Submitted: October 26th, 2022

Analyze and Improve One Defective Graph in News About HongKong

Team2 :
Huafang Bi 320200930710
Yuyang Sun 320200931240
Zhaochen Dong 320200930821
Wenxuan Liu 320200931131

1. Housing shortage-a serious problem in Hong Kong

With the tendency of the problem housing shortage becoming more and more serious, our group decide to analyze a typical city in China. We choose Hong Kong as an example and find an article in China Daily named "Can developer land banks be unlocked?" that describes the detailed situation. The article describes the situation that the huge landlocked leads to the shortage of housing and enhances extreme inequality. So it's necessary to unlock these land.
But in this passage, we find that there are some problems in the chart, which will make it a little hard for readers to understand. Therefore, we decide to make some improvements to make it more understandable.

2. Significance of improvements

2.1 Importance of a good visualization

Nowadays, information visualization is playing an increasingly important role. After visualizing complex data into explicit charts, several problems that humans can't find out intuitively can be seen and solved easily. A good visualization is really important. Good visualizations don't mean they have to be fancy, which sometimes are not useful for users. A good visualization can effectively convey the message to readers. It communicates complex ideas to the audience and inspires its users for new connections.

2.2 Summary of improvements

The aim of graph is to show the government derives a fifth of its annual revenues from land premiums to convert agricultural land to residential or commercial use.
In detail, the graph shows the amount of land premiums from 2011 to 2019 paid by developers and the proportions of them among the total HK government revenue each year. From the graph, we can

roughly find that the proportions of land premium among the total government revenue change with the trend of the amount of land premium.

There are several problems in the chart, which are not that important but still bring inconvenience to readers. There is no need to put the bar chart and the line chart together, because these two units are different and readers may be easy to mix. What's more, each plot are marked, which means that the two y-axes are meaningless to use. The red color also uses incorrectly since red is mostly used for stress.

To modify the graph, first, the two charts need to be divided. Second, the two-axis can be deleted. Last, the red color has to be changed.

