



CYCLING IN THE CITY

Cycling Trends in NYC

May 2016

Cycling in the City

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Estimate of Daily Cycling

Over the past two decades, New York City has seen tremendous growth in cycling, reflecting broad efforts to expand the city's bicycle infrastructure. In the mid-1990s, NYC DOT established a bicycle program to oversee development of the city's fledgling bike network. Since then, NYC DOT has led the charge to build an expansive network that serves an ever growing number of New Yorkers. These efforts were accelerated following the release of PlaNYC in 2007, which set ambitious goals toward creating a more sustainable city, and have been expanded further—with increased emphasis on transportation safety and equity—under the framework of OneNYC.

Since 2010, NYC DOT has expanded and enhanced the on-street bike network by nearly 300 miles, including more than 40 protected lane miles, with a record 12 miles installed in 2015. NYC DOT is on track to install even more protected lanes in 2016, with over 15 new miles planned.

With this expansion of bicycle routes on City streets, along with the miles of new greenway paths in public parks, and the introduction of bike share, there have never been more people biking in New York City. Creation of local bike networks beyond the Manhattan core, in communities such as Long Island City and Brownsville, encourages people to use a bicycle to get around their own neighborhoods to run errands or visit friends. Development of new stretches of path along greenways such as the Brooklyn Waterfront and Bronx River makes it more enticing for cyclists to take recreational rides and provide comfortable spaces for parents with young children to go for family bike rides. Miles of protected on-street bike lanes are emboldening the more cautious and risk-averse New Yorkers to take to the streets on a bike, while Citi Bike makes cycling a more convenient option for quick trips around the city and multi-modal commutes—even for those who do not own a bicycle.

This Cycling in the City brief sees to answer two basic questions:

- ***How frequently are New Yorkers using cycling as a mode of transportation?***
- ***How is that frequency changing over time?***



Williamsburg St W, Brooklyn



Ridgewood, Queens

Understanding who is biking in New York City and how often they ride is incredibly valuable, but cycling demographics and trends are very challenging to evaluate. Historically, evaluation of cyclist activity in New York City was centered on counting the number of bicycles entering and exiting the core. However, cycling has grown and matured dramatically as a mode of transportation since the first counts were conducted in 1980. New Yorkers are using bikes for a much wider variety of trips, making it even more difficult to assess bicycle use in the City.

In an effort to better understand the widening breadth of cycling, New York City Department of Transportation (NYC DOT) partnered with the New York City Department of Health and Mental Hygiene (NYC DOHMH) to include several questions about cycling in NYC DOHMH's annual Community Health Survey. Beginning in 2009, and expanding in 2013, these questions shed light on how frequently New York City residents cycle each day, each week, and each year, as well as for what purpose they bike. The survey results are an exciting new data source that provide insight into bicycle use across the city. By focusing on the cyclist and not the trip, the survey provides a more holistic approach to quantifying cycling activity, especially when used in combination with national surveys, on-going bike counts, and Citi Bike trip data. Taken as a whole, this information helps paint a more accurate picture of cycling in New York City than we have ever had before.

*This brief examines these data sources in order to provide a **snapshot** of cycling in the city today and an evaluation of **trends over time**, providing a better understanding of how cycling has grown over the past decades.*

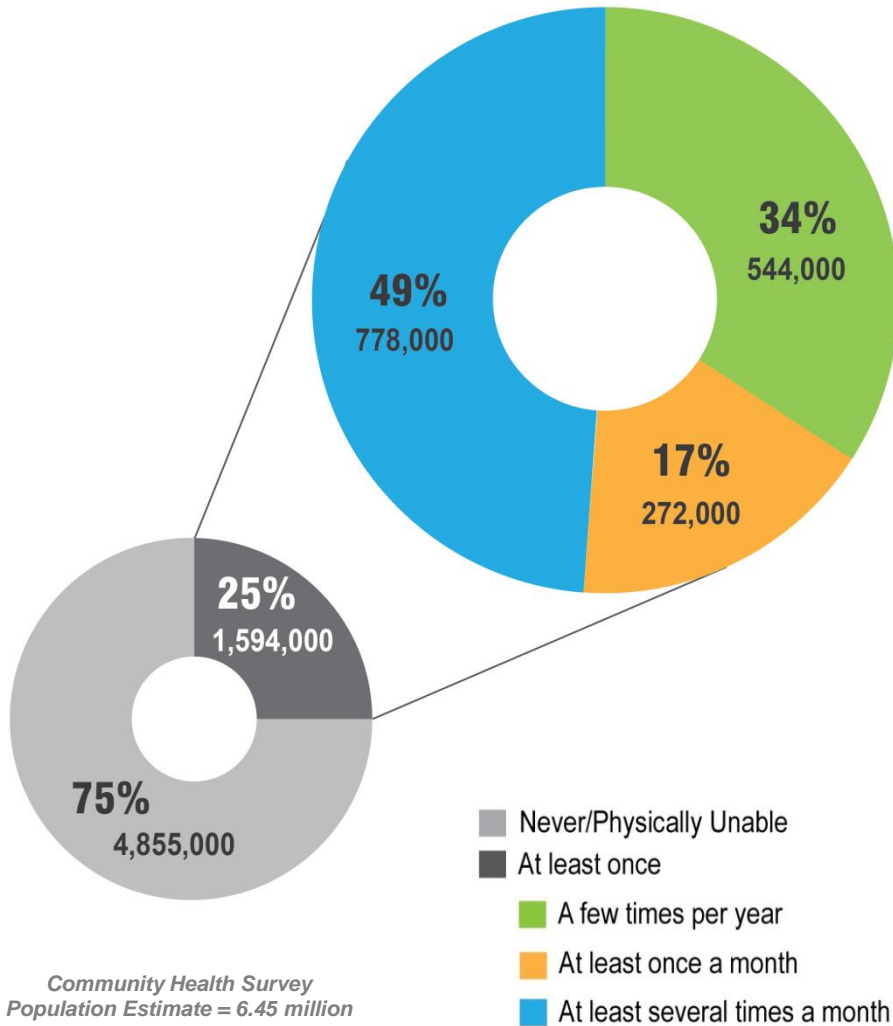
For details regarding the data presented in this document, please consult the Data Types, Sources, and Limitations page of the Appendix.

