

Applied Statistics and Visualization for Analytics: Redesign Project

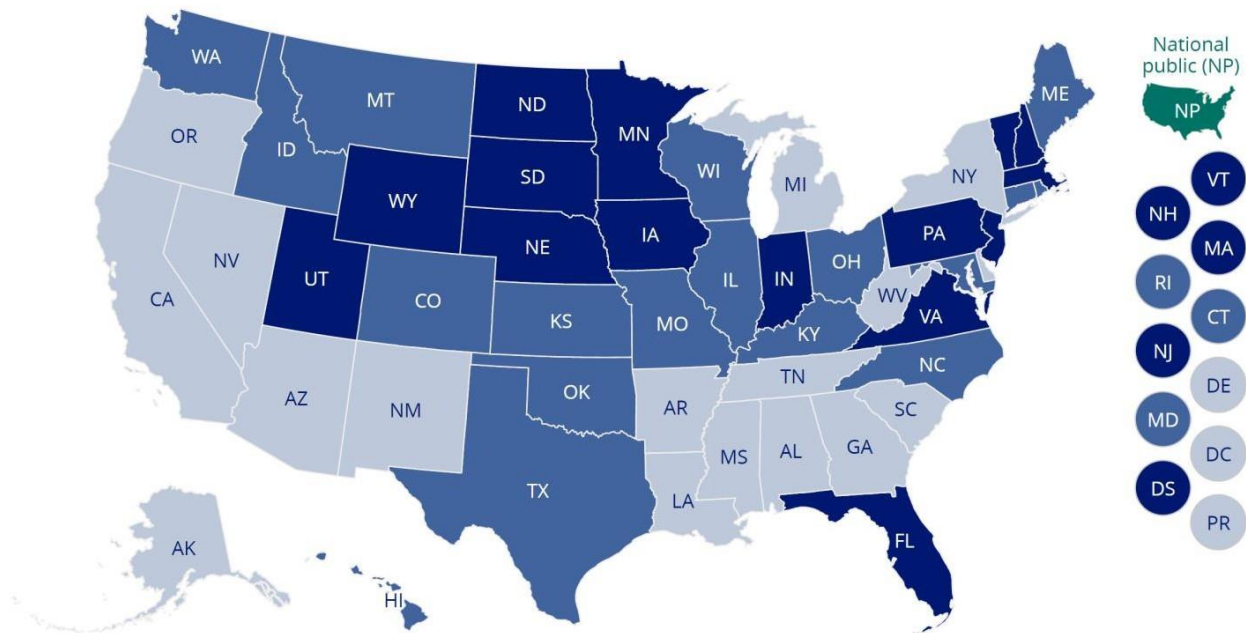
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Redesign Project

BAD GRAPH 1:

State Performance Compared to the Nation of Mathematics Grade 4

This Map represents the Average Scores of each Jurisdiction, it also represents its difference from Mathematics, grade 4, Difference in average scale scores between jurisdictions, for all students [TOTAL] = All students, 2017



State Performance Compared to the Nation: Data Table

Mathematics, Grade 4

Difference in average scale scores, percentage at or above Basic, percentage at or above Proficient, between all jurisdictions and National public, for All students [TOTAL], 2017

the National Public Average value.

Fig 1: Bad Graph representing State Performance Compared to the Nation of Math Grade 4

The above graph is a bad graph as the names of the states are written on the map due to this the appearance is very clumsy. The average values of each state are not shown in the map. In order to see the value of each state, we must hover over the map, which is a very time-consuming task. By looking at the graph we cannot infer how much the average value of each state is comparable with the National Public Average. The legend is of not much use in this map, as it is not much descriptive about the data represented in the graph. We can see that few states have higher average value and few states have lower average value, but we cannot know which state has the highest average and which state has the least average. When we take two states which are having a higher average value (dark blue colored), we don't know by how much they differ from each other. So it is difficult to accurately differentiate between states.

