

Datahacks: Business Track

Saarthak Mehra



BART → Bay Area Rapid Transportation
(metro/train/subway/etc.)



Hotspots → popular destinations to visit in San Francisco (i.e. tourist spots, sports stadium, etc.)



barts_to_all.csv

- Each row represents the average travel time from a Bart station to any location in SF
- Origins and Destination IDs are TAZs (Traffic Analysis Zone)
- Only 3 bart stations
 - Embarcadero
 - Montgomery
 - Powell

	Origin Movement ID	Origin Display Name	Destination Movement ID	Destination Display Name	Date Range	Mean Travel Time (Seconds)	Range - Lower Bound Travel Time (Seconds)	Range - Upper Bound Travel Time (Seconds)
0	3603	Embarcadero, San Francisco, CA	1987	709716 (1987)	4/1/2019 - 6/30/2019, Every day, Daily Average	3373	2479	4589
1	3603	Embarcadero, San Francisco, CA	1994	910502 (1994)	4/1/2019 - 6/30/2019, Every day, Daily Average	2888	2486	3353
2	3603	Embarcadero, San Francisco, CA	2020	609301 (2020)	4/1/2019 - 6/30/2019, Every day, Daily Average	3015	2173	4182
3	3603	Embarcadero, San Francisco, CA	2044	609270 (2044)	4/1/2019 - 6/30/2019, Every day, Daily Average	3019	2156	4226
4	3603	Embarcadero, San Francisco, CA	2054	609261 (2054)	4/1/2019 - 6/30/2019, Every day, Daily Average	2916	2079	4089
5	3603	Embarcadero, San Francisco, CA	2074	609250 (2074)	4/1/2019 - 6/30/2019, Every day, Daily Average	2842	2016	4005
6	3603	Embarcadero, San Francisco, CA	2076	609263 (2076)	4/1/2019 - 6/30/2019, Every day, Daily Average	2869	2050	4014
7	3603	Embarcadero, San Francisco, CA	2081	609241 (2081)	4/1/2019 - 6/30/2019, Every day, Daily Average	2877	2045	4047
8	3603	Embarcadero, San Francisco, CA	2092	609242 (2092)	4/1/2019 - 6/30/2019, Every day, Daily Average	2860	2030	4027
9	3603	Embarcadero, San Francisco, CA	2113	910512 (2113)	4/1/2019 - 6/30/2019, Every day, Daily Average	2737	2361	3172
10	3603	Embarcadero, San Francisco, CA	2116	609152 (2116)	4/1/2019 - 6/30/2019, Every day, Daily Average	2796	1984	3939
11	3603	Embarcadero, San Francisco, CA	2117	609141 (2117)	4/1/2019 - 6/30/2019, Every day, Daily Average	2824	2002	3982
12	3603	Embarcadero, San Francisco, CA	2142	609111 (2142)	4/1/2019 - 6/30/2019, Every day, Daily Average	2710	1947	3770
13	3603	Embarcadero, San Francisco, CA	2155	609102 (2155)	4/1/2019 - 6/30/2019, Every day, Daily Average	2586	1873	3568

hotspots_to_all.csv

- Each row represents the average travel time from a hotspot to any location in SF
- Origins and Destination IDs are TAZs (Traffic Analysis Zone)
- Only 3 hotspots
 - Fisherman's wharf
 - Oracle Park
 - Palace of Fine Arts

	Origin Movement ID	Origin Display Name	Destination Movement ID	Destination Display Name	Date Range	Mean Travel Time (Seconds)	Range - Lower Bound Travel Time (Seconds)	Range - Upper Bound Travel Time (Seconds)
0	3394	Fisherman's Wharf, San Francisco, CA	1608	709746 (1608)	4/1/2019 - 6/30/2019, Every day, Daily Average	4030	3244	5005
1	3394	Fisherman's Wharf, San Francisco, CA	1803	809911 (1803)	4/1/2019 - 6/30/2019, Every day, Daily Average	3782	3110	4599
2	3394	Fisherman's Wharf, San Francisco, CA	1845	910670 (1845)	4/1/2019 - 6/30/2019, Every day, Daily Average	2412	2133	2726
3	3394	Fisherman's Wharf, San Francisco, CA	1864	709739 (1864)	4/1/2019 - 6/30/2019, Every day, Daily Average	4453	3546	5590
4	3394	Fisherman's Wharf, San Francisco, CA	1866	809914 (1866)	4/1/2019 - 6/30/2019, Every day, Daily Average	3592	2884	4472
5	3394	Fisherman's Wharf, San Francisco, CA	1883	809915 (1883)	4/1/2019 - 6/30/2019, Every day, Daily Average	3749	3056	4598
6	3394	Fisherman's Wharf, San Francisco, CA	1894	809913 (1894)	4/1/2019 - 6/30/2019, Every day, Daily Average	3525	2866	4335
7	3394	Fisherman's Wharf, San Francisco, CA	1916	709744 (1916)	4/1/2019 - 6/30/2019, Every day, Daily Average	4061	3290	5012
8	3394	Fisherman's Wharf, San Francisco, CA	1933	809912 (1933)	4/1/2019 - 6/30/2019, Every day, Daily Average	3300	2625	4148
9	3394	Fisherman's Wharf, San Francisco, CA	1940	809917 (1940)	4/1/2019 - 6/30/2019, Every day, Daily Average	3456	2737	4362
10	3394	Fisherman's Wharf, San Francisco, CA	1975	80997A (1975)	4/1/2019 - 6/30/2019, Every day, Daily Average	2872	2344	3518
11	3394	Fisherman's Wharf, San Francisco, CA	1994	910502 (1994)	4/1/2019 - 6/30/2019, Every day, Daily Average	2486	2078	2973
12	3394	Fisherman's Wharf, San Francisco, CA	2041	910490 (2041)	4/1/2019 - 6/30/2019, Every day, Daily Average	2336	1997	2731
13	3394	Fisherman's Wharf, San Francisco, CA	2054	609261 (2054)	4/1/2019 - 6/30/2019, Every day, Daily Average	3407	2535	4578

