

Transportation of New York

Xinyu Chen



Outline

- Introduction
- Modal share
- Transportation systems
 - ✏️ Transit system
 - ✏️ Shared mobility
- GHG emissions
- Traffic safety
- Travel behavior trend
- Uniqueness of transport
- Reference

Introduction



New York City

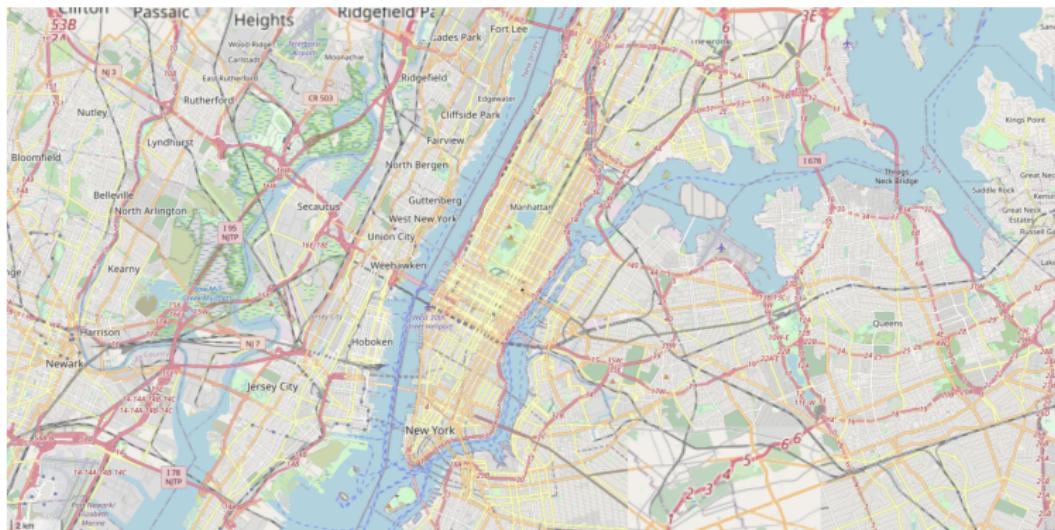
- The **most populous city** in the US
- The **most densely populated major city** in the US



Introduction

New York City

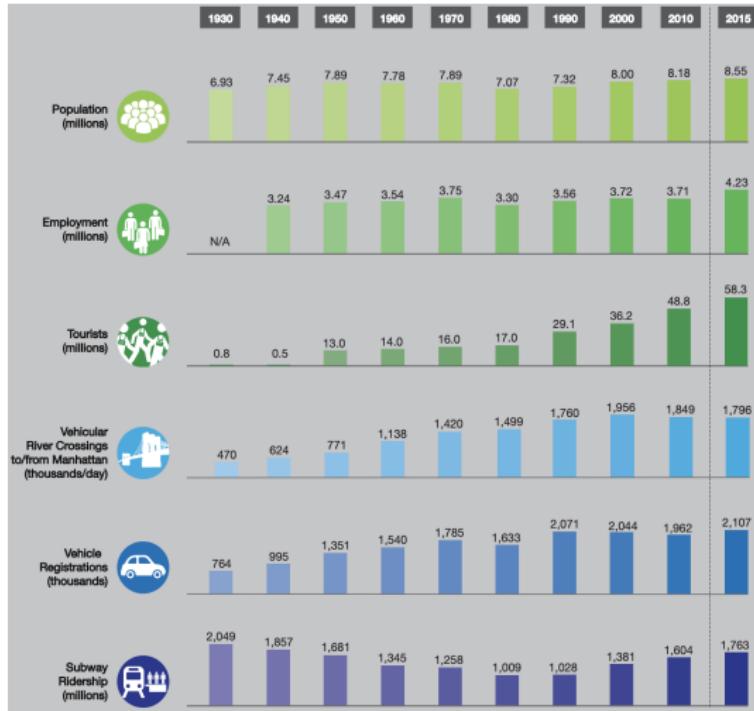
- 784 km²
- Population: 8.34 million (2019)



Montreal

- 432 km²
- Population: 4.20 (2019)

