

PROBLEM SET 1 - POINT AND INTERVAL ESTIMATION AND TESTING

ECO 204 - Statistics for Business and Economics - II
Summer 2025

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Due Date: 4th July, 6 PM, 2025

Instructions : Please form a group of three (max) and submit on Google Classroom by the due date.

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Point and Interval Estimation

1. Suppose we would like to understand the **spending behavior of the students at the Economics Dept. at EWU**. With this in mind, we randomly asked 64 students about how much they spent for lunch yesterday, the data is given below:

Student	Amount	Student	Amount	Student	Amount	Student	Amount
1	20.50	17	18.89	33	25.53	49	11.85
2	14.63	18	19.88	34	27.71	50	17.88
3	23.77	19	23.11	35	33.81	51	6.83
4	29.96	20	20.11	36	21.79	52	30.99
5	29.49	21	20.34	37	19.16	53	14.62
6	32.70	22	20.08	38	26.35	54	18.38
7	9.20	23	30.36	39	20.01	55	26.85
8	20.89	24	21.79	40	26.85	56	25.10
9	28.87	25	21.18	41	13.63	57	27.55
10	15.78	26	19.22	42	17.22	58	25.87
11	18.16	27	34.13	43	13.17	59	14.37
12	12.16	28	27.49	44	20.12	60	15.61
13	11.22	29	36.55	45	22.11	61	26.46
14	16.43	30	18.37	46	22.47	62	24.24
15	17.66	31	32.27	47	20.36	63	16.66
16	9.59	32	12.63	48	35.47	64	20.85

The first column is the student serial and the second column is the amount spent in TK. Now answer following questions.

- What is the population of this study?
- If the target parameter is the **mean amount spent for lunch, let's say this is μ** (note this is the population mean), in theory how would you calculate the population mean?
- What is the sample size in this case?
- What is the point estimate of the population mean μ ?
- If we know the amount spent on lunch is distributed normally with a population standard deviation of $\sigma = 6$, what is the standard error of the sample mean? At 95% confidence, construct a interval estimate for the population mean μ .
- If we do not know the population standard deviation, assuming normality how would you construct the interval estimate for the population mean μ ?
- Finally if we don't know anything about the population distribution, how would you construct the interval estimate for the population mean μ ?
- Can you construct an interval if we don't know about the population distribution but the sample size is only 10.

Note: Data File: If you want you can use the data file Student_Lunch.xlsx, where the Amounts are recorded in an Excel file.

Remarks: Most of the problems are taken from ?. If possible you should do more problems from ? and ?.

References: