



MOVING AT THE SPEED OF CONGESTION

THE TRUE COSTS OF TRAFFIC IN THE CHICAGO METROPOLITAN AREA

AUGUST 2008



METROPOLITAN PLANNING COUNCIL



What is congestion?

Traffic is inevitable — but not all congestion is bad. Retailers thrive on bustling streets, and, up to a point, the more people and goods moving through a neighborhood, city or region, the healthier its economy.

Once a threshold is reached, however, the cost of adding another vehicle to the road - in terms of delay and other drawbacks of traffic - outweighs the benefits to society.

This tipping point is different for every roadway. The research team behind this report determined the efficient level of traffic for different expressways and arterial roads in metropolitan Chicago, then measured the cost of additional traffic. What they found is excess congestion has infected our entire region's transportation network — and the costs are far greater than anyone has previously estimated.

What is congestion costing northeastern Illinois?

It's no secret traffic congestion in Chicagoland is bad and getting worse. Despite recent attention to climbing gas prices, most people still do not fully comprehend how much gridlock is costing them — and our region.

To compete globally, metropolitan Chicago needs a comprehensive understanding of the waste and implications of excess congestion. With this information, the entire region can begin to identify transportation strategies and investments that will strengthen our communities.

To quantify the true cost of congestion in northeastern Illinois and demonstrate its magnitude, the Metropolitan Planning Council commissioned HDR Decision Economics to study excess traffic on Chicagoland's expressways and arterial roads. This report details the findings, showing the burdensome effects of congestion on three scales — global, regional and individual.

REPORT SUMMARY

Figures and findings

\$7.3 billion

Cost of congestion to the Chicago region per year

Chicago and its six surrounding counties — Cook, DuPage, Kane, Lake, McHenry and Will — squander an estimated \$7.3 billion a year in wasted time and fuel, and environmental damages due to excess traffic congestion on its expressways and arterials. If nothing is done, that amount is predicted to grow by about 55 percent by 2030, more than twice as fast as the region's population, to \$11.3 billion a year.

87,000

Number of jobs the region would add by eliminating excess congestion

Eliminating excess road congestion in the region would create an estimated 87,000 jobs that today are lost due to labor and transportation costs.

22%

Percent increase in peak travel time as a result of congested traffic conditions

Congestion also slows the region's economy by adding 22 percent to peak period travel times. In fact, while climbing gas prices are hurting individuals across Chicagoland, people may be surprised to learn lost time is costing them 19.5 times more than wasted fuel.

ONLINE RESOURCE

For more information on this report visit www.metroplanning.org.

With \$7.3 billion you could...

Build eight CTA Red Line extensions and have enough money left to give the first 282,666,666 people a free ride (with two transfers!).

Put 292,000 students through four years of undergraduate education at the University of Illinois at Chicago.

Completely fund the total budget for the City of Chicago for the next two years.

Build seven Olympic Villages.

REPORT SUMMARY

Congestion impairs the region's ability to compete globally.

Metropolitan Chicago is a major national and international hub for air, rail, ship, and truck-borne freight, but congestion is slowing the movement of goods through the six-county area. The region's freight sector alone loses approximately \$1 billion a year to wasted time. Meanwhile, Chicagoland forfeits some 87,000 jobs that could be created if we had more attractive transportation networks.

Congestion is a regionwide problem requiring regional solutions.

Each county contributes to the total regional cost of congestion and contributes to gridlock on expressways and arterial roads. Congestion is heaviest on Chicago's expressways, but much of that traffic originates in the surrounding counties. Within the outlying counties, traffic jams on arterial routes are much heavier, and because of lower vehicle speeds, arterial congestion contributes much more to regional air pollution.

Congestion reduces quality of life for individuals and families.

In 2005, wasted fuel cost regional households an estimated \$354 million; dramatic increases in gas prices since then have driven that figure closer to \$680 million. Lost time costs individuals even more: a trip that should take only 30 minutes may take closer to 40, resulting in approximately 66 minutes of wasted time each week for the average driver.



PHOTO: JOSH HAWKINS

METHODOLOGY

A note on the methodology

This report improves upon previous understandings by using a more contextually nuanced approach to assessing congestion in northeastern Illinois, which accounts for a wider range of costs. It also uses more sophisticated models and databases. Furthermore, this report provides a spatial understanding of congestion.

A county-by-county breakdown of congestion share and costs gives a more accurate, and ultimately more useful, picture of congestion's costly implications.

Although \$7.3 billion and 87,000 jobs are very large figures, they are almost certainly low estimates as a consequence of the limited scope of this assessment and the inability to quantify certain costs. For instance, other costs associated with congestion but not accounted for in this study include stress, fender-benders, noise, and the price tag for unsuccessful strategies to limit or speed up traffic. Additionally, congestion considered here is only recurrent congestion — congestion that occurs on a predictable pattern as a result of greater demand for roads than capacity constraints allow. Congestion resulting from incidents, such as traffic accidents or construction, is not included in this report, but does inflict additional costs on the Chicago region.

In addition, the most recent study of the costs of congestion on metropolitan Chicago, the annual Texas Transportation Institute's (TTI) Urban Mobility Report, assessed Chicago's cost much lower, at \$4 billion. *Moving Beyond the Speed of Congestion* measures congestion over a longer portion of the day and larger segment of the region's road network. Most importantly, this report's estimates of current average speeds, based on 2005 data from the Chicago Metropolitan Agency for Planning, are lower than the average speeds TTI estimates.



PHOTO: ENVIRONMENTAL LAW & POLICY

Congestion threatens Chicago's economy.

\$1 billion

Amount region's freight industry loses a year as a result of congested traffic conditions

5.5%

Percent reduction in the cost of business travel if congestion were reduced by 22%

Metropolitan Chicago's intersection of rail, road, air, and water networks make it an integral part of the global marketplace. However, increasing congestion threatens the long-term health of Chicagoland's economy. Not only does congestion impose additional costs upon business, but it also stymies larger firms' ability to develop cost-saving logistic strategies. Moreover, congestion imposes a penalty upon the region of an estimated 87,000 jobs — the number of jobs predicted for a less gridlocked environment. Mitigating the Chicago region's congestion woes will create jobs and attract new investment, as well as eliminate the current costs that businesses and their customers must pay.

