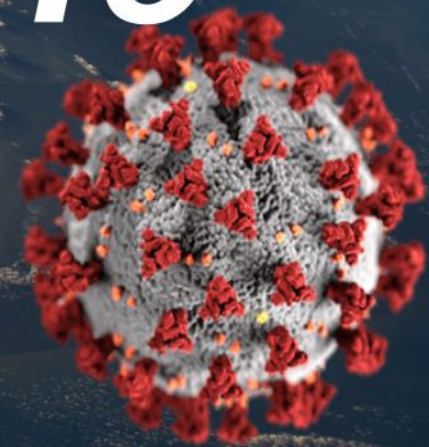




# ***How AI Will Transform NYC/LI Post-COVID-19***

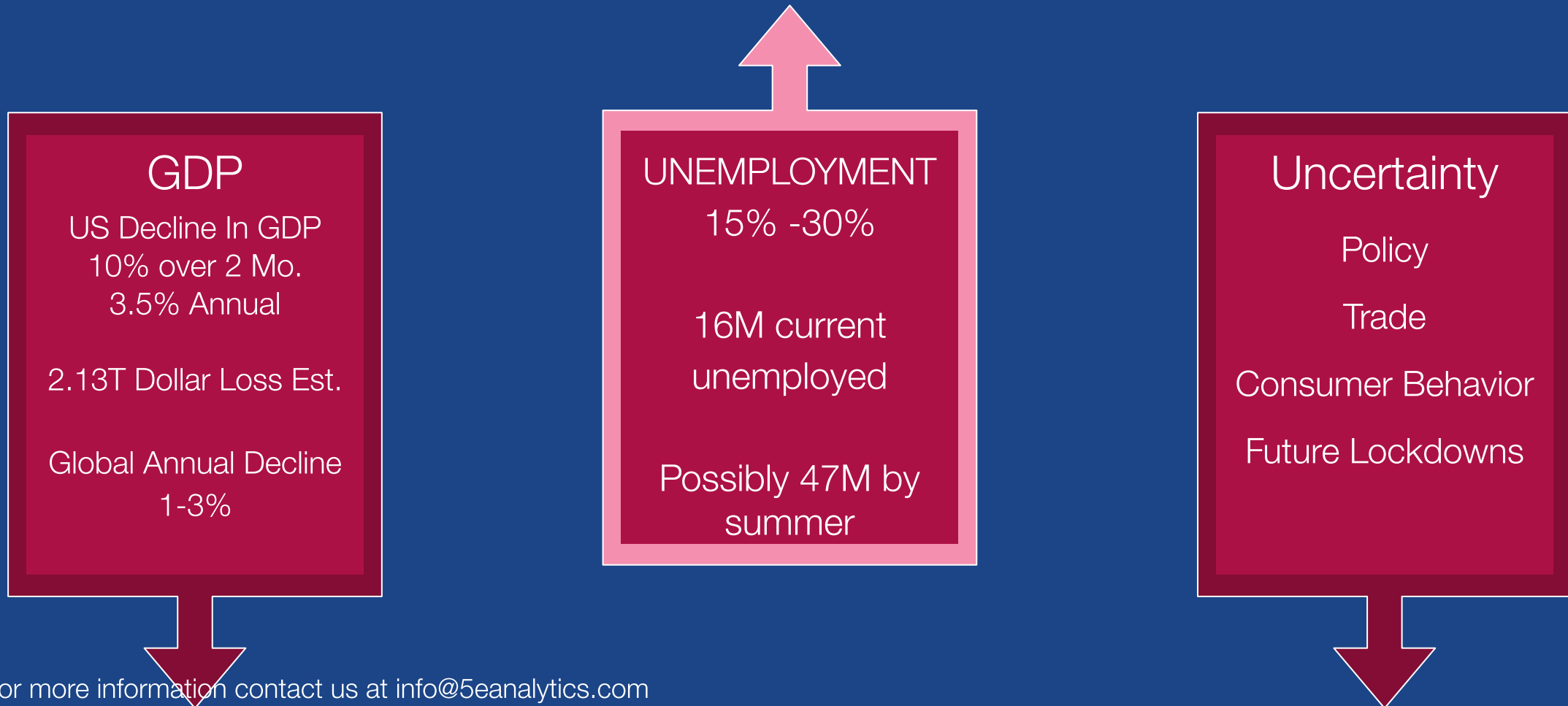


# DISCUSSION

- Reopening The Economy - Data Driven Approach
- Current State of Modelling
- Industry Challenges
- Opportunities for AI / ML
  - Finance
  - Healthcare
  - Retail
  - Manufacturing

# COVID-19: Current Situation

Since March 16th, the pandemic has caused tremendous strain on the economy, with great pains across every segment of the economy



For more information contact us at [info@5eanalytics.com](mailto:info@5eanalytics.com)

# COVID-19: Current Situation

Reopening any part or the whole economy will be based a few critical factors, each of which require a significant amount of data, including real-time.



