Welcome!

- Today you will hear a presentation and have the opportunity to ask questions via the chat box.
- Find resources and materials at nyspreventschronicdisease.com
- Today's session is being recorded

Webinar Guidelines

- Please designate one person at the computer
- Adobe Features you will use today:
  - Chat Box
  - Polls
Evaluations
Nursing Contact Hours, CME and CHES credits are available
Please visit nyspreventchronicdisease.com
to fill out your evaluation and complete the post-test.

Partners and Sponsors
• New York State Department of Health
• University at Albany, School of Public Health, Center for Public Health Continuing Education

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No commercial funding has been accepted for this activity.

Objectives
☐ Explain how to access national, state, county, and street-level data on motor vehicle traffic, bicycle, and pedestrian use, injuries, hospitalizations, and fatalities.

☐ Describe how to review and understand the data and make decisions about its use for supporting complete streets policy planning.

☐ Provide examples of how data can be used for complete streets planning.
Today's Speakers

Rob Limoges, Director,
Safety Program Management Bureau, NYS DOT

Michael Bauer, Section Chief,
Epidemiology and Surveillance,
NYS DOH Bureau of Occupational Health and Injury Prevention

Tony Hull, Senior Planner
Toole Design Group

TRAFFIC DATA AT THE NEW YORK STATE DEPARTMENT OF HEALTH

Michael Bauer, MS
New York State Department of Health
Bureau of Occupational Health and Injury Prevention

Michael Bauer, MS
Section Chief, Epidemiology and Surveillance
Bureau of Occupational Health and Injury Prevention
New York State Department of Health
Data Sources for Traffic Injury Surveillance

- Accident Information System (AIS)
- Pre-hospital Care Reports (Ambulance data)
- Crash Outcome Data Evaluation System (CODES)
- Injury Surveillance Data
  - Deaths
  - Hospitalization Discharge
  - Outpatient Emergency Department Discharge

Accident Information System (AIS)

- Police Crash Reports
  - Includes ticketing information
- Gives information about what happens before and during a crash
- New York State Department of Motor Vehicles (DMV) receives data from police and individuals
  - Crash level data
  - Vehicle level data
  - Individual level data
AIS Data

- **Answers**
  - How old was the driver?
  - What safety equipment was being used?
  - Was speeding involved?
  - Was the road slippery?
  - Was it sunny?
  - What type of vehicle was involved?

- **Does NOT answer**
  - Do the ambulance response times vary across counties?
  - What injuries are sustained by crash victims?
  - What is the ultimate medical outcome for the crash victim?
  - What crash-related charges are billed to government payers?

Pre-hospital Care Report (PCR) Data

- **Ambulance Run Data**
  - What happens (immediately) following a crash
  - Reports received by DOH Bureau of Emergency Medical Services (EMS)
    - EMS Provider Information
    - Event Information
    - Patient Information

PCR Data

- **Answers**
  - What is the response time?
  - What is the transport time?
  - How do the above times vary across the state?
  - What procedures are done following a crash on route to the hospital?

- **Does NOT answer**
  - What crash factors lead to EMS care?
  - What is the outcome for the crash victim?
  - What are the hospital charges for the crash victim?
Injury Surveillance Data

- Hospital Data
  - Inpatient Hospital Discharge Data
  - Outpatient Emergency Department Visits (ED)

- Vital Statistics Death Files
  - Track all deaths due to injury
  - From NYS death certificate data
  - Includes data not reportable to DMV

Hospital Data

- Answers
  - What happens to the crash victims hospitalized or treated in the ED?
  - What was the medical diagnosis? (more detail than KABCO)
  - Did the rate of hospitalized children decrease following the passage of new CPS laws?
  - What are the crash-related medical charges billed to Medicare and Medicaid?

- Does NOT answer
  - Are speed-related crashes related to an increase in traumatic brain injury?
  - Is seat-belt use associated with decreased hospitalization stays?
  - What percent of crash-related hospitalizations are related to drowsy drivers in Albany County?

Crash Outcome Data Evaluation System (CODES)

- Linked Database
  - Matches individual records from AIS to PCR data
  - Matches individual records from AIS to hospital data

- Previously funded by the National Highway Traffic Safety Administration
- Currently funded by grants from:
  - Governor's Traffic Safety Committee
  - Centers for Disease Control and Prevention
Strengths of CODES

- Provides medical and financial outcome information
- Examines racial and disparities among different crash factors in NYS
- Create a full picture that describes what occurs before, during, and after a crash
- Maximum Abbreviated Injury Severity (MAIS) Score is calculated for CODES data
  - Allows qualitative comparison of crash-related injury

CODES Applications

- Provides Evidence-Based Evaluation of Statewide Policies
  - Graduate Driver Licensing (GDL) Law
  - Upgraded Child Restraint Law
  - New York City Pedestrian Action Plan
  - Educational Fact Sheets
  - Epidemiological research

Limitations of CODES

- Hospital and ED patients with motor-vehicle related injuries may not be in the CODES database
  - Parking lot injuries
  - Driveway injuries
  - Police not called & motorist report not filed
CODES provides a more complete picture of the crash

Linked data expands crash data so that components of traffic safety can be evaluated in terms of outcomes such as death, injury, injury severity, inpatient charges, MAIS, payer, and costs.

