W209 Final Presentation

Tuesday, August 3rd 2021

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Project Overview

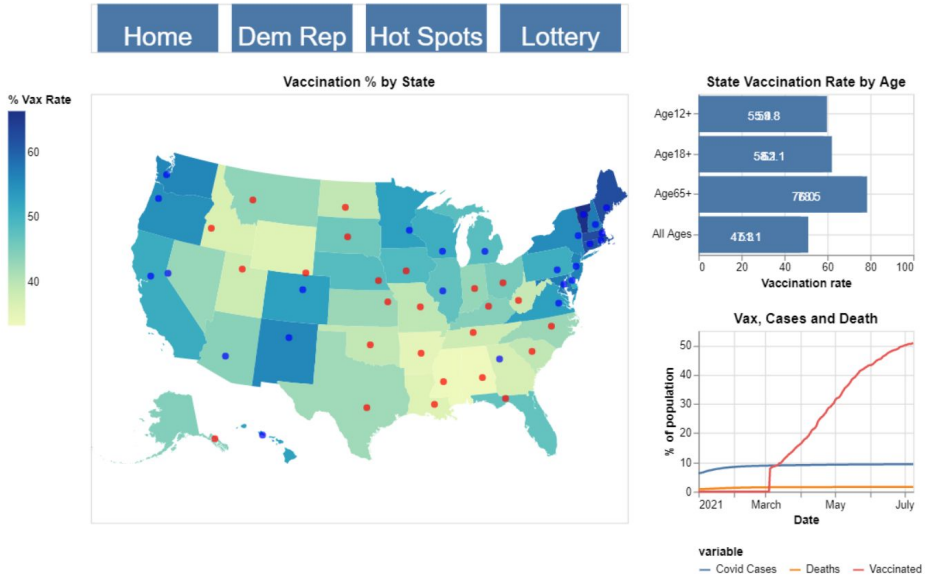
Our project aims to explore COVID-19 vaccination trends in the United States since January 2021 from three different perspectives:

1. National overview of various vaccination trends (Sunit)
2. Changes in attitudes towards vaccination over time (Lea)
3. Relationship between county health and vaccination rates (Valerie)

Sunit- Usability Study Prototype

Tasks Tested:

1. **Overall**: Explore the visualization and talk about the functionality you encounter.
2. **Task 1**: Are you able to visualize the vaccination trends across the states in the country and can you determine the vaccination rate by age group?
3. **Task 2**: Can you find the difference in the vaccination rates between states that voted democratic or republican?



Sunit - MoSCoW

M - Must Have:

1. Remove the top navigation bar and add that functionality in the form of ToolTip and Text to Choropleth
2. Adjust colors for Choropleth, Bar and Line Charts to be similar and clear indication of what color represents "good" and "bad"
3. Rework how the political affiliation of each state is indicated in the visual.
4. Use “mouse over” to show Tooltip and “click” to update the Bar/Line charts.

S-Should Have:

1. Text label above bar chart to indicate what state the user clicked on
2. Show differences in Vaccination, Infection and Death rates between state and national level.

C - Could Have:

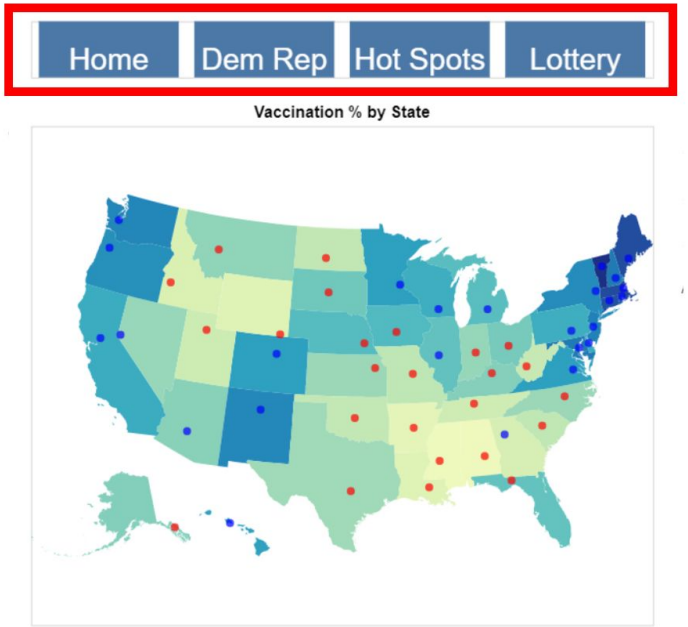
1. Add a larger full length line chart that takes up the bottom of the visualization to show greater detail of the Vaccination, Infection and Death rates.

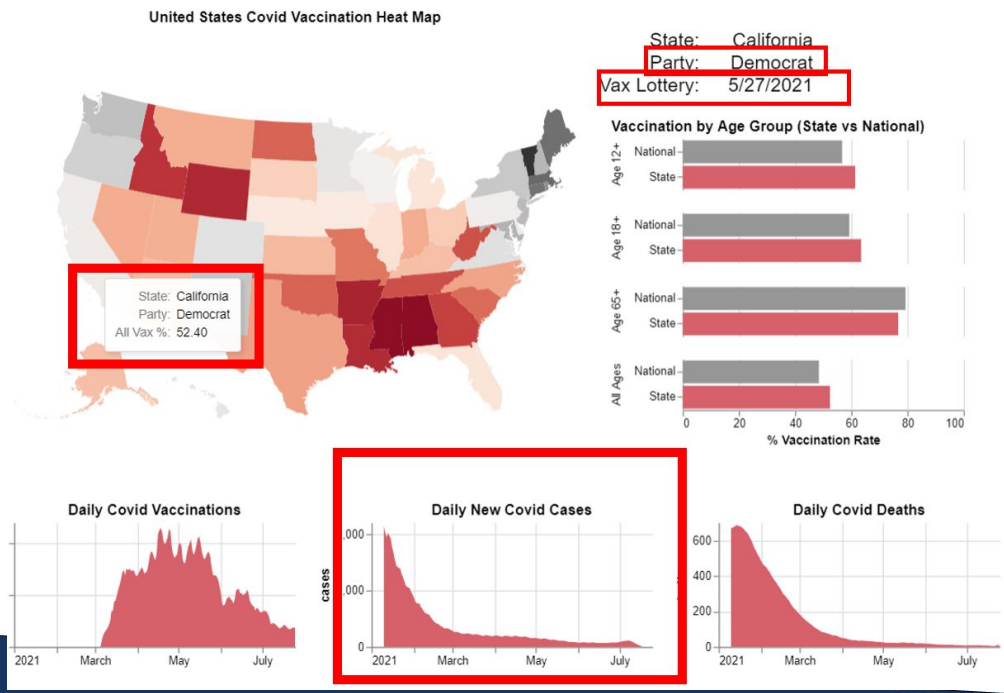
W - Would Not Have

1. Add animated visuals to indicate what areas are interactive on the visualization to guide the user towards it.

Sunit- Usability Study Results

ISSUES	IMPLEMENTED SOLUTIONS
Top navigation buttons confusing	Remove buttons. Move functionality to Map