**Monitor virus infections**



**Identify low risk reinfection areas**



**Open Selected Areas / Businesses**



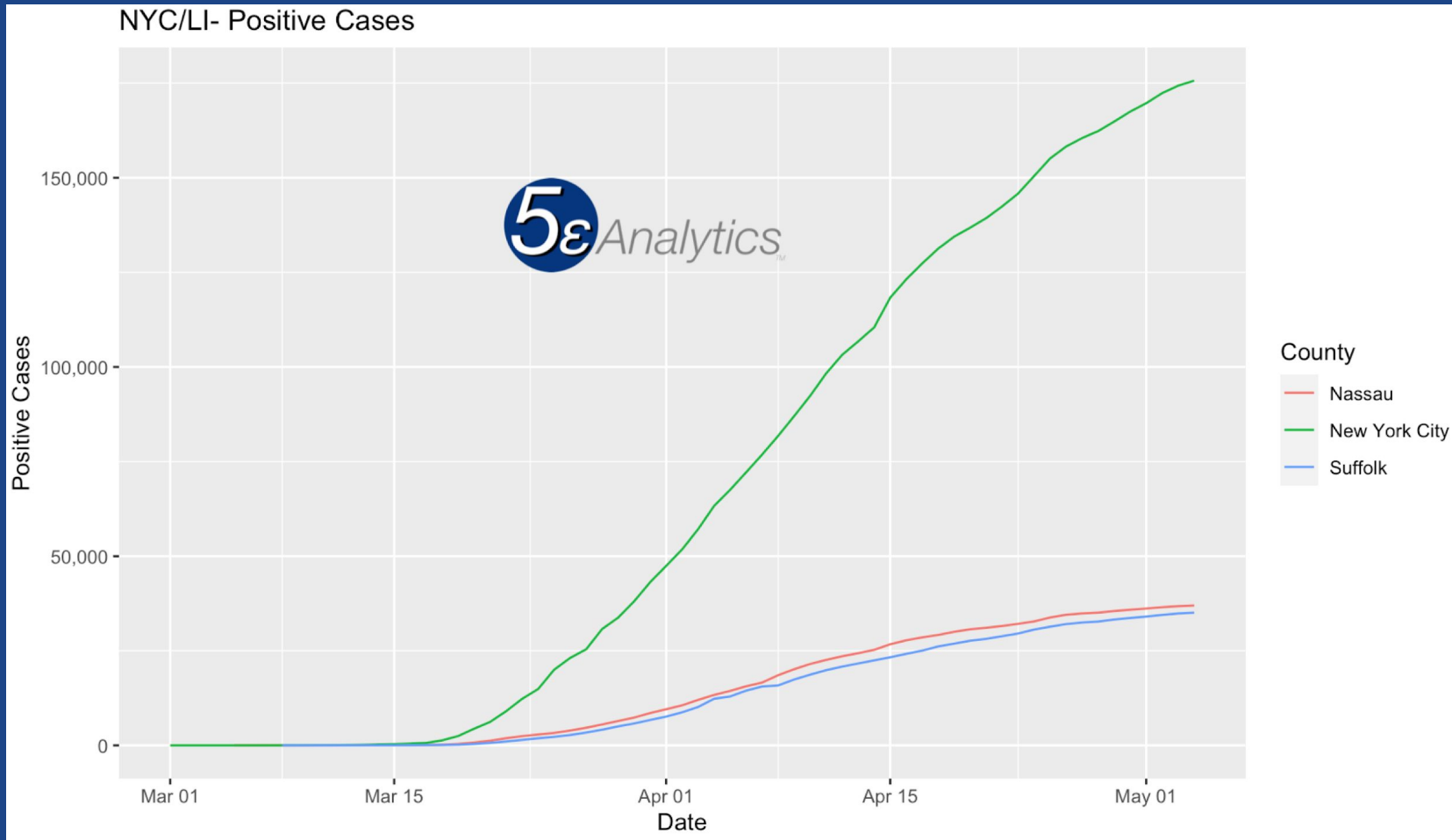
**Reopen - Monitor - Identify - Isolate**



# COVID-19 - Positive Cases



Monitor virus infections



Identifying the rate of infections across the nation is critical.

