



Making the Shift: Roadmap for Youth Homelessness Data Infrastructure

3: Promising Practices Literature Review



Policy Wise
for Children & Families



Acknowledgments

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SHARING GUIDELINES

It is the hope of all those who contributed to this project that these findings are shared and used to benefit others and inform policy and practice to improve child, family, and community well-being. PolicyWise asks the intent and quality of the work is retained; therefore, PolicyWise for Children & Families must be acknowledged in the following ways:

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Key Messages

This document shares learnings from a literature review of promising practices for administrative data.

Data infrastructure refers to the collection and storage of information; people’s skills, mindsets, and capacity around data; the rules for who can access the information and in what ways; and how the information can be used. *Administrative data* is information collected by organizations for their operations. It can be linked to other information to help predict and prevent homelessness.

1. **Use a human-centered approach.** People involved in services, data collection, and the sharing of resulting findings need to be considered. Data design should consider how frontline staff engage with people experiencing homelessness. This reality should shape what data is collected, how it is managed, and how it is used.
2. **Build relationships and collaboration for data sharing.** Build relationships to increase data sharing across services provided to youth. Reciprocal, multi-sectoral collaborations promote success as youth that experience homelessness often have complex needs.
3. **Start with the local (community) level.** Community context should be considered. Start data sharing small with what agencies are comfortable with and slowly increase sharing.
4. **Promote data use and sharing.** Strong leadership and policies drive data use and sharing. Data visualization improves data accessibility and use of data. Also, inclusive common definitions of homelessness can increase data use across various youth-supporting organizations.
5. **Support capacity building.** Train frontline staff on the importance of data quality and privacy. Also, train researchers to build up their capacity to work with administrative data effectively.
6. **Use data ethically.** No harm should come to communities due to data use. An equity lens is needed to support individuals better and prevent further marginalization that may occur as a result from reporting findings. Privacy and consent policies should be designed in a manner that builds trust with service users. Data privacy methods are tools to address privacy concerns.
7. **Engage with relevant communities.** The voice of youth with living and lived experience of various backgrounds should be included in the design of data infrastructure to reflect the complex reality of homelessness. Data infrastructure should incorporate Indigenous worldviews, knowledge, and perspectives.
8. **Consider the challenges of using administrative data.** While administrative data can be useful to informing the prevention of youth homelessness, it also has many unique limitations that must be considered to maximize its effectiveness. Consider if other types of data are required to cover these limitations.

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Introduction

This project is funded by Making the Shift: Youth Homelessness Social Innovation Lab. Making the Shift is co-led by the Canadian Observatory on Homelessness and A Way Home Canada. It is funded through the Networks of Centres of Excellence. Working in collaboration with researchers, policymakers, practitioners, and advocates, the Lab conducts, funds, and mobilizes cutting-edge research and prototypes promising program models in communities across Canada to prevent and end youth homelessness.

This project's goal is to create a roadmap for data infrastructure to support the prevention of youth homelessness in Canada. *Data infrastructure* refers to the collection and storage of information, the rules for who can access the information and in what ways, and how the data can be used. Project activities include: 1) project steering, such as convening advisory team meetings to inform project actions, 2) learning to understand key related data infrastructure, promising practices and processes, other Making the Shift project learnings, youth with lived experience relevant practices, and Indigenous community relevant practices, 3) engagement with stakeholders to co-decide the best path for a roadmap, and 4) the co-creation of the roadmap with stakeholders.

As part of the data infrastructure learning aspect of this project, this document shares learnings from a literature review of promising practices for administrative data infrastructure. While this document focuses on administrative data as part of the project's original focus, other aspects of the project consider other types of data that inform data infrastructure.

Administrative data is collected by organizations for their operations. This data may be demographics, characteristics, and needs of those experiencing homelessness. Examples are intake data from youth homelessness front-line providers and other program data, such as education, health, and justice data. Different data sources can be linked together using identifiers (e.g., name and date of birth) to understand trajectories into homelessness and what factors may be addressed to prevent homelessness.

Methods

We conducted a narrative literature review to identify promising practices of data infrastructure that facilitate homelessness prevention. The review informs data infrastructure options to be prioritized by stakeholders at the engagement stage of the project. We reviewed both academic and grey literature that presented promising practices for data infrastructure that use homelessness-related health and/or social data. Our focus was on Canada, the United Kingdom, Australia, New Zealand, and Europe.

