

Effect of providing permanent housing for the homeless on per capita homeless rates in US cities.

IDS 701 Project Proposal

Prepared by

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I. Identify and understand the problem

1.1 Problem Statement

In the mid 2000's, after early empirical success, the United States Department of Housing and Urban Development implemented the Housing First approach. (McEvers & Pendleton, 2015) Since adoption, some cities have substantially reduced homelessness, while others have struggled despite this approach. As such, recently, the effectiveness of this approach has been questioned.

1.2 Exploratory Questions

1. What were the cities/counties with the largest amount of homeless people when the Housing First approach was implemented?
2. What are the factors that are expected to cause homelessness?
3. How do the demographics of the homeless compare with the national average?

1.3 Quantitative Results

1. In 2007, the two cities with the largest homeless populations were New York and Los Angeles, each with over 45,000 homeless individuals. Following them, Detroit and Houston both had over 10,000 homeless individuals. Then there were 17 different cities that had over 5,000 homeless individuals. These 21 cities (*see appendix 1*) are where this project will focus its analysis, as these are the cities that require the most intervention to drastically reduce homelessness.
2. According to the report "*Structural and Systemic Factors Contributing to Homelessness in Canada: An Analysis of Research Gaps and Proposed Research Directions*", there are three main groups of factors that cause homelessness: factors associated with income (i.e.

unemployment, lack of education), factors associated with health (including mental health and substance abuse), and factors associated with housing (i.e. unaffordable housing, unsafe housing, and eviction). (Buckland, 2001)

3. The table below from “*The 2022 Annual Homelessness Assessment Report*” (de Sousa et al., 2022) shows that an outsized portion of homeless people are Non-White and Non-Hispanic/Non-Latino.

	All People		Sheltered People		Unsheltered People	
	#	%	#	%	#	%
All People	582,462	100%	348,630	100%	233,832	100%
Age						
Under 18	98,244	16.8%	87,960	25.2%	10,284	4.2%
18 to 24	40,177	6.9%	26,981	7.7%	13,196	5.6%
Over 24	444,041	76.3%	233,689	67.0%	210,352	90.1%
Gender						
Female	222,970	38.3%	152,693	43.8%	70,277	30.0%
Male	352,836	60.6%	193,366	55.5%	159,470	68.3%
Transgender	3,588	0.6%	1,593	0.5%	1,995	0.9%
A Gender that is not Singularly 'Female' or 'Male'	2,481	0.4%	846	0.2%	1,635	0.7%
Questioning	609	0.1%	132	0.0%	477	0.2%
Ethnicity						
Non-Hispanic/Non-Latin(a)(o)(x)	442,220	75.9%	269,964	77.4%	172,256	73.5%
Hispanic/Latin(a)(o)(x)	140,230	24.1%	78,666	22.6%	61,564	26.5%
Race						
American Indian, Alaska Native, or Indigenous	19,618	3.4%	8,843	2.5%	10,775	4.6%
Asian or Asian American	8,261	1.4%	3,909	1.1%	4,352	1.9%
Black, African American, or African	217,366	37.3%	154,557	44.3%	62,809	26.9%
Native Hawaiian or Pacific Islander	10,461	1.8%	4,692	1.3%	5,769	2.5%
White	291,395	50.0%	157,637	45.2%	133,758	57.2%
Multiple Races	35,383	6.1%	18,992	5.4%	16,391	7.0%

Table 1: Homelessness rates by Race

II. Backward Design

2.1 Topic

This project seeks to understand the effectiveness of a Housing First approach in reducing homelessness.

2.2 Project Question

This project aims to answer the question: What is the effect of providing permanent housing for the homeless on per capita homeless rates?

2.3 How Will Answering This Problem Help Address Your Problem?

To understand the permanent housing investment needed to effectively reduce homelessness, it is necessary to look at the relationship between providing permanent housing for the homeless and the rates of homelessness in different jurisdictions. However, because homelessness is a complex problem caused by a variety of factors, it is critical to consider the limitations of providing only permanent housing. This analysis will also look at how other factors, such as health, addiction, and inequality, affect the effectiveness of providing permanent housing..

