NABSA

NORTH AMERICAN BIKESHARE ASSOCIATION

1ST ANNUAL

Shared Micromobility

State of the Industry Report

2019

NABSA is pleased to present our first annual **Shared Micromobility State of the Industry Report**. Over the last 14 years, the shared micromobility industry has grown from a handful of city bikeshare programs, to a complex ecosystem of bikeshare and shared e-scooter systems with a wide variety of vehicle types, system models, and ownership configurations. Cities have come to rely on shared micromobility as an integral part of the transportation network, increasing transportation options and contributing to environmental, equity, and public health goals.

To inform this report, we have collected data across a wide variety of topics, including ridership metrics, user profiles, employment, equity, and community benefits. Our data sources include surveys sent to shared micromobility operators and public agencies across North America, supplemented by research reports on shared micromobility, census data, and other data that is tracked by NABSA.

This 2019 State of the Industry report shows a snapshot in time, providing a baseline for tracking trends and marking successes and challenges as the industry continues to grow and evolve. See page 14 for detailed notes on methodology.

The Report includes:

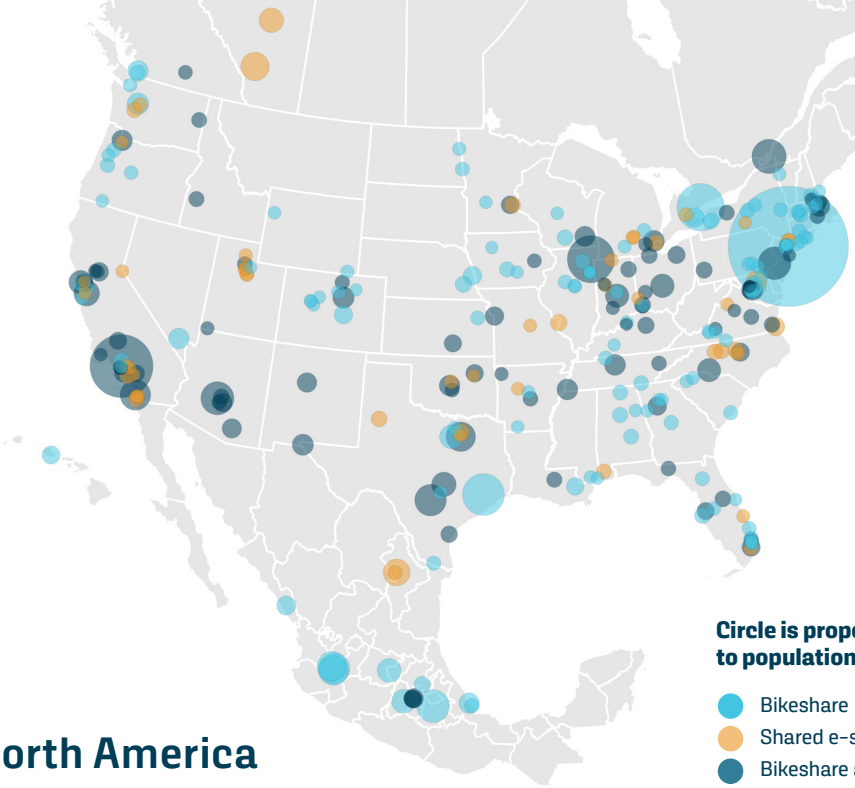
Introduction:
Shared Micromobility in North America

Shared micromobility has become an integral part of cities* across North America. In 2019, at least 292 cities had at least one bikeshare or e-scooter system and 99 had both.
This includes:

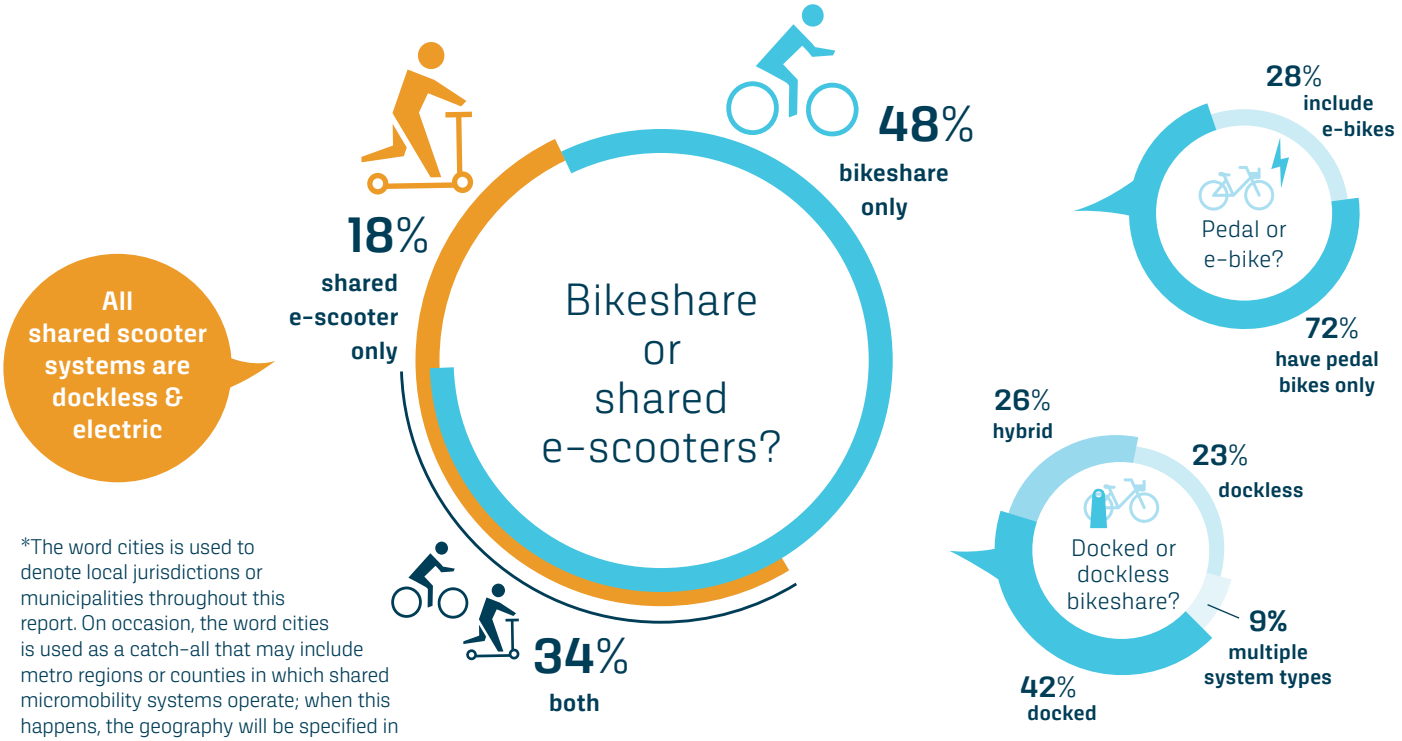
- **264 cities in the United States**
- **17 cities in Mexico**
- **11 cities in Canada**

