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# Transportation Applications- LED Workshop Ideas

January 19-20, 2006

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# Transportation Applications

- Highway/Street System Planning
    - Forecasting
    - Land Use Interaction- Trip Rates
  - Transit Services
    - Route Planning
    - Marketing
    - Evaluation-Market Success?
-

# 2003 Travel Behavior Inventory

**Table 40A**

**Percent of Vehicle Trips by Destination Activity and Vehicle Occupancy: Seven-County Area**

Vehicle Occupancy	Total	Went to Work	Went to Work Related	Went to School	Went to Other School Activities	Went to Child Care	Quick Stop	Went Shopping	Went to Friends/Relatives
1	71.5%	94.6%	92.6%	88.3%	74.7%	NA	57.2%	71.0%	66.5%
2	19.3%	4.0%	6.4%	7.2%	17.7%	NA	32.6%	21.3%	22.9%
3	6.3%	0.9%	0.6%	2.2%	2.7%	NA	5.7%	5.7%	8.6%
4	2.1%	0.3%	0.1%	1.7%	0.0%	NA	4.5%	1.6%	1.4%
5+	0.8%	0.2%	0.3%	0.6%	4.9%	NA	0.0%	0.4%	0.6%
<b>TOTAL</b>	100.0%	100.0%	100.0%	100.0%	100.0%	NA	100.0%	100.0%	100.0%

**Table 40B**

### Percent of Vehicle Trips by Destination Purpose and Vehicle Occupancy: Seven-County Area

[illegible]

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## Common Presentation:

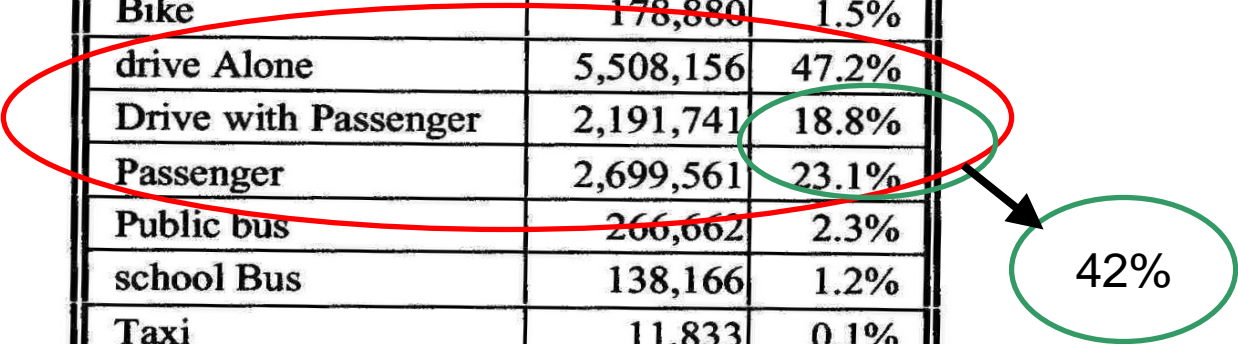
- ❑ “Public Transit = only 2.3% of all person trips”



# 2003 Travel Behavior Inventory

**Table 34**  
**Trips by Travel Mode: Seven-County Area**

Travel Mode	Trips	Percent
Walk	657,321	5.6%
Bike	178,880	1.5%
drive Alone	5,508,156	47.2%
Drive with Passenger	2,191,741	18.8%
Passenger	2,699,561	23.1%
Public bus	266,662	2.3%
school Bus	138,166	1.2%
Taxi	11,833	0.1%
Motorcycle	7,584	0.1%
Other	10,193	0.1%
Refused	2,337	0.0%
<b>TOTAL</b>	<b>11,672,434</b>	<b>100.0%</b>
<b>Auto Mode</b>		
Drive Alone	5,508,156	53%
Carpools	4,891,302	47%
<b>TOTAL</b>	<b>10,399,458</b>	<b>100%</b>

