

2008

The History and Future of Homeless Management Information Systems

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HOMELESSNESS IN AMERICA

Volume 3

Solutions to Homelessness

Edited by Robert Hartmann McNamara

Praeger Perspectives

PRAEGER

**Westport, Connecticut
London**

Chapter Ten

THE HISTORY AND FUTURE OF HOMELESS MANAGEMENT INFORMATION SYSTEMS

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A major transformation has occurred in the way organizations manage their data since the advent of affordable computing. Most of the transactions conducted by businesses, government agencies, and nonprofit organizations are “paperless,” meaning that they are recorded electronically. Business transactions are recorded at electronic cash registers or via online purchases, and the services provided by government and nonprofit organizations are often entered directly into a computer at the point of contact with the client. The transformation of data from paper to computers has made it possible to manage and analyze data in ways that were never before possible.

CONGRESSIONAL INITIATIVES

This transformation has occurred in programs serving persons experiencing homelessness, in large part due to Congressional legislation and the U.S. Department of Housing and Urban Development (HUD). Beginning with the fiscal year 1999 HUD Appropriations Act, Congress required HUD to take the lead in the development of Homeless Management Information Systems (HMIS). The rationale and objectives of this directive was stated in House Report 105-610:

HUD is directed to work with a representative sample of jurisdictions to collect, at a minimum, the following data: the unduplicated count of clients served; client characteristics such as age, race, sex, disability status; units (days) and type of housing received (shelter, transitional, permanent) and services rendered. Outcome information such as housing stability, income and health status should be collected as well. Armed with information like this, HUD’s ability to assess the success of

homeless programs and grantees will be vastly improved. If funds are necessary to implement this directive with new tracking systems, HUD may use the funds requested for technical assistance.¹

Congress went further in its push for HMIS by authorizing the use of Supportive Housing Program funds for the development of such systems, and ambitiously establishing a deadline that client-level data should be available from an HMIS within three years. This initiative was articulated in the fiscal year 2001 Senate Report 106-410:

The Committee believes that HUD must collect data on the extent of homelessness in America as well as the effectiveness of the McKinney homeless assistance programs in addressing this condition. These programs have been in existence for some fifteen years and there has never been an overall review or comprehensive analysis on the extent of homelessness or how to address it. The Committee believes that it is essential to develop an unduplicated count of homeless people, and an analysis of their patterns of use of assistance (HUD McKinney homeless assistance as well as other assistance both targeted and not targeted to homeless people), including how they enter and exit the homeless assistance system and the effectiveness of assistance. The Committee recognizes that this is a long-term effort involving many partners. However, HUD is directed to take the lead in approaching this goal by requiring client level reporting at the jurisdiction level within three years.²

In 2006, Congress once again urged HUD to develop HMIS nationwide, and to produce Annual Homeless Assessment Reports from HMIS data. The intent of Congress was expressed in Senate Report 109-109, which stated:

In order to improve efforts in addressing homelessness, it is critical for providers and government officials to have reliable data. To address this matter, the Committee began an effort in 2001 that charged the Department to collect homeless data through the implementation of a new Homeless Management Information System (HMIS). The implementation of this new system would allow the Department to obtain meaningful data on the Nation's homeless population and develop annual reports through an Annual Homeless Assessment Report (AHAR).³

EARLY EFFORTS TO DEVELOP HMIS

Not all of the impetus for HMIS was federal. In 1986, New York City implemented an HMIS on its own initiative, and in 1993 the City of Philadelphia developed an HMIS to track the "purchase of service" orders submitted by local shelters to the city. New York City and the City of Philadelphia were also among the few cities that provided funding to homeless shelters; according to HUD's 1988 Survey of Homeless Shelters, almost ninety percent of all emergency and transitional shelters were private non-profit organizations.⁴ Public funding of shelters provided these cities with an important advantage in creating an HMIS—it enabled them to mandate shelter participation in the system.

