

Health Benefits of Active Transportation in New York City

Active transportation is any self-propelled mode of transportation (such as walking, jogging, bicycling, or in-line skating) to get from one place to another. Most New Yorkers who use public transportation also use active transportation when they walk to and from the subway or bus stop.

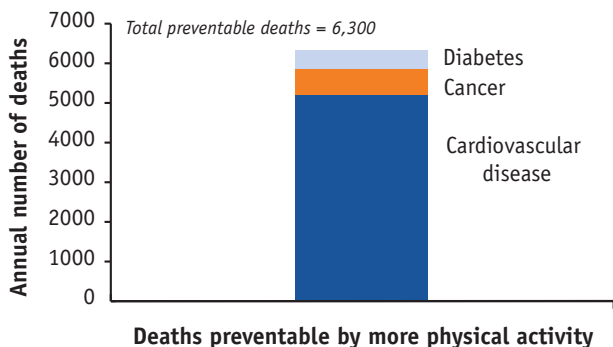
Active transportation is by definition also physical activity. Regular physical activity helps prevent early death, obesity, heart disease, high blood pressure, diabetes, stroke, colon cancer, breast cancer, depression, cognitive decline, and osteoporosis.

Active transportation can reduce private car, taxi or other motor vehicle trips, which decreases pollution and improves air quality. Use of active transportation in conjunction with public transportation, instead of car trips, helps make New York City's roads safer for everyone.

This report describes the health benefits of active transportation in New York City. Recommendations to increase the benefits of active transportation are on page four.

Physical activity provides important health benefits

Deaths preventable by more physical activity, by type of disease, New Yorkers aged 30 and older (2005-2007 average)



- Physical inactivity contributes to one in eight deaths annually among New Yorkers aged 30 and older from cardiovascular disease (including heart disease and stroke), cancer, and diabetes—an estimated 6,300 deaths a year.
- Regular physical activity such as brisk walking or biking for two and a half hours a week (a half hour every weekday) lowers risk of premature death by more than 20%.¹
- Brisk walking or biking for a half hour every weekday reduces heart disease risk.¹
- Regular brisk walking for 20 to 30 minutes per day can reduce diabetes risk by 30%.²

These findings quantify preventable mortality using methods from a national analysis that relied on previously published evidence on the causal associations between modifiable risk factors and cause of death.

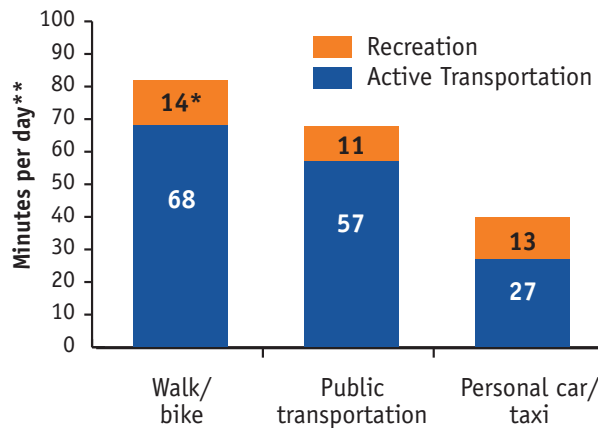
Sources: New York City Health and Nutrition Examination Survey 2004; NYC DOHMH Office of Vital Statistics 2005-2007.

New Yorkers get more physical activity through transportation than recreation

- On average, people who walk or bike to work get more than an hour of active transportation time daily.
- New Yorkers who walk or bike to work get more than 40 minutes more combined transportation and recreation physical activity per day than those who use a personal car or taxi.
- New Yorkers who take public transportation for most of their commute get almost half an hour more daily combined transportation and recreation physical activity than those who use a personal car or taxi.

Recreation activity, such as exercise or sports participation, is conducted in addition to other daily activities. Active transportation includes active commuting as well as other everyday activities such as walking or biking to the store.

Average daily transportation and recreation activity among New Yorkers who work outside the home



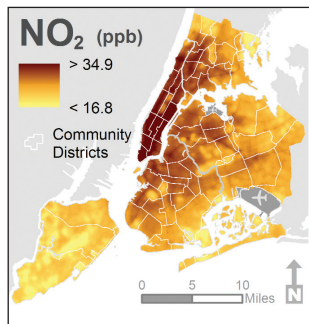
Transportation used for most of commute

*Due to small numbers, estimate should be interpreted with caution.

**Minutes of at least moderate physical activity.

Source: Physical Activity and Transit Survey Wave 1, 2010.