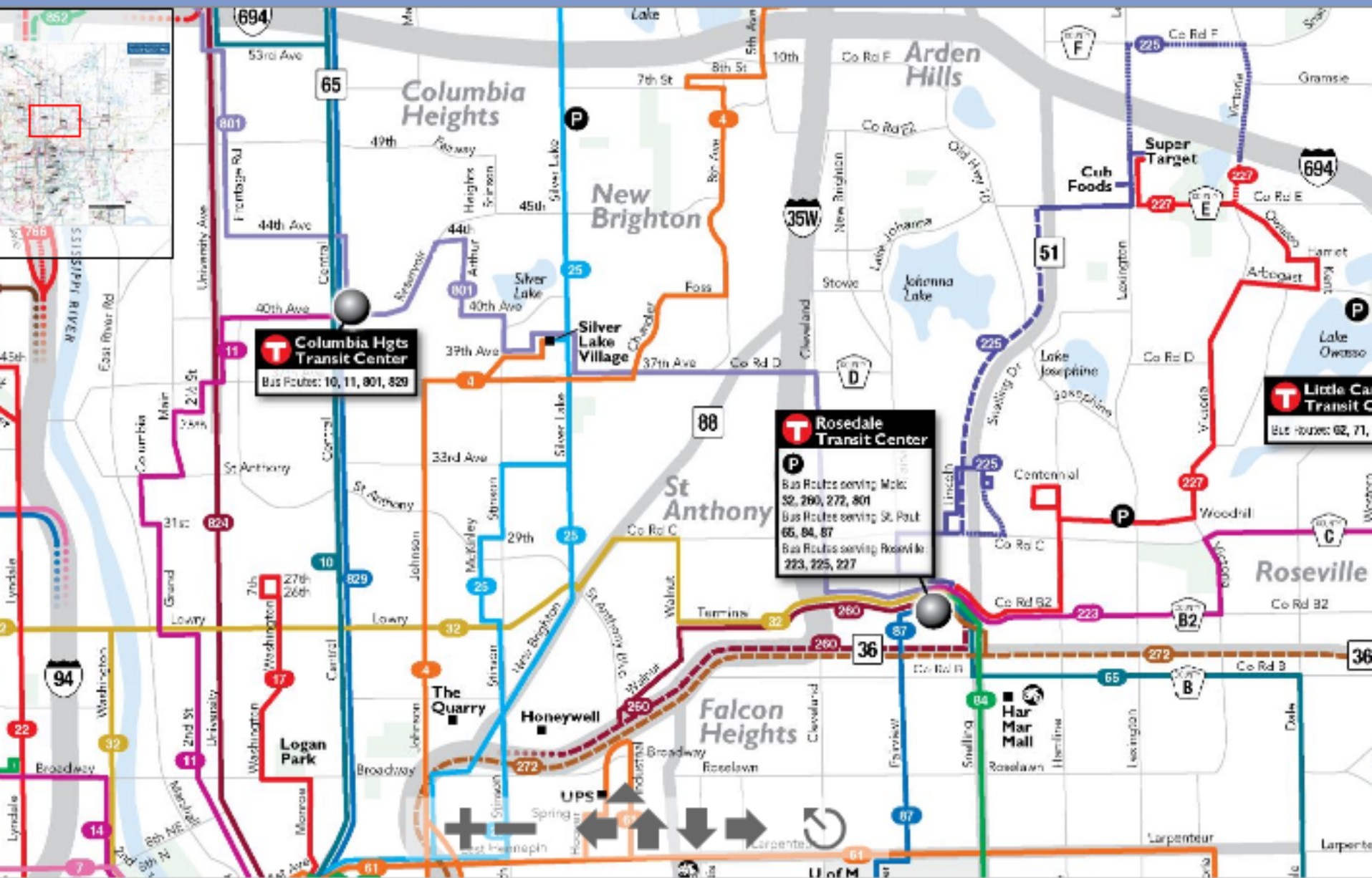


42%

# 2003 Travel Behavior Inventory

**Table 33A**  
**Trips by Destination Activity: Seven-County Area**

<b>Destination Activity</b>	<b>All Modes</b>	<b>Percent</b>	<b>Motorized Modes</b>	<b>Percent</b>
Work	1,292,376	11.1%	1,194,506	11.0%
Work-Related	381,535	3.3%	367,452	3.4%
Attending School	180,496	1.5%	158,753	1.5%
Other School Activities	52,488	0.5%	48,918	0.4%
Child Care, Day Care, After School Care	50,344	0.4%	47,980	0.4%
Quick Stop	18,580	0.2%	18,042	0.2%
Shopping	1,514,540	13.0%	1,449,026	13.4%
Visit Friends/Relatives	347,094	3.0%	296,401	2.7%
Personal Business	1,392,538	11.9%	1,301,091	12.0%
Eat Meal Outside of Home	676,137	5.8%	621,501	5.7%
Entertainment/Recreational/ Fitness	604,670	5.2%	525,926	4.8%
Civic/Religious	157,537	1.3%	148,297	1.4%
Pick up/Drop off	912,828	7.8%	898,547	8.3%
With Another Person at Their Activity	29,087	0.2%	29,087	0.3%
Change Mode	173,146	1.5%	107,556	1.0%
At-Home Activities	3,843,644	32.9%	3,582,544	33.1%
Working at Home	45,394	0.4%	40,608	0.4%
<b>TOTAL</b>	<b>11,672,434</b>	<b>100.0%</b>	<b>10,836,235</b>	<b>100.0%</b>



