2020 Post/Intercensal Population Estimates Transition

The Community Health Assessment Tool (CHAT), and other programs at the Department of Health (DOH), use externally created population data for such things as calculating health-related rates. The data we typically use have become available again after a period of being unavailable. We are using this opportunity to inform staff and other users about the updated population estimates and provide recommendations for their use. (See the "Recommendations" section at the end of the document.)

This applies to all teams that are currently using the Population Interim Estimates (PIE, also known as PopPIE) developed by Public Health-Seattle & King County (PHSKC), though this document will focus on CHAT.

The CHAT team is updating which population estimates are used in the CHAT system. We are replacing the interim (PIE) estimates we were using with the newly published estimates. We have applied the new estimates retroactively. As a result, previously calculated rates will not match any new rates calculated using CHAT.

Background

Washington State's Office of Financial Management (OFM) creates small area demographic estimates (SADE) to approximate the race, age, and sex distribution of residents in smaller geographic units (e.g. census blocks, block groups and tracts). DOH uses these numbers for calculating health-related rates. These SADE numbers are based on the United States Census Bureau's estimates and adjusted by OFM based on Washington State specific data.

The SADE estimates use detailed demographic tables created by the Census Bureau for each census. The Census Bureau, however, has only recently created most of the needed tables for the 2020 census. In the meantime, we have been using estimates (PIE) based on the 2010 tables where the 2020 tables had not been produced. These PIE were not created by OFM but used a similar process.

Now that the updated tables are available, OFM recently

- Produced SADE for 2020 and onward.

- Updated estimates for 2010-2019.

- Reassigned 1990-2010 estimates according to 2020 census-based geographies.

We are switching to using these estimates.

Definitions

Below are some terms and acronyms helpful for understanding this issue.

CHAT: Community Health Assessment Tool. An online query-based system available for local health jurisdictions and Tribes. CHAT requires population estimates to create any rate (crude, age-adjusted, etc.) that is not based on the total number of vital events (such as births) in the state.

Intercensal Population Estimates: estimates created for the years between two censuses *using data from both censuses* to estimate the population in the intervening years. Intercensal estimates, therefore, cannot be made before the release of the second census. In the current case, 2011-2019 intercensal estimates have information from both the 2010 and the 2020 censuses.
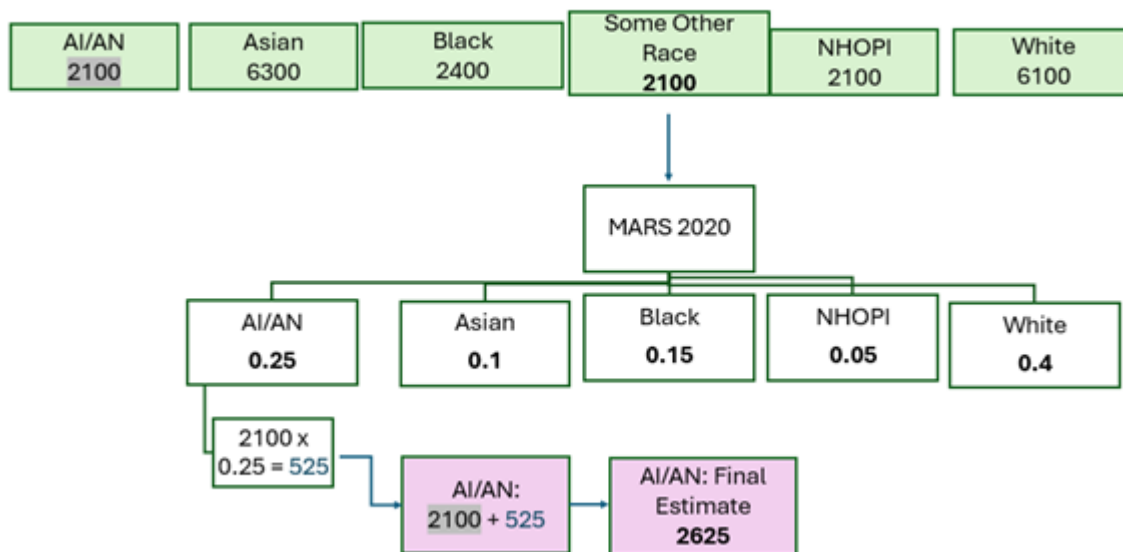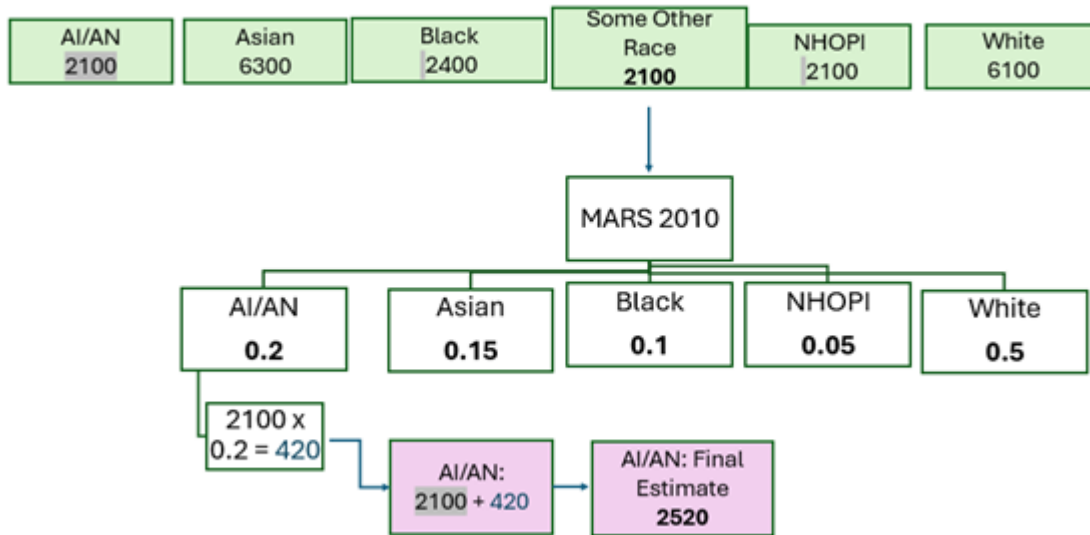
Postcensal Population Estimates: estimates that use *only the previous census* to estimate populations in years following that census. For example, a postcensal estimate for 2023 would start with the 2020 estimate, then use other data sources (e.g. birth counts) to estimate the population in 2023. These estimates, therefore, only require that the previous census' data be available.

