Tracking Bike Rack Usage on Buses with Automated Passenger Counter Technology

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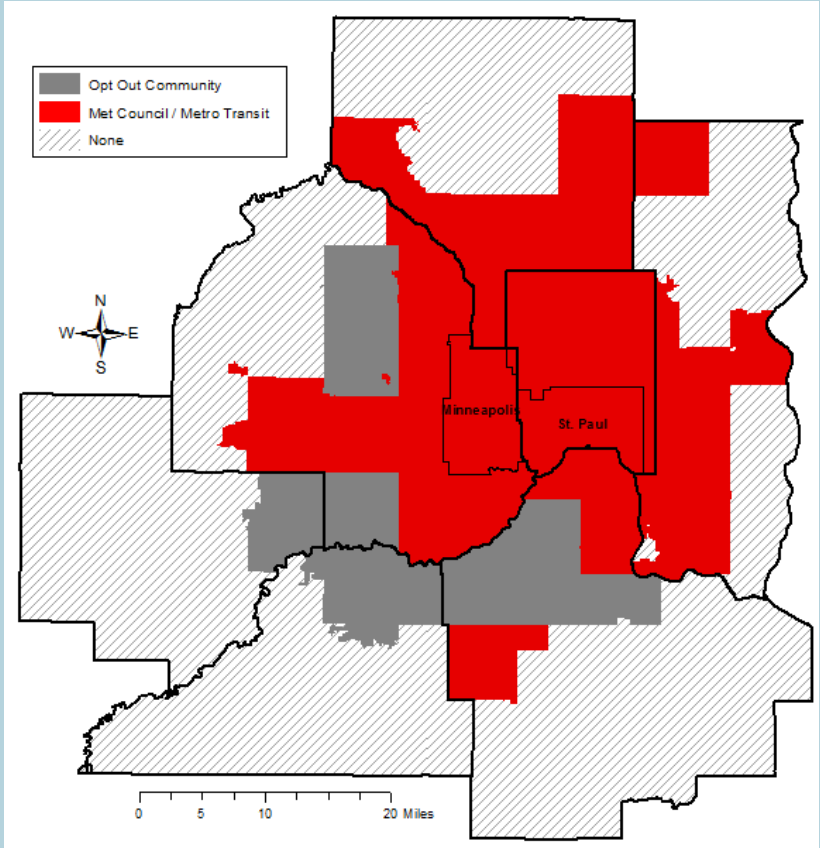
Key Presentation Take-Aways

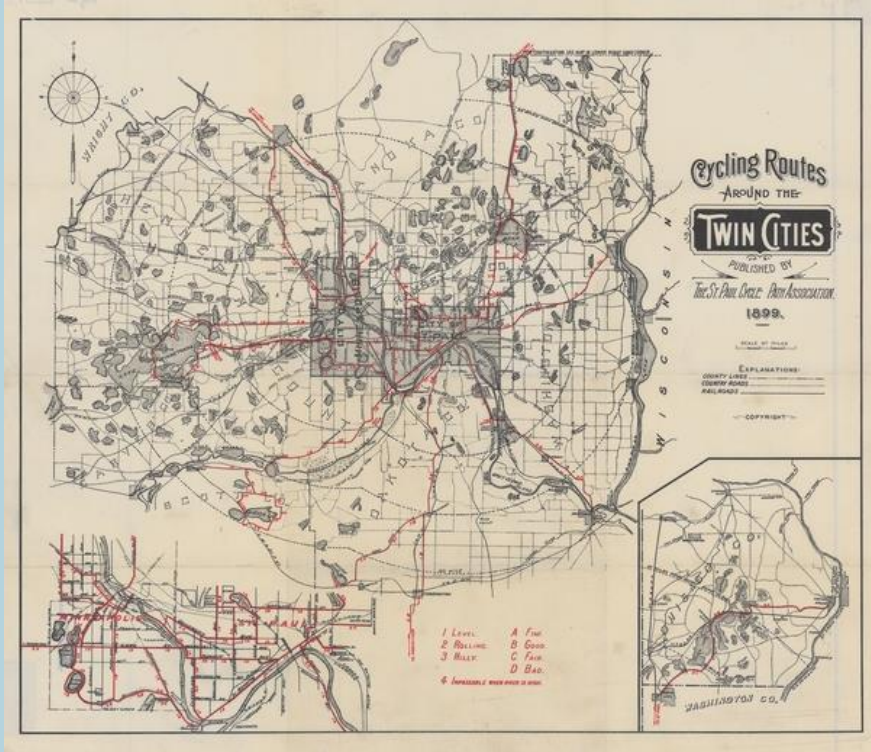
- Existing technology systems can accommodate tracking usage of bike racks on buses
- High potential for improving customer experience
- Collaboration across departments is key

Metro Transit Overview

- 131 routes (128 bus)
- 902 buses
  - All with two place bike racks
- 82.6 million rides in 2016, 71% by bus



Bicycling in the Twin Cities



- Strong bicycling culture
- Continued investment in bicycle facilities
- What weather?

Project Origin

- The need
  - Customer complaints
  - Lack of data
- The idea
  - TransLink (Vancouver, BC) attached APC sensors to its bus bike racks, but…

Pilot Details

- Worked with Trapeze on the design
- Installed on 22 buses
  - All 13 A Line (arterial BRT) vehicles
  - 9 other buses serving routes known to carry a lot of bikes
- Magnetic sensors attach to each wheel arm and tray in Sportworks two-place bike racks

Pilot Details (continued)

- Wire travels through the bumper and connects to the radio cabinet
- Data is transmitted with all other vehicle and passenger data
- Currently processed once a month for analysis

Flowchart

Actuator, Proximity Switch

Metal jacketed wire drilled through bumper, routed past driver area to radio cabinet

Wire plugs into the CAD/AVL Logic unit as a discrete value

In the future, this data can be incorporated into real time signage and mobile/desktop sites alongside bus arrival time data

Bike on/off data is transmitted after bus begins moving via the data radio.

