SHELTER PULSE: TRACKING TORONTO'S DAILY SHELTERS & OVERNIGHT SERVICES

A Real-Time Look at Occupancy, Capacity Gaps, and Program Efficiency

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Executive Summary: Empowering Toronto's Shelter Network Through Data-Driven Insights

Toronto faces challenges in sheltering residents due to seasonal, socio-economic, and crisis-driven factors. The "Shelter Pulse" dashboard, using data from Toronto's Shelter Management Information System (SMIS), provides real-time insights to help civic leaders make data-driven decisions for vulnerable populations. With daily records from 2021 onward, it tracks key metrics like user counts (over 2.7 million), occupancy rates, capacity, and program details, highlighting patterns and resource needs across the city.

Key Insights and Takeaways:

1. **Proactive Resource Allocation:** With occupancy rates nearing 100% in many areas, especially during winters, the dashboard allows officials to prioritize high-demand shelters. For instance, winter spikes often push occupancy to 97-99%, indicating a need for pre-emptive capacity planning.
2. **Tailored Support for Diverse Populations:** Demographic breakdowns, such as over 42,00,000 Mixed Adults and 23,00,000 Men using services, reveal specific demand patterns, helping officials adapt resources to meet the needs of different population segments. This ensures that shelters provide relevant and effective support.
3. **Efficient Use of Surplus Capacity:** The Surplus Analysis section provides a detailed view of resource utilization across Toronto's shelter network, allowing officials to filter by Service Type, Location Name, Sector, and more for adaptable resource allocation. For example, filtering by Service Type reveals substantial surpluses in specific areas: Motel/Hotel Shelters show a funded capacity of 80,408 rooms but an actual capacity of 203,215, resulting in a surplus of 122,807 rooms; Isolation/Recovery Sites, funded for 3,910 rooms, have an actual capacity of 14,989, creating a surplus of 11,079 rooms; Shelters funded for 7,054 beds have an actual capacity of 11,496, showing a surplus of 4,442 beds. These insights enable the city to redistribute surplus resources to high-demand locations, balancing supply and demand efficiently across the network and ensuring resources are allocated where they are most needed.
4. **Long-Term and Seasonal Planning:** Year-over-year data and seasonal filters reveal trends, enabling officials to anticipate future needs. Colder months show higher occupancy rates, necessitating temporary shelters or additional beds to ensure access for all in winter.
5. **Transparency and Accountability:** By visualizing occupancy, capacity, and demand data, the Shelter Pulse dashboard fosters transparency and accountability, underscoring Toronto's commitment to responsibly managing resources and addressing homelessness.

The Shelter Pulse dashboard is a powerful platform that provides real-time insights into Toronto's shelter needs, challenges, and opportunities. By merging data with an interactive, user-friendly design, it empowers civic leaders to make informed decisions that improve shelter efficiency and responsiveness. Through strategic insights and optimized resource allocation, the dashboard strengthens Toronto's mission to build a safe, resilient shelter network, demonstrating technology's role in supporting a compassionate city.

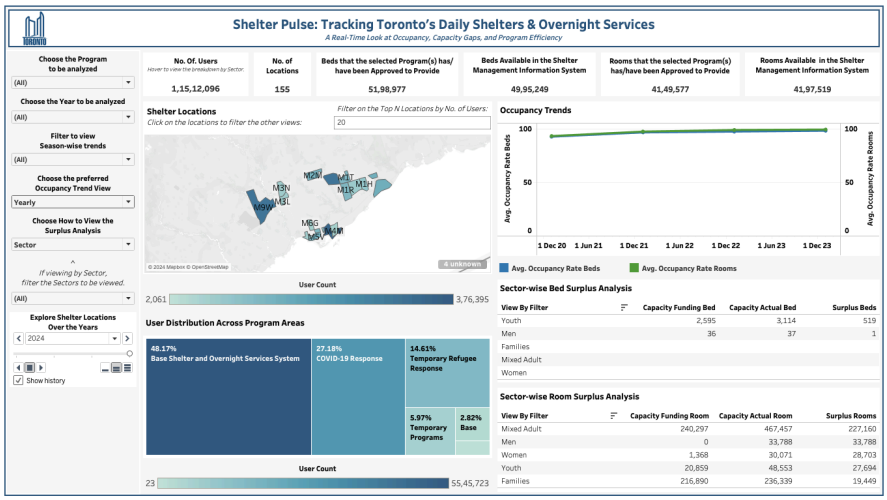
Dashboard Overview: Visual Storytelling for Informed Decision-Making

The Shelter Pulse dashboard uses a combination of interactive views, filters, and tooltips to bring the city's shelter data to life. Each visualization provides a unique perspective on shelter demand and capacity, guiding civic officials toward effective, data-driven decisions. Here's how each view within the dashboard contributes to understanding and managing Toronto's shelter needs.

1. Filtered Insights: Customizing the View for Targeted Analysis

The dashboard includes a variety of filter options that allow users to narrow down the data based on specific needs, offering a flexible way to analyze shelter demand. Officials can apply these filters to adjust the display for targeted questions, making it easier to identify trends, address deficits, and optimize resources.

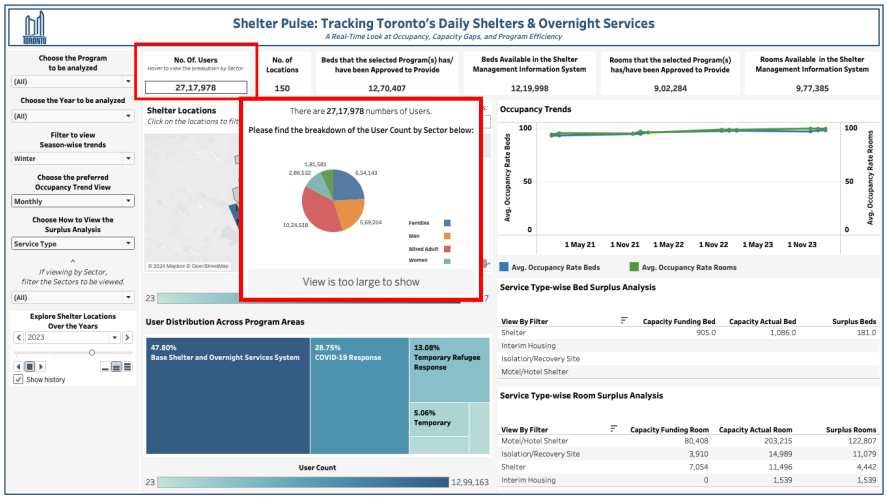
- **Program Selection Filter**: Allows officials to analyze one or multiple programs, providing insights into unique occupancy patterns and demographics.
- **Year, Seasonal, and Page Controls**: Enables data viewing by specific years or seasons, facilitating year-over-year analysis to reveal long-term demand patterns and assist in seasonal planning, particularly for winter peaks.
- **Occupancy Trend View Options**: Adjusts the trend time frame (daily, weekly, monthly, yearly) to help officials distinguish between short-term surges and sustained demand, enhancing responsiveness.
- **Capacity Surplus View Options**: Identifies shelters over their funded capacity by parameters like program area, sector, or location, allowing officials to prioritize and redistribute resources efficiently.