All 151 e-scooter systems are dockless and electric, while the 240 city bikeshare systems have a mix of docked, dockless, and hybrid systems, with some cities having multiple systems of different types; 28% of cities with bikeshare systems have fleets that include e-bikes.

North American Cities with Shared Micromobility Systems, Shown by Population Size



At least 292 cities in North America have a shared scooter or bikeshare system



*The word cities is used to denote local jurisdictions or municipalities throughout this report. On occasion, the word cities is used as a catch-all that may include metro regions or counties in which shared micromobility systems operate; when this happens, the geography will be specified in the text and/or the methodology section.

Why Shared Micromobility?

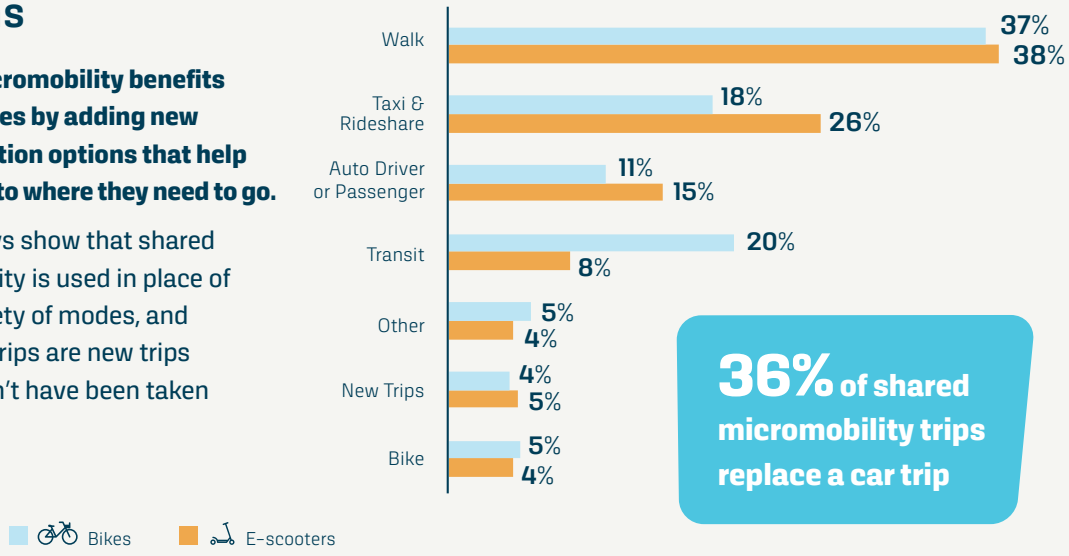
Industry Benefits

Transportation Options

Shared micromobility benefits communities by adding new transportation options that help people get to where they need to go.

User surveys show that shared micromobility is used in place of a wide variety of modes, and that 5% of trips are new trips that wouldn't have been taken otherwise.

Mode Replacement by System Type



36% of shared micromobility trips replace a car trip

Physical Activity & Exercise

Exercise is an essential component of a healthy lifestyle. Moderate exercise like pedal and e-biking, and light exercise like riding an e-scooter, have powerful, measurable effects on health.

North Americans gained almost

30 million hours

of additional physical activity

through shared micromobility, by creating new trips and replacing motorized trips:

13.1 **million hours** on pedal bikes

1.4 **million hours** on e-bikes

15.2 **million hours** on e-scooters

Reduced Greenhouse Gas Emissions

Riding shared micromobility produces considerably fewer greenhouse gas emissions.

Compared to auto trips, shared micromobility trips reduce GHG emissions by:

100% on pedal bikes
97% on e-bikes
98% on e-scooters

In 2019, shared micromobility offset approximately **65 million pounds of CO_2 emissions** by replacing auto trips.

These reduction factors do not take into account operations, externalities, or lifecycle costs for shared micromobility or for driving, as data for these calculations was unavailable.

Why People Use Shared Micromobility

NABSA compiled the results of user surveys conducted in cities with shared micromobility to understand why people ride, and what users see as the main benefits. Because different surveys asked different questions, we are presenting the top reasons without assigning numeric values to them.

Shared micromobility helps people meet a variety of needs; people see shared micromobility as something that benefits their community.