Step 1: Developing a search strategy

We developed a search strategy using search terms and inclusion/exclusion criteria based on the question, "What are promising practices of data infrastructure that facilitate homelessness prevention?"

(See Appendix A for search strategy). This strategy was developed with the assistance of a research librarian at McGill University.

Step 2: Conducting the search

We conducted academic literature searches using databases (Ovid Medline, CINAHL, SocIndex) in January - February 2023. We also hand reviewed homelessness-focused journals (Housing Studies, Journal of Social Distress and the Homeless, European Journal on Homelessness, Housing Care and Support, International Journal on Homelessness, Parity). Our grey literature search was guided by “Searching the Literature: A Guide to Comprehensive Searching in the Health Sciences”¹). We searched several gray literature databases (opengrey.eu, OAlster, Elicit, and New York Academy of Medicine’s Grey Literature Report). We also conducted a more targeted search for reports and papers released by non-profits, think-tanks, and other organizations that focus specifically on addressing homelessness (such as the Ruff Institute of Global Homelessness, A Way Home, and others) (See Appendix B for targeted organizations in the grey literature search). Finally, we conducted a broader Google search. After removing duplicates, we found 1,002 academic publications and 32 non-academic publications (e.g., organization reports, blogs).

Step 3: Screening

Screening was a two-part process. First, two team members screened the title and abstract of the first 100 retained publications using the inclusion criteria to establish consistency in the screening process (See Appendix C for Inclusion and exclusion criteria). Disagreement was discussed among the reviewers and consulted with a third team member. Once we reached an 85% agreement rate, publications were divided and screened independently. A total of 131 publications (124 academic literature and 7 grey literature) were included for the second stage. The team members then screened the full text against the inclusion criteria. Disagreements were resolved in the same manner as the first stage. A total of 35 (29 academic papers and six non-academic publications) were retained for coding. Also, publications related to Indigenous health data use (n = 2) and Canadian disease surveillance and observational drug research (n = 2) were added for review (See Appendix D for flow diagram and Appendix E for a list of included publications).

Step 4: Coding of retained publications

The publications (n = 39) were divided into two categories: 1) big picture findings that provide overarching/broad lessons and recommendations for data sharing and linkage; and 2) methods findings that provide specific methods and tools for data analysis, sharing, and linkage. We created an initial code list based on the review questions. Codes included: principles for data collection & sharing, methods, legislation, consent, privacy, data security, data quality, examples of promising practices, learning, and limitations. Using the initial code list, the two reviewers coded assigned publications both deductively and inductively using NVivo 12 Plus. After the first round of coding, the two members reviewed codes, created categories, and identified emerging themes and sub-themes about promising practices from publications.

Step 5: Synthesizing key findings

A third team member with knowledge of findings across the project merged the two separate coding lists from the previous stage and synthesized key findings while identifying overlapping themes in the coding lists of big picture and methods findings.

Findings

Promising practices for data infrastructure

We found six promising practices for data infrastructure to facilitate youth homelessness prevention.

1. Use a human-centered approach

To connect data to services, **data infrastructure design requires a human-centered approach** that considers people who are involved in data collection and sharing, and people experiencing homelessness^{2,3}. Data needs to inform decisions by **being connected to how services are being delivered**. People experiencing homelessness often have complex support needs⁴⁻⁶ and information shared through self-report is a way to self-advocate for access needed services^{2,7}. In this manner, **data makes unmet needs visible to connect people with services and findings should have an impact on policy and public responses**^{3,8,9}. Connecting data from multiple services can provide a rapid assessment of needs across the system and also support service coordination^{3,10}.

2. Build relationships to foster collaboration and data sharing

As data is often distributed across agencies due to the complex trajectories and needs of youth that face homelessness, a lack of sharing across agencies misses opportunities for service coordination. **Building cross-agency relationships breaks down silos and facilitates collaboration**.

Multi-level, multi-sectoral coalitions are a backbone of data sharing focused on complex issues like youth homelessness^{3,11-15}. For example, British Columbia's Homelessness Intervention Project reported that inter-ministry and interagency collaboration among health, social, and housing government and non-profit agencies resulted in better outcomes to serve the complex needs of adults with severe mental illness who are chronically homeless¹⁵. One suggestion to increase sharing was to **create cross-sectoral working groups**¹⁶. Also, suggestions were made to communicate a **shared, clear vision for data sharing** and **build reciprocal relationships**^{2,3,16,17}. For example, employment and housing sectors have collaborated to meet the connected goals of increasing employment and reducing homelessness¹⁷.

