

Public Health Approaches to Traffic Safety: A Research Symposium in Support of New York City's Vision Zero

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Intro

Guohua Li

Defining injury as meriting eradication

New York's Vision Zero: ushers in a new era for the city in public health

Catherine Stayton

Director of the Injury and Violence Prevention Program at NYC DOHMH

250 fatalities year that are traffic related in NYC & thousands of injuries that bring a range of consequences beyond the morbidity

it is our honor to contribute a public health lens to tackle this problem

Surveillance

- [Surveillance and research on traffic related hospitalizations and fatalities
- [Provide vision zero task force w/public health data to help target traffic safety interventions
- [Research on walking, driving, motorcycling and biking patterns

Outreach

Traffic fatalities at a 12-year low

Burden resides on protecting our pedestrians

Pedestrian injuries rank highest cause of death for ages 1-14 (2009-11)

Also high for ages 65+

Charlie Dimaggio

Kenneth Moritsugu, Former Acting US Surgeon General

KEYNOTE

"No level of fatality on city streets should be considered inevitable and acceptable."

Can we achieve zero injuries/fatalities?

Began in Sweden in 1997. Goal to achieve a highway system w/no fatalities & no serious injuries in road traffic

Since then adopted by other countries and several jurisdictions in US. Over past 15+ years, has reduced mortality & morbidity in Sweden and elsewhere

NYC reduced 40% of fatalities in 15 years

Predicated on linking the various sectors of the government which have an impact on traffic safety into a strategic approach: city hall, police, transportation, city admin services, taxi and limousine commission, DOH, private sector & nonprofits, public dialogue

"a truly multi disci, multio org approach to a multifaceted problem"

40 % reduction is impressive. But let's look at other side of the coin. That leaves us w/a 60% challenge.

From public health perspective: spectrum of impact on individ, family, community, society

Despite improvemets, there have been short term as well as long term impacts on morbidity: 20-25% of those injured

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Continuing but reducing impact on human suffering and misery of societal burden and financial costs

Identify cause by risk factor identification.

Develop and test prevention strategies by evaluation research

Implementing prevention programs

Support for state and local health agencies, public awareness, quality assurance

“the public health approach and vision zero are perfectly aligned; through planning, through process through measurement, through outcomes”

Public health approach is incremental

Head and the heart (science & evidence + human impact)

Critical that successful programs that improve health of public are based on both the head as well as the heart

Lessons from last decade and a half: “connect the dots” involve organizations from across spectrum of interests, involve political leadership

Traffic safety: just as public health is not one dimension, it' sa multiple dimension tapestry

Communicate: work together to attain efficiency

Successful approaches: design, enforcement, education

Engage in a public dialogue not only amongs our selves but turning outwards as well. Using principles of health literacy

Measure, measure, measure: “That which gets looked at gets done.”

To make meaningful impact on road safety, we need to adopt systematic approach: technology, behavior, enforcement, laws, regulation and policy

LOCAL HEALTH DATA: KEY QUESTIONS ON INJURY CONTROL AND ROAD SAFETY

Panel

Pubic Health Data to Answer and Develop Research Questions: Traffic-related injuries in NYC

Jennifer Norton of Bureau of Environmental Disease and Injury Prevention on Using Utility of public health data resources

- [Health mortality and hospitalization data have detailed info on demographics, injury outcomes coded to standardized int'l classification system and length of hosp stay and related charged

- [Population based public health surveys include info about behaviors

Future research topics

Opportunities for collaboration

Pedestrians are 52 percent of deaths compared to 14 percent nationally

Community health survey

Which neighborhoods have highest prevalence of aduts who walk to/from work, school, public transport or to do errands?

Highest in lower to mid manhattan and west Brooklyn & west queens. Lowest in SI and E. Queens

Youth Risk Behavior Survey (every other year in odd years): % of youth who rode a bicycle. Males are more likely to ride bicycle (61) than females (39); among those who wore a helmet never or rarely: M (89) F(86)

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Getting to school: Views from 6th grade students, parents and school principals in NYC low-income neighborhoods

Philip Noyes

Director of Research, Evaluation and Planning

Brooklyn District Public Health Office, DOHMH

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Coming to this as someone who's interested in increasing active transportation: walk, bike, skateboard and scoot

Discuss school transportation study

How do 6th grade students in low income schools get to school?

Concepts to consider in getting to zero

Child obesity rates remain higher in NC low income neighborhoods. Childhood obesity in low income neighborhoods not declining in low income neighborhoods as it is in other neighborhoods

Social ecological framework and study components: it's important to move beyond just the individual

Study

Worked w/15 schools across 3 neighborhoods in low walkability zip codes (6th grade school)

Most 6th graders in low-income neighborhoods live close to school: over 40 % w/in 5 blocks; 70%+ w/in 20 blocks

That is an opportunity for increasing physical activity

60/64 % walk to/from school; 14/10 take car; 24/23 MTA; 0 bike; 2/2 school bus; 1:1 skate

we are way ahead of many other places in the country because we have so many kids walking to school.

