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Highway Traffic Safety Data Overview for Metropolitan Chicago

Analysis of 2005 Crash Data

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CMAP Congestion Management Process

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Regional Traffic Safety Data Overview

Regional Casualty Rates and Trends

Metropolitan Chicago Motor Vehicle Casualties Fell from 2002 to 2005

The annual number of injuries and fatalities from motor vehicle crashes in northeastern Illinois fell 12.47% from 2002 to 2005. The change was greatest in fatalities; fatalities fell from 675 to 629, or 6.8%. Table 1 shows the change in injuries for the 7-county area from 2002 to 2005.

Table 1
Injuries and Fatalities from Motor Vehicle Crashes, Northeastern Illinois, 2002 and 2005

Injury Severity	2002	2005	Change	% Change
Injury Reported, Not Evident	38,296	31,710	-6,586	-17.2%
Non-Incapacitating Injuries	36,453	32,842	-3,611	-9.9%
Incapacitating Injuries	11,061	10,515	-546	-4.9%
Fatalities	675	629	-46	-6.8%
Total Injuries and Fatalities	86,485	75,696	-10,789	-12.47%

Sources: IDOT, CMAP

Fatality and Injury Rates Also Fell

Traffic crashes are a function of risk and exposure to that risk. Risk can be measured either from a public health (crashes per population) or mobility perspective (crashes per million miles of travel). Exposure rates rose from 2002 to 2005; both population and vehicle miles traveled (VMT) grew moderately. However, from 2002 to 2005, crash risks fell both from a public health and mobility perspective. Fatalities per hundred thousand people fell 8.3%, and fatalities per hundred million VMT fell 9.3%. See Table 2 for a summary.

Table 2
Northeastern Illinois Motor Vehicle Injury Rates, 2002 and 2005, Summary

Measure	2002	2005	% Change
Fatalities per Hundred Million VMT	1.15	1.04	-9.3%
Fatalities per Hundred Thousand Population	8.12	7.44	-8.3%
Non-Fatal Injuries per Hundred Million VMT	145.58	124.00	-14.8%
Non-Fatal Injuries per Hundred Thousand Population	1,032.39	888.43	-13.9%
Population	8,311,742	8,449,379	1.7%
Annual VMT (Billions)	58.945	60.537	2.7%

Sources: IDOT, CMAP, U.S. Census

Regional Traffic Safety Data Overview

Fatality Rates and Trends by Subarea

2005 regional death rates from motor vehicles crashes in metropolitan Chicago fell substantially from 2002 to 2005, but remained above the national target of 1.00 fatalities per million VMT.

Analysis of Motor Vehicle Fatalities by Northeastern Illinois Subarea

The area with the lowest fatality rates, in terms of both VMT and population, was DuPage County, though fatalities and fatality rates both rose during the analysis period. From a VMT perspective, suburban Cook County had the second lowest fatality rate.

Based on population, Chicago had the second lowest motor vehicle fatality rate in the region, owing to shorter trips and lower automotive mode share in the City. However, each vehicle mile traveled tends to be riskier in the city than elsewhere, with a relatively high VMT fatality rate.

Areas with the highest fatality rates per population include those with substantial rural road infrastructure, particularly McHenry and Kendall Counties. In both of these counties, motor vehicle fatality rates are high, but declining.

Population- and VMT-based motor vehicle fatality rates fell in every county but DuPage. However, DuPage County fatalities may be a statistical anomaly, since, as Table 4 will show, injury rates are declining there.

Table 3

Motor Vehicle Fatalities, Northeastern Illinois, 2002 and 2005, by Subarea

Subarea	Fatalities		Fatalities per 100 Million VMT		Fatalities per 100,000 Population	
	2002	2005	2002	2005	2002	2005
Chicago	232	191	1.85	1.52	8.04	6.72
Suburban Cook	194	187	0.90	0.86	7.79	7.60
DuPage County	40	56	0.47	0.65	4.33	6.01
Kane County	39	35	1.15	0.99	8.80	7.24
Kendall County	17	17	2.89	2.48	27.51	21.36
Lake County	61	60	1.05	1.03	9.04	8.52
McHenry County	36	30	1.76	1.40	12.96	9.85
Will County	56	53	1.27	1.00	10.00	8.25
Region	675	629	1.15	1.04	8.12	7.44

Sources: IDOT, CMAP

Regional Traffic Safety Data Overview

Non-fatal Injury Rates and Trends by Subarea

Analysis of Motor Vehicle Injuries by Northeastern Illinois Subarea

While fatality rates are highest in rural counties, urban counties have the highest motor vehicle non-fatal injury rates. Urban counties exhibit congestion and vehicle conflicts that result in greater numbers of crashes, but these crashes, on average, tend to be less deadly than rural crashes on high-speed roads.