Cycling in the City A Snapshot

1

NUMBER OF CYCLISTS

Percent of Adult New Yorkers who Ride a Bike (NYC DOHMH)



Community Health Survey
Population Estimate = 6.45 million
Adult New Yorkers

25% of adult New Yorkers, nearly 1.6 million people, **ride a bike** (at least once in past year)

Of those adult New Yorkers, about **three-quarters of a million (778,000)** **ride a bicycle regularly** (at least several times a month)



E 106 St, Manhattan

COMMUTERS AND TRIPS PER DAY

About **86,000** adult New Yorkers, **2.5%** of all commuting residents, usually bike to **work or school**

Source: New York City Department of Health and Mental Hygiene, Community Health Survey 2014, see appendix

On a typical day, there are over **400,000 cycling trips** made in New York City

Source: U.S. Census Bureau's American Community Survey Journey to Work 2014, New York City Department of Health and Mental Hygiene, Community Health Survey 2014 see appendix



Queens Blvd, Queens

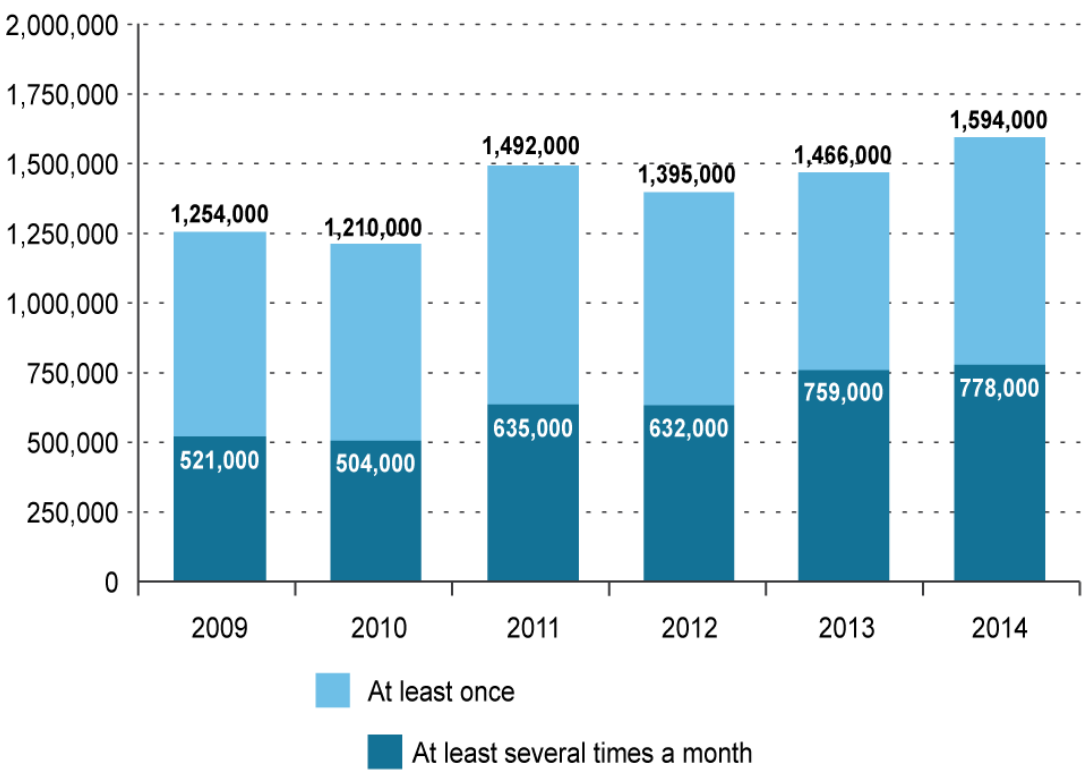
Cycling in the City
Trends Over Time

2

CITYWIDE TOTAL AND FREQUENT CYCLISTS

Since 2009, the NYC DOHMH Community Health Survey has asked respondents how many times they rode a bike in the past 12 months. Since even the most avid cyclist must begin riding a bike at some point, a clear upward trend in both novice and experienced cyclists illustrates the widening appeal of cycling.

