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Problem-Oriented Guides for Police
Problem-Specific Guides Series
No. 50

Traffic Congestion Around Schools

by
Nancy G. La Vigne



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About the Problem-Specific Guides Series

The *Problem-Specific Guides* summarize knowledge about how police can reduce the harm caused by specific crime and disorder problems. They are guides to prevention and to improving the overall response to incidents, not to investigating offenses or handling specific incidents. Neither do they cover all of the technical details about how to implement specific responses. The guides are written for police—of whatever rank or assignment—who must address the specific problem the guides cover. The guides will be most useful to officers who:

- **Understand basic problem-oriented policing principles and methods**. The guides are not primers in problem-oriented policing. They deal only briefly with the initial decision to focus on a particular problem, methods to analyze the problem, and means to assess the results of a problem-oriented policing project. They are designed to help police decide how best to analyze and address a problem they have already identified. (A companion series of *Problem-Solving Tools* guides has been produced to aid in various aspects of problem analysis and assessment.)

- **Can look at a problem in depth**. Depending on the complexity of the problem, you should be prepared to spend perhaps weeks, or even months, analyzing and responding to it. Carefully studying a problem before responding helps you design the right strategy, one that is most likely to work in your community. You should not blindly adopt the responses others have used; you must decide whether they are appropriate to your local situation. What is true in one place may not be true elsewhere; what works in one place may not work everywhere.

- **Are willing to consider new ways of doing police business**. The guides describe responses that other police departments have used or that researchers have tested. While not all of these responses will be appropriate to your particular problem, they should help give a broader view of the kinds of things you could do. You may think you cannot implement some of these responses in your jurisdiction, but perhaps you can. In many places, when police have discovered a more effective response, they have succeeded in having laws and policies changed, improving the response to the problem. (A companion series of *Response Guides* has been produced to help you understand how commonly-used police responses work on a variety of problems.)

- **Understand the value and the limits of research knowledge**. For some types of problems, a lot of useful research is available to the police; for other problems, little is available. Accordingly, some guides in this series summarize existing research whereas other guides illustrate the need for more research on that particular problem. Regardless, research has not provided definitive answers to all the questions you might have about the problem. The research may help get you started in designing your own responses, but it cannot tell you exactly what to do. This will depend greatly on the particular nature of your local problem. In the interest of keeping the guides readable, not every piece of relevant research has been cited, nor has every point been attributed to its sources. To have done so would have overwhelmed and distracted the reader. The references listed at the end of each guide are those drawn on most heavily; they are not a complete bibliography of research on the subject.

- **Are willing to work with others to find effective solutions to the problem**. The police alone cannot implement many of the responses discussed in the guides.

They must frequently implement them in partnership with other responsible private and public bodies including other government agencies, non-governmental organizations, private businesses, public utilities, community groups, and individual citizens. An effective problem-solver must know how to forge genuine partnerships with others and be prepared to invest considerable effort in making these partnerships work. Each guide identifies particular individuals or groups in the community with whom police might work to improve the overall response to that problem. Thorough analysis of problems often reveals that individuals and groups other than the police are in a stronger position to address problems and that police ought to shift some greater responsibility to them to do so. Response Guide No. 3, *Shifting and Sharing Responsibility for Public Safety Problems*, provides further discussion of this topic.

The COPS Office defines community policing as "a policing philosophy that promotes and supports organizational strategies to address the causes and reduce the fear of crime and social disorder through problem-solving tactics and police-community partnerships." These guides emphasize problem-solving and police-community partnerships in the context of addressing specific public safety problems. For the most part, the organizational strategies that can facilitate *problem-solving* and *police-community partnerships* vary considerably and discussion of them is beyond the scope of these guides.

These guides have drawn on research findings and police practices in the United States, the United Kingdom, Canada, Australia, New Zealand, the Netherlands, and Scandinavia. Even though laws, customs and police practices vary from country to country, it is apparent that the police everywhere experience common problems. In a world that is becoming

increasingly interconnected, it is important that police be aware of research and successful practices beyond the borders of their own countries.

Each guide is informed by a thorough review of the research literature and reported police practice and is anonymously peer-reviewed by line police officers, police executives and researchers prior to publication.

The COPS Office and the authors encourage you to provide feedback on this guide and to report on your own agency's experiences dealing with a similar problem. Your agency may have effectively addressed a problem using responses not considered in these guides and your experiences and knowledge could benefit others. This information will be used to update the guides. If you wish to provide feedback and share your experiences it should be sent via e-mail to cops_pubs@usdoj.gov.

For more information about problem-oriented policing, visit the Center for Problem-Oriented Policing online at www.popcenter.org. This web site offers free online access to:

- the Problem-Specific Guides series
- the companion *Response Guides* and *Problem-Solving Tools series*
- instructional information about problem-oriented policing and related topics
- an interactive problem-oriented policing training exercise
- an interactive *Problem Analysis Module*
- a manual for crime analysts
- online access to important police research and practices
- information about problem-oriented policing conferences and award programs.

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The Problem of Traffic Congestion Around Schools

What This Guide Does and Does Not Cover

This guide begins by describing the problem and reviewing the factors that increase the risks of school traffic congestion. It then identifies a series of questions to help you analyze your local problem. Finally, it reviews responses to the problem, and what is known about them from evaluative research and local practice.