Why People Ride:


Faster and easier travel


Fun


Save money


Increase travel options/flexibility

Benefits to the Community:


Environmental benefits


Personal health / exercise benefits


Reduced need for parking

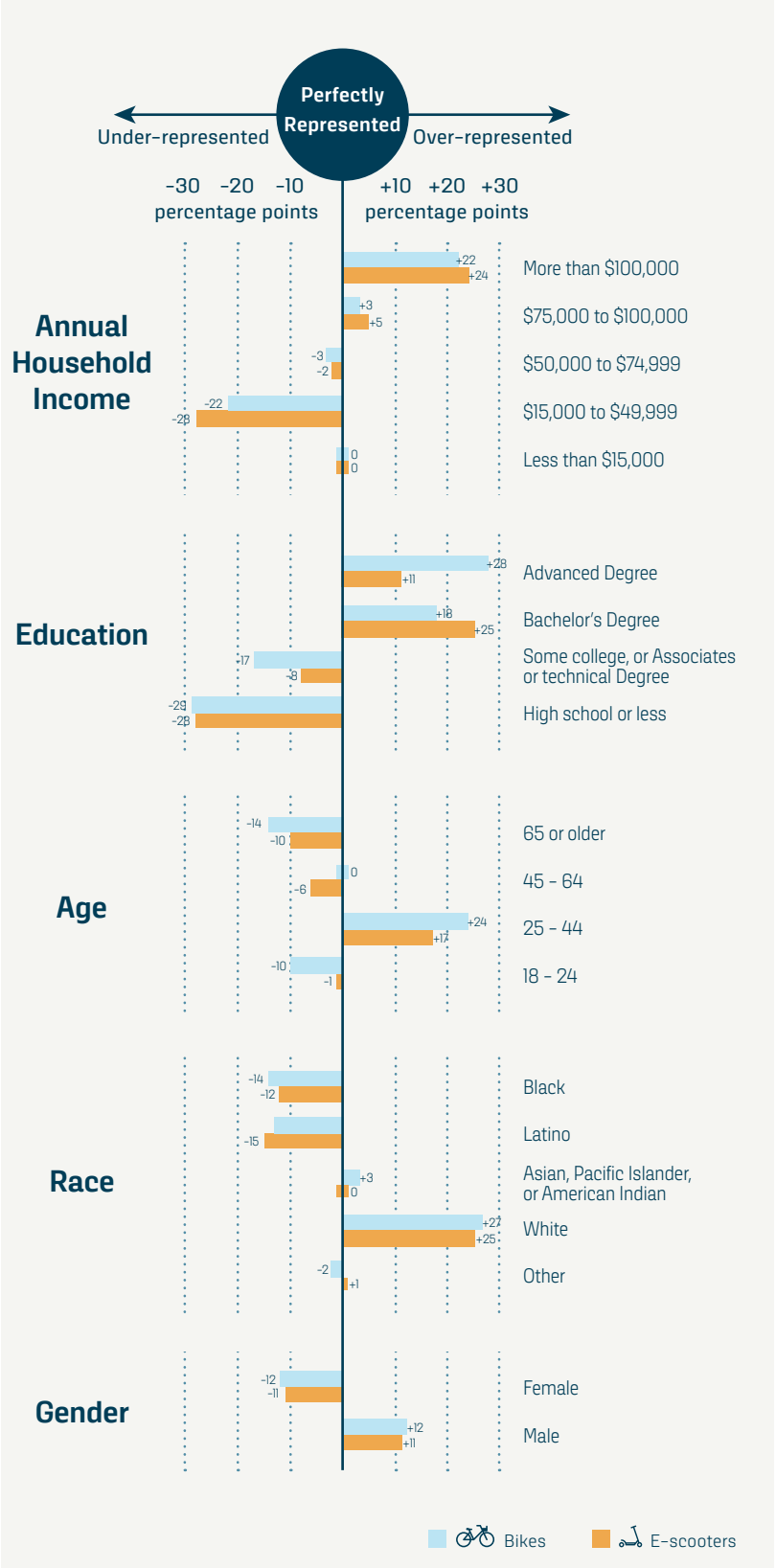

Reduce traffic or time driving

INCREASED ACCESS TO JOBS

Studies conducted by the Micromobility Coalition and DePaul University show that access to shared micromobility substantially increases the number of jobs that people can access without a car within a 45 minute commute. For example, Boston residents could access 436,000 jobs in 45 minutes or less through transit and/or walking. However, that number increases by 60% to 696,000 when shared micromobility is added as an option. Below are the increases for a number of other cities.

City	Without Shared Micromobility (Walking and Transit)	With Shared Micromobility (Walking, Transit, and Shared Micromobility)	Increase
Boston	436,000	696,000	**60%**
Brookline	461,000	721,000	**56%**
Cambridge	611,000	823,000	**35%**
Chicago	366,397	385,570	**5%**
Miami	281,000	394,000	**40%**
Miami Beach	142,000	176,000	**24%**
Nashville	46,000	97,000	**111%**
Seattle	283,000	382,000	**35%**
Somerville	460,000	775,000	**68%**

Who Uses Shared Micromobility



Do shared micromobility users over-represent or under-represent city demographics?

The chart shows the average number of percentage points by which shared micromobility users over- or under-represent local demographics. For example, if women represent 50% of the population of a particular city, but they represent only 40% of that city's shared micromobility users, then women are under-represented by 10 percentage points.

