

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 evaluates 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 and the NYC DOT Mobility 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. The sample size for these surveys is smaller than the national surveys (between 1,000 and 10,000 people depending on the 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 (2019-21), there are approximately 55,000 bicycle commuters in New York City who take 110,000 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 604,000 (110,000/18.2%) 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 550,000 daily cycling trips in 2019.

The 2019 NYC DOT Citywide Mobility Survey provides an opportunity to validate these assumptions. The survey includes a trip diary, where respondents list every trip they took in the last seven days. According to the survey results, which distinguish Citi Bike trips from other bike trips, 13.4% of the respondent's bike trips were taken using Citi Bike. Multiplying the monthly total amount of 2019 Citi Bike trips by 13.4% and then adding that amount to the monthly Citi Bike trips yields an approximate amount of total bike trips for each month. Similarly, multiplying the total amount of Citi Bike trips in a year by 13.4%, adding the total yearly Citi Bike trips, then dividing the result by 365 days yields an average daily amount of approximately 470,000 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.

[Citywide Mobility Survey](#)