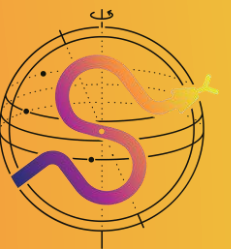
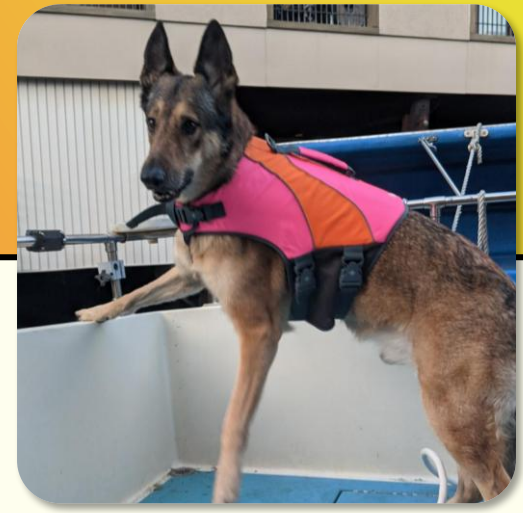
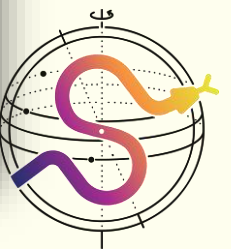
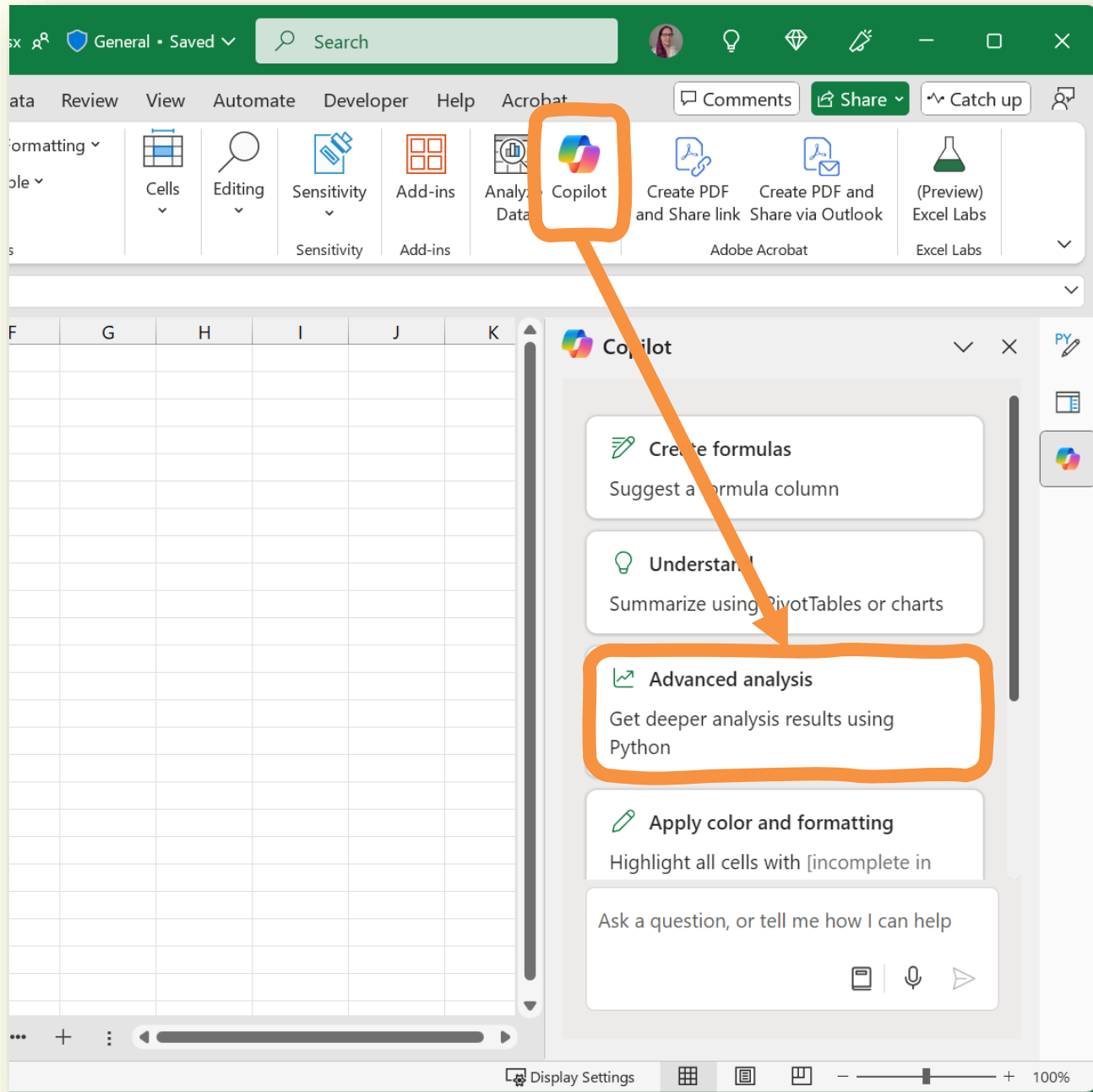


