

Transportation in America:

How Does it Affect our Health? And How Do We Prove It?



Susan L. Polan, PhD

Associate Executive Director

American Public Health Association

“Protect, Prevent, Live Well”

We Are At A Transportation Crossroad



- **Homes far from jobs**
- **Dependence on foreign oil**
- **Climate change**
- **Changing demographics**
- **Crumbling infrastructure**
- **Fluctuating gas prices**

Also Have A Costly Preventable Health Crisis

- Traffic injuries and fatalities ~ \$200 billion
- Obesity/overweight societal cost ~\$117 billion & the cost of inactivity ~ \$76 billion
- Health problems from transportation related poor air quality \$40 - \$64 billion
- Exacerbating poverty and health inequities



Transportation Policy Decisions Are Important To Public Health

- Federal transportation funding & policy program greatly influences how states, regions and cities invest in transportation
- It significantly determines what the country's transportation network – interstate, regional and local – will be and how it will function
- These decisions also affect our health

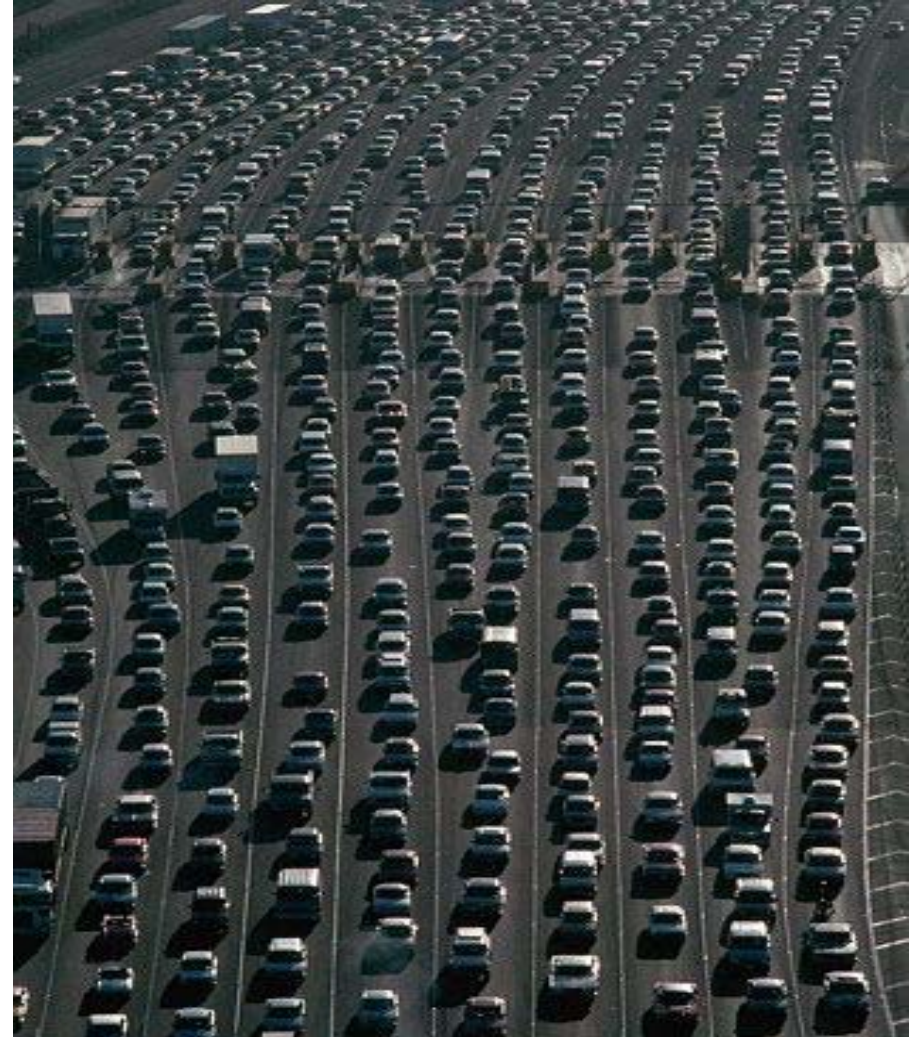
Four Key Areas



- **Obesity**
- **Safety**
- **Air Quality**
- **Equity and Access**

Obesity

- **Obesity is one of the fastest growing public health issues**
- **Opportunities to be physically active have been engineered out of daily life**
- **Each hour spent in the car increases the risk of obesity**



Safety

- **Leading cause of death among persons 1-24 years old**
- **Each year in the United States, motor vehicle crashes account for:**
 - 42,000 deaths
 - 3.4 million nonfatal injuries
 - 24 million vehicles
 - estimated \$200 billion in costs
- **Compared with occupant injuries, pedestrian injuries are more severe, with a fivefold higher likelihood of death among those injured**
- **4,881 pedestrians were killed in traffic crashes within the United States.**