Shifting from motor vehicles to active transportation reduces car trips, congestion, and air pollution

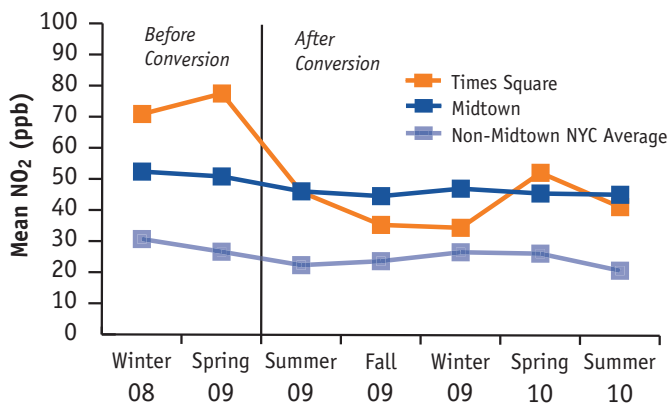


Estimated nitrogen dioxide concentrations in New York City, 2008-2009

NO₂=nitrogen dioxide; ppb=parts per billion.

Source: New York City Community Air Survey, NYCDOHMH

Nitrogen dioxide concentrations before and after the conversion to a pedestrian plaza in Times Square

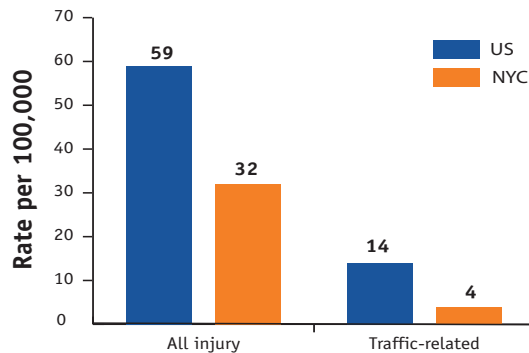


Source: New York City Community Air Survey, NYCDOHMH

- Motor vehicles contribute an estimated 7% of fine particulate (PM_{2.5}) emissions and 28% of nitrogen oxides emissions in New York City.³ The highest concentrations of these pollutants are found in areas where traffic density is highest.
- Each year, PM_{2.5} pollution in New York City causes more than 3,000 deaths, 2,000 hospital admissions for lung and heart conditions, and approximately 6,000 emergency department visits for asthma.⁴
- If fewer cars are on the roads, air quality will improve.
- Reducing pedestrians' proximity to heavy traffic volumes can reduce their exposure to harmful pollutants. For example, the City's creation of a car-free pedestrian plaza in Times Square in 2009 substantially reduced levels of NO₂ in the plaza. Air pollution exposure can be reduced by exercising away from heavy traffic.
- The health benefits of regular physical activity, even in polluted air, outweigh the risks of inactivity.¹ Estimates of the impact of switching from daily car to bike trips found biking significantly increases life expectancy.⁵

Transportation injuries are far less common in New York City than nationally

Injury death rates, US vs. NYC, 2005-2007



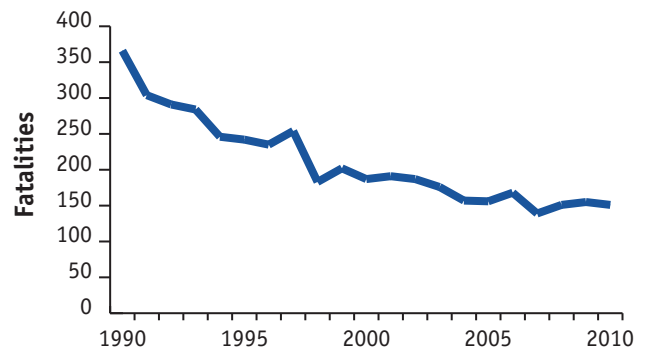
Sources: Data on all injury deaths are from WISQARS (US) and NYC DOHMH Office of Vital Statistics. Traffic-related death data are from FARS (US) and NYC Department of Transportation Traffic Fatality Database (NYC).

- New York City's injury death rate is about half of the national rate (32 vs. 59 per 100,000 residents in 2005-2007). The City's traffic-related death rate is less than one third of the national rate (4 vs. 14 per 100,000).
- New York City's low traffic fatality rate contributes to its low overall injury death rate compared to the US.
- More than half of New York City workers use public transportation on a daily basis, which is safer than driving. Nationally, for every 100 million miles traveled, passenger death rates on mass transit are 95% less than passenger death rates in motor vehicles, according to the Federal Transit Administration.

