

FIRST Program 2006 SUMMARY REPORT

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Minnesota Department of Transportation

Office of Traffic, Safety, and Operations

Regional Transportation Management
Center

Incident Management Unit

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Program Updates

The FIRST program has been upgraded in the last 3 years. Major updates included: adding more routes, staff, and upgrading the trucks with new sign boards, decals, and other safety enhancements.

Staff

The FIRST program has a **21 member staff; two supervisors and 19 FIRST drivers**. Of the 19 FIRST drivers, 18 positions are full-time and one is part-time. The supervisors do not patrol any routes and are normally on duty from 4:30 A.M. to 8:15 P.M. and on call after that. The supervisor reports to the Incident Management Engineer of the Office of Traffic, Safety and Operations.

Freeway Coverage

The FIRST program covers critical freeway segments using a route structure to optimize response times. Routes have been tested and selected based on the potential for incident-created congestion. Factors that were used in the determination consisted of roadway characteristics, extent and severity of daily congestion, number of incidents, and the presence or absence of an on-line ramp metering system and video surveillance.

There are currently **11 routes covering 225** miles of metro area freeways. The FIRST route map (Figure 1) is shown on the following page.

Summary of Results for 2006

FIRST assisted at 19,381 incidents in 2006. Of the incidents in 2006, 68 percent were detected while patrolling their routes.

