Transportation as a Social Determinant of Health

March 30, 2017
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The Network is a national initiative of the Robert Wood Johnson Foundation launched in 2010 to advance law as a tool to improve public health.

Experts in public health law, our leadership team comprises a National Director and five Regional Office Directors who lead teams of Network attorneys across the U.S.
Legal Technical Assistance

Network attorneys in your region can answer questions on a wide range of public health legal issues at no cost, and can assist you in using law to advance your public health initiatives.

Visit networkforphl.org.
Moderator

Margaret Power, Extern, Public Health Law Program, Centers for Disease Control and Prevention

- M.P.H., West Virginia University
- Research interests/areas of expertise:
  - Rural health
  - Health systems
Presenter

**Elizabeth Skillen**, Senior Advisor, Policy, Research, Development and Analysis Office, Office of the Associate Director for Policy, Centers for Disease Control and Prevention

- Ph.D., University of Georgia
- **Research interests/areas of expertise:**
  - Social determinants of health
  - Evidence-based approaches
  - Transportation
  - Environmental health
Presenter

Captain Holly Billie, Injury Prevention Specialist, Transportation Safety Team, Division of Unintentional Injury Prevention, National Center for Injury Prevention and Control, Centers for Disease Control and Prevention

- M.P.H., University of Texas Health Sciences Center
- Research interests/areas of expertise:
  - Social determinants of health
  - Transportation safety for American Indians and Alaska Natives
  - Tribal environmental health issues
  - Intentional/unintentional injury prevention
Presenter

Monica Hammer, Project Manager, Minnesota Department of Human Services

- J.D., University of Washington School of Law
- Research interests/areas of expertise:
  - Social determinants of health
  - Transportation
  - Environmental noise
  - Environmental health law and policy
CDC’s population health initiative to improve health in 5 years or less

Elizabeth L. Skillen PhD, MS

Office of the Associate Director for Policy
Centers for Disease Control and Prevention
March 30, 2017
The Changing Health System

• Shift from “Volume-Based” Payment Model to “Value-Based” Payment Model
  ➢ Opportunities to improve population health and address health equity
  ➢ Increased focus on prevention and wellness

• Emerging clinical care models
  ➢ Continued need for more collaboration between clinical care and public health
The “Buckets” of Prevention Framework

1. Traditional Clinical Prevention
   * Increase the use of evidence-based services

2. Innovative Clinical Prevention
   * Provide services outside the clinical setting

3. Total Population or Community-Wide Prevention
   * Implement interventions that reach whole populations

Health Care
Public Health
Buckets 1 and 2
traditional clinical  |  innovative clinical

THE 6|18 INITIATIVE
Accelerating Evidence into Action

SIX WAYS TO SPEND SMARTER FOR HEALTHIER PEOPLE

- Reduce Tobacco Use
- Control Blood Pressure
- Prevent Healthcare-Associated Infections (HAI)
- Control Asthma
- Prevent Unintended Pregnancy
- Control and Prevent Diabetes

www.cdc.gov/sixeighteen
Bucket 3
Community-Wide Prevention

- How do we improve population health in our states and communities?
- What is the best evidence of health *and* cost impact?
- What can we do that will begin to show results soon?
Questions we have heard

I work for a governor who only wants health initiatives that will lead to positive results before she runs for re-election? Got any of those?

How do I make the business case for my community-wide health strategies to a hospital board?

I lead a small health department. How do I address the social determinants of health?
HI-5
HEALTH IMPACT IN 5 YEARS
14 evidence-based, community-wide, population health interventions:

• Improve health of community (not clinical/patient-oriented)

• Demonstrate positive health impact in 5 yrs. or less & cost effectiveness &/or savings over time

www.cdc.gov/hi5
HI-5

HEALTH IMPACT IN 5 YEARS
How was the HI-5 List Developed?

**Step 1**
Earned the highest evidence rating from:
- *The Guide to Community Preventive Services* (n=120 “Recommended”)
- Robert Wood Johnson Foundation/ U of Wisconsin County Health Rankings/ Roadmaps What Works for Health site (n=144 “Scientifically Supported”)
- CDC Experts

**Step 2**
Excluded Bucket 1 & 2 interventions and those with evidence of potential harm

**Step 3**
Excluded those without evidence reporting:
- measurable impact on health in five years
- cost effectiveness and/or savings over the lifetime of the population or earlier
- those not implemented in more than 85% of states

**Step 4**
Excluded those not implemented at policy level

Result: 14 interventions that earned the highest evidence ratings, show positive health impact within 5 years, and report cost effectiveness/savings over the lifetime of the population or earlier.
14 Evidence-Based, Community-Wide Interventions