Compared to the populations of the cities they operate in, shared micromobility users are disproportionately:

- Young (particularly age 25 to 44)
- White
- Male
- Have higher incomes
- Have higher levels of education

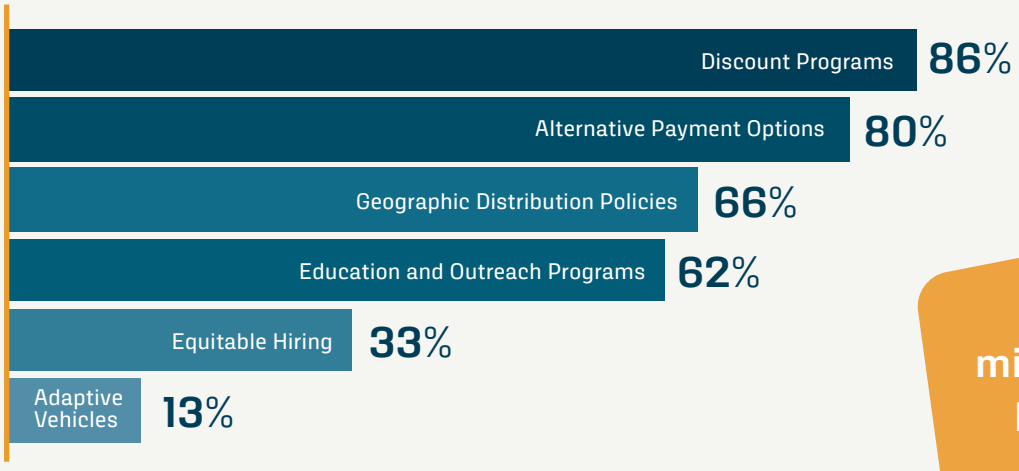
Shared bike and e-scooter systems show broadly similar demographic user bases.

Interestingly, moderately low-income people are significantly under-represented among riders, however the lowest income bracket is proportionately represented. It is possible that income-based equity programs are contributing to this pattern.

*People under 18 years old were omitted from the analysis, as were nonbinary and other genders not counted in the Census since data was unavailable.

Transportation Access & Equity

Shared micromobility systems offer a range of equity programs. Below is the percentage of bikeshare and shared e-scooter programs in North America that have:



The median number of equity programs is

4

Annual cost for discounted vs non-discounted membership programs across 12 cities

Shared micromobility can be an important way to increase transportation equity. More than half of cities require that systems meet a set of equity requirements.

Equity program costs and funding sources:

According to TREC's *National Scan of Bikeshare Equity Programs,* equity programs can cost upwards of $200,000 per year. The most common sources of funding for bikeshare equity programs include:

- **Grants and foundations (38% of programs)**
- **Cities and municipalities (18%)**
- **Sponsors (9%)**
- **Operators (8%)**
- **Community Partners (3%)**
- **Combination (24%)**

Shared Micromobility By the Numbers

Comparison of Trends by Vehicle Type

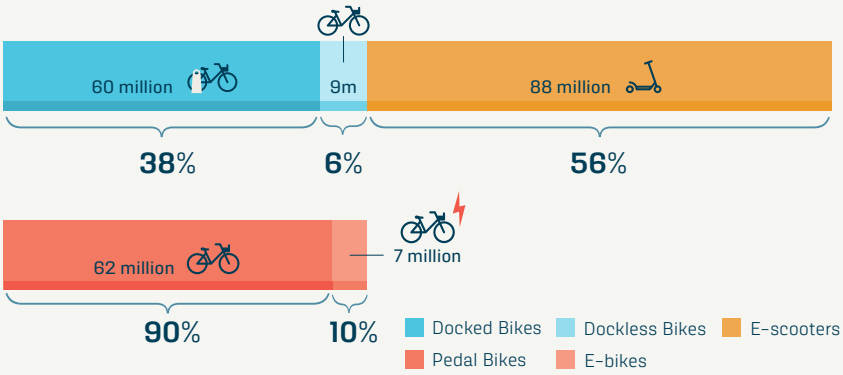
North Americans took an estimated 157 million trips on 194 thousand shared micromobility vehicles in 2019. E-scooters accounted for a little more than half of all vehicles and trips. Dockless bikes and e-bikes formed the smallest share of all vehicles and trips.

E-Bike Utilization

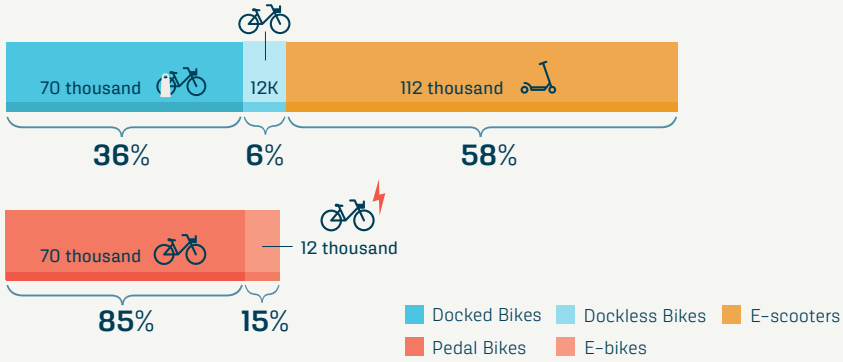
Comparing system average utilization rates, shared e-bikes were used more intensively on a per vehicle-day basis.

For every 1 trip per vehicle-day traveled by pedal bike, systems saw an average of 1.7 trips per vehicle-day traveled by e-bike.

157 Million Trips Across North America in 2019

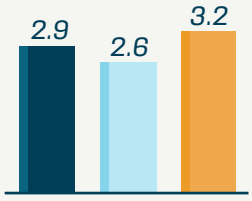


194 Thousand Vehicles
Deployed Across North America on an average day in 2019

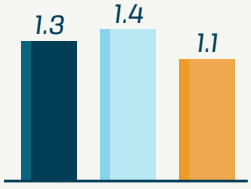


The average shared micromobility vehicle was used for nearly three trips per vehicle per service day. The average trip was 1.3 miles long and lasted for 23 minutes. E-scooters had somewhat higher utilization than bikes, while bikes had longer trip distances and durations. These numbers are based on aggregate data, individual cities will have variations based on local conditions.