Number of Adult New Yorkers Who Rode a Bike at Least Once in the Past Year



+49% Growth
in the number of New Yorkers who ride a bike several times a month, 2009-2014

+340k Increase
in the number of New Yorkers who bike at least once a year, 2009-2014



DAILY CYCLING

The Decennial Census and the American Community Survey (ACS) Journey to Work data provide long-term statistics on the number of people in New York City who use a bicycle as their primary mode of commuting to work (Daily Bike Commuters).

Commuters typically make two commute trips each day (Daily Bike Commute Trips) and research shows that commuting represents approximately one-in-five travel trips in New York City, therefore we can estimate that there are approximately four additional non-commuting bike trips for each commuting bike trip (Total Daily Cycling Trips).

Census data is available for 1980, 1990, 2000 and American Community Survey data has been collected annually since 2005. Because the sample size is smaller for the ACS, a rolling three year average is used for each year after 2000 (e.g. the 2014 number is based on the 2012, 2013, and 2014 surveys).



Estimates of Daily Cycling Activity by Year

	1980	1990	2000	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Bike Commuters (to work)	9,700	9,600	15,000	16,500	18,200	20,900	23,500	24,400	25,000	26,900	31,500	37,600	41,800
Bike Commute Trips (to work)	19,400	19,200	30,000	33,000	36,400	41,800	47,000	48,900	50,000	53,800	63,000	75,200	83,600
Total Daily Cycling Trips	100,000	100,000	150,000	170,000	180,000	210,000	240,000	240,000	250,000	270,000	320,000	380,000	420,000