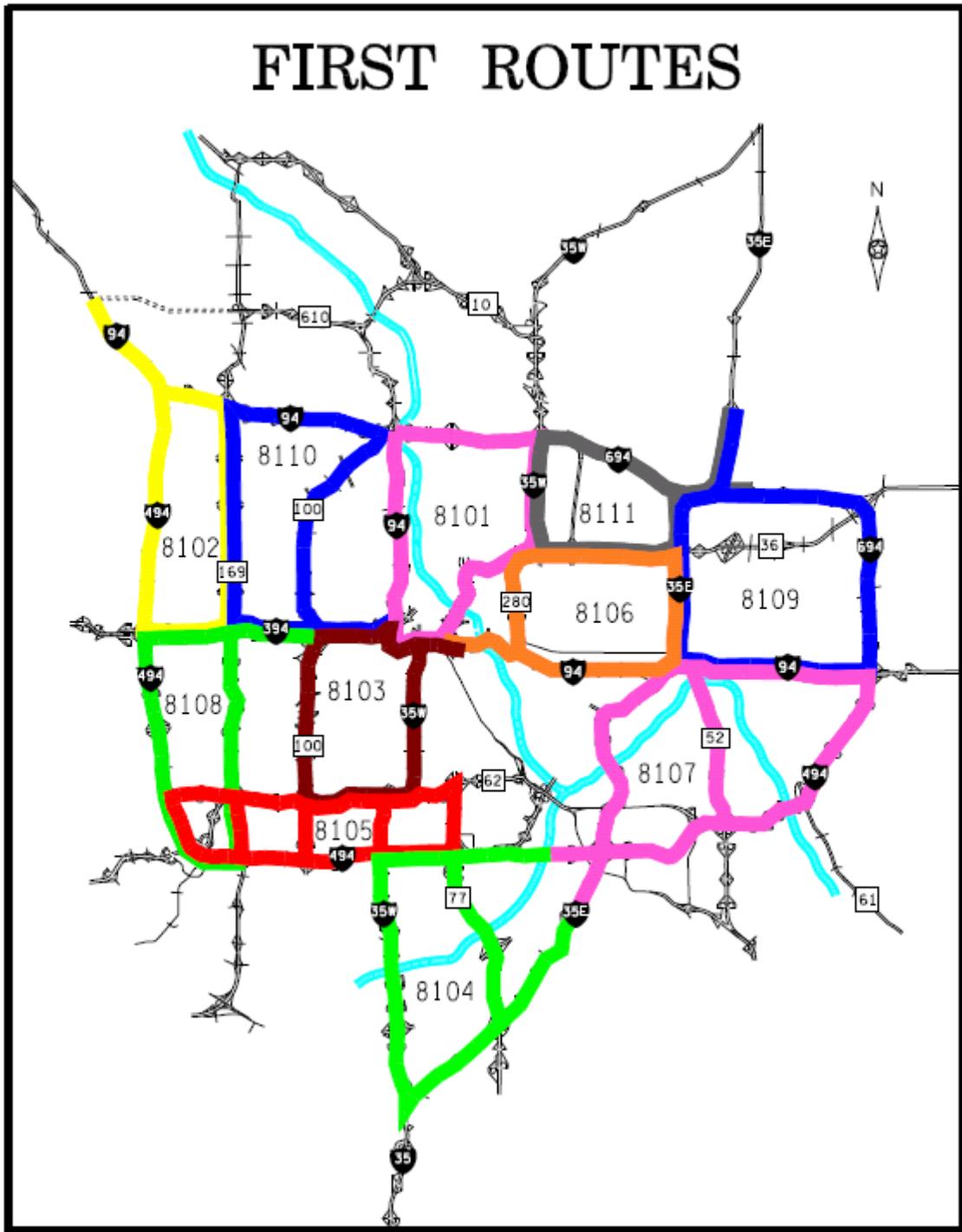


Figure 1. FIRST Routes

Detailed Program Results for 2006

This section outlines in detail the data collected about the FIRST program activity for 2006.

Figure 2 shows the total annual FIRST incidents since 1993, the year it was fully integrated with other traffic management initiatives and managed under the Freeway Operations Section. In general, the number of incidents per year is following a stable, but slightly increasing trend. Table 1 details the number of incidents by route since 1993. Figure 3 indicates that in 2006 routes 8108, 8110, and 8111 were barely covered. There may be plans to cover those routes in the future depending on the availability of funding.

