DBC_Final_Age

December 20, 2018

This project was completed by insert full name here in partial fulfilment of ECON-UB.0232, Data Bootcamp, Spring 2018. I certify that the NYU Stern Honor Code applies to this project. In particular, I have: Clearly acknowledged the work and efforts of others when submitting written work as our own. The incorporation of the work of others-including but not limited to their ideas, data, creative expression, and direct quotations (which should be designated with quotation marks), or paraphrasing thereof- has been fully and appropriately referenced using notations both in the text and the bibliography. And I understand that: Submitting the same or substantially similar work in multiple courses, either in the same semester or in a different semester, without the express approval of all instructors is strictly forbidden. I acknowledge that a failure to abide by NYU Stern Honor Code will result in a failing grade for the project and course. With this project we have executed a study of citibank through the study of demographics, mainly age and gender. We have come to the conclusion that citibike should mainly focus on marketing their program to males between the ages of 18-30 and 60-80 given that these users experience the highest average cost per minute from riding. If Citi Bike attracts customers who use the program least, they will be able to spread their assets amonst more customers. Unfortunately, we were unable to provide significant correlations between variables in our data and a further investigation with a larger dataset should be done to prove our conclusions.

```
In [63]: %matplotlib inline
         import pandas as pd
                                          # data package
         import matplotlib.pyplot as plt # graphics
         import numpy as np
         import statsmodels.formula.api as smf
         usrs=71429
In [2]: citi = pd.read_csv('C:/Users/Kanyanta/Desktop/datascience/Citi/201501-citibike-tripdate
        for i in ('08','09','10'):
            t = pd.read_csv('C:/Users/Kanyanta/Desktop/datascience/Citi/2015'+i+'-citibike-tri
            citi = citi.append(t)
In [3]: #citi.to_csv("CitiNew", encoding='utf-8')
In [4]: citi
Out [4]:
                 tripduration
                                                               stoptime \
                                          starttime
                         1346
                                      1/1/2015 0:01
                                                          1/1/2015 0:24
        0
                                      1/1/2015 0:02
        1
                          363
                                                          1/1/2015 0:08
```

2	346	1/1/2015 0:04	1/1/2015 0:10
3	182	1/1/2015 0:04	1/1/2015 0:07
4	969	1/1/2015 0:05	1/1/2015 0:21
5	496	1/1/2015 0:07	1/1/2015 0:15
6	152	1/1/2015 0:07	1/1/2015 0:09
7	1183	1/1/2015 0:08	1/1/2015 0:28
8	846	1/1/2015 0:09	1/1/2015 0:23
9	576	1/1/2015 0:10	1/1/2015 0:20
10	540	1/1/2015 0:10	1/1/2015 0:19
11	419	1/1/2015 0:11	1/1/2015 0:18
12	751	1/1/2015 0:13	1/1/2015 0:25
13	332	1/1/2015 0:13	1/1/2015 0:18
14	1099	1/1/2015 0:14	1/1/2015 0:32
15	649	1/1/2015 0:14	1/1/2015 0:25
16	614	1/1/2015 0:14	1/1/2015 0:24
17	1196	1/1/2015 0:16	1/1/2015 0:36
18	1426	1/1/2015 0:17	1/1/2015 0:40
19	1262	1/1/2015 0:18	1/1/2015 0:39
20	707	1/1/2015 0:18	1/1/2015 0:30
21	307	1/1/2015 0:18	1/1/2015 0:23
22	1053	1/1/2015 0:19	1/1/2015 0:37
23	446	1/1/2015 0:20	1/1/2015 0:27
24	1251	1/1/2015 0:21	1/1/2015 0:41
25	797	1/1/2015 0:21	1/1/2015 0:35
26	503	1/1/2015 0:21	1/1/2015 0:30
27	1639	1/1/2015 0:22	1/1/2015 0:49
28	1175	1/1/2015 0:22	1/1/2015 0:42
29	470	1/1/2015 0:22	1/1/2015 0:30
		• • •	• • •
1212247	302	10/31/2015 23:57:51	11/1/2015 00:02:54
1212248	1321	10/31/2015 23:57:52	11/1/2015 00:19:54
1212249	267	10/31/2015 23:57:57	11/1/2015 00:02:24
1212250	704	10/31/2015 23:58:00	11/1/2015 00:09:45
1212251	1127	10/31/2015 23:58:01	11/1/2015 00:16:49
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1212253	474	10/31/2015 23:58:06	11/1/2015 00:06:00
1212254	292	10/31/2015 23:58:10	11/1/2015 00:03:03
1212255	470	10/31/2015 23:58:17	11/1/2015 00:06:07
1212256	320	10/31/2015 23:58:19	11/1/2015 00:03:40
1212257	710	10/31/2015 23:58:23	11/1/2015 00:10:14
1212258	513	10/31/2015 23:58:39	11/1/2015 00:07:12
1212259	883	10/31/2015 23:58:56	11/1/2015 00:13:40
1212260	1487	10/31/2015 23:58:58	11/1/2015 00:23:46
1212261	194	10/31/2015 23:58:59	11/1/2015 00:02:13
1212262	1471	10/31/2015 23:59:00	11/1/2015 00:23:31
1212263	3939	10/31/2015 23:59:05	11/1/2015 01:04:44
1212264	4033	10/31/2015 23:59:05	11/1/2015 01:06:19
1212265	3958	10/31/2015 23:59:06	11/1/2015 01:05:04

```
1041
                       10/31/2015 23:59:12 11/1/2015 00:16:33
1212266
                                              11/1/2015 00:11:33
1212267
                  736
                       10/31/2015 23:59:17
1212268
                  548
                       10/31/2015 23:59:26
                                              11/1/2015 00:08:35
                 3919
                        10/31/2015 23:59:35
                                              11/1/2015 01:04:55
1212269
1212270
                 1621
                        10/31/2015 23:59:36
                                              11/1/2015 00:26:38
                        10/31/2015 23:59:44
                                              11/1/2015 00:05:25
1212271
                   341
1212272
                 1924
                       10/31/2015 23:59:46
                                              11/1/2015 00:31:50
1212273
                  711
                       10/31/2015 23:59:50
                                              11/1/2015 00:11:42
                  621
                       10/31/2015 23:59:54
                                              11/1/2015 00:10:15
1212274
1212275
                   632
                       10/31/2015 23:59:56
                                              11/1/2015 00:10:29
1212276
                        10/31/2015 23:59:57
                                              11/1/2015 00:13:24
                   807
         start station id
                                        start station name
0
                       455
                                           1 Ave & E 44 St
1
                                           9 Ave & W 18 St
                       434
2
                                      E 24 St & Park Ave S
                       491
3
                       384
                                   Fulton St & Waverly Ave
4
                       474
                                           5 Ave & E 29 St
5
                                           W 29 St & 9 Ave
                       512
6
                       498
                                        Broadway & W 32 St
7
                            Washington St & Gansevoort St
                       405
8
                                           W 49 St & 8 Ave
                       450
9
                       160
                                  E 37 St & Lexington Ave
                               Madison St & Montgomery St
10
                       291
11
                       517
                                    Pershing Square South
                                           2 Ave & E 58 St
12
                       290
                                      Allen St & Hester St
13
                       361
14
                       317
                                         E 6 St & Avenue B
15
                                           W 39 St & 9 Ave
                       488
16
                       285
                                        Broadway & E 14 St
17
                                           W 25 St & 6 Ave
                       466
18
                       360
                                      William St & Pine St
19
                       485
                                           W 37 St & 5 Ave
20
                       449
                                           W 52 St & 9 Ave
                                           5 Ave & E 29 St
21
                       474
                                           E 47 St & 2 Ave
22
                       164
                                  E 51 St & Lexington Ave
23
                       522
24
                       217
                                             Old Fulton St
25
                                          W 56 St & 10 Ave
                       513
                                  Fulton St & Rockwell Pl
26
                       243
27
                       382
                                  University Pl & E 14 St
28
                                             Old Fulton St
                       217
29
                       243
                                  Fulton St & Rockwell Pl
                       . . .
                                            E 4 St & 2 Ave
1212247
                       439
1212248
                       268
                                     Howard St & Centre St
1212249
                      3086
                                Graham Ave & Conselyea St
1212250
                       521
                                           8 Ave & W 31 St
```