New York City continues to get safer for pedestrians

- Traffic deaths have declined in New York City about 30% since 2000. Pedestrian deaths, which make up the largest portion of traffic deaths, have declined 59% since 1990 (366 in 1990 vs. 151 in 2010).
- Speeding and driver inattention are major contributors to motor vehicle crashes with pedestrians and bicycles in New York City.
- Engineering interventions, such as lane reconfigurations and sidewalk extensions, can reduce the number of pedestrian injury crashes at high-risk intersections and traffic corridors in New York City.⁶

New York City Pedestrian Deaths, 1990-2010



Sources: NYC Department of Transportation Traffic Fatality Database

METHODS AND DATA.

Preventable death analysis: Physical activity and mortality data sources are reported on page 1. Deaths attributable to physical inactivity were calculated with methods from Danaei G, Ding EL, Mozaffarian D, Taylor B, Rehman J, et al. (2009) The Preventable Causes of Death in the United States: Comparative Risk Assessment of Dietary, Lifestyle, and Metabolic Risk Factors. *PLoS Med* 6(4): e1000058. Preventable deaths were rounded to the nearest 100 deaths.

Physical activity analysis: The Physical Activity and Transit Survey was made possible by funding from the U.S. Department of Health and Human Services. Data are weighted to the NYC adult population per the American Community Survey (2006-2008) and are age-adjusted to the US 2000 standard population.

Air Quality analysis: For more information on the NYC Community Air Survey, see The New York City Community Air Survey: Results from Year One Monitoring 2008-2009 at <http://www.nyc.gov/html/doh/downloads/pdf/eode/comm-air-survey-report.pdf>.

Injury death rate analyses: Injury death rates for the US are generated by the Centers for Disease Control and Prevention, National Center for Injury Prevention and Control, Web-based Injury Statistics Query and Reporting System (WISQARS), 2005-2007. Injury death rates for NYC are computed by the Health Department's Injury Surveillance and Prevention Program using mortality data from the Office of Vital Statistics, 2005-2007.

Traffic-related and pedestrian death rate analyses: Traffic-related death rates for the US are generated by the National Highway Traffic Safety Administration's Fatality Analysis Reporting System (FARS) for 2005-2007. Traffic-related and pedestrian deaths for NYC are from NYC's Department of Transportation Traffic Fatality Database for 1990-2010.

Recommendations

Be active: Walk, bike, and use public transportation.

- Take advantage of everyday opportunities to walk or bike to work, school, stores, or other destinations.
- If you can't actively commute for the full trip, take public transportation and get off a stop or two early and walk.
- Health care providers and health plans should encourage active transportation as an easy way to increase physical activity.

Be safe on New York City streets no matter how you travel.

- Wear a helmet when biking. Working cyclists and children 13 or younger are required to by law—everyone else should.
- When walking, always cross with the light, not against it.
- Drive safely: Slow down and don't text or talk on the phone when driving. Unless otherwise posted, the speed limit in New York City is 30 mph.

Design streets, neighborhoods and buildings to encourage walking and biking.

- Continue construction of traffic-calming measures such as pedestrian refuge islands, sidewalk extensions and lane reconfigurations.
- Provide secure indoor parking for bicycles to encourage employees to bike to and from work.
- Continue to install on-street and protected bike lanes.

REFERENCES.

1. U.S. Department of Health and Human Services, 2008 Physical Activity Guidelines for Americans. 2008. <http://www.health.gov/PAGuidelines/guidelines/default.aspx>. Accessed on April 20, 2011.
2. Jeon CY, Lokken RP, Hu FB, van Dam RM. Physical activity of moderate intensity and risk of type 2 diabetes. *Diabetes Care*. 2007;30:744-752.
3. US EPA. 2005. EPA 2005 National Emissions Inventory (NEI). Available at: <http://www.epa.gov/ttn/chief/net/2005inventory.html>. Accessed on April 23, 2011.
4. Air Pollution and the Health of New Yorkers: The Impact of Fine Particles and Ozone. New York City Department of Health and Mental Hygiene. Available at: <http://www.nyc.gov/html/doh/downloads/pdf/eode/eode-air-quality-impact.pdf>. Accessed on April 23, 2011.
5. De Hartog JJ, Boogaard H, Nijland H, Hoek G. Do the Health Benefits of Cycling Outweigh the Risks? *Environ Health Perspect*. 2010; 118: 1109-16.
6. New York City Department of Transportation. Division of Planning and Sustainability. 2010 Sustainable Streets Index. <http://www.nyc.gov/html/dot/html/about/ssi.shtml>. Accessed on May 3, 2011.

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