

Managing Data for Suburban Bus Planning

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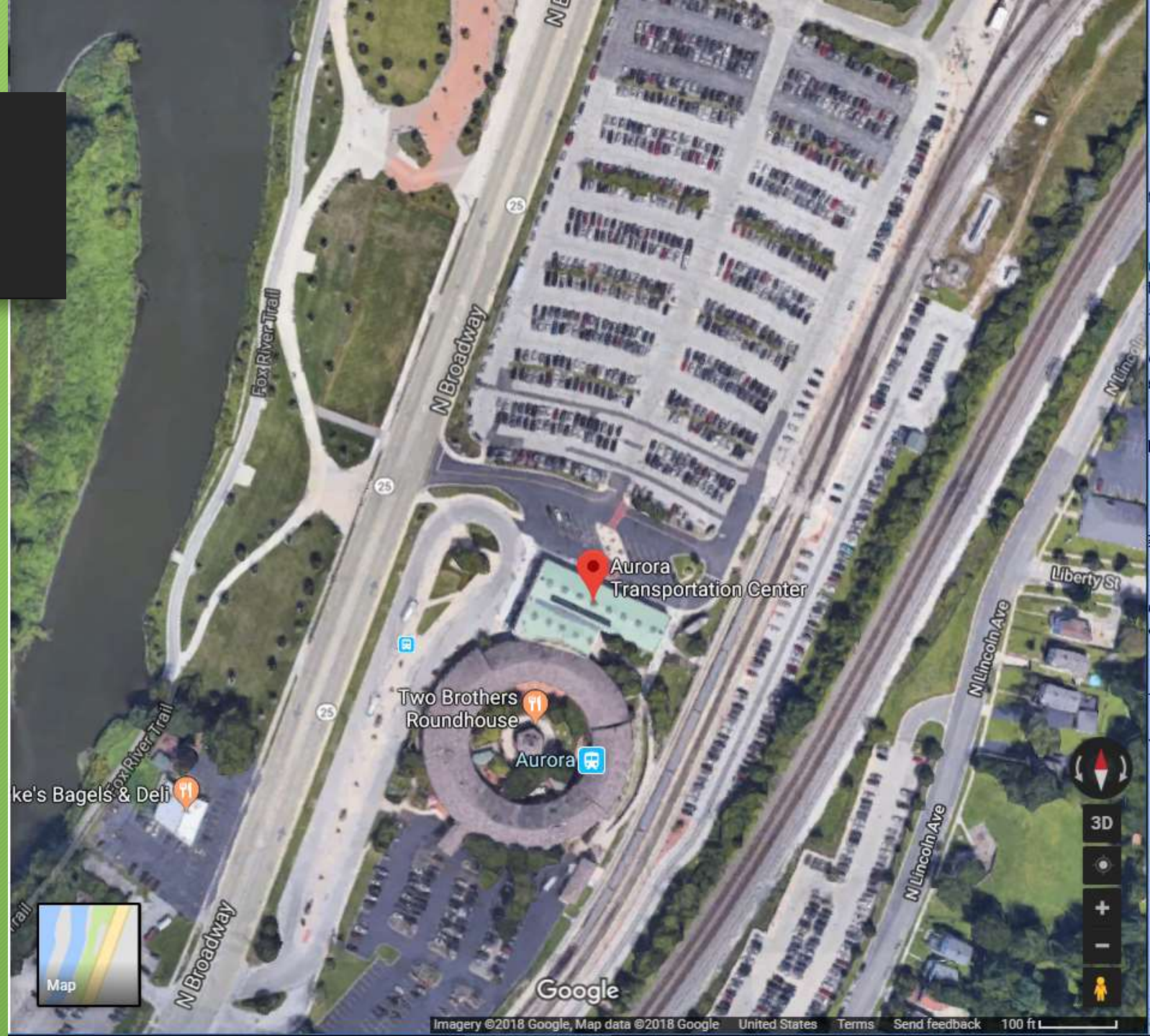
Data Request

- Aurora Transit Center is getting reconfigured
- We need to know which busses have the most transfers between them, and...
- Which routes have the most Metra riders?



