Estimates of COVID-19 Vaccine Coverage Among People Experiencing Homelessness and Housing Instability in King County

As our communities move towards long-term strategies to help manage the physical, behavioral health, social and economic impacts of COVID-19, people experiencing homelessness (PEH) still navigate a unique set of challenges. Those living in shelters and other congregate settings are at higher risk for COVID-19 spread. People who are unsheltered face additional vulnerabilities, including less access to hygiene and sanitation facilities and public restrooms. People experiencing less visible forms of homelessness (i.e., doubled up) report barriers such as access to testing and treatment in convenient and culturally responsive settings.

Public Health - Seattle & King County's (PHSKC) Community Health Services (CHS) Division strengthens King County's safety net services and partnerships to deliver equitable and responsive health care for historically marginalized communities. CHS operates one of the largest Health Care for the Homeless Network (HCHN) programs in the United States.

With the assistance of community partners, CHS implements multiple strategies to ensure that people experiencing homelessness (PEH) - both visible and not – receive equitable access to vaccines. Strategies to date include: 1) mobile vaccination program which has deployed response teams to over 500 shelters, encampments, and day programs; 2) safety net clinic outreach from PHSKC's 13 clinics and multiple satellite locations; and 3) engagement with King County's Community Health Centers and other health care systems who serve PEH and historically marginalized communities.

Since the beginning of the pandemic, data and lived experience has reinforced that Black, Indigenous, and people of color (BIPOC) - particularly those experiencing homelessness - are disproportionately impacted by COVID-19 as they are by other Public Health emergencies. CHS vaccine access strategies have aligned with PHSKC and the King County Executive's declaration in June 2020 that racism is a Public Health crisis.[1]

> **Key Takeaways**
>
> 45-55% of people experiencing homelessness (PEH) or housing instability over the age of 12 have been vaccinated with at least one dose of any COVID-19 vaccine as of January 31, 2022. Vaccination rates appear lower within less visible types of homelessness (i.e., doubled up).
>
> 95% of King Co. general population age 12 and over have received at least one dose of any COVID-19 vaccine as of January 31, 2022.
>
> There is a clear trend towards higher vaccination rates the more stable one's housing status, with the highest vaccination rates in homeless housing programs.
>
> COVID-19 vaccination coverage gaps among people experiencing homelessness cannot be fully understood without examining well documented racial and geographic disparities that existed prior to the pandemic.

REPORT PURPOSE

The purpose of this report is to describe how Community Health Services (CHS) analysts utilized new data integration opportunities to: 1) estimate vaccination coverage among people experiencing homelessness at the population and facility level; and 2) better understand vaccination strategies to address gaps and promote more equitable vaccination.

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[1] King County Executive Office, June 2020. Racism as a Public Health Crisis in King County
Further suggested reading on racism and public health: Dr. Camara Phyllis Jones Levels of Racism: A Theoretical Framework and a Gardener's Tale

NUMBER OF PEOPLE EXPERIENCING HOMELESSNESS IN KING COUNTY

King County has long recognized that point-in-time counts undercount the number of people experiencing homelessness in our region.[2] Improving our methods and utilizing more inclusive definitions for less visible types of homelessness are critical to appropriate resource allocation and racial justice.

Integrating data from multiple housing and health systems is one way to better estimate and address the many social, cultural, and legal reasons why PEH may not be found in traditional shelter system counts. Data integration is also necessary for vaccination estimates, as housing and homeless status is not collected as a separate field in the Washington State Immunization Information System (WAIIS). Housing status can only be determined by linking to other data sources or attempting to search the address field in WAIIS.

CHS analysts applied a two-part strategy to ensure that the most representative number of people experiencing homelessness would be considered in vaccination coverage estimates.

Step 1: Understand the two major federal definitions of homelessness

- U.S. Department of Housing & Urban Development (HUD) which estimates people in, or in need of, shelters and publicly funded housing and services (associated with the Homeless Management Information System)

- U.S. Health Resources & Services Administration (HRSA) estimates people in, or in economic need of, safety net health center services (associated with Public Health and Health Care for the Homeless Networks).

The purpose of these definitions is largely to determine service eligibility and financial assistance. Based on that, each definition has different and complex inclusion criteria depending on what service is being considered. There are four groups that may or may not be "counted" as people experiencing homelessness: 1) permanent supportive housing residents; 2) individuals who are in temporary and unstable living situations (i.e., doubled up); 3) individuals with experience of homelessness in the past 12 months; and 4) individuals transitioning out of correctional facilities and other institutions.

Step 2: Integrate multiple data sets that combine both HRSA and HUD definitions, account for the different inclusion criteria, and arrive at the broadest number of people experiencing homelessness for the given point in time.

The final inclusion criteria for CHS vaccination estimates more closely aligns with the HRSA definition and included individuals who, at any time in the previous 12 months, stayed in spaces not meant for human habitation (streets, abandoned buildings), vehicles, encampments, tiny house villages, shelters, transitional and/or supportive housing programs. Individuals who lacked stable housing (i.e., doubled up) were also included if they were found with a HRSA homeless status in Public Health's electronic health record system, including Jail Health Services. Please see Figure 1 for data sources.

> **45,790 people in King County ages 12 and above experienced homelessness or housing instability in the past 12 months as of January 31, 2022.**

Twelve months recognizes that homelessness is neither a singular nor linear event. While each person's experience is unique, many people require economic, medical, and social support stabilization upon exiting homelessness.

See Appendix A for linkage and classification methodology.

