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To cite this article: Deden Rukmana (2020): The Causes of Homelessness and the Characteristics Associated With High Risk of Homelessness: A Review of Intercity and Intracity Homelessness Data, Housing Policy Debate, DOI: [10.1080/10511482.2019.1684334](https://doi.org/10.1080/10511482.2019.1684334)

To link to this article: <https://doi.org/10.1080/10511482.2019.1684334>



Published online: 14 Jan 2020.



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The Causes of Homelessness and the Characteristics Associated With High Risk of Homelessness: A Review of Intercity and Intracity Homelessness Data

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ABSTRACT

Two different city-level homelessness data types have been used by many homelessness studies in the United States: intercity data and intracity data. Intercity homelessness data are collected through cross-sectional surveys to estimate the number of persons experiencing homelessness in each city or metropolitan area. Intracity homelessness data are collected through prior address information reported by persons experiencing homelessness within a city's jurisdiction. This article reviews and compares both city-level homelessness data types. The comparison of intercity and intracity data offers insight into the strength and weaknesses of each data type in identifying the causes of homelessness and the characteristics associated with a high risk of homelessness. Intercity homelessness data examine the effect of policy and institutional variables and community-level variables that vary across cities on the prevalence of homelessness. Meanwhile, intracity homelessness data focus on the spatial variation of demographic, socioeconomic, housing, and other neighborhood factors that contribute to the incidence of homelessness within a jurisdiction that has the same policy and institutional variables. The findings from intracity and intercity homelessness data are not contradictory but complementary. The complementary findings between intercity and intracity homelessness data provide important information for planners to address homelessness at local levels.

ARTICLE HISTORY

Received 1 March 2019
Accepted 21 October 2019

KEYWORDS

homeless; urban planning;
community development

Homelessness has been a focus for planners since the 1980s (Crane & Takahashi, 1998). Many planning scholars (Avramov, 2001; Collin, 1992; Hoch & Slayton, 1989; Neale, 1997) see homelessness as a housing problem. A variety of causes including the closure of single-room-occupancy hotels, downtown redevelopment, gentrification, and the conversion of low-rent apartments to condominiums has reduced significantly the number of affordable housing units for low-income people (Takahashi, 1996; Wolch, Dear, & Akita, 1988). The decreasing number of affordable housing units has caused many to double up with family and friends and forced others into shelters and on the streets (Mallach, 2017; Takahashi, 1996).

The planning literature on homelessness also discusses the deinstitutionalization of state mental hospitals and the reduction of public expenditures on welfare that caused the increasing number of homeless mentally ill (Dear & Wolch, 2014). The deinstitutionalized persons tended to drift toward inner-city neighborhoods where low-rent apartments and emergency shelters were available (Rukmana, 2010, 2011; Wolch et al., 1988). The solution to persons with mental illness experiencing

homelessness must extend beyond merely supplying emergency shelters. Wenning (1991) identifies a wide variety of needs among persons with mental illness experiencing homelessness.

In a seminal planning article on homelessness, Culhane and Metraux (2008) identify that the chronically homeless use emergency shelters as a form of relatively long-term housing. Most chronically homeless do not have a severe mental illness but rather a substance use disorder (Culhane & Metraux, 2008). Providing shelters on a limited basis or reserving transitional housing programs for individuals recently discharged from institutions could reduce their exposure to victimization and dehumanization. Culhane and Metraux (2008) also argue that reallocating resources currently devoted to shelters to community-based programs focusing on helping people remain housed or to quickly return to housing would be both more efficient and more humane.

The role of planners is vital in combating the homelessness problem. Planners can assist in the siting of facilities for persons experiencing homelessness, including emergency shelters, transitional housing, and drop-in centres. Planners can also assist to combat community opposition to the siting of homeless facilities through education and negotiation (Rukmana, 2010; Takahashi, 1996; Wenning, 1991; Wolch et al., 1988). Planners can better characterize persons experiencing homelessness as a constituency that is acutely at risk and link their needs such as obtaining affordable housing, a job, medical care, financial counseling, or childcare to local resources and policy tools (Crane & Takahashi, 1998).

Homelessness prevention is also a critical approach to break the cycle of homelessness by closing the front door of entry into homelessness (Cunningham, Lear, Schmitt, & Henry, 2006). Rukmana (2010) offers an answer for where to target homelessness prevention interventions by mapping the residential origins of persons experiencing homelessness. Areas with high risks of homelessness among women and men are identified and can be designated as the target areas of services for preventing homelessness. Rukmana (2010) recommends providing housing and rental assistance, mediation services for housing problems, and employment and placement services to those areas.

The homelessness crisis in the United States continues unabated despite the continual expansion of programs and services to eradicate homelessness problems, particularly through the U.S. Department of Housing and Urban Development (HUD)'s McKinney-Vento program spending. The Annual Homeless Point-in-Time (PIT) count (HUD, 2018) reported there were approximately 552,830 homeless individuals in the United States in 2018.

Cross-sectional homelessness studies in the United States arrive at contradictory conclusions. O'Flaherty (2004) reviews the findings from nine city-level homelessness studies and three individual-level studies. His study finds housing market conditions have large effects on the homelessness rates in the city-level studies and weak effects in the individual-level studies. In contrast, pathology and poverty have strong effects on the homelessness rates in the individual-level studies and weak effects in the city-level studies.

Byrne, Munley, Fargo, Montgomery, and Culhane (2013) compare the findings of 15 city-level homelessness studies and find different significant community-level variables on determinants of homelessness. Their study builds on the city-level homelessness study by Lee, Townsend Price-Spratlen, and Kanan (2003) and uses a more reliable estimate of the homelessness population from the 2009 HUD PIT counts. Byrne et al. (2013) increase the exploratory power of the community-level variables in explaining variance in homelessness, but still have a few findings that contradict the results of Lee et al. (2003).