Preliminary/Final Estimates: OFM updates their intercensal and postcensal estimates based on data available from the Census Bureau at the time. To create a final estimate, OFM needs the MARS97 file, MARS77 file, and population estimates. If one of these components is missing, OFM releases a preliminary estimate that will be updated once all three necessary components from the Census Bureau become available. Currently the MARS files are not available for the 2020 census. As a result, OFM released preliminary estimates for years 2010-2023 based on the MARS files from the 2010 census (2010 MARS). The 2010-2023 preliminary estimates will be updated to final estimates once the 2020 MARS file becomes available.

MARS files: Modified Age, Race and Sex data released by the US Census Bureau. Besides distributing individuals into age and sex categories, these files are used in SADE to distribute individuals from the 'some other race' category into the standard MARS97 race categories. Currently this file is not available for the 2020 census. The preliminary OFM estimates use the version of this file from the 2010 census (2010 MARS) to distribute individuals from the "some other race" category.

The proportions within "some other race" in the 2010 MARS file are different than the proportions for "some other race" in the 2020 MARS files. Therefore, the resulting population estimates will be different once the 2020 MARS file is available.

Example: Geography A has 20,000 residents. Initial race counts (including "some other race") are shown in green. For simplicity, we are only calculating the final estimates for the AI/AN group in this example.

AI/AN 2100	Asian 6300	Black 2400	Some Other Race **2100**	NHOPI 2100	White 6100

↓

MARS 2010

AI/AN **0.2**	Asian **0.15**	Black **0.1**	NHOPI **0.05**	White **0.5**

2100 x 0.2 = 420 → AI/AN: 2100 + 420 → AI/AN: Final Estimate **2520**

AI/AN 2100	Asian 6300	Black 2400	Some Other Race **2100**	NHOPI 2100	White 6100

↓

MARS 2020

AI/AN **0.25**	Asian **0.1**	Black **0.15**	NHOPI **0.05**	White **0.4**

2100 x 0.25 = 525 → AI/AN: 2100 + 525 → AI/AN: Final Estimate **2625**

Additionally, MARS files come in two varieties:

- MARS97: most commonly used. These break race into six or seven groups.

- MARS77: older, largely historical. These files break race into four or five groups, as opposed to the six or seven groups available in MARS97 files. PIE estimates did not include MARS77 files.

PIE: Population Interim Estimates. Due to the delayed release of several Census Bureau products following the 2020 census, DOH has been using PIE developed by PHSKC. These were vetted by subject matter experts and interested parties from DOH, local health jurisdictions, and Tribes. PIE were available for 2000-2022 so that a consistent series of population data is available. More information about these estimates can be found [here](#).

SADE: Small Area Demographic Estimates. The SADE model produces granular population estimates, broken down by age, sex, race, and ethnicity. These are made for smaller geographic areas (e.g. block, block group and/or census tract). They can be aggregated to create larger geographies such as counties, or any arbitrary set of census blocks as needed.

Preliminary SADE Estimates. This is the name for the recently released OFM SADE estimates. They are labeled as "preliminary" because they will be further updated in 2025 once the Census Bureau releases the 2020 MARS files. With input from CHAT users, we decided in 2024 to switch to these estimates before the final SADE estimates became available.

Final SADE Estimates. This is the name for the final OFM SADE estimates that will include information from the 2020 MARS files. These have not been released yet. The population estimates in CHAT will be updated again with the final SADE estimates once they become available.

