



Unsheltered in Los Angeles – Insights from Street Outreach Service Data

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This document provides additional details about the data and methodology used in “Unsheltered in Los Angeles – Insights from Street Outreach Service Data.” The study analyzes the characteristics and housing enrollments of over 37,000 clients served by Los Angeles Homeless Service Authority’s Street Outreach program during the FY2018-19 year to better understand the unsheltered homeless population in Los Angeles. Data from the Point-in-Time Count Demographic Survey are used to assess whether findings on the Street Outreach population can be generalized to the unsheltered population without additional adjustments. The study also uses linked data from the Homeless Management Information System (HMIS) and Los Angeles County Department of Mental Health in order to calculate a lower-bound estimate of the prevalence of Serious Mental Illness (SMI) among individuals experiencing unsheltered homelessness.

DATA

Point-in-Time Count & Point-in-Time Count Demographic Survey

Results from the annual Point-in-Time Count (PIT Count) and Point-in-Time Count Demographic Survey (PIT Survey) are publically available on the Los Angeles Homeless Services Authority website. We used the results of the 2019 count for the Los Angeles Continuum of Care, which excludes Pasadena, Glendale, and Long Beach, since the HMIS data used in our analysis excludes these three cities as well.

In addition to the publically available PIT Count data, we also used aggregated PIT Survey results provided to CPL by Patricia St. Clair, USC Schaeffer Center, and Benjamin Henwood, USC School of Social Work. Critical to the analysis included in the report, in addition to the estimated

counts of the unsheltered population by demographic subgroups, the data also include the standard errors for each of these estimates. This allowed us to compare the demographic characteristics between the Street Outreach population and the PIT estimates using a simulation strategy that maintained the measurement error inherent in the PIT Survey results.

LAHSA HMIS Data

HMIS data used in this report were provided to CPL by LAHSA through a formal data sharing agreement. An HMIS is a local system used to collect client-level data and data on the provision of federally-funded services for individuals and families who are at risk of, or who are already experiencing homelessness. We note that the HMIS data does not cover all homelessness programs throughout Los Angeles County. For example, domestic violence programs do not participate in the HMIS to protect vulnerable clients’ information.

Programs that do not rely on LAHSA funding are not required to participate in the HMIS, and this also decreases coverage. As such, our findings should only be applied to clients that can be observed in the HMIS.

This report used data elements found in the Client, Enrollment, Disabilities, Services, and Assessments files within the HMIS database. The client file provided demographic information on the individuals in our study sample. The enrollment file was used to define the sample based on the entry date of each individual's initial Street Outreach enrollment and observe housing enrollments that occurred within 12 months of a client's enrollment. The disabilities file added information on self-reported mental health concerns. The services file allowed us to condition rapid re-housing enrollments on move-in dates or recorded services that indicate housing subsidy receipt. The assessments file was used to estimate the prevalence of self-reported mental health concerns as measured by the VI-SPDAT for the study sample and the percent of the sample assessed by the VI-SPDAT as reported in [Table 1](#) of the accompanying brief.

Defining the study sample

The study sample includes the 37,067 unique clients enrolled in the Street Outreach project type in HMIS from July 1, 2018 to June 30, 2019 (FY2018-19). No clients enrolled in Street Outreach during this time period were removed from the analysis.

Defining study outcomes and outcome window

The outcome analyzed in this report, "housing enrollments," is based on each client's subsequent enrollments within one full year of the entry date of their initial enrollment in Street Outreach. We use a relative one-year outcome window instead of a fixed period so that each client has the same amount of time to be connected to additional enrollments, whether their initial Street Outreach enrollment is at the beginning or the end of FY2018-19.

We use subsequent enrollments in HMIS as the outcome of interest instead of using exit data due to the difficulty of observing exits in the HMIS for the Street Outreach client population. [Appendix Table 1](#) shows that exit destinations are either missing or unknown for 84% of Street Outreach clients overall, and 54% or more for those with housing enrollments. Relying on exit data for outcomes in this study

would therefore substantially underestimate client outcomes.

The outcome is calculated as a categorical variable with four mutually exclusive groups: no enrollments, interim housing, rapid re-housing, and permanent housing. We define increasing intensity of enrollments in the same order and assign the most intensive enrollment for each client during the outcome window. For example, if a client with an interim housing enrollment is later enrolled in rapid re-housing within the 12-month outcome window, they are included in the "Rapid Re-housing" group.