Most city-level homelessness studies have used intercity data to understand the roots of the homelessness problem. The intercity homelessness data are collected through cross-sectional survey methods designed to estimate the number of persons experiencing homelessness and their demographics in each city or metropolitan area. Meanwhile, the intracity homelessness data are developed through the use of homelessness rates by census tract or other geographical units within a city's jurisdiction.

The purpose of this study is to review the studies of homelessness that use intercity data and to compare them with the studies of homelessness that use intracity data. It highlights and compares

the strengths and gaps in identifying the cause of homelessness, and the characteristics associated with a high risk of homelessness, and the policy prescriptions from the two different sets of city-level homelessness data.

Methods

Google Scholar and seven electronic databases—EBSCO, Science Direct, Scopus, Academic OneFile, JSTOR, Oxford and ISI Web of Science—were searched for peer-reviewed publications between January 1987 and December 2018 that use intercity and intracity homelessness data. This study identified more than 50 peer-reviewed publications using intercity homelessness data sets. Five intercity homelessness data sets were identified in those peer-reviewed publications, including HUD's 1984 Report to the Secretary on the Homeless and Emergency Shelter, the 1990 Shelter and Street Night Enumeration, the 1990 Urban Institute's Homelessness Survey (also known as the Burt Survey), the Census 2000 Special Reports on Emergency and Transitional Shelter Population, and HUD's Annual PIT count and the Annual Homeless Assessment Report to Congress.

After an extensive literature search that used Google Scholar and the seven databases, 10 studies of homelessness were identified that use intracity homelessness data. The present study uses only 4 of these 10 studies: Culhane, Lee, and Wachter (1996), Wong and Hillier (2001), Rukmana (2010) and Bartelt, Eyrich-Garg, and Lockwood (2017). The remaining six studies were excluded from the analysis. Rukmana (2008) and Rukmana (2011) were excluded because both used the same data as Rukmana (2010). Alexander-Eitzman, Pollio, and North (2013) used addresses of last housing and sleep locations from a longitudinal study of 400 homeless adults in St. Louis, Missouri, and was also excluded. This study focuses only on intracity studies of prior addresses of persons experiencing homelessness. The literature searches for peer-reviewed publications on intercity and intracity homelessness data were augmented with a number of academic databases, but it is limited to within the U.S. context. There are a number of data sets on homelessness in other countries including Brazil and Japan. Schor, Artes, and Bomfim (2003), Iwata and Karato (2011) and Suzuki (2008) were excluded from the study because they are about homelessness in Sao Paulo, Brazil (Schor et al., 2003), and Osaka, Japan, respectively. This study focuses on the homelessness problem in the U.S. context.

In developing countries, a large proportion of households live in inadequate housing but they are not all defined as persons experiencing homelessness (Tippie & Speak, 2006, 2009). Tippie and Speak (2006) found that many people who live in inadequate housing in informal settlements in developing countries cannot be classified as homeless. The definition of homelessness derived from the United States is not applicable in defining homelessness in developing countries such as India (Bhatt & Jamil, 2012) or Bangladesh (Jackman, 2017).

Intercity Homelessness Data

To estimate the number of persons experiencing homelessness and their demographics in each city or metropolitan area, the intercity homelessness data are collected through cross-sectional survey methods. Five intercity homelessness data sources are identified in this article: HUD's 1984 Report to the Secretary on the Homeless and Emergency Shelter, the 1990 Shelter and Street Night Enumeration, the 1990 Urban Institute's Homelessness Survey, the Census 2000 Special Reports on Emergency and Transitional Shelter Population, and HUD's Annual PIT and the Annual Homeless Assessment Report to Congress.

HUD's 1984 Report

HUD's 1984 Report data were collected from 60 metropolitan areas in December 1983 through January 1984. HUD conducted a random sample of 20 areas in each of three area sizes: small areas of

50,000 to 250,000 population, medium areas of 250,000 to 1 million population, and large areas of over 1 million population.

The homelessness rates in HUD's 1984 Report were based on the opinions of 3–12 local officials who were involved with the homelessness problem (Elliot & Krivo, 1991). Involved agencies and representatives were asked for their estimates of literal homeless, including homeless living on the streets and homeless staying in shelters in their areas, on a single night and not for any other period of time. The estimation of the homelessness counts was not based on a systematic count. This is the major flaw of this intercity homelessness data set.

Some of these local officials might have overstated the homeless problems in their jurisdictions to obtain more funds to address the problem (Early & Olsen, 2002; Rossi, 1989). Furthermore, the units of analysis of HUD's 1984 Report are Rand McNally Commercial Marketing Areas, and they do not match up with standard consolidated statistical areas, metropolitan statistical areas, or urbanized areas (Elliot & Krivo, 1991).

Tucker (1987) identifies rent control and vacancy rate as the significant factors for predicting homelessness. Applebaum, Dolny, Dreier, and Gilberbloom (1991) show there is no evidence that rent control causes homelessness. Instead, they argue that homelessness is significantly associated with higher rates of unemployment, higher mean temperatures, higher percentages of renters, and lower vacancy rates. Elliot and Krivo (1991) find that the lack of affordable housing and lower per capita expenditures on mental health care are statistically significant predictors of homelessness. Honig and Filer (1993) find that the level of rents, the number of inpatients in state mental health facilities and the proportion of African Americans impact the rate of homelessness.

S-Night Enumeration

The Shelter and Street Night Enumeration, also publicly known as S-Night, is a part of the 1990 census to enumerate homeless populations not covered by regular Census Bureau procedures for households or persons in group quarters. The enumeration was conducted nationwide and placed greater emphasis on urban places with populations in excess of 50,000, where the homeless tend to be found (Quigley, Raphael, & Smolensky, 2001; Taeuber & Siegel, 1991).

