The serious gap laying on healthcare system in Thailand*

Why there exists gap between health system and mother's report for immunization

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Abstract

This paper has been examined possible variables that influenced children immunization report cases between healthcare system and mother's reports in Thailand. We have found that there existed significantly different rate regarding communities, region, education level and religion. This is important in a sense that it relates to lives as well as indication for why such gap exited. We will discuss its importance in details later in discussion session.

1 Introduction

Trust is a very important but also a big issue in this world. Especially when you need assistance in fields that you are unfamiliar with and require help from others, trust is the best thing that you can rely on. For instance, if you need a legal advice, the best thing that you can do is to trust your lawyer, and be 100% honest. In medical field, trust is directly related to your life. We are certain that you have observed that many people have been refusing to get COVID-19 vaccines. Then, we started to wonder whether the COVID-19 vaccine controversy is similar to other vaccines that safety are proved and guaranteed such as BCG vaccine for preventing tuberculosis. It is true that we no longer have doubts against them. However, if you move sight to developing country in 1980~1990s, situation would certainly different because of lack of well constructed healthcare system or other reasons. This curiosity triggered us to start this research.

This paper is about children immunization reports in 1987, Thailand. Specifically how the rate differs between communities, regions, people with different education levels and religion. Along with that, its cases are divided into reports from mothers and healthcare. There clearly exists limitations and gaps that we are required to fill. First, gap between present and past. We cannot go back to the period and conduct research regarding our focus. Second, thoughts cannot be measured thoroughly. To overcome the limitations, we tried to look for powerful candidates. Among many, we thought that 1987 DHS survey in Thailand specifically regarding children immunization rate from healthcare and mothers with respect to their features would be the best one to represent our interest.

Dataset was not open. Instead, the survey presented various tables. Thus, we were required to convert pdf file to csv. After that throughout the analysis of relation between the variables and immunization rate reported by healthcare and mothers, we could observe that there existed significant gap between healthcare and mothers with respect to variables. This is an important finding because it shows that there could be lack of trust toward healthcare system or shortage of healthcare supports in Thailand. Thus, it can indicate where or who to focus for the healthcare system to gain trust and to offer better services. With further research, we will be able observe how it has been improved since 1987, but for now we are going to focus on why the gap existed in 1987, Thailand.

For this paper, after this introduction session, you are going to explore

*Code and data are available at: https://github.com/SANGWOONG-LEE/Thailand_Healthcare

2) Data
3) Results
4) Discussion
5) Reference list

This report was created using `R` (R Core Team 2020) and its libraries `tidyverse` (Wickham et al. 2019), `dplyr` (Wickham et al. 2021), were used to process and clean the data, and `ggplot` (Wickham 2016) `bookdown` (Xie 2022) and `knitr` (Xie 2021) was used to format this report.

2 Data

To obtain data with respect to our interest, we took an approach to Thailand DHS survey in 1980s and 1990s. Among many candidates, we chose year 1987. In the survey, there existed many similar data regarding our aim. For instance, a data presented child and infant mortality with respect to participants' features. It even had the mortality rate with same variables that our data has. However, we thought that mortality alone could not be enough to show why the gap existed between healthcare system and mothers. Following that, we made a decision that combining other variables would cause bias in this research. The data we chose presented cases of children immunization status between communities(urban and rural), region(north,northeast,central,south and Bangkok), education level(no education, primary, secondary and higher), religion: (Buddhist and Islam), and where they were reported, or whether children did not get one or not. For a small drawback, other religions such as Christianity was excluded since majority of Thai believe in Buddhism and rest believe in Islam.
Now let's begin to talk about our data in details.

1) Communities

- Urban
- Rural

Surprisingly, in 1987 Thailand, if you take a look at figure1 and 2, there were more people in rural than urban areas. According to Statistic, urbanization rate in Thailand from 2010 to 2020 slowly increased but it still remained mid 40 percentage to 50 percentage. This is very small compared to that of US, which is mid 70 to 80. In addition to the population density between urban and rural, mother's report cases were more than healthcare in rural area. Calculating the percentage, it was 60% vs 22.8%. On the other hand, there seems comparatively similar cases reported from healthcare and mothers in urban areas. Lastly,immunization rate is higher in urban compared to rural areas.