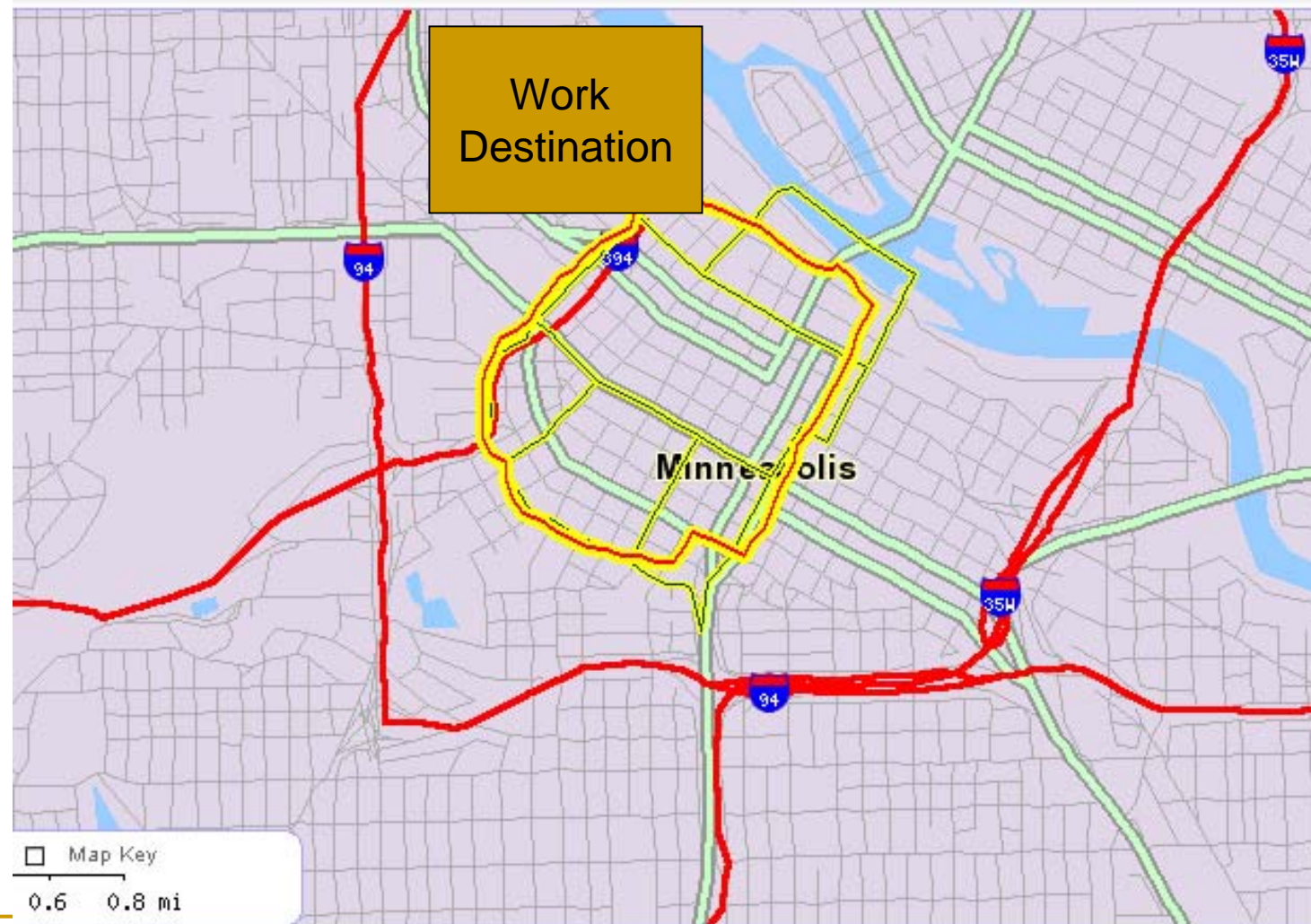
**DOWNTOWN MINNEAPOLIS**



oints and thermals loaded.

2) Map Overlay tools:

3) Display Options: ☒ Points ☒ Thermals ☒ Both ☒ Selection ☒ Report



# U.S. Census Bureau *LED On The Map (Beta)*

[LED Home](#)

[Help](#)

[On](#)

[Placename Lookup](#) Points and thermals loaded.

