

CS 147:
Computer Systems Performance Analysis
Introduction to Graphical Presentation

2015-06-15 CS147

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Computer Systems Performance Analysis
Introduction to Graphical Presentation

Overview

Reference Works

Types of Variables

Graphical Excellence

Guidelines for Good Graphics

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└ Overview

Overview

Reference Works

Types of Variables

Graphical Excellence

Guidelines for Good Graphics

Useful Reference Works

- ▶ Edward R. Tufte, *The Visual Display of Quantitative Information*, Graphics Press, Cheshire, Connecticut, 1983.
- ▶ Edward R. Tufte, *Envisioning Information*, Graphics Press, Cheshire, Connecticut, 1990.
- ▶ Edward R. Tufte, *Visual Explanations*, Graphics Press, Cheshire, Connecticut, 1997.
- ▶ Darrell Huff, *How to Lie With Statistics*, W.W. Norton & Co., New York, 1954

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Types of Variables

- ▶ Qualitative
 - ▶ Ordered (e.g., modem, Ethernet, satellite)
 - ▶ Unordered (e.g., CS, math, literature)
- ▶ Quantitative
 - ▶ Discrete (e.g., number of terminals)
 - ▶ Continuous (e.g., time)

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Charting Based on Variable Types

- ▶ Qualitative variables usually work best with bar charts or Kiviat graphs
 - ▶ If ordered, use bar charts to show order
- ▶ Quantitative variables work well in X-Y graphs
 - ▶ Use points if discrete, lines if continuous
 - ▶ Bar charts sometimes work well for discrete

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└ Types of Variables

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Principles of Graphical Excellence (1)

Graphical excellence is the well-designed presentation of interesting data:

- ▶ Substance
- ▶ Statistics
- ▶ Design

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└ Graphical Excellence

└ Principles of Graphical Excellence (1)

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Graphical Excellence (2)

Complex ideas get communicated with:

- ▶ Clarity
- ▶ Precision
- ▶ Efficiency

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└ Graphical Excellence
└ Graphical Excellence (2)

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Graphical Excellence (3)

Viewer gets:

- ▶ Greatest number of ideas
- ▶ In the shortest time
- ▶ With the least ink
- ▶ In the smallest space

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└ Graphical Excellence
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Graphical Excellence (4)

Excellence:

- ▶ Is nearly always multivariate
- ▶ Requires telling truth about data

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└ Graphical Excellence

└ Graphical Excellence (4)

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Excellence:

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Guidelines for Good Graphics

- ▶ Above all else show the data
- ▶ Maximize the data-ink ratio
- ▶ Erase non-data ink
- ▶ Erase redundant data ink
- ▶ Revise and edit

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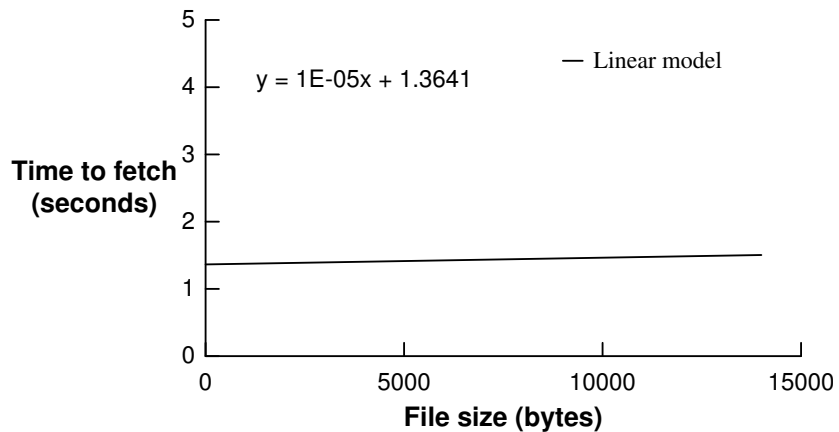
└ Guidelines for Good Graphics

