

# MOoV: Data Analytics on COVID-19 Vaccinations



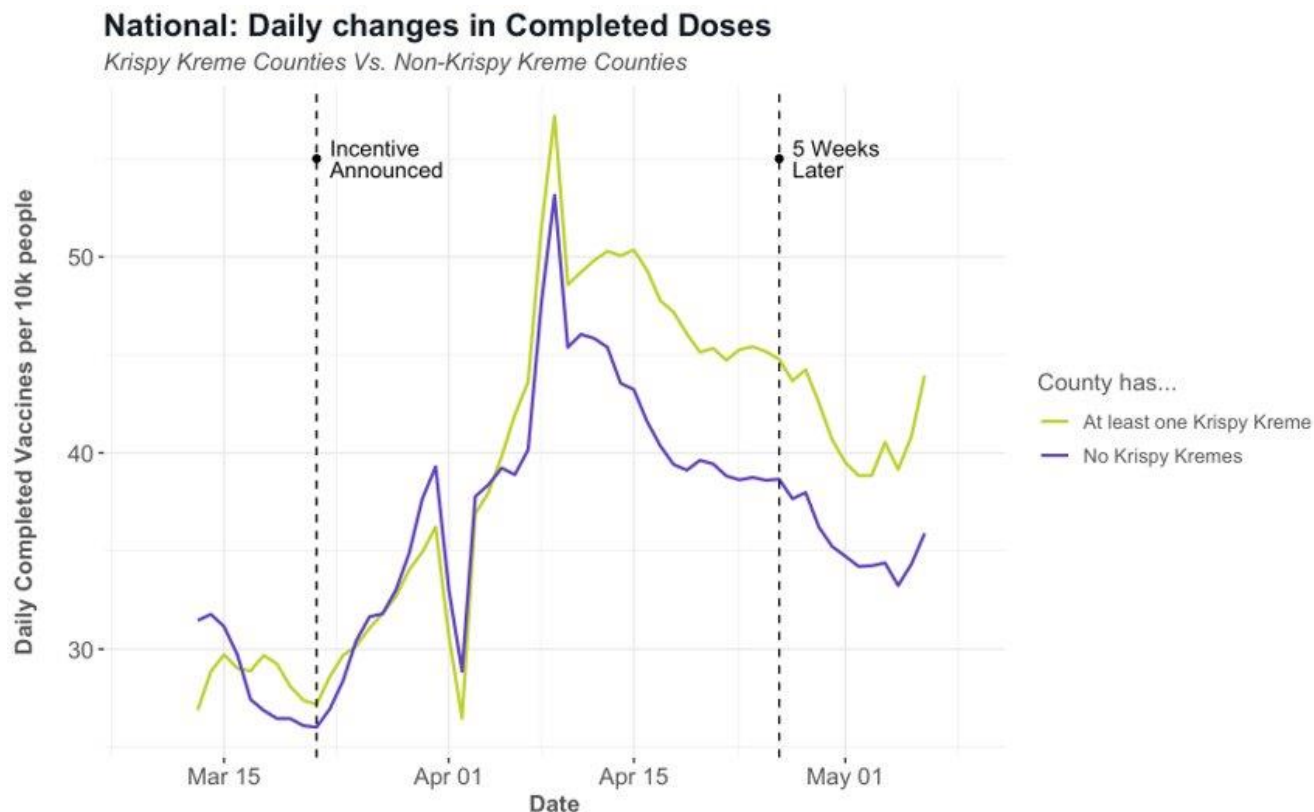
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**Homeland Security Intern**  
**P741 - Data Analytics**

# MOoV Data Analytics

- **Moving Out on Vaccines (MOoV) is a MITRE Corporate initiative led by Health FFRDC Vice President/Director Kim Warren**
- **Initiative focuses on increasing COVID-19 vaccination uptake**
  - Includes partnerships with Federal and state governments, local communities, and healthcare coalitions
  - Brings to bear MITRE's capabilities from multiple areas of the company – Health Communication, Social Integrity, Digital Health, and Data Analytics
- **Member of a 7-person data analytics (DA) team supporting impact analysis and analytic research**
- **DA's focus areas**
  - *Effects of incentives on COVID-19 vaccinations*
  - *Vaccination disparities in subpopulations*
  - Outcome evaluation of MITRE's engagement with Prince George's County Health Dept. in MD

# Krispy Kreme Effect - Overview

**Background:** DA team investigated and compared the impact of six state and private incentive programs on vaccination uptake.