## 1) Background Map Tools:

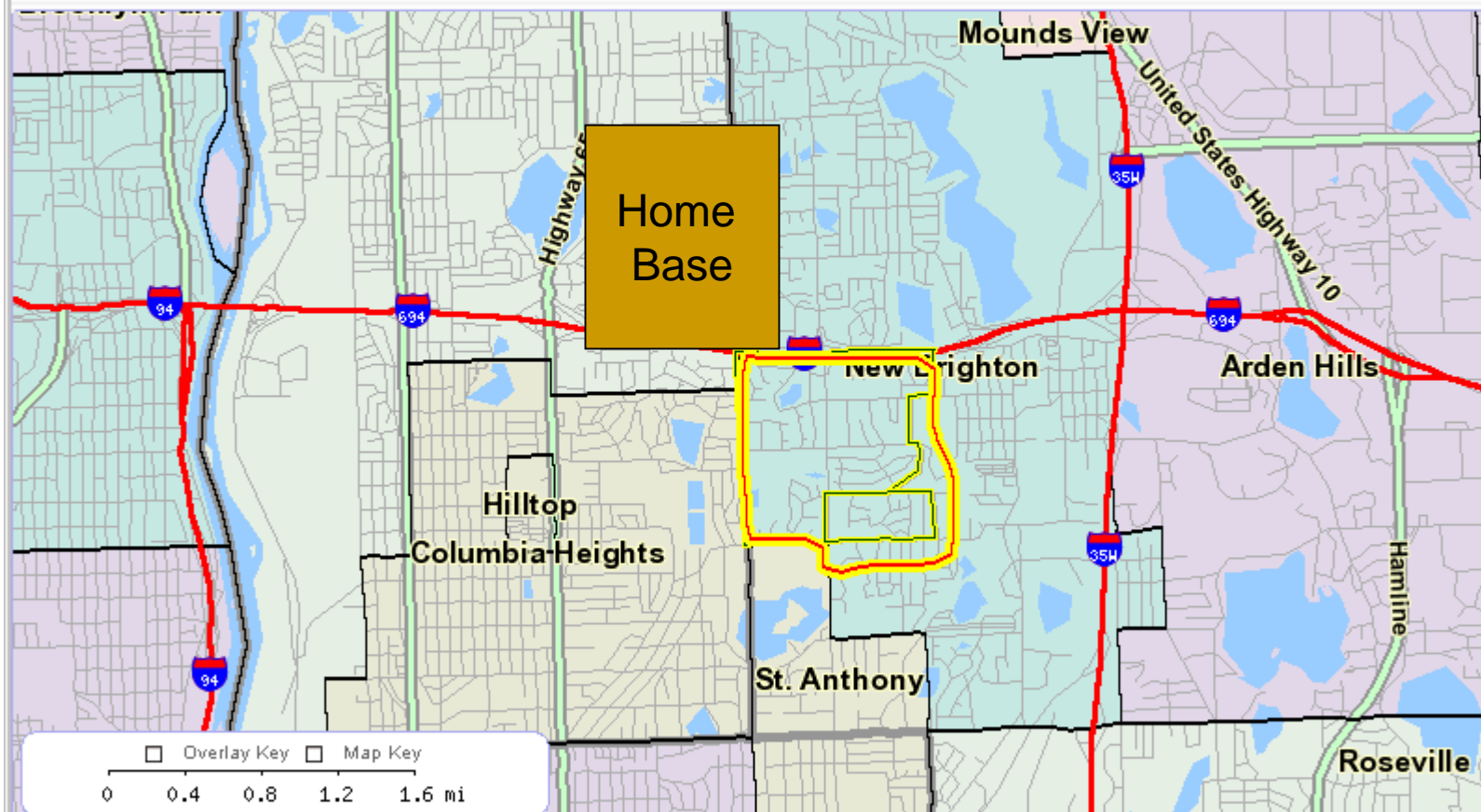
[In](#) [Out](#) [Re-Center](#) [Layers](#)

## 2) Map Overlay tools:

[Create/Change Overlay](#) [Clear](#)

## 3) Display Options:

☒ Points ☒ Thermals ☒ Both ☒ Selection ☒ Report



W3C XHTML 1.0

SDS VALIDATED

GETFIREFOX

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Points and thermals loaded.

5:

Center

Layers

2) Map Overlay tools:

Create/Change Overlay

Clear

3) Display Options:

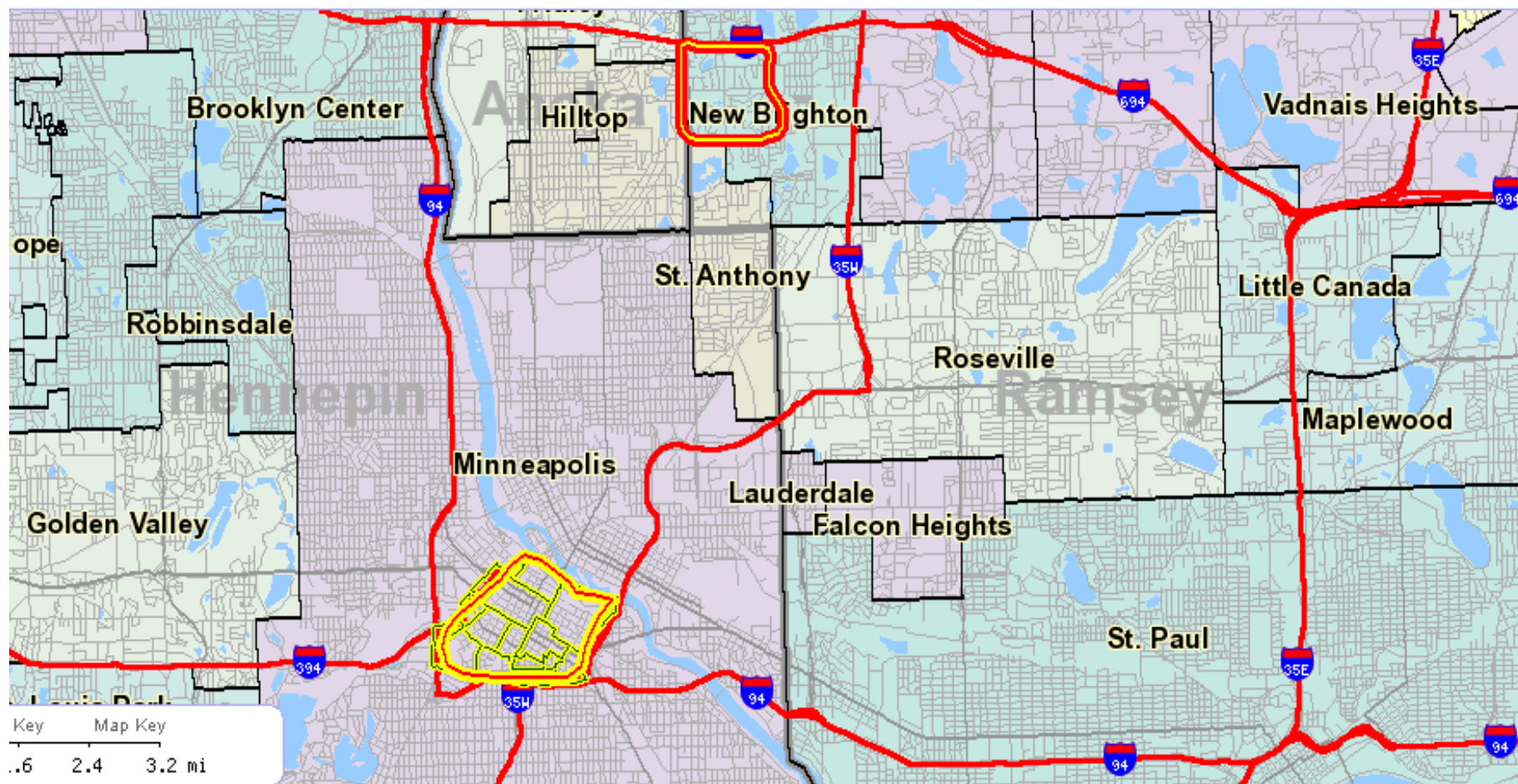
Points

Thermals

Both

Selection

Report



W3C XHTML 1.0

S08 VALIDATED

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? US Census Bureau -- Site Designed and Developed by [Exoensus LLC](#)



Paired Area Report - Characteristics of Workers that Reside in Selection Area #1

User Supplied Label

## WORKERS RESIDING IN SELECTION AREA #1

2003

Count Share

### Jobs Held by Residents

* All Jobs	1,881	100.0%
* All Jobs (Private Sector Only)	1,587	100.0%
* All Primary Jobs (Worker's highest paying job)	1,740	100.0%
* All Primary Jobs (Private Sector Only)	1,472	100.0%

## RESIDENTS FROM AREA #1 THAT WORK IN AREA #2

2003

Count Share

### Jobs held by Residents of Area #1 Working in Area #2

* All Jobs	210	11.2%
* All Jobs (Private Sector Only)	186	11.7%
* All Primary Jobs (Worker's highest paying job)	196	11.3%
* All Primary Jobs (Private Sector Only)	173	11.8%

Definitions and Disclaimers

### Source:

LED Worker Origin/Destination Database (2nd Quarter 2002 and 2003)



# What Is The 'Capture Rate'?

- Boarding Data = 52 from NB zone loadings
- 52/210 to CBD = 24.8%

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## Points to Ponder

- 75% of Potential Riders are not riding,
  - Why not? Are they in carpools?
  - What would it take to capture them?
  - Are the 75% really candidates to ride?
  - Do we have a false sense of accomplishment? (2.3%)
-

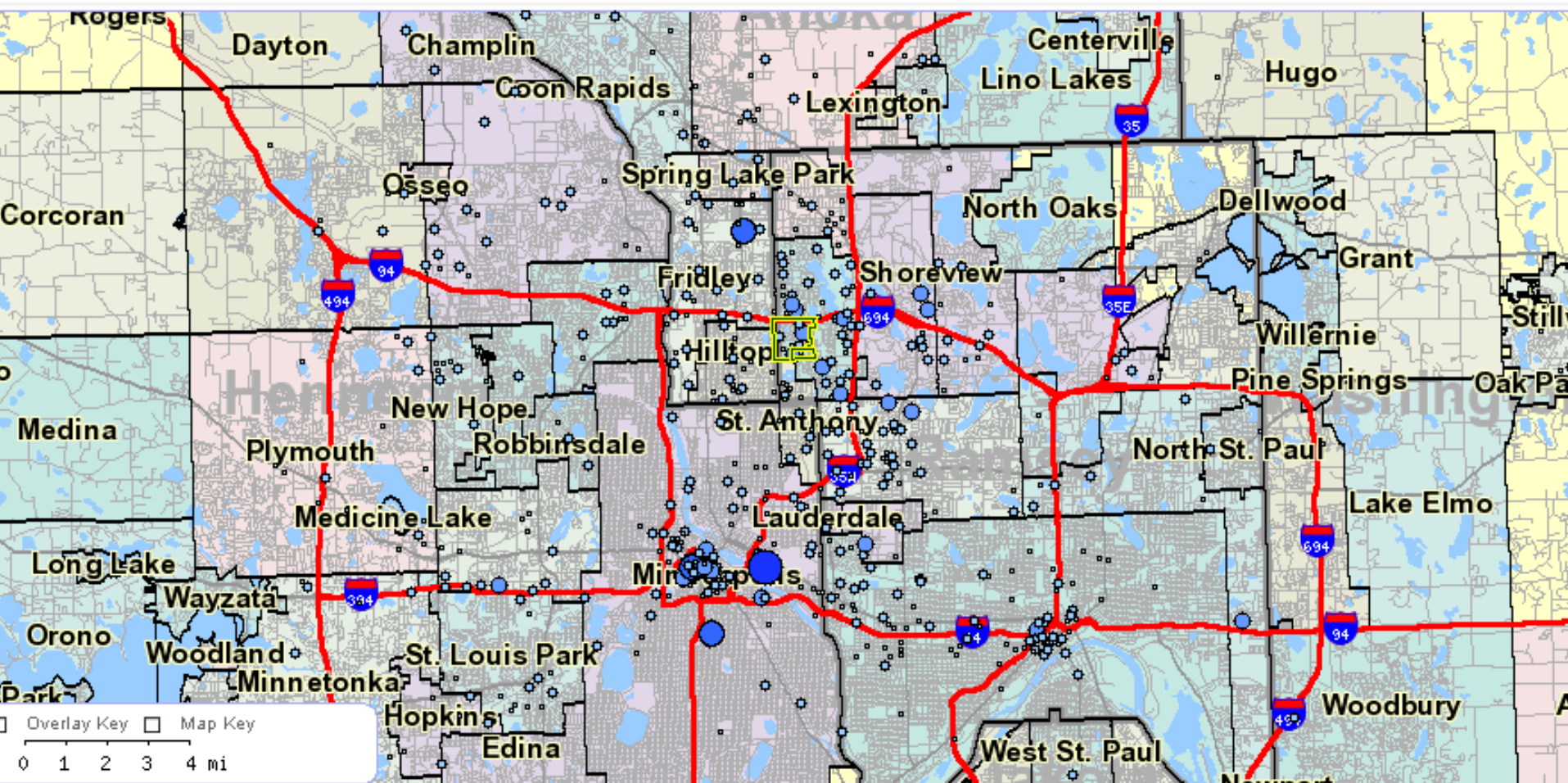
Lookup Points and thermals loaded.