The S-Night enumeration counted persons at emergency shelters, shelters for abused women, shelters for runaway and neglected youths, and low-cost motels costing \$12.00 or less, on March 20, 1990, between 6 p.m. and midnight. S-Night also counted persons experiencing homelessness on the streets on March 21, 1990, between 2 a.m. and 4 a.m., and all individuals leaving from abandoned buildings (Lee & Price-Spratlen, 2004).

S-Night is not intended to be a census of the homeless population; therefore, the numbers obtained are not a complete count of the homeless population. Cousineau and Ward (1992), Edin (1992), Hopper (1992), and Stark (1992) find that S-Night undercounted the size of the homeless population. This undercount is possibly caused by such factors as: the lists of shelters and street locations were incomplete; the census enumerators failed to visit all of the listed street locations and shelters, or they did not follow protocol in counting the homeless population (Quigley et al., 2001); or many street homeless were not counted (Stark, 1992).

Wright and Devine (1995) assert that persons experiencing homelessness spend relatively few nights in locations that would make them potentially countable regardless of the enumeration procedure. Their findings explain why undercounting of persons experiencing homelessness on the streets occurs. Early and Olsen (2002) indicate that the undercount of the street homeless in the S-Night data varies more than that of the sheltered homeless.

The Burt Survey

The Burt Survey is part of a study conducted by The Urban Institute in 1990 to examine probable causes of homelessness during the 1980s. The Burt Survey estimates the size of the homeless

population in 182 U.S. cities that had populations of 100,000 or more in 1986. Cities are used as the unit of analysis because they have a large enough sample size for more sophisticated analysis, and can provide accurate counts of shelters.

The Burt Survey attempted to establish the number of shelter beds that were available for the homeless in two years: 1981 and 1989. They obtained the lists of shelters operating in 1989 from the person responsible for the local Comprehensive Homeless Assistance Plan prior to receipt of HUD's McKinney Act funding, and from local coalitions or coordinators of services for the homeless. They called virtually every shelter provider and completed information on shelter bed capacities in 1981 and 1989.

Burt (1991) acknowledges the flaws of this measure. Many persons experiencing homelessness on any given night did not stay in a shelter; therefore, the shelter bed count will undercount the exact size of the homeless population. Another problem is that the official bed count for a facility may be an inaccurate reflection of the size of the homeless population served by the facility itself. This is because the shelter may be operated at overcapacity or less than full capacity most of the time.

The Census 2000 Special Reports on Emergency and Transitional Shelter Population

For the 2000 census, the Census Bureau conducted a special enumeration for people at emergency and transitional shelters including emergency shelters with sleeping facilities; shelters for children who are runaways, neglected, or without conventional housing; transitional shelters; and hotels and motels that provided shelter for people without conventional housing. The special enumeration was conducted on March 27, 2000. The report also includes the primary demographic data for the population including age, sex, race, and Hispanic or Latino origin for the United States and its regions, states, and metropolitan areas.

Smith and Smith (2001) reported that the enumeration for people at emergency and transitional shelters was developed to include them in Census 2000 and was not designed as a measure of the number of persons experiencing homelessness. The U.S. Census Bureau did not guarantee that all emergency and transitional shelters were covered or that all people typically using shelters were included in the shelter counts. The Census 2000 Special Report also did not include people at shelters for abused women, in transitional housing, or in permanent supportive housing.

The U.S. Census Bureau discouraged data users from using this data set as a count of the homeless population (Smith & Smith, 2001). Because of the limitations noted regarding the enumeration of emergency and transitional shelter population, an accurate estimate of the homeless population is impossible to obtain (Lee & Farrell, 2005).

HUD's Annual PIT and the Annual Homeless Assessment Report to Congress

HUD was mandated by the U.S. Congress to provide financial and technical assistance to communities on conducting the PIT count and submit the Annual Homeless Assessment Report (AHAR) to Congress. HUD has required communities to conduct the PIT count and released the AHAR each year since 2007. The AHAR consists of two parts: the PIT count and the national estimates of homelessness.

The PIT count is based on one-night counts of sheltered and unsheltered homeless populations reported by Continuums of Care (CoCs) covering virtually the entire United States. CoCs are local planning institutions responsible for coordinating the homelessness services in a city, county, metropolitan area, or state. The one-night counts are conducted by CoCs during the last 10 days of January each year. HUD compiled all PIT counts nationwide and these counts became the first part of the AHAR.

The second part of the AHAR is the national estimates of homelessness. The data source for the national estimate of homelessness is the Homeless Management Information System (HMIS) reported by CoCs nationwide. Information from HMIS data includes longitudinal unduplicated

counts of people who used emergency shelters or transitional housing programs at some time during the course of a year, and the characteristics and service needs of people who used emergency shelters or transitional housing programs. In 2017, the PIT count and HMIS data were collected by HUD from 399 CoCs nationwide (HUD, 2017).

In September 2014, HUD released a methodology guide to assist all CoCs in developing, planning, and implementing a PIT count of all persons experiencing sheltered and unsheltered homelessness within their jurisdiction. The guide was created to ensure the consistency and accuracy of PIT counts nationwide. There are 14 count standards in the methodology guide including coordination of the PIT count and the Consolidated Plan jurisdiction, sheltered PIT count, unsheltered PIT count, and data quality. The guide provides information on all stages of the PIT count, including planning, executing, analyzing, and reporting (HUD, 2014).

Applications of Intercity Homelessness Data

Most intercity homelessness studies use HUD's 1984 Report, the S-Night Enumeration, and the Burt Survey. Very few homelessness studies used the intercity data sets from the 2000 Census (Lee and Ferrell, 2005; Lee & Price-Spratlen, 2004). This article identifies four major homelessness studies using HUD's 1984 Report for their analysis. These four homelessness studies—Tucker (1987), Applebaum et al. (1991), Elliot and Krivo (1991), and Honig and Filer (1993)—arrived at contradictory findings, although such contradictory findings should be understood as complementary findings because each study uses different samples of cities and focuses on different causes of homelessness.

