

## **Economic Analysis of Toll Roads**

A major problem facing many metropolitan regions in the United States is traffic congestion. As the urban population increases, people must find new places to live. Many of them move farther away from the urban areas into newly built suburbs, which is called sprawl. Because of this, people who live far away from their workplace, which is usually in the metropolitan center, must drive to work. Because of the need to drive, and the increased number of people living farther from their workplace, highways have become increasingly congested, to the point where it is a top concern in many metropolitan regions throughout the nation. People continue to drive on the highways in spite of the congestion. The search is on to find ways to reduce congestion. Public transportation, an alternative advocated by planners, environmentalists, and activists, is not a viable option for many people. Other alternatives such as telecommuting have not gained widespread use. However, one measure to reduce congestion has been gaining popularity throughout the nation: toll roads. A toll road is a highway which a driver must pay to use. Toll roads are attractive because they reduce congestion while internally funding their construction and operation. Many people support the construction of more toll roads to reduce congestion, but other people criticize toll roads for a variety of reasons.

At the end of the 19<sup>th</sup> Century, railroads were still the main form of transportation. (Weingroff) However, by the 1920's, freeway construction was getting underway, with the help of the federal government. However, it wasn't until World War II that an interstate highway system connecting cities throughout the United States was conceived.

However, even during that time, construction was slow as funding was an issue.

However, in 1956, President Eisenhower signed a bill authorizing federal spending on an interstate highway. (Weingroff) Today, there are 46,000 miles of interstate highways, along with many more thousands of miles of state and US highways. (Weingroff)

However, by the 1970's and 1980's, the quality of highways declined as more people began using them. (Samuel) As a consequence, toll roads began to appear. At first, they were usually built along free highways in an effort to appeal to drivers stuck in gridlock.

However, by the 1990's and continuing today, more stand-alone toll freeways have become more attractive to areas where citizens want to avoid congestion altogether. (Samuel)

Highways are the most popular means of transportation in the United States. However, this popularity has caused them to become congestion. Congestion is the cause of many problems associated with highways. First, congestion leads to a loss of time which could've been used for something more productive. That time could've been used for working or spending time with the family. As suburban sprawl has increased and more people commute to work, congestion on highways has gotten worse. In 2001 alone, an estimated 4.5 billion hours of time were lost collectively to motorists stuck in congestion throughout metropolitan regions across the United States.

([www.betterroads.com](http://www.betterroads.com)) Another problem associated with congestion is increased tension and stress. Sitting in traffic increases driver frustration, and leads to stress as drivers are worried to get to their destination or to meet a time deadline. The stresses incurred have shown to have a negative physical and psychological effect on drivers. (Samuel) These include including elevated blood pressure, increased negative mood states, lowered

tolerance for frustration, increased irritability, and more impatient driving. (Samuel)

Another negative effect of congestion is the decreased access and mobility of people for jobs, shopping, and other activities. Traffic congestion causes people to constrain where they live and work, what activities they can fit into their schedule, and even the hours they do work. (*www.aashto.org*) In heavily congested areas, people set their work schedule either really early or late in the day to avoid hours of congestion.

(*www.aashto.org*)

Another problem associated with congestion is more accidents. As a highway gets crowded, more cars in one section of the highway adjust and switch lanes to deal with the gridlock. This results in a higher incidence of collisions. A study conducted showed that fixing the top 166 bottleneck locations in the United States would prevent almost 300,000 accidents in twenty years. (*www.aashto.org*) Because of accidents, other costs that will incur are with insurance, loss of work time, and car and driver replacement. (*www.aashto.org*)

Another major problem with congestion is the loss of money. As mentioned, the driver's loss of time could've gone to working, which means a loss of an hourly wage. In addition, another cost that will be paid is for wear and tear costs and other costs on the vehicle. Vehicles that are idling or moving slow in traffic are inefficient with gas. It is estimated that \$9 billion of gas is wasted annually as a result of congestion.

(*www.aashto.org*) In addition, vehicles that are on the road longer and that accelerate and brake more frequently wear on the parts of the car, which means they have to be replaced sooner. Individual drivers aren't the only ones who bear the costs of congestion. Companies bear the costs of congestion also. They lose money when goods take longer

to distribute. In addition, they have to pay for gas and wear and tear on the car.

Companies, in an effort to avoid congestion, move their goods at off-commute hours.

(*www.aashto.org*) This leads to more costs for the company as they have to shift the directions of where their goods are shipped and the time when the goods are moved.

Finally, congestion causes harm to environment. Cars release emissions that cause air pollution. Traffic congestion worsens this effect. Idling, low-speed travel, and hard acceleration, all associated with traffic congestion, result in higher car emissions than in normal traffic conditions. (*www.aashto.org*)

Highways have an economic aspect to them. Most people think that highways are a free good, but somebody has to pay them. In addition, since there is no price to pay for a freeway, hence the name, time and the number of vehicles ration travel demand. This is where toll roads play a part in controlling congestion.