+320% Growth
in daily cycling between
1990 and 2014

+68% Growth
In daily cycling between
2010 and 2014

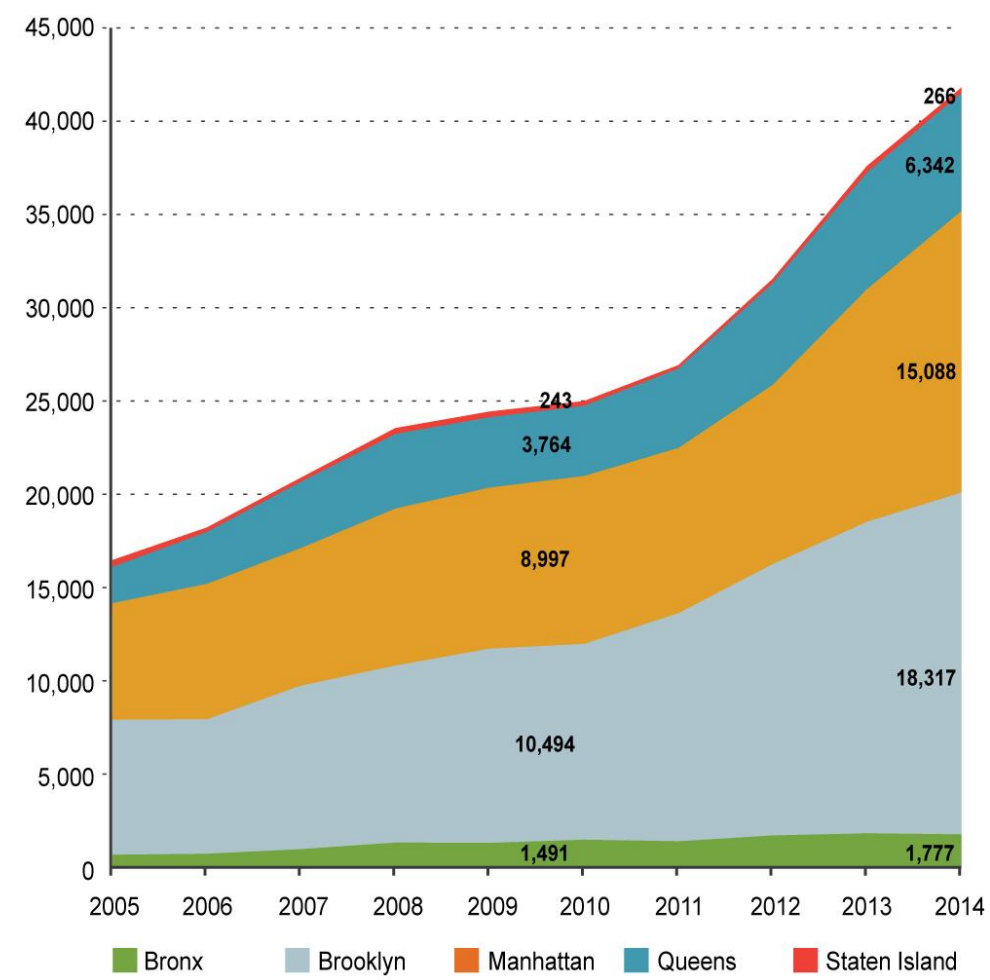
COMMUTERS BY BOROUGH

Percent Growth: 2010-2014

- +9%** Staten Island
- +68%** Queens
- +68%** Manhattan
- +75%** Brooklyn
- +19%** Bronx

+75% Growth in commuting to work in Brooklyn between 2010 and 2014, the fastest of any borough

Commute to Work – Rolling 3 Year Average from ACS by Borough



Union St, Brooklyn

PEER CITIES

Percent Growth: 2010-2014

+67% New York

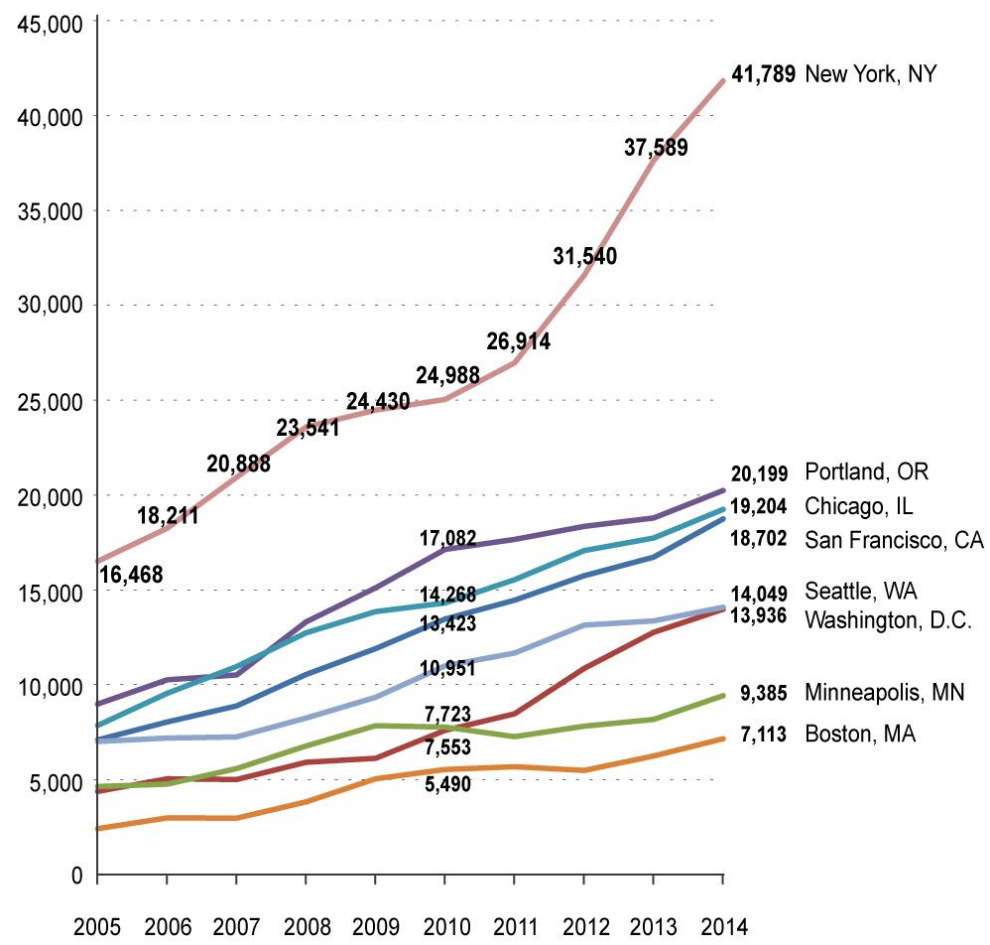
+34% Peer Cities

Peer cities include Portland, OR; Chicago, IL; San Francisco, CA; Seattle, WA; Washington, D.C.; Minneapolis, MN; Boston, MA.



