1. *Data Visualization Examples from Lecture Resources*

One of the types of graphs I found interesting from the resources in the lecture notes were **animated** **graphics**. For instance, the NASA video by Ed Hawkins depicted global rises in temperature from 1890 to 2021. Similarly, in the *Info We Trust* web resource (<https://infowetrust.com/project/bloom>), it was interesting to see a visualization of the blooming of flowers in different months of the year in Virginia. I think this type of data visualization strategy would be interesting to explore in my own research work with autistic children and youth. For instance, my master’s work explored longitudinal changes in the parent-child relationship following participation in their children’s therapy. Rather than utilizing traditional graphics such as bar graphs, I wonder if it may be beneficial to use animation to depict the passage of time (i.e., pre- and post-intervention) for longitudinal research.

Another type of data visualization strategy that could be relevant for my work is the **use of colour** to indicate quantity. For example, the graphic in <https://flowingdata.com> depicted the number of drug overdose deaths seen in Chicago among Black men from 1990 to 2020. Along with depicting the relationship between individuals’ age and the year, colours were utilized to show the number of deaths per 100k. Darker colours such as blue and purple depicted a greater number of deaths (400-600), and lighter colours such as yellow and orange depicted a fewer number of deaths (100-200). This type of data visualization strategy was also utilized to display the number of insurance company nonrenewal rates in states across the US. It would be interesting to explore how this type of data visualization could be used to display demographic data for my dissertation work. For instance, my project will involve collecting data from ethnically diverse families of autistic children and youth across Canada. Instead of presenting demographic information on the percentage of families recruited from different provinces across Canada, it may be more engaging and informative to depict this information using a density plot overlayed on a map of Canada. However, as discussed in class, it will be important to ensure that colour graphics are accessible to all audiences, by using strategies such as implementing colour-blind friendly packages in R, and/or pairing colours with patterns to ensure optimal readability.

Lastly, the data visualization approach I anticipate I will be using frequently in my future research work is **corrgrams**. This method utilizes shapes (e.g., circle, ellipse, bars, shading) to visually display correlation matrices. I found it interesting that colours can be utilized to depict negative versus positive correlation values, and varying degrees of shapes can be utilized to depict the sizes of correlations. This type of data visualization strategy is more digestible and user-friendly than correlation matrices I have used in the past, which are often difficult to interpret unless significant correlations are bolded or starred.

1. *Good/Bad Graphs*

Relevant to my research area, I explored journal articles from the *Autism* journal, which is international journal publishing research related to improving the quality of life of individuals with autism or autism-related disorders. One example of a graphic that **communicated information** **well** was from a scoping review of national policies related to autism in mainland China. The visual below depicted the frequency of participation of various multisectoral organizations in jointly releasing autism-related policies, which is crucial to the effective implementation of these policies. As seen below, the size of each circle indicated the frequency of ministries’ participation in jointly releasing policies, and the thickness of each line indicated the frequency of two ministries participating in the same policy release. Through this depiction, the reader comes to an understanding of the governing bodies that play a larger role in policy release, as well as the relationships between governing bodies.

A diagram of a network of colored lines and dots

Description automatically generated

On the other hand, a graphic that **did not communicate information well** was from an article exploring rates of genetic testing in the evaluation of autism spectrum disorder and developmental disorder. Various genetic tests were explored, such as Fragile X testing (FGX), chromosomal microarray (CMA), and whole exome sequencing (WES). The graph below depicted rates of concordant testing with Fragile X testing. Although the graph was readable, the format used resulted in a significant amount of unused white space. To illustrate the overlap between different types of genetic testing, it may have been more effective to use Venn diagrams or an overlapping circle chart alongside including labels to depict the percentage of individuals who received the respective type of genetic testing.

A graph with a bar and a number of text

Description automatically generated with medium confidence