Political Science 30: Political Inquiry
Section 6

Taylor Carlson
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"Whenever I read statistical reports, I try to imagine my unfortunate contemporary, the Average Person, who, according to these reports, has 0.66 children, 0.032 cars, and 0.046 TVs." — Kató Lomb

Learning Outcomes

By the end of section today, you should:

- Be able to conduct and interpret a difference of proportions test
- Be able to explain the following for "The Colbert Bump"
  - Research question
  - Key confound
  - Method for addressing the confound
  - Key result
- Know the Stata commands relevant for Homework 2

Warm Up

- Name
- Pew Research Center recently conducted a survey of a national sample of 1,503 adults, 18 years of age or older, living in the United States. The results indicated that 29% of respondents reported that the new tax law will have a mostly positive effect on them and their families over the coming years.
- What is the 95% confidence interval for the percentage of U.S. adults who think that the new tax law will have a mostly positive effect on them and their families over the coming years?

$$\hat{p} \pm 2 * \sqrt{\frac{(\hat{p})(1-\hat{p})}{N}}$$

▸ Link to Report

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$$\hat{p} \pm 2 * \sqrt{\frac{(\hat{p})(1-\hat{p})}{N}}$$

$$.29 \pm 2 * \sqrt{\frac{(.29)(1-.29)}{1503}}$$

$$.29 \pm 2 * \sqrt{\frac{.2059}{1503}}$$

$$.29 \pm 2 * \sqrt{0.00014}$$

$$.29 \pm 2 * 0.012$$

$$.29 \pm 0.024$$

$$(.266, .314)$$

$$(26.6\%, 31.4\%)$$

Difference of Proportions

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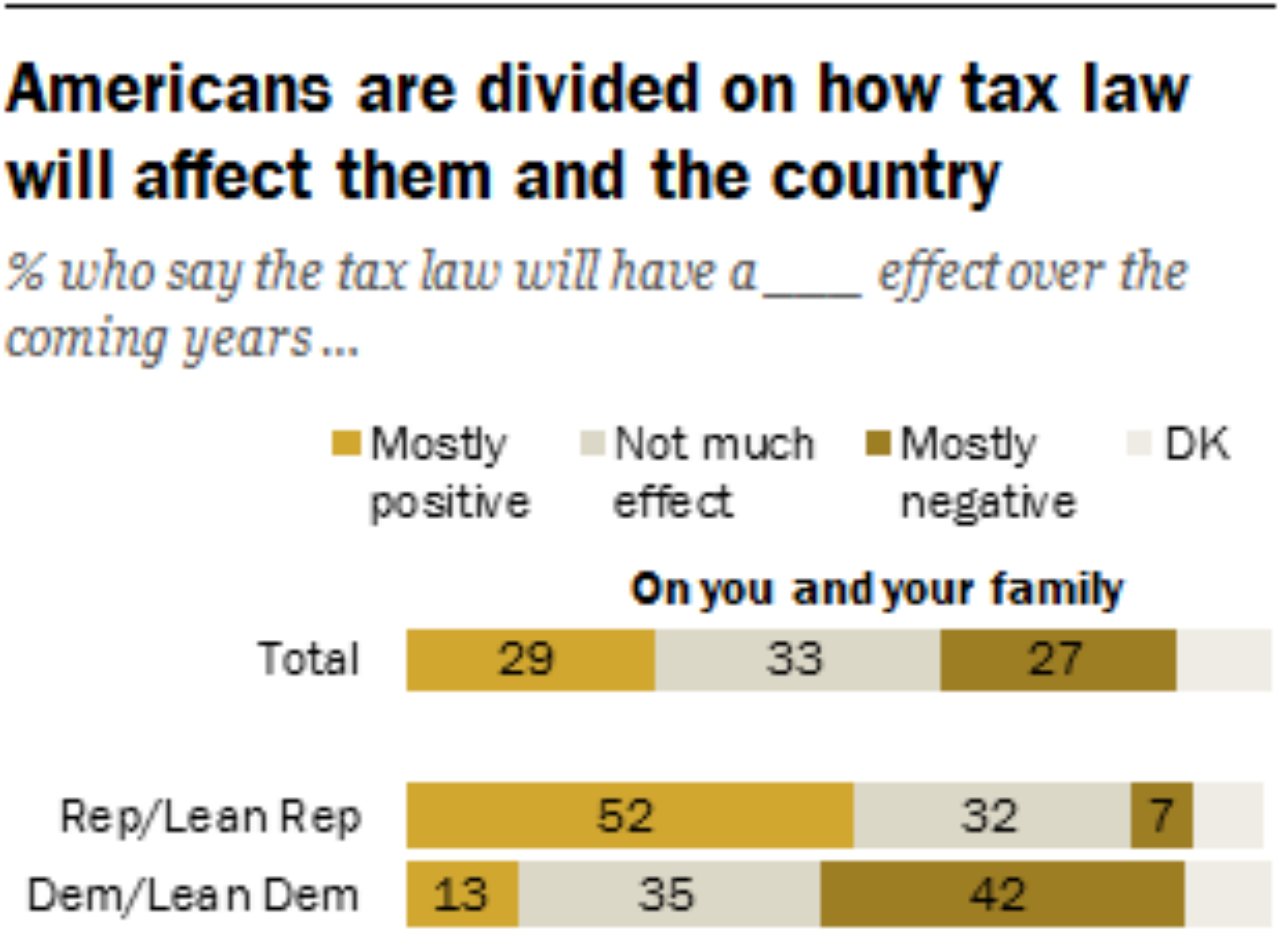