Active transportation is less likely as distance to school increases

Less than half of students think it is safe to walk and only 1/3 think it's safe to bike

Parent focus groups

Strong concerns about bicycling

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Parents want help to keep children safe, such as more visible presence of authority figures, expanding crossing guard presence, developing buddy systems

If we do not explicitly commit to measuring and monitoring that gap—we already have indications that there are differences by neighborhood, and there are disparity issues—if we don't have that commitment to changing all neighborhoods and not just responding to those neighborhoods that are able to self-advocate, we'll likely see that gap maintained or possibly increase.

As our interventions potentially can be perceived as very intrusive. We can see we are getting more and more enmeshed in people's lives and decision making. The same can be said in terms of injury and traffic issues. We need to be thinking of that intrusiveness and what we need to do to gain public trust.

Consider all levels of socioecological model

Alcohol use among pedestrians and motor vehicle drivers killed in NYC traffic crashes: 2009-11

Lawrence Fung of NYC DOH Bureau of Environmental Disease & Inj Prevention and NYC DOT Office of Research Implementation and Safety
Identify populations and time of day that presents highest risk for traffic fatalities
Determine and quantify alcohol involvement in traffic fatalities
Phase of study limited to pedestrian and driver sin fatalities

Alcohol use among pedestrians killed by motor vehicles
457 pedestrian fatalities; 81 % tested for alcohol; 20 % positive for alcohol (any BAC > 0). 83% had greater than legal limit of .08 grams per milliliter; more than half had BAC 2x over legal limit (BACs could underrepresent true values)

Alcohol related fatalities more often seen in late evening and early morning hours

Street crossing behavior varies by alcohol use among pedestrian fatalities

Alcohol use among motor vehicle drivers killed in traffic crashes
400 drivers killed (not necessarily those who struck and killed pedestrians)
88% tested for alcohol; 42% tested positive for alcohol; few of deceased drivers below legal limit for intoxication. 87 percent had BAC = to .08; 58% had BAC greater than twice the legal limit of .08

as night goes on, alcohol involvement accounts to higher percentage of fatalities during late night and early morning hours. (24/38 idnight-6 am)

Adults in their early 20s and 30s had highest number of fatalities involving alcohol. Very few cases among older adults

Alcohol and speeding associated (63% speeding who tested for alcohol)

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Pedestrians comprise majority of traffic related death

Alcohol involvement

Nearly 1 in 4 fatalities tested positive for alcohol; alcohol assoc w/risky behaviors, which include crossing against light for pedestrians and speeding for drivers

How can we expand ed efforts?

What strategies are most effective to reduce risk among road users?

I would love to look into the distracted pedestrian issue. Distracted driver issue is more enforced.

EPIDEMIOLOGIC METHODS IN MOTOR VEHICLE CRASH INJURY RESEARCH AND EVALUATION

Panel

What does Vision Zero Cost?

Peter Muennig

- [One traumatic injury will cost society a lot of money and grief
- [Our job is to capture society's costs with doing these things. There are costs and benefits
- [What does slowing of traffic do?
 - o Reduce injuries (TBI, paralysis, etc)
 - o Honking: people are less social in buildings where a lot of honking is going on outside
 - o Pollution: if you slow cars down, they idle more. It takes you longer to get to work. Spending more time in your car
 - o You build more roads and in fact cars do get from point a to point b faster, but that is only true over a very short period of time. Over a period of 1 year, 2 year, 5 years, the more that you increase barriers to driving, the fewer people actually drive. What you end up doing is reducing number of vehicles on the road. It's not just speed limits, but it's things like traffic calming measures.
 - o Driving is a very psychological process: "if you see a straight line of green lights, you just hit the .. and go"
 - o Pollution: increase in year one is a real cost; decrease in year 2, 3, 4, 5 is a real benefit
- [Distribution effects: different for people in different boroughs, can widen disparities or narrow disparities
- [Good evidence that car time is inked to obesity: going to affect heart disease, cancer rates
- [Flavor for how complicated it is to do these analyses