Congested traffic slows freight movement.

The cost of congestion in wasted time for trucks is an estimated \$1 billion, which accounts for about 14 percent of the \$7.3 billion cost of congestion on the region's roads. The cost of congestion delays to trucks in wasted fuel could not be readily estimated, however, so the cost to the region's freight businesses easily surpasses \$1 billion a year.

Of the total daily truck trips in the Chicago metropolitan region, 7.7 percent have an origin or destination in Chicago's Central Business District. However, these trips accounted for only 3.2 percent of regional truck vehicle miles traveled (VMT) during peak traffic periods, because they tend to be relatively short, averaging 6.2 miles per trip versus 15.6 miles for other trips. Because time delays on both arterials and expressways tend to be significant in central Chicago, however, such trips bear about 5 percent of the congestion costs incurred on truck trips in the region. In 2005, the cost of truck delay due to congestion in the Central Business District equaled about \$47 million per year.

This estimate reflects only the costs that congestion imposes in reduced speeds during travel. Another type of congestion cost arises from the competition of delivery trucks for limited loading zone and dock space in the downtown

UNDERSTANDING THE NUMBERS

Using earlier TTI and CMAP figures, heavy truck vehicle-hours of delay in 2005 were estimated at about 60,000 hours per day; at the estimated cost per truck-hour of delay for driver time and cargo (\$66.83 per hour), this equates to a total daily cost of truck delay of \$4 million. Annualizing at 250 work days per year, the estimated total cost of congestion delays to trucks on Chicago region roads is \$1 billion.

To estimate the reduction in employment in the Chicago region that results from the burden of congestion on car-commuters, HDR assumed that half of the additional commuting costs caused by congestion gets passed on to employers, and the elasticity of labor demand at the metropolitan area level, which measures the sensitivity of labor demand to changes in labor cost, was 1.35. These two factors, when combined with regional labor and congestion statistics, enabled HDR to determine congestion costs the region approximately 87,000 jobs.

core. A Chicago Dept. of Transportation study found the scarcity of such space to be a significant part of the “last mile challenge” for trucks making pickups and deliveries downtown.

Congestion also slows the adoption of cost-saving logistic strategies that depend on transportation being fast and reliable. This adds another \$160 million to the cost of congestion to the region. Less congestion would result in shorter and more reliable travel times, enabling distributors to reduce buffer time and the need to maintain precautionary inventory in the event of late or missed deliveries. Carriers would be able to avoid expenses from driver changes or rest breaks needed to comply with hours of service regulations, and manufacturers could offer their employees more attractive hours, as schedules would not be bound to the sharp delivery and pick-up deadlines necessitated by congestion and the uncertainty it brings.

Congested traffic conditions threaten business.

Wasted time and fuel affect the truck freight industry, as well as other firms that rely on their employees’ ability to move around the region. The service sector, with employees traveling to meetings, making repair calls and deliveries, is particularly burdened by congestion. A previous study by the National Cooperative Highway Research Program found a 22 percent reduction in the Chicago region’s congestion would generate a 5.5 percent reduction in the cost of overall business travel on the region’s roads. The effect of that reduction is more than twice as great for the service sector as it is for other non-freight business such as manufacturing or agriculture.

Congested traffic conditions reduce job growth.

The burden of congestion on commuters creates problems for area employers and stymies job creation. Employers may have to pay higher recruitment costs and offer higher pay to attract workers to job locations not served by transit. At the regional level, high commuting costs effectively increase the cost of living in a region, and some of that higher cost gets passed on to employers. In turn, labor costs can undermine a region’s economic competitiveness, ultimately resulting in a reduction in employment. Excess commuting time costs Chicago-land 87,000 jobs.

Case Study in Congestion

UPS is a global logistics and shipping company that ranks Chicago among its top three markets in package volume and revenue. Chicago also holds the distinction of being among UPS' worst three markets for road congestion.

On-time delivery is vital to UPS' reputation and its bottom line. While UPS has not quantified the cost of congestion to its business, the company avoids congestion wherever possible. One UPS official described the relationship between a delay in a truck's departure time and the delay in the delivery of its freight as "exponential." Overnight air freight shipments to O'Hare International Airport can be particularly sensitive to morning rush hour congestion. Airborne packages arrive at the airport in the early morning hours, with the last flight arriving at 5:00 a.m. Every effort is made to have the cargo on



its way by 6:00 a.m. However, if an aircraft is delayed, trucks transporting the cargo to a distribution center can become mired in morning rush-hour traffic.

As congestion has increased, UPS has responded by adding drivers and delivery runs. Although payroll is the largest single cost for many companies, UPS calculates it is substantially cheaper to hire additional staff than the alternative — Guaranteed Service Refunds — which are a significant cost to the company, and a closely monitored internal business metric. Premium packages, many of which must be delivered by 10:30 a.m., are particularly vulnerable to these penalties.

Policy Implications

The Chicago region's position in the global economy is compromised by congestion. Wasted time alone costs the freight industry \$1 billion a year. To cement its status as a global center of commerce, the region needs policies that will reduce overall costs to business by reducing the impact of congestion.

Strategies to reduce regional congestion must:

- Reduce delay and increase the reliability of travel times, but not detract from quality of life.
- Make the Chicago region more attractive to global investors.
- Be measurable and sustainable.

Cost-saving logistics practices are often contingent on dependable travel times, and bottom-line-sensitive firms would willingly pay for reduced congestion if it meant savings in the long-run. Firms need to move their goods through Chicago, but also locate their offices and their employees in this region. Strategies that improve quality of life in the region and notable improvements and expansion of the transit network will give us a major competitive advantage over other global players.

THE COST TO THE REGION

Congestion is regionwide.

