

ACC575: Data Analytics for Accounting  
LN7: Excel Dashboard - Exercise with S&P 500

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## Background knowledge:

- S&P 500 includes 500 large-cap U.S. stocks across all major industries.
- The exact number of stocks in the S&P 500 is greater than 500 because some companies have multiple classes of stock (e.g., Class A and Class B shares of Google, Berkshire Hathaway, etc.).

## ASSIGNMENT: Due by the coming Sunday

We would like to gain some insights from the S&P 500 data. Create a dashboard to answer the following questions. Include your answers beneath the dashboard in your Excel file.

- ① Q1. Did most firms join the S&P 500 before 1980? (Get YEAR. Draw a bar chart to show the distribution of the year of joining.)
- ② Q2. Which states have the highest number of S&P 500 companies?
- ③ Q3. Which sectors are most represented in the S&P 500?
- ④ Q4. Is there any relationship between sectors and states?
- ⑤ Q5. If you would like to work for a health care company, which states would you need to relocate to?
- ⑥ Q6. What about Michigan? What are the top sectors in Michigan? What kinds of companies are there in Michigan?

NOTE: Effective communication is important. Ensure your dashboard is clear, easy to understand, and user-friendly.

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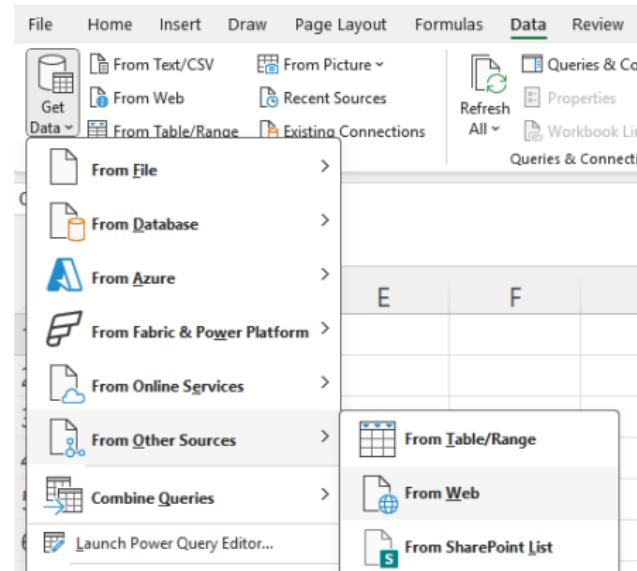
Go to [https://en.wikipedia.org/wiki/List\\_of\\_S%26P\\_500\\_companies](https://en.wikipedia.org/wiki/List_of_S%26P_500_companies); or search "s&p500 list wikipedia" in Google.

## S&P 500 component stocks [edit]

| Symbol | Security            | GICS Sector | GICS Sub-Industry        | Headquarters Location   | Date added | CIK        | [hide] Founded |
|--------|---------------------|-------------|--------------------------|-------------------------|------------|------------|----------------|
| MMM    | 3M                  | Industrials | Industrial Conglomerates | Saint Paul, Minnesota   | 1957-03-04 | 0000066740 | 1902           |
| AOS    | A. O. Smith         | Industrials | Building Products        | Milwaukee, Wisconsin    | 2017-07-26 | 0000091142 | 1916           |
| ABT    | Abbott Laboratories | Health Care | Health Care Equipment    | North Chicago, Illinois | 1957-03-04 | 0000001800 | 1888           |
| ABBV   | AbbVie              | Health Care | Biotechnology            | North Chicago, Illinois | 2012-12-31 | 0001551152 | 2013 (1888)    |
| ACN    | Accenture           | Information | IT Consulting &          | Dublin, Ireland         | 2011-      | 0001467373 | 1980           |

# How to Load data from Web

- ① Check the Wikipedia page for the S&P 500.
- ② Load the data into Excel.
- ③ Data → Get Data → From Other Sources → From Web.
- ④ Copy and paste the URL into the dialog box.
- ⑤ Find the table to load.