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[2] King County Department of Community and Human Services Integrating Data to Better Measure Homelessness

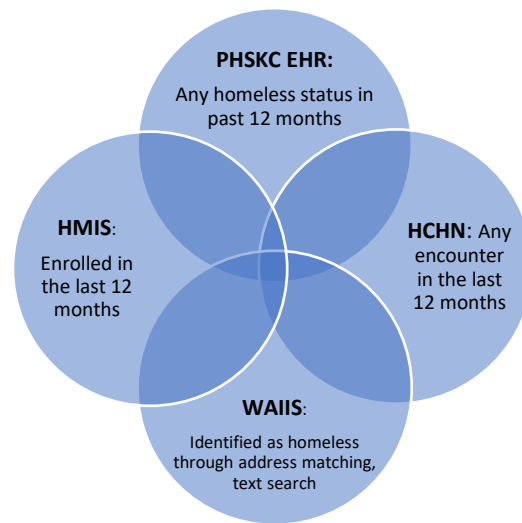## ESTIMATING VACCINATION COVERAGE AMONG PEOPLE EXPERIENCING HOMELESSNESS

After determining the estimated number of people experiencing homelessness or housing instability (n=45,790), CHS analysts used the four data sources as seen in Figure 1 to conduct a deterministic linkage process with a generated ID based on a combination of first and last name, and date of birth to determine an unduplicated count. Linkages were performed in the R Project for Statistical Computing. People experiencing homelessness are identified in at least one of the data systems and may be in multiple.

Based on that analysis, among people experiencing homelessness or housing instability (over the age of 12), **approximately 52% have received at least one dose of any COVID-19 vaccine** as of January 31, 2022.[3] This is relative to 95.0% of the general population age 12 and over as of the same date. **Forty-six percent (46%) have completed the primary series**, relative to 87.4% of the general population.[4]

FIGURE 1: DATA SYSTEMS UTILIZED IN LINKAGE

PHSKC EHR: Any homeless status in past 12 months

HMIS: Enrolled in the last 12 months

HCHN: Any encounter in the last 12 months

WAIIS: Identified as homeless through address matching, text search

SOURCES: 1) KING COUNTY'S HOMELESS MANAGEMENT INFORMATION SYSTEM (HMIS) 2) PUBLIC HEALTH'S SAFETY NET CLINIC ELECTRONIC HEALTH RECORD (EHR) SYSTEM 3) HEALTH CARE FOR THE HOMELESS NETWORK OF KING COUNTY 4) WASHINGTON STATE IMMUNIZATION INFORMATION SYSTEM (WAIIS)

45-55% of people experiencing homelessness or housing instability have been vaccinated as of January 31, 2022.

23,906 people experiencing homelessness or housing instability over the age of 12 have received at least one dose of any COVID-19 vaccine as of January 31, 2022

The number of PEH who have been vaccinated is likely an underestimate given the data sources used in this analysis do not require legal/government names and/or may accept proxy birthdates. Furthermore, as described in the introduction, government databases generally reflect more "visible" categories of homelessness.

VACCINATION RATES AMONG PEH BY RACE AND ETHNICITY

As previously discussed, both data and lived experience of PEH reinforce that Black, Indigenous, and people of color (BIPOC) - particularly those experiencing homelessness, are disproportionately impacted by public health emergencies. Disparities are seen in infection and recovery rates at individual and neighborhood levels. They are also evident in vaccination rates which can be found in Figure 2.

- The highest vaccination rates by race are among white and Asian PEH.
- Non-Hispanic/Latinx PEH have higher vaccination rates than Hispanic/Latinx PEH.
- Each system collects race and ethnicity data differently, and all struggle to fully capture Hispanic/Latinx identities. 7.5% of individuals had an unknown or unreported race; 4.1% had an unknown or unreported Hispanic/Latinx ethnicity.
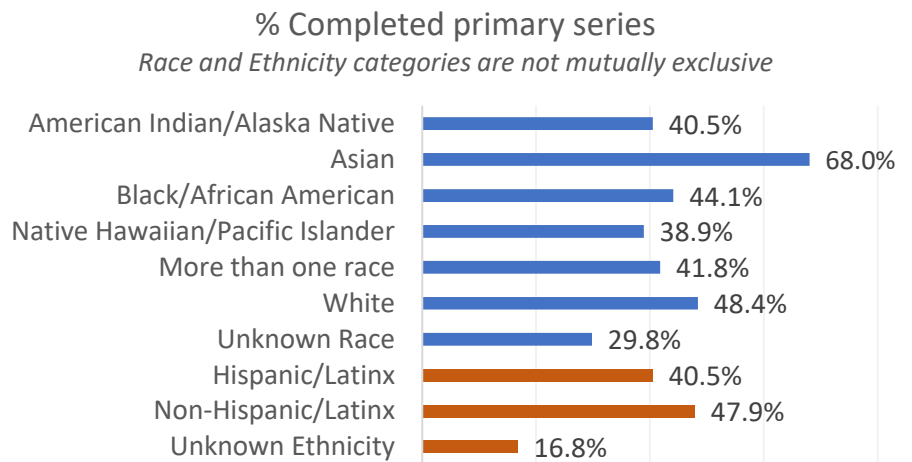
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[3] Received at least one dose of Pfizer-BioNTech, Moderna, or Johnson & Johnson's Janssen. Primary series is defined as two doses of Pfizer-BioNTech or Moderna, or one dose of Johnson & Johnson's Janssen. Please visit Stay Up to Date with Your COVID-19 Vaccines | CDC for additional information on COVID-19 vaccination definitions.
[4] General population estimates as of January 31, 2022. Summary of COVID-19 vaccination among residents - King County

Correlation between race, ethnicity and housing status may explain some, but not all trends. In this analysis, white PEH appear more likely to be in homeless housing programs where outreach efforts were prioritized for congregate settings, age, and other risk factors.[5]

The timing of the COVID-19 pandemic is one where there is an increasing call to link efforts to end homelessness with efforts to end racism, and understand the issues as inextricably linked. Over-representation of BIPOC within the homeless service systems is well documented. Approximately 40% of the overall King County population is BIPOC relative to approximately 56% of PEH in this analysis.[6] Trends in vaccination by race and ethnicity among PEH are largely similar to trends in vaccination rates overall in King County. See Appendix B, Tables 2 and 3 for further breakdown.

