Leveraging Excel for Effective Data Display in Nursing Home Quality Improvement
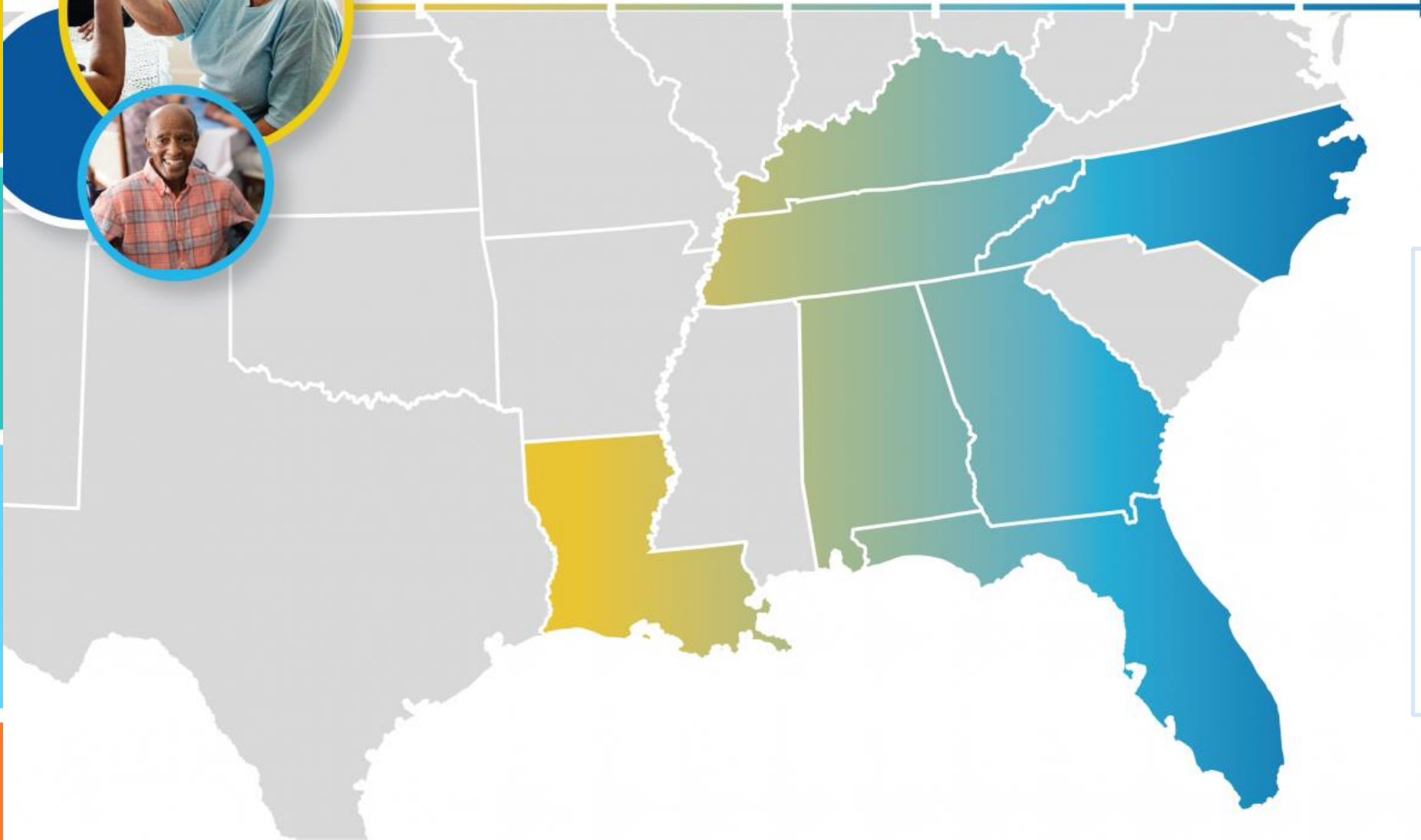

Presented by:

Wesley McFee, MS, PMP

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Making Health Care Better *Together*

Alliant Health Solutions is the Medicare Quality Innovation Network-Quality Improvement Organization (QIN-QIO) for the following states:
- Alabama
- Florida
- Georgia
- Kentucky
- Louisiana
- North Carolina
- Tennessee

Alliant Health Solutions, QIN-QIO

The IPRO QIN-QIO

The IPRO QIN-QIO

- A federally-funded Medicare Quality Innovation Network – Quality Improvement Organization (QIN-QIO) in contract with the Centers for Medicare & Medicaid Services (CMS)

- 12 regional CMS QIN-QIOs nationally

IPRO:
New York, New Jersey, and Ohio

Healthcentric Advisors:
Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont

Qlarant:
Maryland, Delaware, and the District of Columbia

Working to ensure high-quality, safe healthcare for **20% of the nation's Medicare FFS beneficiaries**

Wesley McFee, MS, PMP

SENIOR DATA SCIENTIST

Wes McFee, the principal scientist of machine learning and artificial intelligence at IPRO, holds a master's in healthcare analytics and has a background in hospital quality and clinically as a paramedic. He advised state and independent health organizations on sepsis payment and policy, and designed machine learning for healthcare analytics. Additionally, as a certified Project Management Professional (PMP), Wes managed a state health records system build and served as state higher education chief of staff.