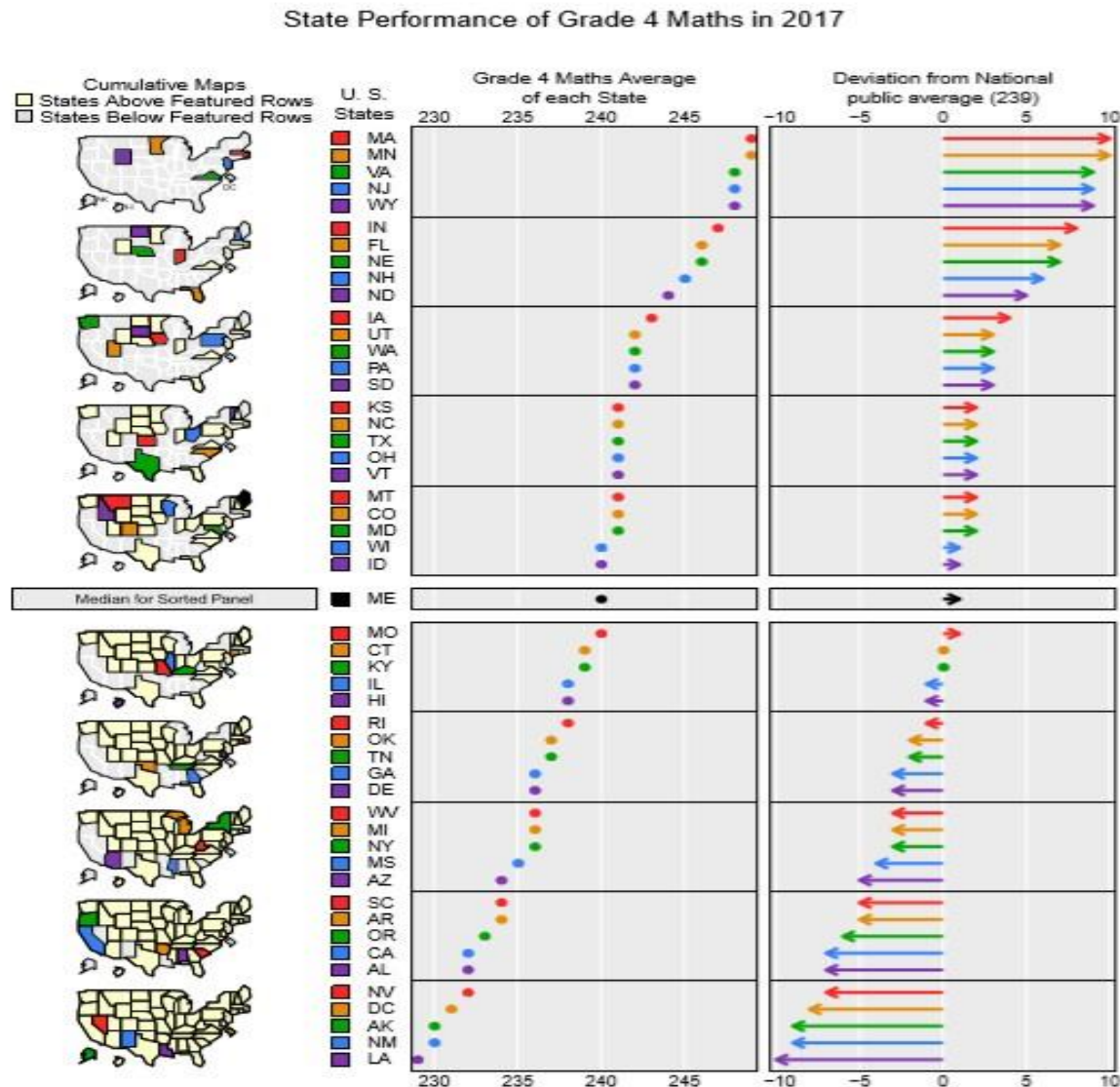


Fig 2: Redesigned Graph: A Micromap representing the State Performance Compared to the Nation

The micromap is the best way to analyze geospatial data. So, we redesigned a micromap in which it shows the Average value of math grade 4 and the deviation of the state from the National Public average of the corresponding states. In each row we take 5 states and represent there corresponding values. The Average value of math grade 4 is sorted in descending order, which makes it easier for comparison of states. We can easily make out the deviation of each state from National Public Average. We can easily make out from the graph, which state has highest and least average. In the above micromap, we used map cumulative which helps us see which all states are covered previously. We represented a state, which is the median for this data. The upper part is greater than median and the states below median are having less value than median. From the above map we

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conclude that that the state MA has the highest Average value of Math Grade 4 and it is the state which has the highest positive deviation from National Public Average. The state LA has the least Average value of Math Grade 4 and this state is most negatively deviated from the National Public Average. The Median state is ME which is n positively deviated from National Public Average by a very small amount.

BAD GRAPH 2:

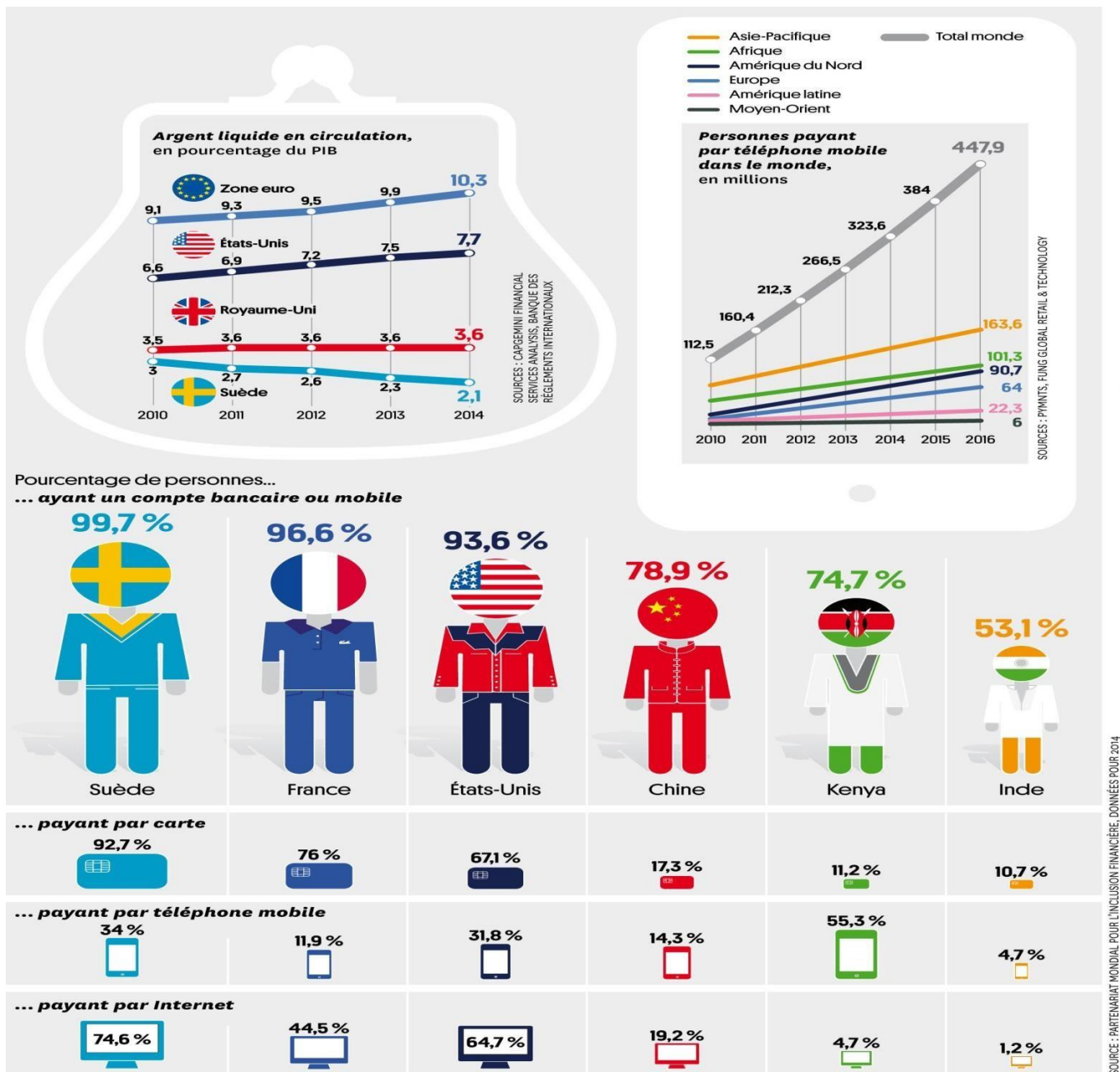
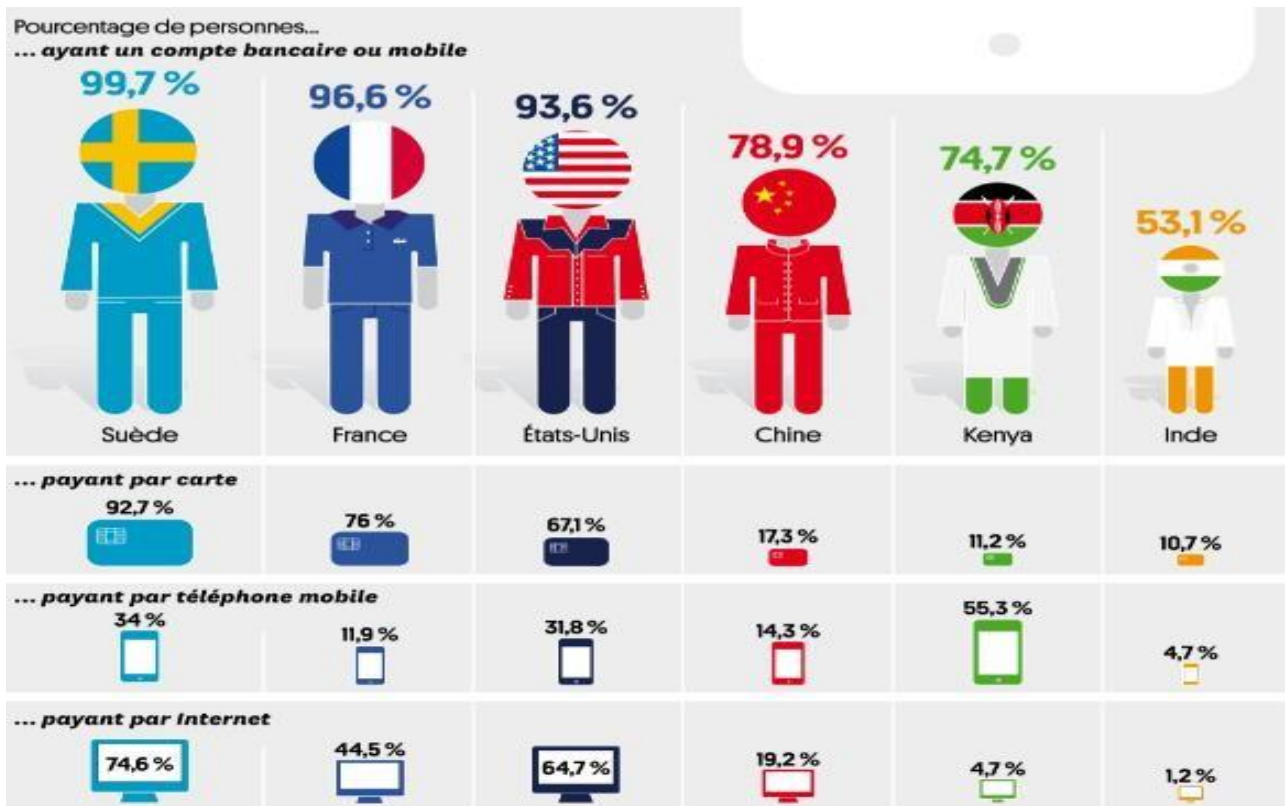


Fig 3: Bad Graph: The Phenomena of disappearance of a cash world

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The above graph shows the ratio of GDP and cash, people have mobile banking and the different way they pay like card, mobile banking and internet.



In the above graph the data is not represented in sorted order, it is presented in some random order. In the first row, the difference between two countries is not clearly shown in the pictorial form, when we compare France (96.6%), United States (93.6%) and China (78.9%), the difference is not represented properly. The decimals are represented using a comma (,).

Redesigned Graphs:

