

COVID-19 Vaccination Demographic Data Analysis December 15, 2020 – March 14, 2021

Snohomish County COVID-19 Vaccination Demographic Data Analysis: December 15, 2020 through March 14, 2021

Snohomish County is currently in phase 1B tier 2 of COVID-19 vaccination distribution plan. The Washington State Department of Health (DOH) defines phase 1B tier 2 as:

- High-risk critical workers in certain congregate settings: agriculture; fishing vessel crews; food processing; grocery store/food bank; corrections (prisons, jails, detention centers); court of law; public transit; and remaining first responders
- People 16 years or older who are pregnant or have a disability that puts them at high risk for severe COVID-19 illness.

Prior phases whose unvaccinated members remain eligible include:

Phase 1b1

- Anyone ≥ 65 years
- All people ≥ 50 years who also live in a multigenerational household
- Educators and school staff for pre-kindergarten through 12th grade
- Childcare workers

Phase 1a

- All workers at risk in health care settings
- People who live or work in long-term care facilities

Data source for all tables was the Washington State Immunization Information System (WAIS), and the Washington State Office of Financial Management (OFM) for population estimates. See appendix A for all data cleaning and assumptions.

The demographic profile of Snohomish County is made up of an even split of males and females, each making up 50% of the population in Snohomish County (table 1). The age distribution of Snohomish County residents shows the largest percent of the population is working-aged adults between the ages of 20 and 64 years old (60%) (table 2). Older adults over 65 years-old make up 16% of the population and children and adolescents (<20 years-old) make up almost one-fourth of the Snohomish County population. The race and ethnicity profile of Snohomish County shows that the county is predominantly white, non-Hispanic (69%) (table 3). Asian's are the second most prevalent race seen in the county (11%) followed closely by all-race Hispanics.

The current list of vaccine-eligible groups set forth above primarily emphasize those at highest risk of severe COVID-19 illness, hospitalization and death (e.g., long-term care residents, age ≥ 65), and those at increased risk of acquisition at work (e.g., healthcare workers, high-risk critical infrastructure workers). More women than men have been vaccinated in Snohomish County. Age and employment would affect gender rates as women tend to live longer than men, and more women work in healthcare. Sixty-five years and above is the most vaccinated group in Snohomish County (56%). This is followed by 50-64 year-olds, 35-49 year-old, and 20-34 year-olds respectively.

Non-Hispanic Whites are the most vaccinated group in Snohomish County by absolute number of doses received, but American Indians/Alaska Natives are the most vaccinated group in terms of proportional coverage (20%, see figure 1). Vaccine uptake among races was compared to non-Hispanic Whites. Hispanics and African Americans had lower rates of COVID-19 vaccination compared to non-Hispanic Whites *when the total population is the denominator used* (table 1). American Indians/Alaska Natives (AI/AN), Native Hawaiian/Pacific Islanders (NH/PI), and Asians had higher *per capita* rates of vaccination. These differences are statistically significant ($p < 0.05$). The increase in AI/AN may be due to Tribal vaccination campaigns. It is unknown why there are differences among other races, but language barriers, age, mobility and transportation, internet access and fluency, employment, and discretionary time may all play roles in vaccine access.

Nearly 60% of people initiating vaccination are now considered fully vaccinated (table 6). The trends seen in the different racial and ethnic groups were also seen in the number of persons that are now considered fully vaccinated (table 7). AI/AN have the highest rate of fully vaccinated persons (15%), followed by NH/PI (13%) and non-Hispanic Whites and Asians (10%). The proportion achieving full vaccination increased across age groups, with people 65 and older having the highest rate of full vaccination coverage (34%) (table 8).

Snohomish County is comprised of both urban and rural areas. City of residence can be seen in table 9. Residence is based on address reported at the time of most recent vaccination. (See appendix A for details on how residency was determined.) City name includes both incorporated and unincorporated Snohomish County addresses. Residents from urban areas such as Everett (19%) and Lynnwood (13%) make up higher percentages of total vaccines administered, but overall coverage of this areas cannot be calculated at this time given the dataset limitations.

