

BIO-STATISTICS DATA VISUALIZATION WITH Structured Data Analysis

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Abstract—In this paper the concept of visualization with Structured data analysis are given as new generation learn best by seeing and uses of biological data. Nowadays, visualization is extremely important to help medical researcher/Doctors to catch the real meaning of some disease. Here the application of biostatistics structured data analysis is to illustrate basic statistical concepts (like mean, median and mode by SPSS), their properties and graphical Representation, in a way that allows the doctors to explore, discovers and uncovers those ideas that will get the messages and stimulate interactive work in the clinical research. In this presentation a main goal is showing a way to approach statistics through the use of a Computational tool, with emphasis in the visual exploration of statistical concepts and focus on the improvement of statistical literacy, reasoning and thinking

1. INTRODUCTION

It is the statistical data analysis of structured data. This can arise either in the form of an a priori structure such as multiple-choice questionnaires or in situations with the need to search for structure that fits the given data into graphs either exactly or approximately. This structure can then be used for making comparisons, predictions, manipulations etc

Data visualization is viewed by many disciplines as a modern equivalent of visual communication. It involves the creation and study of the visual representation of data, meaning "information that has been abstracted in some schematic form, including attributes or variables for the units of information

A primary goal of data visualization is to communicate information clearly and efficiently via statistical graphics, plots and information graphics. Numerical data may be encoded using dots, lines, or bars, to visually communicate a quantitative message. Effective visualization helps users analyze and reason about data and evidence. It makes complex data more accessible, understandable and usable. Users may have particular analytical tasks, such as making comparisons or understanding causality, and the design principle of the graphic (i.e., showing comparisons or showing causality) follows the task. Tables are generally used where users will look up a specific measurement, while charts of various types

are used to show patterns or relationships in the data for one or more variables.

Data visualization is both an art and a science. It is viewed as a branch of descriptive statistics by some, but also as a grounded theory development tool by others. Increased amounts of data created by Internet activity and an expanding number of sensors in the environment are referred to as "big data" or Internet of things. Processing, analyzing and communicating this data present ethical and analytical challenges for data visualization. The field of data science and practitioners called data scientists help address this challenge

2. TERMINOLOGY

Data visualization involves specific terminology, some of which is derived from statistics. For example, author Stephen Few defines two types of data, which are used in combination to support a meaningful analysis or visualization:

- **Categorical:** Text labels describing the nature of the data, such as "Name" or "Age". This term also covers qualitative (non-numerical) data.
- **Quantitative:** Numerical measures, such as "25" to represent the age in years.

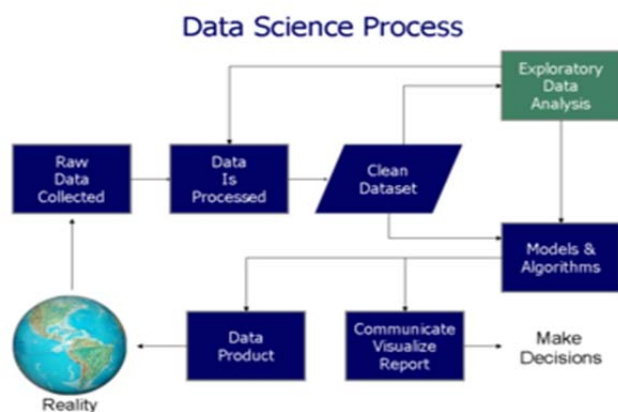
Two primary types of information displays are tables and graphs.

- A table contains quantitative data organized into rows and columns with categorical labels. It is primarily used to look up specific values. In the example above, the table might have categorical column labels representing the name (a qualitative variable) and age (a quantitative variable), with each row of data representing one person (the sampled experimental unit or category subdivision).
- A graph is primarily used to show relationships among data and portrays values encoded as visual objects (e.g., lines, bars, or points). Numerical values are displayed within an area delineated by one or more axes. These axes provide scales (quantitative and categorical) used to

label and assign values to the visual objects. Many graphs are also referred to as charts.^[18]

KPI Library has developed the "Periodic Table of Visualization Methods," an interactive chart displaying various data visualization methods. It includes six types of data visualization methods: data, information, concept, strategy, metaphor and compound.