Overview of Plan

- Existing Bus Bays become parking for Roundhouse
- New Bus Bays along Metra track North of platform



Transactional Data

- Pulled data for September and October of 2017
- Division = 'Fox Valley'
- Lat/Lon filter yields Aurora Transit Center (ATC)
- All transactions pulled
- Transfer information pulled

A	B	C	D	E	F	G	H	I	J	K	L	M				
BUS_ID	FACILITY	TRANSACTION	TRANSFEE	AGENCY	FIRST	PF	SECOND	FIRST	FC	SECOND	LAT	LO	ROUTE	PR	CO	BU
2	2611	Fox Vall	9/1/2017 5:18								41.7582	-88.312	802		0	
3	2611	Fox Vall	9/1/2017 5:18	0	5100				65535		41.7582	-88.312	802		1	
4	2611	Fox Vall	9/1/2017 5:18		5100						41.7594	-88.311	802		1	
5	2611	Fox Vall	9/1/2017 5:18		5100						41.759	-88.311	802		1	
6	2628	Fox Vall	9/1/2017 5:38	0	5237						41.7611	-88.309	802		1	
7	2628	Fox Vall	9/1/2017 5:38		5237						41.7611	-88.309	802		0	
8	2622	Fox Vall	9/1/2017 13:43		5148						41.7593	-88.311	530		1	
9	2622	Fox Vall	9/1/2017 13:43		5148						41.7593	-88.311	530		1	
10	2628	Fox Vall	9/1/2017 5:38	0	5237						41.7611	-88.309	802		1	
11	2628	Fox Vall	9/1/2017 5:44	0	5237						41.759	-88.314	802		1	
12	2616	Fox Vall	9/1/2017 10:48		5231						41.7587	-88.31	533		0	
13	2675	Fox Vall	9/1/2017 10:20	1	5221	524			530		41.7582	-88.312	802		1	
14	2616	Fox Vall	9/1/2017 10:48	0	5231						41.7587	-88.31	533		1	
15	2616	Fox Vall	9/1/2017 10:48	0	5231				533	524	41.7587	-88.31	533		1	
16	2829	Fox Vall	9/1/2017 10:48	0	5072						41.7583	-88.312	802		1	
17	2683	Fox Vall	9/1/2017 10:37	0	5169						41.7612	-88.309	530		1	
18	2617	Fox Vall	9/1/2017 13:46		5240						41.7583	-88.312	530		1	
19	2617	Fox Vall	9/1/2017 13:46		5240						41.7583	-88.312	530		1	
20	2829	Fox Vall	9/1/2017 13:50		5072						41.7594	-88.311	802		1	
21	2829	Fox Vall	9/1/2017 10:49	0	5072				802		41.759	-88.314	802		1	
22	2616	Fox Vall	9/1/2017 10:48		5231						41.7592	-88.311	533		4	
23	2829	Fox Vall	9/1/2017 10:48		5072						41.7593	-88.311	802		2	
24	2829	Fox Vall	9/1/2017 10:45	0	5072				801		41.7612	-88.309	802		1	
25	2616	Fox Vall	9/1/2017 10:45		5231						41.7613	-88.309	533		0	



