STAT 110: Quiz #3 Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Points: 20

Summer 2017

Consider the following snip-it of an article published in Sports Illustrated regarding young pitchers in Major League Baseball. This article is centered on 19 year-old pitching prospect that was drafted by the Baltimore Orioles in the 1st round. From 1981 through 2000, a total of 102 high school pitchers were selected in the first round. Of these, 44 never reached the majors.



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| In an effort to determine whether or not pitchers are of a greater risk of failure, we must compare this against the general failure rate. The article to the right provided these figures. Success/Failure Rate for 1st Round Draft Picks* 66% of 1st round picks play in the major leagues, and
* 34% never play in the major leagues.
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Research Question: Is the failure rate of high-school pitchers taken in the 1st round higher than the general failure rate for major league baseball?

1. Identify the smallest possible value, largest possible value, location of the pyramid, and the outcome from the study for this situation on the number lines below. (6 pts)

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| --- | --- |
| * Smallest possible value
* Largest possible value
* Location of pyramid
* Outcome from study
 | Did Not Make It |

1. Identify the appropriate set-up for your simulation. Suppose that 100 repeated outcomes is desired. (4 pts)

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| --- | --- |
| Identify the following* Probability of heads
* Number of tosses
* Number of repetitions
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The 100 repeated outcomes are provided below.



1. Which of the following statements is most correct regarding the reference distribution? (3 pts)
2. The dots on this reference distribution were constructed under the assumption that high-school pitchers taken in the 1st round have a higher failure rate than others.
3. The dots on this reference distribution were constructed under the assumption that high-school pitchers taken in the 1st round have the same failure rate as others.
4. The dots on this reference distribution were constructed under the assumption that high-school pitchers taken in the 1st round have a 50% failure rate and 50% success rate.

1. Identify what values are used to compute the p-value, compute the p-value, provide a decision, and give a final conclusion using everyday language. (7 pts)

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| **1st Round Pitchers** |
| Research Question | Is the failure rate of high-school pitchers taken in the 1st round higher than the general failure rate for major league baseball? |
| Parameter | $π$ = the probability that a first round pitcher will not make it to the majors |
| Identify the values for computing the p-value | What values are as extreme as or more extreme than the observed outcome? |
| P-Value | P-Value = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Decision | Is the p-value less than 0.05? Circle one.* If “Yes”, then data is said to provide enough evidence for the research question
* If “No”, then data does not provide enough evidence for research question
 |
| Conclusion | Write a conclusion in laymen’s terms. |