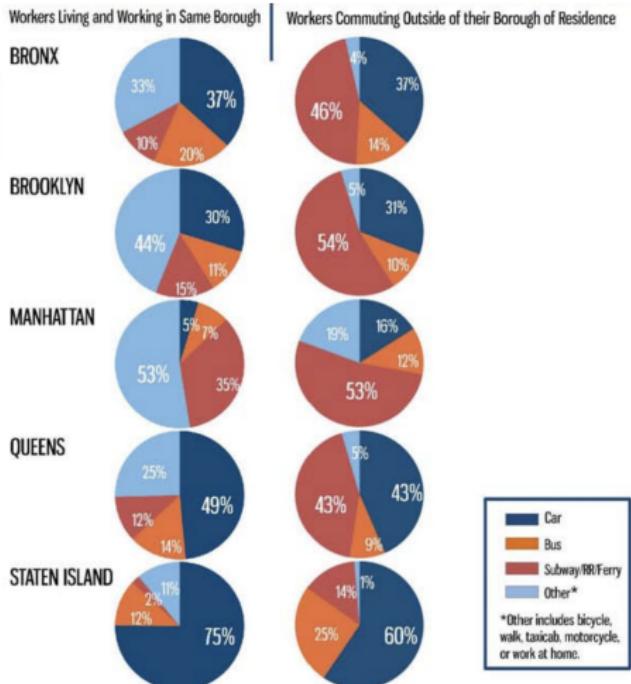
Introduction



Growth in 1980-2010:

- Population: 16%
- Employment: 12%
- Tourism: 187%
- Subway rideship: 59%

Modal share of NYC residents



Findings

- Subway/Railroad/Ferry is the largest mode among workers commuting outside of their borough of residence, except on Staten Island.
- In Queens and Staten Island, the plurality of workers use cars for commuting.

Transit system

Subway in NYC

- 6,600 subway cars
- 472 subway stations
- Daily rideship: \approx 5.5 million
- Annual rideship:
 - 1.76 billion (2015)
 - 1.70 billion (2019)

Subway in Montreal

- 68 subway stations
- Daily rideship: \approx 1.4 million (Q4 2018)
- Annual rideship: 0.35 billion (2016)



Transit system

Bus in NYC

- ☞ 5,927 vehicles in the bus fleet
- ☞ All 100% accessible to riders with disabilities
- ☞ 234 local bus routes
- ☞ 20 Select Bus Service routes
- ☞ 73 express routes
- ☞ Annual rideship:
 - ☞ 651 million (2015)
 - ☞ 557 million (2019)

Manhattan Bus Map



Bronx Bus Map



Brooklyn Bus Map



Bus in Montreal

- ☞ 1,449 vehicles in the bus fleet
- ☞ 220 bus lines
- ☞ Annual rideship:
 - ☞ 234 million (2015)
 - ☞ 223 million (2017)

Shared mobility

Key Areas of Shared Mobility

CARSHARING

- Roundtrip
- One-Way
- Personal Vehicle Sharing(PVS)
 - P2P Carsharing
 - Hybrid P2P - Traditional Carsharing Model
 - P2P Marketplace
 - Fractional Ownership

ALTERNATIVE TRANSIT SERVICES

- Shuttles
- Microtransit

COURIER NETWORK SERVICES (CNS)

- P2P Delivery Services
- Paired On-Demand Passenger Ride and Courier Services

RIDESHARING

- Carpooling
- Vanpooling

SCOOTER SHARING

BIKESHARING

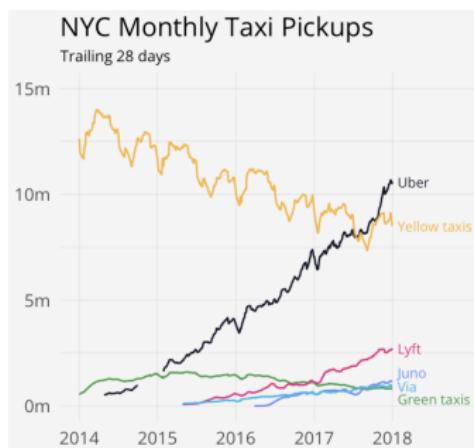
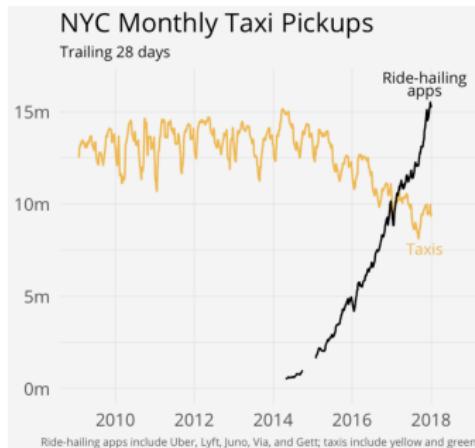
- Public Bikesharing
- Closed Campus Bikesharing
- P2P Bikesharing

