

EM2 Statistics Assignment (Presentation) – Instructions

You are expected to perform a hypothesis test to investigate a claim (or statement) about a **population mean** found in published media. First, identify the claim, gather relevant data, and then carry out a hypothesis test to determine whether there is sufficient or insufficient evidence to reject the claim.

- Respond to all the parts of this instruction sheet. Present all your work on a spreadsheet application (using Microsoft Excel – *Refer to blank template in LMS*).
- Create a video presentation of **up to 4 minutes**, explaining all parts of your work in the spreadsheet. Contents beyond 4 minutes will not be graded.
- Record your video presentation in your own voice and upload it to YouTube, ensuring that you minimally appear with your face speaking into the video at the beginning, and, at the end of the video.
- Ensure that your YouTube video is unlisted (*not private!*) and available minimally until the end of the current semester.

→ **This Statistics Assignment (Presentation) consists of 2 components:**

- **Interim Progress Check (4%)**
- **Video Presentation (8%)**

i.e. The Statistics Assignment (Presentation) constitutes 12% of your overall EM2 grade

Component 1: Interim Progress Check (4%)

In Week 2, you will attend a short progress check with your tutor.

You are expected to:

- Present a clear claim about a population mean taken from a published source.
- State both the null hypothesis (H_0) and alternative hypothesis (H_1).
- Describe your proposed plan for data collection (and if you have already started, share your progress).
- Must show evidence of how you have made use of the (AI chatbot??) to support your learning and progress thus far (e.g. understanding your chosen claim, developing/checking your hypotheses, and/or planning your data collection, etc).
- Be ready to explain and justify your choices / decisions when asked by your tutor.

This interim check is worth 4% of the module grade. It ensures that you are on the right track before completing your final video presentation.

Use of Generative AI for this Assignment

➔ AI Assessment Scale permitted: Level 3 – AI Collaboration

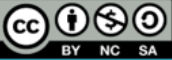
You are expected to use the designated AI learning tool to support your learning and progress in this assignment, but the decisions made, Excel work, interpretation of results and final video presentation must reflect your own understanding.

When using Generative AI:

- AI should support your thinking, not replace it.
- Ensure that your submitted work reflects your own understanding.
- You must be able to explain and justify your work.
- Use AI responsibly by checking its accuracy and protecting your privacy.
- And finally, declare your use of AI (*via Declaration of Originality Form and Use of Generative AI (EM2) on LMS when submitting your video presentation*)

The AI Assessment Scale

1	NO AI	You must not use AI at any point during the assessment. You must demonstrate your core skills and knowledge.
2	AI PLANNING	You may use AI for planning, idea development, and research. Your final submission should show how you have developed and refined these ideas.
3	AI COLLABORATION	You may use AI to assist with specific tasks such as drafting text, refining and evaluating your work. You must critically evaluate and modify any AI-generated content you use.
4	FULL AI	You may use AI extensively throughout your work either as you wish, or as specifically directed in your assessment. Focus on directing AI to achieve your goals while demonstrating your critical thinking.
5	AI EXPLORATION	You should use AI creatively to solve the task, potentially co-designing new approaches with your instructor.

 Perkins, Furze, Roe & MacVaugh (2024). The AI Assessment Scale

This
Assignment

Component 2: Video Presentation (8%)

Rubrics (for students' reference)

Category	Marks	Exemplary 3 marks	Proficient 2 marks	Basic 1 mark	Needs Improvement 0 marks
Explanation of Hypothesis Testing	3	Makes the correct decision/conclusion based on all parts of Excel results presented. Explains findings in clear and logical language.	Two of the three elements are correct and well presented.	Only one element is correct and well presented.	None of the elements are correct or well presented.
Spreadsheet Formula Demonstration	3	Correctly applies and explains Excel formulas for mean, standard deviation, test statistic, p-value, and CI.	Several formulas correctly applied and explained.	Only a few formulas correctly applied and explained.	None of the formulas correctly applied or explained.
Approach & Reasoning	2	2 marks	1 mark		0 marks
		Clear and accurate justification of dataset choice, test selection (t/z), and CI interpretation.	Some mistakes but overall reasoning is present.	Major mistakes or missing reasoning.	Wrong approach and/or no reasoning presented.

Your video presentation is expected to cover the following:

Part 1. Identify a Claim

Select a real-life scenario from an online news portal (e.g. Straits Times, CNA, Today Online), online publication (e.g. Mothership, 8days), or any other credible source.

- The claim must mention a population mean (a numerical value).
This reported value will serve as the basis for your assignment.
- Show the source of the claim at the beginning of your video presentation.
(e.g. screenshot or actual view of the article or webpage, briefly <5 seconds)

Refer to the two examples below (***not to be re-used by any student***):

Example 1

Claim: Post-secondary students receive \$14 pocket money a day in Singapore

Source: Straits Times (Online) [Published: May 26, 2024]

URL: [How much pocket money do Singapore children get? It's \\$4 to \\$14 a day | ST](#)

Example 2

Claim: Singapore teenagers spend 8.5 hours a day on their devices

Source: Channel NewsAsia – Institute of Policy Studies survey [Published: Feb 4, 2025]

URL: [Singapore teenagers spend nearly 8.5 hours a day on screens: CNA-IPS survey](#)

Part 2. Define your Hypotheses

- Clearly state both the null and alternative hypotheses.
- Explain your reasoning for stating the alternative hypothesis.
- For this assignment, use a two-tailed test.

Part 3. Collect your Data

- Obtain a random sample of at least 30 data points (*or more*).
- Briefly explain why your sample is suitable for testing the claim.
- You must collect data yourself.
(e.g. oral survey, paper-and-pen survey, Google / MS Forms, etc.)

Part 4. Using a spreadsheet application (Microsoft Excel)

You must show and briefly explain the formulas used for:

- sample mean and sample standard deviation
- population standard deviation
(*applicable if your source provides this information*)
- test statistic and p-value
- margin of error and confidence interval

Tip: The partial screen-capture below shows part of a presentation. When showing evidence for Sample Standard Deviation, the cell is clicked to reveal the formula used.

- 1) For 'show': Click on the cell containing the calculated component.
- 2) For 'briefly explain': To calculate the sample standard deviation for the 31 data points collected, we use Excel formula STDEV.S from cell A4 to cell A34.

	A	B	C	D	E
1	EM2 Assignment Presentation - AY26/27 October semester				
2					
3	DATA		Parts 4, 5 & 6		
4	15.080		Sample size, n =	31	
5	8.020		Sample mean, $\bar{x}$ =	21.323	
6	8.120		Sample std dev, s =	8.306	
7	17.530				

Formula bar: `=STDEV.S(A4:A34)`

Callout 1: 1) Cell is clicked

Callout 2: 2) Formula used is revealed (after cell is clicked, then briefly explain.)

Part 5. Carry out the Hypothesis test (with conclusion)

- State whether you are using a t-test or z-test, and explain why.
- Use your Excel results to conclude if there is **sufficient evidence** or **insufficient evidence** to reject the claim at a 5% significance level.
- State your conclusion in a clear and logical manner.

Part 6. Construct and interpret the 95% Confidence Interval

- Use your earlier calculations to construct the interval.
- Interpret what this interval says about the claim in a clear and logical manner such that someone unfamiliar with statistics would understand.

- End -