This article identifies seven studies that used the S-Night Enumeration data for their analyses: Early and Olsen (2002), Grimes and Chressanthi (1997), Hudson (1998), Lee et al. (2003, 2004), Quigley and Raphael (2002), Quigley et al. (2001), and Troutman, Jackson, and Ekelund (1999). These studies use different sets of community-level factors as their independent variables and their findings also vary.

After an extensive literature search, this article identifies only three studies that used the Burt Survey data for their analysis: Burt (1991), Quigley et al. (2001), and Quigley and Raphael (2002). Burt (1991) uses the homelessness data from 182 cities of the Burt Survey data. In contrast, Quigley et al. (2001) and Quigley and Raphael (2002) use the homelessness data from 102 and 116 metropolitan areas of the Burt Survey data, respectively.

In the past 5 years, several studies have used HUD's Annual PIT count and the AHAR. Despite some weaknesses, this intercity homelessness data set provides the most reliable and valid homeless population counts compared with other intercity homelessness data. Some studies use these data to identify the association between homelessness and several factors including housing market conditions (Byrne, Fargo, Montgomery, Munley, & Culhane, 2014; Byrne et al., 2013; Fargo, Munley, Byrne, Montgomery, & Culhane, 2013), funding for homeless programs (Moulton, 2013), local economic conditions (Hanratty, 2017), and climate (Corinth & Lucas, 2018).

Critiques of Intercity Homelessness Data

The following section offers critiques of these five intercity homelessness data sets. The review will ascertain the strengths and weaknesses of each data set. This will allow the identification of the characteristics associated with a high risk of homelessness. Risk of homelessness is measured in terms of probabilities of producing persons experiencing homelessness. Areas with high risk are identified by a high number of prior addresses of persons experiencing homelessness. A review and critique of the five intercity homelessness data sets are presented in Table 1.

The accuracy of the homeless population enumeration across locales is critical in identifying determinants of homelessness in the intercity homelessness data set. Accurate counts of homeless populations are difficult to obtain reliably from city to city. Culhane et al. (1996) argue that "even if estimates were reliably obtained across jurisdictions, their validity as comparable measures of the

Table 1. Intercity homelessness datasets.

No.	Intercity DataYear	Year	Unit of Analysis	Methodology	Critiques
1.	U.S. Department of Housing & Urban Development (HUD)'s 1984 Report	1984	20 areas with population of 50,000 to 250,000 20 areas with population of 250,000 to one million 20 areas with population of $\geq$ one million	Estimates of homeless based on opinions of local officials Interviews with 3–12 local officials	-Some officials overstated the homeless problems to obtain more funds Difficult to match the unit of analysis with corresponding Combined Statistical Areas (CSA), Metropolitan Statistical Areas (MSA) or urbanized area Estimates were not based on a systematic count Shelter bed count undercounts the exact size of homeless population Inaccurate reflection because the shelter may be overcapacity or less Shelter capacity reflects public-policy response to homelessness rather than homelessness itself. Biased cross-sectional inferences on the homelessness Undercounted the size of homeless population Lists of shelters and street locations were incomplete Undercounted the street homeless
2.	The Burt Survey	1986	182 cities with population of $\geq 100,000$	Obtained lists of shelters from local officials Phone interviews with shelter providers and completed the information of shelter bed capacity	
3.	The Shelter & Street Night Enumeration	1990	Nationwide Enumeration was emphasized in urban areas with population of $> 50,000$	First step, enumeration at predesignated list of shelters Second step, enumeration on the streets designated by officials Last step, enumeration of all individuals leaving from abandoned buildings Census enumerators counted all clients at emergency and transitional shelters including emergency shelters with sleeping facilities, shelters for children, transitional shelters, and hotel and motels used to provide shelters for people without conventional housing	
4.	The Census 2000 Special Report	2000	Nationwide Enumeration was emphasized in metropolitan areas with ≥ 100 people in emergency and transitional shelters		It was not designed as a measure of the number of homeless people It did not cover all shelters or all people normally using shelters The street homeless were excluded It did not include people at shelters for abused women, transitional housing, and permanent supportive housing.

(Continued)

Table 1. (Continued).

No.	Intercity DataYear	Year	Unit of Analysis	Methodology	Critiques
5.	The Point-in-Time (PIT) and Annual Homeless Assessment Report (AHAR) to Congress	2007-2017	399 communities representing all counties and cities nationwide	In September 2014, the HUD released the methodology guide to assist communities in planning, developing, and implementing a PIT count on one night in the last 10 days of January There are 14 count standards in the methodology guide The HUD requires communities to account for and report on all sheltered and unsheltered persons experiencing homelessness A fully-implemented the Homeless Management Information System (HMIS) with reliable data quality enables communities to conduct shelter homeless counts effectively Information from HMIS data for the AHAR includes longitudinal unduplicated counts of people who used emergency shelters or transitional housing programs at some time during the course of a year	Communities with limited resources are allowed to conduct random sample of area counts of unsheltered homeless population that could produce inaccurate number of unsheltered homeless population Duplication of PIT counts could occur to the service-based approach when the community identify persons experiencing unsheltered homelessness Some communities are given permission to conduct counts outside the last 10 days of January that could result in duplication

Sources: Burt (1991), Elliot and Krivo (1991), Quigley, Raphael, and Smolensky (2001), HUD (2014, 2017), Smith and Smith (2001), and Taeuber and Siegel (1991).

extent of homelessness across locales would be confounded by the highly variant response of those locales to the problem of homelessness” (p. 329).