3. Start at the local (community) level

Detailed community level context is very important as homeless service administrative data is based in the viewpoint of how services are delivered¹⁸. **Contextualization of data helps analyses remain relevant to the practical concerns on the ground**^{3,16}. Communities should **start small by sharing data they are comfortable with and build things up as trust increases**¹⁶. Increased sharing of data across communities has the potential to increase service coordination.

Inclusion of the **expertise of people with lived experience and those who collect data helps reflect the complex reality** of homelessness and housing precarity^{2,3,16,17,19}. **Engagement with Indigenous communities is critical to align policies and practices with Indigenous ways of knowing**²⁰.

In the bigger picture level, a tension exists between agencies collecting universal and specific measures²¹. This tension occurs as **universal measures lack a focus on community, cultural, and Indigenous specific values and priorities, which can limit local planning**²¹. Indigenous community needs should be considered by involving Indigenous communities at all stages of development of data infrastructure to make sure it reflects Indigenous ways of knowing and community priorities^{20,21}.

4. Promote data use and sharing

Strong leadership is a driving force for the promotion of partnerships for data use and sharing^{8,16,22}. Leadership should articulate a **clear vision and value of collaboration**, while understanding the nuances of data sharing¹⁶. Negotiating **data sharing agreements is a key process in data management and governance**^{3,16,20}. In addition, **leveraging policy that recognizes the value of data sharing** can address barriers while creating an incentive for cross-sectoral data sharing^{2,16}.

Legislation and governance promote data sharing^{11,16,18,20}. For instance, California Assembly Bill 210 (AB 210 Chapter 544 of 2017) allows counties to create a multidisciplinary team to expedite homeless adults accessing housing and supportive services, which can require the sharing of confidential information¹⁶.

Legislation benefits from a transparent governance process²³. Participation of citizen or nongovernment organization representatives in the governance committee helps meet transparency and community standards²³.

Creating useful, accessible data promotes its use for service improvement^{3,7,8,24,25}. **Particularly, the use of data visualizations**, such as portals and dashboards, can significantly improve the accessibility of data^{3,18,26}. For example, in the “Built for Zero” project in the U.S., software allowed agencies to track trajectories of people experiencing homelessness, while a dashboard was shared across agencies involved for rapid assessment and intervention²⁶.

Developing a common and inclusive definition of homelessness makes data more useful by better quantifying homelessness, monitoring it, and supporting effective policies^{12,19}. For instance, including couch-surfing in the definition of homelessness provides a more accurate count for youth of color and youth of gender minorities, who are more likely to couch-surf²⁷.

5. Support capacity building

Capacity building helps create quality data collection and useful analysis¹⁶. Frontline providers are often burdened by information management². To address this challenge, **training is needed for frontline providers** to understand why data quality is important, how to improve the quality of data they enter, and the expected outcome of improved quality. Such training can support sustainable data infrastructure¹⁶. In addition, it is important to **train on privacy rules**. Once staff became more knowledgeable about privacy issues, they are better able to communicate with service users on their rights, how their data will be used and protected, and the benefits of sharing¹⁶.

It is also important to **provide training to researchers** to build administrative data research skills. This can increase their ability to work with the data, and create effective community and policy relevant research. Training can be about on topics such as confidentiality requirements²⁸, data manipulation and analysis²⁹, use of administrative data^{3,13}, and the use of up-to-date software and tools²⁹.

6. Use data ethically to support individuals and communities

It is critical that ethical practices are in place to **ensure that data use protects people and communities**^{4,5}. Careful attention should be given to the use of data for non-original purposes as it may be more distanced from the communities where data was collected, potentially leading to the disclosure of non-contextualized information that harms communities²⁰. In principle, **no harm should come to communities because of data use**. For example, the use of deficit-based measures and reporting is criticized for perpetuating negative stereotypes and harming communities²⁰.

Data infrastructure should support equity and prevent harm. Youth that are Indigenous, racialized, and newcomer are disproportionately impacted by homelessness in Canada³⁰, so **an equity lens helps prevent data infrastructure that reinforces marginalization**^{17,20}. Furthermore, since housing is connected to health, we need to address equity through the social determinants of health^{16,19,20,22}. Existing **data gaps for Indigenous people are a missed opportunity for data-driven policies and interventions**. For instance, non-participation in the census for Indigenous populations experiencing housing instability underestimates the full extent of housing instability for planning purposes²⁰. Not being counted can have negative effects as budgeting decisions can be connected to estimates of population need.