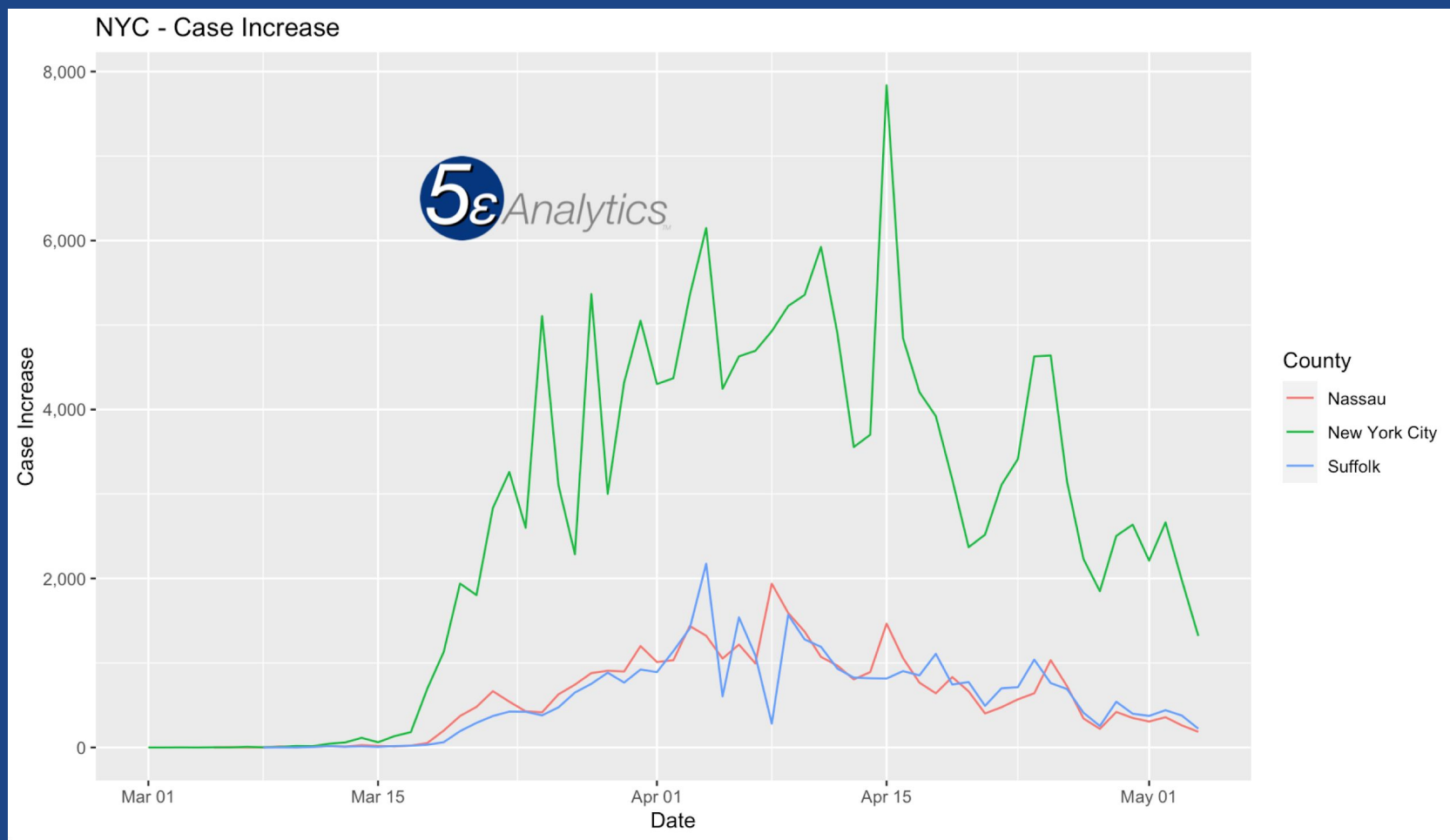
However, regions and subregions must be modeled and analyzed

Data can reveal key insights and identify areas of opportunity.

# COVID-19 - Case Increases



Monitor virus infections



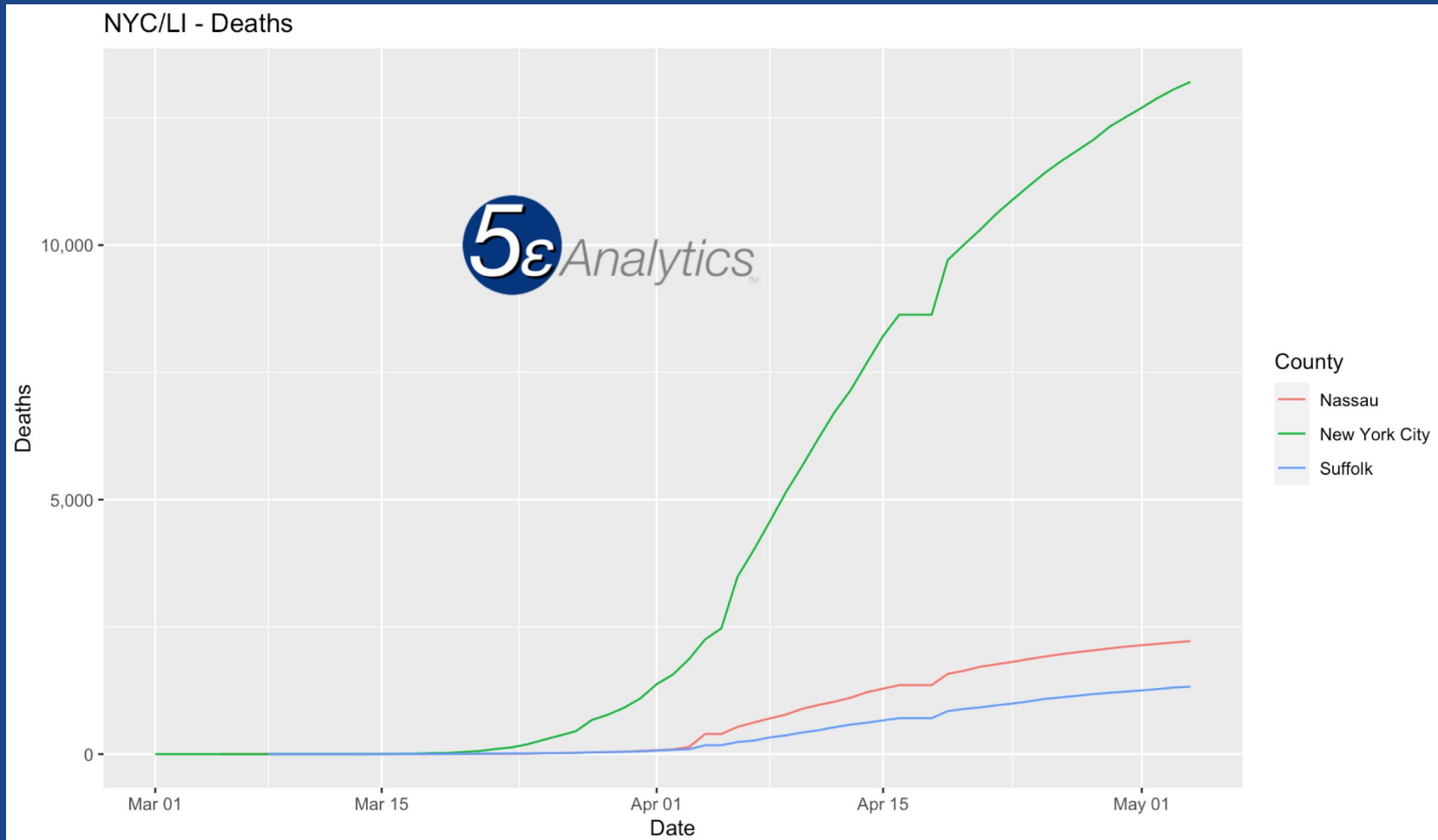
The rate of increased infections changes due to a number of factors.

