Emergency Mask Distribution Plan

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Topics

Overview

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What is
AQI?
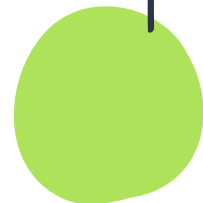
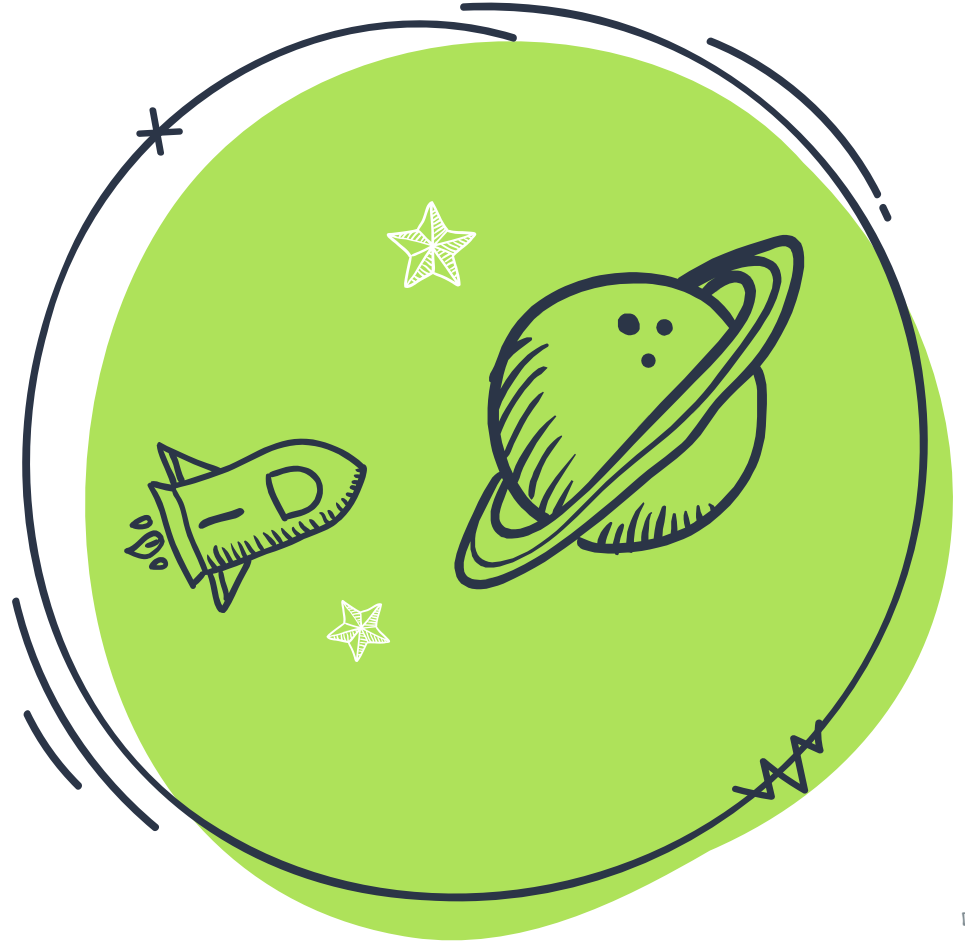Plan of
Action

References

OVERVIEW:

- Recent events regarding the air quality of NYC has necessitated a new plan of action.
- Poor air quality event are likely to become more frequent.
- We propose a plan of action to deal with extreme poor air quality events to protect the health of New Yorkers.
- Using modern AI algorithms, optimal distribution routes are established.

New York City
World Trade Center

2:00 PM

EarthCam

WHAT IS AQI?
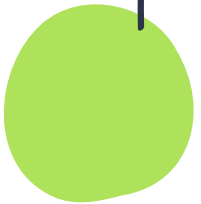
Air Quality Index (AQI)

- A scale ranging from 0 to 500.
- Establishes how clean the air that we breathe in is.
- Establishes different ranges that correspond to different levels of health concern.
- Focuses on the health effects that can occur while spending prolonged periods of time out in bad air.