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Learning Objectives

❑ Understand the Excel layout, basic functions, basic formulas, ribbons, and more.

❑ Understand and apply tables to data and how to choose the most effective visualization method for different types of data and audiences.

❑ Transform raw and tabled data into graphs and charts that effectively communicate data to different audiences, including staff, residents, families, boards, and band regulators.

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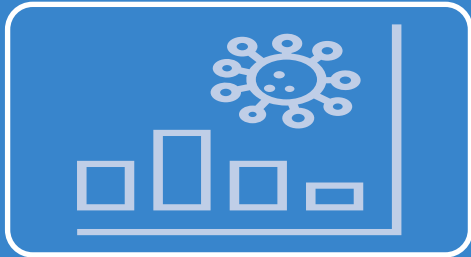
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The POWER of DATA

Today, we're embarking on an exploration into the world of data—how we capture it, mold it, and make it tell its stories. Data is more than just numbers and charts; it's the backbone of informed decision-making and innovation. To kick off our journey, let's ponder a quote that highlights the transformative power of data:

DATA

SORTED

ARRANGED

PRESENTED VISUALLY

EXPLAINED WITH A STORY

ACTIONABLE (USEFUL)
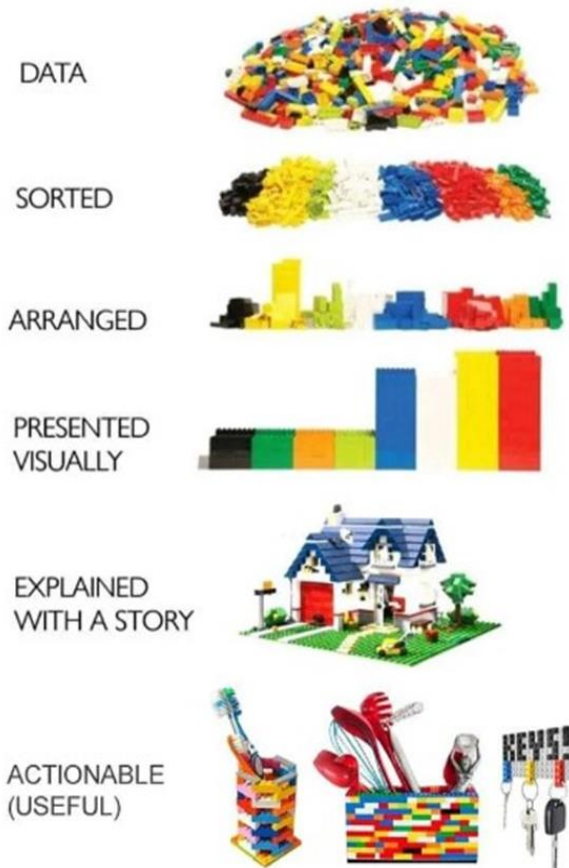
"Without data, you're just another person with an opinion."

– W. Edwards Deming

Data doesn't just support what we know; it often reveals the unexpected, guiding us towards more strategic decisions and innovative solutions.

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Understanding the Excel Interface

Explore major areas of Excel such as the Ribbon, Quick Access Toolbar, Formula Bar, Name Box, Column and Row Headers, Cells, and Sheet Tabs.

Here's a visual guide to get you started.

Instructions:

1. Open Excel to a blank workbook to see these components.

2. Hover over each area to learn their functions through tooltips.
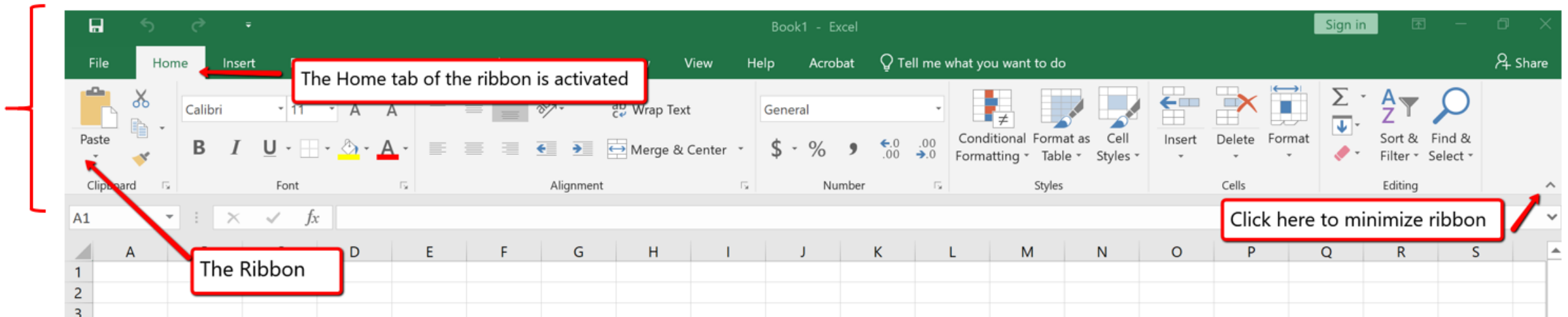
Basic Functions and Formulas