Since most highways are free to anyone, the demand for their use is high. It's the free rider's policy: no one can be restricted from using them. (Miller, 92) However, because of the high demand, in many metropolitan cities throughout the world, the result is congestion, as too many vehicles try to occupy the same highway. The cost of everyone crowding onto the same highway is the time spent on the highway, waiting in traffic, instead of being able to travel quickly. (Miller, 93) People become frustrated with traffic congestion, and lose time, which could've spent at work, with the family, or even sleeping. (*www.aashto.org*) However, since drivers bear no costs other than private costs of driving a vehicle, they are willing to put up with the loss of time and congestion.

However, people are willing to pay for alternatives to driving. As mentioned, driving on a highway causes a loss of time. People resort to using public transportation,

driving in a carpool so they can use the carpool lane, which has a smaller amount of users than regular lanes, and commuting in off-peak hours. In doing this, commuters avoid one cost of going to work, time lost and frustration with congestion, but they incur other costs such as waiting for a bus or other people, or having to change a schedule just to avoid rush hour. The same can be said about toll roads. Using toll roads means a driver must pay to use a road instead of taking a public road. That's the trade off a driver must incur. However, from an economic sense, toll roads are practical means of getting drivers from one place to another.

The most visible consequence of a toll road is it decreases demand for the use of a highway. (Finch) People who usually would not think twice about using a highway because it is free would now have to calculate if his time and money is worth using a toll road. The distance driven will also affect if a toll road is worth using. As a result of a toll road, many drivers will decline to take the toll road, figuring that it's not worth money to save a few minutes or have the comfort of traveling in flowing traffic. As a result, the drivers who deem it worth their money to drive on the toll road will have a less crowded highway to drive on. This has already been done in parts of the United States. Toll roads have been built next to existing freeways to give drivers the option of either staying on a free highways, and risk time loss and congestion, or paying a fee to use a toll road, and enjoying a less crowded highway and a quicker and more predictable trip. (Lawther, 189) A couple of examples include the Florida Turnpike, which parallels I-95, and the New Jersey Turnpike, which parallels US-1 and I-295.

Most toll roads have a flat rate for their use. Problems have risen because of this. Even though a price does reduce demand, thus lowering the amount of vehicles on the

road, sometimes this is not enough. During rush hour, many drivers are willing to pay to use a toll road, which in turn creates congestion on a toll road, defeating the purpose of the toll road. To reduce demand and maintain a constant flow of traffic, owners of toll roads have come up with the idea of congestion pricing. Congestion pricing is a scheme where the fee for a toll road fluctuates, with the highest fee usually during rush hour, to control demand and the amount of vehicles using the toll road. (Hakim, 172) Congestion pricing is a good measure because demand always fluctuates, so pricing should also be able to fluctuate to meet demand. Congestion pricing also is good at making people consider alternate times and modes to get from one place to another. If a freeway is congested, and a toll road using congested pricing is charging a high fee, then people will consider using public transportation or traveling at a different time. This benefits everyone. For drivers using the freeway, that means there will be less people using the free highway, and thus lower congestion, while for drivers using the toll road, it means that less drivers will have to resort to using the toll road, ensuring a smooth-traveling highway. Also, it means that the price of the fee to take toll road will not rise higher since the demand will not be as high. Examples of toll roads that use congestion pricing are Highway 91 in Orange County, California and I-394 in Minneapolis/Saint Paul, Minnesota, along with highways in Sweden and the Netherlands.

Toll roads are also appealing because much of the costs associated with toll roads are internalized. First, the cost of building toll roads is internalized. At first, the owner, such as the government or a private corporation, borrows money to finance the constructions costs. After, all the entity has to pay for is operating costs of the toll road. Usually, the construction costs are huge, with the operating costs being a lot lower. The

entity uses toll money to pay off loans for the construction costs, and to pay for any operating costs. As a result, the costs of the toll road are internalized, and no money will have to be paid by citizens who won't even use the toll road. (Samuel)

In addition, the fees collected can also go to pay for the construction of more toll roads. (Ramamurti, 283) Many have been clamoring for a network of toll roads in specific areas. In the future, some predict, toll roads will be constructed in a network next to existing freeways, giving drivers the option of using free or toll roads, as mentioned earlier. Even if this future is too far-thinking or impractical, a network of toll roads is still popular in that it reduces demand, and thus congestion. One such place where a network is already seen is in Orange County, California.

