New York City Motorcycle Safety Study

POPULAR

2014

The Mattress Profes



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Presentation Outline

- 1. NYC Background & Context
- 2. Vision Zero and other NYCDOT safety programs
- 3. Why Motorcycles?
 - Motorcycle fatality data
- 4. NYC Motorcycle Study
 - Research Methods
 - Findings
 - Recommendations



New York City in Context

- Population of 8.3 million
 - 38% foreign born
- Nearly 30,000 persons per sq. mile
 - Over 70,000 per sq. mile in Manhattan
- Commuting
 - 56% of commuters use some form of public transit
 - 10% walk to work
 - 20% in Manhattan
 - Only 27.3% use a motor vehicle



2012 American Community Survey, 1-year estimates Land area is the size, in square units (metric and nonmetric) of all areas designated as land in the Census Bureau's national geographic (TIGER®) database

VISION ZERO Shift to Safety Focus

What is Vision Zero?

- Vision Zero goal: Protect the public
- Bring traffic fatalities to zero
- Fatalities and injuries are not accidents, they are preventable
- A shift in perception and values: Expect safe streets



Vision Zero Action Plan

Strong Partnerships

- One of Mayor Bill DeBlasio's signature initiatives
- Working with New York State
 - Speed limit lowered to 25 mph, effective November 7, 2014
 - 120 more speed camera locations

Borough Pedestrian Safety Studies & Action Plans

- Will combine outreach feedback and crash data to create comprehensive plans
- To be released in Fall 2014



Enforcement and Education



Public Information Campaigns



Safety Education



NYPD Partnership



Expanded Enforcement

Pedestrian Safety Study & Action Plan

Findings

- Likelihood of KSI increases steeply with increased vehicle speed
- 2/3 of pedestrian fatalities are on arterial streets (<15% of network)
- 47% of pedestrians killed at intersections had right-of-way

New Policy Directions

- Introduced KSI (Killed or Severely Injured) ranking to project planning considerations
- All NYCDOT planning groups incorporate pedestrian safety improvements
- Created High Crash Corridor program to focus on dangerous arterials
- Created 20 mph Neighborhood Slow Zones
- Vulnerable road users—motorcyclists identified as a road user with particularly high risk



Motorcycle Injuries and Fatalities



NYC Traffic Fatalities by Mode*

NYC Vehicle Registrations**

- Motorcycles account for about 14% of all traffic fatalities and 6% ٠ of serious injuries in New York City*
- Motorcycle fatalities have not decreased in the same way that • fatalities in other modes have decreased in the past decade

Motorcycle Safety Study

- Initiated in 2011, based on data showing disproportionate number of fatalities
- Funded by a NYMTC's Unified Planning Work Program (UPWP)
- Goal was to understand the who, what, where & why of crashes and develop recommendations for increasing safety

Timeline:



Research Methods

- Data Analysis
 - Crash Data (2007-2011)
 - NYC Data (DOT/NYPD)
 - National Data (FHWA, NHTSA)
 - Commuting patterns, demographic data (US Census)
 - Vehicle registration data (NYS DMV)
- Field Observation
- Inter-agency coordination
 - NYC Dept. of Health and Mental Hygiene
 - New York City Police Dept.
- Advocate and Expert Outreach
 - Meetings with local groups advocating for motorcycle issues
 - Meeting with transportation professionals doing similar work

Issues and Challenges

- Availability/reliability of data
 - NYPD data can be difficult to interpret and/or not recorded consistently
 - Differing definitions of what is classified as a "motorcycle"
- Small sample size overall mode share
 - Ridership diffuse
 - No easily identified "motorcyclist corridors"
 - Small # of crashes overall, hotspots did not accurately show corridors with high volume motorcycle traffic













Findings

- Age
- Gender
- Location and Roadway Type
- By Borough
- Single v. Multivehicle crashes
- When Crashes Occur: time of day & day of week
- Seasonality
- Collision Type
- Licensing
- Commuting
- Other Demographics
- Health and Safety
- Field Observations

Findings: Age

- In NYC:
 - 59% of motorcycle driver fatalities were under the age of 35*
- In the USA at-large:
 - 37% of motorcycle driver fatalities were under the age of 35**



Findings: Gender

- 97% of motorcycle fatalities were male
 - Similar, but more pronounced gender effect than with all other modes, where 88% of driver fatalities are male

Motorcycle Driver Fatalities by Gender



Findings: Location and Roadway Type

- Motorcycle fatality crashes are more likely to occur on city streets than on highways
 - From 2007-11, 75% of motorcycle fatalities occurred on city streets*
- Motorcycle crashes involving fatalities or serious injuries are spread out over many areas of NYC, with few identifiable "hot spots"

Heat Map: Motorcycle KSI Hot Spots



KSI: Killed or Seriously Injured

Findings: Borough

- Brooklyn and Queens had the highest number of motorcycle driver fatalities
- Manhattan had the highest rate of fatalities per mile of roadway, but the lowest rate per 100,000 population (similar to all modes)
- Staten Island has lowest population, but highest rate per population
- The Bronx is the most over represented in fatalities when compared to registrations

	Fatalities	% of Total Fatalities	% of NYC Vehicle Registrations
Bronx	27	15%	10%
Brooklyn	53	30%	24%
Manhattan	29	16%	21%
Queens	54	31%	31%
Staten Island	13	7%	13%

Fatality & Registration Comparison by Borough

Findings: Single v. Multi-Vehicle

- Motorcycle injury crashes are more likely to involve multiple vehicles
 - 63% motorcycle v. 53% all injury crashes



