

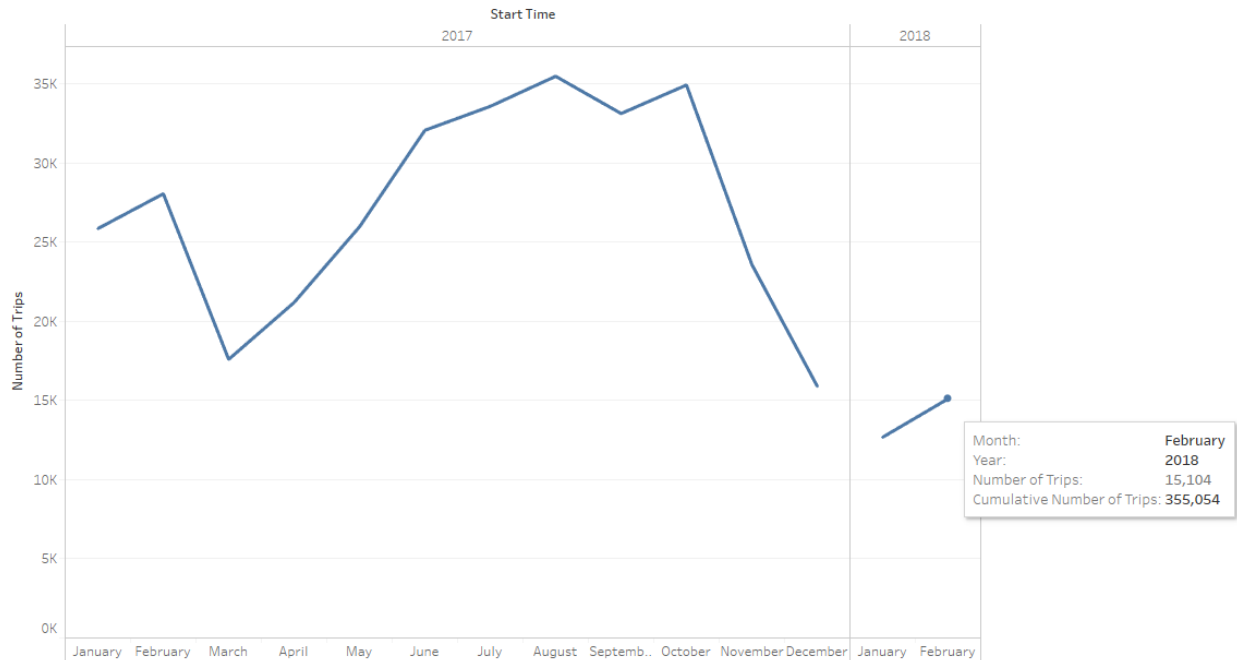
Jersey City CitiBike Analyses

January 1, 2017 to February 28, 2018

1. How many trips have been recorded total during the chosen period?

There were 355,054 unique trips recoded from January 1, 2017 to February 28, 2018.

Number of Trips Per Month



Number of Trips Per Month

Year of Star..	Month of St..	Number of ..	
2017	January	25,852	25,852
	February	28,052	53,904
	March	17,594	71,498
	April	21,186	92,684
	May	25,966	118,650
	June	32,060	150,710
	July	33,573	184,283
	August	35,472	219,755
	September	33,119	252,874
	October	34,919	287,793
	November	23,582	311,375
	December	15,898	327,273
2018	January	12,677	339,950
	February	15,104	355,054

