Shifting the Paradigm: Systems Approaches to Road Safety in US Cities

Crystal Bowne
Nancy Pullen-Seufert
Ellen Zavisca
Panelists

Crystal Bowne
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America Walks

Nancy Pullen-Seufert
Director
National Center for Safe Routes to School

Ellen Zavisca
Principal Transportation Planner
Knoxville-Knox County Planning
Agenda

• Why midsize cities?
• Principles of a Safe Systems approach
  • How a Safe Systems approach differs from traditional approaches to road safety
• Safer Systems/Road to Zero program overview, including challenges and successes
• Knoxville case study
• Q&A
• Name
• Profession
• Where you live (i.e. city), including approx. population/size
Agenda

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advances safe, equitable, accessible, and enjoyable walking and moving conditions by empowering people and communities to effectively advocate for change.

Photo Credit: Dan Burden, Blue Zones
Our Vision

By 2030, streets and neighborhoods in all American communities are safe and attractive public places that encourage people of all ages, abilities, ethnicities, and incomes to walk and move for transportation, wellness, and fun.
Our Reach

America Walks' reach extends to all 50 states, Puerto Rico, and the US Virgin Islands. We are constantly exploring new ways to grow and engage our network.

- Network of Over 30,000 Advocates
- Local, State and National Allied Organizations
- 27 Microgrants Awarded Nationwide in 2018
- Webinars and Online Trainings
  - 13,967 Registrations for 17 Webinars in 2017
Our Work

• Webinars and Trainings
• National Walking Summits
• Walking College
• Federal Advocacy
• Community Change Grants
• Safer Systems program
Safer Systems Program

- Supported by a grant from the National Safety Council and the national Road to Zero Coalition

- Partnered with the University of North Carolina Highway Safety Research Center

- Program goals included:
  - Supporting action planning for improving pedestrian safety in mid-sized cities
  - Facilitating peer-to-peer information sharing and support
  - Expanding collaboration and partnerships across disciplines and stakeholder organizations.
Communities

- Anchorage, Alaska
- Little Rock, Arkansas
- Watsonville, California
- Grand Junction, Colorado
- Pueblo, Colorado
- Gainesville, Florida
- Flint, Michigan
- Chapel Hill, North Carolina
- East Providence, Rhode Island
- Myrtle Beach, South Carolina
- Knoxville, Tennessee
- Richmond, Virginia

Credit: Dan Gelinne, UNC HSRC
Baseline Assessment

- Safety goal
- Five years of crash, injury, and fatality data for pedestrians
- Policies
- Partner organizations and agencies
- Strengths
- Challenges
- Familiarity with Safe Systems approach
# Safer Systems Program Schedule

## Fall 2018
- Bi-weekly learning modules & peer sharing
- “Quick win” activity
- Pedestrian safety plan development

## Winter/Spring 2019
- Implementation of safety plan/community project
- Monthly share calls and discussion

## May – July 2019
- Assessment of outcomes/evaluation

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**Orientation (Sept. 25, 2018)**

**Safe Systems, Collaboration, & Partnerships (Oct. 9, 2018)**

**Assessing Safety & Equity (Oct. 23, 2018)**

**Planning and Designing Safer Communities (Nov. 6, 2018)**

**Addressing Safety Problems (Nov. 27, 2019)**

**Institutionalizing Safe Systems (Dec. 11, 2019)**

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Credit: Dan Gelinne, UNC HSRC
Community Projects

- Data collection/analysis (East Providence, Gainesville, Knoxville, Richmond, Grand Junction, Gainesville, and Pueblo)
- Pop-up and demonstration projects (Anchorage)
- Educational program (Little Rock)
- Larger plan (Watsonville, Chapel Hill, and Pueblo)
- Host an event related to safety (Myrtle Beach)
- Speed radar sign (Flint)
Challenges

- Capacity
- Sustaining interest and momentum from stakeholder groups and team members
- DOTs
- City departments
- Funding/resources

