Disproportionate Effects of COVID-19 in Prisons of Oklahoma

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Problem Statement

- **Goal**: Observe the ethical tradeoff of prioritizing prison communities for vaccination by performing analysis on the infection rates of Oklahoma prison and general populations
- **Hypothesis**: Prisoners will have a higher rate of cases than the general population
- Hope to use results to inform a recommendation regarding prioritization of vaccines
- Observe ethical principles that guide decision-making for vaccines:
  - Maximizing benefits and minimizing harm
  - Mitigating health inequities
  - Promoting justice
  - Promoting transparency

Background

“There’s no way [the vaccine is] going to go to prisoners before it goes to people who haven’t committed any crime.”

— Jared Polis, Governor of Colorado”

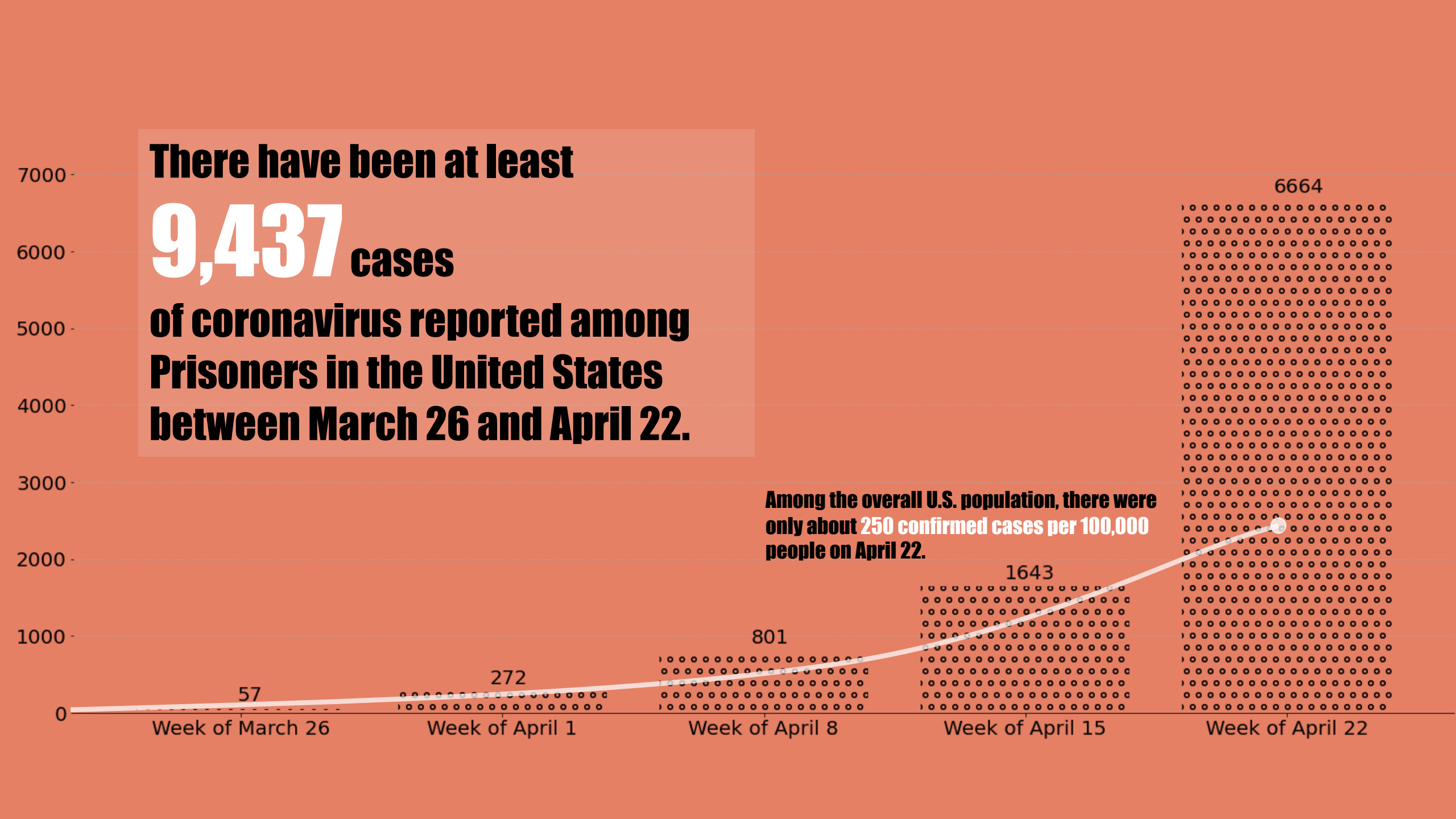
“People are unwilling to say we should vaccinate people who are incarcerated — who may have done something bad — before us. It’s like, ‘How dare they?’ But that’s not the question here. It’s not what we value or who we value. This is about who is at risk of disease. That’s it.”