2. By what percentage has total ridership grown?

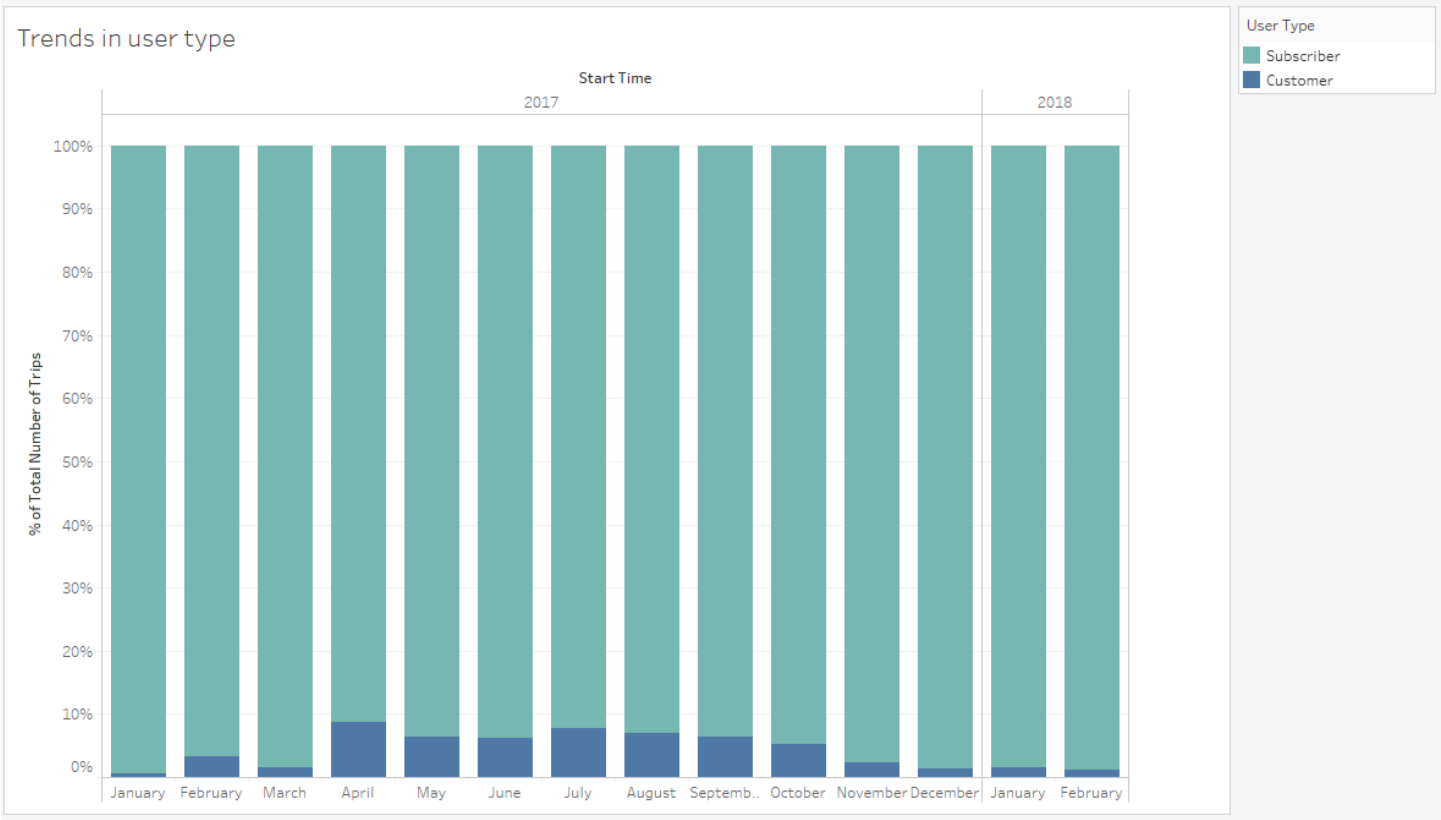
Ridership grew 1,274% from January 1, 2017 to February 28, 2018.

Growth in Ridership

Year of Star..	Month of St..	Number of ..	Running Su..	
2017	January	25,852	25,852	0%
	February	28,052	53,904	109%
	March	17,594	71,498	177%
	April	21,186	92,684	259%
	May	25,966	118,650	359%
	June	32,060	150,710	483%
	July	33,573	184,283	613%
	August	35,472	219,755	750%
	September	33,119	252,874	878%
	October	34,919	287,793	1,013%
	November	23,582	311,375	1,104%
	December	15,898	327,273	1,166%
2018	January	12,677	339,950	1,215%
	February	15,104	355,054	1,273%

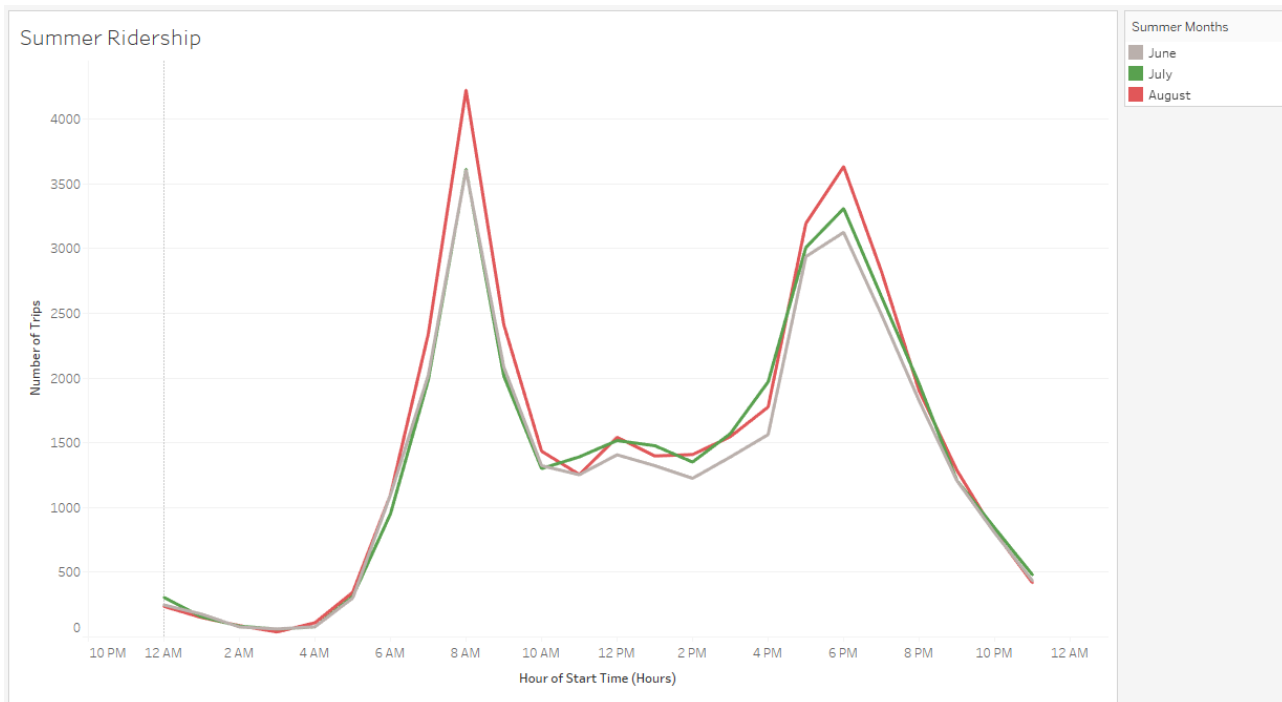
3. How has the proportion of short-term customers and annual subscribers changed?

