Project 5: COVID19 Vaccination

a race of injection vs. infection

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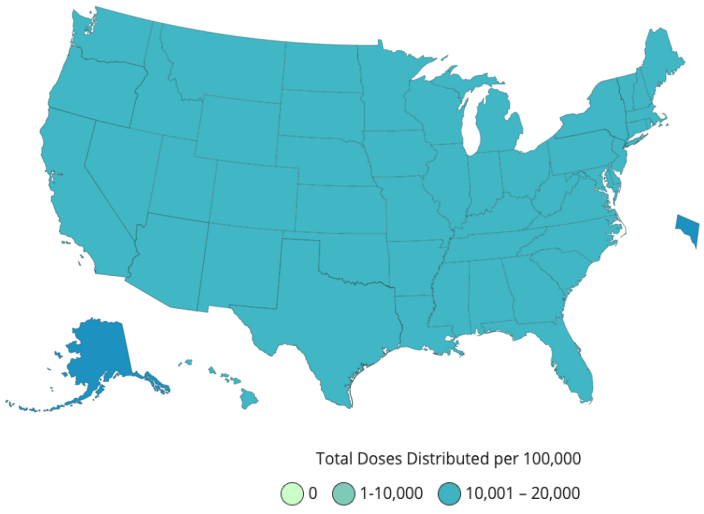
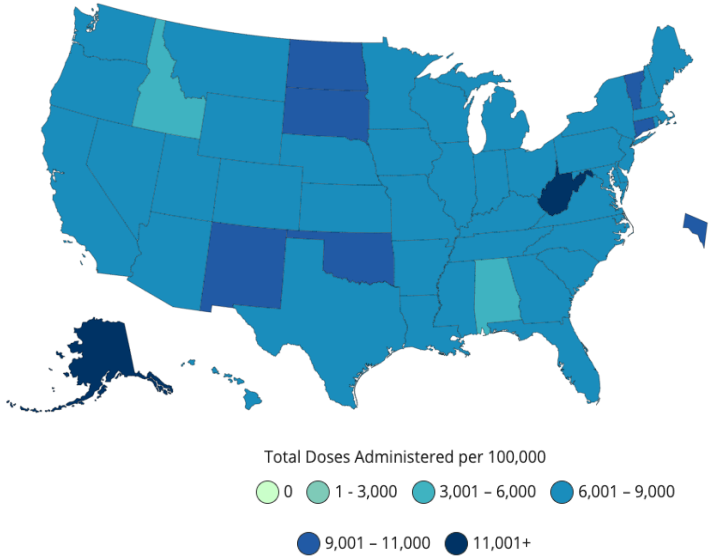
How are we doing on vaccine distribution?

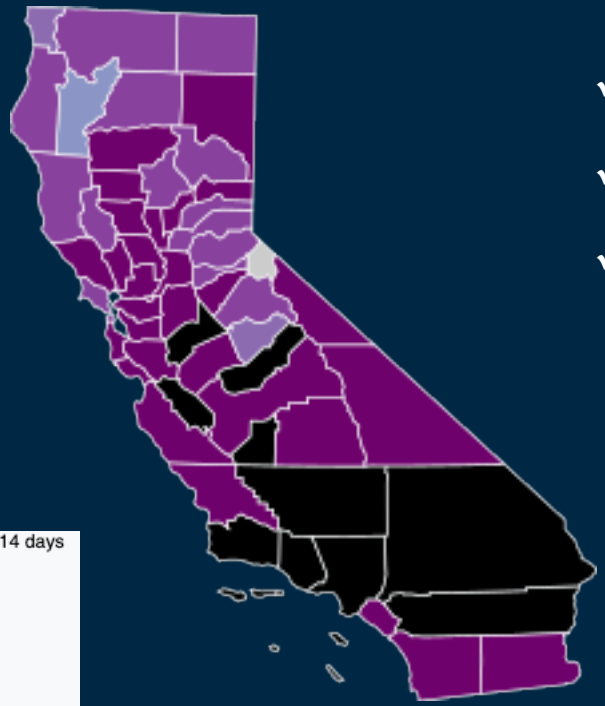


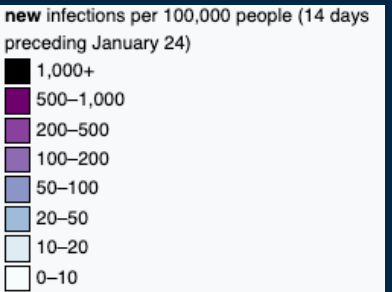


Federal Distribution
14,000-16,000 / 100K

State Administration
3,000-11,000+ / 100K

Highly Impacted States like CA – Slow in Vaccine Distribution





- ✓ Total vaccines administered = 5200 per 100k
- ✓ New cases = 1142.3 per 100k in the last 14 days
- ✓ *Speed matters*

1. Costs lives
2. Costs money
3. Virus mutates
   - new variants may spread faster
   - escape current vaccines

Problem Statement

Can we optimize vaccine distribution by forecasting the next hot spots?