73%

Percent of region's lost time that occurs on arterial routes

\$33 million

Conservative estimate of annual environmental costs resulting from congested traffic conditions

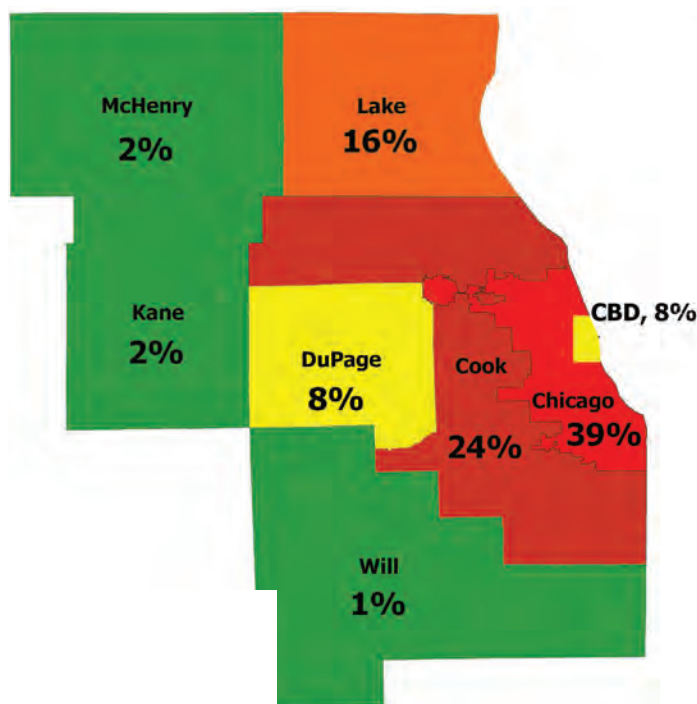
Over the entire regional roadway network, including expressways and arterials, congestion is most severe in Chicago itself, followed by the balance of Cook, then Lake and DuPage counties. Given that these are the region's largest job and population centers, these results are not surprising. However, outside of Chicago, congestion on arterial routes is much greater than on expressways, and produces more air pollution and resulting environmental costs. Additionally, where gridlock happens and where traffic comes from are two different things. The graphics here demonstrate that while traffic jams may be most common and costly in Chicago itself, much of that traffic originates elsewhere in the region.

Where Congestion Happens: County by County

PERCENTAGE OF REGIONAL HOURS OF DELAY EXPERIENCED IN SUB-AREA

The city of Chicago (excluding the CBD) is where traffic delays are experienced most — about 40 percent of the region's total — followed by 24 percent for the rest of Cook County (excluding Chicago), and 16 percent for Lake County. DuPage County and the Central Business District (CBD) contribute equally to the region's total vehicle-hours of delay, at approximately eight percent each.

Source: HDR calculations based on data from CMAP's Congestion Management System for Northeastern Illinois, 2006 Status Report, July 2006. Calculations included Kendall and Grundy counties, which are omitted here.



Where Congestion Begins and Ends

Much of the traffic in the city of Chicago itself comes from elsewhere. While congestion is greatest in and around Chicago, its regional status as an employment and population center both attracts and produces substantial amounts of traffic. Congestion experienced in Cook, DuPage, and Lake counties may be the result of insufficient travel, employment, or residential choices elsewhere. Cook County is the destination for most of the region's workers. 41.5% of DuPage County residents work in Cook County, followed by Will (40%), Lake (35%), McHenry (31.6%), and Kane (27.3%).

PERCENTAGE OF RESIDENTS OF EACH COUNTY WORKING IN OTHER COUNTIES

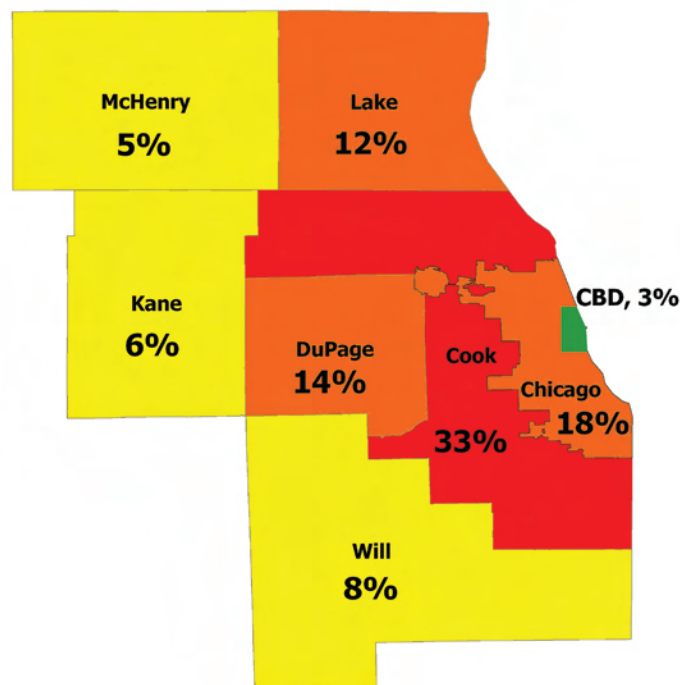
COUNTY WHERE HOME IS	COUNTY WHERE JOB IS					
	COOK	DUPAGE	LAKE	KANE	MCHENRY	WILL
COOK	81.3	8.7	3.7	1.5	0.4	1.6
DUPAGE	41.5	45.5	2.4	4.1	0.5	2.2
LAKE	35.0	5.0	52.9	1.3	2.1	0.7
KANE	27.3	19.7	2.9	38.2	2.9	2.1
MCHENRY	31.6	6.7	12.1	7.0	37.0	0.9
WILL	40.0	18.6	1.5	2.5	0.5	30.0

Source: 2004 work-flow data from the U.S. Census' Longitudinal Employer Household Dynamics

Where Congestion Originates: County by County

PERCENTAGE OF REGIONAL MILES TRAVELED ORIGINATING FROM SUB-AREA

These percentages reflect sub-area shares of regional vehicle miles traveled. While delays may occur primarily in Chicago outside the CBD and in the balance of Cook County, much of the traffic involved in those delays emanates from DuPage (14% of the region's VMT), Lake (12%), Will (8%), Kane (6%), and McHenry (5%).



