Traffic & Neighborhood Quality of Life

THE PROBLEM

Some car, truck, and bus traffic on neighborhood streets is a necessity given our current life style. However, this does not mean that these streets must accommodate ever increasing amount of traffic. As traffic volumes increase the safety of our streets declines along with property value, air quality, and the quiet we enjoy in our homes.

In this fact sheet we'll provide background on these issues along with advice on how to ensure that traffic on your neighborhood streets remains at a reasonable level.

Pedestrian Safety

Between 1986 and 1995, approximately 6,000 pedestrians are killed each year in the U.S. by automobiles and 55% of these fatalities occurred on neighborhood streets.[1] For every pedestrian killed by a car, another 15 were injured.

Speed is a major factor determining whether a pedestrian will be killed or injured by an automobile. A pedestrian is nine times more likely to die if struck by a car traveling at 30 mph compared to 20 mph.[2] Other factors contributing to the high pedestrian accident rate on neighborhood streets include lack of adequate sidewalks, bike lanes, and crossings.

Noise, Health & Property Value

Traffic noise can interfere with sleep, conversation, and other neighborhood pursuits. About 2% of us are exposed to traffic noise at a level which affects health.[3]

Sound is measured in units known as decibels (dB) and highway noise is measured on an "A-weighted decibel" (dBA) scale. 70 dBA is eight times as loud as 60 dBA. The noise level in a library might be 30 dBA while an air conditioner would emit 60 dBA.

Traffic volume, speed, and vehicle type all affect noise levels. At 2,000 vehicles per hour (vph) traffic noise will sound twice as loud as at 200 vph. Traffic moving at 65 mph will sound twice as loud as at 30 mph. And one truck traveling at 55 mph will sound as loud as 28 cars moving at the same speed.

Traffic noise can have a significant effect on property value. A home located adjacent to a major highway may sell for 8% to 10% less when compared to one located along a quiet neighborhood street.[4] Heavy truck traffic lowers property value at a rate 150 times greater than cars. This is because at 50 feet heavy trucks emit noise at 90 dBA while a car traffic produces noise at a level of 50 dBA.[5] An increase in heavy truck traffic may also cause damage to nearby homes through vibrations transmitted through the earth.

While some truck traffic is essential on neighborhood streets (e.g. refuse collection, delivery trucks, and fire engines) an increase in trucks passing through a neighborhood could lower property value and overall quality of life.

Air Quality

A typical U.S. car emits enough pollution to create five tons of carbon dioxide a year. Cars and trucks produce half of all toxic air pollution emitted in the U.S. Estimates indicate that air pollution from cars results in 120,000 premature deaths each year in the U.S.[6] Traffic generated air pollution also accounts for $40-$50 billion in health care costs each year in this country.

Wasted Time

Traffic congestion is one of the most frustrating and costly symptoms of poorly regulated growth. Those of us who commute to work by car spend 110 to 310 hours a year behind the wheel. That's a lot of time spent unproductively.

THE SOLUTIONS

Protecting a neighborhood from traffic impacts boils down to minimizing the speed and volume of traffic, particularly the volume of truck traffic. First and foremost, new development should be guided to sites with access to mass transportation. Pollution emissions are reduced by 60% to 99% when a commuter takes mass transit to work rather than a car. Other forms of transportation, such as walking and bicycling, must be given much greater support by transportation officials. For further information on this topic contact the Surface Transportation Policy Project at 202.466.2636 and visit their web page: www.transact.org

Unfortunately, for some time to come much of our growth will continue to be car oriented - not mass transit oriented. This brings us to two key questions:

- How much traffic is too much for a neighborhood street?
- How can we reduce the impact of existing traffic on neighborhood quality of life?

Limiting Traffic Increases on Neighborhood Streets

Factors which may change traffic on a neighborhood street include:

- increasing the number of houses with access to the street;
- turning a dead-end (cul-de-sac) street into a through street;
- "improving" a street by widening, straightening, etc.;
- increased congestion on larger roads may prompt commuters to use neighborhood streets in hopes of bypassing congestion; and
- expanding or creating new commercial, industrial, or institutional uses with access to a neighborhood street.

Unfortunately, there are no generally accepted criteria for traffic levels compatible with neighborhood quality of life. The criteria presently used to

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assess traffic impacts is geared towards preventing congestion. This criteria is based upon a rating system known as *Level Of Service* or LOS for short.

