

Stat 512 Group 4 Project Cover Page

1. Project Topic: COVID-19 Infection and Death Cases In Indiana
2. Group number: 4
3. List of group members: Xiaoke He, Yuan Gao, Hao Yin, Baoxuan Tao
4. Project YouTube link: <https://www.youtube.com/watch?v=UHBjoHa8wno&t=588s>
5. Project background introduction:

COVID-19 has created a global pandemic, and it has dramatically impacted our daily life. There have been many measures to reduce the spread of diseases, such as vaccines and masks. We are interested in how well each of them works compared to each other. Therefore, we have raised research questions to investigate effectiveness of each measure as well as the collective effectiveness.h6. Project result highlight (what are the major findings of your project, what do you consider the most contribution of this project):

- 1) A full series of Covid-19 vaccines can restrict the infection rate, which may indirectly prove that a full series vaccination is able to increase the immunity to Covid-19.
- 2) The complete series and the booster do not have the same effects in terms of reducing the number of infections.
- 3) The mask mandate plays a more important role in determining the total number of death cases.

When the mask mandate is lifted, the number of death cases is higher than it used to be in Indiana.

7. Project data introduction (the exact data resource, a table summarizes variable notation and definition, such as the one on the first page in the homework).

Source of data:

1. https://covid.cdc.gov/covid-data-tracker/#trends_weeklycases_select_00
2. <https://data.cdc.gov/Vaccinations/COVID-19-Vaccination-Trends-in-the-United-States-N/rh2h-3yt2>

TotalVac	The total number of administered Covid-19 vaccines in Indiana.
Doseone	The total number of administered first doses of Covid-19 vaccine in Indiana.
Series	The total number of administered Second dose of Covid-19 vaccine in Indiana.
Booster	The total number of administered Booster shots of Covid-19 vaccine in Indiana.
infection	The total number of Covid-19 infection cases in Indiana.
death	The total number of Covid-19 death cases in Indiana.
Mask	Mask Mandate Policy in IN. 0 means no Mask Mandate Policy.

8. Briefly describe what you learn from the project and what is the most challenging part.

The most challenging part is our models didn't reach our expectations. Our expectations are very ideal. For example, we assume that vaccines take effect within a week and we can see a sudden decrease in the number of infections. Also, we assume that Indiana will follow the pattern of the general environment and didn't consider the geographical restrictions in Indiana may lead to a different pattern.

Also, in the process of coding, we realize that real data has more severe violations than the database we used in homeworks, and these violations can't always be completely solved by remedial methods covered in our course. It's hard for me to make the decision.

From this project, we learn a lot. First, when we are deciding research questions, we should consider whether the database we will use can handle the scale of our research questions. Besides, the standard of diagnostic treatment is not fixed. In study, we should combine the objective output we get and our human intuition to make decisions.

9. In one sentence, what is your advice for the future student to deliver a high-quality project in the course.

When your database is clearly inadequate to support your research questions in the course of your project, scaling up the database is necessary or a must.