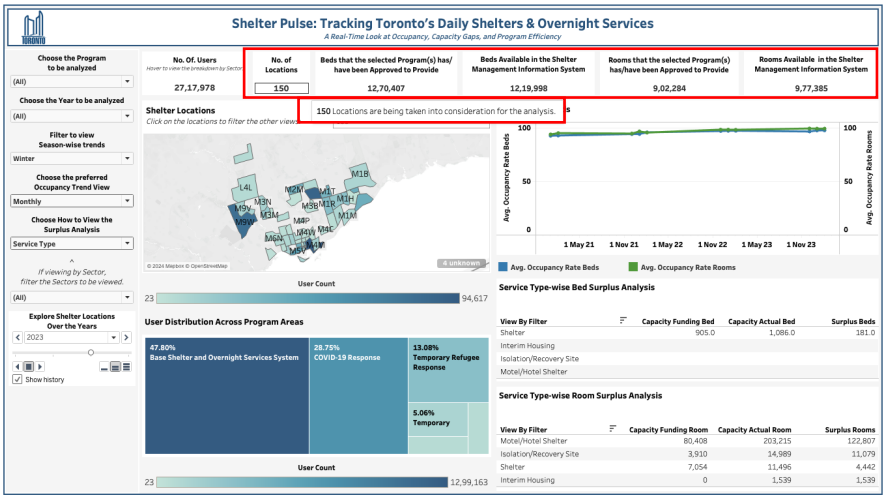
2. Key Performance Indicators: Shelter System Overview

The dashboard's top KPIs provide an essential summary of Toronto's program system, giving city officials immediate insights into overall utilization and capacity of the program(s)/locations selected:

- **Number of Users:** Displays the total shelter users to date, with a tooltip showing a sector-based breakdown (e.g., adult, youth, family). This insight helps officials identify high-demand sectors to guide resource allocation



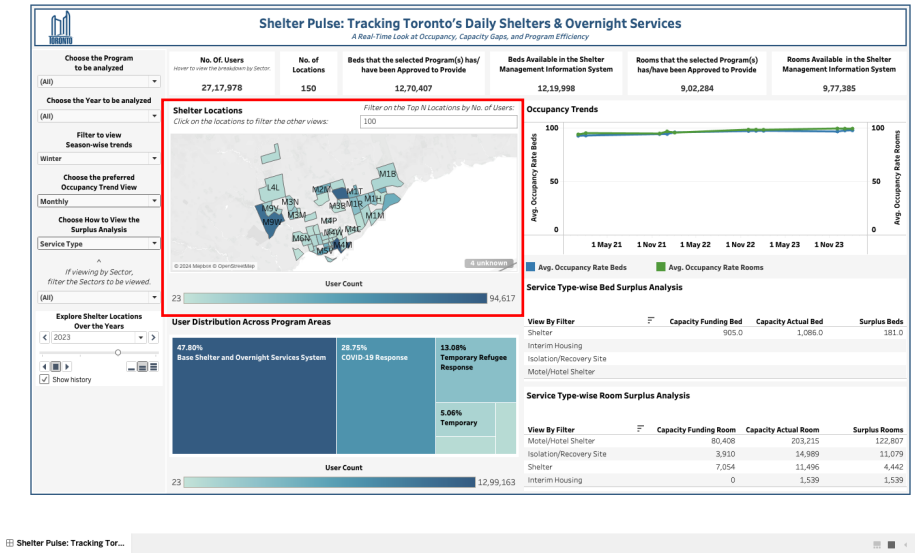
- **Number of Locations and Funded Beds/Rooms vs. Actual Beds/Rooms:** Shows the total shelter locations and compares funded vs. actual bed/room availability. Tooltips highlight any gaps, signalling areas needing resource adjustments



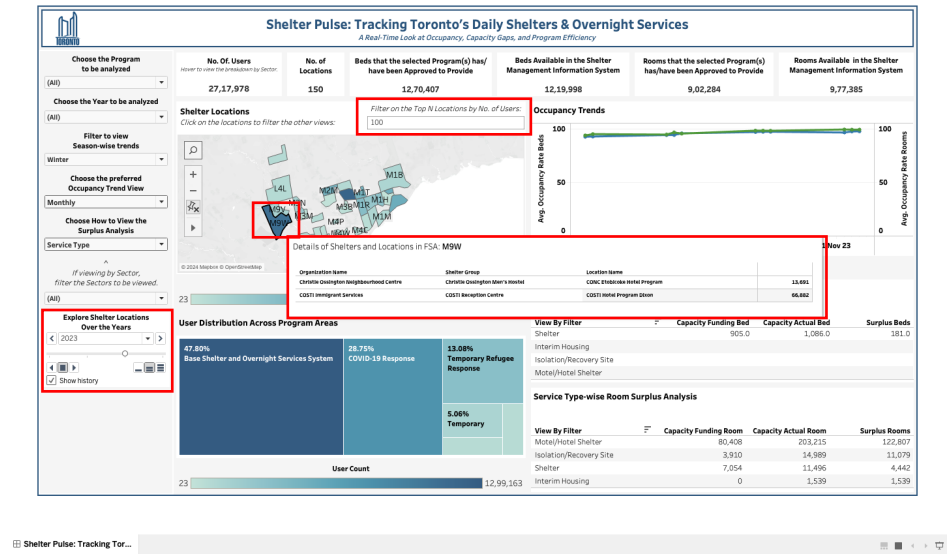
3. Interactive Map with Tooltips: Locational Demand Analysis at a Glance

The dashboard's interactive map view provides a geographic representation of shelter locations across Toronto, making it easy to visualize demand hotspots and resource distribution. Each location is color-coded based on user count, offering a quick overview of where shelter occupancy is highest.

- **Map Visualization:** Color-coded neighborhoods show user counts, highlighting demand hotspots like M5T, M6G, and M6K. This helps civic bodies identify regions needing more resources or capacity expansion.
- **Top N Locations Filter:** Allows users to focus on high-demand shelters by filtering the busiest areas, streamlining resource prioritization.
- **Detailed Tooltips:** Hovering over each location provides information on the organization, shelter group, facility name, and user count for quick insights.
- **Page Control for Year-over-Year Analysis:** Enables viewing shelter data across years, identifying long-term patterns and seasonal peaks, essential for proactive planning and resource allocation.



This interactive map enables officials to make targeted, data-driven decisions, optimizing shelter resources across Toronto based on geographic demand.

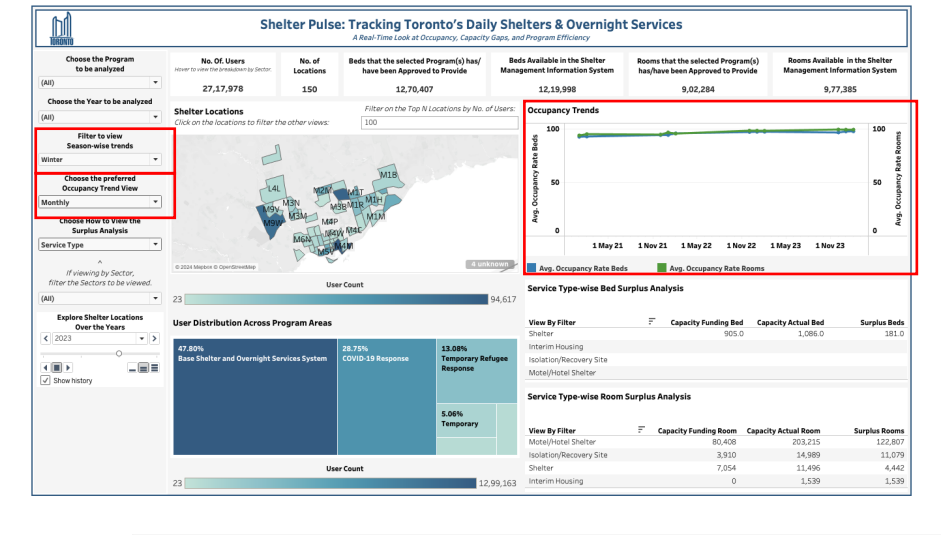


The Top N Filters helps the officials focus on the busiest areas and the page control feature supports historical comparison to see patterns, if any.