Another reason why toll roads are gaining popularity is of improved technology. Before, toll roads required a toll collector and drivers to stop to pay the toll collector, resulting in delays and congestion, which defeated the purpose of a toll road. However, technology has improved toll collection to where drivers do not have to stop. The most popular is electronic toll collection. This is usually where some electronic tag on the vehicle denotes which car went through the electronic toll booth and how much the driver should be billed. An example of this is on Highway 91 in Orange County, where drivers use FasTrak, an electronic tag, when using the toll lanes. ([www.thetollroads.com](http://www.thetollroads.com)) With FasTrak, drivers do not even need to stop to pay for a toll. Another technological advance with toll roads are sensors that can determine how many cars are using the toll road and the time it takes to get from one destination to the next. This can let drivers know how traffic conditions are on the toll road, and more importantly, in the cases where a toll road uses congestion pricing, determine the toll fee.

Lastly, when the costs of public toll roads are internalized, they are outside the financial fluctuations of the government. Popular public toll roads can financially operate autonomously, so even if the government is having a budget problem and money needs to be saved and funding cut, toll roads, unlike free highways, will still have funding and therefore can still be maintained, improved, and even expanded.

([www.worldbank.org](http://www.worldbank.org)) In addition, toll roads are attractive because of today's economic conditions. Building highways cost a lot of money which today, which not many states and districts can afford. Revenue from the gas tax, which is used to pay for highways, can barely pay for maintenance costs of existing highways. (Bayles) This is a result of construction costs exceeding inflation. (Bayles) In addition, more highways that haven't been properly maintained for many years need repair, and since they haven't been maintained consistently, they need to undergo major overhauls, which add to higher costs. (Bayles) As a result, highway planners have looked to toll roads as a new source of revenue to maintain and expand the highway network.

In spite of these advantages of toll roads, a number of critics still contend that toll roads do not benefit drivers and citizens. One criticism they have is that toll fees are expensive. A couple of examples are the New Jersey Turnpike and Highway 91, which costs up to \$7 and \$8 respectively. ([www.thetollroads.com](http://www.thetollroads.com)) In Texas, it was estimated that new toll roads there will cost drivers anywhere from \$.44 to eventually \$1 a mile. (Costello) In some instances, where free highways have been converted to toll roads, critics feel that they shouldn't be taxed twice (original taxes to pay for freeway and toll fee) for the freeway. Since land to build freeways is scarce, freeways that are built should be available to everyone as a public good.

Another criticism of toll roads is that their fees can be seen as regressive, that is, it places a lower burden on the rich. Using the New Jersey Turnpike fee mentioned earlier, it would cost about \$300 a month if a driver used it round trip per working day. That's difficult to pay for low-income families and young people who don't make good money, but easy for wealthier residents to pay. Because of this, toll roads and lanes have been dubbed "Lexus Lanes," meaning that the lanes are meant for the rich. (Orski) However, after a survey was done to determine the income levels of drivers who use toll roads, it was determined that for the most part, people of all income levels use toll roads.

Next, critics say toll roads won't alleviate congestion, but rather add to it. Toll roads, though their highway capacity is high, because of the toll fee, will drive commuters to use nearby free highways and streets, congesting them. (*www.cashtrap.us*) As mentioned, not everyone can afford to regularly use a toll road, so those drivers will have to be forced into other highways, congesting them. Also, others who favor public transportation see the toll roads as adding more vehicles on all roads. Toll roads are just another option for drivers to use, so the higher supply will mean more drivers will get on the highway. Not all highways are toll roads, so eventually, those drivers on the toll roads will get back onto freeways, which will be clogged from the extra vehicles. The transit advocates want money used on toll road to be put into improving public transportation. They believe that if public transportation is efficient enough, it will decrease the number of vehicles on the road.

Another criticism of toll roads is the environmental aspect of constructing one. The construction of a toll road is a time-consuming and costly process, where environmental impact reports and studies must be done. (<http://www.cbo.gov>) In

addition, environmentalists and homeowners do not want toll roads running in undeveloped land and near homes, respectively, so finding the right place to locate a toll road is difficult, which hinders the potential to build one. (<http://www.cbo.gov>)

Lastly, another criticism of toll roads is that it'll hinder development. Toll roads reduce demand, so if less people are on the toll road, the restaurants, gas stations, and stores near the toll road will suffer. (Stall) Furthermore, toll roads are designed to shuttle people from one point to another more quickly and efficiently, so they'll less likely stop along the way. (Stall) In addition, since people would rather not pay for a toll road, people may not want to live near a toll road and have to use it regularly to travel. That means that toll roads will hinder residential development, unless the residential development is geared towards the wealthy who can afford to use the toll road. This can be seen on Highway 241 in Orange County, CA, which ends abruptly in an upscale residential neighborhood in the mountains. ([www.thetollroads.com](http://www.thetollroads.com))

