Chernoff Faces:

The Chernoff Faces method is a data visualization technique brought to us by the 70's. It was developed by Herman Chernoff to represent multivariate data, ostensibly effectively representing up to 18 variables. Facial features(eyes, nose, eyebrows) are mapped to multiple variables, with size, orientation, shape, color, and placement potentially representing different attributes of a single observation.

The Chernoff faces technique is an interesting way to represent multivariate data. It can be used to detect similarities between different items, but it is not the most efficient or the most accurate way to do so. Other techniques, such as parallel coordinates, star graphs, or radar charts, depict as many dimensions as Chernoff faces, but are easier to interpret.

Implementing visualizations of Chernoff faces is quite challenging. Data must be normalized, and often binned in order to convey meaning. Scaling and normalization can be complicated, particularly if variables represent many different kinds of data. On the viewers end, it becomes difficult to extrapolate meaningful quantitative data from normalized and binned representations.

Faces do not make it easy to present data without innate perceived bias. For example, a curved mouth holds positive and negative connotations, which must be considered in order to avoid unwanted implications.

Geocoding:

Geocoding is the process of transforming a description of a location—such as a pair of coordinates, an address, or a name of a place—to a location on the earth's surface. You can geocode by entering one location description at a time or by providing many of them at once in a table. The resulting locations are output as geographic features with attributes, which can be used for mapping or spatial analysis.

You can quickly find various kinds of locations through geocoding. The types of locations that you can search for include points of interest or names from a gazetteer, like mountains, bridges, and stores; coordinates based on latitude and longitude or other reference systems, such as the Military Grid Reference System (MGRS) or the U.S. National Grid system; and addresses, which can come in a variety of styles and formats, including street intersections, house numbers with street names, and postal codes.

Map

Description automatically generated

From simple data analysis to business and customer management to distribution techniques, there is a wide range of applications for which geocoding can be used. With geocoded addresses, you can spatially display the address locations and recognize patterns within the information. This can be done by simply looking at the information or using some of the analysis tools available with ArcGIS. You can also display your address information based on certain parameters, allowing you to further analyze the information. A few of these applications are described in the sections that follow.

Address data analysis: With geocoded addresses, you can spatially display the address locations and begin to recognize patterns within the information. This can be done by simply looking at the information or by using some of the analysis tools available with ArcGIS.

Map

Description automatically generated

Customer data management: Geocoding allows you to take your customers' information and create a map of their locations. Using a variety of related applications, you can use this information in many ways, from establishing marketing strategies to targeting specific clusters of customers to producing route maps and directions. The geocoded locations of your customers can be invaluable data.

Distributed geocoding applications: Many real estate firms have found advantages in distributing information about available real estate via the Internet. By combining the database of available homes and ArcGIS Web services, you can distribute the spatial and nonspatial information about a home to a wide audience.

Reference:

<https://www.cs.middlebury.edu/~candrews/showcase/infovis_techniques_s16/chernoff/chernoff.html>

<https://desktop.arcgis.com/en/arcmap/latest/manage-data/geocoding/what-is-geocoding.htm>