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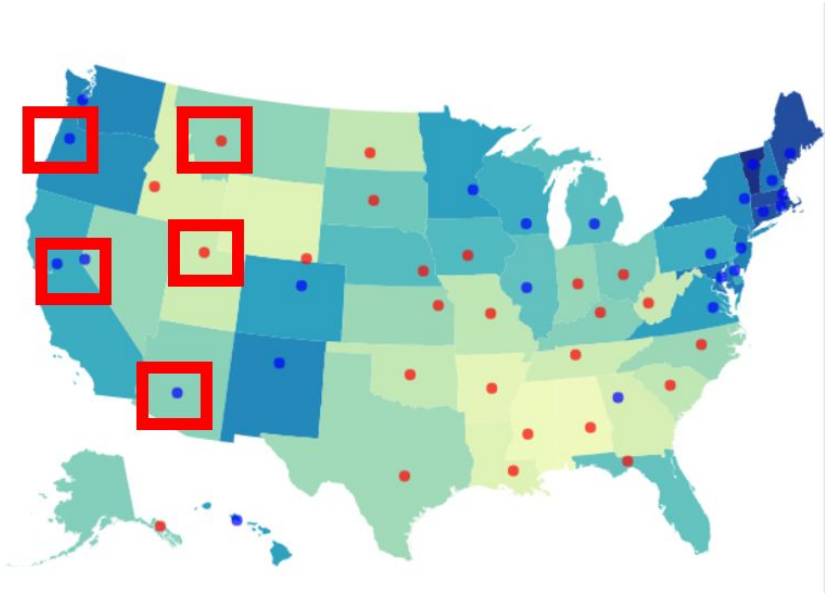
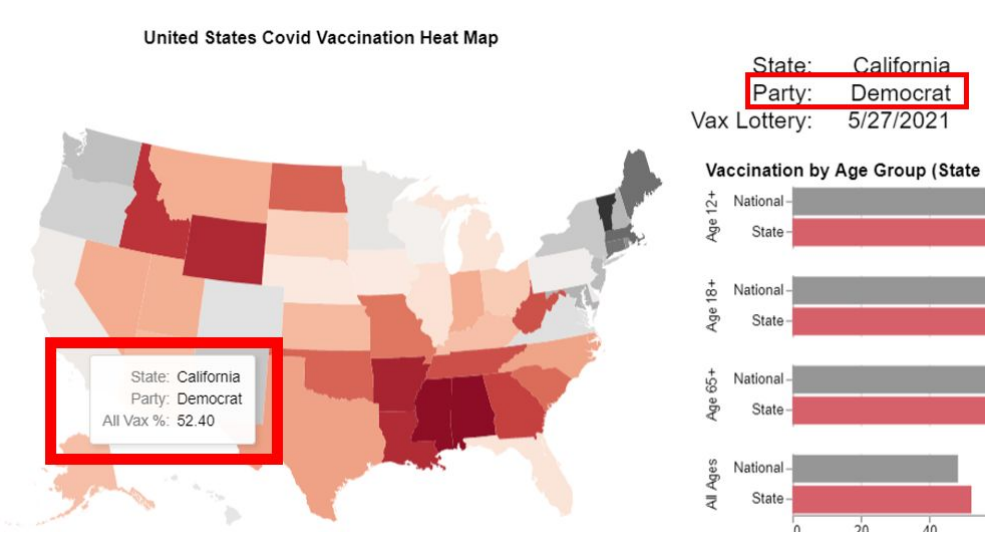
Sunit- Usability Study Results

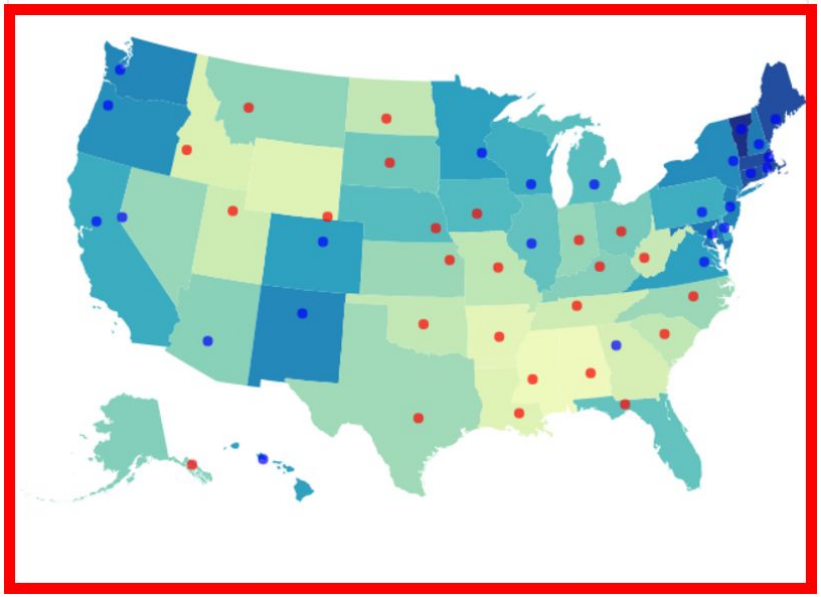
ISSUES	IMPLEMENTED SOLUTIONS
Dots for Political Party Confusing	Add text description of political party.

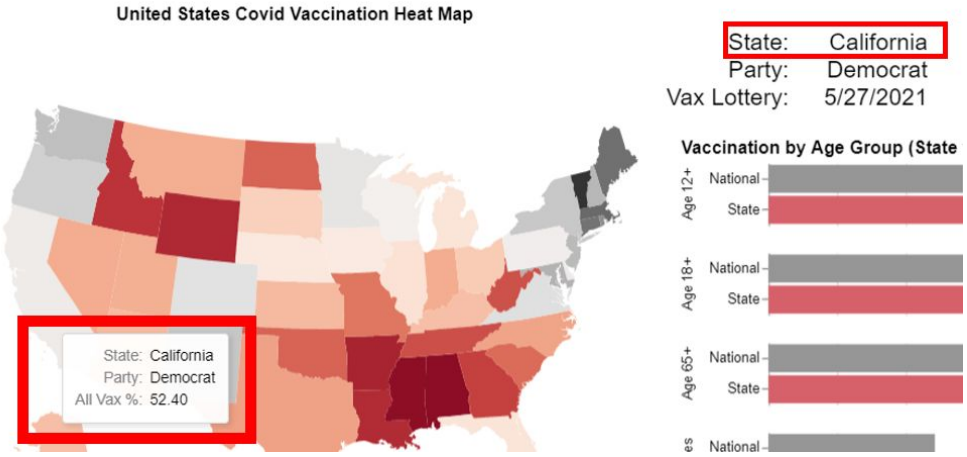




Sunit- Usability Study Results

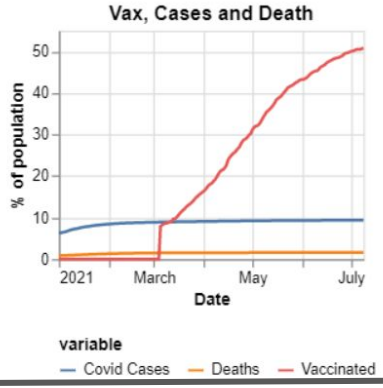
ISSUES	IMPLEMENTED SOLUTIONS
Not clear which state is selected	Add text to indicate which state is selected.

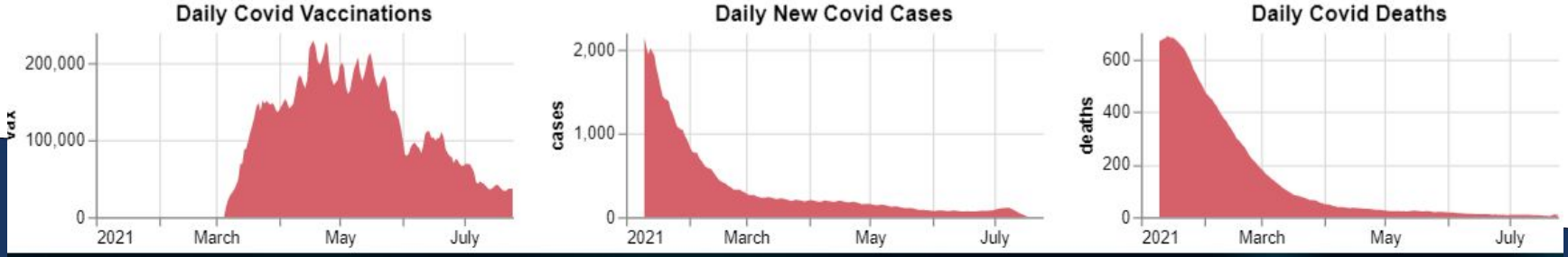




Sunit- Usability Study Results

ISSUES	IMPLEMENTED SOLUTIONS
Difficult to determine trends from line chart.	Create 3 separate area-charts - changed numbers to daily cases/deaths instead of % of population.