## Overview:

- Krispy Kreme was one of the first nationwide incentive programs in the U.S. to promote COVID-19 vaccinations
- Starting on March 22, guests could get a free Krispy Kreme donut by presenting their COVID-19 vaccination record card showing at least one shot of Moderna, Pfizer, or J&J.

## Analysis:

- Analyzed data associated with U.S. vaccination trends in locations near Krispy Kreme stores. Looked at vaccination trends BEFORE, and at 1-, 4-, and 5-week increments AFTER, incentive program was announced.

# Krispy Kreme Effect - Process

## 1. Collected data

- County vaccination data from the CDC
- Krispy Kreme locations scraped from the internet

## 2. Performed data processing

- Data normalization
- 7-day rolling average

## 3. Analyzed data

- Iterative regression analysis

**Caveats:** 1<sup>st</sup>-dose data was not available, so fully vaccinated counts were measured in the following weeks instead.

Date	Recip_County	Series_Complete_Yes
07/29/2021	Copiah County	9,928
07/29/2021	Golden Valley County	400
07/29/2021	Leelanau County	15,320
07/29/2021	Pembina County	2,897
07/29/2021	Bethel Census Area	9,483
07/29/2021	Grant County	80



**Aiken - Whiskey Rd**  
2266 Whiskey Rd  
Aiken, SC, 29803

**Akron - S Maple St**  
354 S Maple St  
Akron, OH, 44302

**Dothan - Ross Clark Circle 84W**  
3095 Ross Clark Circle  
Ste 84W  
Dothan, AL, 36301

**Drive Thru Only - Panama City - W 23rd St**  
465 W 23rd St  
Panama City, FL, 32405



zip, FIPS, county, state  
 97006, 41067, Washington, OR  
 29803, 45003, Aiken, SC  
 44302, 39153, Summit, OH  
 31701, 13095, Dougherty, GA