2) Region

- North
- Northeast
- Central
- South
- Bangkok

Figure3 shows regional based immunization status. Most participants were not from Bangkok, the capital of Thailand. Instead, they were from Northeast. This is because Islan, the northeast part of Thailand, is the largest region of Thailand, and urbanization in Thailand is relatively low. The graph shows very similar trends with figure1. There were more mother's reports outside of Bangkok, and less immunization rate outside of Bangkok. On the other hand, comparatively equal cases were observed in Bangkok. One thing to notice is that percentage of mother's reports in Northeast is noticeably higher.

3) Education level

- No Education
- Primary
- Secondary
- Higher

If you look at figure4, you can observe that as education level goes up, gap between mother's report and healthcare is being filled. In addition to that, non immunization rate decreases. Another thing to notice here is that higher education you have in Thailand, there existed more immunization cases. For instance, people with higher education shows immunization rate close to 100%.

4) Religion

- Buddhist
- Islam

At the beginning of introduction, we talked about small drawback in religion, which is other religions except Buddhisms and Islam were not collected. Moreover, majority of Thai people believes in Buddhism figure1. As we have observed up to this point, similar to other variables, there existed more mother's report cases than that of healthcare with no exception to religion.

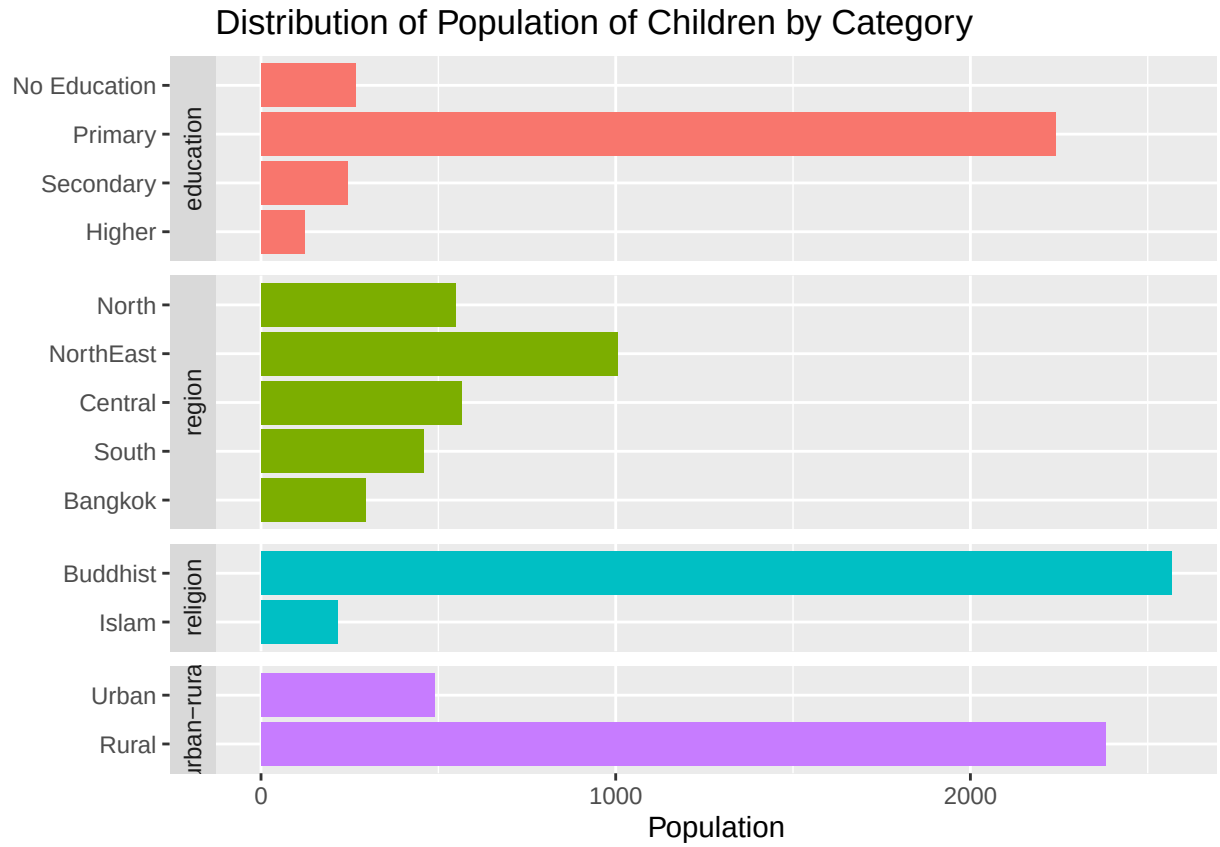

Figure 1: Number of children by category

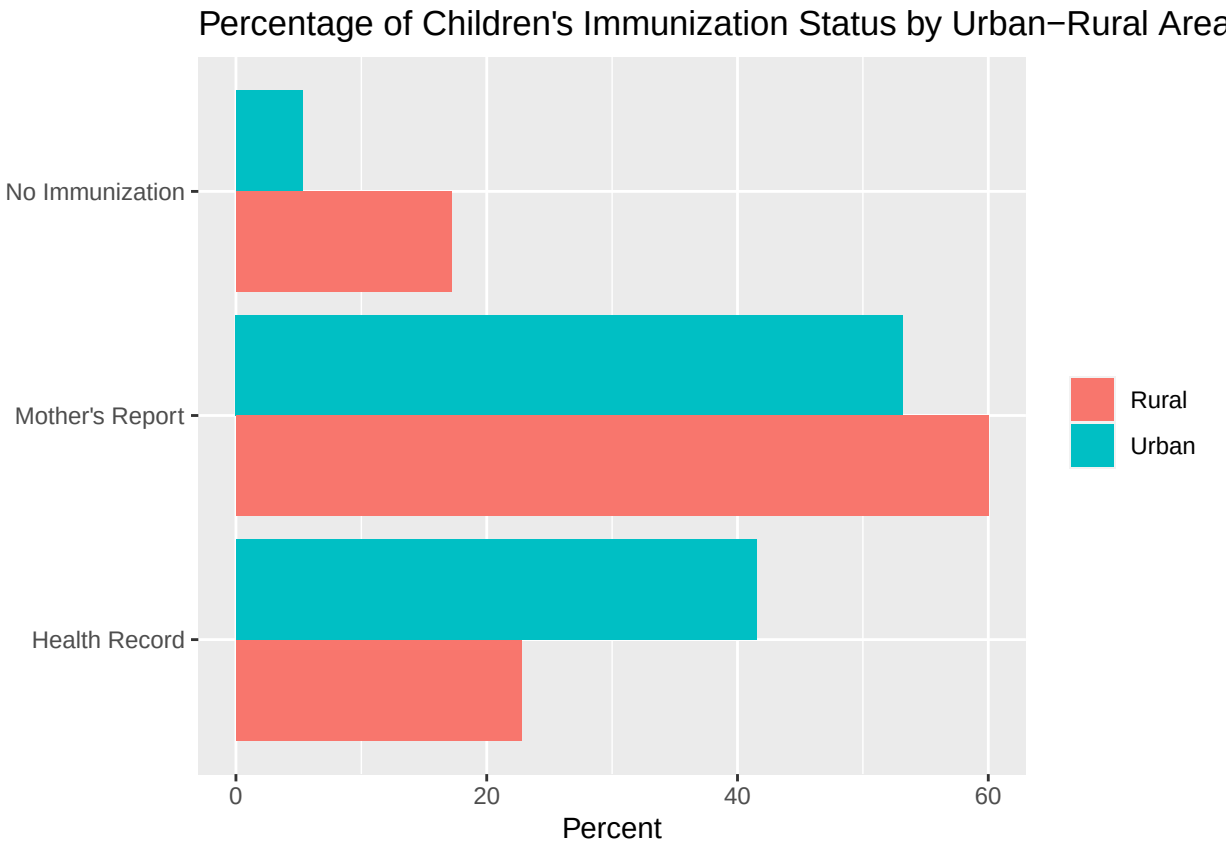

Figure 2: Immunization cases between communities

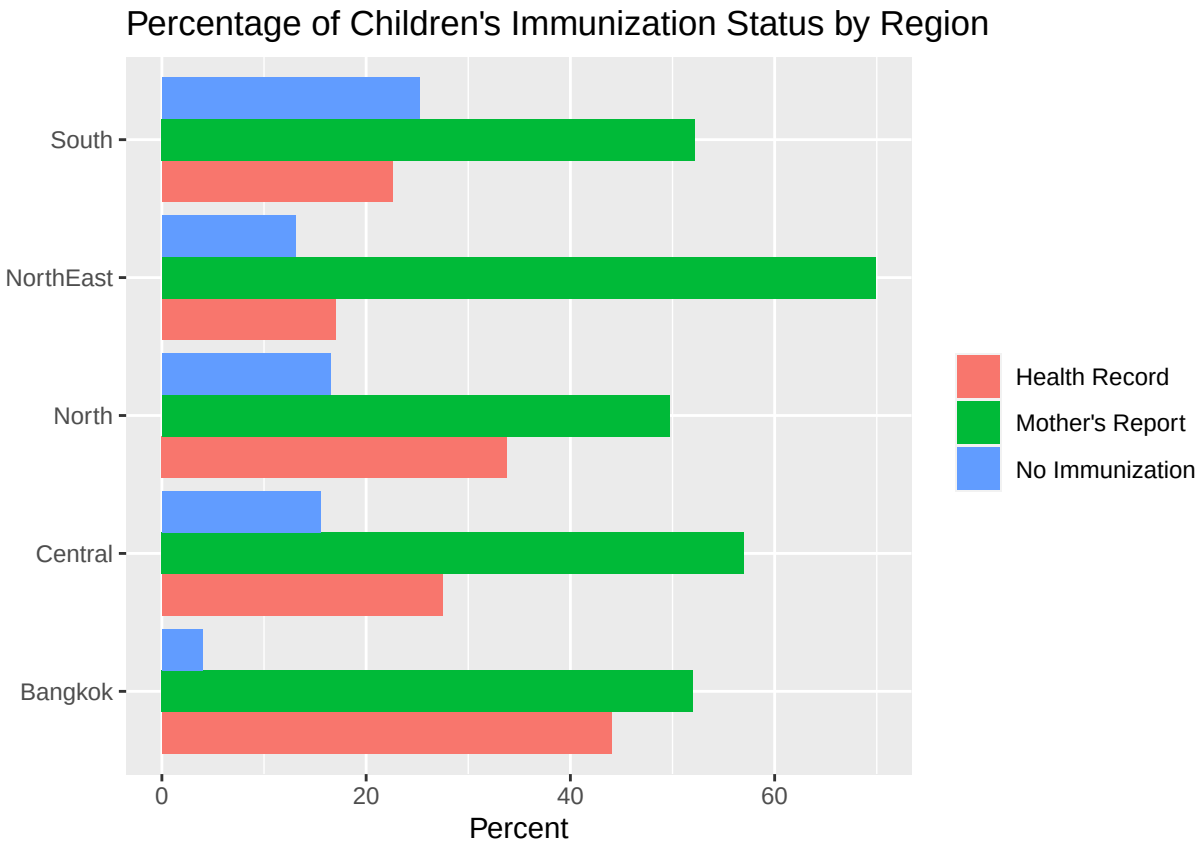

Figure 3: Immunization cases between region

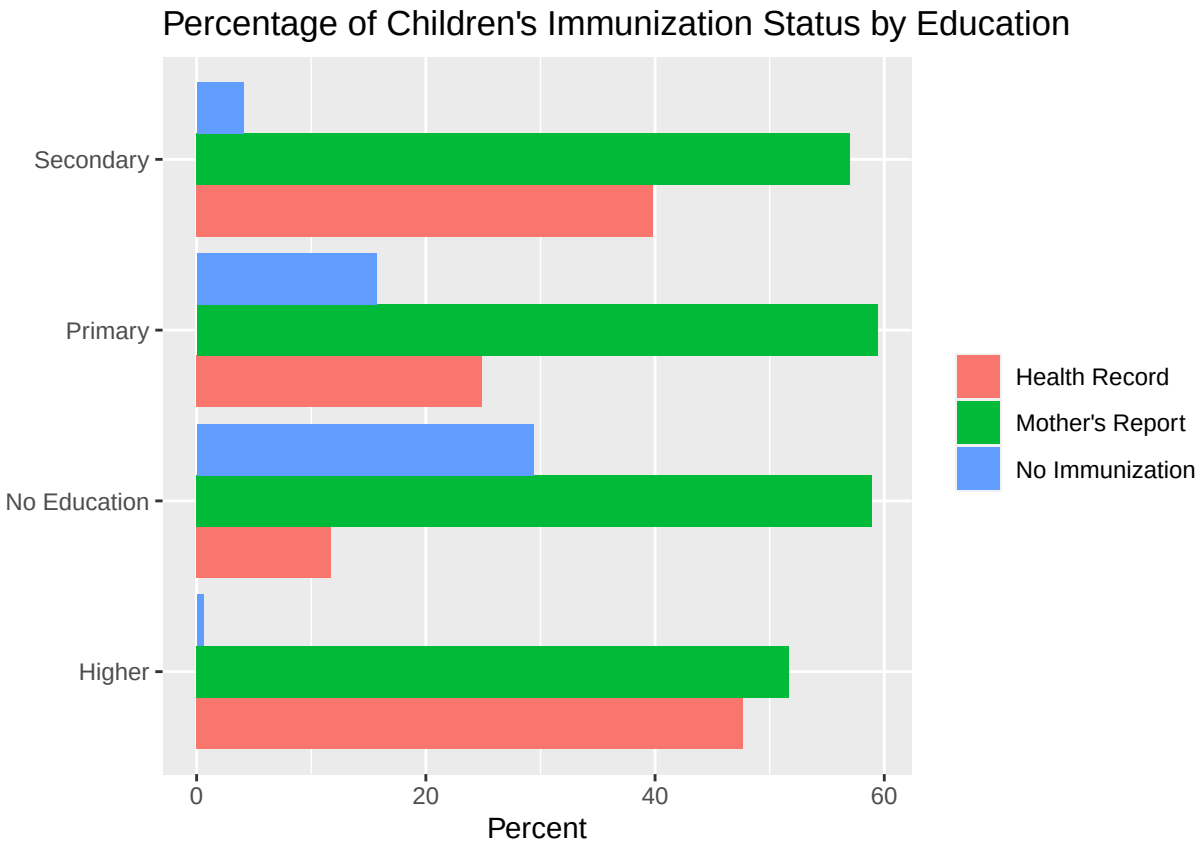

Figure 4: Immunization cases between education

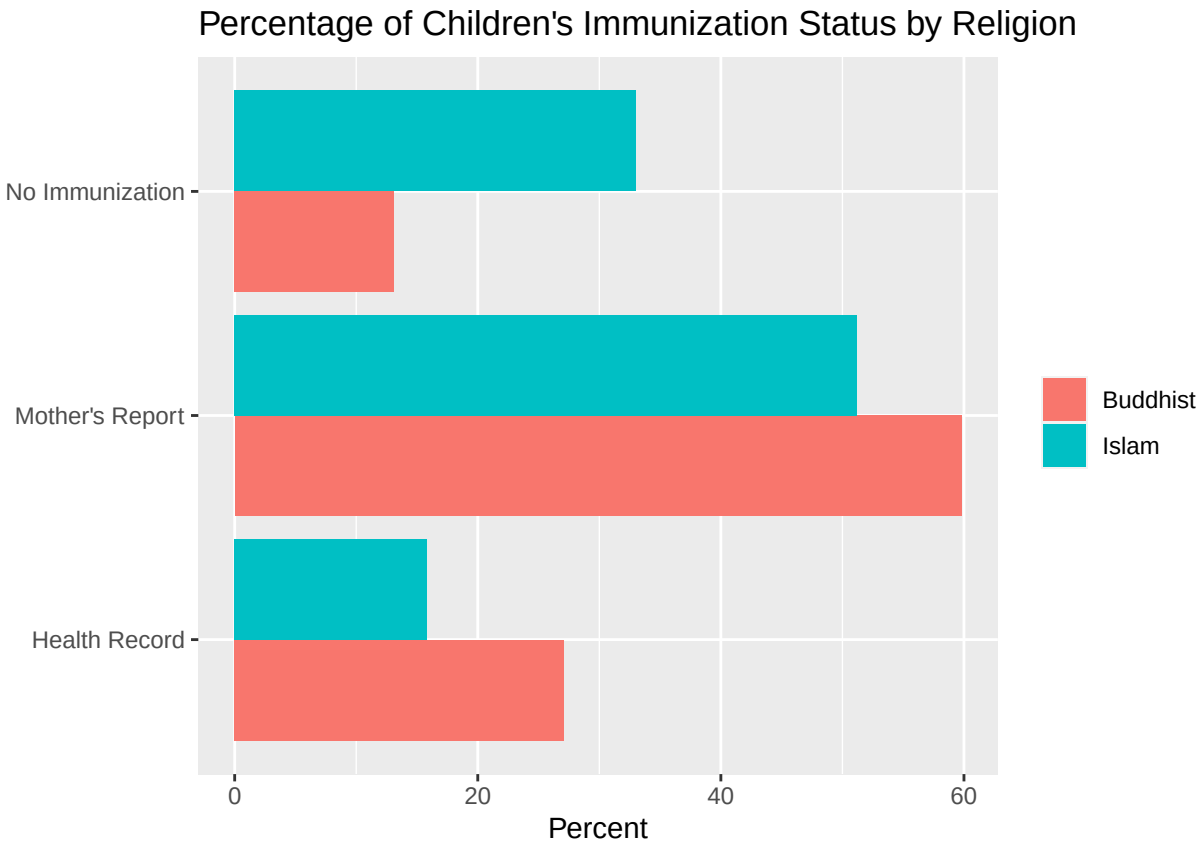

Figure 5: Immunization cases between religion

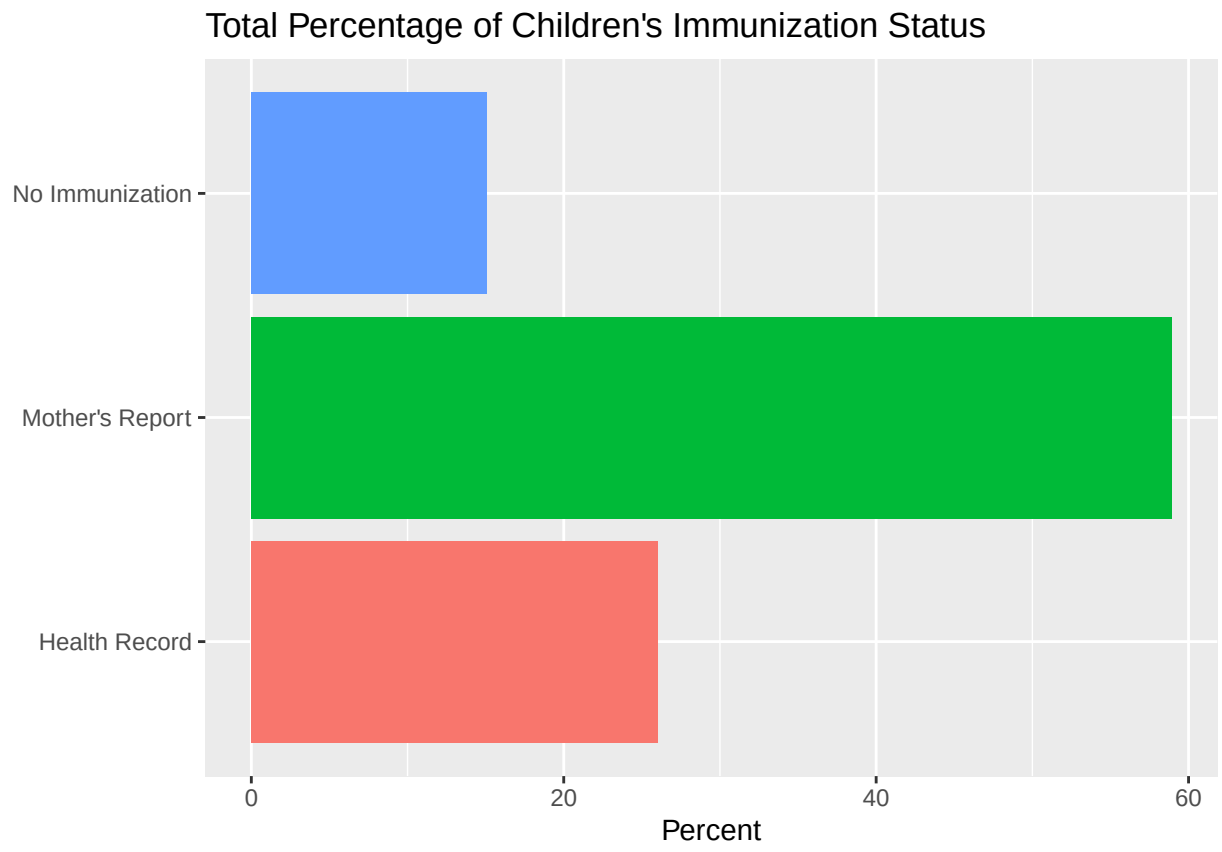

Figure 6: Immunization and non-immunization cases total

3 Results

In this session, we are going to explore the results from data analysis. Let's take a look at figure6, which is the total result of immunization reports. This graph shows that how different immunization rate between healthcare and mother reports were among 2872 participants. 