Reports Prepared for the Community Data Program (CDP) by Two Student Teams at The University of Waterloo

January 20 to April 22, 2021

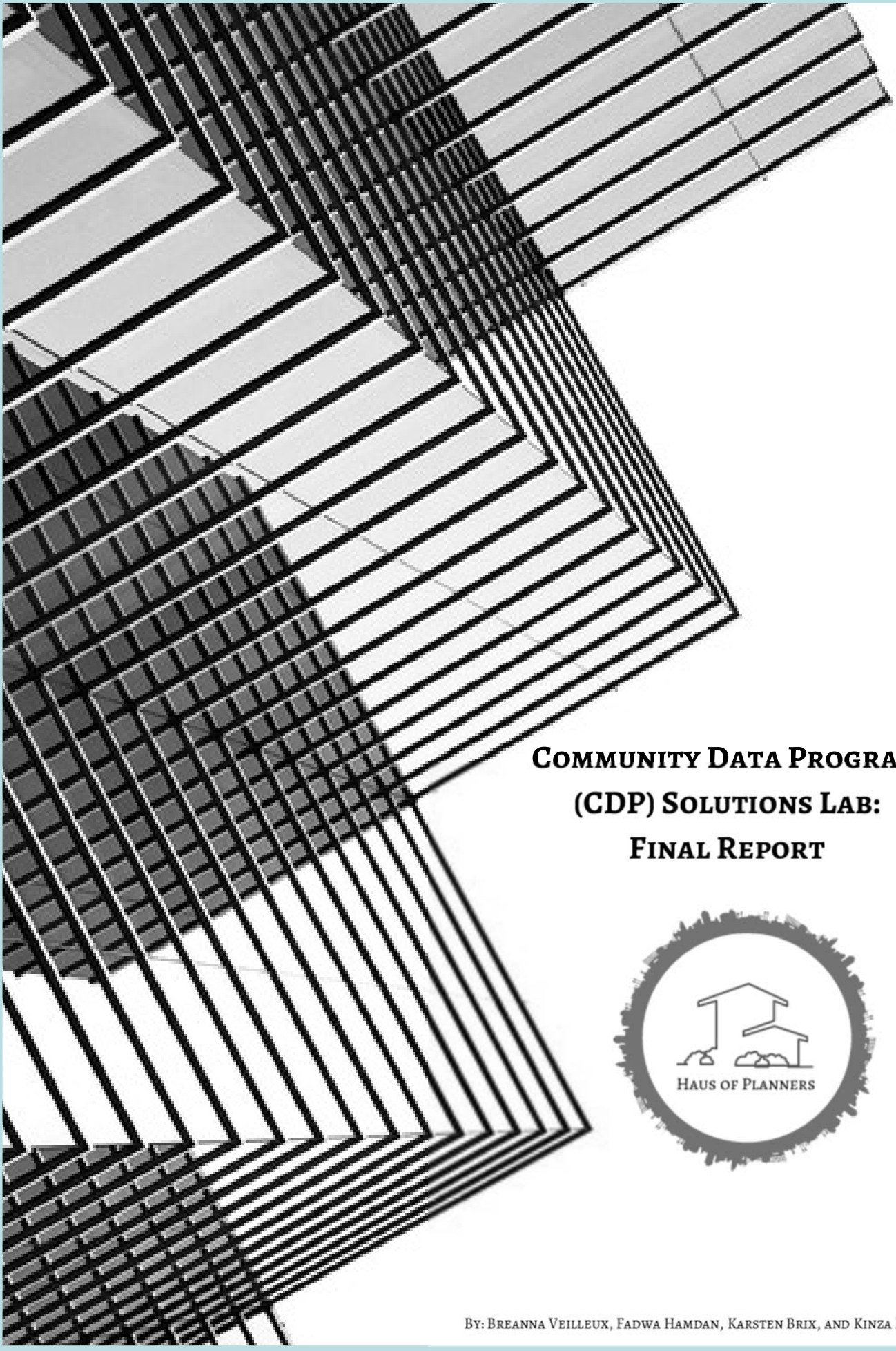
Two urban planning student teams taking the *Plan 405 - Integrated Planning Project* course at the University of Waterloo School of Planning prepared the attached reports for the Community Data Program (CDP) Solutions Lab project. This course was led by Dr. Mark Seasons, with support from Dr. Martine August. From the CDP, the project was initiated/guided by Michel Frojmovic and managed on a week-to-week basis by David Crenna, with periodic support from Mike Ditor.

Terms of Reference for the project asked the participants to review a representative range of published literature and municipal council reports produced by governments and community organizations across Canada that make decisions about social policy, housing and planning issues. More than 50 documents were selected and assessed.

The overall aim of this research project was to determine what types of data, indicators, and analytical methods are currently being applied to housing and related issues. In addition, how are these are being presented to decision-makers seeking to resolve such issues? The project also ventured into aspects of "metadata" (or data about data) as well as assessment of the clarity of presentation methods.

The CDP managers were impressed throughout by the interest and dedication shown by the eight students engaged in this project, and thankful as well for the overall guidance offered by Professors Seasons and August. Well done, all!

Note that views expressed in these reports are those of the student teams alone. They do not necessarily represent positions of the Community Data Program, the Canadian Community Economic Development Network (CCEDNet), or of the University of Waterloo Planning program.



Community Data Program (CDP) Solutions Lab: Final Report

Haus of Planners

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HOP: into a new generation of planning and design

Executive Summary

In partnership with the Community Data Program (CDP), the purpose of this report is to analyze and understand the housing policies and programs in Western Canada and Quebec to review and recommend tools for local practitioners and decision makers on the best methods to track the results of housing policies and programs. This is achieved from analyzing housing reports and documents, and reviewing case studies related to following 13 indicators: units produced, cost per unit, longevity of impacts, homelessness, social equity impacts, social housing, rent supplements, rental construction, home ownership assistance, zoning reform, environmental impacts, jobs created, and policy and program accessibility. The results indicate the production of housing, social housing, rental construction, and social equity impacts tended to be the most common indicators. All of which tend to be indicators measuring current events or solutions. On the other hand, the least common indicators were zoning reform, jobs created, and environmental impacts - indicators which are more likely to measure long-term forms of intervention. The presence of certain indicators also appeared to be influenced by the geographic location of the report. From this, policy-based and indicator-based recommendations are derived to address data gaps. These recommendations include contextualizing Cost per Unit and Unit productivity data within the timeframe given of the report as well as integrating longevity of impacts into a provincial and municipal scale for a more comprehensive perspective of effects. Moreover, several free GIS and data cleaning software are recommended to be used by municipalities, planners, and other groups, as well as the use of public-private partnerships to address financial restrictions

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Research Strategy and Design

General Overview

Research was a core component of this project. As the client requested a better understanding of housing systems within Western Canada and Quebec, it was imperative for Haus of Planners (HOP) to both provide and utilize data that met and guided the project goals. Rather than quantitative aspects, research heavily revolved around the qualitative findings that considered housing. Generally, research strategy revolved around three interdependent levels: compilation, organization, and analysis.

As the highest level of this process, the compilation of research findings considered a wide range of resources. Municipal websites, documents, and legislature, as well as the information provided by relevant agencies and organizations were the primary resources referred to by HOP staff. Municipal websites included those belonging to the City of Calgary, or City of Winnipeg, for example, which held municipal planning information, including housing strategies and targets. Specifically, municipal documents and legislature included public documents, such as the Official Plans of the respective municipalities, or various frameworks guiding housing-related policy implementation. The agencies and organizations which were referred to when collecting data included those which dealt with housing-related issues, including the Homeless Hub in the City of Winnipeg, for example. Additionally, a survey -- as directed by the client -- was circulated to various municipalities and organizations, including, but not limited to: End Homelessness Winnipeg, Réseau québécois des OSBL d'habitation, Fédération des coopératives d'habitation du royaume du Saguenay-Lac-St-Jean, and Office municipal d'habitation de Trois-Rivières. As of yet, survey responses have not been received.

The organization of these documents was a critical aspect of the research process. In order to adequately present and analyze information, all of the referred-to documents were compiled in a spreadsheet, which were further categorized into the following subheadings: source, link, list of data items, applications, data producer, geographic coverage, frequency of collection, and housing system focus. Figure 2 depicts this information. Ultimately, the research provided the foundation for analysis, which was conducted through considering various case studies across the Western Canadian provinces, including Quebec.

Source:	Source:	List of Data Items:	Applications:	Data Producer:	Geographic Coverage:	Frequency of Collection	Housing System Focus:
Arrondissement La Cité-Limoilou: Portrait sociodémographique et économique	https://www.ville.quebec.qc.ca/apropos/portrait/quelques_chiffres/arrondissements/docs/Portrait_arrondissement_La%20Cit%C3%A9-Limoilou.pdf	Demographic, socio-economic, and housing data	Demographic Analysis	City of Quebec	Neighbourhood of Limoilou	Data collected through Census Records	Demographic changes

Figure 2: Screenshot of organized data

Research Strategy and Design Continued

An Examination of the Current Situation

When collecting data from the aforementioned resources, it is equally, if not more, important to consider where those findings were derived from. With respect to general demographic information, the 2016 Census (Statistics Canada) provided by the Government of Canada are heavily relied upon (City of Winnipeg, n.d.). Additional targets, such as that for affordable housing, housing initiatives, and strategies, are obtained from the Canadian Mortgage Housing Corporation (CMHC) (CMHC, n.d.).

How Research was Carried Out

The research for this RFP was conducted through various stages (Figure 3). Generally, the research strategy revolved around key milestones from three of the five outlined phases. In the first phase of the work plan, brainstorming, the key milestones were namely the submission of the draft project proposal, the proposal review meeting, and the revision and resubmission of our proposal. This largely guided the research process. In the findings and analysis phase, or phase three, the key milestone was the draft interim deliverable, to ensure that the content being provided aligned with client expectations. Finally, in the fifth phase, conclusions and final deliverables, the key milestones were recommendations, the final report, and the final presentation. Additional research findings were acquired based on the updated recommendations requested by the client, over several informal meetings led by the Project Manager. Overall, the work plan ensured that every check-in met the goals and objectives of the updated RFP.

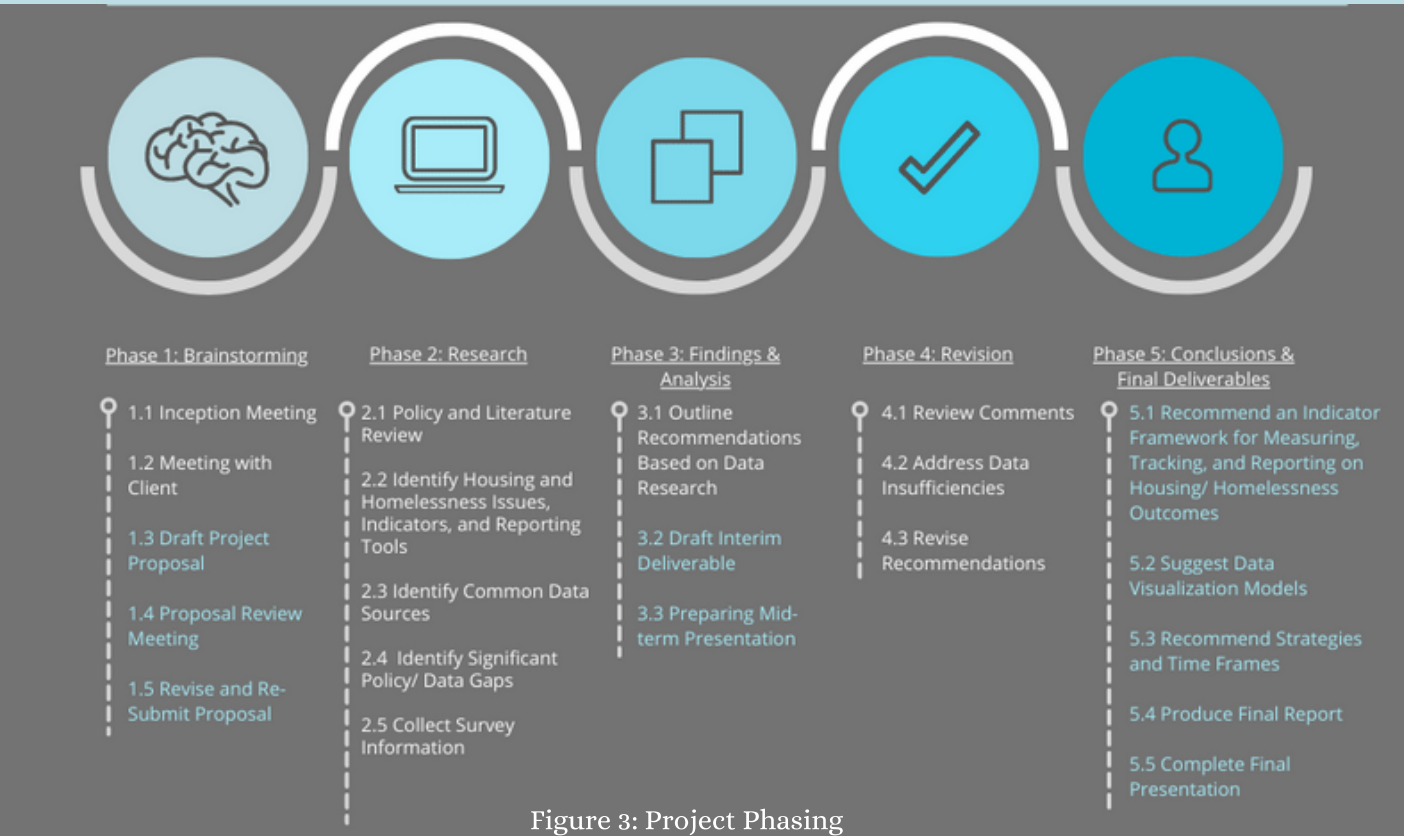


Figure 3: Project Phasing

Indicators

Units Produced

Units produced is an indicator that helps bolser the quantitative proof of housing by indicating the amount of new buildings that have been constructed, or altered in the housing reports

Within Western Canada, 86% of the documents researched explicitly stated the number of units being produced. More thorough case studies such as Morinville had specified unit categories ie. “10-15+ market affordable units through partnerships, 10-15+ market affordable units through incentives, 20-30 near-market and market affordable rental units through secondary suites (Town of Morinville, 2009). Units produced have been successful as an indicator for municipal reports and are easily accessible with units produced being featured towards the beginning of the plans. The programs differ in regional integration. For example the municipality of Okotok sets the context for affordable housing for the province stating “$1.2 billion in investment to build more affordable housing for those who needed it with the construction of approximately 4,100 new and/or updated affordable housing units” (Okotok, 2020) whereas Morinville only addresses specific affordable housing plan for their municipality and does not show how they integrate it into the provincial plan (Morinville, 2009).

Cost Per Unit

The Cost per Unit indicator measures how much each unit costs and by extension, how much money will be granted to construct each unit.

For this indicator, 36% showed the cost per unit. Good examples of cost per unit grant analysis whereby subsidies were given was seen in Calgary with city grants of $5,000 - $7,500 per unit (City of Calgary, 2012). Lecduc indicates cost per unit over a timescale of 5 years. Five different sources of data are used to explain housing costs — 2011 National Household Survey (NHS), 2006 Canada Census, 2001 Canada Census, Edmonton Real Estate Board Multiple Listing Service (MLS) and the CMHC Rental Market Survey (Leduc, 2015). Overall, cost per unit has not been successful with many plans neglecting to state specific figures for each unit. Cost per unit differs on region, for example Saguenay–Lac-Saint-Jean employs cost per unit analysis that are based off StatsCan 2011 and Societe d’habitation.

