U-TURN: the transit transformation denounced as a disaster

This project analysed changes in public transit access — particularly bus stop locations and frequent service routes — following the implementation of Winnipeg Transit's new route network. This document explains how.

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Why do this investigation?

On June 29, Winnipeg Transit overhauled its bus network practically overnight — the largest single-day change in the service's 142-year history.

It wasn't *strictly* overnight: the transit master plan was approved by city council in 2021, and the first stages of the plan — the Primary Transit Network implemented this summer — were finalized last year. The city rolled out digital resources to help riders get familiar with the changes in advance, and posted signage to help the community get prepared. Still, many Winnipeggers simply woke up one Sunday to an all-new transit system.

The city's goal is to make transit more convenient and accessible by streamlining the network, adding more frequent routes and upgrading infrastructure.

Read the Master Plan

A 2023 Probe Research survey found one in ten Winnipeggers use the bus for their daily commute and half don't use transit at all. The city hopes to change these figures for the better.

One month after rolling out the Primary Transit Network, however, public reviews have been mixed.

If you read the story, you might have seen a cheeky mashup of headlines reacting to the changes. Here are some of the news stories included in that collage:

'It sucks' or 'it was due for a change'? Winnipeg bus riders give their takes on new transit network - CBC News
Transit overhaul's first month a bumpy ride - Winnipeg Free Press
New Winnipeg Transit system met with frustration from users: 'I'm not impressed' - City News
Winnipeg riders navigate growing pains of major transit overhaul - Winnipeg Sun
New transit system working through 'glitches' - Winnipeg Free Press
New routes, mixed reaction: riders test transit shakeup - Winnipeg Free Press
Winnipeg bus riders 'trying to be open-minded' about new transit network - CBC News

Many complaints centre on the fact the city removed more than 1,700 bus stops and cut more than a dozen routes as part of its streamlining efforts. For some riders, that's meant longer walks to the bus stop, more transfers and more waiting in the elements. (The city also added 450 stops, for a net loss of 1,265 bus stops.)

But the city did not release data showing exactly where stops were removed from. One opinion in the Winnipeg Free Press noted transit users in the city's North End felt particularly disadvantaged by the cuts, which anecdotally seemed more significant in the historically less-affluent neighbourhood compared to wealthier, southern parts of town. Other anecdotal reports echoed this claim, noting it was more complicated to get to the north end via transit.

This project set out to test that theory, understand exactly where the stops had been removed from and whether there was correlation between the demographics of people who need transit most and the number of bus stops cut from service.

It also set out to analyse whether those stop removals had worked as the city intended by improving access to frequent transit.

What's included in the final product?

The project centres around a series of maps showing the change in bus stops per square kilometre in each of the city's census tracts, and the proportion of residents in those same areas who a) live below the poverty line and b) regularly commute via public transit, according to the 2021 Census.

It also features maps showing the change in stop locations between the original and updated networks, and maps that outline the parts of the city within walking distance of frequent transit service before and after the route overhaul.

What were the results?

Between the old network and new network, there are **2.7 fewer bus stops per km^2** across the entire city. On average, the city removed 3.6 stops and added one stop per km^2.

As the rate of people living below the poverty line increases, so too does the number of stops removed.

In high-needs areas of the city, where the proportion of residents below the poverty line is between 20 and 29 per cent, there are now **6.7 fewer bus stops per km^2.**

Areas where at least 30 per cent of residents live below the poverty line have lost nearly **8 stops per km^2,** more than twice the city average.

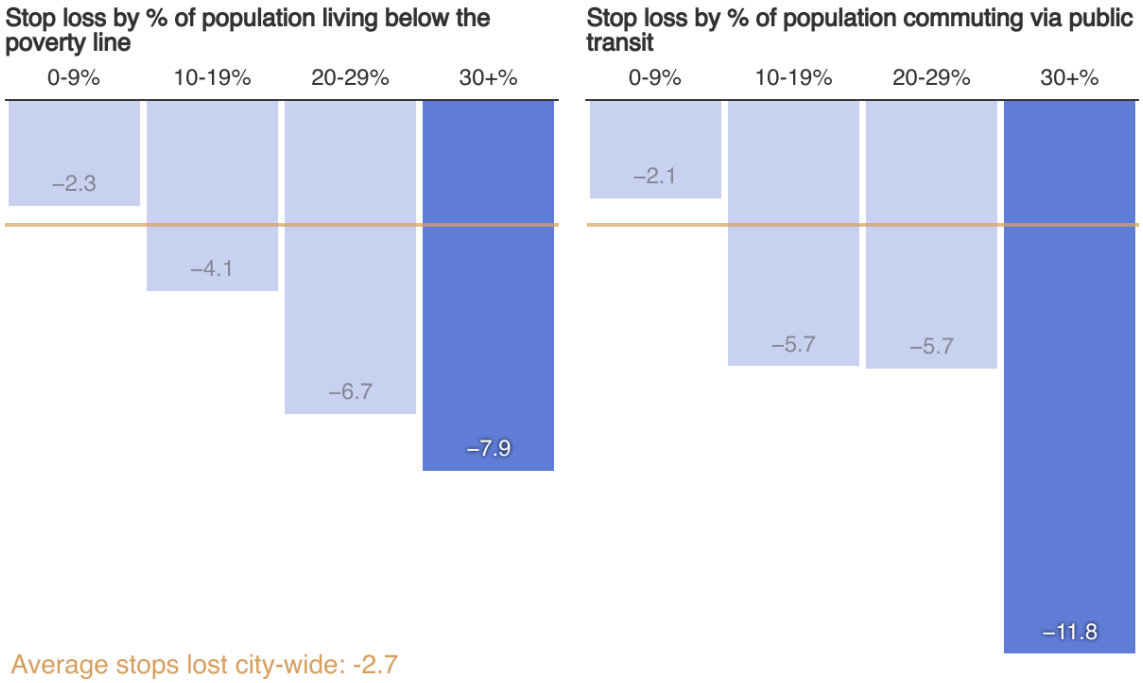
There's a similar pattern when it comes to the neighbourhoods who use transit most.