Data is stored on TMDailyLog

Data is processed on a monthly basis and made available for analysis

Photos


Push in & pull handle up to release and lower
New bus =
new kind of fast.
Sportworks

More Photos

More Photos

More Photos


tire
For Transit and Paratransit Vehicles
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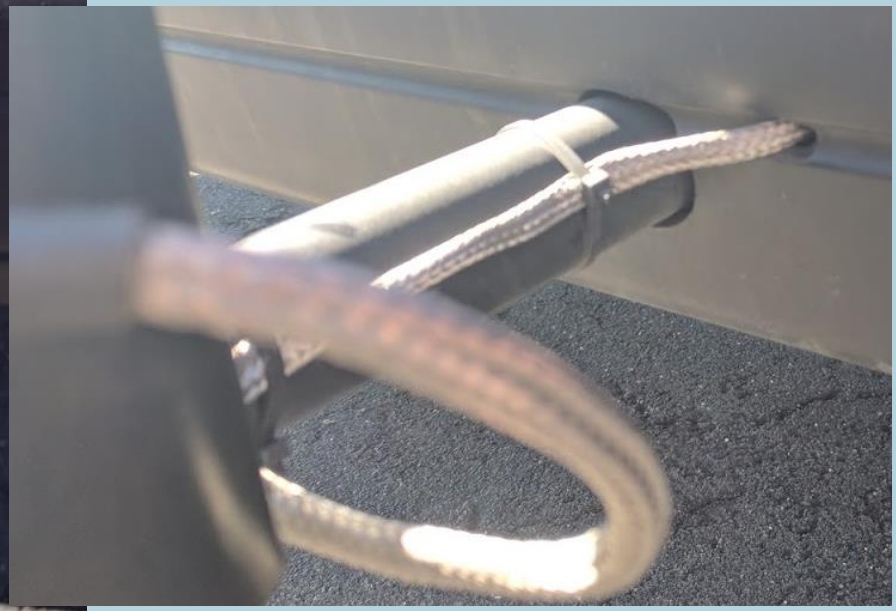
More Photos



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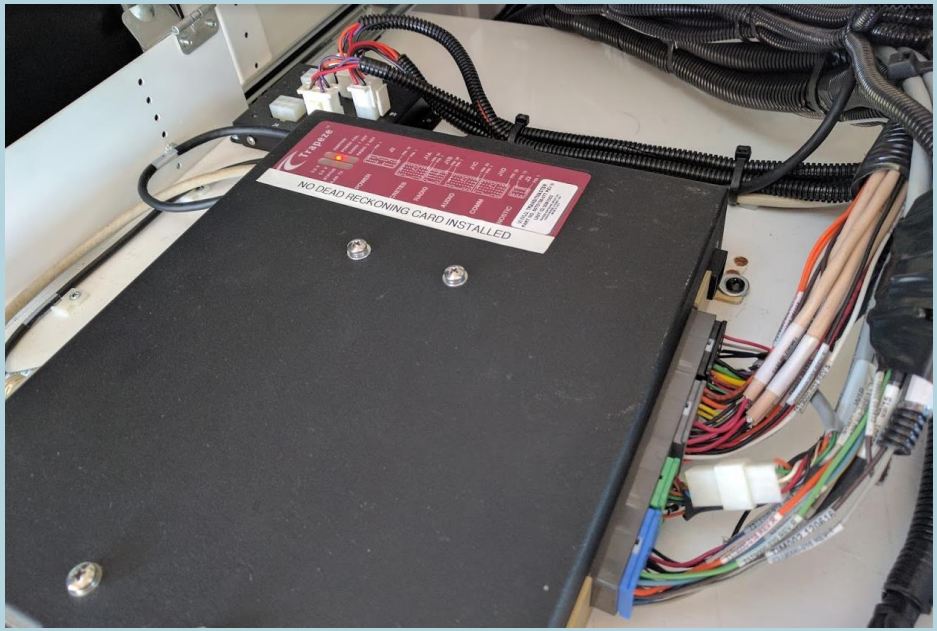