Some studies using intercity homelessness data acknowledge weaknesses of the homeless counts from these data (Honig & Filer, 1993; Lee, Price-Spratlen and Kanan, 2003; Quigley et al., 2001). The potential inaccuracy of the homeless counts is the major weakness of the intercity homelessness data, that might contribute to the statistical insignificance of determinants of homelessness in those studies. Early and Olsen (2002) attribute the statistical insignificance of the factors to inaccurate counts of the homeless, particularly the street homeless.

The inaccuracy of the homeless counts also stems from the shelter bed counts. The level of homelessness undoubtedly affects the supply of shelter beds, but other factors also possibly contribute to shelter capacities, and these may bias cross-sectional inferences on the homelessness drawn from these data. Changes in housing assistance for the poor may also affect the size of the sheltered homeless population (Quigley et al., 2001). Furthermore, Early and Olsen (2002) argue that the use of shelter beds as a proxy for the number of homeless could preclude estimating the effect of additional shelter beds on the level of the homelessness.

The official bed count for a shelter is an inaccurate estimate of the size of the homeless population served by the shelter itself because of the overcapacity of many shelters through most of their service life. The measure of shelter capacity reflects a public policy response to homelessness rather than homelessness itself, whereas measurements of homelessness across localities would be confounded by the different responses of those localities to the homelessness problem. The size of the sheltered homeless population is supply- and policy-driven (Culhane et al., 1996).

Intercity homelessness studies identify a number of community-level variables that are associated with the rate of homelessness. Some studies (Early & Olsen, 2002; Grimes & Chressanthis, 1997) find that housing market variables such as vacancy rates and the presence of rent control are associated with homelessness rates. Economic variables such as unemployment and poverty have significant impacts on homelessness (Applebaum et al., 1991; Troutman et al., 1999). Many studies (Grimes & Chressanthis, 1997; Quigley & Raphael, 2002; Tucker, 1987) also identify climate as a significant predictor of homelessness. These variables vary significantly among cities.

Many intercity homelessness studies (Early & Olsen, 2002; Honig & Filer, 1993; Lee et al., 2003; Troutman et al., 1999) use the proportion of African Americans as one of their explanatory variables. However, these studies did not find the proportion of African Americans to be a statistically significant variable. Early and Olsen (2002) indicate that the small variation in the proportion of African Americans across metropolitan areas may contribute to the statistical insignificance of this variable.

African Americans encounter disadvantages, because of residential segregation, that increase their vulnerability to homelessness and poverty (Culhane et al., 1996; Lee et al., 2003). The poverty rates for Hispanics and African Americans in metropolitan areas are higher than those of non-Hispanic whites (Altshuler, 1999). African Americans and Hispanics living in concentrated poverty neighborhoods may be subject to a neighborhood effect that affects their employment prospects (Altshuler et al., 1999; Ihlanfeldt, 1999). The difference in the quality of geography of opportunity between minority neighborhoods and white neighborhoods leads to a growing gap in real median family income between these segregated neighborhoods.

Intercity homelessness data cannot capture the variation in the proportion of African Americans because of residential segregation. Intercity homelessness data only reveal the aggregated proportion of African Americans in a metropolitan area, not the proportions of African Americans in particular neighborhoods.

Intracity Homelessness Data

Intracity homelessness data are based on the use of homelessness rates across geographical units within a city’s jurisdiction. The geographical units that can be used in intracity homelessness data

include census tracts, aggregated census tracts, and ZIP codes. Intracity homelessness data are developed to assess demographic, socioeconomic, housing, and other neighborhood factors that vary in relation to homelessness rates among geographical units within a city. Four intracity homelessness studies are discussed in this article: Bartelt et al. (2017), Culhane et al. (1996), Rukmana (2010), and Wong and Hillier (2001). These four studies use prior address information, reported by persons experiencing homelessness, aggregated by census tract to construct an intracity measure of homelessness rates and identify demographic, socioeconomic, and housing factors associated with the distribution of the residential origins of persons experiencing homelessness.

The Culhane Study

Culhane et al. (1996) use prior addresses of families admitted to public shelters in New York City and Philadelphia, Pennsylvania, aggregated by census tract, to identify communities at high risk of homelessness and factors that correspond to that distribution. Administrative data from the shelter admission process in both cities were used. They recorded data in the Philadelphia database from December 21, 1989, to April 1, 1994, including records for 9,160 families. In New York City, they recorded data from April 1, 1987, to April 1, 1994, including records for 71,035 families. Using the application of a geographic information system (GIS), the investigators identify three dense clusters of homeless origins in Philadelphia and New York City, collectively accounting for 67% and 61%, respectively, of the homeless residential origins.

Culhane et al. (1996) apply 24 variables, including demographic composition, economic factors, and housing and neighborhood characteristics. Using a regression model, the study indicates that among the demographic variables, the proportion of African American people is the most important predictor of the rate of shelter admission in both cities. The second strongest predictor among demographic variables is the proportion of female-headed households with young children.

The study also reveals significant predictors among economic variables including the proportion of poor households, as the strongest predictor, and the percentage of people not in the labor force. The median household income is significantly and negatively associated with shelter admissions. Among the housing and neighborhood characteristic variables, rent income ratio is the most important predictor of the rate of shelter admissions.

The Wong and Hillier Study

Using 12 of 24 variables used by Culhane et al.'s (1996) study and adding two new variables, Wong and Hillier (2001) employ principal component analysis to group the 14 variables. Their analysis results in three factors explaining 78% of variance. They label these factors *social and economic distress*, *instability*, and *Hispanic overcrowded*.

Eight of the 14 variables are loaded on the social and economic distress factor including the proportion of African Americans, female-headed households with young children, households with public assistance income, poor households, households with subfamilies, unemployed persons, and rates of boarded-up and vacant housing units. The instability factor includes the proportion of one-person households, the proportion of households that recently moved, the proportion of rental units, and the rent-to-income ratio. The Hispanic overcrowding factor encompasses the proportions of Hispanic persons and overcrowded households.