1212251	463	9 Ave & W 16 St	
1212252	439	E 4 St & 2 Ave	
1212253	521	8 Ave & W 31 St	
1212254	439	E 4 St & 2 Ave	
1212255	521	8 Ave & W 31 St	
1212256	334	W 20 St & 7 Ave	
1212257	236	St Marks Pl & 2 Ave	
1212258	3074 Mor	ntrose Ave & Bushwick Ave	
1212259	229	Great Jones St	
1212260	119	Park Ave & St Edwards St	
1212261	504	1 Ave & E 15 St	
1212262	119	Park Ave & St Edwards St	
1212263	257	Lispenard St & Broadway	
1212264	257	Lispenard St & Broadway	
1212265	257	Lispenard St & Broadway	
1212266	492	W 33 St & 7 Ave	
1212267	348	W Broadway & Spring St	
1212268	379	W 31 St & 7 Ave	
1212269	257	Lispenard St & Broadway	
1212270	285	Broadway & E 14 St	
1212271	490	8 Ave & W 33 St	
1212272	498	Broadway & W 32 St	
1212273	348	W Broadway & Spring St	
1212274	237	E 11 St & 2 Ave	
	~~-	E 44 C. 1 C 1	
1212275	237	E 11 St & 2 Ave	
1212275 1212276	237 468	E 11 St & 2 Ave Broadway & W 55 St	
	468	Broadway & W 55 St	
1212276	468 start station latitude	Broadway & W 55 St	
1212276 0	468 start station latitude 40.750020	Broadway & W 55 St start station longitude -73.969053	265
1212276 0 1	468 start station latitude 40.750020 40.743174	Broadway & W 55 St start station longitude -73.969053 -74.003664	265 482
1212276 0 1 2	468 start station latitude 40.750020 40.743174 40.740964	Broadway & W 55 St start station longitude -73.969053 -74.003664 -73.986022	265 482 505
1212276 0 1 2 3	468 start station latitude 40.750020 40.743174 40.740964 40.683178	Broadway & W 55 St start station longitude -73.969053 -74.003664 -73.986022 -73.965964	265 482 505 399
1212276 0 1 2 3 4	468 start station latitude 40.750020 40.743174 40.740964 40.683178 40.745168	Broadway & W 55 St start station longitude -73.969053 -74.003664 -73.986022 -73.965964 -73.986831	265 482 505 399 432
1212276 0 1 2 3 4 5	468 start station latitude 40.750020 40.743174 40.740964 40.683178 40.745168 40.750073	Broadway & W 55 St start station longitude	265 482 505 399 432 383
1212276 0 1 2 3 4 5 6	468 start station latitude 40.750020 40.743174 40.740964 40.683178 40.745168 40.750073 40.748549	Broadway & W 55 St start station longitude	265 482 505 399 432 383 474
1212276 0 1 2 3 4 5 6 7	468 start station latitude 40.750020 40.743174 40.740964 40.683178 40.745168 40.750073 40.748549 40.739323	Broadway & W 55 St start station longitude	265 482 505 399 432 383 474
1212276 0 1 2 3 4 5 6 7 8	468 start station latitude 40.750020 40.743174 40.740964 40.683178 40.745168 40.750073 40.748549 40.739323 40.762272	Broadway & W 55 St start station longitude	265 482 505 399 432 383 474 174 488
1212276 0 1 2 3 4 5 6 7 8 9	468 start station latitude 40.750020 40.743174 40.740964 40.683178 40.745168 40.750073 40.748549 40.739323 40.762272 40.748238	Broadway & W 55 St start station longitude	265 482 505 399 432 383 474 174 488
1212276 0 1 2 3 4 5 6 7 8 9 10	468 start station latitude 40.750020 40.743174 40.740964 40.683178 40.745168 40.750073 40.748549 40.739323 40.762272 40.748238 40.713126	Broadway & W 55 St start station longitude	265 482 505 399 432 383 474 174 488 174
1212276 0 1 2 3 4 5 6 7 8 9 10 11	468 start station latitude 40.750020 40.743174 40.740964 40.683178 40.745168 40.750073 40.748549 40.739323 40.762272 40.748238 40.713126 40.751581	Broadway & W 55 St start station longitude	265 482 505 399 432 383 474 174 488 174 151 540
1212276 0 1 2 3 4 5 6 7 8 9 10 11 12	468 start station latitude 40.750020 40.743174 40.740964 40.683178 40.745168 40.750073 40.748549 40.739323 40.762272 40.748238 40.713126 40.751581 40.760203	Broadway & W 55 St start station longitude	265 482 505 399 432 383 474 174 488 174 151 540 507
1212276 0 1 2 3 4 5 6 7 8 9 10 11 12 13	468 start station latitude 40.750020 40.743174 40.740964 40.683178 40.745168 40.750073 40.748549 40.739323 40.762272 40.748238 40.713126 40.751581 40.760203 40.716059	Broadway & W 55 St start station longitude	265 482 505 399 432 383 474 174 488 174 151 540 507 438
1212276 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14	468 start station latitude 40.750020 40.743174 40.740964 40.683178 40.745168 40.750073 40.748549 40.739323 40.762272 40.748238 40.713126 40.751581 40.760203 40.716059 40.724537	Broadway & W 55 St start station longitude	265 482 505 399 432 383 474 174 488 174 151 540 507 438 2012
1212276 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	468 start station latitude	Broadway & W 55 St start station longitude	265 482 505 399 432 383 474 174 488 174 151 540 507 438 2012 434
1212276 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	468 start station latitude	Broadway & W 55 St start station longitude	265 482 505 399 432 383 474 174 488 174 151 540 507 438 2012 434 312
1212276 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17	468 start station latitude 40.750020 40.743174 40.740964 40.683178 40.745168 40.750073 40.748549 40.739323 40.762272 40.748238 40.713126 40.751581 40.760203 40.716059 40.724537 40.756458 40.734546 40.734546	Broadway & W 55 St start station longitude	265 482 505 399 432 383 474 174 488 174 151 540 507 438 2012 434 312 454
1212276 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	468 start station latitude	Broadway & W 55 St start station longitude	265 482 505 399 432 383 474 174 488 174 151 540 507 438 2012 434 312