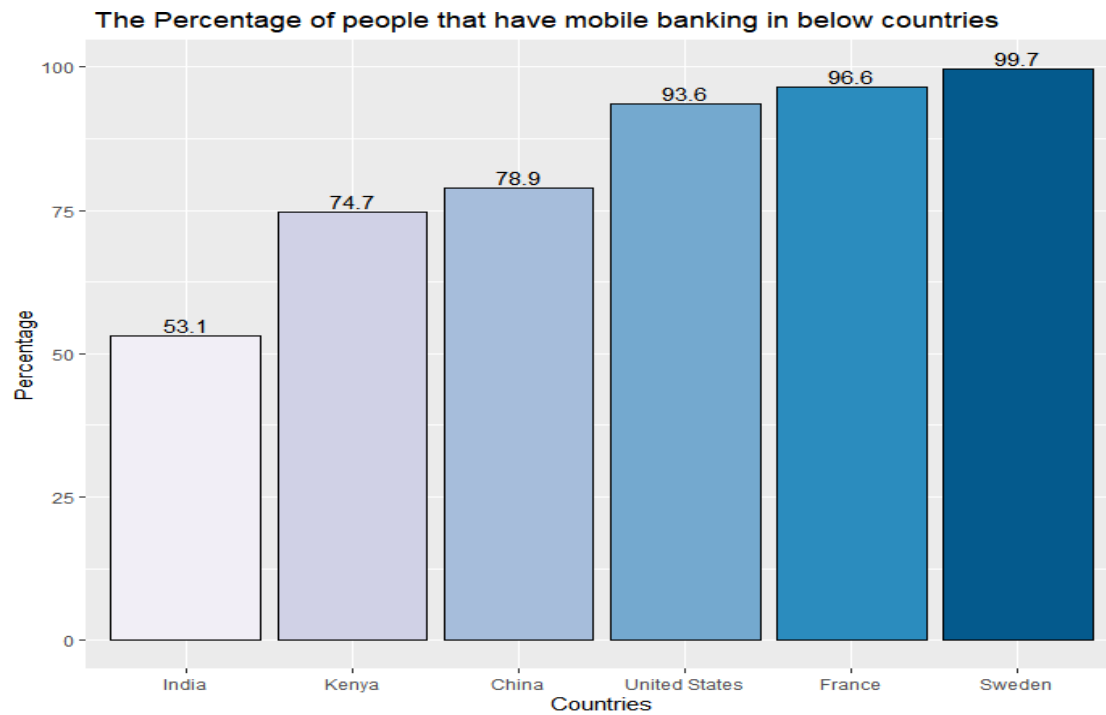


Figure 4: Percentage of people having mobile banking

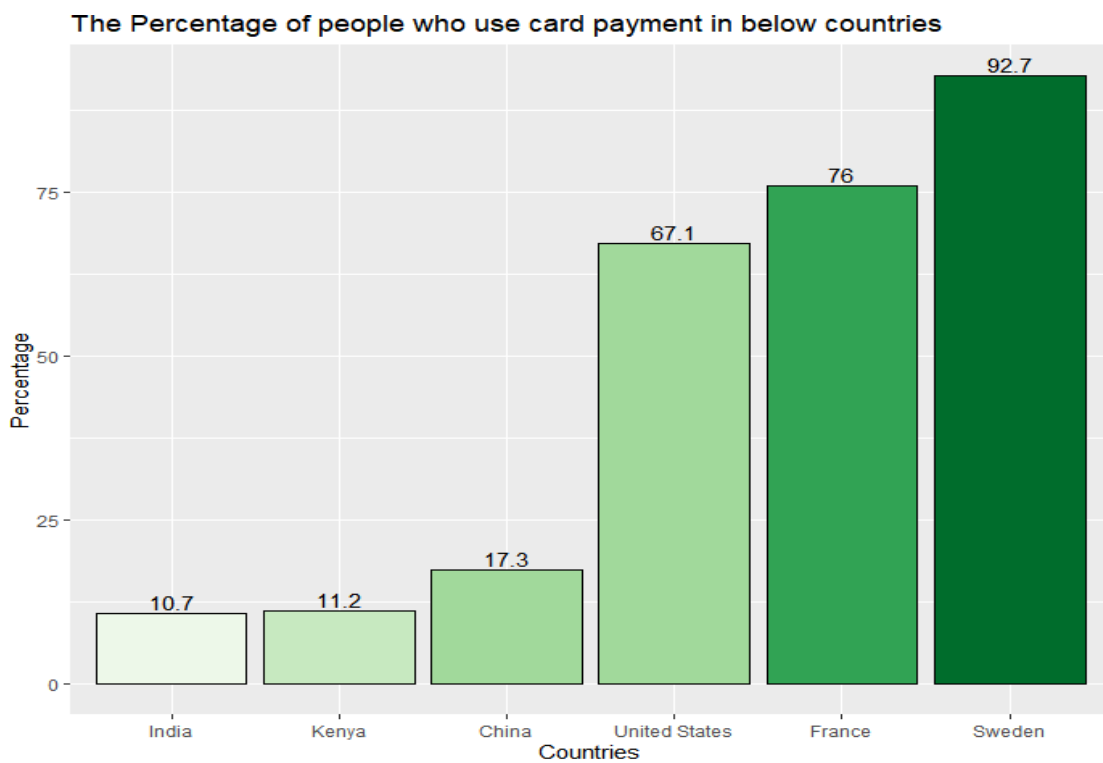


Figure 5: Percentage of people using card payment

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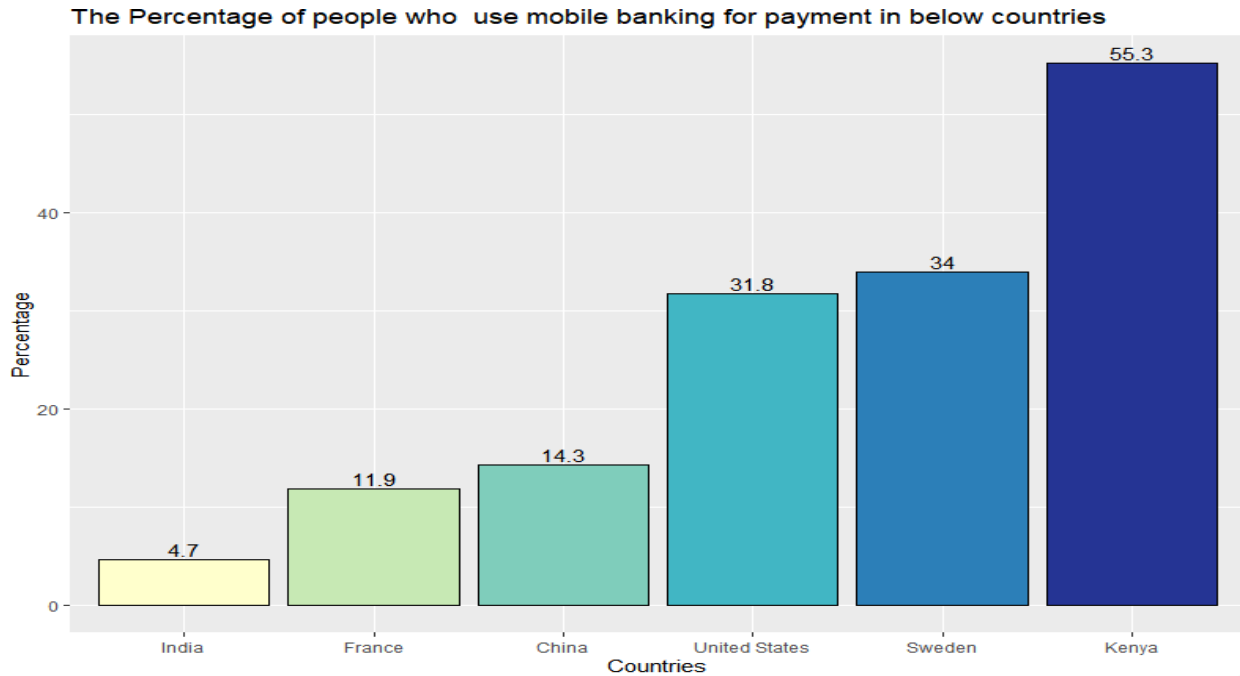