2.4 Ideal Experiment

Ideally, to answer this question, an experiment would be conducted, randomly assigning each city with a random amount of permanent housing per capita to analyze the impact of investing in permanent housing for the homeless on homelessness.

2.5 Pick a Study Context

Since the ideal experiment is not possible, this project will compare per capita homeless rate trends in cities with “high” permanent housing capacity and cities with “low” permanent housing capacity. Permanent housing capacity is not expected to be the primary factor that drives homelessness, so analysis will compare city poverty levels, unemployment levels, drug addiction levels, health (including mental health) levels, and racial equity levels, in addition to the idiosyncratic effects of the state, and macroeconomic effects of the time.

While permanent housing capacity is not the primary driver of homelessness, it is expected to be the variable which public policy has the most control over. Additionally, while permanent housing alone cannot necessarily help people with health and addiction issues, there is evidence that suggests a Housing First approach is more successful at helping with these issues than a Treatment First approach. (Padgett et al., 2011, #)

2.6 Project Design

This project will analyze per capita homeless rates using a linear regression to infer the relationship between permanent housing and homelessness, while accounting for poverty levels, drug addiction, health levels, and racial equity levels.

2.7 Model Results

The hypothesis for this project is that there is an inverse causal relationship between permanent housing for the homeless and homelessness. Therefore, if the hypothesis is true, the expectation is that the linear regression will provide a negative coefficient and a high test statistic (and correspondingly low p-value) for permanent housing. However, if the hypothesis is false, the

expectation is that there will be a low test statistic (and correspondingly high p-value) and/or a positive (or very close to zero) coefficient for permanent housing.

	Coef	Std Error	z	p> z	[0.025	0.975]
Intercept						
Permanent housing (beds)	Negative coefficient			Very small p-value		
Poverty						
Drug addiction						
Unemployment						

Additionally, when visualizing the data, if the hypothesis is true, the expectation is that the average trend for jurisdictions who invested in the greatest amount of permanent housing for the homeless will see a significantly more negative slope in their homeless rates than the average trend for the jurisdictions who invested in the least amount of permanent housing. Again, conversely, if the hypothesis is false, the expectation is that the average trend for the jurisdictions who invested in the greatest amount of permanent housing for the homeless is similar or greater than the average trend for the jurisdictions who invested the least amount in permanent housing.

2.8 Final Variables Required

To conduct this analysis, several variables are required, including:

1. Annual per capita homeless rates for the 21 cities that have implemented the Housing First policy during the analysis period. Specifically, the study will require:
 - a. Annual homeless population estimates
 - b. Population data
2. Annual per capita permanent housing, measured in beds. Specifically, the study will require:
 - a. Annual permanent housing units available for the homeless
 - b. Population estimates
3. Annual per capita poverty. Specifically, the study will require:
 - a. Annual poverty estimates
 - b. Population estimates
4. Annual unemployment rate
5. Annual Drug-related mortality per capita to measure the magnitude of drug addiction. Specifically, the study will require:
 - a. Annual drug-related mortality

- b. Population estimates
- 6. Annual suicide rate per capita to measure the magnitude of mental health. Specifically, the study will require:
 - a. Annual suicide incidents
 - b. Population estimates
- 7. Annual population estimates by race

2.9 Data Sources

To conduct the analysis, we shall aggregate data on key factors for homelessness. Specifically, we will need estimates for permanent housing inventory for the homeless, population estimates and poverty, unemployment, drug addiction and mental health levels for cities of interest, as factors that impact homelessness.

In coordination with the U.S. Department of Housing and Urban Development (HUD), homelessness data is primarily collected by entities known as Continuum of Care (CoC) programs. The CoC program is a coalition of institutions and organizations that provide funding to local communities to develop housing and services for people experiencing homelessness. Each CoC program can vary in size based on the local population and is responsible for specific regions, which do not necessarily map to specific counties or cities. (U.S. Department of Housing and Urban Development, 2021).