Table 1: COVID-19 by sex at birth, Snohomish County

Sex at birth	Count	Population	Percent coverage
Female	96,436	414,378	23%
Male	63,646	416,122	15%
Unknown	516	---	---
Total persons initiating vaccination	160,598	830,500	19%

Table 2: COVID-19 vaccination by age group, Snohomish County

Age group	Count	Population	Percent coverage
15-19	1,026	46,608	2%
20 to 34	17,905	152,342	12%
35 to 49	27,555	176,569	16%
50 to 64	41,068	169,752	24%
65+	73,028	129,586	56%
Unknown	16	---	---
Total persons initiating vaccination	160,598	674,857	24%

Table 3: COVID-19 vaccinations by race and ethnicity, Snohomish County

Race non-Hispanic	Count	Population	Percent coverage	Relative Risk	95% CI Lower	CI Upper
African American	3,555	24,195	14.7%	0.9	0.86	0.91
American Indian/Alaska Native	1,814	9,083	20.0%	1.2	1.15	1.26
Asian	16,601	92,570	17.9%	1.1	1.06	1.10
Native Hawaiian or Pacific Islander	903	4,562	19.8%	1.2	1.12	1.27
White	93,690	563,862	16.6%	1.0		
Other, non-Hispanic	25,973	---	---	---	---	---
Hispanic	6,184	88,072	7.0%	0.4	0.41	0.43
Unknown	11,878	---	---	---	---	---
Total persons initiating vaccine	160,598	830,500	19.3%	---	---	---

Figure 1: COVID-19 vaccination rates per 100,000 by Race and Ethnicity, Snohomish County