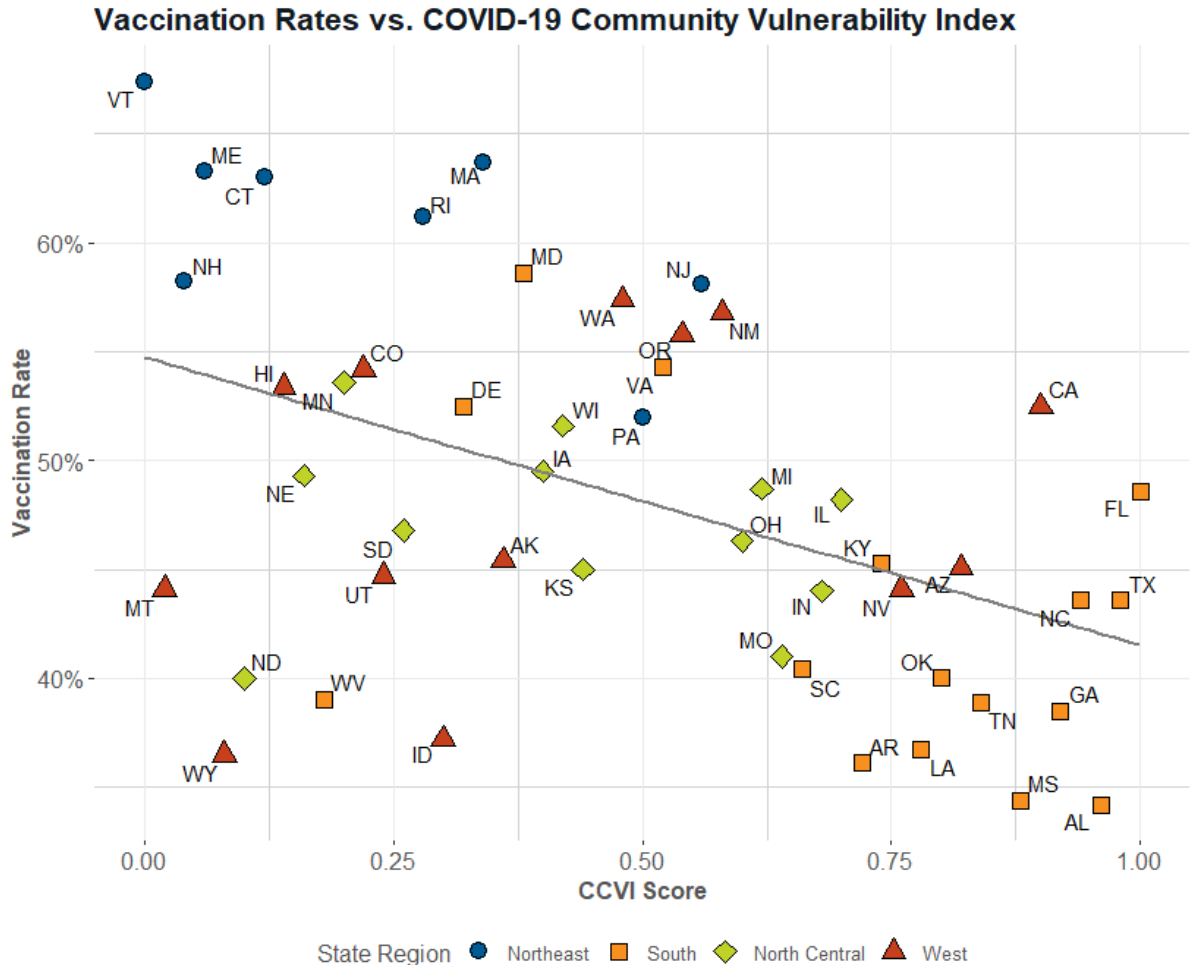
# Krispy Kreme Effect - Results

- **No significant effect:** Counties with Krispy Kreme stores *did not* have statistically significant increases in vaccination rates after implementation of other factors.
  - **Additional factors:** *population, hesitancy rates, and prior vaccination trends.*
  - **Trends:** "Krispy Kreme Effect" is significant when population controls are removed, indicating a strong relationship between store locations and population/vaccine availability.
- **Impact**
  - Incorporated into a white paper to help inform MITRE sponsors and partners considering implementing incentive programs

	coef	std err	t	P> t	[0.025	0.975]
const	-0.4994	0.171	-2.926	0.004	-0.834	-0.164
kk	0.0193	0.047	0.408	0.683	-0.074	0.112
log_pre_diff	0.6076	0.021	28.281	0.000	0.565	0.650
initial	0.0070	0.003	2.688	0.007	0.002	0.012
estimated_hesitant	-0.7163	0.390	-1.835	0.067	-1.483	0.050
log_pop	0.4506	0.025	18.208	0.000	0.402	0.499

# Vaccination Disparities in Subpopulations - Overview

- Research focused on identifying trends and understanding disparities in COVID-19 **vaccine administration** and **public opinion** across **demographics** (race, education, and socio-economic status) and **social vulnerability metrics** using publicly available data.