CODES offers information from multiple sources to glean more complete information

- **Demographics:** Identifies your target audience
- **Personal behavior:** Determines health and traffic safety messages
- **Environmental factors:** Determines non-human factors that should be addressed
- **Vehicle factors:** Guides specific messaging or engineering improvements about vehicle types or characteristics
- **Economic factors:** Supports traffic safety efforts by illustrating cost and guides expenditure plans

Data Availability

Summary Statistics Available Online

- AIS data: www.safeny.ny.gov
- Hospital discharge and CODES: www.health.ny.gov/statistics/prevention/injury_prevention/traffic/

Contact for Technical Assistance and Customized Data Reports

Michael Bauer: michael.bauer@health.ny.gov
Information available from NYSDOT

Crash Data
- Safety Information Management System (SIMS)
- Accident Location Information System (ALIS)

Traffic and Roadway Information
- Traffic Data
- Roadway Inventory Data

Crash Data
SIMS (Safety Information Management System)
- Performs Network Analysis to identify High Accident Locations
- Crash data from 1987 to present
- Links crashes with highway attributes on the State system

Outputs:
- Average crash rates by facility type
- Expected Accident frequencies by crash type (i.e. Run Off Road, Wet road, Right Angle)
- PIL list
- Crash Reduction Factors
https://www.dot.ny.gov/divisions/operating/osss/highway/accident-reduction
Crash Data

ALIS (Accident Location Information System)

- Crash data location coding – performed by DMV
- Query Reporting and Analysis (QRA) - GIS based query and reporting tool with map interface. Complex statistical filter and sliding scale analysis for “Hot Spot” identification.
- Location Editing (LE): Used by DOT staff to relocate a miscoded crash based on more detailed info from the crash report (Officers Notes).

ALIS Map Interface

Query showing fatal crashes in Suffolk County for the latest 3 year period.

Detailed data elements for individual crashes.

Sample ALIS Verbal Description Report
How to get Crash data

- To request crash data for a specific location (i.e. Street segment, intersection, corridor) go to https://www.dot.ny.gov/main/foil-form-challenge
- Regional DOT Offices
- Local MPOs
- Government employees can request direct access to the ALIS application. For information contact:
  - Andrew.Sattinger@dot.ny.gov
  - 518-457-9738

NYSDOT Traffic and Roadway Information

Roadway Inventory Data
- State and local highway data
- Number of lanes
- Pavement type
- Pavement width
- Functional Class

Traffic Data
- Traffic Data viewer https://www.dot.ny.gov/tdv
- Traffic volume report
- Historic Data

NYSDOT - Traffic Data Viewer https://www.dot.ny.gov/tdv
Bringing it together…

Columbus Ave (110 to 98; 77 to 65)
High Crash Corridor Safety Improvements
Manhattan, 2013

Source: NYCDOT

For more information…

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Director – Safety Program Management and Coordination Bureau
New York State DOT
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Albany, NY 12232

518-457-2452
robert.limoges@dot.ny.gov

Getting Better Data for Complete Streets

Tony Hull
Nonmotorized Transportation Consultant
Minneapolis, MN
My Background - Data Collection

Mid-Ohio Regional Planning Commission (Columbus, OH MPO)
NBPDP manual counts 2005 – Framework for regional data collection
NTPP Nonmotorized Transportation Pilot Program
2008-2012 Transit for Livable Communities/BWTC Minneapolis, MN Program Evaluation - manual counts, automated counts, surveys, community-wide estimation model
NCHRP 7.19 Methods and Technologies for Collecting Pedestrian and Bicycle Volume Data
2012-2013 Toole Design Group – state of practice field testing technologies; develop guidebook for practitioners (Fall 2014)

Why Collect Bicycle and Pedestrian Volume Data?

Transportation is DATA driven
- Articulate need
- Understand travel behavior
- Safety – crash exposure rate
- Evaluate operational and facility improvements
- Prioritize investments $$
- Legitimize active transportation!

Data and Performance Measures

<table>
<thead>
<tr>
<th>Measure</th>
<th>Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total lane miles of arterial and freeway system</td>
<td>2%</td>
</tr>
<tr>
<td>Total population</td>
<td>4%</td>
</tr>
<tr>
<td>Total peak period commuters</td>
<td>6%</td>
</tr>
<tr>
<td>Total VMT on arterials and freeway system</td>
<td>-2%</td>
</tr>
<tr>
<td>Total congested travel</td>
<td>-15%</td>
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</table>

Data and Performance Measures - Minneapolis 2007 - 2010

<table>
<thead>
<tr>
<th>Measure</th>
<th>Trend</th>
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<tbody>
<tr>
<td>Peak hour bicycling</td>
<td>34%</td>
</tr>
<tr>
<td>Peak hour walking</td>
<td>17%</td>
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</table>