In areas of the city, where the transit commuters make up between 20 and 29 per cent of the population there are now **5.7 fewer bus stops per km^2.**

While areas where more than 30 percent of the population commute via transit have lost nearly **12 stops per km^2**. That's more than 4 times the city-wide average.

Neighbourhoods with the greatest need for public transit lost up to 4 times as many bus stops

Areas with higher poverty rates and more transit users lost significantly more bus stops per square kilometre than the city average.



Analysis used tract-level data from the 2021 Census and from the General Transit Feed Service.

Chart: Julia-Simone Rutgers • Created with Datawrapper

However, access to frequent transit service has improved. The portion of the population within a 15-minute walk of a bus stop delivering frequent service (defined as buses that arrive at least every 15 minutes) has increased by nearly **70 per cent**.

At the ward level, Winnipeg's Fort Rouge - East Fort Garry, Mynarski and Point Douglas neighbourhoods lost the highest number of stops per square kilometre, losing 7.2, 6.6 and 5.5 stops per km, respectively. Mynarski and Point Douglas are areas of significance in this analysis, having high proportions of low-income residents and residents who primarily commute on transit. The other neighbourhood of significance -- Daniel MacIntyre -- has a stop loss per km of 4.8, ranking sixth.

Six wards were below the city-wide average. The Waverly West neighbourhood saw the fewest lost stops, losing 0.07 stops per sq km. (Net loss of just 2 stops in all.) Of note, this neighbourhood saw the largest population growth of any ward between 2016 and 2021, growing by nearly 30%. Transcona, another edge-of-town neighbourhood which lost fewer stops than the city average, had the second largest population growth at 15%.

Where did the data come from?

1. Bus stop locations were sourced from the General Transit Feed Specification, an open-source database that allows transit networks to publish schedules and real-time data in a standardized format.

   For the purposes of this project, I selected two Winnipeg transit feed specifications to represent the original and new route networks respectively. Each feed data set included text files listing:
   - The applicable service dates, including dates where service was altered as a result of holidays or other exceptions
   - The location, number and name of all bus stops
   - The name and number of each bus route
   - The path of each bus trip (a segment of a route specific often specific to the day of the week, time of day and direction of travel)
   - The schedule for each stop

   For the original network, I used a feed published on April 25, 2025. This feed represents the state of the transit network between Apr. 13 and June 28, 2025. The compliance report indicated there were no errors in the data, and it included only two non-standard schedule days on April 18 (Good Friday) and May 19 (Victoria Day). Read the GTFS validation report.

   For the new transit network, I used the latest available feed at the time, which represents the state of the network between June 29 and Aug. 30. The validation report similarly indicates no errors, with schedule exceptions only on July 1 (Canada Day) and Aug. 4 (Terry Fox Day). Read the GTFS validation report.

2. Census data was sourced from Statistics Canada's Census Program Data Viewer. I selected the Census Tract geographic level — the smallest available — for the Winnipeg Census Metropolitan Area (CMA). I removed tracts that are not part of municipality itself.

   I then selected the following indicators from the 2021 Census (the latest census year) for analysis:
   - Population change between 2016 - 2021
   - Population density
   - Percentage of population commuting on public transit

- 2020 poverty rate

The poverty rate is calculated using the market basket measure. The poverty threshold is based on the cost of a basket of basic goods for a family of four, including food, clothing, shelter and transportation. If a household income is below the threshold to afford this basket of goods based on the region and size of the family, it is considered below the poverty line.

Read the Statistics Canada documentation for poverty rates

There are some limitations to the data. Notably, while it is the most recent census data available, it is now about four years old. The next census will be released in 2026. The MBM poverty measure has been critiqued for under-reporting poverty rates — particularly on reserves and in the territories — as it excludes some vital daily costs (i.e. child care, medication) and does not account for factors that income cannot capture, such as housing insecurity. On reflection, the low-income measure (LIM) may have presented a more accurate picture of poverty rates for detailed analysis.