2x Faster. Between 2010 and 2014, cycling to work has grown twice as fast as other major cities

Commute to Work - Rolling Three Year Average comparing NYC to Other Cities



EAST RIVER BRIDGES

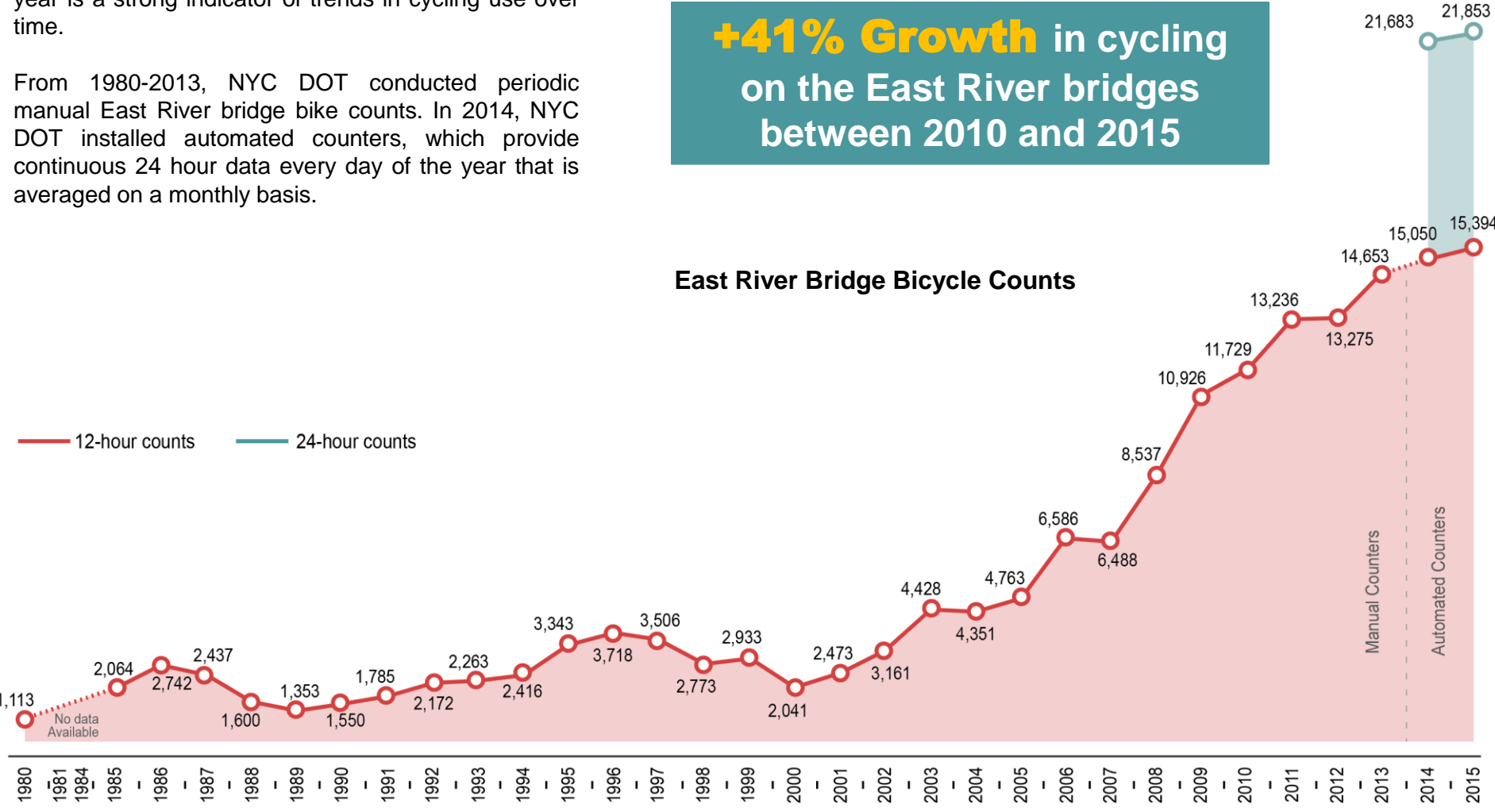
Many New York City cyclists use the Queensboro, Williamsburg, Manhattan and Brooklyn bridges to connect between the boroughs and the Manhattan core. Comparing counts on these bridges from year to year is a strong indicator of trends in cycling use over time.

From 1980-2013, NYC DOT conducted periodic manual East River bridge bike counts. In 2014, NYC DOT installed automated counters, which provide continuous 24 hour data every day of the year that is averaged on a monthly basis.