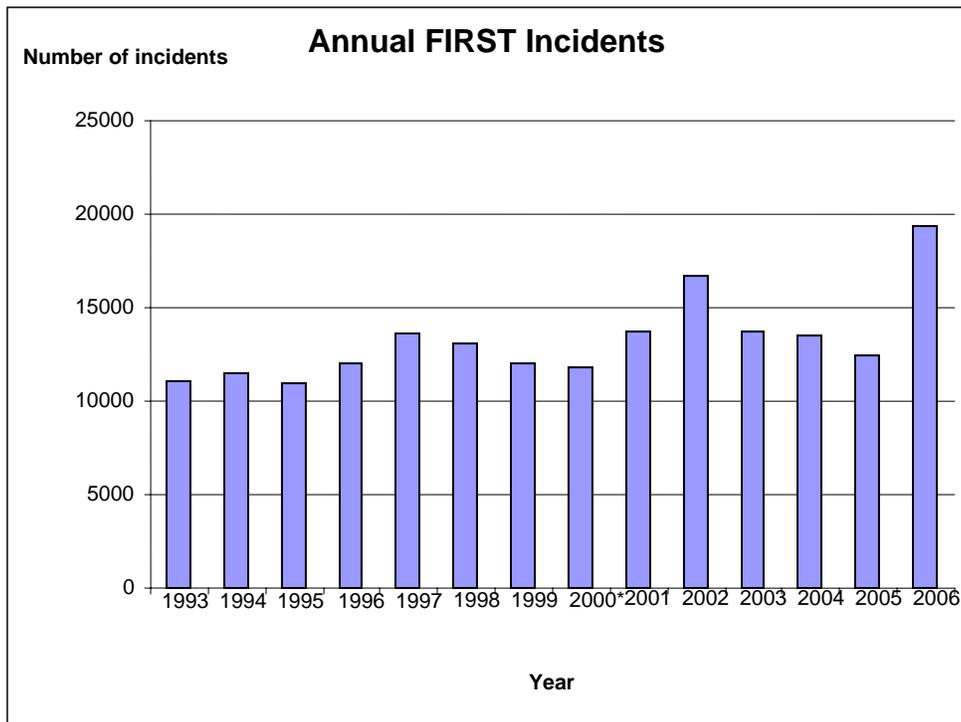


Figure 2. Annual FIRST Incidents

Data source is FIRST Access Database
*Route change in April 2000

Table 1. Total Incidents per Route for 1993 – 2006

Data source is FIRST Access Database

*Route change in April 2000

Year	8101	8102	8103	8104	8105	8106	8107	8108	8109	8110	8111	Other	Total Incidents
1993	1941	2346	2344	1726	856	1894	NA	NA	NA	NA	NA	NA	11107
1994	2569	2512	2263	1590	671	1937	NA	NA	NA	NA	NA	NA	11542
1995	2426	2413	1860	1594	765	1940	NA	NA	NA	NA	NA	NA	10998
1996	2248	2694	1950	1721	1094	2044	212	NA	NA	NA	NA	31	11994
1997	2757	2396	2747	1780	244	2581	761	NA	NA	NA	NA	379	13645
1998	2976	2372	2243	2093	105	2603	321	NA	NA	NA	NA	415	13128
1999	2774	2324	1688	1879	49	2284	542	NA	NA	NA	NA	457	11997
2000*	2309	1763	1838	1763	1125	1776	491	88	NA	NA	NA	674	11827
2001	2066	2365	2143	2284	1527	1903	533	89	NA	NA	NA	807	13717
2002	2746	2164	2201	2325	1957	2495	897	226	NA	NA	NA	1726	16737
2003	2032	2277	1598	2406	1958	2396	327	99	NA	NA	NA	647	13740
2004	2013	2136	1450	2488	2220	3043	67	23	NA	1	NA	30	13471
2005	1786	2027	1644	1870	1617	2406	236	18	379	56	11	441	12491
2006	2150	2335	2762	2157	2278	3099	2010	34	1652	286	176	442	19381

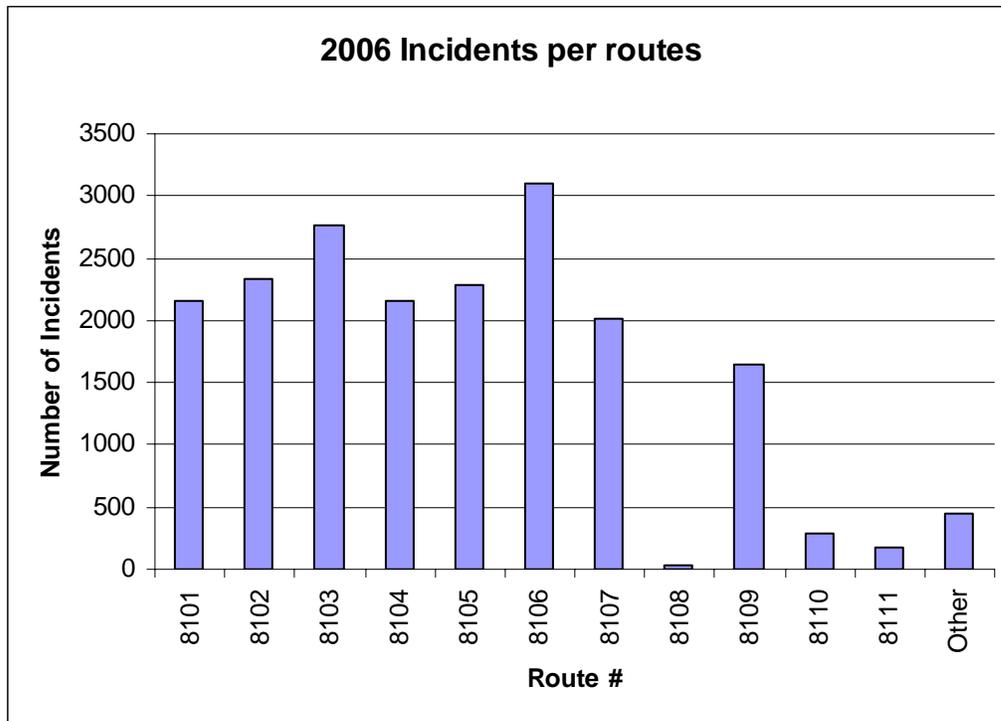


Figure 3. 2006 Incidents per routes

FIRST responds to three main types of incidents: stalls, crashes, and removal of debris from the roadway. Table 2 shows the portion of the total incidents in each of these

categories. The number for “services provided” is higher than “total incidents” since sometimes more than one service is provided for each incident.