Raw Data View

- Route on color
- Area too large



Transfers at Aurora Transit Center

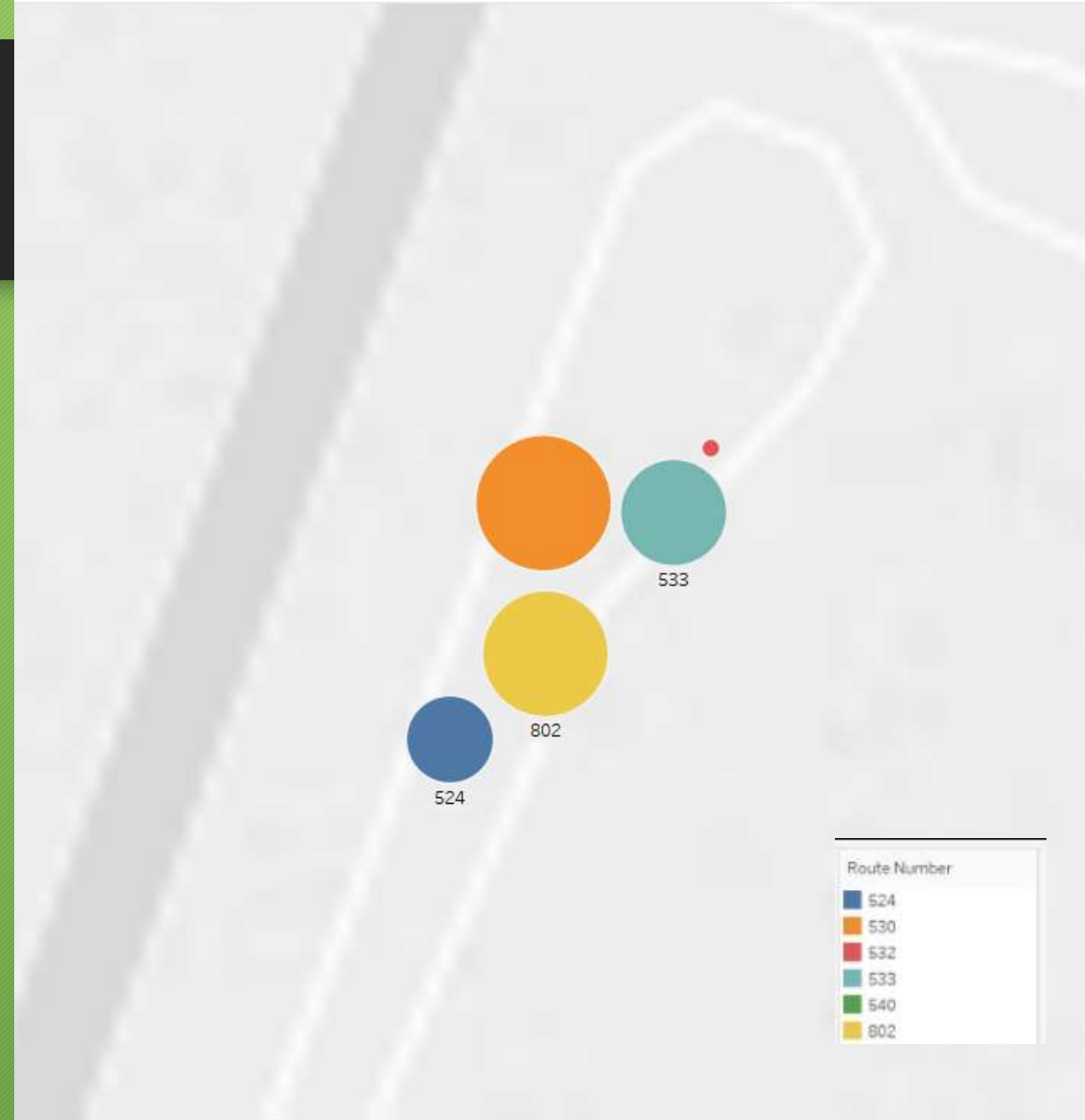
- Narrow focus on transit center
- Some transactions delayed
- Position of bus bays becomes visible
- Odd patterns in the North

center



Bus Bays Found?

- Used average lat/lon to find bus bays
- Filter out 65535's



Not Bad



Busses in Taxi Lane?

- There are a significant number of boardings outside the designated transit bays