Learn how to use basic functions like SUM, AVERAGE, MIN, and MAX, and how to create simple formulas. Here's how you can apply these in Excel.
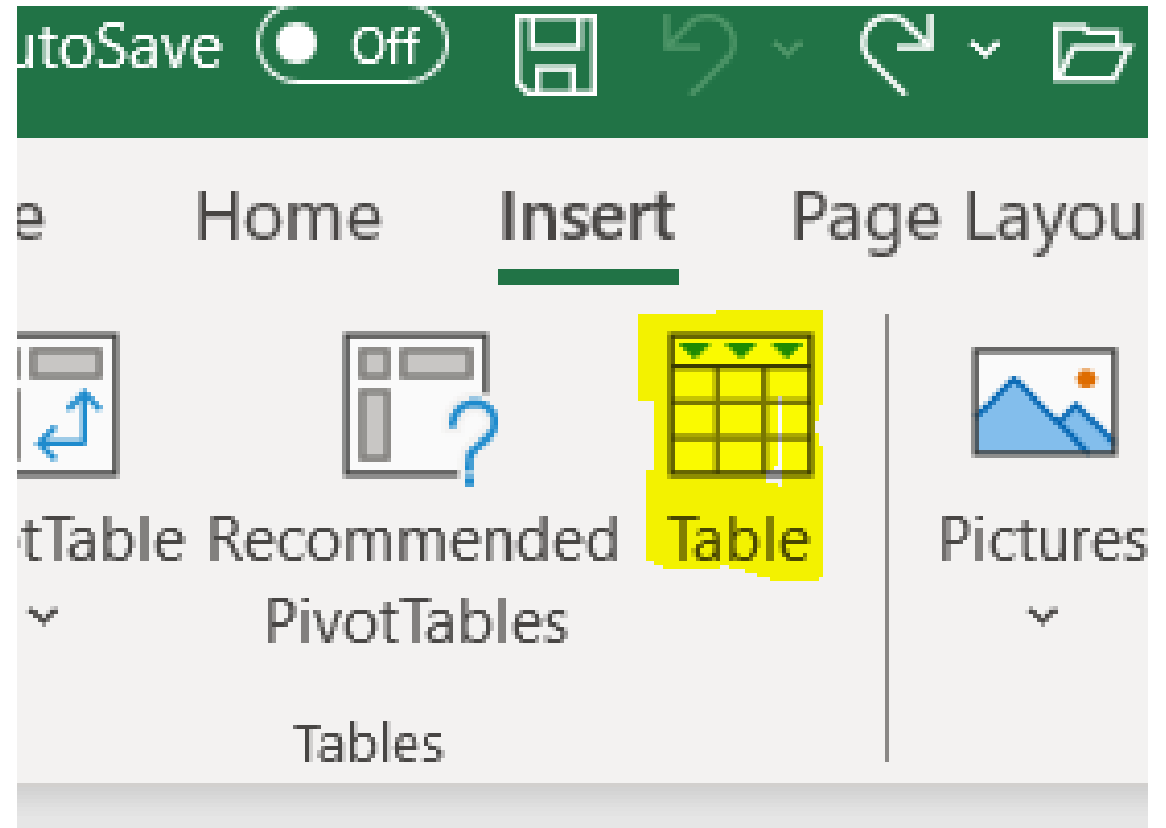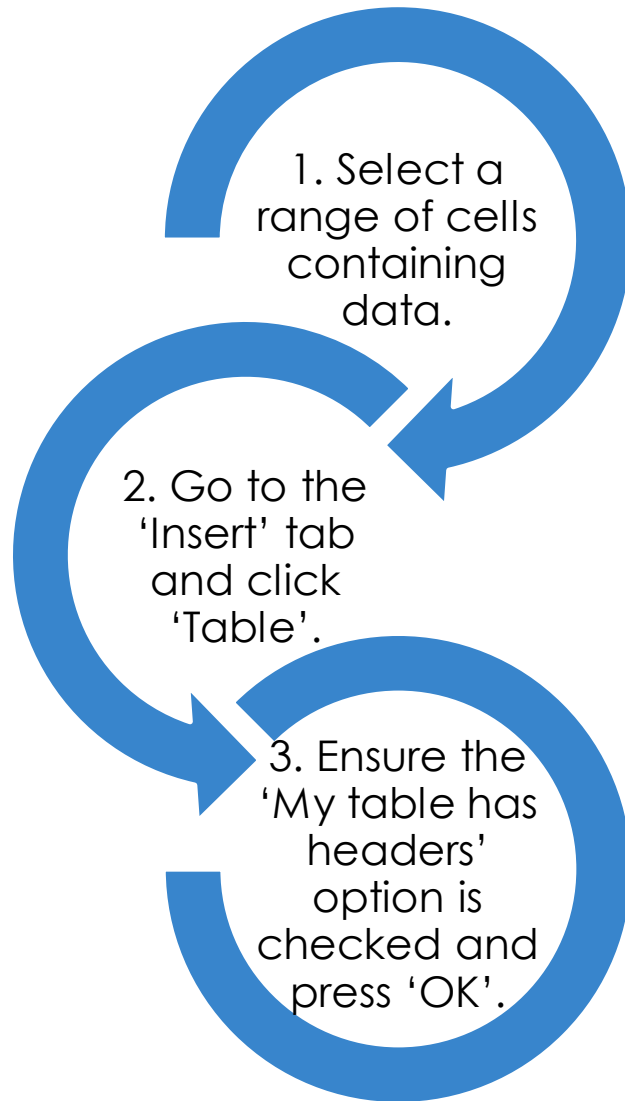
Step-by-Step Guide:

1. Type '=SUM(' then select cells to sum.

2. Explore AVERAGE, MIN, and MAX similarly.

Falls for Month by Day of Week		
Day of Week	# by Day	% by Day
Sunday	8	20%
Monday	5	13%
Tuesday	9	23%
Wednesday	3	8%
Thursday	4	10%
Friday	4	10%
Saturday	7	18%
Total	40	100%
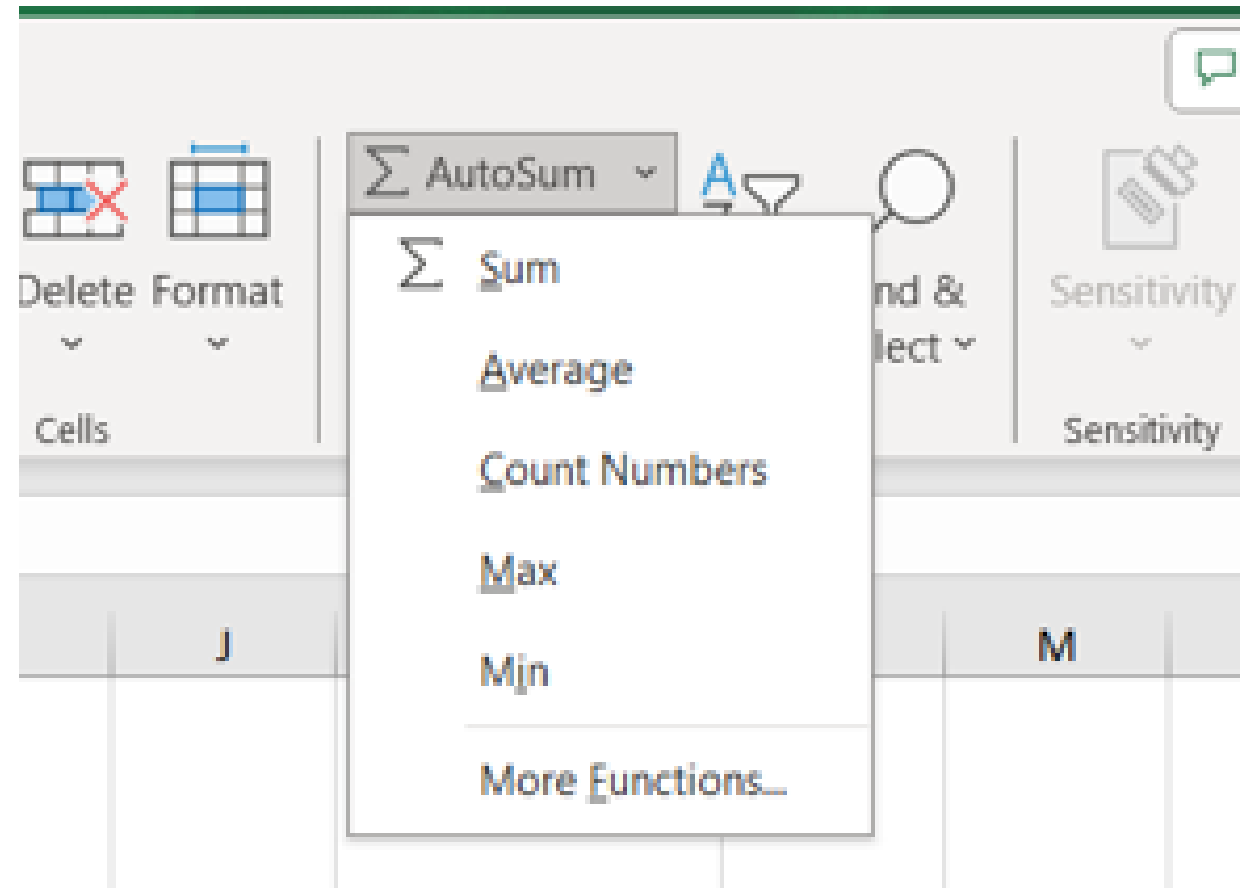
Working with Tables

Discover how to convert a data range into a table for better data management. We'll look at sorting, filtering, and using structured references.

1. Select a range of cells containing data.

2. Go to the 'Insert' tab and click 'Table'.

3. Ensure the 'My table has headers' option is checked and press 'OK'.

Data Visualization Techniques

Choosing the right chart type is crucial for effective data visualization. This slide will guide you on matching data types with the correct charts.

Step-by-Step Guide

1. Highlight the data to be charted.
2. Go to the 'Insert' tab and choose a chart type (e.g., Bar, Line, Pie).
3. Use the 'Chart Tools' to modify chart elements like titles, labels, and colors.