**Change the Context:**
*Making the Healthy Choice the Easy Choice*
- School-Based Programs to Increase Physical Activity
- School-Based Violence Prevention
- Safe Routes to School (SRTS)
- Motorcycle Injury Prevention
- Tobacco Control Interventions
- Access to Clean Syringes
- Pricing Strategies for Alcohol Products
- Multi-Component Worksite Obesity Prevention

**Address the Social Determinants of Health**
- Early Childhood Education
- Clean Diesel Bus Fleets
- Public Transportation System Introduction or Expansion
- Home Improvement Loans and Grants
- Earned Income Tax Credits
- Water Fluoridation
Public Transportation System Introduction or Expansion

Description

– Includes a variety of transit options such as buses, light rail, and subways
– Increases both access and use of public transit and to reduce traffic

Health Impact

– Reductions in health risk factors such as motor vehicle crashes, air pollution, and physical inactivity
– Increases in 8 to 33 minutes of walking per day

Economic Impact

– Typical American public transit service improved to high quality urban rail or bus rapid transit service would result in per capita annual health benefits of $354.86
CDC
Transportation Health Impact Assessment Toolkit

• How can public officials, community members, and planners ensure that future transportation policies consider health?
  • Health Impact Assessments (HIA)

• The Transportation HIA Toolkit provides a framework
  • Addresses future health effects of proposed projects, plan, or policy before it is built to avoid negative impacts
  • Considers how people of all ages and abilities are able to move about their community easily and safely
  • Identifies the health value of proposals
  • Promotes multisector partnerships

• [https://www.cdc.gov/healthyplaces/transportation/hia_toolkit.htm](https://www.cdc.gov/healthyplaces/transportation/hia_toolkit.htm)
Where we are now

- Roads to transportation
  - Emergency preparedness and response (ex: evacuation)
  - Innovation (ex: TSPLOST, selling naming rights)
  - Urban revitalization
  - Employers
  - Active transportation
Webinar
April 26th 1:00-2:00 pm EST

Health Impact in 5 Years (HI-5) Webinar Series:
An In-depth Look at Public Transportation Expansion

• Therese McMillan. Chief Planning Officer for the Los Angeles County Metropolitan Transportation Authority (“LA Metro”).

• Joseph Calabrese. Chief Executive Officer & General Manager of the Greater Cleveland Regional Transit Authority
www.cdc.gov/hi5
Motor Vehicle Injury Prevention: Evidence Based Strategies and Using the Community Guide

Holly Billie, MPH
Injury Prevention Specialist
CDC National Center for Injury Prevention and Control

Transportation as a Social Determinant of Health Webinar
March 30, 2017
Motor Vehicle Death

- In 2014, 602 children ages 12 years and younger died in crashes, more than 121,350 were injured
- In 2013, 32,000 crash deaths
  - More than $380 million in direct medical costs
- In 2015, more than 10,000 died in alcohol impaired driving crashes
- Death rates for American Indians/Alaska Natives are 1.5 times more than for other Americans

https://www.cdc.gov/motorvehiclesafety/
Seat Belt Use by Law Type

![Bar chart showing seat belt use by law type in 2015 and 2016.](chart.png)

- **Primary Law States**:
  - 2015: 91.2%
  - 2016: 92.1%

- **Other Law States**:
  - 2015: 78.6%
  - 2016: 83.0%

Source: NOPUS

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NHTSA Seat Belt Use in 2016—Overall Results DOT HS 812 351
MV Occupant Death Rates by State, 2012
State Fact Sheets

- CDC.gov/motorvehiclesafety
- Costs of crash deaths
- Seat belts
- Impaired driving

https://www.cdc.gov/motorvehiclesafety/states/occupant_death_rate.html
Motor vehicle-related injuries kill more children and young adults than any other single cause in the United States. For people of all ages, motor vehicle crashes are the leading cause of death from injury.

This brochure is designed to help public health program planners, community advocates, educators, and policymakers find proven intervention strategies—including programs, services, and policies—for preventing motor vehicle-related injury. It can help decision makers in both public and private sectors make choices about what intervention strategies are best for their communities. This brochure summarizes information in The Guide to Community Preventive Services (The Community Guide), an essential resource for people who want to know what works in public health.