Injury Crashes by # of Vehicles Involved and Location (2007-11)

Findings: When Crashes Occur

- Motorcycle crashes more likely to occur during afternoon and evening hours
- Similar, but more pronounced trend than injury crashes for all modes

Crashes by Time of Day (2007-11)



Findings: When Crashes Occur



- Motorcycle injury crashes occur more often on the weekend
- Shows inverse pattern injury crashes for all modes

Findings: Seasonality

- The highest % of motorcycle injury crashes occurred during the month of July
- June, July & August account for 42% of all motorcycle injury crashes
 - 27% of injury crashes for all modes occurred during the same period



Injury Crashes by Month

Findings: Collision Types

- Motorcycle injury crashes in New York City are more likely to occur as a result of a few vehicle movements:
 - Overtaking: 28% motorcycle injury vs. 6% all other injury crashes
 - Right Angle: 23% motorcycle injury v. 12% all other injury crashes
 - Left Turns: 19% motorcycle injury v. 4% all other injury crashes
- Cited causes for fatalities (most common):
 - Unsafe Speed: 40% of motorcycle v. 49% all other motor vehicle occupant
 - Failure to yield: 10% of motorcycle v. 1% all other motor vehicle occupant
- Indicates that visibility and driver awareness of motorcycles are both strong contributing factors

Findings: Licensing & Registration

- In about 40% of motorcycle fatality cases in NYC, the motorcyclist was not licensed or not properly licensed*
 - About 10% of all motor vehicle fatalities in NYC have this characteristic
 - In the USA at-large, 22% of motorcyclists fatalities were not licensed*
- Motorized two wheelers account for about 2% of all vehicle registrations in NYC**
 - Motorcycles are about 3% of all vehicle registrations in the USA at-large*
- From 2007-2011, two wheeler registrations increased by 14.5% in NYC**
 - During the same period, motorcycle registrations increased by 18.2% in the USA at-large**

Findings: Commuting

- Motorcycles account for less than 1% of all commuting trips in NYC
 - In the USA at-large, about 0.23% of commuting trips are by motorcycle



Commuting Trips in NYC by mode

American Community Survey, 2012 1- year estimates

Findings: Other Demographic Information

- Foreign Born:
 - No significant relationship found
 - 30% of all motor vehicle operator & 32% of motorcycle driver fatalities were foreign born*
 - 38% of New York City's population is Foreign born**
- Race:
 - Non-Hispanic Blacks accounted for the highest proportion of motorcycle driver fatalities, at 37%*
 - Non-Hispanic Blacks make up 23% of the NYC population***

*New York City Department of Health and Mental Hygiene (2009-11) **American Community Survey, 2012 1-year estimates ***NYC Dept of City Planning, 2010

Findings: Health and Safety

- Alcohol Use:
 - 12.5% of the motorcyclist driver fatalities tested had a blood alcohol content (BAC) above the legal limit of .08%
 - In contrast, 34.5 % of motor vehicle driver fatalities who were tested were above the legal limit*
 - USA had 29% of motorcyclist riders with at BAC over the legal limit
- Helmet Use
 - Where data was known, 84% of motorcycle driver fatalities were wearing a helmet
 - In 43% of the fatality cases helmet use was "unknown" *

Findings: Field Observations

- Sample counts were conducted at several locations:
 - Williamsburg Bridge
 - Brooklyn Bridge
 - 10th Avenue, Manhattan
 - AM and PM peak counts on weekdays, mid-day counts on weekends
- Observations:
 - 99% of motorcycle drivers observed were wearing helmets
 - 94% had daytime running lights
 - 83% were using protective eyewear
- Vehicle Mix:
 - Scooter: 28%
 - Cruiser: 44%
 - Sport: 27%
 - Other: 1%

Findings: Summary

- Age 59% of fatals are under age 35
- Gender 97% of fatals are male
- Location and Roadway Type 75 % on local streets
- By Borough Fatalities occur in all boroughs of NYC
- Single v. Multivehicle crashes More multi-vehicle crashes
- When Crashes Occur Crashes occur more commonly in afternoon/evening and on weekends
- Seasonality Strong seasonal relationship
- Collision Type Crash types indicate visibility is an issue
- Licensing High % of unlicensed riders
- Commuting Low % of commuting by motorcycle
- Other Demographics No significant relationship to foreign born, race
- Health and Safety Alcohol less of a factor, helmet use is high
- Field Observations Low volumes, mix of types, high compliance with gear requirements

Preliminary Recommendations

- Education:
 - Develop a safety campaign aimed at motorcyclists and motor vehicle drivers
 - Tied to the Vision Zero initiative
 - Uses tools such as advertising, social media, and printed materials
 - Target campaign with risk factors in mind, i.e. young males during summer months
 - Improve training materials and licensing requirements
- Enforcement:
 - Increase strategic coordination between NYCDOT and NYPD on motorcycle safety issues
 - Develop reforms in methods of relaying data crash report
 - Step up enforcement regarding non-licensed or non-permitted vehicles

NYCDOT Safety Campaigns



Walk safe. Cross smart.

Traffic injuries are avoidable. Mom was right. Look before you cross the street.











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Next Steps

- Review process
 - Determine overlap, points of synergy with other parts of agency
 - Explore additional funding for safety campaign
- Expected Release in late 2014
- Implement recommendations in 2015/16
 - May be included with larger Vision Zero efforts



Questions?



Thank You

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