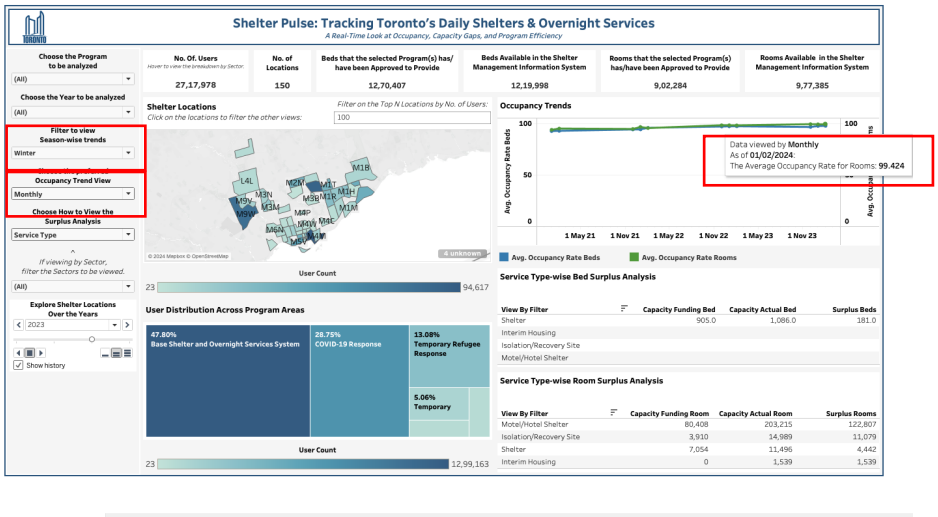
4. Occupancy Trends: Tracking Demand Over Time

The occupancy trends chart provides a time-based view of bed and room occupancy, showing trends over the past few years. Users can select different time frames (daily, weekly, monthly, yearly) to see how demand fluctuates over time, allowing officials to identify both seasonal and long-term trends.

- **Trend Insights**: Occupancy trends reveal seasonal spikes, especially during winter when rates often approach 100%, signalling a need for additional capacity or emergency shelters. This aids in proactive seasonal planning for predictable demand surges.
- **Tooltip Analysis**: Hovering over trend points provides occupancy rates on specific dates, helping officials identify demand shifts influenced by factors like weather or city events. This immediate detail supports quick, informed contingency planning.



The trends chart allows officials to monitor bed and room occupancy over time.

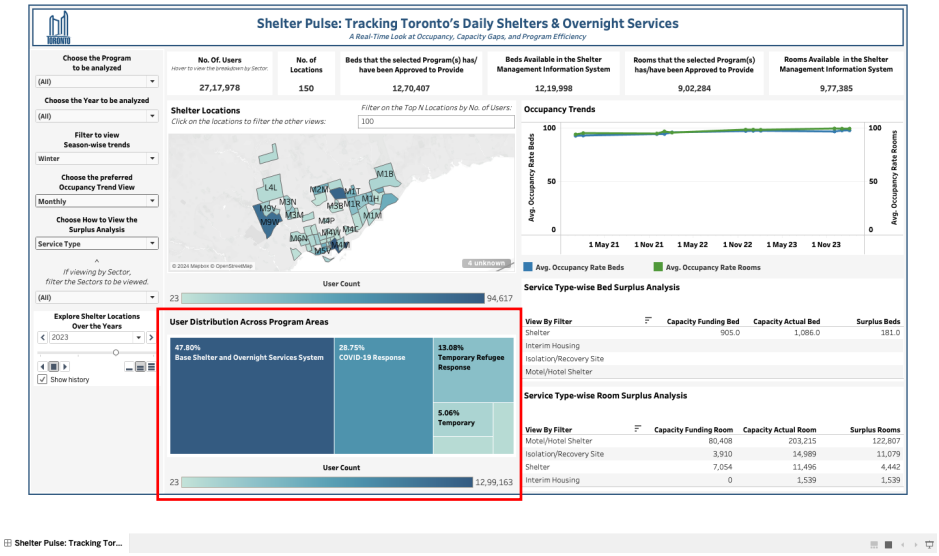


The filters for seasons, year and an option to choose how the user wants to see the data (daily, weekly, monthly, yearly) helps drill down into insights about fluctuations that may correlate with weather or city events.

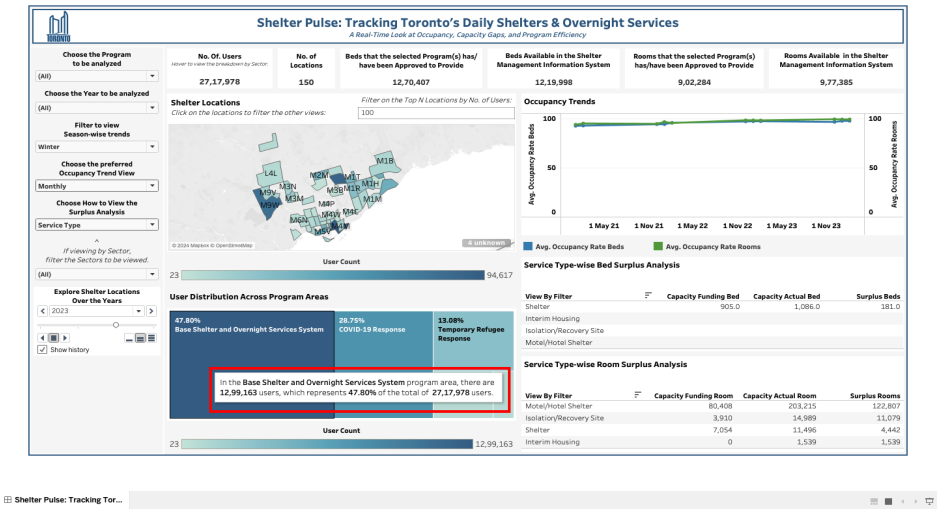
5. Demand Distribution with Treemaps: Visualizing Program Usage

The treemap visualization offers a breakdown of user demand across different shelter program areas, providing a clear picture of where the bulk of users are concentrated. This component of the dashboard highlights the varying levels of dependency on specific programs.

- **User Distribution by Program Area**: Treemaps show user distribution across major programs, with the Base Shelter and Overnight Services System supporting about 47.80% of users, underscoring its crucial role. This helps officials prioritize funding for the most utilized programs.