7. Protect privacy and consent

Individual-level information about people experiencing homelessness can be used to tailor services and predict people at risk for becoming homeless². **Data privacy and consent policies should be designed in a manner that builds trust among service users and participating organizations**¹⁶.

Many **data privacy methods are available to protect privacy**, such as robust encryption and anonymization^{18,23,31}, limiting access to statistical and aggregated data^{18,23}, and the use of data within safe settings²⁹. It is recommended to **create appropriate consent processes**¹⁶ and **mechanisms** that consider youth needs and various ethical considerations. Strong consent processes can support trustful relationships and reduce power imbalances between youth and those collecting data^{2,18}.

Challenges to the effective use of administrative data

Administrative data can support frontline providers, researchers, and decisionmakers working with persons experiencing homelessness as they make decisions²³. However, it is also important to note limitations of administrative data, as they have implications to how administrative data should be used.

1. Administrative data is not designed for research

Despite its usefulness, administrative data was not collected for the purpose of research. Therefore, it **can suffer from data quality issues, contextual changes that occur over time, and other issues that can**

limit the potential of the data^{2,32}. There is also oftentimes a lack of consideration of proper data governance and documentation about administrative data before it is created.

2. Data bias affects conclusions

Data biases can lead to improper decision-making³³. First, while **many studies use administrative data to characterize people experiencing homelessness**^{34–37}, **they do not capture all cases of homelessness**. This is due to a lack of reliable measures of homelessness³⁶, mobility of people that are homeless^{35,37}, and data being only for service users and missing couch surfers, etc.^{20,25,34,38,39}. This limitation can lead to issues when interpreting data and creating accurate predictive models.

Data quality is affected both by service users and service providers that enter incorrect information^{18,23,28,35,40}. When asked to self-report, people experiencing homelessness may refuse to provide information even if it is critical to finding needed supports³³. Required data is often not measured, such as individual characteristics related to support needs³³, behavioural risk factors⁴⁰, and other risks for homelessness³⁵. Not collecting information related to the strengths and resilience of youth experiencing homelessness may also result in the further marginalization of youth.

Understanding major environmental factors, such as recession and public health emergencies, can improve homelessness service allocation³³. People becoming homelessness due to environmental factors may need different assistance from those experiencing homelessness for other reasons³³.

3. Difficulties using data for service improvement

While service evaluation and improvement is crucial, it can be challenging to understand inconsistencies between predictions and observations³³. Service evaluation requires information and context that is beyond administrative data. Also, service evaluation data collection needs to be optimized for potential changes in workflow it creates when adopted⁴¹.

4. Ethical concerns for using data

Power imbalances between service providers and users can impact consent¹⁸. Even though consent should be voluntary, people using services may feel that they need to provide information they think is tied to support. In addition, **risks are involved in the use of administrative data for decision-making**. For instance, if administrative data is used to identify “high service users” to prioritize recipients for permanent supporting housing, this decision may mask important nuances between service use and need, making us prioritize services for some and further marginalize others^{18,23}.

5. Client data is distributed across agencies

Supports for persons experiencing homelessness can be delayed by a lack of service coordination. Unfortunately, data is often distributed across different agencies^{14,41}. Agencies may have incomparable data, privacy and security concerns for sharing, and different capacity for sharing^{14,17,41}.

Conclusion

We identified six themes for promising practices of data infrastructure that could contribute to youth homelessness prevention. Across themes, Indigenous communities' participation in decision-making is critical to fill existing data gaps and align with Indigenous ways of knowing on data infrastructure. In addition, many challenges for the use of administrative data need to be considered.

Appendices

Appendix A: Search strategy

- 1 ((record or records or Data) adj3 (administrat* or infrastructure* or link* or shar* or integrat*)).tw,kf. or Datasets as Topic/
- 2 homeless persons/ or homeless youth/
- 3 Public Housing/ or Housing/ or Housing Instability/
- 4 (homeless* or unstable housing or housing instability).tw,kf.^{Note 1}
- 5 2 or 3 or 4
- 6 Management Information Systems/ or Management information system*.tw,kf.^{Note 1}
- 7 "Information Storage and Retrieval"/
- 8 1 or 6 or 7
- 9 5 and 8

Note 1: tw = text word search in title or abstract; kf = word in author provided keyword [Medline, Embase]; * = truncation symbol to search for a word that could have multiple endings