— Dr. Jaimie Meyer, associate professor at the Yale School of Medicine

Compared to 1 in 20 in the general population.

1 in 5 Prisoners in the U.S. Has Had COVID-19

Even as the first Americans begin to receive COVID-19 vaccines, the spread of the virus behind bars shows no sign of slowing.

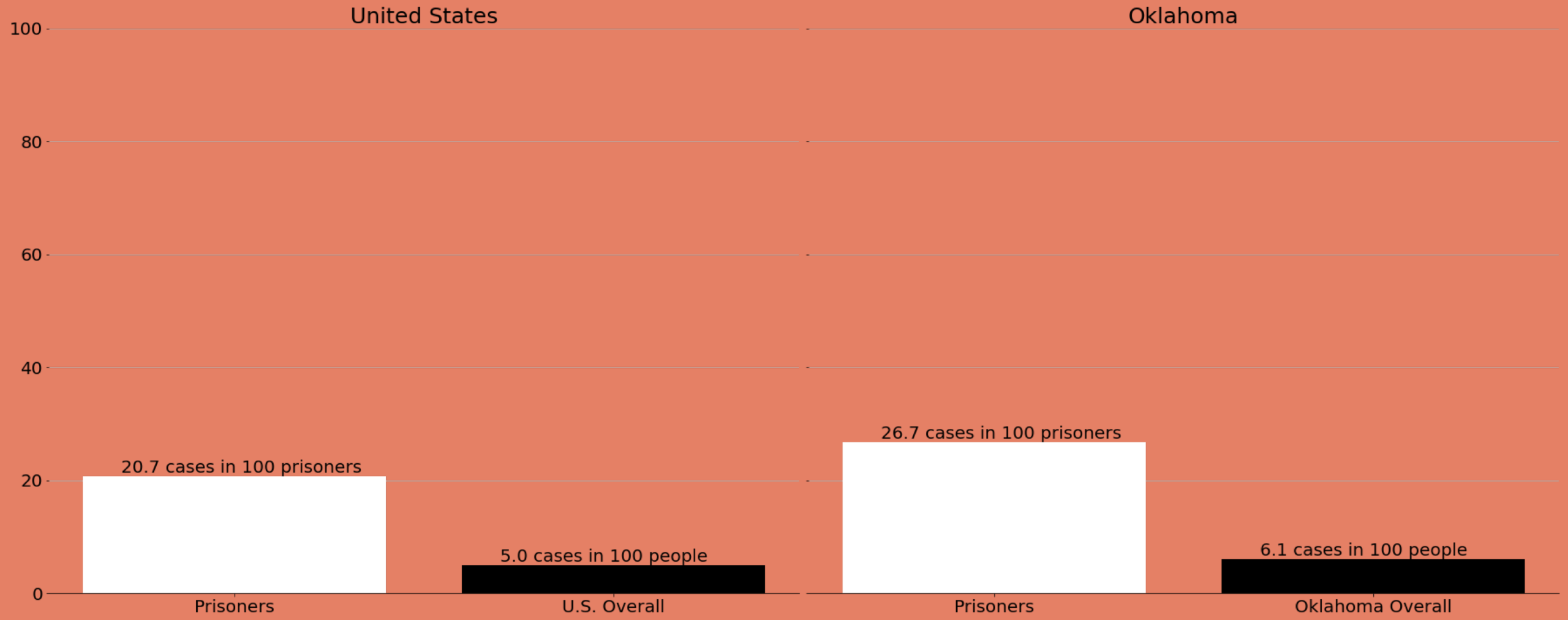

There have been at least
9,437 cases
of coronavirus reported among Prisoners in the United States between March 26 and April 22.
7000
6000
5000
4000
3000
2000
1000
0
57
272
801
1643
6664
Among the overall U.S. population, there were only about 250 confirmed cases per 100,000 people on April 22.
Week of March 26
Week of April 1
Week of April 8
Week of April 15
Week of April 22