For the purposes of this guide, school-related traffic congestion is defined as the overcrowding and blocking of streets on or near school property that is typically associated with car transportation of children to and from school. While routes to and from school are examined in the context of this problem, most of this guide is devoted to problems occurring in the immediate vicinity of the schools that generate traffic-related problems. A thorough review of the research indicates that the vast majority of problems pertaining to school traffic congestion occur in middle and elementary schools. This guide therefore focuses primarily on causes of and ways to prevent traffic around these subsets of schools, although most responses could apply to a wide range of educational institutions.

School traffic congestion is but one aspect of a larger set of problems related to school traffic. This guide is limited to addressing the particular harms school traffic congestion creates. Related problems not directly addressed in this guide, each of which requires separate analysis, include the following:

- Speeding in residential areas. Sometimes school congestion creates speeding in the larger vicinity, as frustrated parents and commuters try to make up for lost time associated with the congestion.
- Reckless driving, speeding, and traffic violations associated with high school students' driving themselves to and from school.
- Cruising.
- Street racing.
- Loud car stereos.

Some of these related problems are covered in other guides in this series, all of which are listed at the end of this guide. For the most up-to-date listing of current and future guides, see www.popcenter.org.

Finally, it is important to emphasize that this guide assumes that you are interested in solving a school traffic problem that already exists. As with many crime, disorder, and public nuisance problems, the best way to prevent school traffic congestion is to "design it out" during the school site-planning stage. While the issue of new school construction is beyond this guide's scope, several resources offer guidance on the best way to design parking, drop-off, and pick-up areas, and procedures to ensure children's safe and speedy transport to and from new schools in the planning stages.[1]

General Description of the Problem

School-related traffic congestion and the risks such congestion poses to the safety of the students, teachers, parents, residents, and motorists in and around school locations is a significant problem in communities both throughout the United States and abroad. The most obvious cause of traffic congestion around schools is vehicles, and the biggest source of those vehicles is parents' dropping off and picking up their children from school. In the United States, roughly three-quarters of school-aged children are taken to school by car.[2] In the United Kingdom, the share of children taken to school by car is estimated to be between one-third[3] and one-half.[4] In both countries, the rate of increase in car transportation of children to school has been significant, often creating serious traffic congestion problems.[5] As described below, an increase in children taken to school by car is just one contributing factor to the problem. Other factors include changes in school purposes and populations, new school construction, the addition or elimination of busing, and the overall physical infrastructure, street layout, and traffic signs and signals surrounding a school.

Traffic congestion alone causes inconvenience to drivers, leads to lost time from the job, and can contribute to "road rage." In addition to affecting parent drivers and other commuters, school traffic congestion is a source of problems for students, school staff, residents in and around schools, and local police charged with enforcing traffic laws and responding to problems raised by residents and schools. More importantly, congestion can be a source of traffic crashes and child pedestrian injuries and deaths.[6] Child pedestrian injuries due to traffic are more likely to occur in settings with high traffic volume and on-street parking, with children's often emerging "masked" from behind parked cars.[7]

Factors Contributing to Traffic Congestion Around Schools

Understanding the factors that contribute to your problem will help you frame your own local analysis questions, determine effective measures, recognize key intervention points, and select appropriate responses to the problem of school traffic congestion. The following factors contribute to school traffic congestion.

Population Trends and Changes in Transportation Modes

While many factors contribute to the problem of school traffic congestion, according to experts, the single greatest explanation for recent school traffic congestion is the growth of the school-aged population over a relatively short time, combined with urban sprawl.[8] Both factors have led to an unanticipated volume of students' being taken to school by car, rendering original school drop-off and pick-up schemes (including guidelines for when and where parents may drop off, pick up, and park), street layouts, and traffic control measures ineffective in controlling congestion. A related factor is the growth in car ownership and use, which has been associated with a decline in parents' willingness for children to walk or bike to and from school independently.[9] Indeed, far fewer children are walking or biking to school, with official statistics' showing a 40 percent decrease in school-aged children walking or biking between 1977 and 1995.[10] This may be explained by changes in the workforce, with more working mothers' taking their children to school by car on their way to work.[11]

When asked, parents who choose to take their children by car cite distance, traffic hazards, time constraints, and bad weather as the most common reasons for selecting this transportation mode.[12] Other research has asserted that both road safety and

"stranger danger" are the key explanations for why parents are increasingly taking their children to school by car.[13] One can view such threats to child safety as both a cause and a symptom of school congestion. On the one hand, parental concerns about traffic hazards could lead more parents to drive their children to school, thereby increasing congestion. On the other hand, traffic congestion could lead to more child pedestrian accidents, with backed up cars' blocking the views of small children crossing the street to enter school.

High school student drivers may also contribute to traffic congestion problems around schools, particularly because they are inexperienced drivers who often disregard traffic and parking signs.[14] However, this source of the problem is easily addressed by requiring students to get parking permits or to park in remote lots, or to prohibit students from driving to school altogether.[15] Perhaps for this reason, the literature on this topic rarely attributes traffic congestion to student drivers. (Related problems, such as vandalism, litter, and disorder around high school parking lots, are quite common[16] but are not addressed in this guide). Nonetheless, most of the effective responses in this guide apply in the high school context.

In some jurisdictions, reduced budgets have led to the elimination of busing systems, thereby increasing the use of cars and the congestion they create. In other school districts, busing has increased to promote more racially and socioeconomically balanced student bodies. In some cases, however, busing can contribute to congestion problems, such as when buses share the same drop-off and pick-up lanes as parents' vehicles. Even in districts that provide busing with adequate space and effective loading and unloading arrangements, some parents may prefer to drive their children to school, thereby exacerbating traffic congestion.