Indicators Continued

Longevity of Impacts

Longevity of impacts is an indicator that determines how long term measurements are estimated to achieve greater affordability. This helps in realizing the reliability and effectiveness of housing strategies.

Western Canada had 36% of the reports incorporate the longevity of impacts. Leduc's report indicated the current amount of units needed (1 445), but emphasized the future need to incorporate 122 units/year to continue the longevity of the affordable housing plan for 5 years before reverting to market rates (Leduc, 2015). Longevity of Impacts has been well incorporated within the Quebec and Alberta documents. This is seen in the Plan communautaire en itinerance de Trois-Rivieres, Politique D'Habitation - Ville de Quebec, Politique de Développement Social - Plan D'Action 2007-2008. It is also observed in Alberta whereby a 10-year scope of supporting 1st and 2nd entrant (Foundations for home: Calgary's Corporate Affordable Housing Strategy). Alberta as a whole incorporates a broad-scale provincial management plan for longevity of impacts whereas Quebec focuses on the individual municipality within the reports. There are approximately 12,000 non-market housing units in Calgary which is "low in comparison to other major cities such as Edmonton. Affordable housing must reflect the province in a stronger way going forward" (Calgary, 2016). Finally, Quebec states their individual municipal need and the effect that it will have on its residents but does not compare it to the Provincial need or overall impact (Trois-Rivieres, n.d.).

Rental Construction

The rental construction indicator measures the presence of newly constructed residential units that were built with the intent of being rented rather than sold. This includes the development of purpose-built rentals. This indicator was fairly common in our research from Western Canada and Quebec. In total, 71% of the reports discussed rental construction.

One example of rental construction can be seen in the RESOLVE campaign in Calgary (Calgary, 2016). This campaign brings together social service agencies, businesses, and community leaders with the goal of helping to build affordable rental housing for 3,000 vulnerable or homeless people in the city (Calgary, 2016). As of 2016, construction had already been completed for the campaigns first project. Three additional buildings have also begun construction (Calgary, 2016).

The campaign has successfully provided affordable housing for more than 1,182 individuals since its offset (Calgary, 2016). The program ensures that the rental housing remains affordable through a rent payment system that is based on the resident's income (RESOVLE, 2021).

Indicators Continued

Homeownership Assistance

Home ownership assistance provides support to homebuyers in order to help them afford the purchase of a home. Although Home ownership assistance programs are often financially driven, they come in different forms, including loans, tax-credits, rebates, etc. In our research, the split of documents discussing home ownership assistance was fairly even. A total of 46.2% of reports made mention to some form of home ownership assistance.

The City of Quebec has a home ownership assistance program that was created to help encourage increased homeownership. Specially, the program had the goal of increasing home ownership in the central neighbourhoods of the city (Quebec, 2006). The program successfully helped to transform rental housing into undivided and divided co-ownership (Quebec, 2006). However, due to the housing crisis, the city decided to put in place a moratorium that would control the transformation of rental housing into condominiums (Quebec, 2006).

Quebec City's politique d'habitation discusses the need to reevaluate the effectiveness of the home ownership assistance program to maximize its effectiveness and alignment with other housing goals as set out by the city (Quebec, 2006). Since the publication of the politique d'habitation in 2006, no additional information regarding this home ownership assistance program could be found.

Zoning Reform

The zoning reform indicator refers to a change in municipal zoning, in this case, with the intent of aiding housing affordability. Overall, Zoning reform was one of the least common indicators present in the reports. Only 15.4% of reports discussed the implementation of zoning reform policies to help achieve affordable housing goals.

In Quebec City's politique d'habitation discusses the city's need to be more open to the exploration of different zoning tools to solve housing issues (Quebec, 2006). Specifically, the city places emphasis on the need to update zoning to encourage the development of new housing around major transit routes (Quebec, 2006).

Inclusionary zoning is one of the most common zoning reform systems implemented to achieve this goal. Inclusionary zoning requires, or incentivizes, that the construction of new developments include a certain percentage of affordable units.

As seen in their respective housing reports, Quebec City and the Town of Okotoks are both exploring the possibility of implementing inclusionary zoning policies in order to encourage the development of additional affordable housing units (Quebec, 2006) & (Okotoks, 2020).

Other zoning tools include pre-zoning or increasing the flexibility of mixed-use land use zoning as a way of increasing affordable unit developments (Okotoks, 2020)

Indicators Continued

Homelessness

Homelessness refers to those individuals, households, or communities who do not have access to stable, permanent, or adequate housing, and do not possess the means of acquiring such living conditions. Homelessness is the product of systemic or societal barriers, in which many of those impacted do not choose to live in such conditions (Homeless Hub, 2012). Within Western Canada, inclusive of Quebec, homelessness is a critical issue; recent studies show that is an increasingly prevalent concern observing upward trends (Cousins, 2020). In Vancouver (British Columbia), for example, the rate of homelessness grew two per cent within one year (McElroy, 2019).

Within the Western Canadian provinces, including Quebec, homelessness is addressed by numerous municipalities, as it is explicitly referred to in 42 percent of the analyzed documents. While this is the case, certain municipalities consider homelessness with more urgency than others. For example, Vancouver seemingly provides more initiatives for tackling homelessness when compared to Winnipeg, for example. Stop Homelessness, the city's Housing and Homelessness Strategy, and Homelessness Action Week are a few of the several initiatives Vancouver has adopted in practice (City of Vancouver, n.d.). Conversely, Winnipeg largely contributes to homeless aid from provincial funding or collaborating with third-party organizations (City of Winnipeg, n.d.). Various factors could be the result of this. Although Winnipeg's population is larger than Vancouver's, Vancouver's homelessness rate is significantly more accelerated than that of Winnipeg's (City of Vancouver, n.d.). Affordable housing options are also of critical concern to note, of which, research suggests, Vancouver is significantly lacking.

Similar trends are observed between smaller and larger municipalities within intra- and inter-provincial comparisons. For instance, the municipality of Winnipeg considers and accounts for homelessness more so than the municipality of Brandon. While both municipalities are situated in Manitoba, the former addresses it within policy making whereas the latter does not.

With respect to private organizations contributing to this cause, both similarities and distinctions exist. While some organizations consider homelessness in general, others consider homelessness within certain groups, such as within Indigenous populations, where homelessness is a prevalent issue (EHWC, 2017). Further, there are organizations which are spread across the country, such as The Homeless Hub, or, there are those which are dedicated to certain regions, such as End Homelessness Winnipeg.

Overall, homelessness is a recognized issue which should be considered more widely. Further action is required to combat increasing homelessness rates, which can only be done with collaborative efforts from both public and private institutions.

Indicators Continued

Social Equity Impacts

Social equity refers to the fair and just management of all institutions serving public needs, as well as the fair and equitable distribution of public services (UTCM, n.d.); the impact of these considerations would refer to how the presence, or lack thereof, social equity present within communities is impacting the qualities of life present within those areas. In Western Canada, inclusive of Quebec, social equity impacts are most concerningly observed within Indigenous communities due to the lack of socially equitable interventions present within policymaking (Wuttunee, 2019). For instance, Winnipeg (Manitoba) has the largest per capita Indigenous population of any major city in Canada, with more than 12 percent of its residents self-identifying as Indigenous; within this population, one in four Indigenous adults and more than one in three Indigenous children live in poverty (EHWC, 2017), where more than two-thirds of those experiencing homelessness in Winnipeg are Indigenous (EHWC, 2017). These trends are the direct result of social equity impacts.

Impacts of social equity are explored through examining socioeconomic or quality of life considerations within various municipalities. With respect to this, 10 percent of the analyzed documents considered this factor. A considerable amount of these documents are sourced from Quality of Life reports or Vital Signs, from municipalities such as Winnipeg and Quebec City, amongst others.

While this indicator is being acknowledged, it is arguable that little is being done to promote adequate levels of social equity. For instance, municipal budgets, as observed in Winnipeg, for example, prioritize many other factors over social equity impacts, including: high-rise development, transportation, and other-related economic development opportunities (City of Winnipeg, n.d.).

Social Housing

Social housing refers to those properties owned by either public or private institutions that provide rental housing at affordable rates. In Canada, including Western Canadian provinces and Quebec, social housing is geared towards a household's income, whereby the rent paid is equivalent to thirty percent of the household's gross income (Ministry of Housing, n.d.).

Within the scope of the research conducted for this RFP, 86 percent of the analyzed documents referred to social housing. Generally, as there is a baseline to follow to maintain affordable rates, this is similar across all municipalities between all of the analyzed provinces. Whenever implemented, social housing accommodates low-income dwellers; as such, when implemented, they can be considered successful.

Indicators Continued

Rent Supplements

Rent supplements refer to government-funded payments that cover the difference between what a household can afford to pay and what the actual cost of housing is; they are centered around affordable rates (Ministry of Housing, n.d.). With COVID-19, for example, rent supplements have been provided by the majority of Western Canadian provinces, including Quebec, where the province has offered temporary aid for those residents who are required to leave work to self-isolate; this is valued at $573 (Dunham, 2020).

From the analyzed documents, approximately 42 percent of the documents considered rental supplements. When implemented, rent supplements benefit those who require it -- often low-income residents. However, rent supplements are not a high priority for Canadian provinces. Instead, when considering affordable living, interventions such as affordable housing or social housing are given more priority (City of Winnipeg, n.d.).

Environmental Impacts

Environmental impacts highlight any changes that will occur on the existing environment from the implementation of a new policy or program, whether that be adverse or positive.

Within the scope of the research conducted for this RFP, this was a very uncommon indicator throughout the Western provinces reports, as only 13% took environmental impacts into consideration. To contrast, 40% of the Quebec documents reviewed this indicator. Throughout their housing plan - politique d'habitation. One of the report's main priorities is to identify constraints associated with the natural environment and habitat. Further, the city notes several ways in which new housing developments can contribute to sustainable development, including suggesting environmentally sensitive construction materials and energy efficient building designs.

Jobs Created

Jobs created identifies if the policy or program intended will reduce local unemployment.

Within the scope of the research conducted for this RFP, this was an uncommon indicator with only 19.57% of reports mentioning the possibility of creating jobs and its economic benefits. This indicator was displayed one of two ways amongst the reports that mentioned it: a metric showing the number of jobs created or an explanation of how the policy or program will create jobs. The Region of Waterloo's "Community Services Annual Report," highlights the first metric, as it shows the number of new jobs created annually.

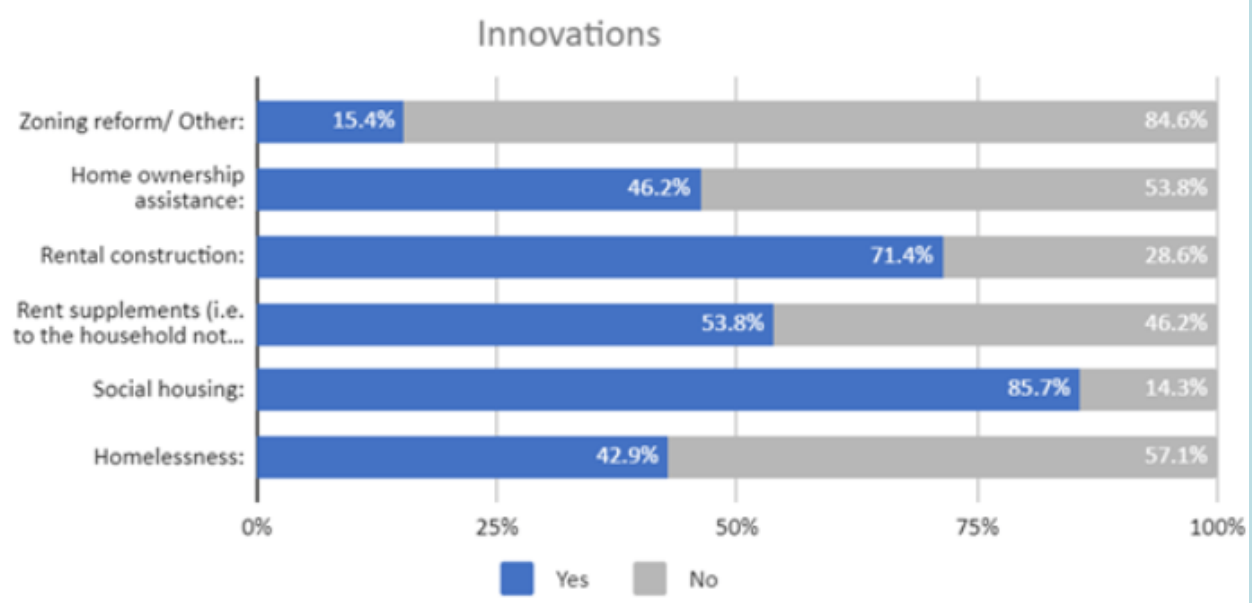
Longevity of Impacts	Helps in understanding who is benefitting from the impacts of the housing program ie. Leduc has a 5-year entrant plan	Allows for more restrictions on the permanent housing strategies	Creates a comprehensive look into the future of housing plans	May be a difficult indicator to predict over a long period of time ie. Calgary had unexpected economic difficulties in the midst of affordable housing plan (Calgary, 2016)
Homelessness	Several interventions, initiatives, and agencies exist across Canadian municipalities to address this concern.	Increasing rates of homelessness are observed across all municipalities that consider it in policy making (ie., where homelessness data is regularly available).	Strengthening the collaboration between public municipal agents and private organizations to maximize effective utilization of resources.	Lack of support from municipal decision-makers, potentially due to competing interest (desires for economic prosperity over social equity, for example).
Social Equity Impacts	The analysis of this component allows municipalities (and relevant third-party organizations) to determine the social equality within their respective areas.	Even if these considerations have been acknowledged, little is being done to rectify current situations.	Strengthening community ties by investing and prioritizing equity efforts will significantly enhance the social fabric, and will work towards the erasure of marginalization or stigmatization of certain subcommunities (ie., Black, LGBTQ+, immigrants, low-income.	Lack of support from municipal decision-makers, potentially due to competing interests.
Social Housing	Provides housing options for low-income households.	Social housing is often stigmatized.	Increasing investment opportunities for such developments will allow them to improve many aspects, including quality of life and reputation.	Lack of support from municipal decision-makers, potentially due to competing interests. NIMBYism is also a concern.
Rent Supplements	Assist low-income households.	N/A	Rent supplement programs can be improved across all municipalities; the increased investment of this will enable low-income earners to live in adequate housing immediately, rather than wait on social housing lists or construction for additional affordable housing	Lack of priority in local governments.