Our mutually exclusive outcome groups are defined as follows:

1. **"No Enrollments"** indicates that the client enrolled in no other projects or only enrolled again in Street Outreach. [Appendix Table 2](#) provides the distribution of additional Street Outreach enrollments for this category of clients, showing that 77% only enrolled in Street Outreach once, with the remaining 23% enrolling multiple times.
2. **"Interim Housing"** indicates that the client was enrolled in an interim housing program as defined by the following project types in the [HMIS Data Dictionary](#): Emergency Shelter, Day Shelter, Safe Haven, and Transitional Housing. Clients with this outcome were not enrolled in either rapid re-housing or permanent housing during the outcome window.
3. **"Rapid Re-housing"** indicates that the client was enrolled in the HMIS project Rapid Re-Housing and had either a recorded move-in date or had service records indicating subsidy receipt in the form of payment of rent, security deposit, moving costs, or utilities. Clients with this outcome may also have been enrolled in an interim housing program during the outcome window; clients with this outcome were not enrolled in permanent housing during the outcome window.
4. **"Permanent Housing"** indicates that the client enrolled in either a permanent housing or permanent supportive housing program as defined by the following project types in the HMIS Data Dictionary: Permanent Supportive Housing (disability required for entry), Housing with Services (no disability required for entry), or Housing Only. Clients with this outcome may also have been enrolled in an interim housing or rapid re-housing program during the outcome window but are only counted as enrolling in permanent housing for the purposes of this study.

Sensitivity check using two-year outcome

As a sensitivity check on whether a one-year outcome window was too short to observe a significant share of eventual housing enrollments for a difficult to reach population, we conducted a sub-analysis that looked at outcomes over a two-year period. Since the range of CPL's HMIS data at the time of this report ended in September 30, 2020 we used a sample of Street Outreach clients enrolled between July and September of 2018 to observe housing enrollments over two full years for these clients.

Among these clients, 18% had a housing enrollment within 12 months and an additional 7% had a housing enrollment within 12-24 months. [Appendix Table 3](#) provides the full results of this analysis. Since 72% of housing enrollments occurred within the first year of Street Outreach enrollment we believe this is sufficiently strong evidence that a one-year outcome window is an appropriate interval to use as our main outcome.¹

Missingness on demographic variables

HMIS rates of missingness are due to both true missingness (no data in the HMIS) and non-response (e.g., client doesn't know, client refused, or data not collected). [Appendix Table 4](#) provides the full rates of missingness for the key demographic and health condition variables used in the study. We discuss how missing data may have affected our analysis, and efforts we made to mitigate any potential bias from missing data in the methodology section of this appendix.

Department of Mental Health

To estimate the lower-bound prevalence of SMI among the Street Outreach population, we used data from the Enterprise Linkages Project (ELP). The ELP data held by CPL contains client-level service utilization data from multiple Los Angeles County public services agencies, including LAHSA and the Department of Mental Health (DMH). Data in the ELP are linked across agencies by LA County's Chief Information Office using a proprietary method that anonymizes the data while allowing researchers to view an individual's cross-agency service utilization. We used this data to determine whether any of the Street Outreach clients in our sample were diagnosed with SMI between January 1, 2006 and their enrollment in Street Outreach during FY 2018-19.

Among Street Outreach clients for whom we were able to link DMH service records, we distinguished between those with diagnosis codes for SMI and clients who either received services without any specific diagnosis or whose diagnosis was outside of our definition for SMI (e.g., substance use disorder). The diagnoses used to define SMI for the purposes of this study are: bipolar disorder, episodic mood disorder, major depressive disorder, manic episode, other psychotic or delusional disorder, schizoaffective disorder, schizophrenia, and schizotypal disorder. The grouping of these diagnosis codes as a proxy for SMI was provided to CPL by affiliate researchers in the David Geffen School of Medicine at UCLA.

Housing Inventory Count data

To provide context on the scarcity of housing resources in Los Angeles County available for Street Outreach clients, the report also used publicly available data from the 2019 Housing Inventory Count (HIC) from the Department of Housing and Urban Development (HUD).² Like the PIT Count, the HIC provides an estimate of the total number of "beds" and their occupancy at a single "point in time."

Our calculation of occupancy rates differs slightly from the HIC summary data provided by HUD in part because we measured the total available beds instead of only the "year-round" beds provided by the summary data. Conditioning on whether or not an interim housing bed is "year-round" excludes seasonal/winter beds, which we include since we compared these data to the PIT Count which is conducted during the winter.