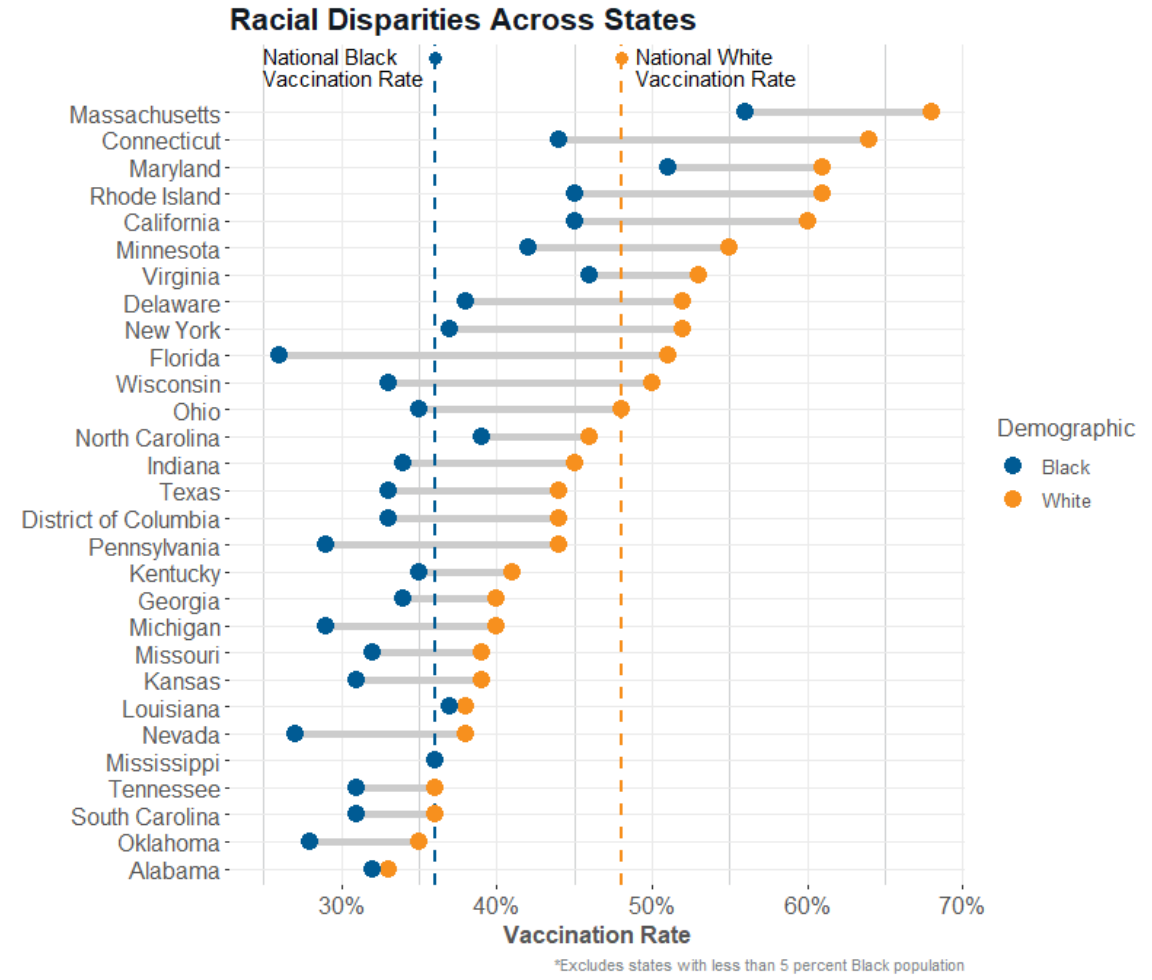
# Vaccine Disparities in Subpopulations - Results

## ■ Results

- Racial disparities exist, but there is no one perfect metric
- Vaccination rates are correlated with socioeconomic and education factors
- Hesitancy concerns are correlated with vulnerability indices

## ■ Impact

- Leave behind shared with the greater MOoV team to inform current and future MITRE strategies



# Conclusions

## ■ Skills and lessons learned

- Technical skills
  - Sharpened data analytics knowledge
  - Data wrangling and plotting using R language
- Experience
  - Teamwork environment
  - Project planning and meeting facilitation
- Lessons
  - Time management
  - Taking lead and initiative

## ■ Acknowledgements

