

Creating Visual Displays of Data

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Introduction

Frequently data that is to help people understand various ideas and concepts is only represented by raw numbers (or words). This represents, for most, a fairly difficult method of needing to interpret and understand. By taking the same data and representing it through visual graphic representations, the same information can be more frequently and easily understood. What follows is descriptions of some the data types and some graphic representations of data.

Table

The following table provides descriptions of the various listings in the provided dataset:

Item	Data	Description
Mean	21.52	The average of the numbers. Adding together all the numbers and dividing by the number of numbers. In this dataset, it is $753.24 / 35$ for a mean of 21.52
Median	21.26	The middle number of a group of numbers. Of the 35 numbers in this dataset, the middle would be the 17 th number, or in this case 21.26 .
Mode	none	Represents the number which appears most often in a set of numbers. There is none in this dataset.
SD	2.83	It is the standard deviation which is a measure of how spread out the numbers are or “how much” they deviate from each other.
Minimum	16.19	The lowest value for the dataset.
Maximum	27.16	The highest value for the dataset.
Range	10.97	The difference between the lowest and highest numbers in dataset. In this case, it is $27.16 - 16.19 = \mathbf{10.97}$
Count	35	Total amount of numbers in the dataset, in this case 35 .

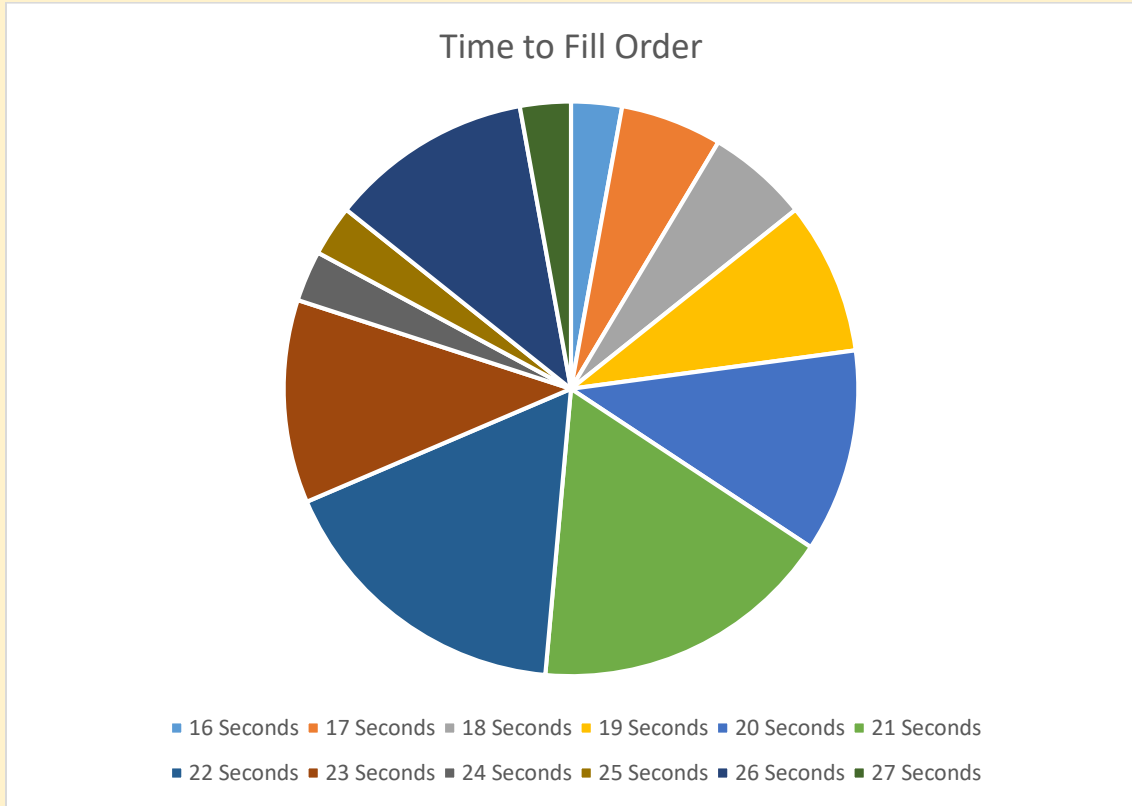
(Gates & Gentry et al., 2016)