58.9 percentage of immunization was reported by mothers, approximately 1691 people, 26.0 percentage for healthcare, approximately 747 people and finally 15.1 percentage for non-immunization which is approximately 434 people. With this numbers in mind, we are going to analyze why this phenomena occurred in Thailand focusing on two main points; the gap between healthcare records and mother's reports as well as non-immunization rate

First, let's take a look at figure2. From this graph, we can observe that there is not much difference in mother's reports between rural and urban areas. However, there is significant gap in healthcare records. Percentage of healthcare records for urban is 41.5% and for rural is 22.8%. Following that, non immunization rate in rural areas is 17.2% which is more than 3 times of non immunization rate in urban, 5.3%. This two gaps indicate that there needs more healthcare facilitates in rural areas. However, percentage of mother's reports in rural areas is not low. This indirectly shows that there existed accessibility to vaccines in rural areas. Thus, we also concluded that lack of trust toward healthcare system could potentially influence the gap as well.

Second, from figure3, regional based immunization rate shows very similar trends with that of communities. All over the regions, there were more mother's reports than healthcare records. For some specific region such as South, Northeast and Central, the gap between mothers' reports and health records was wider than the others. Also, there were more participants who answered non-immunization status than health reports in south. Another interesting thing to notice from this graph is the North part. Northern Thailand shows very similar trend with Bangkok unlike other regions. We suspect the city, Chiang Mai for the unexpected result. Chiang Mai is a city with historical monument and you can enjoy beautiful landscape there. Following that, many tourists have been visiting the city. Therefore, there were more accessibility to healthcare facilities other cities outside of Bangkok. Contrast to Chiang Mai, northeastern Thailand is more local. Following that, people in Chiang Mai could feel more vulnerable to virus or sensitive regarding it, therefore more willing to get