MA 155 Projects

First Name_____ **Last Name**_____

Project 3: Inferential Statistics
Due Date: xx/xx/xx @ xx p.m. on Canvas
Instructions:

- You **must** watch this video: *add your video* first before starting the project.
- You **must** use MS Excel to complete the project.
- You **must** round all your answers to two decimal places.
- You **must** use this word file/ document to complete and submit the project on canvas by the due date.

1. **(x points)** Use your Project 1 data set that has a **sample size of 25** to create a new variable called body mass index (BMI). Name the new variable **BMI-25**. **BMI is weight divided by the square of height multiplied by 10,000 (round your BMI values to one decimal place)**. The formula for obtaining BMI is given as follows:

$$BMI = \frac{weight}{height^2} \times 10{,}000$$

Based on the 25 BMI observations, compute the following:

a) **(x points)** What is the sample mean (point estimate)?

b) **(x points)** What is the margin of error for a 95% confidence interval?

c) **(x points)** What is the 95% confidence interval for the true population mean?

d) **(x points)** Interpret the interval in part 1.c).

2. **(x points)** Use your Project 1 data set that has a **sample size of 50** to create a new variable called body mass index (BMI). Name the new variable **BMI-50**. **BMI is weight divided by the square of the height multiplied by 10,000 (round your BMI values to one decimal place)**. The formula for obtaining BMI is given as follows:

$$BMI = \frac{weight}{height^2} \times 10{,}000$$

Based on the 50 BMI observations compute the following:

a) **(x points)** What is the sample mean (point estimate)?

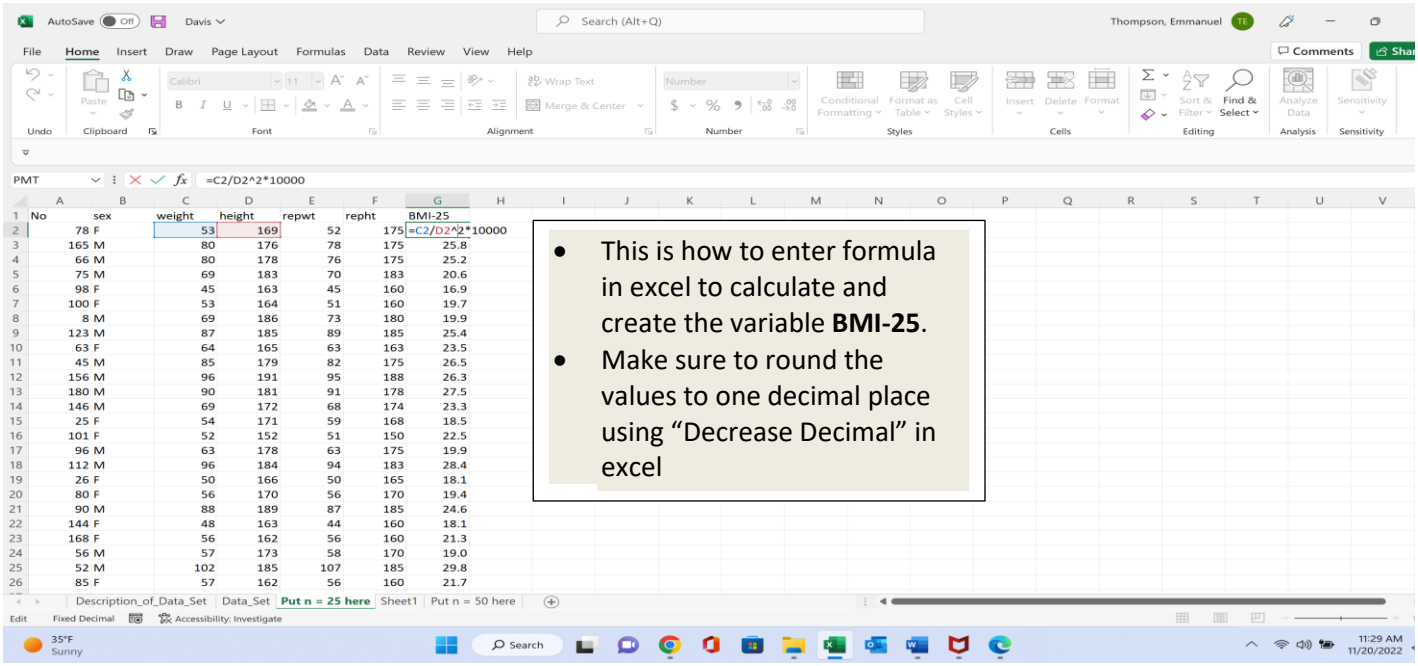
b) **(x points)** What is the margin of error for a 95% confidence interval?

c) **(x points)** What is the 95% confidence interval for the true population mean?

d) **(x points)** Interpret the interval in part 2.c).

