

Where Do Bike Share Trips Come From?

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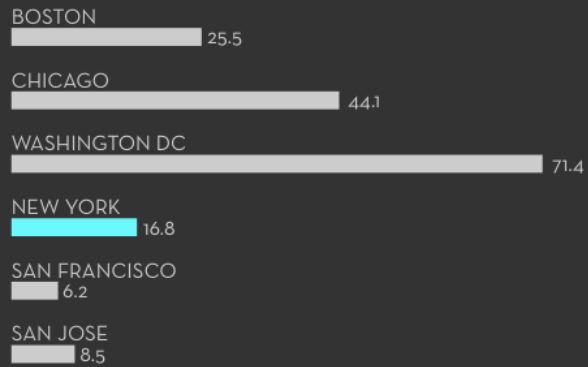
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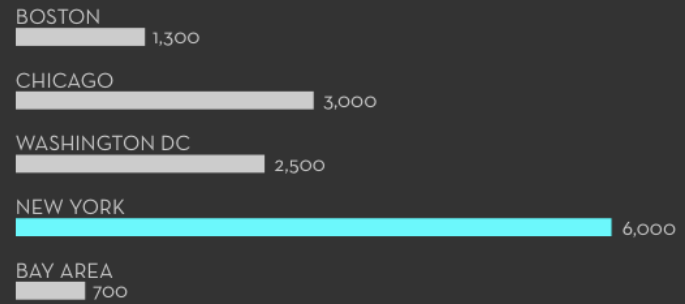
2014 Ground Transportation Technology
Summit

November 19, 2014

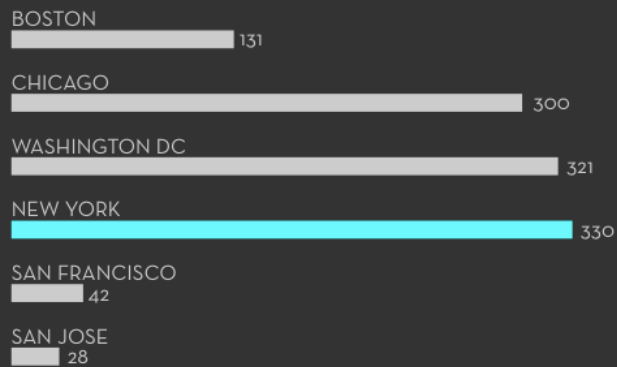
SYSTEM COVERAGE (SQUARE MILES)