The treemap visualization shows how demand is distributed across different program areas



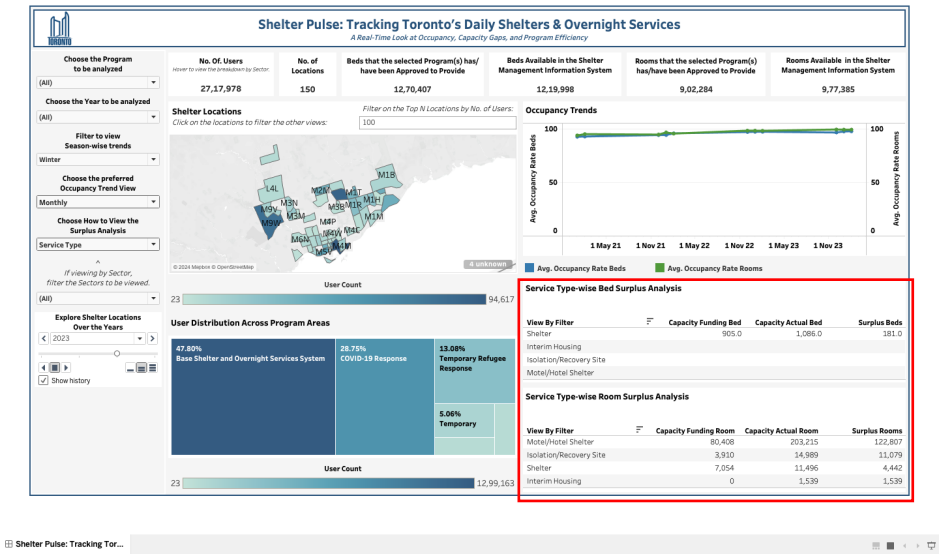
The tooltip gives information on the actual numbers and total numbers along with the % of total.

6. Surplus Analysis: Targeting Resource Efficiency with Data-Driven Insights

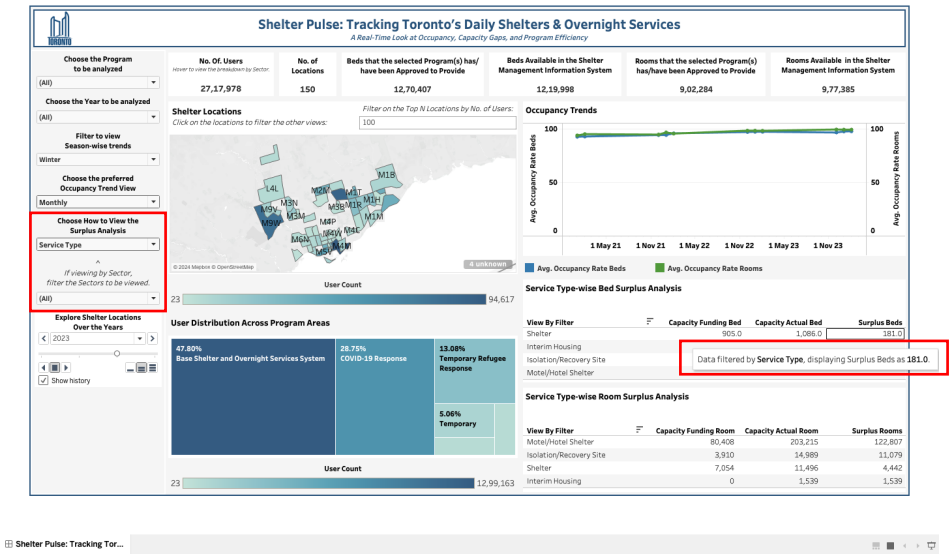
The Surplus Analysis offers a quantitative view of resource utilization across Toronto's shelter network. Using the "View By" filter, users can assess surplus capacity by Service Type, Location, Sector, and more. For example:

- **Motel/Hotel Shelter:** 80,408 rooms funded vs. 203,215 actual, with a surplus of 122,807 rooms.
- **Isolation/Recovery Site:** 3,910 rooms funded vs. 14,989 actual, with a surplus of 11,079 rooms.
- **Shelter:** 7,054 beds funded vs. 11,496 actual, showing a surplus of 4,442 beds.

These surpluses highlight areas where resources can be reallocated to meet demand, optimizing shelter network efficiency.



The surplus analysis tables enable officials to compare funded versus actual capacity for both beds and rooms.



The "View By" filter allows users to analyze surpluses by service type, location, sector, and more.

7. Key Civic Impact and Takeaways

The Shelter Pulse dashboard transforms complex data into actionable insights, empowering Toronto officials to make informed, impactful decisions for the city's shelter system. Key benefits include:

- **Strategic Resource Allocation**: Interactive filters allow officials to analyze data by program, location, season, and more, helping them target funding to high-demand shelters, ensuring resources are used effectively.
- **Proactive Seasonal Planning**: Seasonal filters reveal fluctuations in shelter demand, especially during winter peaks. Officials can anticipate these trends, mobilizing emergency resources as needed to prevent overcrowding.
- **Efficient Resource Utilization**: The Surplus Analysis feature identifies areas with surplus capacity, enabling better distribution of resources and reducing waste across the shelter network.
- **Long-Term Capacity Planning**: Year-over-year data helps officials adjust capacities based on consistent demand patterns, aligning resources with neighborhood needs over time.
- **Transparency and Accountability**: Real-time data on occupancy and capacity fosters transparency, building public trust by showcasing the city's commitment to addressing homelessness responsibly.

This data-driven approach enhances resource management, strengthens public trust, and supports Toronto's mission to provide effective shelter services.

Appendix

About the Data

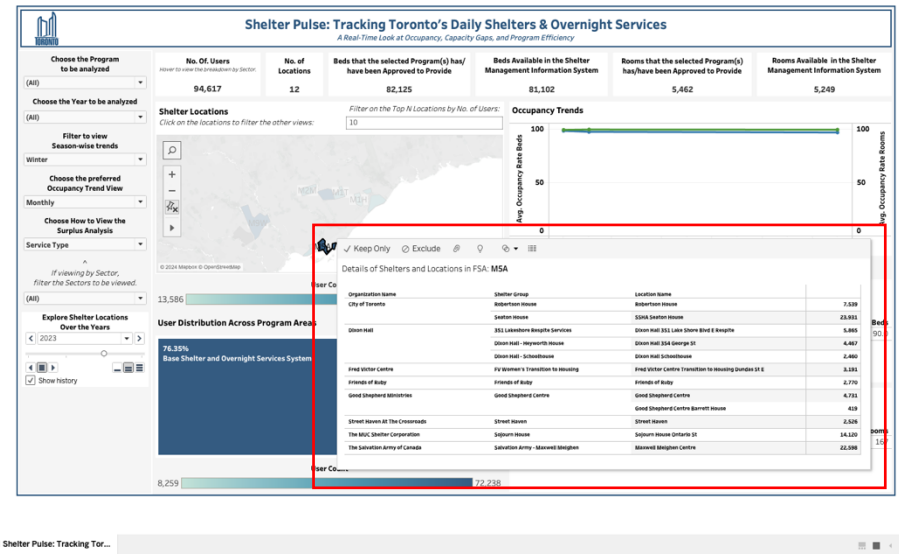
The dataset used for the Shelter Pulse Dashboard has been sourced from Toronto's Open Data Portal. The dataset provides daily records of active overnight shelters and services managed by the Toronto Shelter and Support Services (TSSS) in the Shelter Management Information System (SMIS). Below are the list of columns and details for each:

Column	Description
_id	Unique row identifier for Open Data database
OCCUPANCY_DATE	Date of the record. This date refers to the evening of the overnight period being reported. The occupancy data is retrieved at 4:00 am the following morning, so an OCCUPANCY_DATE of January 1, 2021 would refer to data collected at 4:00 am on January 2, 2021.
ORGANIZATION_ID	Unique ID to consistently identify organizations even if the organization name changes
ORGANIZATION_NAME	Name of the organization providing the overnight service
SHELTER_ID	Unique ID to consistently identify the shelter group even if the shelter group name changes
SHELTER_GROUP	The shelter group to which the program belongs in the SMIS database. The shelter group is named for the lead shelter, but also includes satellite programs and hotel programs administered by the lead shelter.
LOCATION_ID	Unique ID to consistently identify locations even if the location name changes
LOCATION_NAME	The name of the location of the program
LOCATION_ADDRESS	Street address of the location of the program
LOCATION_POSTAL_CODE	Postal Code of the location of the program
LOCATION_CITY	City of the location of the program
LOCATION_PROVINCE	Province of the location of the program
PROGRAM_ID	Unique ID to consistently identify programs even if the program name changes.
PROGRAM_NAME	Name of the program
SECTOR	A means of categorizing homeless shelters based on the gender, age and household size of the service user group(s) served at the shelter location. There are currently five shelter sectors in Toronto: adult men, adult women, mixed adult (co-ed or all gender), youth and family.
PROGRAM_MODEL	A classification of shelter programs as either Emergency or Transitional. **Emergency**: A homeless shelter program that can be accessed by any individual or family experiencing homelessness with or without a referral. **Transitional**: A homeless shelter program that provides required, specialized programming and can be accessed by eligible individuals and families experiencing homelessness by referral only.
OVERNIGHT_SERVICE_TYPE	Identifies the type of overnight service being provided. (Options are: Shelter, 24-Hour Respite, Motel/Hotel, Interim Housing, Warming Centre, 24-Hour Women's Drop-in, Isolation/Recovery Site) **Shelter**: Supervised residential facilities that provide temporary accommodation and related support services to assist people

	experiencing homelessness to move into housing. Operate year-round. **24-Hour Respite**: An allied shelter service which provides essential services to individuals experiencing homelessness in an environment that prioritizes ease of access to safe indoor space. Services provided include resting spaces, meals and service referrals. Operates on a 24/7 basis. **Motel/Hotel**: A type of shelter program that provides shelter beds/rooms through contracts with hotel and motel operators, which enables the City to expand and contract emergency shelter capacity in response to demand for services. **Interim Housing**: A type of shelter program that provides interim housing shelter beds through contracts with apartment spaces. **Warming Centre**: An allied shelter service that provides immediate safe indoor space for people during extreme cold weather alerts. Facilities vary, but often include City of Toronto buildings or community recreation centres. Services vary, depending on the facility, and may include at a minimum resting spaces, snacks and referrals to emergency shelter. Operates on a 24/7 basis for the duration of an extreme cold weather alert. **24-Hour Women's Drop-in**: A type of 24-Hour Respite Site that provides services to women and transgender or gender-non-binary people who are experiencing homelessness. **Isolation/Recovery Site**: Dedicated isolation and recovery programs with medical supports for people experiencing homelessness to isolate and recover from COVID-19.
PROGRAM_AREA	Indicates whether the program is part of the base shelter and overnight services system, or is part of a temporary response program. **Base Shelter and Overnight Services System**: Programs that are intended to be regular, year-round programs. **Base Program - Refugee**: Programs that are intended to be year-round programs that serve refugee and asylum claimant families and individuals **Temporary Refugee Response**: Programs that are intended to create spaces in the overnight services system in order to support refugee and asylum claimant families and individuals. **COVID-19 Response**: Programs that are intended to create spaces in the overnight services system in order to support improved physical distancing during the COVID-19 pandemic. **Winter Response**: Programs that are intended to be exclusively dedicated to the provision of additional spaces under winter services plans. Winter service planning may also add additional capacity to existing programs classified in other program areas.
SERVICE_USER_COUNT	Count of the number of service users staying in an overnight program as of the occupancy time and date. Programs with no service user occupancy will not be included in reporting for that day.
CAPACITY_TYPE	Whether the capacity for this program is measured in rooms or beds. Family programs and hotel programs where rooms are not shared by people from different households are room-based. **Bed Based Capacity**: A program where occupancy is measured at the bed level. Typically applicable for programs with common sleeping areas. **Room Based Capacity**: A program where occupancy is measured at the room level. Typically applicable to family programs or hotel-based programs where sleeping rooms are not shared by people from different households.

CAPACITY_ACTUAL_BED	The number of beds showing as available for occupancy in the Shelter Management Information System.
CAPACITY_FUNDING_BED	The number of beds that a program has been approved to provide.
OCCUPIED_BEDS	The number of beds showing as occupied by a shelter user in the Shelter Management Information System for this program for this date.
UNOCCUPIED_BEDS	The number of beds that are showing as available for occupancy that are not occupied as of the occupancy date. Beds may be held for a service user or may be vacant. Calculated as CAPACITY*ACTUAL*BED minus OCCUPIED_BEDS.
UNAVAILABLE_BEDS	The number of beds that are not currently available in a program. This can include temporarily out-of-service beds due to maintenance, repairs, renovations, outbreaks and pest control. Calculated as CAPACITY*FUNDING*BED minus CAPACITY*ACTUAL*BED.
CAPACITY_ACTUAL_ROOM	The number of rooms showing as available for occupancy in the Shelter Management Information System for this program for this date.
CAPACITY_FUNDING_ROOM	The number of rooms that a program is has been approved to provide.
OCCUPIED_ROOMS	The number of rooms showing as occupied by a shelter user in the Shelter Management Information System for this program for this date.
UNOCCUPIED_ROOMS	The number of rooms that are showing as available for occupancy that are not occupied as of the occupancy date. Rooms may be held for service users or may be vacant. Calculated as CAPACITY*ACTUAL*ROOM minus OCCUPIED_ROOMS.
UNAVAILABLE_ROOMS	The number of rooms that are not currently available in a program. This can include temporarily out-of-service rooms due to maintenance, repairs, renovations, outbreaks and pest control. Calculated as CAPACITY*FUNDING*ROOM minus CAPACITY*ACTUAL*ROOM.
OCCUPANCY_RATE_BEDS	The proportion of actual bed capacity that is occupied for the reporting date. Calculated as OCCUPIED*BEDS divided by CAPACITY*ACTUAL_BED.
OCCUPANCY_RATE_ROOMS	The proportion of actual room capacity that is occupied for the reporting date. Calculated as OCCUPIED*ROOMS divided by CAPACITY*ACTUAL_ROOM.