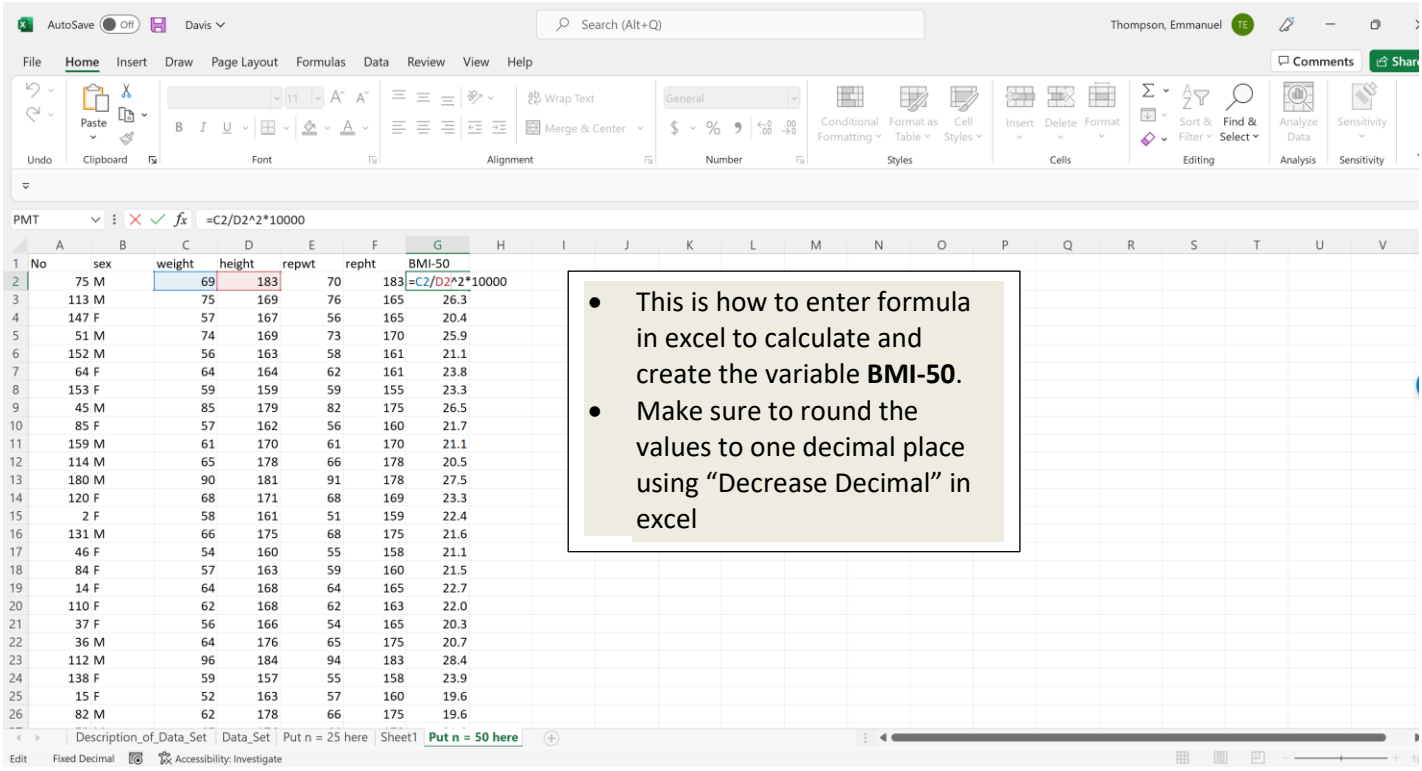
3. **(x Points)** Comment briefly (not more than two sentences) about the impact of sample size (i.e., when the sample size was increased from 25 to 50) on the width of the confidence interval.

Appendix



No	sex	weight	height	repwt	repht	BMI-25
78	F	53	169	52	175	=C2/D2^2*10000
165	M	80	176	78	175	25.8
66	M	80	178	76	175	25.2
75	M	69	183	70	183	20.6
98	F	45	163	45	160	16.9
100	F	53	164	51	160	19.7
8	M	69	186	73	180	19.9
123	M	87	185	89	185	25.4
63	F	64	165	63	163	23.5
45	M	85	179	82	175	26.5
156	M	96	191	95	188	26.3
180	M	90	181	91	178	27.5
146	M	69	172	68	174	23.3
25	F	54	171	59	168	18.5
101	F	52	152	51	150	22.5
96	M	63	178	63	175	19.9
112	M	96	184	94	183	28.4
26	F	50	166	50	165	18.1
80	F	56	170	56	170	19.4
90	M	88	189	87	185	24.6
144	F	48	163	44	160	18.1
168	F	56	162	56	160	21.3
56	M	57	173	58	170	19.0
52	M	102	185	107	185	29.8
85	F	57	162	56	160	21.7

- This is how to enter formula in excel to calculate and create the variable **BMI-25**.
- Make sure to round the values to one decimal place using “Decrease Decimal” in excel



No	sex	weight	height	repwt	repht	BMI-50
75	M	69	183	70	183	=C2/D2^2*10000
113	M	75	169	76	165	26.3
147	F	57	167	56	165	20.4
51	M	74	169	73	170	25.9
152	M	56	163	58	161	21.1
64	F	64	164	62	161	23.8
153	F	59	159	59	155	23.3
45	M	85	179	82	175	26.5
85	F	57	162	56	160	21.7
159	M	61	170	61	170	21.1
114	M	65	178	66	178	20.5
180	M	90	181	91	178	27.5
120	F	68	171	68	169	23.3
2	F	58	161	51	159	22.4
131	M	66	175	68	175	21.6
46	F	54	160	55	158	21.1
84	F	57	163	59	160	21.5
14	F	64	168	64	165	22.7
110	F	62	168	62	163	22.0
37	F	56	166	54	165	20.3
36	M	64	176	65	175	20.7
112	M	96	184	94	183	28.4
138	F	59	157	55	158	23.9
15	F	52	163	57	160	19.6
82	M	62	178	66	175	19.6

- This is how to enter formula in excel to calculate and create the variable **BMI-50**.
- Make sure to round the values to one decimal place using “Decrease Decimal” in excel