

Practice Quiz for Exam #2
 Summer 2017

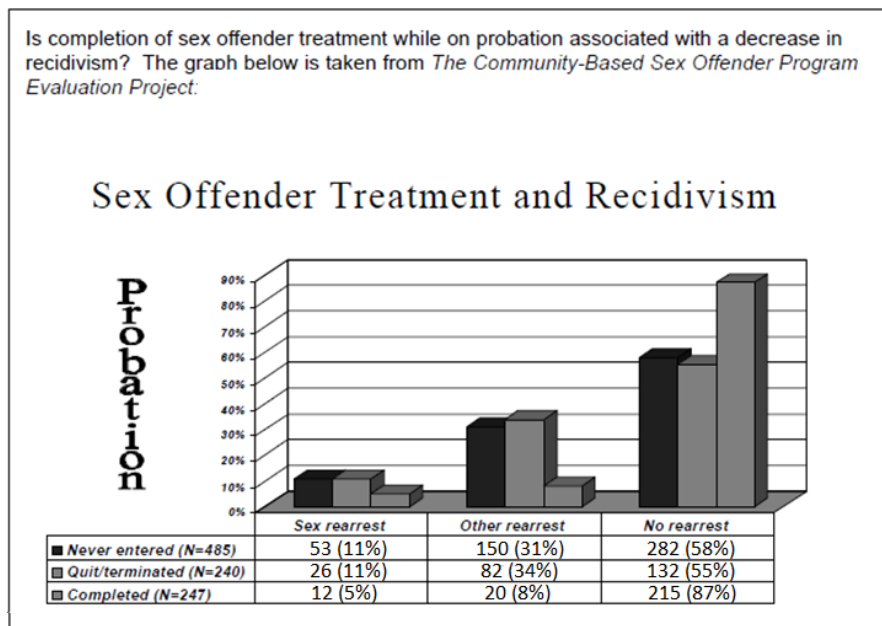
STAT 110: Quiz
 Points: 20

Name: SOLUTION

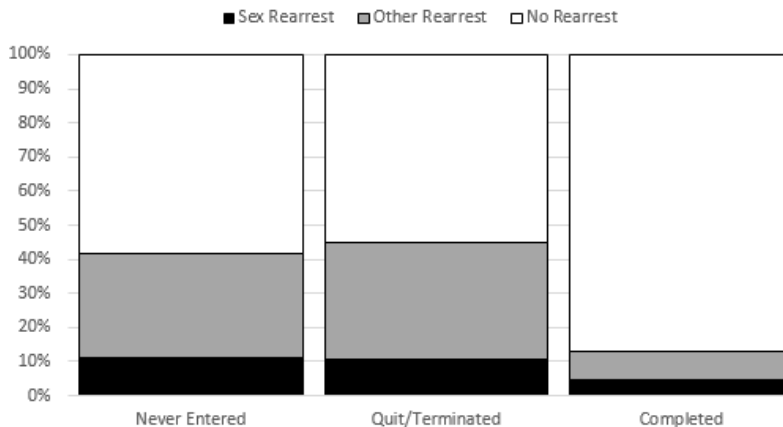
Note: This quiz is coming directly from p61 of the Chapter 4 notes.

Example 4.4.6 The Minnesota Department of Corrections often creates reports for the Minnesota State Legislature to identify the importance of funding programs that are known to improve public safety. The following data was presented in one such report. The following question and supporting data were provided on p17 of their report.

Source: <http://www.doc.state.mn.us/publications/documents/sosupreport.PDF>



- Use the data provided above in the table to construct the more appropriate 100% stacked column graph for this data. (4 pts)



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2. Obtain the Expected Counts, p-value, decision, and conclusion for this investigation.