Snohomish County COVID-19 Vaccination Rates by Race/Ethnicity

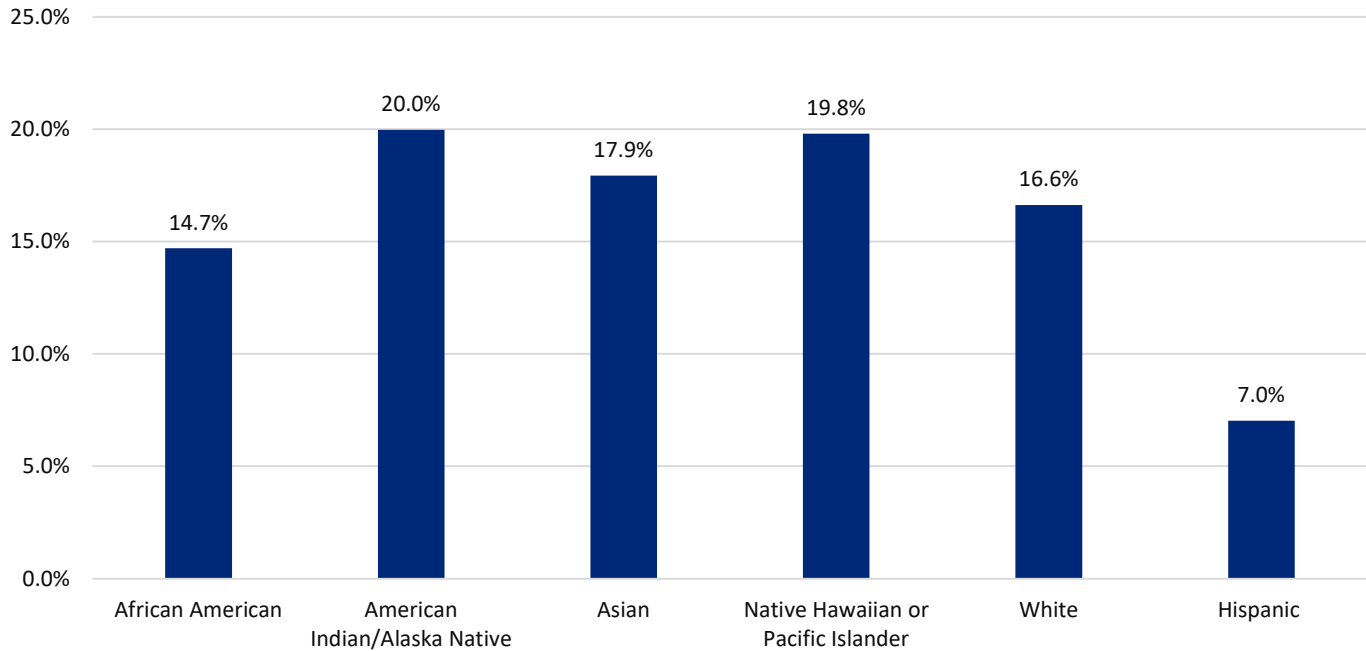


Table 4: COVID-19 vaccination by race/ethnicity and age group, Snohomish County

Race non-Hispanic	15-19	20 to 34	35 to 49	50 to 64	65+	Total
African American	27	565	1,170	1,052	739	3,553
American Indian or Alaskan Native	39	335	404	530	505	1,813
Asian	170	2,484	3,947	4,517	5,483	16,601
Native Hawaiian or Other Pacific Islander	6	151	242	268	236	903
White	411	8,442	13,385	22,667	48,777	93,682
Other, non-Hispanic	169	2,684	4,086	6,759	12,274	25,972
Ethnicity						
Hispanic	88	1,263	1,476	1,895	1,461	6,183
Unknown	116	1,981	2,845	3,380	3,553	11,875
Total persons initiating vaccination	1,026	17,905	27,555	41,068	73,028	160,582

Table 5: COVID-19 vaccinations by race and ethnicity in persons ≥ 65 years-old, Snohomish County

Race non-Hispanic	Count	Population	Percent coverage	Relative Risk	95% CI Lower	95% CI Upper
African American	739	1,605	46%	1.0	0.95	1.09
American Indian/Alaska Native	505	1,106	46%	1.0	0.93	1.10
Asian	5,483	12,929	42%	0.9	0.91	0.96
Native Hawaiian or Pacific Islander	236	338	70%	1.5	1.36	1.75
White	48,777	107,913	45%	1.0		
Other, not Hispanic	12,274	---	---	---	---	---
Ethnicity						
Hispanic	1,461	3,867	38%	0.8	0.79	0.88
Unknown	3,553	---	---	---	---	---
Total persons ≥65 initiating vaccination	73,028	129,586	56%	---	---	---

Table 6: COVID-19 vaccination status among Snohomish County residents

Vaccination status	Count	Percent coverage
Fully vaccinated	95,084	59%
Partially vaccinated	65,514	41%
Total	160,598	100%

Table 7: COVID-19 vaccination status among Snohomish County residents by race/ethnicity

Race non-Hispanic	Fully vaccinated	Partially vaccinated	Total	Population	Percent fully vaccinated
African American	2,092	1,463	3,555	24,195	9%
American Indian/Alaska Native	1,325	498	1,823	9,083	15%
Asian	9,259	7,342	16,601	92,570	10%
Native Hawaiian or Pacific Islander	594	309	903	4,562	13%
White	55,937	37,753	93,690	563,862	10%
Other, not Hispanic	15,459	10,514	25,973	---	---
Ethnicity					
Hispanic	3,218	2,966	6,184	88,072	4%
Unknown	7,200	4,678	11,878	---	---
Total	95,084	65,514	160,598	830,500	11%

Table 8: COVID-19 vaccination status among Snohomish County residents by age group

Age group	Fully vaccinated	Partially vaccinated	Total	Population	Percent fully vaccinated
15 to 19	487	539	1,026	46,608	1%
20 to 34	11,119	6,786	17,905	152,342	7%
35 to 49	16,441	11,114	27,555	176,569	9%
50 to 64	22,965	18,103	41,068	169,752	14%
65+	44,067	28,961	73,028	129,586	34%
Unknown	5	11	16	---	---
Total	95,084	65,514	160,598	674,857	14%