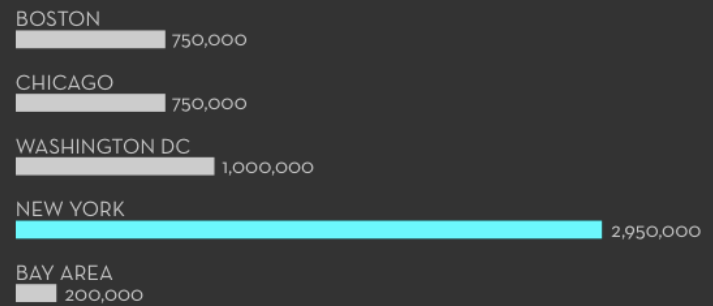
NUMBER OF BICYCLES



NUMBER OF BIKE SHARE STATIONS



NUMBER OF TRIPS IN 6 MONTHS



CITIBIKE STATIONS

LOCATION OF CITIBIKE STATIONS IN NEW YORK



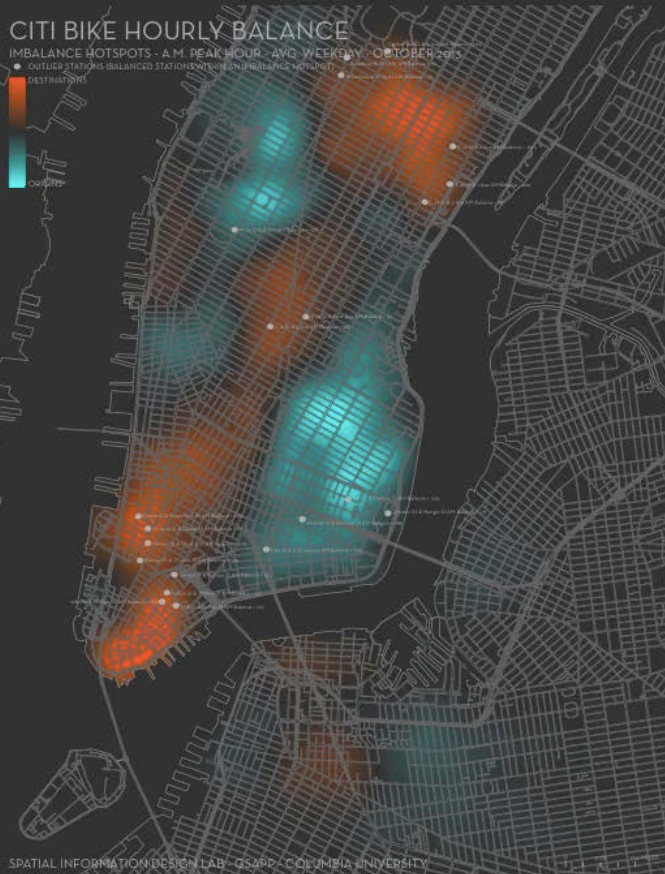
Asymmetric O-D Travel

CITI BIKE HOURLY BALANCE

IMBALANCE HOTSPOTS - A.M. PEAK HOUR - AVG. WEEKDAY - OCTOBER 2015

● OUTLIER STATIONS (BALANCED STATIONS ARE IN IMBALANCE HOTSPOTS)

DESTINATIONS



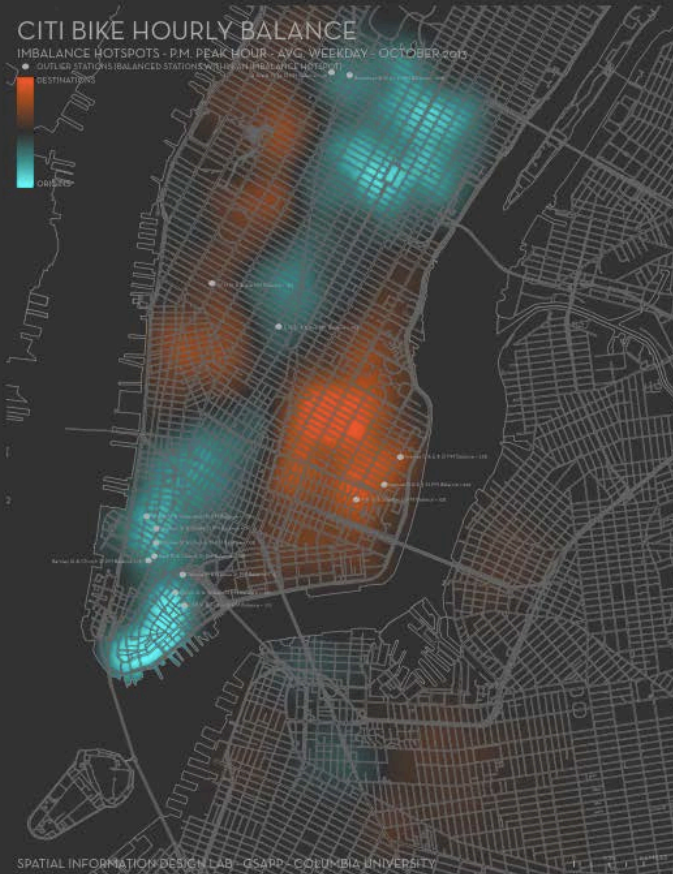
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CITI BIKE HOURLY BALANCE