1. what is the current distribution protocol?
2. can we develop a model to forecast hot spots?
3. does this work?
   (If so, should we change the protocol?)

Current Vaccine Distribution Plan

Phase 1A (in progress)

- ~ 3 million
- healthcare workers
- long-term care residents

Phase 1B

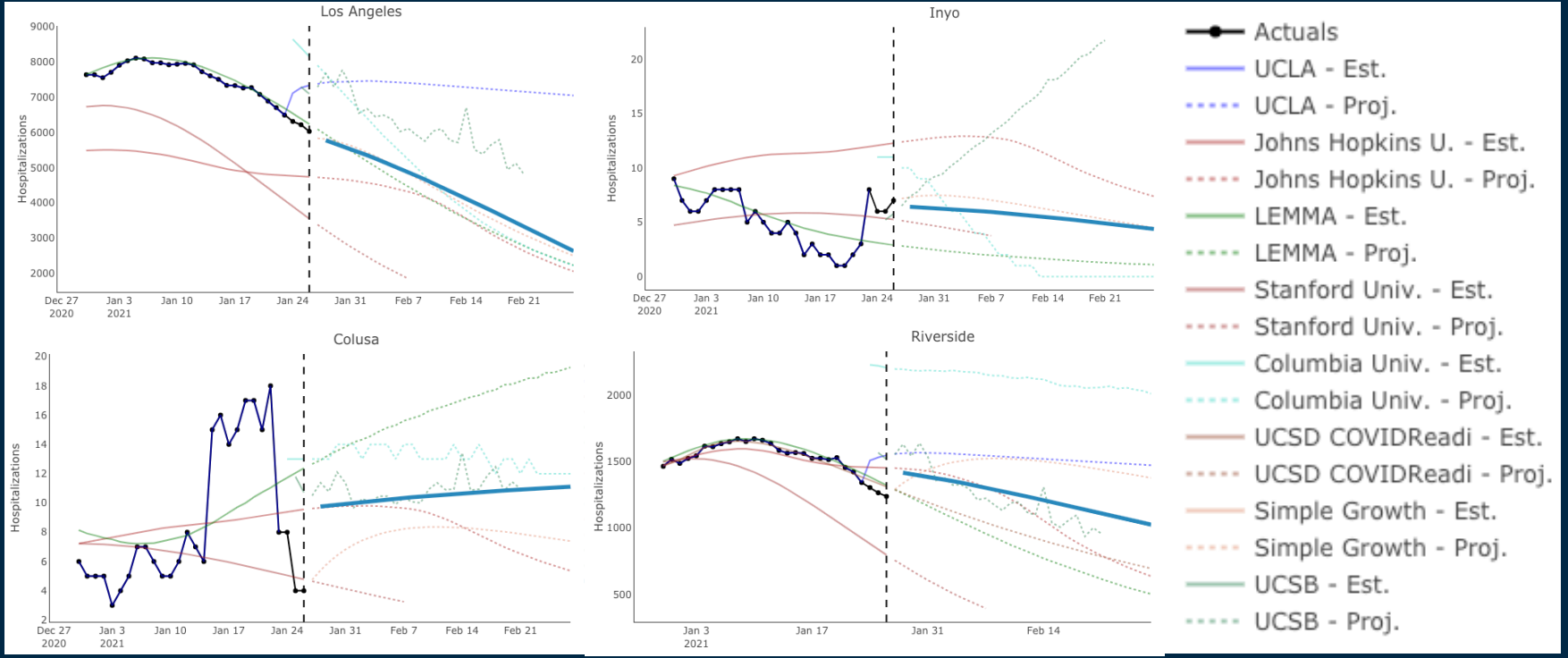
- Tier 1 (we are here)
- Age 65+ yrs old
- Essential workers
- (education, childcare, emergency services, food, agriculture)

- Tier 2
- Essential workers
- (transportation, residential, and sheltering facilities, services, critical manufacturing)

Phase 1C

- Age 50-64 yrs old
- Age 16-49 yrs old with underlying health conditions

How does our model compare to existing models?



Conclusion

- forecasting is extremely difficult
- currently, none of the existing models perform well
- many unexpected factors can change the trends (govt policies, supply issues, distribution within the county, etc)

- mathematical models over ethics?
- can we justify “optimizing” for the state?
- should race/gender/age/wealth be used to decide who gets the vaccine first?