% Completed primary series
Race and Ethnicity categories are not mutually exclusive

American Indian/Alaska Native	40.5%
Asian	68.0%
Black/African American	44.1%
Native Hawaiian/Pacific Islander	38.9%
More than one race	41.8%
White	48.4%
Unknown Race	29.8%
Hispanic/Latinx	40.5%
Non-Hispanic/Latinx	47.9%
Unknown Ethnicity	16.8%

VACCINATION RATES AMONG PEH BY SEX AND GENDER IDENTITY

Data systems do not capture both sex assigned at birth and gender identity separately and consistently. To identify gender identity of PEH we looked across systems to find any indication of transgender or non-binary identity. No major differences in COVID-19 vaccination rates were determined by gender. The true number of transgender and non-binary PEH is likely higher than reported in Appendix B, Table 4, and data suggests transgender PEH are disproportionately unsheltered.[7]

FACILITY LEVEL VACCINATION COVERAGE

Estimates of vaccination coverage at the facility level (i.e., percentage of people at a given shelter) can help guide resource allocation and support organizations as they determine site specific capacity needs. Seattle & King County's shelter and housing system is complex and one of the largest in the United States. It is mostly organized by funding sources and databases are siloed. Many buildings house multiple programs (i.e., a day center during the day and shelter at night). The shelter deintensification strategy to reduce the number of people at a given location to encourage social distancing made it even more difficult to track an already transient population.

At the beginning of the pandemic CHS analysts created a centralized system to track data on all known facilities and sites (including unsheltered spaces) from multiple government and community sources. They organized locations into three categories for prioritization and response purposes based on a facility risk and equity impact prioritization tool.

1. **Crisis response** includes primarily congregate settings: shelters, day centers, meal programs, tiny houses or tent cities, and unsheltered spaces like encampments and safer parking lots.
2. **Homeless housing programs** includes permanent and transitional housing programs.

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[5] For additional data on race/ethnicity among PEH, please see King County Regional Homelessness Authority's dashboard.

[6] BIPOC defined as those who identified as American Indian/Alaska Native, Asian, Black/African American, Native Hawaiian/Pacific Islander, reported more than one race, and/or Hispanic/Latinx ethnicity.
King County demographics obtained from the Washington State Office of Financial Management and can be viewed in a chart at this link.

[7] Trans and Gender Non-Conforming Homelessness - National Alliance to End Homelessness

3. **Other programs** include those that primarily, but may not exclusively serve PEH, such as outreach programs, homelessness prevention, and behavioral health system facilities. Facility type includes locations where people receive services but not necessarily reside.

Some of these facilities, but not all, are included in the Homeless Management Information System (HMIS). Importantly, unsheltered spaces like encampments, which PHSKC deployed multiple strategies to engage, are not captured in HMIS. Estimates of vaccination coverage are only available if the facility was found within the HMIS. Individuals must be actively receiving services. See Appendix A, Figure 5 for all facilities.

Using the subset of HMIS clients from the linkage described above, we calculated vaccination coverage estimates available for 350 facilities in HMIS at 255 unique addresses. Across this subset, 47.7% of currently enrolled clients have received at least one dose of any COVID-19 vaccine. 41.1% of clients have completed their primary series.

TABLE 1: VACCINATION BY CATEGORY AND FACILITY TYPE

| Universe Category	Facility Type	% completed primary series	# of facilities in analysis
Homeless Housing Programs	Permanent Housing	49.2%	123
	Transitional Housing	41.5%	46
	Subtotal	**48.5%**	**169**
Other Homeless Programs	Coordinated Entry	27.8%	4
	Homeless Prevention	43.1%	15
	Other Services	40.8%	37
	Street Outreach	33.9%	18
	Subtotal	**38.6%**	**74**
Crisis Response	Day Center	33.3%	23
	Emergency Shelter	40.0%	72
	Tiny House/Tent Cities	33.3%	12
	Subtotal	**34.8%**	**107**
Total		41.1%	350

Observations about facility level vaccination coverage

The highest vaccination coverage is found in homeless housing programs, including permanent supportive housing and transitional housing. This may be related to several factors, including:

- Operators of homeless housing are required to provide health care either on-site or through collaboration. Physical and behavioral health care providers, such as PHSKC's Health Care for the Homeless Network (HCHN) Housing Health Outreach Team (HHOT), have a well-established presence in numerous buildings. Residents of homeless housing may also reflect an older adult population.
- Day centers and emergency shelters may also provide on-site health care. Guests may utilize these sites more sporadically and only for basic and urgent needs. They may not be as consistently connected to services and may be in more acute stages of crisis and instability.