4. Advanced Analysis + Copilot for Python in Excel



Pair program your data analysis

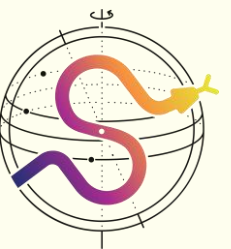
Use **Advanced Analysis**
mode in **Copilot** which can
generate Python code for
you to start with!



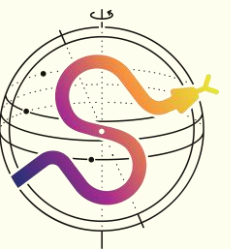
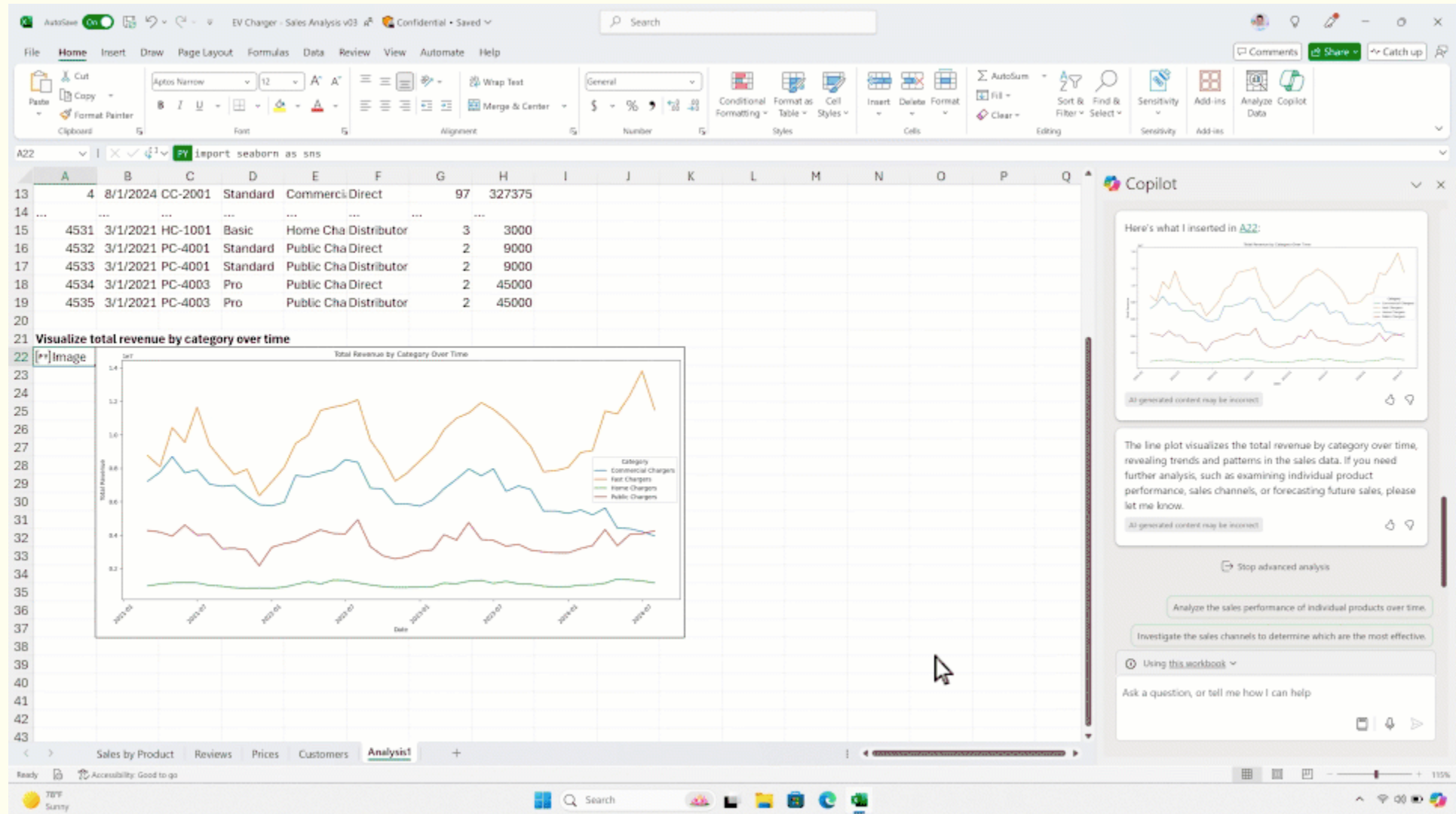
Ask for help starting a project