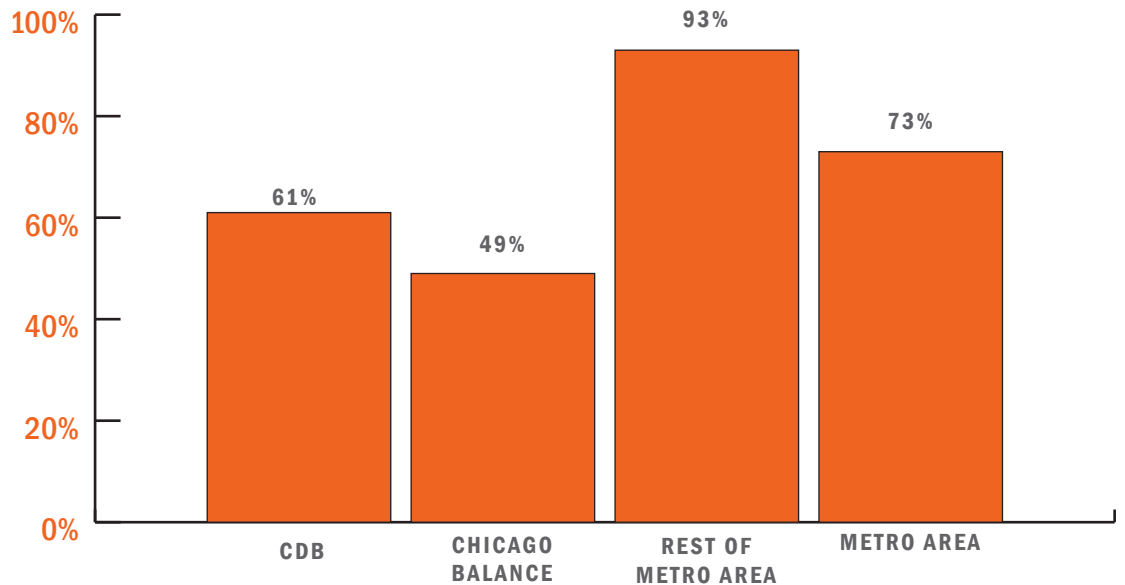
Source: Chicago Metropolitan Agency for Planning: Congestion Management System for Northeastern Illinois, 2006 Status Report, July 2006. Calculations included Kendall and Grundy counties, which are omitted here.

Where Congestion Occurs: Arterial Share

VEHICLE-HOURS OF DELAY ON ARTERIALS

The majority of total vehicle-hours of delay occur on arterials, rather than on expressways, with the exception of Chicago outside the CBD.

Source: HDR calculations based on data from CMAP's Congestion Management System for Northeastern Illinois, 2006 Status Report, July 2006. Calculations included Kendall and Grundy counties, which are omitted here.



UNDERSTANDING THE NUMBERS

CMAP's 2006 Congestion Management System (CMS) report measured recurrent congestion that results from the interaction of limited road capacity and usual traffic volumes throughout the day. Using this as a starting point, the researchers conservatively estimated delay relative to average speeds under relatively uncongested conditions (as opposed to free flow).

For each sub-area of the region, and separately for arterials versus expressways, the average speed is calculated for the uncongested section as the ratio of total vehicle-miles of travel to total vehicle-hours of travel. This was used to determine hours-per-mile and vehicle-hours of delay.

Not all congestion within the region is the same.

Congestion in the Chicago metropolitan area is about as pervasive on arterial routes as it is on expressways. For the area as a whole, the proportion of vehicle-hours of travel that occur under congested conditions is 26.6 percent for arterials and 28.6 percent for expressways. There is a common conception that resolving congestion is largely a question of managing gridlock on expressways. However, in this case, a regionwide assessment is misleading because traffic patterns outside Chicago are very different than those within the city.

Only in the city of Chicago itself is congestion greater on the expressways than on arterial routes. In every other part of the region, the percentage of vehicle-miles and vehicle-hours traveled under periods of congestion are higher on arterials than on expressways. Likewise, the majority of total vehicle-hours of delay occur on arterials, rather than on expressways, with the exception of Chicago outside the CBD.

Environmental Costs of Congestion

Fuel efficiency is highest, and so environmental costs lowest, at consistent medium speeds. As a result, environmental costs of congestion on arterial routes are substantially higher than for expressways. Lower vehicle speeds, as well as frequent stops-and-starts, strain engines and reduce fuel efficiency.

ESTIMATED IMPACT OF CONGESTION ON THE ANNUAL COST OF AIR POLLUTION FROM VEHICLE EMISSIONS IN THE CHICAGO REGION

AREA	EXPRESSWAYS	ARTERIALS	TOTAL COST
(Thousands)			
Chicago CBD	\$689	\$1,965	\$2,654
Chicago Balance	\$1,886	\$10,170	\$12,057
Cook County Balance	-\$3,138	\$12,539	\$9,401
DuPage County	-\$901	\$4,403	\$3,502
Kane County	\$0	\$968	\$968
Kendall County	\$0	\$34	\$34
Lake County	-\$830	\$5,530	\$4,700
McHenry County	\$0	\$255	\$255
Will County	-\$1,065	\$682	-\$383
Total	-\$3,358	\$36,547	\$33,189

Environmental costs are difficult to measure.

Calculating the cost of wasted time and wasted fuel is a simple affair compared with the complex assessment of the environmental costs of congestion. The value of time and fuel can be determined much more readily than the value of environmental quality. Among the adverse effects associated with motor vehicle air pollution are respiratory disease, “structural deterioration, crop damage, and decreased visibility” (Federal Highway Administration, 2000). Automobile emissions include greenhouse gases such as carbon dioxide and methane, and other pollutants like carbon monoxide, nitrous oxides, and particulate matter. These gases contribute to global climate change, which could have immense and unimaginable costs, only some of which can still be avoided. While these costs are very real, they are difficult to quantify.