Throughout the time period, the vast majority of riders were annual subscribers as opposed to short-term customers. More short-term customers appear to be utilizing CitiBike during the warm months, from April to October, then the number dips during colder months. This indicates that people may be more tempted to check out a bike ad hoc during good weather.



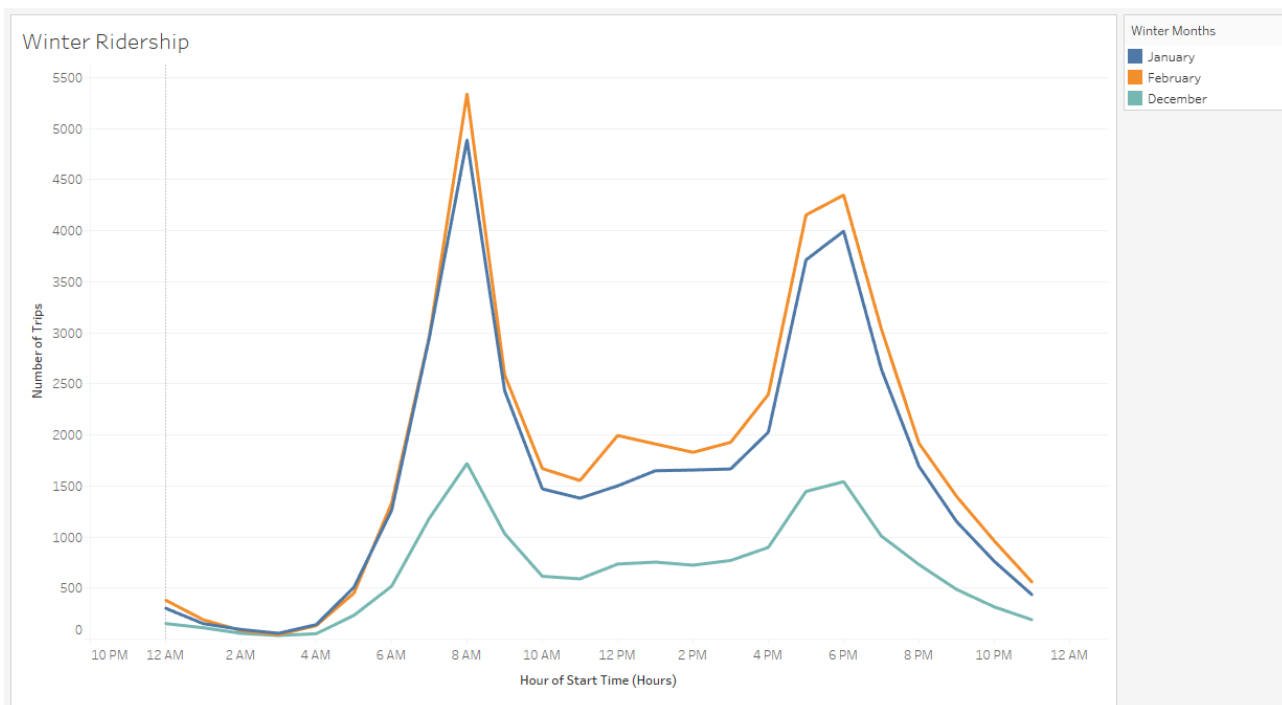
4. Today, what are the peak hours in which bikes are used during summer months?

Unsurprisingly, peak hours in both the summer and winter occur during regular commute times, around 8-9AM and 5-6.30PM. There is a small but unsurprising boost around lunch time.



5. Today, what are the peak hours in which bikes are used during winter months?

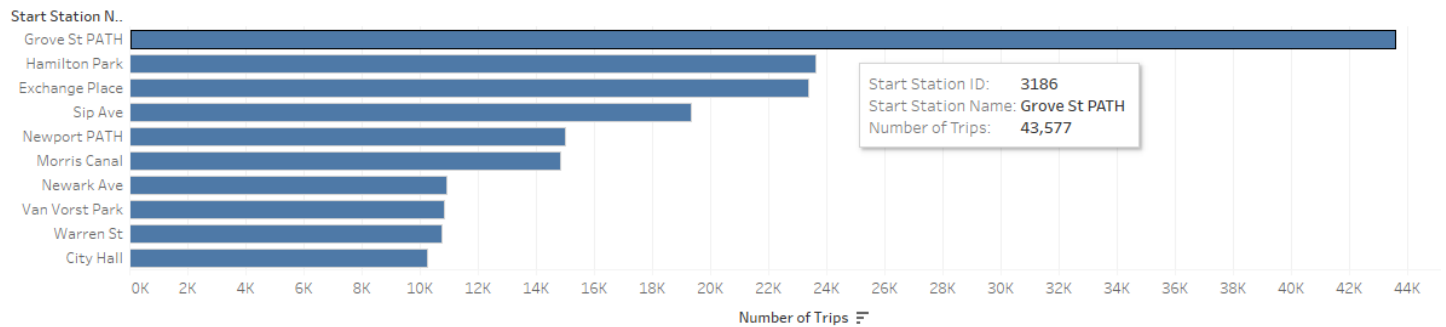
Unsurprisingly, peak hours in both the summer and winter occur during regular commute times, around 8-9AM and 5-6.30PM. There is also a small but unsurprising boost around lunch time. Ridership is notably lower in December, possibly because of less commuting for work during the holidays or the weather.