20	40.764618	-73.987895	509
21	40.745168	-73.986831	476
22	40.753231	-73.970325	523
23	40.757148	-73.972078	518
24	40.702772	-73.993836	313
25	40.768254	-73.988639	488
26	40.688226	-73.979382	270
27	40.734927	-73.992005	352
28	40.702772	-73.993836	313
29	40.688226	-73.979382	270
	•••		
1212247	40.726281	-73.989780	326
1212248	40.719105	-73.999733	426
1212249	40.715143	-73.944507	3106
1212250	40.750967	-73.994442	482
1212251	40.742065	-74.004432	403
1212252	40.726281	-73.989780	326
1212253	40.750967	-73.994442	450
1212254	40.726281	-73.989780	326
1212255	40.750967	-73.994442	450
1212256	40.742388	-73.997262	247
1212257	40.728419	-73.987140	302
1212258	40.707678	-73.940162	3087
1212259	40.727434	-73.993790	308
1212260	40.696089	-73.978034	3071
1212261	40.732219	-73.981656	487
1212262	40.696089	-73.978034	3071
1212263	40.719392	-74.002472	387
1212264	40.719392	-74.002472	387
1212265	40.719392	-74.002472	387
1212266	40.750200	-73.990931	285
1212267	40.724910	-74.001547	229
1212268	40.749156	-73.991600	546
1212269	40.719392	-74.002472	387
1212270	40.734546	-73.990741	3156
1212270	40.751551	-73.993934	2021
1212271	40.748549	-73.988084	531
1212272	40.724910	-74.001547	361
1212273	40.730473	-73.986724	348
1212274	40.730473	-73.986724 -73.986724	348
1212275		-73.981923	
1212276	40.765265	-73.981923	446
	omd	and atation latitude	\
0	end station name		\
0	Stanton St & Chrystie St	40.722293	
1	W 15 St & 7 Ave	40.739355	
2	6 Ave & W 33 St	40.749013	
3	Lafayette Ave & St James Pl	40.688515	
4	E 7 St & Avenue A	40.726218	

5	Greenwich Ave & Charles St	40.735238
6	5 Ave & E 29 St	40.745168
7	E 25 St & 1 Ave	40.738177
8	W 39 St & 9 Ave	40.756458
9	E 25 St & 1 Ave	40.738177
10	Cleveland Pl & Spring St	40.721816
11	Lexington Ave & E 26 St	40.741473
12	E 25 St & 2 Ave	40.739126
13	St Marks Pl & 1 Ave	40.727791
14	E 27 St & 1 Ave	40.739445
15	9 Ave & W 18 St	40.743174
16	Allen St & E Houston St	40.722055
17	E 51 St & 1 Ave	40.754557
18	Clark St & Henry St	40.697601
19	Mott St & Prince St	40.723180
20	9 Ave & W 22 St	40.745497
21	E 31 St & 3 Ave	40.743943
22	W 38 St & 8 Ave	40.754666
23	E 39 St & 2 Ave	40.747804
24	Washington Ave & Park Ave	40.696102
25	W 39 St & 9 Ave	40.756458
26	Adelphi St & Myrtle Ave	40.693083
27	W 56 St & 6 Ave	40.763406
28	Washington Ave & Park Ave	40.696102
29	Adelphi St & Myrtle Ave	40.693083
1212247	E 11 St & 1 Ave	40.729538
1212248	West St & Chambers St	40.717548
1212249	Driggs Ave & N Henry St	40.723250
1212250	W 15 St & 7 Ave	40.739355
1212251	E 2 St & 2 Ave	40.725029
1212252	E 11 St & 1 Ave	40.729538
1212253	W 49 St & 8 Ave	40.762272
1212254	E 11 St & 1 Ave	40.729538
1212255	W 49 St & 8 Ave	40.762272
1212256	Perry St & Bleecker St	40.735354
1212257	Avenue D & E 3 St	40.720828
1212258	Metropolitan Ave & Meeker Ave	40.714133
1212259	St James Pl & Oliver St	40.713079
1212260	Boerum St & Broadway	40.705381
1212261	E 20 St & FDR Drive	40.733143
1212262	Boerum St & Broadway	40.705381
1212263	Centre St & Chambers St	40.712733
1212264	Centre St & Chambers St	40.712733
1212265	Centre St & Chambers St	40.712733
1212266	Broadway & E 14 St	40.734546
1212267	Great Jones St	40.727434
1212268	E 30 St & Park Ave S	40.744449
1212200	L CO DO W LAIR AVE D	10.111113