By the late 1990s, although New York City and Philadelphia had the most advanced HMIS, they were by no means the only jurisdictions that were interested in creating an administrative database on shelter users and the provision of homeless services. Numerous jurisdictions recognized the potential benefits of such systems, and independently set out to establish a system that sought to collect a uniform set of data elements from a majority of the persons and families receiving homeless services. Such local initiatives were, however, largely ad hoc undertakings in that they set out to fulfill local needs for data and they used a variety of different software platforms for collecting this data. Where Philadelphia and New York City had the advantage of having almost all homeless services providers funded through a municipal entity that oversaw shelter services, in other jurisdictions agencies that provided shelter and other homeless services were considerably more independent and it was more difficult to get these providers to collect data on their services.

In 1999, under the joint sponsorship of HUD and the U.S. Department of Health and Human Services (HHS), approximately twenty jurisdictions met as the Homeless Services Data Systems User Group to discuss these issues and to explore different ways to coordinate and standardize data collection efforts. As a result of this meeting, nine jurisdictions—six cities, two counties, and one state—with the most advanced HMIS collaborated on a report that acted as the prototype for establishing an ongoing measure of the parameters of the services using homeless population and for tracking related trends on the use of homeless services over time.⁵ The establishment of a standardized reporting format allowed a comparison of different jurisdictions on the basis of their HMIS, as well as the basic numbers and rates of the local homeless populations. This served as a precursor for the HUD-sponsored data reports based on HMIS that will be discussed in the next section.

In 1997, HUD initiated an exhaustive review of all existing HMIS in the United States to produce a national report on homelessness. The study revealed that in 1999 only twelve jurisdictions appeared to have a sufficient proportion of shelters represented (known as “coverage”). The study recommended the development of standard data elements for all HMIS and the use of HMIS data for cross-jurisdictional homelessness research.⁶

HUD and the Annual Homeless Assessment Report

HUD has maintained its support of HMIS by creating a series of technical assistance publications and offering direct assistance to jurisdictions that were implementing an HMIS. The technical assistance publications have addressed such topics as the selection of HMIS software, implementation of an HMIS, enhancing HMIS data quality, producing unduplicated counts of homeless clients, integrating HMIS data with other services data, and using HMIS data for improving local homeless services. HUD has sponsored

several conferences and workshops to disseminate HMIS development strategies. In addition to the Congressional authorization to use Supportive Housing Program (SHP) funds for HMIS, HUD has also awarded additional "points" to the competitive applications for SHP funding that include HMIS development.⁷

In July of 2002, HUD issued a contract to produce the first Annual Homeless Assessment Report (AHAR). The first task of the project was to convene an "Expert Panel" to develop the National HMIS Data Standards, as recommended in its 1999 national report on HMIS. After an extensive review process, the Standards recommended by the Expert Panel in 2002 were finally promulgated in July of 2004. Meanwhile, the project created a nationally representative sample of eighty jurisdictions to contribute aggregated HMIS data for the AHAR. The sample was constructed from eighteen large cities selected from four geographic strata with certainty, and sixty-two cities selected randomly from sixteen geographic strata. Because many HMIS were still in an incipient stage, the data were collected for only a three-month period, from February 1, 2005 to April 30, 2005. In February of 2007, HUD finally released the first AHAR, with a national estimate of the prevalence of homelessness in the United States and a profile of the persons sheltered.⁸

Although some growth of HMIS was inevitable, it is likely that HUD's efforts greatly accelerated this growth, and HUD's data standards helped ensure that HMIS were developed consistently. HUD has closely monitored the status of HMIS implementation since 2001 and found that in 2005 seventy-two percent of all jurisdictions receiving HUD funding for homeless services were in the process of implementing an HMIS, whereas in 2001 only sixteen percent of these jurisdictions were doing so. Only twenty percent were still in the planning stages, and seven percent had not yet considered implementation of an HMIS.⁹

The Current and Future Role of HMIS in Homelessness Research and Policy

The challenges of generating HMIS data that can be used for homelessness policy decisions became clear during the process of producing the first AHAR. Although a majority of jurisdictions have implemented HMIS, many of them struggled to enlist a majority of shelters within their jurisdiction to participate in the HMIS. As is the case with missing data in any research, low bed coverage compromises the representativeness of HMIS data.¹⁰

