Say we want to check if people in NYC are more inclined to get flu vaccine than Poole, NY. Let \( p_1 \) = proportion for NYC, \( p_2 \) = prop. for Poole.

\[ H_0: p_1 = p_2 \quad \Rightarrow \quad p_1 - p_2 = 0. \]
\[ H_1: p_1 > p_2 \quad \Rightarrow \quad p_1 - p_2 > 0 \]

Collect 2 samples

NY

\( n_1 = 105 \)
\( \hat{p}_1 = 0.92 \)

Podunk

\( n_2 = 62 \)
\( \hat{p}_2 = 0.87 \)

Use \( Z \)-test for this:

\[ Z = \frac{\hat{p}_1 - \hat{p}_2 - 0}{\sqrt{\text{se}(\hat{p}_1 - \hat{p}_2)}} \]

Use pooled prop estimate for \( \hat{p}_0 = \frac{n_1 \hat{p}_1 + n_2 \hat{p}_2}{n_1 + n_2} \)
50P_{37} = \frac{50!}{13!}.

First choose 37 seats: \(50C_{37} = \frac{50!}{33!13!}\).

Then 37!

You want to pack a suitcase with 4 pairs pants, 8 shirts, and 2 jackets.

You have 7 pairs pants, 15 shirts, 3 jackets.

In how many ways can you pack it?

\[
\binom{4}{1}, \binom{15}{8}, \binom{3}{2} = 7 \text{nCr } 4 \times 15 \text{nCr } 8 \times 3 \text{nCr } 2
\]

\[
\binom{n}{n-1} = \binom{n}{1} = n
\]

What is the probability of drawing 5 cards consisting of 2 ♠s and 3 ♦s?

13 each suit

\#	ext{ways}

\#	ext{ways 5 cards}

\[
\binom{13}{2} \cdot \binom{13}{3} = \frac{\binom{13}{2} \cdot \binom{13}{3}}{\binom{52}{5}}
\]