Physical Design Issues

As described above, the use of cars as a major means of transportation of children to and from school is inextricably linked to the design of the area surrounding the school. Narrow streets or those that allow parking on both sides are unlikely to provide ample room for cars to maneuver. Areas that are "landlocked" by cul-de-sacs may offer few alternative routes into and out of the area surrounding the school, and streets that become one-way during peak school arrival and departure times may create confusion rather than resolving congestion issues.

Poorly timed traffic lights, entry and exit routes designed without consideration of overall commuting patterns, and a lack of temporary parking spaces may also be sources of congestion problems. In addition, congestion may be caused by too many children's being dropped off or picked up at the same time. Furthermore, the absence of pedestrian and bike pathways and crosswalks and the presence of cars parked along the major thoroughfares leading to and from the school can increase the harm traffic congestion causes by blocking the children's visibility.

New Schools, Residential Subdivisions, and Changes in School Assignment

If not well planned, building a new school in an area may result in traffic congestion. New schools may be constructed to anticipate the growth associated with new home construction, but there may be no adequate plan for the traffic the school generates. Indeed, even new developments designed to be pedestrian-friendly with walkways through the neighborhood have encountered congestion problems around schools, due to parental concerns about child safety.[17]

Conversely, the construction of a new residential subdivision may lead the school system to change the school assignment process. Such changes can alter the school composition, with younger students' generating more parent drop-offs and pick-ups, and students' arriving from more remote destinations leading to an increase in congestion caused by the addition of school buses. Similarly, increases in the school population caused by changing demographics may lead to the use of temporary "relocatables"—trailer classrooms that by necessity are placed in parking areas that would have otherwise served to decrease congestion. These are just a few examples of how school traffic congestion problems can be caused by the ever-changing size, capacity, and population of schools and how, like squeezing a water balloon, changes in one or two schools in a school system can affect traffic congestion around others.

Understanding Your Local Problem

The information provided above is only a generalized description of school traffic congestion. You should use these basic facts to help develop a more specific understanding of your local problem. Analyzing the local problem carefully will help you design a more effective response strategy.

Stakeholders

The following groups have an interest in the school traffic-congestion problem and should be considered for the contribution they might make to gathering information about the problem and responding to it.

Police

This guide is written for police, not because they are the biggest stakeholders in solving traffic congestion problems, but because they are often one of the first to be called when traffic congestion develops around schools. Police are more likely to be contacted only after tensions have developed among residents, school staff, and parents over who is responsible for the congestion. Police therefore are in a unique position to serve as mediator between these groups, helping them to seek common ground in developing and implementing effective solutions and ultimately making their jobs easier by reducing the number of calls for service generated by congestion, and the traffic violations and traffic safety issues that often accompany it.

Parents

When it comes to both understanding the underlying source of the congestion problem and developing responses to it, parents may be the single most important stakeholder you identify. This is because parents' decisions to drive their children to school, their concern for their children's safety, and their regard for existing traffic rules can tremendously affect the problem.

Students

While research indicates that most school traffic problems occur around elementary and middle schools, in cases where congestion is around high schools, students are significant stakeholders given that their driving and parking habits are likely contributing to the problem. Student input in lower-grade schools is equally important, and can become critical if a response strategy includes encouraging children to walk or bike to school.

School Administrators and Teachers

School staff often experience the aggravation of school traffic congestion in equal measure to parents. Some staff may be inconvenienced by congestion in their own commutes to and from the school. Others, such as the principal and school administrators, bear the brunt of complaints by parents and local residents. Given that most congestion occurs in and around school property, the child safety concerns associated with traffic congestion become the school's responsibility, as well.

Local Residents

Residents living near schools with congestion problems are very much affected by the problem, and may also be contributing to it. Imagine being late for work and pulling out of your driveway, only to realize that school traffic is at its peak and it will take another 10 minutes just to travel a tenth of a mile. Residents may become so frustrated by repeated complaints to the school or local police with no sign of resolution in sight, that they deliberately ignore signs prohibiting street parking or making streets one-way during drop-off and pick-up times, further contributing to the congestion problem.

Other Commuters

In some areas, school traffic congestion is caused or exacerbated by commuters whose routes take them past the school or those who use residential roads around schools as shortcuts to reduce travel time, despite the congestion they may encounter around schools.

Transportation and Planning Department

Your local transportation and planning department is also a critical partner in understanding and addressing the problem of school traffic congestion. This agency can change or add traffic signs, create one-way streets, and change the traffic-light timing to increase traffic flow and reduce congestion around the school.

School Bus Companies

In cases in which congestion occurs around schools that have busing, the bus companies are an important partner in developing responses to the problem. For example, if buses are perceived as contributing to the congestion problem, the school may determine that the best approach is to stagger bus drop-off and pick-up times and/or schedule those times so that they do not coincide with parental drop-off and pick-up times.

Parent Teacher Associations (PTAs) and School Boards

Formal entities such as PTAs can conduct surveys of their membership to better understand the nature of the problem, to enlist their participation and support in developing and implementing responses, and to aid in administering surveys designed to assess the response's impact.

School Building Architects and Landscapers

School architects and landscapers may need to be enlisted to better understand possible and feasible changes to school property, as well as to aid in drafting plans to reduce congestion. In addition, while most of the literature on school traffic congestion pertains to schools already existing when a traffic problem emerges, it is important to note that school architects can play a critical role in designing out traffic problems before new schools are erected.

