DON'T STOP JUST YET!

A simple, effective, and socially responsible approach to bus-stop consolidation

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ABSTRACT

Bus-stop spacing is often **too wide**, making buses **slow** and **unreliable**. This paper creates a **new methodology** for **removing** redundant **stops** in Montreal.

METHODOLOGY GOALS

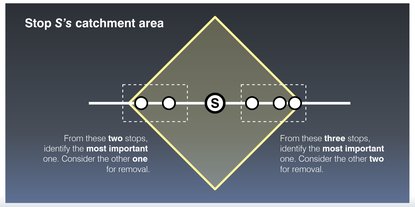
Simple. **Avoid complex math**, allowing transit agencies to easily understand and implement it.

Effective. Cut enough stops to **decrease runtimes**—so much that routes can be run at existing frequencies with **fewer buses**.

Automatable. Able to be coded, allowing for **quick analysis** of all routes on **any modern bus network**.

Socially responsible. Sympathetic to the needs of those with **reduced mobility**.

BASIC RULE FOR STOP REMOVAL



STEP 1

Determine each stop's catchment

- Catchment areas are of **variable size**, based on factors such as:
  - Bus **service quality**;
  - Street grid **connectivity**; and
  - Population **density**.
- Min: **255m**; Mean: **553m**; Max: **832m**

STEP 2

Classify each stop's importance,

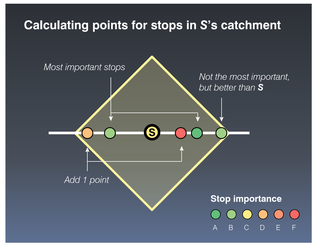
from **A** (must-keep) to **F** (unimportant), based on whether:

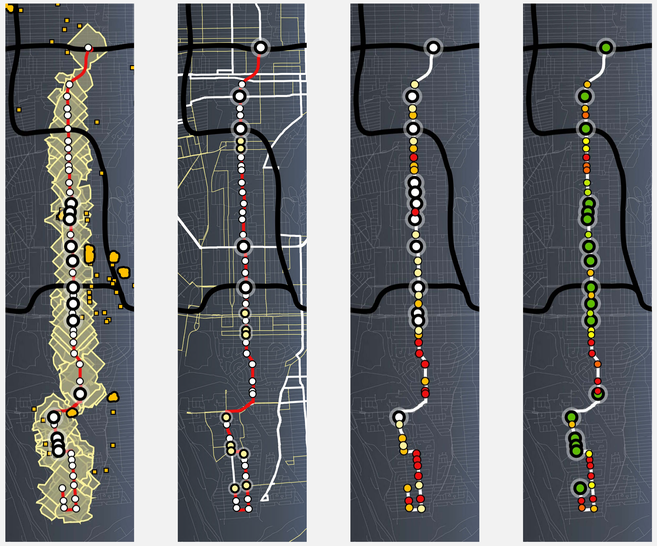
- It serves **health-care** / **seniors centres**;
- It **connects** with other **transit** lines;
- It has high **passenger activity**; and
- It is the **first** or **last stop** on a route.

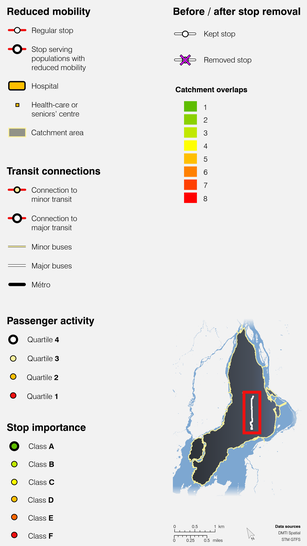
STEP 3

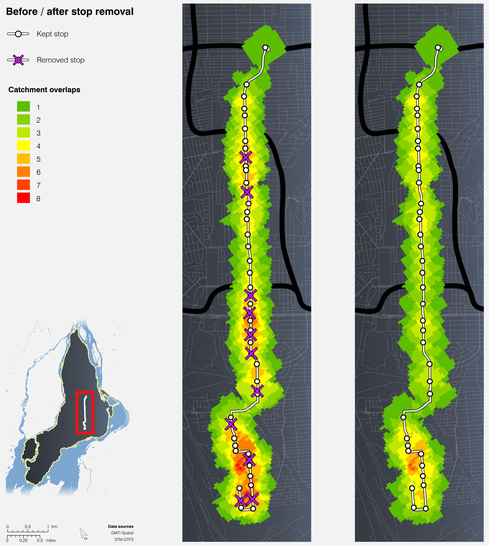
Use catchment & importance to decide which stops to remove

- For each stop S on a route, find the other **stops in S's catchment**;
  - Identify the **most important stops** before and after S; and
  - **Add 1 point** to all other stops that are **less important** than S.
- Repeat for all stops on the route, then remove stops with **points > 1**.
- For **consecutive stops** with points > 1, only remove those with the **most points**.









RESULTS – SYSTEM-LEVEL

Stops analyzed	8596
Routes analyzed	177
Stops removed	1977 (23%)
Service-coverage change	-1.06%
Time saved per route	1.2 minutes
Buses saved	42
Daily operating time saved	109 hours

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CIRRELT

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