6. Today, what are the top 10 stations in the city for starting a journey? (Based on data, why do you hypothesize these are the top locations?)

The top 10 starting stations are below. Interpretation follows.

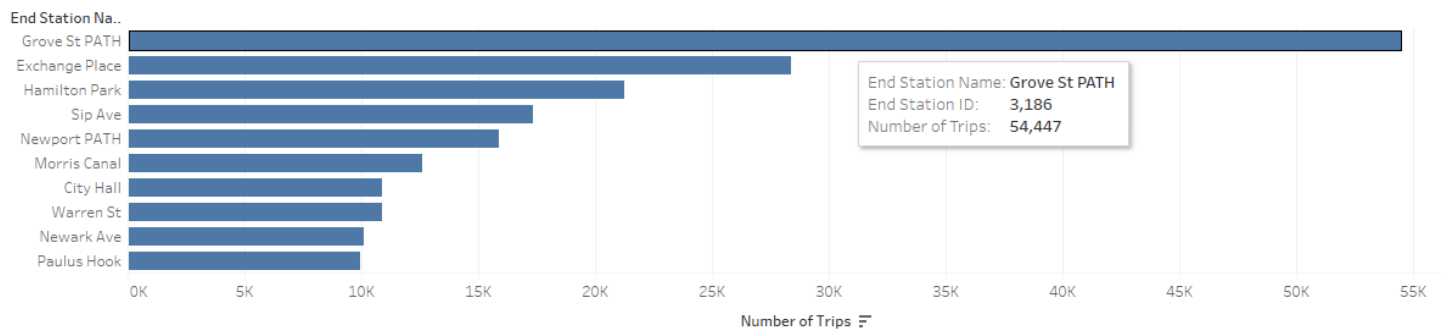
Most Popular Starting Stations



7. Today, what are the top 10 stations in the city for ending a journey? (Based on data, why?)

The top 10 ending stations are below. Interpretation follows.

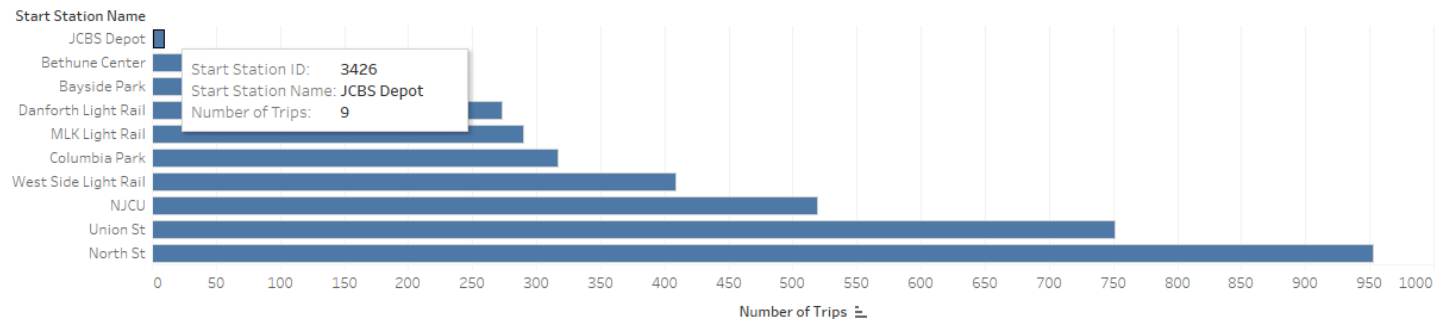
Most Popular Ending Stations



8. Today, what are the bottom 10 stations in the city for starting a journey? (Based on data, why?)

The bottom 10 starting stations are below. Interpretation follows.

Least Popular Starting Stations



9. Today, what are the bottom 10 stations in the city for ending a journey (Based on data, why?)

The bottom 10 ending stations are below. Interpretation follows.

Least Popular Ending Stations



6 & 8. Reasons for top and bottom 10 starting stations.