[illegible]

A screenshot of a Microsoft Copilot chat interface. At the top, the Copilot logo and name are on the left, and a close icon is on the right. The chat area shows a user's question in a light green bubble: "Can you give me some sample code in Python that runs a monte carlo simulation for a finance application?". Below this, a Copilot response in a white bubble explains that a common Monte Carlo simulation in finance is to estimate the future price of a stock using the Geometric Brownian Motion (GBM) model, and offers to write a Python code snippet. A grey warning box below the response states "AI-generated content may be incorrect" with two feedback icons (thumbs up and thumbs down). The user's next message, "Here's what I inserted in A13:", is partially visible in a white bubble. Below the chat area are two input suggestions in rounded rectangles: "Ask for the data or provide a specific query to analyze." and "Request a specific type of analysis or visualization." At the bottom, there is a text input field with the placeholder "Type a message for Advanced analysis" and three icons: a document, a microphone, and a send arrow.



Ask for help forecasting and extending visuals



Ask for help creating visualizations...

The screenshot shows the Microsoft Excel interface with the Copilot AI assistant. The worksheet 'Analysis5' contains data from the 'EV Charger Data' table. The Copilot sidebar is open, showing a boxplot analysis of revenue by product category. The sidebar also includes a text input field for further analysis requests.

Excel Worksheet Data:

Product_ID	Category	Revenue	Units_Sold	Marketing_	Product_Review
0 P001	Standard C	2505	55	1323.7	Absolutely love this charger! It's fast and ef
1 P002	Fast Charg	2515	58	1241.6	Not satisfied with the purchase. The charge
2 P003	Standard C	2515	55	1219.7	This product is okay, but I expected more fe
3 P004	Standard C	3658	54	1265	Great value for money! The installation was
4 P005	Standard C	5006	51	1326.8	Worst purchase ever. The charger is slow a
...
45 P046	Fast Charg	11648.25	49	1432.83	Charges my car much faster than the previ
46 P047	Fast Charg	17460	85	2233	Satisfied with the performance, but it's a bit
47 P049	Standard C	20257	94	2468.7	Simple to use, but the instr
48 P048	Fast Charg	11297.25	56	1425.73	Great for commercial use, handles multipl
49 P050	Standard C	11961.06	53	1426.11	Good charger, but it heats up quite a bit.

Copilot Analysis:

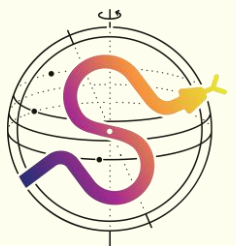
The boxplot above shows the revenue distribution by product category. It provides insights into the spread and central tendency of revenue within each category. You can proceed with further analysis such as examining the correlation between marketing spend and units sold, performing sentiment analysis on product reviews, or identifying top-performing products.