Appendix B: Targeted organizations for grey literature search

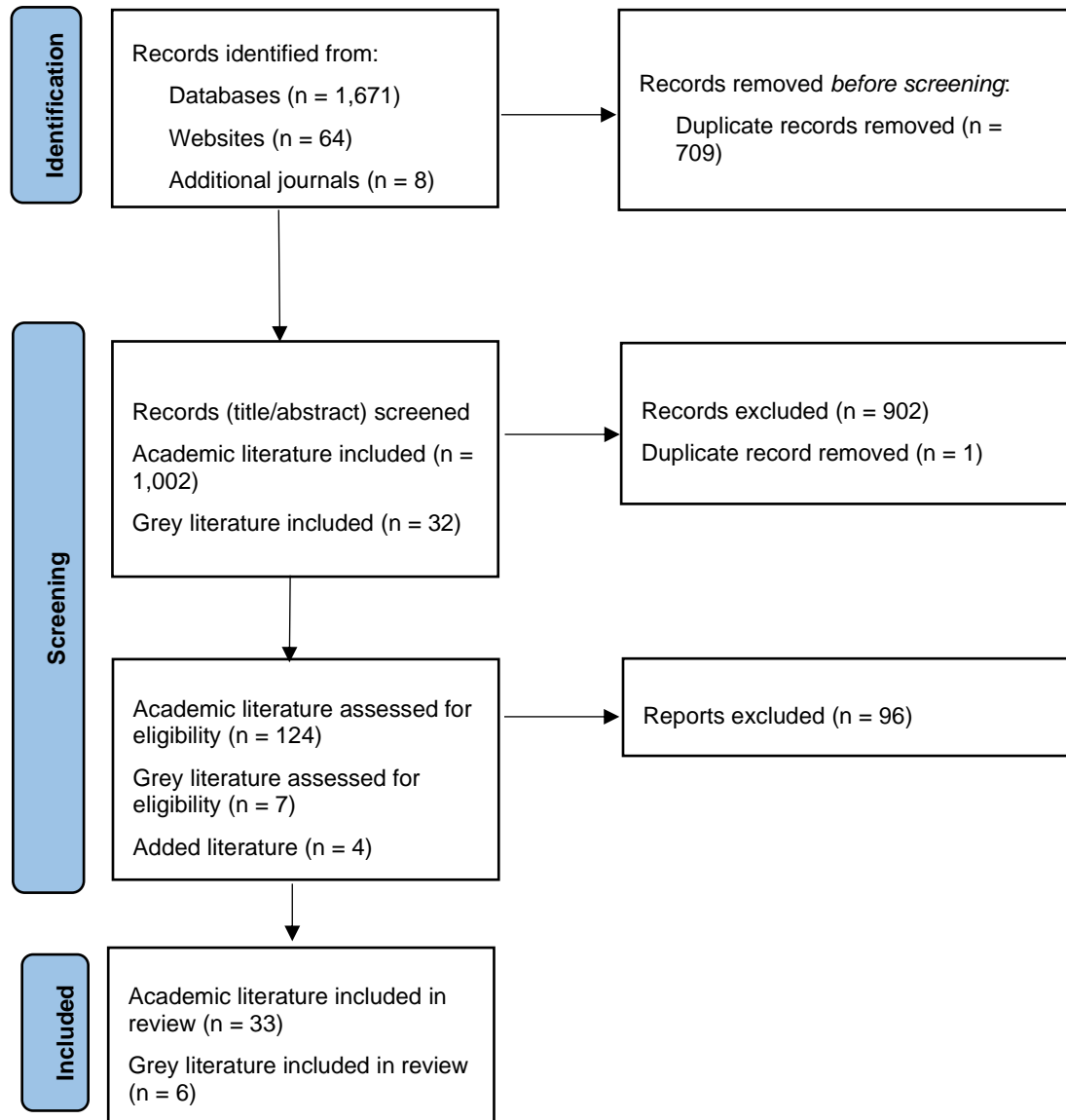
Toronto University Library https://onesearch.library.utoronto.ca/
Homelessness Management Information System (HMIS) https://www.calgaryhomeless.com/discover-learn/research-data/data/hmis/
Shelter Management Information System (Toronto) https://www.toronto.ca/community-people/community-partners/emergency-shelter-operators/shelter-management-information-system/
Preventing and reducing homelessness: An integrated data project https://www2.gov.bc.ca/gov/content/housing-tenancy/affordable-and-social-housing/homelessness/homelessness-cohort
Homeless Individuals and Families Information System (HIFIS) https://www.infrastructure.gc.ca/homelessness-sans-abri/hifis-sisa/index-eng.html
Homeless Hub https://www.homelesshub.ca/about-us/coh-publications/reports
Homelessness Learning Hub https://homelessnesslearninghub.ca/library
National Alliance to End Homelessness https://endhomelessness.org/resources/?fwp_resource_search_facet=data%20prevention
City of Toronto: Housing and Homelessness Research and Reports https://www.toronto.ca/city-government/data-research-maps/research-reports/housing-and-homelessness-research-and-reports/
End Homelessness Winnipeg https://endhomelessnesswinnipeg.ca/research-reports/
Alliance to end homelessness Ottawa https://www.endhomelessnessottawa.ca/progressreports