Figure 6: Percentage of people using mobile banking

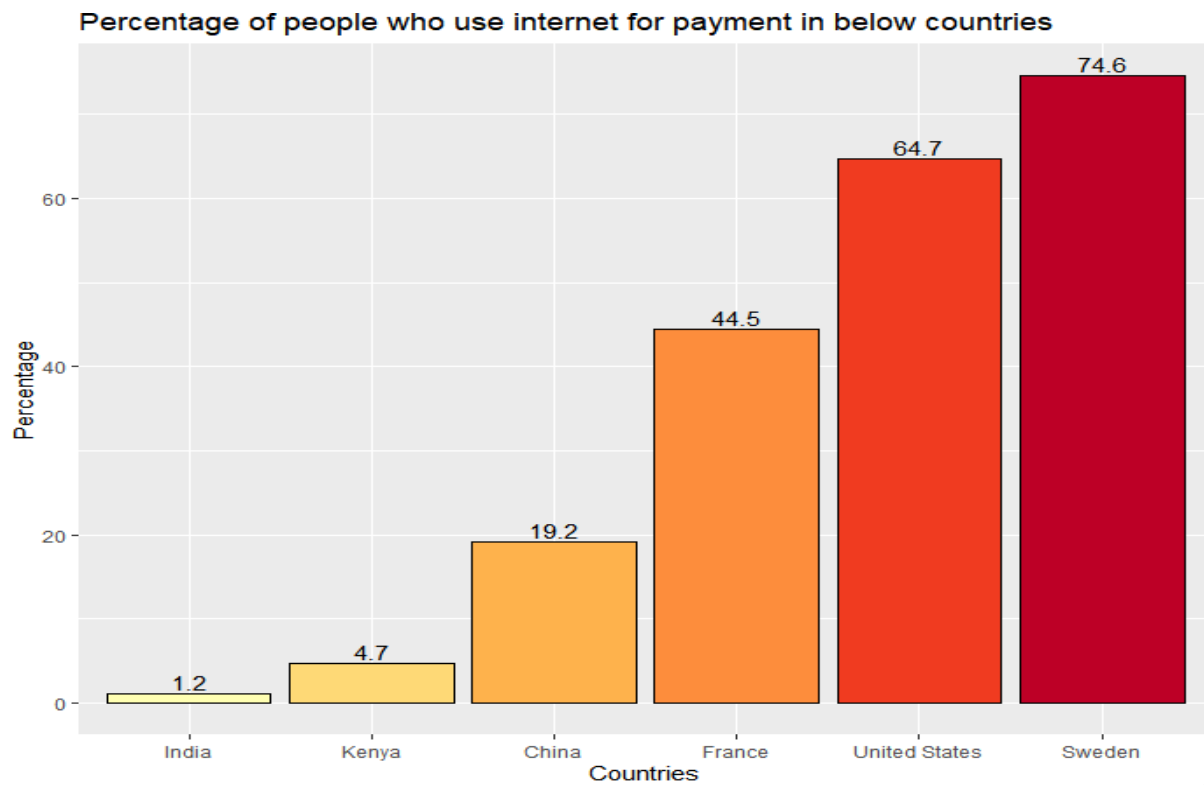


Figure 7: Percentage of people using internet for payment

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The difference between each country is represented clearly in the bar plot, all plots are in sorted order. We can easily recognize which country is highest and which country is least.

