New York City DOT
Vision Zero & Big Data

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NEW YORK CITY
DOT

NYCDOT & Vision Zero

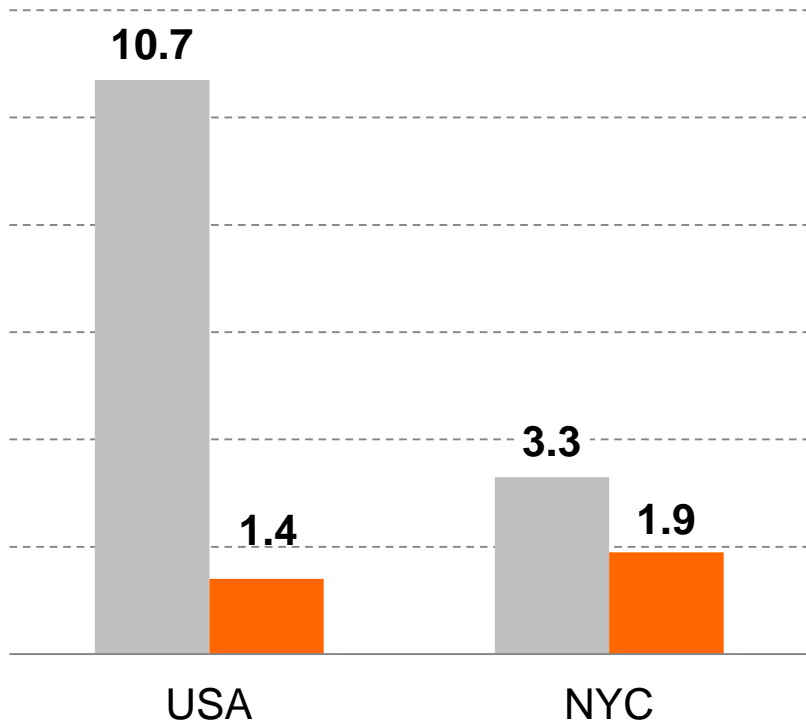**NYC Open Data**

City Fleet Telematics

Yellow and Green Taxi GPS

MTA Bus Time

NYC VS. USA TRAFFIC FATALITIES

Total Fatalities **Pedestrian Fatalities**
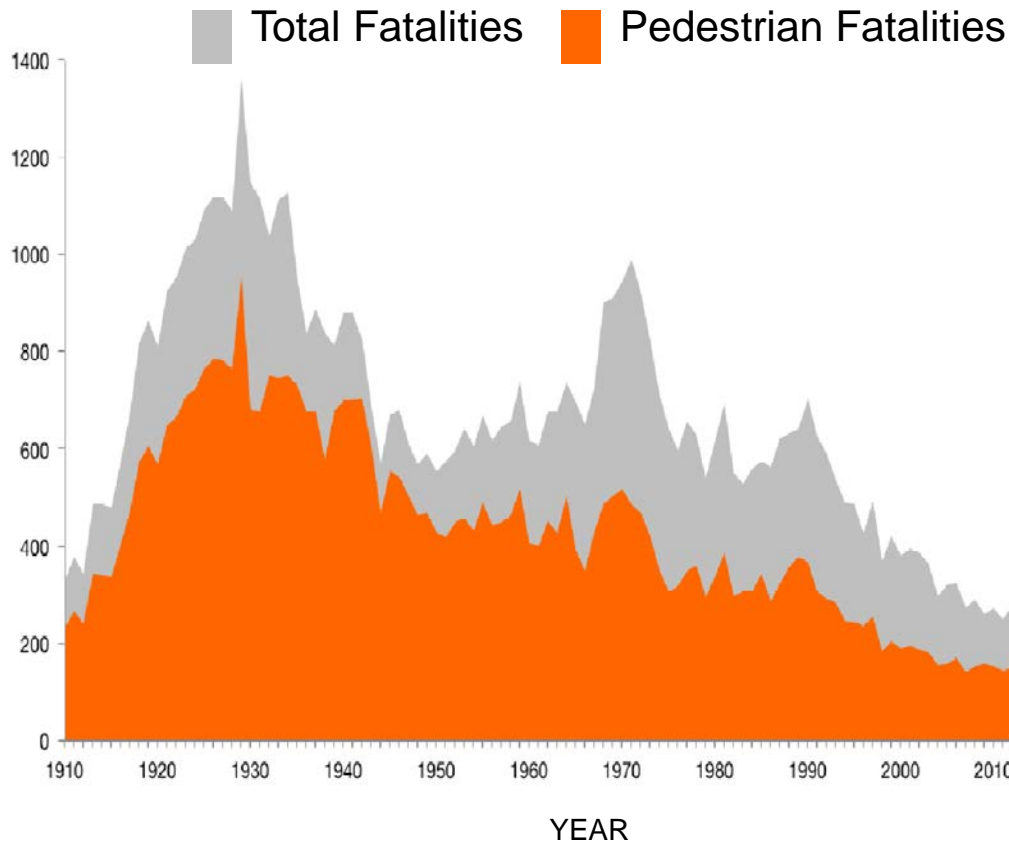
Traffic Fatalities per 100,000 Residents

