics Canada Table 17-10-0136-01

Annual Population Change - Saskatoon CSD
(Percentage)
Source: Statistics Canada Table 17-10-0136-01

Some key observations from the data are:

- The Saskatoon CMA's estimated population in 2023 is expected to be about 364,000 in 2023 while the CSD eclipsed 300,000.
- Due to the strong influence of net international immigration, we estimate the annual growth rate to be about 4.9% about 2.6 percentage points above the pre-2022 average for both the CMA and CSD.
- Like Saskatchewan, the Saskatoon CMA's population growth is almost exclusively from international immigration, about 99.6%.
- The Saskatoon CMA's birth rates are higher than the provincial rates, while deaths are lower, resulting in a higher natural increase.
- Moreover, Saskatoon is a net recipient of people from other parts of Saskatchewan which helps offset the losses of persons to other provinces. Saskatoon accounts for about 36% of Saskatchewan's net population movement to other provinces.

Saskatoon CMA Components of Population Growth in Persons - July 1
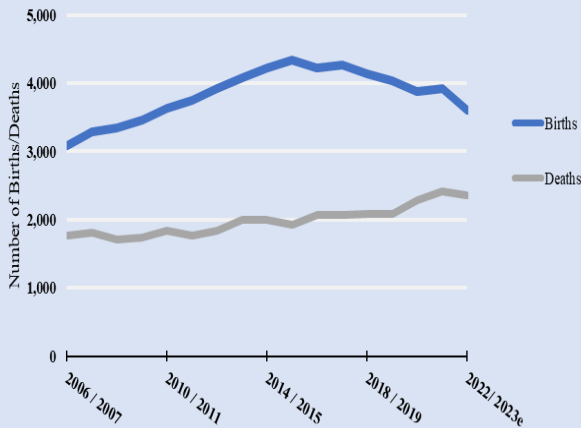Source: Calculations from Statistics Canada Table 17-10-0136-01

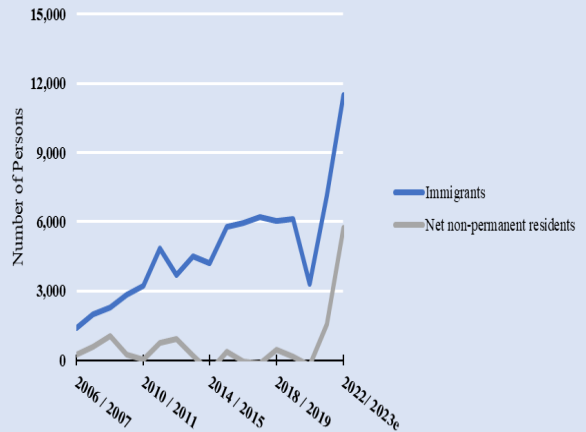| Saskatoon CMA Components of Population Change July 1, 2023 over July 1, 2022 Source: Calculations from Statistics Canada Tables 17-10-0008-01 and 17-10-0136-01	
Population Components and Subcomponents	**Persons**
Births	3,603
Deaths (minus)	2,356
Natural Increase	**1,247**
Immigrants	11,495
Net Non-Permanent Residents	5,756
Net Emigration (minus)	268
Net International Immigration	**16,983**
Provincial In-migrants	5,584
Provincial out-migrants (minus)	7,883
Net Interprovincial Migration	**(2,299)**
Net Intrapovincial Migration	**1,220**
Total Population Change	**17,151**

Saskatoon CMA - Births and Deaths
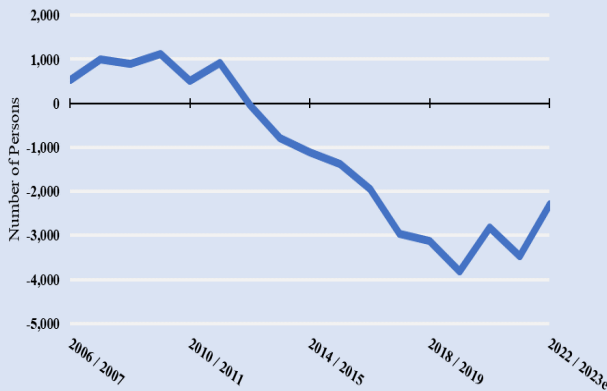*Source: Statistics Canada Table 17-10-0136-01*

Saskatoon CMA - Immigrants and Non-Permanent Residents
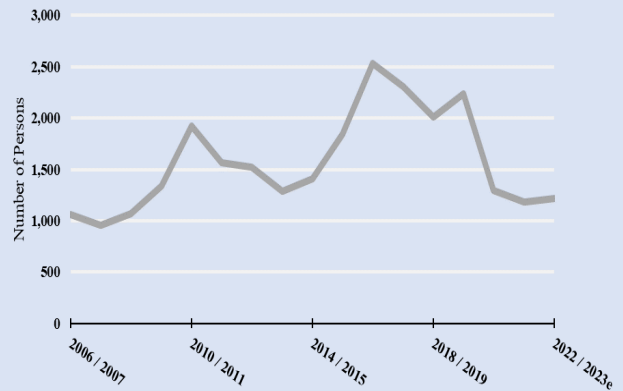*Source: Statistics Canada Table 17-10-0136-01*