Air Quality

- Asthma is a major public health problem
- Kids who attend school near highways have higher incidence of respiratory problems
- Communities near highways have disproportionate rate of lung cancer



Transportation Changes Have Impact

ORIGINAL CONTRIBUTION

Impact of Changes in Transportation and Commuting Behaviors During the 1996 Summer Olympic Games in Atlanta on Air Quality and Childhood Asthma

Michael S. Friedman, MD

Kenneth E. Powell, MD, MPH

Lori Hutwagner, MS

LeRoy M. Graham, MD

W. Gerald Teague, MD

DESPITE ADVANCES IN ASTHMA therapy, asthma remains a substantial public health problem. In the United States, asthma is a leading cause of childhood morbidity, with an estimated prevalence of 6.9% in children and youth younger than 18 years.¹ Numerous studies have documented a rise in the morbidity, mortality, and prevalence of asthma in different populations.²⁻⁸ The cause or causes of this trend remain controversial.⁹⁻¹¹

Experimental, laboratory, and epidemiologic studies in the last several years have linked high concentrations of known air pollutants to respiratory health problems, most notably exacerbations of asthma.¹²⁻²³ However, opportunities to study the health effects of anthropogenic improvements in air quality are rare. One study found a decrease in particulate pollution and respiratory hospital admissions associated with the closure of an industrial factory in that community.²⁴ To our knowledge, no study has examined the impact of improved ozone pollution for an extended period of time on asthma exacerbations or other markers of asthma morbidity. Also, the extent to which moderate concentrations of

Context Vehicle exhaust is a major source of ozone and other air pollutants. Although high ground-level ozone pollution is associated with transient increases in asthma morbidity, the impact of citywide transportation changes on air quality and childhood asthma has not been studied. The alternative transportation strategy implemented during the 1996 Summer Olympic Games in Atlanta, Ga, provided such an opportunity.

Objective To describe traffic changes in Atlanta, Ga, during the 1996 Summer Olympic Games and concomitant changes in air quality and childhood asthma events.

Design Ecological study comparing the 17 days of the Olympic Games (July 19–August 4, 1996) to a baseline period consisting of the 4 weeks before and 4 weeks after the Olympic Games.

Setting and Subjects Children aged 1 to 16 years who resided in the 5 central counties of metropolitan Atlanta and whose data were captured in 1 of 4 databases.

Main Outcome Measures Citywide acute care visits and hospitalizations for asthma (asthma events) and nonasthma events, concentrations of major air pollutants, meteorological variables, and traffic counts.

Results During the Olympic Games, the number of asthma acute care events decreased 41.6% (4.23 vs 2.47 daily events) in the Georgia Medicaid claims file, 44.1% (1.36 vs 0.76 daily events) in a health maintenance organization database, 11.1% (4.77 vs 4.24 daily events) in 2 pediatric emergency departments, and 19.1% (2.04 vs 1.65 daily hospitalizations) in the Georgia Hospital Discharge Database. The number of nonasthma acute care events in the 4 databases changed –3.1%, +1.3%, –2.1%, and +1.0%, respectively. In multivariate regression analysis, only the reduction in asthma events recorded in the Medicaid database was significant (relative risk, 0.48; 95% confidence interval, 0.44–0.86). Peak daily ozone concentrations decreased 27.9%, from 81.3 ppb during the baseline period to 58.6 ppb during the Olympic Games ($P < .001$). Peak weekday morning traffic counts dropped 22.5% ($P < .001$). Traffic counts were significantly correlated with that day's peak ozone concentration (average $r = 0.36$ for all 4 roads examined). Meteorological conditions during the Olympic Games did not differ substantially from the baseline period.

Conclusions Efforts to reduce downtown traffic congestion in Atlanta during the Olympic Games resulted in decreased traffic density, especially during the critical morning period. This was associated with a prolonged reduction in ozone pollution and significantly lower rates of childhood asthma events. These data provide support for efforts to reduce air pollution and improve health via reductions in motor vehicle traffic.

JAMA. 2001;285:897-905

www.jama.com

ozone (ie, daily peak of 50-100 ppb) during various exposure lengths affects asthma morbidity remains controversial.¹²⁻¹⁶

Author Affiliations are listed at the end of this article.
Corresponding Author and Reprints: Michael S. Friedman, MD, Air Pollution and Respiratory Health Branch, National Center for Environmental Health, Centers for Disease Control and Prevention, Atlanta, GA 30333 (e-mail: mff7@cdc.gov).



Transportation Access & Equity



- **Nearly 1/3 of people living in this country cannot access or afford to access basic needs**
- **Poorest 5th of US families pay 42% of their income to own and drive a car**
- **Low-income neighborhoods often lack safe place to walk, bike or play**



Where does this lead us?