Current Status

Following the 2020 census, the US Census Bureau delayed the release of many granular population estimates needed by OFM for calculating small area demographic estimates. Since health-related rates cannot be calculated without a population denominator, PHSKC developed PIE. DOH has been using PIE in all dashboards and publications.

Transition Plan

CHAT

PIE were incorporated into CHAT as of January 31, 2024. We replaced previous population estimates with the 2011-2022 PIE estimates to provide consistency.

We asked CHAT users in June 2024 how they would like us to manage the estimate conversion process. Based the feedback we received, CHAT is releasing data using preliminary estimates rather than waiting for the release of final estimates. All CHAT modules using population estimates as a denominator have been updated with the preliminary 2010-2023 estimates. We also updated CHAT with final 1990-2009 estimates that were redistributed to geographies based on the 2020 census.

The Center for Health Statistics will also transition any related dashboards to reflect the new estimates. These will be updated again when final estimates are released (expected summer 2026).

Benefits: Population estimates are based on the most recent full decade of data available. This eliminates issues with creating three- or five-year aggregations. We do not have to wait for final 2010-2019 estimates, which are expected to come at some point in 2026.

Costs: Rates are changing twice: once in January 2025 for the preliminary estimates, and again in 2026 for final 2010-2024 estimates.

Center for Health Statistics

The Center for Health Statistics (CHS) will update all dashboards that they are responsible for that use population denominators from PIE to SADE estimates. We recommend that other teams using state, county, census tract, block group, zip code, school district, race, or age as a denominator base to recalculate their rates with the new OFM estimates. This will mean a more accurate, updated rate consistent with numbers used across the state.

Timeline

As the US Census Bureau begins to release the delayed 2020 demographic estimates, OFM has been able to start producing SADE estimates. Below is an approximate timeline for when various estimates may be released.

Table 1. Current status and projected timeline of population estimate sources. All listed datasets are adjusted to 2020 census geographies.

Estimates	Years Available	Race Proportions based on which census:	MARS Format	Approximate release date
PIE estimates	2011-2022	2010	MARS97	Replaced in CHAT by SADE.
Final SADE estimates	1990-2010	2010	MARS77	Available now from OFM.
Final SADE estimates	2000-2010	2010	MARS97	Available now from OFM. 2004-2009 available in CHAT.
Preliminary SADE	2010-2023	2010	MARS97 & MARS77	Available now from OFM.
Final 2020 MARS demographic distribution	2020	2020	MARS97 & MARS77	Expected release by Census Bureau in 2025.

Final SADE estimates	2010-2024	2020	MARS97 & MARS77	Expected release from OFM in 2026, depending on release date of MARS 2020 from the US Census Bureau.

Data Impacts

We expect notable differences in demographic estimates created using PIE, preliminary SADE and final SADE.

The US Census Bureau changed the way they collected and processed race data. This led to a significant increase in the "some other race" category, with corresponding drops in single race categories. Therefore, we expect to see changes in rates calculated by race. In some case these changes will be substantial.

OFM also expects that the age distribution of Washington state will change with the 2020 estimates. The older populations are increasing as the baby boomer generation ages. At the same time, the fertility rate is dropping, leading to lower counts in the 0-4 age group.

These differences in race categorization and age distribution are expected to be large in the final OFM release as well. For this reason, we recommend all teams transition now to incorporating the preliminary OFM estimates, and to the final OFM estimates in the future. This will ensure agencies across the state produce rates that accurately reflect the Washington's demographic attributes.

Additionally, the 2020 census coincided with the beginning of the COVID-19 pandemic. This has led to complications in counting student populations. Areas with large college student populations are expected to show unusual drops in populations. This reflects the change to remote learning during the census collection.

Recommendations

DOH makes the following recommendations moving forward for work that relies on population estimates:

- **Use preliminary (and final, when available) SADE estimates, rather than PIE.**

  - For DOH staff, there is no expectation to recalculate past work with new estimates unless a data update is needed. However, because of the size of the expected impact from these transitions, there is a high likelihood that recalculating existing rates will be necessary.

- **Do not combine different population estimate sources.**

- **When updating data that used a previous estimate, add language such as "Rates may differ from previously published rates due to changes in population**

estimates.”

Accessing Raw Data

If you wish to access the population estimates directly, rather than through CHAT, you can do so here:

DOH: Y:\Datasets\Unrestricted\Population\OFM SADE Preliminary and Final updated 1990-2023

External Users: Community Health Assessment

Bibliography

1. **Bureau, U.S. Census.** National Center for Health Statistics. *Population Census and Population Estimates.* [Online] June 26, 2023. [Cited: May 10, 2024.]

2. **Management, Office of Financial.** Small Area Demographic Estimates Frequently Asked Questions. *Office of Financial Management.* [Online] . https://ofm.wa.gov/sites/default/files/public/dataresearch/pop/asr/sade/sade_faq.pdf.