Epidemiologic Approach to Injury Control

Guohua Li

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- [Injury vs disease
- [Injury death rate=(case fatality rate)x(incidence rate)x(exposure prevalence rate)
- [Three ways to reduce injury death rate
 - o Reduce exposure to traffic (driving, bikig, walking)
 - o Reduce injury occurrence given exposure (safe roads, vehicles, and behaviors)
 - o Reduce fatality risk given injury (improved protection, EMS, trauma care)
- [Three ways to achieve vision zero≥ reduce the above to 0
- [Injury eradication by eliminating exposure: baby walker injuries
 - o Children under age 15 months injured on baby walkers in US in 1999 8,800
 - o Baby walker related injuries were eradicated after sales of baby walkers were banned in Canada (2004) and the US (2008)
- [Fatal Crash Rate per 1000,000 flight hours for US air carriers was high in 50s, now virtually zero
- [Death rate from ped injury in spain decreased 2/3 from 1993-2011. 42% incidence rate; 52% due to case fatality rate. There was little change in the exposure
- [The Haddon Matrix (epidemiologic approach to injur control)
- [Can modify pre-crash, crash, and pro-crash factors
- [Motor vehicle death rates have declined because of safety improvements
- [NYC has lower death rate than most US cities; but not international cities
- [Hierarchy of public health interventions on disease
 - o Control: reduce incidence, prevalence, morbidity and mortality
 - o Elimination: reduce incidence to zero
 - o Eradication: “ “ “ permanently
 - o Extinction: eliminating disease agent and vector
- [Conditions of disease elimination as applied to traffic injury: Yes
 - o Political commitment
 - o Availability of effective interventions
 - o Practical diagnostic tool
 - o Need for humans in the life cycle of the agent/vector
- [Vision Zero is achievable

Pediatric Pedestrian Injury in NYC and the Safe Routes to School Program Charles Dimaggio

- [Traffic calming works
 - o Reduce pedestrian injuries by slowing traffic (makes transportation less pleasant for drivers and safer for pedestrians)
 - o Road narrowing
 - o New traffic and pedestrian signals
 - o Speed bumps
 - o Speed boards

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- High visibility crosswalks
- New parking regulations
- Tradeoff is we get to continue breathing
- [Evaluation important
- [Kids can still be kids and be safe
- [Safe Routes to School
 - 2005 US DOT legislation \$612 million
 - by 2012 \$1.12 billion “largest expenditure of injury prevention in US history”
 - 10K of national's 100,000 schools
 - intended as an obesity reduction, not injury prevention program
 - CDC-funded study by Dr Dimaggio & colleagues
 - Data and analysis
 - [186K geocoded pedestrian crashes 2001-10
 - [44 % decrease in SRTS census tracts following program implementation
 - [0 % change in non-SRTS tracts
 - [instead of looking just at yearly data, look at quarterly data
 - Cost benefit/effectiveness: Markov model long-term impacts SRTS on injury reduction (savings, medical costs, disability, death)
 - [Overall net societal benefit \$230 million, 2,055 QALYS
 - Texas (“What is the anti-New York? And so we said, ‘Texas.’”): if we could demonstrate something with this drek, we have a shot at a bigger study
 - 42% decrease rate in fatalities pedestrian injuries
 - all state data (State Data System)

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NYCDOT transportation data

Ann Marie Doherty, NYC DOT Chief, research implementation and safety Roundtable

"When I first started, the agency's goal was to move traffic"

701 traffic fatalities in 1990 to 2013 with 291

pedestrians

three main sources for crash data from NYCDOT, NYPD, NYS DOT, DMV
Traffic (18) and ped injuries (29) have declined from this time last year

Chief Thomas Chan, NYPD Transportation Bureau

Roundtable

Chief of community affairs under Commissioner Kelly

Commissioner Bratton lateralled him

One of top three concerns of Bratton's commission is traffic

- [increase enforcement of hazardous violations: speeding, failure to yield to ped, signal light violations, improper turns, disobeying signs, cell phone/texting
- [include speed enforcement at a precinct level (in the past, it hasn't been practice of local precincts to catch speeders. Didn't think they would get enforcement by personnel and had other priorities)
 - o upgrading equipment
- [number of personnel assigned to highway patrol (people reluctant to go to this unit. Issuing summonses. Became an issue w/police department.

7.8 percent decrease; 10.7 percent industries down YTD; 3.2 percent bicycle injuries

74% bicyclists contributed to collisions. Only 3 had helmets (11 %)

97 % of cyclists who died (had head injuries?) in 04 weren't wearing helmets in 2011, they recommended a helmet law

Improving traffic safety: the role of the CDC

Arlene Greenspan, Associate Director for Science of the National Center for Injury Prevention and Control, CDC

Injury prevention premiere public health achievement of the decade

Motor vehicle injury prevention is focus area

A "winnable battle" (Dr. Frieden's "winnable battles")

Big cause of injuries is walkable injuries, but NYC is different

CDC's approach

- [increase seat belt, booster, and child protection: would save 300K additional lives per year if everyone in country buckled up
 - o primary seatbelt enforcement laws increase seat belt use (17 states do not have these laws)
 - o some populations less likely to buckle up
- [reduction of alcohol impaired driving
- [focus on vulnerable populations (teens, native americans, elderly)

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Categories

Safety

Physical activity