Ultimately, the environmental cost in dollars is contingent upon society’s values of environmental integrity. The City of Chicago has developed a global reputation for being an environmentally minded pioneer, drafting its own Climate Action Plan, promoting and enabling increased bicycling, and rewarding new architecture and building retrofits designed to conserve energy. The Chicago region is beginning to follow suit, as evidenced by the Metropolitan Mayors Caucus’ Greenest Region Compact. Because the Chicago area appears to value environmental integrity highly, the calculations here for environmental costs will be low estimates.

UNDERSTANDING THE NUMBERS

Determining the environmental costs of congestion required a three-step process: determine the cost of one ton of relevant pollutants, determine the output of pollutants resulting from congestion, and, from that, determine the total cost of pollution. This report used air pollution cost estimates from the Federal Highway Administration's Highway Economic Requirement System – State Version. For example, one ton of carbon monoxide has damage costs of \$100, one ton of sulfur dioxide has damage costs of \$8,400.

With the preceding caveat, it is possible to begin to assess the environmental cost of congestion. Overall, the environmental cost of congestion is estimated at approximately \$33 million a year. Automobiles produce pollution whenever operating, but emit noxious fumes at a higher rate when traffic slows and driving patterns include increased cycles of acceleration and braking. This explains why, in every area of the region, the cost associated with arterial congestion is higher, and in some cases vastly higher, than for expressways. In some cases, the impact of congestion on expressways is actually negative. This is because automobiles operate most efficiently at medium speeds. Congestion on expressways can slow traffic to the point that emissions are actually lower than they would be in a relatively uncongested situation, thus forgoing emissions that would otherwise have resulted.

Policy Implications

Congestion occurs throughout the region, with the greatest amount of delay occurring in and adjacent to Chicago, and a significant portion originating in other counties. Although congestion on major expressways is a significant challenge for Cook County and Chicago, it is actually arterial routes – such as LaGrange Road, Roosevelt Road, or Green Bay Road – that are more of a challenge in outlying counties.

Strategies to reduce regional congestion must:

- Be regional in scope in order to address the point of origin and point of destination, as well as the network of roads in between.
- Not simply address the expressway system at the expense of arterial routes. In many places, arterial routes are already the main source of concern, and diverting more traffic to them will exacerbate existing conditions.

Due to the greater fuel efficiency associated with expressway travel, it is actually arterial routes that contribute more substantially to the air pollution caused by congestion. As the region pursues strategies to both mitigate its congestion and improve its environment, particularly air quality, it will need to be vigilant about not unintentionally increasing arterial traffic. Congestion mitigation strategies that focus solely on increasing expressway speeds, perhaps by increasing expressway prices, could inadvertently divert traffic to arterials. Instead, a coordinated strategy to increase travelers' transportation options, while reducing traffic levels and increasing speeds on both expressways and arterials, will be necessary to reduce congestion without inadvertently adding to regional air pollution.

THE COST TO THE INDIVIDUAL

Congestion hurts people.

\$5.1 billion

Annual cost of wasted commuting time due to congestion

\$681 million

Cost of wasted gas due to congestion in 2008

Many of the strains that congestion inflicts on individuals and families are difficult, if not impossible, to quantify. What is the cost of the stress generated by being stuck in traffic? What is the cost of missing a child's soccer match, or not getting to the store before it closes?

However, other measures are much more readily assessed. Commuters and other drivers lose time on the roads, which has a significant cost, and the amount of wasted fuel is a very tangible concern. Congestion also adds uncertainty to the commute, and to other travel, leading drivers to build additional time into their schedules in the event that traffic jams occur. This is time that could otherwise be spent working, shopping, or relaxing.

Car Commuter Travel Cost

The annual cost of wasted time per car commuter ranges from \$824 in some of the outlying counties to \$3,014 within the city of Chicago. This is wasted money that could be used elsewhere. Again, this is only the additional cost incurred from the region's congestion. Total transportation costs would include travel during uncongested periods as well, and would be considerably higher.

ANNUAL COST OF WASTED TIME DUE TO CONGESTION AMONG CAR COMMUTERS EMPLOYED IN THE CHICAGO METROPOLITAN AREA, BY PLACE OF EMPLOYMENT, 2005 ESTIMATES

PLACE OF EMPLOYMENT	CAR COMMUTERS		COST OF WASTED TIME PER COMMUTING HOUR	TIME COST OF CONGESTION PER YEAR	
	Thousands			Total	Per car commuter
Chicago	857		\$14.58	\$2.58 billion	\$3,014
Suburban Cook	1,121		\$15.22	\$1.42 billion	\$1,264
Outer suburbs	1,254		\$14.48	\$1.1 billion	\$879
Region	3,232		\$14.76	\$5.1 billion	\$1,579