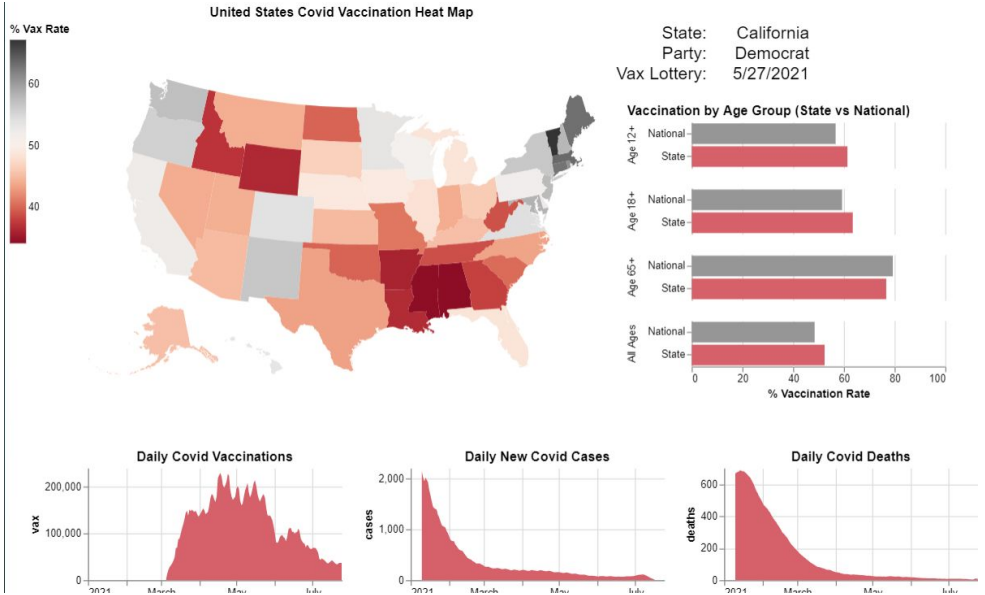


Sunit- Final Visualization

Overall task: Explore the Covid 19 vaccination rates across the states in the United States.

- Are you able to visualize the vaccination trends across the states in the country and can you determine the vaccination rate by age group?
- Can you find the difference in the vaccination rates between states that voted democratic or republican?

Revised design: I simplified and separated the line charts for Vaccination, Cases and Deaths for Covid. Also removed top nav bar and dots on map for simplification. Users can click on state to get more insight and details. (Ben Shneiderman Mantra).

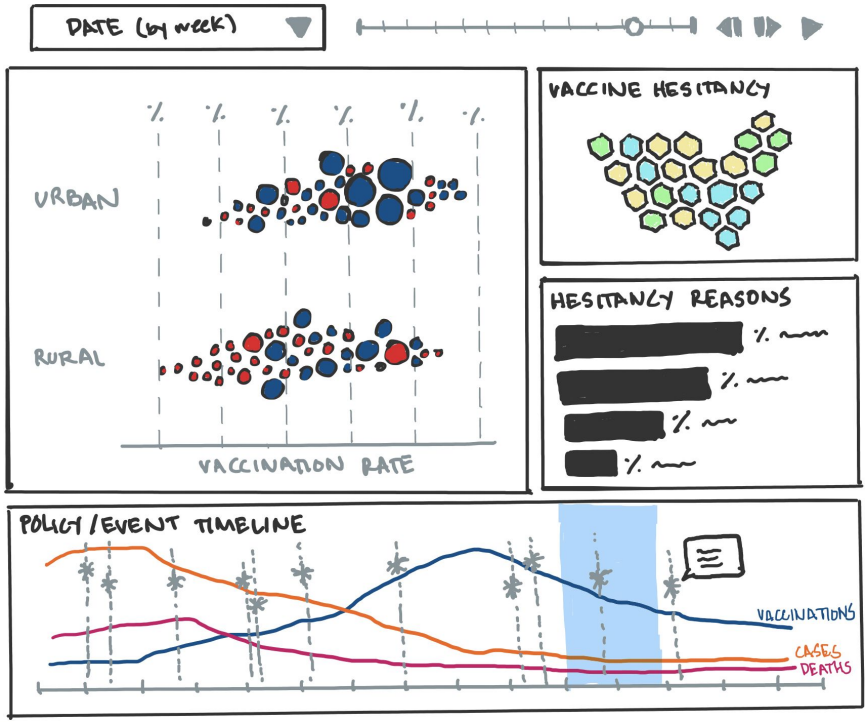


Lea - Midterm Tasks and Goals

Overall task: Discover how COVID-19 vaccination rates, vaccine hesitancy, and reasons for vaccine hesitancy change over time since January 2021

- How do nationwide/state policies and events affect vaccine hesitancy, reasons for vaccine hesitancy, and rates of vaccination?
- How does vaccine hesitancy change over time?
- How do the reasons for vaccine hesitancy change over time?
- How do changes in vaccination rate trend with county characteristics (political leaning, urban-rural classification, poverty rate)?

Lea - Preliminary Design and Approach



Overall design: Connected dashboard of various facets (vaccine hesitancy hex map, bar chart of hesitancy reasons, current event timeline, and county-level detail scatterplot)

Rationale:

- Main goal is for the user to explore trends related to vaccine hesitancy
  - Observe how trends change over time
  - Make connections between different facets
- Ben Schneiderman mantra: nationwide overview first, then filter by state, and get details by county

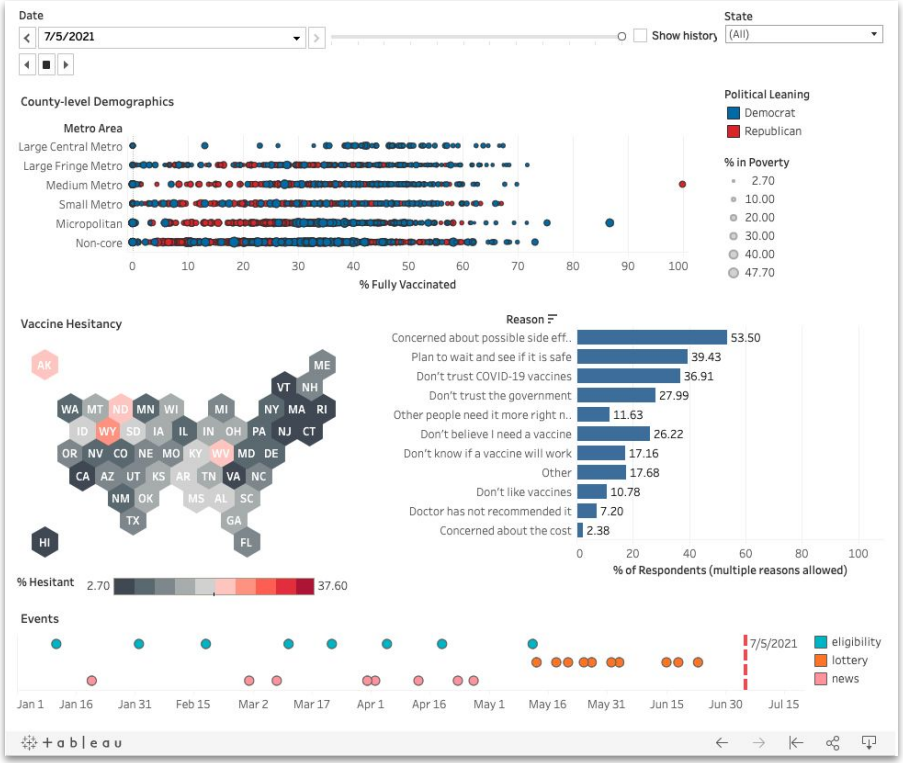
Lea - Usability Study Prototype

Tasks Tested:

1. Overall: Explore the visualization and talk through the functionalities you encounter.

2. Specific Task 1: When does the most striking change happen in vaccine hesitancy nationwide, and what events or factors seem to trend with it?

3. Specific Task 2: Pick a state where a vaccine lottery was held. How effective do you think the vaccine lottery was in that state?



Lea - MoSCoW

M-Must have:
1) Move events timeline to the top and closer to time-lapse controls.
2) Make time controls more prominent; label with short instructions.
3) Add functionality to filter by state by selecting the state on the hexagon map.
4) Split “news” event category to “CDC announcements” and “current events” for clarity.
5) Remove poverty as a channel in the scatter plot.

