

CSE-6242 - Course Project

TEAM 12

Team Members:

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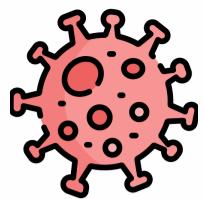
Project Title:

ANONYMIZED COVID PATIENTS'
OUTCOME ANALYSIS & PREDICTION

Data: [CDC Anonymized Patients Data](#) and [CDC Vaccination Data](#)

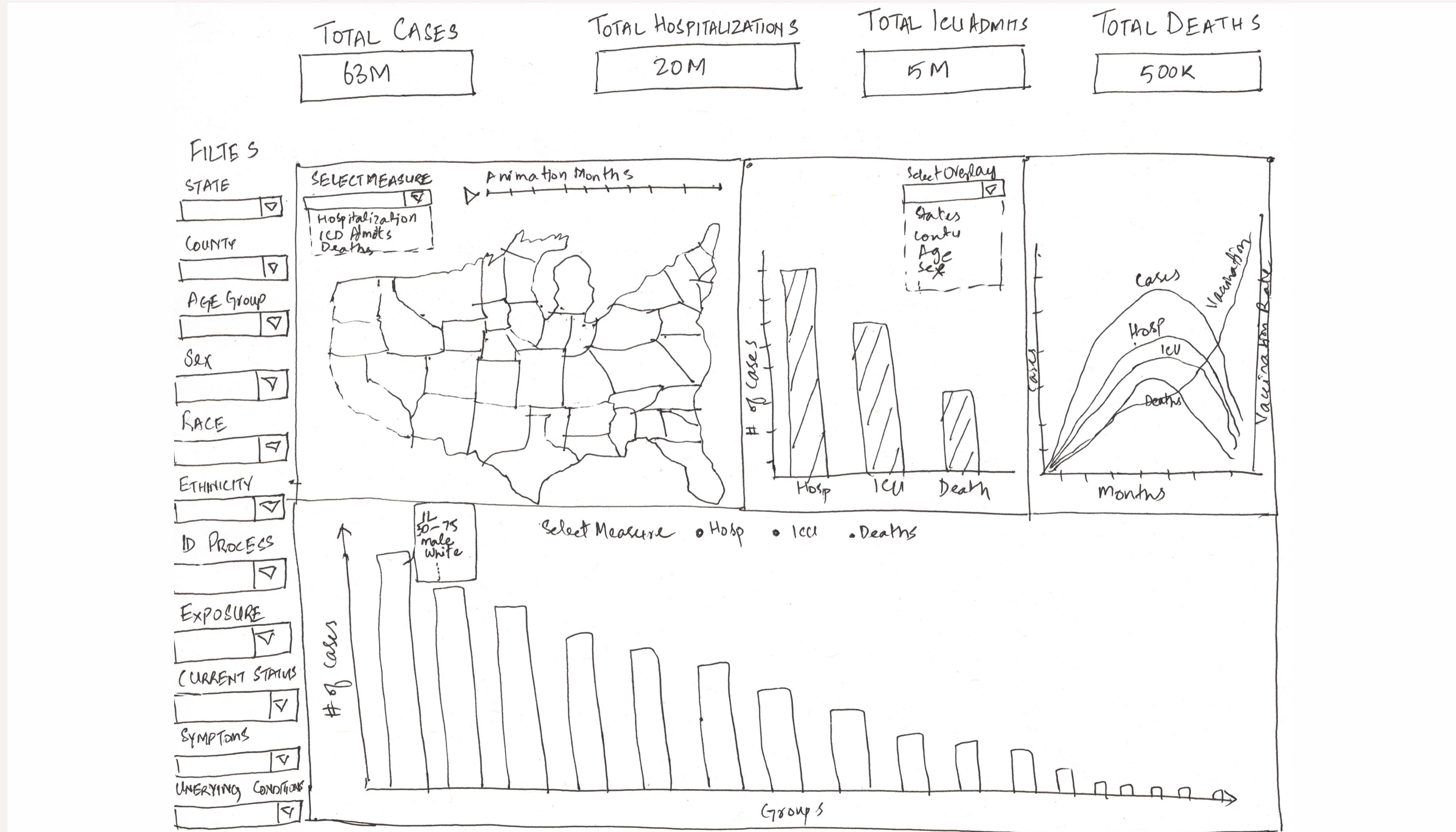
Abstract:

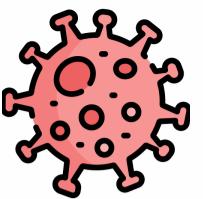
COVID-19 pandemic disrupted lives unevenly with certain sociodemographic groups being overexposed to the pandemic. Despite prior studies' focus on forecasting the epidemiological outcomes using empirical and data-driven models, a general statistical that incorporates societal variables is missing. We propose to develop a regression and visualization framework that makes predictions of COVID-19 health outcomes with respect to epidemiological and sociodemographic data, jointly. The impact of this work is modeling and visualizing the impact of COVID-19 on disproportionately exposed groups in the US.