Credit: Nirmal Purja/AP
Successes

• Incorporation of Safe Systems principles in planning and public conversations (e.g. planning for forgiveness)
  • Chapel Hill’s Pedestrian Safety Action Plan
  • Watsonville’s Vision Zero Action Plan

• Increased cross-sector collaboration and partnerships
  • Grand Junction Public Works, Planning Department, and Colorado Mesa University
  • Richmond City Health Department, Public Works, Virginia Commonwealth University, VDOT, and BikeWalk RVA
Successes

• Advancing work on Safe Systems beyond the program period
  • Anchorage secured funding for additional demonstration projects
  • East Providence is completing a map of pedestrian crashes
Thank You!

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Shifting the Paradigm: Systems Approaches to Road Safety in US Cities

Nancy Pullen-Seufert,
UNC Highway Safety Research Center
SRTS National Conference
Main points

1. What is a Safe Systems approach?
2. Why focus on midsize cities?
The context

Figure 1: Numbers of U.S. Traffic Deaths in 2008 and 2017

- Pedestrian Deaths:
  - 2008: 4,414
  - 2017: 5,977
  +35%

- All Other Traffic Deaths Combined:
  - 2008: 33,009
  - 2017: 31,156
  -6%

Source: NHTSA FARS

Figure from GHSA, https://www.ghsa.org/sites/default/files/2019-02/FINAL_Pedestrians19.pdf
How do Safe Systems and Vision Zero relate?
Comparing Traditional & Safe Systems Approaches

What are we focused on?

Traditional Approach

Changing behavior - heavy on education and law enforcement

Safe Systems Approach

Using design and operational changes instead of relying primarily on behavior change
Comparing Traditional and Safe Systems Approaches

**Whose needs are considered?**

**Traditional Approach**
- Drivers

**Safe Systems Approach**
- All road users
Comparing Traditional and Safe Systems Approaches

What's our goal?

**Traditional Approach**
Reduce the number of crashes, fatalities or serious injuries

**Safe Systems Approach**
Eliminate all deaths and serious injuries
Safe Systems Principle 1: People Make Mistakes
Safe Systems Principle 2: Human Beings are Vulnerable
Mitigating crash forces

Speed Management

DEATH DUE TO SPEED


Comparing Traditional and Safe Systems Approaches

What planning approach should we take?

**Traditional Approach**

Reactive to incidents; incremental improvements to address the problem

**Safe Systems Approach**

Proactively target and treat risk to improve the system (systemic improvements)

Adapted From: ITF/OECD, Zero Road Deaths and Serious Injuries

Reactive vs Proactive Approaches
Reactive vs Proactive Approaches
SS Principle: Coordination across disciplines & agencies required

Figure taken from Safer Roads, Safer Queensland (2015-2021)
### BARRIERS TO COLLABORATION

<table>
<thead>
<tr>
<th>Values</th>
<th>Failure to Mainstream Safety</th>
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<tr>
<td>Language</td>
<td>Insufficient Data</td>
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<tr>
<td>Problem Solving Strategies</td>
<td>“Siloed” Mindsets</td>
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<tr>
<td>Leadership by Discipline or Organization</td>
<td>Turnover</td>
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<tr>
<td>Lack of Safety Champions</td>
<td>Time</td>
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*Image Source: Highway Safety Research Center*
### In review...

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<td>Fatalities and life-changing injuries are inevitable</td>
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<td>Staff members work within silos</td>
<td>Collaboration between departments &amp; agencies</td>
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From: Ellen Zavisca, Knoxville-Knox County Planning  
Adapted from Vision Zero Network
Mid-size cities

- For our project: 50,000 – 200,000 population

Assets:

- Tend to have a cultural or historical draw
- Often experiencing rapid growth
  - Lower cost of living than large cities
  - Access to services, cultural opportunities
- Have a transportation department
Mid-size cities

Challenges:

- Limited staff capacity, limited budgets
- Fewer examples than large cities
Beyond Crash Data:
Road to Zero in Knoxville, TN

Ellen Zavisca
Knoxville-Knox County Planning/Knoxville Regional TPO
75% of pedestrian/bicycle crashes in the Knoxville region involve pedestrians.