barts_hotspots.csv

- Each row represents a unique type of origin-destination ride for a certain day
 - Bart → Hotspot
 - Hotspot → Bart
- Features 5-23 represent different types of mean travel times
 - Exploring the relationships between them can be interesting!
 - Midday, Evening, Early Morning do **not** have not defined times associated with them. Can you figure out an estimation for any of these temporal intervals?
- **INCLUDES BART → HOTSPOT & HOTSPOT → BART RIDES**

Embarcadero → Oracle Park

	Date	Origin Movement ID	Origin Display Name	Destination Movement ID	Destination Display Name	Daily Mean Travel Time (Seconds)	Daily Range - Lower Bound Travel Time (Seconds)	Daily Range - Upper Bound Travel Time (Seconds)	AM Mean Travel Time (Seconds)	AM Range - Lower Bound Travel Time (Seconds)	...	PM Range - Upper Bound Travel Time (Seconds)	Midday Mean Travel Time (Seconds)	Midday Range - Lower Bound Travel Time (Seconds)
0	05/12/2019	3603	Embarcadero, San Francisco, CA	3792	Oracle Park, 24 Willie Mays Plaza, San Francis...	526	370	748	420.0	305.0	...	700	566	388
1	05/13/2019	3603	Embarcadero, San Francisco, CA	3792	Oracle Park, 24 Willie Mays Plaza, San Francis...	610	424	877	583.0	467.0	...	1468	579	446
2	05/14/2019	3603	Embarcadero, San Francisco, CA	3792	Oracle Park, 24 Willie Mays Plaza, San Francis...	603	415	877	612.0	464.0	...	1193	600	425
3	05/15/2019	3603	Embarcadero, San Francisco, CA	3792	Oracle Park, 24 Willie Mays Plaza, San Francis...	655	440	974	706.0	489.0	...	1107	701	512
4	05/16/2019	3603	Embarcadero, San Francisco, CA	3792	Oracle Park, 24 Willie Mays Plaza, San Francis...	605	434	842	609.0	469.0	...	1034	657	501
5	05/17/2019	3603	Embarcadero, San Francisco, CA	3792	Oracle Park, 24 Willie Mays Plaza, San Francis...	574	409	805	522.0	405.0	...	917	628	462

hours_q1.csv & hours_q2.csv

- Each row represents the average travel time for some unique trip in the specified hour of day (hod) in either quarter 1 or quarter 2
- Example
 - Trip: Powell → Fisherman's Wharf
 - Hod: 15 (**military time**)
 - Mean_travel_time: 8.94
- Regular and Geometric means and standard deviations are given. Try to take advantage of both!

	sourceid	dstid	hod	mean_travel_time	standard_deviation_travel_time	geometric_mean_travel_time	geometric_standard_deviation_travel_time
0	3768	3700	3	161.58	87.83	147.02	1.49
1	3772	3660	3	373.98	217.24	328.16	1.65
2	3751	3708	6	1197.27	259.18	1171.36	1.23
3	3761	3608	6	588.32	223.30	557.92	1.36
4	3767	3724	17	438.98	235.70	395.22	1.55
5	3778	3614	17	1771.23	439.96	1717.16	1.28
6	3769	3704	17	511.86	270.83	460.53	1.55
7	3775	3644	17	544.15	228.36	513.53	1.37
8	3772	3674	17	963.83	504.70	858.42	1.61
9	3779	3604	17	501.38	176.70	478.24	1.35
10	3777	3624	17	1920.58	397.03	1883.62	1.21
11	3776	3634	17	956.07	376.74	889.96	1.46
12	3761	3784	17	1646.46	429.40	1600.84	1.26
13	3768	3714	17	512.26	142.10	494.03	1.30
14	3773	3664	17	1430.39	402.00	1380.00	1.30
15	3771	3684	17	1373.96	489.25	1306.88	1.35
16	3696	3624	4	221.46	187.37	157.85	2.31
17	3688	3704	4	70.33	76.70	48.40	2.31
18	3694	3644	4	138.65	103.60	114.39	1.78
19	3684	3744	4	228.27	145.00	197.98	1.65
20	3686	3724	4	129.06	92.83	108.22	1.76
21	3608	3604	4	281.86	212.87	228.04	1.88

Things to keep in mind

- Quarter 1 → 01/01/19 : 03/31/19 | Quarter 2 → 04/01/19 : 06/30/19
- Larger travel time values do **not** correlate with more efficient rides
 - Contrary to typical time series, a decline in the value of our variable (travel time) is actually a good sign of efficiency
- 3 relevant BART stations and 3 relevant hotspots
- Direction of travel → think of the ride's general direction relative to the heart of the city
- It may help to have a map!

Questions?