However, understanding the general trends can give better indications of reopenings, or even future waves.

# COVID-19 - Mortality Rates



Monitor virus infections



Mortality rates clearly play a role in decision making by policy makers.

Morbidity numbers are critical to healthcare providers and related services.

Morbidity rates will also affect customers behaviors in areas due to fear.

# COVID-19: Current Situation



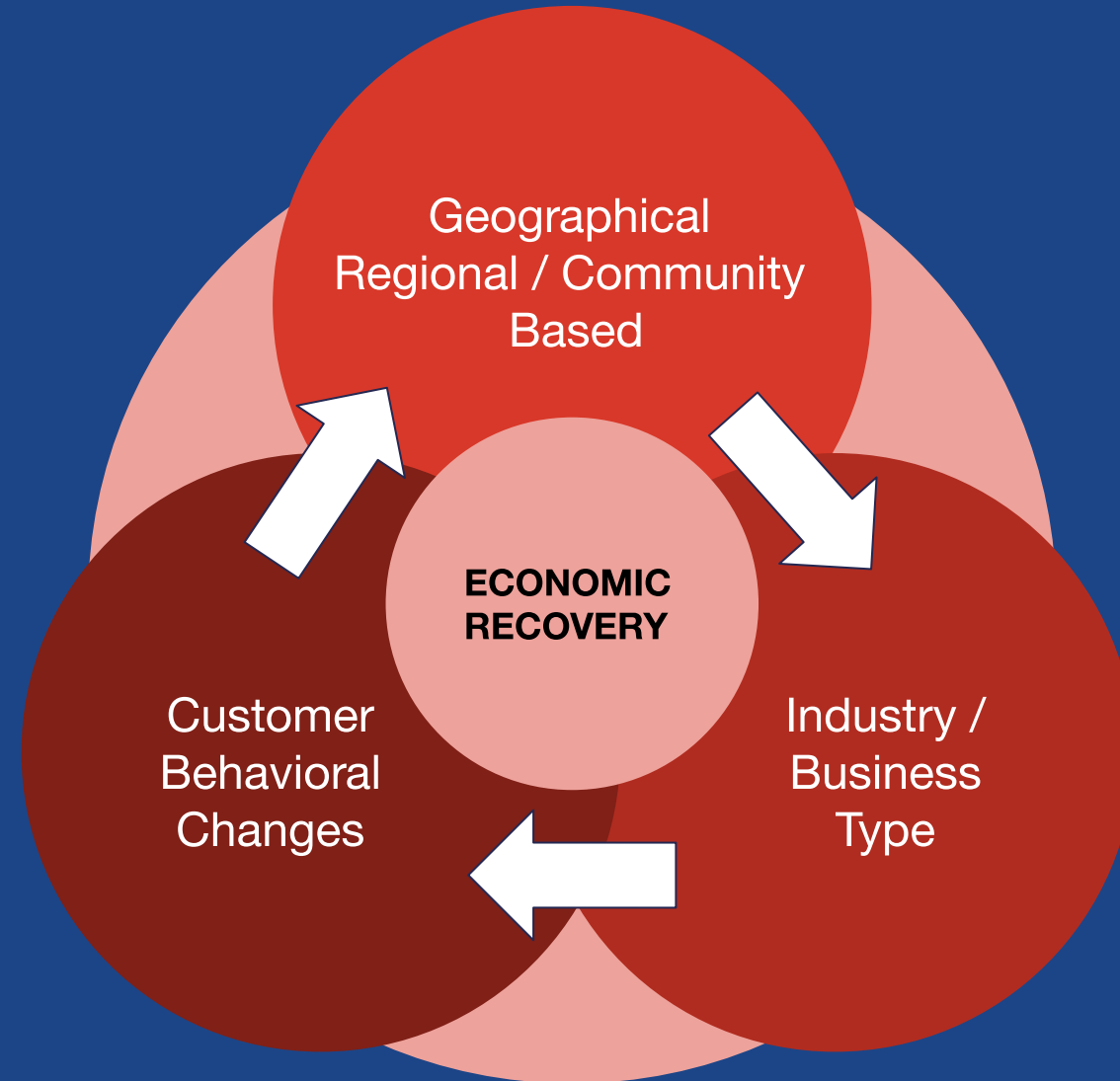
Identify low risk reinfection areas

Recovery will occur in a "data-driven way".

