The Relationship of Delivery Method, Birth Weight and Race on Infant Mortality

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INTRODUCTION

The purpose of this research is to find out how factors such as delivery method, birthweight, and race affect infant mortality to figure out how it can be reduced. Infant mortality is defined as the number of deaths per 1000 births for children under 1 years.

Q1: How is infant mortality affected by delivery method?
Q2: How is infant mortality affected by birthweight?
Q3: How is infant mortality affected by race?

Birthweight is a significant factor in infant mortality rate. This study aims to assess the trends for birthweight and infant mortality rates.

METHODS

The research questions were evaluated by bar charts and a grouped scatterplot. The datasets were acquired through the CDC Wonder database. The data was collected by the CDC between the years of 2007 and 2016. The death rate is defined as the number of deaths divided by the numbers of births and multiplied by 1000. ANOVAS were run to find significant differences.

RESULTS

Figure 1 showed that the Cesarean delivery method has a higher death rate, 7.32, than the vaginal delivery method, 5.18.

Figure 2 is a bar chart of race, delivery method and death rate. I found that African Americans have the highest death rate for vaginal births while Native Americans have the highest death rate for c-section births. The group with the lowest death rate is the Asian American vaginal birth group

For all the races, the C-sections have larger death rates than the vaginal method. There was large difference in the death rate for Native Americans for the two delivery methods. An ANOVA showed that there is a significant difference between the death rates for the different races. The death rates for American Indians and African Americans are significantly different from the death rates of Asians and Whites.

Figure 1:
Delivery Method and Death Rate

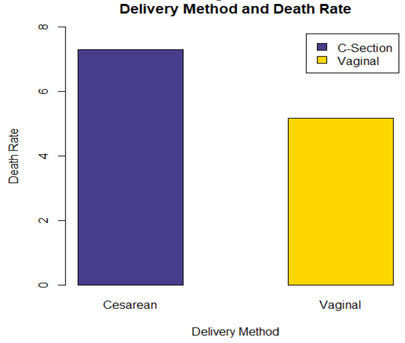

Figure 2:
Bar Chart of Delivery Method, Race and Death Rate

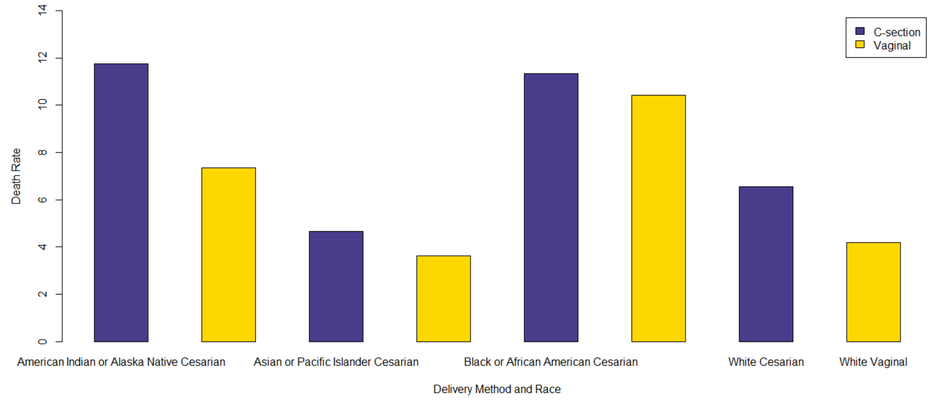

Figure 3:
Bar Chart of Death Rate for Very Low-Birthweight infants for Each Delivery Method

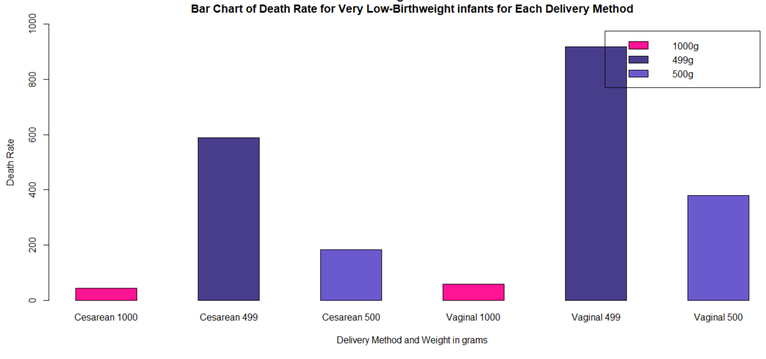

Figure 4:
Bar Chart of Death Rate for Low-Birthweight infants for Each Delivery Method