Stem and Leaf

Stem	Leaf
16	19 58 95
17	66
18	27 51
19	00 30 70
20	12 39 40 55 60 67
21	18 26 40 70 76 99
22	15 34 48
23	23 42 77
24	
25	72
26	14 34
27	16

The stem and leaf chart quickly reveals that the raw data has 20 and 21 seconds as most common range (in rounded data it becomes 21 and 22 seconds as shown below). Also, 24 with null, is the least data position in the range of 16 through 27.

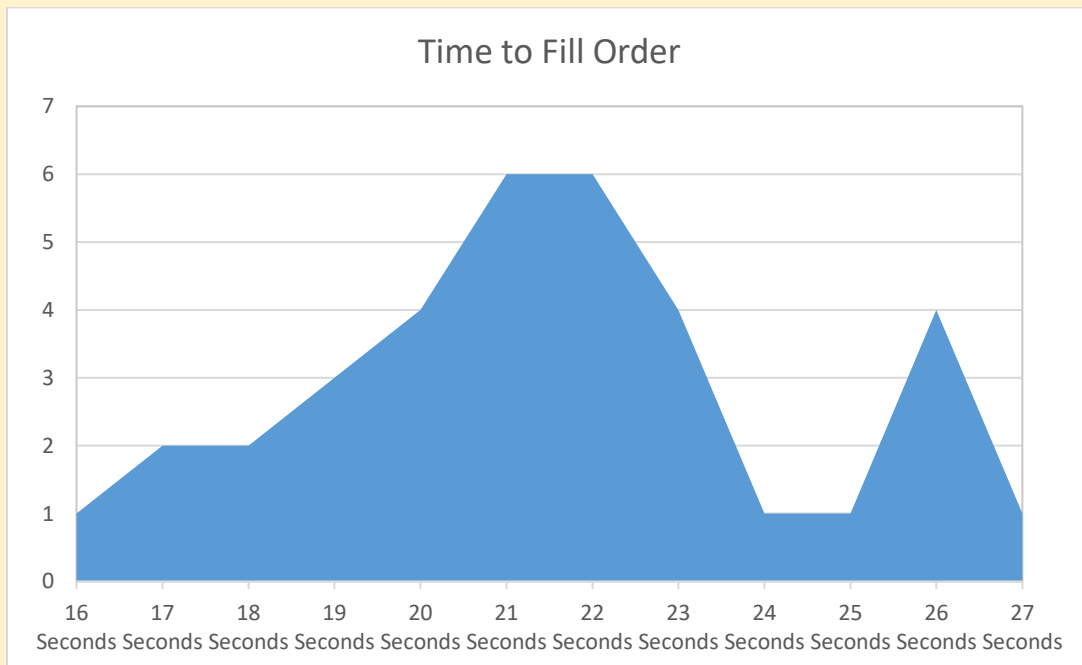
Pie Chart



The original dataset had 35 unique data points, far too many for a pie chart. The data was rounded to the nearest one creating 12 data points – 16 seconds through 27 seconds. Still too many data points for good display with pie chart but better. A clustered column graph appears much better.