91% of the pedestrian/bicycle crashes involved the injury or death of a person walking or bicycling. There were 73 fatal crashes mapped here, with a total of 74 fatalities. 71 people were killed while walking, 3 while bicycling.

11x It is 11 times more likely for a pedestrian or bicyclist to be killed in a traffic crash compared to a motorist.

- 47 out of 1,000 crashes involving a person walking or bicycling result in a fatality.
- 4 out of 1,000 car-only crashes result in a death.

60% of regional pedestrian/bicycle crashes occur in Knoxville. However, based on population, Sevierville has the highest crash rate in the region, followed by Knoxville and Alcoa.
31% of the mapped pedestrian/bicycle crashes took place at night. (The distinction between day and night is based on the time of sunset and sunrise on any given day.)

64% of all fatal pedestrian/bicycle crashes occurred at night (47 of 73 total fatal crashes).

35% of crashes involving pedestrians happened at night, compared with 20% of crashes involving bicyclists.

More about the data here
Knoxville ped/bike crashes: Jan. 2007–March 2018

Overview
- Between January of 2007 and March of 2018, there were 1,291 crashes involving either pedestrians or bicyclists. This results in a rate of 10 crashes per month, 115 crashes per year.
- 956 crashes (74 percent) involved pedestrians, 331 involved bicyclists, and 4 crashes involved both.
- Almost all of the crashes (1,179, or 91 percent) involved the injury or death of a person walking or bicycling.
  - 1,143 crashes involved injuries only, and another 37 involved a fatality. One crash resulted in 3 fatalities, for a total of 38 people killed while walking or bicycling. Of the 38 total fatalities, 36 were killed while walking, the other 2 while bicycling.
- Between January 2015 and March 2018, 21 percent of injury-only crashes involved serious injuries.
- Chart 1 shows the number of crashes by year. Chart 2 shows the number of fatal and serious injury crashes by year.

1. Chart reports rank the severity of crashes as either fatal, suspected serious injury, suspected minor injury, possible injury, or no injury. Suspected serious injury crashes used to be reported as “injuring,” and suspected minor injury were reported as “non-injuring.” For this report, suspected serious and non-injuring crashes are combined as “serious injury” crashes. City of Knoxville crash reports began to include reliable information about the severity of injuries in 2013.
Looking for patterns

• Patterns in geography: corridors and intersections

• Patterns in circumstance
  • Crash factors assigned to 45% of crashes in Knoxville Region
Frequent crash factors

Turning movement crashes are the most common crash type in urban contexts; left turns account for about half of these.
Frequent crash factors

Lack of designated pedestrian space is the most common factor in the unincorporated parts of counties.
Limitations of this data

- Crashes reported to police are just the tip of the iceberg
- We’re working on supplementing crash data
Adding to the data

• Working with TN Dept. of Health on matching hospital data
• Online survey on crashes and near misses
  • 200 responses
  • For every 1 crash reported to police, we found:
    1 unreported crash
    30 near-miss incidents
How do we put the data to work?

• Suggesting & evaluating changes to our streets
• Engaging with first responder community
• Collaborating on understanding serious and fatal crashes
Crashes are down on Cumberland

- Ped/bike crashes down 90% since road diet
- Crashes of all types down 44%

Ped/bike crashes along Cumberland per year
Engaging law enforcement through training

• Trainer provided by FHWA
• Co-sponsored by Bike Walk TN
• 12 law enforcement agencies represented, plus engineers, public health staff, & advocates
Joint review of fatal crashes

• Bringing together law enforcement, engineers, public health, & planning to share information about crashes

• After just 2 rounds, we’ve learned more about:
  • Who repairs what, and how to report it
  • How info about DUIs gets onto crash reports – or doesn’t
  • The importance of location data to engineers & planners
### Defining the systems approach

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