Difference of Proportions Test: Write Hypotheses

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Difference of Proportions Test: Check the Data

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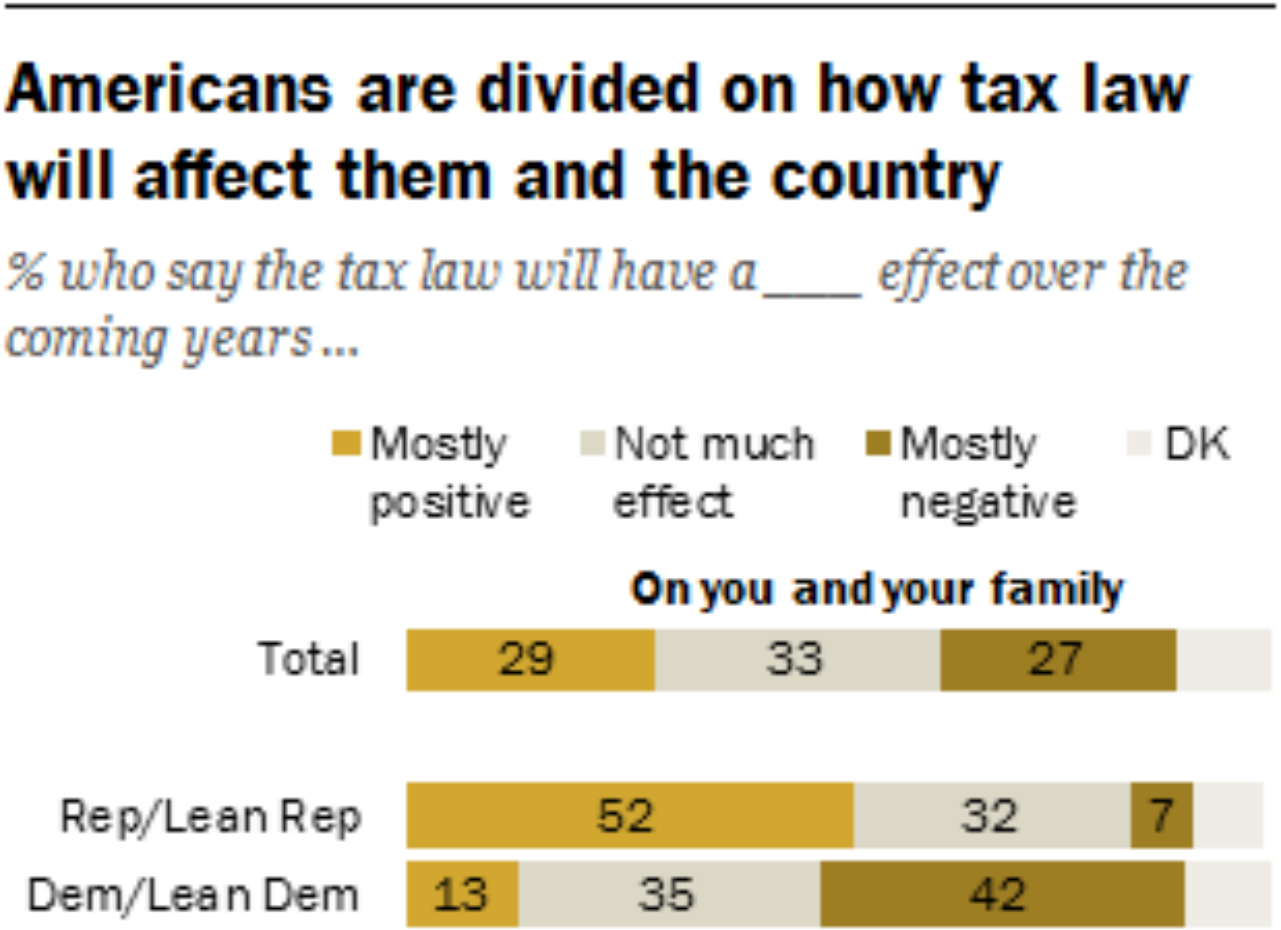