	Monthly Falls By Prior Activity		
	Activity	# Falls	% Falls
65	Walking	5	13%
66	Transfer	2	5%
67	Bed	23	58%
68	Chair	0	0%
69	Toileting	1	3%
70	Wheelchair	7	18%
71	Other	2	5%
72	Total	40	100%

Effective Communication with Graphs and Charts

Learn design principles for clear and impactful charts. See before and after examples to understand how to improve your data presentations.

Case Study:

1. Select a poorly designed chart and discuss its shortcomings.
2. Apply improvements such as simplifying color schemes, adding labels, and removing unnecessary elements.
3. Show a side-by-side comparison of the original and improved chart.

Trend or Run Chart

- Gather data in a chronological or sequential form. Measurements must be taken over a period of time.

- Divide the data into two sets of values, X and Y. The values for X represent the time intervals and the values for Y represent the measurements taken.

- Plot the data for each time interval.

- If an average or mean line is to be used, calculate and plot. Average or means is equal to the sum of all data points divided by the number of data points - i.e., 2, 5, 4, and 9 equals 20. Twenty divided by four equals an average of five.

- Connect the points for easier visualization.

Trend or Run Chart Example

ED Average Stat Lab Turn Around Time
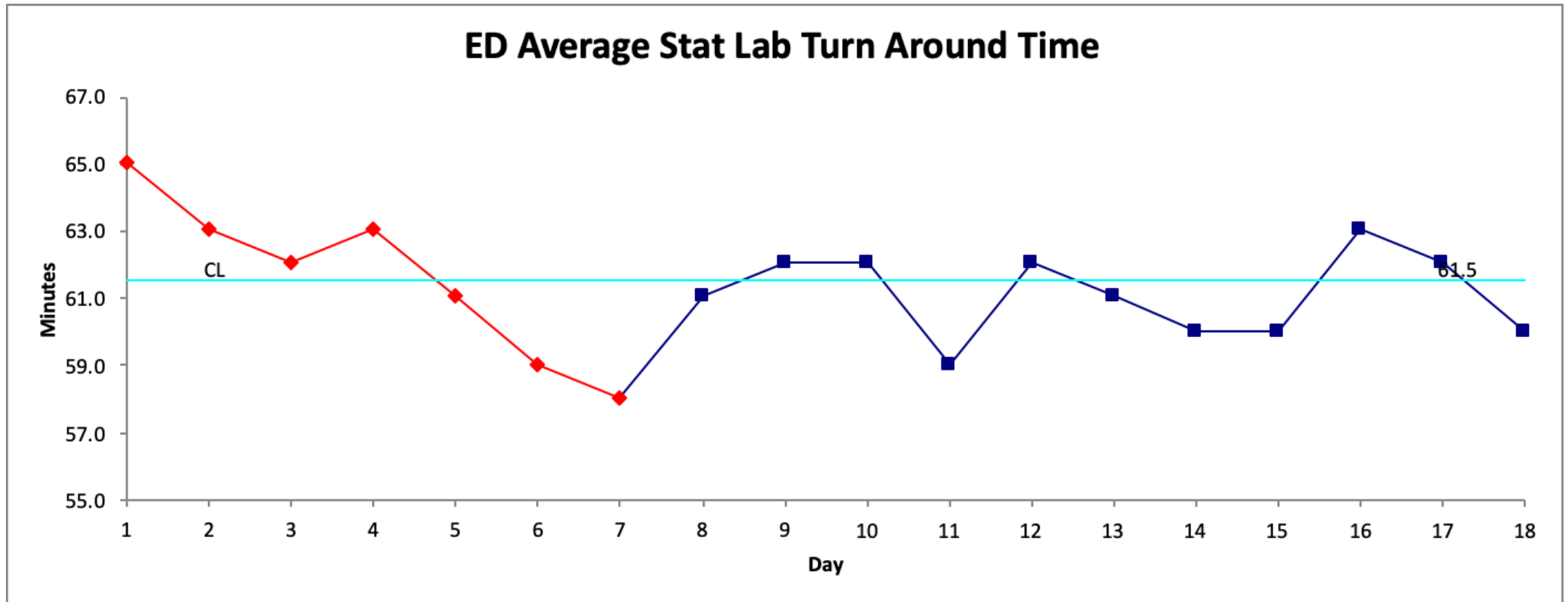
Bar Chart

- Determine the discrete range. Examine your data to find the bar with the largest value. This will help you determine the range of the vertical axis and the size of each increment. Then label the vertical axis.

- Determine the number of bars. Examine your data to find how many bars your chart will contain. These may be single, grouped, or stacked bars. Use this number to draw and label the horizontal axis.