Insights Dashboard

The CDC data for anonymized patients and vaccination is analyzed in Tableau (below). The data is updated as of end of Feb, 2022.





Model Performance Dashboard

This dashboard, also built in Tableau, provides an overview of the modeling exercise. It compares the two models the team built and provides an overview of reasoning for the model selection.

MODEL 1 : Multi-Response Prediction

Description : XYZ

Data Specs :

Test Data Confusion Matrix

		Model Classification	
		YES	NO
True Class	YES	TP	FN
	NO	FP	TN

Accuracy: X %

ROC :

Specificity: Y %

AUC :

Sensitivity: Z %

Model 2 : Merged One Target Prediction

Description : ABC

Data Specs :

Test Data Confusion Matrix

		Model	
		YES	NO
True	YES	TP	FN
	NO	FP	TN

Accuracy: X %

ROC :

Specificity: Y %

AUC :

Sensitivity: Z %

Test Data Plot

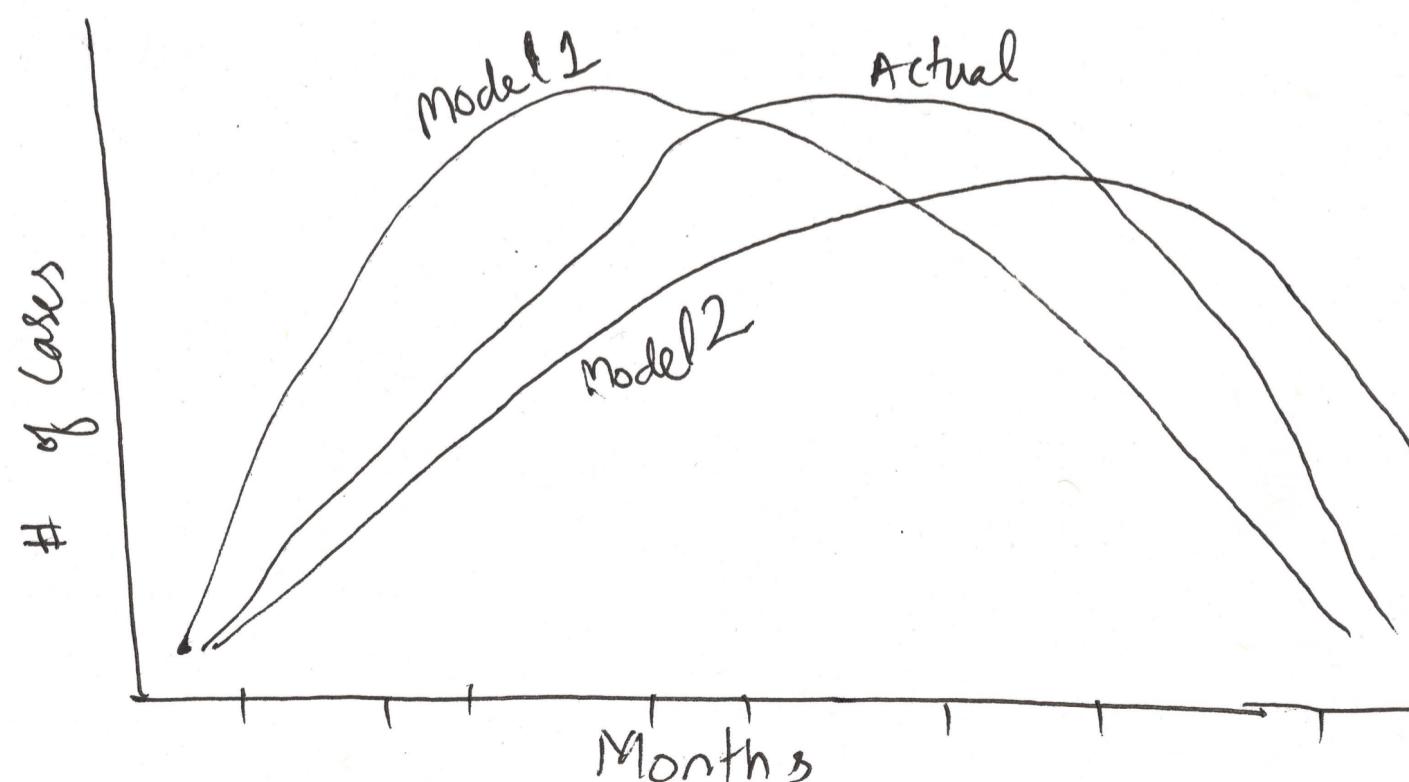
Select Measure: • Hosp • ICEU

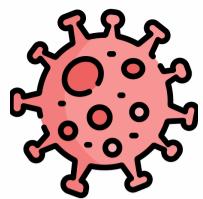
• Death

Selected Model:

Reasoning:

-
-
-
-





Get Individual Case Predictions

The underlying Machine Learning model will help you get a prediction for 3 different scenarios for: Hospitalization, ICU Admission & Death. Given different patient profile properties, the prediction for each of the 3 scenarios will be provided. Select the properties values and hit “Get Predictions” button.