[Appendix Table 5](#) provides the results of our analysis of the raw HIC data, showing that at the point in time when the 2019 HIC was conducted, only 4,134 beds across our three housing enrollment outcome categories were available out of 45,146 total beds. We estimate that there are ten times more unsheltered individuals in the Los Angeles CoC than unoccupied beds by dividing the 42,471 unsheltered individuals estimated in the 2019 PIT Count by the 4,134 unoccupied beds in the HIC.³

METHODOLOGY

Simulation analysis

Appendix Table 6 juxtaposes the full demographic distributions of our sample of Street Outreach clients and the 2019 PIT Survey. The Street Outreach data used for this analysis comes from administrative records of the served population for an entire fiscal year (2018-19), and so we do not include measures of statistical precision for these data. However, to establish confidence in differences between the Street Outreach demographic distribution and the PIT Survey, we needed to account for variation in PIT Survey estimates since they are calculated using a weighted sample of survey respondents. Further, we cannot simply compare counts for this analysis because the PIT survey is taken over a short time period of a few months while Street Outreach happens throughout the year.

To proceed, we conducted a simulation analysis that relied on the PIT Survey sampling variation to produce 95% confidence intervals for various characteristics of the PIT unsheltered population. We started by randomly drawing 1,000 independent samples for each demographic count covered by the PIT Survey. Each simulated draw is based on a normal distribution centered at the PIT count estimate with variance based on the associated standard error. We then calculated various sample characteristics – such as the share of the Black unsheltered population – for each simulated sample and created two-tailed 95% confidence intervals using the resulting 2.5 and 97.5 centiles of each characteristic across simulated samples. The survey estimates used to perform these simulations were provided to CPL by Patricia St. Clair, USC Schaeffer Center, and Benjamin Henwood, USC School of Social Work, both of whom help conduct the PIT Survey.

We then checked whether each demographic characteristic of the Street Outreach population fell within its respective 95% confidence interval from the PIT Survey simulations. If Street Outreach characteristics fell outside of these confidence intervals, we concluded that the differences between the two populations were statistically significant. **Appendix Table 7** provides the full results of this simulation analysis.

Note that there are limitations to this analysis based on seasonality. Specifically, because the PIT survey is conducted between December and March, any seasonal changes in the composition of the unsheltered population may not be fully

reflected in the Street Outreach clients enrolled throughout the fiscal year. One could perform the analysis by limiting the sample to those who entered Street Outreach in months when the PIT survey is conducted, as well as those who continued to be served by Street Outreach in those months, but challenges with that approach also exist due to high rates of missing exit data. For that reason, we preferred the broader approach with the understanding that any statistically significant differences would suggest that either (1) there are differences in the two samples if seasonal compositional differences are not meaningful, or (2) there are seasonal differences that would need to be taken into account when comparing the PIT to the Street Outreach population. In both cases, the comparison is meaningful.

Entropy balancing

The results of the report showed differences in the rate of housing enrollments for Black clients compared to White clients. In order to confirm that these difference were not due to other demographic factors, we used entropy balancing in order to re-weight the sample of White clients so that they more closely resembled the Black sample of clients in terms of gender, age, HMIS history, and mental health concerns.⁴ This method required that the re-weighted sample only use observations with complete data for the covariates used in the balancing. As such, **Appendix Table 8** provides housing enrollment outcome data for a subgroup of White, Black, and Latinx clients that have complete data for all necessary covariates. These results are provided as a check to confirm that observed differences after re-weighting are not solely the result of selection effects for clients with complete data.

The results of the report also showed differences in the rate of housing enrollments for clients with a clinical DMH-SMI diagnosis compared to clients with no DMH service history. To test whether these difference were due to other demographic factors, we again used entropy balancing to re-weight the sample of clients with no DMH history so that they more closely resembled the DMH-SMI diagnosed sample of clients in terms of gender, race, age, HMIS history, and mental health concerns. **Appendix Table 9** provides housing enrollment outcome data for a subgroup of DMH-SMI diagnosed clients that have complete data for all necessary covariates. These results are provided as a check to confirm that observed differences after re-weighting are not solely the result of selection effects for clients with complete data.

TABLE A1: Unobserved Exit Destination Data by Housing Enrollment Group

INTERIM HOUSING	RAPID RE-HOUSING	PERMANENT HOUSING	FULL SAMPLE
72%	54%	62%	84%

Notes: This table uses HMIS exit destination data to calculate the percent of Street Outreach clients in our sample from each housing enrollment enrollment group that are either missing exit data or their exit destination is unknown.