S- Should have:
1) Add a collision force so the marks don’t overlap in the scatter plot.
2) Consolidate metro areas to urban and rural.

C- Could have:
1) Add anchor or reference points to give state data better context.

W - Would not have:
1) Add vaccination rates over time to timeline for reference

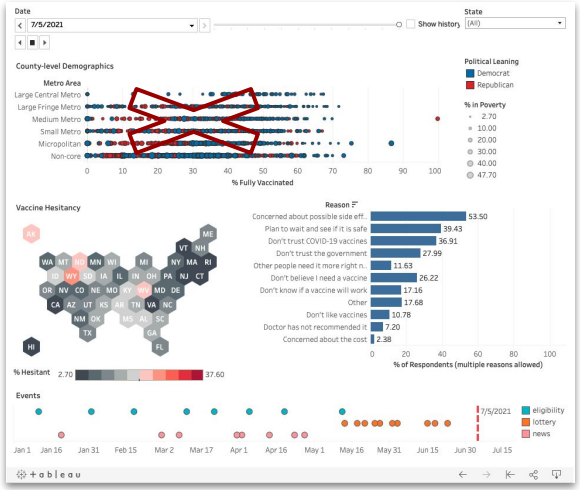
**Note: MoSCoW prioritization with intent to use D3 for the final vis, But priorities may have shifted after deciding to use Tableau instead.*

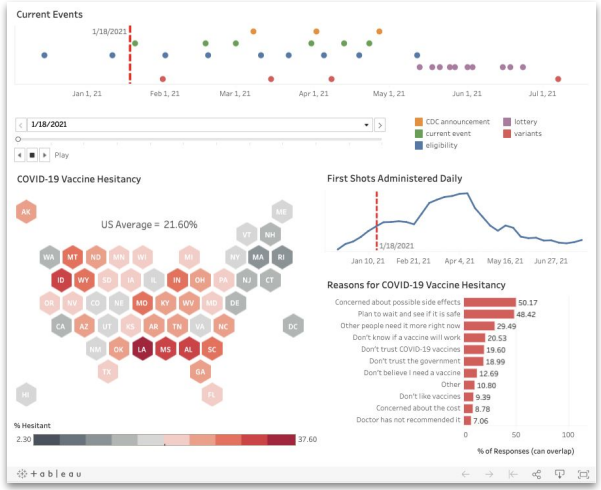
Lea - Usability Study Results

ISSUES	IMPLEMENTED SOLUTIONS
Hard to navigate; too dense with information	Simplify and rearrange dashboard so it is more logically ordered (flow from top left to bottom right)
Some functionalities are easy to miss: time-lapse/autoplay, events timeline	Rearranged dashboard to place events timeline on top and closer to time-lapse controls so it is easier to see that they are related
Some labels are confusing: e.g., “news” event	Changed labeling to be clearer and more explicit
Hard to get insights from scatterplots: marks overlap and urban classification is confusing	Removed scatterplot - more distracting than useful
Specific task #2 is hard to complete without reference to vaccination rates	Replaced scatterplot with simple line chart of administered first doses daily

Lea - Usability Study Results

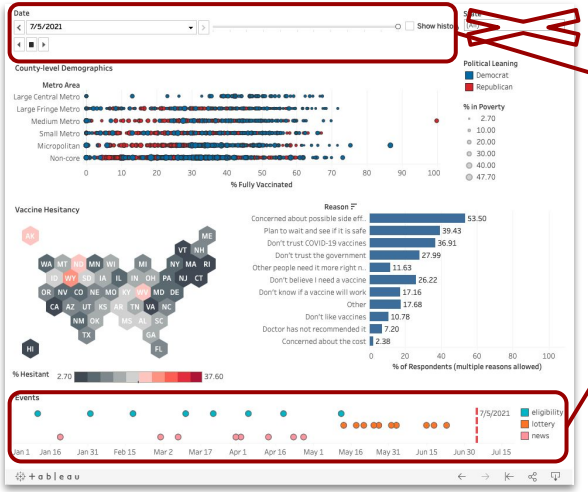
ISSUES	IMPLEMENTED SOLUTIONS
1) Hard to navigate; too dense with information 2) Hard to get insights from scatterplots: marks overlap and urban classification is confusing	Simplify - remove scatter plot, since it is more distracting than useful

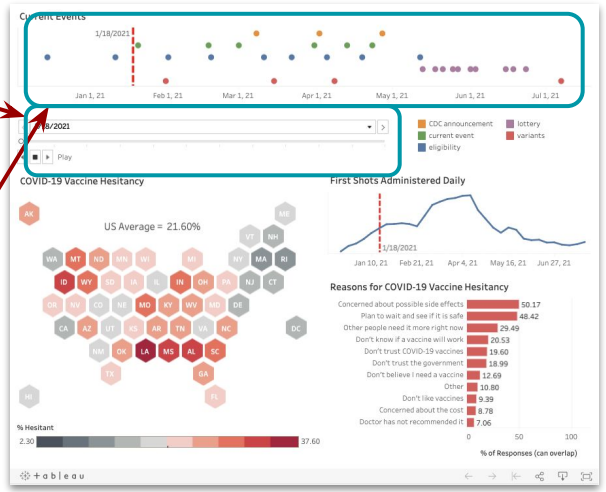




Lea - Usability Study Results

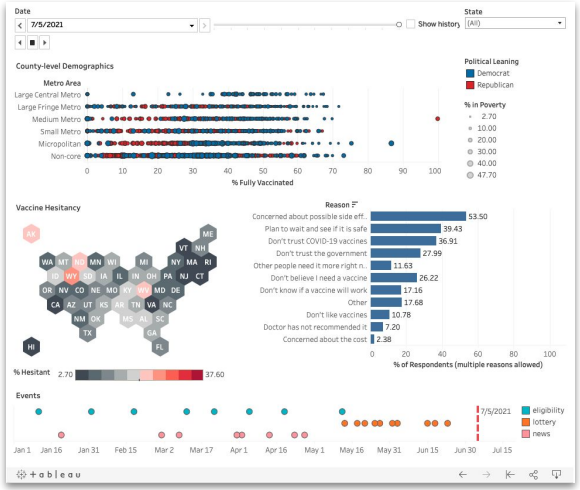
ISSUES	IMPLEMENTED SOLUTIONS
1) Some functionalities are easy to miss: time-lapse, autoplay, events timeline, state drop-down 2) Some labels are confusing: e.g., “news” event	Rearranged dashboard to place events timeline on top and closer to time-lapse controls (easy to see relationship). Removed state drop-down. More categories were introduced for events.

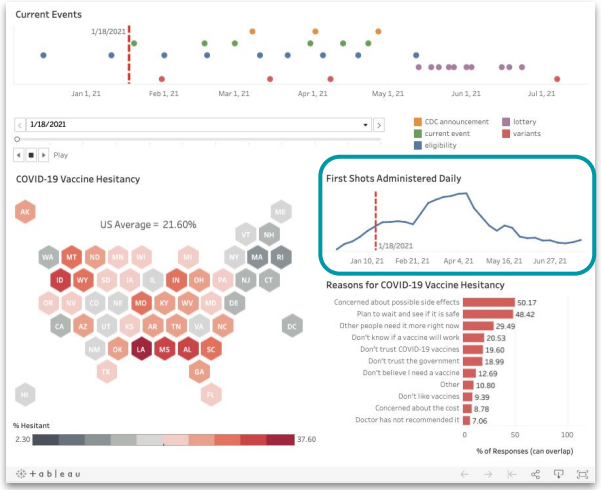




Lea - Usability Study Results

ISSUES	IMPLEMENTED SOLUTIONS
Specific task #2 is hard to complete without reference to vaccination rates	Replaced scatterplot with simple line chart of administered first doses daily