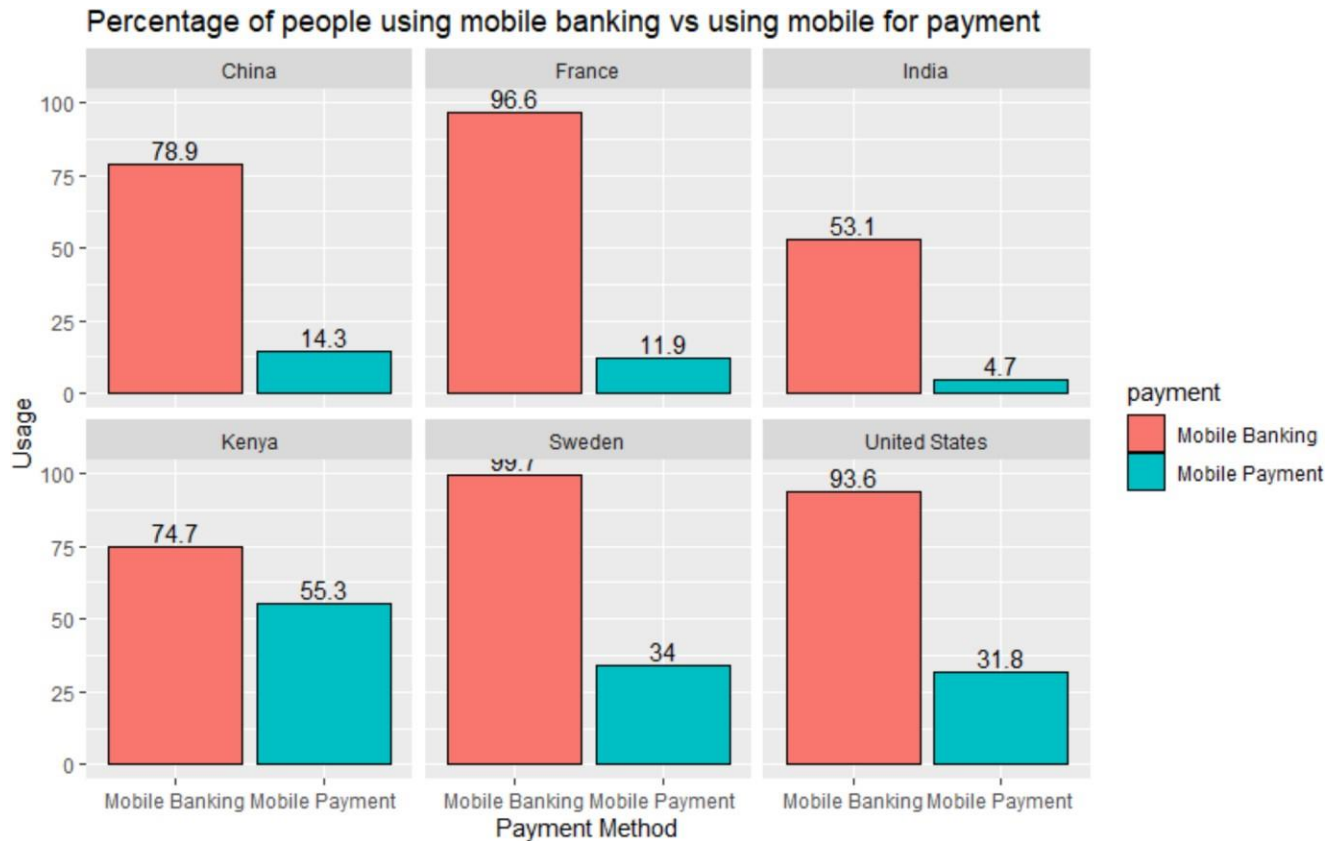


Figure 8: To Represent mobile banking and mobile payment

This graph shows that many countries use mobile banking, but the percentage of customers who prefer mobile payment is comparatively very less. The country has the highest percent (99.7%) of mobile banking customers but only 34% of people use mobile payment. The countries France (96.6%) and United States (93.6%) also have high percentage of mobile banking users. India has the least percent of mobile banking (53.1%) and mobile payment (4.7%). Although, in Kenya only 74.7% of mobile banking, it has highest percentage of mobile payment (55.3%) users.

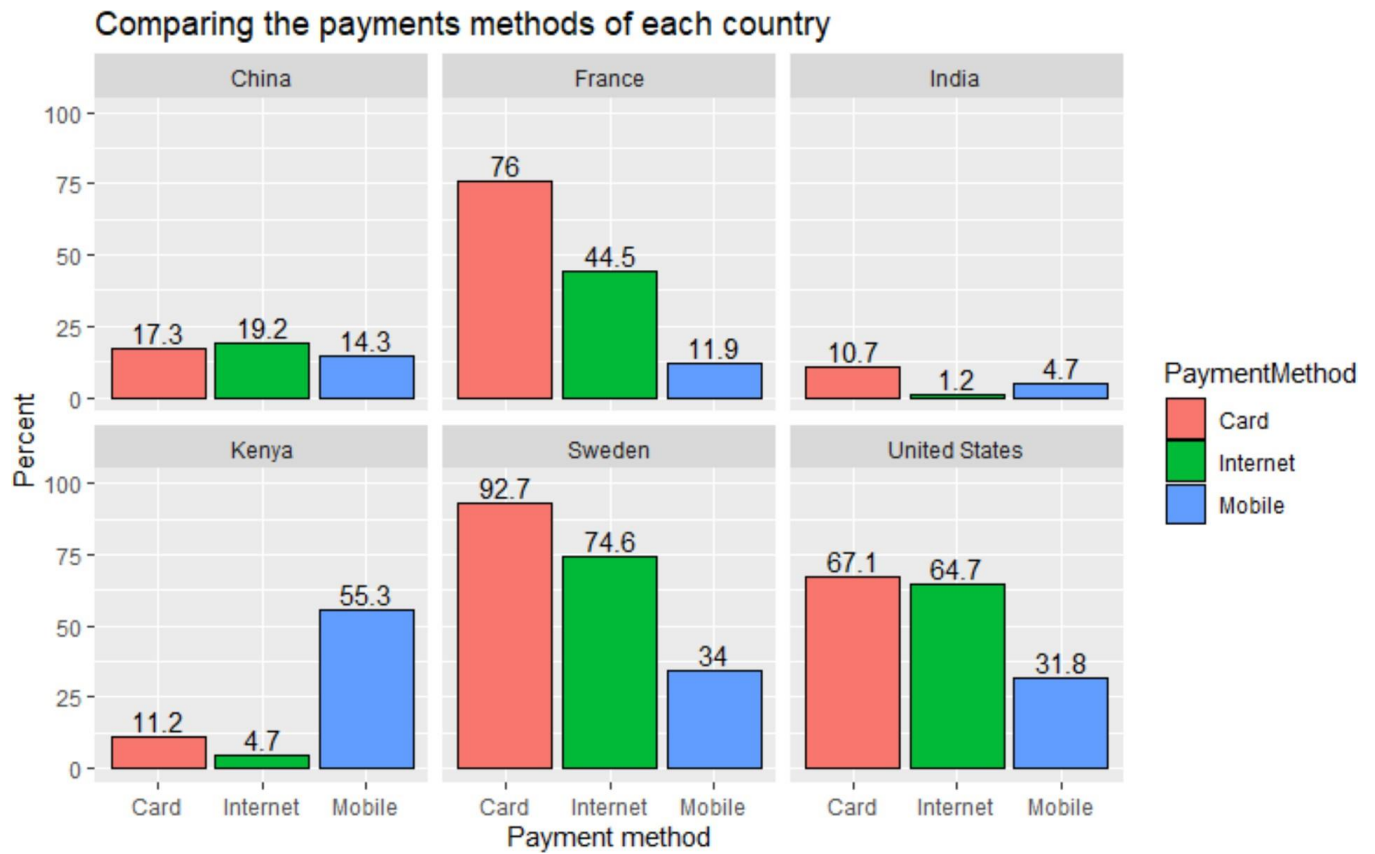


Figure 9: Analysis between different modes of payment

We see that in countries like France, Sweden, United States and India most of the users prefer card payment more compared to mobile payment and internet payment. In China all three payment modes are used almost equally but payment by internet is the highest. Kenya has the highest percentage of people who prefer Mobile payment. Paying by internet is least in countries like India and Kenya. Mobile payment is of least percentage in India and France.