TABLE A2: Number of Street Outreach Enrollments for Clients with No Housing Enrollments within One Year

	COUNT	PERCENT
1	23,669	77%
2	4,593	15%
3	1,546	5%
4	597	2%
5	217	1%
6	70	0%
7	31	0%
8	11	0%
9	4	0%
Clients with No Housing Enrollment	30,738	100%

Notes: This table shows how many Street Outreach clients in the “No Enrollments” outcome category had additional enrollments in Street Outreach within one year. As such, this table only looks at the 30,738 clients in the study sample with no housing enrollment outcomes.

TABLE A3: Housing Enrollments of Street Outreach Clients within One and Two Year Outcome Windows

	NO ENROLLMENTS	INTERIM HOUSING	RAPID RE-HOUSING	PERMANENT HOUSING	ANY HOUSING ENROLLMENT	SAMPLE TOTAL
Enrolled within 12 months	8,707	1,424	285	224	18%	10,640
Change within 13-24 months	-779	519	70	190	7%	10,640
Two year total	7,928	1,943	355	414	25%	10,640

Notes: This table uses HMIS data on clients enrolled in Street Outreach projects in July, August, and September of 2018. The table shows housing enrollments that occur within one year of their initial Street Outreach enrollment and then additional enrollments that occur in the second year after their initial enrollment.

TABLE A4: Rates of Missingness for HMIS Street Outreach Data

	COUNT	PERCENT
Gender	483	1%
Race	1,872	5%
Age	4,262	11%
Any Mental Health Concern	4,646	13%
Complete Observations	28,138	76%
Missing Any	8,929	24%
Total Sample	37,067	100%

Notes: This table provides the count and percent of clients missing key demographic data analyzed in the study. Missingness means that the data is either truly missing or not observed as a result of non-response or collection error.

TABLE A5: Los Angeles CoC Point in Time Bed Occupancy, by Project Type

	TOTAL BEDS	OCCUPIED BEDS	PERCENT OCCUPIED	BEDS AVAILABLE
Interim Housing	15,894	13,786	87%	2,108
Emergency Shelter	12,277	10,834	88%	1,443
Transitional Housing	3,489	2,837	81%	652
Safe Haven	128	115	90%	13
Rapid Re-Housing	6,924	6,924	100%	0
Permanent Housing	22,328	20,302	91%	2,026
Permanent Supportive Housing	20,584	18,623	90%	1,961
Other Permanent Housing	1,744	1,679	96%	65
Total	45,146	41,012	91%	4,134

Notes: This table uses data from the 2019 Housing Inventory Count (HIC) acquired from the Department of Housing and Urban Development. Organizations that operate multiple project types are counted once per project type. Occupancy rates represent a single point in time estimate. "Total Beds" counts include seasonal beds. 2019 HIC (Raw File) available at: <https://www.hudexchange.info/resource/3031/pit-and-hic-data-since-2007/>

TABLE A6: Demographic Comparison of Street Outreach Clients and Unsheltered Individuals in 2019 PIT Count

	PERCENTAGE			COUNT		
	STREET OUTREACH	UNSHELTERED PIT	DIFFERENCE	STREET OUTREACH	UNSHELTERED PIT	DIFFERENCE
Gender						
Male	63%	71%	-8	23,125	30,173	-7,048
Female	36%	26%	10	13,061	11,194	1,867
Other	1%	3%	-2	398	1,104	-706
Race/Ethnicity						
Black	36%	28%	8	12,656	11,898	758
Latinx	32%	37%	-5	11,372	15,887	-4,515
White	29%	28%	1	10,052	12,001	-1,949
Asian	1%	1%	0	432	354	78
Native American	1%	2%	-1	254	910	-656
Pacific Islander	1%	1%	0	192	259	-67
Other	1%	3%	-2	237	1,162	-925
Age						
Under 18	1%	2%	-1	414	901	-487
18-24	10%	5%	5	3,310	2,056	1,254
25-54	63%	66%	-3	20,676	28,152	-7,476
55-61	15%	17%	-2	4,901	7,107	-2,206
62+	11%	10%	1	3,504	4,255	-751
Total				37,067	42,471	

Notes: The total column for Street Outreach (column 4) includes some clients with missing data. For rates of missingness by demographic characteristic, please refer to [Appendix Table 4](#).

