

NAME: \_\_\_\_\_

PID: \_\_\_\_\_

The population of N=800 mispayments is in Column A of the spreadsheet *project.xls*, which is available on the course web site under **Project**. If you obtain the spreadsheet from the course web site, save it on your local hard drive (for example, in Internet Explorer you can right click on the link and then choose “Save target as”) and then open it with Excel. The population has mean mispayment  $\mu = \$0.962$  and has proportion  $p = 0.1975$  of nonzero mispayment values.

Read the attached file (second page) to draw a sample of size 30 from the population.

Observation #	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>
Row #										
Value										
Observation #	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>
Row #										
Value										
Observation #	<b>21</b>	<b>22</b>	<b>23</b>	<b>24</b>	<b>25</b>	<b>26</b>	<b>27</b>	<b>28</b>	<b>29</b>	<b>30</b>
Row #										
Value										

- Calculate the sample mean  $\bar{x} =$  \_\_\_\_\_, the sample standard deviation  $s =$  \_\_\_\_\_ and the proportion  $\hat{p} =$  \_\_\_\_\_ of sample values that are nonzero. (You can use the **=AVERAGE()** and **=STDEV()** functions in Excel, or use the other software to compute the mean and standard deviation.)
- Calculate the nominal 95% confidence intervals for mean  $\mu$  and proportion  $p$ , in each case, check to see if your interval covers the parameter value. Use t-multiplier for mean  $\mu$  and z-multiplier for proportion  $p$ . Recall that the population values are  $\mu = \$0.962$  and  $p = 0.1975$ .
  - Your nominal 95% CI for  $\mu$  is : \_\_\_\_\_  
Does your CI cover  $\mu$ ? \_\_\_\_\_ (Yes / No)
  - If there are about 600 students doing this project this semester, how many of these students do you expect to answer “Yes” to “Does your CI cover  $\mu$ ”? \_\_\_\_\_
  - Your nominal 95% CI for proportion  $p$  is : \_\_\_\_\_  
Does your CI cover  $p$ ? \_\_\_\_\_

**Note:** Submit the first page (answer sheet) only.

**How to get random number by using the random table?**

Step1: Pick out **30 random numbers** from the random table (Table C.10, page 454) in any order you like. For example:

- the last column (31880, 73043, 61171,)
- the previous four rows (98083,33185,80951,79752, ...),
- or the inverse diagonal elements ( 73167,06410,53783, ...).

Make sure you have your own sampling plan. Everyone is supposed to get different random numbers by different sampling plan.

Step2: The population size=800, choose the first three number as the random row number of the Population. For example

(**31880, 73043, 61171**,) → (**318, 730, 611**,)

Ignore any number greater than 800.

Step3: Get sample values from the data table by using the real row # in Step2.

Random Number from random table:	<u>31880</u> , <u>73043</u> , <u>61171</u> ...
	<div style="display: flex; justify-content: space-around;"> <span>↓</span> <span>↓</span> <span>↓</span> </div>
By step 2 get location (row) numbers:	<u>318</u> , <u>730</u> , <u>611</u> , ...
	<div style="display: flex; justify-content: space-around;"> <span>↓</span> <span>↓</span> </div>
Using Data Table find the values:	0.00, 0.00, ...

**The other methods to get random number instead of using random table.**

- a) Every calculator has function to generate a random number between 0 and 1. Then times 800 you'll get random row #.
- b) You also can use the function “=FLOOR(RAND()\*800+1,1)” in Excel to get random number for row #.
- c) Any statistics software has functions taking random values.

**Use Excel to take a random sample from the population.**

To take a random sample and place the result in Cell B2, and you have the first random number = 616, you would type

**=INDEX(\$A\$1:\$A\$800, 616)**

in Cell B2. (Note: Don't miss the equal sign“=”) Then the 616<sup>th</sup> observation in the data table is drawn, and the observed value = 4.03. Put “616” as the first row number and the value “4.03” as the first observed value. Replace 616 with the row numbers based on random numbers you obtained, you can list all 30 values in your random sample.