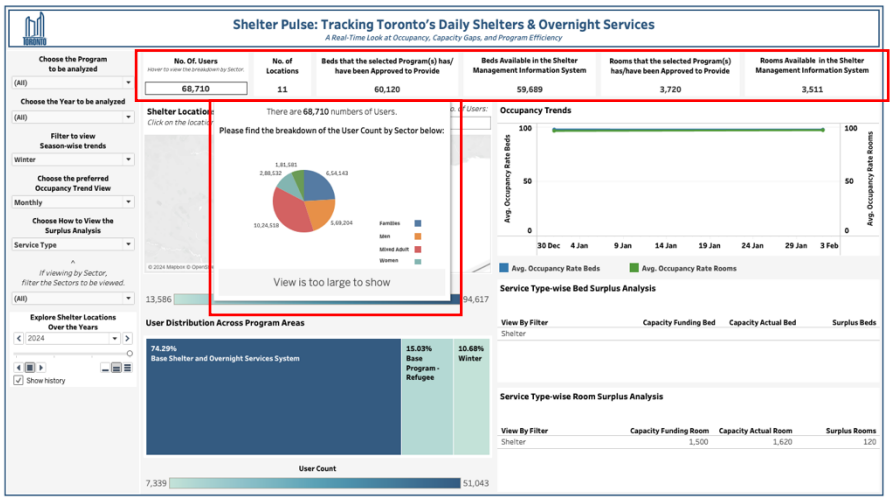
Example Analysis for FSA M5A



Overview of Key Metrics

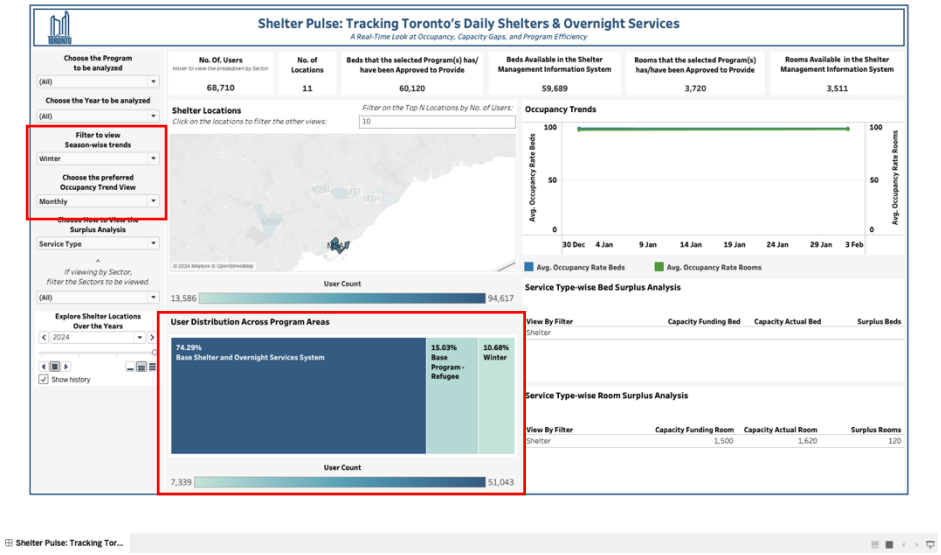
In FSA M5A, the Shelter Pulse dashboard highlights critical data:

- **Number of Users**: 68,710, broken down by sector
  - Mixed Adult: 10,24,518; Families: 6,54,143; Men: 5,69,204; Women: 2,88,532
- **Number of Locations**: 11.
- **Funded vs. Actual Capacity**: 80,120 funded beds (59,689 available) and 3,720 funded rooms (3,511 available), indicating near-full capacity.



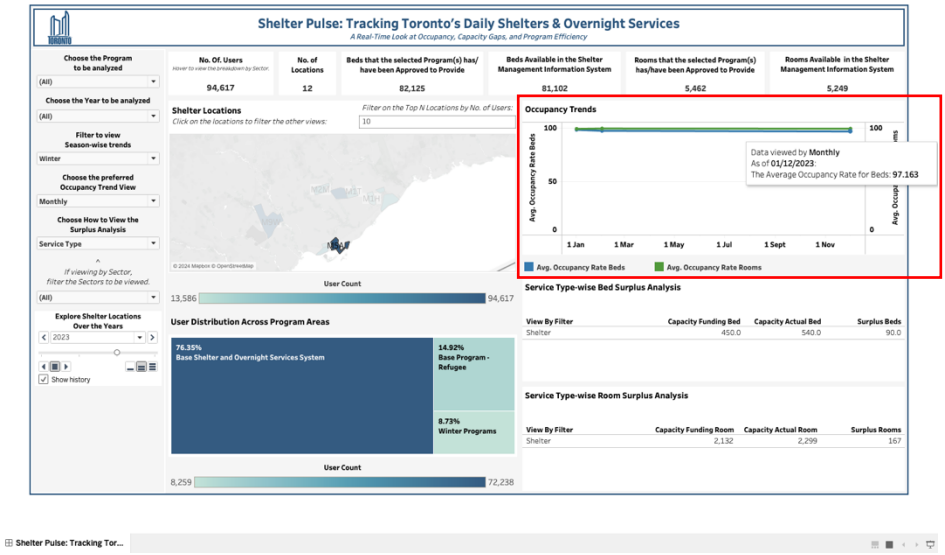
Map Visualization and Demand Distribution

The interactive map shows high-demand areas in M5A, which is why we selected that area – this will allow officials to prioritize shelters in higher demands. The **User Distribution by Program Area** treemap shows 74.29% usage for the Base Shelter and Overnight Services System, 15.03% for Base Program - Refugee, and 10.68% for Winter Programs, highlighting key service dependencies.



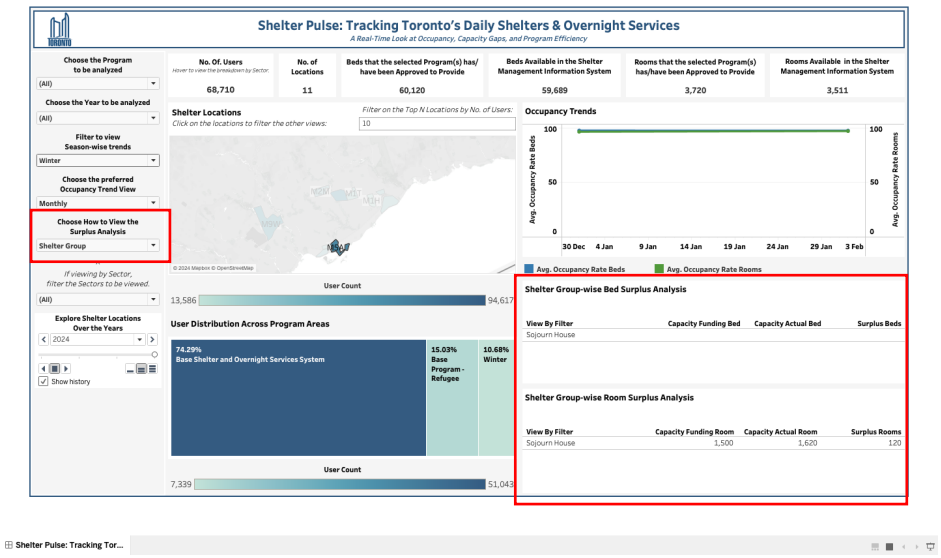
Occupancy Trends and Seasonal Patterns

The **Occupancy Trends** chart reveals a consistent 97-99% occupancy. This data aids in proactive resource allocation for seasonal demand increases, particularly in winter.