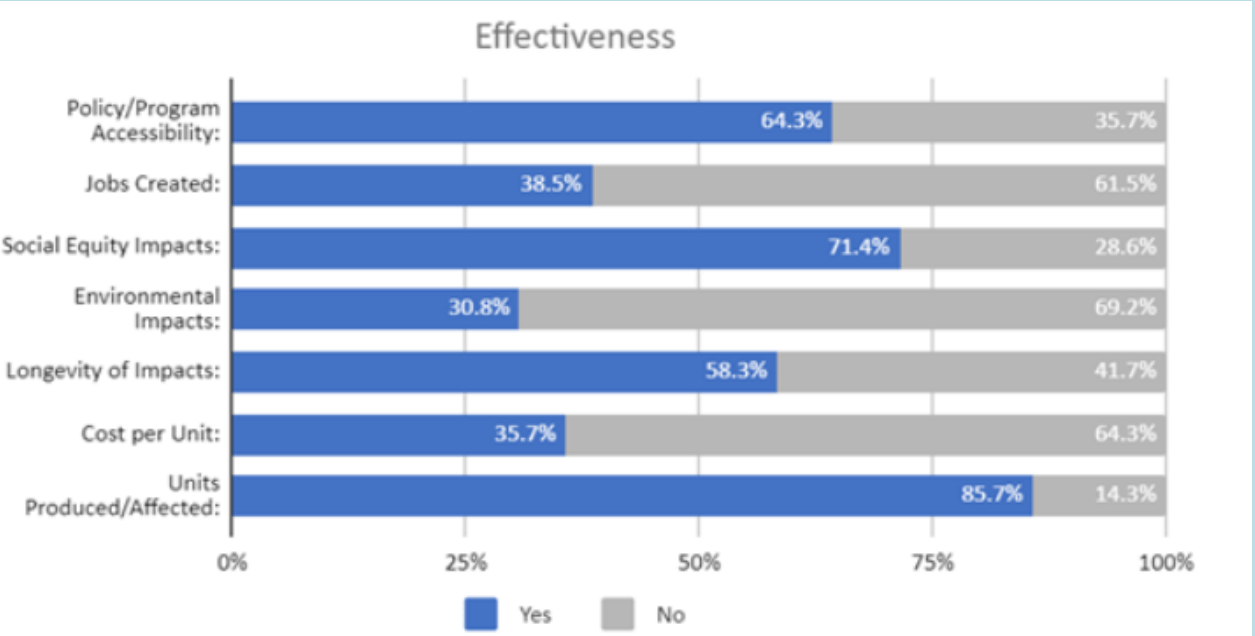
			(both of which take years, on average).	
Rental Construction	Commonly seen throughout the documents. Rental housing can be targeted towards specific vulnerable population groups i.e. homeless populations.	Without a system in place to ensure the rent prices remain affordable, additional rental units will not always solve the housing affordability concern.	Cities can incentivize the construction of additional rental units through density bonusing or other incentivization programs.	Due to financial constraints, rental construction does not tend to be the preferred development option for residential developers.
Home Ownership Assistance	Can help to increase the levels of homeownership, especially for those that may not have had the financial means to do so.	Many programs provide point-in-time assistance but they do not necessarily provide continued homeownership assistance that would enable the owner to keep up the property.	As seen in the Quebec City, a city may use home ownership assistance programs to target specific growth areas.	Since many of the assistance programs are financially driven, it becomes difficult to measure their effectiveness over time.
Zoning Reform	Inclusionary zoning policies can be used to increase the availability of affordable residential units.	Not commonly implemented at this time.	Inclusionary zoning can be a useful tool for municipalities to explore and implement in order to encourage the development of new affordable units.	Areas with weaker housing markets might not be as amenable to the implementation of inclusionary zoning since the financial return may not be high enough to provide the developer with a favourable trade-off.
Environmental Impacts	Consideration of environmental impacts can highlight if a policy or program has a positive or adverse impacts on the existing environment	Not commonly implemented across Western provinces	Environmental considerations in the construction and operation of housing can help municipalities achieve their environmental goals	Areas with stricter conservation laws will have difficulties moving forward with policy and program proposals
Jobs Created	The implementation of new policies and programs will require additional employees	Not commonly implemented at this time.	Potential to reduce local unemployment and achieve municipal economic goals	Financial constraints may make hiring additional individuals more difficult
Policy/ Program Accessibility	Takes into consideration most of the population, including vulnerable groups	It's difficult to equally address the needs and concerns of the entire population	Potential to achieve universal accessibility	Prioritizes specific groups over others (eg. in Quebec policies consider only disabled individuals and the elderly, but not homeless and

Methods of Data Visualization

There are common data themes of data visualization found in housing report. Many municipal, regional, and provincial housing reports utilize simple coloured bar graphs to display census data comparisons. Moreover, colour coded maps of the city are used to demonstrate the spatial relationship between population proportion and movement. To contrast, the reports rarely consist of graphs.

Conclusions





Overall, the degree of focus for each indicator differs between the reports researched, as well as the regions. Many reports focused on the production of new housing units, social housing, rental construction, and social equity impacts. It is therefore common for many municipalities to focus on the development of new housing options, whether that be the construction of new rental housing, co-ownership, or social housing.

There appears to be less of a focus on the long-term qualitative policy indicators like zoning reform, jobs created, and environmental impacts. From our research sample, cost per unit was infrequently mentioned.

Regions across the country experience different housing affordability concerns. Although there may be an overlap in the associated indicators used to alleviate these housing concerns, the regional needs and housing solutions differ. This changes the type of intervention that is required and can explain why certain indicators are more common than others.

Take for example for the divide of housing vacancy versus the limit of housing supply. Certain cities in Alberta have been experiencing low vacancy rates and a limited housing supply. As a result, many of the housing interventions in Albertan cities involve the construction of new residential units to combat these issues.

On the other hand, several cities in Quebec – namely Quebec City and Saguenay – are predominantly composed of an older housing stock. These cities have been generally experiencing a stagnant or declining population. This has resulted in a higher level of housing vacancy; however, the available housing may be older or in a state of disrepair. Rather than constructing new housing units, these cities have taken an affordable housing focus that emphasizes the revitalization, renovation, and adaptation of the existing housing stock (Quebec, 2006).

The frequency of environmental impacts also shows a regional divide between Western cities and those in Quebec. While, overall, environmental impacts were discussed in 30.8% of the reports, 40% of the reports from Quebec discussed this indicator. A consistent theme in Quebec City's politique d'habitation was the encouragement of sustainable development (Quebec, 2006).

Data Gaps

Several data were identified throughout the research which may hinder the long-term evaluation of the indicator's successes:

1. Updated copies of the reports or general progress reports were not always completed. Without the presence of comparable documents, it becomes difficult to measure the effectiveness of suggested programs and indicators.
2. There are data gaps in the community-level housing interventions. Housing data is often found in larger municipalities; however, smaller municipalities do not often produce housing reports. From our research, 58% of reports came from larger municipalities.
3. Another consideration is the effects that modifiable areal unit problem may have on data. The modifiable areal unit problem occurs when the measurement of a municipal boundary changes over time. Since the delineated boundary differs, long-term results may be impacted because of the spatial discrepancy. This is especially relevant for documents that are based on census data and findings like the Beauport neighbourhood report

Comments on Policy Recommendations

Rapid Housing Initiative

Canada's Rapid Housing Initiative (RHI) invests $1 billion to create up to 3,000 new permanent, affordable housing units across the country and arises from municipal requests. The Major Cities Stream pledges $500 million in immediate support for pre-determined municipalities. The municipalities were determined based on metrics including the levels of renters in severe housing need and of people experiencing homelessness. Calgary has been allocated $24.6 million of the $1 billion going forward. Foundations for home: Calgary's Corporate Affordable Housing Strategy proposes to use these funds to build 26,000 additional households by 2024 (Calgary, 2016)

Streamline Planning and Approval Processes for Capital Projects

Allowing meaningful interactions and contributions from the public that is affected, but containing it to tighter time-frames is another common municipal housing policy proposal. This is done by integrating strategy planning with what drives daily activities and then match the strategy to the business needs of the project. Also, working from one platform with equal access and avoiding duplication of housing information is claimed to aid in the streamlining process.

Software Recommendations

There are several free GIS software programs that can be used by planners, municipalities, or organizations that wish to spatially track housing data. Free GIS software options include:

- GeoDa – a free software program developed to support open-source spatial analysis. This program was specifically designed to analyze location specific spatial data (University of Chicago, 2021).
- SaTScan – a free software program developed to analyze spatial, temporal, and space-time data (SaTScan, 2005).
- QuickGIS – an open source geospatial data publishing platform (GISQUICK, 2021).

There are also several free data-cleaning tools which may be of interest to planners and organizations. These include:

- OpenRefine – a free tool to clean and transform data. Good for transforming the format of data (Deoras, 2018).
- Trifacta Wrangler – a tool to clean and transform data with less formatting time and more focus on analysis (Deoras, 2018).

More Comments on Recommendations

Financial Incentives

Providing financial incentives to developers is also a frequent advocacy recommendation, since it may fast-track implementation of affordable housing in municipalities. Proposed incentives largely revolve around funding or other monetary-related concerns, which would promote the desire for developers to invest in affordable housing. Further, incentives should not be restricted to housing type; for example, policies can be adopted to ensure that affordable housing can be available in all types of housing, across many different subdivisions and communities, to ensure adequate and accessible housing is a realistic option for all households.

Utilize Private-Public Partnerships

The Canadian Council for Public-Private Partnerships defines public-private partnerships as "a cooperative venture between the public and private sectors, built on the expertise of each partner, that best meets clearly defined public needs through the appropriate allocation of resources, risks, and rewards." There are four types of partnerships that range in the degree of risk transfer and private sector involvement. These include: consultative arrangements where governments seek out expert advice and input from private sectors or community groups, contributory partnerships that are funded by the public sector while the private sector carries out the development, community development arrangements that allow both the public and private sector to contribute equally to achieve a common goal, and lastly a collaborative partnership where both parties share equal risk and rewards of a project (CCPPP, 2019).

Advocates say there are many opportunities to utilizing PPP's in the provision of public services. Opportunities include: having the potential to deliver higher-quality services at a lower cost, increasing the level of effectiveness in the development process because of the pooling of expertise and resources, and having more flexibility because private sectors are able to distance themselves from political intervention (Moskalyk, 2008).

More Comments on Recommendations

Innovative Affordable Housing Models

Initiating "innovative housing models" commonly refers to adoption of varied methods that would meet municipal requirements of implementing affordable housing strategies, in more desirable or approachable ways. As it is appreciated that affordable housing is strongly required in municipalities across Canada, the general policies and tools utilized to adopt such measures are often expensive, in both cost and time. To accommodate the growing need for affordable housing, more innovative methods can include, namely: revitalizing the physical appearance of affordable housing accommodate, to de-stigmatize its presence; implementing a diverse range of affordable housing options, rather than the frequently adopted mid-to-high-rise apartment dwellings; heavily relying on sustainable materials, so that buildings are long-lasting and environmentally-sound; and, collaborating with relevant stakeholders to strategize, design, and implement various affordable housing developments.

Our Team'sRecommendations for Improving Data/ Indicators

Based on our research and analysis of the specified indicators, we have developed the following data and indicator-related recommendations:

1. Include an additional indicator that evaluates the quality of municipalities' existing housing stock. This is especially important for the older housing stock that may be in a state of disrepair.
2. Create a long-term framework to analyze the percentage of constructed rental units that remain rental over-time. This framework should evaluate whether or not the rental costs remain affordable for tenants throughout time.
3. Home ownership assistance should be further split to differentiate financial housing assistance programs from ownership assistance programs. To evaluate the long-term success of these programs, the indicator should explore the proportion of users who maintained ownership of the homes and whether the costs associated with the property remain affordable.
4. Provide additional zoning indicators, specific relating to inclusionary zoning. Use this indicator to compare the trade-off of additional affordable housing with market considerations.

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HOP: into a new generation of planning and design

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Recommending Easy-to-Use Community Decision-Making Tools to Help Achieve Housing Goals

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Executive Summary

This project is intended to support the Community Data Program ("the client")'s work in a Housing Solutions Lab funded by the Canada Mortgage and Housing Corporation. This report details our findings from a meta-analysis of data on affordable housing and homelessness at the local level. From our analysis, we produced an Environmental Scan Report that identified key housing and homelessness issues and preliminary data gaps. After completing further research, we have written this final report to explain the current state of the data and make recommendations for a local housing and homelessness reporting system based on best practices.

Our research covered the Eastern Canadian provinces and a portion of Québec, while our partner team (Haus of Planners) researched the Western Canadian provinces and the other portion of Québec. In our chosen provinces, we sourced documents that fit the categories listed in the Terms of Reference. After feedback from the client on our list of documents, the list was refined to include 35 documents.

The most common indicators found in the analyzed documents were homelessness indicators, housing market indicators, housing need indicators, demographic indicators, and funding indicators. We found that while many of the documents examined used municipally sourced data, the documents predominately used data from separate organizations like Statistics Canada, the Canada Mortgage and Housing Corporation, and provincial organizations.

Out of all the documents examined, Simcoe County and The City of Gatineau stood out as having the best combination of programs. Simcoe County provides municipally funded rent subsidies, an urban native housing program, a secondary suites program, and an affordable homeownership program. The City of Gatineau has a land reserve associated with their Social Housing Fund and they provide funding for affordable housing through the AccèsLogis program, a homeownership program, renovation programs, and a downtown residential construction subsidy program.

Indicators were found to have vastly diverse benefits and limitations. An example is an indicator's ability to be utilized over a period of time to be used to evaluate the efficacy of planning policies or programs. While indicators provide different depths or variety of data they can inform,

analysing the overlap and accumulative benefits provides a solid foundation on which to construct a resilient indicator framework.

The majority of organizations do not produce complementary progress reporting to their programs and policies. Some organizations produce consistent reports, while most do not. This results in less clarity of program and policy successfulness. Reporting on progress is important to ensure consistency among monitoring tools and to enable effective project comparisons. Our analysis points to the City of Toronto (and the Toronto Community Foundation), the City of Ottawa, and Simcoe County as the leaders in progress reporting. These organizations produce consistent progress reports and collect a host of other relevant, publicly accessible data.

Our analysis also identified gaps in homelessness reporting. Due to inconsistencies in the definitions of homelessness and in the data collection methods, different statistics are collected which can lead to different prevention and intervention methods. It is also ineffective to compare data from different regions with these discrepancies.

We found that appropriate data visualization was utilized in most cases. Reviewed documents generally displayed tabular and geoinformation data, the common methods of data visualizations were bar graphs, pie charts, and pictographs. The graphs that we found to be inadequate fell into five trends: potentially misleading, issues with legibility, human error, issues with labeling, and bland/outdated aesthetics. We made recommendations to address these trends based on data visualization studies and established graphic design related online publications.

The common indicators have proven to be valuable in the understanding of housing and homeless issues. In turn, we have developed a framework that maximizes the use of such indicators by promoting collaboration between the different indicator categories and consistency between jurisdictions. We recommend annual progress reports on housing and homelessness programs and policies that focus on quantity, quality, and effect or impact to evaluate project success. These reports should look at a combination of the common indicators to inform whether the program or policy is reducing chronic homelessness or not. We also recommend that a universal definition of homelessness is determined and that data collection methods are refined. This will ensure that data is more accurate, which will inform more effective policies and programs and ensure that data is more comparable across jurisdictions.

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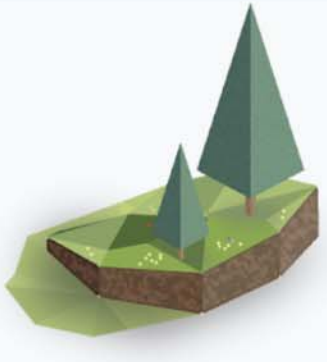
introduction



1.0 Introduction

1.1 Project Background

The Community Data Program ("CDP" or "the client") is participating in a housing-focused Solutions Lab in association with the Canada Mortgage and Housing Corporation to strengthen evidence-based planning and decision-making. In-House Group is supporting the CDP's work by performing a meta-analysis of data on affordable housing and homelessness at the local level. We researched the key issues surrounding housing and homelessness and how the data is presented. Upon completion of this analysis, we have recommended a local housing and homelessness reporting system.

In-House Group is focusing on the Eastern Canadian provinces, while the other team on this project, Haus of Planners, will be covering the Western Canadian provinces. Due to language capability constraints, the teams are splitting coverage of Québec. Our team is working closely with Haus of Planners to ensure that our analyses are complementary to one another.