3 Take a close look at the graph

3.1 Original graph

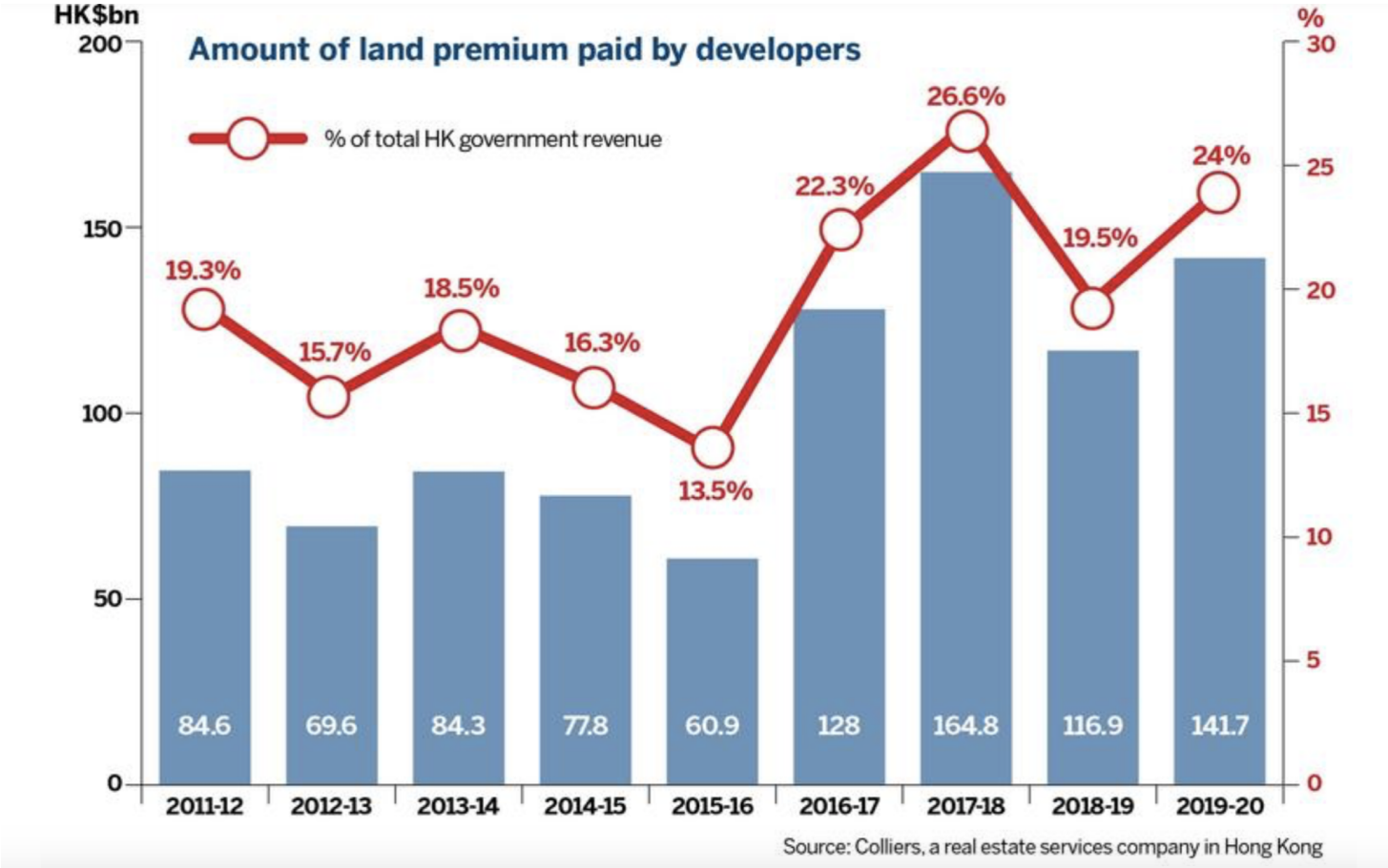

Figure1-original graph

3.2 Replicated graph

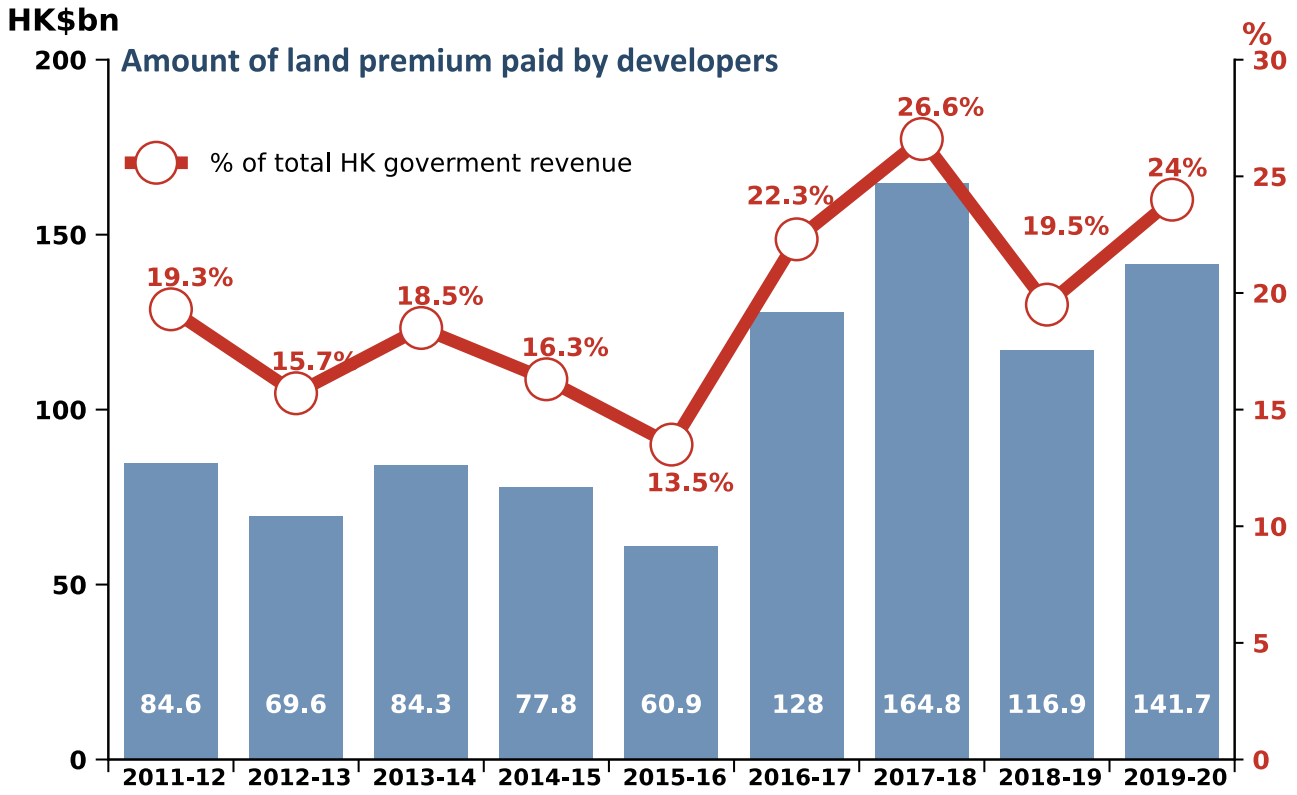

Figure2-replicated graph

3.3 Visual analysis of the graph

There are two charts in the graph, one is bar plot, the other is scatter plot.

The bar plot represents the amount of land premium. The x-axis and left y-axis describe the situation. The data type of x-axes is time and right y-axis is numerical. The size of the bar means the amount of HK$bn.

The scatter plot has the same x-axis as the bar plot, but the amount is labeled in the right y-axis. The data type of y-axis is also numerical. The position of the scatter plot, which is determined by x and y, represents the percentage of whole HK government revenue.

3.4 Cognitive analysis of the graph

After analyzing cognitive theory, we find the graph also has some effective visualizations.

Considering the readability, the graph uses the red color in both label and data to represent the account for total HK government revenue and the blue color to represent the amount of land premium paid by developers. The consistency in the label and data makes users capable to understand at once. Considering the working memory, the graph uses only two colors to represent two plots. The amount of variable is small, so readers could remember it easily. What's more, the graph uses labels to remind readers of different meanings of the two plots, making it more effective to read.