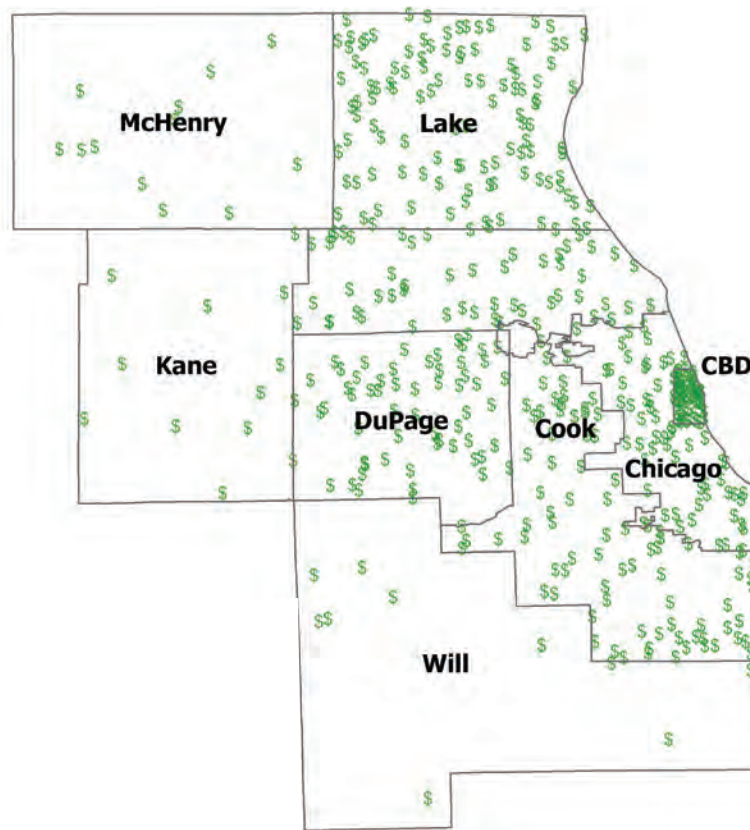
Time is Money

TIME COST OF CONGESTION BY SUB-AREA

⌘ = \$10,000,000 in wasted time due to congestion

The largest portion of cost due to congestion comes in wasted time. Because the majority of the region's back-ups occur in Chicago and Cook, DuPage, and Lake counties, the highest concentration of monetary loss occurs there as well. All told, the region loses \$6.98 billion a year in wasted time due to congestion.

Source: HDR calculations based on data from CMAP's Congestion Management System for Northeastern Illinois, 2006 Status Report, July 2006. Calculations included Kendall and Grundy counties, which are omitted here.



UNDERSTANDING THE NUMBERS

The average value of time per vehicle-hour, \$24.03, was calculated as a weighted average of the values for each of the three categories of travel based on their relative percentage of vehicle miles traveled: commercial truck (\$67 per hour), other business (\$38), and personal (\$14.75), including commuting; while the other 15 percent captures all “on-the-clock” driving, such as deliveries and trips to meetings.

Wasted time costs money.

Each vehicle-hour lost to congestion has an assumed cost of \$24.03. Assuming 250 days of congested travel per year (i.e., excluding weekends and holidays), for 2005, the estimated total cost of congestion in wasted time amounts to \$6.98 billion for the metropolitan area. While most people tend to think about wasted fuel when they think of congestion, the cost of lost time is almost 20 times greater for the region.

The time commuters lose to congestion accounts for the major share of the total cost of congestion on Chicago-area roads. In 2005, gridlock increased the overall cost for commuting by car to workplaces in the Chicago metropolitan region by about \$5.1 billion. This amounts to nearly two-thirds of the region's estimated \$7.3 billion annual total. However, evidence from a National Cooperative Highway Research Program study of tolled express lanes in southern California suggests that \$20 per hour might be a more accurate measure of the value of personal travel time than the U.S. DOT's measure of \$14.75. A value of \$20 per hour would increase the total cost of congestion in the Chicago area by 24 percent, to \$9.0 billion.

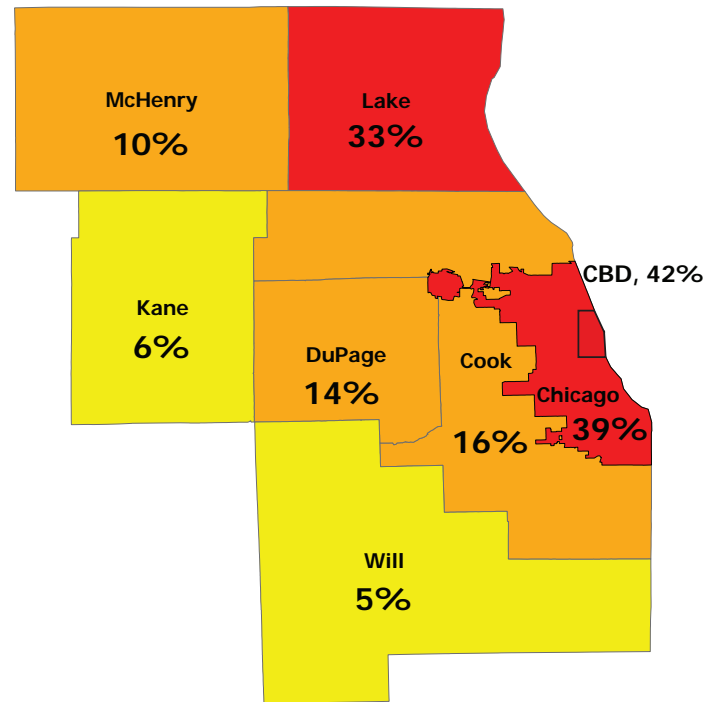
Increased Travel Times

PERCENTAGE INCREASE IN TRAVEL TIMES DURING PERIODS OF CONGESTION

For the region as a whole, congestion increases travel times by 22 percent.

Another measure of the severity of congestion is the travel time index, which indicates the extent to which congestion lengthens travel times within a geographic unit. For the region as a whole, the travel time index is 1.22, meaning that congestion lengthens travel within the region by 22 percent. Sub-areas of the region have a higher or lower index, corresponding to the severity of congestion within those areas. In

DuPage County, congestion adds 14 percent to total travel time on the county's roads. This becomes a much larger concern the closer and closer one gets to Chicago's downtown. Congestion adds 42 percent to total travel time in the Central Business District. Again, this is merely a measure of congestion within those sub-areas. Some of the traffic in the CBD, for instance, originates in outlying counties such as Will or Kane, but that contributes to the CBD's index rather than to the origin county's index.



Source: Chicago Metropolitan Agency for Planning: Congestion Management System for Northeastern Illinois, 2006 Status Report, July 2006. Calculations included Kendall and Grundy counties, which are omitted here.

Congestion increases travel uncertainty.