Figure 1: Map of Provincial Distribution Between Groups

1.2 Research Process

The project's Terms of Reference provided a list of document categories to cover in this project. It also requested that the sources be varied by geographic region. Our team divided the document categories and used Google to search for our individual document types in a variety of regions. Following this search, a source list was compiled for client approval. After discussions with the client team, the source list was refined to include 35 documents across 6 document type categories with 15 more specific document type sub-categories (see Figure 2).

1. Collection of sources from several predetermined categories of interest expressed by the client
2. Assess and quantify the presence of data types in the collected resources
3. Refine and replace sources, removing those that do not provide useful information and adding additional sources to inform an Environmental Scan Report
4. Summarize findings, note interesting housing and homelessness approaches, and identify indicators of housing/homelessness strategy effectiveness in a Final Report

1.3 Research Limitations

This project examined a wide range of document types which allowed us to see a general picture of housing and homelessness in our chosen provinces. However, as we were only able to analyze 35 documents in depth, we were not able to get a holistic view of the current state in every region examined.

1.4 CDP Survey

The CPD survey was sent, prioritizing distribution to parties that authored sources utilized to conduct the research in this report. Appropriate contact avenues were found for 15 parties, consisting of public planning staff, organizations and information centers, media, and a foundation. Most of these contacts were public planning staff, comprising eight of the recipients. Results were not accessible to In-House Group but were collected through Google Forms.

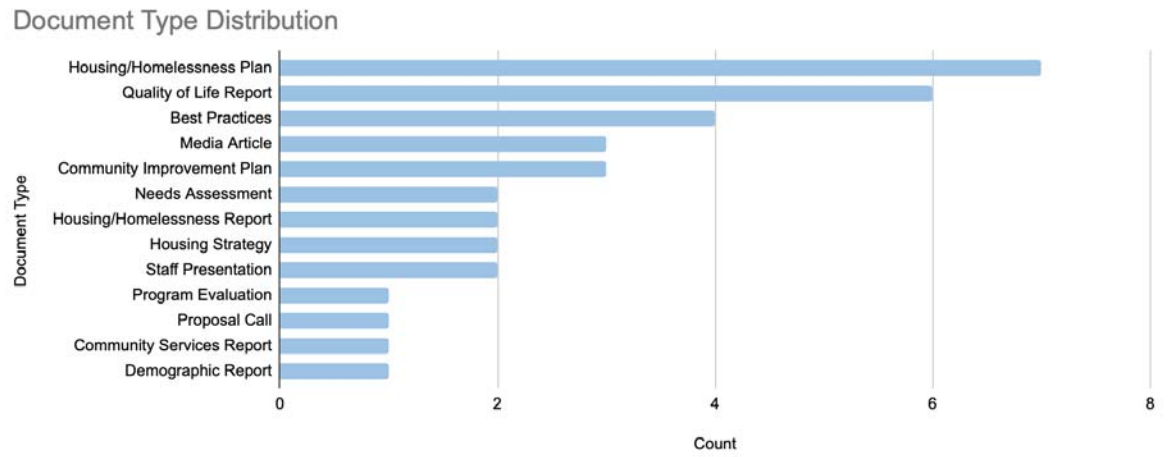
examination of the current state

2.0 Examination of the Current State

2.1 Documents Reviewed

The 35 main documents that In-House Group analyzed included quality of life reports, municipal (and provincial) documents, community organization documents, best practice documents, media articles, and staff presentations. These types of documents were chosen based on the categories outlined in the Terms of Reference. Figure 2 outlines the distribution of the types of documents.

Figure 2: Document Type Distribution



Most of the documents analyzed were produced by the local government or a community organization, while others were produced by provincial governments and media companies. The documents covered a range of cities and regions in the previously identified provinces. These include but are not limited to Toronto and other municipalities in the Greater Toronto Area, Waterloo Region, Simcoe Muskoka, Hastings County, Grey Highlands, Windsor-Essex, Ottawa, Gatineau, Montréal, Laval, Nunavik, and regions in Nova Scotia, New Brunswick, and Newfoundland and Labrador.

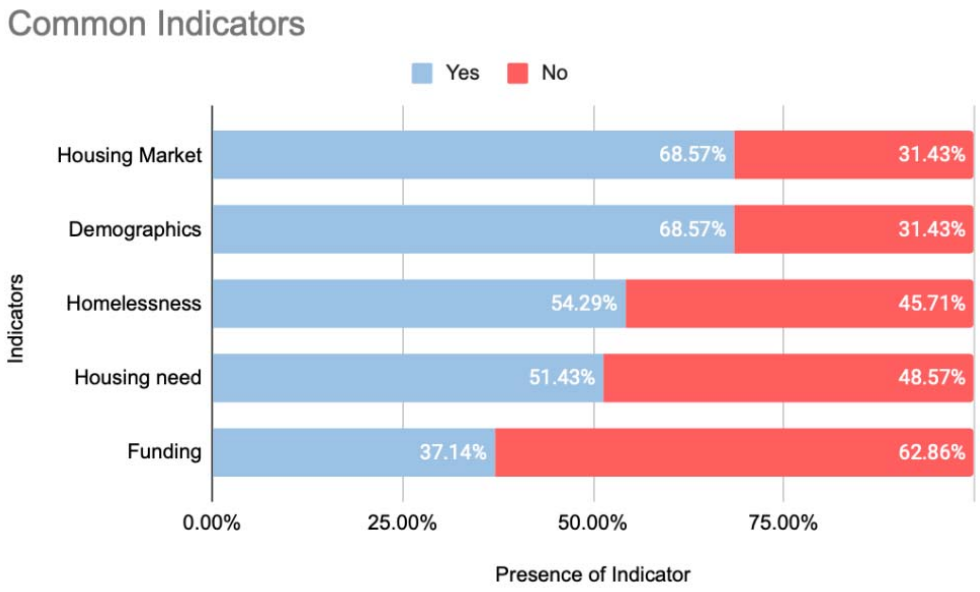
2.2 Common Indicators

The most common indicators found in the reports analyzed for this project were:

- Homelessness indicators were very common and often included shelter counts, counts of individuals “turned away” from shelters, street counts, types of homelessness, and causes of homelessness.

- Housing market indicators included rental vacancy rates, housing prices and rents, counts of affordable housing units produced, and eviction counts.
- Housing need indicators included average numbers of people on housing waitlists, core housing need counts, repair need counts, and housing turnover rates.
- Demographic indicators included population, income, age, marginalized groups, and child poverty rates.
- Funding indicators included grant amounts, forgivable loan amounts, funding amounts for housing repairs, shelter funding amounts.

Figure 3: Common Indicators Distribution



2.3 Common Data Sources

As demographic indicators are reported on extensively by Statistics Canada, l'Institut du Québec, and other organizations, the most important indicators for CDP to collect data for would be homelessness, housing market, and housing need indicators.

While many of the documents examined used municipally sourced data, the documents overwhelmingly used data from separate organizations like Statistics Canada, the Canada Mortgage and Housing Corporation, and provincial organizations. This points to the conclusion that municipalities and local organizations are not able to collect all of the housing and

homelessness data that they require, but that they are willing to use outside data. There is a clear need for supplementary data.

2.4 Case Studies of Promising Local Program and Policy Structures

2.4.1 Simcoe County

Simcoe County uses a variety of interventions to address housing issues. They provide municipally funded rent subsidies, an urban native housing program, a secondary suites program, and an affordable homeownership program (County of Simcoe, n.d.).

Providing such a wide variety of programs seems like it would be successful, though there is seldom data available on some of the programs. The program variety addresses many different issues and levels of affordable housing. In 2020, 563 people were counted as experiencing homelessness compared to the 697 in 2018 (County of Simcoe, 2020). Furthermore, the County is 70% of the way to their target of creating 2,685 new affordable housing units by 2024 (County of Simcoe, 2019). 1,873 have been built as of 2019 (County of Simcoe, 2019). Of the 585 new units created in 2019, 265 were secondary suites, which seems to be the most popular program (County of Simcoe, 2019). It is clear that Simcoe County is on track to meet their affordable housing provision goal in large part due to the programs they provide.

Figure 4: Simcoe County Programs

Source: Simcoe County, n.d.

2.4.2 City of Gatineau

The City of Gatineau also uses a variety of interventions to address housing issues. They have a land reserve associated with their Social Housing Fund and they provide funding for affordable housing through the AccèsLogis program, a homeownership program, renovation programs, and a downtown residential construction subsidy program (City of Gatineau, n.d.).

As of 2012, all land in the reserve was donated and the reserve contained no land (Communauté métropolitaine de Montréal, 2012). This demonstrates that the land is actually being used and the program is being implemented, rather than collecting land and then stalling. 1,000 affordable housing units have been built in Gatineau since 2002 (Communauté métropolitaine de Montréal, 2012). The City of Gatineau provided $11,803,000 in financial assistance for the construction of 706 social and affordable housing units between 2006 and 2009 (Communauté métropolitaine de Montréal, 2012). Gatineau also provided $12,600,000 to build 700 affordable housing between 2010 and 2013 (Communauté métropolitaine de Montréal, 2012). While the progress seems small, the programs in place in Gatineau are clearly working. They cover a range of affordable housing issues including protecting the existing stock of affordable housing, supporting homeownership, and supporting the construction of new social and affordable units.

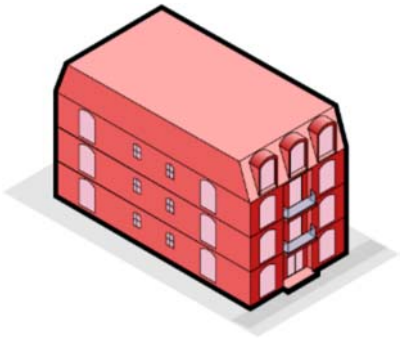
Figure 5: City of Gatineau Programs

Source: City of Gatineau, n.d.; Communauté métropolitaine de Montréal, 2012

indicator analysis

3.0 Indicator Analysis

3.1 General Affordable Housing and Homelessness Indicators



The data sources explored generated a variety of information that was best categorized into a series of indicators that can be utilized to gain useful information about the results of program or policy implementation. Although indicators do reflect the consequences of such implementations, each portrays different information at varying levels of efficacy. The indicators found from the sources explored are described below.

The first common indicator is the quantity of units produced or affected by a given policy or program. This allows for effective measuring housing availability and supply and is a direct product of a shift in policy or creation of an incentive. This makes this indicator excellent at directly evaluating such implementations' performance. This indicator does not address long-term affordability and rent increases but provides a snapshot only of prices at the date of evaluation. This indicator can also be difficult to explore in literature (Freemark, 2018). It is also difficult to distinguish if units are part of supplementing a general housing demand or specifically targeted or even restricted purchasing to homeless or people below the poverty line.

Cost per unit is an effective metric to compare and contrast against average market rates. It is a solid measure to compare against other indicators in an attempt to evaluate affordability. Insert Quote (Lee, 2019). Cost per unit is generally limited in time, lacking utility for long-term indications of affordability in more volatile housing markets. Cost is not the primary determinant of affordability. This indicator is also missing the ability to compare price to unit size and in turn track the success of particular housing strategies, such as tiny homes. (Riggs et al., 2020). The threshold of affordability is often considered to be 30% of one's income, meaning that cost per unit may not be the most accurate indicator without the context of local income-level.

The longevity of impacts is a meta-indicator, where other indicators are measured after an elapsed period of time has occurred since the implementation of a policy or program. While it serves as an effective way of evaluating these decision-making interventions, it is not without its individual limitations. It requires tuning and consideration of changing demographics if that is a targeted consideration of the policy or program. It is also difficult to track longer-term impacts as

there is a lack of sufficient national data available to provide a solid baseline to measure progress (Gaetz et al., 2013). It is also an indicator that is underrepresented in academic literature (Government of Ontario, 2019)

Using environmental impacts as an indicator provides a surprising number of benefits. It describes the ancillary benefits that might increase support for addressing homelessness and affordable housing issues. It can also be used to evaluate environmental policies, allowing for multi-faceted approaches to smart city policies. To some extent, impact on environmental accessibility to homeless individuals and those living in affordable housing can help describe the quality of affordable housing and shelter quality. Environmental accessibility can also help identify equity issues (Demarco et al., 2020). However, this indicator lacks a direct reflection of homelessness prevalence and severity.

Social equity is best evaluated as its own indicator of policy and program efficacy. It can gauge the presence and extent of inequity within homelessness and housing issues independently and is an effective metric of examining the efficacy of programs and policies directly targeted at addressing discrimination and inequities experienced by specific disadvantaged people. Despite these explicit benefits, shifting landscapes of inequity may require constant monitoring of this indicator to ensure appropriate application (Stuart, 2014). It can also be difficult to gauge the multi-dimensional problem of homelessness and such studies are underrepresented in academic literature (Government of Ontario, 2019).

Utilizing jobs created as an indicator has a considerable number of weaknesses but is ideal for gauging decision-makers' ability to provide additional job supply as a method of mitigating homelessness. It does not consider non-unemployment reasons for homelessness and does not evaluate the direct impact this indicator has on the population it is trying to evaluate efficacy for. Stigma surrounding homeless people can also result in jobs being created, but not utilized by those they were created for (Groton et al., 2017).

Evaluated policy and program accessibility is a broad and informative indicator to evaluate program and policy efficacy. It can be paired with social equity impacts to locate driving factors of inequity within public policy and programs. It is also useful in determining how context-sensitive and flexible public policy and programs are. This indicator also requires little monitoring

over time. Using this indicator to evaluate physical accessibility of public homeless shelters is a metric that can assist in ensuring equitable use of hard shelter services. It also accounts for potential additional costs of physical accessibility systems that may be required during construction of affordable housing units that may make the projects less affordable after implementation. This indicator generally requires evaluation from third parties to provide unbiased evaluation of public policy. Additionally, while policies and programs can be technically accessible, lack of information on public resources is critical and must be specified as part of the indicator.

While each of these indicators has its own advantages and shortcomings, they can be utilized in tandem to cover a wider variety of information. This is demonstrated in Table 1:

Table 1: Indicator Benefits Cross-Analysis

	Indicator Benefits								
	Describes Current Landscape	Evaluates Policy/Program Efficacy	Evaluates Affordability	Considers Temporal Change	Evaluates Ancillary Benefits	Evaluates Quality of Affordable Housing	Evaluates Inequity	Evaluates Policy/Program Context	Evaluates Physical Accessibility
Units Produced	■	■							
Cost/Unit	■		■						
Longevity		■		■					
Env. Impacts					■	■	■		
Social Equity	■	■					■		■
Jobs Created		■							
Program Accessibility				■			■	■	■
Shelter Beds							■	■	
# Stayed in Shelter									
# of Shelter Beds Used	■	■						■	
Length of Stay								■	
# People Turned Away	■						■	■	
# of Food Banks							■		
# of Soup Kitchens							■		

3.2 Homelessness-Specific Indicators

In addition to the common indicators used to evaluate both affordable housing and homelessness issues, several indicators focused explicitly on homelessness. These indicators, in contrast to the general indicators, are explicitly quantitative and require statistical evaluation requiring resources and time beyond the capacity of our investigation. Correlation coefficient and analysis of variance studies are recommended to be conducted before and after policy and program implementation to determine the efficacy of adjusting these parameters within homelessness strategies.