Another challenge to the quality of HMIS data is the omission of homeless clients from the HMIS. Low client coverage obviously results in an undercount and underestimates the prevalence of homelessness in a community. Higher omission rates among types of homeless clients will also bias the profile of persons served.¹¹

An unexpected problem encountered during the production of the first AHAR was the frequency of missing exit dates. In addition to overestimating the average length of stay, this problem makes it appear in the data that some clients have never left a shelter, resulting in occupancy rates that exceed 100 percent.¹²

Despite the data quality issues found nationwide, an increasing number of jurisdictions have successfully resolved them, and many others are in the process of improving their data quality. HUD's push for HMIS has brought the data quality issues to the forefront, and technical assistance has been developed to address them. HUD's conferences and workshops have also enabled jurisdictions to learn from the successful efforts of others. The HMIS data standards have helped ensure that all shelters are collecting the same information, which will facilitate cross-jurisdictional analysis. Although the first AHAR was more useful for revealing the strengths and weaknesses of HMIS data than it was for influencing national homelessness policies, the promise of data-driven homelessness policies can be realized on a local level.

One of the most important advantages of HMIS is that it produces longitudinal data. Every shelter record is in effect a survey of a person experiencing homelessness. Until the advent of HMIS, most homelessness research was conducted with cross-sectional data. This means that the data was collected with a point-in-time survey, using a sample of homeless persons who were either residing in a shelter or found living "on the street" (i.e. places not intended for habitation). Although all survey data is prone to sampling bias, cross-sectional samples of homeless persons are also more likely to include persons who are experiencing long episodes of homelessness. Research by Culhane and Kuhn indicates that more frequent users of shelter are more likely to manifest health, mental health, and substance abuse problems.¹³ To the extent that persons experiencing longer episodes of homelessness differ from the persons with shorter episodes, homelessness research using cross-sectional data will be biased.

As a relatively new source of data for homelessness research, new avenues of inquiry are now possible. One of the earliest demonstrations of the potential of HMIS for homelessness research was the period prevalence estimates made by Culhane et al., using HMIS data from New York City and Philadelphia.¹⁴ Culhane et al. estimated that one percent of the populations in both cities had experienced homelessness over a one-year period, and three percent had experienced homelessness over a period of three years in Philadelphia and five years in New York City. These rates were three times the point-in-time estimates of homelessness made from cross-sectional data. This suggests that period prevalence estimates of homelessness provide policy-makers with a more accurate measure of the magnitude of homelessness in their community, which in turn serves to better evaluate the effectiveness of measures to reduce homelessness.

Since longitudinal data are more representative of the persons experiencing homelessness, it is better suited for comparing the prevalence of homelessness across demographic groups. Again using HMIS data from New York City and Philadelphia, Culhane and Metraux used prevalence estimates to calculate the relative risk of homelessness between the two cities and between groups defined by gender, age, and race.¹⁵ The differences in relative risks can help policy-makers understand the causes of homelessness and to target their efforts to reduce homelessness.

Aggregating HMIS data to the total number of people served in a time period (e.g. daily, weekly, or monthly) makes it usable for time-series analysis. Time-series analysis can be used to make short-term forecasts of shelter caseloads based on the net of shelter admissions and exits. When shelter admissions exceed shelter exits during the same time period, the shelter caseload will increase, and when shelter exits exceed shelter admissions, the caseload will decrease. The caseload effects of changes to shelter admission and exit policies can be estimated based on the anticipated change in the number of admissions and exits after implementation of the new policies.

Time-series analysis can also be used to evaluate the relationship between presumably related trends and events. Culhane, Poulin, Hoyt, and Metraux used aggregated data from Philadelphia's HMIS to evaluate the effect of welfare reform on the admissions of homeless families. They used interrupted time-series analysis to evaluate whether the number of homeless family admissions changed significantly after the implementation of welfare reform in Pennsylvania (it did not, most likely because sanctions were rare), and the relationship between the shelter caseload trends, welfare caseload trends, and economic trends (a significant association was not found between shelter and caseload trends, but an extremely strong association was found between welfare caseloads and the unemployment rate).¹⁶ Using New York City HMIS data, O'Flaherty and Wu found a strong effect of September 11, 2001, on the shelter caseload.¹⁷

The electronic nature of HMIS data makes it feasible for matching to other databases that include the records of persons who have either experienced homelessness or are at risk of it. The matching process requires common identifiers in each database, such as social security numbers (the HMIS Data Standards require shelter staff to request this information) or unique combinations of name, gender, and birth dates. This matching creates an integrated database that enables research about a homeless client's circumstances before entering a shelter and their experiences after leaving the shelter.