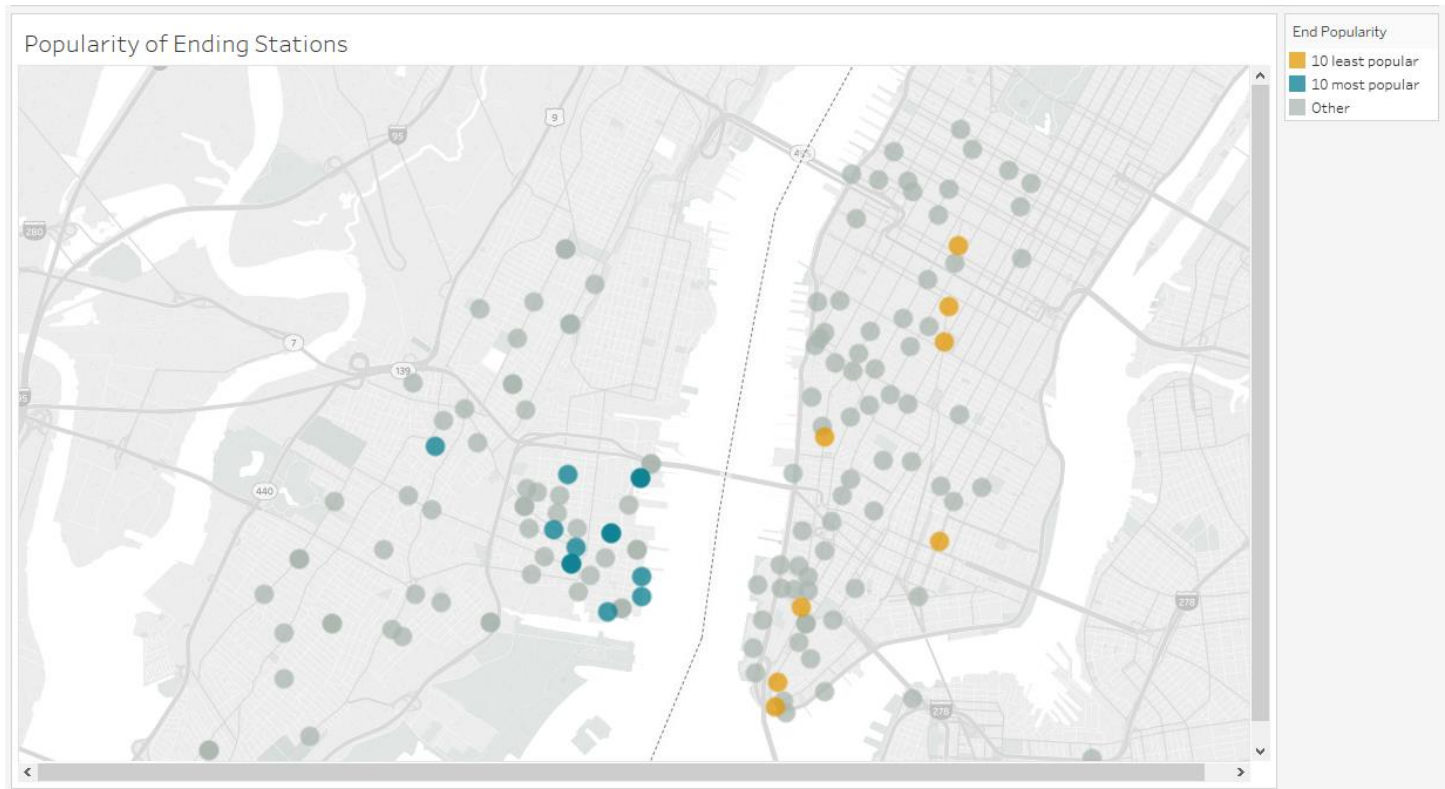
All starting stations in the Jersey City CitiBike dataset are below. The 10 most popular are in teal and the 10 least popular are in orange. The gray overlay represents median household income in 2018. The most popular stations are clustered on the east side of the city with more businesses and with closer access to Manhattan, while the least popular are the furthest away. Given that ridership peaks during rush hours, this may indicate that proximity to areas with higher concentrations of businesses lead to higher ridership.

Popular stations also tend to be in areas with higher median incomes while less popular stations are in areas with lower median incomes. It's possible that individuals who can afford to live closer to business hubs tend to use CitiBike more often. Individuals with lower median incomes live further away from hubs and also may work further away from where they live, outside of bike-commuting distance.



7 & 9. Reasons for top and bottom 10 ending stations.

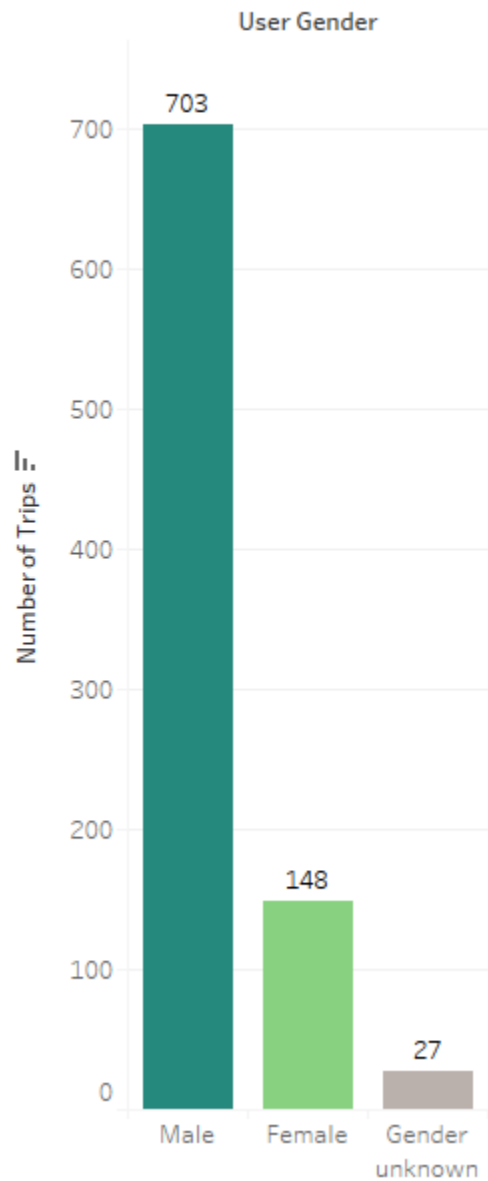
All ending stations in the Jersey City CitiBike dataset are below. The 10 most popular are in teal and the 10 least popular are in orange. As discussed above, it looks like Manhattan is a popular destination for Jersey City CitiBike users, based on the number of ending stations located there. However, Manhattan destinations are still a long distance away from Jersey City so the least popular stations tend to be further from bridges and other access points. The most popular stations are still clustered on the east side of Jersey City, which makes sense if these locations are close to business hubs but are still within the city.