The datasets used to estimate the key factors of homelessness will be aggregated and mapped onto CoCs, which can span multiple counties (*see Appendix I*). The project is focused on the 21 CoCs with the largest amount of homelessness in 2007, these CoCs tend to map well to the largest cities, where data is expected to map more easily to counties, and expected to be more accurate. The following table provides a visual representation of the final table after the data merges have been performed. The bolded variables indicate the key variables required to perform the merges between tables.

Point-in-Time (PIT) Homeless Estimates			Housing Inventory Count (HIC)			County-CoC Mapping		Poverty	
Overall Homeless Estimates	CoC Name	CoC Number	CoC Number	Total Year-Round Beds (Other Permanent Housing)	Total Year-Round Beds (Permanent Supportive Housing)	CoC Number	FIPS Code	FIPS Code	Poverty Estimates
Unemployment			Mortality			Population			
FIPS Code	Unemployment Rate	FIPS Code		Suicide Deaths	Drug-Related Mortality	FIPS Code	Population Estimates	Race Demographic Estimates	

1. Point-in-Time (PIT) Homeless Estimates from 2007 to 2022 by CoC

The point-in-time (PIT) estimates of homelessness were obtained from HUD (U.S. Department of Housing and Urban Development., 2023). The dataset provides information on homelessness for each CoC operating region in a given year, with each spreadsheet tab representing data for a year between 2007 to 2022. This data will be combined into the overall homeless count for each year, to create a comprehensive dataset that provides the homeless population of a city over time.

While the PIT homelessness count provides valuable information about the prevalence of homelessness in a given area, it is important to recognize some potential challenges with the data quality. The count is conducted on the coldest night in January of each year by a group of staff members and volunteers. However, due to limited resources, some Continuums of Care (CoCs) may need to estimate the total number of homeless individuals based on a street count and then scale up the data proportionally using census population data or sampling. This approach may vary across different CoCs and can be problematic since the coldest day of the year may impact cold climates differently from warm climates.

Despite these challenges, the CoCs operation is consistent, providing reliable data on the total number and characteristics of all people residing in their geographic area. While there may be differences in estimates across regions, the PIT homelessness count still provides the best public estimates of homelessness that are currently available.

2. Housing-Inventory-Count (HIC) from 2007 to 2022 by CoC

The Housing-Inventory-Count (HIC) data was obtained from HUD (U.S. Department of Housing and Urban Development., 2023). The dataset provides information on the

number of different types of housing provided for the homeless, including both temporary and permanent housing units for each CoC operating region in a given year, with each spreadsheet tab representing data for a year between 2007 and 2022. This dataset provides an accurate representation of housing capacities for the homeless because each CoC provides funding to secure these housing options and is trusted to maintain detailed records every year. The total number of beds provided through permanent housing is calculated based on the year-round beds in Permanent Supportive Housing and other forms of permanent housing. Similarly, it is necessary to consolidate the annual permanent housing inventory into a dataset to obtain a comprehensive dataset that provides information on the permanent housing capacity of a city for the homeless over time.

3. Small Area Income and Poverty Estimates (SAIPE) from 2007-2021 by County

The Small Area Income and Poverty Estimates (SAIPE) to be utilized in this project was sourced from the United States Census Bureau (United States Census Bureau, n.d.). The dataset includes comprehensive information on the annual poverty estimates of counties throughout the United States. The Census Bureau calculates these estimates using a home-brewed statistical model, which combines summary data from American Community Survey (ACS), federal income tax returns, SNAP benefits, decennial census, postcensal population estimates, Supplemental Security Income reciprocity, and economic data from the Bureau of Economic Analysis (BEA). This data by county will be mapped onto CoCs to provide a representation of poverty estimates in these regions.

4. Local Area Unemployment Statistics (LAUS) from 2007-2021 by County

The annual unemployment rates for counties across the United States comes from the United States Bureau of Labor (Rice & Galbraith, 2008). The LAUS data is derived using the industry-standard Handbook method. To provide a more comprehensive understanding of the relationship between unemployment and homelessness, this dataset will be aggregated across counties and mapped onto respective CoCs.