Ontario Alliance to end Homelessness https://www.oaeh.ca/
Greater Victoria Coalition to End Homelessness https://victoriahomelessness.ca/our-products/reports/
Coalition for the Homeless https://www.coalitionforthehomeless.org/advocacy-library/
Ruff Institute of Global Homelessness https://ighhub.org/using-data/using-data-homelessness-work
Australian Alliance to End Homelessness https://aaeh.org.au/publications
National Alliance to End Homelessness https://endhomelessness.org/
Center for Homelessness Impact https://centreforhomelessnessimpact.github.io/egm-implementation/
A Way Home https://awayhome.ca/resources/reports-books/
Manitoba Collaborative Data Portal http://www.mbcdp.ca/demographic-dashboards.html
End Homelessness Winnipeg https://endhomelessnesswinnipeg.ca/research-reports/
Institute of Urban Studies, university of Winnipeg https://www.uwinnipeg.ca/ius/
Social Planning Council of Winnipeg https://spcw.mb.ca/reports-and-publications/
National Center for Homeless Education https://nche.ed.gov/data-and-stats/

Appendix C: Inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
<ul style="list-style-type: none"> • Populations <ul style="list-style-type: none"> - People experiencing homelessness/unstable housing including: <ul style="list-style-type: none"> ○ Indigenous populations ○ Racialized minorities ○ Women ○ Persons with disabilities ○ Individuals from LGBTQ2+ community - Seniors will be excluded from this review. • Concept <ul style="list-style-type: none"> - Data infrastructure, data integration/linkage that use health and/or social data using for creating homelessness evidence - Study that provides recommendation on how to collect data • Study type/Document type <ul style="list-style-type: none"> - Primary/secondary research, dissertation, reviews, reports that meet the above criteria - Both academic/gray literature • Geographical location Canada, UK, Scotland, Australia, US, New Zealand • Language English • Period After 2012 	<ul style="list-style-type: none"> • Populations Seniors • Concept Research study that does not include best practices/recommendations for data collection • Document type Book reviews, research protocols, editorials, letter to the editor, introduction to issues/special issues, conference posters/abstracts

Appendix D: Flow diagram



Adapted from PRISMA flow diagram

Appendix E: List of included publications

*: References for the report only and not part of the literature review. (Not included for review)