Their study shows that the correlation between the risk of homelessness within a census tract and the social and economic distress factor is very high. In contrast, a small relationship between the rate of shelter use and the instability factor, and between the rate of shelter use and the Hispanic overcrowded factor, is found.

The Rukmana Study

Rukmana (2010) examines the spatial distribution of the residential origins of persons experiencing homelessness who were interviewed in a PIT homelessness survey in Miami-Dade County in January 2005. He compares the residential origins of homeless women with those of homeless men. Using hot-spot analysis and spatial distribution statistical tests, Rukmana (2010) reveals that the distribution of the residential origins of homeless men is statistically different than that for homeless women.

His study uses 16 variables, including demographic composition and socioeconomic and housing characteristics. Using the regression model, the study finds that the proportions of African Americans and Hispanics are significantly and positively associated with the rate of homelessness among men, but are not statistically significant among women. Similarly, economic factors are significantly and positively associated with the rate of homelessness among men, but are not statistically significant among women.

Rukmana (2010) reveals that areas with higher concentrations of single mothers with young children and higher concentrations of unemployed female residents are more likely to produce homeless women. His study also finds that housing variables are significantly associated with the rate of homelessness among both men and women.

The Bartelt Study

Bartelt et al. (2017) attempted to identify communities at high risk of homelessness and a series of demographic and socioeconomic characteristics, human service support features, and property and violent crime rates that correspond to that distribution. The Bartelt study used the prior address of persons experiencing homelessness who entered the Office of Supportive Housing Homeless (OSH) Centralized Intake Services in Philadelphia between February 2008 and January 2010.

The study identified 20,949 cases of shelter use from the OSH during that 2-year period. Of those cases, 9,121 cases did not include information on prior addresses, 809 cases had prior addresses outside of Philadelphia, and 502 cases listed a prison or shelter as a prior address. The remaining cases were geocoded and only 10,373 cases were successfully mapped. The Bartelt study also excluded 2,269 cases who were repeat users of OSH resources.

Bartelt et al. (2017) confirm the results of previous intracity homelessness studies (Culhane et al., 1996; Rukmana, 2010; Wong & Hillier, 2001) that multiple factors representing demographic, housing, and economic community processes are significantly associated with communities at high risk of homelessness. Bartelt et al. (2017) reveal that the capacity of drug treatment centres and property and violent crime rates at the block group level are significantly associated with the rates of homelessness.

Critiques of Intracity Homelessness Data

The following section offers a review and critique of these four intracity homelessness data sets. The review will offer insight into the strengths and weaknesses of each method in identifying the characteristics associated with a high risk of homelessness.

The validity of the counts of persons experiencing homelessness in intercity homelessness data is confounded by there being different policies among cities to address the homelessness problem. Intracity homelessness data address this critique because these data use the counts of persons experiencing homelessness within the jurisdiction of a city with uniform policy and regulation. The intracity homelessness data are concerned not with a complete and precise population estimate but rather with identifying a representative sample of people from whom residential origin information can be obtained.

Table 2 offers a review and critique of the four intracity homelessness studies (Bartelt et al., 2017; Culhane et al., 1996; Rukmana, 2010; Wong & Hillier, 2001). These intracity homelessness studies assess the spatial variation and processes that contribute to the incidence of homelessness within

Table 2. Intracity homelessness datasets.

No.	Intercity Data	Year	Study population	Methodology	Critiques
1.	Culhane Study	1996	New York City and City of Philadelphia Homeless families admitted to the public shelters	Obtained administrative data of the public shelters admission including prior addresses of persons experiencing homelessness Multiple years data (7 years in New York and 4 years in Philadelphia) Unit of analysis: census tracts 24 independent variables	Homeless individuals were excluded Persons admitted to private shel- ters, transitional housing pro- grams or homeless street people were not included in the study 16.8% of the total prior addresses in New York City is missing/ unmatched 13.8% of the total prior addresses in Philadelphia is missing/ unmatched
2.	Wong and Hillier Study	2001	City of Philadelphia Homeless families admitted to the city's public shelters	Obtained prior addresses of persons experiencing homelessness from the public shelter system One year data Unit of analysis: census tracts 14 independent variables	Homeless individuals were excluded Persons admitted to private shel- ters, transitional housing pro- grams or homeless street people were not included in the study 22% of the total prior addresses is missing/unmatched
3.	Rukmana Study	2010	- Miami-Dade County, Florida Persons experiencing homelessness who participated in 50 homeless- ness programs	Collected data from a point-in- time survey in January 27, 2005 including prior addresses of persons experiencing homelessness 1,201 completed surveys Unit of analysis: census tract groups 16 independent variables	Number of cases (N=1204) is very small compared to the two previous studies (Culhane N=71,035 in New York and N=9,160 in Philadelphia; Wong and Hillier N=5,677) 16% of the total prior addresses is missing/unmatched
4.	Bartelt Study	2017	City of Philadelphia Persons experiencing homelessness admitted to the city's public shelters	Obtained prior addresses of persons experiencing homelessness from the public shelter system Two-year data Unit of analysis: census block groups 7 variables from the American Community Survey (ACS) Five-Year Summary File The rates of violent and prop- erty crime from the Philadelphia Police Department (the PPD) The capacity of halfway houses and drug treatment cen- ters from the PPD	9,121 out of 20,949 cases did not have the information of prior addresses 8% of unmatched prior addresses of 11,829 cases

Sources: Bartelt et al. (2017), Culhane et al. (1996), Rukmana (2010), and Wong and Hillier (2001).

a jurisdiction. These four studies also provide evidence that it is possible to improve the delivery of homelessness service by identifying communities at risk of homelessness. The distribution of prior addresses of persons experiencing homelessness offers critical information for various homelessness services, particularly homelessness prevention programs.

