Disc Sec week of 5-12 May 17

All potential nightly rides at well known weight (165 lbs)

Sample of observed underground riders weight (165 lbs)

\[ n = 192 \]

\[ \text{sum } S = ? \]

Ex. 30,900 lb.

\[ \text{mean } \mu = 158 \text{ lb.} \]

\[ \text{SD } \sigma = 33 \text{ lb.} \]

\[ N = ? \]

\[ (N \gg n) \]

\[ \text{Hypothetic } \bar{S} \]

\[ \text{IID } S \]

\[ h = 192 \]

\[ \text{Sum } S \approx ? \]

Ex. 29,950

\[ \text{low } \mu_0 = 30,336 \text{ lb.} \]

\[ \text{low } \text{SE of } S \]

\[ \text{SE of } S \approx 457 \text{ lb.} \]

\[ \text{low SE 457 lb.} \]

\[ \text{Hist CLT} \]

\[ \frac{30,336 \text{ lb.}}{30,336 \text{ lb.}} \]

\[ \text{EV of } S = \text{E } \text{IID } S = n \mu = (192)(158 \text{ lb.}) \]

\[ \text{EV of } S = 30,336 \text{ lb.} \]

\[ \text{low } \text{SE 457 lb.} \]
\[ SE_{\text{est}}(S') = 0.5 \sqrt{n} = (33 \text{ lb.}) \sqrt{192} \div 457 \text{ lb} \]

Long run hit rate of \( S' \): \( 0.0099 \% \) = 1%

\[ 30,336 \text{ lb.} \div 31,400 \text{ lb.} = (\text{units}) \]

\[ z = \frac{31,400 \text{ lb.} - 30,336 \text{ lb.}}{457 \text{ lb.}} = 2.33 \]

1% failure rate not good enough? Go full load every day!

\( \Theta = \text{system says bad} \)

\( \Theta = \text{good} \)

\( \Theta = \text{really is good} \)

\( \Theta = \text{really is bad} \)
1. $P(B) = 1\%$ (prevalence)

2. $P(- | G) = 97\%$

3. $P( + | B ) = 98\%$

\[
\begin{array}{c|c|c}
 & B & \bar{B} \\
\hline
G & 297 & 9,603 \\
\bar{G} & 9,900 & 10,000 \\
\hline
\text{what system says} & 395 & 9,605 \\
\hline
\text{true} & 100 & 9,900 \\
\end{array}
\]

\[
P(\text{card really } | \text{ system says } B) = \frac{98}{395} = 25\%.
\]