1. Gerstein Science Information Centre, University of Toronto Libraries. Searching the Literature: A Guide to Comprehensive Searching in the Health Sciences. <https://guides.library.utoronto.ca/comprehensivesearching>
2. Slota SC, Nigam I, Fleischmann KR, Greenberg SR, Cruz D. From Communities of Practice to Smart and Connected Communities: Information Sharing Practices Among Social Service Providers. *Proc Assoc Inf Sci Technol*. 2022;59(1):287-298. doi:10.1002/pra2.753
3. Slota SC, Fleischmann KR, Lee MK, et al. A feeling for the data: How government and nonprofit stakeholders negotiate value conflicts in data science approaches to ending homelessness. *J Assoc Inf Sci Technol*. Published online October 5, 2022:asi.24715. doi:10.1002/asi.24715
4. Pierse N, Ombler J, White M, et al. Service usage by a New Zealand Housing First cohort prior to being housed. *SSM - Popul Health*. 2019;8(101678841):100432. doi:10.1016/j.ssmph.2019.100432
5. Meyer B, Wyse A, Grunwaldt A, Medalia C, Wu D. *Learning about Homelessness Using Linked Survey and Administrative Data*. National Bureau of Economic Research; 2021:w28861. Accessed February 17, 2023. <http://www.nber.org/papers/w28861.pdf>
6. Malvaso C, Montgomerie A, Pilkington RM, Baker E, Lynch JW. Examining the intersection of child protection and public housing: development, health and justice outcomes using linked administrative data. *BMJ Open*. 2022;12(6):e057284. doi:10.1136/bmjopen-2021-057284
7. Lelubre M, Dewaele M. Do Statistics Help our Understanding of Homelessness and Housing Exclusion? – Creating a Methodology for Harmonised Data Collection across a Territory. *Eur J Homelessness*. 2016;10(2):137-150.
8. Metraux S, Tseng YP. Using Administrative Data for Research on Homelessness: Applying a US Framework to Australia: Using Administrative Data for Research on Homelessness. *Aust Econ Rev*. 2017;50(2):205-213. doi:10.1111/1467-8462.12216
9. Palmer AR, Piescher K, Berry D, Dupuis D, Heinz-Amborn B, Masten AS. Homelessness and child protection involvement: Temporal links and risks to student attendance and school mobility. *Child Abuse Negl*. 2022;135(can, 7801702):105972. doi:10.1016/j.chiabu.2022.105972
10. Song J, Grey CNB, Davies AR. Creating an e-cohort of individuals with lived experience of homelessness and subsequent mortality in Wales, UK. *J Public Health Oxf Engl*. 2022;44(4):805-809. doi:10.1093/pubmed/fdab180
11. Deloitte. Addressing homelessness with data analytics A data-driven approach to homelessness. <https://www.deloitte.com/global/en/our-thinking/insights/industry/government-public-services/homelessness-data.html>
12. Lowell W, Hanratty M. Who Counts? Educational Disadvantage among Children Identified as Homeless and Implications for the Systems That Serve Them. *Soc Serv Rev*. 2022;96(4):581-616.

13. Platt RW, Henry DA, Suissa S. The Canadian Network for Observational Drug Effect Studies (CNODES): Reflections on the first eight years, and a look to the future. *Pharmacoepidemiol Drug Saf.* 2020;29(S1):103-107. doi:10.1002/pds.4936
14. Trick WE, Hill JC, Toepfer P, Rachman F, Horwitz B, Kho A. Joining Health Care and Homeless Data Systems Using Privacy-Preserving Record-Linkage Software. *Am J Public Health.* 2021;111(8):1400-1403. doi:10.2105/AJPH.2021.306304
15. Patterson M, Somers J, Moniruzzaman A. Sealing the cracks: preliminary findings from an inter-ministry initiative to address chronic homelessness in British Columbia. *J Interprof Care.* 2012;26(5):426-428. doi:10.3109/13561820.2012.686537
16. Erika Siao, Julie Silas. Breaking Down Silos: How to Share Data to Improve the Health of People Experiencing Homelessness. <https://www.chcf.org/publication/breaking-down-silos-share-data-improve-health-people-experiencing-homelessness/>
17. Felton C, Heidi Schultheis. Sharing Data Across Systems: Leveraging Homeless Service and Public Workforce Systems Data to Support Jobseekers Experiencing Homelessness. <https://search.issuelab.org/resource/sharing-data-across-systems-leveraging-homeless-service-and-public-workforce-systems-data-to-support-jobseekers-experiencing-homelessness.html>
18. Ian Thomas, Peter Mackie. The principles of an ideal homelessness administrative data system: lessons from global practice. 14(3):63-85.
19. Develtere P. Data Collection Systems and Homelessness in the EU—An Overview. *Eur J Homelessness.* 2022;16(2). https://www.feantsaresearch.org/public/user/Observatory/2022/EJH_16-2/EJH_16-2_RN2.pdf
20. Smylie J, Firestone M. Back to the basics: Identifying and addressing underlying challenges in achieving high quality and relevant health statistics for indigenous populations in Canada. *Stat J IAOS.* 2015;31(1):67-87.
21. Anderson MJ, Smylie JK. Health systems performance measurement systems in Canada: how well do they perform in First Nations, Inuit, and Métis contexts? *Pimatisiwin.* 2009;7(1):99.
22. Andrea Danes, Jessica Chamba. How can data stop homelessness before it starts? https://www.ey.com/en_ae/government-public-sector/how-can-data-stop-homelessness-before-it-starts
23. Culhane D. The Potential of Linked Administrative Data for Advancing Homelessness Research and Policy. *Eur J Homelessness.* 2016;10(3). https://www.feantsa.org/download/10-3_article_58614037148803779846.pdf
24. Thomas I, Tweed E. The promises and pitfalls of administrative data linkage for tackling homelessness. *Eur J Homelessness.* 2021;15(3):177-188.
25. Messier G, John C, Malik A. Predicting Chronic Homelessness: The Importance of Comparing Algorithms using Client Histories. *J Technol Hum Serv.* 2022;40(2):122-133. doi:10.1080/15228835.2021.1972502