- Geographical "opening"
- By industry / type of business
- Customer behavioral changes

*Business must align their recovery strategy to this model.*

*Using data and modelling to inform their decisions.*





# Reopening the Economy

According to policy makers they are looking to open the economy...

"COMMUNITY BY COMMUNITY"

What would this look like?

Can we predict what might be open?

Is there a risk of more hotspots leading to a closure?

# Smaller to Larger



Identify low risk reinfection areas

## Step 1

Smaller cities / areas in smaller less populous states.

## Step 2

Medium cities / areas in smaller states

## Step 3

Larger cities in small states.  
Smaller cities / areas in larger states.

## Step 4

Larger broader more populous areas of most states.

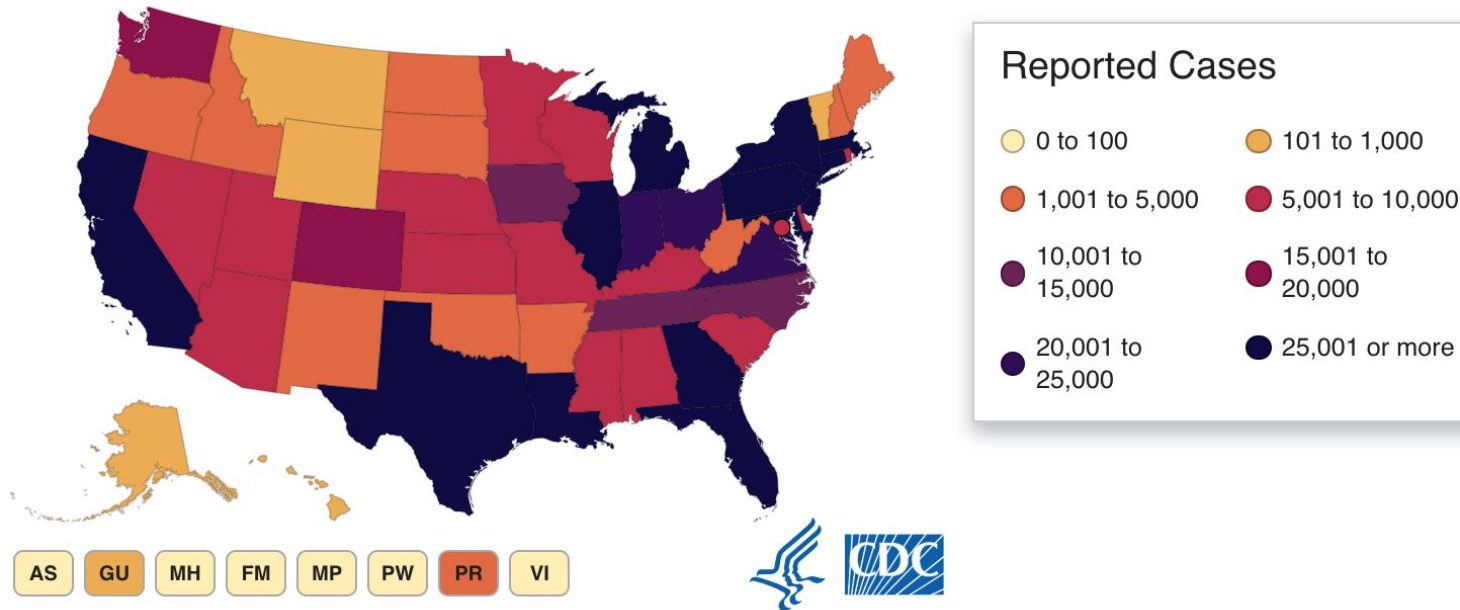
Major metropolitan regions will open last (based on timing)

- New Orleans
- Detroit
- Los Angeles SF
- New York (in total) will be last to completely open \*