## From Web

Basic  Advanced

URL

□ X

### Navigator

Select multiple items

Display Options ▾

- ◀ HTML Tables [2]
  - Table 1
  - Table 2
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  - Table 3
  - Table 4
  - Table 5
  - Table 6
  - Table 7
  - Table 8
- ▶ Text [2]
  - HTML Code
  - Displayed Text

Table View Web View

Table 1

| Symbol | Security                        | GICS Sector            | GICS Sub-Sector               |
|--------|---------------------------------|------------------------|-------------------------------|
| MMM    | 3M                              | Industrials            | Industrials                   |
| AOS    | A. O. Smith                     | Industrials            | Building                      |
| ABT    | Abbott Laboratories             | Health Care            | Health Care                   |
| ABBV   | AbbVie                          | Health Care            | Biotech                       |
| ACN    | Accenture                       | Information Technology | IT Consulting                 |
| ADBE   | Adobe Inc.                      | Information Technology | Applicat                      |
| AMD    | Advanced Micro Devices          | Information Technology | Semiconduc                    |
| AES    | AES Corporation                 | Utilities              | Independent                   |
| AFL    | Aflac                           | Financials             | Life & Health                 |
| A      | Agilent Technologies            | Health Care            | Life Sciences                 |
| APD    | Air Products                    | Materials              | Industrial                    |
| ABNB   | Airbnb                          | Consumer Discretionary | Hotels, Restaurants & Leisure |
| AKAM   | Akamai Technologies             | Information Technology | Internet & Direct Marketing   |
| ALB    | Albemarle Corporation           | Materials              | Specialty Chemicals           |
| ARE    | Alexandria Real Estate Equities | Real Estate            | Office REITs                  |
| ALGN   | Align Technology                | Health Care            | Health Care                   |
| ALLE   | Allegion                        | Industrials            | Building                      |
| LNT    | Alliant Energy                  | Utilities              | Electric Utilities            |
| ALL    | Allstate                        | Financials             | Property & Casualty           |
| GOOGL  | Alphabet Inc. (Class A)         | Communication Services | Interactive Media & Telecom   |
| GOOG   | Alphabet Inc. (Class C)         | Communication Services | Interactive Media & Telecom   |

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Add Table Using Examples

Load ▾

Transform Data

Cancel

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## Functions to use

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You need to use the following functions to analyze the data:

- IFERROR()
- LEFT()
- FIND()
- TEXTAFTER()
- YEAR()

The next slides include the details of these (and related) functions.

# IFERROR()

## Description

- IFERROR() is a logical function that returns a specified value if a formula evaluates to an error, otherwise returns the result of the formula.
- It helps prevent error messages from appearing in your spreadsheet and provides user-friendly alternatives.

## Syntax

```
=IFERROR(value, value_if_error)
```

- **value:** The formula or expression to evaluate
- **value\_if\_error:** The value to return if an error occurs
- Returns the formula result if no error, otherwise returns the specified value

## IFERROR() Example 1: Division by Zero

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**Description:** Calculates return on assets (ROA) and returns "-" if assets are zero to avoid calculation errors.

|   | A                 | B                   | C                |
|---|-------------------|---------------------|------------------|
| 1 | <u>Net Income</u> | <u>Total Assets</u> | <u>ROA (A/B)</u> |
| 2 | 10,000            | 100,000             | 0.10             |
| 3 | 5,000             | 0                   | -                |
| 4 | 8,000             | 160,000             | 0.05             |

**Formula in cell C2:** =IFERROR(A2/B2, "-")

# LEFT()

## Description

- LEFT() extracts a specified number of characters from the beginning (left side) of text
- Useful for extracting codes, prefixes, or identifiers
- Returns text, even if the original contains numbers