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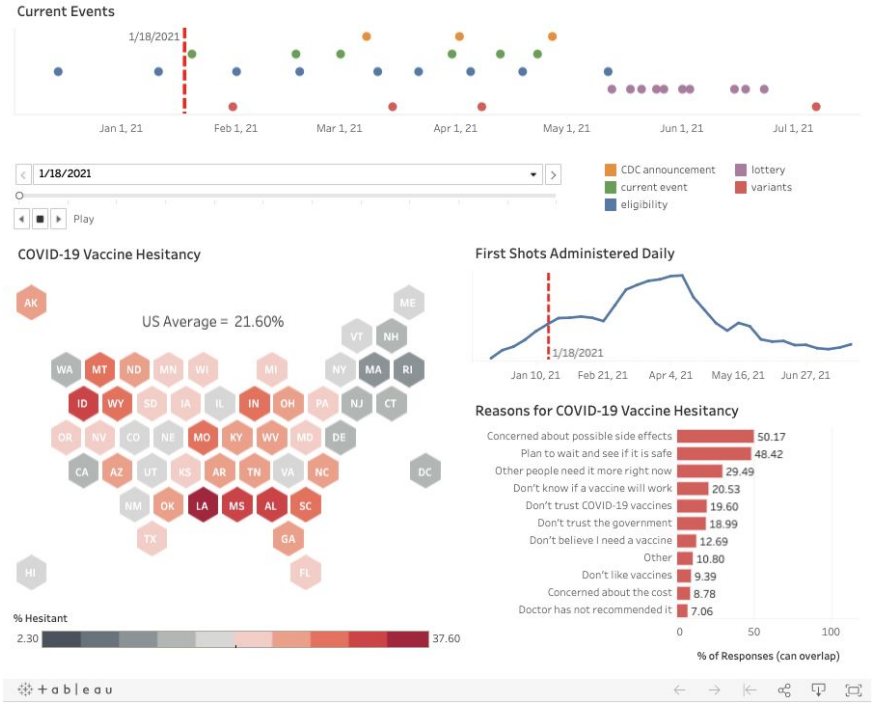
Lea - Final Visualization

Overall task: Explore how attitudes towards COVID-19 vaccinations change over time

- How do vaccine hesitancy and reasons for hesitancy change over time?
- How do current events affect vaccine hesitancy, reasons for vaccine hesitancy, and rates of vaccination?

Revised design: Simplified connected dashboard of various facets (vaccine hesitancy hex map, bar chart of hesitancy reasons, current event timeline, and administered first dose line plot)

Revised Schneiderman mantra implementation: Autoplay for national overview, then state-level information for each date can be selected using map



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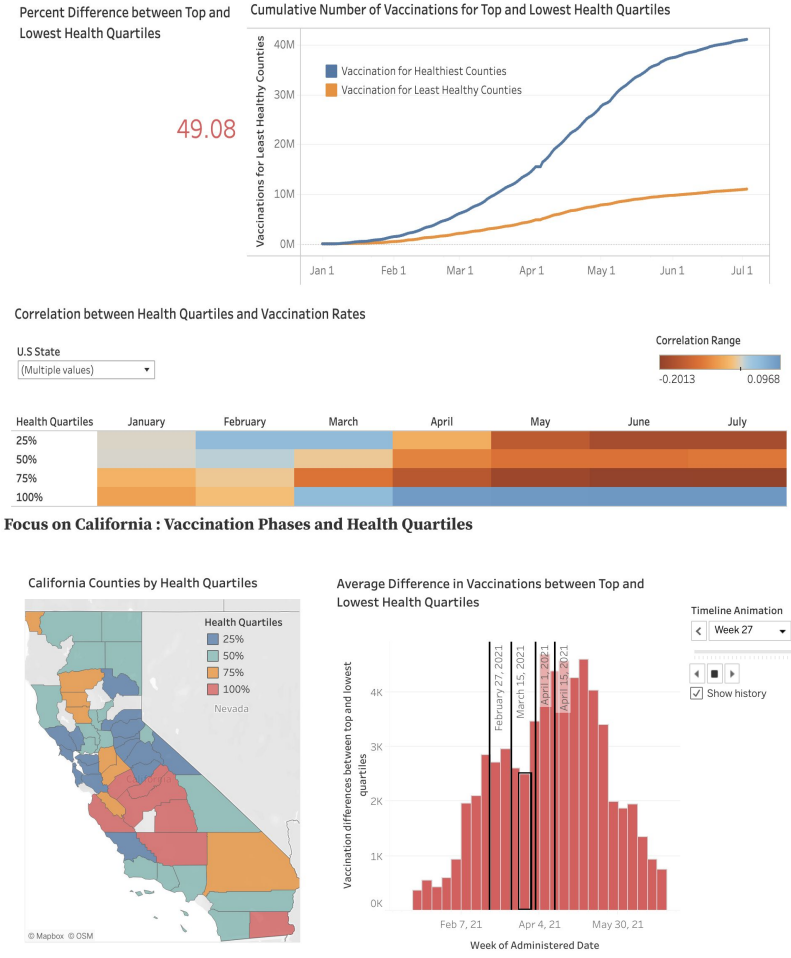
Valerie - Usability Prototype

Tasks Tested:

1. Overall: Explore the visualization and talk through the functionalities you encounter.

2. Specific Task 1: Do you think that there is a difference in vaccination rates based on whether a county in the U.S has a lot of healthy people or not?

3. Specific Task 2: Could you find the percent difference in vaccinations between healthiest and least healthy counties on April 10th?



Valerie - MoSCoW

M-Must have:
1) Clarify measures used and confirm we are controlling for population at the county level.
2) Clean up the axes, which provide misleading information because the whole text does not show up.
3) Clarify what health quartiles mean - what is good health versus bad health
4) Rework correlation plot so that the metric is shown in a more intuitive way to all audiences (i.e.: high correlation is "good" versus "bad").

S- Should have:
1) Improve the interactivity of the health quartile dashboard. Allow drill down at the state level, when possible.
2) Clarify color coding to be consistent across dashboards but also to avoid confusion specifically between line and correlation plots

C- Could have:
1) Include more health measures

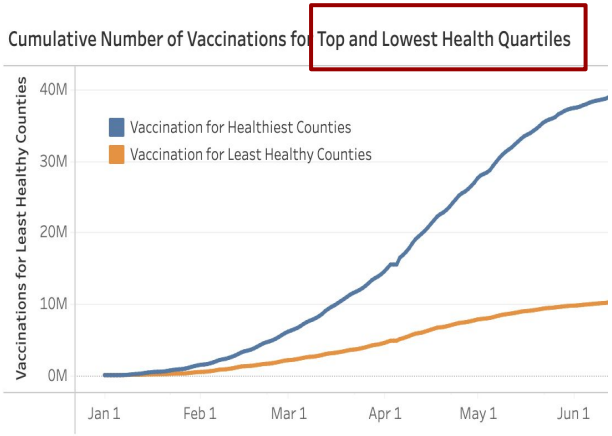
W - Would not have:
1) Because of the complexity of the measures, I will not add other layers, such as political affiliation

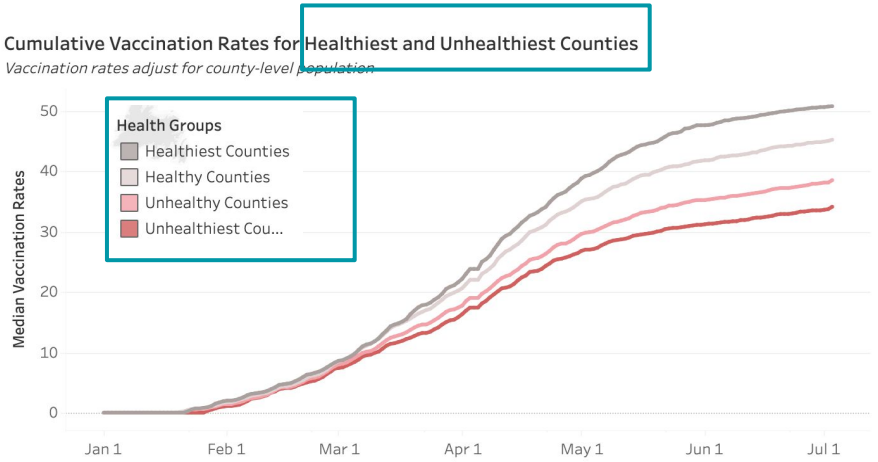
Valerie - Usability Study Results

ISSUES	IMPLEMENTED SOLUTIONS
Testers reversed the interpretation of the quartile divisions	Clarified wording regarding healthy and unhealthy counties

Percent Difference between Top and Lowest Health Quartiles

49.08





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Valerie - Usability Study Results

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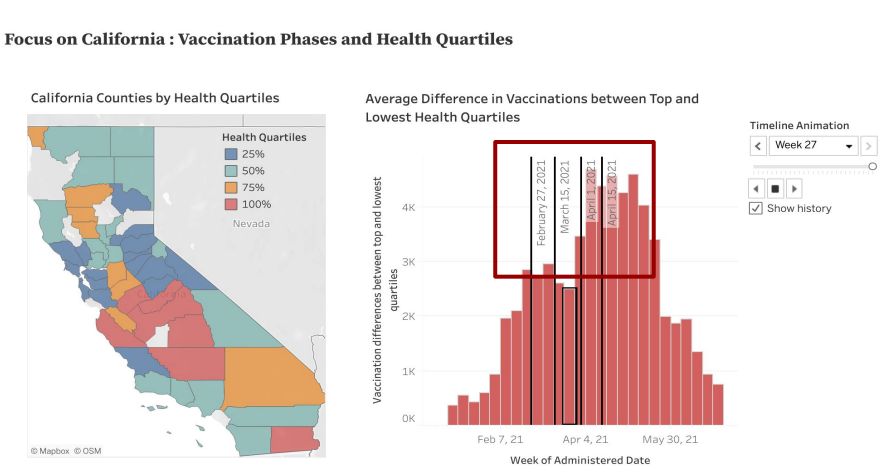

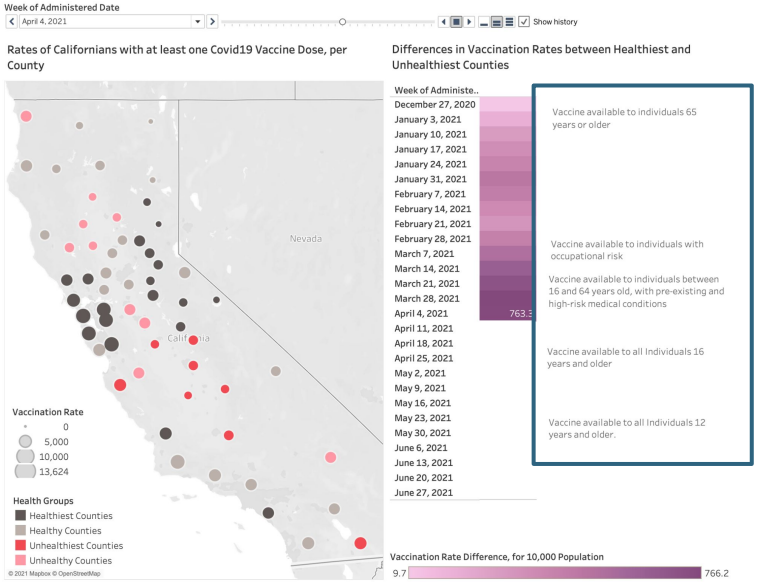

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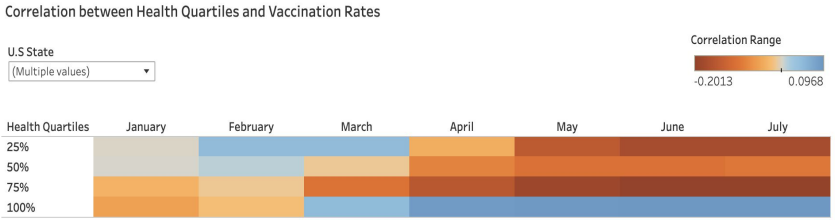
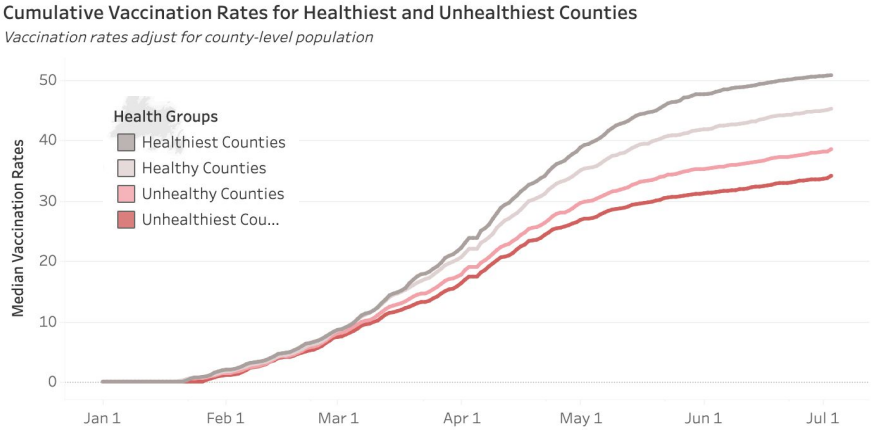
Valerie - Usability Study Results

ISSUES	IMPLEMENTED SOLUTIONS
Testers did not fully understand what correlation meant in the heatmap	The task of understanding health status and vaccination trends was best visualized by adding a color encoding to the line plot. Simplification was key.





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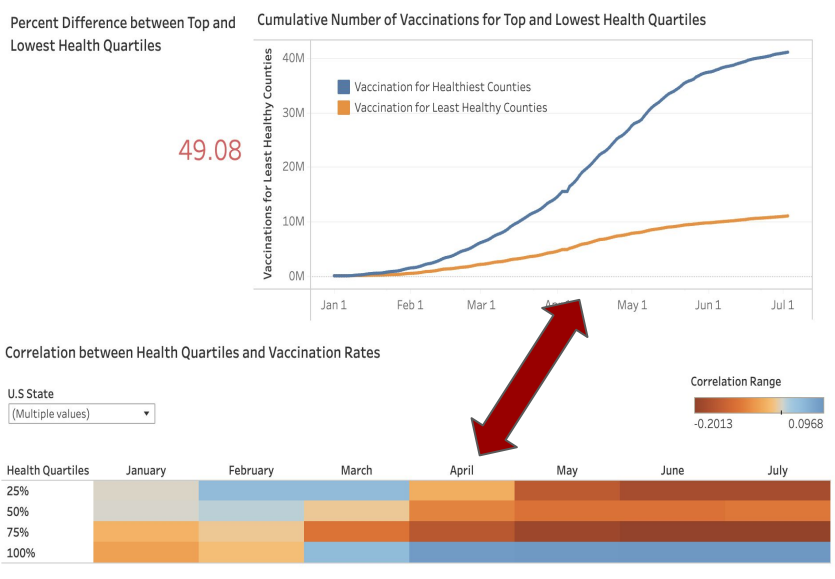
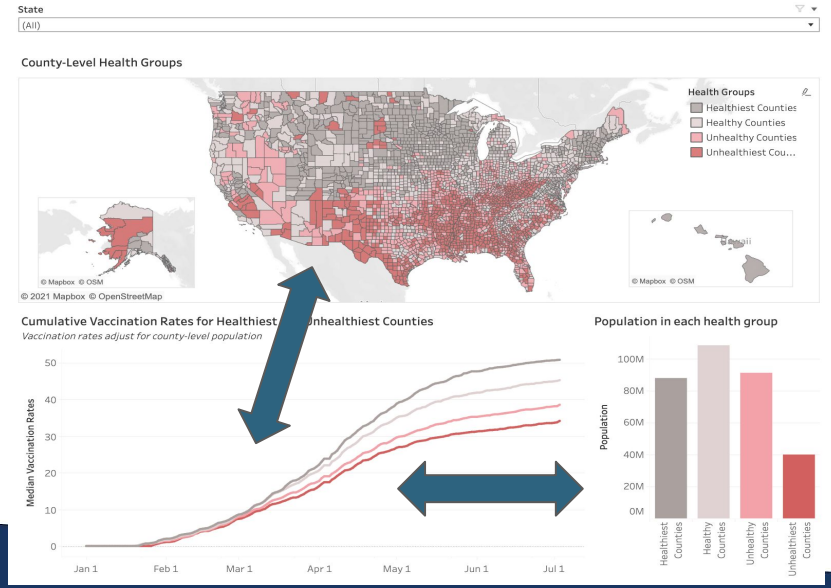
Valerie - Usability Study Results

ISSUES	IMPLEMENTED SOLUTIONS
Colors between charts were similar but did not necessarily encode the same thing	Color encoding now exclusively relates to health groups across all charts.





