

AI-Engaged Data Visualization Activity

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Course Subject:	PST 7730 – Data Analysis for Professionals: Visualization and Interpretation
Student Level:	Graduate
Number of Students:	10-12
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What the Students Did

Graduate students in a professional studies data visualization course used AI tools (primarily Claude and embedded AI features in Excel and Tableau) to transform complex datasets into polished, narrative-driven visualizations. Rather than treating AI as a shortcut, students engaged in iterative collaboration: using natural language queries to explore data, prompting AI for chart type and design recommendations, and deliberately deciding when to accept or override those suggestions. Alongside the final visualization and accompanying narrative, students submitted a brief process reflection documenting where AI added value, where it fell short, and what analytical judgment they exercised throughout. Because the course already carried a substantial graded workload, the AI-engagement components were woven into existing course activities rather than added as separate assignments.

Purpose

The purpose of this activity was to give graduate students in a non-technical professional studies program hands-on experience using AI as a collaborative tool for data analysis and visualization, while developing the critical judgment to evaluate when AI assistance genuinely helps and when human expertise is essential. The

learning goals addressed prompt engineering for data tasks, the ability to translate complex data into clear and compelling visual narratives for non-technical audiences, and a transferable workflow for AI-partnered analytical work in professional contexts.

A secondary goal was to lower the technical barrier to visualization tools such as Tableau for students whose primary professional need is to parse and present quantitative findings, not to develop full-time analyst proficiency.

The activity also aimed to build students' capacity to critically evaluate AI-generated insights, recognizing spurious patterns and generic narrative framings, and the kinds of domain knowledge that AI cannot supply.

Assessment

Student work was evaluated using an existing visualization rubric, with the novel element being assessment of the process reflection and the documentation students generated throughout their AI collaboration. The reflection asked students to identify where AI contributed meaningfully, where it required correction or override, and what judgment calls they made. The instructor also gathered informal student feedback on three questions: whether the activity changed how they think about AI as a collaborative tool, whether they felt prepared to apply similar workflows in other contexts, and what they found most and least valuable.

Faculty Reflections

Since this is a non-technical course for a Doctor of Professional Studies program, not a CS, AI, or analytics program, leveraging AI tools meaningfully lowered the technical burden for this population. These students need to be able to parse quantitative data, extract findings, and present those findings to non-technical audiences. AI helped them get there faster and with more confidence than they would have otherwise, and students were much more comfortable iterating with AI to design and tinker with dashboard construction that would have been out of reach for visualization novices working without assistance.

Students also reported feeling genuinely empowered by how responsive the tools were to specific, course-grounded instructions. When they prompted Claude with reference to our main course texts, the tool was able to understand and apply those authors' core design principles to reformat visuals accordingly. Embedded AI tools in Excel and Tableau proved more useful for data wrangling and feature creation than for visualization design itself, while Claude was more effective for the narrative and design work.

One thing I would flag for colleagues: having students annotate their prompt logs and decision points is time-intensive, but this documentation piece yields the

highest value for any educator hoping to adapt this activity. It is also important to resist the temptation to over-structure the prompting activity; giving students some freedom to explore and make their own choices produced more interesting reflections than tightly prescribed workflows would have.

I would encourage other faculty in graduate programs to consider how AI tools might reduce technical friction in ways that free students to focus on the analytical and communicative work that is central to their learning goals.

Step-by-Step Directions

Step 1	Review an instructor demonstration of AI visualization tools and workflows. Pay attention to how the instructor uses natural language queries to explore data and how they decide when to follow or override AI suggestions.
Step 2	Select a dataset and define the "story" you want to tell (e.g., program outcomes, a public dataset with compelling narrative potential).
Step 3	Use AI tools to explore the data through natural language queries, asking questions to identify patterns, trends, and anomalies.
Step 4	Document initial findings and potential story angles that emerge from the exploration.
Step 5	Prompt AI for visualization recommendations based on your data and narrative goals.
Step 6	Build visualizations iteratively, refining through additional prompts and making deliberate choices about which AI suggestions to follow or modify.

Step 7	Develop narrative text that provides context for your visualization, explains key insights, and articulates implications for your audience.
Step 8	Complete human-in-the-loop refinement by critically evaluating AI contributions and documenting where AI added value vs. where human judgment improved output.
Step 9	Conduct accessibility and ethics review to ensure visualizations meet accessibility standards and to check for potential bias in AI-suggested framings.
Step 10	Assemble the final deliverable with your polished visualization and accompanying narrative.
Step 11	Write a process reflection describing where AI helped, where it fell short, and what judgment calls you made throughout the collaboration.

Related Materials

- Process Reflection Assignment:
 - [Process Reflection: AI-Assisted Data Visualization](#)