Mapping Open Data

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My Background

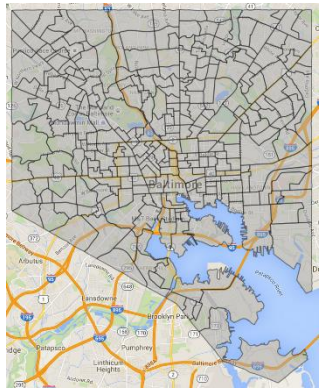
Biomedical Engineering

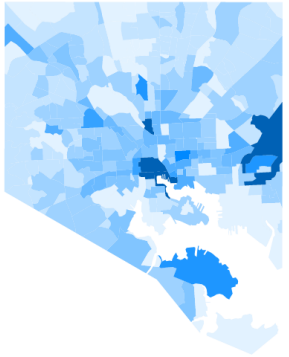
- Machine Learning / Data Science
- Brain Computer Interfaces
- Muscle-controlled Prosthetics

Not (wasn’t?) a developer.

Maps are easy to make

- Find data (Web)
  - Attributes
  - Geometry
- Clean data (Excel / Python)
- Import and merge data in GIS (QGIS)
- Analyze and style data (QGIS)
- Host it online (Mapbox)



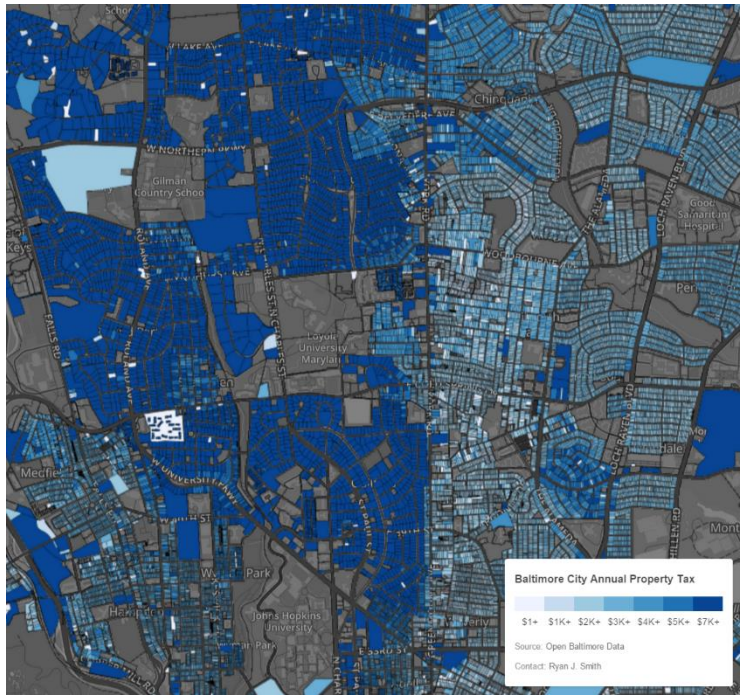


Maps make data accessible

RAW DATA

propertyAddress	lotSize	cityTax
2045 W NORTH AVE	15-2X83-10	$1964.84
2043 W NORTH AVE	14X83-10	$1122.66
2041 W NORTH AVE	14X83-10	$1043.28
2039 W NORTH AVE	14X83-10	$1043.28
2037 W NORTH AVE	14X83-10	$680.40
2035 W NORTH AVE	14X83-10	$567.00
2033 W NORTH AVE	14X83-10	$680.40
2031 W NORTH AVE	14X83-10	$68.04
2029 W NORTH AVE	14X83-10	$680.40
2027 W NORTH AVE	14X83-10	$680.40
2025 W NORTH AVE	14X83-10	$680.40
2023 W NORTH AVE	14X83-10	$680.40
2021 W NORTH AVE	14X83-10	$680.40
2019 W NORTH AVE	14X83-10	$680.40
2017 W NORTH AVE	14X83-10	$680.40
2001 W NORTH AVE	0.231 ACRES	$0.00
1824 N PAYSON ST	13-10X80	$680.40
1822 N PAYSON ST	13-10X80	$680.40
1820 N PAYSON ST	13-10X80	$680.40
1818 N PAYSON ST	13-10X80	$680.40
1816 N PAYSON ST	13-10X80	$680.40
1814 N PAYSON ST	13-10X80	$680.40
1812 N PAYSON ST	13-10X80	$680.40
1810 N PAYSON ST	13-10X80	$680.40
1808 N PAYSON ST	13-10X80	$680.40
1806 N PAYSON ST	13-10X80	$680.40
1804 N PAYSON ST	13-10X80	$680.40
1802 N PAYSON ST	13-10X80	$0.00
1800 N PAYSON ST	13-10X80	$0.00