1212269	Centre St & Chamb	ers St		40.712733	
1212270	E 72 St & Yo	rk Ave		40.766638	
1212271	W 45 St &	8 Ave		40.759291	
1212272	Forsyth St & Bro	ome St		40.718939	
1212273	Allen St & Hes			40.716059	
1212274	W Broadway & Spr	ing St		40.724910	
1212275	W Broadway & Spr	_		40.724910	
1212276	W 24 St &	_		40.744876	
	end station longitude	bikeid	usertype	birth year	gender
0	-73.991475			•	2
1	-73.999318				1
2	-73.988484		Subscriber		1
3	-73.964763	19610			1
4	-73.983799				1
5	-74.000271	20788			2
6	-73.986831	19006			1
7	-73.977387				2
8	-73.993722				1
9	-73.977387		Subscriber		1
10	-73.997203	16947			1
11	-73.983209	14807			1
12	-73.979738	16702			1
13	-73.985649		Subscriber		1
14	-73.976806	19909			1
15	-74.003664				1
16	-73.989111				1
17	-73.965930		Subscriber		1
18	-73.993446	21554			1
19	-73.99440 -73.994800				1
20	-74.001971		Subscriber		
20					1
				1962.0	1
22	-73.991382		Subscriber		1
23	-73.973442	15812	Subscriber	1988.0	1
24	-73.967510	19780	Customer	NaN	0
25	-73.993722	16761	Subscriber	1969.0	1
26	-73.971789	14570	Customer	NaN	0
27	-73.977225	18320	Subscriber	1996.0	2
28	-73.967510	16610	Customer	NaN	0
29	-73.971789	20804	Subscriber	1986.0	1
					• • •
1212247	-73.984267	23705	Subscriber	1982.0	1
1212248	-74.013221	24036	Customer	NaN	0
1212249	-73.943080	24078	Subscriber	1982.0	1
1212250	-73.999318	23197	Subscriber	1967.0	1
1212251	-73.990697	17391		1983.0	2
1212252	-73.984267	22171		1982.0	2
1212253	-73.987882	23482	Subscriber	1978.0	1

1212254	-73.984267	22120	Subscriber	1983.0	2
1212255	-73.987882	18211	Subscriber	1980.0	2
1212256	-74.004831	22527	Subscriber	1979.0	1
1212257	-73.977932	24230	Subscriber	1963.0	1
1212258	-73.952344	22115	Subscriber	1980.0	1
1212259	-73.998512	17554	Subscriber	1995.0	1
1212260	-73.949765	14948	Customer	NaN	0
1212261	-73.975739	23553	Subscriber	1982.0	2
1212262	-73.949765	15414	Customer	NaN	0
1212263	-74.004607	18901	Customer	NaN	0
1212264	-74.004607	19899	Customer	NaN	0
1212265	-74.004607	16282	Customer	NaN	0
1212266	-73.990741	18253	Subscriber	1959.0	1
1212267	-73.993790	17827	Customer	NaN	0
1212268	-73.983035	16859	Subscriber	1962.0	1
1212269	-74.004607	16982	Customer	NaN	0
1212270	-73.953483	21038	Subscriber	1976.0	1
1212271	-73.988597	15238	Subscriber	1971.0	1
1212272	-73.992663	17292	Subscriber	1960.0	1
1212273	-73.991908	23374	Subscriber	1982.0	1
1212274	-74.001547	23503	Subscriber	1990.0	1
1212275	-74.001547	22104	Subscriber	1980.0	2
1212276	-73.995299	14597	Subscriber	1967.0	1

[3966572 rows x 15 columns]

```
In [5]: del citi['usertype']
In [6]: del citi['end station name']
In [7]: del citi['start station id']
In [8]: del citi['start station name']
In [9]: del citi['end station id']
In [10]: citi
```

Out[10]:	tripduration	starttime	stoptime \
0	1346	1/1/2015 0:01	1/1/2015 0:24
1	363	1/1/2015 0:02	1/1/2015 0:08
2	346	1/1/2015 0:04	1/1/2015 0:10
3	182	1/1/2015 0:04	1/1/2015 0:07
4	969	1/1/2015 0:05	1/1/2015 0:21
5	496	1/1/2015 0:07	1/1/2015 0:15
6	152	1/1/2015 0:07	1/1/2015 0:09
7	1183	1/1/2015 0:08	1/1/2015 0:28
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[3966572 rows x 10 columns] In [11]: citi['Age']=2018-citi['birth year'] citi['Gender']=citi.gender.map({1: 'Male',2: 'Female'}) In [12]: citi=citi[citi['tripduration']>60] citi=citi[citi['tripduration']<7200]</pre> citi=citi[citi['Age']<91]</pre> In [13]: citi Out[13]: tripduration starttime stoptime \ 1346 1/1/2015 0:24 0 1/1/2015 0:01 1 363 1/1/2015 0:02 1/1/2015 0:08 2 346 1/1/2015 0:04 1/1/2015 0:10 3 1/1/2015 0:04 1/1/2015 0:07 182 4 1/1/2015 0:05 1/1/2015 0:21 969 5 496 1/1/2015 0:07 1/1/2015 0:15 6 1/1/2015 0:07 1/1/2015 0:09 152 7 1/1/2015 0:08 1/1/2015 0:28 1183 8 846 1/1/2015 0:09 1/1/2015 0:23 9 1/1/2015 0:10 1/1/2015 0:20 576 10 540 1/1/2015 0:10 1/1/2015 0:19 11 1/1/2015 0:11 1/1/2015 0:18 419 1/1/2015 0:25 12 751 1/1/2015 0:13 13 1/1/2015 0:13 1/1/2015 0:18 332 14 1099 1/1/2015 0:14 1/1/2015 0:32 15 649 1/1/2015 0:14 1/1/2015 0:25 16 614 1/1/2015 0:14 1/1/2015 0:24 1/1/2015 0:16 1/1/2015 0:36 17 1196 18 1426 1/1/2015 0:17 1/1/2015 0:40 19 1/1/2015 0:18 1/1/2015 0:39 1262 20 1/1/2015 0:18 1/1/2015 0:30 707 21 1/1/2015 0:18 1/1/2015 0:23 307 22 1/1/2015 0:19 1/1/2015 0:37 1053 23 446 1/1/2015 0:20 1/1/2015 0:27 25 797 1/1/2015 0:21 1/1/2015 0:35 27 1639 1/1/2015 0:22 1/1/2015 0:49 29 470 1/1/2015 0:22 1/1/2015 0:30 30 321 1/1/2015 0:23 1/1/2015 0:29 31 259 1/1/2015 0:23 1/1/2015 0:27 32 81 1/1/2015 0:23 1/1/2015 0:24 11/1/2015 00:03:53 1212238 384 10/31/2015 23:57:28 10/31/2015 23:57:30 11/1/2015 00:00:55 1212239 204 1212240 424 10/31/2015 23:57:31 11/1/2015 00:04:36 1212241 10/31/2015 23:57:34 11/1/2015 00:07:07 573 1212243 10/31/2015 23:57:42 11/1/2015 00:05:57 495