- Opportunity for transformational change in transportation policy
- Much of the disease and disability can be prevented
- We can reshape the transportation system to create the infrastructure we need which can also improve our health

Opportunities

- Shift from a model that moves cars to a model that moves people through a safe, accessible, and efficient system for everyone.
 - 🚗 More mass transit
 - 🚗 More rail transit
 - 🚗 Multi-use paths
 - 🚗 More green space
 - 🚗 Mixed land use
 - 🚗 Streets designed for multi-modal transportation
- Incorporate health impact assessments

Health Impact Assessments

- HIAs are a multidisciplinary process within which a range of evidence about the health effects of a proposal is considered in a structured framework...based on a broad model of health which proposes that economic, political, social, psychological and environmental factors determine population health.

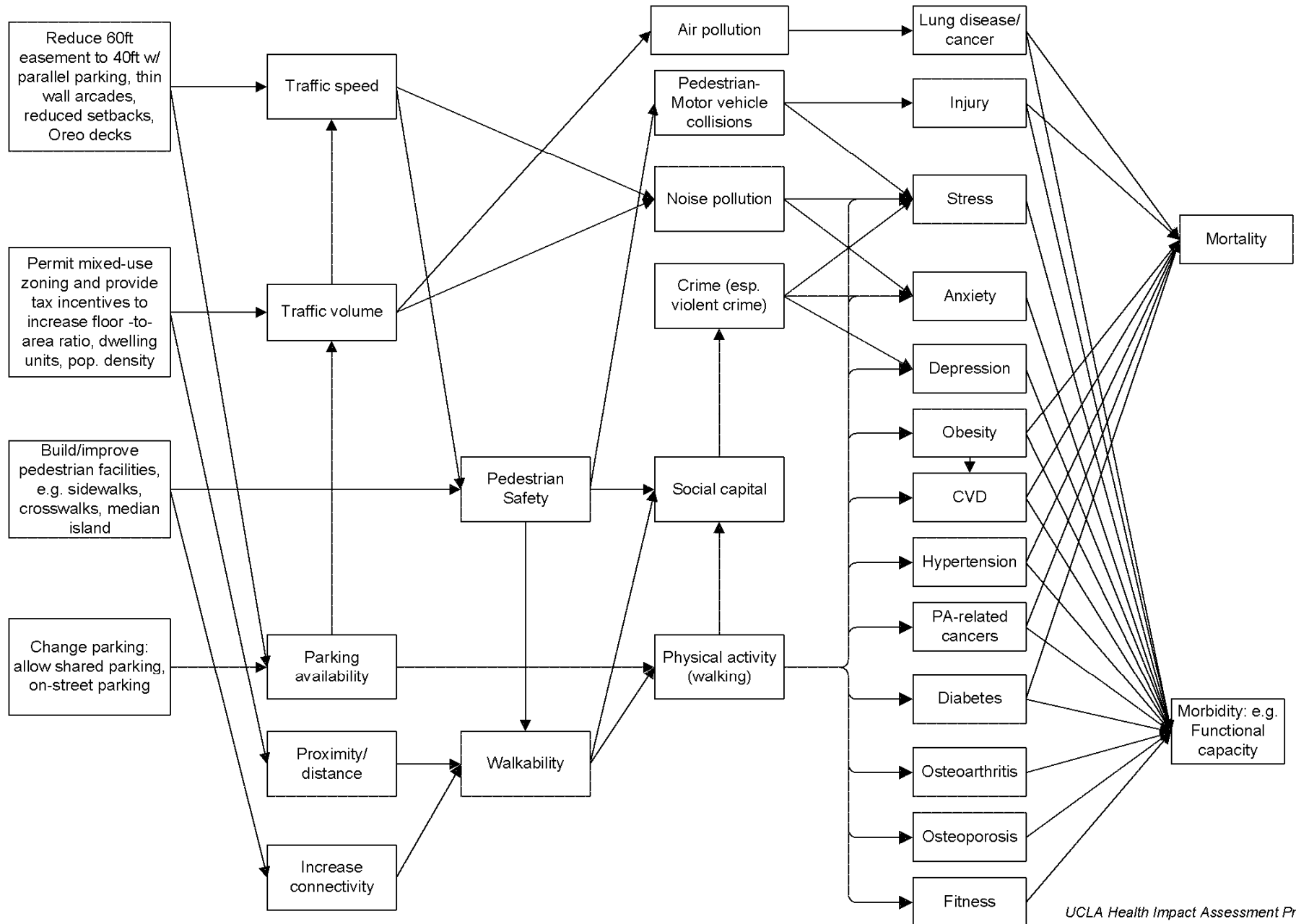
Logic Framework for the Buford Highway/NE Plaza Project HIA

Project Components

Proximal Impacts

Intermediate Outcomes

Health Outcomes



Steps for HIAs

- Screening
- Scoping
- Assessment
- Communication
- Recommendations
- Analysis

Susan L. Polan, PhD
Associate Executive Director,
Public Affairs and Advocacy
slpolan@verizon.net
www.apha.org



“Protect, Prevent, Live Well”