Table 2. Breakdown of Incident Types for 1993 – 2006

Incident Type	1996	1997	1998	1999	2000*	2001	2002	2003	2004	2005	2006
Stalls	10648	12480	11939	11014	10610	12051	14661	11517	11001	9943	15054
Crashes	707	624	684	576	763	1037	1381	1590	2021	1814	3278
Debris	443	436	405	328	305	422	546	423	424	467	706
Other	196	105	100	79	149	207	149	210	287	267	343
Total Incidents	11994	13645	13128	11997	11827	13717	16737	13740	13733	12491	19381
Services Provided	16382	18249	17067	15637	16508	17858	20604	22360	12677	17442	28933

Data source is FIRST Access Database

*Route change in April 2000

77 percent of the total incidents attended to by FIRST in 2006 were stalled vehicles. Figure 4 illustrates the percentage of incidents by type in 2006. Figure 6 displays the percentages of incidents according to how they were detected, or found. Of the incidents that FIRST responded to in 2006, 68 percent were detected by the FIRST drivers while patrolling their routes. This large percentage demonstrates the effectiveness of using roving patrols to detect incidents versus relying solely on CCTV. The Control Room of the RTMC notified FIRST in 25 percent of the total incidents in 2006.

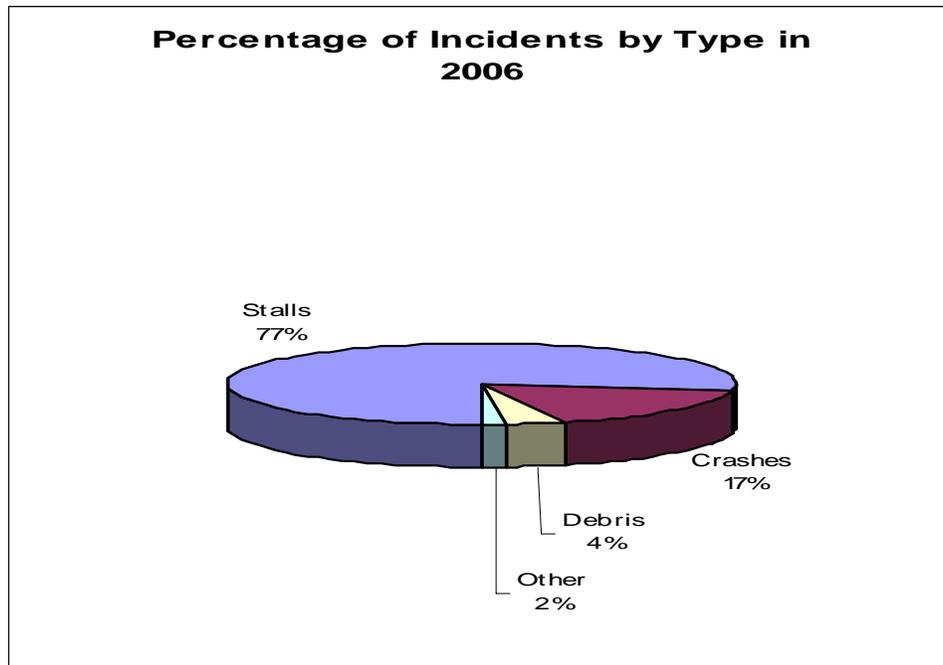


Figure 4. Percentage of Incidents by Type in 2006

Data source is FIRST Access Database

