

Improving Bus Travel Times for McGill Students

Executive Summary

Bus transport is a main mode of transport which McGill students rely on, with a mode share of 18%. However, the bus **performs poorly on metrics such as speed and reliability** and represents an area of transport that could be improved.

The analysis identified the **24 and 55 bus routes** as key routes to improve which could improve the service for McGill students overall. These routes have a **large number of McGill bus users** which reside in their catchment areas.

It is also identified that **these routes have a particularly low stop spacing**. Increasing this stop spacing through reducing the amount of stops to those which are most important **could improve travel times by ~10%**. Thus, is recommended that McGill advocate for an increased stop spacing along the 24 and 55 bus routes. This presents a political scope which may be viable for McGill, while being highly impactful for McGill students.

Other future improvements which could be advocated for include implementing **all-door boarding** and **changing the locations of bus stops from before traffic lights, to being after them**.

Bus transport to McGill

The bus is **one of the main modes which McGill Students use to travel to campus**. It is the third most used mode of transport, with a mode share of 18%, following only the metro (28%) and walking (24%). Despite this, it has poor perceptions when compared to other modes of transport and is plagued by a number of issues. **McGill students see the bus as slow, unreliable, and uncomfortable** when compared to other modes of transport. While the bus may have some intrinsic flaws when compared to other modes of transport, there are many ways which transportation here can be improved.

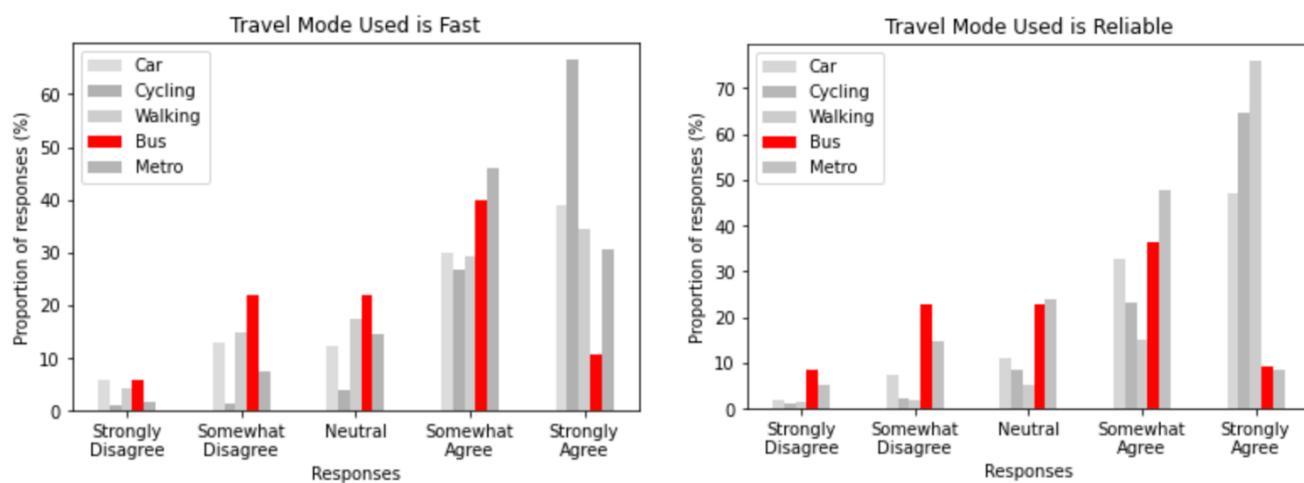


Figure 1: Survey results for perceptions of travel in the 2018 McGill Travel Survey, with McGill students seeing the bus as slow and unreliable compared to other modes

Looking at the speed of travel for the bus, it can be seen to have a similar average travel time to the metro, despite users typically being situated in closer areas to McGill than those who use the metro.

Table 1: Average travel times for the main modes of transport to McGill (2018 Travel Survey)

Mode	Car	Cycling	Walking	Bus	Metro
Avg. Travel Time	46 min	27 min	22 min	48 min	42 min