# Example - United States



Identify low risk reinfection areas

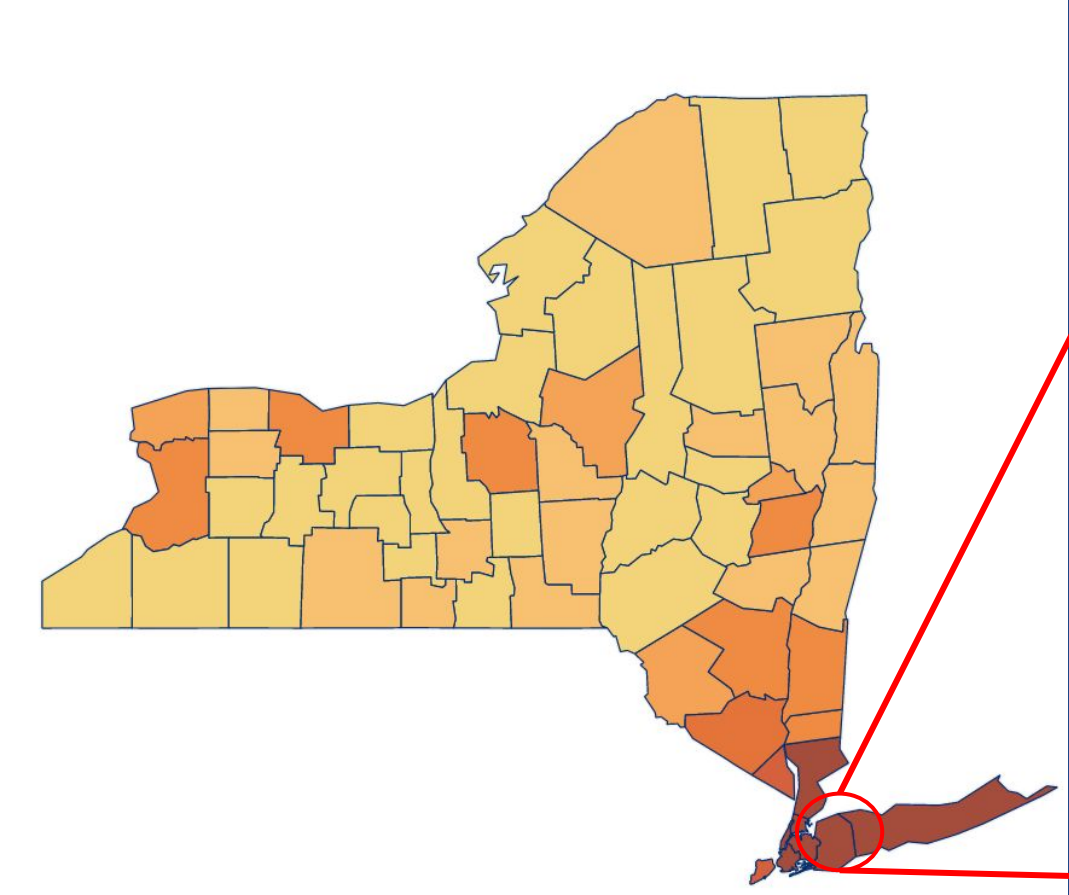


Cases are clearly centered at or near major metropolitan areas.

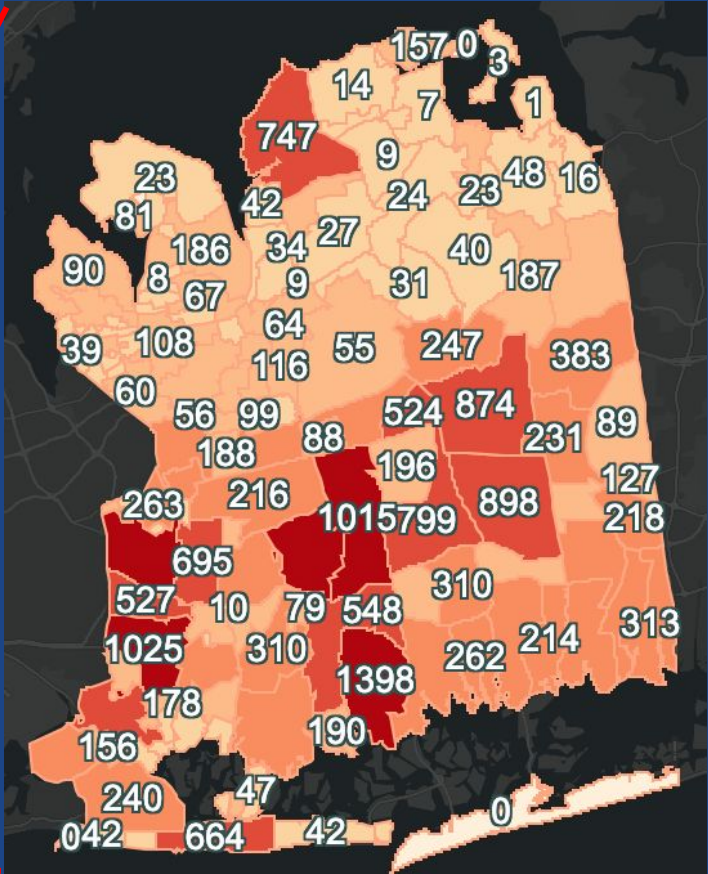
Target areas for initial recovery are areas where the infection rates are much lower and interstate travel is restricted.

