ACC575: Data Analytics for Accounting
LN0. Introduction to Data Analytics

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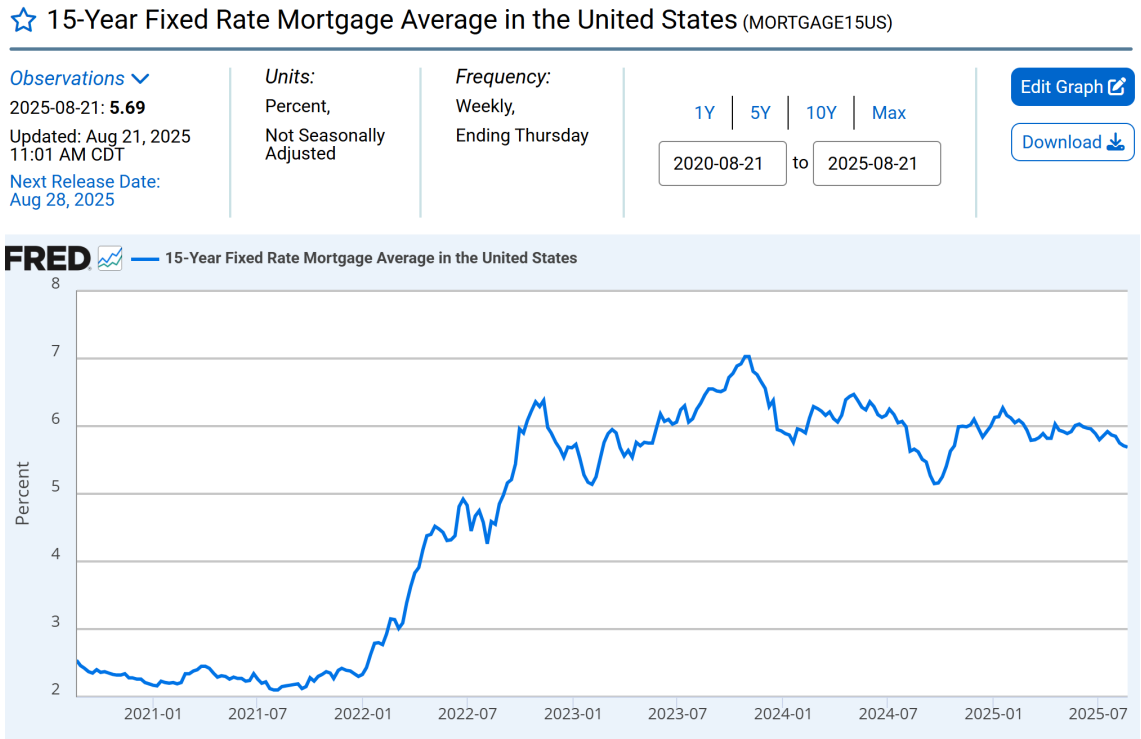
Data analytics

Data analytics is:

- the process of **analyzing data** to extract **meaningful insights** and make **data-driven decisions**.
- used to **solve business problems** and **improve decision-making**.

Example: Buying a house?

- Does mortgage rate matter when buying a house?
- See the figure below (source: FRED).
- When is the best time to buy a house?



Example: Buying a house?

- We can make mortgage calculators in Excel.
- We can understand the impact of mortgage rate on the monthly payment.
- The monthly payment depends on the **mortgage rate** and the **loan period**.
- **Loan amount** is fixed.

	A	B	C	D	E	F
1	**Mortgage Calculator**					
2	**Home Price**	**500,000**				
3	**Down Payment**	**200,000**				
4	**Loan amount:**	**300,000**				
5	**Years**	**10**	**15**	**20**	**25**	**30**
6	**5.00%**	-$3,181.97	-$2,372.38	-$1,979.87	-$1,753.77	-$1,610.46
7	**5.50%**	-$3,255.79	-$2,451.25	-$2,063.66	-$1,842.26	-$1,703.37
8	**6.00%**	-$3,330.62	-$2,531.57	-$2,149.29	-$1,932.90	-$1,798.65
9	**6.50%**	-$3,406.44	-$2,613.32	-$2,236.72	-$2,025.62	-$1,896.20
10	**7.00%**	-$3,483.25	-$2,696.48	-$2,325.90	-$2,120.34	-$1,995.91
11	**7.50%**	-$3,561.05	-$2,781.04	-$2,416.78	-$2,216.97	-$2,097.64
12	**8.00%**	-$3,639.83	-$2,866.96	-$2,509.32	-$2,315.45	-$2,201.29

Example: Buying a house?

- We also have to pay **home insurance** and **property taxes**.
- Add them to the previous mortgage calculator.

14	Total Monthly Payment (incl. Insurance and Tax)					
15	Annual Insurance:	2,604				
16	Annual Tax:	9,035				
17	Years	10	15	20	25	30
18	5.00%	-$4,151.88	-$3,342.30	-$2,949.78	-$2,723.69	-$2,580.38
19	5.50%	-$4,225.71	-$3,421.17	-$3,033.58	-$2,812.18	-$2,673.28
20	6.00%	-$4,300.53	-$3,501.49	-$3,119.21	-$2,902.82	-$2,768.57
21	6.50%	-$4,376.36	-$3,583.24	-$3,206.64	-$2,995.54	-$2,866.12
22	7.00%	-$4,453.17	-$3,666.40	-$3,295.81	-$3,090.25	-$2,965.82
23	7.50%	-$4,530.97	-$3,750.95	-$3,386.70	-$3,186.89	-$3,067.56
24	8.00%	-$4,609.74	-$3,836.87	-$3,479.24	-$3,285.37	-$3,171.21

Example: Buying a house?