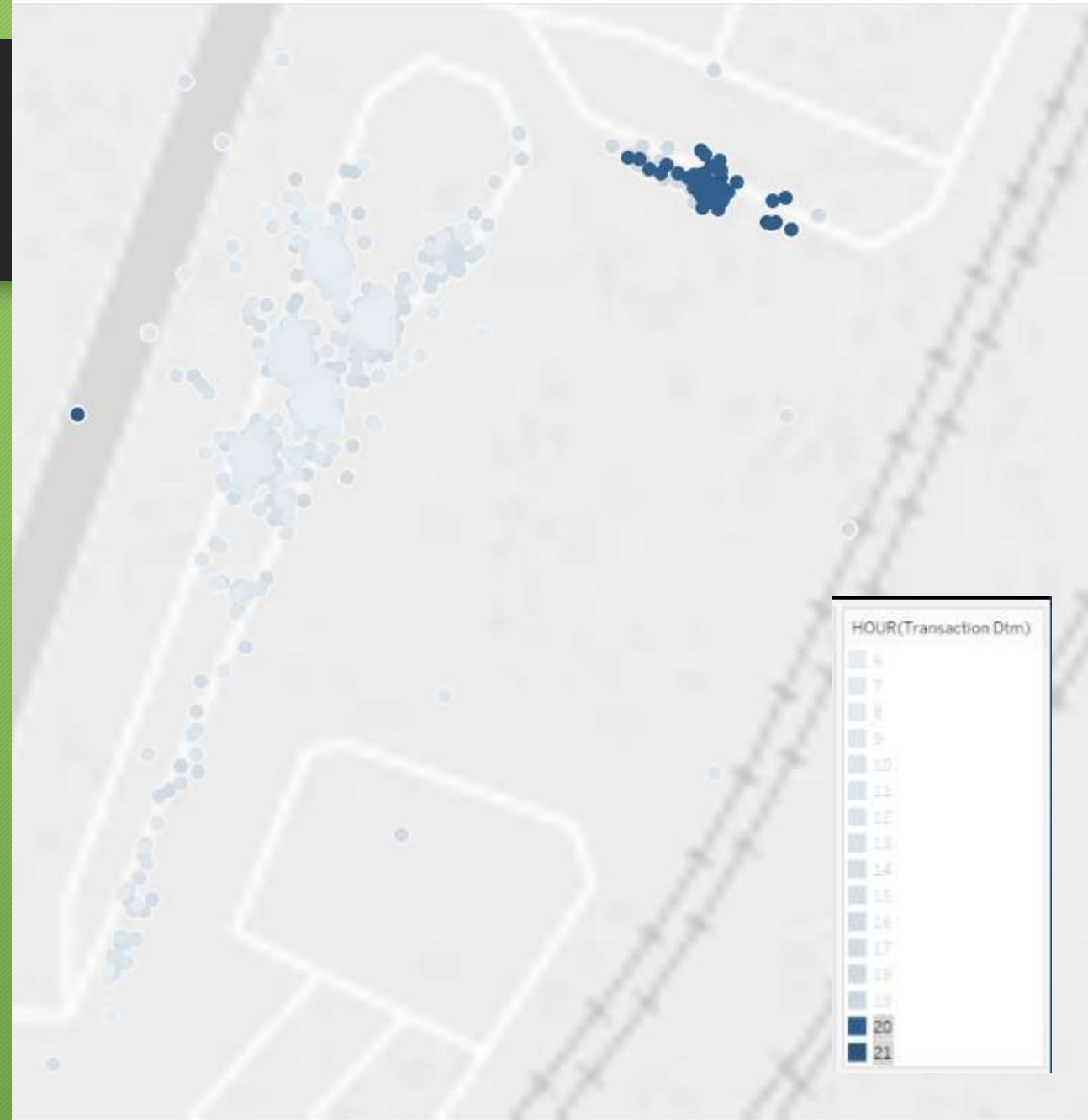
Boardings by Hour

- Hour on color
- Darker is later



Late Service

- Busses relocated after 8:00 PM?



Transfers

- Boarding Routes across top
- Previous route along left
- Null previous route indicates “Initial Ride”
- Transfers between ATC routes labeled “ATC”
- Out of area Pace and all CTA rides indicate “Metra”

Aurora Transportation Center

Previous Ro..	First Prev R..	Route Number					
		524	530	532	533	540	802
Initial Ride	Null	424	849	13	764	3	934
	Total	424	849	13	764	3	934
ATC	524	77	536	2	128		329
	530	446	379	22	790		1,122
	532	1	9		7		4
	533	129	550	5	34		399
	540	2	6				3
	802	272	793	5	430	1	89
	Total	927	2,273	34	1,389	1	1,946
CTA and Other Pace	1		6				
	7		20				
	12		3				
	18		1				
	20	1	2		9		
	49				1		
	54				1		
	60		1		1		
	125						1
	126		2				
	151	1			2		
	156		1		2		
	157		3				2
	307		1		1		
	311				2		
	330				2		
	331	1	2				2
	496				2		
	663				1		
	687						1
	715						1
	801						1
	824				5		
	828		1				
	829		6		9		27
	834		5				
	Total	3	54		38		35