+893% Growth in cycling on the East River bridges between 1990 and 2015

+41% Growth in cycling on the East River bridges between 2010 and 2015

East River Bridge Bicycle Counts



GROWTH BY BRIDGE

East River Bridges
Percent Growth: 2010-2015

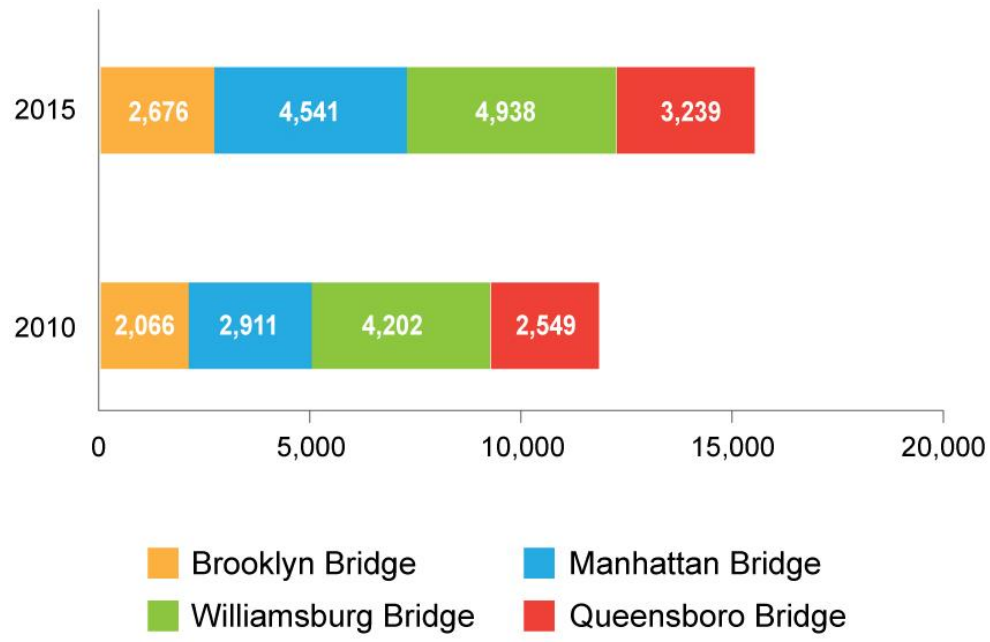
- +30%** Brooklyn Bridge
 - +56%** Manhattan Bridge
 - +18%** Williamsburg Bridge
 - +27%** Queensboro Bridge
- +41%** *All East River Bridges*

+56% Growth in cycling on the Manhattan Bridge between 2010 and 2015, the fastest of the East River bridges



Undercliff Ave, Bronx

Cyclist Counts at East River Bridges (7am – 7pm, Weekdays)



MIDTOWN NORTH/SOUTH

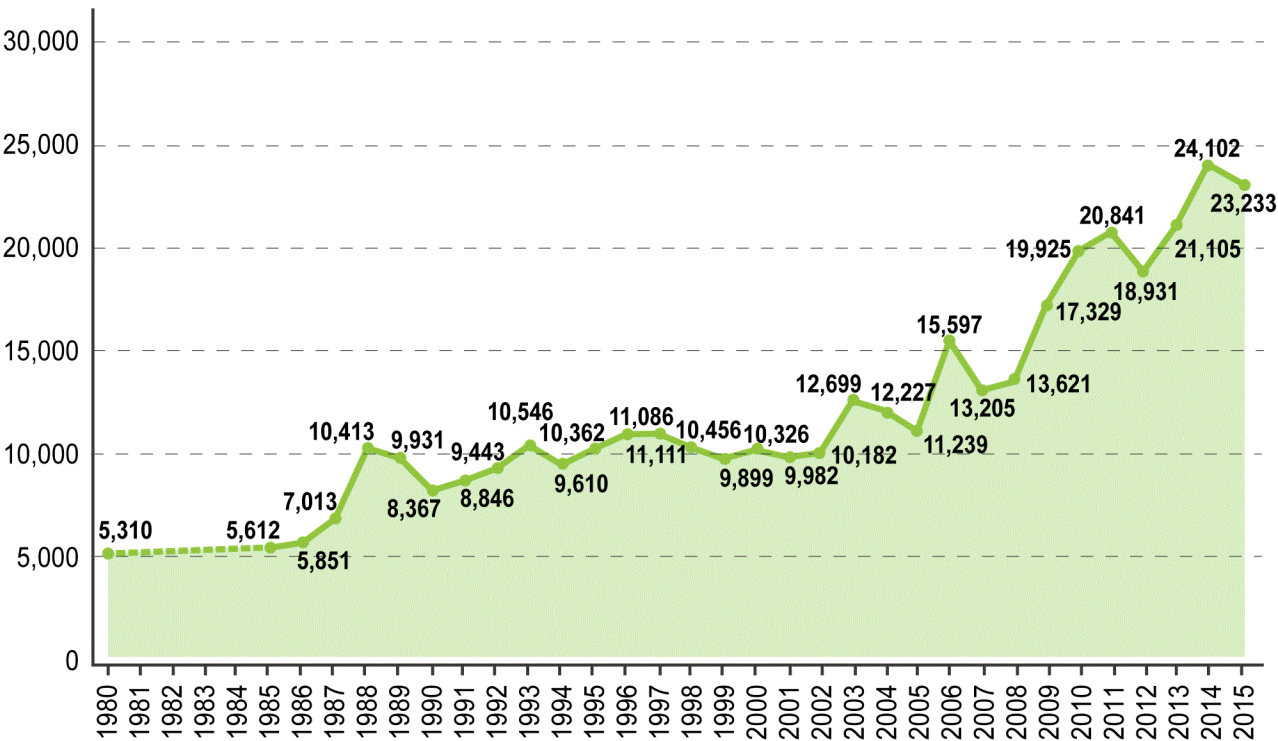
NYC DOT also counts cyclists entering and leaving the core at 50th Street along the avenues and Hudson River Greenway. This data was first recorded in 1980, and has been collected annually since 1985, and three times per year—typically in May, July, and September—since 2007.