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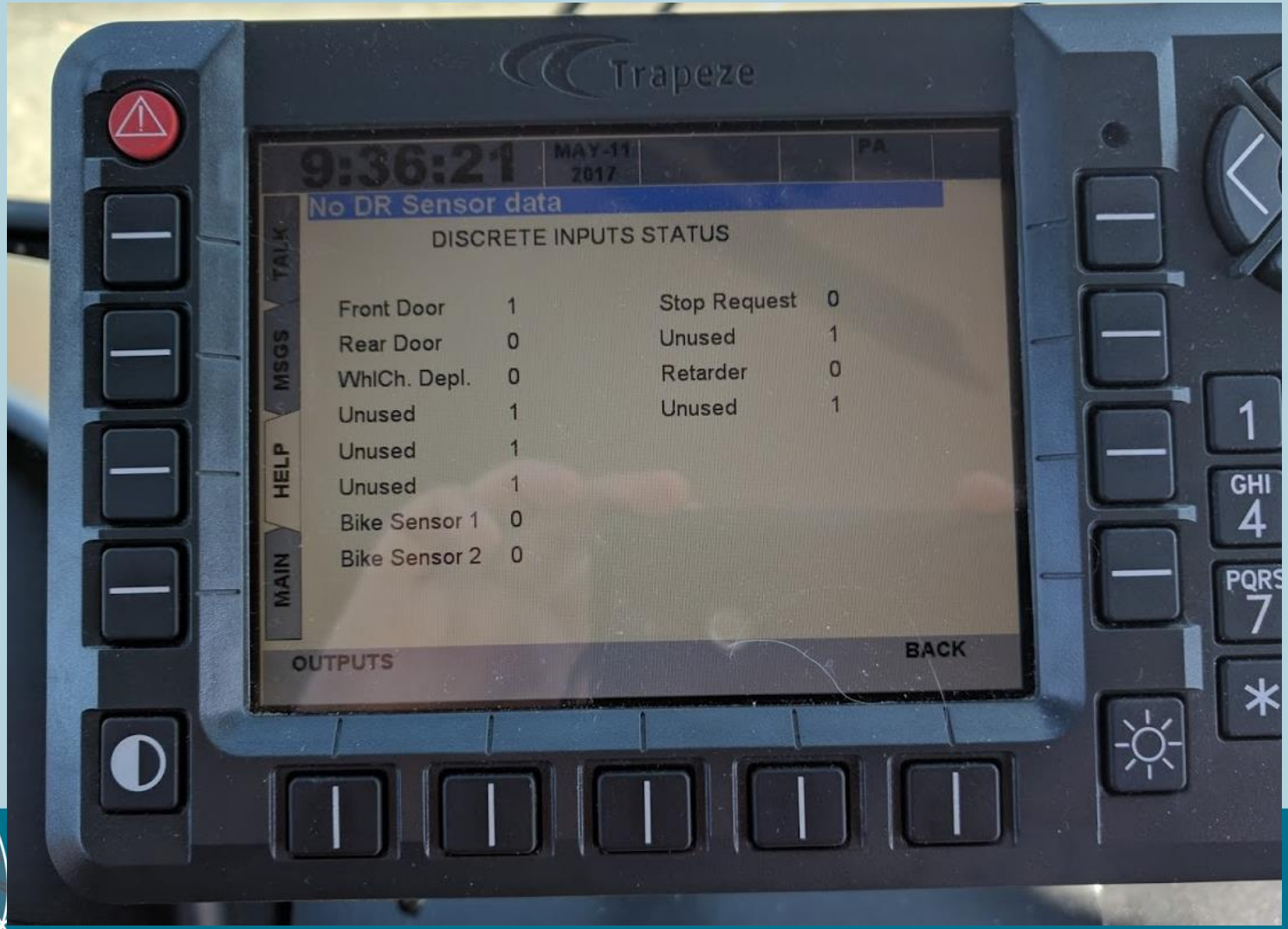
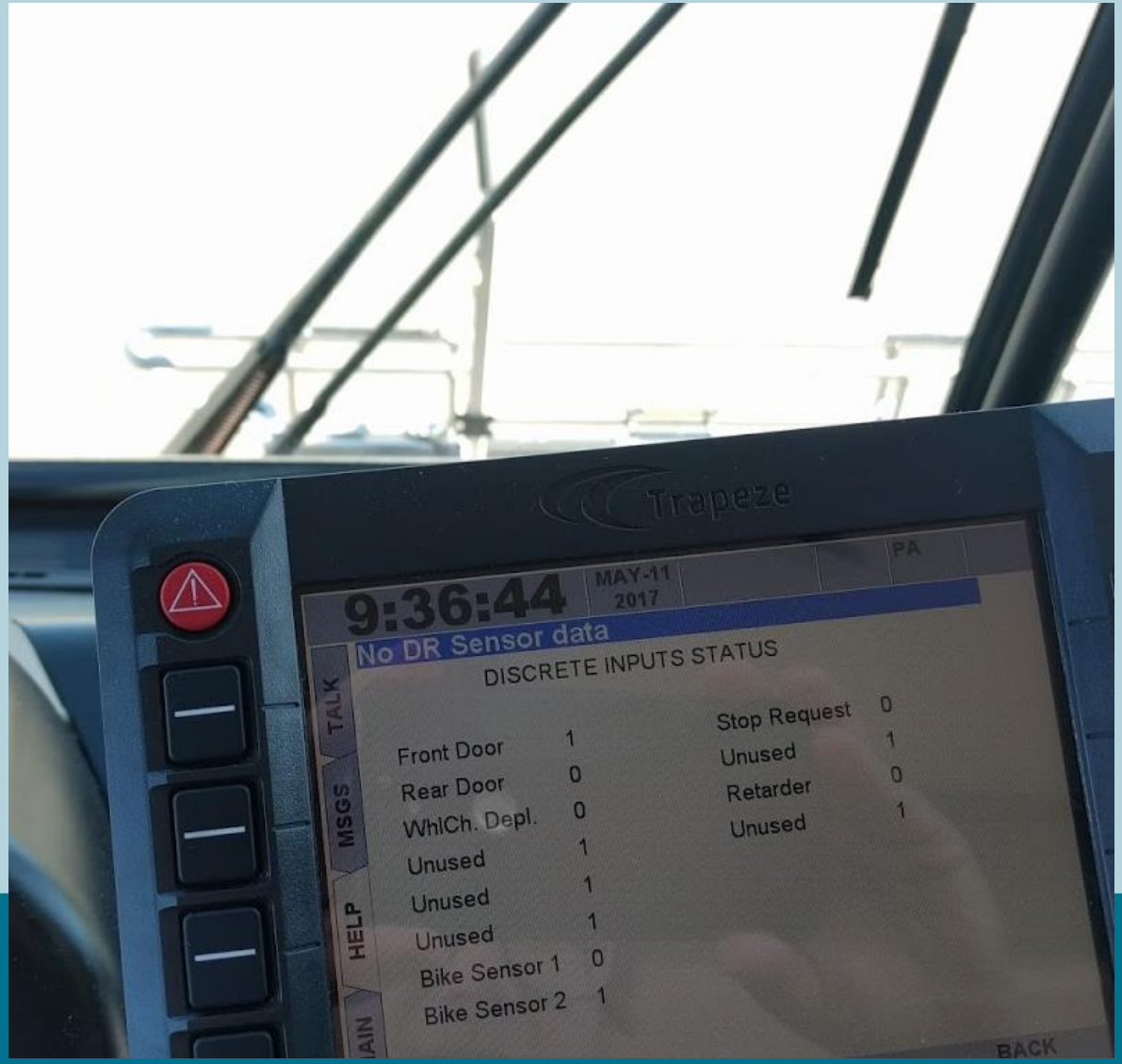