Aurora Transportation Center

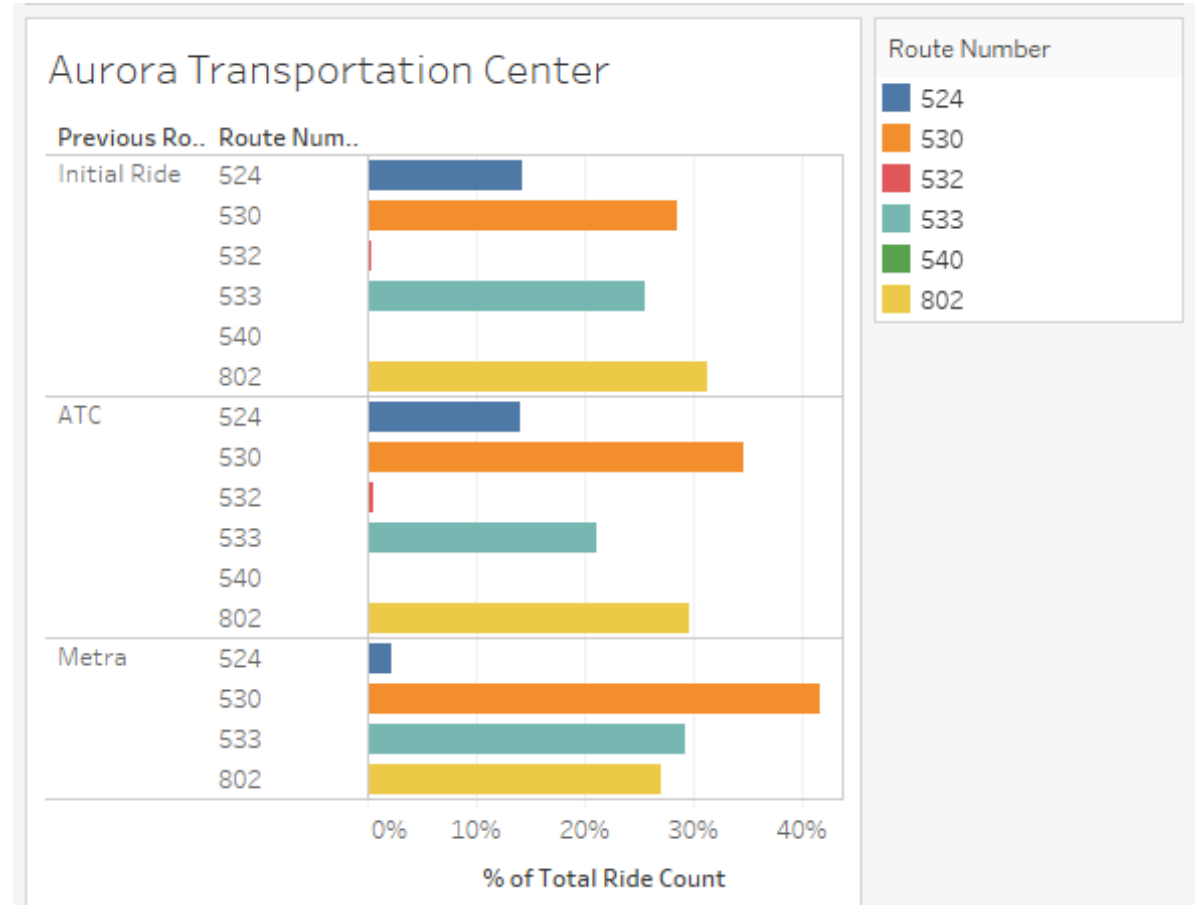
	Nodes					
Previous Ro..	524	530	532	533	540	802
Initial Ride	424	849	13	764	3	934
ATC	927	2,273	34	1,389	1	1,946
Metra	3	54		38		35
Grand Total	1,354	3,176	47	2,191	4	2,915

Transfers

Transfers compared to Initial Rides and Metra

Transfers by Route

- 524, 530, 533, 802 have a lot of transfers at ATC
- 530, 533, 802 have the most Metra rides