Neighboring Businesses

In some cases, schools are located near retailers or businesses that generate their own traffic or that suffer from school-generated traffic. These businesses represent another important stakeholder group in understanding and addressing the traffic congestion problem.

Asking the Right Questions

The following are some critical questions you should ask in analyzing your particular problem of school traffic congestion, even if the answers are not always readily available. Your answers to these and other questions will help you choose the most appropriate set of responses later on.

Incidents

Incident data will enable you to measure the level and type of traffic congestion problem occurring around the school(s) affected by congestion. To answer these questions, it is useful first to learn whether the school system and/or police department has a mechanism for recording traffic congestion complaints. In some cases, police calls-for-service data may provide the necessary details to extract this information. In the case of school-generated data, however, the school system is likely to document only traffic safety issues, such as crashes involving the injury or death of a child. It is likely, therefore, that the police officer assigned to the school (or the patrol area in which the school is located) is the best source of incident data. The questions to ask to obtain incident data include the following:

- How many complaints does the school receive about traffic congestion?
- How many complaints do the police receive about traffic congestion?
- Who is making the complaints—residents, school staff, parents, or all of the above?
- How many vehicular crashes have occurred around the school?
- How many pedestrian injuries and deaths have occurred around the school?

- How many traffic violations have occurred around the school? What types of violations are occurring?
- To what degree is the traffic congestion caused by parent drivers, and to what degree by non-parent drivers, including bus drivers, commuters, and residents? Why are each of these drivers in the area, and what are their motivations for driving?
- To what degree do pedestrians contribute to traffic congestion?

Setting

- What are the main access points to and from the school (main drive, pedestrian entrances, side streets, etc.)?
- Where are the existing drop-off and pick-up areas?
- Are there alternate drop-off and pick-up sites that could be used?
- Where are the crosswalks and associated limit lines?
- What speed zones exist in and around the school? Do they appear to affect traffic flow?
- Where are no-parking zones, bus-parking areas, bus-loading/unloading zones, and student drop-off and pick-up areas located?
- Does the neighborhood have features that draw traffic into the area at school drop-off and pick-up times? For example, are there area retailers or businesses whose customers and/or employees contribute to the problem?
- How many parking spaces are located on and around school property?
- What is the average time it takes to drop off or pick up a child during peak congestion hours (including wait time and time entering/exiting car)?

- How far is traffic backed up entering and exiting school at the busiest times (minimum, maximum, average)?
- What is the maximum number of students who could walk to school (distance is less than one-half mile or other standard by student age)? Do the children who walk to school live closer to the school than those who don't?

A useful means to assist in answering these questions about setting is to conduct field observations at and around the school at different times of day and days of week to find out where most traffic is coming from, where people park, and where pedestrian pathways and flows are located.[§] Such observations may also reveal whether any nonschool commuter traffic cutting through the school area is contributing to the problem.

§ You can find a useful resource to guide such field observations in a document produced by the National Highway Safety Transportation Board that provides advice to those conducting pedestrian and bicycle crash analyses. See www.nhtsa.dot.gov/people/injury/pedbimot/ped/pbcatjan01/index.html.

Times

- At what times of day is congestion at its worst? What days of the week? What times of the year?
- Do peak congestion hours correspond with other events?
- Are incidents clustered in time, or spread over time?
- Is congestion seasonal, with most problems' occurring during cold winter months, and no problems' occurring during summer recess?

School System Context

In most growing school systems, school assignment is reevaluated each year. As a result, even if your particular problem is congestion around an individual school, the problem must be considered in light of the larger school system context. This includes identifying and anticipating any significant changes, including the following:

- Have there been, or are there plans for, changes in school assignment at both the school of interest and neighboring schools?
- Are there plans for residential and commercial development in the surrounding area?
- Are there anticipated changes in traffic patterns and physical infrastructure around the school?
- Does the school have plans to add relocatable classrooms, and if so, where will they be located?

These questions underscore the importance of understanding that any efforts to address school congestion problems must be considered in light of the larger system, and that congestion issues and your responses' effectiveness must be reassessed and may need to be amended each year.

Driving Habits

When studying the issue in your local jurisdiction, it may be useful to conduct a survey of parents to learn how often they drive their children to school, their openness to other forms of transportation, and their perceptions of the incidence and severity of the congestion problem. In analyzing the problem, a survey of parents can shed light on why they take their children by car, including the following response categories:

- It is quicker/more convenient.
- It is on the way to/from work.
- There is no other transportation.
- The weather is bad.
- It is too far to walk.
- My children are too young to go to school alone.
- I drop off/pick up other kids.
- I have concerns about child safety and "stranger danger."

If the chosen response to the problem is to reduce parental driving, such a survey can help in developing a response that speaks to parents' motivations and concerns. Conducting a similar survey after implementing your response will also assist in your assessment of whether the response was effective (see "Measuring Your Effectiveness" below).

Other important questions to pose to parent drivers include the following:

- How often do you drive your children to school? Daily? Special occasions only?
- What alternative modes of transportation are available?
- Why do you choose particular routes and pick-up and drop-off points?

A "windshield survey" posing similar questions to parents and other commuters stuck in congestion around schools may also be fruitful.