DATA VISUALIZED



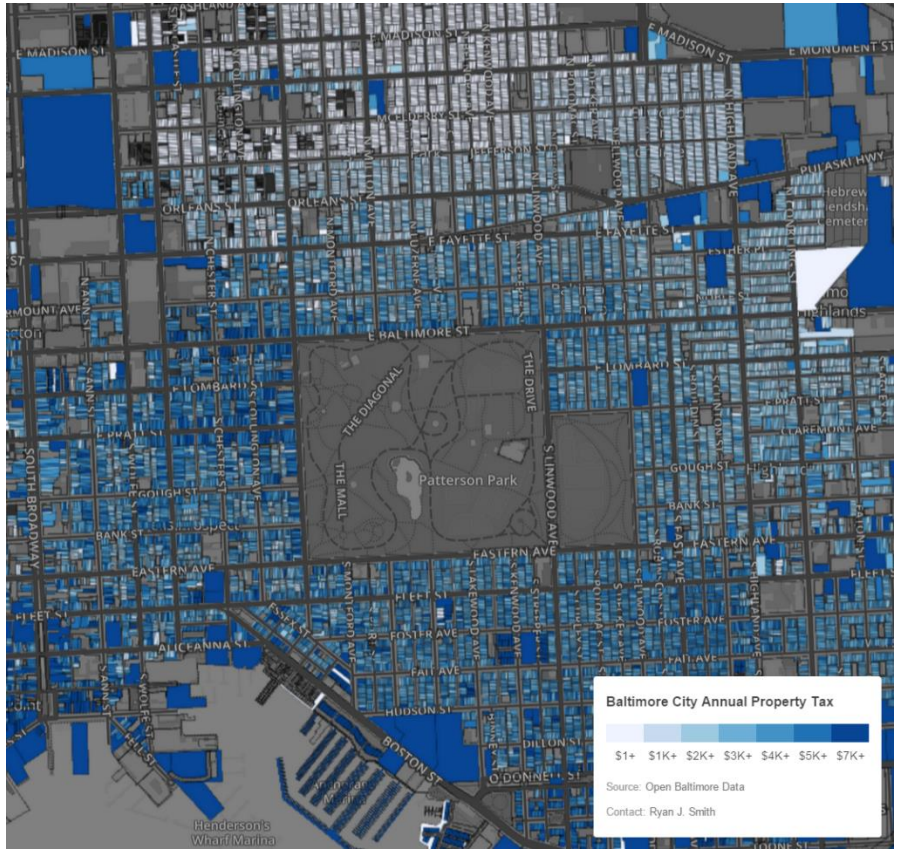
Baltimore City Property Tax Map

Data:

- Property tax by address (csv)
- Address geometry (shapefiles)

Tools:

- Excel (Cleaning)
- QGIS (Mapping)
- Mapbox (Styling and hosting)



Maps reveal hidden trends

Statement of Votes Cast
Baltimore City General Held November 8, 2011
SOVC For Jurisdiction Wide, All Counters, MAYOR

