**Abstract of project5**

**Background：**

In December 2019, 27 cases of viral pneumonia were found in Wuhan, Hubei province. On January 7, 2020, the expert said it was a novel corona-virus, and preliminary progress was made in the identification of the etiology of viral pneumonia of unknown cause in Wuhan. Since the novel corona-virus pneumonia was transmitted from person to person, the national health commission of China (NHC) placed the novel corona-virus pneumonia under the control of class b of the statutory infectious diseases, and took the prevention and control measures of class a infectious diseases. The nucleic acid test of the pathogen was completed on January 10. Novel corona-virus 2019 was officially named novel corona-virus 2019 by the world health organization (who) on January 12, 2020.

Globally, as of 10:00 central European time on May 28 the number of confirmed covid-19 cases increased by 104,505 to 5,593,631 compared with the previous day. The number of deaths increased by 4,221 to 353,334 from the previous day.

**Motivation:**

To increase the cure rate, reduce the death rate, so that each country can allocate medical resources effectively, and the public can be aware of their own risk factors and take preventive measures.

**Research question：**

Whether the death ratio of COVID—19 is related to individual characteristics (such as age group, gender)

**(Potential)Variables of interest:**

Age group

gender

**Research method：**

Find the data of each death cases and their personal information,such as their ages and genders.

Put this data to the R studio.

Calculate the death ratio in each age group, calculate as time passed by the death ratio of male and female.

Use R studio and use the linear regression,Logistic Regression and Aggregated Level Data to find if there are some relationship between the death ration and the individual characteristics and check the Confidence Intervals to make sure if that is reliable.

Model1:death ratio~age group (0-10,10-20,....80-90,90-100,over）(linear regression,logistic regression) (tables, graphs, plots)

Model2:death ratio ~ time (linear regression,logistic regression) (in two lines which represent male and female)

Model3 : death ratio ~age group and gender (multiple regression model?(not sure))

Then if model1 and 2 are significant the use the model 3 to find the multiple model of death ratio and age group and gender.

Use the Latex to write the poster,and use the graph which is drew by R code to show the answer clearly and make the conclusion reliable.

**Conclusion:**

There is some relation between the age group and the death ratio

There is some relation between the gender and the death ratio

And we can guess a multiple model with individual characteristics and death ratio.

**Application:**

We can better protect the health of all people and allocate medical resources more rationally.

And use the model 3 we can predicting mortality rates for each country and reduce them by effectively allocating health resources to focus on protecting vulnerable populations.

This can be tailored to different situations in different countries, greatly reducing losses in each country, effectively controlling mortality rates, and increasing cure rates in each country.

Reference

# 1.Coronavirus (COVID-19) death numbers by gender and age Germany 2020(until 6.2)

<https://www.statista.com/statistics/1105512/coronavirus-covid-19-deaths-by-gender-germany/>

5.Number of coronavirus (COVID-19) cases in Germany in 2020, by age group

<https://www.statista.com/statistics/1105465/coronavirus-covid-19-cases-age-group-germany/>

2.Number of COVID-19 cases in Australia , by age and gender(until 6.2)

<https://www.statista.com/statistics/1104012/australia-number-of-coronavirus-cases-by-age-group/>

3.Number of confirmed coronavirus (COVID-19) cases in Slovenia in 2020, by age and gender

<https://www.statista.com/statistics/1104413/slovenia-confirmed-coronavirus-cases-covid-19-by-age-and-gender/>

4.Number of coronavirus (COVID-19) cases in England as of June 4, 2020, by age and gender

<https://www.statista.com/statistics/1115083/coronavirus-cases-in-england-by-age-and-gender/>

6.Breakdown of 44,672 sample patients infected with novel coronavirus COVID-19 in China as of February 11, 2020, by age group

<https://www.statista.com/statistics/1095024/china-age-distribution-of-wuhan-coronavirus-covid-19-patients/>

7.Fatality rate of novel coronavirus COVID-19 in China as of February 11, 2020, by age group

<https://www.statista.com/statistics/1099662/china-wuhan-coronavirus-covid-19-fatality-rate-by-age-group/>