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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?

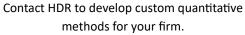
ChatGPT-4 said: LB: 18.0, UB: 36.0

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







# **EXCEL LABS AI FUNCTION**

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

### **Prerequisites**

- OpenAl 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+).
- OpenAl API Credits:
  - Make sure you have added credits to your OpenAI account via the <u>Billing page</u>.
- 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 thirdparty integration.

# Steps to Install and Use LABS.GENERATIVEAI() Function

- 1. Install the OpenAl 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 OpenAl API Key:

- o 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:

- o 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



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#### 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:

o 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.