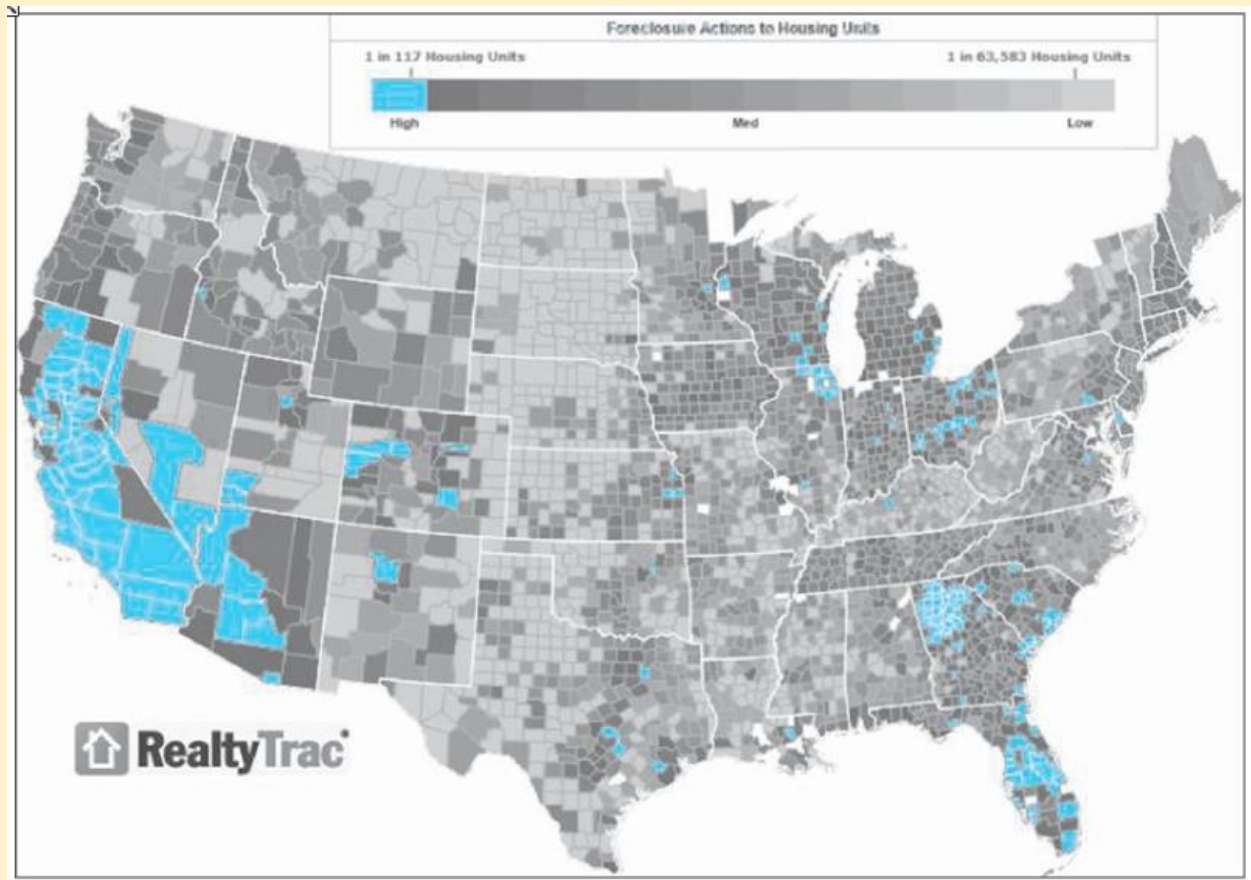
However, a stacked area chart provides the best pie-like and column-like combination:



It is important that the visual representation is immediately recognized as representation of the data. The above chart quickly shows the rounded dataset 21 and 22 second times to fill order are the most frequent in this dataset, while 24 & 25 seconds represent the least frequent.