TABLE A7: Demographic Comparison of Street Outreach Clients and Unsheltered Individuals in 2019 PIT Count, Confidence Intervals

	UNSHeltered 95% PIT Confidence Intervals			
	STREET OUTREACH	2.5 CENTILE	97.5 CENTILE	STREET OUTREACH OUTSIDE CI
Gender				
Male	63.2%	69.0%	73.0%	Yes
Female	35.7%	24.4%	28.2%	Yes
Transgender	0.9%	1.1%	3.2%	Yes
Gender Non-Conforming	0.2%	0.0%	0.8%	No
Race/Ethnicity				
Black	36.0%	25.0%	31.2%	Yes
Latinx	32.3%	34.0%	41.0%	Yes
White	28.6%	25.0%	31.2%	No
Asian	1.2%	0.5%	1.2%	Yes
Native American	0.7%	1.3%	3.0%	Yes
Pacific Islander	0.5%	0.1%	1.1%	No
Other	0.7%	1.7%	3.7%	Yes
Age				
Under 18	1.3%	1.5%	2.7%	Yes
18-24	10.1%	3.5%	6.1%	Yes
25-54	63.0%	63.5%	68.9%	Yes
55-61	14.9%	14.3%	18.9%	No
62+	10.7%	8.4%	11.7%	No

Notes: This table uses point estimates and standard errors from USC's PIT Count Demographic Survey to create a simulation dataset containing 1,000 observations drawn from the distribution of each demographic characteristic. The simulated dataset is then used to create 95% confidence intervals around each estimated characteristic. If the observed demographic characteristics of the Street Outreach sample are outside of this range, we conclude that the difference between the two groups is statistically significant.

TABLE A8: Housing Enrollments by Racial and Ethnic Groups, with Re-weighting

	ENROLLMENT	INTERIM HOUSING	RAPID RE-HOUSING	PERMANENT HOUSING	SAMPLE TOTAL
White Clients					
All White Clients	85%	12%	1%	1%	10,052
All White Clients with Complete Data	82%	15%	2%	2%	7,524
Black Clients					
All Black Clients	77%	18%	3%	2%	12,656
Black Clients with Complete Data	74%	21%	3%	2%	10,598
White Clients Re-weighted to Black Clients	81%	15%	2%	2%	7,524
Latinx Clients					
All Latinx Clients	85%	12%	2%	1%	11,372
Latinx Clients with Complete Data	83%	13%	2%	2%	9,169
White Clients Re-weighted to Latinx Clients	84%	13%	2%	1%	7,524

Notes: This table shows the results of re-weighting the sample of White clients to Black and Latinx clients on demographic characteristics, HMIS history, and self-reported mental health concerns. Since individuals missing data on any of the variables used for re-weighting are excluded from the analysis, this table also shows the difference between all White, Black, and Latinx clients and those without any missing demographic data (labeled “complete data” in the table).

TABLE A9: Housing Enrollments of Clients with DMH-SMI Diagnosis, Reweighted

	ENROLLMENT	INTERIM HOUSING	RAPID RE-HOUSING	PERMANENT HOUSING	SAMPLE TOTAL
No DMH History Clients					
All No DMH History Clients	87%	10%	2%	1%	27,477
No DMH History Clients with Complete Data	83%	13%	2%	1%	19,436
DMH-SMI Diagnosed Clients					
All DMH-SMI Diagnosed Clients	70%	25%	2%	3%	7,341
DMH-SMI Diagnosed Clients with Complete Data	68%	25%	3%	4%	6,701
No DMH History Clients Re-weighted to DMH-SMI Clients	75%	20%	3%	2%	19,436

This table shows the results of re-weighting the sample of clients with no DMH history to DMH-SMI diagnosed clients on demographic characteristics, HMIS history, and self-reported mental health concerns. Since individuals missing data on any of the variables used for re-weighting are excluded from the analysis, this table also shows the difference between all clients and clients without any missing demographic data (labeled “complete data” in the table) for both DMH-SMI diagnosed clients and clients with no DMH history. DMH diagnoses data comes from Department of Mental Health client service records from January 1, 2006 through June 30, 2019.

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Endnotes

- 1 Appendix Table 3 shows that 18% of the sample had a housing enrollment within 12 months and a total of 25% had a housing enrollment within 24 months. $18\% / 25\% = 72\%$ of housing enrollments occur within the first 12 months.
- 2 2019 HIC (Raw File) available at: <https://www.hudexchange.info/resource/3031/pit-and-hic-data-since-2007/>
- 3 Excluding seasonal beds would lower the estimated number of unoccupied beds to 2,988, which would suggest that there are 14 times as many unsheltered individuals than unoccupied beds.
- 4 Entropy balancing is a data preprocessing technique capable of balancing two samples on a specified set of covariates. For more information, see: <https://web.stanford.edu/~jhain/Paper/PA2012.pdf>