Further Analysis Suggestions:

- Analyze the correlation between marketing spend and units sold.
- Perform sentiment analysis on product reviews.

Input Field:

Type a message for Advanced Analysis



...even with pretty vague directions

The screenshot displays a Microsoft Excel spreadsheet titled "Network Analysis.xlsx" with a green header bar. The ribbon includes "File", "Home", "Insert", "Page Layout", "Formulas", "Data", "Review", "View", and "Help". The active cell is A8, containing the formula `=PY import networkx as nx`. The spreadsheet content includes:

- Row 1: **Advanced Analysis**
- Row 2: This sheet will include all Python code generated by Copilot.
- Row 4: **Load data from Network Data, Table1**
- Row 5: `[*] DataFrame`
- Row 7: **Plot network graphs using nodes and edges data**
- Row 8: `[*] Image`

Three network graphs are visualized in the spreadsheet, each with a corresponding color scale legend:

- Network 1:** A graph with nodes and edges colored by a scale from 5 to 25.
- Network 2:** A graph with nodes and edges colored by a scale from 10 to 40.
- Network 3:** A graph with nodes and edges colored by a scale from 10 to 40.

On the right side of the spreadsheet, the Copilot chat interface is open, showing the following conversation:

Copilot

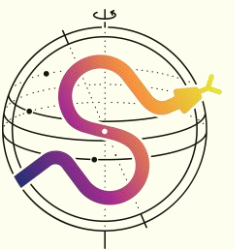
Using Python, can you create a set of network graphs using my data?

The network graphs have been successfully plotted using the nodes and edges data. You can now proceed with further analysis or visualization. What would you like to do next?

