ONE APPROACH TO INFERENCE ABOUT M: CI'S. ANOTHER: SIGNIFICANCE TESTS.

**NULL HYPOTHESIS (H₀):**
- SKEPTIC'S POSITION: NOTHING NEW
- FLEX TIME DOESN'T WORK
- UNLUCKY SAMPLING
- DIFF. BETWEEN 6.3 vs. 5.4 is

**ALTERNATIVE HYPOTHESIS (H₁):**
- SOMETHING NEW
- FLEX TIME WORKS
- DIFF. 6.3 vs. 5.4 is REAL
- M < 6.3

2. TRY NULL ON FOR SIZE - SEE IF DISCREPANCY BETWEEN HOW DATA CAME OUT vs. HOW DATA SHOULD HAVE COME OUT IS LARGE - IF SO, FAVOR ALT; IF NOT, FAVOR NULL.

\[ \hat{SE}_{null} (\bar{X}) = \frac{\bar{X} - 5}{\sqrt{n}} = \frac{3.0 \text{ DAYS}}{\sqrt{100}} = 0.3 \text{ DAYS} \]
Distance measure (test statistic)

\[
Z = \frac{(\bar{Y} - \mu_0)}{\sigma / \sqrt{n}}
\]

\[
Z = \frac{(5.4 - 6.3)}{SE(9)} = \frac{-0.9}{0.3} = -3
\]

SE 0.3

\[
P_2 \quad 99.7\%
\]

CLT

5.4 \quad 6.3

\[
1 - \text{TAILED TEST}
\]

P - value = chance, if null is true, of getting data as extreme as, or more extreme than, what we got
HERE \( p = 0.15\% \). Final form of reasoning: IF \( p \) SMALL, FAVOR ACT.

IF \( p \) BIG, FAVOR NULL.

How small is small?

Conventional answer: \( p \leq 5\% \) \( \iff \) the diff. is statistically significant (statsig).

\( p \leq 1\% \) \( \iff \) highly statsig.

Here with \( p = 0.15\% \), diff. between 6.7 (null) & 5.4 (data) is highly statistically significant, so conclusion: on face of it, flex time seems to work (favor alternative).
95% CI: \( \bar{x} \pm 2 \times SE(\bar{x}) \)

\[
5.4 \pm 2 \times (0.3) = \]

\[
(5.4 \pm 0.6)
\]

ALTS: WAY TO JUDGE IF A DIFF. IS STAT. SIG.: COMPUTE 95% CI, SEE IF "NULL" VALUE OF \( \mu \) IS IN THE CI OR NOT; IF IT'S NOT, DIFF. IS STAT. SIG.

\[
4.8 \quad 5.4 \quad 6.3
\]

\[
6.3
\]

OS: 46% vs. 77% IS LARGE IN PRACTICAL TERMS (I.E., THIS DIFF. IS PRACTICALLY SIGNIFICANT (PRACTSIG)); BUT IS IT STAT. SIG.? (I.E., COULD THIS DIFF. BE EXPLAINED BY UNLUCKY SAMPLING?)
| **NULL HYP. (H₀)** | HIS SAMPLING METHOD IS
| :------------------ | :---------------------- |
|                    | LIKE SAS               |
| **ALT. HYP. (Hₐ)** | **NO, IT'S NOT**       |