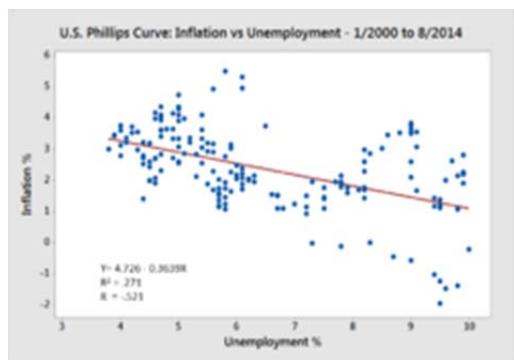
3. METHODS



Quantitative data visualization

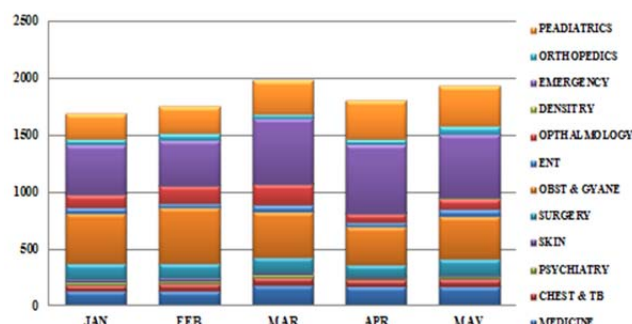


Qualitative data visualization

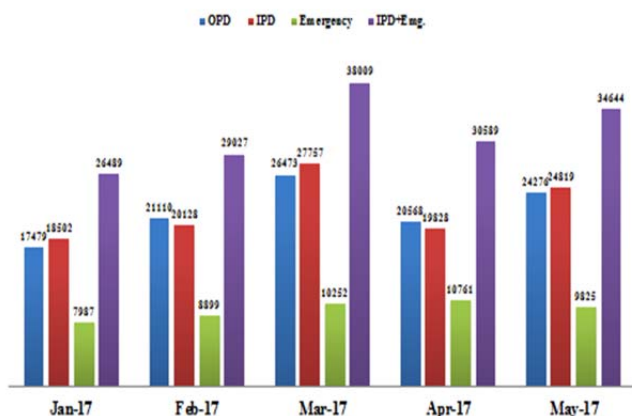


Hospital data visualizations

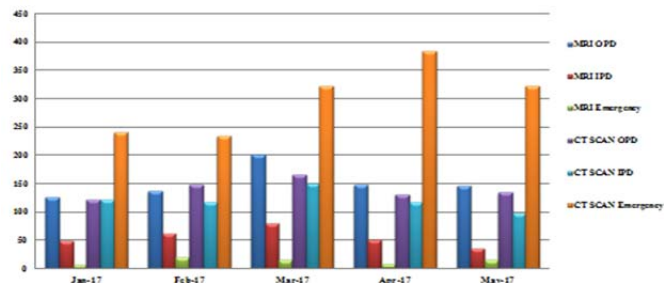
Admission Trends For Various Department
(Jan.-2017 to May 2017)



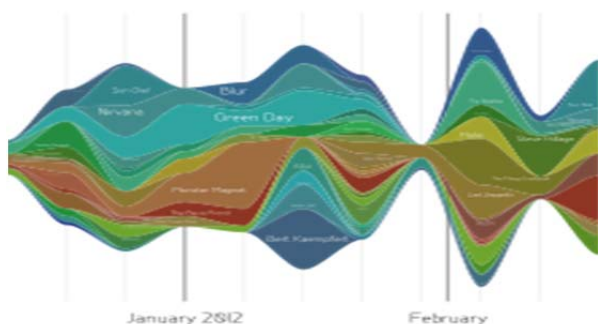
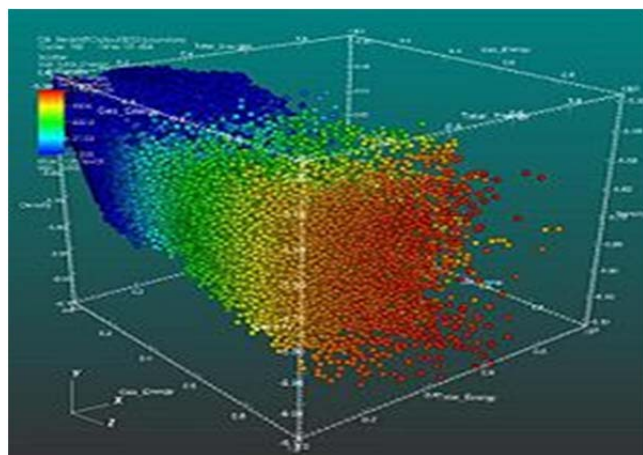
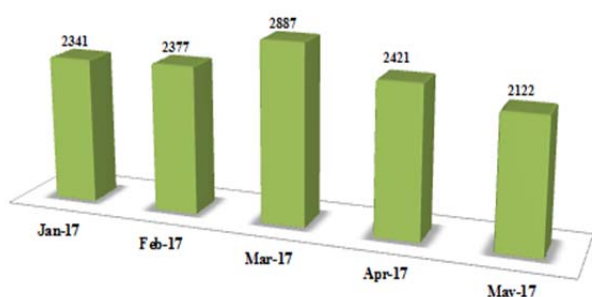
LABS. INVESTIGATION TRENDS FOR VARIOUS MONTH WISE-2017



MRI & CT SCAN TRENDS FOR VARIOUS MONTH WISE-2017



Minor Procedures Month Wise Year - 2017



4. DISCUSSION

With the above graphs the actual data visualization presentation the followings:

- Creating effective mechanisms for each audience member depending on their role, tasks, locations and access to technology.
- Defining important meaning (relevant knowledge) that is needed by each audience/ doctors/ member in each context.
- Determining the required periodicity of data updates.
- Determining the right timing for data presentation (when and how often the user needs to see the data)
- Finding the right data (subject area, historical reach, breadth, level of detail, etc.)
- Utilizing appropriate analysis, grouping, and other presentation formats.

5. CONCLUSION

An improvement in statistics teaching and analysis data using in reflect and careful way to achieve right decisions.

There are many possibilities to explore, improve and add other potentialities to the data visualization for time saving.

It is also significant to better understand and easy to explain the structural data.

REFERENCES

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- [3] wikipedia, Google Search Engine.