1) Map Tools:

2) Map Overlay tools:

3) Display Options:

☒ Points ☒ Thermals ☒ Both ☒ Selection ☒ Report

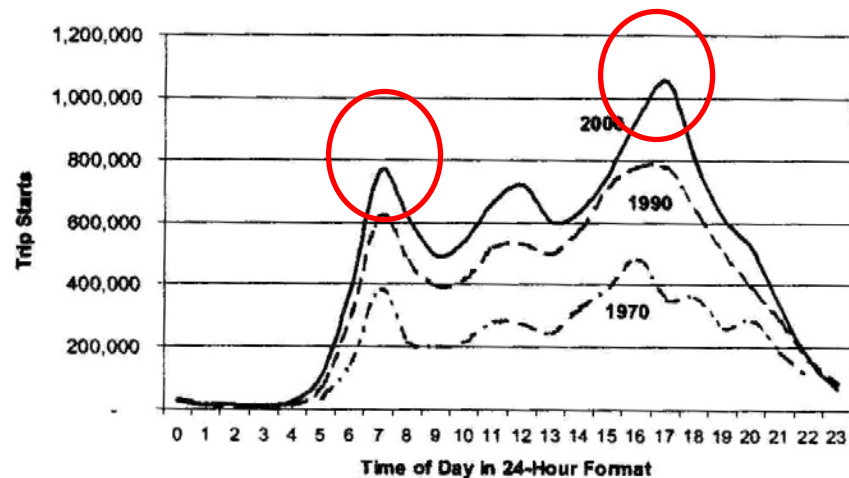


**Morning and afternoon peak travel periods are broadening and becoming more intense.**

Both the morning and afternoon peak periods are becoming longer in duration and entail more trips than in 1990. Both the AM and PM peak periods are each an hour longer in duration and peak later than in 1990.

Midday travel is becoming more pronounced. The number of trips starting during the noon hour exceeds those starting during the 1990 morning peak hour.

**Person Trip Starts: 1970, 1990 and 2000**





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# Issues- Can LED Solve Them?

- Data is a low Priority-
    - Emphasis is on Program (Project) Delivery
    - People Skill Development/Maintenance?
  - Transportation Data is-
    - Hard to get
    - Expensive
    - Infrequently Sampled
    - Getting More Difficult to Keep Relevant
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# Challenges for LED in Transportation

## ■ Role of LED O-D Data for Modeling?

- ❑ Forecasting?
- ❑ Calibration/Validation?
- ❑ Automated O-D Table Linkage?
- ❑ Totally New Models?

## ■ Transit Applications?

- ❑ Route Management/Evaluation?
  - ❑ Marketing?
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12/18/2005