Non-fatal injuries declined in all but Kendall and Will Counties, where suburbanization is leading to more crashes. However, in Will County, motor vehicle injury rates declined over the period. All injury rate measures except in Kendall County fell from 2002 to 2005.

City of Chicago injury rates per million VMT fell by more than 20% from 2002 to 2005, faster than in other areas of the region. However, Chicago injury rates per million VMT are still substantially higher than the rest of the region. From the population risk perspective, high Chicago VMT risk is mitigated by shorter trips and alternatives to the automobile, so that Chicago is below Kane County and suburban Cook County in injury rates per 100,000 population.

Table 4

Non-fatal Injuries from Motor Vehicle Crashes, Northeastern Illinois, 2002 and 2005, by Subarea

Subarea	Non-fatal Injuries		Non-fatal Injuries per 100 Million VMT		Non-fatal Injuries per 100,000 Population	
	2002	2005	2002	2005	2002	2005
Chicago	32,639	25,940	260	206	1,131	913
Suburban Cook	25,696	23,483	119	108	1,031	954
DuPage County	9,088	7,746	107	89	983	832
Kane County	4,501	4,472	133	127	1,016	925
Kendall County	517	664	88	97	837	834
Lake County	6,243	5,720	107	98	925	812
McHenry County	2,419	2,212	118	103	871	726
Will County	4,707	4,830	107	91	841	752
Region	85,810	75,067	146	124	1,031	888

Sources: IDOT, CMAP

Regional Traffic Safety Data Overview

Regional Crash Rates and Trends

Metropolitan Chicago Motor Vehicle Crashes Fell from 2002 to 2005

In addition to measuring trends and rates of injuries and fatalities, we have also measured the trends and rates of the crashes that cause those casualties. Table 5 shows that total crashes in seven-county metropolitan Chicago fell from 4.1% between 2002 and 2005. The drop was highest in crashes that cause one or more injuries. Crashes with property damage only dropped more slowly. One possible explanation of this trend is the improvements of safety features of vehicles, so that a crash that would have caused injuries in 2002 might have caused only property damage in 2005. Still, lower total crashes point to highway safety or driver behavior improvements.

Table 5
Motor Vehicle Crashes, Northeastern Illinois, 2002 and 2005

Most Harmful Event in Crash	2002	2005	Change	% Change
Crashes with Property Damage Only	250,542	243,419	-7,123	-2.8%
Injury Crash	58,853	53,324	-5,529	-9.4%
Fatal Crash	606	579	-27	-4.5%
Total Crashes	310,001	297,322	-12,679	-4.1%

Sources: IDOT, CMAP

Crash rates per hundred million VMT and per hundred thousand people in Table 6 show that, after adjusting for exposure, crash risks are falling. Still, on average, a crash occurred every 1 minute 46 seconds in 2005. A fatal crash occurred every 17 hours 50 minutes.

Table 6
Northeastern Illinois Motor Vehicle Crash Rates, 2002 and 2005, Summary

Measure	2002	2005	Change
Crashes per Hundred Million VMT	526	491	-6.6%
Crashes per Hundred Thousand Population	3,726	3,519	-5.6%
Time between Crashes	1 minute, 41 seconds	1 minute, 46 seconds	5 Seconds
Time between Injury Crashes	8 minutes, 55 seconds	9 minutes, 51 seconds	56 seconds
Time between Fatal Crashes	16 hours, 39 minutes	17 hours, 50 minutes	1 hour, 11 minutes

Sources: IDOT, CMAP, U.S. Census

Regional Traffic Safety Data Overview

Crash Rates and Trends by Subarea

Analysis of Motor Vehicle Crashes by Subarea

Crash rates vary widely by subarea in northeastern Illinois. Crash rates are highest in the City of Chicago, but the greatest declines in crashes and crash rates between 2002 and 2005 took place in the City of Chicago.

Suburbanization is leading to higher crash rates in Kendall County, but Kendall County's crash rate remains low relative to the rest of the region.

In the remainder of the region, crash rates remained relatively stable between 2002 and 2005.