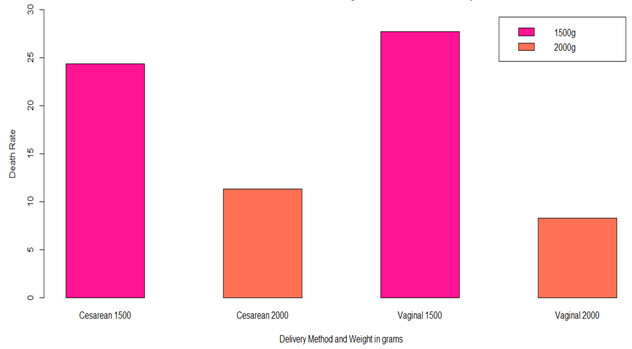

Figure 5:
Bar Chart of Death Rate for Average Birthweight infants for Each Delivery Method

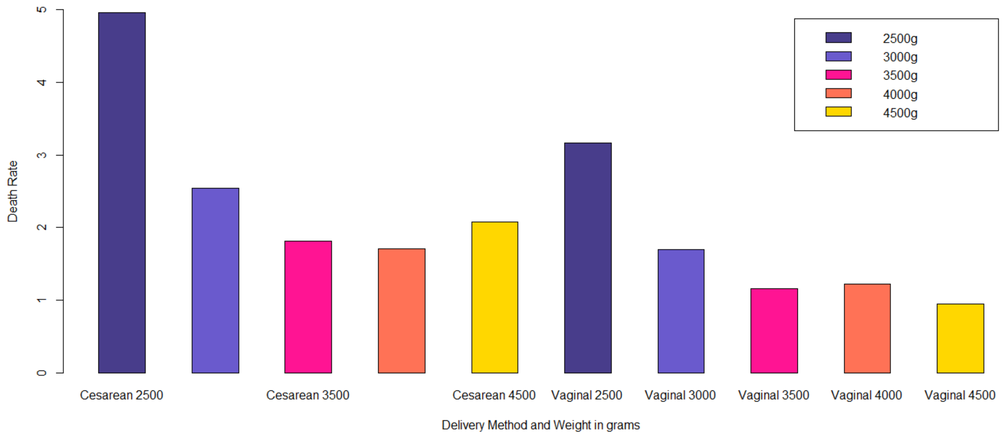

Figure 3 shows a bar chart of the death rate for very low birth weight infants. You can see that the death rate is very high for the vaginal births. In Figure 4, you can see that for low birthweight infants, the death rate is much higher for the vaginal delivery method. It is much lower for the cesarean delivery method. Babies who weigh less than 1500 grams are considered very low birth weight and babies weighing between 1500 and 2500 grams are low birth weight.

In figure 5, you can see that the death rate for C-sections is much higher than vaginal births. This is the opposite of what we found in Figure 3 and 4. The death rate is much lower for small infants who were delivered by C-section and that the death rate is much lower for larger infants who were delivered by the vaginal method.

The grouped scatter plot shows how birthweights of 499 grams are less common but have a very high mortality rate. There is a significant difference between the death rates for very small babies weighing less than 1000 grams and the death rates for babies who weigh more than 1000 grams

CONCLUSION

The overall findings from this study is that there is a significant difference between the death rate for the different races. American Indians and African Americans have the highest death rates for infant mortality. Overall, the death rate for vaginal births is lower than the death rate for c-section births. However, for infants weighing less than 2000 grams, the death rate is smaller for those delivered by C-sections than the vaginal method. There is a large difference in the death rate for American Indians born in the vaginal method vs. the c-section method. One limitation of this study is that some of samples for certain groups are small and the CDC deemed some of those rates as “Unreliable.” Having a larger sample could fix this. A future experiment could aim to figure out why there is such a large difference in the death rate for these variables.

Figure 6: Death Rate for Very Low Birthweight Infants