FIGURE 3: VACCINATION BY REGION AMONG PEH

While caution should be applied in interpreting small numbers in a complex system, the experience of Public Health's nurses, outreach workers, and disease investigators supports the belief that effective and equitable vaccination strategies require time to establish trust and rapport with PEH in a variety of settings.
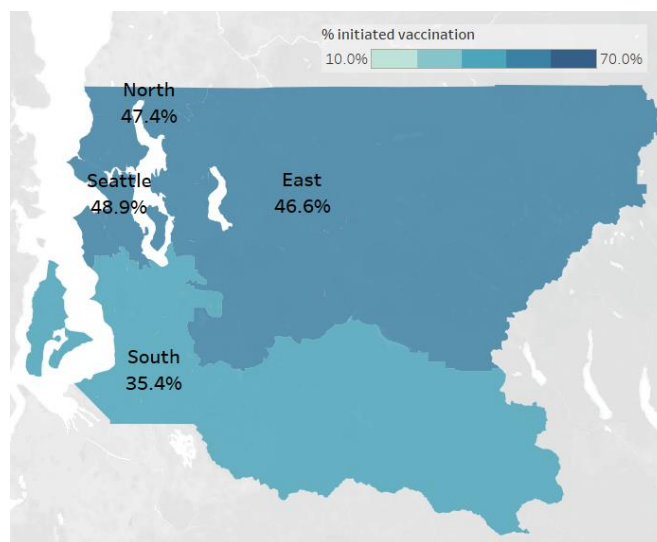
GEOGRAPHIC AND REGIONAL LEVEL VACCINATION COVERAGE

The geographic and regional level coverage data presented here is based on the location of previously described HMIS facilities. There are multiple political, economic, and environmental factors in site placement - and whether a homeless population is visible. With few exceptions, vaccination coverage at a facility level reflects those of the surrounding area. Exceptions may include a small number of facilities serving PEH in the East and North. Additional maps can be found in Appendix C.

Overall vaccination coverage among PEH in HMIS facilities was lower in South King County compared to other regions, similar to the general population.[8] This may be associated with the fact that South King County homeless services are more geographically dispersed compared with areas like Downtown Seattle which has more clustered services. South King County has more scattered sites – programs with multiple units in different locations which may not all be close together. Transportation – both for PEH and organizations serving them, is a major factor in accessibility.

Findings of differential health outcomes and access to health promotion services in South King County are by no means unique to this analysis or to COVID-19. King County's Office of Equity and Social Justice has long produced compelling reports show the important differences in identity, culture, geography, health status, and socioeconomic status between, and within, racial and ethnic communities across King County.[9] Their work speaks to the impact of ongoing and historic systemic racism and recognizes the strengths and assets of each community.

SUMMARY AND DISCUSSION

This analysis was the first data linkage between both King County homeless data systems (Health Care for the Homeless Network and Homeless Management Information System) and the Washington State Immunization Information System (WAIIS). Safety net clinic electronic health record data allowed us to include individuals experiencing less visible forms of homelessness (i.e., doubled up and those incarcerated within Jail Health programs). This contributes to broader efforts for use of more inclusive definitions of homelessness for resource allocation and racial justice.

Our findings estimated that 45-55% of people experiencing homelessness have received at least one dose of any COVID-19 vaccine as of January 31, 2022. While this may be an underestimate, it is likely that a gap remains. There is a clear trend towards higher vaccination rates the more stable one's housing status. Engagement in day centers and shelters can be sporadic, guests have competing priorities and/or require additional time and trust to establish rapport with medical providers.

Several tactics have been deployed to increase vaccination access including: 1) partnership development with trusted organizations, those with lived experience, and organizations who also serve individuals experiencing less visible forms of homelessness (i.e., doubled up); 2) ongoing outreach to shelters and day centers through mobile units and community events; 3) addressing language access and interpreter service needs among PEH in these settings; and 4) linking efforts to end homelessness with efforts to end racism, and understand the issues as inextricably linked.[10]

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[8] Disparities pre-COVID and in vaccination are well documented by King County's Pandemic and Racism Advisory Group. Public Health Insider.
[9] King County Office of Equity and Social Justice. Maps of King County demographics.
[10] Rogers et al. Trends in COVID-19 vaccination intent and factors associated with deliberation and reluctance among adult homeless shelter residents and staff, 1 November 2020 to 28 February 2021 - King County, Washington. Vaccine. 2022 Jan 3;40(1):122-132. doi: 10.1016/j.vaccine.2021.11.026.

LIMITATIONS

- Homeless status is defined and asked differently across and within systems. Doubled-up and at-risk populations are often not fully captured.
- Deterministic methods were used for person-level linkages. Databases used contain multiple aliases. Probabilistic linking may return an improved match rate, by looking at name similarities and incorporating other identifiers like social security numbers and choosing the most likely match.
- There are likely PEH who have received vaccination but due to reported name inconsistencies across systems or WAIIS data entry delays may not appear consistently in WAIIS.
- Facility-level (and geographic) estimation are only available for facilities and people enrolled in HMIS; this excludes the broader universe of sites like encampments, temporary sites, etc.
- As with the general population, please use caution interpreting data because of small numbers, particularly among American Indian/Alaska Native, Asian, and Native Hawaiian/Pacific Islander PEH.
- Data on languages spoken and interpreter service needs in homeless service facilities is limited.

Appendices

APPENDIX A: METHODOLOGY

Data Linkage – Person Level

King County's Department of Community and Human Services, Public Health-Seattle & King County, and King County Information Technology (KCIT) have invested on data infrastructure, an Integrated Data Hub (IDH), to link data from many different systems, including HMIS and HCHN. The IDH used to first link HMIS and HCHN clients. We then linked the combined HMIS/HCHN client table with EPIC and WAIIS (as seen in Figure 4).