# Example - New York

Identify low risk reinfection areas



New York State



Nassau County (NYS)

# What Role does AI/ML Play Now

Machine Learning /Artificial Intelligence Algorithms can help immediately by:

- Pinpointing areas that will likely open up and when
- Modeling the restart of economic activity by consumers and businesses
- Identify changes in immediate behavior
- Identify changes in long term consumer behavior



# Challenges for AI/ML (Now)

Healthy, but problematic, skepticism of models

- Virus modeling was off in a number of areas
- Predictions were uncertain and politicians kept reinforcing this notion

REPORT

## A guide to healthy skepticism of artificial intelligence and coronavirus

Alex Engler · Thursday, April 2, 2020



NEWS WEATHER SPORTS VIDEO BEST OF CONTESTS & MORE

CBS 11 News  
ON AIR

### I-Team: How Accurate Are The 'Alarming' Coronavirus Curve Graphs?

### *Modeling Coronavirus: 'Uncertainty Is the Only Certainty'*

By The Associated Press

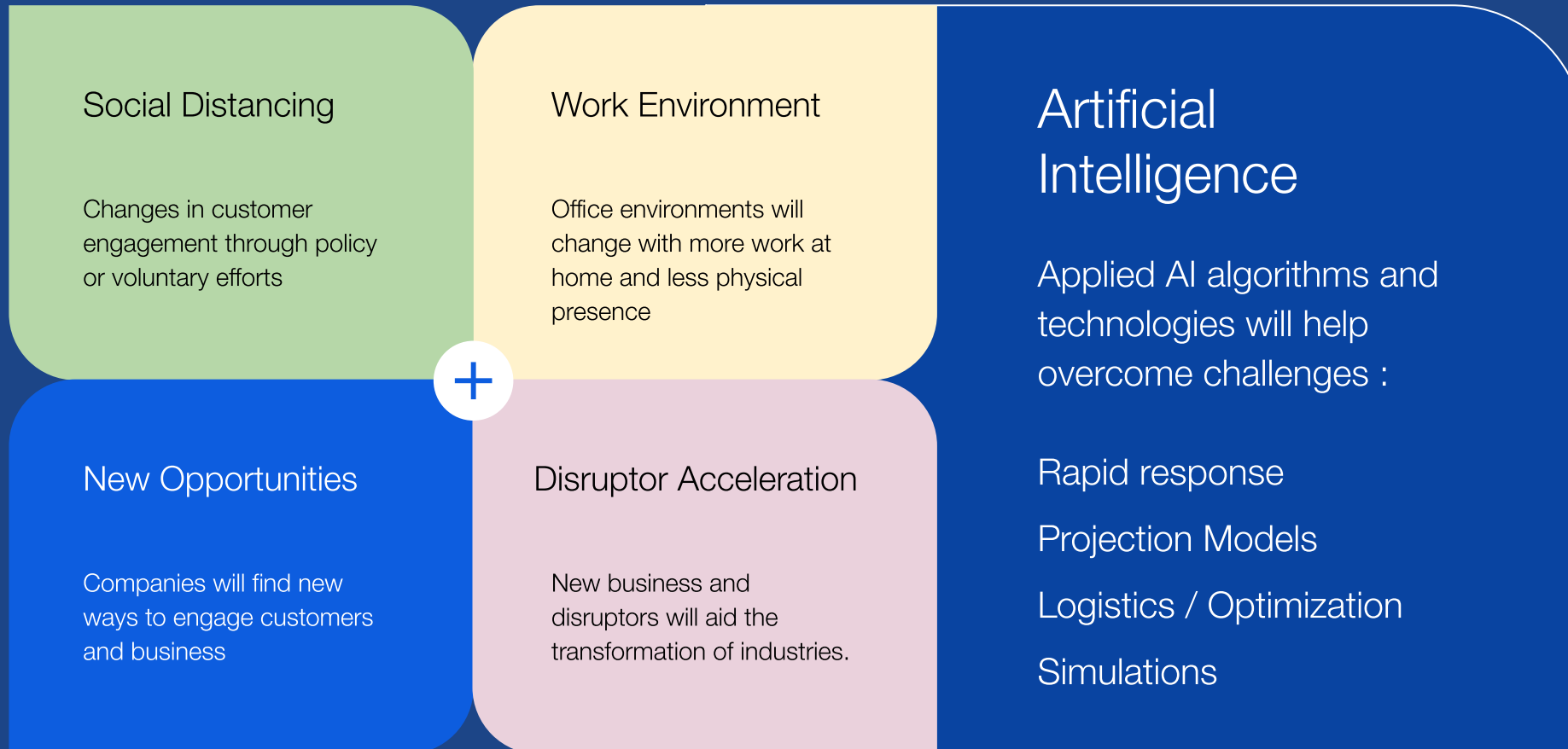
# Impact on NYC / LI

New York City / LI region has a very diverse set of industries. Changes will occur over every major industry in the area these are:

- 1) Finance
- 2) Healthcare
- 3) Professional & Technical Services
- 4) Retail
- 5) Manufacturing
- 6) Education

Source: New York Bureau of Labor Market Information Division of Research and Statistics. "Significant Industries: A Report to the Workforce Development System"

# Post-COVID-19



# Industry Challenges

## Social Distancing

Social distancing will cause many retail based companies to identify ways to connect to their customers.

- Social distancing policy
- Voluntary social distancing
- Customer demands for different services

# Industry Challenges - AI / ML

Social Distancing

AI / ML algorithms can be used to help

- manage traffic into stores
- increase connections with customers through online and mobile needs
- enhance delivery mechanisms using self driving and automated deliveries
- utilize real time data for prediction of replenishment even at consumer level



# Industry Challenges

Work Environment

Companies will face the question of monitoring employees health, not just for COVID-19, which will present a number of legal and privacy issues

- what data to collect and how (legal / privacy)
- how to store the data
- predict and forecast who should stay home or alter work schedules
- manage workflow and foot traffic in warehouses
- safeguard inventory

# Industry Challenges

New Opportunities

New opportunities to engage customers will emerge. AI / ML can provide greater insight to uncover the opportunities.