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Above All Else Show the Data



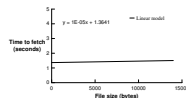
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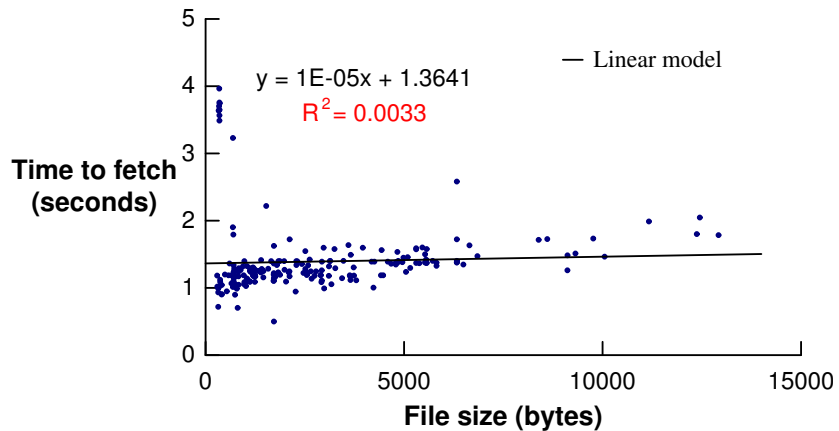
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└ Above All Else Show the Data

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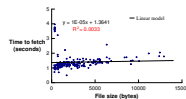
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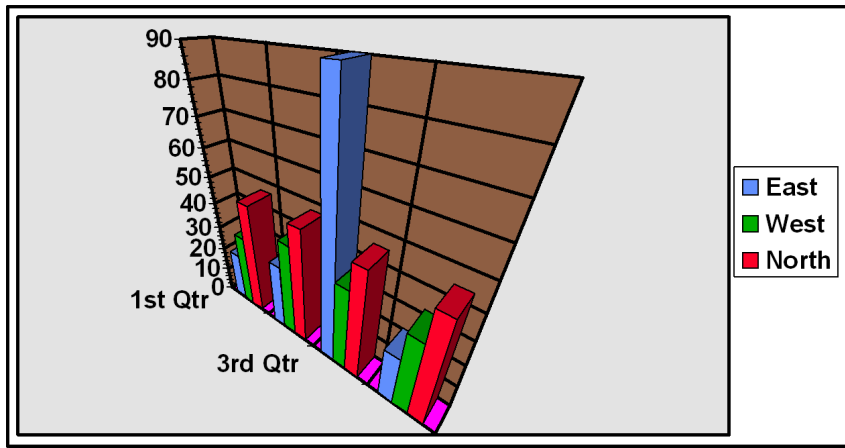
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└ Above All Else Show the Data