	USA	NYC
Total Fatalities	10.7	3.3
Pedestrian Fatalities	1.4	1.9

USA data excludes NYC; Average of last 3 years available data

NYC FATALITIES

Total Traffic and Pedestrian

| Total Fatalities | Pedestrian Fatalities |

Year	Pedestrian Fatalities	Percent of Total Fatalities	
1950's	453	72%	
1990's	261	51%	
2000's	167	51%	
2011	142	57%	
2012	151	54%	
2013	183	62%	
2014	140	54%	
2015	136	58%	

What is Vision Zero in NYC

- Led by City Hall
- Prominent
- Multi-Agency
- Funded
- Comprehensive
  - Engineering
  - Enforcement
  - Education
  - Policy

Priority Geographies

- Developed for 5 Vision Zero Borough Pedestrian Safety Action Plans (2015)

- To prioritize engineering, enforcement & education

- **Priority Corridors** - highest pedestrian KSI per mile = 50% of total

- **Priority Intersections** – highest pedestrian KSI, account 15% of total

- **Priority Areas** - highest density of pedestrian KSI crashes per square mile = 50% of total

Brooklyn Priority Map

Vision Zero: Year 1 Accomplishments

- DOT & NYPD Street Teams

- Public information campaigns

- Passage of Speed camera bill

- 25mph default speed limit

- 27 Arterial Slow Zones

- 57 Safety Engineering Projects

Vision Zero: Year 2

- 80 Safety engineering projects

- 12 protected bike lane miles

- 400+ LPIs at Priority Corridors and Intersections

- Targeted safety education and outreach

- Enhanced street lighting on Priority Corridors

- 140 speed cameras installed by mid-September

- 9 completed Neighborhood Slow Zones

- 340 speed humps installed

2015 Safety Engineering Project:
Intervale Ave, The Bronx

BEFORE

AFTER

PEDESTRIAN TRAFFIC FATALITIES

Before and After Vision Zero

Prior to Vision Zero

5 year average:
157 fatalities

Average increase:
4.9 fatalities/year

Trendline/forecast based on 2009-2013 fatalities
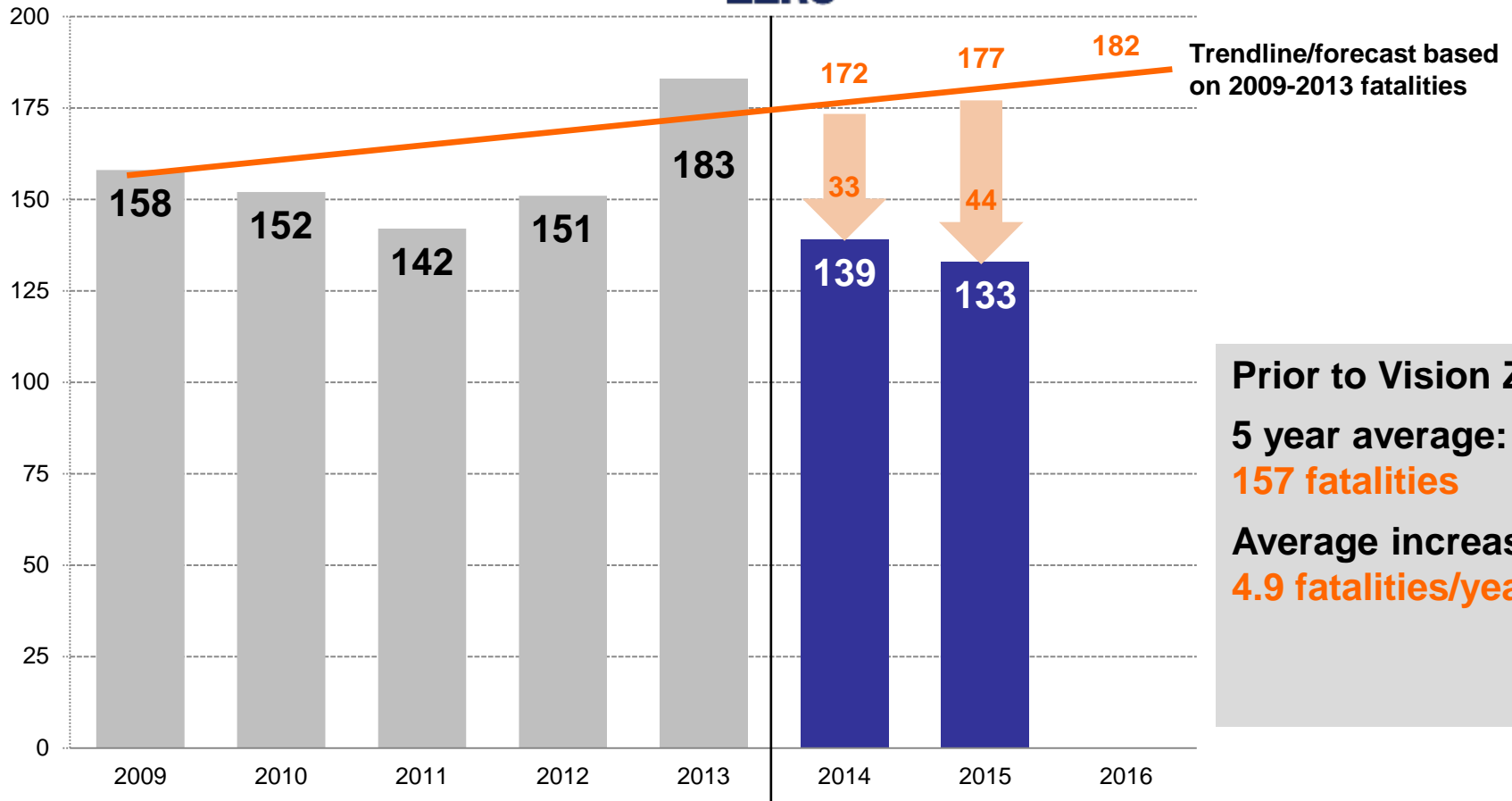
NYC OpenData

Search

Click here for the official list of NYC datasets

Business

City Government

Education

Environment

Health

Housing & Development

Public Safety

Recreation

Social Services

Transportation

NYC BigApps

- **NYC Open Data** launched in 2011

- In 2012, the New York City Council approved Local Law 11, requiring all city agencies to open their data by 2018