Number of emergency shelter beds is effective for establishing a supply in a given area, although not all homeless people opt to stay in a shelter, so it is not indicative of the true scope of the homelessness problem in a given area. The number of individuals who stayed in a shelter allows for collection of demographic data and can be used to predict which demographics are subject to disproportionate homelessness. The number of times shelter beds were used is useful as a trackable quantitative indicator for shelter usage. Average length of stay in emergency shelter in days is effective in evaluating how chronic homelessness is to individuals. Lastly, a number of individuals turned away from homeless shelters highlights the weaknesses of the homelessness programs in a given area and can be used to effectively measure demand for the construction of additional shelters.

data gaps

4.0 Data Gaps

4.1 Progress Reporting Gap

Out of the 35 documents analyzed for this project, only 7 had complementary progress updates. This demonstrates a significant data gap, as it is unclear how successful the majority of the programs and policies have been. There is also inconsistency among monitoring tools which results in data that cannot be compared effectively.

There is great variety in the frequency of reporting. For example, the Toronto Community Foundation, Windsor-Essex Community Foundation, and the Strait Region Community Foundation release a Vital Signs Report every year (sometimes more than one), while other community foundations like Fredericton and Greater Montréal release reports inconsistently (the most recent Fredericton report is from 2014). Releasing consistent reports helps to keep track of how things are changing.

The City of Toronto (and the Toronto Community Foundation), the City of Ottawa, and Simcoe County appear to do the best job of keeping track of data and reporting on progress of the organizations examined. Effective progress reporting ensures transparency, provides information to focus efforts for the remainder of the project and/or for future projects, and can encourage funding providers to continue providing funding.

4.1.1 Progress Reporting Best Practice Case Studies

4.1.1.1 Toronto

The City of Toronto provides shelter data on their website that is updated on a monthly basis. This website tracks how many homeless people have been moved to supportive housing each month in comparison to the previous year, people experiencing homelessness, the number of people that entered/exited the shelter system, the change between months, and other socioeconomic information that would be valuable in understanding the scope of the homelessness issues (City of Toronto, 2021).

Approximately one year after the Toronto City Council adopted the HousingTO 2020-2030 Action Plan and the Toronto Housing Charter, the HousingTO Implementation Plan was presented to Council. The Implementation Plan provided an update to the Action Plan, including a list of achievements from 2020 and the impacts of COVID-19. The list of achievements focused

primarily on the creation of new units and the number of households supported (City of Toronto, 2020).

This data tracking and the HousingTO Implementation Plan are complementary to the presentation to the City of Toronto Disability, Access, and Inclusion Advisory Committee that was analyzed for this project.

The Toronto Community Foundation has released a Vital Signs Report every year since 2006, including a 2020 Fallout Report on the effects of Covid-19 half a year into the pandemic (Toronto Community Foundation, n.d.). The reports do change from year to year in terms of aspects of housing that are focused on most heavily. However, these reports still provide an annual update on the general state of housing in Toronto (sometimes the GTA as a whole), social housing waitlist counts, vacancy rates, and average house prices and rents (Toronto Community Foundation, n.d.). They also look at other aspects of life that influence someone's housing situation like health and wellness, work, and getting around (Toronto Community Foundation, n.d.).

4.1.1.2 City of Ottawa

The 10-Year Housing and Homelessness Plan Progress Report: 2014-2017 examines the progress of the first 5 years of the City's 10-Year Housing and Homelessness Plan. This document was analyzed as part of this project and demonstrates a best practice in terms of progress reporting. The report details the new units that have been built, the units that have been repaired, and the new subsidies that have been introduced as part of the Plan (City of Ottawa, 2018). It also provides shelter and homelessness data, demographic data, and funding amounts from all three levels of government (City of Ottawa, 2018).

In addition to the Housing and Homelessness Plan Progress Report, the City of Ottawa has an entire website dedicated to progress reports. It is a useful tool as it provides recent updates (2019/2020) as well as archived versions of progress reports dating back to 2004 to measure the scope of the changes in the past decade (City of Ottawa, n.d.).

4.1.1.3 Prince Edward Island

This Housing Action Plan Progress Report complements the Homelessness Hub's report card on homelessness for Prince Edward Island that was analyzed for this project. The progress report aims to highlight the progress made on housing initiatives in Prince Edward Island since the province released its five-year housing action plan in July of 2018. The report summarizes the progress made up to December 2019 and then indicates new areas of focus moving forward (Government of Prince Edward Island, 2018). The plan provides tables highlighting the progress in different areas including availability, affordability, sustainable communities, coordination/collaboration, and leadership (Government of Prince Edward Island 2018).

4.1.1.4 Fredericton

The most recent Vital Signs Report for Fredericton is from 2014. Most other Community Foundations produce these reports every few years so there is a clear gap in progress reporting in the Fredericton Community Foundation's reporting. However, other organizations in Fredericton provide progress updates that can supplement the outdated Vital Signs Report. The Community Action Group on Homelessness's 2017 Annual Progress Report on Homelessness is one of such reports. It reports on the organization's multi-year plan to end homelessness and was published when the province was 3-years deep into their multi-year plan to combat homelessness (Community Action Group on Homelessness, 2017). The progress report provided useful indicators (such as: number of families on waiting lists for rent subsidies, market rental vacancy, average market rental cost for 1/2 bedroom apartments, social assistance rate, etc.) and displayed the data for 4 years between 2014 and 2017 (Community Action Group on Homelessness, 2017). The report also provides data on specific shelters in the area for the purpose of highlighting notable changes throughout the years (Community Action Group on Homelessness, 2017).

4.1.1.5 Saint John's

The Human Development Council's Saint John's 2016 Progress Report on Homelessness serves as a progress report for the homeless initiatives taking place in Saint John's, New Brunswick. Similar to the aforementioned sources, this report provides indicators related to homelessness and compares them throughout the years (Human Development Council, 2017). The report highlights housing indicators at large, as well as data from specific shelters (Human Development Council, 2017).

4.1.1.6 Simcoe County

Simcoe County has a publicly accessible online database with rental subsidy statistics, emergency shelter database analyses, homelessness enumerations, centralized waitlist reports, and annual housing reports (County of Simcoe, n.d.). There is only one document related to rental subsidy statistics and while it provides useful information, it only covers a program from 2015-2017 (County of Simcoe, n.d.). Three homelessness enumerations are available (from 2016, 2018, and 2020). The documents provided for each year present different information making it more challenging to compare them and to see how successful programs and policies have been (County of Simcoe, n.d.). Two centralized waitlist reports are available (2014 and 2015). These documents report on the number of people on the social housing waitlist, what kind of household they are, how many people were housed, what the wait times are, and distributions across municipalities (County of Simcoe, n.d.).

The annual report highlights the 10-Year Affordable Housing and Homelessness Prevention Strategy and provides clear and helpful information on the subject. They track performance by reporting on the quantity produced, the quality of what was produced, and the effect or impact of what was produced for each of the 5 strategic themes of the Strategy (County of Simcoe, 2019). Overall, Simcoe County does a good job with progress reporting, though they could be more consistent and report more frequently. These progress reports supplement and complement the 2016 Simcoe Muskoka's Vital Signs Report by providing more detailed and updated information.

4.2 Homelessness Reporting

Based on our analysis of the chosen documents, there is a clear gap in the data collection and reporting on homelessness. While this data gap is partially due to shortcomings in the data collection methods, the discrepancies in definitions of homelessness is also a major factor that needs to be addressed moving forward. Not all organizations that collect primary data on homeless people use the same definition. Many organizations only focus on the “on-street” population (which includes the shelter population). Other groups consider people who have homes but not adequate utilities as “homeless”, they also include those with housing insecurity (the “at risk” population) in this count. Not only does using different definitions lead to very different statistics, but it can also lead to different prevention and intervention methods and makes it challenging to compare these methods and their success rates.

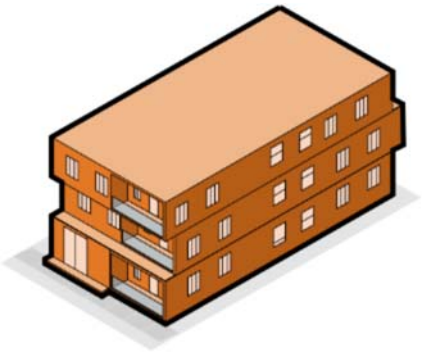
Based on our analysis of the chosen documents, homelessness reports and plans had a tendency to rely on shelter counts and point-in-time counts to determine the homelessness population and to identify the corresponding housing needs (Toronto Foundation, 2020; Fredericton Community Foundation, 2014; Huronia Community Foundation, 2016; Affordable Housing Association of Nova Scotia, 2018; City of Toronto, 2018). Shelter counts only address the homeless population that access shelters and while this is important data to collect, it does not account for people experiencing different kinds of homelessness on its own. Furthermore, simply counting the number of people accessing shelters does not inherently address the factors that cause homelessness. There are a variety of factors outside of the common economic factors like domestic violence, custody disputes, and mental illnesses that can contribute to homelessness. Simply counting the number of people who use shelters and building housing for that number does not address these issues. For example, programs that focus on the on-street population can help temporarily get individuals off of the streets, but they do not give the individuals the tools to actually escape homelessness (such as employment assistance, rent subsidies, or mental health supports). Very few of the documents analyzed for this report addressed the common non-economic factors that contribute to homelessness.

Although many government homelessness programs in Canada do include the at-risk population in their definition of homelessness, the data collecting methods in the documents examined do not reflect this, as their main focus tended to be the on-street population. The current data

collection methods on their own, are not sufficient as they do not provide a holistic picture of homelessness. More comprehensive data collection methods and a longitudinal model would be better suited to capturing a representation of homeless populations and understanding the full scope of the homelessness issue. The following section demonstrates in more detail how point-in-time counts do not provide a holistic representation of the homeless population.

4.2.1 Homelessness Reporting Case Study

City of Toronto



Toronto conducts the Street-Needs Assessment (City of Toronto, 2018) every year in the hopes of collecting both qualitative and quantitative homeless demographics, but they use an inaccurate point-in-time method to collect the data.

The first part is a “Windshield Street Survey” where city employees and volunteers literally approach people on the street who appear to be homeless. These individuals are asked to do a quick questionnaire, each questionnaire counts as one homeless individual, and those who cannot answer or choose not to answer are also counted as homeless individuals. The first problem is that it is impossible to survey each and every street in a city which results in a incomplete street survey; moreover, 44% of the city volunteers did not show up on the day of the street count for the 2018 assessment. Next, it is impossible to identify who is homeless based on appearance alone, this fact means that much of the street population on the day of the count was excluded. Third, the street population varies depending on the season, it is impossible to survey the entire population in one night.

The next part of Toronto’s Street-Needs Assessment involves a Service-Based counting technique, this “indoor count” section involves identifying services that the homeless use (such as emergency shelters, transitional shelters and individuals identifying as homeless in correctional institutes) and conducting surveys in those locations. Similar to the street count, those who volunteered to do a questionnaire were included in the count, and those who were unable to or chose not to complete the questionnaire were also included in the count. The first problem with this technique is that not every service that the homeless population uses was surveyed. Next, many non-homeless individuals (such as those living in poverty or temporarily

escaping from an abusive home) often use these services as well. Resulting in inaccuracies by including the individuals who did not fill out the survey in the homeless count.

data visualization

5.0 Data Visualization

Good data visualization helps the viewer see relationships between data points that would be too difficult to analyze with numbers alone. It can help the reader understand the main takeaways of data faster and can make sharing the data easier. The reviewed documents displayed several types of data with different visualization methods. We did not find any overarching issues around data visualization among the documents, there were a few graphs that we found to be problematic. Overall, the data was presented in a way that is easy for the public to understand. Furthermore, the different types of data were generally displayed with the most appropriate visualization method. Lastly best practices were followed for the most part.

The reviewed documents mainly displayed tabular and geoinformation data, and the bar graph was the most commonly used visualization method. Some documents relied heavily on pictographs/icon arrays, such as the Simcoe Muskoka's Vital Signs document and the Region of Waterloo Community Services Annual Report. Lastly, pie charts and stacked bar graphs were also common. Given that the reviewed documents are for public use, the chosen data visualization methods were very appropriate. Studies on data visualization methods for non-expert audiences list bar graphs as the most effective and preferred method, as they require “relatively little cognitive effort” for comprehension (Smerecnik et al.) Another study found that pie charts are more effective at communicating data with smaller numerators than other methods (K. J. McCaffery et al., 2012). The same study also found pictographs to be similarly successful. The documents generally displayed data in a manner that is appropriate for a public audience.

The small proportion of data visualizations that we consider to be inadequate fall into three categories: potentially misleading, not following best practices, and human error. In addition, we found that many graphs did not include the necessary labeling.

5.1 Potentially Misleading

A misleading data visualization, also called distorted graphs, are graphs that misrepresent data. Distorted graphs are not always blatantly dishonest, but the way that the data is arranged or represented can often lead to false conclusions. Documents created for the public need to be especially aware of this possibility, as the public may not have the time or graph literacy to derive the correct conclusions. Advocacy type documents may use graphs to sway public opinion, a close review of this category of documents did not reveal any major biases. Our research did not

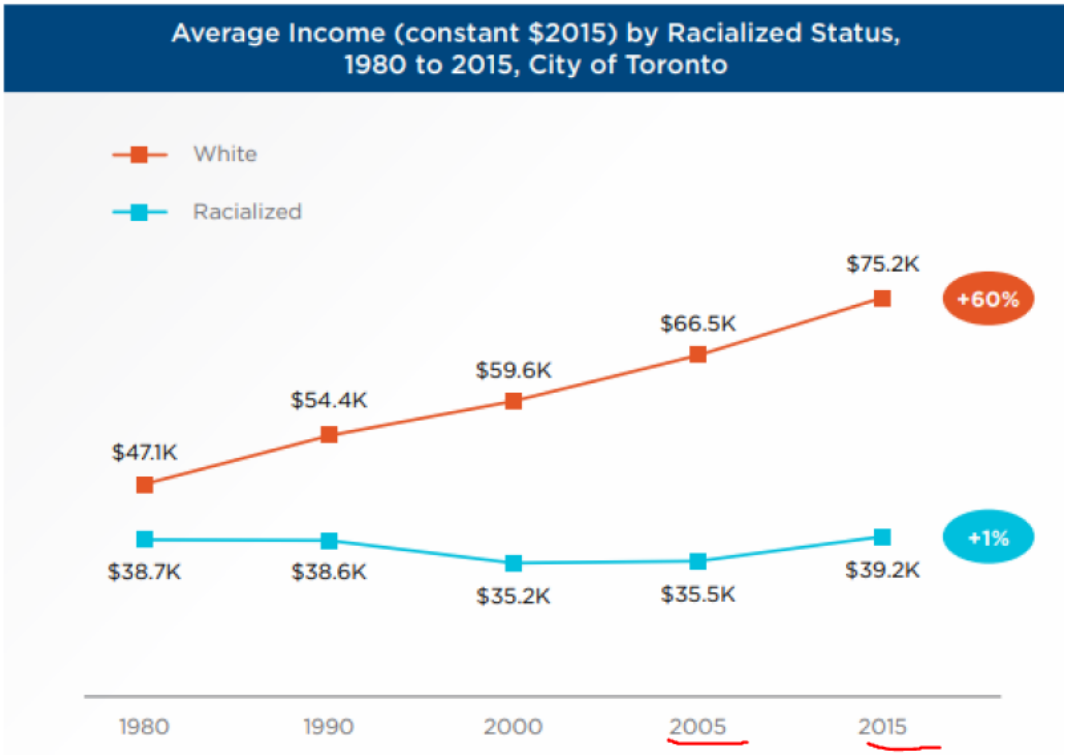
identify any trends of highly distorted/manipulative graphs among the documents. However, we did find one trend that many resources on data visualization would deem to be distorted, the trends being irregular axis numbers/improper intervals. To reiterate, these example graphs are not blatantly dishonest, but the continuation of these trends can eventually lead to manipulative graphs. Lastly, we found one graph that is potentially misleading due to comparing datasets with different sample sizes, this was not a trend, but it is worth mentioning.