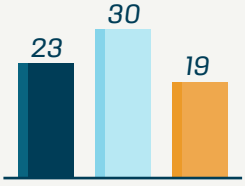
2.9 Trips/vehicle/day
Average per deployed service day



1.3 miles per trip
Average Trip Distance (miles)



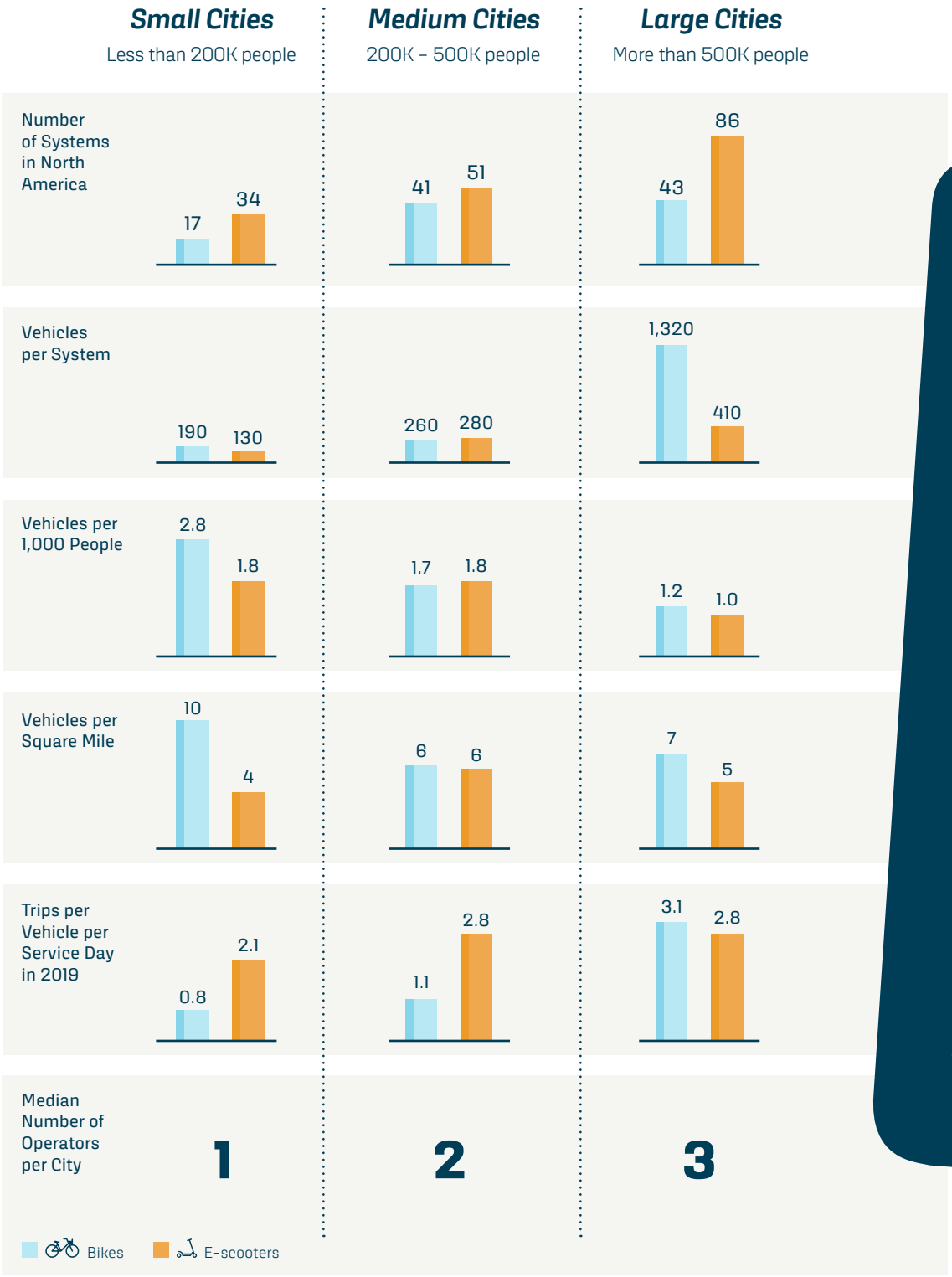
23 minutes per trip
Average Trip Duration (minutes)



All Vehicles Bikes E-scooters

System Statistics by City Size

Shared micromobility systems have different operating characteristics in cities of different sizes. The number of systems, average vehicle counts, system densities, utilization, and the median number of operators for small-, medium-, and large-sized cities are shown below.



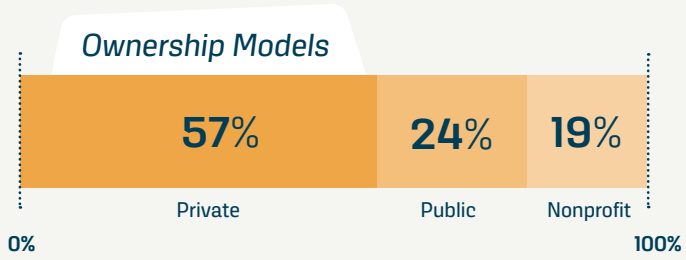
Larger cities tend to have more vehicles per system (especially bikes), but fewer per capita.

Bikeshare utilization was higher in larger cities. However, shared e-scooter utilization was relatively consistent irrespective of city size.