The increased uncertainty the threat of congestion creates also has costs, though it is difficult, if not impossible, to assign a dollar figure to it. The lack of reliability in travel times leads travelers to include additional buffer time in their plans, particularly for travel during the morning period, when commuters are concerned about lateness to work. This is not an uninformed gamble, but one informed by experience. CMAP has estimated a variation in traffic volumes and speeds by time of day on selected roadways. This conforms to the normal pattern of morning and afternoon traffic peaks, with the dominant peak — morning or afternoon — being corridor-specific. For example, to travel the Stevenson Expressway northbound from Naperville Road to I-294 normally takes under 15 minutes during the off-peak versus about 22 minutes during the height of the morning peak and 20 minutes during the height of the afternoon peak. On some days, however, travel during the peak periods can take much longer. The 95TH percentile in the distribution of travel times is between 30 and 35 minutes during the morning and afternoon peaks, an effective doubling of off-peak travel times. One result of this is the morning peak starts early, with travel times on the Stevenson Expressway increasing rapidly around 6:00 a.m.

Cost of Wasted Fuel Due to Congestion

Congestion results in wasted fuel, as engine performance is lower with the repeated acceleration and deceleration characteristic of heavy traffic. Congestion on Chicago-area roads increased the area's fuel consumption in 2005 by about 8 percent, from approximately 9.2 million to 9.9 million gallons per day. The total cost of the additional consumption equates to about \$354 million annually for the whole region.

Source: HDR calculations based on data from CMAP's Congestion Management System for Northeastern Illinois, 2006 Status Report, July 2006, and other sources

CALCULATION OF THE EXCESS FUEL COST OF ROAD CONGESTION IN THE CHICAGO METROPOLITAN AREA, 2005

	AVERAGE MPG		INCREASE IN ANNUAL FUEL COST
	Congested	Uncongested	(In millions)
CBD	12.0	13.3	\$15
Chicago Balance	13.0	14.7	\$110
Cook Co. Balance	15.0	16.0	\$99
DuPage	15.4	16.4	\$37
Kane	16.8	17.3	\$8
Kendall	17.2	17.9	\$2
Lake	14.7	16.7	\$65
McHenry	17.0	17.8	\$9
Will	17.9	18.4	\$8
Metro area			\$354

UNDERSTANDING THE NUMBERS

The cost of wasted fuel was estimated using average speeds under congested and relatively uncongested conditions, and TTI's equation for miles per gallon. The cost of gasoline was set at \$1.88 per gallon, the average Illinois retail price in 2005 (the reference year for all calculations in this analysis) minus federal, state and local taxes.

Congestion increases fuel costs.

The annual increase in fuel costs per peak period traveler in 2005 came to \$81. That includes all peak period traffic, not simply commuters. Again, this is the extra amount of money spent on gas as a result of congestion. Gas prices have risen considerably since 2005, and are expected to continue rising. At current fuel prices (July 2008), the increase in annual fuel cost incurred by congestion is \$681 million.



PHOTO: ENVIRONMENTAL LAW & POLICY

Policy Implications

Congestion does not simply cost people time and money, it wastes both. For most people there is no benefit gained from excessive congestion.

Strategies to mitigate regional congestion must:

- Reduce the number of lost hours and amount of gas that literally goes up in smoke.
- Increase certainty about travel times.
- Provide people with more transportation choices.

Strategies to mitigate congestion may include some kind of toll to price more accurately the utility of traveling without excessive traffic. It is important to remember these tolls, which would appear to be an additional cost, would serve to eliminate partially or wholly the wasted time and money that congestion creates. Variable tolling schemes that determine tolls based on the level of traffic might help to maintain a

more even flow, thereby increasing people's confidence about travel time.

While some would say congestion is the result of people choosing to drive, it is equally accurate to view congestion as the result of a lack of choice. A prime example is a mass transit network that more efficiently moves people to and from home, work, stores, schools, and other transportation hubs to give people more choice in how to get around.

Real solutions are possible.

Every year, metropolitan Chicago is wasting \$7.3 billion in lost time, fuel, productivity and environmental damage as a result of excess traffic congestion. To remain globally competitive, we cannot continue to hemorrhage resources that could be invested in more efficient mass transit, better schools, increased job creation, and business attraction. This report provides a mandate for change by defining the scope and severity of the cost of congestion in our region. The report's findings indicate clear criteria to guide future solutions.

Criteria for solutions

The cost of a solution must not exceed the cost of congestion.

Simply put, even if we spend \$1 billion today to solve regional congestion, we'll still be ahead by \$6.3 billion.

Solutions must balance the needs of business, society, and the environment.

Congestion costs the region's freight industry some \$1 billion a year, and impedes the creation of some 87,000 jobs. Individuals bear the burden in their pocketbooks, too, through wasted time and fuel. The environment suffers through deteriorating air quality and increased greenhouse gas emissions. Successful congestion solutions will address all of these issues.

Solutions must be regional in scope.

Traffic jams may occur most often in Chicago, but a lot of that traffic originates in surrounding counties. Solutions must address congestion in our region as a whole, not just in downtown Chicago.

Solutions must address congestion on expressways and arterial roads.

Gridlock is not confined to expressways. Indeed, traffic is often worse on arterials — and heavy traffic on arterials causes greater environmental harm. Solutions must not simply divert traffic from expressways to arterial roads.

Solutions must address wasted time as well as fuel.

Climbing gas prices are hurting individuals across Chicagoland, but lost time is costing them 19.5 times more than wasted fuel. Solutions should help people reduce the amount of time they spend on the roads, period. This will have the added benefit of curbing frequent visits to the pump.

Conclusions

This analysis has revealed several underlying dynamics of the region's congestion:

- Congestion impedes Chicagoland's global competitiveness.
- Congestion is a regional problem that must be solved regionally.
- Congestion hurts individuals and their families, who waste time in traffic and money on fuel.

"Solutions" that impede business growth are not the answer. "Solutions" that focus only on Chicago's downtown or the region's expressways, at the expense of arterial routes, will stunt growth and may increase pollution. "Solutions" that reduce transportation choices, rather than expand them, will cause more problems than they fix. Reducing congestion must improve the region's environmental sustainability, social equity, and economic competitiveness.

Better choices about land use and development patterns would reduce the number of miles we need to drive. More information on traffic patterns would give people more choices about when to drive. Some element of pricing would motivate people and businesses to make informed decisions about how important driving is to them, and at which time of the day. However, increasing driving costs without first improving transit alternatives can disproportionately harm those members of society who already struggle to make ends meet.