- Repository of 1350+ government-produced, machine-readable data sets

- Socrata platform
  - Provides metadata, raw download, generates automatic & consistent API
- https://nycopendata.socrata.com
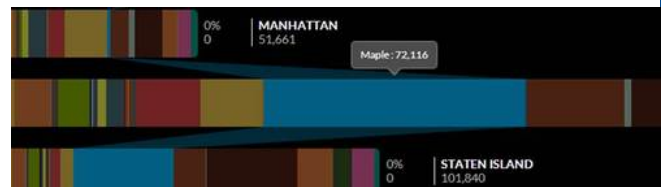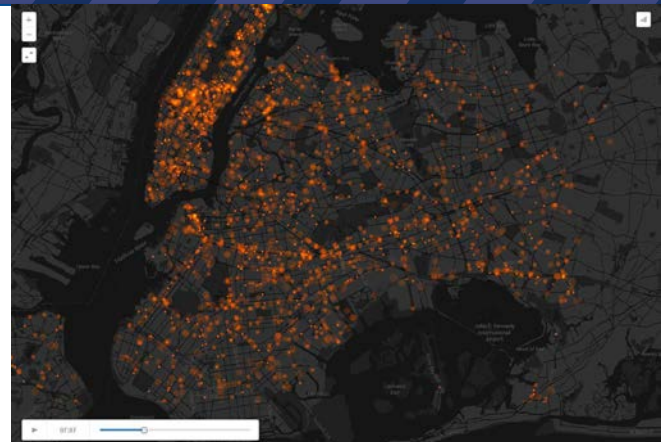
City Fleet Telematics for Vision Zero

- Part of the City's Automated Fuel Management System with EJ Ward, NYC is currently rolling out tracking devices called CANceivers on all City fleet vehicles
- Covers all major agencies, including Sanitation, Police, Fire, Parks, Transportation
  - 20,000 (out of 27,000) installations to date

- OBDII interface
- WiFi update capability
- No manual entry once the vehicle arrives at the terminal

- CANceivers track up to 30 variables including:
  - Location
  - Speed
  - Hard Braking
 - Hard Acceleration
  - Seat Belt Usage