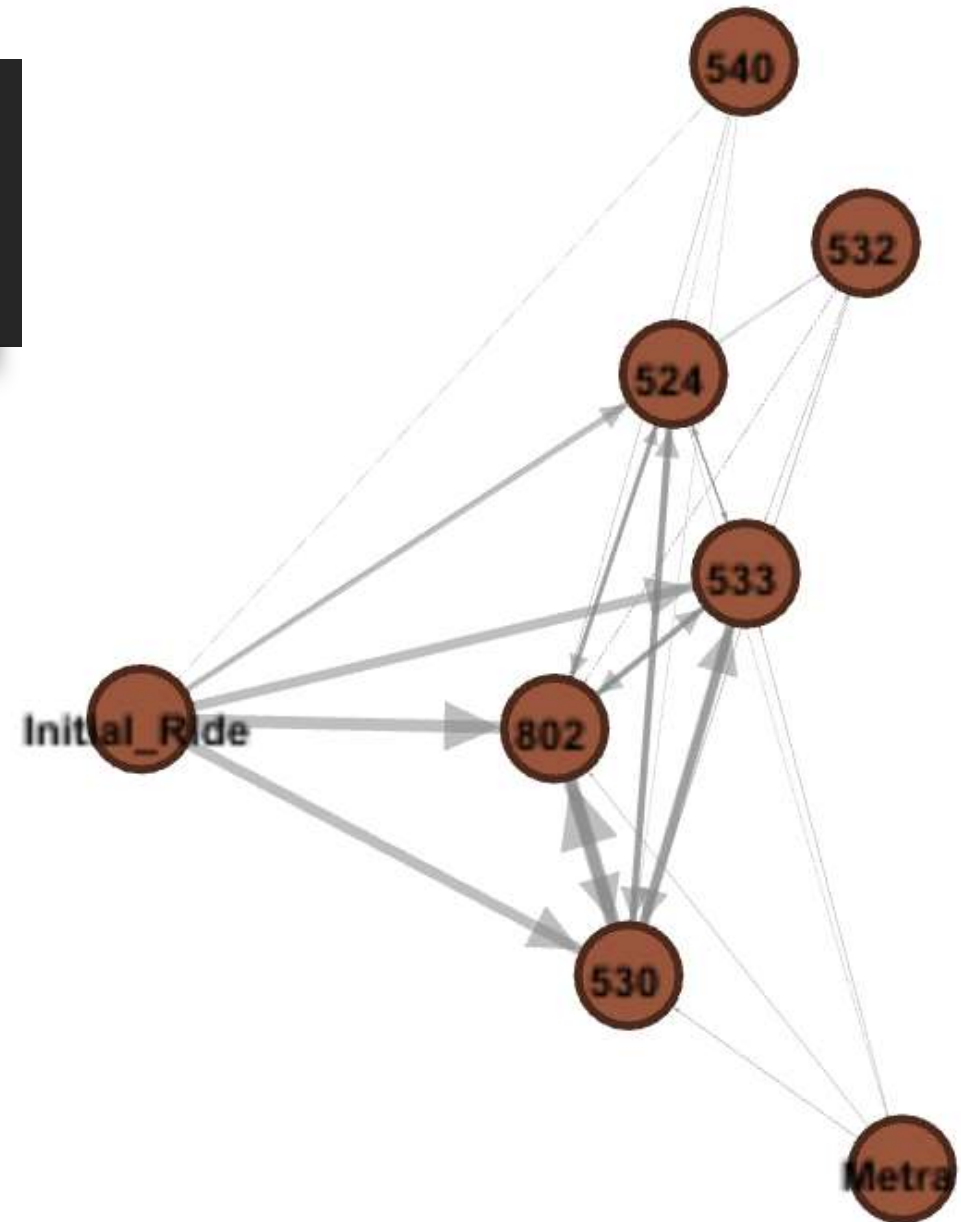


Results

- Based on Transfers alone:
530 - 802 - 533 - 524
- Based on Initial Ride alone:
802 - 530 - 533 - 524
- Based on Metra alone:
530 - 533 - 802 - 524

Most Efficient Layout

- Proposed layout puts 4 high transfer routes together
- Route 524 has the least Metra rides, so farthest from station
- 532 and 540 have very low transfers



Results May Vary