Research Question	Is completion of sex offender treatment while on probation associated with a change in the recidivism rate?																																																																																																																							
Analysis in Excel	<p>Conduct the appropriate analysis in Excel. You must calculate the Expected Counts for each cell in the table. Use the =CHITEST() function in Excel to obtain the appropriate p-value. (8 points)</p> <table border="1"> <tr><td>1</td><td>A</td><td>B</td><td>C</td><td>D</td><td>E</td><td>F</td></tr> <tr><td>2</td><td></td><td>Observed Counts</td><td></td><td></td><td></td><td></td></tr> <tr><td>3</td><td></td><td>Group</td><td>Sex Rearrest</td><td>Other Rearrest</td><td>No Rearrest</td><td>Total</td></tr> <tr><td>4</td><td></td><td>Never Entered</td><td>53</td><td>150</td><td>282</td><td>485</td></tr> <tr><td>5</td><td></td><td>Quit/Terminated</td><td>26</td><td>82</td><td>132</td><td>240</td></tr> <tr><td>6</td><td></td><td>Completed</td><td>12</td><td>20</td><td>215</td><td>247</td></tr> <tr><td>7</td><td></td><td>Total</td><td>91</td><td>252</td><td>629</td><td>972</td></tr> <tr><td>8</td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>9</td><td></td><td>Expected Counts</td><td></td><td></td><td></td><td></td></tr> <tr><td>10</td><td></td><td>Group</td><td>Sex Rearrest</td><td>Other Rearrest</td><td>No Rearrest</td><td>Total</td></tr> <tr><td>11</td><td></td><td>Never Entered</td><td>45.41</td><td>125.74</td><td>313.85</td><td>485</td></tr> <tr><td>12</td><td></td><td>Quit/Terminated</td><td>22.47</td><td>62.22</td><td>155.31</td><td>240</td></tr> <tr><td>13</td><td></td><td>Completed</td><td>23.12</td><td>64.04</td><td>159.84</td><td>247</td></tr> <tr><td>14</td><td></td><td>Total</td><td>91</td><td>252</td><td>629</td><td>972</td></tr> <tr><td>15</td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>16</td><td></td><td>P-Value</td><td colspan="3">=CHITEST(C4:E6,C11:E13)</td><td></td></tr> <tr><td>17</td><td></td><td></td><td colspan="3">2.94989E-15</td><td></td></tr> </table> <p>What is the p-value from your test? (2 pts)</p> <p>P-Value = $2.95E - 15 \approx 0$</p>	1	A	B	C	D	E	F	2		Observed Counts					3		Group	Sex Rearrest	Other Rearrest	No Rearrest	Total	4		Never Entered	53	150	282	485	5		Quit/Terminated	26	82	132	240	6		Completed	12	20	215	247	7		Total	91	252	629	972	8							9		Expected Counts					10		Group	Sex Rearrest	Other Rearrest	No Rearrest	Total	11		Never Entered	45.41	125.74	313.85	485	12		Quit/Terminated	22.47	62.22	155.31	240	13		Completed	23.12	64.04	159.84	247	14		Total	91	252	629	972	15							16		P-Value	=CHITEST(C4:E6,C11:E13)				17			2.94989E-15			
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Decision	<p>Make the appropriate statistical decision.</p> <p><u>Decision:</u> If the p-value < 0.05, then data is said to support the research question.</p> <p><input checked="" type="radio"/> Data supports research question</p> <p><input type="radio"/> Data does not support research question</p>																																																																																																																							
Conclusion	<p>Write an appropriate conclusion in context and in laymen's terms.</p> <p>There is enough statistical evidence to say that completion of sex offender treatment program while on probation associated with a decrease (or change) in the recidivism rate (p-value very small).</p>																																																																																																																							

3. Suppose the Completed group was removed from consideration and only the Never Entered group was compared against the Quit / Terminated group. Would you expect the p-value from this analysis to increase, decrease, or not change? Briefly explain. (3 pts)

The p-value would: Increase | Decrease | Not Change

Explain:

The p-value would increase (above 0.05) because the patterns for the Never Entered and Quit / Terminated groups are nearly identical, i.e. close to the no difference situation.