Citywide Safety Index Report

January - July 2015

Vehicle Information		CANceiver Unit			CRASH			Violations			High Speed				Hard Driving				Seatbelt
Agency	Unit Number	Reporting CANceiver	Last Odometer Event	Miles Driven	Fatalities in Collisions	Injuries in Collisions	Total Collisions	Red Light	Bus Lane	Speed Zone	Speed Events per 100mi	Total Speed Events	Speed Events 50-64mph	Speed Events 65mph+	Acceleration Events per 100mi	Total Acceleration Events	Braking Events per 100mi	Total Braking Events	Seatbelt Compliance
	367	No	N/A	N/A	0	0	0	1	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	385	Yes	6/4/2015	178	0	0	0	0	0	0	10.11	18	15	3	1.12	2	42.13	75	N/A
	386	Yes	7/31/2015	3,499	0	0	0	0	0	0	21.06	737	643	94	3.92	137	17.81	623	N/A
	387	Yes	7/29/2015	1,341	0	0	1	0	0	0	15.14	203	198	5	10.14	136	31.25	419	N/A
	388	Yes	7/31/2015	1,163	0	0	0	0	0	0	14.53	169	157	12	6.02	70	25.45	296	N/A
	389	Yes	7/31/2015	975	0	0	0	0	0	0	13.95	136	125	11	5.03	49	28.00	273	N/A
	390	Yes	6/17/2015	1,169	0	0	0	1	0	0	7.70	90	86	4	1.45	17	16.77	196	N/A
	391	Yes	7/31/2015	421	0	0	0	0	0	0	16.63	70	63	7	10.69	45	16.39	69	N/A
	392	Yes	7/27/2015	1,278	0	0	0	0	0	0	17.84	228	209	19	3.21	41	19.64	251	N/A
	393	Yes	7/31/2015	415	0	0	0	0	0	2	19.52	81	80	1	6.51	27	20.48	85	N/A
	394	Yes	7/31/2015	1,213	0	0	0	0	0	0	23.74	288	266	22	6.27	76	21.52	261	N/A
	500	Yes	7/31/2015	3,374	0	0	0	2	0	1	18.23	615	527	88	17.87	603	8.24	278	100%
	501	Yes	3/2/2015	290	0	0	0	0	0	0	24.14	70	69	1	6.21	18	8.62	25	N/A
	502	No	N/A	N/A	0	0	0	0	1	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	503	No	N/A	N/A	0	0	0	0	0	1	N/A	679	611	68	N/A	792	N/A	255	100%
	504	No	N/A	N/A	0	0	0	0	0	0	N/A	1,072	971	101	N/A	323	N/A	205	N/A
	505	Yes	7/22/2015	1,182	0	0	0	0	0	1	32.32	382	372	10	11.93	141	8.88	105	N/A
	506	Yes	5/20/2015	2,553	0	0	0	0	0	0	16.45	420	392	28	19.58	500	16.14	412	N/A
	507	Yes	6/13/2015	1,372	0	0	0	1	0	0	20.85	286	244	42	31.92	438	22.81	313	N/A
	508	Yes	6/5/2015	1,950	0	0	0	1	0	0	32.92	642	568	74	8.56	167	17.79	347	N/A
	509	Yes	7/31/2015	2,753	0	0	1	0	0	1	21.03	579	484	95	21.83	601	15.44	425	5%