IMBALANCE HOTSPOTS - P.M. PEAK HOUR - AVG. WEEKDAY - OCTOBER 2015

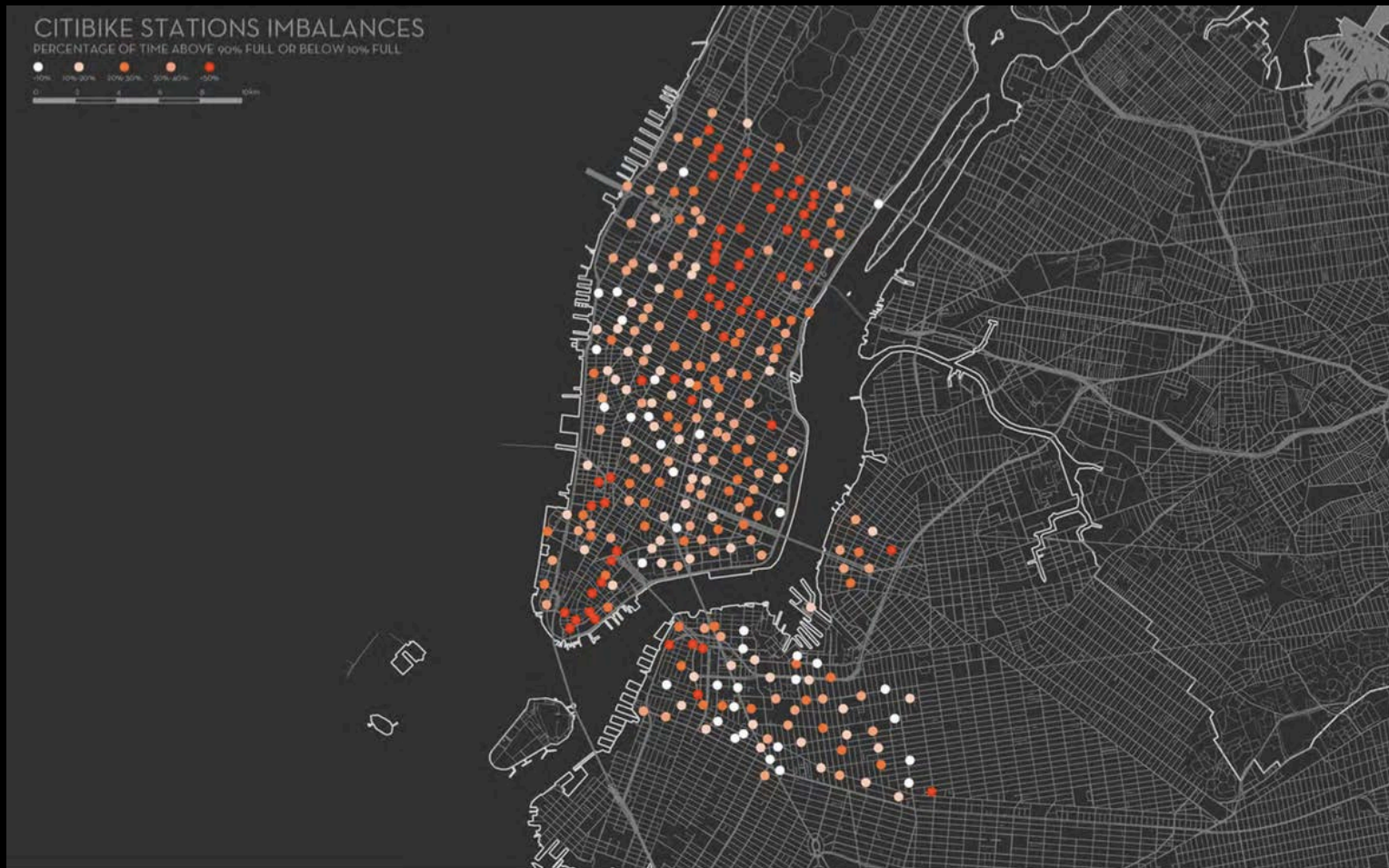
● OUTLIER STATIONS (BALANCED STATIONS ARE IN IMBALANCE HOTSPOTS)

DESTINATIONS



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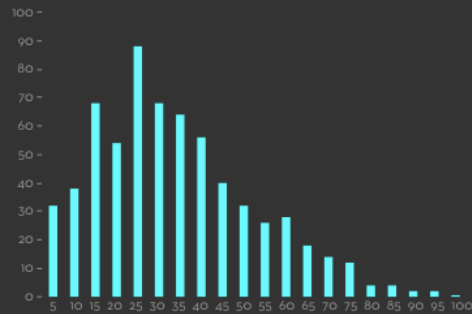
System Imbalance Due to One-Way Travel



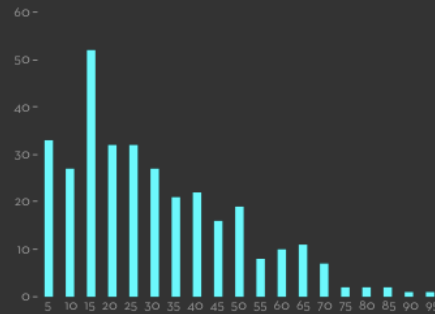
Station Imbalance Not Evenly Distributed

CITIBIKE STATIONS IMBALANCES NUMBER OF STATIONS AND PERCENTAGE OF TIME EITHER FULL OR EMPTY

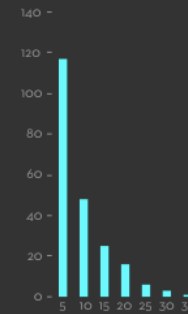
NUMBER OF STATIONS EITHER FULL OR EMPTY BY PERCENTAGE OF TIME