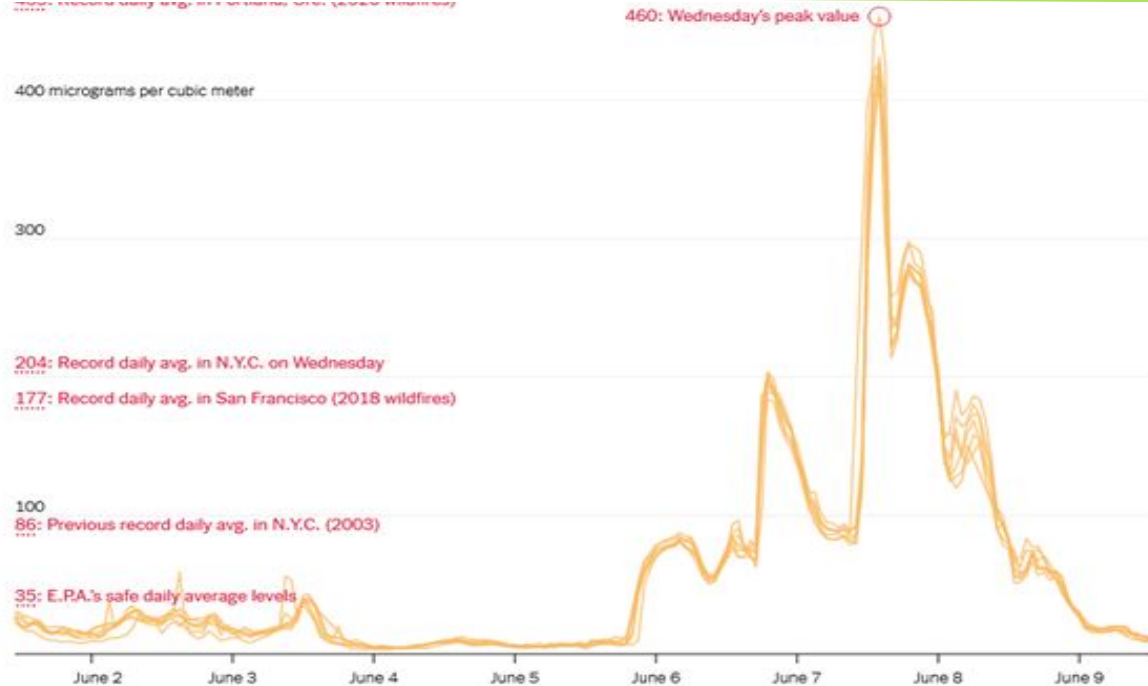| Daily AQI Color	Levels of Concern	Values of Index	Description of Air Quality
Green	Good	0 to 50	Air quality is satisfactory, and air pollution poses little or no risk.
Yellow	Moderate	51 to 100	Air quality is acceptable. However, there may be a risk for some people, particularly those who are unusually sensitive to air pollution.
Orange	Unhealthy for Sensitive Groups	101 to 150	Members of sensitive groups may experience health effects. The general public is less likely to be affected.
Red	Unhealthy	151 to 200	Some members of the general public may experience health effects; members of sensitive groups may experience more serious health effects.
Purple	Very Unhealthy	201 to 300	Health alert: The risk of health effects is increased for everyone.
Maroon	Hazardous	301 and higher	Health warning of emergency conditions: everyone is more likely to be affected.

Break down of different levels of AQI and what the effect on the general public.