Intracity homelessness data can also suffer from inaccurate counts. The missing data for the question about prior addresses, which is a key part of intracity homelessness data, is the principal disadvantage of intracity homelessness data. There are two causes of missing data: (a) some prior addresses are not available from the administrative data or from the surveys, and (b) some prior

addresses reported by persons experiencing homelessness could not be geocoded by the GIS application because the addresses are incomplete or incorrect.

The Culhane study reported as many as 16.8% of the total prior addresses in New York City as missing or unmatched, and 13.8% of the total prior addresses in Philadelphia. The Wong and Hillier study reported missing and unmatched prior addresses accounting for as much as 3% of the total prior addresses obtained from the management information systems of the Community-Based Homelessness Prevention Program (CHPP) and 22% of the total prior addresses obtained from the Office of Emergency and Shelter Services in Philadelphia. The Rukmana study reported 171 missing prior addresses and 19 unmatched prior addresses out of 1,201 completed surveys. The Bartelt study reported 9,121 missing prior addresses and 8% unmatched prior addresses out of 11,829 cases.

Sampling method becomes a critical issue in developing an intracity homelessness study. Culhane et al. (1996) and Wong and Hillier (2001) used homeless families who were admitted to public shelters as their samples. Their studies exclude homeless individuals; therefore, the findings of their study cannot offer recommendations for preventing homelessness among individuals. Their studies also exclude unsheltered homeless who have characteristics and needs distinct from those of sheltered homeless.

The Rukmana study (2010) examines all categories of persons experiencing homelessness, including homeless families and homeless individuals, but the samples of persons experiencing homelessness in this study were much smaller than those of Culhane et al. (1996) and Wong and Hillier (2001). Because of the small sample, Rukmana (2010) used census tract groups created from two or more adjoining census tracts with a total population of about 20,000. The use of larger units of analysis such as census tract groups may not be as appropriate as census tracts or census block groups in representing the variability of neighborhoods.

Another critical issue in intracity homelessness studies is the validity of prior address information reported by persons experiencing homelessness. The prior address question may be interpreted differently by persons experiencing homelessness. The Culhane study (1996) acknowledged this possible shortcoming in the study. Prior addresses reported by persons experiencing homelessness may be the addresses of emergency shelters, transitional housing, or relatives' or friends' houses. The question of prior address is intended to identify the last house or apartment address where persons experiencing homelessness lived before becoming homeless. Such a question is not easy to answer for persons experiencing homelessness.

Recommendations for Future Research on Homelessness, and Implications for Planners

Intercity homelessness data are more accurate and appropriate for assessing the effects of policy and regulation on the prevalence of homelessness across different jurisdictions. Studies that use intercity homelessness data can identify significant relationships between various community-level factors and homelessness rates. Lee et al. (2003) and Byrne et al. (2013) categorized the community-level factors across cities into six domains: housing market, economic conditions, demographic composition, safety net, climate, and transience. Many studies that use intercity homelessness data have identified a significant relationship between these community-level factors and homelessness rates (Byrne et al. 2012).

In the meantime, intracity homelessness data are more representative of local homelessness and therefore are more accurate and appropriate for identifying determinants of local causes of homelessness. Findings using intracity homelessness data will significantly contribute to the mandate from HUD for Ten-Year Plans to End Homelessness that explicitly include the recognition of local variations in the causes of homelessness. The intracity homelessness data will also support the comprehensive strategic plan to prevent and end homelessness, which primarily focuses on preventing homelessness.

Intracity homelessness data can also reveal the variation in the proportion of African Americans because of residential segregation in a metropolitan area. The Culhane study demonstrates how an intracity homelessness measure reveals the significant variations in the proportions of African Americans in New York City and Philadelphia that contribute to the statistical significance of the *proportion of African Americans* variable. Similarly, the Rukmana study shows how the residential origins of persons experiencing homelessness reveals the statistical significance of the *proportion of African Americans* and *proportion of Hispanics* variables in explaining the high rate of homelessness particularly among men in Miami-Dade County.

The intercity homelessness studies (Early & Olsen, 2002; Honig & Filer, 1993; Lee et al., 2003) do not find poverty to be a statistically significant factor in explaining the incidence of homelessness across metropolitan areas. On the other hand, the intracity homelessness studies (i.e., the Culhane, Wong and Hillier, Rukmana, and Bartelt studies) clearly capture the variations of poverty and other related variables at the neighborhood level that attribute to the statistical significance of those variables in explaining the incidence of homelessness.

The impacts of economic downturn and foreclosure on homelessness can be investigated in great detail by both intercity and intracity homelessness studies. Intercity homelessness data can be used to assess the effect of foreclosure on homelessness across cities nationwide using the PIT count. The effect of unemployment on homelessness can also be examined by correlating unemployment rates with homelessness rates across cities nationwide.

Intracity homelessness data can be used to complement findings from intercity homelessness data. The use of intercity homelessness data will result in the statistical insignificance of foreclosure and unemployment if the variation of foreclosure and unemployment across cities nationwide is small. Intercity homelessness data reveal only the aggregated foreclosure and unemployment rates in a metropolitan area, not the foreclosure and employment rates at the neighborhood level. In contrast, intracity homelessness data can reveal the variation of foreclosure and unemployment rates at the neighborhood level in a metropolitan area. Bocian, Ernst, and Li (2008), Immergluck and Smith (2005), and Yanmei (2011) indicate that high mortgage foreclosure rates are highly concentrated in low-income minority neighborhoods. High foreclosure rates in low-income minority neighborhoods are related to the poor quality of geography of opportunity in low-income minority neighborhoods. Residential segregation is one of the causes of differences in the quality of geography of opportunity and also unemployment rates between low-income minority neighborhoods and white neighborhoods.