- Determine the order of the bars. Bars may be arranged in any order. (A bar chart arranged from highest to lowest incidence is called a Pareto Chart). Normally, bars showing frequency will be arranged in chronological (time) sequence. Draw the bars.
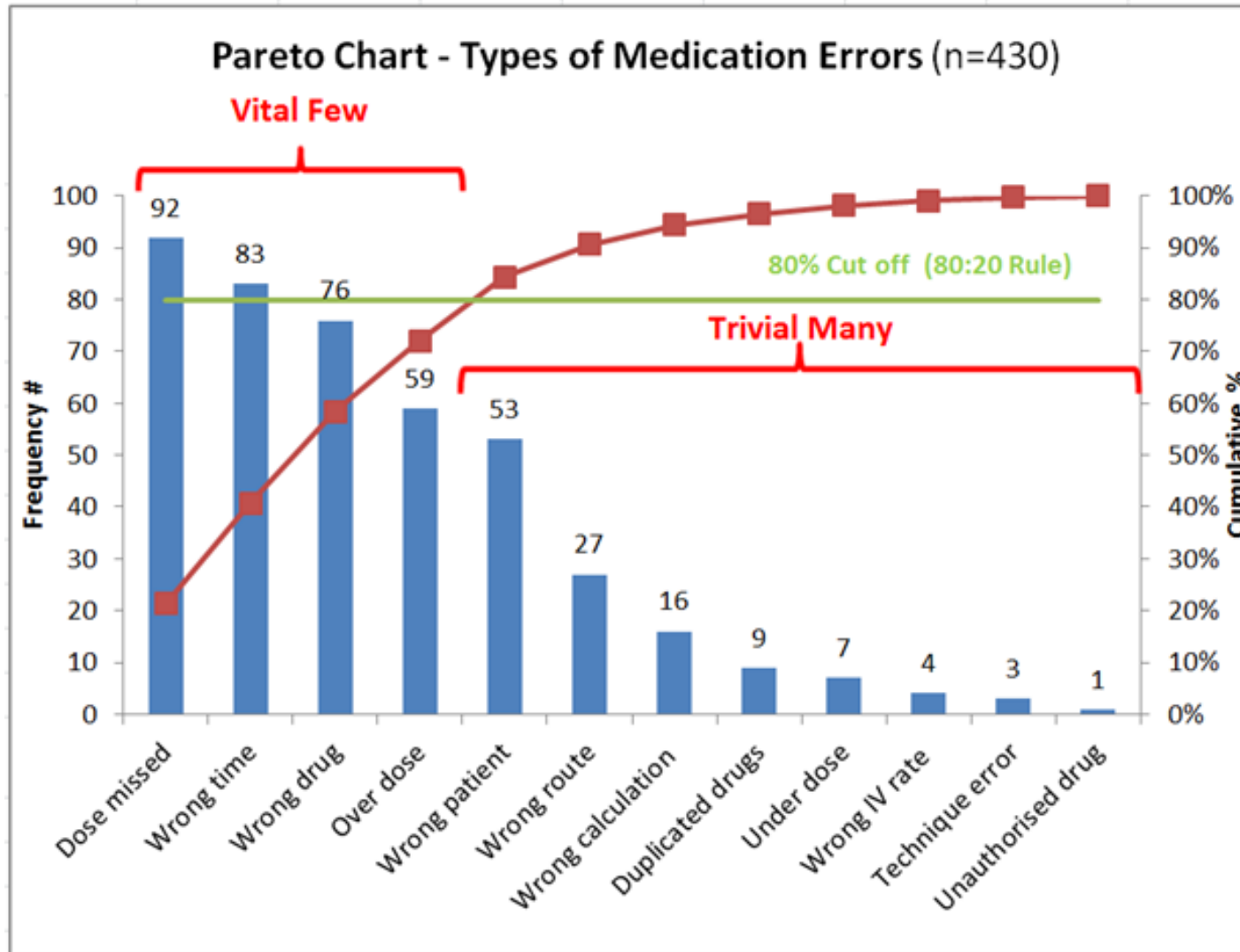
Bar Chart Example
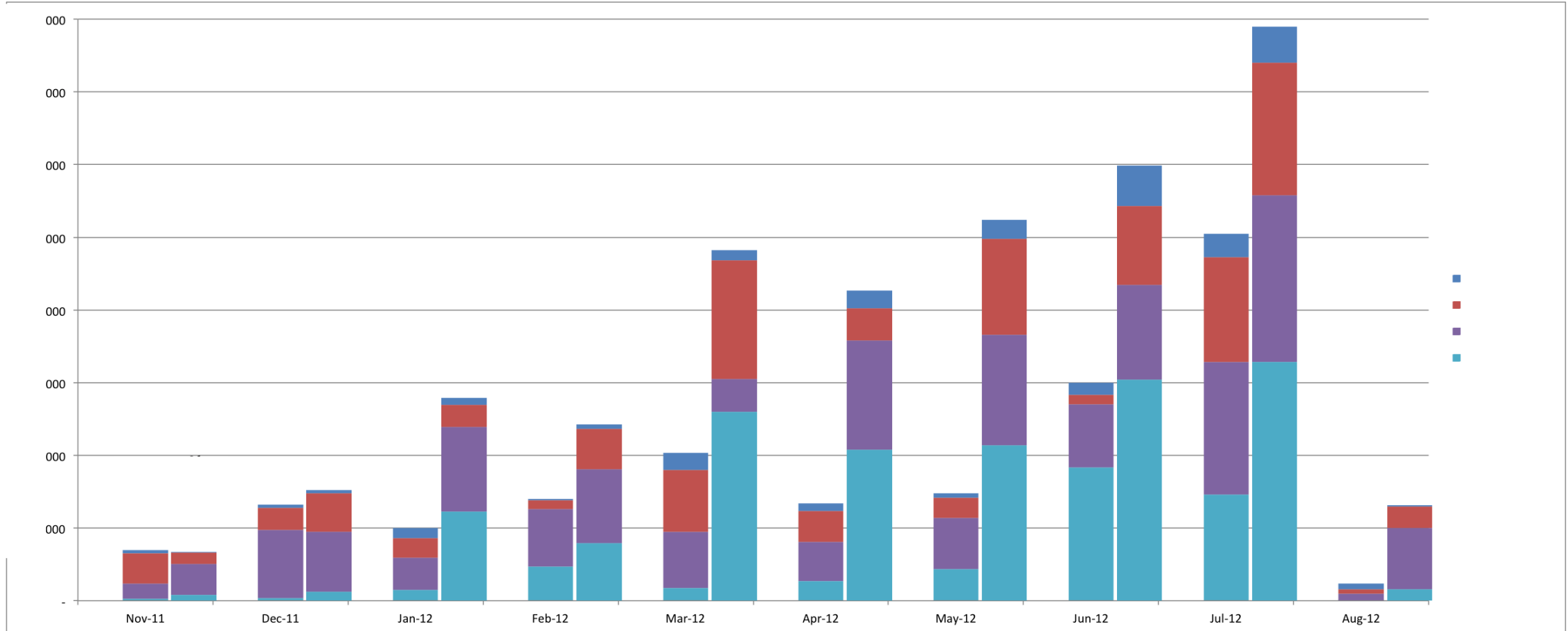
Pareto Chart