	510	Yes	6/20/2015	1,548	0	0	0	0	0	0	18.67	289	247	42	11.89	184	13.70	212	N/A
	511	Yes	7/31/2015	2,824	0	0	0	1	0	0	38.88	1,098	846	252	23.97	677	24.47	691	5%
	512	Yes	7/19/2015	4,959	0	0	0	0	0	1	22.00	1,091	950	141	29.84	1,480	12.58	624	100%
	513	Yes	7/31/2015	4,243	0	0	0	1	0	0	19.99	848	740	108	27.15	1,152	11.74	498	100%
	514	Yes	7/31/2015	3,430	0	0	0	0	0	0	19.74	677	595	82	18.02	618	7.84	269	100%
	515	Yes	7/31/2015	3,083	0	0	0	0	0	1	23.42	722	580	142	30.13	929	12.81	395	100%
	516	Yes	7/31/2015	3,559	0	0	0	0	0	0	23.60	840	649	191	30.57	1,088	14.50	516	100%
	517	Yes	7/31/2015	2,659	0	0	0	0	0	1	17.98	478	449	29	18.54	493	7.90	210	100%
	518	No	N/A	N/A	0	0	0	1	0	0	N/A	627	518	109	N/A	639	N/A	481	100%
	519	Yes	7/22/2015	3,535	0	0	1	0	0	0	29.02	1,026	843	183	39.63	1,401	15.50	548	100%
	520	Yes	6/17/2015	43	0	0	0	0	0	0	6.98	3	3	0	41.86	18	18.60	8	N/A
	521	Yes	7/31/2015	3,431	0	0	0	1	0	0	19.41	666	582	84	15.88	544	6.03	207	100%
	522	Yes	7/31/2015	2,168	0	1	1	0	0	0	25.37	550	447	103	36.16	784	13.28	288	100%
	523	Yes	7/31/2015	3,217	0	0	0	0	0	1	20.95	674	594	80	35.69	1,148	12.93	416	100%
	525	Yes	7/31/2015	3,017	0	0	0	1	0	0	19.99	603	497	106	21.94	662	8.88	268	100%
	526	Yes	7/31/2015	3,376	0	0	0	0	0	0	21.09	712	617	95	22.16	748	9.15	309	100%
	527	No	N/A	N/A	0	0	0	1	0	0	N/A	346	267	79	N/A	337	N/A	165	100%
	528	Yes	7/30/2015	2,032	0	0	0	0	0	0	30.31	616	566	50	20.52	417	10.93	222	100%
	530	Yes	7/31/2015	3,214	0	0	0	0	0	0	15.74	506	453	53	35.59	1,144	20.72	666	30%
	531	Yes	7/31/2015	2,600	0	0	0	0	0	0	19.95	519	470	49	28.00	728	16.77	436	N/A
	532	Yes	7/30/2015	3,291	0	0	0	0	0	1	22.12	728	630	98	28.38	934	16.01	527	15%
	533	Yes	7/29/2015	3,086	0	0	0	0	0	0	17.17	530	432	98	45.17	1,394	24.82	766	N/A
	534	Yes	1/21/2015	416	0	0	0	0	0	0	21.88	91	90	1	42.31	176	48.08	200	N/A
	535	No	N/A	N/A	0	0	0	1	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	536	Yes	7/20/2015	3,802	0	0	1	0	0	0	20.02	761	636	125	52.08	1,980	28.12	1,069	N/A
	538	Yes	7/31/2015	3,819	0	0	0	0	0	0	25.61	978	777	201	37.58	1,435	28.78	1,099	N/A
	539	Yes	7/31/2015	3,009	0	0	0	0	0	0	21.24	639	610	29	23.20	698	17.15	516	N/A