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1212253	40.762272	-73.987882	23482	1978.0
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3	1	49.0	Male
4	1	41.0	Male
5	2	49.0	Female
6	1	46.0	Male
7	2	33.0	Female
8	1	27.0	Male
9	1	27.0	Male
10	1	39.0	Male
11	1	38.0	Male
12	1	31.0	Male
13	1	30.0	Male
14	1	35.0	Male
15	1	39.0	Male
16	1	59.0	Male
17	1	47.0	Male
18	1	41.0	Male
19	1	38.0	Male
20	1	46.0	Male
21	1	56.0	Male
22	1	31.0	Male
23		30.0	Male
25			Male
23 27		22.0	Female
29	1		Male
30	1		Male
31		32.0	Male
32		36.0	Male
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4	969	1/1/2015 0:05	1/1/2015 0:21	
5	496	1/1/2015 0:07	1/1/2015 0:15	
6	152	1/1/2015 0:07	1/1/2015 0:09	
7	1183	1/1/2015 0:08	1/1/2015 0:28	
8	846	1/1/2015 0:09	1/1/2015 0:23	
9	576	1/1/2015 0:10	1/1/2015 0:20	
10	540	1/1/2015 0:10	1/1/2015 0:19	
11	419	1/1/2015 0:11	1/1/2015 0:18	
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17	1196	1/1/2015 0:16	1/1/2015 0:36	
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19	1262	1/1/2015 0:18	1/1/2015 0:39	

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1212238 1212239 1212240 1212241 1212243	40.730477 40.745712 40.737262 40.730477 40.741444	-73.999061 -73.981948 -73.992390 -73.999061 -73.975361
1212238 1212239 1212240 1212241 1212243 1212244	40.730477 40.745712 40.737262 40.730477 40.741444 40.730473	-73.999061 -73.981948 -73.992390 -73.999061 -73.975361 -73.986724
1212238 1212239 1212240 1212241 1212243 1212244 1212245	40.730477 40.745712 40.737262 40.730477 40.741444 40.730473 40.723684	-73.999061 -73.981948 -73.992390 -73.999061 -73.975361 -73.986724 -73.975748
1212238 1212239 1212240 1212241 1212243 1212244 1212245 1212246	40.730477 40.745712 40.737262 40.730477 40.741444 40.730473 40.723684 40.719105	-73.999061 -73.981948 -73.992390 -73.999061 -73.975361 -73.986724 -73.975748 -73.999733
1212238 1212239 1212240 1212241 1212243 1212244 1212245 1212246 1212247	40.730477 40.745712 40.737262 40.730477 40.741444 40.730473 40.723684 40.719105 40.726281	-73.999061 -73.981948 -73.992390 -73.999061 -73.975361 -73.986724 -73.975748 -73.999733 -73.989780
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1212254	40.729538	-73.984267	22120	1983.0
1212255	40.762272	-73.987882	18211	1980.0
1212256	40.735354	-74.004831	22527	1979.0
1212257	40.720828	-73.977932	24230	1963.0
1212258	40.714133	-73.952344	22115	1980.0
1212259	40.713079	-73.998512	17554	1995.0
1212261	40.733143	-73.975739	23553	1982.0
1212266	40.734546	-73.990741	18253	1959.0
1212268	40.744449	-73.983035	16859	1962.0
1212270	40.766638	-73.953483	21038	1976.0
1212271	40.759291	-73.988597	15238	1971.0
1212272	40.718939	-73.992663	17292	1960.0
1212273	40.716059	-73.991908	23374	1982.0
1212274	40.724910	-74.001547	23503	1990.0
1212275	40.724910	-74.001547	22104	1980.0
1212276	40.744876	-73.995299	14597	1967.0

	gender	Age	Gender
0	2	58.0	Female
1	1	55.0	Male
2	1	44.0	Male
3	1	49.0	Male
4	1	41.0	Male
5	2	49.0	Female
6	1	46.0	Male
7	2	33.0	Female
8	1	27.0	Male
9	1	27.0	Male
10	1	39.0	Male
11	1	38.0	Male
12	1	31.0	Male
13	1	30.0	Male
14	1	35.0	Male
15	1	39.0	Male
16	1	59.0	Male
17	1	47.0	Male
18	1	41.0	Male
19	1	38.0	Male
20	1	46.0	Male
21	1	56.0	Male
22	1	31.0	Male