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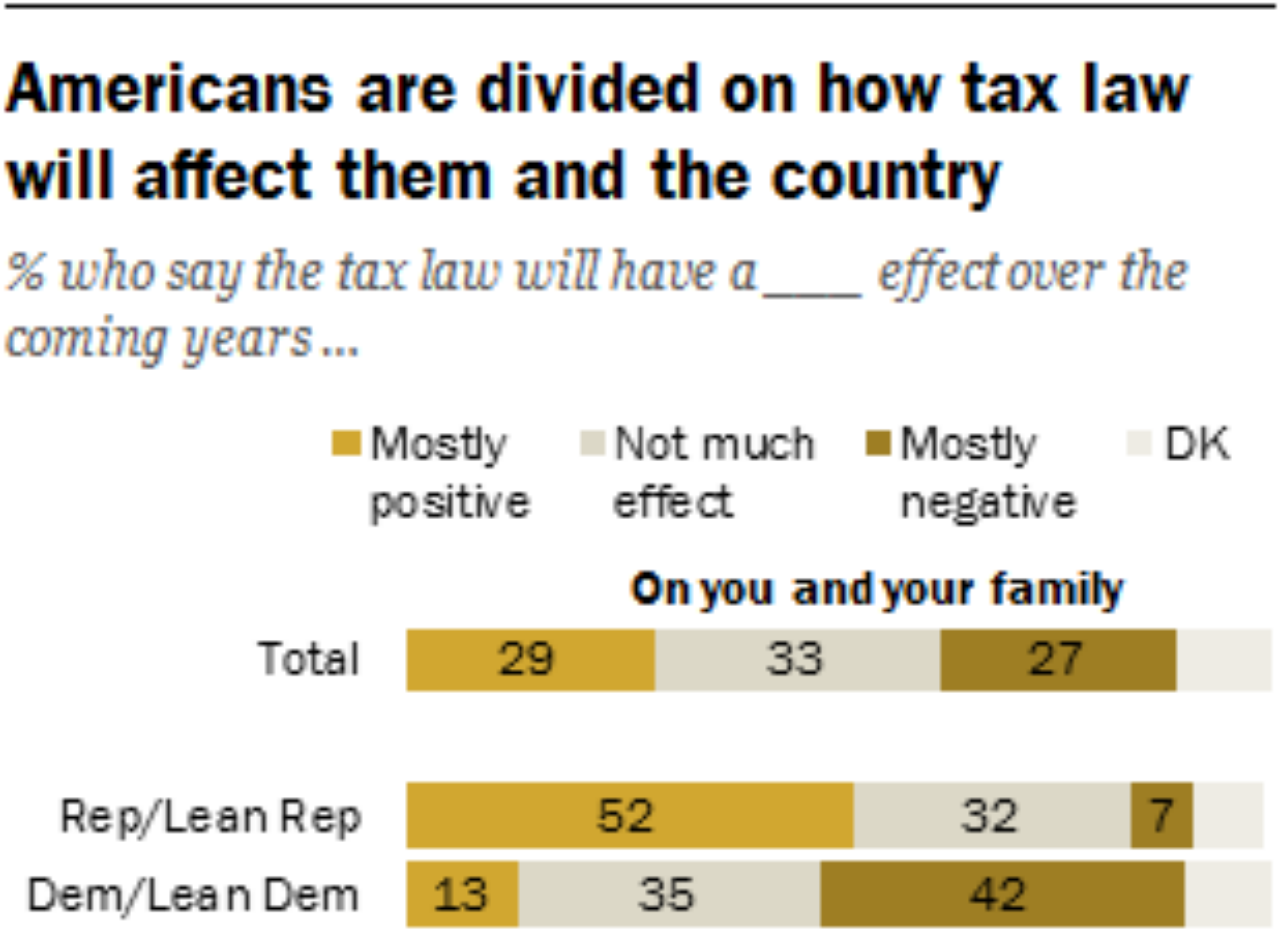