Intracity homelessness data may lead researchers to develop more locally and regionally based models with more variables. Three intracity homelessness studies (Culhane et al., 1996; Rukmana, 2010; Wong & Hillier, 2001) used only factors associated with the incidence of homelessness that were available from the U.S. Census Bureau. Bartelt et al. (2017) added some factors to their data retrieved from local institutions. They used the rate of violent and property crime and the locations of drug treatment centres and halfway houses, including their capacities from the Philadelphia Police Department. There are still many factors associated with the risk of homelessness at the local level that were not included in these studies, such as foreclosure, job availability, access to public transit, measures of social capital, and availability of other social services.

GIS is essential in developing intercity homelessness data. All intracity homelessness studies (Bartelt et al., 2017; Culhane et al., 1996; Rukmana, 2010; Wong & Hillier, 2005) used the application of GIS to geocode the prior addresses of persons experiencing homelessness and to visually display the variations in concentration and density among these addresses. The prior addresses were transformed into GIS data in conjunction with the database of street files. The geocoding tools within the GIS application find the appropriate street segment record and estimate a location based on linear interpolation within the address range in the database of street files. The GIS application can produce spatial displays of the areas with a high risk of homelessness and relate those areas with factors associated with the risk of homelessness. The results of GIS application are very useful in

addressing the essential question facing the planners of homelessness prevention interventions: where to target an intervention.

To produce more accurate intercity homelessness data, we recommend improving the accuracy of counts of persons experiencing unsheltered homelessness, particularly in large metropolitan areas. Two possible methods to improve the accuracy of counts of unsheltered people are offered. First is the method developed by Berk, Kriegler, and Ylvisaker (2008) that employs the sampling of census tracts to estimate the number of persons experiencing homelessness in Los Angeles County, California. Second is the method developed by Hopper, Shinn, Laska, Meisner, and Wandering (2008) that employs two approaches: a plant-capture strategy in which embedded decoys were used to estimate the proportion of visible persons experiencing homelessness missed by enumerators, and a postcount survey of service users to estimate the percentage of persons experiencing unsheltered homelessness who were not visible. Meanwhile, to produce more accurate intracity homelessness data we recommend including a question regarding the last address prior to becoming homeless in the HMIS database for every person experiencing homelessness who seeks homelessness services, and promoting the application of GIS to produce an intercity data set from the last address information provided by persons experiencing homelessness.

The complementary findings of the characteristics associated with a high risk of homelessness between intercity and intracity homelessness data provide vital information for planners to address homelessness at the local level. The idea of planning to end homelessness in 10 years came from HUD and the Bush Administration after the release of the report *A Plan, Not a Dream: How to End Homelessness in Ten Years* by the National Alliance to End Homelessness in 2000. The U.S. Interagency Council on Homelessness challenged 100 cities to create plans to end homelessness in 10 years. Intercity homelessness data examine the effects of structural causes, including rent control, lack of affordable housing, unemployment, and poverty, that vary across cities on the prevalence of homelessness. Intracity homelessness data complement intercity homelessness data by examining the effects of demographic, socioeconomic, and housing factors at the neighborhood level.

The complementary findings of the intercity and intracity homelessness studies can assist land-use planners in the siting of facilities for persons experiencing homelessness, such as emergency shelters, transitional housing, and drop-in centres. Homelessness prevention is a valuable solution to break the cycle of homelessness. Intracity homelessness data can identify areas with high risk of homelessness that should address this fundamental question. Planners can use the findings from the intracity homelessness studies to target homelessness prevention interventions to areas with high risk of homelessness.

Urban planners can also use the complementary findings of intercity and intracity homelessness studies to develop comprehensive planning or neighborhood planning to address social equity issues at the neighborhood level. Neighborhood planning that aims to create healthy social communities, empower neighborhood residents, and develop neighborhood economies (Rohe, 2009) will benefit from the complementary findings of intercity and intracity homelessness studies.

There are limitations to this study that should be noted. First, the intercity and intracity data are limited in their ability to contribute to the development of policies focusing on different issues associated with homelessness, and researchers, policymakers, and planners need to be aware of these limitations. The use of these data sets ultimately depends on matching specific policy goals with the appropriate data set.

Second, the causes and characteristics associated with a high risk of homelessness at the individual level are not discussed here. This study focuses on the city-level variables that are associated with the rate of homelessness. This study compares only the causes of homelessness and the characteristics associated with homelessness from two different sets of city-level data. A comparison of individual-level homelessness data and city-level data was conducted by O'Flaherty (2004).

Conclusion

This article expands the O'Flaherty study (2004) by reviewing two different types of data sets for conducting city-level homelessness studies: intercity and intracity homelessness data. Intercity homelessness data sets examine the effects of policy and institutional variables such as rent control, rental assistance, and affordable housing policy (Grimes & Chressanthi, 1997; Troutman et al., 1999), and community-level variables such as economic conditions, demographic composition, safety nets, climate, and transience, that vary across cities, on the prevalence of homelessness.

Meanwhile, intracity homelessness data focus on the spatial variation of demographic, socio-economic, housing, and other neighborhood factors that contribute to the incidence of homelessness within a jurisdiction under the same policy and institutional variables. The two sets of results from intracity and intercity homelessness data are not contradictory but complementary.

Community-level variables that significantly vary across cities are very likely to have an impact on homelessness rates. These variables include vacancy rates, rent control, poverty, unemployment rates, and climate. In contrast, community-level variables with small variations across cities, such as the proportion of African Americans, are not associated with the rate of homelessness (Early & Olsen, 2002).

Intracity homelessness data can capture the variation of community-level variables at the neighborhood level such as census tracts or census tract groups. Variations in residential segregation and the rates of violent and property crime are small at the metropolitan or city level, but high at the neighborhood level. Intracity homelessness studies find these two community-level variables are associated with homelessness rates. The findings of intracity homelessness studies should be seen as complementary to the findings of intercity homelessness studies.

Disclosure Statement

No potential conflict of interest was reported by the author.

Notes on Contributor

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