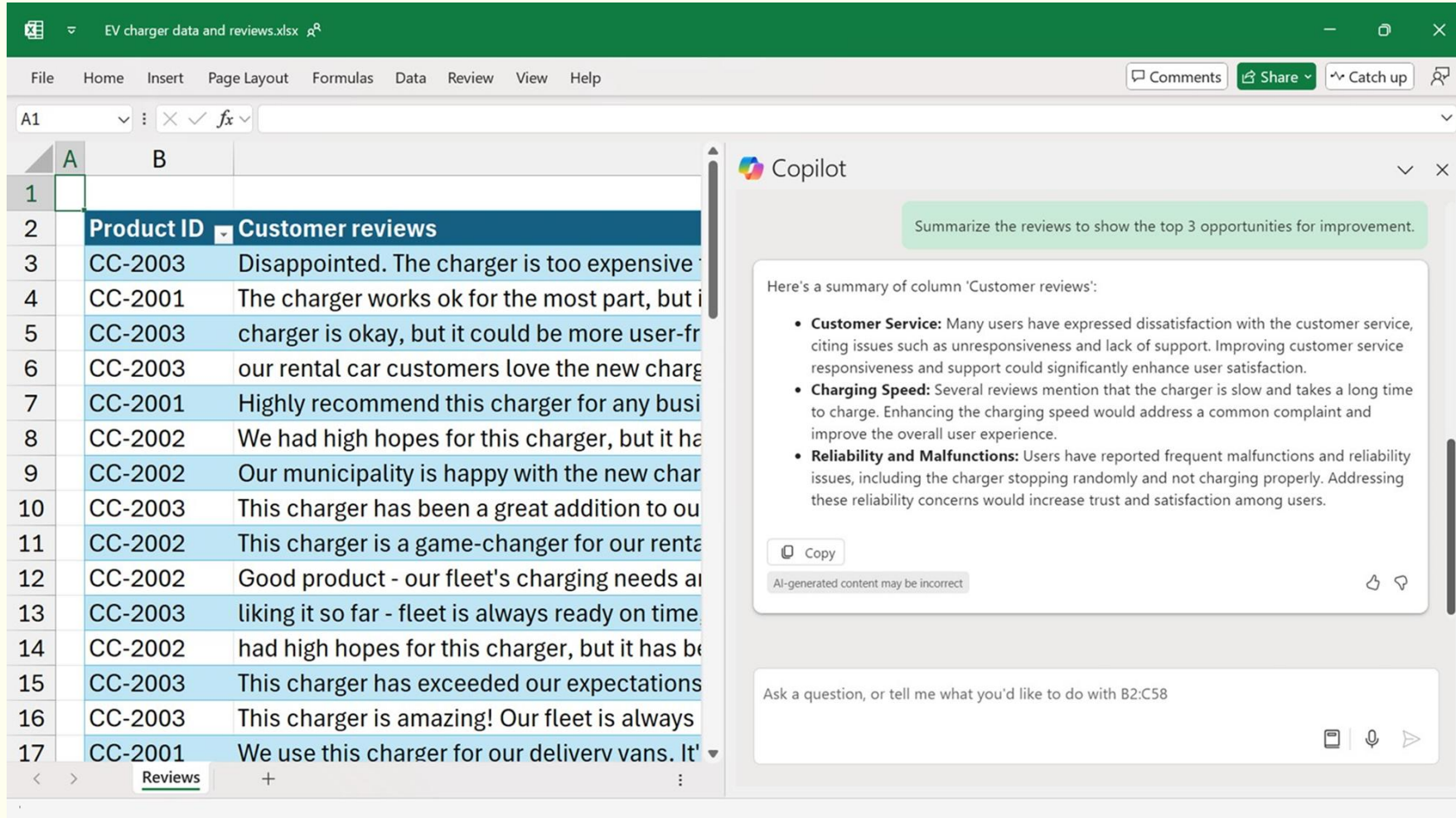
AI-generated content may be incorrect

Here's what I inserted

Type a message for Advanced Analysis



Ask for summaries of data



The screenshot displays a Microsoft Excel spreadsheet titled "EV charger data and reviews.xlsx". The spreadsheet contains a table with two columns: "Product ID" and "Customer reviews". The data is as follows:

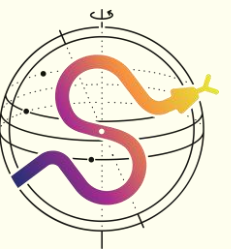
Product ID	Customer reviews
CC-2003	Disappointed. The charger is too expensive.
CC-2001	The charger works ok for the most part, but it
CC-2003	charger is okay, but it could be more user-fr
CC-2003	our rental car customers love the new charge
CC-2001	Highly recommend this charger for any busi
CC-2002	We had high hopes for this charger, but it ha
CC-2002	Our municipality is happy with the new char
CC-2003	This charger has been a great addition to ou
CC-2002	This charger is a game-changer for our renta
CC-2002	Good product - our fleet's charging needs ar
CC-2003	liking it so far - fleet is always ready on time
CC-2002	had high hopes for this charger, but it has be
CC-2003	This charger has exceeded our expectations
CC-2003	This charger is amazing! Our fleet is always
CC-2001	We use this charger for our delivery vans. It'

The Copilot AI assistant is overlaid on the right side of the spreadsheet. It has been prompted with the instruction: "Summarize the reviews to show the top 3 opportunities for improvement." The assistant's response is as follows:

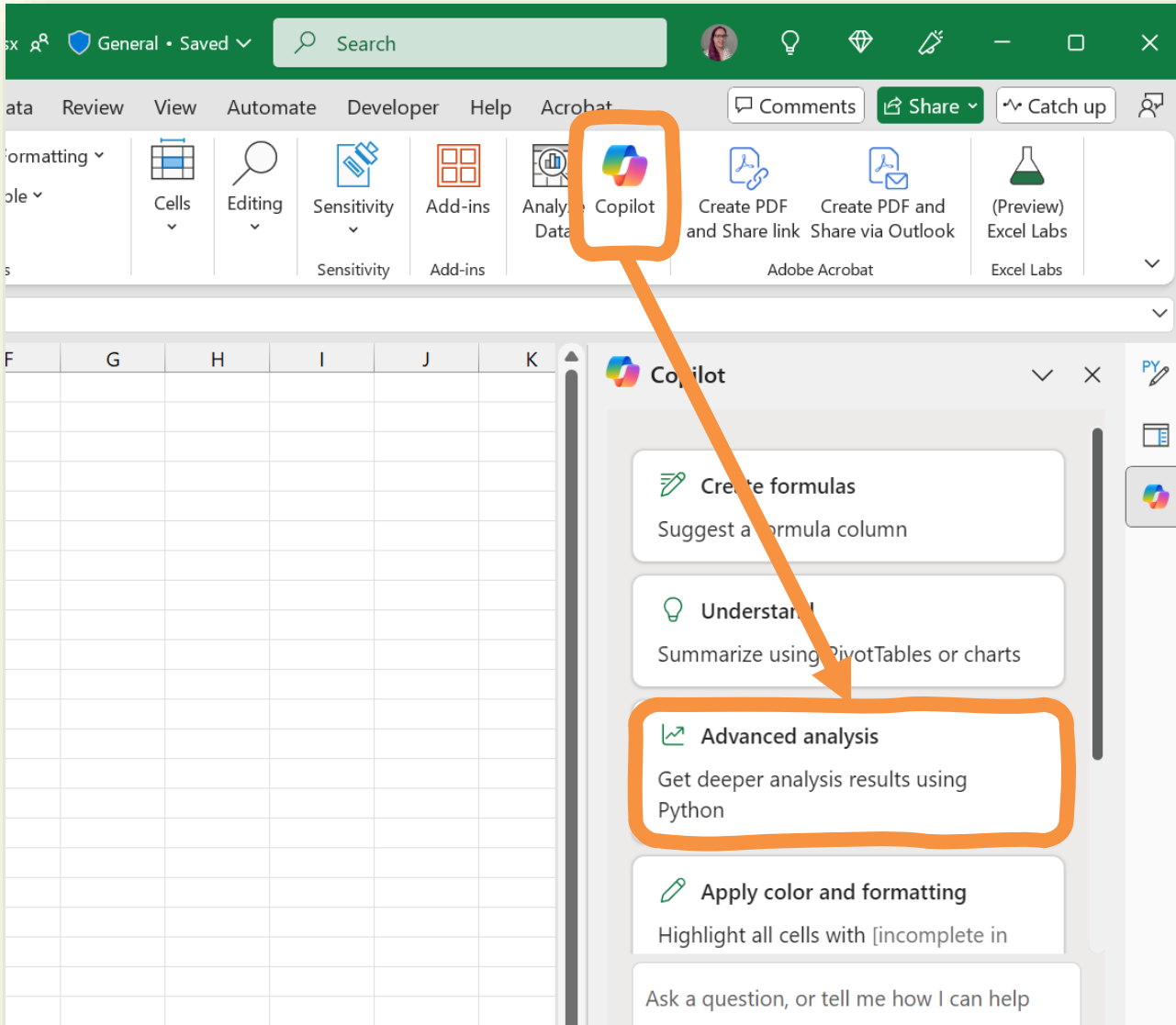
Here's a summary of column 'Customer reviews':

- **Customer Service:** Many users have expressed dissatisfaction with the customer service, citing issues such as unresponsiveness and lack of support. Improving customer service responsiveness and support could significantly enhance user satisfaction.
- **Charging Speed:** Several reviews mention that the charger is slow and takes a long time to charge. Enhancing the charging speed would address a common complaint and improve the overall user experience.
- **Reliability and Malfunctions:** Users have reported frequent malfunctions and reliability issues, including the charger stopping randomly and not charging properly. Addressing these reliability concerns would increase trust and satisfaction among users.

The assistant also provides a "Copy" button and a disclaimer: "AI-generated content may be incorrect". At the bottom of the Copilot panel, there is a text input field with the placeholder text: "Ask a question, or tell me what you'd like to do with B2:C58".