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Maximize the Data-Ink Ratio



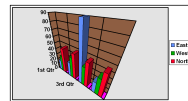
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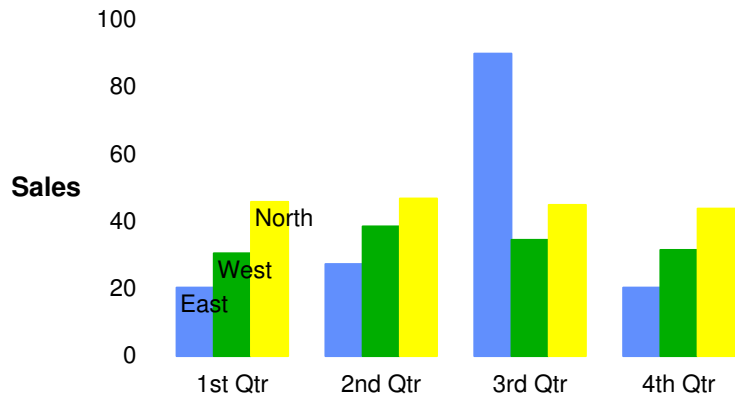
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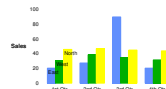
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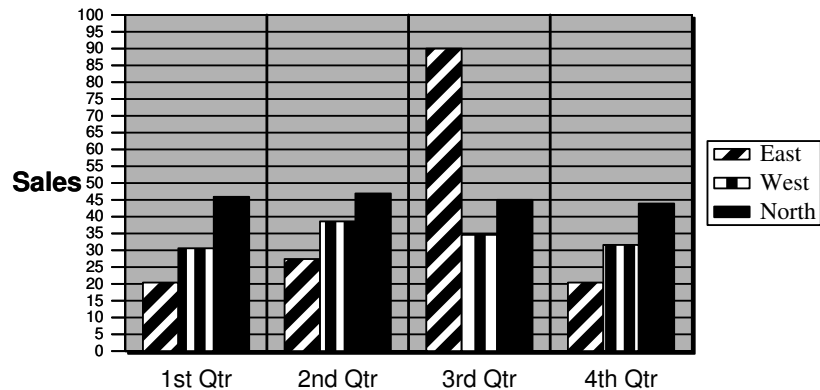
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└ Maximize the Data-Ink Ratio

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Erase Non-Data Ink



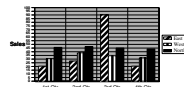
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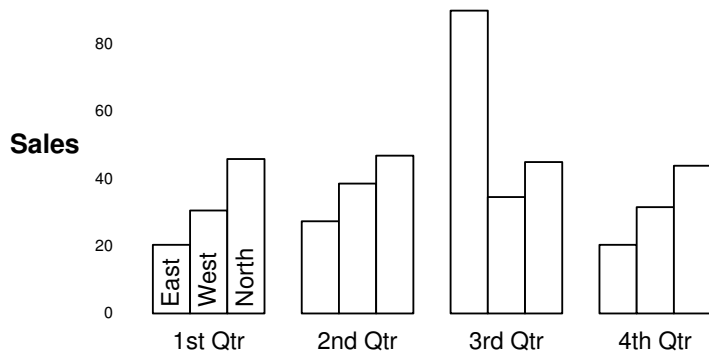
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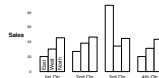
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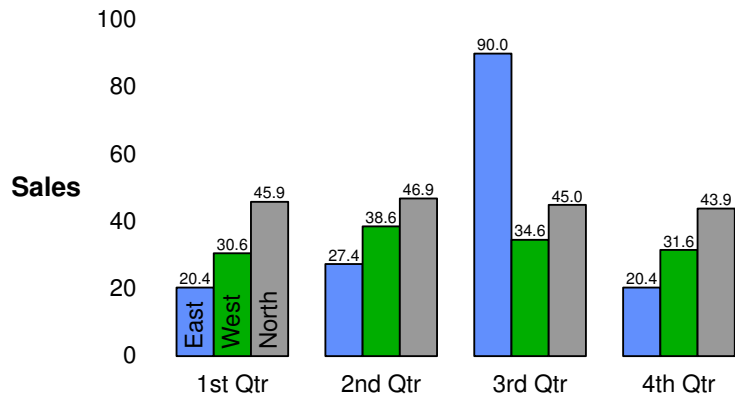
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Erase Redundant Data Ink