1. Please make your selections:

Select a State ▾

Select a County ▾

Select an Age Group ▾

Select Sex ▾

Select Ethnicity ▾

Select a Race ▾

Select Identification Process ▾

Select Exposure ▾

Select Current Status ▾

Select Symptoms Status ▾

Select Underlying Conditions ▾

2. Click to Get Predictions:

Get Predictions

Reset

Hospitalization Probability:



ICU Admission Probability:



Patient Death Probability:



Select a State ▼

Select a State ▼

Select a State ▲

Washington

New York

California

Select a State ▲

Washington ▼

Washington

New York

California

Select a State ▲

New York ▼

Washington

New York

California

Select a State ▲

California ▼

Washington

New York

California

Select a County ▼

Select a County ▼

Select a County ^

King

San Diego

Snohomish

Select a County ^

King ▼

King

San Diego

Snohomish

Select a County ^

San Diego ▼

King

San Diego

Snohomish

Select a County ^

Snohomish ▼

King

San Diego

Snohomish

Select an Age Group ▼

Select an Age Group ▼

Select an Age Group ▲

0 to 17 years

18 to 49 years

50 to 64 years

Select an Age Group ▲

0 to 17 years ▼

0 to 17 years

18 to 49 years

50 to 64 years

Select an Age Group ▲

18 to 49 years ▼

0 to 17 years

18 to 49 years

50 to 64 years

Select an Age Group ▲

50 to 64 years ▼

0 to 17 years

18 to 49 years

50 to 64 years

Select Sex ▼

Select Sex ▼

Select Sex ^

Male

Female

Select Sex ^

Male ▼

Male

Female

Select Sex ^

Female ▼

Male

Female

Select Ethnicity ▼

Select Ethnicity ▼

Select Ethnicity ^

Hispanic

Non-Hispanic

Select Ethnicity ^

Hispanic ▼

Hispanic

Non-Hispanic

Select Ethnicity ^

Non-Hispanic ▼

Hispanic

Non-Hispanic

Select a Race ▼

Select a Race ▼

Select a Race ^

Asian

Black

White

Select a Race ^

Asian ▼

Asian

Black

White

Select a Race ^

Black ▼

Asian

Black

White

Select a Race ^

White ▼

Asian

Black

White

Select Identification Process ▼

Select Identification Process ▼

Select Identification Process ▲

Clinical Evaluation

Routine Surveillance

Contact Tracing

Select Identification Process ▲

Clinical Evaluation ▼

Clinical Evaluation

Routine Surveillance

Contact Tracing

Select Identification Process ▲

Routine Surveillance ▼

Clinical Evaluation

Routine Surveillance

Contact Tracing

Select Identification Process ▲

Contact Tracing ▼

Clinical Evaluation

Routine Surveillance

Contact Tracing

Select Exposure ▼

Select Exposure ▼

Select Exposure ^

Yes

No

Select Exposure ^

Yes ▼

Yes

No

Select Exposure ^

No ▼

Yes

No

Select Current Status ▼

Select Current Status ▼

Select Current Status ^

Lab Confirmed Case

Probable Case

Select Current Status ^

Lab Confirmed Case ▼

Lab Confirmed Case

Probable Case

Select Current Status ^

Probable Case ▼

Lab Confirmed Case

Probable Case

Select Symptoms Status ▼

Select Symptoms Status ▼

Select Symptoms Status ▲

Asymptomatic

Symptomatic

Select Symptoms Status ▲

Asymptomatic ▼

Asymptomatic

Symptomatic

Select Symptoms Status ▲

Symptomatic ▼

Asymptomatic

Symptomatic

Select Underlying Conditions ▼

Select Underlying Conditions ▼

Select Underlying Conditions ▲

Yes

No

Select Underlying Conditions ▲

Yes ▼

Yes

No

Select Underlying Conditions ▲

No ▼

Yes

No

1. Please make your selections:

Select a State ▾

Select a County ▾

Select an Age Group ▾

Select Sex ▾

Select Ethnicity ▾

Select a Race ▾

Select Identification Process ▾

Select Exposure ▾

Select Current Status ▾

Select Symptoms Status ▾

Select Underlying Conditions ▾

2. Click to Get Predictions:

Get Predictions

Reset

Hospitalization Probability:

—

ICU Admission Probability:

—

Patient Death Probability:

—

1. Please make your selections:

Washington ▾

Snohomish ▾

0 to 17 years ▾

Male ▾

Hispanic ▾

Asian ▾

Clinical Evaluation ▾

Yes ▾

Lab Confirmed Case ▾

Asymptomatic ▾

Yes ▾

2. Click to Get Predictions:

Get Predictions

Reset

Hospitalization Probability:

65%

ICU Admission Probability:

25%

Patient Death Probability:

10%

1. Please make your selections:

California ▾

King ▾

18 to 49 years ▾

Female ▾

Non-Hispanic ▾

White ▾

Contact Tracing ▾

No ▾

Probable Case ▾

Symptomatic ▾

Yes ▾

2. Click to Get Predictions:

Get Predictions

Reset

Hospitalization Probability:

95%

ICU Admission Probability:

50%

Patient Death Probability:

20%