Trapeze
9:36:21
MAY-11
2017
PA
No DR Sensor data
DISCRETE INPUTS STATUS
Front Door 1
Rear Door 0
WhlCh. Depl. 0
Unused 1
Unused 1
Unused 1
Bike Sensor 1 0
Bike Sensor 2 0
Stop Request 0
Unused 1
Retarder 0
Unused 1
TALK
MSGS
HELP
MAIN
OUTPUTS
BACK
1
GHI
4
PQRS
7
*

More Photos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MAY-11
2017
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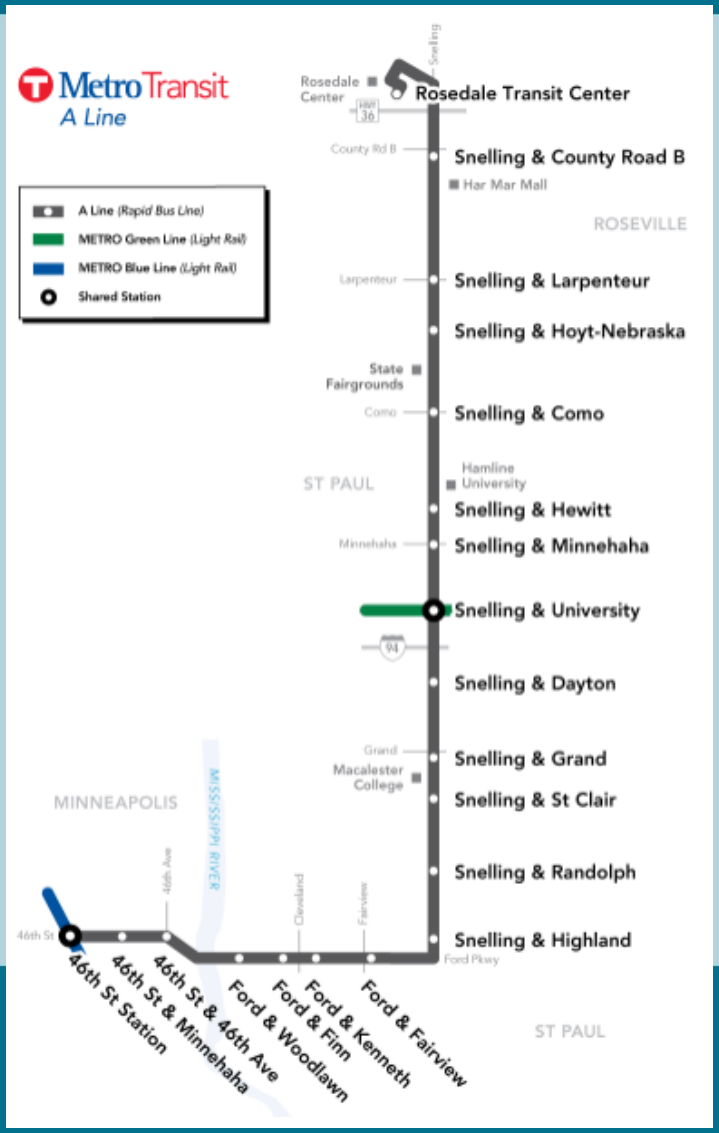
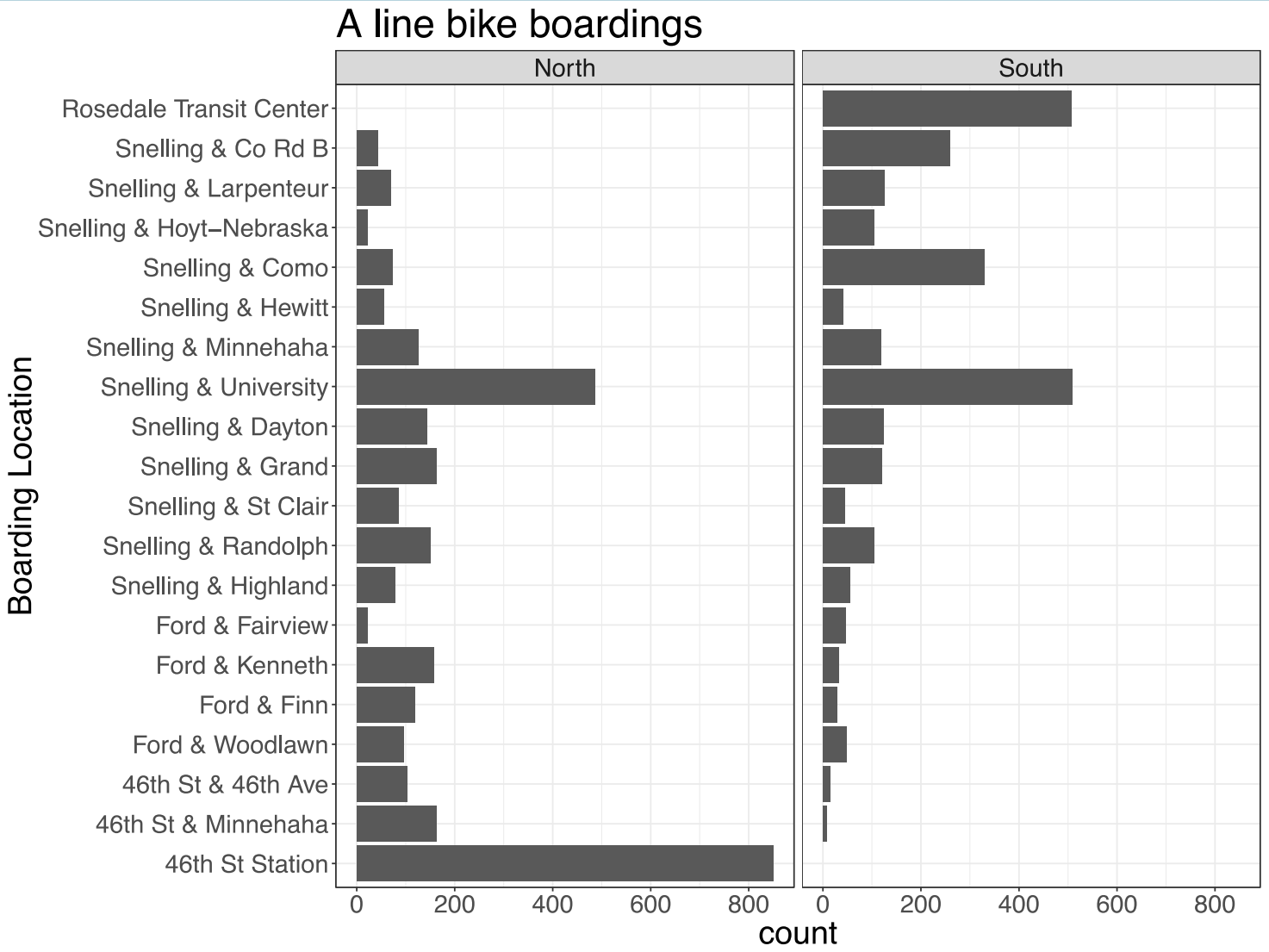
BACK