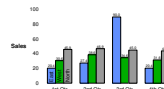
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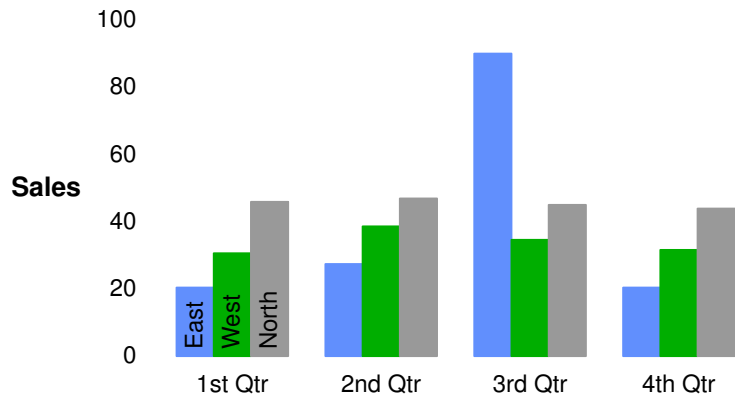
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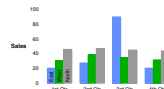
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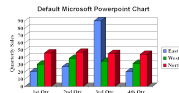
Erase Redundant Data Ink



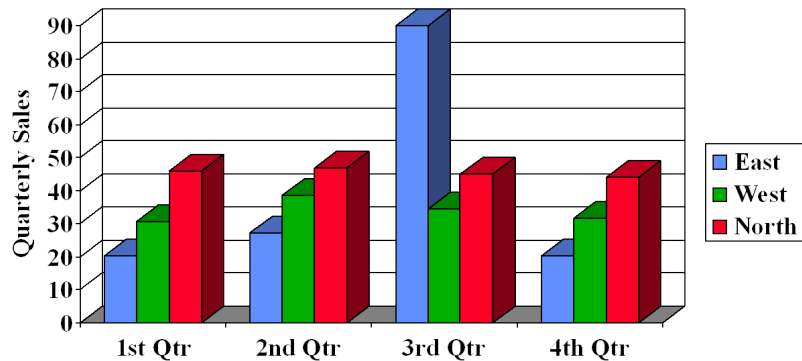
Revise and Edit

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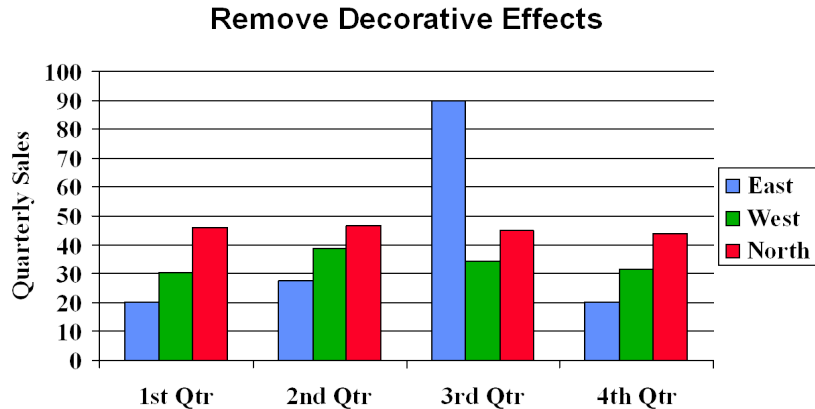
Revise and Edit



Default Microsoft Powerpoint Chart

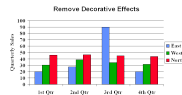


Revise and Edit

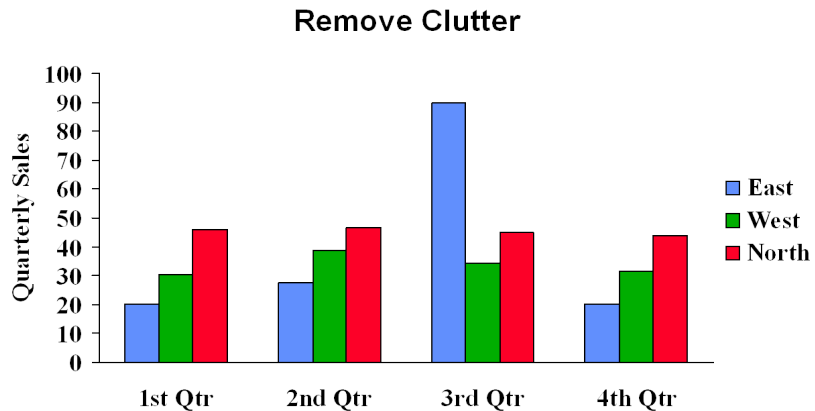


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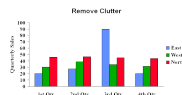