Culhane and his colleagues have already begun to use integrated databases to expand homelessness research. By matching Philadelphia HMIS data with a database of general assistance recipients, the rate of shelter admissions was determined for persons terminated as a result of new laws passed in Pennsylvania.¹⁸ Merges of Philadelphia HMIS data and the Philadelphia AIDS Registry revealed the risk of AIDS among homeless persons and the

risk of homelessness among persons with AIDS.¹⁹ A merge of New York City permanent supportive housing records with HMIS data and other service utilization records demonstrated that placement into permanent supportive housing dramatically reduces the use of shelter and other services by persons with severe mental illness (mental illness was identified by matching the New York City HMIS data with records of psychiatric services obtained from the Medicaid office of the New York State Department of Health, the New York City Health and Hospitals Corporation, the New York State Office of Mental Health, and the U.S. Department of Veterans Affairs).²⁰ Matching New York City HMIS data with New York jail and prison data revealed the risk of incarceration among shelter users, and the shelter stay patterns of persons who have been incarcerated.²¹

The large number of cases in HMIS databases makes the data well suited for statistical analysis. The outcomes (i.e. dependent variables) that could be investigated with statistical techniques include first admission into a shelter, return to shelter, and the length of time in shelter. HMIS data are especially useful for evaluating the determinants of chronic homelessness because HUD has officially defined this as being disabled and having a continuous shelter stay of at least 365 days or four or more episodes of homelessness in three years.²² The differential effects on exits to housing, the street, or to unknown destinations could also be evaluated if exit data are included in an HMIS. Matching HMIS data to other databases will provide more independent variables for better statistical modeling.

HMIS-based research will never be a substitute for homelessness research on the basis of customized surveys, nor will it offer the richness of interviews conducted with homeless persons selected by the researcher. HMIS data also do not include persons living on the street who have never entered a shelter, although it is likely that many people on the street use shelters as well. Nevertheless, the research that has already been conducted with New York City and Philadelphia HMIS data demonstrates its potential with the HMIS data becoming available in many other communities. Cross-jurisdictional research will enhance this potential by introducing differences in local policies and population composition as additional causal variables. The volume and quality of HMIS data will continue to grow in the foreseeable future, offering unprecedented opportunities for new homelessness research.

NOTES

1. House Report 105-610, 32-3.
2. 2001 Senate Report 106-410, 51-2.
3. Senate Report 109-109, 176.
4. U.S. Department of Housing and Urban Development, *The 1988 National Survey of Shelters for the Homeless* (Washington, DC: Office of Policy Development and Research, 1989).