Table 9: COVID-19 vaccinations by city of residency, Snohomish County

City	Count	Percent of total
Arlington	8,380	5%
Bothell	16,807	10%
Brier	1,483	1%
Darrington	412	<1%
Edmonds	16,666	10%
Everett	29,916	19%
Gold Bar	608	0%
Granite Falls	1,467	1%
Hat Island	<5	<1%
Index	80	<1%
Lake Stevens	8,170	5%
Lynnwood	20,964	13%
Marysville	13,811	9%
Mill Creek	4,383	3%
Monroe	4,955	3%
Mountlake Terrace	4,494	3%
Mukilteo	5,874	4%
North Lakewood	51	<1%
Silvana	93	<1%
Snohomish	13,131	8%
Stanwood	5,605	3%
Startup	49	<1%
Sultan	999	1%
Tulalip	1,889	1%
Woodinville	8	<1%
Woodway	299	<1%
Total	160,598	100%

Appendix A: Data cleaning and assumptions

1. The dataset is a snapshot of the WAIS backend/repository data. If an existing/historic record is updated in WAIS, updates will not be reflected in subsequent datasets on that exact row.
2. Updated records may be reported as duplicates in the repository (hence cleaning step 3). This cleaning process is an attempt to mimic:
 - a) the WAIS deduplication process (i.e., cleaning step 3 to keep most recent record when vaccines administered within 5 days of each other)
 - b) what may be shown in the final WAIS dataset of "valid" vaccine doses
3. RecipientID is the variable used by DOH for unique identifier per person, but is known to have some issues/inconsistencies. To be consistent with DOH, we use this unique identifier as well.
4. County code is based on zip code. There are known data quality issues with incorrect zip codes entered, resulting in incorrect county code. Additionally, there are several misspelled cities and occasional non-character cities.
 - a) These are cleaned as individual records. They are reviewed for unique records, and misspelled cities are updated in a batch process. In-county city/zip code combinations are coded to Snohomish County.
 - b) Remaining out of county cities are re-coded to the proper county based on city or 99999 if unknown.
 - c) There will be some margin of error as this is not precise. If address is blank, Snohomish residence is not assumed.
5. Final exports with 1 row per person (as opposed to 1 row per vaccine) default demographic info to the LAST reported record by administration date (name, address, race/ethnicity). Most records are the same as the first.
 - a. This is an update from previous weeks, which defaulted to the 1st record reported by administration date. The week this change was implemented was 3/8/2021.
6. Janssen vaccine code was added of 3/8/2021 after DOH cleaning criteria (<6 days apart).
 - a. If any Janssen vaccine in final datasets, person will be considered fully vaccinated. If a person has 2 vaccines in final dataset, person will be considered fully vaccinated. (this variable inserted after final cleaning step 8)
 - b. If a person's 1st vaccine by administration date is Janssen, exclude any subsequent vaccines by administration date (this step inserted after DOH cleaning step 3)
 - c. If a person's 1st vaccine is not Janssen but 2nd vaccine is Janssen, keep both 1st and 2nd vaccine record. Any subsequent records are removed after Janssen vaccine. (this step inserted after DOH cleaning step 3)
7. Step 6 will give preference to anyone with 1st or 2nd vaccine that is Janssen (as a fully vaccinated individual), and may:
 - a) Exclude some people that may otherwise have had a Snohomish County address in a subsequent record that were excluded, but Janssen record does not have Snohomish County address
 - b) Undercount the number of Pfizer/Moderna vaccines given IF the Janssen vaccine is not the "true" vaccine record counted in the final WAIS data system (manually verify individual records is beyond the scope of this analysis and the required resources)

8. While the final dataset after our cleaning process has up to 2 vaccine records per person, we know that persons exist in the WAIS data system with >2 COVID vaccine records reported. Additional vaccine records were excluded from this analysis.