- Suppose you plan to take out a 15-year mortgage:
- You are curious about the total interest you will pay over the 15 years, depending on the **mortgage rate** and the **loan amount**.
- **Loan period** is fixed.

Years	15			
Loan Amount	**200,000**	**250,000**	**300,000**	**350,000**
5.00%	-$1,581.59	-$1,976.98	-$2,372.38	-$2,767.78
5.50%	-$1,634.17	-$2,042.71	-$2,451.25	-$2,859.79
6.00%	-$1,687.71	-$2,109.64	-$2,531.57	-$2,953.50
6.50%	-$1,742.21	-$2,177.77	-$2,613.32	-$3,048.88
7.00%	-$1,797.66	-$2,247.07	-$2,696.48	-$3,145.90
7.50%	-$1,854.02	-$2,317.53	-$2,781.04	-$3,244.54
8.00%	-$1,911.30	-$2,389.13	-$2,866.96	-$3,344.78

Example: Any insight from the data?

- **Crocs' asset trend** (source: Macrotrends)
- Any insight from the data?

Year	Total Assets (mil USD)
2015	608
2016	566
2017	544
2018	469
2019	739
2020	1,119
2021	1,545
2022	4,502
2023	4,644
2024	4,812

Power of Visualization

- Which one is easier to get quick insights?
- Which one is easier to communicate the results?

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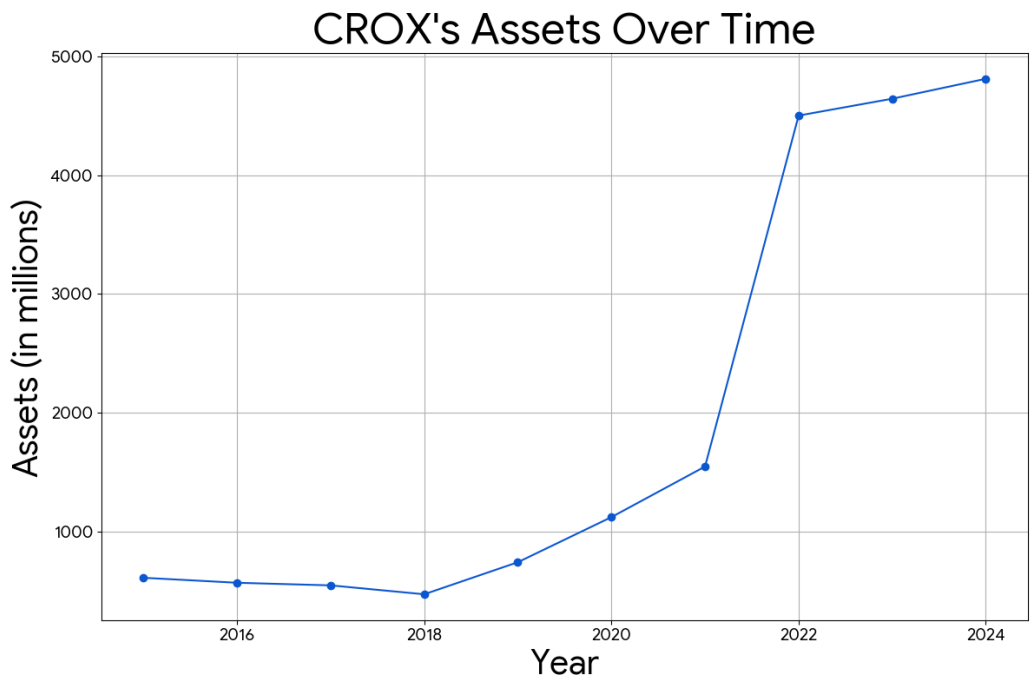

AMPS model (Richardson et al. textbook)

- **A**sk the question (Ch1)
- **M**aster the data (Ch2-4)
- **P**erform the analysis (Ch5-9)
- **S**hare the story (Ch10)

AMPS model - Illustration

Crocs again.

AMPS	Description
A	What happened? Why assets increased so much?
M	Gather and understand the financial statement data.
P	Analyze the data: examine asset changes, review current and non-current assets, and perform other relevant checks.
S	Communicate the results to stakeholders.

Importance of data analytics in the age of AI

- AI will be able to do more and more of the work that accountants do.
- **Hallucination of AI**
  - AI may hallucinate and make mistakes.
  - You need to be able to understand and inspect the results of AI.
  - You need to be able to use AI effectively.
- **Final decisions are still made by humans.**
- It's still important for you to have **data analytics skills** to be able to use AI effectively.

Tools available to perform data analytics

- Excel
- Tableau
- Power BI
- Python
- AI tools such as ChatGPT, Gemini, etc.

Introduction to Excel

- Excel is a spreadsheet software that is part of the Microsoft Office suite.
- Excel is widely used in business, education, and personal finance for tasks such as:
- Creating budgets and financial statements
- Excel is continuously evolving and actively incorporates new AI-powered features.
  - Python in Excel (2024)
  - copilot() function (2025)

Conclusion

- **Data analytics** is the process of analyzing data to extract meaningful insights and make data-driven decisions.
- **Excel** is a powerful tool for data analytics.
- The **AMPS model** is a framework for data analytics.
- **Visualization** is a powerful tool for data analytics.
- **AI** is a powerful tool for data analytics.
- This course will cover the basics of data analytics and Excel.