Current Responses

- What are the current practices in place to control traffic congestion? What are the existing guidelines for student drop-off and pick-up?
- What are the current street signs in and around the school? It is important to note the locations of all stop signs, traffic lights, speed limit signs, and directional signs (one-way or street closure signs), as well as any associated hours of operation (e.g., "No entry between 7 a.m. and 9 a.m.").[§]
- Is there a crossing guard on duty, and if so, at what times of day?
- What are the existing police patrol patterns? Are patrols assigned to coordinate with school arrivals and departures? Does the school have a police resource officer assigned to it?
- What responses have worked in the past, and for how long? What past responses have yielded limited or no effectiveness?

Once you have gathered information on street patterns, traffic flows, and signs, a useful means of integrating all this information in a way that leads to potential solutions is to map the locations of these factors, either by hand or through the use of Geographic Information System software. Such mapping can be useful to understand the flows and nature of congestion within the larger context of the surrounding area. At this point in the process, you should begin to develop a list of possible responses designed to address the underlying cause of your school traffic problem. It is often useful to survey parents, teachers, staff, and even students to obtain their feedback on which of the proposed interventions they

§ For guidelines on appropriate signs, see the Federal Highway Administration's Manual on Uniform Traffic Control Devices at http://mutcd.fhwa.dot.gov.

like best. While the popularity of the response should not be the only criterion for its selection, if you have identified an array of equally effective responses, it is only logical to implement the one that most people will support, particularly because their compliance is critical to the intervention's success. Such a survey not only serves to narrow down the list of possible interventions, but also will help to justify the response ultimately implemented.

Measuring Your Effectiveness

Measurement allows you to determine to what degree your efforts have succeeded, and suggests how you might modify your responses if they are not producing the intended results. You should take measures of your problem before you implement responses, to determine how serious the problem is, and after you implement them, to determine whether they have been effective. You should take all measures in both the target area and the surrounding area. (For more detailed guidance on measuring effectiveness, see the companion guide to this series, *Assessing Responses to Problems: An Introductory Guide for Police Problem-Solvers.)*

The following are potentially useful measures of the effectiveness of responses to school traffic congestion:

- fewer vehicles around the school
- reduced time spent by parents' dropping off and picking up children
- fewer complaints received by the school about traffic congestion
- fewer complaints received by the police about traffic congestion
- fewer vehicular crashes around the school
- fewer pedestrian injuries and deaths around the school
- fewer traffic violations around the school
- lower percentage of parents' using cars to take children to school
- improved perceptions of congestion among parents and staff.

Responses to the Problem of Traffic Congestion Around Schools

General Considerations for an Effective Response Strategy

Your analysis of your local problem should give you a better understanding of the factors contributing to it. Once you have analyzed your local problem and established a baseline for measuring effectiveness, you should consider possible responses to address the problem.

The following response strategies provide a foundation of ideas for addressing your particular problem. These strategies are drawn from a variety of research studies and police reports. Several of these strategies may apply to your community's problem. It is critical that you tailor responses to local circumstances, and that you can justify each response based on reliable analysis. In most cases, an effective strategy will involve implementing several different responses. Law enforcement responses alone are seldom effective in reducing or solving the problem. Do not limit yourself to considering what police can do: carefully consider whether others in your community share responsibility for the problem and can help police better respond to it. The responsibility of responding, in some cases, may need to be shifted toward those who have the capacity to implement more effective responses. This is particularly true in the case of school congestion problems, as solutions typically rely on the leadership and cooperation of school staff, teachers, students, and parents. (For more detailed information on shifting and sharing responsibility, see Response Guide No. 3, *Shifting and Sharing Responsibility for Public Safety Problems*).

Specific Responses To Reduce Traffic Congestion Around Schools

Changing Transportation Modes

Many responses to the problem of school traffic congestion are designed to reduce the number of children taken to school in private vehicles. These efforts are often presented as environmentally friendly programs that increase physical activity among children, resulting in benefits far beyond that of reduced traffic congestion. With any of these programs designed to change parents' and students' behavior, incentives for participating as well as changes designed to make it easier to participate can go a long way toward achieving congestion reductions. Marin County, California, for example, implemented many of the responses described below to encourage children to walk or bike to school, and experienced a 50 percent increase in the number of children walking and biking and a corresponding decrease of 29 percent in car traffic around the school.[18] Similar results have been achieved in Boston and Minnesota,[19] as well as in jurisdictions throughout the United Kingdom[20] and Canada.[21]

1. **Educating parents.** You can educate parents about their children's using alternative transportation modes to and from school, as well as the dangers and legal consequences of traffic violations, and ways that parents play a role in reducing congestion and increasing student safety by following the rules of the road. You can provide such information in the PTA newsletter or distribute it in fliers handed to parents while they are waiting in school drop-off and pick-up zones.

2. **Encouraging students to walk or bike to school.** You could encourage students to walk or bike to school if the school curriculum integrates the health and environmental benefits of walking or biking to school into the school curriculum (e.g., encouraging pupils to consider the impact of different transportation choices on the environment as well as their own physical health). You can enhance such programs by enabling students to earn points and/or rewards based on how frequently they walk or bike to school.

www.iwalktoschool.org



Adding crosswalks and crossing guards is one way to make walking and biking to school safer and easier for students.

3. **Encouraging carpooling.** Likewise, parents would have an added incentive to carpool if you created a special express carpool lane, enabling participating drivers to get in and out of the school area—and on to their jobs or errands—faster.

City of Glendale, Arizona



Programs such as "Safe Routes to School" employ tactics such as adding crosswalks and crossing guards and encouraging parents to have their children walk or bike to school.