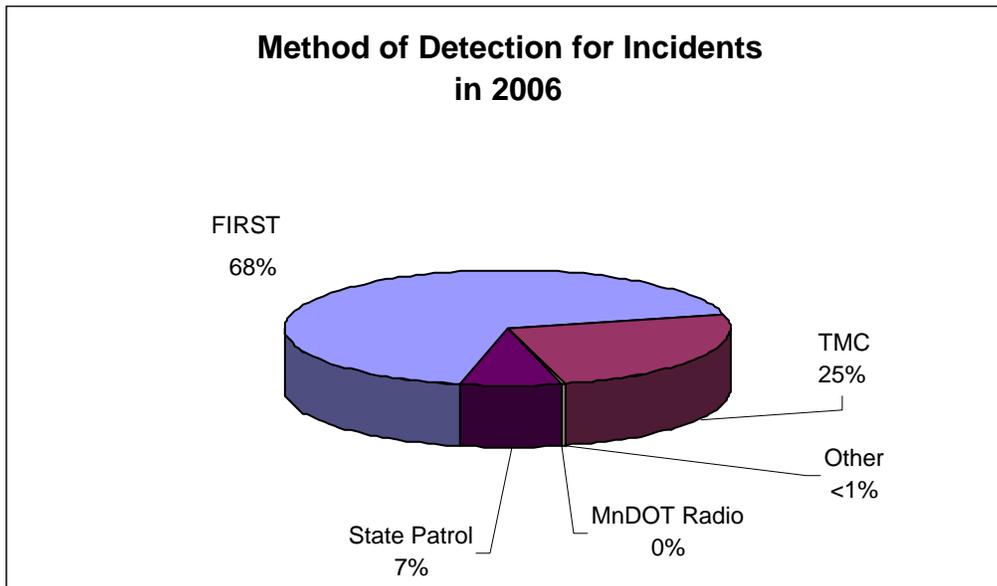


Figure 5. Accidents per method of detection

Data source is FIRST Access Database

FIRST drivers are equipped to provide many different types of services. Table 3 breaks down the services provided from 1993 to 2006. Figure 6 details the services provided in 2006.

Table 3. Breakdown of services provided for 1993-2006

Type of Service Provided	1993	1994	1995	1996	1997	1998	1999	2000*	2001	2002	2003	2004	2005	2006
Mechanical Assistance*	2476	2432	2583	2703	3027	2961	2766	2862	3815	4504	4295	3236	2816	2876
Other	1382	1391	1556	1542	1764	1412	1305	1830	2119	2318	1880	1790	2079	3226
Provide Fuel	1056	1087	1134	1262	1534	1430	1444	1338	1325	1664	1616	1529	1266	2219
Telephone, Transport or Directions	2438	2304	2253	2532	2712	2526	2327	2029	2126	2340	2190	1708	1147	1442
Push Vehicle	653	721	697	724	675	584	545	524	519	629	685	621	492	876
Remove Debris	770	634	541	499	428	467	372	386	552	715	762	670	743	1180
Tag Unoccupied Vehicle	2857	2621	2175	2240	2508	2639	2234	2120	2334	2631	2306	1895	1884	2801
Tire Change	1275	1393	1380	1598	1877	1804	1736	1563	1930	2343	2308	1835	1672	2465
Traffic Control	750	2129	2373	3282	3724	3244	2908	3856	3108	3460	6318	6346	5343	11848
Total Number of Services Provided	13657	14712	14692	16382	18249	17067	15637	16508	17828	20604	22360	19630	17442	28933