Date:11/22/11
Time:06:58:15
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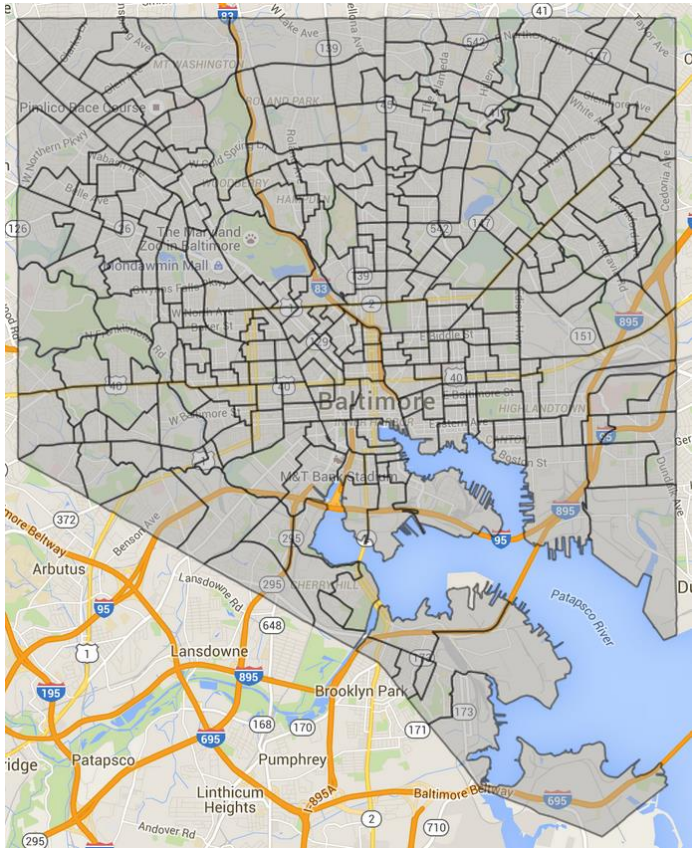
	MAYOR								
	Reg. Voters	Times Counted	Total Votes	Rawlings-Blake, S. (DEM)		Griffin, Alfred V. (REP)		Write-In Votes	
Jurisdiction Wide									
001-001 School No. 47	1198	75	74	47	63.51%	26	35.14%	1	1.35%
001-002 Engine House No. 5	1774	172	164	97	59.15%	51	31.10%	16	9.76%
001-003 School No. 47	1526	95	92	66	71.74%	24	26.09%	2	2.17%
001-004 St. Brigid's Parish Center	2264	138	138	98	71.01%	36	26.09%	4	2.90%
001-005 Hatton Senior Citizens Center	2881	212	207	127	61.35%	72	34.78%	8	3.86%
002-001 School No. 23	961	112	107	79	73.83%	20	18.69%	8	7.48%
002-002 School No. 23	1551	149	142	84	59.15%	49	34.51%	9	6.34%
002-003 Lemlo House	2046	169	165	106	64.24%	47	28.48%	12	7.27%
003-001 School No. 423	1341	104	100	89	89.00%	7	7.00%	4	4.00%
003-002 School No. 423	570	28	28	25	89.29%	3	10.71%	0	0.00%
003-003 St. Leo's Church Hall	1499	123	121	91	75.21%	27	22.31%	3	2.48%
004-001 Charles Tower Apartments	1267	88	86	72	83.72%	13	15.12%	1	1.16%
004-002 Steadman Fire Station	1549	60	58	43	74.14%	15	25.86%	0	0.00%
004-003 Murty Center-Poe Auditorium	503	57	52	49	94.23%	2	3.85%	1	1.92%
005-001 Pleasant View Gardens	1390	102	100	92	92.00%	6	6.00%	2	2.00%
005-002 Monument East Apartments	327	49	47	42	89.36%	5	10.64%	0	0.00%
006-001 School No. 83	1250	116	111	95	85.59%	11	9.91%	5	4.50%
006-002 School No. 27	588	56	53	43	81.13%	8	15.09%	2	3.77%
006-003 School No. 27	442	69	64	58	90.63%	5	7.81%	1	1.56%
006-004 School No. 27	933	184	173	128	73.99%	33	19.08%	12	6.94%
006-005 School No. 83	2206	171	163	125	76.69%	24	14.72%	14	8.59%
007-001 East Baltimore Development, Inc	892	81	75	64	85.33%	9	12.00%	2	2.67%
007-002 School No. 13	321	15	14	11	78.57%	1	7.14%	2	14.29%
007-003 School No. 13	2059	200	185	160	86.49%	17	9.19%	8	4.32%
007-004 Immanuel Temple AME Church	2064	203	197	177	89.85%	12	6.09%	8	4.06%
008-001 The Maryland State Boychoir Center For the Arts	1011	160	152	120	78.95%	29	19.08%	3	1.97%
008-002 The Maryland State Boychoir Center For the Arts	1121	135	125	93	74.40%	21	16.80%	11	8.80%
008-003 Catholic High School	1645	175	164	140	85.37%	20	12.20%	4	2.44%
008-004 School No. 36	436	43	41	38	92.68%	2	4.88%	1	2.44%
008-005 School No. 36	1728	169	163	146	89.57%	16	9.82%	1	0.61%
008-006 School No. 250	1794	184	171	158	92.40%	9	5.26%	4	2.34%
008-007 School No. 250	449	47	41	36	87.80%	3	7.32%	2	4.88%
008-008 Truck Co. No. 15	755	91	87	73	83.91%	11	12.64%	3	3.45%
008-009 Collington Square Recreation Center	994	105	101	90	89.11%	8	7.92%	3	2.97%
008-010 School No. 85	3114	587	537	484	90.13%	38	7.08%	15	2.79%
008-011 School No. 86	514	77	71	62	87.32%	8	11.27%	1	1.41%
009-001 Church of the Redeemed of the Lord	584	46	44	36	81.82%	8	18.18%	0	0.00%
009-002 Ellerslie Apartments	783	97	92	74	80.43%	15	16.30%	3	3.26%
009-003 School No. 51 Entrance on 34th st.	1351	181	176	150	85.23%	21	11.93%	5	2.84%
009-004 School No. 51 Entrance on 34th st.	1822	282	271	237	87.45%	27	9.96%	7	2.58%
009-005 School No. 410 Entrance Tivoly Ave	1531	220	209	195	93.30%	11	5.26%	3	1.44%
009-006 School No. 410 Entrance Tivoly Ave	1863	256	247	226	91.50%	14	5.67%	7	2.83%
009-007 School No. 44	1680	203	189	167	88.36%	17	8.99%	5	2.65%
009-008 Mason Hall	1470	123	118	110	93.22%	6	5.08%	2	1.69%
009-009 School No. 31	821	94	91	84	92.31%	4	4.40%	3	3.30%
009-010 Engine House No. 31	1133	133	126	112	88.89%	9	7.14%	5	3.97%
009-011 School No. 31	326	14	14	10	71.43%	2	14.29%	2	14.29%
009-012 Mason Hall	1402	167	158	140	88.61%	16	10.13%	2	1.27%
009-013 School No. 7	830	97	95	85	89.47%	9	9.47%	1	1.05%
009-014 School No. 7	1388	138	128	111	86.72%	16	12.50%	1	0.78%
009-015 Oliver Multi-Purpose Center	1768	181	172	154	89.53%	16	9.30%	2	1.16%
010-001 School No. 16	1038	129	122	112	91.80%	8	6.56%	2	1.64%
010-002 Waters Tower	1168	160	152	143	94.08%	7	4.61%	2	1.32%
010-003 Latrobe Homes	612	42	39	35	89.74%	3	7.69%	1	2.56%
010-004 School No. 16	641	72	71	68	95.77%	3	4.23%	0	0.00%
011-001 Chase House	1398	114	112	85	75.89%	18	16.07%	9	8.04%
011-002 Chase House	469	73	69	62	89.86%	4	5.80%	3	4.35%
011-003 Brown Memorial Church	1309	220	215	185	86.05%	25	11.63%	5	2.33%
011-004 McCulloh Homes	913	70	66	60	90.91%	3	4.55%	3	4.55%
011-005 Chase House	572	44	41	35	85.37%	5	12.20%	1	2.44%
011-006 Central Library	2061	212	207	170	82.13%	32	15.46%	5	2.42%
011-007 Waxter Center	1232	145	144	113	78.47%	27	18.75%	4	2.78%