FIGURE 4: DATA LINKAGE ACROSS SYSTEMS.
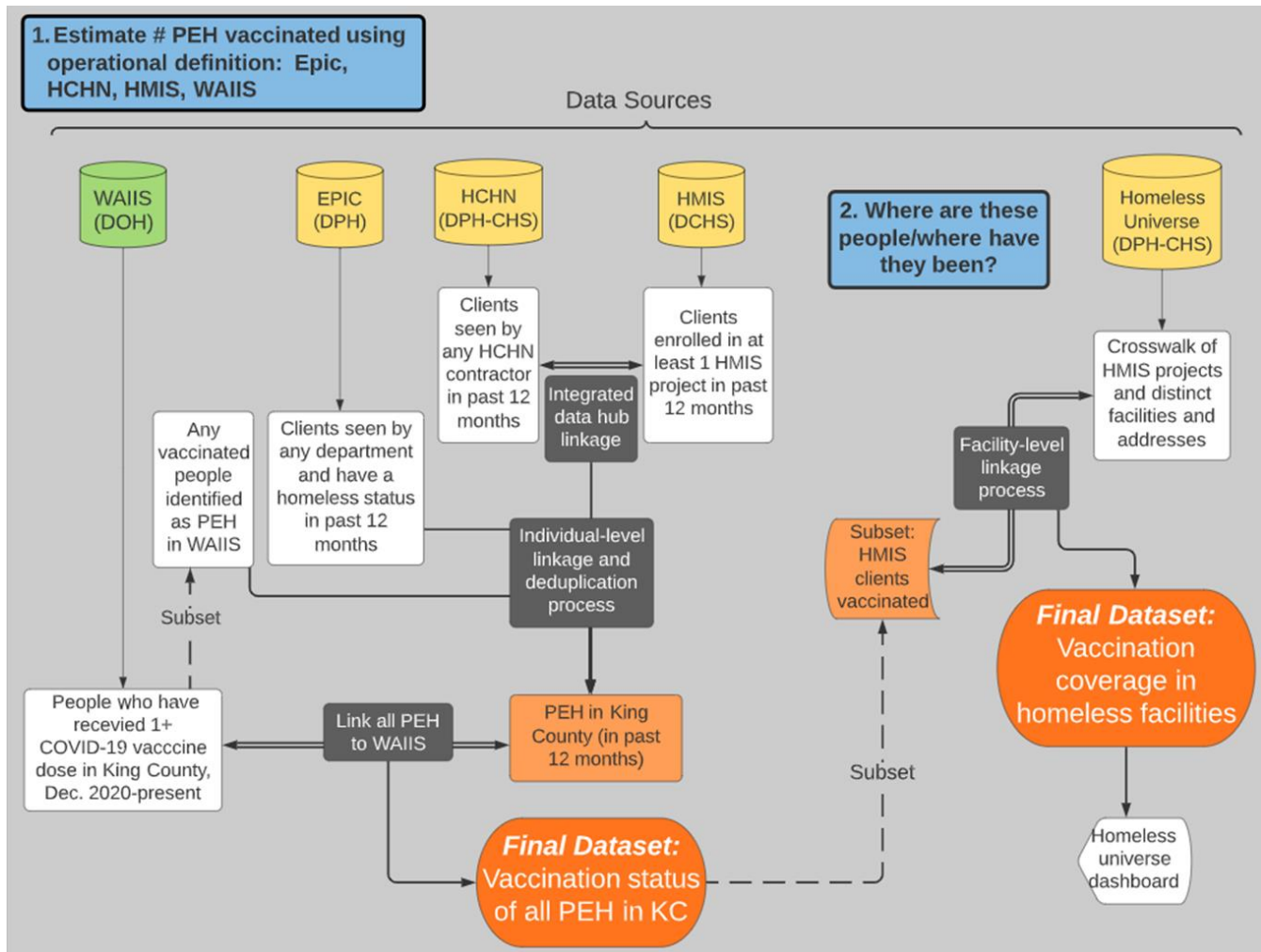
FEBRUARY 2021 – JANUARY 2022. PEH = PEOPLE/PERSONS EXPERIENCING HOMELESSNESS, WAIIS = WASHINGTON STATE IMMUNIZATION INFORMATION SYSTEM, DPH-CHS = DEPARTMENT OF PUBLIC HEALTH, COMMUNITY HEALTH SERVICES, EPIC: ELECTRONIC HEALTH RECORD SYSTEM USED IN COMMUNITY HEALTH SERVICES, HCHN = HEALTH CARE FOR THE HOMELESS NETWORK, HMIS = HOMELESS MANAGEMENT INFORMATION SYSTEM, DCHS = DEPARTMENT OF COMMUNITY AND HUMAN SERVICES

### *Data Linkage – Facility Level*

A master facility spreadsheet was created to aid Public Health's COVID homelessness response teams. It contains fixed site facilities for both housing and healthcare, along with sites such as encampments and other places where PEH may go for basic needs services and supports.

Data sources include:

- Public Health's Community Health Services, Communicable Diseases & Environmental Health
- King County's Department of Community & Human Services – multiple programs
- City of Seattle homeless service lists
- Information from community agencies and community advisory groups

Combining these sources, we then accounted for differences between facilities and addresses at same location (ex: day center and shelter). We found a total of 883 active facilities at 644 addresses as seen in Figure 5. A subset of these facilities are found in HMIS.