LOS ratings range from A to F, with A being the best and F is severe congestion, grid-lock. Many local and State highway agencies restrict development projects that would cause LOS to drop below D in urban areas and C in rural settings.

Traffic Volume & Neighborhoods Impacts

The volume of traffic causing an unacceptable LOS may be well above that causing excessive noise, safety, health, or property value impacts. For example, a typical two-lane (one lane in each direction) 20-foot wide neighborhood street can accommodate a traffic volume of less than 1,000 vehicle trips without a significant adverse effect on quality of life.

As shown in the following table, a typical single-family detached home will generate about ten vehicle trips per day.

Building Type	Trips/ Day
Single-family detached house	10.0
Townhouse	8.5
Apartment/Condominium	6.5
Shopping Center (Examples):	
Small (10,000 ft^2)	1,680
Medium (75,000 ft^2)	5,325
Large (over 200,000 ft^2)	9,400

So a neighborhood street with a hundred homes fronting on it would carry about a thousand trips per day.

At 1,000 to 4,000 trips per day impacts may justify a combination of driver education efforts and modifications to the street to reduce traffic impacts. At 5,000 trips per day increased police enforcement plus education and street modifications would be needed to manage quality of life impacts. Traffic volume would need to approach 8,000 trips per day before the LOS would begin showing a need to constrain traffic increases. At that point a traffic signal may improve the LOS rating. Once the signal is installed the LOS approach would then permit traffic volume to increase up to 15,000 trips/day before a failed rating would again be reached.

As the preceding discussion illustrates, the LOS rating system may not be very effective in protecting a neighborhood from traffic increases that would degrade quality of life.

Calming Neighborhood Traffic In recent years a number of *traffic calming* techniques have been developed. The overall purpose of traffic calming is to slow down vehicle speed and/or to reduce traffic volume by discouraging through traffic. These techniques fall into the three categories mentioned in the previous section of this fact sheet: education, modifications to streets, and enforcement.

Education: A popular education technique consists of a radar gun and a large electronic display. The display is mounted along a neighborhood street where it will be easily seen by passing motorists. A volunteer points the radar gun at an approaching car. The driver of the car then sees their speed on the electronic display. While this and other education techniques can reduce speed, the effects tend not to last very long afterwards.

Street Modifications: Engineered modifications tend to be more effective and longer lasting than education techniques, but they are also more expensive and may not be readily accepted by the public. Following are some of the more frequently employed modifications.

- Speed humps can reduce traffic to 15 mph. The humps are 3-4 inches high and 12 feet long.
- Modifying the entrance to a neighborhood street can reduce through traffic. Examples of modifications include a reduction in the entrance width of the street and posting no-turn signs to discourage drivers from entering the street.
- Two-way or four-way stop signs can cause some speed reduction But without heavy enforcement stop signs may not be very effective
- A traffic circle may be more effective than stop signs. However, drivers may speed up in the middle of a block to make up for time lost at the circle.

Enforcement: Increased enforcement of speed limits does improve compliance but without on-going efforts the benefits may be short-lived. In one study enforcement reduced the average speed by 12% and lead to more than a five-fold increase in the number of drivers complying with the posted speed limit. This study also found that most of the worse speeders were neighborhood residents and the majority (62%) were over 25 years old.[7]

Whenever your community is faced with a traffic issue or any other threat to quality of life please give Community & Environmental Defense Services a call at 800-77304571. Our advice is available free of charge to citizens and citizen groups. Check out our web page (www.ceds.org) for other publications on preserving neighborhood quality of life.

1. 1. Mean Streets: Pedestrian Safety and Reform of the Nation's Transportation Law by the Environmental Working Group www.ewg.org

2. Mean Streets 1998: Children at Risk by the Surface Transportation Policy Project. http://www.transact.org/

3. U.S. Department of Transportation, Bureau of Transportation Statistics, *Transportation Statistics Annual Report*, Washington, D.C., 1995.

4. Highway noise and property value by J.P. Nelson, *Journal of Transport Economics & Policy*, May 1982, p. 117-138.

5. Residential noise damage costs caused by motor vehicles by D. Haling and H. Cohen, *Transportation Research Records*, Issue 1559, p. 84-95.

6. Out of the car and into the future by Md> Lowe, *World Watch*, Nov./Dec. 1990.

7. Managing traffic speeds in residential areas by K. Kim, *Transportation Quarterly*, Vol. 51(1), p. 127-133.