MTA PIT CREW

Week 1 Project

https://www.thisismetis.com/data-science-bootcamps

PROBLEM

Picture: Passengers waiting for train

Subway is Delayed 40% of the time

PROBLEM

The NYT reports:
Between 2012 and 2018
train delays increased
from 18% to 40%
of the time.

PROBLEM



26% Planned!

MTA's SOLUTION

FAST FORWARD

Improved Coordination

- Fewer crews
- Larger crews
- Multidisciplinary

PICTURE: MTA CREW MEMBER

MTA's SOLUTION

Shutdown

- Nights
- Weekends
- 2.5 years

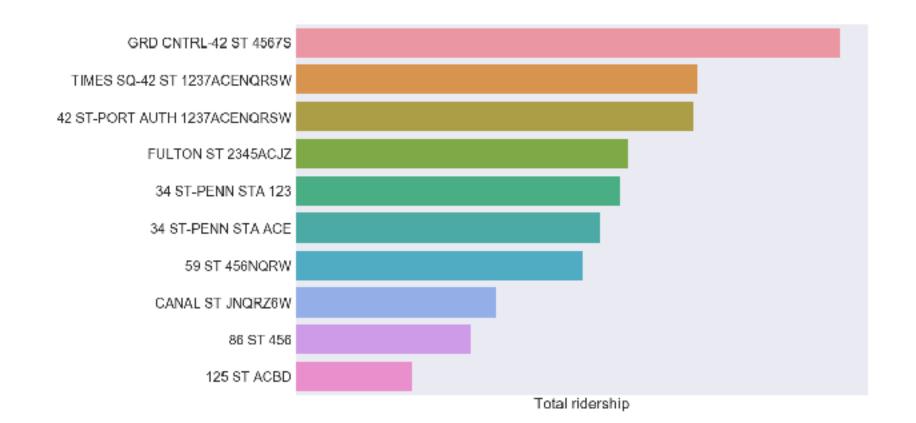
FAST FORWARD

PICTURE: MTA CREW MEMBER

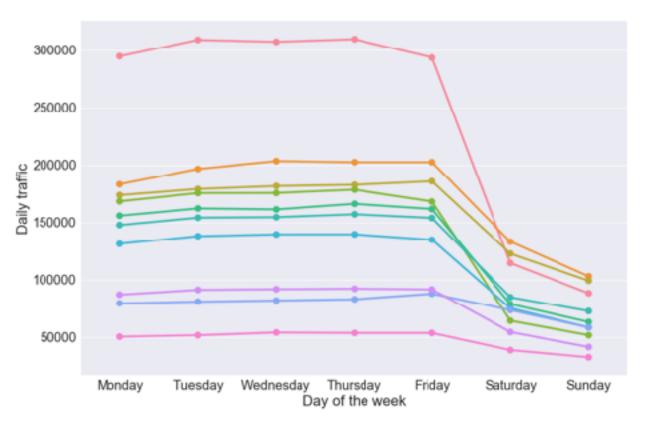
The Data Science

PICTURE: DATA SCIENTIST

THE TOP TEN STATIONS



Daily Traffic

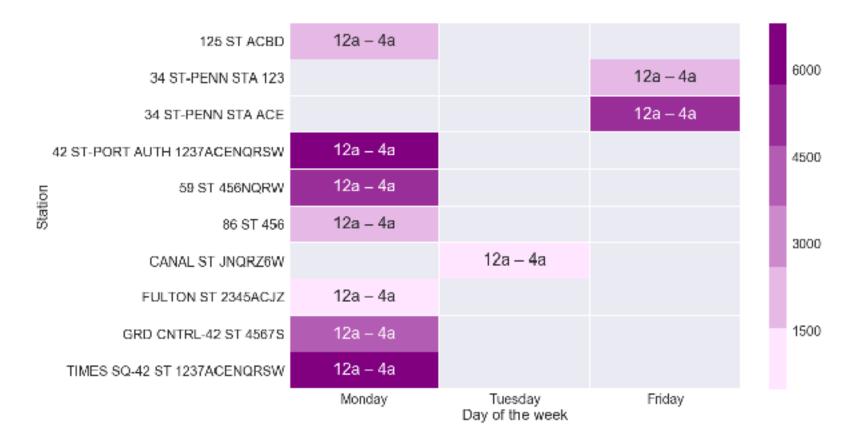


- GRD CNTRL-42 ST 4567S
- TMES SQ-42 ST 1237ACENQRSW
- 42 ST-PORT AUTH 1237ACENORSW
- FULTON ST 2345ACJZ
- 34 ST-PENN STA 123
- 34 ST-PENN STA ACE
- 59 ST 456NQRW
- CANAL ST JNORZ6W
- 86 ST 456
- 125 ST ACBD

STATION PRIORITY

	125 ST ACBD	12a – 4a			6000
	34 ST-PENN STA 123			12a – 4a	
	34 ST-PENN STA ACE			12a – 4a	5000
42	ST-PORT AUTH 1237ACENQRSW			12a – 4a	
Ю	59 ST 456NQRW			12a – 4a	4000
Station	86 ST 456			12a – 4a	3000
	CANAL ST JNQRZ6W		12a – 4a		
	FULTON ST 2345ACJZ			12a – 4a	2000
	GRD CNTRL-42 ST 4567S			12a – 4a	
	TIMES SQ-42 ST 1237ACENQRSW			4a – 8a	1000
		Monday	Tuesday Day of the week	Sunday	

STATION PRIORITY



STATION PRIORITY



Next Steps

Multiple Response Optimization with desirability functions

Apply client-specific preferences and constraints

PICTURE: Optimization Curve

MTA Constraints

Lost revenue

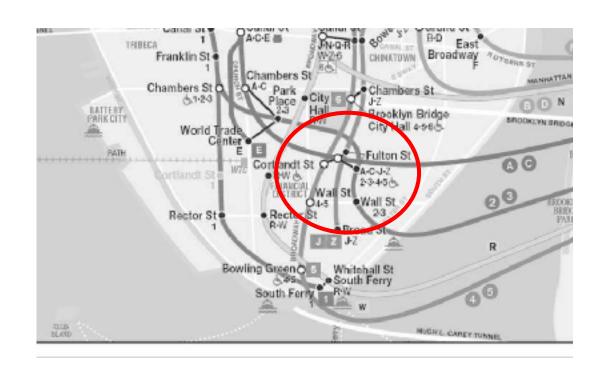
PICTURE: Bag of Cash

Labor Costs

PICTURE: Crew Members

Proximity to other stations

Use DOE
to evaluate
Differences in
Total volume
based on
specific
closures.



References

http://www.businessinsider.com/nyc-subway-37-billion-plan-for-repair-unveiled-2018-5

http://web.mta.info/mta/news/books/docs/150518 SubwayPerformance.pdf

https://www.nytimes.com/interactive/2018/05/09/nyregion/subway-crisis-mta-decisions-signals-rules.html?smid=fb-share