Contemporary Issues in Developing Countries: Empirical Report

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Chapter 1

Introduction

So far, COVID-19 is overwhelming the whole over the world. Researchers has been conducted surveys and analysis about COVID-19, such as the factors of Covid-19 infections or fatalities [5, 6], the effects of social distancing [1], and relationships between COVID-19 positives and going-out-ratio accordingly to generations and genders. However, there's been no research on relationships between COVID-19 and other diseases.

UNAIDS, which is a NGO organization to promote global actions on HIV/AIDS pandemic, has posted an instructional report on how people with HIV should do to prevent themselves from COVID-19 infection [8, 7]. This organization studies mainly on practical knowledge that people should behave.

Therefore, in this report, I studied the relationship between COVID-19 and HIV, and other diseases in terms of the number of yearly incidence of positives.

I assume that, if countries can keep the figures of positive cases of contagious diseases on a daily basis, they can immediately lower the number of COVID-19 positive cases in a year. In addition, if people try to protect themselves from COVID-19 and keep social distancing or home staying, there should be a decrease in the number of other contagious diseases. Thereby, my hypothesis is "there should be some relationships between the number of incidence of positives in each diseases and the transition of the number of COVID-19 cases in every country".

Chapter 2

Data

In this chapter, I explain the datasets I used to study this hypothesis. I used

1. Population, total(Population estimates and projections) in 2018 from DataBank [3]
2. Incidence of HIV, total (per 1,000 uninfected population) in 2020 from DataBank [3]
3. Incidence of malaria (per 1,000 population at risk) in 2020 from DataBank [3]
4. Incidence of tuberculosis (per 1,000 population at risk) in 2020 from DataBank [3]
5. Incidence of COVID-19 cases (Cumulative number) in 2020 and 2021 from Our World in Data [2]

In the 5th data above, I used a cumulative data of incidence of positives on 2021/12/24 and 2020/12/31 in order to get a sum of cases by year. I organized data above by deleting row data of countries which don't exist on all datasets above. All of the data above is cross section data. The number of observations was 193.

The organized dataset and my project file are available at []

Chapter 3

Analytical Framework

My hypothesis is "there should be some relationships between the number of incidence of positives in each diseases and the transition of the number of COVID-19 cases in every country". I used a computed variable that suggests the number of cases, which calculated from the relative data (per 1,000 population).

My estimation model is below:

$$T_c = I_{HIV}\beta_H \; I_{Malaria}\beta_M \; I_{TB}\beta_T \; P\beta_P \tag{3.1}$$

T means that the transition of the number of COVID-19 cases from 2020 to 2021. c means each countries. I_{HIV} means that the incidence of HIV cases. $I_{Malaria}$ means that the incidence of Malaria cases. I_{TB} means that the incidence of tuberculosis cases. P means the population of the country. Each β is a coefficient. T and P are integer, ratio scale variables. c is a text, nominal variable. The other four variables are decimal, ratio scale.

My estimation model is OLS.

In implementation, I used jamovi, which is a rapper software of R [4] (figure 3.1).

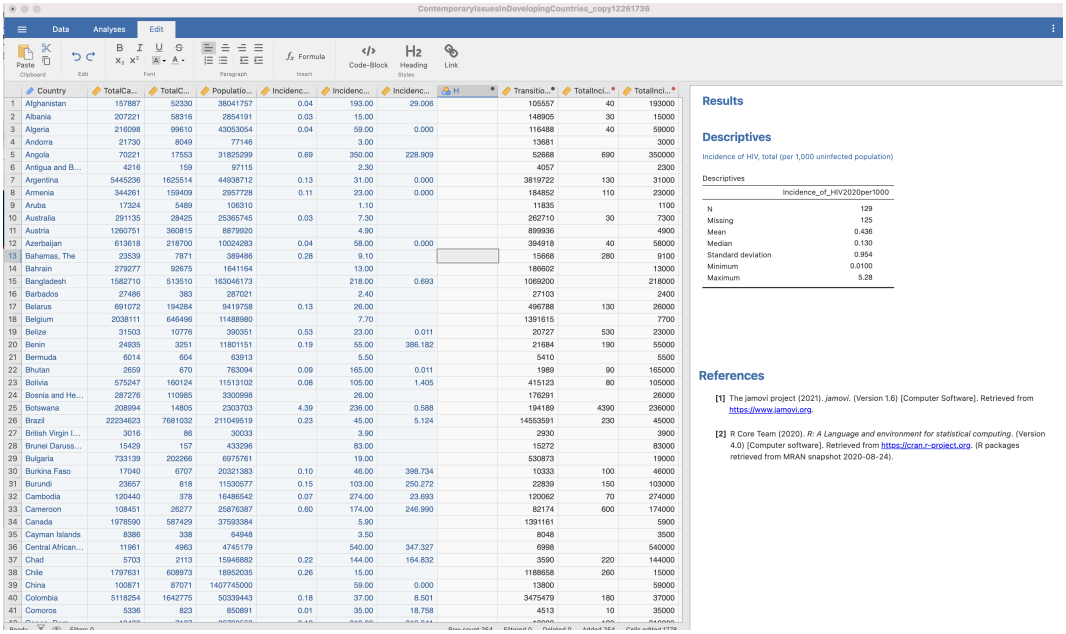

Figure 3.1: Jamovi's user interface

Chapter 4

Results and Discussion

Model	R	R^2
1	0.889	0.791

Table 4.1: Model fit measures.

Predictor	Estimate	SE	t	p
Intercept	437831.8479	249245.93132	1.757	0.083
Population2019	0.0181	0.00104	17.367	$< .001$
IncidenceOfMalaria2018per1000	−2203.2547	1201.33898	−1.834	0.070
IncidenceOfTB2020per1000	−1953.2374	1307.77723	−1.494	0.139
IncidenceOfHIV2020per1000	152995.3594	173369.21225	0.882	0.380

Table 4.2: Model Coefficients

The result is above 4.14.2. There looks no significant effects on the transition of the number of COVID-19 cases from 2020 to 2021 from the coefficients related to diseases. I assume that this result was because people may get such diseases in various way. For example, you may get COVID-19 easily even if you breath in the virus once, but you cannot get HIV virus in such way. In addition, I assume there were so many missing values in the dataset.

Chapter 5

Conclusion

The purpose of my study was to prove the hypothesis "there should be some relationships between the number of incidence of positives in each diseases and the transition of the number of COVID-19 cases in every country". I supposed if countries can keep the figures of positive cases of contagious diseases on a daily basis, they can immediately lower the number of COVID-19 positive cases in a year. The result was not that significant, but my suggestion should spot a light on the needs to survey of the relationships and co-effects of each diseases.

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