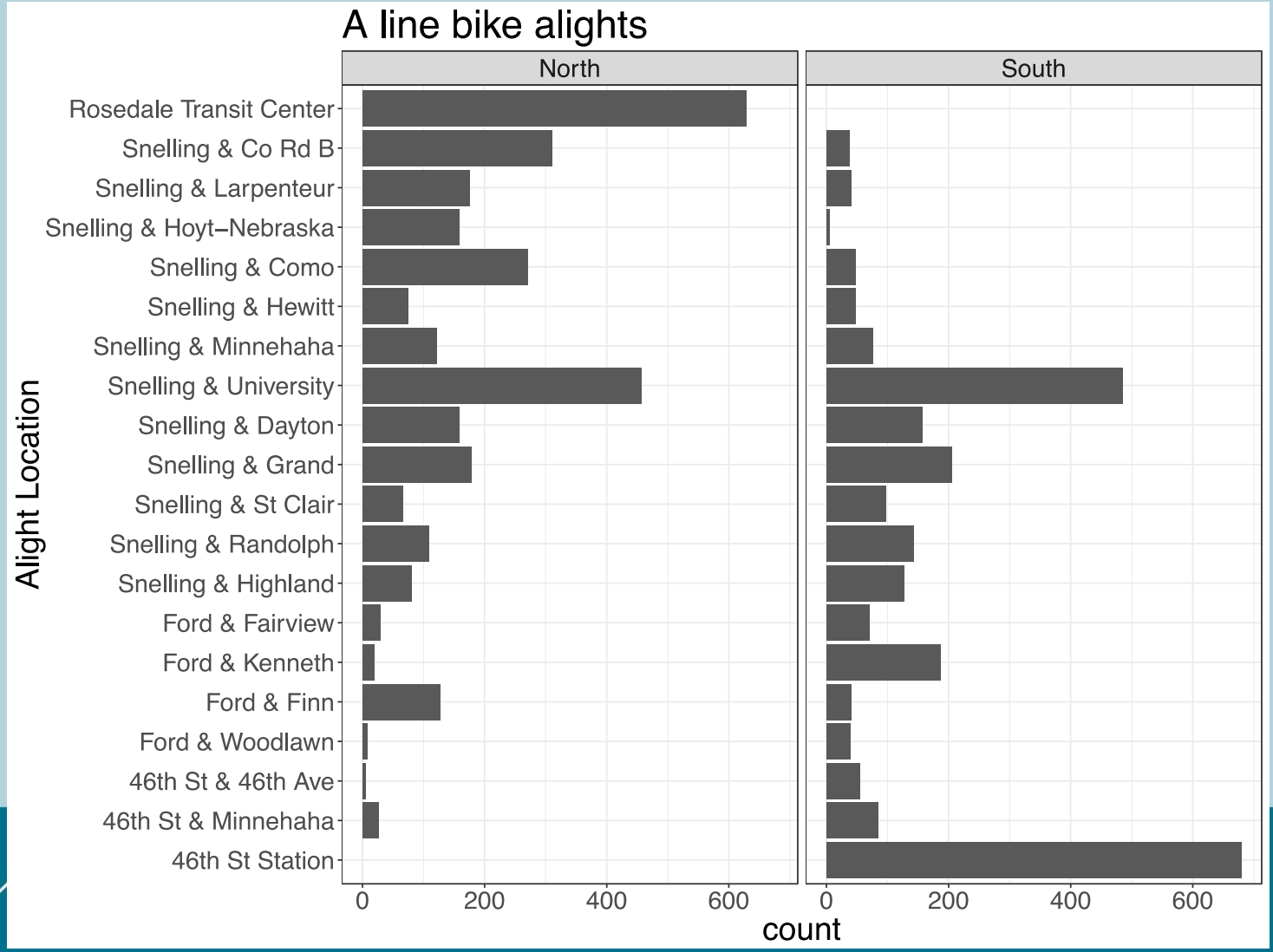
Early Results – A Line



Early Results – A Line



Early Results (continued)