Yellow and Green Taxi GPS
- GPS in over 13,000 taxi cabs
- Each fare trip is recorded
- Since 2008, over 1 billion records have been stored and analyzed
- Since 2015, green taxi and breadcrumb GPS points available
- The data provide numerous insights:
  - Spatial and Temporal Trip Distributions
  - Origin-Destination Patterns
  - Trip Length and Travel Times
  - Intra-zonal, Inter-zonal and corridor-wide travel speeds
  - Useful for Before-After comparisons
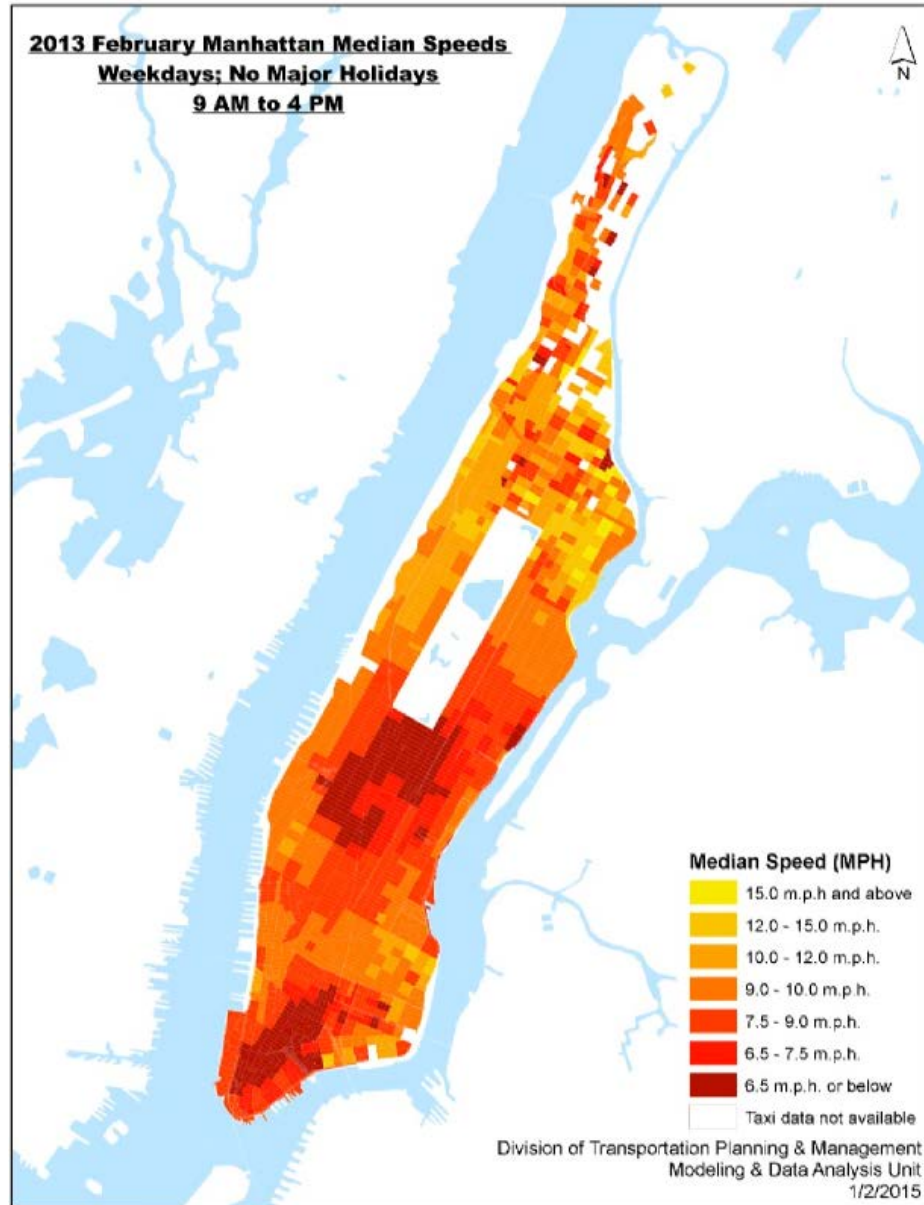
Manhattan Traffic Speeds Day By Day