Saskatoon CMA - Interprovincial Migration
Source: Statistics Canada Table 17-10-0136-01

Saskatoon CMA - Intraprovincial Migration
Source: Statistics Canada Table 17-10-0136-01

Like Saskatchewan, we estimate Saskatoon experienced record population growth in 2023. Saskatoon's population growth is strongly influenced by international immigration. Between 2006/07 and 2022/23, Saskatoon is estimated to have added a net total of over 122,000 persons in the CMA and just over 94,000 in the CSD. Over 88,000 of them are from net international immigration. Given some recently announced immigration policy changes by the federal government we anticipate Saskatoon's population will fall back to more typical growth rates in 2024, but on the higher side of about 3%, which is still well above average.[14]

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[14] https://www.canada.ca/en/immigration-refugees-citizenship/news/2024/01/canada-to-stabilize-growth-and-decrease-number-of-new-international-student-permits-issued-to-approximately-360000-for-2024.html

Appendix A: Data Tables

Table 1: Saskatchewan Population Estimates 2006-2023 (as at July 1) Source: Statistics Canada Table 17-10-0009-01			
Year	**Population Estimates**	**Year Over Year Change (Persons)**	**Growth Rate (%)**
2006	992,313	N/A	N/A
2007	1,002,074	9,761	1.0%
2008	1,017,368	15,294	1.5%
2009	1,034,791	17,423	1.7%
2010	1,051,426	16,635	1.6%
2011	1,065,661	14,235	1.4%
2012	1,083,005	17,344	1.6%
2013	1,098,868	15,863	1.5%
2014	1,111,989	13,121	1.2%
2015	1,122,210	10,221	0.9%
2016	1,135,496	13,286	1.2%
2017	1,147,315	11,819	1.0%
2018	1,156,210	8,895	0.8%
2019	1,164,223	8,013	0.7%
2020	1,167,386	3,163	0.3%
2021*	1,167,711	325	0.0%
2022	1,178,422	10,711	0.9%
2023	1,209,107	30,685	2.6%

Table 2: Saskatchewan Components of Population Growth Source: Statistics Canada Table 17-10-0009-01									
Year	Births	Deaths	Natural Increase	Immigrants	Net Non Permanent Residents	Net Emigration	Net International Immigration	Net interprovincial Migration	Residual Deviation
2006 / 2007	12,532	8,996	3,536	3,096	229	209	3,116	1,549	1,560
2007 / 2008	13,628	9,296	4,332	4,291	1,143	207	5,227	4,171	1,564
2008 / 2009	13,927	9,014	4,913	5,928	2,263	224	7,967	2,983	1,560
2009 / 2010	14,259	9,019	5,240	7,204	834	356	7,682	2,153	1,560
2010 / 2011	14,440	9,347	5,093	7,553	303	241	7,615	545	982
2011 / 2012	14,465	9,081	5,384	11,446	1,904	766	12,584	1,878	-2,502
2012 / 2013	14,890	9,315	5,575	9,814	3,311	733	12,392	392	-2,496
2013 / 2014	15,159	9,434	5,725	12,317	203	790	11,730	-1,839	-2,495
2014 / 2015	15,421	9,424	5,997	11,377	725	854	11,248	-4,528	-2,496
2015 / 2016	15,520	9,378	6,142	15,171	-254	1,001	13,916	-4,272	-2,500
2016 / 2017	15,477	9,486	5,991	14,313	372	619	14,066	-5,760	-2,478
2017 / 2018	15,367	9,516	5,851	14,999	-330	673	13,996	-8,475	-2,477
2018 / 2019	14,725	9,556	5,169	13,915	1,634	786	14,763	-9,441	-2,478
2019 / 2020	14,446	9,788	4,658	13,383	-45	936	12,402	-11,412	-2,485
2020 / 2021	14,048	10,693	3,355	7,353	-295	783	6,275	-7,174	-2,131
2021 / 2022	13,653	11,074	2,579	16,291	2,090	756	17,625	-9,493	0
2022 / 2023	13,343	11,219	2,124	26,124	9,594	769	34,949	-6,388	0