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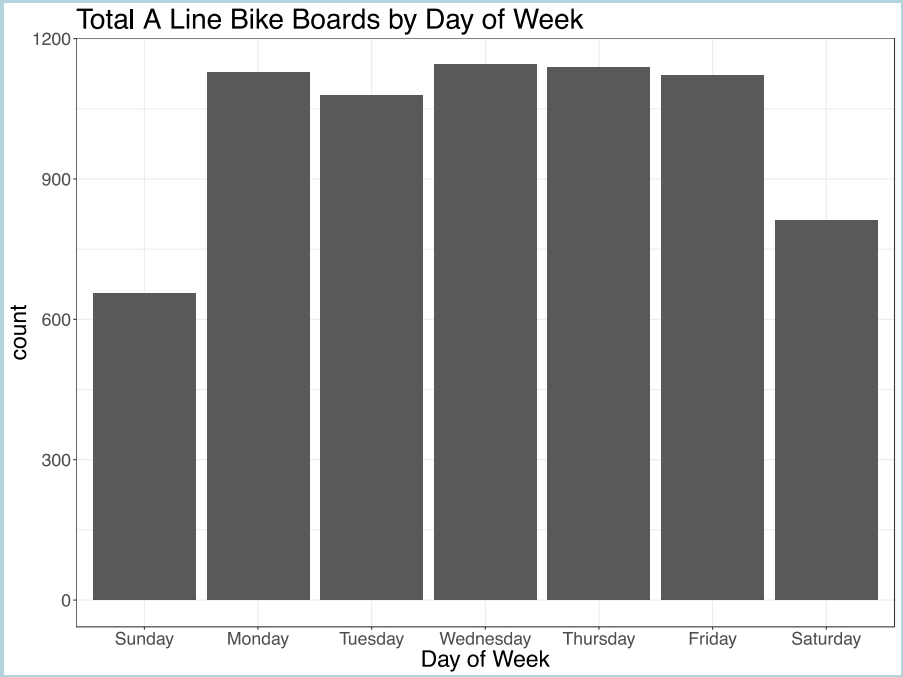