FIGURE 5: ENTIRE HOMELESS FACILITY RESPONSE UNIVERSE (N=883)
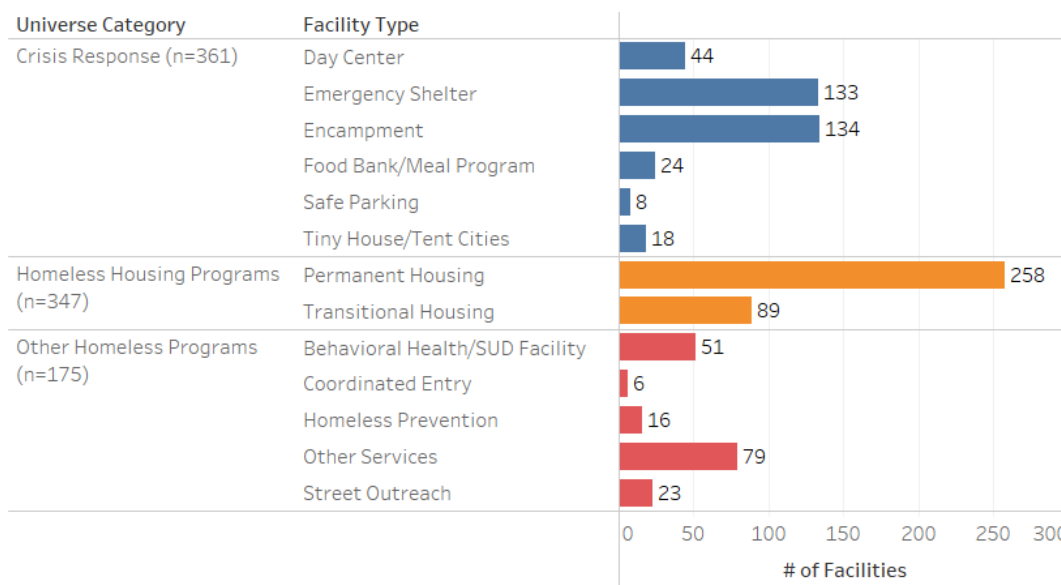
Complexities in analyzing this data include facilities and sites are named differently across databases and sources, facilities and those they serve frequently moved throughout COVID, Organization schema of shelter and housing facilities based on funding (ex: a 100-bed count facility will likely have more than one funder and naming convention).

APPENDIX B: TABLES AND FIGURES

TABLE 2: VACCINATION BY RACE

Race	# of PEH in analysis	# of PEH with at least one dose	% at least one dose	# of PEH completed primary series	% completed primary series
American Indian/Alaska Native	2,245	1,065	47.4%	909	40.5%
Asian	1,958	1,444	73.7%	1,331	68.0%
Black/African American	13,218	6,732	50.9%	5,830	44.1%
More than one race	2,795	1,366	48.9%	1,169	41.8%
Native Hawaiian/Pacific Islander	1,099	502	45.7%	427	38.9%
White	21,040	11,478	54.6%	10,188	48.4%
Unknown Race	3,435	1,319	39.8%	1,022	29.8%
Total	45,790	23,906	52.2%	20,876	45.6%

TABLE 3: VACCINATION BY HISPANIC OR LATINX ETHNICITY

Ethnicity	# of PEH in analysis	# of PEH with at least one dose	% at least one dose	# of PEH completed primary series	% completed primary series
Hispanic/Latinx	6,275	2,993	47.7%	2,543	40.5%
Non-Hispanic/Latinx	37,621	20,480	54.5%	18,014	47.9%
Unknown Ethnicity	1,894	433	23.8%	319	16.8%
Total	45,790	23,906	52.2%	20,876	45.6%

TABLE 4: VACCINATION BY GENDER

Gender	# of PEH in analysis	# of PEH with at least one dose	% at least one dose	# of PEH completed primary series	% completed primary series
Female	17,781	9,453	53.2%	8,320	46.8%
Male	27,320	14,115	51.7%	12,298	45.0%
Non-Binary/Other	189	94	49.7%	83	43.9%
Transgender Female	46	21	45.7%	19	41.3%
Transgender Male	26	12	46.2%	*	*
Unknown Gender	428	211	49.3%	149	34.8%
Total	45,790	23,906	52.2%	20,876	45.6%

*SMALL NUMBERS SUPPRESSED TO PREVENT POSSIBLE IDENTIFICATION.

TABLE 5: VACCINATION BY UNIVERSE CATEGORY AND FACILITY TYPE (HMIS CURRENTLY ENROLLED CLIENTS ONLY)

Universe Category	Facility Type	% at least one dose	% completed primary series	# of facilities in analysis	# of PEH in analysis
Homeless Housing Programs	Permanent Housing	55.4%	49.2%	123	8,538
	Transitional Housing	49.6%	41.5%	46	742
	Subtotal	54.8%	48.5%	169	9,134
Other Homeless Programs	Coordinated Entry	33.3%	27.8%	4	72
	Homeless Prevention	49.2%	43.1%	15	703
	Other Services	47.7%	40.8%	37	2,559
	Street Outreach	39.5%	33.9%	18	1,627
	Subtotal	44.8%	38.6%	74	4,848
Crisis Response	Day Center	40.7%	33.3%	23	4,579
	Emergency Shelter	48.1%	40.0%	72	2,819
	Tiny House/Tent Cities	44.3%	33.3%	12	447
	Subtotal	42.4%	34.8%	107	6,840
Total		47.7%	41.1%	350	18,643

NOTE: # OF PEH IN THE TOTAL MAY NOT EQUAL THE SUM OF THE # OF PEH IN EACH FACILITY TYPE AND/OR UNIVERSE CATEGORY; PEH MAY BE ENROLLED IN MORE THAN ONE PROJECT IN HMIS

TABLE 6: VACCINATION BY HOUSING STATUS (PUBLIC HEALTH & HCHN CLIENTS ONLY)