Table 7

Motor Vehicle Crashes, Northeastern Illinois, 2002 and 2005, by Subarea

Subarea	Total Crashes		Crashes per 100 Million VMT		Crashes per 100,000 Population	
	2002	2005	2002	2005	2002	2005
Chicago	136,920	119,059	1,089	945	4,744	4,188
Suburban Cook	88,853	90,109	411	414	3,567	3,661
DuPage County	28,971	29,206	340	337	3,133	3,136
Kane County	13,432	14,279	396	406	3,032	2,955
Kendall County	1,494	2,093	254	306	2,417	2,629
Lake County	19,267	19,112	332	328	2,855	2,714
McHenry County	7,144	7,216	348	336	2,572	2,368
Will County	13,920	16,248	316	307	2,486	2,528
Region	310,001	297,322	526	491	3,726	3,519

Sources: IDOT, CMAP

Regional Traffic Safety Data Overview

Focus on Late-Night Fatalities

Large Portion of Motor Vehicle Fatalities Occur Late at Night

“Late-night” travel, between 10 p.m. and 5 a.m., is only 11% of regional VMT. Despite being such a small part of travel, late-night motor vehicle 2005 fatalities comprised 33.5 percent of all motor vehicle fatalities in the region. In Chicago, late-night 2005 fatalities comprised more than 41% of all motor vehicle fatalities, even after falling 21.8% from 2002 levels (see Table 8).

CMAP estimates that the fatality rate for late night travel in northeastern Illinois for 2005 was as high as 3.14 per hundred million late-night VMT, or more than three times the overall regional rate of 1.04 fatalities per hundred million VMT. An analysis of 2002 data demonstrated even higher rates spiking immediately after midnight, particularly during the weekend. Clearly, late-night travel is riskier than other regional travel.

Causes of higher late-night fatality rates may include drowsiness and slower reaction time, intoxication, and higher uncongested speeds on area freeways. Many of these factors need to be addressed through driver behavior, perhaps through education or enforcement. Poor visibility may also be a factor on late-night crashes, particularly for pedestrian crashes. Visibility might be addressed through advanced illumination techniques.

Table 8

Late Night Motor Vehicle Fatalities, Northeastern Illinois, 2002 and 2005, by Subarea

Subarea	Fatalities between 10 pm and 5 am		% Change	Late-Night As Percent of Total Fatalities (2005)
	2002	2005		
Chicago	101	79	-21.8%	41.4
Suburban Cook	69	63	-8.7	33.7
DuPage County	17	14	-17.6	25.0
Kane County	10	7	-30.0	20.0
Kendall County	3	4	33.3	23.5
Lake County	18	20	11.1	33.3
McHenry County	14	9	-35.7	30.0
Will County	13	15	15.4	28.3
Region	245	211	-13.9%	33.5

Sources: IDOT, CMAP

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Background Information

CMAP Congestion Management Process

Chicago Metropolitan Agency for Planning (CMAP) was established in 2006 to integrate planning for transportation and land use in the seven metropolitan Chicago counties of Cook, DuPage, Kane, Kendall, Lake, McHenry, and Will. CMAP's transportation initiatives include a congestion management process that addresses highway safety among other highway performance issues.

This report is the first of a series of projected CMAP reports addressing highway safety. These new analyses will take advantage of all crashes for 2005 and succeeding years being geocoded in a new IDOT initiative to provide data to support safety initiatives.

An in-depth 2005 analysis of 2002 data is posted at http://catsmpo.com/PUB/reports/traffic_safety/safety_analysis_final_report.pdf

Population and VMT by Subarea

The safety analysis included subarea crash and casualty rates per hundred million VMT and population. The population and VMT estimates used to calculate these rates are given below.

Table 9
Population and VMT by Subarea

Subarea	Annual VMT (Millions)		Population (Thousands)		VMT within Subarea per Resident (2005)
	2002	2005	2002	2005	
Chicago	12,572	12,602	2,886	2,842	4,433
Suburban Cook	21,605	21,769	2,491	2,461	8,844
DuPage County	8,519	8,675	925	931	9,316
Kane County	3,391	3,520	443	483	7,286
Kendall County	588	685	62	80	8,602
Lake County	5,809	5,829	675	704	8,279
McHenry County	2,050	2,146	278	305	7,044
Will County	4,410	5,301	560	643	8,248
Region	58,945	60,527	8,319	8449	7,163

Sources: IDOT, CMAP

31.5% of regional VMT is on our freeways and Toll roads. In addition, the region has 24,000 centerline miles and 7,700 signalized intersections.