Table 3A: Saskatoon CMA Population Estimates Source: Statistics Canada Table 17-10-0136-01				Table 3B: Saskatoon CSD Population Estimates Source: Statistics Canada Table 17-10-0142-01				
Year	Persons	Annual Change	Annual Growth Rate	Persons	Annual Change	Annual Growth Rate	CSD Share of CMA	CSD Share of New CMA Growth
2006	241,931	N/A	N/A	208,278	N/A	N/A	86%	N/A
2007	246,052	4,121	1.7%	210,987	2,709	1.3%	86%	66%
2008	251,481	5,429	2.2%	214,775	3,788	1.8%	85%	70%
2009	257,960	6,479	2.6%	219,980	5,205	2.4%	85%	80%
2010	264,665	6,705	2.6%	225,107	5,127	2.3%	85%	76%
2011	271,728	7,063	2.7%	230,194	5,087	2.3%	85%	72%
2012	280,765	9,037	3.3%	237,213	7,019	3.0%	84%	78%
2013	287,960	7,195	2.6%	242,604	5,391	2.3%	84%	75%
2014	294,216	6,256	2.2%	247,230	4,626	1.9%	84%	74%
2015	299,349	5,133	1.7%	250,702	3,472	1.4%	84%	68%
2016	307,367	8,018	2.7%	256,731	6,029	2.4%	84%	75%
2017	315,702	8,335	2.7%	263,042	6,311	2.5%	83%	76%
2018	323,148	7,446	2.4%	268,948	5,906	2.2%	83%	79%
2019	330,413	7,265	2.2%	275,157	6,209	2.3%	83%	85%
2020	336,850	6,437	1.9%	280,400	5,243	1.9%	83%	81%
2021	339,870	3,020	0.9%	282,266	1,866	0.7%	83%	62%
2022	347,536	7,666	2.3%	288,311	6,045	2.1%	83%	79%
2023e	364,641	17,105	4.9%	302,426	14,115	4.9%	83%	83%

Appendix B: Glossary of Key Terms[15]:

Census metropolitan area (CMA) - is formed by one or more adjacent municipalities centred on a population centre (known as the core). A CMA must have a total population of at least 100,000 of which 50,000 or more must live in the core.

Components of demographic growth - any of the classes of events generating population movement variations. Births, deaths, and migrations are the components responsible for the variations since they alter either the total population or the age and sex distribution of the population.

Demographic dependency ratio - the ratio of the combined population aged between 0 to 14 years old, and the population aged 65 years and over to the population aged between 15 and 64 years old.

Emigrant - Canadian citizen or **immigrant** who has left Canada to establish a residence in another country, involving a change in usual place of residence. Emigration may be either temporary or permanent.

Error of closure - difference between the **postcensal estimate** at the census date and the results of the census adjusted for **census net undercoverage** (including adjustment for incompletely enumerated Indian reserves).

Immigrant - an immigrant refers to a person who is or has ever been a landed immigrant (permanent resident) and who has been granted the right to live in Canada permanently by immigration authorities. Immigrants are either Canadian citizens by naturalization (the citizenship process) or permanent residents under Canadian legislation.

International migration - represents movement of population between Canada and a foreign country which involves a change of the usual place of residence.

Interprovincial migration - represents all movement from one province or territory to another involving a change in the usual place residence. A person who takes up residence in another province or territory is an **out-migran**t with reference to the province or territory of origin and an **in-migrant** with reference to the province or territory of destination.

Intraprovincial migration or subprovincial migration - represents all movement from one region to another within the same province or territory involving a change of the usual place residence.

Natural increase - variation of the **population** size over a given period as a result of the difference between the numbers of births and deaths.

Net internal migration - sum of **net intraprovincial** and **net interprovincial migration**.

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[15] Glossary is taken from: https://www150.statcan.gc.ca/n1/pub/91-214-x/2023001/app-ann-a-eng.htm.

Net international migration - is obtained according to the following
formula: Immigrants + returning emigrants + net non-permanent residents – (emigrants + net temporary emigrants).

Net interprovincial migration - represents the difference between **in-migrants** and **out-migrants** for a given province or territory.

Net intraprovincial migration - represents the difference between in-migrants and out-migrants in a given region. A region can be defined as a census division, an economic region, or a census metropolitan area.

Net non-permanent residents - represent the variation in the number of **non-permanent residents** between two dates.

Net temporary emigration - represents the variation in the number of temporary emigrants between two dates. Temporary emigration includes Canadian citizens and **immigrants** living temporarily abroad who have not maintained a usual place of residence in Canada.

Non-permanent resident - a person who is lawfully in Canada on a temporary basis under the authority of a valid document (work permit, study permit, Minister's permit, or asylum claimant) issued for that person along with members of his family living with them. This group also includes individuals who seek refugee status upon or after their arrival in Canada and remain in the country pending the outcome of processes relative to their claim.

Population estimate Postcensal - population estimate produced by using data from the most recent available census adjusted for census net undercoverage (including adjustment for incompletely enumerated Indian reserves) and estimate of the components of demographic growth since that last census. This estimate can be preliminary, updated, or final.

Population growth or total growth - variation of population size between two dates. It can also be obtained by summing the natural increase, total net migration and if possible, subtract residual deviation. It can be positive or negative.

Residual deviation - difference between demographic population growth calculated using intercensal estimates of population between two dates and that obtained by the sum of the components for the same period.

Returning emigrant - Canadian citizen or immigrant having previously emigrated from Canada and subsequently returned to the country.

Year - unless otherwise specified, the term "year" refers to the period beginning July 1 of a given year and ending June 30 of the following year.