5.1.1 Irregular Axis Numbers / Improper Intervals

Irregular axis numbers or improper intervals can be used to manipulate a graph to either emphasize or deemphasize trends. Several graphs through the documents used irregular axis numbers. The data is not necessarily misrepresented in these graphs, but the graphs should still use an axis break to make the skipped numbers more apparent (McCready, 2021).

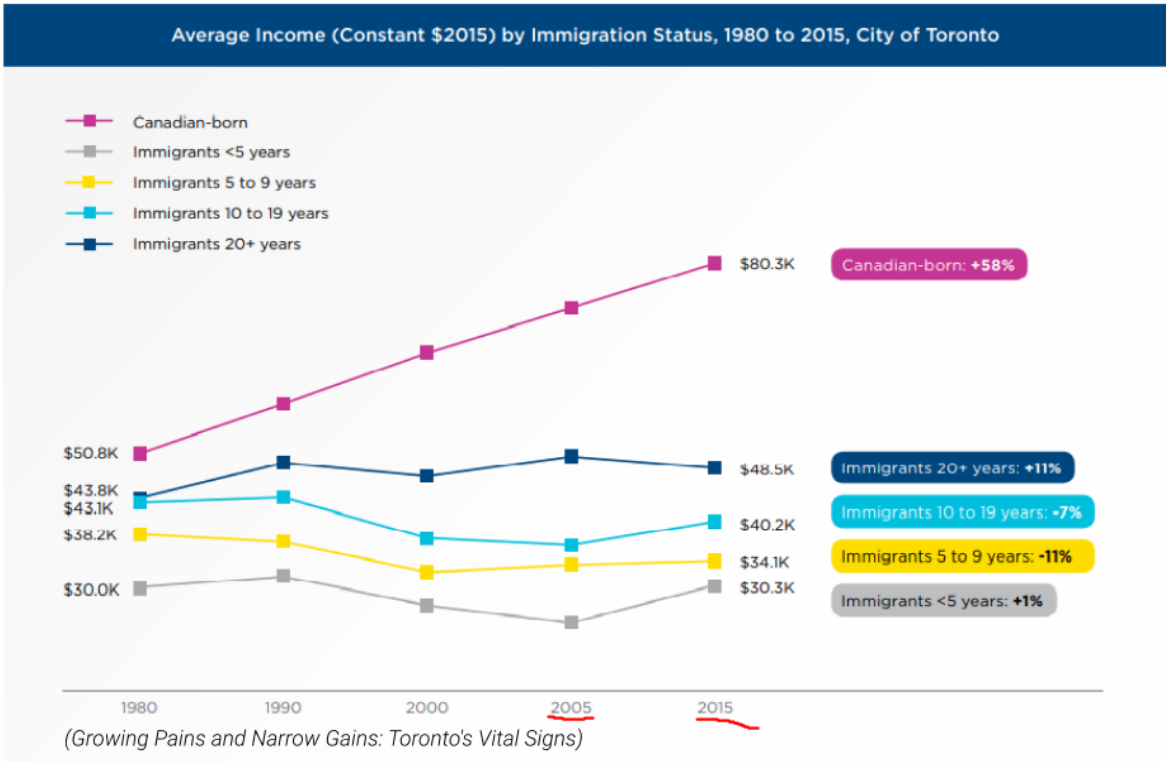
The two graphs below show temporal trends. The x-axis is regular at first but makes a big jump between 2005 and 2015. Perhaps the trend would look different if 2005 data was also displayed. Although this criticism may be nit-picky, these graphs should still use axis breaks to adhere to best practice.

Figure 6: Figure from Toronto's Vital Signs Report



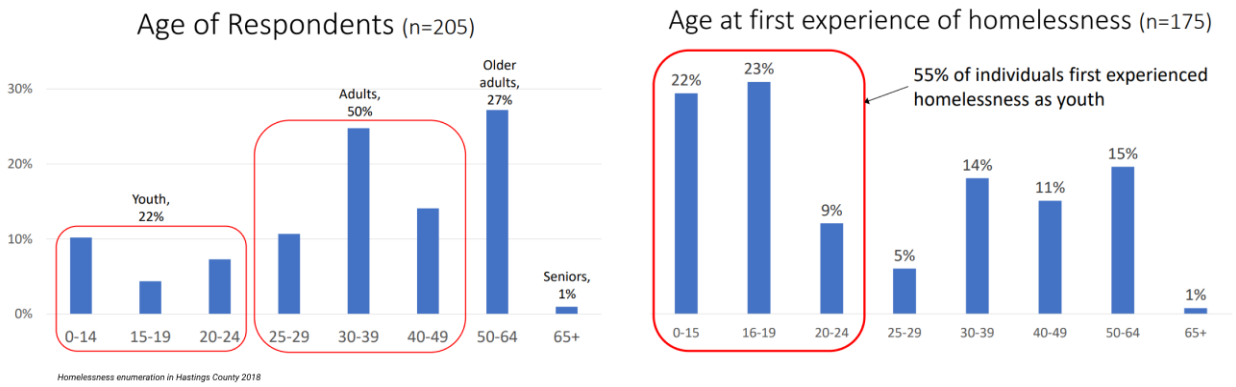
(Growing Pains and Narrow Gains: Toronto's Vital Signs)

Figure 7: Figure from Toronto's Vital Signs Report



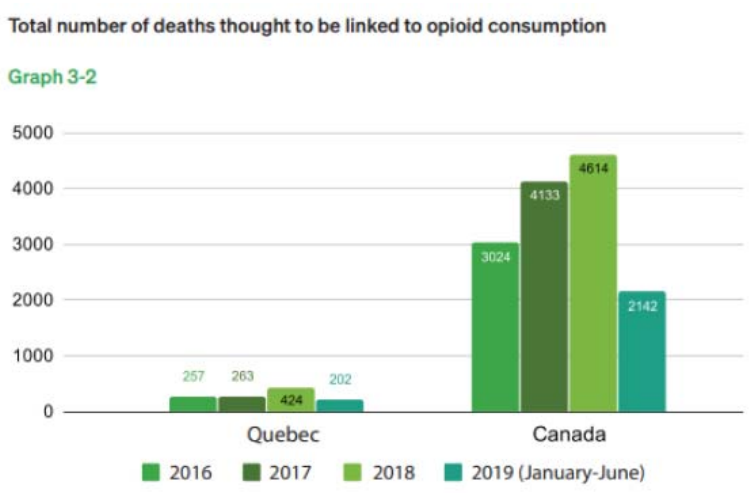
The next two graphs are using data straight from a survey that was not designed to create a graph. We presume that the age range options in the survey reflect different age classifications, 0-14 would be children, 15-19 as late teens, 20-24 as young adults and so on. These data collection methods end up creating irregular improper intervals. Perhaps a consistent 5-year age range would create more opportunities for analysis. Furthermore, the red markings came with the graph, likely a part of a Microsoft PowerPoint slide show. Public documents should receive more polish.

Figure 8: Figure from Hastings County Report



5.1.2 Comparing Different Sample Sizes

Figure 9: Figure from Montreal's Vital Signs Report



Greater Montréal's Vital Signs 2020: 2000-2019 in Review

A quick glance at the graph on the right might lead to the conclusion that there are less opioid connected deaths in Quebec than in Canada on average. However, this would be a false conclusion. This graph numerically compares two sets of data with different sample sizes, furthermore the "Canada" data set would also contain the opioid related deaths inside Quebec as well. Putting these data sets beside one another in this manner leads human intuition to directly compare the two data sets. Simply converting the data set to be the percentage of the specific regions' population would create a more honest and effective graph. Also, changing the data set to "Quebec" and "All "Other Provinces and Territories" would help. This potentially misleading graph was likely not created with manipulative intent, however more care should be put into making graphs that are for the public eye.

5.2 Issues with Legibility

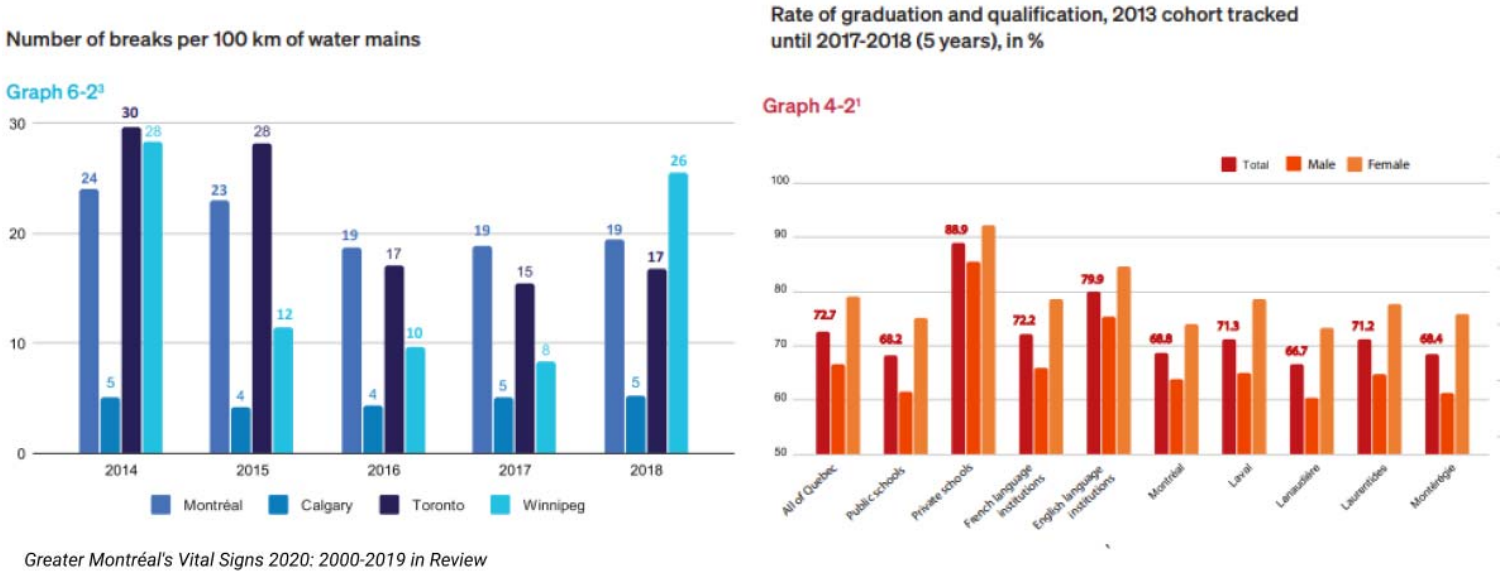
The goal of data visualization is to make numbers and statistics become easier to understand in a visually digestible format; best practices guide us towards legible graphs. Graphs that ignore some of these best practices are sometimes still able to convey relationships in data, but they miss out on the opportunity to be more effective. This report will not include the long and well documented list of best practices for data visualization that aid in creating legible graphs, instead we will show examples of the trends of overlooked best practices within the reviewed papers that lead to legibility issues.

5.2.1 Use Distinct Colours

Using distinct colors in graphs assure that the viewer will not need to constantly look back and forth from the graph and the legend. Colors that are easy to identify in relation to one another will help the viewer associate a specific color with a data set, "green for Toronto, blue for Montreal". Using similar colors can confuse the viewer, "light blue for Calgary, dark blue for Toronto, baby

blue for...". Although the graphs below did a great job at differentiating the data sets using groups and spaces, more distinct colors would make the graphs more digestible (Yi, 2019).

Figure 10: Figure from Montreal's Vital Signs Report

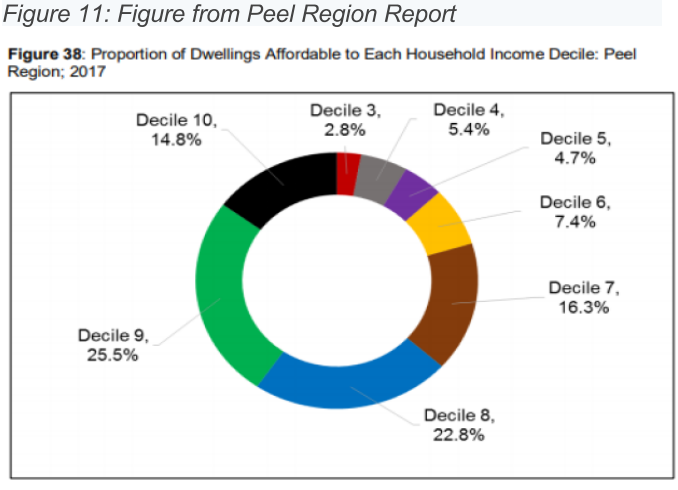


Greater Montréal's Vital Signs 2020: 2000-2019 in Review

5.2.2 Pie Chart Best Practices

We used a study that found pie charts to be an efficient data visualization method, the caveat is that pie charts are only efficient when the number of slices are below 5 (Datawrapper, 2021). Above 5 pieces, the human brain has a difficult time judging the proportion in a circle. The percent value should also be specified numerically, either inside or beside the pie piece. Furthermore, the slices should start at 12 o'clock and then be arranged from largest to smallest or vice versa, this helps the viewer extrapolate the relationships better (Act-on, 2020). Several pie charts in the reviewed documents did not follow these guidelines.

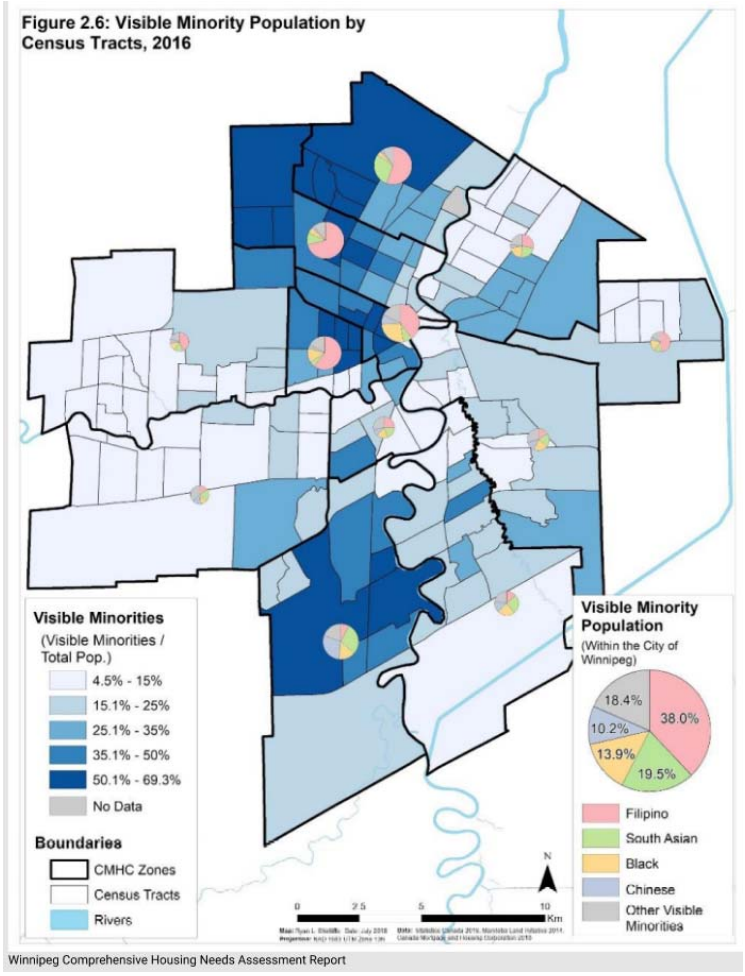
Figure 11: Figure from Peel Region Report



The pie chart on the left has too many pieces. Next, the pie slices are not arranged from largest to smallest, instead they are arranged in decile order. This dataset may be better represented in a stacked bar graph.