The Marshall Project

The Data

- Collected weekly between **March 2020** and **June 2021**
- Assumed Oklahoma state- and county-level data are comparable w.r.t. case and death rates
- Potential sources of bias
  - Oklahoma prisons, jails, and detention centers have a history of not reporting comprehensive data regarding staff and prisoner cases
  - Infection data across all facilities most probably are undercounted due to general lack of testing
  - Not all states release how many prisoners they've tested, but states that test prisoners broadly and regularly may appear to have higher case rates than states that don’t

General Population vs. Prison Population



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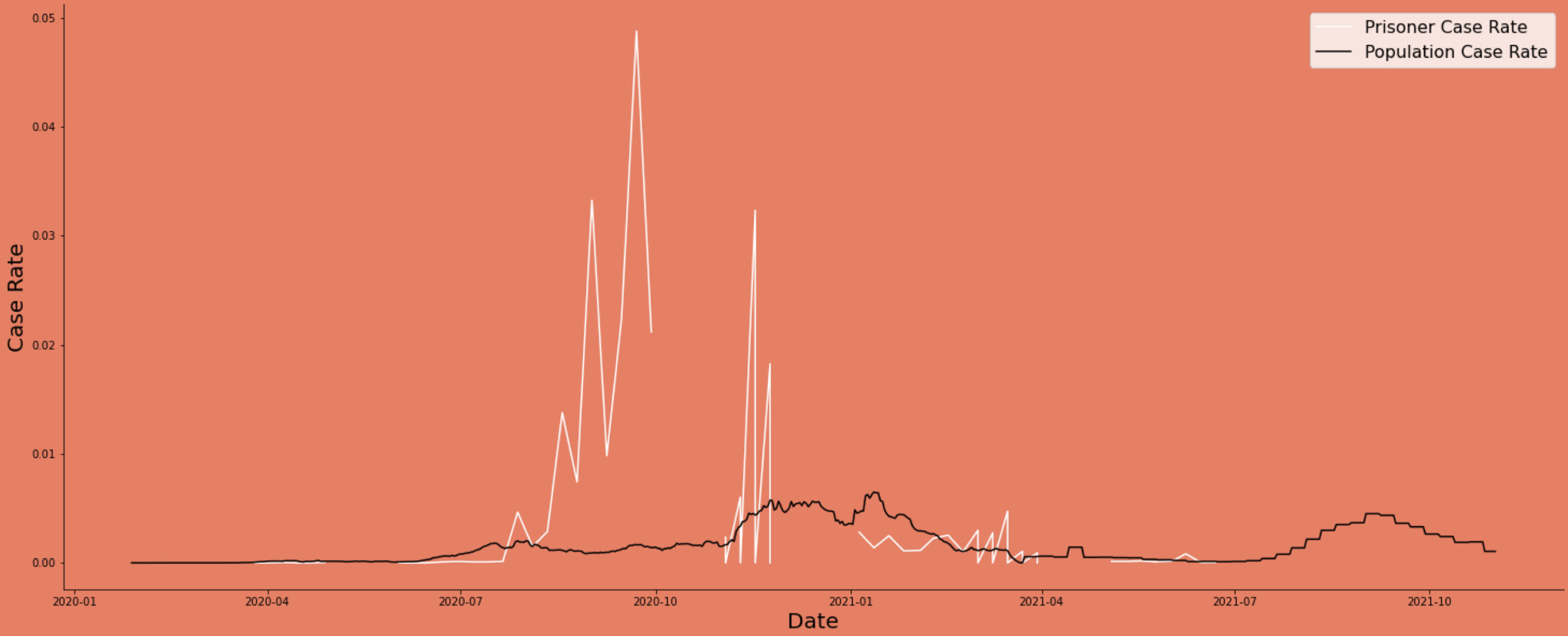