## Customer Behavior

AI will identify changing purchasing habits (how / where / when)  
AI can create more "contactless" purchasing  
AI solutions can predict and model these habits / identify gaps

## Payments

Customer payment systems will change - subscription / non touch  
AI solutions can interact with payment systems

## New Acquisitions

Customers will gravitate toward safer businesses  
AI / ML algorithms can identify sentiments and attitudes of newer customers

# Industry Challenges

Disruptor Acceleration

Disruptors have already begun entering the market seeking to take advantage of the current situation

- Increased automated delivery systems
- Enhanced mobile application use
- AI algorithms to help customers find products
- Use of machine learning and optimization for faster supply chain
- Increased cloud based data solutions
- Greater access to more data and sharing of data (***Data Cooperation***)

# What does this mean?

## ORGANIZATIONS MUST BECOME MORE DATA CENTRIC

The more data centric an organization is, the more easily it is able to identify risks and challenges and develop risk mitigation strategies.

Creating predictive models are a part of these risk mitigation strategies and AI will enhance an organization's capabilities.

# Industry Specific AI Solutions

01	Finance	<ul style="list-style-type: none"><li>• Commercial Real Estate Models</li><li>• Retail Banking AI changes</li><li>• Increased fraud detection</li></ul>
02	Healthcare	<ul style="list-style-type: none"><li>• Telehealth data algorithms</li><li>• NLP for notes</li><li>• Wearable technology data analysis</li></ul>
03	Retail	<ul style="list-style-type: none"><li>• Contactless purchasing</li><li>• Product replenishment algorithms</li><li>• Increased data sharing between providers</li></ul>
04	Technology	<ul style="list-style-type: none"><li>• Increasing data requirements</li><li>• Artificial Intelligence Services</li><li>• Proactive predictions of failures / changes</li></ul>
05	Manufacturing	<ul style="list-style-type: none"><li>• Simulations for product surges</li><li>• Supply chain enhancements</li><li>• New product identification</li></ul>



# Finance - AI / ML

1. Commercial Real Estate - Changing work patterns, identifying areas for best investments
2. Fraud detection algorithms - Less contact invites more fraud
3. Economic challenges - possible increase in bankruptcies and losses
4. Retail Banking - new procedures and operations for contactless banking, chatbots and process automation
5. Data Analysis - Examine unstructured data in an automated fashion for analysts.

# Healthcare - AI / ML

1. Epidemic Response - Emphasis on better data collection and more advanced data modeling for virus and other disease management
2. Telehealth - Will see the emergence of more data and interconnected devices such as EKG, BP, etc, including wearable health technology
3. Data Interconnection - Increased emphasis on rapid data integration across hospital systems and providers
4. Treatments - advances in treatments due to expedited analysis
5. Natural Language Processing to analyze comments from patients , nurses , doctors for better care.

# Retail - AI / ML

1. Customer Traffic - Manage flow of customers in retail stores to minimize contact points
2. Automatic replenishment - Stores can predict purchases and have products on hand to minimize surges
3. AI delivery - automatic delivery of products, prescriptions, groceries, cars
4. Virtual Reality and Experience - enable customers to experience products prior to purchase
5. Enhanced customer service and targeting

# Technology - AI / ML

1. Increased Data Requirements - new solutions are needed to help collect and analyze data. Shared repositories will become more prevalent
2. Augment Existing Services - Customers will seek AI solutions from their vendors to provide competitive advantages
3. Predict outages (MSP) - MSP's can predict outages or slowdowns and even provide insights into changes in activity
4. New solutions - Data held by technology companies represents opportunities for new products
5. Increased partnerships - skills held by tech companies can be shared.

# Manufacturing - AI / ML

1. Simulations - increased use of simulations for work traffic pattern and logistics.
2. New Products - data can predict new attributes of products demanded by customers
3. Direct Delivery - AI algorithms can help manage supply chain and provide direct to consumer / business opportunities
4. Automation - Warehouses will increase use AI powered technologies to move products, thereby reducing touchpoints.



# Recommendations

1. **Collect more data** (and more... and more)
2. **Reevaluate / Modify Data Repositories**
  - a. Complexity of new data requires reevaluations
  - b. Data Lakes will become more important
  - c. Structured and unstructured data
3. **Develop a data analytic strategy**
  - a. Near Term - model individual regions, localities - possible closures
  - b. Model changes in current customer behavior and monitor changes
  - c. Longer Term - identify changing trends and predictions

# Recommendations

## 4. **Use more touch point data services**

- a. Internal data points (employee / customer / product)
- b. Use **IoT** to collect information closer to the customer and for logistics
- c. Gather data from ancillary unrelated services (healthcare, finance) for use in modeling

## 5. **Simulations**

- a. Using Simulations can help risk plans and mitigation efforts
- b. Can provide insight into various uncertain scenarios including area shutdowns
- c. Optimization models combined with simulations can enhance supply chain logistic issues