4. **Mapping out safe pedestrian routes.** One such program is called Safe Routes to School,[§] which is designed to "improve children's health and that of the overall community by making walking and bicycling to school safer and easier." This is achieved by mapping out the safest ways (e.g., those that avoid busy intersections and use sidewalks) that children can travel by bike or walk to and from school, adding crosswalks and crossing guards, and encouraging parents to have their children walk or bike to school. Most local police agencies have basic computerized mapping capabilities that they could use for this purpose. The city or county planning department can often provide an alternative source of mapping expertise.

[§] For more information, see the National Safe Routes to School Clearinghouse at www.saferoutesinfo.org.

5. **Implementing a "walking school bus" program.** Under such programs, a route is identified similar to a bus route, but also selected with pedestrian safety in mind. Parents are recruited to "drive" the bus, walking along the predetermined route to pick up children who are registered by their parents to "ride" the bus and escort them by foot to the school. Student sashes, school bag tags, and bus stop signs are often used as part of the program, as are backpacks and lockers to make it easier for children to walk without having to haul a large volume of books and school supplies with them. Naturally, such programs work only in neighborhoods that are near (i.e., in walking distance) of the school.

Similar to walking buses, cycle trains entail a group of parents and pupils cycling to school together. Safe biking routes are mapped out in advance, and school bags and lunch boxes are transported in a bike trailer pulled by a parent volunteer. Any biking program should include the installation of lockers or other ways to accommodate and secure the anticipated increase in bikes on school property.

Green Communities Canada Active & Safe Routes to School



Programs such as "walking school bus" identify routes similar to bus routes, but do so with pedestrian safety in mind.

6. **Instituting school busing.** While this option is typically viewed as cost-prohibitive, using buses or minivans to transport children to school is nonetheless an effective means of reducing the number of children taken to school by car, as well as the congestion that accompanies that transportation mode. Instituting a busing program, however, must involve a consideration of when and where buses will load and unload. Otherwise, buses could end up contributing to a congestion problem rather than reducing it. Moreover, before initiating a new busing system, it may be useful to survey parents to confirm that they would use it.

§ See www.walkinginfo.org (accessed March 15, 2007).

Implementing Drop-Off, Pick-Up, and Physical Design Measures

The source of many congestion problems stems from poorly planned drop-off and pick-up procedures, as well as parking-related physical design characteristics. Altering these rules and design characteristics can often resolve congestion issues with little impact to parents' and students' daily routines. In Plano, Texas, measures to reroute traffic through the designation of one-way streets, the synchronization of street traffic lights with school dismissal times, additional signs, and other physical design measures resulted in increases in traffic flow and a reduction in crashes around the school.[22] In the Phoenix school system, implementing a school safety program that included changes to drop-off and pick-up procedures reduced congestion and yielded significant improvements to school safety across the state.[§]

7. **Altering drop-off and pick-up rules.** You can reduce congestion considerably by altering the times during which parents can drop off or pick up their children or by staggering bell times. However, parents who have multiple children at the same school, yet different drop-off and pick-up times, may discourage these changes. A related change would be to change or add drop-off and pick-up locations, encouraging alternative routes into and out of the school area so that drivers would not all congregate in one place. Instituting "valets" at drop-off locations, whereby school staff or volunteers escort children from car to school, can also expedite the drop-off process. You should implement any change in drop-off and pick-up procedures at the start of the school term to eliminate confusion, accompanied by clear and detailed written instructions.
8. **Strategically funneling traffic.** You can minimize some types of congestion problems by directing different types of traffic to different locations on and around the school property. For example, you could locate staff parking behind the building, while buses pick up and drop off in one area and parents drop off and pick up their children in another area. These measures, however, are often not available to schools that do not have multiple areas serving these purposes, as well as those that have outgrown the neighborhoods in which they are located and therefore have little extra space to dedicate to strategic funneling. Indeed, in some situations, even if space were available to create new entry, exit, and parking locations, area residents might object to the reduction of green space caused by those changes.

9. **Establishing curbing and parking zones.** Using curbing and signs to extend drop-off and pick-up zones may reduce congestion at the immediate school site. Creating additional temporary parking areas along with safe pedestrian routes from those areas to the school can also have an impact. Such pedestrian routes might involve creating new crosswalks and/or using a crossing guard. In addition, you could create no-parking zones to restrict street parking that might be adding to congestion and restricting student pedestrians' visibility.
10. **Rerouting street networks.** Often the simplest solution to the school congestion problem is to reroute streets to force drivers to seek alternative routes to and from the school. This is usually accomplished by creating one-way streets or erecting "no entry" signs on certain streets leading to the school, which might be in effect only during peak drop-off and pick-up hours.
11. **Synchronizing traffic lights.** One simple approach to reducing school congestion is to examine traffic lights' existing timing and to revise the lights' timing to synchronize with school start and dismissal times. This measure naturally requires coordinating with your local traffic authority, and may not have an impact if the lights' timing is not a source of the congestion problem to begin with.

Responses With Limited Effectiveness

12. **Enhancing the enforcement of existing traffic laws.** As with similar, more "reactive" police measures, such as increased patrols, enhanced enforcement of existing traffic laws is likely to have a positive but short-term impact on the problem. As soon as traffic enforcement reverts back to preintervention levels, congestion is likely to increase again.§ However, if patrols are assigned strategically to increase presence during peak arrival and departure periods, they may serve as a very useful and effective complement to other problem-solving measures.

§ See response guide No. 1, *The Benefits and Consequences of Police Crackdowns,* for further information on how intensive enforcement works.