NUMBER OF EMPTY STATIONS BY PERCENTAGE OF TIME



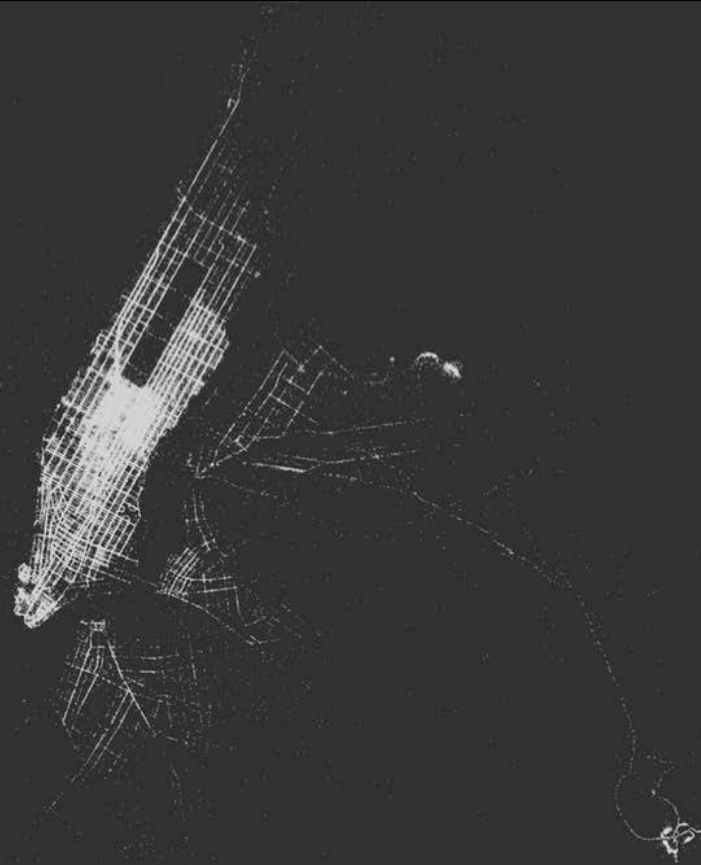
NUMBER OF FULL STATIONS BY PERCENTAGE OF TIME



NYC TAXI CABS

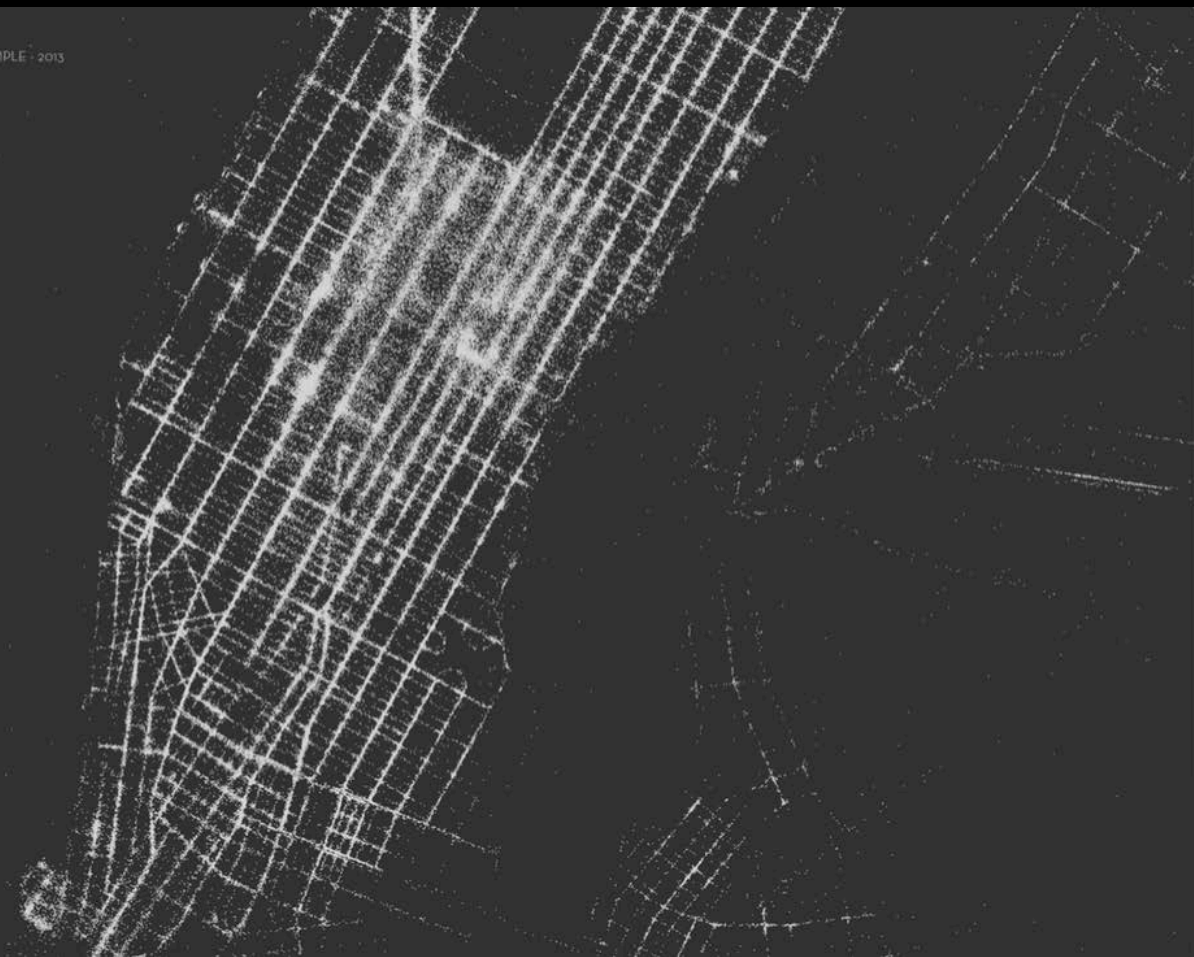
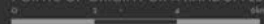
POINTS OF ORIGIN FOR A RANDOM 200K SAMPLE - 2013