## Syntax

```
=LEFT(text, [num_chars])
```

- **text:** The text string from which to extract
- **num\_chars:** Number of characters to extract (default = 1)
- Returns text

# RIGHT()

## Description

- RIGHT() extracts a specified number of characters from the end (right side) of text
- Useful for extracting suffixes, file extensions, or trailing codes
- Returns text

## Syntax

=RIGHT(text, [num\_chars])

- **text:** The text string from which to extract
- **num\_chars:** Number of characters to extract (default = 1)
- Returns text

# MID()

## Description

- MID() extracts characters from the middle of text, starting at a specified position
- Most flexible of the three extraction functions
- Useful when data follows a specific pattern

## Syntax

```
=MID(text, start_num, num_chars)
```

- **text:** The text string from which to extract
- **start\_num:** Position of first character to extract (1 = first character)
- **num\_chars:** Number of characters to extract
- Returns text

## LEFT(), RIGHT(), MID() - Accounting Example

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### Example: Parsing Account Codes

Account code format: "XXXX-Description-Type" (e.g., "1000-Cash-Asset")

| Account Code    | Formula      | Result |
|-----------------|--------------|--------|
| 1000-Cash-Asset | =LEFT(A2,4)  | 1000   |
| 1000-Cash-Asset | =RIGHT(A2,5) | Asset  |
| 1000-Cash-Asset | =MID(A2,6,4) | Cash   |

### Accounting Applications:

- Extract account numbers from GL codes
- Parse transaction IDs: "INV-2024-12345" → extract year "2024"
- Extract check numbers: "CHK-001234" → "001234"
- Separate fiscal year from period code: "FY2024-Q1" → "2024"

## Example: First Digit Analysis for Fraud Detection

Extract first digit from amounts to check Benford's Law:

| Amount   | Formula                      | First Digit |
|----------|------------------------------|-------------|
| 1,234.56 | =VALUE(LEFT(TEXT(A2,"0"),1)) | 1           |
| 5,678.90 | =VALUE(LEFT(TEXT(A3,"0"),1)) | 5           |
| 987.65   | =VALUE(LEFT(TEXT(A4,"0"),1)) | 9           |

### Breakdown:

- ① `TEXT(A2,"0")` converts number to text (removes formatting)
- ② `LEFT(...,1)` extracts first character
- ③ `VALUE(...)` converts back to number for counting

**Use Case:** Fraud detection by analyzing digit distribution in expenses

# FIND()

## Description

- FIND() locates one text string within another
- Returns the position (number) where the text is found
- **Case-sensitive**
- Returns #VALUE! error if text not found

## Syntax

=FIND(find\_text, within\_text, [start\_num])

- **find\_text:** The text you want to find
- **within\_text:** The text in which to search
- **start\_num:** (Optional) Position to start search (default = 1)
- Returns position number

# SEARCH()

## Description

- SEARCH() works like FIND() but is case-insensitive
- Can use wildcard characters (\*) and (?)
- More flexible than FIND()

## Syntax

=SEARCH(find\_text, within\_text, [start\_num])

- **find\_text:** The text you want to find (can use wildcards)
- **within\_text:** The text in which to search
- **start\_num:** (Optional) Position to start search
- Returns position number

## FIND() and SEARCH() - Example

### Example: Finding Delimiters in Account Codes

| Account Code        | Formula       | Position of "-" |
|---------------------|---------------|-----------------|
| 1000-Cash-Asset     | =FIND("-",A2) | 5               |
| 5000-Revenue-Income | =FIND("-",A3) | 5               |

### Combined with MID() to Extract:

| Extract        | Formula   |
|----------------|---|
| Account number | =LEFT(A2,FIND("-",A2)-1)                              |
| Account name   | =MID(A2,FIND("-",A2)+1,FIND("-",A2,6)-FIND("-",A2)-1) |

Use Case: Parse structured text like "1000-Cash-Asset" into components

## FIND() vs. SEARCH() - Key Difference

### Case Sensitivity:

| Text               | Find   | FIND()  | SEARCH() |
|--------------------|--------|---------|----------|
| "Accounts Payable" | " pay" | #VALUE! | 10       |
| "Accounts Payable" | "Pay"  | 10      | 10       |

### When to Use Each:

- FIND(): When exact case matters (account codes, IDs)
- SEARCH(): When case doesn't matter (searching descriptions)
- SEARCH(): When using wildcards (\*, ?)