Pollutants targeted in AQI:

- Ground level ozone
- Particulate matter
- Carbon monoxide
- Sulfur dioxide
- Nitrogen dioxide

Fine Particle Pollution at Seven Locations in NYC

460: Wednesday's peak value

400 micrograms per cubic meter

300

204: Record daily avg. in N.Y.C. on Wednesday

177: Record daily avg. in San Francisco (2018 wildfires)

100
86: Previous record daily avg. in N.Y.C. (2003)

35: E.P.A.'s safe daily average levels

June 2   June 3   June 4   June 5   June 6   June 7   June 8   June 9

Data processed by the new york times of the timeline of the air quality index from june 2nd to june 9th, 2023.
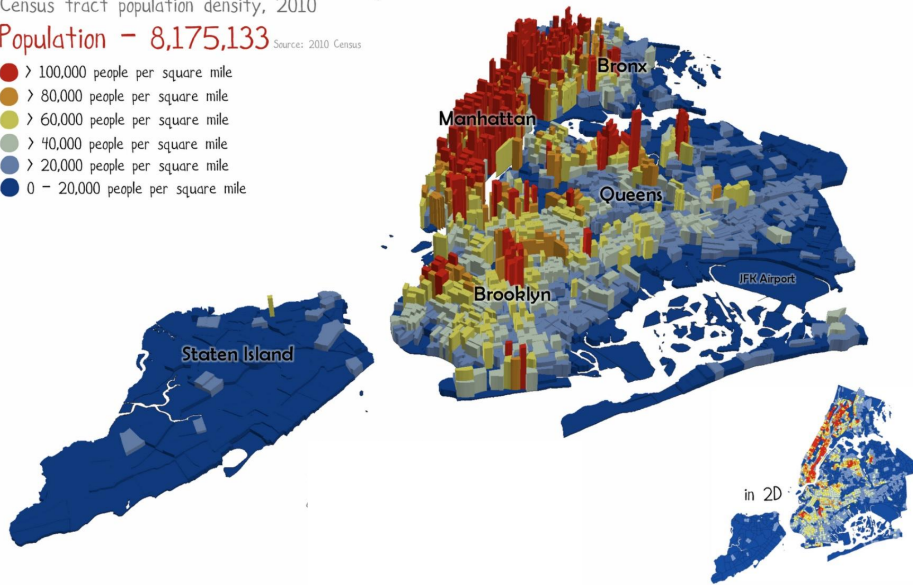
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NYC DENSITY POPULATION

New York City in 3D
Census tract population density, 2010
Population — 8,175,133 Source: 2010 Census

- > 100,000 people per square mile
- > 80,000 people per square mile
- > 60,000 people per square mile
- > 40,000 people per square mile
- > 20,000 people per square mile
- 0 — 20,000 people per square mile

Alasdair Rae, 2012

Bronx
Manhattan
Queens
Brooklyn
JFK Airport
Staten Island

in 2D

In 2010, the population was around 8,175,133, with an average density of just under 28,000 persons per square mile.