Data source is FIRST Access Database

* Includes overheats and jump starts

+ Route change in April 2000

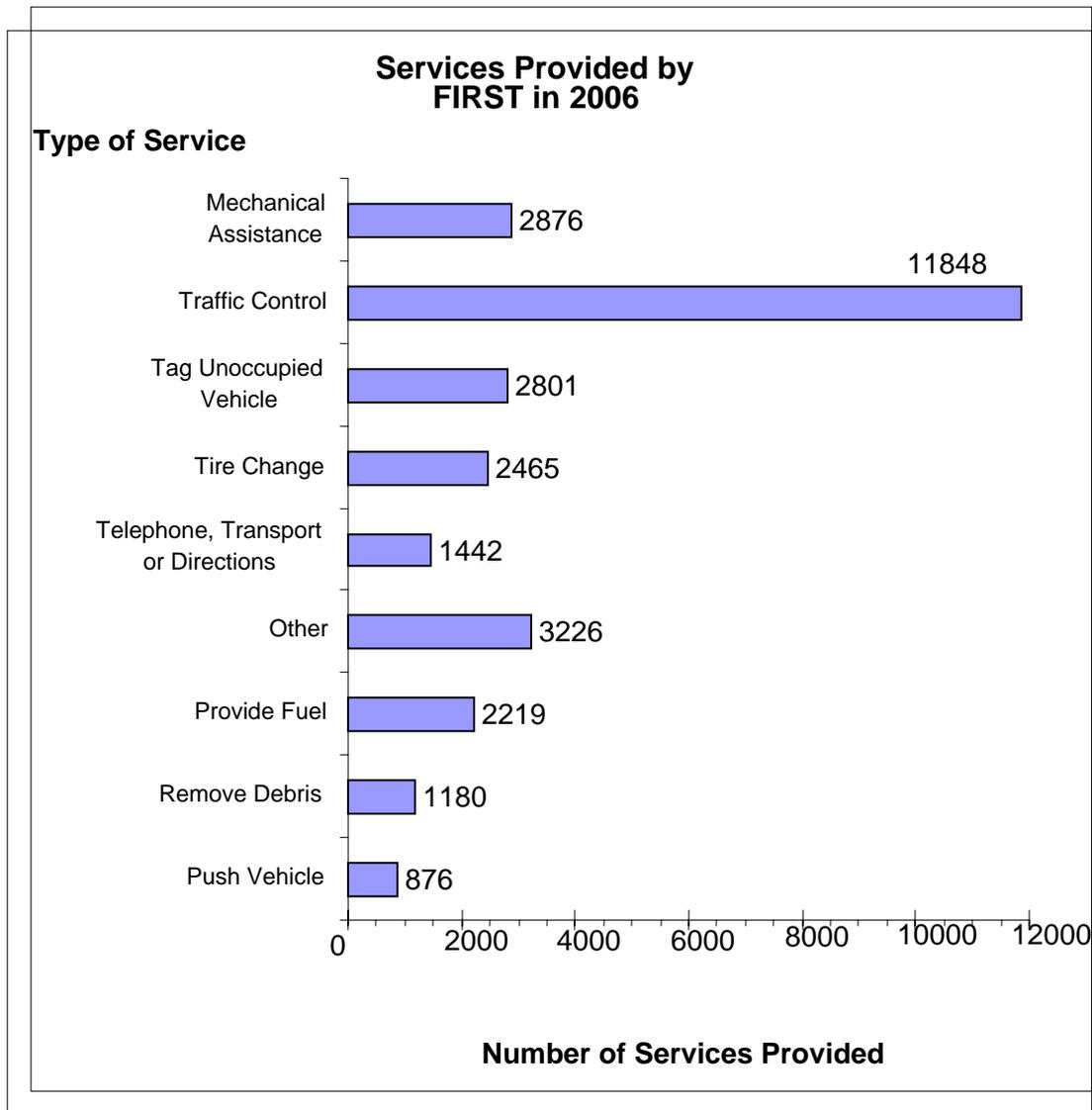


Figure 6. Services provided by FIRSTs in 2006

Data source is FIRST Access Database

Table 4 shows the number of disabled vehicles pushed by FIRST from 1993 to 2006 from different locations. A large number of vehicles are removed from the mainline, relieving the freeway of possible congestion and preventing secondary crashes. The percentages of pushes from different locations in 2006 are illustrated in Figure 7.