- Place the data captured in the Check Sheet into a table, in descending order. From this table, calculate the percentage frequency and the cumulative frequency.

- Plot this information as a bar chart, where each vertical bar represents a different cause or problem, and the left vertical axis represents the number of causes and problems.

- Identify the bar where the cumulative frequency is high relative to the number of categories.

- Look for a Pareto Effect, where the first few categories account for most of the problems.

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Pareto Chart Example

Pareto Chart - Types of Medication Errors (n=430)

Pareto Principle:

20% of the causes contribute to **80%** of the problems

Pie Chart

- Pie charts, a form of an area chart, are an easy way to visualize percentage breakdowns of a total. They're useful for analyzing polls, statistics, and managing money and data. And they make an excellent visual display for explaining data to other people.

- Used when data visualization does not need to represent time.

- Utilize the charting capabilities in Microsoft Office (Excel or Word).

Pie Chart Example
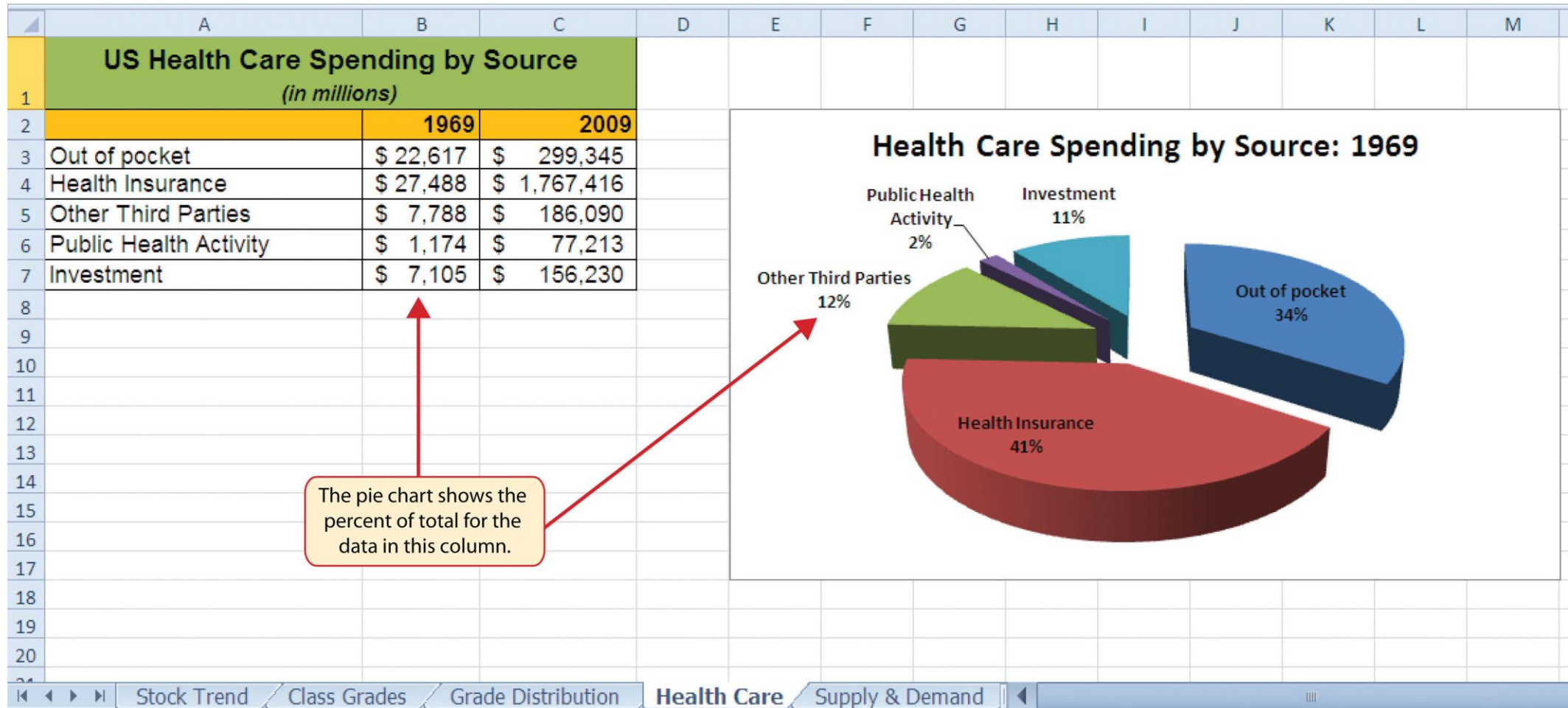
Interactive Q&A and Practice Session