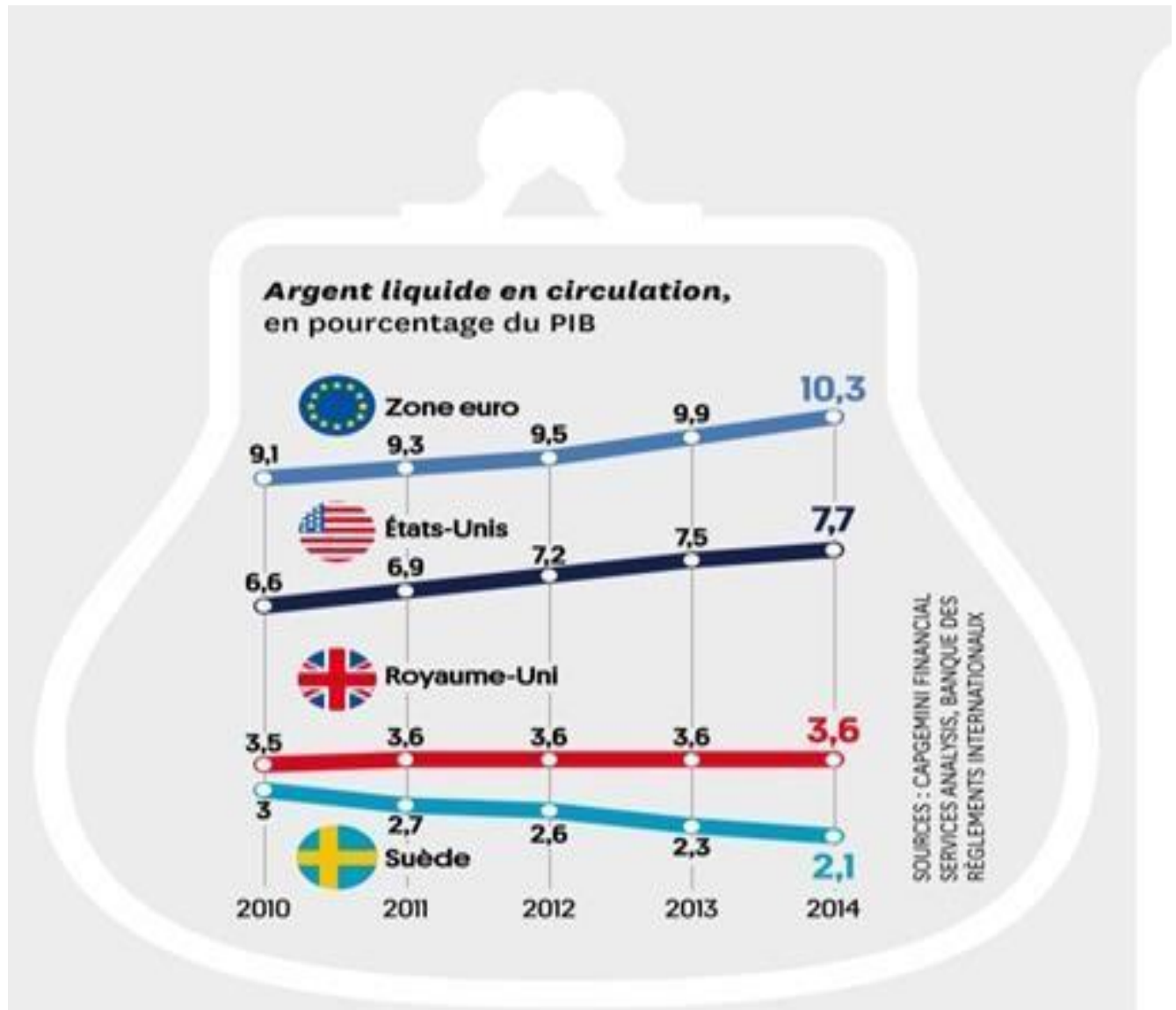


Figure 10: Bad Graph: Represents Liquid cash in circulation in percentage of GDP

This graph does not have proper scaling. The legend is not represented, which would have given us a better understanding of data.

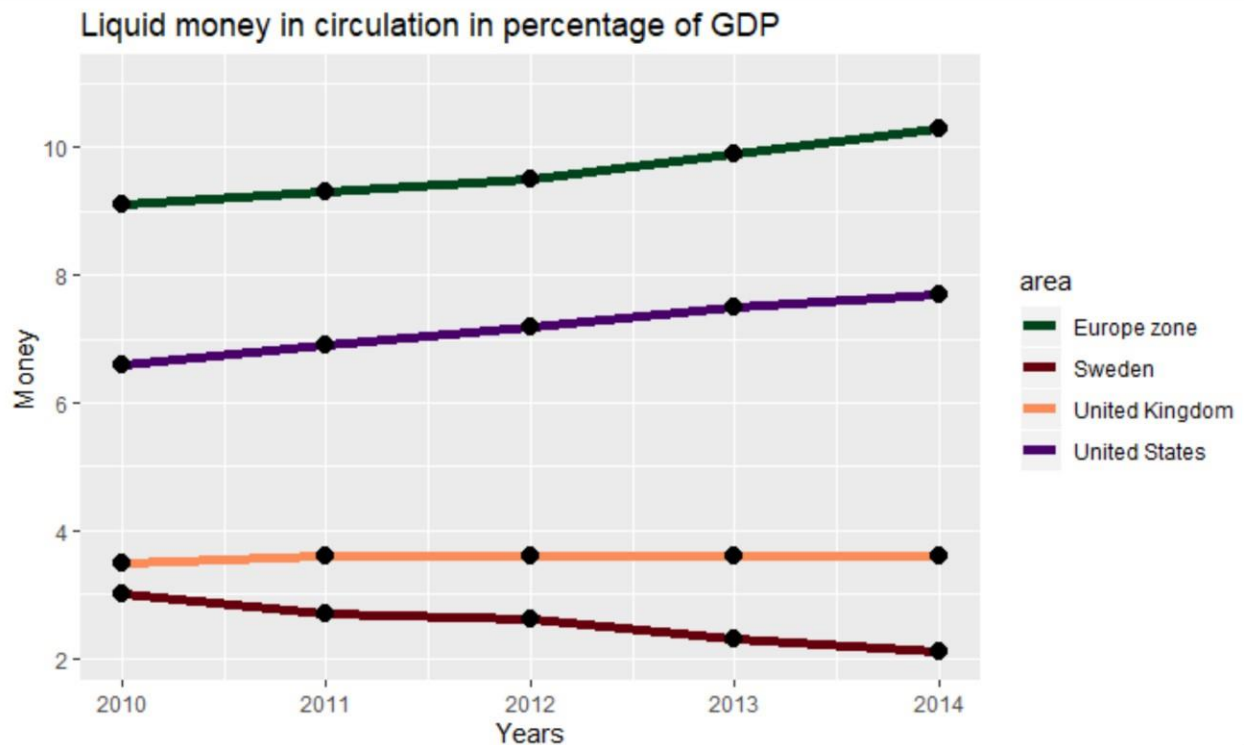


Figure 11: Redesigned Graph: Line graph representing liquid cash in percentage of GDP

This graph has proper scaling and the legend is properly descriptive. This line graph shows that the liquid cash in percentage of GDP is increasing in Europe Zone and Sweden. It is stable in United Kingdom while it is decreasing in US.