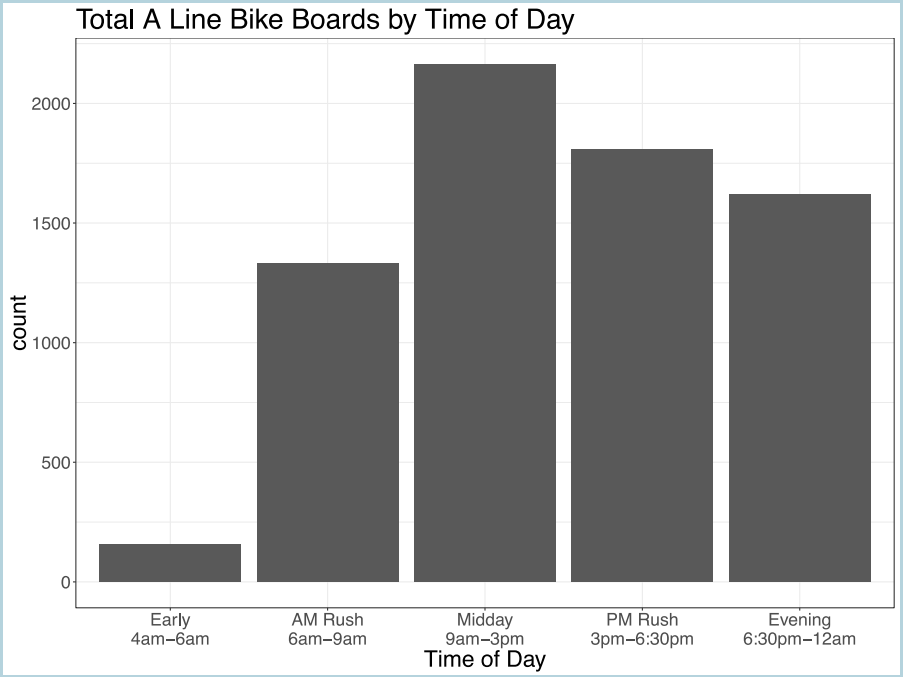

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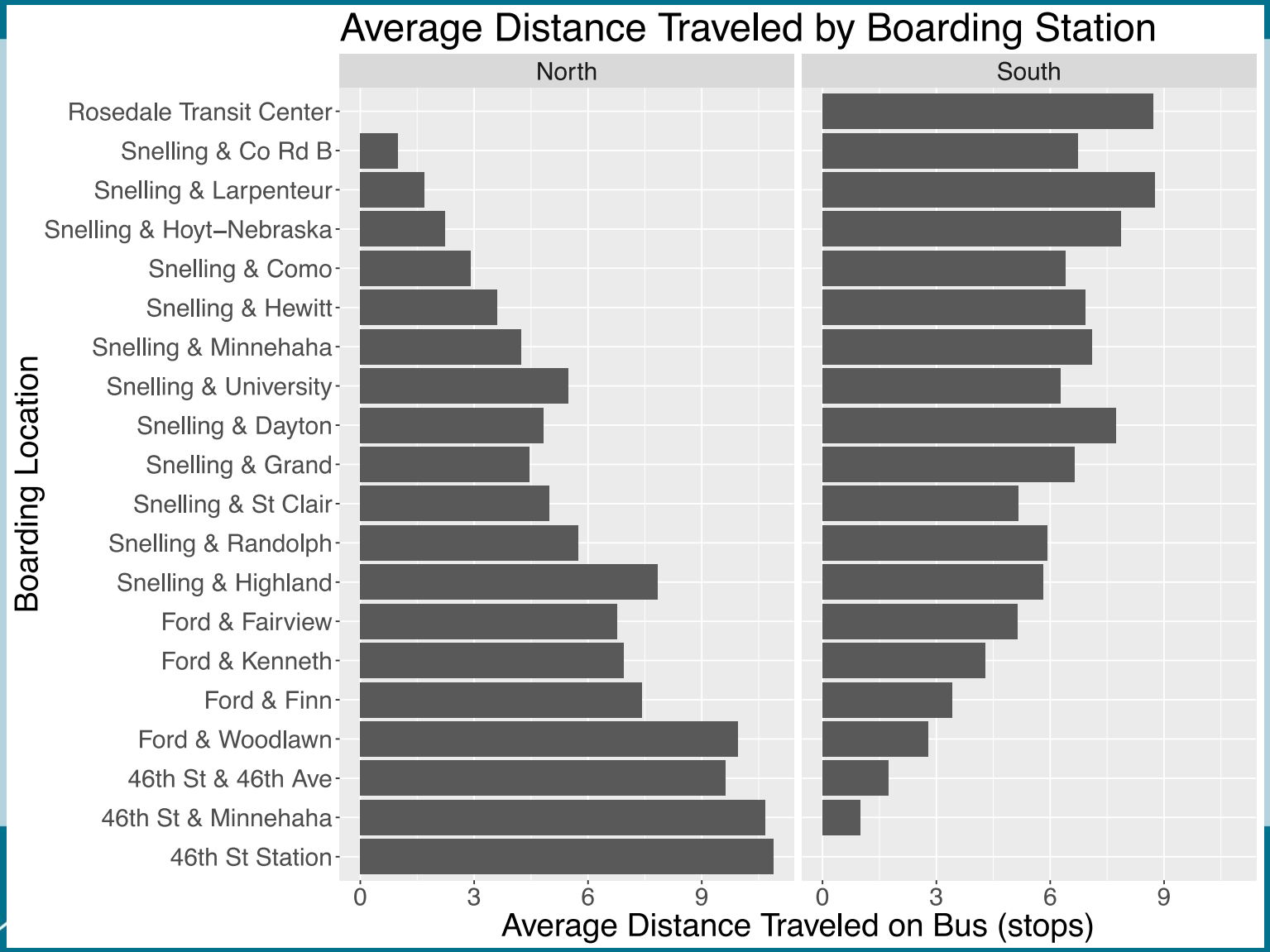
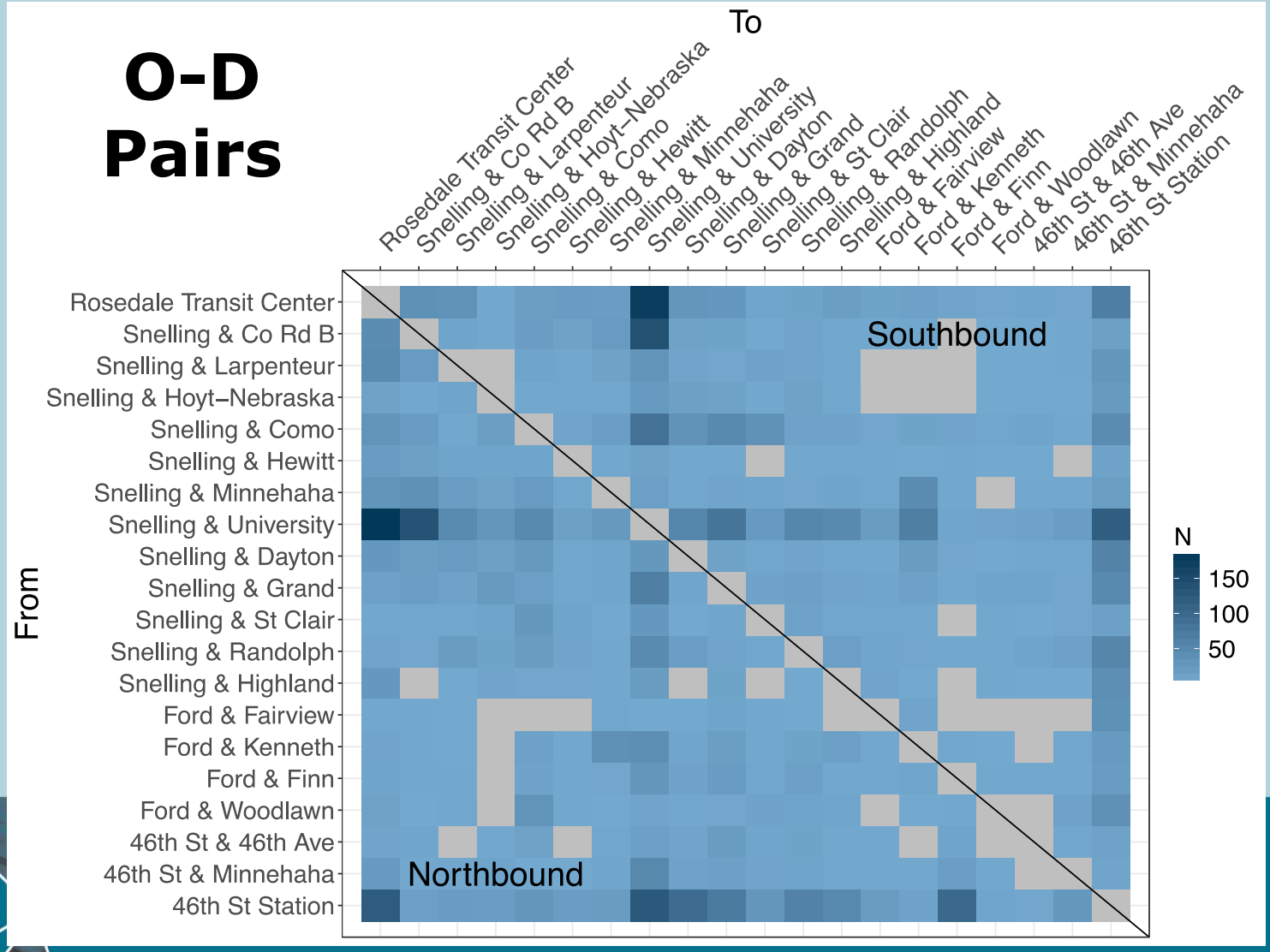