26. Douglas Broom. How three US cities are using data to end homelessness.
27. Petry L, Hill C, Milburn N, Rice E. Who Is Couch-Surfing and Who Is on the Streets? Disparities Among Racial and Sexual Minority Youth in Experiences of Homelessness. *J Adolesc Health Off Publ Soc Adolesc Med.* 2022;70(5):743-750. doi:10.1016/j.jadohealth.2021.10.039
28. Milne BJ, Atkinson J, Blakely T, et al. Data Resource Profile: The New Zealand Integrated Data Infrastructure (IDI). *Int J Epidemiol.* 2019;48(3):677-677e. doi:10.1093/ije/dyz014
29. Jones KH, Heys S, Tingay KS, Jackson P, Dibben C. The Good, the Bad, the Clunky: Addressing Challenges in Using Administrative Data for Research. *Int J Popul Data Sci.* 2019;4(1). doi:10.23889/ijpds.v4i1.587
30. Gaetz S, Schwan K, Redman M, French D, Dej E. *The Roadmap for the Prevention of Youth Homelessness.* Canadian Observatory on Homelessness Press; 2018.
31. Jones KH, Ford DV, Jones C, et al. A case study of the Secure Anonymous Information Linkage (SAIL) Gateway: A privacy-protecting remote access system for health-related research and evaluation. *J Biomed Inform.* 2014;50:196-204. doi:10.1016/j.jbi.2014.01.003
32. Aykanian A. Exploring the potential of homeless management information system data for understanding the mobility of people experiencing homelessness. *J Soc Distress Homelessness.* Published online February 8, 2022:1-9. doi:10.1080/10530789.2022.2035129
33. Chelmis C, Qi W, Lee W. Challenges and Opportunities in Using Data Science for Homelessness Service Provision. In: *Companion Proceedings of the Web Conference 2021.* ACM; 2021:128-135. doi:10.1145/3442442.3453454
34. Strobel S, Burcul I, Dai JH, Ma Z, Jamani S, Hossain R. Characterizing people experiencing homelessness and trends in homelessness using population-level emergency department visit data in Ontario, Canada. *Health Rep.* 2021;32(1):13-23. doi:10.25318/82-003-x202100100002-eng
35. Zech J, Husk G, Moore T, Kuperman GJ, Shapiro JS. Identifying homelessness using health information exchange data. *J Am Med Inform Assoc JAMIA.* 2015;22(3):682-687. doi:10.1093/jamia/ocu005
36. Byrne T, Baggett T, Land T, et al. A classification model of homelessness using integrated administrative data: Implications for targeting interventions to improve the housing status, health and well-being of a highly vulnerable population. *PLoS One.* 2020;15(8):e0237905. doi:10.1371/journal.pone.0237905
37. Kithulgoda CI, Vaithianathan R, Culhane DP. Predictive Risk Modeling to Identify Homeless Clients at Risk for Prioritizing Services using Routinely Collected Data. *J Technol Hum Serv.* 2022;40(2):134-156. doi:10.1080/15228835.2022.2042461
38. Richard L, Hwang SW, Forchuk C, et al. Validation study of health administrative data algorithms to identify individuals experiencing homelessness and estimate population prevalence of homelessness in Ontario, Canada. *BMJ Open.* 2019;9(10):e030221. doi:10.1136/bmjopen-2019-030221

39. Hossain R, Dai JH, Jamani S, et al. Hard-to-Reach Populations and Administrative Health Data: A Serial Cross-sectional Study and Application of Data to Improve Interventions for People Experiencing Homelessness. *Med Care*. 2021;59(Suppl 2):S139-S145. doi:10.1097/MLR.0000000000001481
40. Lix LM, Ayles J, Bartholomew S, et al. The Canadian Chronic Disease Surveillance System: A model for collaborative surveillance. *Int J Popul Data Sci*. 2018;3(3):433. doi:10.23889/ijpds.v3i3.433
41. Khurshid A., Rajeswaren V., Andrews S. Austin’s MyPass Initiative: Pilot Study of Using Blockchain Technology for the Homeless. *J Med Internet Res*. 2020;((Khurshid, Andrews) Dell Medical School, University of Texas at Austin, 1601 Trinity Street, Austin, United States). doi:10.2196/16887