13. **Increasing traffic fines**. Often termed "double fines," elevated traffic fines have been used to control speed in specified "safety corridors." You could employ similar efforts to enforce zoning and parking rules designed to reduce congestion. However, evaluations suggest that signs indicating increased fines achieve little long-term impact.[23]

Appendix: Summary of Responses to Traffic Congestion Around Schools

The table below summarizes the responses to school traffic congestion, the mechanism by which they are intended to work, the conditions under which they ought to work best, and some factors you should consider before implementing a particular response. It is critical that you tailor responses to local circumstances, and that you can justify each response based on reliable analysis. In most cases, an effective strategy will involve implementing several different responses. Law enforcement responses alone are seldom effective in reducing or solving the problem.

Response No.	Page No.	Response	How It Works	Works Best If	Considerations
Changing Transportation Modes					
1	26	Educating parents	Reduces volume of vehicle traffic	…parents take ownership of the education process, persuading each other to seek alternative transportation methods for their children	Parents' fears about child safety and "stranger danger" must be assuaged; parental education campaigns, unless ongoing, are unlikely to achieve long-term effects on their own
2	27	Encouraging students to walk or bike to school	Reduces volume of vehicle traffic	…it is integrated into the school curriculum, rather than presented as a one-time, stand-alone effort	Providing lockers or backpacks and limiting the number of items children have to take to and from school could facilitate compliance
3	27	Encourage carpooling	Reduces volume of vehicle traffic	…express carpool lanes are created, providing easy drop-off and pick- up, and rewarding carpoolers by enabling them to bypass congestion	School administrators could play a role in encouraging carpooling by generating lists of neighboring students and distributing them to parents; some parents may have privacy concerns regarding sharing their children's names and addresses with others

Response No.	Page No.	Response	How It Works	Works Best If	Considerations
4	28	Mapping out safe pedestrian routes	Reduces volume of vehicle traffic	…it is combined with student and parental education campaigns (see above)	Safe routes may differ by transportation mode, requiring different maps for walkers versus bikers
5	29	Implementing a "walking school bus" program	Reduces volume of vehicle traffic	…it has strong support among parents	Requires a great degree of coordination and a dedicated team of volunteers
6	30	Instituting school busing	Reduces volume of vehicle traffic	…the bus loading and unloading zones are designed carefully; otherwise, buses may contribute to congestion	Busing is very expensive and would require strong political support at the jurisdictional level; busing also requires the support of parents and an assurance from them that they would allow their children to be taken to school by bus
Implementing Drop-Off, Pick-Up, and Physical Design Measures					
7	31	Altering drop-off and pick-up rules	Eliminates peak volume times, reducing congestion	…parents are alerted well in advance of any change	You will need to make special exceptions for parents with multiple school-aged children; any carpool lanes would need to be exempt
8	31	Strategically funneling traffic	Reduces congestion at key points	…there is adequate space for alternatives	Creating alternative parking and pick-up and drop-off locations may be costly; may reduce green space
9	32	Establishing curbing and parking zones	Reduces congestion in drop-off and pick-up areas; improves pedestrians' visibility, thereby reducing crash hazards	…you use crosswalks and crossing guards to ensure student safety in walking to and from parking areas	Any new parking or zoning schemes need to be stringently enforced

Response No.	Page No.	Response	How It Works	Works Best If	Considerations
10	32	Rerouting street networks	Reduces congestion	… rerouting is planned holistically, considering traffic light timing, peak congestion times, and local residential concerns	Requires extensive coordination with local traffic and planning agencies
11	32	Synchronizing traffic lights	Reduces congestion	… synchronization plans are designed within the larger context of residential and commuter traffic issues	Can be costly
Responses With Limited Effectiveness					
12	33	Enhancing the enforcement of existing traffic laws	Deters driving or unsafe driving	…enforcement is both random and ongoing	Requires ongoing vigilance; otherwise, congestion problems quickly revert back to preintervention levels
13	33	Increasing traffic fines	Deters parking, thereby reducing congestion, and deters unsafe driving	… fines are stringently enforced	Evaluations of similar schemes to control speeding indicate little if any long-term impact

Endnotes

1 Matthews (1998); also see Cooner et al. (2004).
2 National Center for Chronic Disease Prevention and Health Promotion (2001).
3 Derek Halden Consultancy (2002).
4 Dickson (2000).
5 Kearns and Collins (2003); Black, Collins, and Snell (2001).
6 National Highway Traffic Safety Administration (2006).
7 National Highway Traffic Safety Administration (2006).
8 Downs (1999).
9 Hillman (1993).
10 Granville et al. (2002).
11 Derek Halden Consultancy (2002).
12 Bradshaw (1995).
13 Valentine (1996).
14 *St. Petersburg Times* (2005).
15 Davis (1996); Korecki (1999).
16 *Associated Press* (1999); Wiser (2005).
17 Oakes (2003).
18 Appleyard (2003).
19 Alexandria Health Department (2003).
20 Department of Environment, Transportation, and Regions (1999).
21 O'Brien (2000); also see Better Environmentally Sound Transportation (2007).
22 Plano Police Department (2004).
23 Jones, Griffith, and Haas (2002).