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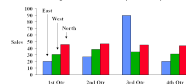
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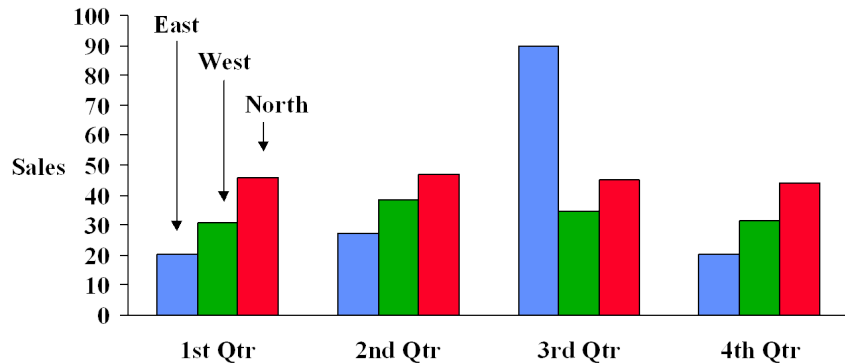
└ Revise and Edit

Revise and Edit

Make Legends and Titles Simple to Interpret



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Revise and Edit

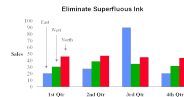
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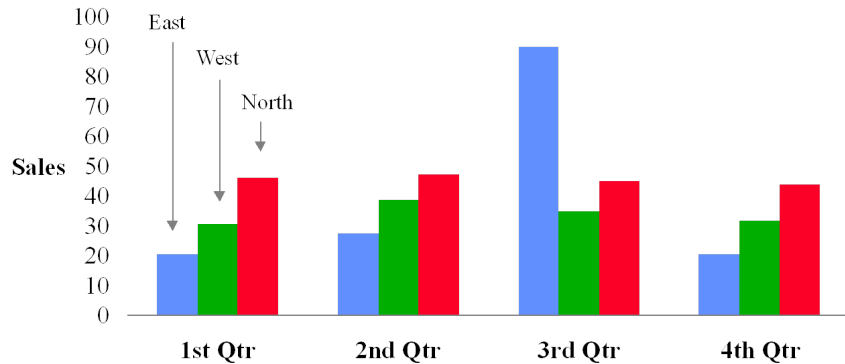
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└ Revise and Edit

Revise and Edit



Eliminate Superfluous Ink



Revise and Edit

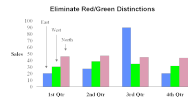
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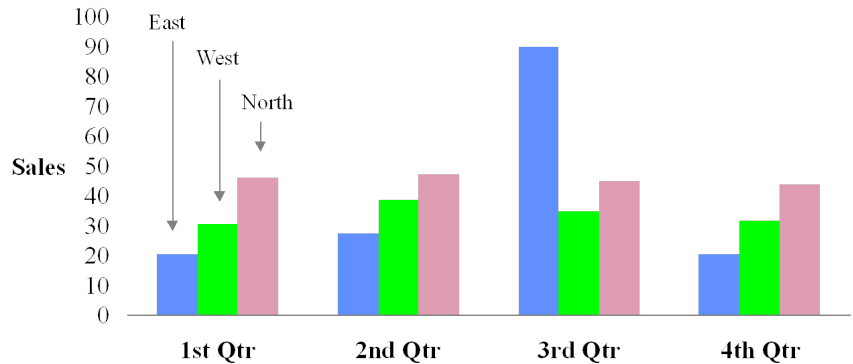
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Eliminate Red/Green Distinctions



Revise and Edit

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Choose Better Fonts

