

Two-Proportion z-Tests and Intervals

We know how to have the calculator find a z-Interval and conduct a z-Test for one proportion. Now let's ask it to do them for two proportions.

```
EDIT CALC TESTS
1:Z-Test...
2:T-Test...
3:2-SampZTest...
4:2-SampTTest...
5:1-PropZTest...
6:2-PropZTest...
7:ZInterval...
```

```
2-PropZTest
x1:318
n1:811
x2:48
n2:184
p1:0.392108508 <p2>p2
Calculate Draw
```

STAT TESTS

We're using a Normal model to test a hypothesis based on *two samples*. So scroll down to **6:2-PropZTest**.

Enter **x1**, the observed number of successes (318) and **n1**, the sample size (811) from the first sample.

Enter **x2**, the observed number of successes (48) and **n2**, the sample size (184) from the second sample.

Now comes a potentially tricky question...is this test:

- one-tail lower,
- one-tail upper, or
- two-tailed?

Calculate

```
2-PropZTest
P1≠P2
z=3.332941852
P=8.5944146E-4
p1=.392108508
p2=.2608695652
p=.367839196
```

The rest is up to you! The calculator gives you the P-value; it's your job to make sense of it. You also get the sample proportion values (**p1 hat** and **p2 hat**) as well as the pooled proportion (**p hat**).

Is the result small enough that you *reject the null*, or is it large enough that you *fail to reject the null*? (Remember to **never accept the null**.)

```
2-PropZInt
x1:318
n1:811
x2:48
n2:184
C-Level:.95
Calculate
```

Run back through a **2-PropZInt** (option **B**) to give you further evidence to comment on – in context, of course!

```
2-PropZInt
(.05944,.20303)
p1=.392108508
p2=.2608695652
n1=811
n2=184
```