Local Acts

A MULTIAGENCY EFFORT TO REDUCE BICYCLIST FATALITIES AND SERIOUS INJURIES IN NEW YORK CITY

Jenna Mandel-Ricci, MPA
Catherine Stayton, DrPH
Leze Nicaj, MPH
Solomon Assefa, MS
David Woloch, MPP
Kevin Jeffrey
Patrick McCarthy, MPA, CPP
Noah Budnick

In the summer of 2005, responding to an apparent increase in the number of bicyclist fatalities in New York City (NYC), a coalition of bicycling advocacy groups, clubs, racing organizations, and working cyclists presented a six-point Bike Safety Action Plan to NYC's Department of Transportation (DOT) and Police Department (NYPD). Leading the list of desired action steps was the coalition's request for a comprehensive study of bicyclist fatalities. The requested report was to be modeled on a bicycling casualty study completed by the city of Toronto in the late 1990s,[1] considered by many advocates to be the most comprehensive municipal study to improve bicycling conditions to date. Advocates asked that the city's health department play a role in the study.

One year later, in September 2006, four NYC agencies with a shared interest in promoting safe bicycling—the Department of Health and Mental Hygiene (DOHMH), Department of Parks and Recreation, DOT, and NYPD—released a joint report to the public entitled *Bicyclist Fatalities and Serious Injuries in New York City: 1996–2005*.[2] The report provided a comprehensive examination of bicyclist fatalities and serious injuries, drawing on multiple data sources including police accident reports, accident scene investigations, and medical examiner files. As part of the report, the city announced an aggressive package of action steps to increase bicycling and promote safety. Details of the investigation, proposed action steps, and subsequent efforts are described in this article.

INITIATIVE SUMMARY

In the fall of 2005, staff from DOHMH's Division of Epidemiology, DOT's Bicycle and Pedestrian Safety Units, and NYPD's Traffic Control Division established a multiagency team to develop the report. The team chose to focus on bicyclist fatalities and serious injuries (defined as an injury that requires the bicyclist to be taken to the hospital), based on completeness of existing data sources. Analyses were conducted on bicyclist deaths that occurred in NYC from 1996 through 2005. Because of a longer lag time in receiving data on serious injuries, these analyses were conducted through 2003 only.

Reconciliation of multiple data sources

The primary data source for bicyclist fatalities was the DOT Fatality Database, which is reconciled on a monthly basis with NYPD investigation reports. Fatalities identified from this source were cross-referenced with death certificates maintained by the Office of Vital Statistics at DOHMH to confirm the cause of death and identify any additional bicyclist fatalities. This cross match identified an additional 13 fatalities not found in the DOT Fatality Database. For these deaths, cause of death was verified using medical examiner records.

Development of the analytic plan

In addition to person, place, time, and circumstance factors for each crash, the multiagency team examined motor vehicle type (small vs. large), contributing crash factors as defined by crash scene investigators, helmet use, presence of bicycle lanes, and "dooring" (accidents caused by a bicyclist hitting an open motor vehicle door or trying to avoid one). Spatial analyses were also incorporated into the investigation, and medical examiner files were reviewed to ascertain bicyclist characteristics such as helmet use.

Analysis and interpretation

Throughout the fall of 2005 and spring of 2006, the multiagency team reviewed findings and refined its analysis. Additional data sources were examined to understand bicycling trends in NYC and provide national comparison data. Because of the interdisciplinary composition of the team, analysis and interpretation required thorough discussion of data sources and variables.

The study identified 225 bicyclist deaths in NYC from 1996 through 2005 and 3,462 serious injuries between 1996 and 2003. The annual death rate remained steady at 2.8 deaths per million population, comparable to the national rate of 2.7 deaths per million, despite

much higher rates of bicycling. The majority (91%) of bicyclists who died were male, and among men, the highest death rate (8.3 per million) was in the 45–54 age group. Among children aged 5–14, the death rate was five times higher for boys than for girls.

Most fatalities (92%) involved contact with a moving motor vehicle. Almost all fatal crashes (89%) occurred at intersections, and more than half (53%) occurred on large, arterial roads, even though such roads make up only 10% of NYC's road system. Large vehicles, including trucks and buses, were involved in almost one-third (32%) of fatal crashes, although such vehicles comprise only 5% to 17% of vehicles on city roadways. Nearly all fatalities (94%) involved poor driving or bicycle riding practices, particularly driver inattention and disregard of traffic signals and signs. Among those for whom helmet use was known (59%), almost all bicyclists who died (97%) were not wearing a helmet. Nearly three-quarters (74%) of fatal crashes involved a head injury. Only one fatal crash with a moving motor vehicle occurred when a bicyclist was in a marked bike lane.

Spatial analyses identified three locations in NYC where three or more fatalities occurred in very close proximity (within 1,000 feet of one another) and an additional six locations where three or more fatalities occurred in close proximity (within a quarter mile of one another). Several locations were also identified where multiple serious injuries occurred. DOT investigators immediately carried out safety evaluations of all these locations.

Serious injuries declined by 46% over the study period, against a backdrop of increased bicycling, as indicated by annual counts and population-based surveys. Thirty percent of crashes resulting in serious injuries occurred mid-block, compared with 11% for fatal crashes. While large vehicles were involved in nearly a third of fatal crashes (32%), they accounted for only 7% of serious injury crashes. Documentation of helmet use for serious injuries was even more incomplete than for fatal crashes (32%); nonetheless, among those with documented information, helmet-wearing rates were more than four times higher than rates for fatal crashes (13% vs. 3%).