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Nancy G. La Vigne is a senior research associate at the Urban Institute in Washington, D.C., where she directs several projects related to crime prevention, prisoner reentry, and the use of mapping to understand and address a variety of criminal justice problems. Prior to joining the Urban Institute, La Vigne was the founding director of the National Institute of Justice's Crime Mapping Research Center (now known as the MAPS program); research director for the Texas Punishment Standards Commission; and a consultant to the Police Executive Research Forum, the National Council on Crime and Delinquency, and the National Development and Research Institute. La Vigne holds a doctorate in criminal justice from Rutgers University and a master's degree in public affairs from the University of Texas at Austin.

Recommended Readings

- **A Police Guide to Surveying Citizens and Their Environments**, Bureau of Justice Assistance, 1993. This guide offers a practical introduction for police practitioners to two types of surveys that police find useful: surveying public opinion and surveying the physical environment. It provides guidance on whether and how to conduct cost-effective surveys.

- **Assessing Responses to Problems: An Introductory Guide for Police Problem-Solvers**, by John E. Eck (U.S. Department of Justice Office of Community Oriented Policing Services, 2001). This guide is a companion to the *Problem-Oriented Guides for Police* series. It provides basic guidance to measuring and assessing problem-oriented policing efforts.

- **Conducting Community Surveys**, by Deborah Weisel (Bureau of Justice Statistics and Office of Community Oriented Policing Services, 1999). This guide, along with accompanying computer software, provides practical, basic pointers for police in conducting community surveys. The document is also available at www.ojp.usdoj.gov/bjs.

- **Crime Prevention Studies**, edited by Ronald V. Clarke (Criminal Justice Press, 1993, et seq.). This is a series of volumes of applied and theoretical research on reducing opportunities for crime. Many chapters are evaluations of initiatives to reduce specific crime and disorder problems.

- **Excellence in Problem-Oriented Policing: The 1999 Herman Goldstein Award Winners.** This document produced by the National Institute of Justice in collaboration with the Office of Community Oriented Policing Services and the Police Executive Research Forum provides detailed reports of the best submissions to the annual award program that recognizes exemplary problem-oriented responses to various community problems. A similar publication is available for the award winners from subsequent years. The documents are also available at www.ojp.usdoj.gov/nij.

- **Not Rocket Science? Problem-Solving and Crime Reduction**, by Tim Read and Nick Tilley (Home Office Crime Reduction Research Series, 2000). Identifies and describes the factors that make problem-solving effective or ineffective as it is being practiced in police forces in England and Wales.

- **Opportunity Makes the Thief: Practical Theory for Crime Prevention**, by Marcus Felson and Ronald V. Clarke (Home Office Police Research Series, Paper No. 98, 1998). Explains how crime theories such as routine activity theory, rational choice theory and crime pattern theory have practical implications for the police in their efforts to prevent crime.

- **Problem Analysis in Policing**, by Rachel Boba (Police Foundation, 2003). Introduces and defines problem analysis and provides guidance on how problem analysis can be integrated and institutionalized into modern policing practices.

- **Problem-Oriented Policing**, by Herman Goldstein (McGraw-Hill, 1990, and Temple University Press, 1990). Explains the principles and methods of problem-oriented policing, provides examples of it in practice, and discusses how a police agency can implement the concept.

- **Problem-Oriented Policing and Crime Prevention**, by Anthony A. Braga (Criminal Justice Press, 2003). Provides a thorough review of significant policing research about problem places, high-activity offenders, and repeat victims, with a focus on the applicability of those findings to problem-oriented policing. Explains how police departments can facilitate problem-oriented policing by improving crime analysis, measuring performance, and securing productive partnerships.

- **Problem-Oriented Policing: Reflections on the First 20 Years**, by Michael S. Scott (U.S. Department of Justice Office of Community Oriented Policing Services, 2000). Describes how the most critical elements of Herman Goldstein's problem-oriented policing model have developed in practice over its 20-year history, and proposes future directions for problem-oriented policing. The report is also available at www.cops.usdoj.gov.

- **Problem-Solving: Problem-Oriented Policing in Newport News,** by John E. Eck and William Spelman (Police Executive Research Forum, 1987). Explains the rationale behind problem-oriented policing and the problem-solving process, and provides examples of effective problem-solving in one agency.

- **Problem-Solving Tips: A Guide to Reducing Crime and Disorder Through Problem-Solving Partnerships** by Karin Schmerler, Matt Perkins, Scott Phillips, Tammy Rinehart and Meg Townsend. (U.S. Department of Justice Office of Community Oriented Policing Services, 1998) (also available at www.cops.usdoj.gov). Provides a brief introduction to problem-solving, basic information on the SARA model and detailed suggestions about the problem-solving process.

- **Situational Crime Prevention: Successful Case Studies**, Second Edition, edited by Ronald V. Clarke (Harrow and Heston, 1997). Explains the principles and methods of situational crime prevention, and presents over 20 case studies of effective crime prevention initiatives.

- **Tackling Crime and Other Public-Safety Problems: Case Studies in Problem-Solving**, by Rana Sampson and Michael S. Scott (U.S. Department of Justice Office of Community Oriented Policing Services, 2000) (also available at www.cops.usdoj.gov). Presents case studies of effective police problem-solving on 18 types of crime and disorder problems.

- **Using Analysis for Problem-Solving: A Guidebook for Law Enforcement**, by Timothy S. Bynum (U.S. Department of Justice Office of Community Oriented Policing Services, 2001). Provides an introduction for police to analyzing problems within the context of problem-oriented policing.

- **Using Research: A Primer for Law Enforcement Managers**, Second Edition, by John E. Eck and Nancy G. LaVigne (Police Executive Research Forum, 1994). Explains many of the basics of research as it applies to police management and problem-solving.

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