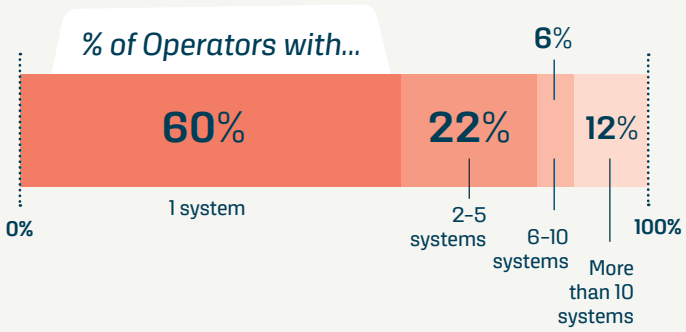
Small cities tended to have a single micromobility operator whereas medium- and large-sized cities tended to have more than one operator.

Operating Characteristics

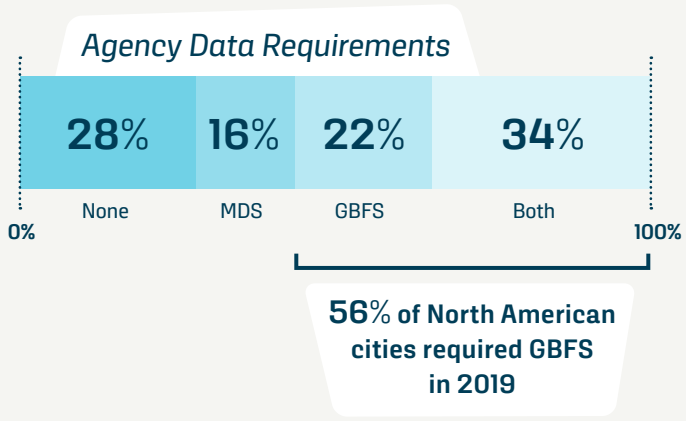
The way that shared micromobility operates continues to evolve. This page shows a 2019 snapshot of system ownership, the range of sizes of operators, how agencies are requiring data to be reported, and jobs generated by the industry.



The last few years have seen a shift in how shared micromobility operates with more than half of systems now privately owned.



The majority of shared micromobility operators are single system operators. Forty percent operate in multiple markets with just over 10% considered large operators (operating in over 10 markets).



Most cities require the General Bikeshare Feed Specification (GBFS) for use in navigation apps, and/or the Mobility Data Specification (MDS) for operational coordination with regulators.

Jobs

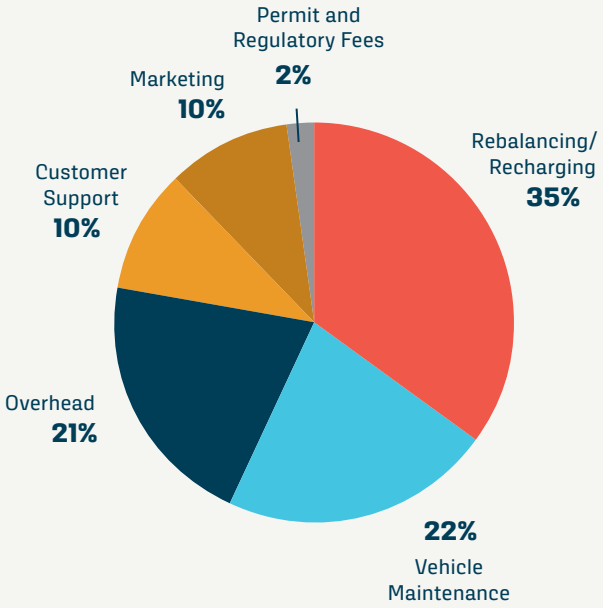
NABSA estimates that the shared micromobility industry generates direct employment of approximately **5,000 full-time equivalent jobs** in North America at city and government agencies, operating companies and nonprofits, equipment vendors, and planning and engineering companies.

Shared Micromobility as Public Transportation

Shared micromobility can be thought of as a human-powered public transportation system. As a flexible transportation option with comparatively low overhead and operations costs, shared micromobility can complement higher-volume fixed-route transit services by offering mobility services for many trips at a lower per-traveler cost. Below is a breakdown of typical operating costs and revenues reported by agency and nonprofit owned docked bikeshare systems, as well as a comparison of farebox recovery and monthly user costs between shared micromobility and traditional transit options in the same cities.

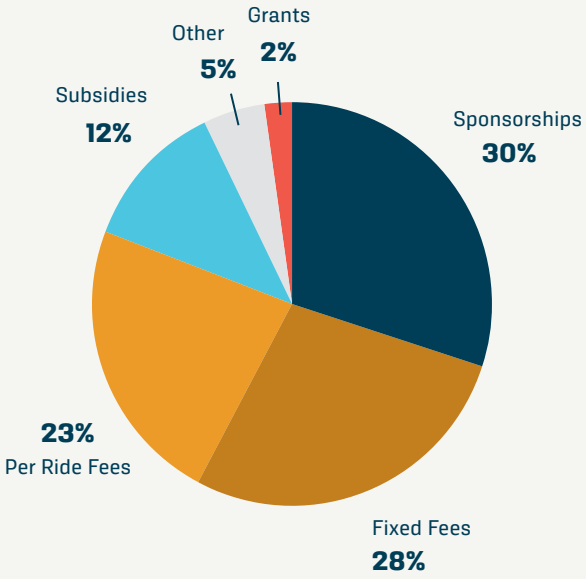
Operating Costs

for Agency- and Nonprofit-Owned Systems



Revenues

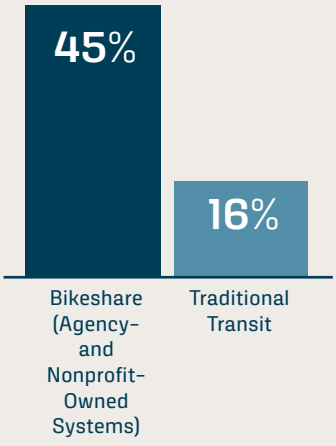
for Agency- and Nonprofit-Owned Systems



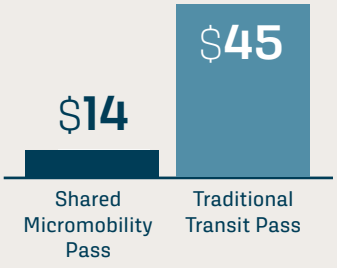
Shared micromobility expands the reach of public transportation by adding first- and last-mile connections, and serves as a low-cost supplement to traditional transit. Increasingly, transit agencies offer shared micromobility as part of their services, including in cities such as Austin, Dayton, Kansas City, Los Angeles, Las Vegas, and others.