Housing Status	# of PEH in analysis	# of PEH with at least one dose	% at least one dose	# of PEH completed primary series	% completed primary series
Street	3,660	1,350	36.9%	1,112	30.4%
Emergency Shelter	1,836	935	50.9%	805	43.8%
Transitional Housing	635	389	61.3%	343	54.0%
Permanent Supportive Housing	1,518	1,102	72.6%	1,023	67.4%
Other (motel, jail, institution)	641	375	58.5%	312	48.7%
Doubled Up	613	293	47.8%	259	42.3%
At Risk	1,283	679	52.9%	598	46.6%
Unknown housing status	4,010	1,802	44.9%	1,595	39.8%
All Public Health & HCHN clients	14,196	6,925	48.8%	6,047	42.6%

TABLE 7: VACCINATION BY HEALTH REPORTING AREA/REGION (HMIS CURRENTLY ENROLLED CLIENTS ONLY)

Region	Health Reporting Area (HRA)	% at least one dose	% completed primary series	# of facilities in analysis	# of PEH in analysis
East	Bear Creek/Carnation/Duvall	46.2%	46.2%	1	13
	Bellevue-Central	54.5%	45.8%	7	354
	Bellevue-NE	*	*	0	0
	Bellevue-South	37.5%	37.5%	1	16
	Bellevue-West	52.6%	43.4%	9	447
	Covington/Maple Valley	0.0%	0.0%	1	**
	Issaquah	23.9%	19.6%	2	46
	Kirkland	43.3%	35.8%	7	120
	Kirkland North	55.9%	55.9%	3	34
	Mercer Isle/Pt Cities	*	*	0	0
	Newcastle/Four Creeks	17.8%	13.3%	1	45
	Redmond	38.4%	30.5%	6	190
	Sammamish	*	*	0	0
	Snoqualmie/North Bend/Skykomish	46.3%	43.9%	3	41
	Subtotal	46.6%	39.4%	41	1,110
North	Bothell/Woodinville	62.1%	55.2%	2	29
	Kenmore/Lake Forest Park	54.5%	45.5%	1	11
	Shoreline	41.9%	35.5%	4	93
	Subtotal	47.4%	40.6%	7	133
Seattle	Ballard	42.2%	36.4%	5	313
	Beacon/Georgetown/South Park	47.9%	39.3%	17	1,047
	Capitol Hill/Eastlake	46.3%	37.3%	3	67
	Central Seattle	52.0%	45.5%	41	4,548
	Delridge	53.4%	47.9%	4	146
	Downtown	48.3%	41.9%	105	9,122
	Fremont/Greenlake	40.3%	30.2%	4	139
	NE Seattle	51.3%	44.7%	23	651

Region	Health Reporting Area (HRA)	% at least one dose	% completed primary series	# of facilities in analysis	# of PEH in analysis
	North Seattle	43.1%	36.7%	5	218
	NW Seattle	48.0%	42.6%	9	223
	Queen Anne/Magnolia	55.9%	47.6%	13	517
	SE Seattle	51.5%	45.6%	24	987
	West Seattle	*	*	0	0
	Subtotal	48.9%	42.4%	253	16,183
South	Auburn-North	46.1%	39.4%	7	165
	Auburn-South	43.9%	31.7%	3	41
	Black Diamond/Enumclaw/SE County	*	*	0	0
	Burien	32.9%	20.0%	4	70
	Des Moines/Normandy Park	*	*	0	0
	East Federal Way	*	*	0	0
	Fairwood	50.0%	26.7%	2	30
	Federal Way-Central/Military Rd	23.0%	17.4%	5	396
	Federal Way-Dash Point	21.1%	14.0%	1	57
	Kent-East	*	*	0	0
	Kent-SE	46.8%	45.0%	6	111
	Kent-West	29.2%	21.4%	1	360
	North Highline	0.0%	0.0%	1	**
	Renton-East	20.0%	20.0%	1	**
	Renton-North	40.4%	33.7%	6	267
	Renton-South	45.7%	37.1%	2	35
	SeaTac/Tukwila	63.7%	56.0%	5	91
	Vashon Island	*	*	0	0
	Subtotal	35.4%	28.3%	44	1,586
Unknown	Unknown	41.3%	36.3%	5	80
	Subtotal	41.3%	36.3%	5	80
Total		47.7%	41.1%	350	18,643

*AREAS WITH 0 FACILITIES INCLUDED; NO PEH WERE IDENTIFIED IN THAT HRA IN THIS ANALYSIS. THIS DOES NOT NECESSARILY INDICATE THERE ARE NO PEH OR SERVICES IN THAT HRA.

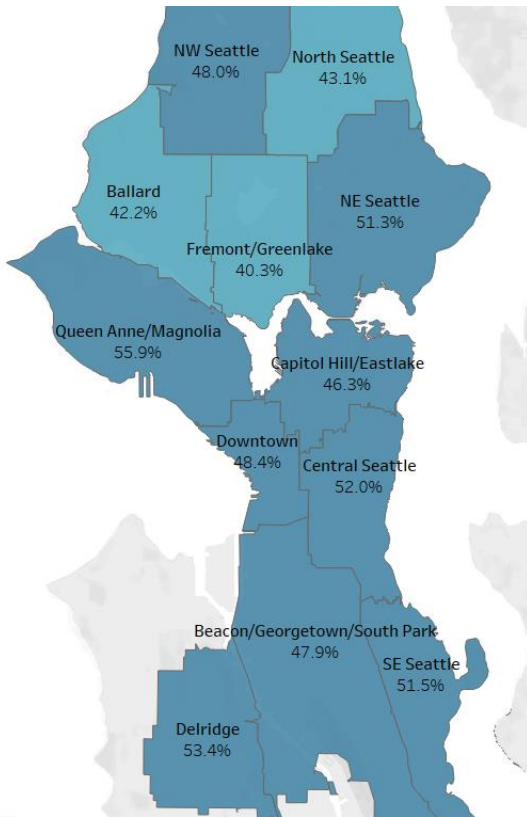**SMALL NUMBERS SUPPRESSED TO PREVENT POSSIBLE IDENTIFICATION.

