



Introduction to Data Exploration

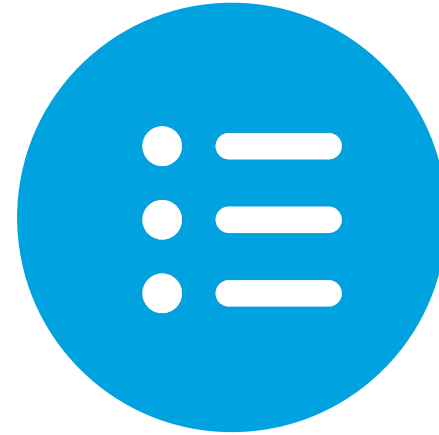
What is Visualization?

Objectives



Objective 1

Define
visualization



Objective 2

Describe key
purposes of
visualization

What is Visualization?

Definition

“The use of computer-supported, interactive visual representations of data to amplify cognition.”¹

What is NOT Visualization?

This is not simply the process of making a graphic or an image, the goal is to create insight, not pretty pictures.

What is Visualization?



We want to help people form a mental image of something and internalize their own understanding



We want to promote discovery, decision making and explanations



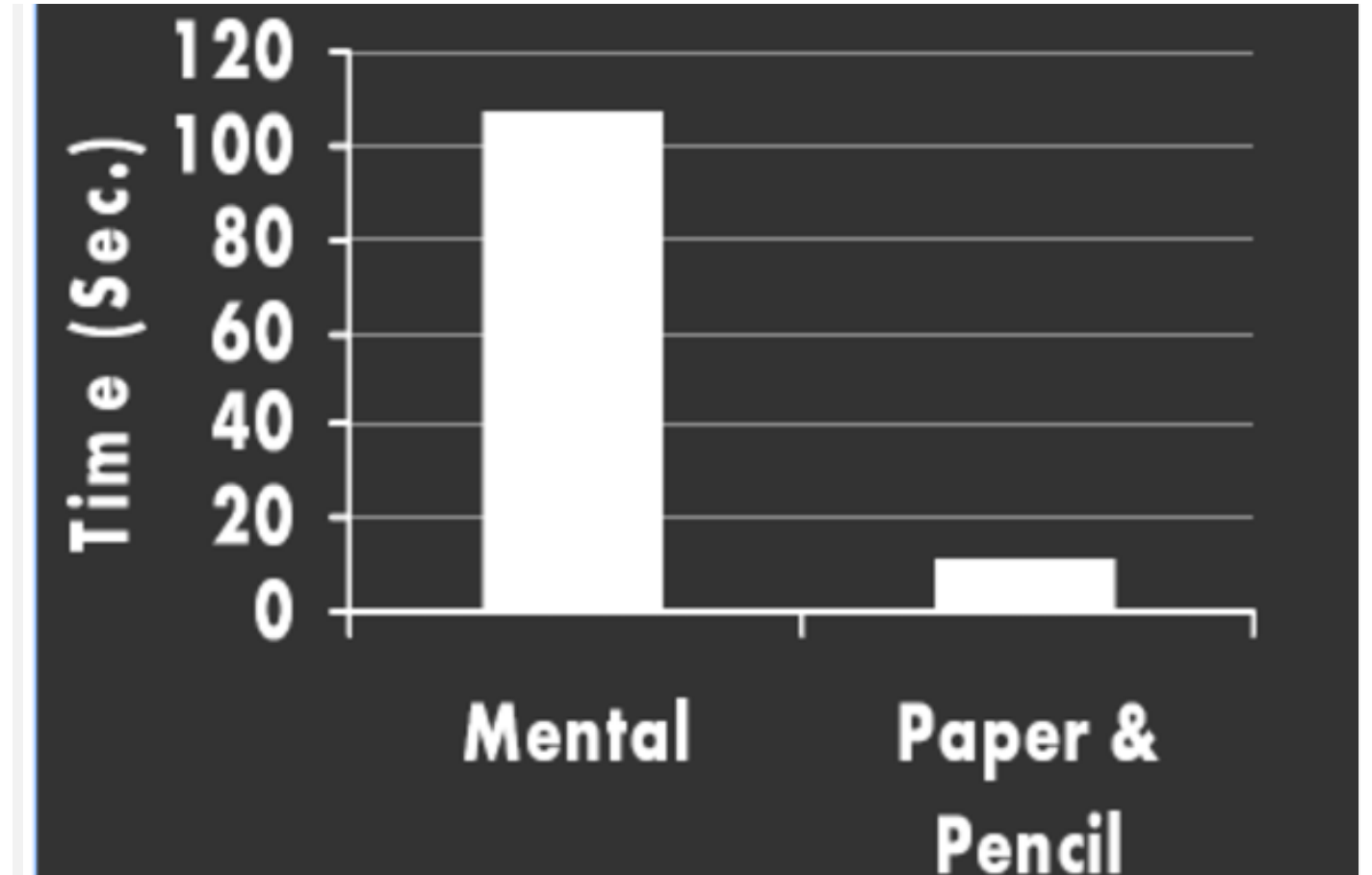
We want to find and utilize cognitive and perceptual principles



We want to optimize our visualizations and our interactions with the visualization according to these principles

Why is Visualization Helpful?

- | Amplifies cognition
- | Expands working memory
- | Reduces search time
- | Improves pattern detection and recognition
- | Controls attention



Purpose of Visualization



Analysis – Understand your data better and act upon that understanding



Given a data set, compare, contrast, assess, evaluate



Solve a problem!



Presentation – Communicate and inform others more effectively



Visualization is most useful in **exploratory data analysis**¹

“ Information visualization is ideal for exploratory data analysis. Our eyes are naturally drawn to trends, patterns, and exceptions that would be difficult or impossible to find using more traditional approaches, such as tables or text, including pivot tables. When exploring data, even the best statisticians often set their calculations aside for a while and let their eyes take the lead. ”

- S. Few
Now You See It

¹ J. W. Turkey. Exploratory Data Analysis