Figure 12 demonstrates an ineffective use of pie charts. The big pie chart on the bottom right is effective, but the several charts layered on top of the map create a

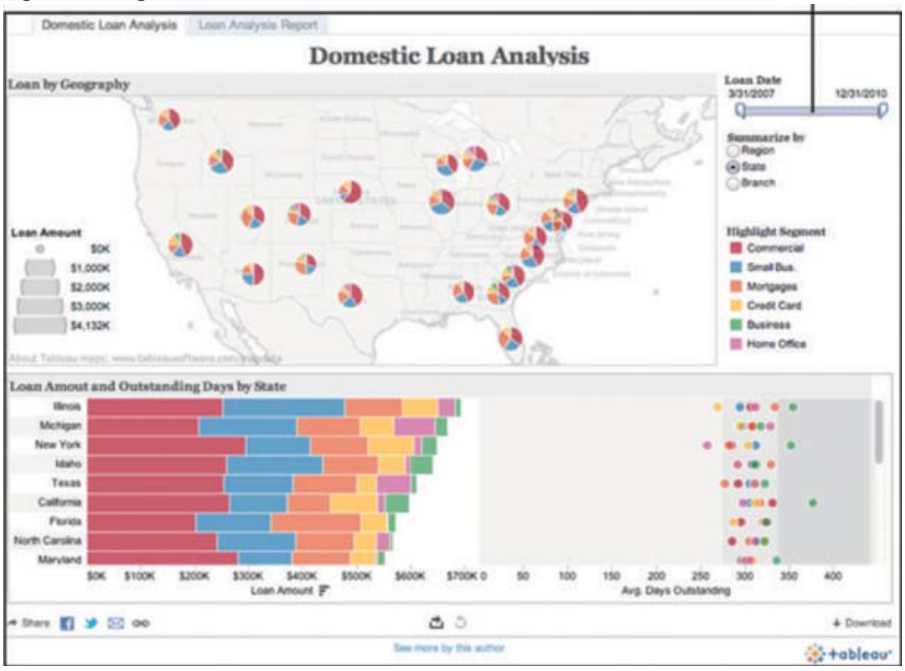
Figure 12: Figure from Winnipeg Comprehensive Housing Needs Assessment Report



problem. It appears that the relative size of the charts on the map are used to communicate the overall population of the respective region, this decision ended up making some charts too small to see. Furthermore, they don't show numeric percentage values. This data set could be more effectively displayed using a stacked bar graph, see example below.

The graph in Figure 13 deals with a similar type of data as the previous Winnipeg Comprehensive Housing Needs Assessment Report graph. The top part displays the geoinformation data with pie charts; it fails to be effective in a similar way. However, the lower half shows the same data with stacked bar graphs. The 2nd way is much more effective as the proportion of loans between the states can be accurately measured.

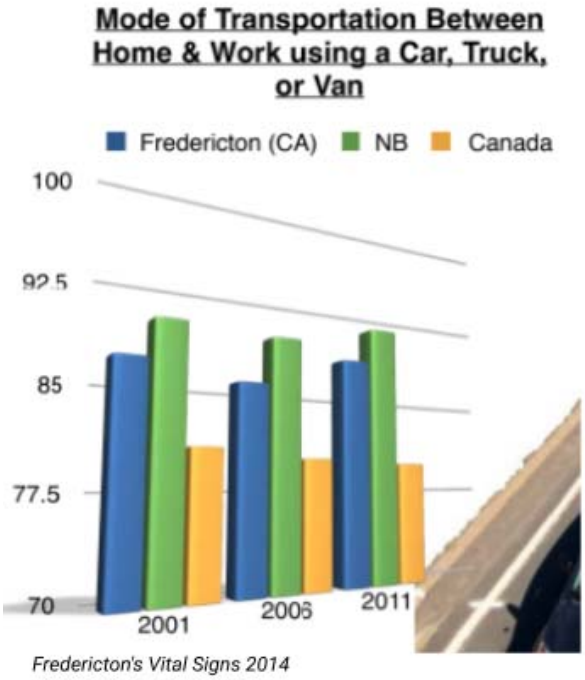
Figure 13: Figure made in Tableau



5.2.3 Avoid 3D

Adding a third dimension to graphs may seem like an attractive choice as it adds visual flare, but generally the third dimension is entirely superfluous (Finan, n.d.). 3D can delude the relationship between data, as the eye perceives closer objects to be larger than objects further away.

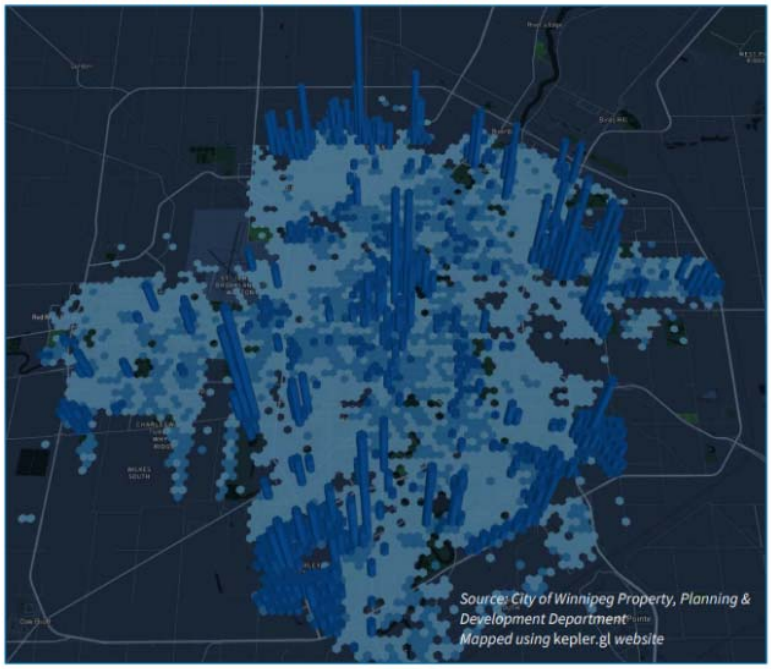
Figure 14: Figure from Fredericton's Vital Signs Report



Fredericton's Vital Signs 2014

In the Figure 14 graph, the 3D creates difficulty when trying to compare the datasets, the bars for NB in 2001 and 2006 look about the same from this angle. Not showing the bar values numerically makes the problem worse. A 2D graph would have been a better choice.

Figure 15: Figure from Winnipeg Property, Planning, & Development Department



The above map shows that the number of units added strongly correlates with the dollar volume of investment. Moreover, both new and emerging communities and the downtown area have seen significant increases in dwelling units added over the last ten years.

The graph in Figure 15 breaks two guidelines, using non-distinct colors and using 3D. It is impossible to compare the relative size of the 3D hexagons that are below the camera to the hexagons the furthest away. This graph may work if it was an online interactive space, but it does not work on 2D paper. This set of spatial distribution data can be more effective when displayed with choropleth saturation or gradient.

5.2.4 Human Error

Simple mistakes are prone to happen in any type of work, sometimes these mistakes make data visualizations more difficult to comprehend. The mistakes we spotted were nothing major, but there were more cases of human error than we had expected. Public documents should receive

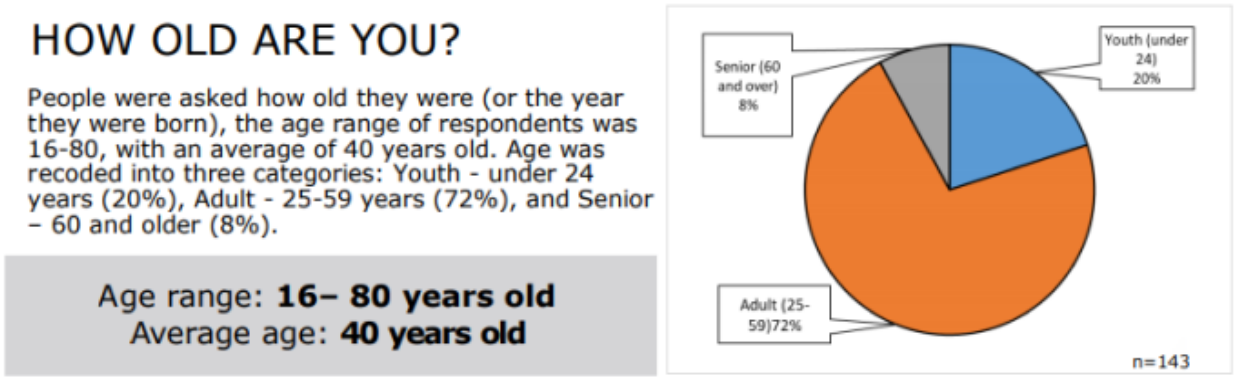
more polish in general, avoiding these types of mistakes can help the public trust their government more. The following examples have incomplete axis labels and overlapping text.

5.2.5 Issues with Labelling

Creating legible graphs is very important, but the features surrounding the graph should be given equal consideration. These supporting features can dramatically help improve comprehension and shareability. Good placement/use of graph elements means that the viewer can quickly understand the main takeaways without reading deeply into the body of text. In addition, adequate periphery elements can make the graph easier to share as all the necessary information will be included in a single screen shot.

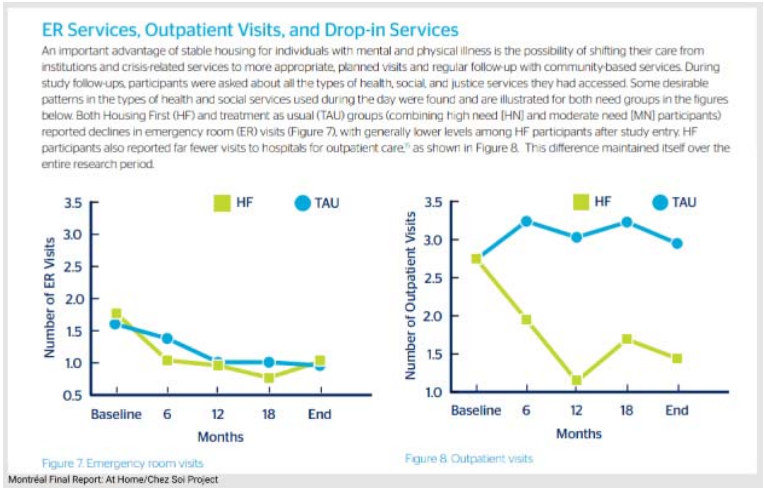
First, we found many graphs that simply don't have a title, the layout suggested that they share a title with their respective paragraph (graph below). One document put the graph titles in small text below the graph (graph on left). A descriptive title placed on top of the graph communicated necessary context.

Figure 16: Figure from Halifax Point in Time Count



Nova Scotia - EVERYONE COUNTS Report on the 2018 Halifax Point in Time Count

Figure 17: Figure from Montreal At Home Report



Next, the graph axis should be clearly labeled, no matter how obvious it may seem. Moving on to another shortfall, sources of data should be placed in smaller text below the graph. In addition, stating the numerical value directly on the data point is sometimes appropriate, it reduces the need to estimate the exact value. The lack of these elements was a trend among the reviewed documents.

To repeat, clearly labeled titles, axes, sources, and data points help the viewer understand the graph without needing to read into the body of text. We also suggest writing the main takeaway of the graph either as the title, or directly below the title.

Figure 18: Figure Depicting Labelling Issues

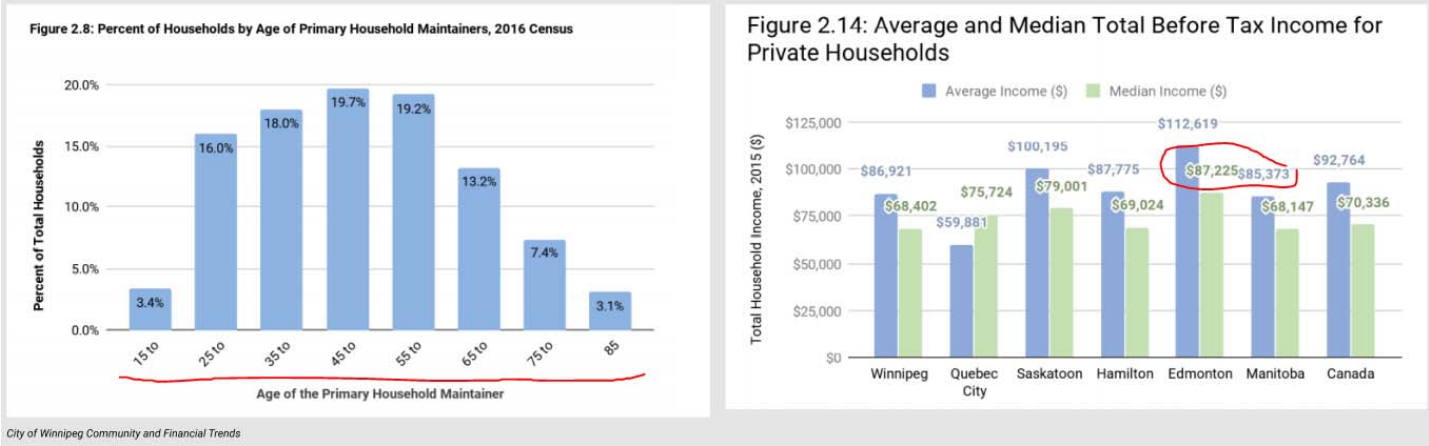
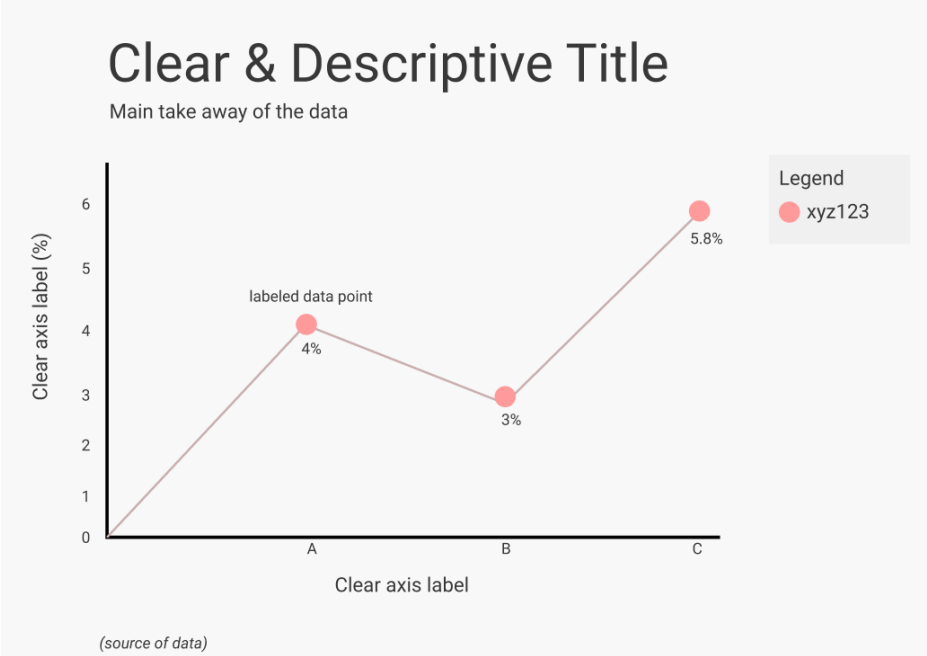