New York City, New York Population 2023

7,888,121

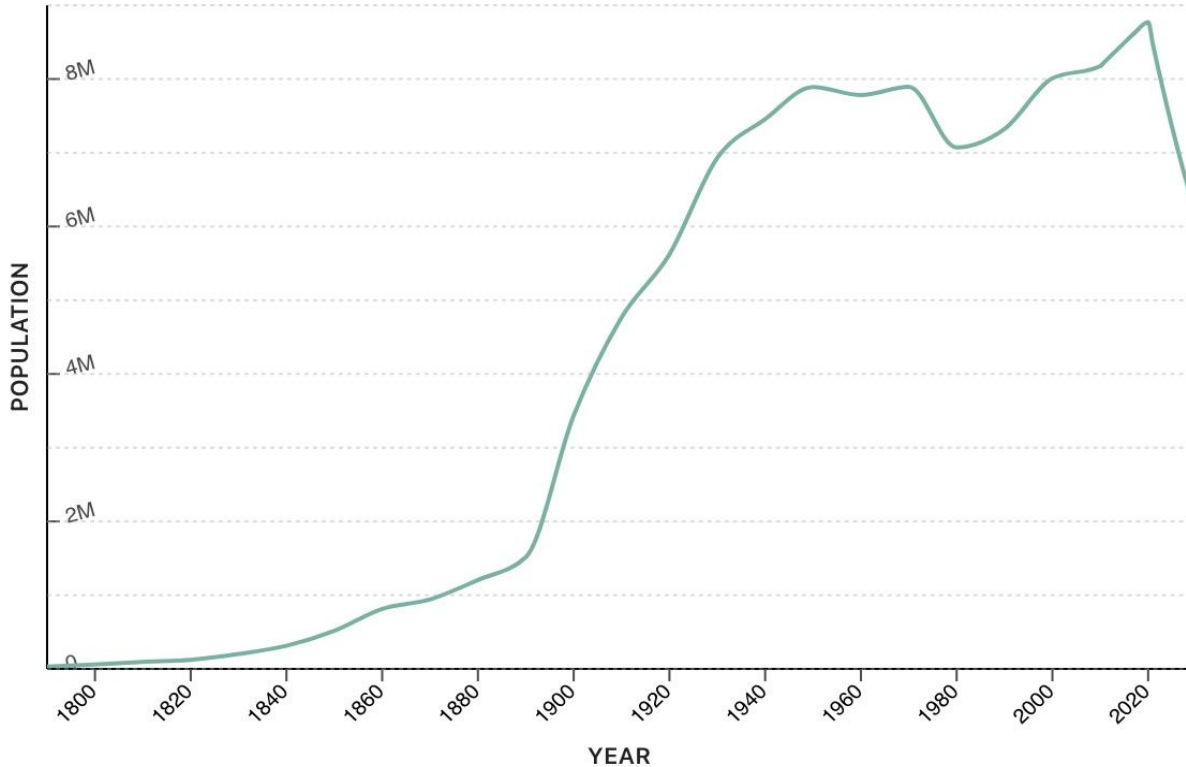New York City has a population density of 26,261 persons per square mile, spanning over 468 miles.

Plan of Action

- Identify solicited location for the stockpiling of high quality masks.
- Use Artificial Intelligence (AI) as a form of distribution to determine;
  - Route Optimization
  - Inventory Management
  - Demand Forecasting
  - Surveillance and Monitoring

Potential Storage Units in NYC

Regions of NYC	Bronx	Manhattan	Queens	Brooklyn	Staten Island
Stadiums	Yankee Stadium	Madison Square Garden	USTA Bille Jean King National Tennis Center	Barclays Center	Richmond County Bank Ballpark
CUNY Colleges	Bronx Community College	BMCC /CCNY	CUNY School of Law	Brooklyn College	College of Staten Island
Hospitals	Montefiore	Mount Sinai	NewYork-Presbyterian/Queens	Maimonides	Staten Island University Hospital
Department of Sanitation (DSNY)	Bronx 6 Sanitation Department	DSNY Manhattan 8 Garage	DSNY Queens District 7 Garage	DSNY Brooklyn District 3 Garage	DSNY Section 12

enables you to reach your destination safely

Materials

- N95 and KN95 masks:
  - Efficiency in blocking 95% of particles in the air
  - Highest level of protection due to blocking both large and small particle
  - Specifically designed to fit on the user's face

"An N95 respirator is a respiratory protective device designed to achieve a very close facial fit and very efficient filtration of airborne particles. Note that the edges of the respirator are designed to form a seal around the nose and mouth."

– The U.S. Food and Drug Association, "N95 Respirators, Surgical Masks, Face Masks, and Barrier Face Coverings"

The Genius of N95s

Materials

- Existing infrastructure to distribute these masks
  - MTA buses
  - Street cleaners and garbage trucks
  - Emergency vehicles.
- Storage units for spare mask reserves.

Budget

Necessity	Cost
Gas (Excluding MTA buses and emergency vehicles)	$1020
Workers	$200,000 for a thousand workers working 8 hours
Masks	$1.5 MIllions

The table above shows the costs for the masks, payment to new workers under an 8 hour workday, and gas for the vehicles, excluding the MTA buses and emergency vehicles.

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QUESTIONS?
COMMENTS?
CONCERNS ?