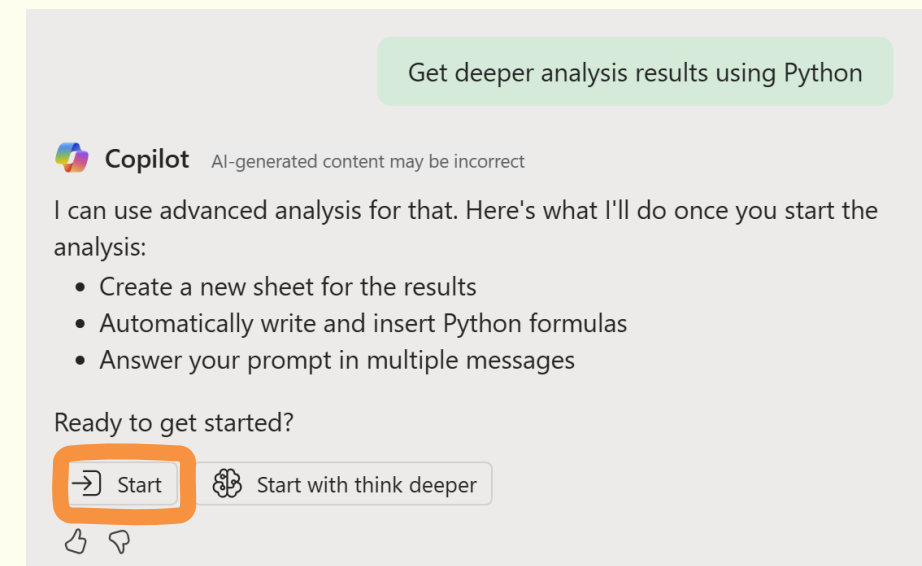


How do I start Advanced Analysis?



Or start with a prompt like:

- "Analyze this data using Python"
- "Run advanced analysis using Python"



The Analysis sheet:

Analysis Sheet

This sheet will include all the Python formulas generated by Copilot.

Load data from Sheet1, OfficeForms.Table

[Py] DataFrame

Preview

	Id	Start time	Completion time	Email	Name	What are you using for AI?	Are you using AI in your work?
0	1	45792.5872569444	45792.5874189815	anonymous	None	Learning/Experimenting	Yes, I'm using it as a tool
1	2	45792.5874768519	45792.5913657407	anonymous	None	Data Science/Python	Yes, I'm using it as a tool
2	3	45792.5918981481	45792.5923726852	anonymous	None	Learning/Experimenting	Yes, I'm building applications
3	4	45792.5934722222	45792.5938078704	anonymous	None	Data Science/Python	Yes, I'm building applications
4	5	45792.5950347222	45792.5972800926	anonymous	None	Data Science/Python	Yes, I'm building applications
...
233	234	45794.526087963	45794.543900463	anonymous	None	cloud services/AWS	A little, I occasionally use it
234	235	...	...	anonymous	None	Automation/Python	Yes, I'm building applications
235	236	...	...	anonymous	None	Data Science/Python	Yes, I'm using it as a tool
236	237	...	...	anonymous	None	Data Science/AWS	Yes, I'm using it as a tool
237	238	...	...	anonymous	None	Data Science/AWS	A little, I occasionally use it

Visualize main categories for Python use, cloud, and AI adoption

[Py] Image

Python Use Cases

Cloud Platform Usage

AI Adoption

Copilot Catalyst (Preview)

Start advanced analysis

AI-generated content may be incorrect

Here's what I'm loading in A6 to run the analysis:

[Py] Hide analysis

Python

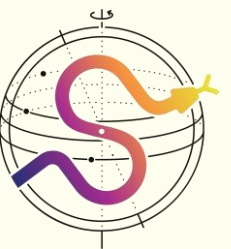
```
1 #Load data from Sheet1, OfficeForms.Table
2 OfficeForms_Table_df=xl("OfficeForms.Table", headers=True)
```

Show explanation

238 rows x 8 columns

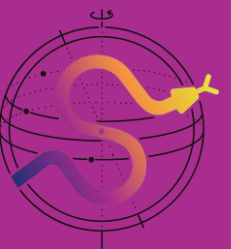
	Id	Start time	Completion time	Email	Name
0	1	45792.5872569444	45792.5874189815	anonymous	0
1	2	45792.5874768519	45792.5913657407	anonymous	0
2	3	45792.5918981481	45792.5923726852	anonymous	0
3	4	45792.5934722222	45792.5938078704	anonymous	0
4	5	45792.5950347222	45792.5972800926	anonymous	0
...
233	234	45794.526087963	45794.543900463	anonymous	0

Message Copilot





Let's look at a demo!



Exercise: Discover your Data

1. Using a data set of your own or one provided in the tutorial repo, use Advanced Analysis to help you make some sort of visualization of the data.
2. Then use the Copilot chat to learn more about the data by trying out some of it's suggested prompts.



aka.ms/scipy-sheets