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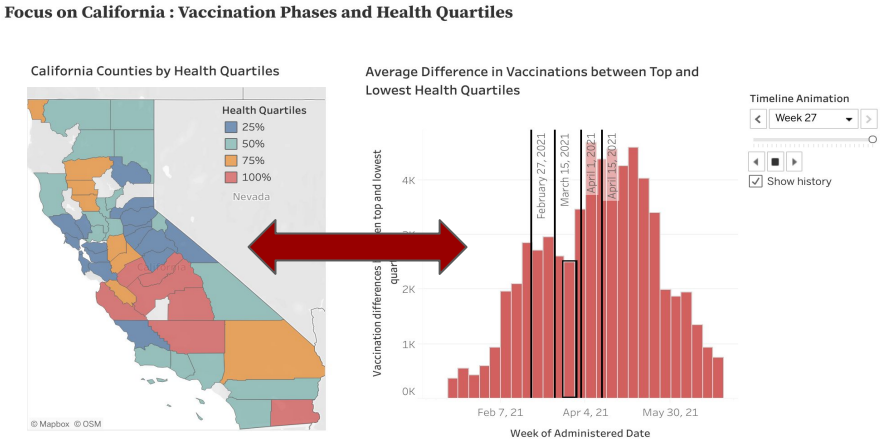

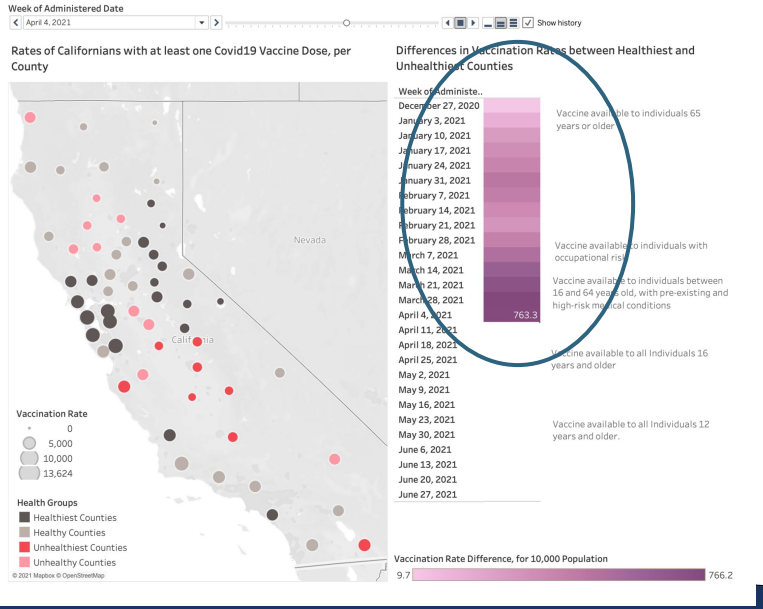

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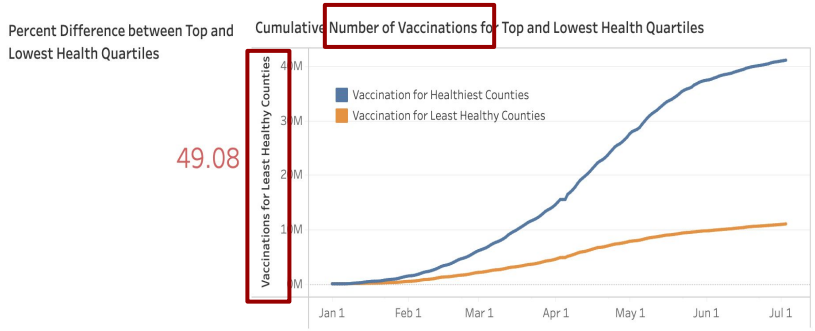
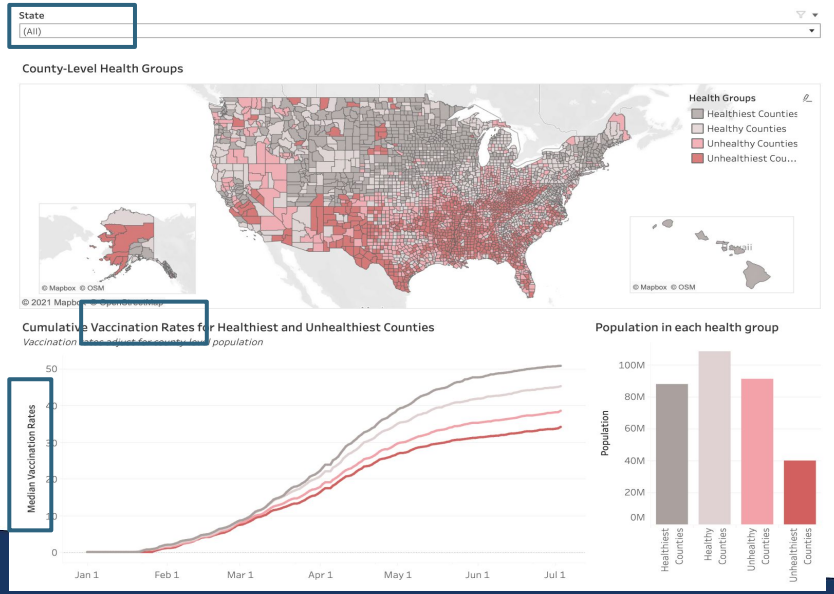
Valerie - Usability Study Results

ISSUES	IMPLEMENTED SOLUTIONS
Miscellaneous bugs: labels were inaccurate or misleading	Color encoding now exclusively relates to health groups across all charts.





Valerie - Usability Study Results

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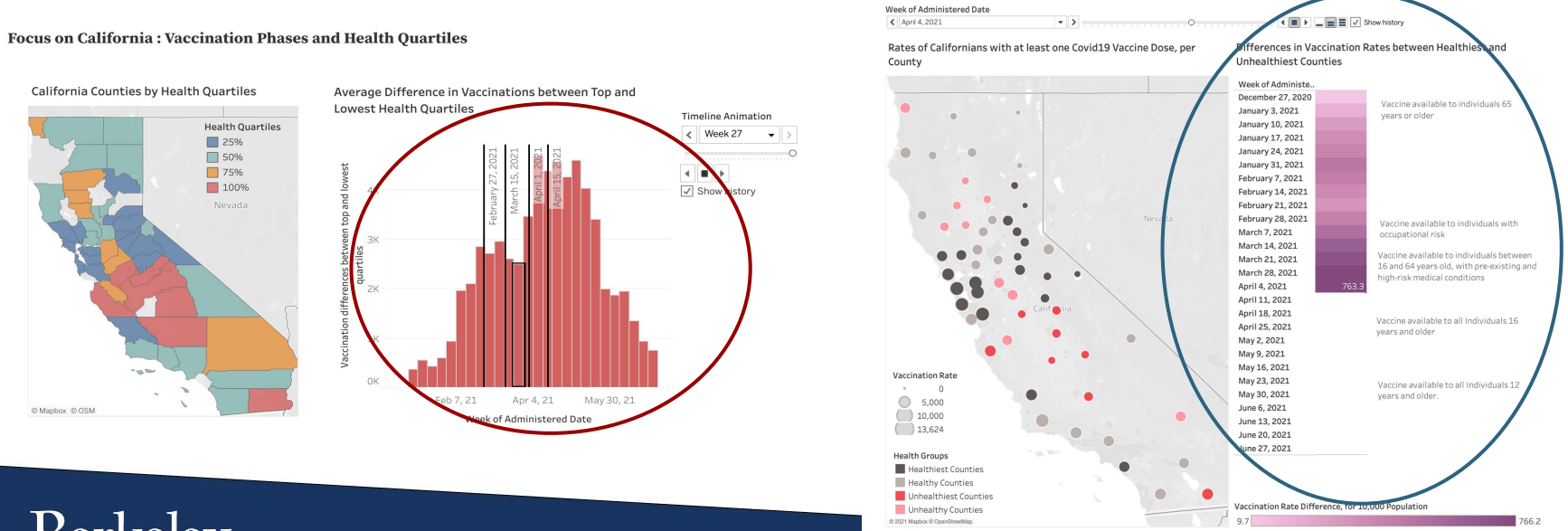