Use the information in this brochure to help select intervention strategies you can adapt for your community to:

- Increase the use of child safety seats
- Increase the use of motorcycle helmets
# Task Force Findings

## Use of child safety seats
- Laws mandating use
- Community-wide information and enhanced enforcement campaigns
- Distribution and education programs
- Incentive and education programs
- Education programs when used alone

## Use of motorcycle helmets
- Universal helmet laws

## Use of safety belts
- Laws mandating use
- Primary (vs. secondary) enforcement laws
- Enhanced enforcement programs

## Reducing alcohol-impaired driving
- 0.08% blood alcohol concentration (BAC) laws
- Lower BAC laws for young or inexperienced drivers
- Maintaining current minimum legal drinking age (MLDA) laws

Visit the “Motor Vehicle-Related Injury Prevention” page of The Community Guide website at [www.thecommunityguide.org/mvori](http://www.thecommunityguide.org/mvori) to find summaries of Task Force findings and recommendations on preventing motor vehicle-related injuries. Click on each topic area to find results from the systematic reviews, included studies, evidence gaps, and journal publications.
Child Safety Seats

- **Reduces Death Risk**
  - 71% infants, 54% toddlers

- **What works:**
  - Laws mandating use
    - Primary
    - All children through age 8
    - Age and size appropriate seats
  - Education and enhanced enforcement
  - Seat distribution with education
    - Provides seats to parents/caregivers and includes education
  - Incentive and education
    - Incentives for child safety seat use

The Community Guide Motor Vehicle-related Injury Prevention
Seat Belts

- Reduces risk of death and serious injury by about half

What works

- Laws mandating use
  - All occupants
- Primary Enforcement Laws
  - VS. secondary enforcement
- CDC Study – Primary laws increase use by 14 percentage points, secondary by 8 percentage points
- Driver death rates drop by 7% when states changed from secondary to primary
Impaired Driving Prevention

- **What works**
  - .08 BAC laws
  - Lower BAC laws for young or inexperienced drivers
  - Maintaining current minimum legal drinking age (MLDA) laws
  - Sobriety checkpoints
    - Checkpoints - 20% reduction in impaired crashes and deaths
  - Mass media campaigns
  - Multi-component interventions with community mobilization
  - Ignition interlocks
    - Ignition interlocks-reduces re-arrests by 67%
Motorcycle Helmets

- **What works**
  - Universal helmet laws
  - Helmets reduce the risk of death by 37%
  - Helmets reduce the risk of head injury by 69%.
Motor Vehicle Death Rates by Race

Source: CDC WISQARS 2016; www.cdc.gov/ncipc/wisqars
American Indians/Alaska Natives

- Sovereign Nations
- 567 federally-recognized tribes
- State traffic laws do not always apply on tribal lands
- Seat belt use varies widely
  - 2016, on 17 reservations overall seat belt use was 77.7%
  - 12 reservations with primary laws, seat belt use was 80.2%
  - 3 reservations with secondary laws, seat belt use was 71.6%
  - 2 reservations with no law, seat belt use was 64.6%
Tribal Laws Related to Motor Vehicle Safety

- Menu of Selected Tribal Laws
  - Primary seat belt laws
  - Child restraint laws
  - Blood alcohol concentration laws

https://www.cdc.gov/phlp/publications/topic/tribal.html
CDC Tribal Motor Vehicle Injury Prevention Program

- 12 tribes funded
- Implement evidence-based strategies
- Tailored for cultural sensitivity
- Increase in restraint use
  - Hopi Tribe – 33 percent increase
- Decrease in MV crashes
  - San Carlos Apache – 25 percent decrease
The Community Guide in Action

- **CA Rural Indian Health Board**
  - CDC Tribal Motor Vehicle Injury Prevention Program
  - Partner: **Yurok Tribe**
  - Child safety seat distribution
  - Traffic code proposed
    - Adopt CA primary restraint laws
  - Code passed October 2012
  - Child safety seat use increased by 34 percent

https://www.thecommunityguide.org/stories/buckle-yurok
For more information please contact Centers for Disease Control and Prevention
1600 Clifton Road NE, Atlanta, GA 30333
Telephone, 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-6348
E-mail: cdcinfo@cdc.gov  Web: www.cdc.gov

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.
Quiet Luxury

“Calling noise a nuisance is like calling smog an inconvenience.”
Former US Surgeon General William H. Stewart

MONICA S. HAMMER, J.D.
MONICASHAMMERLLC@GMAIL.COM
Socioeconomic implications of noise

Noise as Stressor

Source of danger

Hinderer of healthy behavior
A biopsychosocial model of disease

Primary Exposure

- Noise
  - Sensory and neural hearing damage
  - Increased stress, and distraction

Acute Effects

- Decreased sleep quality and quantity

Chronic Effects

- Hypertension
  - Endocrine disruption
  - Reduced learning and productivity
  - Temporary change in hearing threshold

Long Term Risks

- Heart disease
- Permanent hearing loss

Hammer, Swinburn, Neitzel 2014
Noise as a public health threat

- Over 104 Million Americans are at risk of heart disease, hearing loss, and other health effects due to noise

Hammer, Swinburn, Neitzel 2014
How loud is loud?
The decibel scale

- Wind: 0 dB
- Rustling leaves: 25 dB
- Birds singing: 50 dB
- Subway: 75 dB
- I-pod Max: 100 dB
Road traffic noise isn’t going to kill you, right?

