Data 22700

Data Visualization and Communication

Trimble

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**Homework 3: CDC Births Database**

*Question: Where were most common sites of delivery for U.S. births pre-pandemic, and how do sites of delivery vary with the time of day?*

*Chart

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*Caption: Overall, in 2019, the vast majority of births in the U.S. occurred in hospitals, with the highest density of hospital deliveries occurring between the hours of 7:00 a.m. and 6:00 p.m., peaking during the hour following 8:00 a.m. After hospitals, homes and freestanding birth centers were the next two most common sites of delivery. Unlike the hourly distribution for hospitals, however, homes and freestanding birth centers experienced the highest volume of births in the early morning and late evening, representing an inverse trend across the hours of the day. Intended births at home peaked around the hours of 3:00 a.m. and 11:00 p.m., with deliveries at freestanding birth centers displaying a similar pattern. Interestingly, unintended births at home—though significantly less frequent than hospital, birth center, and intended home births) also saw a peak in frequency around 3:00 a.m. Whether hospital births peak during the workday due to modern medical practices (e.g. cesarian sections) can only be inferred from the data, but the visualization suggests that freestanding birth centers and homes may represent alternative delivery sites for mothers who enter labor at unexpected or odd hours of the day—or do not use medical techniques to induce birth during the hours of daylight. Data source: CDC Birth Data Files, 2019.*

Though nearly everyone I’ve spoken to about the subject was born in a hospital, I was

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Description automatically generatedwhere the most common sites of birth were in the U.S., and whether the time of day had an influence in where mothers had their children delivered—both aspects of the question I brainstormed. Since I sought to depict where births were happening, as well as when they were occurring over the course of a 24-hour day, I thought a heatmap would serve as a succinct, visually appealing visualization type to display my data. Additionally, working with seaborn heatmaps gave me the chance to tinker with a more sophisticated type of visualization than the histograms and bar graphs I used in previous assignments. Originally, the pivot tables I fed into the heatmaps had the axes flipped (hour of the day on the y-axis and birthplace on the x-axis); however, I switched the axes to the orientation above for readability purposes, as it was difficult to read the long, text labels about birthplace when they were sideways (shown to the right). I also changed the format of the timestamps to be in military time hour-wise, added a label to the gradient legend, and chose a color scheme thematically to births and infants (pink) that made it visually easier to distinguish between varying intensities of hues relative to a gradient that utilized multiple color tones. Additionally, I added thin white outlines over the heatmap grid so viewers could easily distinguish which boxes to see which corresponds to a particular site of delivery and hour of the day. Finally, after creating the top plot of the visualization, I realized the difference in frequencies between hospital births and all others was so stark that it became nearly impossible to see the distribution of births across 24 hours at other sites of delivery. As a result, I produced a second chart which included all other sites other than hospitals to provide more detailed insights into secondary and tertiary categories of birthplaces.