3. Council level census data — including the same indicators used for census tract analysis — was sourced from the City of Winnipeg, which released census data summaries for each ward. This data was used to present a broader picture of the trends revealed in the tract-level analysis. An alternative to this approach would be to use the neighbourhood-cluster profiles, which would have offered a middle ground between the large, ward level data and granular census tracts. This may have been useful for wards like Point Douglas, for example, which have a blend of income levels depending split along geographical lines.

How was the analysis conducted?

1. Bus stop locations in both the old and new networks were imported into a Jupyter notebook and merged based on the unique stop code, name and coordinates. The merged dataframe included a column to indicate whether the stop appeared in both, or just one of the datasets. This was used to isolate stops that had not been carried over into the new network — the lost stops — and those that had been added to the new network. The data was fact checked by comparing the number of stops in each category: lost, added and unchanged, to city data on the number of stops added to and removed from the old transit network. Using geopandas, I reprojected the bus stops to EPSG 3158. This is the standard projection for Manitoba (NAD 83 UTM Zone 14) using the Canadian Spatial Reference System.

2. I then used geopandas to count the number of added and lost bus stops in each census tract. (I later repeated this analysis in QGIS by counting the total number of bus stops from each network within each tract, and calculating the net difference.) I calculated the

net change in stops per square kilometre for each tract and merged this with the census data indicators, which had been cleaned to remove tracts outside Winnipeg city limits. This data was used to create choropleth map layers showing the net stop change per km^2, poverty rate and proportion of transit users for each census tract.

3. To establish trends in stop changes based on the percentage of population living below the poverty line/commuting by public transit, I decided on four ranges that could be used across both datasets. The distribution is remarkably similar across both the poverty rate and transit use data, with the 1st quartile at ~5%, the median at ~8% and the 3rd quartile at ~11%. The Census data uses the following quartiles to categorize areas of higher poverty: 0-9%, 10-19%, 20-29% and 30% or more. These delineations felt more natural and easier to communicate to readers, so I categorized both datasets according to these divisions. This was an editorial decision. The data skews significantly toward the lower basket, which represents the majority (by area) in both datasets. I attempted to mitigate this skew by measuring stop changes per square kilometre.

4. I calculated the average stop change per square kilometre for each range in each data set, and found a similar trend across both: the number of stops removed per km^2 was significantly higher as the proportion of residents either commuting via transit or living below the poverty line increased. It is important to note these are predominantly small areas in densely-populated parts of the city (i.e. downtown) which had a significant number of bus stops to begin with.

5. I repeated the stop loss per km^2 calculations using ward level data, and assessed which neighbourhoods had the greatest transit need, assuming higher poverty rates and a higher proportion of people already commuting by transit can be taken as indicators of transit need. (Notably, for the ward-level data, I used low-income measure rather than MBM to calculate poverty rates, however the trend was consistent using both measures.) The same neighbourhoods ranked highest for proportion of low income residents and residents commuting by transit, albeit in slightly different orders.

6. Finally, I wanted to calculate the total population within a 10 and 15 minute walk of frequent transit to test whether the network changes have improved access to more rapid transit routes. The city defines frequent transit as service that comes within 15 minutes on and off peak (excluding nights and weekends). The new network names bus routes based on their frequency, with F and FX routes referring to Frequent and Frequent Express respectively. There's also the Blue Line, which is the city's lone rapid transit line, mainly serving the University area. I used QGIS's service area feature to define the areas of the city within a 10 and 15 minute walk of bus stops served by Rapid, Frequent or Frequent Express routes. I then used overlay features to calculate the percent of each ward within close walking distance of frequent transit. I used these percentages to roughly calculate the population within walking distance of frequent transit. This is similar to the method Statistics Canada uses to calculate transit access. I would have preferred to use census tract level data for this, but the Census Program

Data Viewer did not have outright population numbers as an option for download, and I already had populations for each ward. These calculations are therefore an estimate.

7. To repeat these calculations for the original transit network, I first had to determine which routes operated on frequent schedules. The naming system used terms like “Express” and “Super Express”, but I found these did not *really* relate to how frequently the bus arrived during weekday daytime hours. After one sort-of failed attempt to devise my own system of calculating headways (the time between trips on a particular route) using the GTFS data, I discovered the tidy transit R package, designed to work directly with GTFS datasets.

   Read the tidytransit documentation.

   I used this package and this 2023 tutorial by Tom Buckley to calculate the headways for each route and determine, once and for all, which routes ran every 15 minutes during weekday hours. I defined frequent transit routes as those with a median headway of 15 minutes or less on weekdays between 7am and 7pm. I then repeated step six for the old network’s frequent routes, and calculated the percent difference in population with access to frequent transit between the old and new networks.