Farebox Recovery

Bikeshare Only

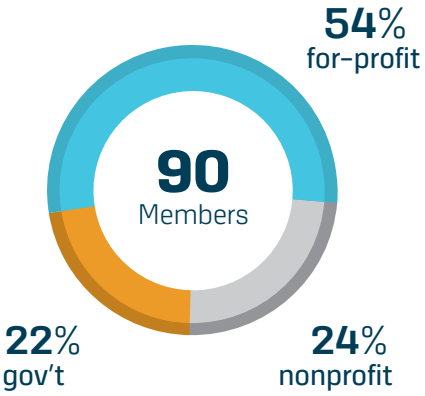


Monthly Cost to Users



How NABSA Supports the Industry

The North American Bikeshare Association (NABSA) connects the shared micromobility industry to support, promote and enhance shared alternatives to traditional transportation across North America. NABSA is a nonprofit organization dedicated to providing resources, education, and advocacy for the shared micromobility industry, and to creating spaces for the industry's public, private, and nonprofit sectors to convene and empower each other. In 2019, NABSA had 90 members from 7 countries.



Seven Countries in 2019

Canada
Mexico
United States
China
France
Norway
United Kingdom

NABSA Highlights for 2019

300
NABSA Annual Conference attendees

392
Webinar registrants

104
Bills tracked affecting the industry

442
Knowledge Share and Member Center users

1,900
Website sessions per month by 1,264 unique users

1,150
Newsletter recipients

Methodology

Survey Tools

Primary data for this report was collected through two surveys: an Operator Survey and an Agency Survey. The Surveys were distributed to all known shared micromobility operators and agencies in both Excel and online formats. Survey questions asked about the attributes of shared micromobility systems operating within those agency jurisdictions and operator markets.

Page 2 – Introduction

Population data sources for the map include:

- The 2018 US American Community Survey
- The 2016 Canadian Census
- Mexico's Encuesta Intercensal 2015 (Intercensal Survey 2015)

System data was derived from an internal database of all known shared micromobility systems in North America that is maintained and updated by NABSA.

Page 4 – Industry Benefits

Mode Replacement

Mode-replacement statistics were calculated as averages of published survey data from 12 systems or cities: Alexandria, Arlington, Bay Area, Chicago, Denver, Hoboken, Portland, San Antonio, San Francisco, San Mateo, Tucson, and Washington, D.C. "Other" modes include other shared micromobility, personal e-scooters, and non-identified "other" options.

Physical Activity

Reported physical activity statistics were calculated from shared micromobility trips replacing taxi, rideshare, auto driver or auto passenger, transit, and new trips and applying the average trip duration calculated from responses to the Operator and Agency Surveys.

Research citations for the benefits of light physical activity include: *Association of Light Physical Activity Measured by Accelerometry and Incidence of Coronary Heart Disease and Cardiovascular Disease in Older Women* (LaCroix et al 2019), and *Dose-Response Associations Between Accelerometry Measured Physical Activity and Sedentary Time and All Cause Mortality: Systematic Review and Harmonised Meta-Analysis* (Ekelund et al 2019).

E-bike riders use about 76 percent of the energy expenditure of pedal-bike riders. Riding an e-bike provides moderate metabolic activity on flat segments (metabolic equivalent of task [MET] of 3) and vigorous activity on uphills (MET of 6). This is based on the research in *Comparing Physical Activity of Pedal-Assist Electric Bikes with Walking and Conventional Bicycles* (Langford et al 2017).

E-scooters provide light physical activity (MET of 2.5). This is based on the research in *Evaluating the Physical Activity Impacts of Riding Electric Kick Scooters* (poster session presented at the 2019 Conference on Health and Active Transportation, Washington D.C; Wen et al 2019).

Greenhouse Gas Emissions

Reduction in total Greenhouse Gas (GHG) emissions was calculated based on taxi, rideshare, and auto driver/passenger trip replacement; an estimate of total trips taken on shared micromobility modes; and average trip distance calculated from responses to the Operator and Agency Surveys. Reduction factors do not take into account externalities, operations, or lifecycle costs for shared micromobility or for driving.

GHG emission factors for e-bikes and e-scooters were calculated based on energy factors from the following sources: *Electric Two-Wheelers in China: Analysis of Environmental, Safety, and Mobility Impacts* (Cherry 2007) and *The Environmental Impacts of Shared Dockless Electric Scooters* (Hollingsworth et al 2019); and average US Grid emission factors were obtained from the *US EPA eGrid2018 Database* (EPA, 2020). The automobile emission factor was taken from the *US EPA Memorandum on GHG Emissions from a Typical Passenger Vehicle* (EPA, 2018).

Page 5 – Why People Use Shared Micromobility

Why People Ride & Community Benefits

These statistics were calculated from published survey data from the Bay Area, Detroit, Philadelphia, and Washington, D.C. (bikeshare); Chicago and Portland, OR (shared e-scooters); and Arlington County, VA and San Antonio (both modes). Not all response options were represented in all surveys. This report lists the four most frequent answers across surveys for each of the two categories.