Early Results (continued)

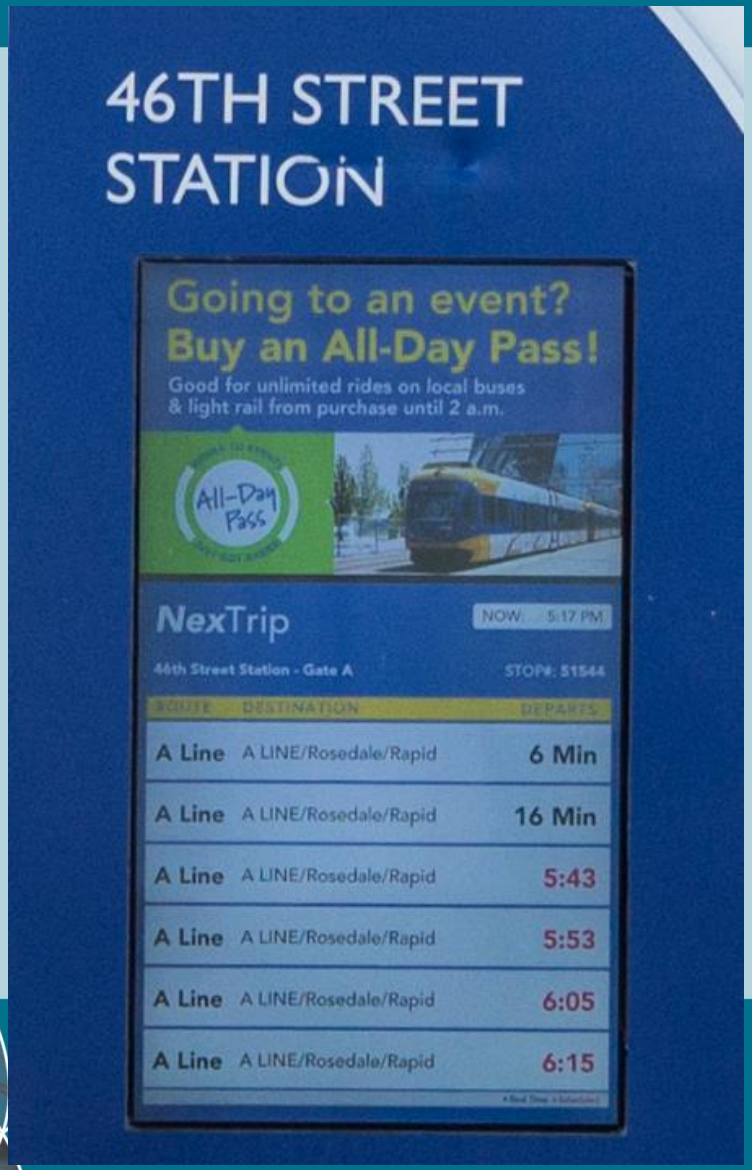
O-D Pairs

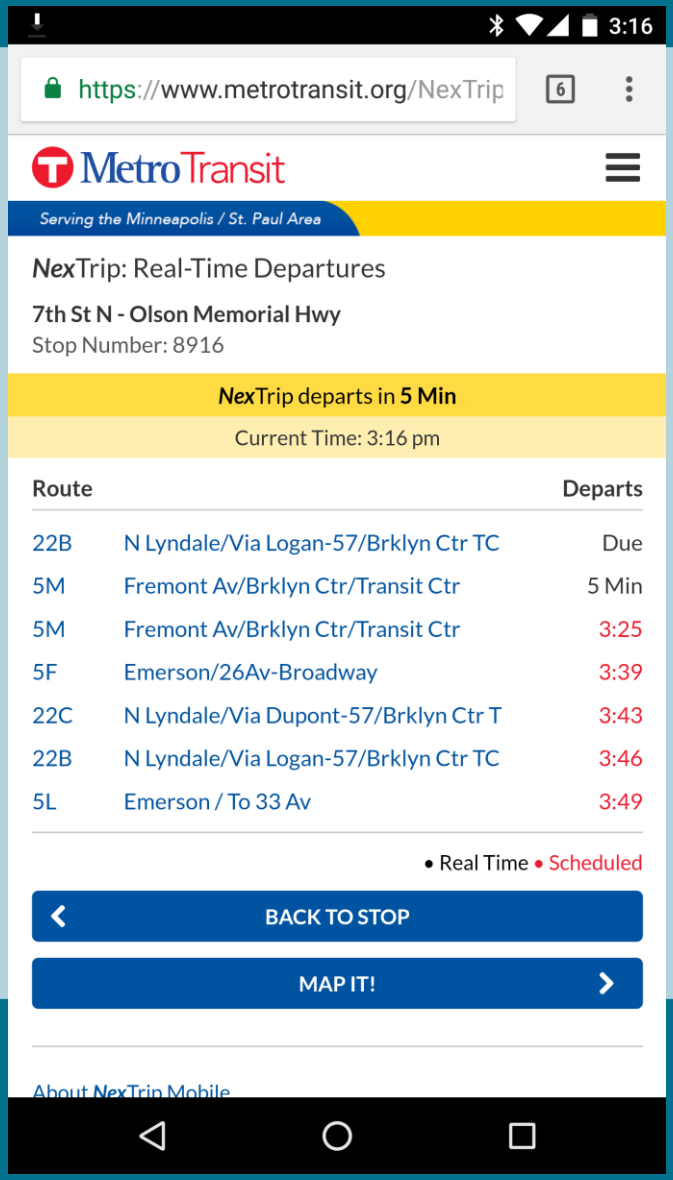


Expanding the Pilot

- Ensuring data accuracy and completeness
- Identifying funding
- A Line station real-time signs
- Mobile and desktop real-time information

Signs and Websites/Apps





Questions?

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