Midtown is the heart of the city where jobs and other activities are heavily concentrated, this density is both an opportunity and a challenge for growing cycling. Through Citi Bike and the enhancement of the bicycle network, cycling in midtown has seen solid growth with the potential for more.

+317% Growth
in cycling in Midtown
between 1980 and 2015

+11% Growth
in cycling in Midtown
between 2010 and 2015

Midtown North-South Trips (7am – 7pm, Weekdays)



CITI BIKE

In 2013, New York City launched the first phase of Citi Bike—the largest bike share system in North America. After two years of operation, phase two expansion began. Further expansion is planned through 2017.

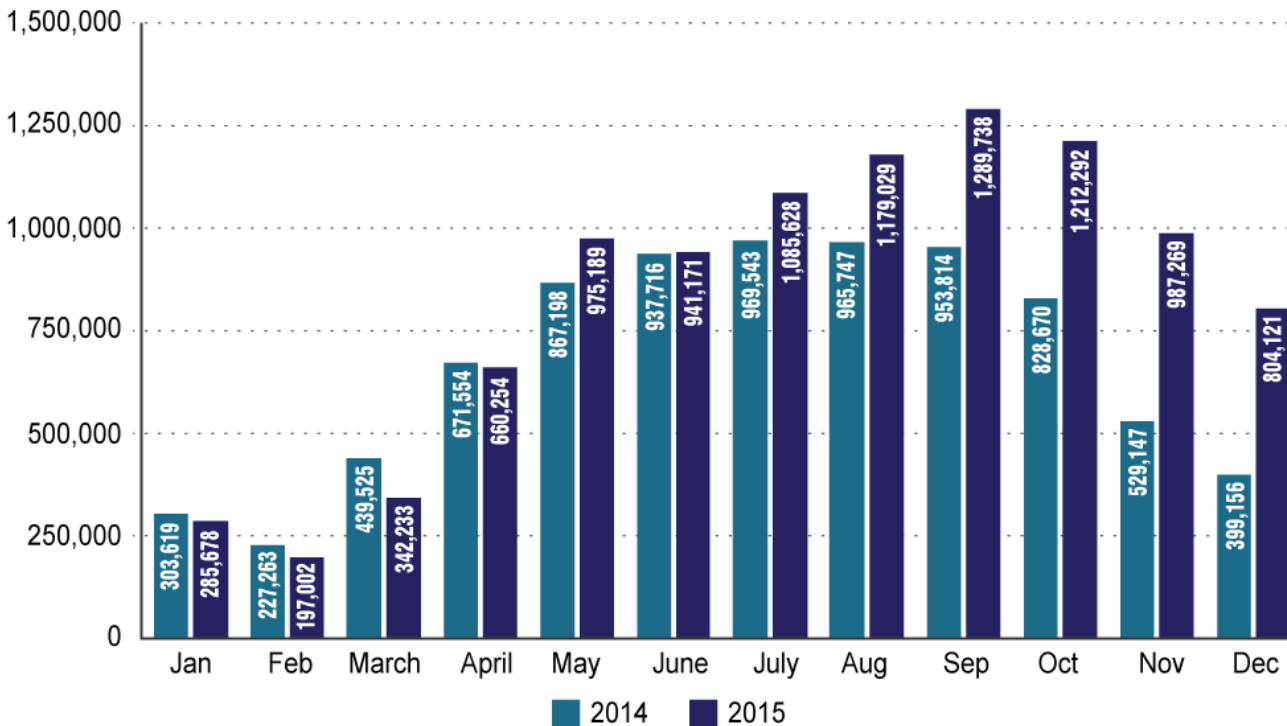
Bike share makes it more convenient for New Yorkers—even those who don't own a bicycle—to make short trips by bike and provides an important supplement to the existing transportation network, facilitating multi-modal trips.

Trips per day is averaged from January through December.



Hudson St, Manhattan

Total Citi Bike Trips by Month



+23% Growth
in daily
Citi Bike use
from 2014 to 2015

Trips per Day on
Citi Bike
2014: **22,172**
2015: **27,287**

Cycling in the City Appendix

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DATA TYPES, SOURCES AND LIMITATIONS

The ideal source of cycling data is robust, comprehensive, and goes far back in time. In reality, information about cycling in New York City is very difficult to collect due to the geographically dispersed nature of cycling activity, the wide variety of trip types, and variations in ridership affected by weather. This brief evaluate data from a variety of sources, each with its own strengths and limitations.

