

Apocalyptics



CDC Zombie Apocalypse Proposal

April 10th, 2015 - Revanth Garlapati, Trevor Smith, Brian Kim

Problem



Dr. Evil

- Infamous terrorist from the UK
 - Ties with Al Qaeda, Iran, and North Korea
 - 3 attempts at world destruction in last 25 years
 - attempts neutralized by now inactive secret agent with MI-6
 - Dr. Evil is planning to release a **deadly biological agent** in the **NYC Subway**
 - The chemical causes **Victus Mortuus**
 - kills humans and turns them into **Homo Necrosis Zombifis**(aka: zombies).
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Problem



NYC has **8.4 million people**

-**3.1 million located in Manhattan** during the daytime

-**100,000/sq-mile**

It is believed that if an outbreak is not contained **within 48 hours**

-the world's population is at risk.

Why the Subway System?

- FBI believes attack will likely happen on a NYC Subway Station
- NYC Subway has an average ridership of **2.5mil-5.5mil per day**
- Disease can spread very quickly throughout the city through the deep network of subway stations located in the five boroughs



Initial Findings

Stations with Most Foot Traffic

Station Name

Top Stations - March

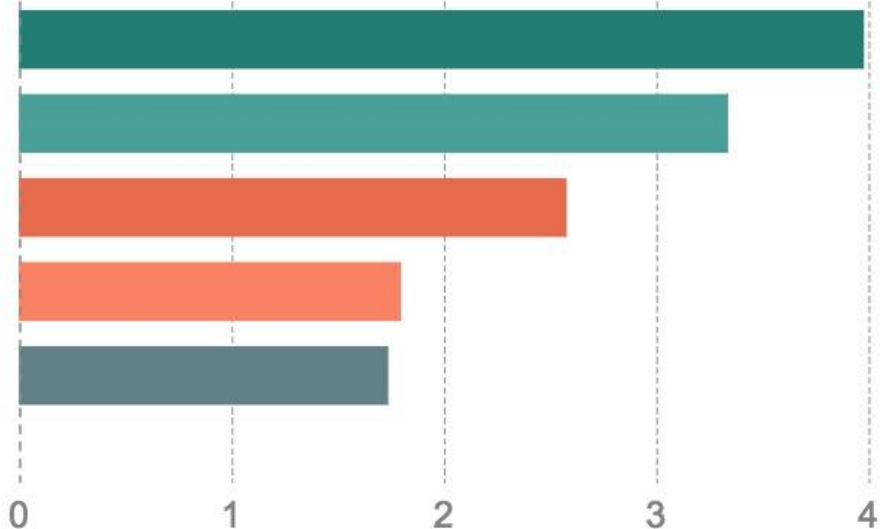
Penn Station

Grand Central

Herald Square

Port Authority

Times Square



Number of Riders (millions)

Entries by Day

Weekdays are much more popular than weekends

- 5.5 million riders on an average weekday
- 3 millions average riders on an average weekend day

Mornings are busier than afternoons or nights

- nearly 50% of all traffic is during the morning commute time

DAILY RIDERSHIP



5.5 AVG WEEKDAY

3.2 SAT

2.5 SUN

Grand Central by Time



8am



12pm



4pm



8pm

*data in millions unless otherwise noted

COVERAGE BY TOP STATIONS

2.8%

Penn Station

by itself accounts for 2.5% of all subway entries in NYC

10%

Top 5 Stations

Penn Station
Grand Central
Herald Sq.
Port Authority
Times Square

50%

Top 86 Stations

The top 18% of stations account for half of all foot traffic

25%

Top 25 Stations

16 of the top 25 are located in lower Manhattan

66%

Top 150 Stations

We think this is the critical point of stations that must be covered to minimize an outbreak

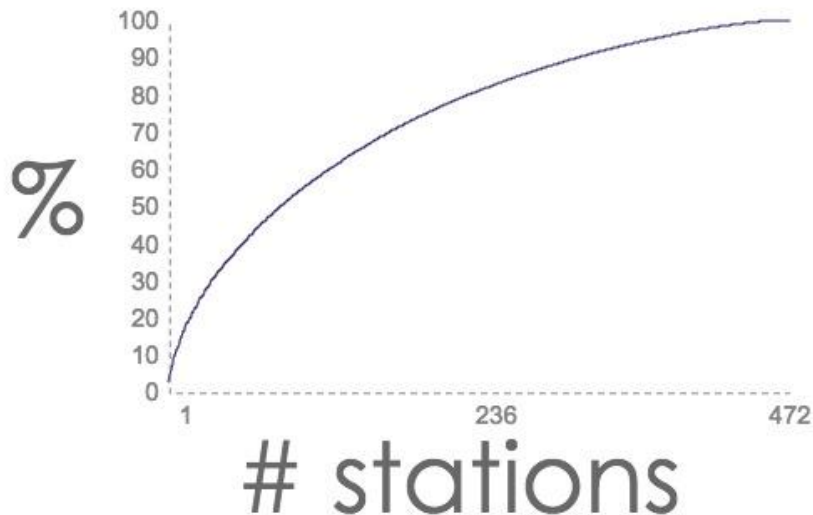
80%

Half of All Stations

Covering only half of all the stations will get us to 80% foot traffic coverage

Coverage Distribution

The top **5 stations** cover **10%**
The top **86 stations** cover **50%**
Half of all stations cover **80%**



Next Steps

Proposed Solution



-By analyzing **MTA Subway data** as well as incorporating a few other data sources we can **prevent / minimize** the effects of a zombie outbreak.

-By understanding the most **at risk** areas/times, the CDC will be able to efficiently staff, police officers and other resources.

-Also, if an outbreak does occur, our interactive heatgraph map of NYC will update to show where to stream resources and which stations to completely shut down in order to contain the outbreak.

Other useful data sources

Other data sources:

- Street traffic index
 - MTA record based spread models
 - Twitter / FB / Instagram
 - New York City Council data on population densities.
 - Pedestrian/Traffic data
 - Weather data and its impact on virus spread
 - Information on spread mechanism
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NYPD Army



“I have my own army in the NYPD, which is the seventh biggest army in the world.”

Mayor Bloomberg

There are over **34,000** NYPD officers

Risk map of NYC



Risk / Danger Level