0 2 4 6 8 10km



NYC TAXI CABS

POINTS OF ORIGIN FOR A RANDOM 200K SAMPLE - 2013

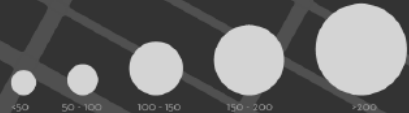


Citibike and Taxis: Complements or Substitutes?

- Identify similar O-D pairs for taxi and Citibike trips
 - In sample: Grand Central Terminal-PA Bus Terminal
- Isolate single rider taxi trips
- Look at data by time of day
 - Assumption: bike share will be more recreational on weekends relative to weekdays

SELECTED CITIBIKE PAIRS

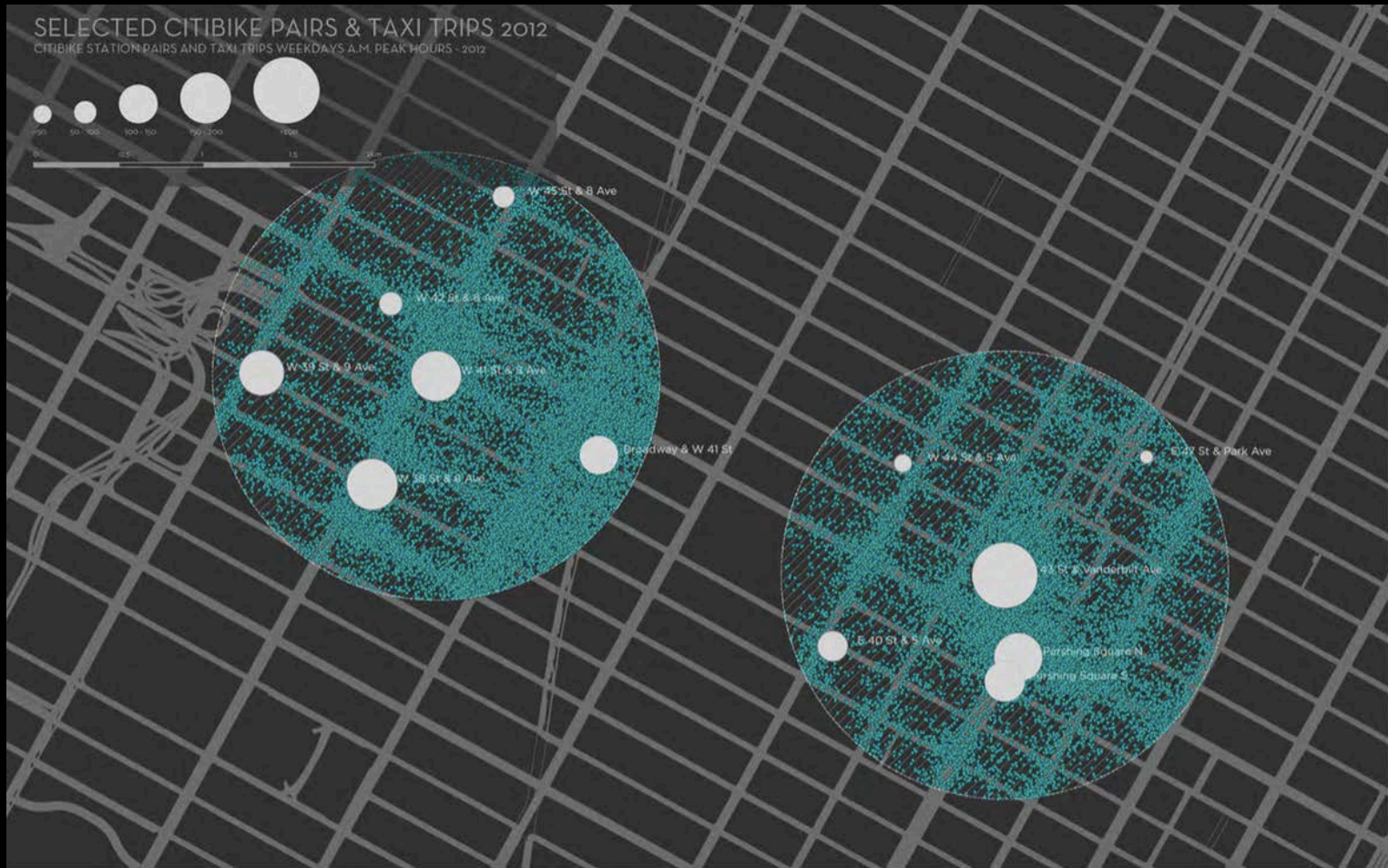
CITIBIKE STATION PAIRS AND USAGE ON WEEKDAYS A.M. PEAK HOURS