If metropolitan Chicago is to remain a globally competitive region, local and state leaders must be willing to act on new approaches to planning, financing and constructing transportation infrastructure. Whatever the menu of strategies the Chicago region adopts and implements, solutions will require regional commitments and coordination.

Real solutions to the region's congestion are possible and at hand. Quantifying the exact nature of congestion, as this report has done, is the first step toward a healthier, more efficient, and less wasteful Chicago region.

ABOUT THE REPORT



METROPOLITAN PLANNING COUNCIL

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Founded in 1934, the Metropolitan Planning Council (MPC) is a nonprofit, nonpartisan group of business and civic leaders committed to serving the public interest through development, promotion and implementation of sound planning policies so all residents have access to opportunity and a good quality of life, the building blocks of a globally competitive greater Chicago region.

Study conducted by:

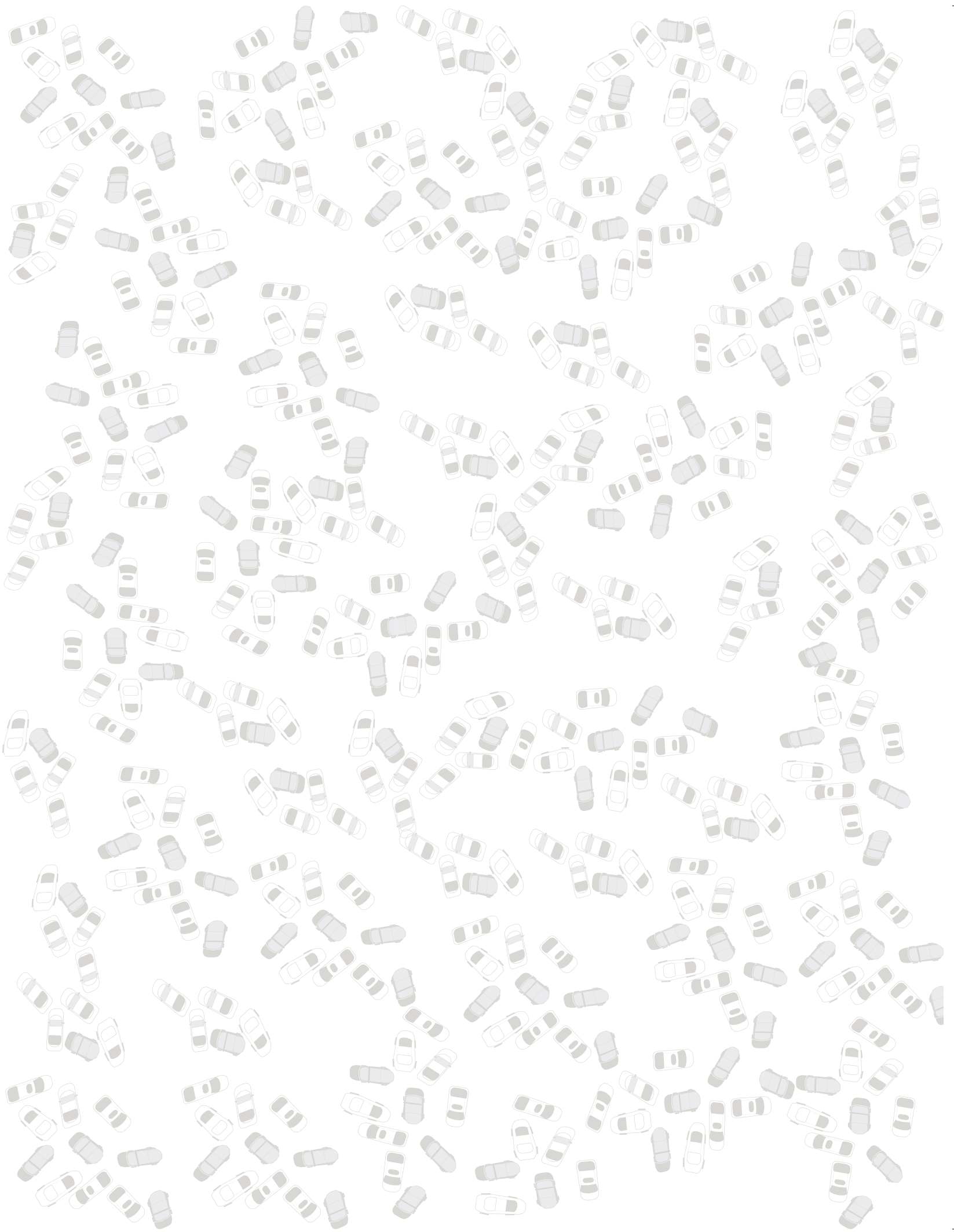
HDR Decision Economics

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This report presents findings from a study conducted by HDR Decision Economics, in association with Dr. Alex Anas, for the Metropolitan Planning Council. The main purpose of the study is to analyze and, to the extent possible, quantify the costs resulting from traffic congestion on area roads, including costs in lost time, wasted fuel, and environmental degradation. Although the Urban Mobility Report series prepared at the Texas Transportation Institute (TTI) has already done much to quantify and publicize these costs for Chicago and many other urban areas, it is merely one perspective on this subject.

A number of metropolitan planning organizations around the country prepare their own estimates of the costs of congestion using richer models and databases than the basis for the Urban Mobility Report, resulting in significantly different estimates. Chicago Metropolitan Agency for Planning (CMAP) has prepared a Congestion Management System Report, which provides key data inputs to this study (Chicago Area Transportation Study 2006). This report draws on a variety of other sources: interviews with Chicago-area businesses in the freight distribution sector; also special tabulations from the CMAP travel demand model; various studies relating to the cost of traffic congestion, including the TTI Urban Mobility Report; and the RELU-TRAN model of land use and transportation interaction in the Chicago metropolitan region. Developed by Dr. Anas, the RELU-TRAN model was updated for this study with additional data from the U.S. Census, and CMAP forecasts of economic growth and its long-range plan for highway capacity expansion.





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