10. Today, what is the gender breakdown of active participants (Male v. Female)?

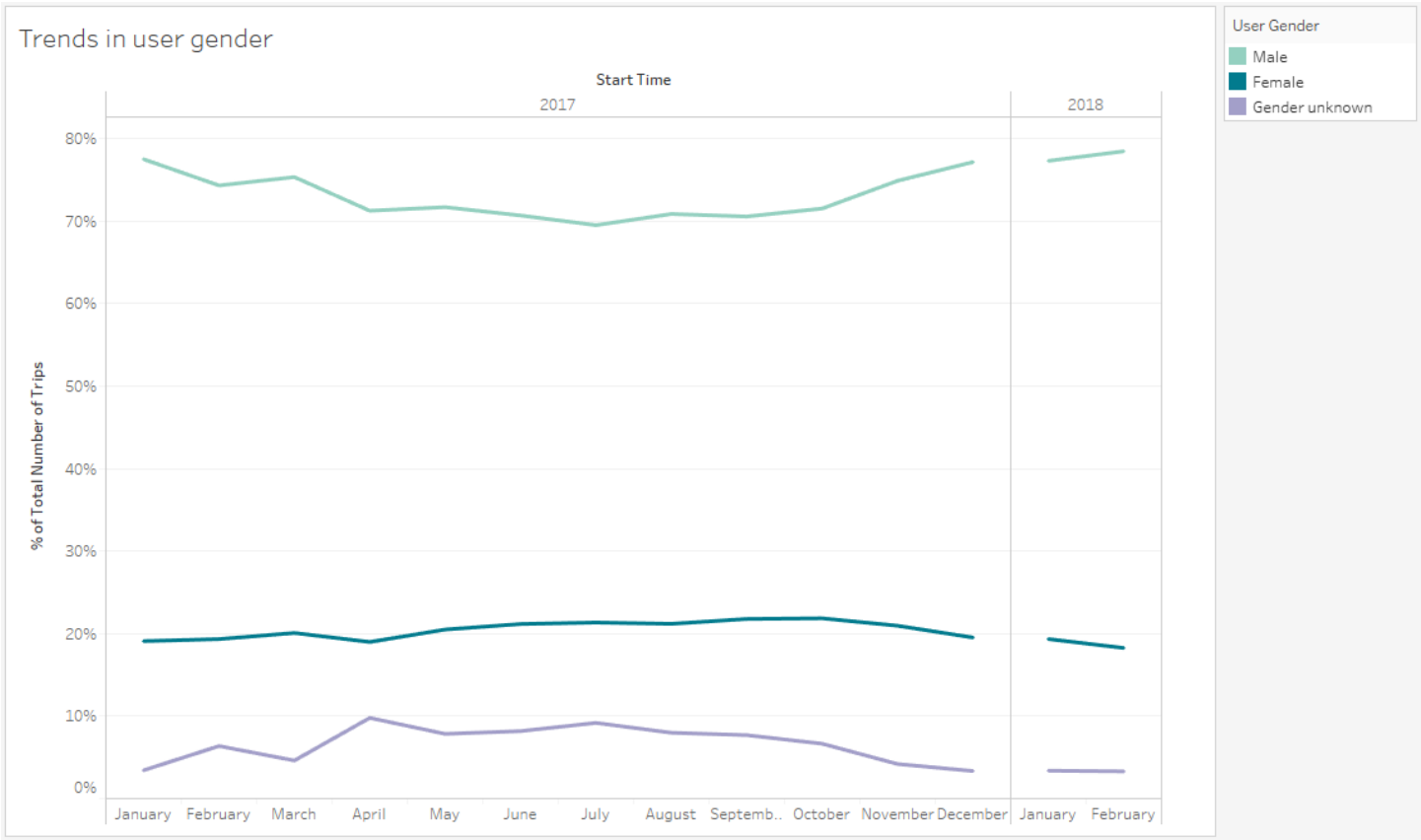
The most recent date with data available was February 28, 2018. The vast majority of riders with known genders -- 82.6% -- were male.