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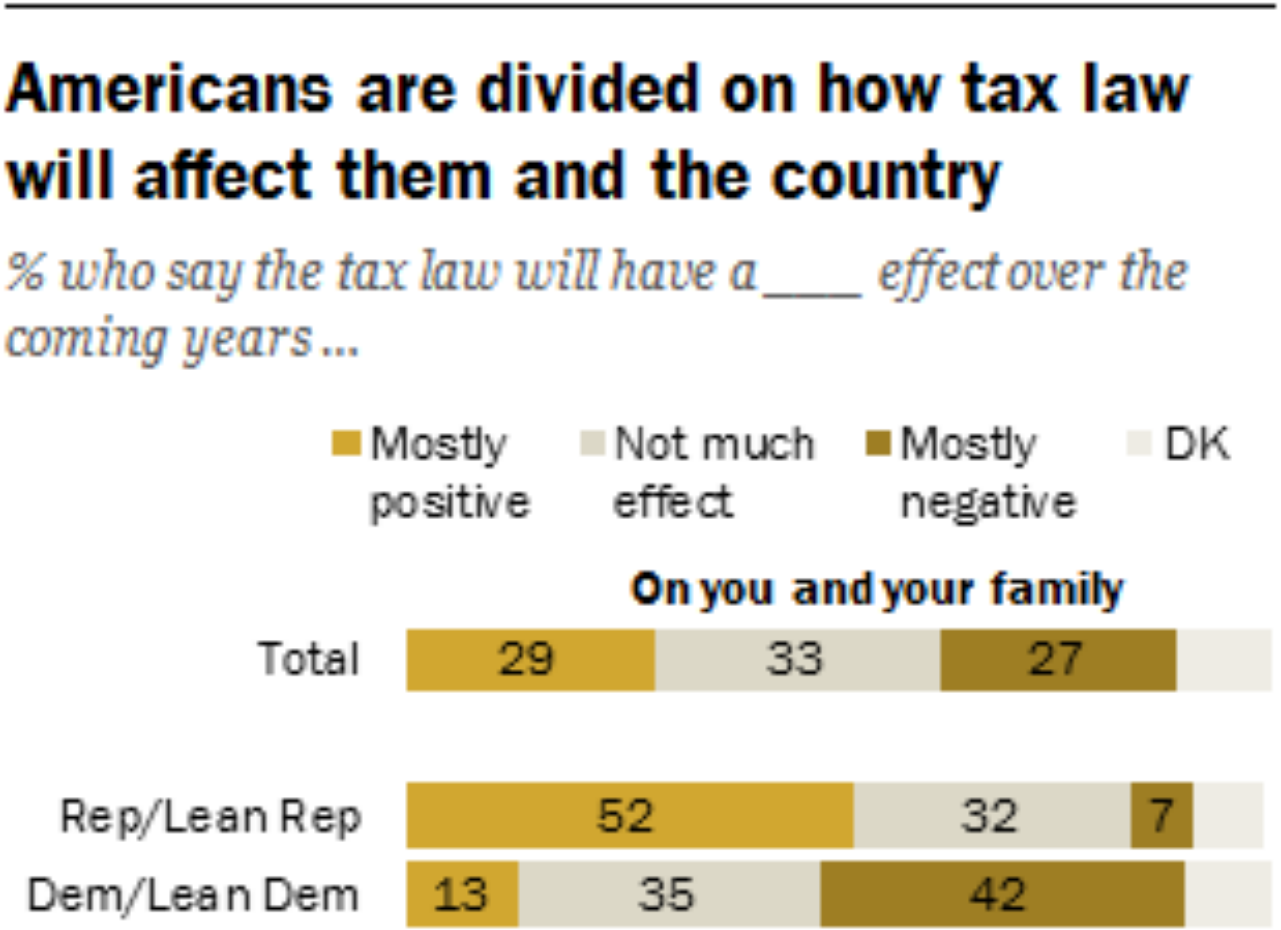