2011 Mayoral Vote Map

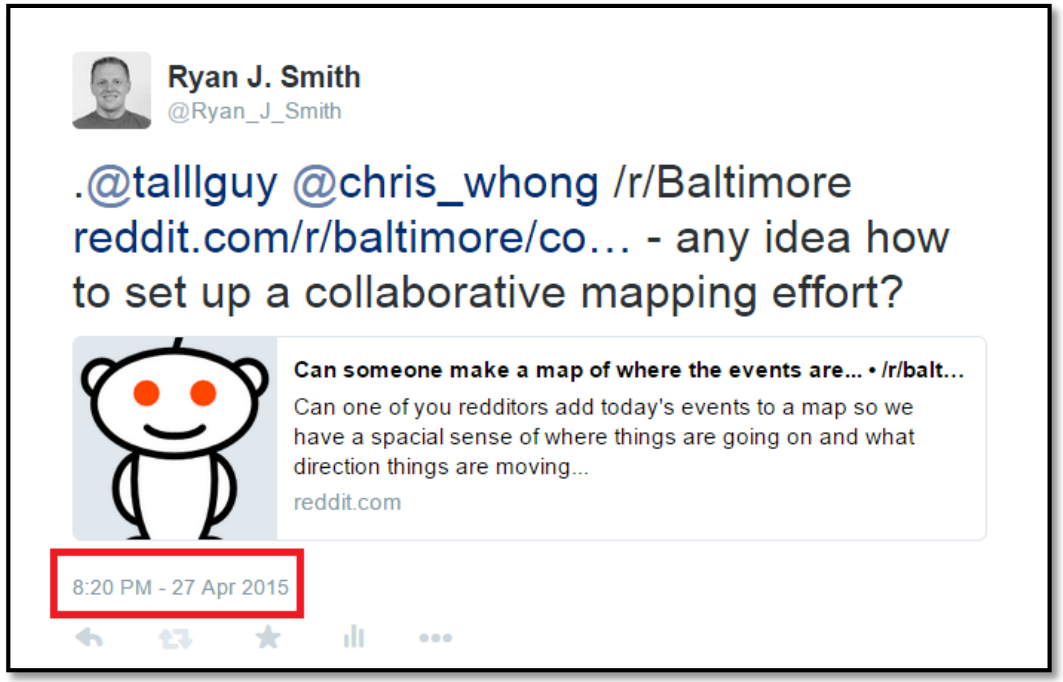
Data:

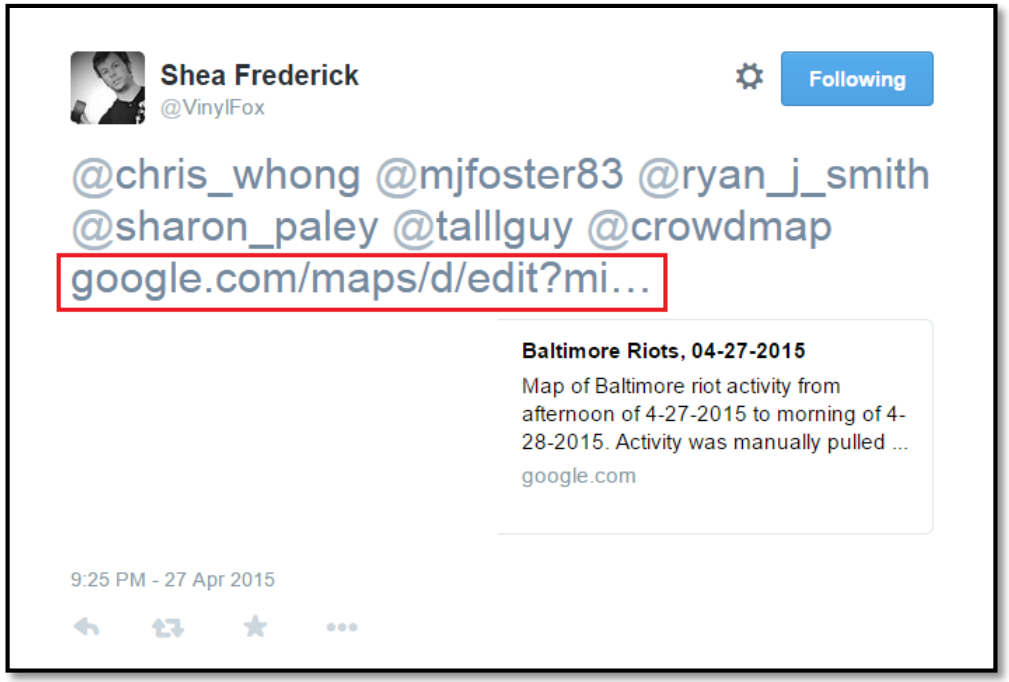
- Total votes by precinct (pdf)
- Precinct shape files

Tools:

- Tabula – Data Extraction (pdf to xls)
- Excel – Data Cleaning
- QGIS – Mapping
- Mapbox – Styling and hosting