2011: Taxi Trips



2012: Taxi Trips

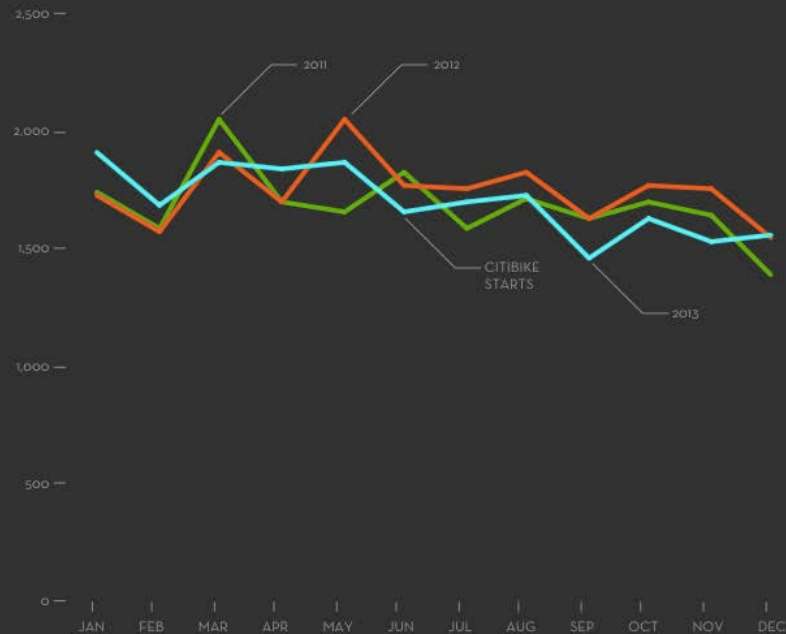


2013: Taxi trips and Citibike usage



Citibike trips are likely substitutes for some taxi trips

MONTHLY TAXI TRIPS FOR SELECTED AREAS
MONTHLY TAXICAB TRIPS AROUND SELECTED POPULAR CITIBIKE STATION PAIRS



Conclusions

- Bike share trips are likely substituted away from existing transport options for Midtown weekday travel
- Overall measured effect is small
 - Not many O-D trips
- Bike share trips share asymmetric characteristics with taxi trips
- Unobserved effects are likely large