JANUARY
S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

FEBRUARY
S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28					

MARCH
S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

APRIL
S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

MAY
S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

JUNE
S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

JULY
S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

AUGUST
S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

SEPTEMBER
S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

OCTOBER
S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

NOVEMBER
S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

DECEMBER
S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

This calendar shows average daily speeds in the Manhattan CBD, 6 a.m. to 6 p.m.

Key:

- The 25 fastest days (average speed between 16.3 m.p.h. and 11.9 m.p.h.). Most occur on major holidays or on Sundays in January or July.
- The next 75 fastest days (average daily speed between 11.7 m.p.h. and 10.5 m.p.h.). Most occur on weekends during spring or fall seasons, or immediately before or after holidays.
- Between the 100 fastest days and 100 slowest days are the 165 days with average daily speeds between 10.5 m.p.h. and 9.2 m.p.h. Most are weekdays during spring and summer seasons.
- The next 75 slowest days (9.2 to 8.6 m.p.h.) fall into mid-week weekdays late in the year.
- The 25 slowest days (8.6 to 6.9 m.p.h.) mostly occur in the latter part of the year and all are weekdays. The heaviest concentrations are in late September during the United Nations General Assembly, and in November and December.

Fastest Day
- 2008: Sunday, June 1 (15.1 m.p.h.)
- 2009: Thursday, January 1 (13.9 m.p.h.)
- 2010: Sunday, July 4 (14.2 m.p.h.)
- 2011: Sunday, August 28 (16.3 m.p.h.)