Development of recommendations and action steps

As part of the report-writing process, team members worked with the leadership of their respective agencies to develop action steps to simultaneously promote bicycling and increase bicyclist safety. The team identified 38 action steps and organized them into five key areas: (*1*) bicycle infrastructure, (*2*) motorist and bicyclist awareness, (*3*) investigation and enforcement, (*4*) legislation, and (*5*) improvement of data collection, analysis, and reporting. Among these action steps were commitments to complete 240 miles of bicycle lanes over four years, conduct a citywide public awareness campaign on roadway safety, and increase data collection efforts to better understand bicycle ridership. While a small number of these initiatives were already under consideration, report findings created a sense of momentum among agency leaders and galvanized their commitment to the initiatives. The team also developed general recommendations for motorists, bicyclists, health-care providers, and community-based organizations toward improving bicyclist safety in NYC.

OUTCOME AND EVALUATION

The joint report, *Bicyclist Fatalities and Serious Injuries in New York City: 1996–2005,* was released during a mid-September press conference in 2006, featuring the commissioners of Health, Parks, and Transportation, and the NYPD chief of transportation. The press conference focused on the report's key findings and the action steps the city was pledging to carry out, most within a 12-month time frame. Media interest was extensive, and advocates lauded the report as the "most thorough analysis of cyclist serious injuries and fatalities undertaken in the United States."[3]

As of early 2008, significant progress has been made toward fulfilling the identified action steps, and multiagency commitment remains high. The four involved agencies and leading bicycling advocacy groups meet quarterly to track progress and identify opportunities for additional bicycle-related initiatives. Achievements to date include the following:

- Completion of 68 miles of new bicycle lanes and installation of more than 700 bicycle parking racks;
- Pilot-testing of several new bike-lane designs, with specific emphasis on bicyclist safety at intersections (pilot designs include a solid green bike lane that continues through intersections; reversing the placement of the parking lane and the bike lane, with vehicle left turns prohibited and a dedicated turning signal for bicyclists; and bike-lane placement on both sides of a large, one-way avenue);
- The launch of a citywide roadway safety awareness campaign entitled "Look," focusing on educating motorists on a bicyclist's right to the road and the unique dangers posed by intersections;
- Distribution of approximately 10,000 free helmets at community events;

- Passage of a local law requiring restaurant delivery workers to wear helmets while bicycling;
- The addition of survey questions on bicycle riding and helmet use to the Health Department's annual population-based telephone survey of approximately 10,000 NYC adults, and an increase in the frequency and breadth of bicyclist counts conducted by the city; and
- Initiation of the "Teach Your Child to Ride a Bike" program in parks across the city.

DISCUSSION

Demand for this multiagency investigation was driven by advocate concerns around bicyclist safety and the desire of several city agencies to increase bicycling for both its environmental and health benefits. Readiness and commitment on the part of agency leadership was high; report findings directed efforts to the areas of greatest need. Bicycling and other forms of alternative transportation are now a critical piece of Mayor Michael Bloomberg's recently announced PlaNYC 2030, a comprehensive effort toward sustainability of NYC's physical environment. Quarterly meetings since the release of the report have enabled team members to involve parts of their agencies not traditionally working on bicycling promotion. For example, to improve safety for NYC's large population of restaurant delivery workers, DOHMH has begun to train thousands of restaurant supervisors and staff on bicyclist safety through its mandatory Health Academy courses.

This multiagency investigation has also prompted better working relationships within city government and among city agencies and advocacy groups. Other collaborative projects have been undertaken as a result. DOT and DOHMH have since worked together on an investigation of child motor vehicle-related fatalities. Advocacy groups and the city have also been able to effectively collaborate to gain community support for the placement of bicycle lanes and bicycle parking racks in neighborhoods where these facilities are most needed. Agencies and advocates recently came together to plan and execute the 2007 Bike Month NYC, an annual series of bicycling promotion events. The city's most comprehensive Bike Month to date attracted record numbers of participants and overtly focused on the health and environmental benefits of bicycling. Moving forward, the involved agencies and advocacy groups are committed to further expanding and improving the city's bicycle infrastructure and the number of bicyclists using it.

Jenna Mandel-Ricci, MPA, is Director of Special Projects, Division of Epidemiology, at the New York City Department of Health and Mental Hygiene (DOHMH). Catherine Stayton, DrPH, is Director of the Injury Epidemiology Unit at DOHMH. Leze Nicaj, MPH, is a Research Scientist with the Injury Epidemiology Unit at DOHMH. Solomon Assefa is Director of the Traffic Accident and Analysis Unit at the New York City Department of Transportation (DOT). David Woloch is Deputy Commissioner of External Affairs at DOT. Kevin Jeffrey is Deputy Commissioner of Public Programs at the New York City Department of Parks and Recreation. Patrick McCarthy is Commanding Officer of the Traffic Management Center with the New York City Police Department. Noah Budnick is Deputy Director of Transportation Alternatives. All are in New York, New York.

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Address correspondence to: Jenna Mandel-Ricci, MPA, New York City Department of Health and Mental Hygiene, 125 Worth St., Room 315, CN-6, New York, NY 10013; tel. 212-788-5379; fax 212-788-4473; e-mail <jricci@health.nyc.gov>.

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