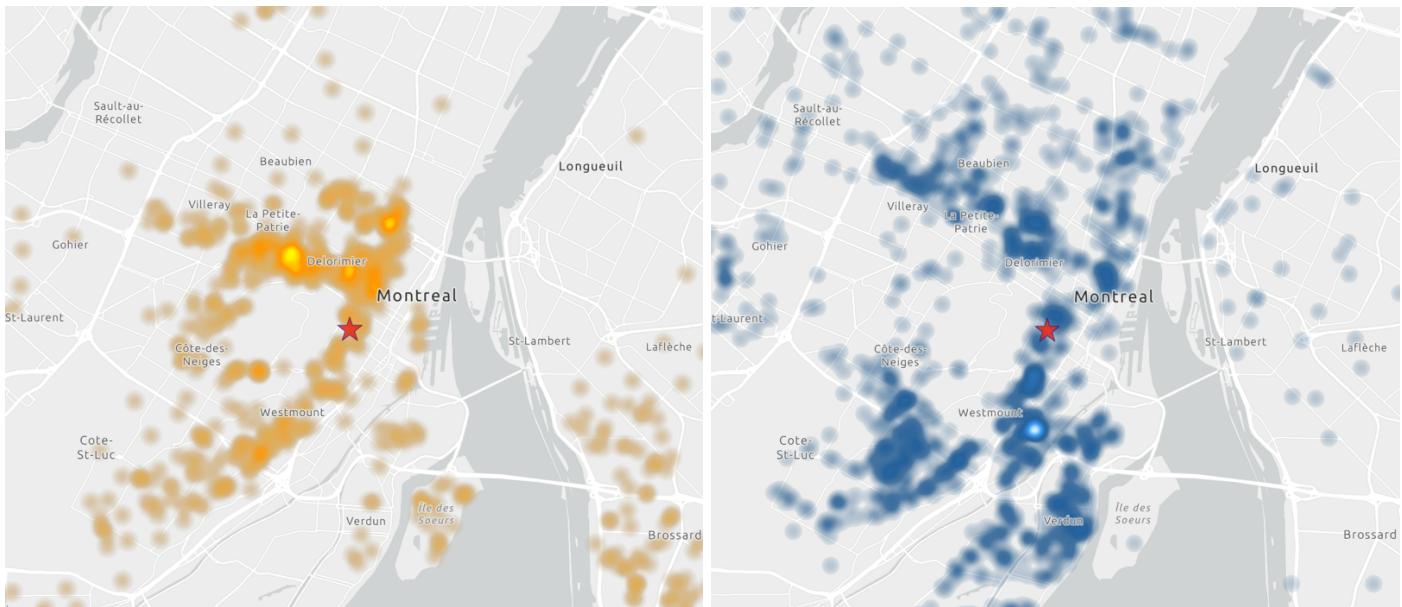


Figure 2: Despite a similar average travel time, metro users (blue) live more widely dispersed than bus users (orange), further highlighting the slowness of the bus as a travel mode. McGill's downtown campus is given by the star on the map. Source: 2018 McGill Travel Survey

Areas where students taking the bus to McGill's downtown campus live can be identified on these maps, and thus the bus routes on which key improvements are could be the most impactful to McGill students. **Students taking the bus are typically live along the route 55 and route 24 catchment areas.**