Maps don’t have to be fancy to be useful





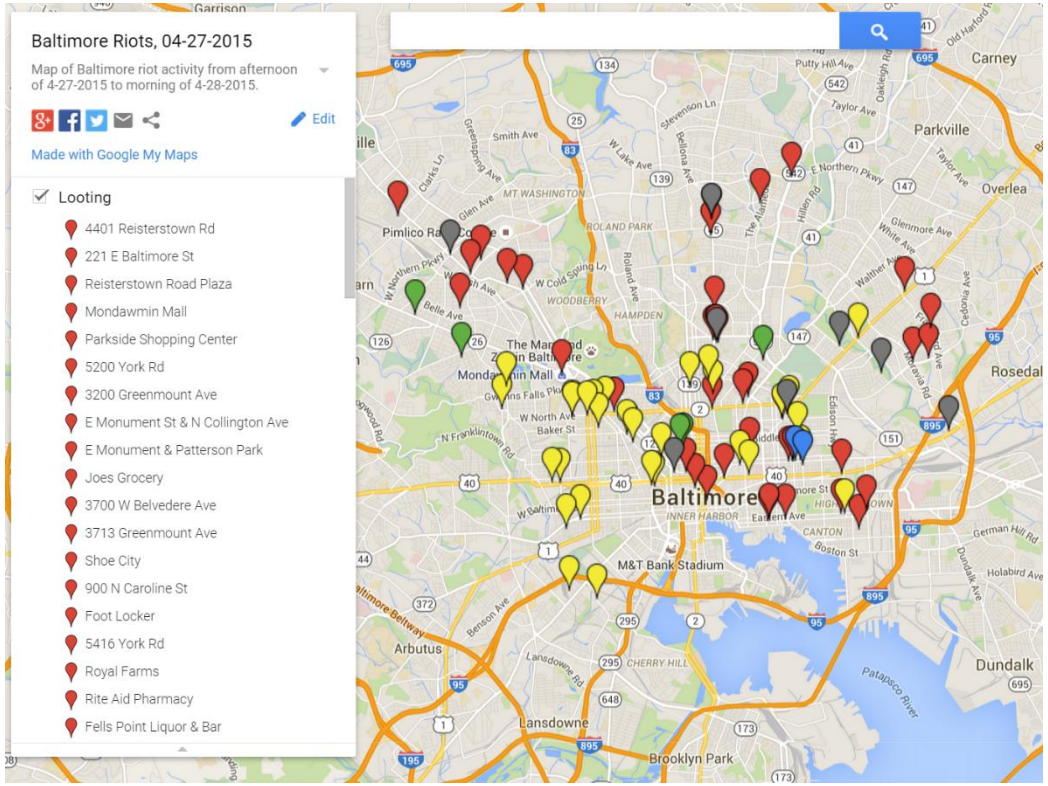
Baltimore Riot Map

Data:

- Twitter
- Reddit
- Police Scanners

Tools:

- Google maps
- Headphones



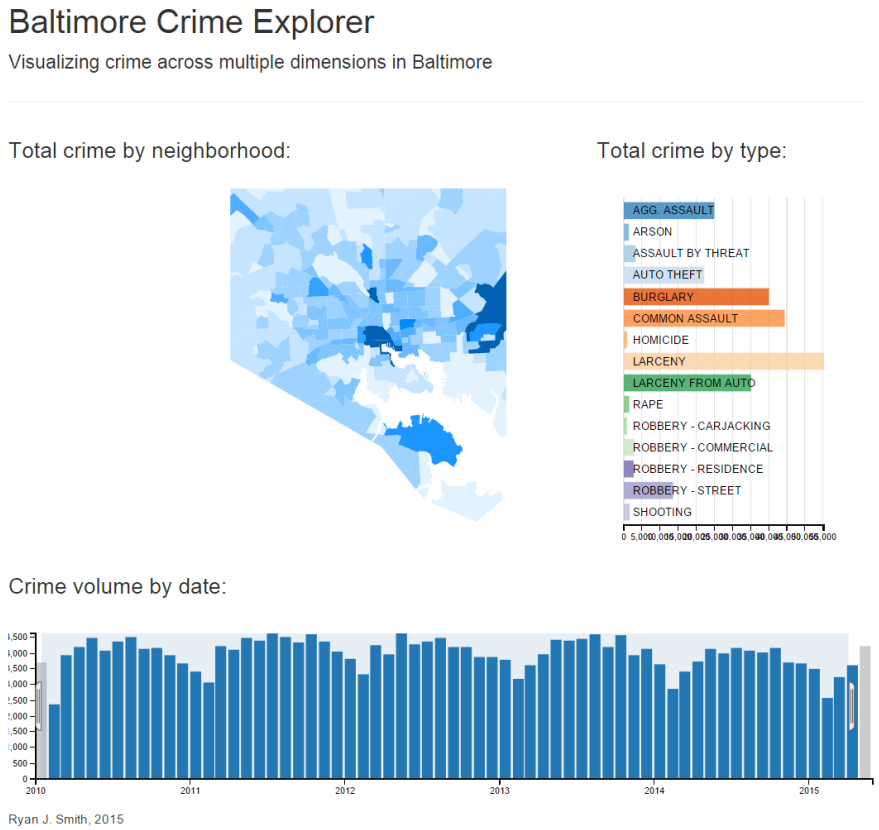
Interactive Maps: Crime Explorer

Data

- BPD Violent Crimes, 2010-2015
  - ~250,000 incidents
- 2010 Census Demographics
- Neighborhood Shape Files

Tools

- Python (pandas) – Data cleaning
- d3.js, crossfilter.js, dc.js – Visualization
- Github & github pages – Hosting



Questions?