23	1	30.0	Male
25	1	49.0	Male
27	2	22.0	Female
29	1	32.0	Male
30	1	32.0	Male
31	1	32.0	Male
32	1	36.0	Male
 1212238	 1	40.0	 Male
1212230	1	30.0	Male Male
	1	37.0	
1212240			Male
1212241	1 1	31.0	Male
1212243 1212244		58.0 24.0	Male
	2		Female
1212245	1	31.0	Male
1212246	2	28.0	Female
1212247	1	36.0	Male
1212249	1	36.0	Male
1212250	1	51.0	Male
1212251	2	35.0	Female
1212252	2	36.0	Female
1212253	1	40.0	Male
1212254	2	35.0	Female
1212255	2	38.0	Female
1212256	1	39.0	Male
1212257	1	55.0	Male
1212258	1	38.0	Male
1212259	1	23.0	Male
1212261	2	36.0	Female
1212266	1	59.0	Male
1212268	1	56.0	Male
1212270	1	42.0	Male
1212271	1	47.0	Male
1212272	1	58.0	Male
1212273	1	36.0	Male
1212274	1	28.0	Male
1212275	2	38.0	Female
1212276	1	51.0	Male

[3367936 rows x 12 columns]

In [15]: citi.dropna()

Out[15]:	tripduration	starttime	stoptime \
0	1346	1/1/2015 0:01	1/1/2015 0:24
1	363	1/1/2015 0:02	1/1/2015 0:08
2	346	1/1/2015 0:04	1/1/2015 0:10
3	182	1/1/2015 0:04	1/1/2015 0:07

4	969	1/1/2015 0:05	1/1/2015 0:21
5	496	1/1/2015 0:07	1/1/2015 0:15
6	152	1/1/2015 0:07	1/1/2015 0:09
7	1183	1/1/2015 0:08	1/1/2015 0:28
8	846	1/1/2015 0:09	1/1/2015 0:23
9	576	1/1/2015 0:10	1/1/2015 0:20
10	540	1/1/2015 0:10	1/1/2015 0:19
11	419	1/1/2015 0:11	1/1/2015 0:18
12	751	1/1/2015 0:13	1/1/2015 0:25
13	332	1/1/2015 0:13	1/1/2015 0:18
14	1099	1/1/2015 0:14	1/1/2015 0:32
15	649	1/1/2015 0:14	1/1/2015 0:25
16	614	1/1/2015 0:14	1/1/2015 0:24
17	1196	1/1/2015 0:16	1/1/2015 0:36
18	1426	1/1/2015 0:17	1/1/2015 0:40
19	1262	1/1/2015 0:18	1/1/2015 0:39
20	707	1/1/2015 0:18	1/1/2015 0:30
21	307	1/1/2015 0:18	1/1/2015 0:23
22	1053	1/1/2015 0:19	1/1/2015 0:37
23	446	1/1/2015 0:20	1/1/2015 0:27
25	797	1/1/2015 0:21	1/1/2015 0:35
27	1639	1/1/2015 0:22	1/1/2015 0:49
29	470	1/1/2015 0:22	1/1/2015 0:30
30	321	1/1/2015 0:23	1/1/2015 0:29
31	259	1/1/2015 0:23	1/1/2015 0:27
32	81	1/1/2015 0:23	1/1/2015 0:24
			. ,
1212238	384	10/31/2015 23:57:28	11/1/2015 00:03:53
1212239	204	10/31/2015 23:57:30	11/1/2015 00:00:55
1212240	424	10/31/2015 23:57:31	11/1/2015 00:04:36
1212241	573	10/31/2015 23:57:34	11/1/2015 00:07:07
1212243	495	10/31/2015 23:57:42	11/1/2015 00:05:57
1212244	371	10/31/2015 23:57:47	11/1/2015 00:03:58
1212245	529	10/31/2015 23:57:46	11/1/2015 00:06:36
1212246	680	10/31/2015 23:57:52	11/1/2015 00:00:03
1212247	302	10/31/2015 23:57:51	11/1/2015 00:02:54
1212249	267	10/31/2015 23:57:57	11/1/2015 00:02:24
1212250	704	10/31/2015 23:58:00	11/1/2015 00:02:21
1212251	1127	10/31/2015 23:58:01	11/1/2015 00:16:49
1212252	288	10/31/2015 23:58:01	11/1/2015 00:10:45
1212253	474	10/31/2015 23:58:06	11/1/2015 00:02:50
1212254	292	10/31/2015 23:58:10	11/1/2015 00:03:03
1212254	470	10/31/2015 23:58:17	11/1/2015 00:03:03
1212255		10/31/2015 23:58:17	11/1/2015 00:08:07
	320 710	10/31/2015 23:58:19	11/1/2015 00:03:40
1212257	710 512		
1212258	513	10/31/2015 23:58:39	11/1/2015 00:07:12
1212259	883	10/31/2015 23:58:56	11/1/2015 00:13:40
1212261	194	10/31/2015 23:58:59	11/1/2015 00:02:13

```
1041 10/31/2015 23:59:12
                                              11/1/2015 00:16:33
1212266
1212268
                   548 10/31/2015 23:59:26
                                              11/1/2015 00:08:35
1212270
                  1621
                        10/31/2015 23:59:36
                                              11/1/2015 00:26:38
                        10/31/2015 23:59:44
                                              11/1/2015 00:05:25
1212271
                   341
1212272
                  1924
                        10/31/2015 23:59:46
                                              11/1/2015 00:31:50
                        10/31/2015 23:59:50
                                              11/1/2015 00:11:42
1212273
                   711
1212274
                   621
                        10/31/2015 23:59:54
                                              11/1/2015 00:10:15
1212275
                   632
                        10/31/2015 23:59:56
                                              11/1/2015 00:10:29
                        10/31/2015 23:59:57
                                              11/1/2015 00:13:24
1212276
                   807
         start station latitude
                                 start station longitude
0
                       40.750020
                                                 -73.969053
1
                       40.743174
                                                 -74.003664
2
                       40.740964
                                                 -73.986022
3
                       40.683178
                                                 -73.965964
4
                                                 -73.986831
                       40.745168
5
                       40.750073
                                                 -73.998393
6
                       40.748549
                                                 -73.988084
7
                       40.739323
                                                -74.008119
8
                       40.762272
                                                 -73.987882
9
                       40.748238
                                                -73.978311
10
                       40.713126
                                                 -73.984844
11
                       40.751581
                                                -73.977910
12
                       40.760203
                                                -73.964785
13
                       40.716059
                                                 -73.991908
14
                       40.724537
                                                -73.981854
15
                       40.756458
                                                 -73.993722
16
                       40.734546
                                                -73.990741
17
                       40.743954
                                                 -73.991449
18
                       40.707179
                                                -74.008873
                                                 -73.983390
19
                       40.750380
20
                       40.764618
                                                 -73.987895
21
                       40.745168
                                                 -73.986831
22
                       40.753231
                                                 -73.970325
23
                       40.757148
                                                -73.972078
                       40.768254
25
                                                 -73.988639
27
                       40.734927
                                                 -73.992005
29
                       40.688226
                                                 -73.979382
30
                       40.734546
                                                -73.990741
31
                       40.734546
                                                 -73.990741
32
                       40.715816
                                                -73.994224
. . .
                       40.730477
                                                 -73.999061
1212238
1212239
                       40.745712
                                                -73.981948
1212240
                       40.737262
                                                 -73.992390
1212241
                       40.730477
                                                -73.999061
1212243
                       40.741444
                                                -73.975361
1212244
                       40.730473
                                                -73.986724
```