ON-DEMAND RIDE SERVICES

- Ridesourcing/TNCs
- Ridesplitting
- E-Hail

Shared mobility

Ride-hailing

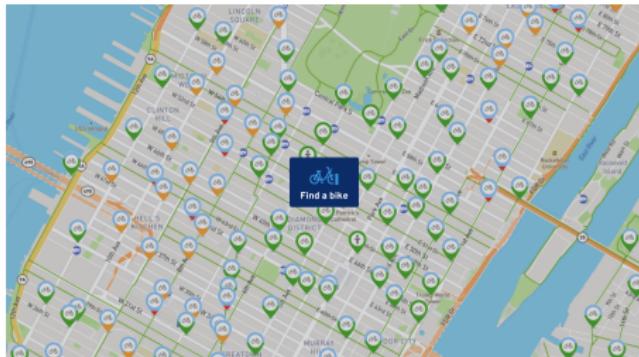


Over the past 4 years,

- ride-hailing apps have grown from 0 to 15 million trips per month
- taxi usage has only declined by around 5 million trips per month

Shared mobility

Citi Bike



- The nation's largest bike share program.
- 15,000 bikes
- 1,000+ stations

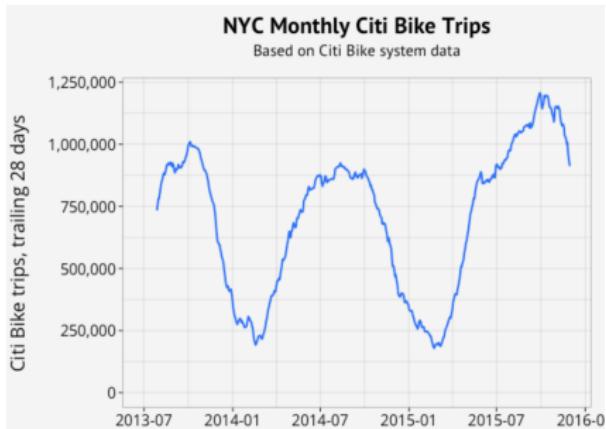


Bikes in Montreal

- 540+ stations

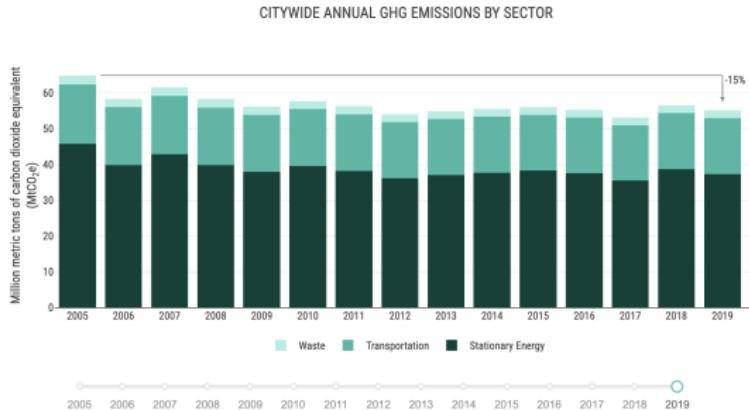
Shared mobility

Citi Bike



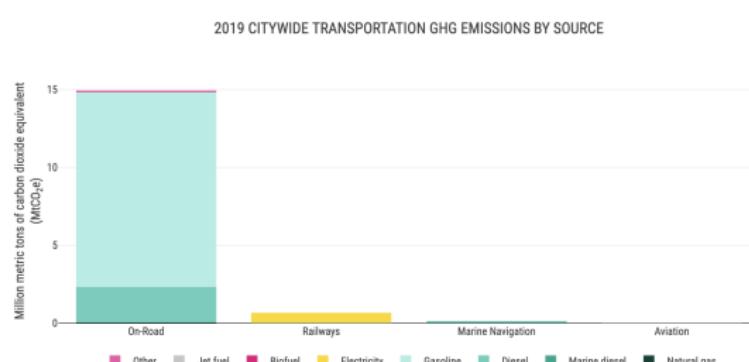
- dramatically fewer rides during the cold winter months
- 1,000,000+ rides in some months