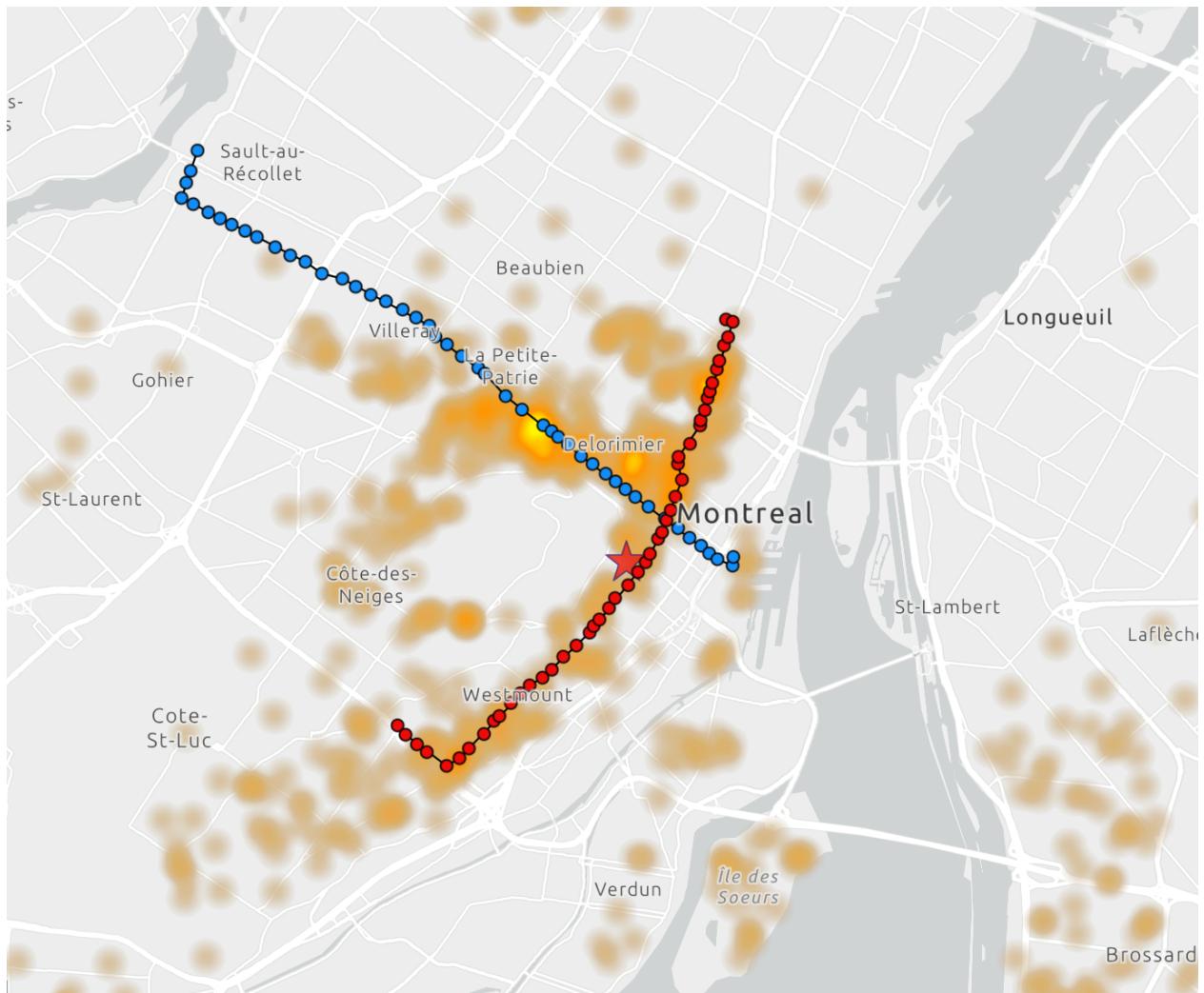


Figure 3: The 24 (red) and 55 (blue) bus routes, covering much of the bus catchment for students travelling to McGill (star). Improvements to these bus routes will have a positive impact to many McGill students. Source: 2018 McGill Travel Survey

Improving Bus Service

To help improve bus services along these key routes, there are a number of operational improvements which could be made. These include:

- Increasing stop spacing
- Allowing all-door boarding
- Implementing far-side of the intersection located stops

Increasing stop spacing is something that could have a considerable impact on travel times along these bus routes. **Current stop spacings are very short** along the identified, below the US average of 313m [1], and far below the optimum estimated spacing for travel time of 600-800m [2]. These stop spacings and introduce additional travel time at a minimal increase in accessibility [3]. Services with increased stop spacings can **reduce travel times by ~6%** [2]. In Montreal on a similar bus route, an express service with increased bus spaces was found to decrease travel times by 11% [4].

Table 2: Current stop spacings along the key bus routes used by McGill students compared to the average US route, and the optimum for travel time. Source: 2018 McGill Travel Survey

Route	24	55	Avg. US Route	Optimum
Avg. Stop Spacing	208 m	244 m	313m	600-800m

Increasing the spacing between stops results in:

- Faster travel times [2, 4]
- Improved health outcomes [5]
- Insignificant impact on ridership [5, 6]

Stops to remove could be determined by existing models to optimise stop spacing [3].

All-door boarding is another policy which can be implemented in bus service operations and is found to improve travel times by ~1% by decreasing the amount of time which a bus spends stationary when passengers are boardings [7]. Concerns about increases in fare-evading have been found to be unfounded [7]. Implementing this policy is simple but requires a city-wide action which may be difficult for McGill to advocate for.

Locating bus stops after traffic lights (far-side stops), as opposed to on the near-side of traffic lights (as is currently used in Montreal) is another change that has been found is another change that has been shown to substantially increase travel time, **with ~5 seconds saved per stop** [8].

Recommendations

The **24 and 55 bus routes have been identified as the key routes which McGill should advocate for changes** on, given the significant prevalence of students travelling to McGill from near these routes.

When improving bus services, perceptions of passengers naturally decrease over time [9]. As such it may be preferable to introduce measures one at a time.

Of the suggested measures, **increased stop spacing** is deemed to be the best option for McGill to advocate for. This is due to the existing prevalent issue, and thus has a **large potential for improvement**, the ability to implement on the specific routes as needed, as opposed to a city-wide implementation as all-door boarding might need.

Bibliography

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