1212245	40.723684	4 -73.975	748		
1212246	40.71910	5 -73.999	733		
1212247	40.72628	1 -73.989	780		
1212249	40.715143	3 -73.944	507		
1212250	40.75096	7 -73.994	442		
1212251	40.74206	5 -74.004	432		
1212252	40.726283	1 -73.989	780		
1212253	40.75096	7 -73.994	442		
1212254	40.726283	1 -73.989	780		
1212255	40.75096	7 -73.994	442		
1212256	40.742388	3 -73.997	262		
1212257	40.728419	9 -73.987	140		
1212258	40.707678	3 -73.940	162		
1212259	40.727434	4 -73.993	790		
1212261	40.732219	9 -73.981	656		
1212266	40.75020	73.990	931		
1212268	40.749156	5 -73.991	600		
1212270	40.734546	6 -73.990	741		
1212271	40.75155	1 -73.993	934		
1212272	40.748549	9 -73.988	084		
1212273	40.724910	74.001	547		
1212274	40.730473	3 -73.986	724		
1212275	40.730473	3 -73.986	724		
1212276	40.76526	73.981	923		
		end station longitude		birth year	\
0	40.722293	-73.991475	18660	1960.0	
1	40.739355	-73.999318		1963.0	
2	40.749013	-73.988484	20845	1974.0	
3	40.688515	-73.964763	19610	1969.0	
4	40.726218	-73.983799		1977.0	
5	40.735238	-74.000271	20788	1969.0	
6	40.745168	-73.986831	19006	1972.0	
7	40.738177	-73.977387	17640	1985.0	
8	40.756458	-73.993722	15691	1991.0	
9	40.738177	-73.977387	17837	1991.0	
10	40.721816	-73.997203	16947	1979.0	
11	40.741473	-73.983209	14807	1980.0	
12	40.739126	-73.979738	16702	1987.0	
13	40.727791	-73.985649	17342	1988.0	
14	40.739445	-73.976806	19909	1983.0	
15	40.743174	-74.003664	19584	1979.0	
16	40.722055	-73.989111	19202	1959.0	
17	40.754557	-73.965930	20683	1971.0	
18	40.697601	-73.993446	21554	1977.0	
	40 700400	70 004000			
19	40.723180	-73.994800	16894	1980.0	
20	40.745497	-74.001971	14598	1972.0	

22			.754666	-73.991382	15617	1987.0
23		40	.747804	-73.973442	15812	1988.0
25		40	.756458	-73.993722	16761	1969.0
27		40	.763406	-73.977225	18320	1996.0
29		40	.693083	-73.971789	20804	1986.0
30		40	.739017	-74.002638	15777	1986.0
31		40	.739017	-74.002638	21338	1986.0
32		40	.714067	-73.992939	20781	1982.0
1212238		40	.733320	-73.995101	18778	1978.0
1212239		40	.748238	-73.978311	15163	1988.0
1212240		40	.730477	-73.999061	19062	1981.0
1212241		40	.722055	-73.989111	22597	1987.0
1212243		40	.745168	-73.986831	21287	1960.0
1212244		40	.732219	-73.981656	22923	1994.0
1212245		40	.738177	-73.977387	23153	1987.0
1212246		40	.720196	-73.989978	18911	1990.0
1212247		40	.729538	-73.984267	23705	1982.0
1212249		40	.723250	-73.943080	24078	1982.0
1212250		40	.739355	-73.999318	23197	1967.0
1212251		40	.725029	-73.990697	17391	1983.0
1212252		40	.729538	-73.984267	22171	1982.0
1212253		40	.762272	-73.987882	23482	1978.0
1212254		40	.729538	-73.984267	22120	1983.0
1212255		40	.762272	-73.987882	18211	1980.0
1212256		40	.735354	-74.004831	22527	1979.0
1212257		40	.720828	-73.977932	24230	1963.0
1212258		40	.714133	-73.952344	22115	1980.0
1212259		40	.713079	-73.998512	17554	1995.0
1212261		40	.733143	-73.975739	23553	1982.0
1212266		40	.734546	-73.990741	18253	1959.0
1212268		40	.744449	-73.983035	16859	1962.0
1212270		40	.766638	-73.953483	21038	1976.0
1212271		40	.759291	-73.988597	15238	1971.0
1212272		40	.718939	-73.992663	17292	1960.0
1212273		40	.716059	-73.991908	23374	1982.0
1212274			.724910	-74.001547	23503	1990.0
1212275		40	.724910	-74.001547	22104	1980.0
1212276		40	.744876	-73.995299	14597	1967.0
	gender	Age	Gender			
0	2	58.0	Female			
1	1	55.0	Male			
2	1	44.0	Male			
3	1	49.0	Male			
4	1	41.0	Male			
5	2	49.0	Female			
6	1	46.0	Male			