GHG emissions



Findings

- GHG emissions have reduced 15%
- On-road transport is the most remarkable factor for GHG emission in transportation

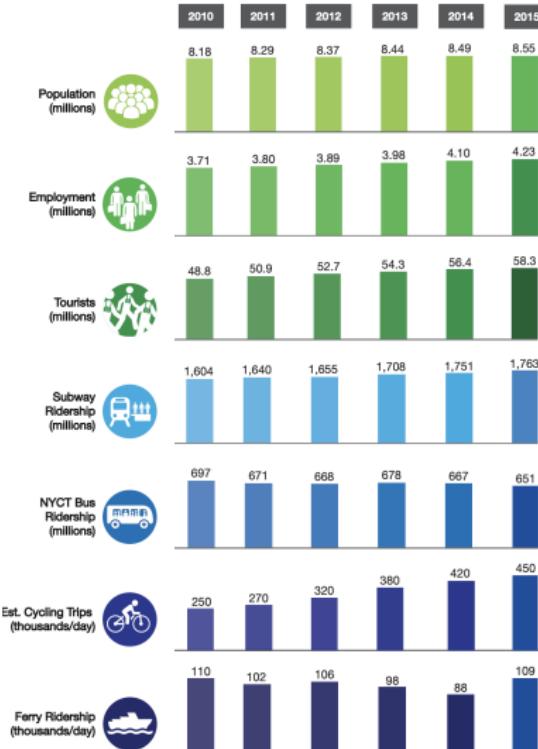


Traffic safety

Crash summary (severity)

	New York State		New York City	
	2015	2019	2015	2019
Total	251,142	418,687	41,632	121,091
Fatal	1,045	881	232	205
Serious	9,097	10,043	2,213	3,147
Moderate	15,229	16,219	4,108	5,899
Minor	75,084	85,527	24,184	35,982
Unk severity	3,576	2,854	2,326	1,655
Property damage	147,111	303,163	8,569	74,203

Travel behavior trend



Trend

- **Subway ridership** has grown an average of 2% since 2010.
- **Bus ridership** dropped 46 million passengers between 2010 and 2015.
- **Cycling** increased by 80% between 2010 and 2015 as bike infrastructure continued to expand on city streets.
- **Ferry ridership** has fluctuated in recent years.

Uniqueness of transport



New tool to help city **eliminate traffic related deaths** and **reduce crash related injuries and damage to both the vehicles and infrastructure**.

Reference

Data and images are taken from:

- ✍ https://www1.nyc.gov/assets/planning/download/pdf/plans/transportation/peripheral_travel_02e.pdf
- ✍ <https://new.mta.info/agency/new-york-city-transit/subway-bus-ridership-2019>
- ✍ NYMTC: <https://www.nymtc.org/ABOUT-US/annual-reports>
- ✍ Citi Bike website: <https://www.citibikenyc.com/>
- ✍ Todd W. Schneider (2016). A tale of twenty-two million Citi Bike rides: Analyzing the NYC bike share system. [Blog post]
- ✍ NYC Connected Vehicle Project: <https://www.cvp.nyc/>
- ✍ ITS MR website: <https://www.itsmr.org/sas-guest-portal/>
- ✍ NYC Taxi & Limousine Commission (TLC) website:
<https://www1.nyc.gov/site/tlc/index.page>
- ✍ Todd W. Schneider (2015). Analyzing 1.1 billion NYC taxi and Uber trips with a vengeance. [Blog post]
- ✍ GHG emissions: <https://nyc-ghg-inventory.cusp.nyu.edu/>
- ✍ <http://tram.mcgill.ca/Teaching/srp/documents/NickC.pdf>

Thanks for your attention!