Fastest Non-Holiday Weekday
- 2008: Friday, May 11 (12.4 m.p.h.)
- 2009: Monday, September 28 (11.9 m.p.h.)
- 2010: Monday, January 4 (11.8 m.p.h.)
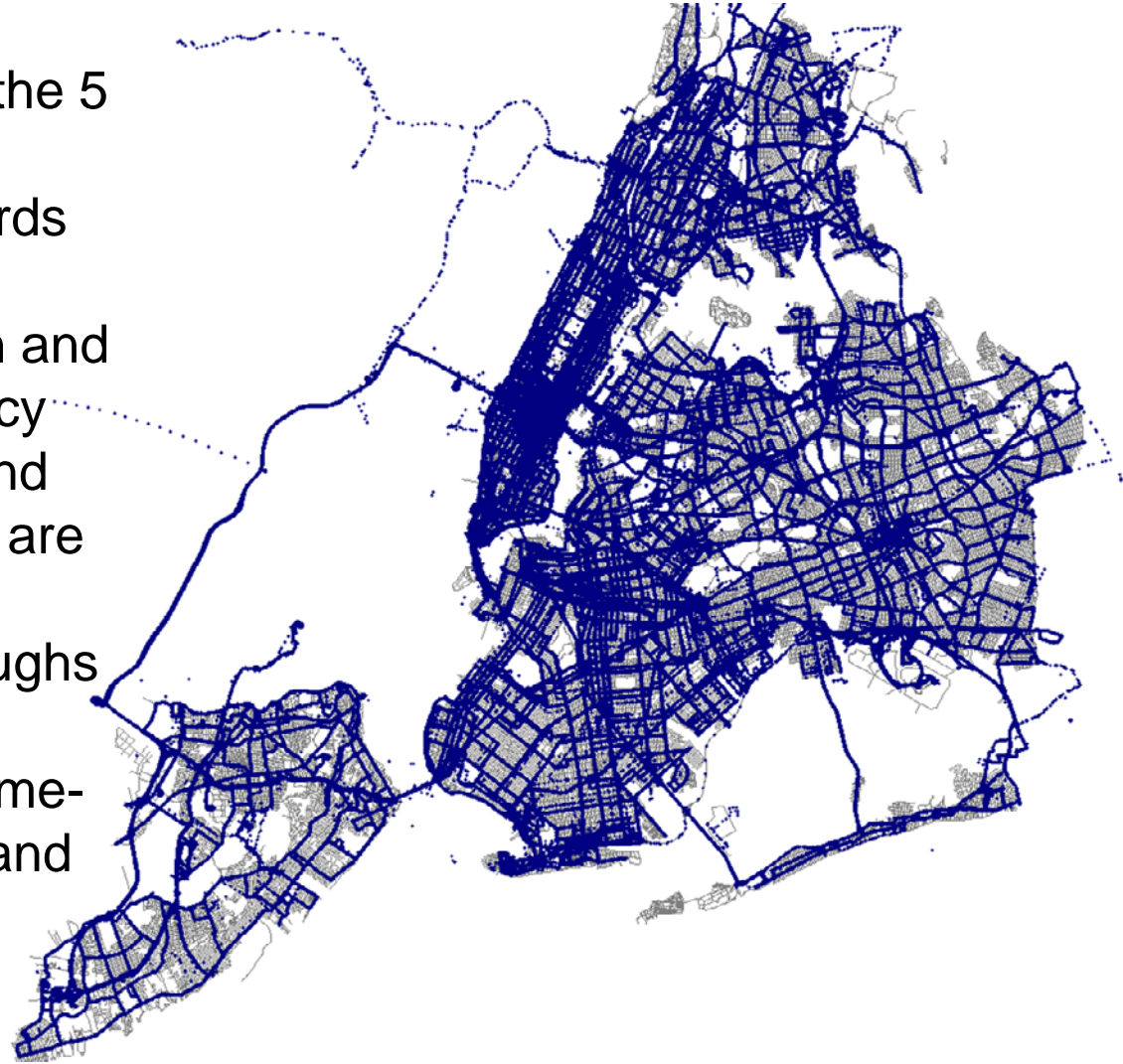- 2011: Monday, January 3 (11.6 m.p.h.)

Slowest Day
- 2008: Wednesday, September 24 (7.0 m.p.h.)
- 2009: Monday, December 21 (8.0 m.p.h.)
- 2010: Wednesday, December 29 (6.4 m.p.h.)
- 2011: Friday, January 28 (6.9 m.p.h.)

2011 Holidays
Month	Holiday
January	New Year's Day (1)
	Martin Luther King Jr. Day (17)
February	President's Day (21)
April	Easter Sunday (24)
May	Memorial Day (30)
July	Independence Day Observed (4)
September	Labor Day (5)
October	Columbus Day (10)
November	Veteran's Day (11)
	Thanksgiving (24)
December	Christmas Day (25)

MTA Bus Time

- GPS devices on entire MTA NYCT and MTA Bus fleet in the 5 Boroughs
- Currently over 6 million records per day
- Gathers bus activity, position and speed at 30-second frequency
- Includes data for corridors and crossings where speed data are not typically gathered
- Coverage of the Outer Boroughs in addition to Manhattan
- Specific vehicle, route and time-of-day data can be isolated and analyzed
- Useful for Before-After comparisons