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CHAPTER 2

Overview of Data Visualization

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Learning Outcomes

This chapter aims for learner to be able to:-

1. Characterize the sciences of data visualization.
2. Identify skillset required for data visualization.
3. Expose with standard HTML5 online visualization.

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Table of Content

- Principles of data visualization
- Graphing and visualization algorithms
- Scalability concerns
- Introduction to standard visualization web APIs

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Sciences of Data Visualization

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Data Science

... a "concept to unify statistics, data analysis and their related methods" in order to "understand and analyze actual phenomena" with data.

Hayashi C. (1998)

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Data Science

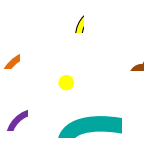
Source : Cathy O'Neil and Rachel Schutt, 2013

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Data Scientist

“... data scientists do is make **discoveries** while swimming in data.”


Source : [T. H. Davenport & D.J. Patil, 2012](#)



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Data Science Skillsets

According to [Quora \(2017\)](#), top five skills for data scientist:-



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Decision Science

- Making decisions is a needs for everybody at all level – personal, organizational, regional, national and global.
- Increasing research interest in decision science based on SCOPUS database.

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Visualization Web API's

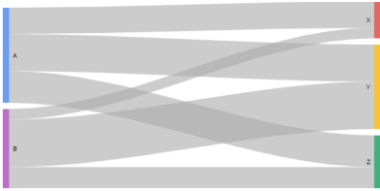
- With HTML5, it is now possible to perform **drawing of graphics** in the web without require any additional software plug-ins.
- List of web APIs for data visualization:-
 - Google charts
 - D3.js

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Google Chart API

- URL : <https://developers.google.com/chart/>




Sankey diagram, available in Google Chart API
 Source : <https://developers.google.com/chart/interactive/docs/gallery/sankey>

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Summary


- Data visualization involve the interdisciplinary of data (computer & technology) and cognitive (thinking) sciences.
- Collaborative wisdom through web bring greater impact on data visualization.

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References


- Hayashi C. (1998) What is Data Science ? Fundamental Concepts and a Heuristic Example. In: Hayashi C., Yajima K., Bock HH., Ohsumi N., Tanaka Y., Baba Y. (eds) Data Science, Classification, and Related Methods. Studies in Classification, Data Analysis, and Knowledge Organization. Springer, Tokyo
https://doi.org/10.1007/978-4-431-65950-1_3
- R. Schutt & C. O. Neil, *Doing Data Science: Straight Talk from the Frontline*, O'Reilly Media, Inc. ©2013
- Quora (2017), *What Are The Top Five Skills Data Scientists Need?*

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Learn more

- <http://www.fusioncharts.com/whitepapers/downloads/Principles-of-Data-Visualization.pdf>
- <http://download.101com.com/pub/tdwi/Files/052114%20IBM.pdf>
- <https://www.idrc.ca/sites/default/files/sp/Document%20EN/data-visualization-in-review-summary-report.pdf>

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