Figure 19: Figure Depicting Proper Titling

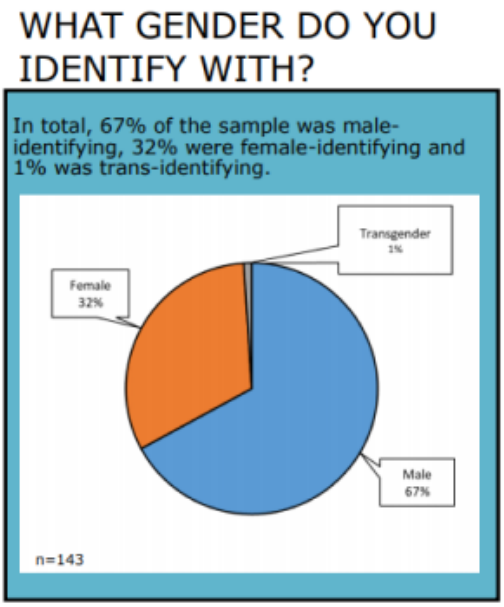


5.2.6 Bland/Outdated Aesthetics

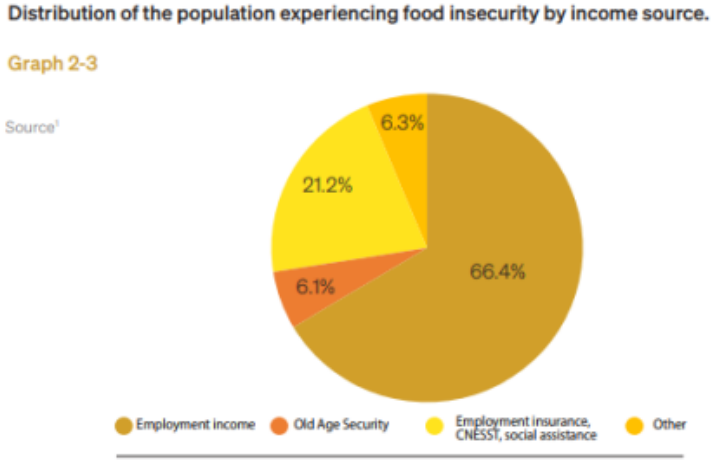
We did not judge the graphs based on their aesthetics so far, but this is a subject that deserves consideration as well. Aesthetically pleasing graphs are more engaging, a harmonious balance of color, line weight, and proportions appeals to the eye and invites analysis. Viewers will always appreciate this added level of care. Furthermore, graphs that adhere to the changing visual landscape tells the viewer that the respective organization or government keeps up with the times,

that they deeply understand recent events beyond just data points. The two graphs below both follow many of the guidelines for effective graphs, most would agree that both graphs can successfully communicate data. However, the graph below on the left is lacking in aesthetic value (unconventional use of comic book type speech bubbles as a label, title outside of the box), while the graph on the right is following modern graphical language (such as using muted colors).

Figure 20: Figure Comparing Aesthetics



Nova Scotia - EVERYONE COUNTS Report on the 2018 Halifax Point in Time Count



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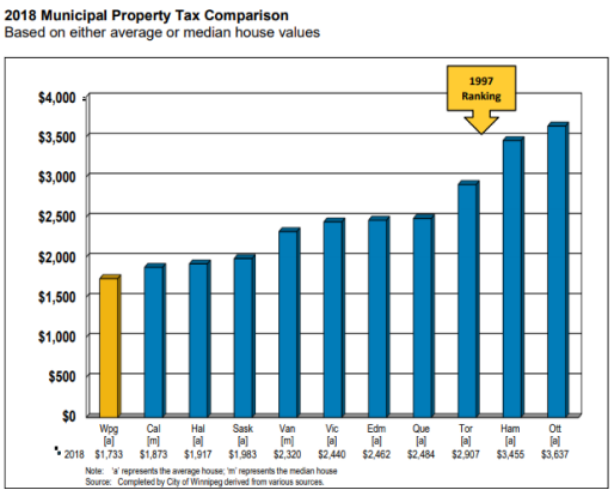
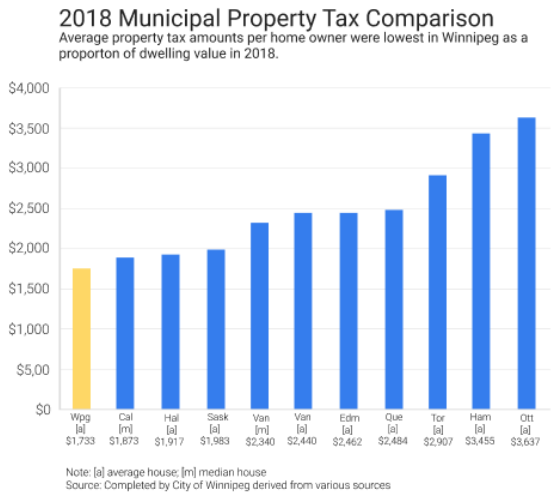
The more aesthetically pleasing graph signals a high level of professionalism, which is something that all governments and organizations aim for. Budget constraints are a barrier to hiring professional graphic designers to create aesthetically pleasing graphs. However, today's technology can help anyone create pleasing graphs in a short amount of time and for free. We recommend putting the graphs created in typical software such as Microsoft Office or ArcGIS into a free tool like Figma, or a paid tool like Tableau. These graphic tools add more control to the aesthetic elements of graphs. An untrained person can easily recreate a graph using simple shapes, lines, and text, with full control over all these building blocks. We followed this suggested workflow and created a more aesthetically pleasing graph in Figma in about 10 minutes, see image below.

Figure 21: Figure Comparing Aesthetics





conclusions and recommendations

6.0 Conclusions and Recommendations

6.1 Conclusions

In conclusion, many useful indicators are currently being used, though their prevalence is inconsistent. Practitioners need to be consistent in the data they collect and use in order to make comparisons and inform effective policies and programs. When indicators are combined, most drawbacks are eliminated, and a comprehensive system can be generated to better understand complex issues like homelessness and affordable housing. Based on the documents we analyzed, data is not always being presented in the most effective way. The following section details our recommendations to mitigate these issues, which will hopefully result in more effective affordable housing policies and programs that will reduce homelessness.

6.2 Recommendations

6.2.1 Recommended Indicator Framework

The documents reviewed throughout the research process suggest that the most common types of indicators can be subdivided into the following categories: homelessness, housing market, housing need, demographic, service provision, and funding. From these categories, several indicators reappeared throughout the documents, including the quantity of units produced or affected, cost per unit, longevity of impacts, environmental impacts, social equity, jobs created, and program accessibility. These indicators are valuable tools used to understand housing and homelessness conditions on municipal, provincial, and national levels. It is important to capitalize on these indicators to generate a comprehensive system to best understand housing and homelessness issues at large. As a result, our proposed framework represents an approach that is both collaborative between indicators and consistent between jurisdictions.

The collaborative approach of the framework was inspired by the notion that the weaknesses of the individual indicators would be mitigated – or perhaps eliminated entirely – if they were used in conjunction with one another. This can be attributed to the fact that many of the indicator categories are interconnected and are often dependent on one another, so the most logical approach would be to combine the indicators to highlight the most beneficial information. To illustrate, units produced and affected and cost per unit are both housing market indicators that directly impact homelessness levels. The indicators both provide valuable insight on the availability of housing units in a specific area. The cost per unit indicator is a helpful tool to compare rent and housing prices against average market rates, which could be used as a

determinant of homelessness levels if the data indicates a lack of affordable housing stock in the respective area.

This data should be used in conjunction with the homelessness-specific indicators to establish connections between market conditions and the prevalence of homelessness and generate appropriate solutions to address the issue moving forward. Some valuable homelessness-specific indicators to include in the framework include number of emergency shelter beds, number of individuals who stayed in a shelter (subdivided into men, women, children, and families), number of times shelter beds were used, average length of stay in emergency shelter, number of individuals turned away from shelters (Homeless Hub, 2010). The number of food banks, and the number of soup kitchens have also been identified as valuable homelessness-specific indicators, though they are currently not as prevalent in homelessness reporting (Homeless Hub, 2010). We recommend these service provision indicators for the following reasons:

This represents one example of the collaborative approach proposed under the recommended framework. To maximize the efficacy of the framework, policymakers should strive to consider all indicator categories collaboratively to mitigate any gaps present in the data.

In addition to being collaborative, it is critical to ensure that the indicator framework remains consistent between jurisdictions. The documents reviewed throughout the research process varied in the amount and type of data collected by the publishing organization. The lack of a uniform framework makes it difficult to compare data between jurisdictions as they utilize different indicators inspired by inconsistent definitions. Streamlining an indicator framework would ensure that the data collected by practitioners in various jurisdictions remains consistent, which would be highly advantageous from both an academic and policymaking perspective. The streamlined data from different cities, regions, and provinces can be used to drive research and

policymaking. Such a framework represents a unique opportunity to strengthen the quality of housing and homelessness data available in Canada, which can then be used to inform innovative research and policymaking on a multitude of levels.

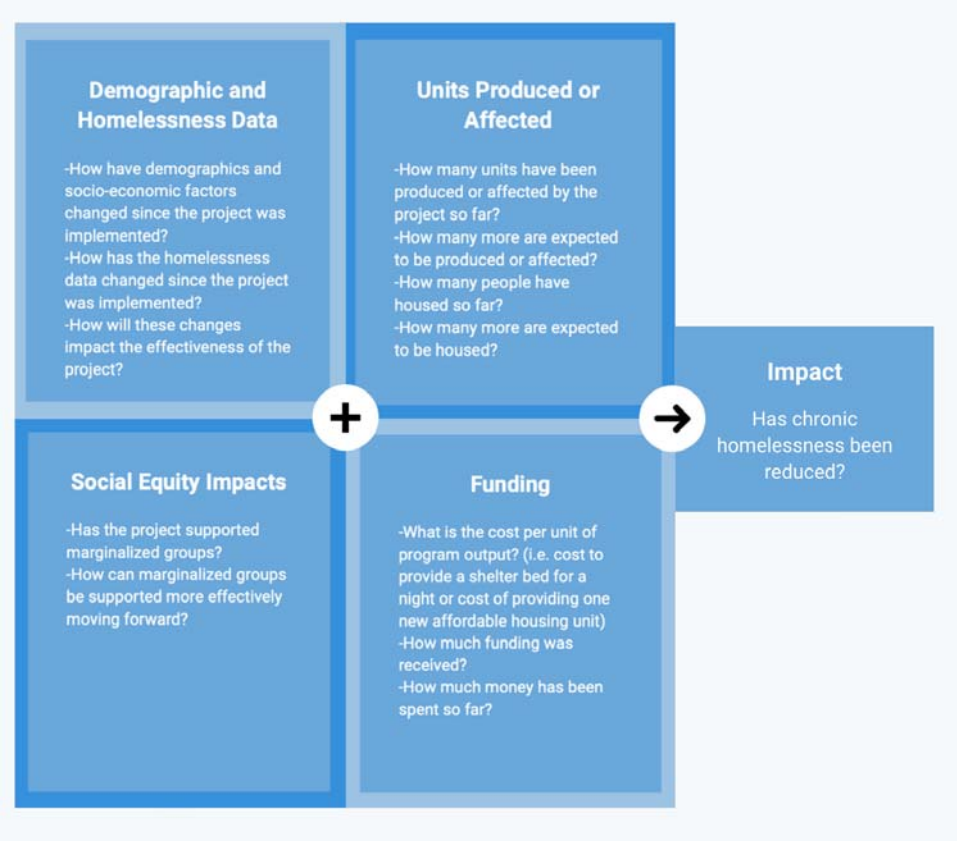
6.2.2 Strategies to Fill Gaps

6.2.2.1 Progress Reporting Gap

In order to fill the progress reporting gap, we recommend providing organizations with a reporting framework. A reporting framework would increase consistency between organizations, making it easier to compare progress from one program or policy to another. Furthermore, using a reporting framework rather than starting from scratch would likely take less time and therefore, would free up time to be spent on other initiatives or to be spent diving deeper into the progress report than would otherwise be possible.

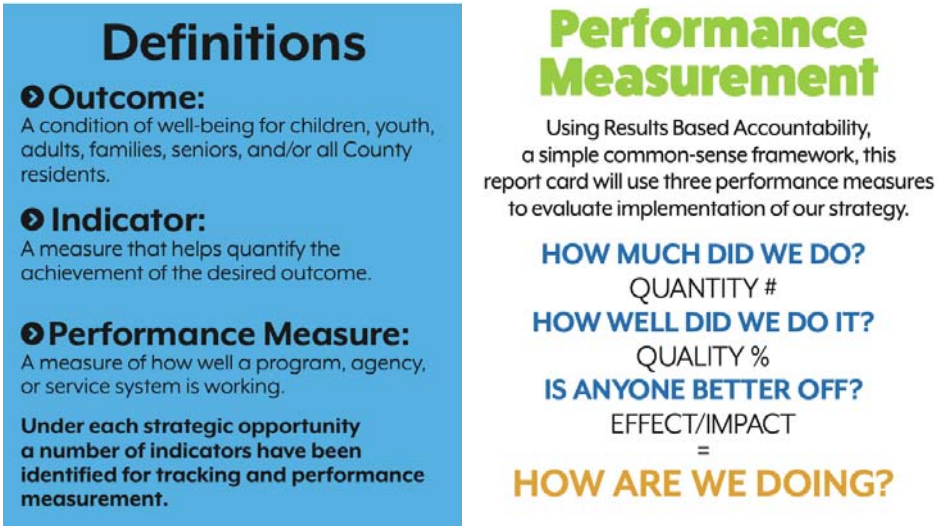
In addition to a summary of the project, various indicators should be included in a progress report. While not all of the important indicators will be relevant to every program or policy, there are several that will apply to the majority. Some key indicators to include are as follows:

Figure 22: Recommended Progress Report Framework



Addressing these questions will help to inform whether the program or policy is reducing chronic homelessness or not, which should be one of their overarching focuses. We recommend reporting progress using this framework with the approach of Simcoe County's annual housing progress report. In their housing progress report, they focus on quantity, quality, and effect or impact to evaluate how they are doing. See Simcoe County's approach in Figure 23 below.

Figure 23: Simcoe County Progress Reporting Framework



Source: Simcoe County, 2019

6.2.2.2 Homelessness Reporting Gap

To fill the gap in homelessness reporting effectively, universal definitions of homelessness and the different kinds of homelessness are necessary. Universal definitions will support comparison between regions and will support more accurate data collection which will likely result in programs and policies that better meet the needs of the community.

Once specific definitions have been confirmed, data collection methods should be refined. As detailed above, the point-in-time count method results in inaccurate counts that misinform programs and policies. To supplement point-in-time counts, we recommend using the homelessness-specific indicators covered in the recommended indicator framework to inform this step. Although, those do not account for individuals who do not make use of shelters or those who are at-risk.

Figure 24: Recommended Homelessness Reporting Strategy

6.2.3 Recommended Data Visualization Methods

The reviewed documents used appropriate data visualization methods in the majority of cases. It is important to pause and think about how a graph will be perceived by someone who is not familiar with the data or data visualization in general. Creating graphs for an audience with low graph literacy should be the goal, and as such, we support the frequent use of bar graphs, pie charts (with 5 or less categories) and pictographs within the analyzed documents. Furthermore, best practices should be followed as much as possible, they should only be omitted after careful considerations of the audience's perspective. In addition to creating more legible graphs, following the guidelines will reduce the chances of accidentally creating manipulative graphs. In addition, adequate labels should be included as they assist with graph comprehension and allow for increased shareability. Lastly, we found aesthetics to sometimes be an overlooked factor in graph making, we recommend using simple free tools online to elevate the aesthetics of graphs.

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