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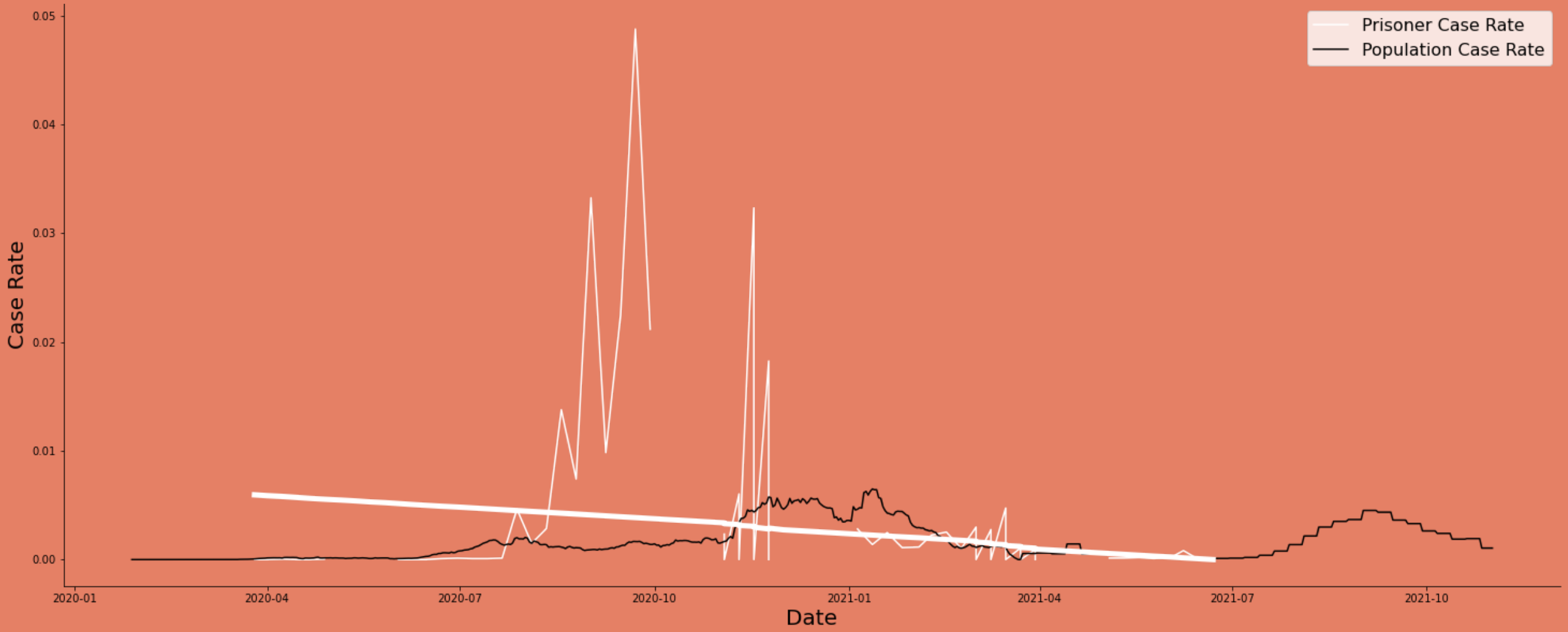

ANOVA

- H_0: any in case rates between prisoners and the general population is due to random chance
- H_A: any in case rates between prisoners and the general population is not random

	df	sum_sq	mean_sq	F	PR(>F)
C(population)	1.0	0.000423	0.000423	23.167162	0.000002
Residual	706.0	0.012896	0.000018	NaN	NaN

Takeaways and Future Work

- Result is clear - prisoners are contracting coronavirus at a higher rate than the general population
- Limitations:
  - Underreporting of cases in prisons resulted in gaps in the data
  - No mask mandate data in Oklahoma, making it difficult to demarcate landmark events that cause shifts in trends
  - Broken data make statistical analyses potentially biased/unreliable
- Future Work:
  - Get better data!
  - Conduct a more traditional time-series analysis, and perhaps build a predictive model