- 7% increase in risk of hypertension per 10 dB(A) of noise starting at 48 dB(A)

- 8% increase risk in heart disease per 10 dB(A) of noise starting at 53 dB(A)

- Attributed mortality in EU due to noise in 2004: 102,907 in a population of 407 million
Estimated source exposures >65 dBA LDN in US

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<td>Industry</td>
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<tr>
<td>Air transport</td>
<td>8</td>
<td>0.5</td>
</tr>
<tr>
<td>Construction</td>
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<td>3.3</td>
</tr>
<tr>
<td>Railroad and...</td>
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</tr>
<tr>
<td>Road traffic</td>
<td>19.3</td>
<td>30.4</td>
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POP QUIZ! Which area of law can best protect public health from the harmful impact of noise?

Does noise destroy the right to quiet enjoyment?
- Property law

Is noise a pollutant?
- Environmental regulation

Is noise actually protected free speech?
- Constitutional law

Is noise a public nuisance?
- Land use planning
How can the law address noise as a social determinant of health?

1. Direct regulation
2. Procurement
3. Altering the informational environment
4. Altering the built environment
1. Direct regulation

42 USC 4905(c)  EPA shall regulate major sources of noise for which noise emission standards are feasible and which fall into one of the following categories:

- Construction equipment
- Transportation equipment
- Any motor or engine
- Electric or electronic equipment

Is state and local action preempted?

No state or political subdivision may adopt or enforce any law or regulation which limits noise emission which is not identical to EPA regulation. 42 USC 4905 (e) (1) Nothing... denies the right of any state or political subdivision to enforce controls on environmental noise through licensing, regulation, or restriction of the use, operation, or movement of any product. 42 USC 4905 (e) (2)
3. Altering the Informational Environment
4. Altering the Built Environment for highway projects involving federal funds

- **23 USC 109** (excerpt): The Secretary of Transportation shall promulgate guidelines ... and... final decisions ....taking into consideration the need for fast and efficient transportation, ... and the costs of eliminating or minimizing such adverse effects such as air, noise, and water pollution...

- Translation: Public health impacts are not calculated or disclosed

- Instead, calculation considers whether a 7-10 dBA can be achieved for a significant population size at a reasonable cost for projects that approach or exceed an anticipated 69 dBA for residential areas or anticipated 5 dBA increase.
When change in anticipated Db levels is 5 dB or greater (or locations with 65day/55night), MDOT will determine whether noise wall is feasible (at least one unit will experience 7 dB reduction) and reasonable ($43,500/ benefited unit).

- When both feasible and reasonable, MDOT will put decision to *community vote!*
Envisioning what you can do as a public health practitioner

- **Information** = improve the value of EISs, HIAs by disclosing exposure assessments and health impacts of noise on morbidity, heart disease

- **Awareness** = Increase capacity to map noise in coordination with other spatial data to identify high noise levels and vulnerable populations that could benefit from intervention

- **Coordination** = Enable inter-agency gov’t partnership and identify shared metrics

- **Tools** = Prioritize health as a goal in transportation law and policy

Hammer, et. al. “A comparison of environmental noise pollution policies in the United States, United Kingdom, and the Netherlands using a comprehensive environmental health framework” Journal of Environmental Planning and Management Forthcoming
Thank you!
monicashammerllc@gmail.com
Db standards for when noise wall or barrier should be considered were written with the intention of protecting public health (M.A.R. 7030.0040)

<table>
<thead>
<tr>
<th>Noise Area Classification</th>
<th>Daytime</th>
<th>Nighttime</th>
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<tr>
<td></td>
<td>$L_{50}$</td>
<td>$L_{10}$</td>
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<tr>
<td>1</td>
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<td>2</td>
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<td>70</td>
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<tr>
<td>3</td>
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Table 5: 23 CFR, Part 772, Table 1 Noise Abatement Criteria (NAC)
[Hourly A-Weighted Sound Level decibels (dBA)]

<table>
<thead>
<tr>
<th>Activity Category</th>
<th>Activity Criteria(^2)</th>
<th>Evaluation Location</th>
<th>Activity Description</th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>57 60</td>
<td>Exterior</td>
<td>Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.</td>
</tr>
<tr>
<td>B(^3)</td>
<td>67 70</td>
<td>Exterior</td>
<td>Residential</td>
</tr>
<tr>
<td>C(^3)</td>
<td>67 70</td>
<td>Exterior</td>
<td>Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic</td>
</tr>
</tbody>
</table>
Q&A

Please type your questions in the Q&A panel.
Thank you for attending

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