Jobs Access

These statistics were reported directly from the following research (assumes a 45-minute travel time):

- Micromobility Coalition's job access studies: https://micromobilitycoalition.org/reports/
- *E-Scooter Scenarios: Evaluating the Potential Mobility Benefits of Shared Dockless Scooter in Chicago* (Smith and Schwieterman 2018).

Research that further supports these statistics can be found in *High Impact Prioritization of Bikeshare Program Investment to Improve Disadvantaged Communities' Access to Jobs and Essential Services (Quian & Niemeier 2019).*

Page 6 – Who Uses Shared Micromobility

These statistics were calculated based on a comparison of the demographics of shared micromobility users (as reported by a selection of cities conducting their own user surveys) and the equivalent demographic data for those cities from the 2018 American Community Survey (ACS). The table on the following page lists the cities included in the analysis and identifies which demographic data were reported in each survey. Over-/under-representation for each demographic (by vehicle type) is an average of the over-/under-representation for each city.

	Income	Education	Age	Race	Gender
Shared E-scooters					
Alexandria 2019			X	X	X
Arlington 2019					X
Chicago 2020	X	X	X	X	X
Denver 2019	X				X
Portland 2018	X	X	X	X	X
San Antonio 2019	X	X	X	X	X
Tuscon 2020	X	X	X		X
Bikeshare					
Bay Area Bikeshare 2015	X	X	X	X	X
Minneapolis – Saint Paul 2014	X	X	X	X	X
Philadelphia 2018				X	
Salt Lake City 2014	X	X	X	X	X
Seattle 2017	X		X	X	X
Washington, D.C. 2016	X		X	X	X

Page 7 – Transportation Access & Equity

The distribution and median number of equity programs were calculated from responses to the Agency and Operator Surveys. Equity program categories are adapted from *Evaluating Efforts to Improve the Equity of Bikeshare Systems* (McNeil, MacArthur, Dill, and Broach, 2019).

Annual costs were calculated as averages based on publicly available data for the full and discounted prices of annual, monthly, or weekly passes or subscription costs for shared micromobility systems in the following cities: Austin, Baton Rouge, Cincinnati, Cleveland, Detroit, Honolulu, Los Angeles, New York, Philadelphia, Portland, Vancouver BC (bikes); Fort Collins (e-bikes); and Portland and San Francisco (e-scooters).

Page 9 – Comparison of Trends by Vehicle Type

Trip data was obtained from responses to the Agency and Operator Surveys and supplemented by online data. Some data for smaller systems was unavailable and supplemented by online data.

Vehicle data was obtained from responses to the Agency and Operator Surveys. However, some vehicle data for smaller systems was unavailable; missing data was estimated based on that system's number of trips and the calculated utilization rate and average number of service days for the technology type as estimated from the Agency Survey responses. Systems reported as smart bike systems were classified into either docked or dockless systems based on their technology type and operating characteristics.

Reported overall utilization rates were calculated from aggregate industry-level data. The e-bike and pedal bike comparison was calculated from system average utilization rates. Duration and distance statistics were calculated from trip-weighted Operator Survey responses.

Page 10 – System Statistics by City Size

The number of systems was derived from a database of known shared micromobility programs operating in North America in 2019 that is maintained and updated by NABSA. All other statistics were calculated as averages of system data collected from the Agency and Operator Surveys; city population and size were drawn from the 2018 American Community Survey 5-Year Estimates and from the U.S. Census Bureau, respectively.

Page 11 – Operating Characteristics

Ownership model statistics were calculated from responses to the Operator and Agency Surveys. The reported number of systems per operator is based on completed Operator Surveys. Reported agency data requirements were calculated from Agency Survey responses. The reported jobs estimate was calculated from responses to the Operator Survey and used the median jobs per vehicle and the number of vehicles deployed to estimate jobs where data was missing in the sample.

Page 12 – Shared Micromobility as Public Transportation

Operating cost and revenue percentages were calculated from responses to the Operator and Agency Surveys. Bikeshare farebox recovery was calculated as an average of data from the Agency and Operator Surveys, and transit farebox recovery data was obtained from the Federal Transit Administration's National Transit Database for the same set of cities that responded to the farebox recovery Survey question.

Not all Survey respondents responded to all questions and the response to the farebox recovery question included a different, smaller selection of cities than the response to the operating costs and revenues question. Data for these three metrics is based on agency and nonprofit systems only, since private companies do not share financial data with the public.

Monthly user cost was calculated as an average of publicly available data on the cost of monthly passes for shared micromobility and transit systems in the following cities: Austin, Cincinnati, Cleveland, Detroit, Honolulu, Los Angeles, Milwaukee, New York, Philadelphia, Portland, Vancouver (bikes); Baton Rouge and Fort Collins (e-bikes); and Portland, San Francisco, and Baton Rouge (e-scooters). These cities were chosen as a sample of different geographies and system types.

Page 13 – How NABSA Supports the Industry

These statistics were drawn from data recorded and provided by NABSA.

Acknowledgments

The North American Bikeshare Association (NABSA) connects the biggest minds in bikeshare and shared micromobility to support, promote, and enhance shared alternatives to traditional transportation across North America. NABSA is the industry's membership organization with representation from system owners, operators, host cities, equipment manufacturers and technology providers.

In December 2018, NABSA widened its scope to include all shared micromobility devices. If it fits in a bike lane, it fits in the North American Bikeshare Association.

North American Bikeshare Association (NABSA) (2020):
1st Annual Micromobility State of the Industry Report.
https://doi.org/10.7922/G2057D6B

NABSA
NORTH AMERICAN BIKESHARE ASSOCIATION

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