Surplus Capacity Insights

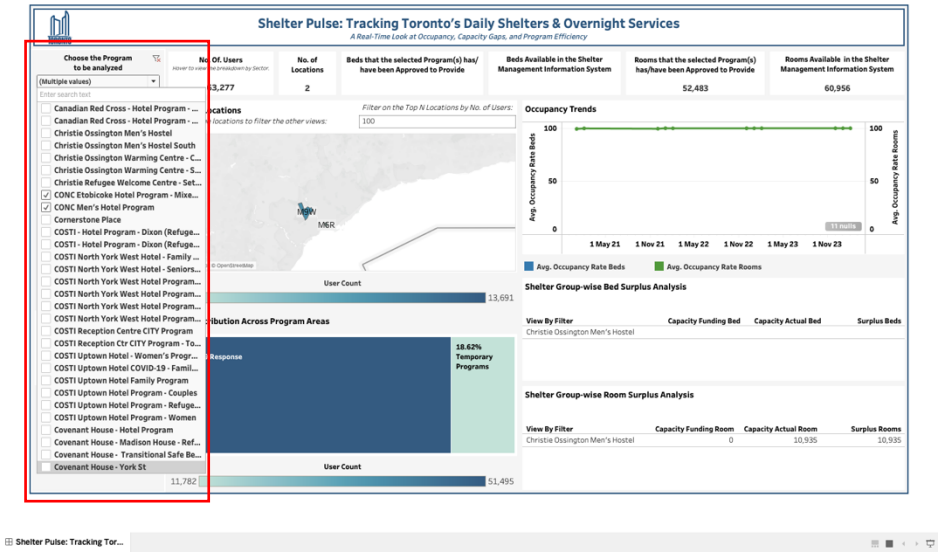
We have filtered on View by Shelter Group and Sojourn House currently has a surplus of 120 rooms beyond its funded capacity, indicating it can accommodate additional occupants. This surplus capacity may serve as a small buffer to support sudden increases in demand, particularly useful during peak times or emergencies. Civic bodies can leverage this data to allocate surplus resources effectively across shelters with higher demand, ensuring balanced utilization across the city's shelter system.



Strategic Takeaways for FSA M5A

1. **Prioritized Resource Allocation**: The high occupancy in M5A's shelters (close to 97-99%) and the number of users till date (68,710) underscore the need for focused resource allocation. By identifying the busiest shelters and their capacity constraints, officials can channel funding and support to locations with the greatest demand, ensuring those in need receive timely assistance.
2. **Sector-Specific Support**: The demographic breakdown from the pie chart reveals that the largest user groups are Mixed Adults and Men. This insight helps civic bodies understand the unique needs of different demographic groups in M5A. For example, shelters might prioritize facilities or programs tailored to adults or male-only accommodations, ensuring the available resources meet the actual demographic demand effectively.
3. **Seasonal Preparedness**: The winter season brings higher demand, as shown by the dashboard's seasonal filter. By examining occupancy trends, particularly the sustained 97% average occupancy rate during colder months, officials can anticipate increased need and activate emergency beds or temporary shelters in advance. This proactive approach ensures the city can respond swiftly to seasonal fluctuations in demand.
4. **Efficient Use of Surplus Resources**: Although M5A has minimal surplus (120 rooms), this data provides an opportunity for efficient management. Surplus capacity in specific shelters could be allocated dynamically to high-demand periods or redirected to nearby areas if M5A reaches capacity limits. By reallocating these resources without incurring additional costs, officials can maximize the shelter system's efficiency and ensure that underutilized beds or rooms are optimally employed.

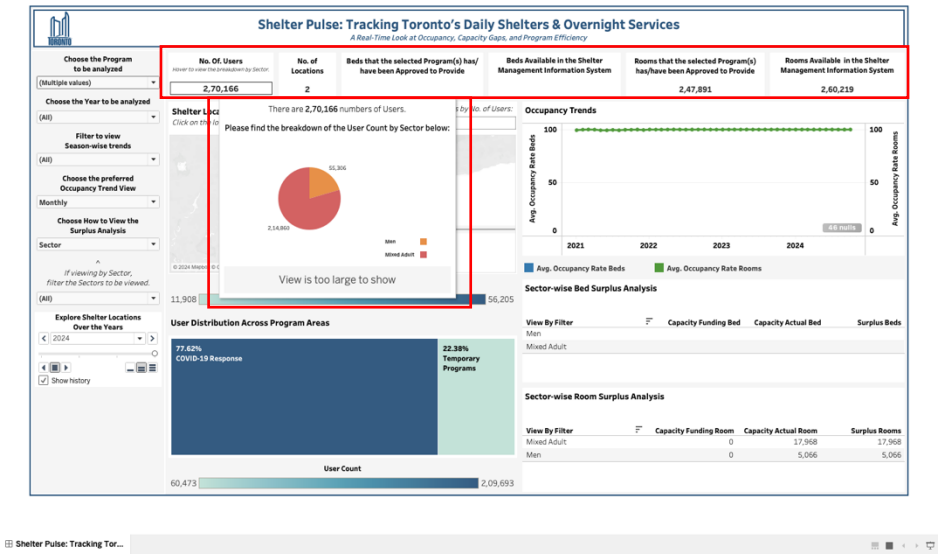
Example Analysis for Program Names: CONC Etobicoke Hotel Program - Mixed Adult and CONC Men's Hotel Program



Overview of Key Metrics

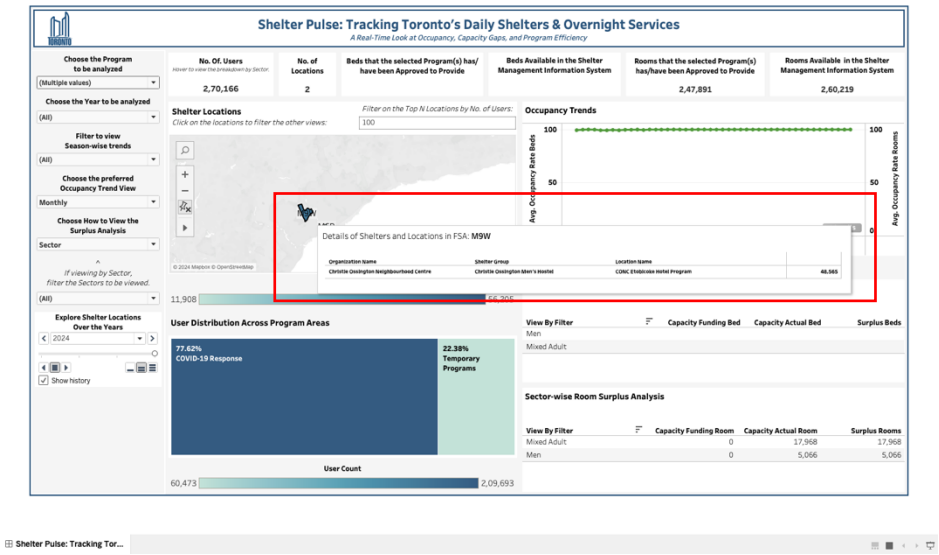
In the selected programs, the Shelter Pulse dashboard provides insights on selected programs, offering a focused view of shelter demand and capacity.