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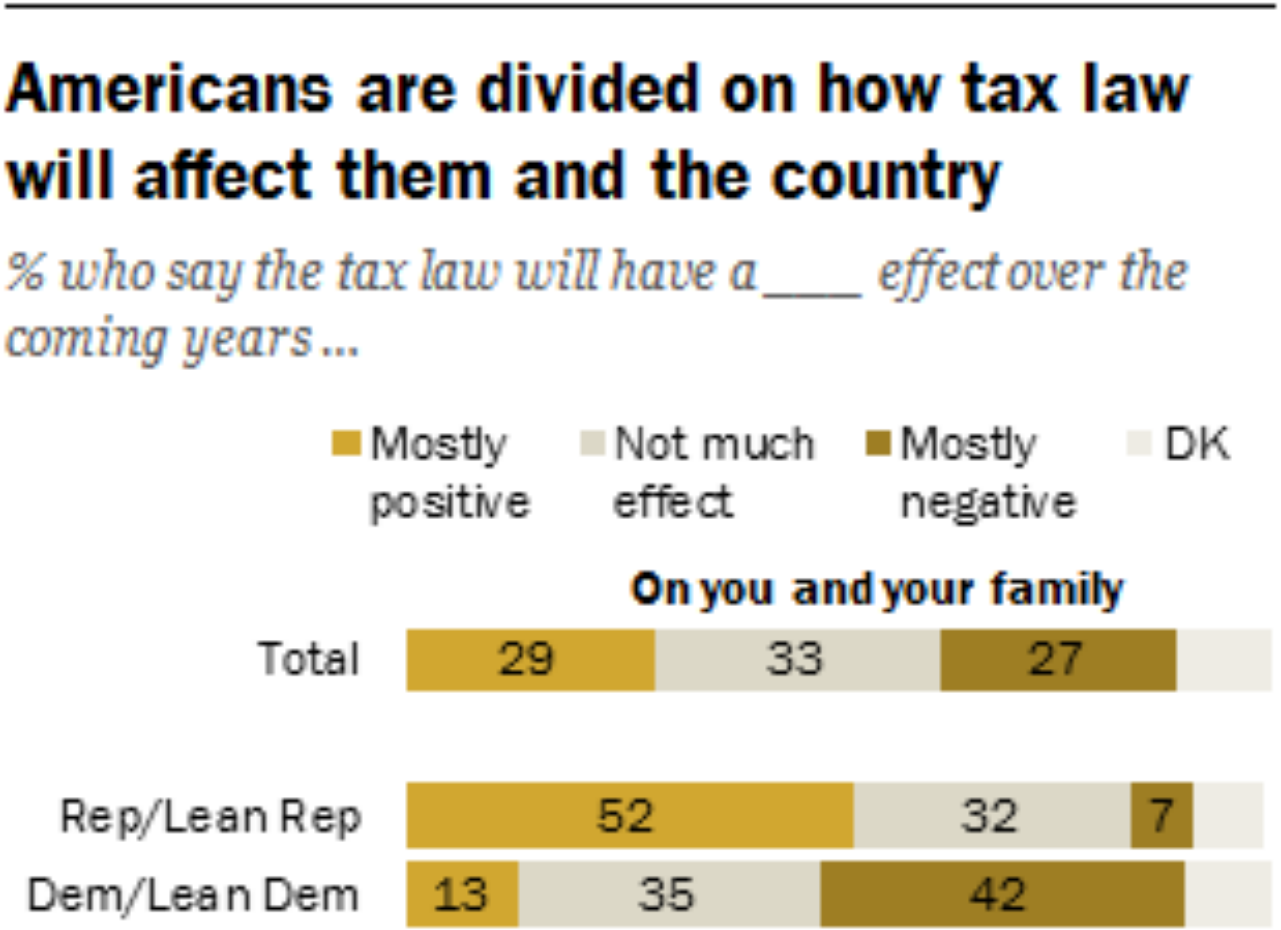