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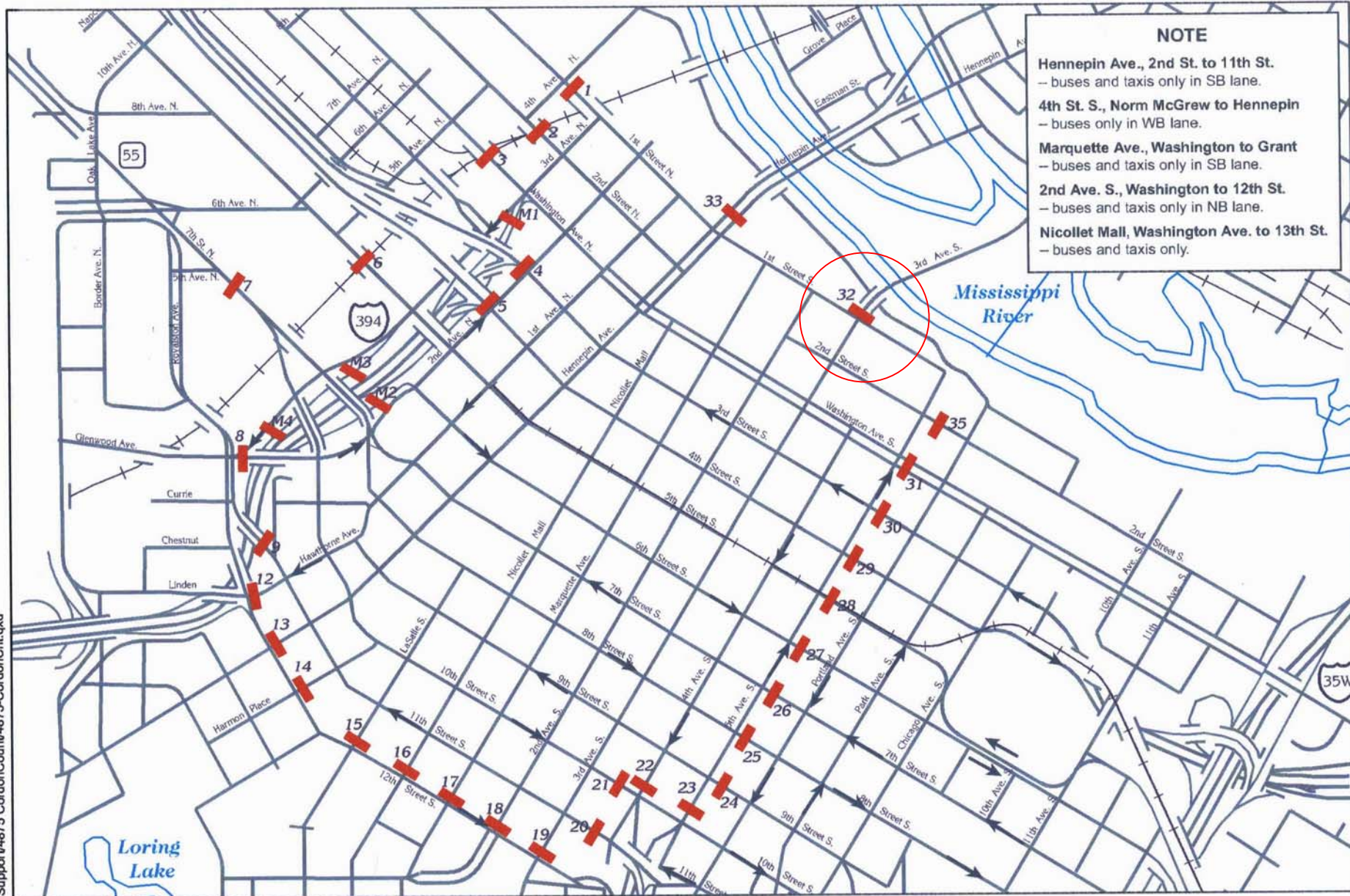


	2003		2002	
	Count	Share	Count	Share
<b>Number of Employers:</b>	2,059		2,051	
<b>Number of Jobs Held by Employed Workers</b>				
* All Jobs	102,818	100.0%	108,839	100.0%
* All Jobs (Private Sector Only)	83,526	81.2%	88,789	81.6%
* All Primary Jobs (Worker's highest paying job)	97,700	95%	103,550	95.1%
* All Primary Jobs (Private Sector Only)	79,097	76.9%	84,258	77.4%

WHERE RESIDENTS ARE EMPLOYED	2003		2002	
	Count	Share	Count	Share
<b>Total Workers (All Jobs - Private Sector)</b>	83,526	100.0%	88,789	100.0%
<b>Cities/Towns Where Workers Live</b>				
* Minneapolis	19,862	23.8%	21,115	23.8%
* St. Paul	5,481	6.6%	6,342	7.1%
* Out-of_State	3,185	3.8%	3,463	3.9%
* Unincorporated Areas	2,968	3.6%	3,350	3.8%
* Plymouth	2,590	3.1%	2,782	3.1%
* All Other Locations	49,440	59.2%	51,737	58.3%

<b>Counties Where Workers Live</b>				
* Hennepin	45,278	54.2%	47,700	53.7%
* Ramsey	10,192	12.2%	11,447	12.9%
* Dakota	6,964	8.3%	7,401	8.3%

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**TABLE 3**  
**TYPES OF VEHICLES ENTERING AND LEAVING MINNEAPOLIS CENTRAL BUSINESS DISTRICT AT EACH LOCATION IN 2003**