4. Improvements to the graph

4.1 Improved graph

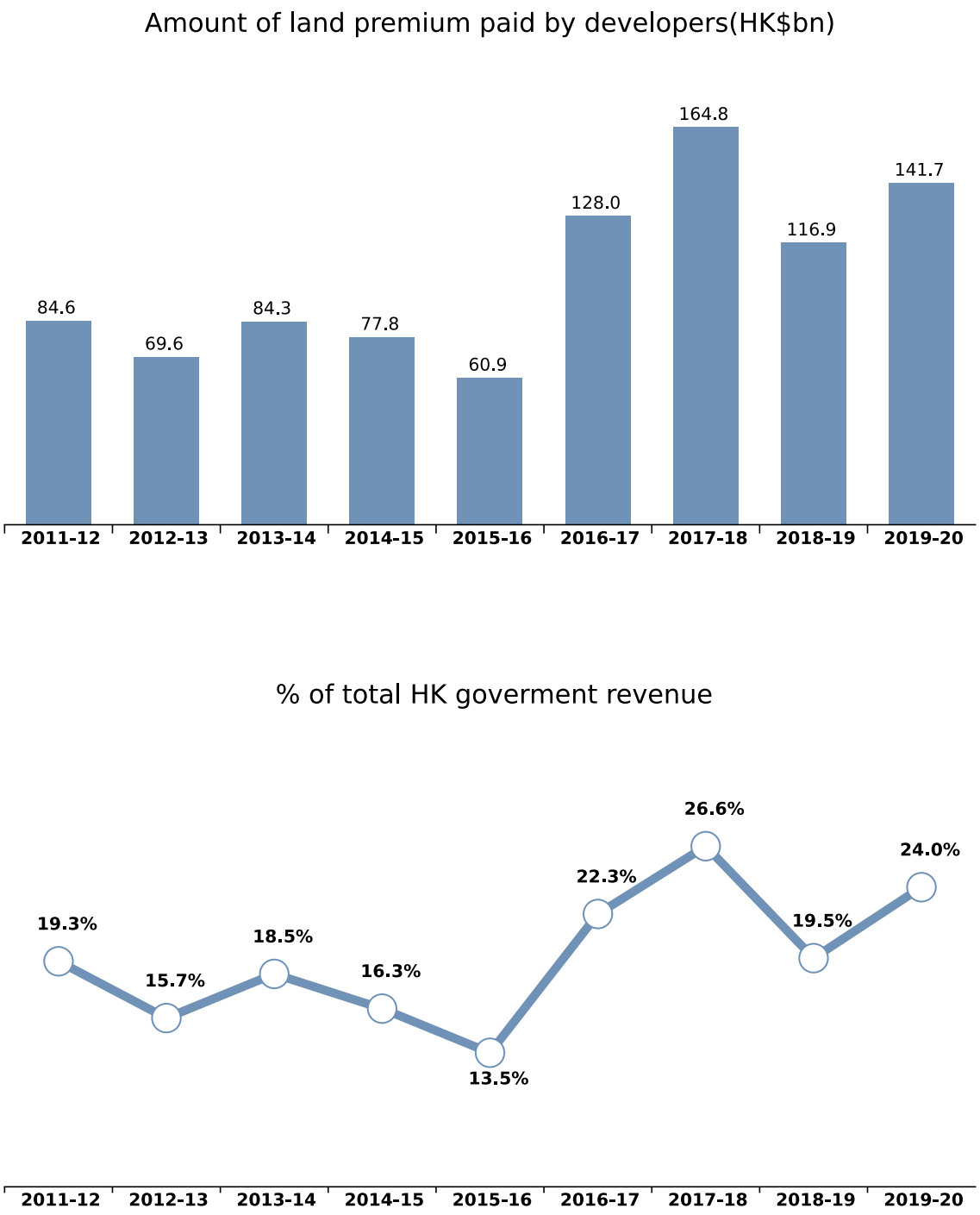

Figure3-Improved graph

4.2 Processes for making the graph effective

Although the graph has something effective, there are still many errors. The graph combines the line

chart with the bar chart. It may cause problems for readers to understand because the two y-axes have different units. What's more, it is completely unnecessary to put these two plots together as they don't have relationship with each other. We solve this problem by dividing them apart. The readers will see the amount of land premium changing as year goes on and its account for the total HK government revenue separately.

For the y-axis of the two charts, we delete them as they are not useful when the number of each plot has been labeled. And they may also cause difficulties for readers to understand.

We also change the color of the scatter plot. The red color is usually used when the designer wants to stress some important insights. But actually, these two graphs are of the same importance. Therefore, we change the color of them to blue.

For the bar chart, we change the position of data and put them on the top of the bar. So that the users could see it directly. For the unit, We put it after the name of graph, which also aims to let users see it clearly.

In the chart we improved, we haven't highlighted any data, because the report doesn't stress any data.

5. Final remark

5.1 Take-home messages mentioned

The whole message introduces the importance of information visualization and set an example of the land premiums from 2011 to 2019 paid by developers in Hong Kong. It talks about the content of the graph and its structure. Then, it finds the problems and comes up with solutions according to the requirements of a good visualization mentioned earlier in the message to make the graph better to read.

5.2 Actions for making good visualizations

We can learn from the message that, each element in a visualization has a big influence on its final affection.

To make sure we have better visualizations, first, before adding an element to the graph, we should think that whether it is necessary. If the element is unnecessary, then overlook it.

If it's necessary, then consider whether the graph will become more messy and difficult for readers to read after adding the element in one way. If adding the element in this way couldn't make the graph a better one, then come up with another method to add this element such as marking the number of each plot instead of creating two y-axes.

Through these two steps, good visualization can be created more easily, which users can have unexpected discoveries, deeper understanding, and a new way of thinking.