5. Mortality Multiple Cause Data from 2007-2021 by County

The mortality data used in this study was obtained from the Centers for Disease Control and Prevention (CDC) and provides information on various causes of death, including drug overdose and suicide deaths, collected from death certificates of U.S. residents (Centers for Disease Control and Prevention, n.d.). The aim of incorporating the mortality data is to account for the effects of drug addiction and mental health issues in the United States on homelessness. While other measures could be used to evaluate these issues for a particular city in a given year, obtaining such data at the required level of granularity from the public domain was challenging. Therefore, the analysis uses mortality data as a

stand-in for evaluating drug addiction and mental health issues. The data will be aggregated across the years and counties and mapped onto corresponding CoCs.

6. Population Data from 2007-2021 by County

Population estimates were obtained from the United States Census Bureau (United States Census Bureau, n.d.). The goal is to make meaningful comparisons across cities by normalizing the aforementioned datasets and calculating the per capita homeless rates and permanent housing capacity for cities of interest. It is important to note that census data is only collected every ten years, and population estimates for the intervening years are based on births, deaths, and migration.

Since the population data was provided for three different time periods (2000 to 2009, 2010 to 2020, and 2020 to 2021), it is necessary to concatenate these datasets to obtain a comprehensive dataset at the county level for the U.S. population from 2000 to 2021. In order to merge the population data with the PIC and HIC data, we will manually map CoC numbers and the corresponding operating cities or counties. It is important to note that this manual mapping may not perfectly match all the counties to CoCs, as some areas are not currently served by any CoCs. However, it remains the best identifier to merge all data unless HUD provides more granular county-level homeless estimates in the future.

To measure racial equality in the 21 cities of interest, the same tables can be used to obtain racial demographic data. However, it is important to note that the Census Bureau only provides population data by race at the county level from 2010 onwards. Therefore, this study will not be able to assess levels of racial equality from 2007 to 2009 due to data limitations.

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Appendix

Appendix 1: Manual Mapping of Cities in Project and Their Corresponding FIPS Codes

CoCs	FIPS
New York City CoC	36005 (Bronx County) 36047 (Kings County) 36061 (New York County) 36081 (Queens County) 36085 (Richmond County)
Los Angeles City & County CoC	06037 (Los Angeles County) - LA CoC excludes the cities of Glendale, Pasadena and Long Beach
Detroit CoC	26163 (Wayne County)
Houston, Pasadena, Conroe/Harris, Ft. Bend, Montgomery, Counties CoC	48201 (Harris County) 48339 (Montgomery County) 48157 (Fort Bend County)
Georgia Balance of State CoC	13011 (Banks County) 13015 (Bartow County) 13021 (Bibb County) 13071 (Colquitt County) 13127 (Glynn County) 13137 (Habersham County) 13139 (Hall County) 13179 (Liberty County) 13187 (Lumpkin County) 13241 (Rabun County) 13257 (Stephens County) 13275 (Thomas County) 13135 (Gwinnett County) 13311 (White County) 13321 (Worth County).
Metropolitan Denver CoC	8001 (Adams County) 8005 (Arapahoe County) 8013 (Boulder County) 8014 (Broomfield County)

	8031 (Denver County) 8035 (Douglas County) 8059 (Jefferson County)
Phoenix, Mesa/Maricopa County CoC	04013 (Maricopa County)
Seattle/King County CoC	53033 (King County)
Philadelphia CoC	42101 (Philadelphia County)
Las Vegas/Clark County CoC	32003 (Clark County)
San Diego City and County CoC	06073 (San Diego County)
San Jose/Santa Clara City & County CoC	06085 (Santa Clara County)
San Bernardino City & County CoC	06071 (San Bernardino County)
Atlanta CoC	05049 (Fulton County)
Tampa/Hillsborough County CoC	12057 (Hillsborough County)
Chicago CoC	17031 (Cook County)
San Francisco CoC	06075 (San Francisco County)
District of Columbia CoC	11001 (District of Columbia)
Austin/Travis County CoC	48453 (Travis County)
Boston CoC	25025 (Suffolk County)