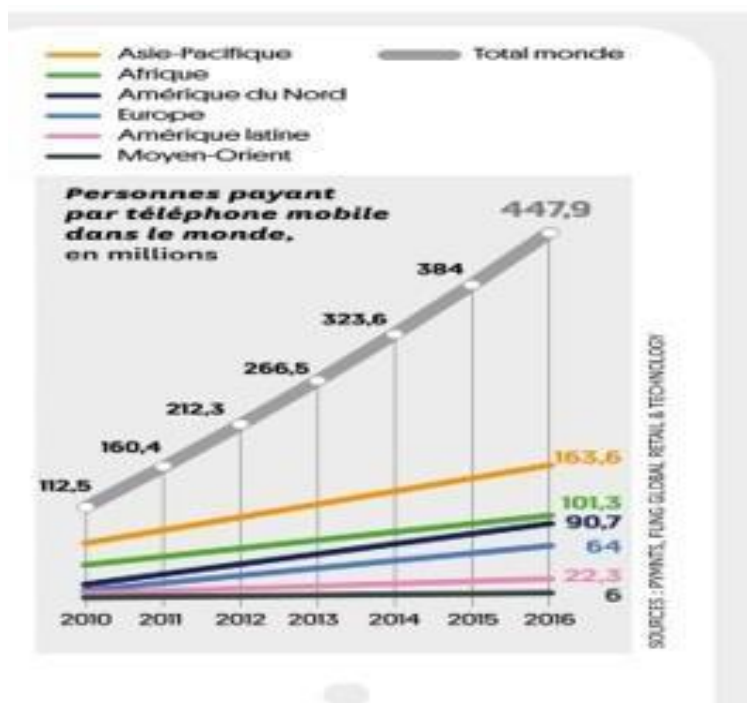


Figure 12: Bad Graph: People paying for mobile phone in the world

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To interpret the value of a continent in a particular year is difficult, as there is no proper scaling. The values are properly described only for 2016, it is difficult to interpret the values for other years.

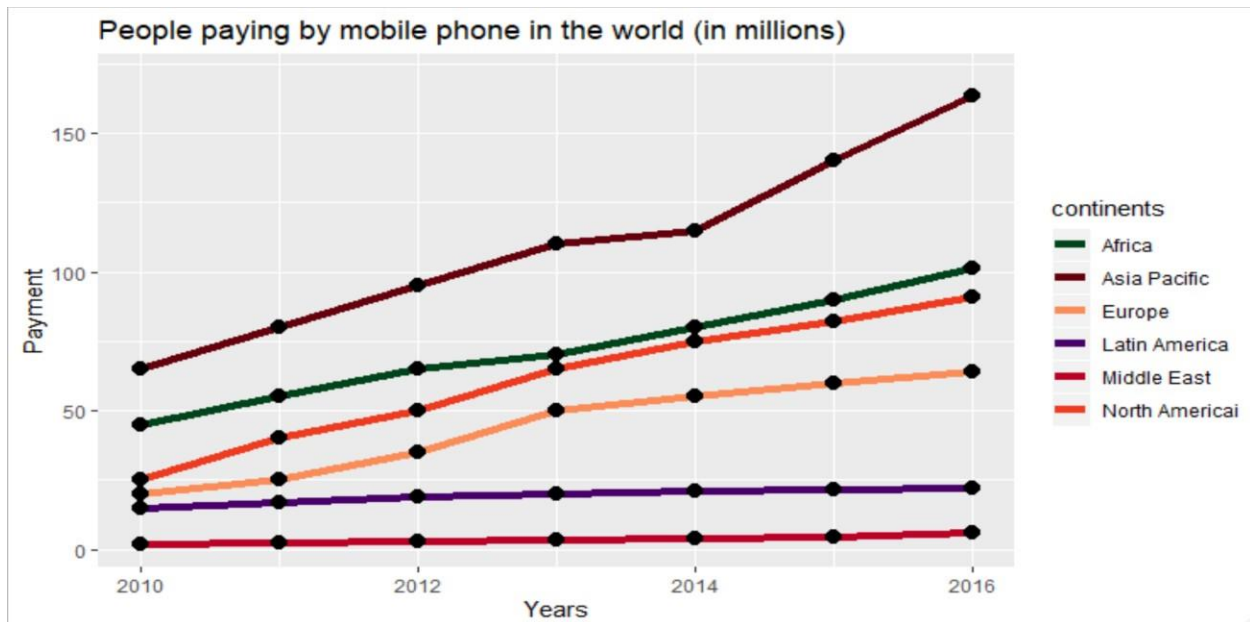


Figure 13: Redesigned Graph: This line graph shows the people paying for mobile phone in the world (in millions)

This graph has proper scaling and grid lines, the colors make it easy to differentiate between different continents. The number of people paying for mobile phone, is almost stable in Latin America and Middle East. The line graph is monotonically increasing for Asia Pacific, Africa, North America and Europe.

References:

1. Infographie. La disparition du cash, un phénomène mondial. (2017, May 3). Retrieved from <https://www.courrierinternational.com/grand-format/infographie-la-disparition-du-cash-un-phenomene-mondial#&gid=1&pid=1>.
2. Followrammy. (n.d.). NAEP State Profiles. Retrieved from <https://www.nationsreportcard.gov/profiles/stateprofile?chort=1&sub=MAT&sj=&sfj=NP&st=MN&year=2017R3>.

Appendix:

1. `library(ggplot2)`