APPENDIX C: MAPS OF GEOGRAPHIC VACCINATION COVERAGE AMONG PEH

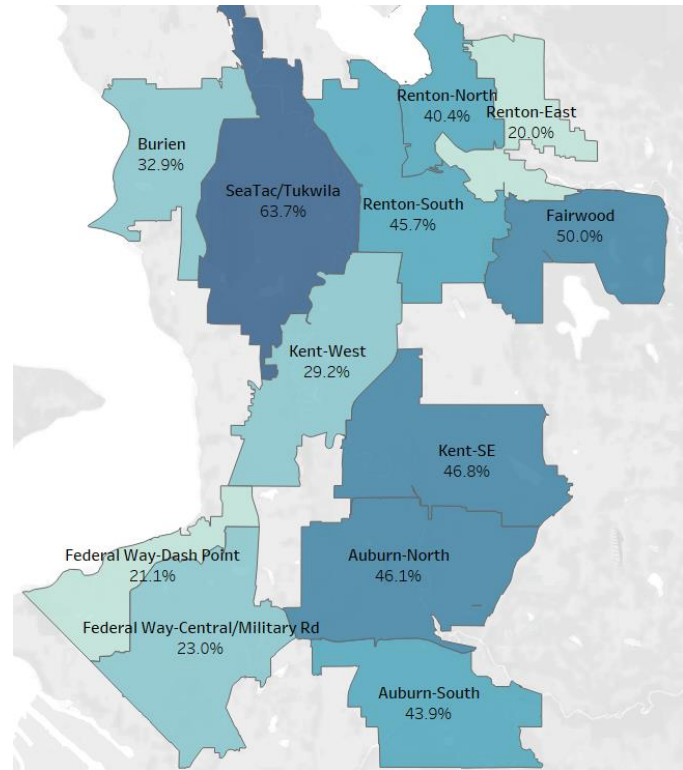Health Reporting Area (HRA) level maps display the percent of PEH who received at least one dose of any COVID-19 vaccine.[11]
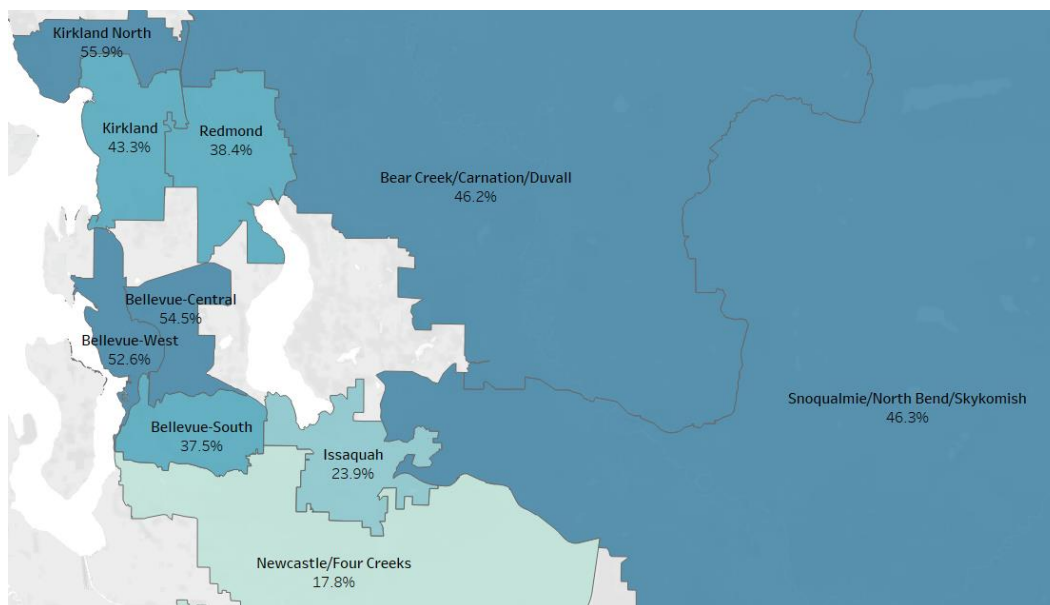
NORTH KING COUNTY

Shoreline
41.9%

Kenmore/Lake Forest Park
54.5%

Bothell/Woodinville
62.1%

SEATTLE

NW Seattle
48.0%

North Seattle
43.1%

Ballard
42.2%

NE Seattle
51.3%

Fremont/Greenlake
40.3%

Queen Anne/Magnolia
55.9%

Capitol Hill/Eastlake
46.3%

Downtown
48.4%

Central Seattle
52.0%

Beacon/Georgetown/South Park
47.9%

SE Seattle
51.5%

Delridge
53.4%

SOUTH KING COUNTY

Renton-North
40.4%

Renton-East
20.0%

Burien
32.9%

SeaTac/Tukwila
63.7%

Renton-South
45.7%

Fairwood
50.0%

Kent-West
29.2%

Kent-SE
46.8%

Federal Way-Dash Point
21.1%

Auburn-North
46.1%

Federal Way-Central/Military Rd
23.0%

Auburn-South
43.9%

EAST KING COUNTY

Kirkland North
55.9%

Kirkland
43.3%

Redmond
38.4%

Bear Creek/Carnation/Duvall
46.2%

Bellevue-Central
54.5%

Bellevue-West
52.6%

Snoqualmie/North Bend/Skykomish
46.3%

Bellevue-South
37.5%

Issaquah
23.9%

Newcastle/Four Creeks
17.8%

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[11] Additional information on Health Reporting Areas: Geographical definitions - King County