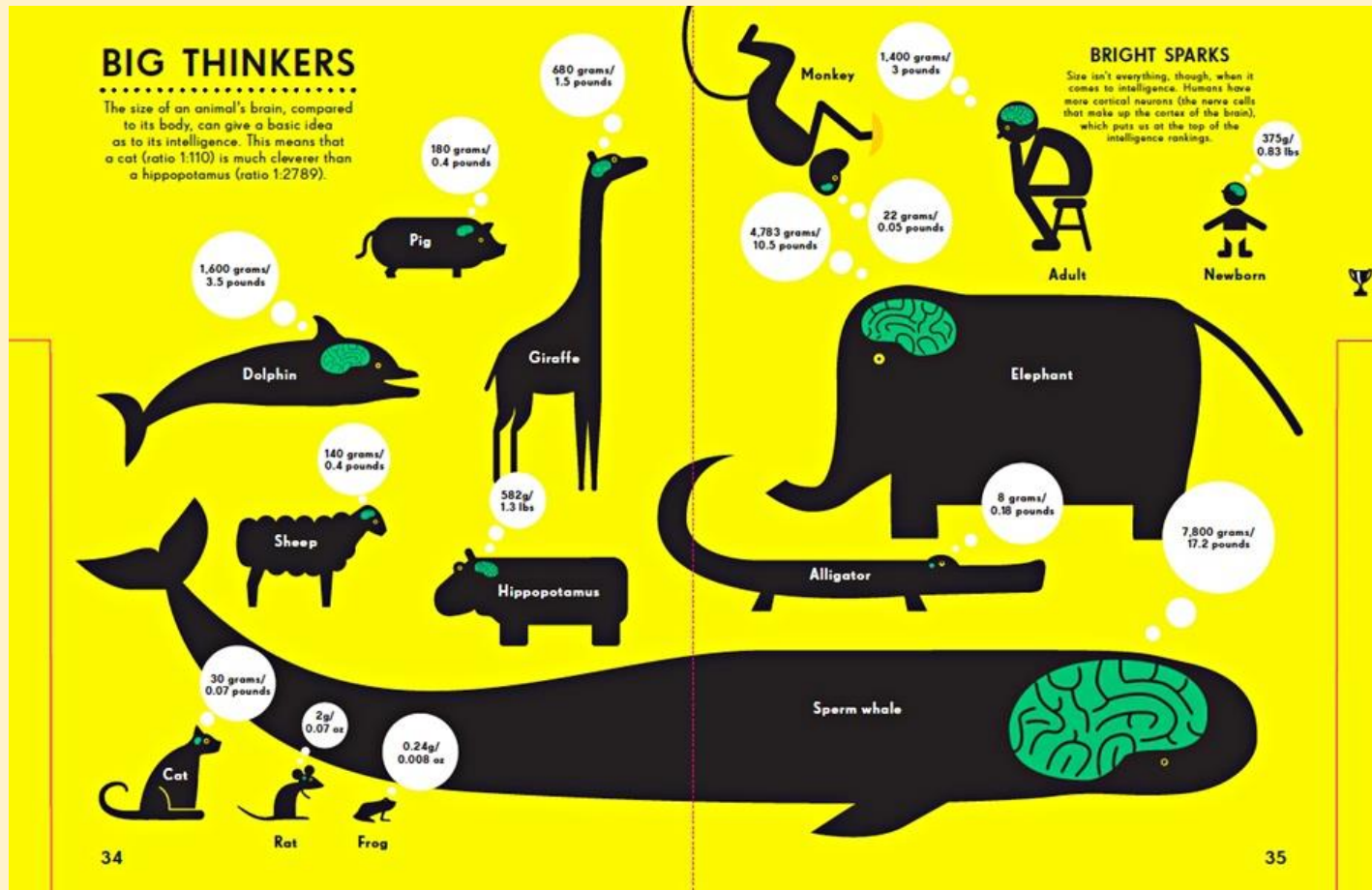
Some Newer Data Representations and Summary

Other frequently used data mapping today is GIS, “Essentially a GIS works by linking data sets to each other with at least one common data field” (Cooper, 2013-03-05, p. 418) which is shown on a map, such as the USA map below:



(Cooper, 2013, p. 418)

This paper has just barely touched on a few options of some of the most common visual displays of data. The number of possibilities is almost endless. In today's Internet world, visual displays grow regularly with items such as Infographics (as shown below for children) showing more and more data in many ways:



.(Rogers, 2014).

Reference

Cooper. (2013-03-05). Business Research Methods, 12th Edition [VitalSource Bookshelf version]. Retrieved from <https://bookshelf.vitalsource.com/books/0073521507>

Gates, L.B., Gentry, D. & Sevilla, D. (2016) Math is Fun. Retrieved from <http://www.mathsisfun.com/definitions/mean.html>

Rogers, S. (2014). Infographics for children: What they can learn from data visualizations.

Retrieved from <https://www.theguardian.com/news/datablog/2014/mar/07/infographics-for-children-can-learn-from-data-visualisations>