User Gender on February 28, 2018



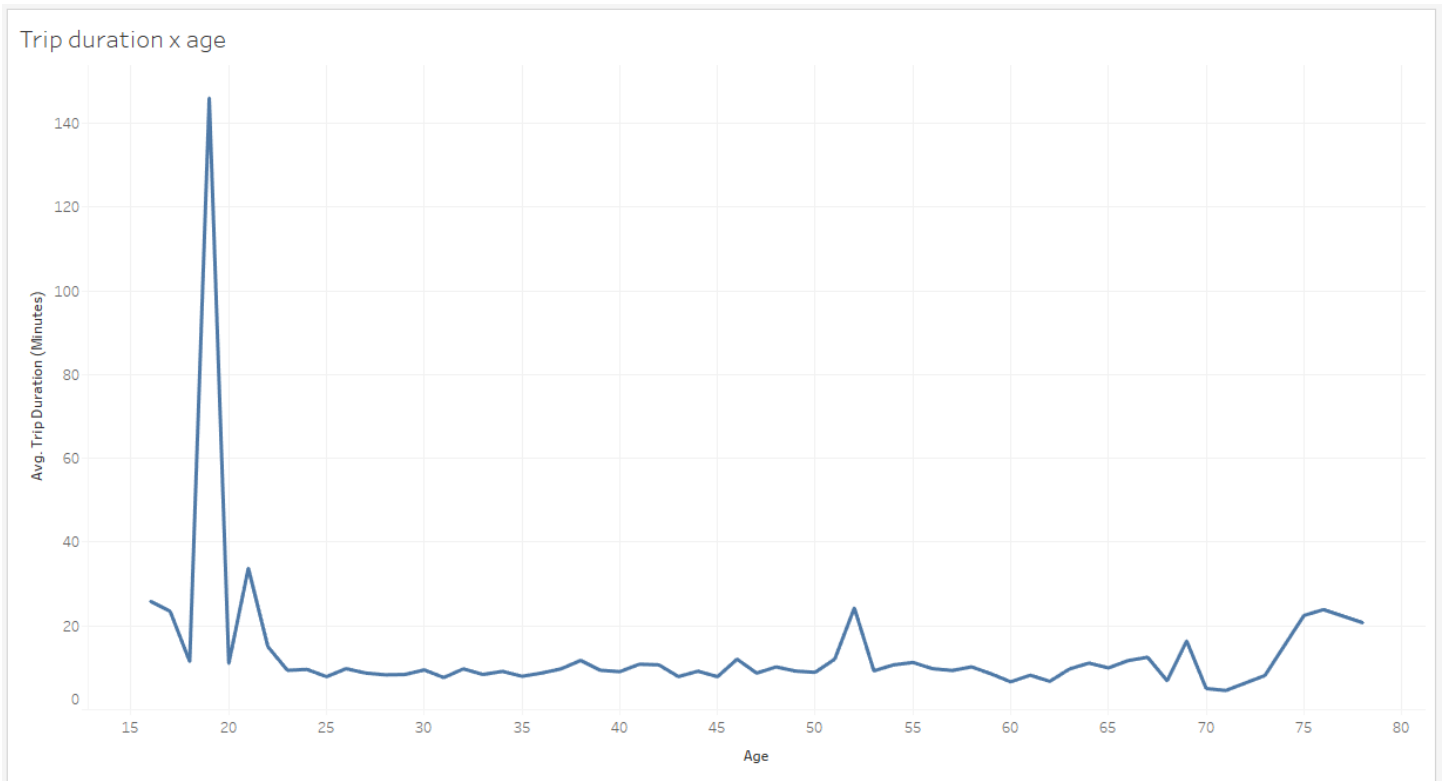
11. How effective has gender outreach been in increasing female ridership over the course of the past year?

Gender outreach does not seem to be very effective. The proportion of female riders is almost flat, with small increases and decreases that mirror the weather.



12. How does the average trip duration change by age?

There were many age outliers – up to about 130 years old, but I restricted the maximum to 80. Average trip duration is much higher between the ages of about 17 and 20, averaging almost 2.5 hours, then declines. Riders in their early 20s take longer trips then it levels it around age 24, with few noticeably peaks and valleys. It is possible that riders who may still be in school may be choosing to ride a bike longer distances so that they don't have to pay for alternative, more expensive modes of transportation such as the subway. The peak hour analyses suggest that most riders are commuting to and from work. Therefore, older riders may be more likely to commute short distances to work and may be more likely to live a short ride away from work and business hubs.



13. What is the average distance in miles that a bike is ridden?

Average miles ridden

8.191

14. Which Bikes (by ID) are most likely due for repair or inspection this year?

Assuming that bike mileage strongly impacts the likelihood of a bike needing repair or inspection, the bikes with the most mileage should be inspected first. The bike IDs ordered by mileage are below.

Bike Mileage

Bike ID		
26192	7,412	^
26190	7,412	
26431	7,332	
26308	7,321	
26156	7,199	
26170	7,192	
26302	7,191	
26175	7,188	
26168	7,050	
26201	6,911	
26272	6,907	
26208	6,888	
26273	6,879	
26172	6,769	
26229	6,763	
26193	6,725	
26285	6,705	
26254	6,686	
26292	6,647	
26242	6,581	
26316	6,507	
26169	6,500	
29674	6,494	
26305	6,477	
26151	6,463	
26288	6,434	
26206	6,416	
26223	6,391	
26165	6,368	▼