vaccine for their children. In addition to that, Chiang Mai has one extra resource, which is tourist, so there were higher chances for them to get into middle class. This could lighten the burden for household spending.

Third, figure4 presents very interesting point. While mother's reports no matter what educations you had in Thailand was uniform, as education level goes up from no education to higher, healthcare records increase. In addition to that, non-immunization rate decreases depending on your education. Non-immunization rate in higher education group is only 0.6%, on the other hand, it is 29.4% for no education group. If healthcare facilities were available to all, this scheme would not exist. We could deduce that having vaccine at healthcare facilities could be burden to some groups. Yet, we cannot be 100% certain about this result because we could not find relation between education level and income. This point could also be interpreted as lack of trust among lower education level groups.

Lastly, figure5 represents immunization status along with religion. It shows that Buddhist got more immunization compared to that of Islam as well as healthcare records. Although Buddhist got more immunization, still its rate is mainly from mother's reports. One thing to notice here is that non-immunization rate for Islam is comparatively high. Like many variables above, we can suspect that there would be less accessibility to healthcare system in the Islamic communities.

To sum up, all of variables pointed same thing: need for more healthcare system in 1987 Thailand, or unbalance of healthcare system between regions, communities, cities, and religion. Furthermore, from some variables such as education level, we could find that some specific groups would not believe healthcare system 100%.

4 Discussion

In this session, we are going to explore remained and unanswered questions from results session.

4.1 What can we learn about 1987 Thailand healthcare system?

4.2 From results of analysis what should be enhanced?

4.3 Weaknesses

Dataset does not have wide variety of information, more categories such as more variety on religion, additional information such as ## Next steps for future

Appendix

A Additional details

B References

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