LOCATION	STATION	AUTO		TAXI		LIGHT TRUCK		HEAVY TRUCK		BUS*		TOTAL VEHICLES		
		IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	TOTAL
1st Street at 3rd Avenue North	1	2344	2160	35	33	195	194	22	22	65	44	2,660	2,452	5,112
2nd Street at 3rd Avenue North	2	1739	1352	41	39	131	145	65	52	17	20	1,993	1,608	3,600
Washington at 3rd Avenue North	3	5284	5518	71	69	712	732	129	116	111	94	6,307	6,530	12,837
3rd Street at 2nd Avenue North	4	0	9879	0	90	0	2243	0	195	0	218	0	12,625	12,625
4th Street at 2nd Avenue North	5	10180	0	102	0	1177	0	80	0	204	0	11,743	0	11,743
5th Street at 3rd Avenue North	6	2142	1817	22	18	264	233	34	27	156	129	2,617	2,223	4,840
7th Street near 5th Avenue North	7	5372	5092	178	134	382	329	43	16	385	237	6,359	5,808	12,167
Glenwood/3rd at 12th Street North	8	1814	1476	34	16	176	133	28	20	107	78	2,160	1,724	3,883
11th Street North at Currie Avenue	9	0	3098	0	70	0	358	0	148	0	215	0	3,889	3,889
Hawthorne Avenue at 12th Street North	12	0	13280	0	170	0	817	0	75	0	226	0	14,568	14,568
Hennepin Avenue at 12th Street South	13	9532	1622	116	131	992	146	146	46	209	161	10,995	2,106	13,101
Harmon Place at 12th Street South	14	1176	1224	27	20	109	122	14	43	41	3	1,367	1,412	2,779
LaSalle Avenue at 12th Street South	15	3894	4050	91	269	362	222	45	87	136	40	4,528	4,669	9,197
Nicollet Mall at 12th Street South	16	0	0	141	37	28	26	0	0	372	208	541	271	812
Marquette Avenue at 12th Street South	17	5784	321	287	253	271	53	84	12	59	217	6,485	856	7,340
2nd Avenue at 12th Street South	18	26	5616	41	204	15	139	7	62	141	113	230	6,134	6,364
3rd Avenue at 12th Street South	19	3107	4082	60	115	182	357	50	64	92	95	3,492	4,713	8,205
11th Street South at 4th Avenue	20	15639	0	581	0	840	0	130	0	395	0	17,585	0	17,585
10th Street South at 4th Avenue	21	0	3367	0	279	0	205	0	45	0	41	0	3,937	3,937
4th Avenue at 10th Street South	22	0	4048	0	348	0	2108	0	151	0	201	0	6,855	6,855
5th Avenue at 10th Street South	23	14332	0	422	0	1188	0	167	0	432	0	16,542	0	16,542
9th Street South at Portland Avenue	24	5626	0	145	0	147	0	47	0	96	0	6,061	0	6,061
8th Street South at Portland Avenue	25	0	8862	0	407	0	294	0	207	0	235	0	10,006	10,006
7th Street South at Portland Avenue	26	9482	0	600	0	512	0	80	0	321	0	10,996	0	10,996
6th Street South at Portland Avenue	27	0	9185	0	208	0	682	0	54	0	276	0	10,405	10,405
5th Street South at Portland Avenue	28	2057	0	30	0	126	0	26	0	2	0	2,241	0	2,241
4th Street South at Portland Avenue	29	0	5695	0	122	0	383	0	5	225	241	225	6,446	6,671
3rd Street South at Portland Avenue	30	5104	0	100	0	457	0	89	0	105	0	5,855	0	5,855
Washington at Portland Avenue	31	8628	9905	66	96	268	961	104	46	145	180	9,212	11,189	20,401
3rd Avenue Bridge	32	5700	4301	81	112	337	274	133	62	51	180	6,302	4,929	11,231
Hennepin Avenue Bridge	33	8815	11255	116	121	1468	1524	266	160	240	254	10,905	13,314	24,219
2nd Street at Portland	35	1837	2575	57	61	109	121	27	44	5	29	2,035	2,830	4,865
I-394 on/off ramp to Washington Avenue	M1	5108	4102	145	116	465	373	75	60	49	54	5,841	4,706	10,547
I-394 off ramp to 6th Street	M2	3818	0	108	0	347	0	56	0	97	0	4,426	0	4,426
I-394 on ramp from 3rd Avenue	M3	0	957	0	27	0	87	0	14	0	42	0	1,127	1,127
I-394 HOV on ramp from 3rd Avenue	M4	0	332	0	9	0	30	0	5	0	22	0	398	398
4th Street Ramp	TAD 4	242	0	0	0	0	0	0	0	0	0	242	0	242
5th Street Ramp	TAD 5	431	297	0	0	0	0	0	0	0	0	431	297	728
7th Street Ramp	TAD 7	896	732	0	0	0	0	0	0	0	0	896	732	1,628
<b>TOTAL</b>		<b>140,106</b>	<b>126,199</b>	<b>3,698</b>	<b>3,575</b>	<b>11,261</b>	<b>13,292</b>	<b>1,947</b>	<b>1,838</b>	<b>4,259</b>	<b>3,853</b>	<b>161,270</b>	<b>148,757</b>	<b>310,028</b>

\* Bus types include Metro Transit, School, Greyhound, Jefferson Lines, and Metro Mobility