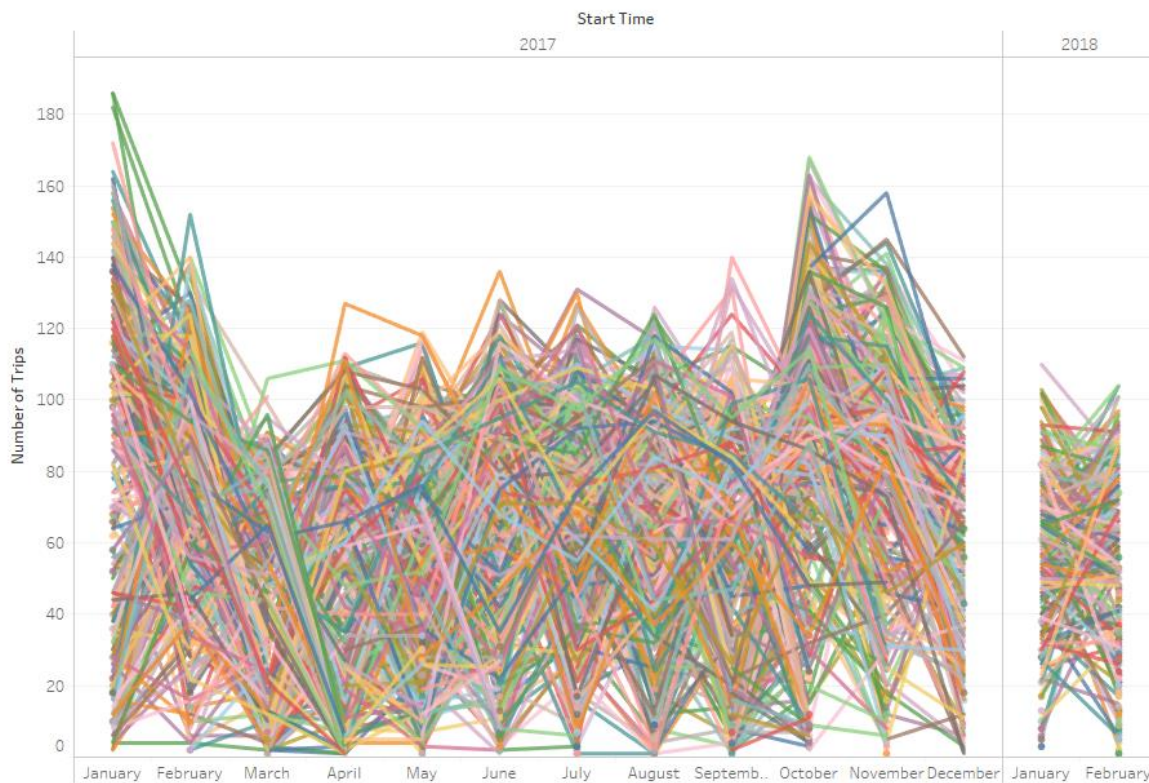
15. How variable is the utilization by bike ID?

Utilization by bike ID is extremely variable, with some bikes being ridden only once over the entire time period and the most popular being ridden almost 1000 times. Although there are thousands of bikes and it is impossible to track the usage of a single bike over the time period, the sheer chaos of the line chart suggests that utilization is extremely variable both between and within bikes.

Utilization by bike ID

Bike Popula..	Bike ID	
10 least ridden	15345	1
	16032	1
	18292	1
	18621	1
	19354	1
	19637	1
	20217	1
	20778	1
	21106	1
	21292	1
10 most ridden	26302	833
	26431	847
	26192	856
	26201	869
	26168	878
	26156	887
	26272	888
	26308	895
	26175	905
	26190	927

Utilization by Bike ID



Unexpected patterns

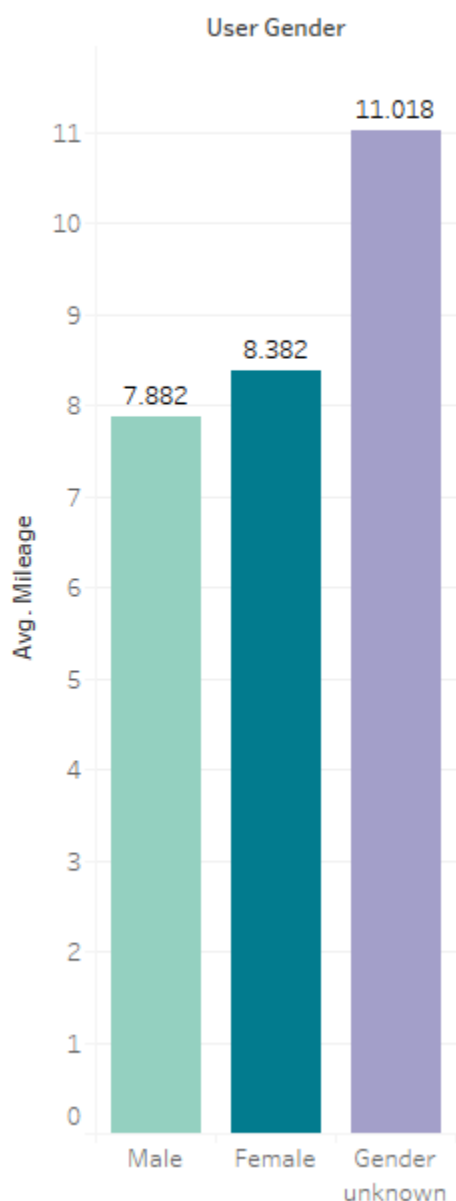
Riders with unknown gender have higher average mileage than known female and male riders.

Riders with unknown gender are much more likely to be short-term customers than subscribers, which is likely why their gender was unknown in the first place.

Short-term customers who check out bikes for one-off trips have longer trips on average than subscribers. This may be because they need to pay per use so they may not check out a bike for a short, reasonably walkable trip.

Together, these findings suggest that the finding that riders with unknown gender have higher average mileage may actually be caused by the fact that riders of unknown gender are much more likely to be short-term customers, who also tend to take longer rides.

Unexpected! Riders with unknown gender have higher average mileage.



Subscriber x gender

User Gender	User Type	
	Customer	Subscriber
Male	1,552	257,190
Female	1,047	71,620
Gender unknown	14,416	9,015

Subscriber x gender

User Gender	User Type	
	Customer	Subscriber
Male	0.60%	99.40%
Female	1.44%	98.56%
Gender unknown	61.53%	38.47%

Subscriber x mileage