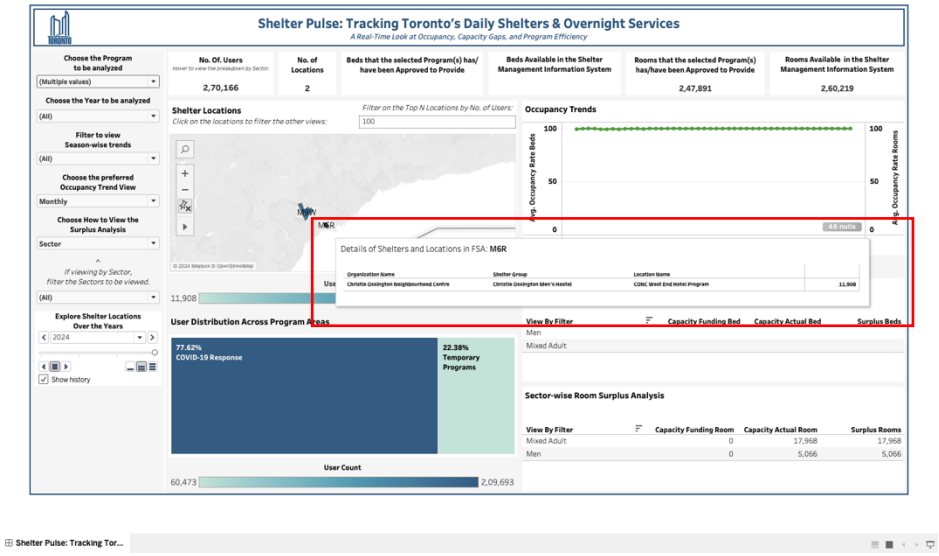
- **Total Number of Users**: 270,166
  - Mixed Adult: 214,860; Men: 55,306
- **Number of Locations**: 2
- **Capacity Overview**:
  - **Rooms**: 247,891 funded beds with 260,219 currently available.



Map Visualization and Demand Distribution

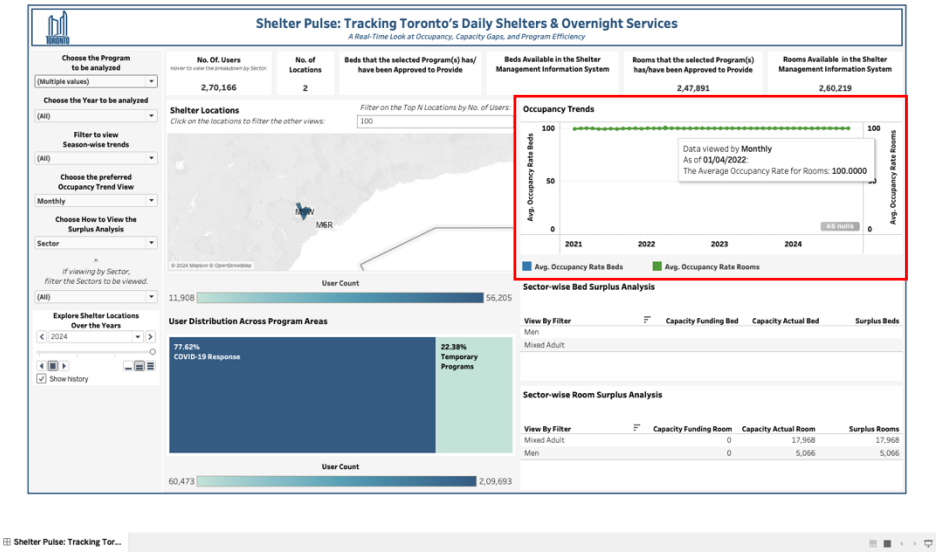
The map highlights shelter locations in M6R and M9W, allowing officials to quickly assess high-demand areas. The treemap view indicates 22.38% of usage is dedicated to Temporary Programs and 77.62% as a Covid-19 Response area. This insight helps civic bodies understand which programs are most utilized in both locations, ensuring targeted support.





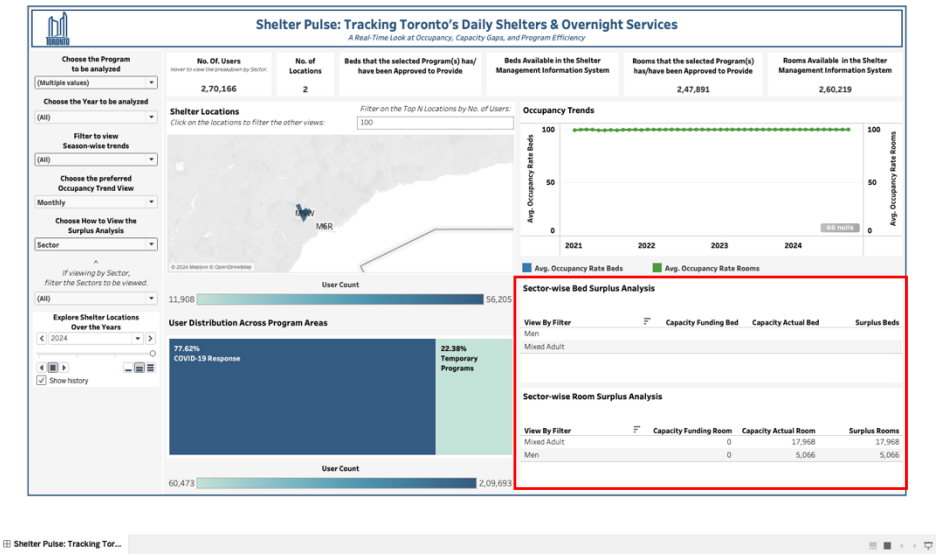
Occupancy Trends and Seasonal Patterns

The occupancy trend chart reflects near-constant 100% occupancy in beds and rooms, emphasizing a sustained high demand for resources. Seasonal planning and proactive measures could alleviate strain during peak times.



Surplus Capacity Insights

By filtering on specific Sectors, we observe a surplus of 17,968 rooms for Mixed Adults suggesting that this category has excess capacity that could be allocated to other areas if needed. Surplus of 5,066 rooms, indicating that additional resources may be available to address fluctuating demand in other sectors or FSAs.



Strategic Takeaways for the Programs

1. **Sector-Specific Surplus Management:** The surplus of 17,968 rooms for Mixed Adults and 5,066 for Men offers flexibility. This excess capacity can be reallocated dynamically to meet shifts in demand across demographics, particularly during seasonal peaks or emergencies.
2. **Proactive Seasonal Planning**: A stable ~100% occupancy trend highlights the need for consistent capacity maintenance, with a preparedness plan to mobilize surplus resources in winter when shelter demand may rise.
3. **Geographic Targeting for Expansion**: High demand at M6R and M9W suggests potential areas for targeted expansion or funding to alleviate pressure on existing shelters.
4. **Sustained Support for Temporary Programs**: Temporary programs, covering 22.38% of user demand, are essential for meeting immediate needs. Extending support to these programs ensures shelter availability for acute housing crises.
5. **Demographic-Specific Assistance**: Mixed Adults (214,860 users) and Men (55,206 users) represent key demographics. Tailoring services to these groups could enhance shelter experiences and meet their specific needs effectively.
6. **Efficiency Through Room Reallocation**: The dashboard's room surplus insights show that there is room for reallocating underutilized spaces to shelters in higher-demand areas or sectors. With the surplus of 17,968 rooms for Mixed Adults and 5,066 for Men, civic bodies can develop a reallocation plan to address fluctuating occupancy rates across other FSAs or demographic groups. This efficiency measure enables the city to manage demand variances across shelters without investing in additional infrastructure. By leveraging this existing capacity, officials can ensure that resources are employed effectively, reducing waste and enhancing the overall responsiveness of the shelter network.