7	2	33.0	Female
8	1	27.0	Male
9	1	27.0	Male
10	1	39.0	Male
11	1	38.0	Male
12	1	31.0	Male
13	1	30.0	Male
14	1	35.0	Male
15	1	39.0	Male
16	1	59.0	Male
17	1	47.0	Male
18	1	41.0	Male
19	1	38.0	Male
20	1	46.0	Male
21	1	56.0	Male
22	1	31.0	Male
23	1	30.0	Male
25	1	49.0	Male
27	2	22.0	Female
29	1	32.0	Male
30	1	32.0	Male
31	1	32.0	Male
32	1	36.0	Male
	٠.		
1212238	1	40.0	Male
1212239	1	30.0	Male
1212240	1	37.0	Male
1212241	1	31.0	Male
1212243	1	58.0	Male
1212244	2	24.0	Female
1212245	1	31.0	Male
1212246	2	28.0	Female
1212247	1	36.0	Male
1212249	1	36.0	Male
1212250	1	51.0	Male
1212251	2	35.0	Female
1212252	2	36.0	Female
1212253	1 2	40.0	Male Female
1212254	2	35.0	Female
1212255 1212256	1	38.0	Male
		39.0	
1212257	1	55.0	Male
1212258	1	38.0	Male
1212259 1212261	1 2	23.0	Male Female
	1	36.0	Male
1212266	1	59.0	Male
1212268		56.0	
1212270	1	42.0	Male

```
58.0
                                   Male
         1212272
                        1
                          36.0
         1212273
                       1
                                   Male
                       1
                          28.0
                                   Male
         1212274
                       2
         1212275
                          38.0
                                Female
                        1 51.0
         1212276
                                   Male
         [3367936 rows x 12 columns]
In [16]: citi.describe()
Out [16]:
                               start station latitude start station longitude
                tripduration
                                                                   3.372554e+06
         count
                3.372554e+06
                                         3.372554e+06
                7.363967e+02
                                         4.073622e+01
                                                                  -7.398889e+01
         mean
         std
                5.434387e+02
                                         2.016099e-02
                                                                   1.436770e-02
         min
                6.100000e+01
                                         4.067891e+01
                                                                  -7.401713e+01
         25%
                3.710000e+02
                                         4.072217e+01
                                                                  -7.399884e+01
         50%
                5.860000e+02
                                         4.073705e+01
                                                                  -7.399009e+01
         75%
                9.390000e+02
                                         4.075097e+01
                                                                  -7.398057e+01
                7.199000e+03
                                         4.078721e+01
                                                                  -7.392989e+01
         max
                end station latitude
                                       end station longitude
                                                                     bikeid
                         3.372554e+06
                                                 3.372554e+06
                                                               3.372554e+06
         count
                         4.073588e+01
                                               -7.398906e+01
                                                               2.021684e+04
         mean
                         2.006677e-02
                                                1.439341e-02 2.970967e+03
         std
         min
                         4.064677e+01
                                               -7.404630e+01 1.452900e+04
         25%
                         4.072210e+01
                                               -7.399915e+01
                                                               1.760300e+04
                         4.073705e+01
         50%
                                               -7.399009e+01
                                                               2.079100e+04
         75%
                         4.075066e+01
                                               -7.398093e+01
                                                              2.289000e+04
                        4.078721e+01
                                               -7.392989e+01 2.474300e+04
         max
                                     gender
                  birth year
                                                       Age
                3.372554e+06
                               3.372554e+06
                                             3.372554e+06
         count
                1.977003e+03
                               1.239152e+00
                                             4.099717e+01
         mean
                               4.297636e-01
         std
                1.140671e+01
                                             1.140671e+01
         min
                1.930000e+03
                               0.000000e+00
                                             1.900000e+01
         25%
                1.969000e+03
                               1.000000e+00
                                             3.200000e+01
         50%
                1.980000e+03
                               1.000000e+00
                                             3.800000e+01
         75%
                1.986000e+03
                               1.000000e+00
                                             4.900000e+01
                1.999000e+03
                               2.000000e+00 8.800000e+01
         max
In [17]: citi['tripduration'].mean()
Out[17]: 736.3966545828473
In [18]: citi.to_csv("CitiFinalData2",)
In [19]: citi.drop
```

1 47.0

1212271

Male

Out[19]:	<box><box </box d method</box>	DataFrame	e.drop	of	tr	ripduration	starttime
	0	1346	_	1/1/2015	0:01	1/1/2015 0:24	
	1	363		1/1/2015	0:02	1/1/2015 0:08	
	2	346		1/1/2015	0:04	1/1/2015 0:10	
	3	182		1/1/2015	0:04	1/1/2015 0:07	
	4	969		1/1/2015	0:05	1/1/2015 0:21	
	5	496		1/1/2015	0:07	1/1/2015 0:15	
	6	152		1/1/2015	0:07	1/1/2015 0:09	
	7	1183		1/1/2015	0:08	1/1/2015 0:28	
	8	846		1/1/2015	0:09	1/1/2015 0:23	
	9	576		1/1/2015	0:10	1/1/2015 0:20	
	10	540		1/1/2015	0:10	1/1/2015 0:19	
	11	419		1/1/2015	0:11		
	12	751		1/1/2015	0:13	1/1/2015 0:25	
	13	332		1/1/2015	0:13	1/1/2015 0:18	
	14	1099		1/1/2015	0:14	1/1/2015 0:32	
	15	649		1/1/2015	0:14	1/1/2015 0:25	
	16	614		1/1/2015	0:14	1/1/2015 0:24	
	17	1196		1/1/2015	0:16	1/1/2015 0:36	
	18	1426		1/1/2015	0:17	1/1/2015 0:40	
	19	1262		1/1/2015	0:18	1/1/2015 0:39	
	20	707		1/1/2015	0:18	1/1/2015 0:30	
	21	307		1/1/2015	0:18	1/1/2015 0:23	
	22	1053		1/1/2015	0:19	1/1/2015 0:37	
	23	446		1/1/2015	0:20	1/1/2015 0:27	
	25	797		1/1/2015	0:21	1/1/2015 0:35	
	27	1639		1/1/2015	0:22	1/1/2015 0:49	
	29	470		1/1/2015	0:22	1/1/2015 0:30	
	30	321		1/1/2015			
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Male

1 55.0

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7	2	33.0	Female
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