Toll roads are becoming more commonplace in today's highways. They are no doubt controversial. Citizens, politicians, economists, and cities are debating their effects. In spite of this, toll roads continue to expand and grow in popularity. I believe that toll roads should only be built as a niche form of transportation. I don't think it should be one of the main ways to get from one place to another. I'm most opposed to toll fees. I believe highways should be made available to all. Not all people can afford to use a toll road regularly, so the wealthy will have a bigger benefit. And I think toll roads will be unfair unless there are good alternatives for drivers who can't afford to use a toll road regularly. Public transportation should be developed to give people more options. However, today, public transportation isn't efficient enough, and people are forced to

drive, and if they can't afford the toll roads, they'll be forced onto congested freeways. And that's unfair to those people. To me, toll roads are only reasonable in a few places, such as places where the maintenance costs of the road are high, and where there are already efficient transportation alternatives. However, I believe money that is spent on expanding the toll road network can be better used on public transportation.

## **Bibliography**

- Bayles, Fred. "Toll lanes: A freer ride, for a price."  
*[http://www.usatoday.com/news/nation/2004-04-07-tolls-usat\\_x.htm](http://www.usatoday.com/news/nation/2004-04-07-tolls-usat_x.htm)*. 2004,  
accessed Dec. 2005.
- Costello, Sal. "Texas Toll Party." *<http://www.texastollparty.com/index.php?direct=1>*.  
2005, accessed Dec. 2005.
- Finch, Ginny. "Congestion Pricing: Reducing Traffic Jams Through Economics."  
*<http://www.tfsrc.gov/pubrds/fall96/p96au4.htm>*. 1996, accessed Nov. 2005.
- Hakim, Simon, et al. Privatizing Transportation Systems. Praeger Publishers: Westport,  
CT, 1996.
- Lawther, Wendell. Privatizing Toll Roads: A Public-Private Partnership. Praeger  
Publishers: Westport, CT, 2000.
- Miller, Roger. The Economics of Public Issues. Pearson Education, Inc.: Boston, MA,  
2005.
- Orski, Kenneth. "Charging for the Use of Roads."  
*[http://www.puaf.umd.edu/faculty/nelson/orski\\_road\\_charging.pdf](http://www.puaf.umd.edu/faculty/nelson/orski_road_charging.pdf)*. 2003.,  
accessed Nov 2005.
- Ramamurti, Ravi. Privatizing Monopolies. Jonh Hopkins University Press: Baltimore,  
1996.
- Samuel, Peter. "Putting Customers in the Driver's Seat: The Case for Tolls."  
*<http://www.rppi.org/ps274.html>*. 2000, accessed Nov. 2005.
- Stall, Linda. "Challenging the Wisdom of the Trans-Texas Corridor."  
*<http://www.stall.net/ttc/>*. 2004, accessed Dec. 2005.
- Weingroff, Richard. "Highway Existence: 100 Years and Beyond - A peaceful campaign  
of progress and reform: The Federal Highway Administration at 100."  
*<http://www.fhwa.dot.gov/infrastructure/rw93.htm>*. 2005, accessed Nov. 2005.
- "Better Roads: Facts about the Highway and Bridge Construction Market."  
*<http://www.betterroads.com/advertising/pdf%20files/highway-facts.pdf>*. 2001,  
accessed Nov. 2005.
- "Citizens Against State Highway to Toll Road Abuse and Proliferation."  
*<http://www.cashtrap.us>*. 2004, accessed Nov. 2005.

“Roads and Highways: Toll Roads and Concessions.”

*[http://www.worldbank.org/transport/roads/toll\\_rds.htm](http://www.worldbank.org/transport/roads/toll_rds.htm). 2002, accessed Nov. 2005.*

“The Benefits of Reducing Congestion.”

*[http://www.aashto.org/community/reports.nsf/0215620f11306ae9862568ce0064971f3df1dce37261d64d86256cfb004f8bcf/\\$FILE/WP2\\_NCHRP%208-36\\_Task%2022\\_Paper%204\\_Congestion.pdf](http://www.aashto.org/community/reports.nsf/0215620f11306ae9862568ce0064971f3df1dce37261d64d86256cfb004f8bcf/$FILE/WP2_NCHRP%208-36_Task%2022_Paper%204_Congestion.pdf). 2002, accessed Nov. 2005.*

“The Toll Roads.” *<http://www.thetollroads.com/home/index.htm>. 2001, accessed Dec. 2005.*

“Toll Roads: A Review of Recent Experience.”

*<http://www.cbo.gov/ftpdocs/40xx/doc4014/1997doc03-Entire.pdf>. 1997, accessed Dec. 2005.*