Table 4. Location of vehicles pushed for 1993-2006

Location	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Shoulder	206	233	224	299	265	228	210	199	203	228	712	186	171	360
Mainline	231	230	231	235	220	201	186	159	208	221	797	294	229	387
Ramp	188	232	233	192	209	173	167	177	161	192	361	174	153	299
Other	35	44	31	34	21	14	9	9	17	23	176	5	9	15
Total	660	739	719	760	715	616	572	544	589	664	2046	659	562	1061

Data source is FIRST Access Database

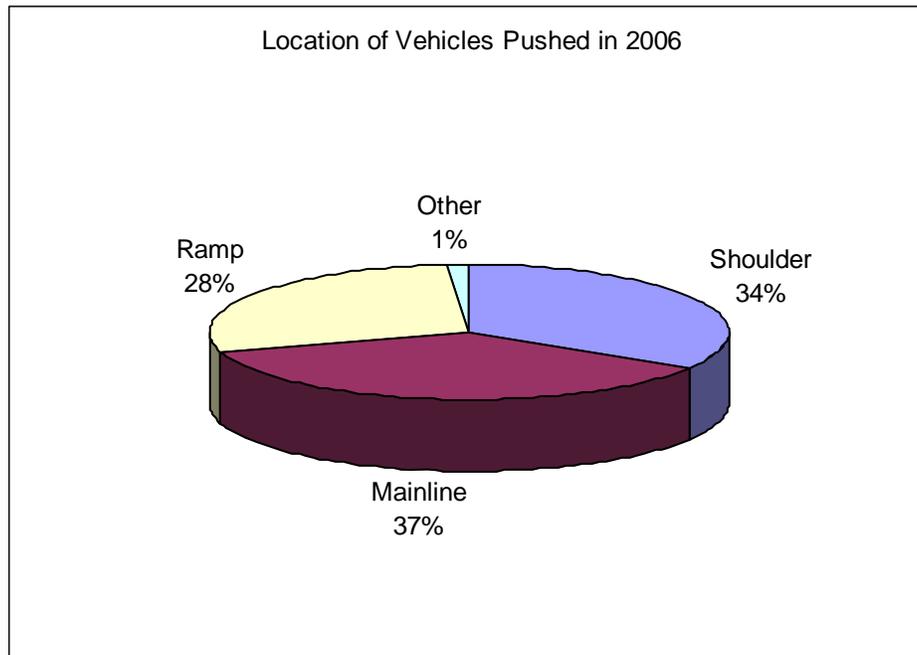


Figure 7. Location of vehicles pushed in 2006

Data source is FIRST Access Database

Data source is TMC Incident Log Database

Table 5 outlines the cost of the FIRST program for fiscal year 2006. A benefit/cost study was conducted in 2004 using 2003 data. (see FIRST Program Evaluation dated November 2004) This study found a 15.8:1 benefit/cost for the program based on reduced delay time for the quick removal to stalled vehicles.

Table 5. Mn/DOT FIRST program annual cost (FY2006)

	FY 2006 Cost
Staff *	
FIRST Employees	\$ 780,542
Premium Pay/Other	\$ 16,622
Overtime Expense	\$ 10,500
<i>* salary & benefits for 14 full-time, 2 part-time and 1 supervisor</i>	
Subtotal Staff	\$807,664
Vehicle Annual Cost	\$ 153,204
<i>Includes gasoline, maintenance, depreciation, parts, labor and shop overhead for 8 vehicles and 2 backup. Vehicle purchase price - \$21,000.</i>	
Supplies/Equipment/Building Operation	\$ 32,687
<i>Field and auto supplies, uniforms, printing, tools, building maintenance and utilities.</i>	
Training	\$ 5,450
<i>Evasive Driving & Other</i>	
Computer System Maintenance & Operation	\$ 20,057
<i>Vehicle location system/data collection</i>	
Communications	\$ 8,878
<i>Nextel radios</i>	
Total Annual Cost	\$ 1,027,940