5. S. Metraux, D. P. Culhane, S. Raphael, M. White, C. Pearson, E. Hirsch, P. Ferrell, S. Rice, B. Ritter, and J. S. Cleghorn, "Assessing Homeless Population Size through the Use of Emergency and Transitional Shelter Services in 1998: Results from the Analysis of Administrative Data in Nine U.S. Jurisdictions," *Public Health Reports* 116, no. 4 (2001): 344-52.
6. D. P. Culhane, S. Metraux, and S. R. Poulin, *The Prevalence of Homelessness in 1999: Rates of Unduplicated Service Users and Service Days for Selected U.S. Jurisdictions* (Washington, DC: U.S. Department of Housing and Urban Development, Office of Community Planning and Development, 2001).
7. U.S. Department of Housing and Urban Development, *Report to Congress: HUD's Strategy For Homeless Data Collection, Analysis and Reporting* (Washington, DC: Office of Community Planning and Development, 2001); U.S. Department of Housing and Urban Development, *Report to Congress: Progress on HUD's Strategy For Improving Homeless Data Collection, Reporting and Analysis* (Washington, DC: Office of Community Planning and Development, 2002); U.S. Department of Housing and Urban Development, *Report to Congress: Progress on HUD's Strategy For Improving Homeless Data Collection, Reporting and Analysis* (Washington, DC: Office of Community Planning and Development, 2003); U.S. Department of Housing and Urban Development, *Report to Congress: Third Progress Report on HUD's Strategy For Improving Homeless Data Collection, Reporting and Analysis* (Washington, DC: Office of Community Planning and Development, 2004); U.S. Department of Housing and Urban Development, *Report to Congress: Fourth Progress Report on HUD's Strategy For Improving Homeless Data Collection, Reporting and Analysis* (Washington, DC: Office of Community Planning and Development, 2005); U.S. Department of Housing and Urban Development, *Report to Congress: Fifth Progress Report on HUD's Strategy For Improving Homeless Data Collection, Reporting and Analysis* (Washington, DC: Office of Community Planning and Development, 2006).
8. U.S. Department of Housing and Urban Development, *The Annual Homeless Assessment Report to Congress* (Washington, DC: U.S. Department of Housing and Urban Development, Office of Community Planning and Development, 2007).
9. U.S. Department of Housing and Urban Development, *Report to Congress: Fifth Progress Report*, 2006.
10. U.S. Department of Housing and Urban Development, *The Annual Homeless Assessment*, 2007.
11. Ibid.
12. Ibid.
13. D. P. Culhane and R. Kuhn, "Applying Cluster Analysis to Test a Typology of Homelessness by Pattern of Shelter Utilization: Results from the Analysis of Administrative Data," *American Journal of Community Psychology* 26, no. 2 (1998): 207-32.
14. D. P. Culhane, E. F. Dejowski, J. Ibanez, E. Needham, and I. Macchia, "Public Shelter Admission Rates in Philadelphia and New York City: The Implications of Turnover for Sheltered Population Counts," *Housing Policy Debate* 5, no. 2 (1994): 107-40.
15. D. P. Culhane and S. Metraux, "One-Year Rates of Public Shelter Utilization by Race/Ethnicity, Age, Sex and Poverty Status for New York City (1990 and 1995) and Philadelphia (1995)," *Population Research and Policy Review* 18 (1999): 219-36.
16. D. P. Culhane, S. R. Poulin, L. M. Hoyt, and S. Metraux, *A Study of the Impacts of Welfare Reform in Philadelphia: Public Shelter Utilization, Demand for Public Housing Programs, and Public Housing Program Recipient Outcomes* (Washington: U.S. Department of Housing and Urban Development, Office of Policy Development and Research, 2002).

17. B. O'Flaherty and T. Wu, "Fewer Subsidized Exits and a Recession: How New York City's Family Homeless Shelter Population Became Immense," *Journal of Housing Economics* 15, no. 2 (2006): 99-125.
18. D. Culhane, M. Koppel, S. Metraux, and I. Wong, *Mitigating the Impact of State Welfare Cuts for Single Adults: The Implementation and Autilization of the Homelessness Prevention Pilot Project in the City of Philadelphia* (Philadelphia: University of Pennsylvania, School of Social Policy and Practice, 1997).
19. D. P. Culhane, E. Gollub, R. Kuhn and M. Shapner, "The Co-occurrence of AIDS and Homelessness: Results from the Integration of Administrative Data for AIDS Surveillance and Public Shelter Utilization in Philadelphia," *Journal of Epidemiology and Community Health* 55 (2001).
20. S. Metraux, S. C. Marcus, and D. P. Culhane, "Assessing the Impact of the New York/New York Supported Housing Initiative for Homeless Persons with Severe Mental Illness on Public Shelter Use in New York City," *Psychiatric Services* 54, no. 1 (2003).
21. S. Metraux and D. P. Culhane, "Recent Incarceration History Among a Sheltered Homeless Population," *Crime and Delinquency* 52, no. 3 (2006).
22. M. R. Burt, J. Hedderson, J. Zweig, M. J. Ortiz, L. Aron-Turnham, and S. M. Johnson, *Strategies for Reducing Chronic Street Homelessness* (Washington, DC: U.S. Department of Housing and Urban Development, Office of Community Planning and Development, 2004).