# TEXTAFTER()

## Description

- TEXTAFTER() returns the text that appears after a delimiter
- Available in Excel 365 and Excel 2021
- Useful for parsing structured labels like “Segment:Region”
- Supports multiple occurrences of the delimiter and optional match modes

## Syntax

```
=TEXTAFTER(text, delimiter, [instance_num], [match_mode], [match_end],  
[if_not_found])
```

- **text:** The source string (cell reference or text)
- **delimiter:** The separator to look for (e.g., “-”, “:” or “—”)
- **instance\_num:** Optional occurrence (default = 1); use negative to count from the end
- **match\_mode:** 0 exact (default), 1 ignore case
- **if\_not\_found:** Optional custom message when delimiter missing

### Example: Extracting Industry From Ticker Labels

| Ticker Label      | Formula             | Result      |
|-------------------|---------------------|-------------|
| MSFT - Technology | =TEXTAFTER(A2,"- ") | Technology  |
| JNJ - Health Care | =TEXTAFTER(A3,"- ") | Health Care |
| CAT - Industrials | =TEXTAFTER(A4,"- ") | Industrials |

### Handling Missing Delimiter:

- Use =TEXTAFTER(A5,"- ",1,0,"No industry listed")
- Prevents #CALC! and keeps dashboards clean

## TEXTAFTER() With Multiple Delimiters

**Scenario:** Account Codes in the Form “Segment-Region-Product”

| Code           | Goal    | Formula              |
|----------------|---------|----------------------|
| FIN-WEST-TRUCK | Region  | =TEXTAFTER(A2,"-",1) |
| FIN-WEST-TRUCK | Product | =TEXTAFTER(A2,"-",2) |
| OPS-EAST-AUTO  | Region  | =TEXTAFTER(A3,"-",1) |
| OPS-EAST-AUTO  | Product | =TEXTAFTER(A3,"-",2) |

**Tip:** Combine with TEXTBEFORE() to capture the first segment and with LET() to avoid repeating long cell references.

# DATE()

## Description

- DATE() creates a date from individual year, month, and day values
- Useful when date components are in separate cells
- Returns a valid Excel date serial number

## Syntax

=DATE(year, month, day)

- **year:** 4-digit year (e.g., 2024)
- **month:** Month number (1-12)
- **day:** Day number (1-31)
- Returns a date value

## YEAR(), MONTH(), DAY()

### Description

- These functions extract components from a date
- YEAR() returns the 4-digit year
- MONTH() returns the month number (1-12)
- DAY() returns the day of the month (1-31)

### Syntax

=YEAR(date)    =MONTH(date)    =DAY(date)

- **date:** A valid date value or cell reference
- Each returns an integer

## DATE(), YEAR(), MONTH(), DAY() - Example

### **Example: Financial Statement Date Analysis**

| Filing Date | Formula    | Year | Month | Day |
|-------------|------------|------|-------|-----|
| 2024-03-15  | =YEAR(A2)  | 2024 |       |     |
| 2024-03-15  | =MONTH(A2) |      | 3     |     |
| 2024-03-15  | =DAY(A2)   |      |       | 15  |

### **Creating a date:**

| Year | Month | Day | Formula         | Result     |
|------|-------|-----|-----------------|------------|
| 2024 | 12    | 31  | =DATE(A2,B2,C2) | 2024-12-31 |

### **Use Case: Grouping transactions by fiscal year or quarter in PivotTables**