Bike Counts are conducted at specific locations either by human observers or automated machines. Typically, manual counts are conducted from 7am-7pm on a non-holiday weekday with no precipitation. The counting season lasts from April to October. The strengths of this approach are that these numbers represent actual bike trips, and that in New York City, regular counts have been conducted at some locations since as far back as 1980, including the four East River bridges that connect Queens and Brooklyn to the Manhattan core and at 50th Street in Midtown. The limitations are that the geographic data points are limited; and that they emphasize longer distance, inter-borough trips that are often taken by commuters. From 1980-2006, NYC DOT performed manual East River bridge bike counts only once per year. Starting in 2007, three counts were conducted annually in May, July, and September. In 2008, the number of counts further increased to 10 monthly counts at each location. In 2013, NYC DOT installed automatic counters on the four East River Bridges that now collect data 24-hours per day, 365 days per year, providing much more complete data set for these particular locations.

Citi Bike Data accounts for every trip taken on a Citi Bike and therefore provides very comprehensive data about the number of trips over time, as well as detailed information about origin, destination, time, and distance traveled. However, this data set is limited to cyclists using Citi Bikes and to trips that begin and end within the Citi Bike service area, which—at this point in time—covers only a small portion of the city’s streets. In addition, it is difficult to determine how many Citi Bike trips are new cycling trips rather than trips that would have been made using a personal bike anyway.

As the years pass, these data will provide a strong sense of the magnitude of change in cycling use. System expansion will allow these robust trip data to capture cycling trends in new neighborhoods each year.

Bike Use Surveys collect information about cycling from samples of the general population. These surveys do not typically provide information about where people are cycling, but they are more geographically encompassing and can more accurately gauge the number of people who are biking, including those who may not ride past typical count locations or use bike share. The following are two major sources of cycling survey data that are used in this brief, one collected at the national level, and the second collected at a citywide level.

National Surveys, including the Decennial Census and the American Community Survey (ACS) ask respondents which mode of transportation they use to get to work. Known as, “Journey to Work,” this data set was collected as part of the long form of the Census from 1980 to 2000 and since 2005 is collected as part of the ACS. The strength of this data set is that it can be used to compare cities across the country but it also has several limitations. As part of the Census, the sample size was large (approximately 1 in 6 commuters), but it was only collected every ten years. As part of the ACS, the sample size is smaller (about 2.75% of households, or 240,000 each month of the year) but it is collected annually on a rolling basis. To address the smaller sample size, this report uses a three year rolling average to determine change over time.

The Journey to Work data set is also limited in that non-commuting bike trips, such as recreational or utility trips, are excluded. It also only accounts for the primary mode of commuting and therefore does not necessarily include bike trips made as part of multi-modal commutes or by occasional bike commuters. Seasonal variations in commuting patterns can also affect the data; respondents may answer the question differently depending on the time of year they are asked.

Citywide Surveys such as the NYC DOHMH Community Health Survey ask respondents specific questions about their bicycle use, providing information about cyclists who may only bike to work occasionally or who regularly bike but not for commuting purposes. However, the sample size for these surveys is smaller than that of the national surveys (approximately 8,000-10,000 people per survey) .

ESTIMATE OF DAILY CYCLING

The Daily Cycling Trip estimate begins with the Journey to Work data from the American Community Survey. It provides estimates of how many people use a bicycle for daily commuting trips to work. According to an average of the last three years of Journey to Work data (2012-14), there are approximately 41,800 bicycle commuters in New York City who take 83,600 trips daily (assuming that each commuter takes two trips). The [New York State 2009 NHTS Comparison Report](#) (Oak Ridge National Laboratory, 2012) indicates that 18.2% of trips that New Yorkers take using personal vehicles are commuting trips to work. This would indicate that potentially 460,000 (83,600/18.2%) total bicycle trips are taken each day. For the purposes of this report, a more conservative assumption that bike commute trips are 20% of total bike trips is used, resulting in an estimate of 420,000 daily cycling trips in 2014.

The DOHMH Community Health Survey provides an opportunity to validate these assumptions. The survey asks how many days of the previous seven the respondent used a bicycle. The number of people who responded to this question in 2014 with a number of days greater than zero represents approximately 7.1% of all adult New Yorkers (out of a survey estimate of 6.45 million total adult New Yorkers, 459,000 adult New Yorkers rode a bike in the last seven days.) According to the survey, these New Yorkers biked an average of 3.38 days. Multiplying the number of New Yorkers who rode by the average number of days biked, and dividing by seven, yields an average of 220,000 New Yorkers biking on a typical day. Conservatively assuming an average of two bicycle trips per cyclist (there and back again) results in an estimate of 440,000 daily cycling trips.

Although, the methodology used for each of these estimates is quite different, they both arrive at a relatively similar total number of trips. Therefore, it is appropriate to apply the one-in-five commute cycling trips to total cycling trips ratio assumption in order to establish estimates dating back to 1980. In addition, the growth of the Daily Cycling Trip estimate generally follows a pattern similar to the Midtown and East River Bridge bike counts.



Queens Blvd, Queens