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Using Artificial Intelligence for Estimation

AI CHATBOT PROMPT

Try this prompt with any AI chatbot (e.g., ChatGPT) to produce 90% Confidence Interval estimates for a list of questions. Think of these confidence intervals as practice ranges — useful starting points for building intuition but not meant to serve as official predictions.

First, copy and paste the text below. Then, provide a list of numbered questions or ask questions one at a time.

Prompt

> *I'll be presenting a set of questions where you should provide hypothetical 90% confidence interval estimates. These estimates are based on general knowledge or reasonable assumptions and are solely for illustrative purposes. They will not influence actual decision-making. For each question, provide the lower and upper bounds of the confidence interval as float values in the format: "LB: [Lower Bound], UB: [Upper Bound]". Do not include any additional commentary, descriptions, or units. The answers should remain consistent with the intent of demonstrating the concept of confidence intervals.*

Example Questions and Answers

These ranges are simply examples of how different AI systems might respond, not "correct" answers.

Question - What is the duration of an overpass bridge construction project in months?
ChatGPT-4 said: LB: 18.0, UB: 36.0
Microsoft Copilot said: LB: 12.0, UB: 36.0

Question - What is the projected price per gallon of gas in Michigan for the upcoming year?
ChatGPT-4 said: LB: 2.70, UB: 3.10
Microsoft Copilot said: LB: 2.80, UB: 3.10

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EXCEL LABS AI FUNCTION

Here are instructions for installing and using the LABS.GENERATIVEAI() function in Excel.

Prerequisites

- **OpenAI API Key:**
  - Sign up at OpenAI and get an API key from the API Keys page.
- **Microsoft Excel Version:**
  - Ensure you are using a version of Excel that supports external add-ins or functions (Excel 365 or Excel 2021+).
- **OpenAI API Credits:**
  - Make sure you have added credits to your OpenAI account via the Billing page.
- **Excel Add-in:**
  - Install the add-in that connects Excel to OpenAI models (i.e., *OpenAI Labs for Excel*). The add-in is not part of Microsoft's standard Excel package. It is a third-party integration.

Steps to Install and Use LABS.GENERATIVEAI() Function

1. **Install the OpenAI Add-in (if necessary):**
   - Go to Insert > Get Add-ins in Excel.
   - Search for "OpenAI".
   - Click **Add** to install the add-in.
2. **Enter Your OpenAI API Key:**
   - Once the add-in is installed, you'll be prompted to enter your API key.
   - Go to the Settings or Configure API key section in the add-in interface and paste your OpenAI API key.
3. **Customize Your Settings (optional):**
   - You can change default AI behavior for the workbook in the LABS.GENERATIVEAI Settings panel. These can also be overridden in a formula.
     - Model – Pick gpt-4, gpt-4o, gpt-4o-mini, or gpt-3.5 (speed vs. accuracy tradeoff).
     - Temperature – Controls randomness (0 = consistent, 1 = creative). Use ~0.2 for estimation.
     - Max Output Length – Sets response size in tokens (100–200 for short answers, higher for long).
     - Frequency Penalty – Lowers repeated words (default 0.1).
     - Presence Penalty – Encourages new topics (keep low for estimation).
     - Content Moderation – On/off toggle; usually leave enabled.
4. **Use the LABS.GENERATIVEAI() Function:**
   - In a cell, enter the following formula to use the LABS.GENERATIVEAI() function:
     - =LABS.GENERATIVEAI(prompt, [temperature],[max_tokens],[model])
   - You can combine the function with other Excel functions and cell references

- **Examples**
  - =LABS.GENERATIVEAI("Tell me a joke.", 0.7, 100, "gpt-4")
  - =LABS.GENERATIVEAI("Estimate the number of bridges in California in " & B4, 0.2, 50, "gpt-3.5-turbo")
    - *With year in B4*
  - =TEXTSPLIT(LABS.GENERATIVEAI("Give 95% CI for an average elephant's lifespan. Format: 60,75 ONLY.",0.2,50,"gpt-4o-mini"),",")
- **Parameters**
  - **prompt**: The text you want the AI model to process (e.g., a question or instruction).
  - **temperature** (optional): Controls randomness. Lower numbers result in less variety; higher numbers result in more variety. At 0, the model almost always generates the same completion for the same prompt.
  - **max_tokens** (optional): The maximum number of tokens to generate. The actual upper limit varies by model. One token is roughly 4 characters for typical English text.
  - **Model** (optional): Specify which model to use (e.g., gpt-4)

5. **Check for Errors:**
   - If you see #N/A, #VALUE!, or an authentication error:
     - Check if your API key is correctly entered.
     - Confirm your OpenAI account has sufficient credits.
     - Verify the function parameters.
6. **Monitor Token Usage:**
   - Track your token usage in your OpenAI account to avoid exceeding your limit.

Once set up, you can use the LABS.GENERATIVEAI() function to interact with OpenAI models directly within Excel.

Best Practices

- 🔒 **Security** — Never paste confidential or personal data into prompts.
- 💡 **Model choice** — Use gpt-4o-mini or gpt-3.5 for fast, low-cost runs, gpt-4o for most reliable day-to-day work, and reserve gpt-4 for the most complex or high-stakes tasks.
- 🎯 **Calibration link** — These tools are useful for practicing estimation skills. Pair them with structured calibration training to improve real-world decision-making.