Data from the Texas Transportation Institute (TTI) Congestion Report 2011
Data from Nonmotorized Transportation Pilot Program
Application: Measuring Facility Usage

- Transportation system monitoring program
- Typically requires collecting counts at set locations and regular intervals
- Critical for tracking progress and measuring success

Change in Walking and Bicycling Activity at Washington State Count Sites, 2009–2012


Evaluating Before-and-After Volumes

- Measure volumes before and after facility is opened
- Forecast usage of planned facilities

Before-and-After Bicycle Facility Usage – buffered bicycle lanes on Pennsylvania Ave


Application: Monitoring Travel Patterns

- Developing extrapolation factors
  - Extrapolate short-duration counts over longer time periods
  - Control for effect of land use, weather, demographics, etc.
- Evaluating user behavior patterns
  - Identify factors that influence walking/biking
  - Controlable (land use) and uncontrollable (weather) factors

Effect of Rainfall on Bicycle Traffic in Arlington, VA
Application: Safety Analysis

- Quantifying exposure
  - Variety of methods proposed to quantify exposure
  - One method compares pedestrian-vehicle collisions to average annual pedestrian volumes
- Identifying before-and-after safety effects

<table>
<thead>
<tr>
<th>Mainline Roadway</th>
<th>Intersection</th>
<th>Reported Pedestrian Crashes (1996-2005)</th>
<th>Projected Total Weekly Pedestrian Crossings</th>
<th>Pedestrian Risk (Crashes per 10,000,000 crossings)</th>
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<tbody>
<tr>
<td>University Avenue</td>
<td>Bonar Street</td>
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<tr>
<td>East Street</td>
<td>15th Avenue</td>
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<tr>
<td>International Boulevard</td>
<td>60th Avenue</td>
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<tr>
<td>San Pablo Avenue</td>
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<tr>
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Project Prioritization

- Identify high-priority locations for improvements
- Identify factors that influence walking/biking and prioritize accordingly
- Measure improper user behaviors (i.e., wrong-way bike riding) to identify areas needing improvement

Multimodal Model Development

- Multimodal travel demand modeling is an emerging field
- Potential to estimate demand over a large area and forecast influence of infrastructure changes
Institutionalize Pedestrian & Bicycle Data

- A multimodal transportation system requires collecting data for all modes of transportation.
- Establish baseline for pedestrian & bicycle safety, infrastructure, volumes, etc.

Bicycle Safety Trends City of Minneapolis 1993 to 2010

Data Collection Challenges

Motor vehicle data collection
- Widely collected
- Easy to track vehicle movements
- Predictable patterns and routes
- Years of trend data to analyze

Bicycle and pedestrian data collection
- Sparsely collected
- Difficult to track and tabulate movements
- Unpredictable paths of travel
- Weather and seasonal impacts
- Lack of historical data

Travel Characteristics by Mode

Motor Vehicle Travel
- Design controlled
- Defined travel paths
- Predictable movements
- Uniform vehicle types

Bicycle Travel
- Some design control
- Less defined travel paths
- Less predictable movements
- Variety of vehicle types

Pedestrian Travel
- Some design control
- Travel paths driven by desire
- Unpredictable
- No design vehicle
Motor Vehicle Data Collection
Constrained; somewhat predictable

Bicycle Data Collection
Constrained environments
easy to monitor
Complex environments
harder to define

Pedestrian Data Collection
Constrained environments
easy to monitor
People tend to make their own path
Motor Vehicle Data Collection

Motor vehicle data collection
- Inductive Loops
- Pneumatic Tubes
- Manual Count Boards
- Video cameras
- ITS integration
- In-vehicle sensors (toll tags)

Bicycle and Pedestrian Volume Data Collection

Manual Counts
- BIKE & PED with attributes
- Tubes and Loop Detectors
- BIKE ONLY
- Radio beam and Passive IR
- BIKE & PED (not separately)
- Combined Technologies
- BIKE & PED
- Video Data Collection
- BIKE & PED with attributes in some cases

Practice continues to advance

- National Bicycle and Pedestrian Documentation Project 2003
- Pedestrian and Bicycle Data Collection Guide 2005
- TRB Bicycle and Pedestrian Data Subcommittee 2011
- Traffic Monitoring Guide update 2013
- NCHRP 7-19 Methods and Technologies for Collecting Pedestrian and Bicycle Volume Data – Guidebook forthcoming (December 2014)
THANK YOU!
Tony Hull
thull317@gmail.com  612.749.8091

Resources:
- National Bicycle Pedestrian Documentation Project
  http://bikepeddocumentation.org/
- Traffic Monitoring Guide
  http://www.fhwa.dot.gov/policyinformation/tmguide/
- NCHRP 07-19 Methods and Technologies for Collecting Pedestrian and Bicycle Volume Data
- Nonmotorized Transportation Pilot Program (NTPP) Final Report
  http://www.fhwa.dot.gov/environment/bicycle_pedestrian/ntpp/
- Transportation Research Board Bicycle and Pedestrian Data Subcommittee
  https://sites.google.com/site/bikepeddata/

Questions