TripDuration by Year

Year / Age (bin)

	2013	2014	2015	2016	2017	2018

Avg. Trip Duration in Minutes

2013: 10: 12.25, 20: 12.64, 30: 13.08, 40: 13.29, 50: 13.78, 60: 14.39, 70: 15.30, 80: 15.36, 90: 11.56

2014: 10: 13.23, 20: 12.40, 30: 12.72, 40: 12.80, 50: 13.34, 60: 13.89, 70: 14.88, 80: 9.88, 90: 10.91

2015: 10: 12.12, 20: 13.00, 30: 13.47, 40: 13.70, 50: 14.31, 60: 14.99, 70: 14.60, 80: 10.93, 90: 11.03

2016: 10: 13.41, 20: 13.53, 30: 13.82, 40: 13.94, 50: 14.33, 60: 14.89, 70: 14.21, 80: 14.72, 90: 12.72

2017: 10: 19.28, 20: 15.26, 30: 16.94, 40: 13.97, 50: 13.91, 60: 14.24, 70: 14.38, 80: 15.78, 90: 14.81

2018: 10: 17.91, 20: 14.55, 30: 15.33, 40: 20.21, 50: 13.50, 60: 15.19, 70: 14.68, 80: 15.01, 90: 17.96

Bike ID: 14,529 — 33,690

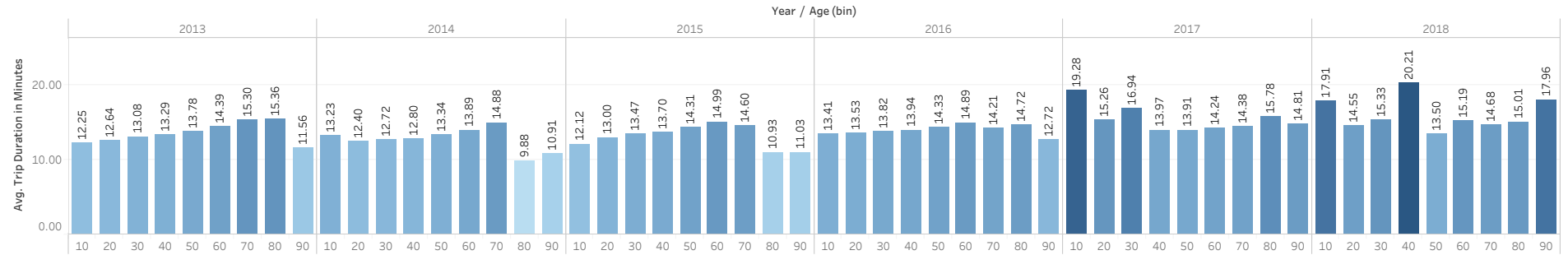**Note:**
Observations Looks like there is a change in patter of average trip duration broken down by age. Before 2018, the trend is trip duration increase from mid teens through 60 years old and then sharply drops. After 2017, average for teens significantly increases, while other age groups remain relatively the same.
Distance computation is ref: https://www.thoughtco.com/degree-of-latitude-and-longitude-distance-4070616.

At 40' north, a degree of longitude is 53 miles and a degree of latitude is 69.172 miles. Distance is computed by adding the distance in latitude + longitude due to New York street block structure. BTW, this is only distance between stations. If bike return to same station or not going the shortest distance between stations, it is impossible to factor those in.

For bike return to same station, maybe we can factor in the average speed and estimate the distance by duration in minutes. Here is the possible algorithm:

1. From all trips to difference stations, computer the average speed

2. For trips return back to same station, compute the distance by duration..

DistanceVsTripDurationCorrelation

Null	2013	2014	2015	2016	2017	2018

Trip Duration in Minutes: 300,000.00 / 200,000.00 / 100,000.00 / 0.00

Distance in Miles: 0.00 / 5,000.00 / 10,000.00