Applying learned skills with live data. Engage in real-time problem solving and enhancement of your Excel skills.

Interactive Exercise:

1. Encourage participants to select a dataset from their own work or the provided 'Sample Falls Data'.
2. Guide them through applying a function, creating a table, or generating a chart.
3. Address any questions or difficulties in real-time.

Questions?

Making Health Care Better *Together*

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Better Healthcare, Realized
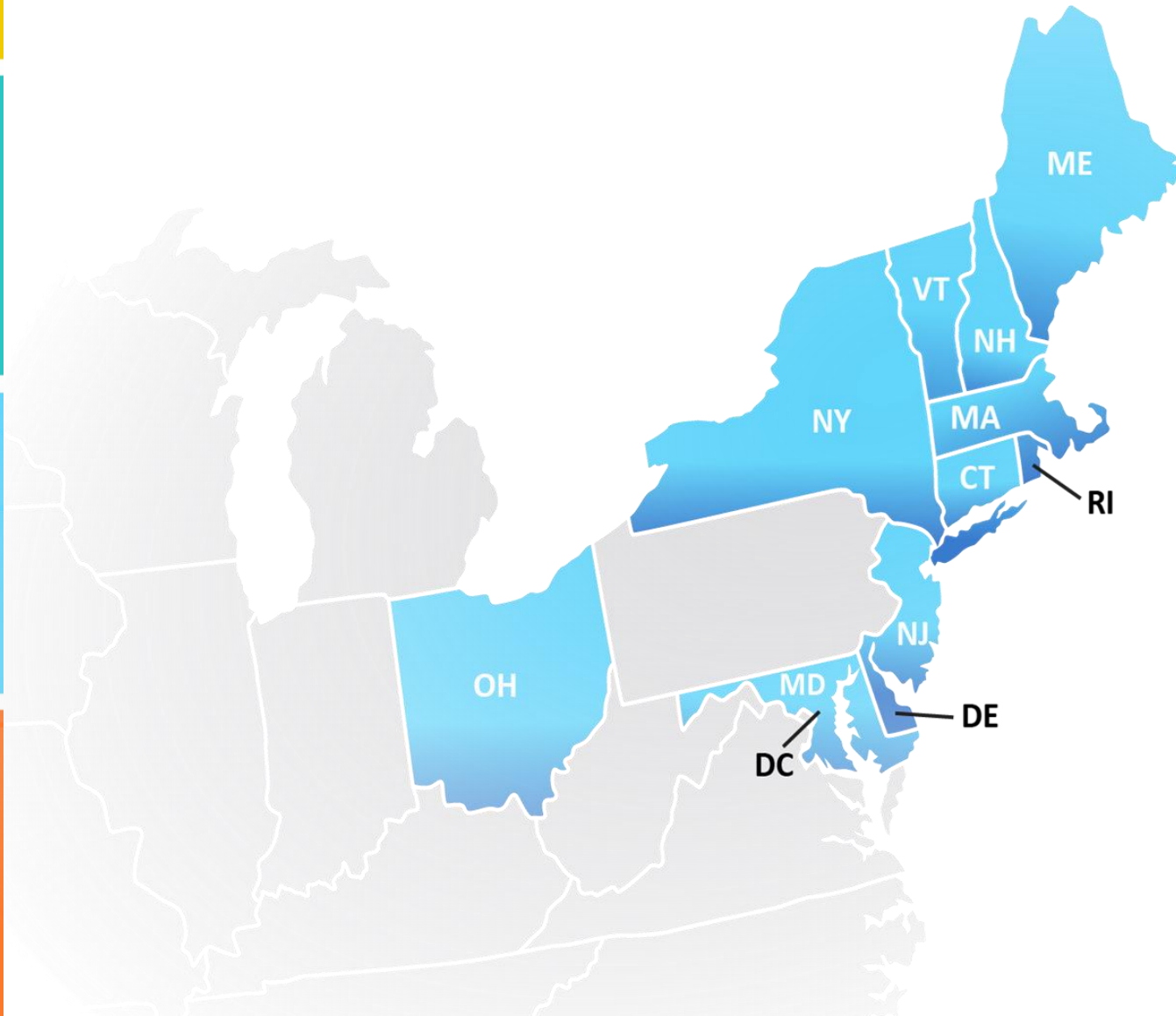
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