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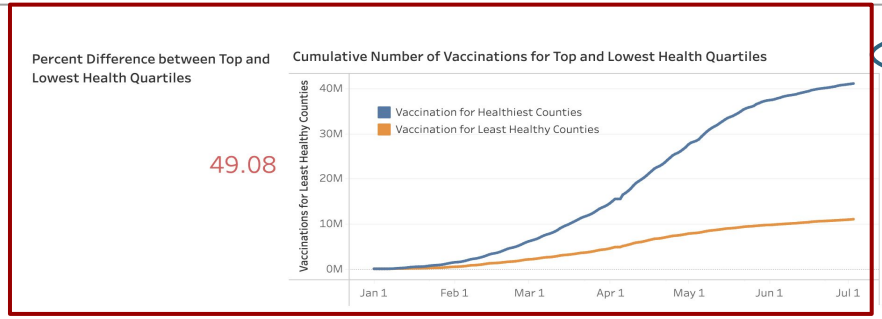
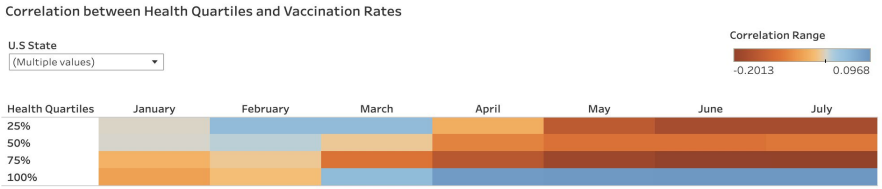
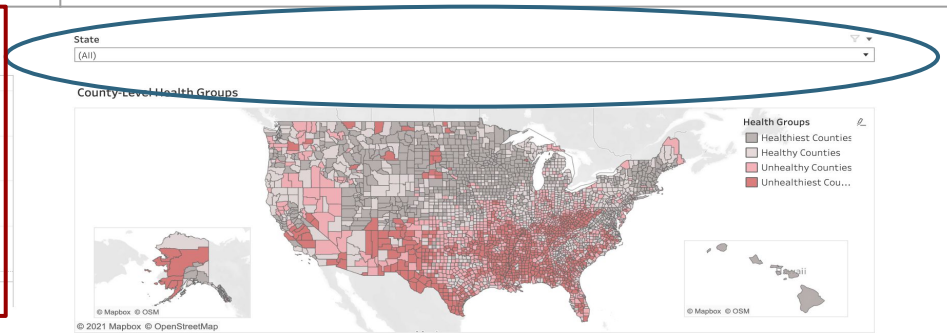
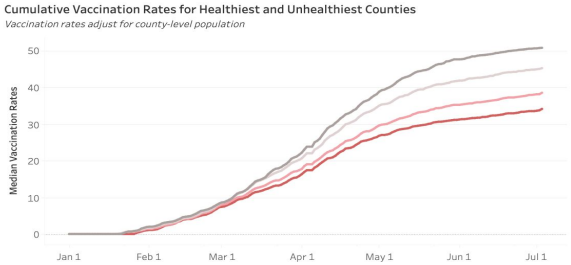
Valerie - Usability Study Results

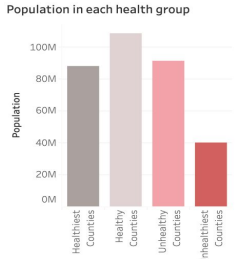
ISSUES	IMPLEMENTED SOLUTIONS
Users expected the same level of exploration and interactivity across all three of our designs	Color encoding now exclusively relates to health groups across all charts.











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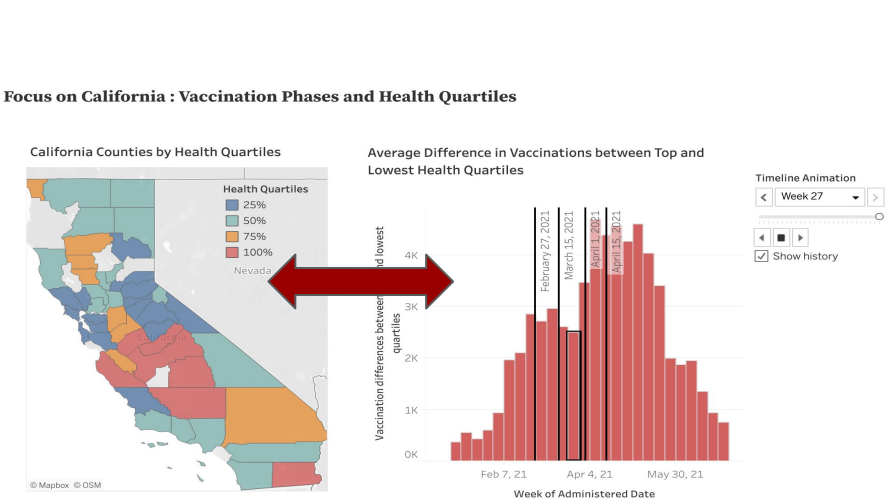
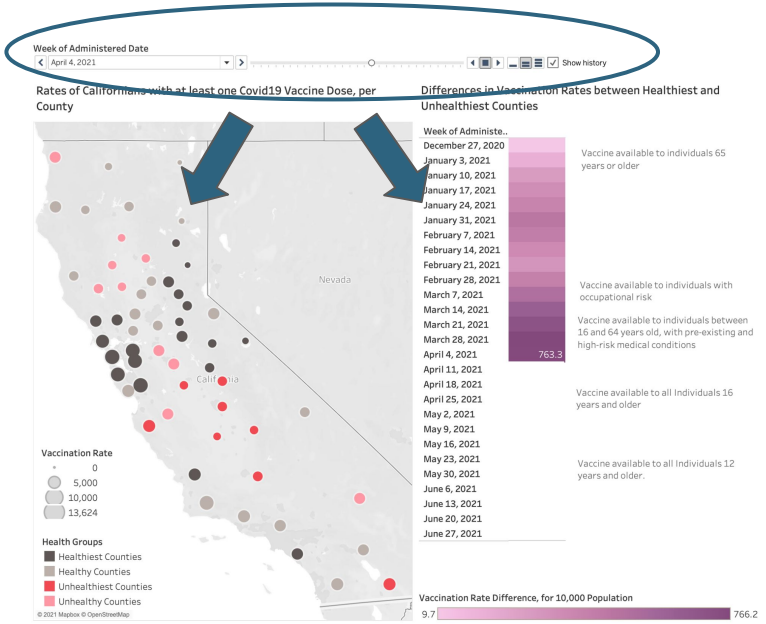
Valerie - Usability Study Results

ISSUES	IMPLEMENTED SOLUTIONS
Users expected the same level of interactivity across all three of our designs	Color encoding now exclusively relates to health groups across all charts.





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Valerie - Final Visualizations

Overall task: Explore the relationship between county-level health and COVID-19 vaccination rates in the U.S, since January 2021.

- At the national level, are vaccination rates the same for highest and lowest health quartiles?
- At the national level, are vaccination rates correlated with health quartiles?
- In California, are vaccination phases appealing to all counties, irrespective of their healthy status?

Revised design: I separated National versus California insights into two dashboards and simplified how to visualize non-inuitive metrics, like county-level health.
Revised Schneiderman mantra implementation: For each dashboard, I added interactivity to present an overall view that users can further drill down on.