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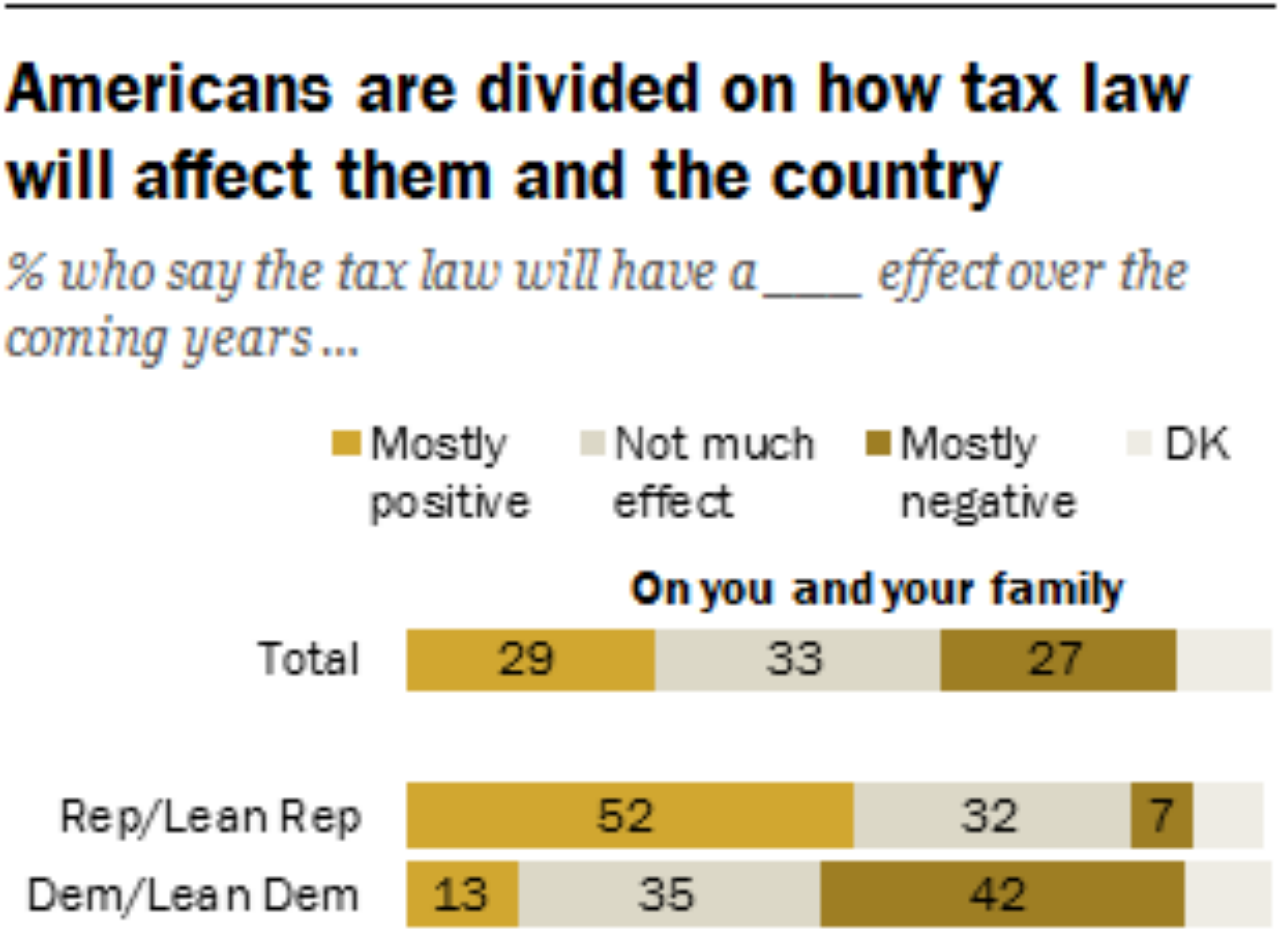

Does our hypothesis *appear* to hold? $.52 - .13 = .39 \neq 0$ Yes

Difference of Proportions Test: Test for Significance

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$(\hat{p}_{Rep} - \hat{p}_{Dem})$

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$$(\hat{p}_{Rep} - \hat{p}_{Dem}) \pm$$

Difference of Proportions Test: Test for Significance

$$(\hat{p}_{Rep} - \hat{p}_{Dem}) \pm 2*$$

Difference of Proportions Test: Test for Significance

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- $\hat{p}_{Rep}$ = Proportion of Republicans with positive opinion

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- $\hat{p}_{Rep}$ = Proportion of Republicans with positive opinion
- $\hat{p}_{Dem}$ = Proportion of Democrats with positive opinion
- $std.error_{Rep}$ = Standard Error for Republicans: $\frac{\sqrt{(\hat{p}_{Rep})(1-\hat{p}_{Rep})}}{\sqrt{N_{Rep}}}$

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- $std.error_{Dem}$ = Standard Error for Democrats: $\frac{\sqrt{(\hat{p}_{Dem})(1-\hat{p}_{Dem})}}{\sqrt{N_{Dem}}}$
- N_{Rep} = Number of Republicans in the sample
- N_{Dem} = Number of Democrats in the sample

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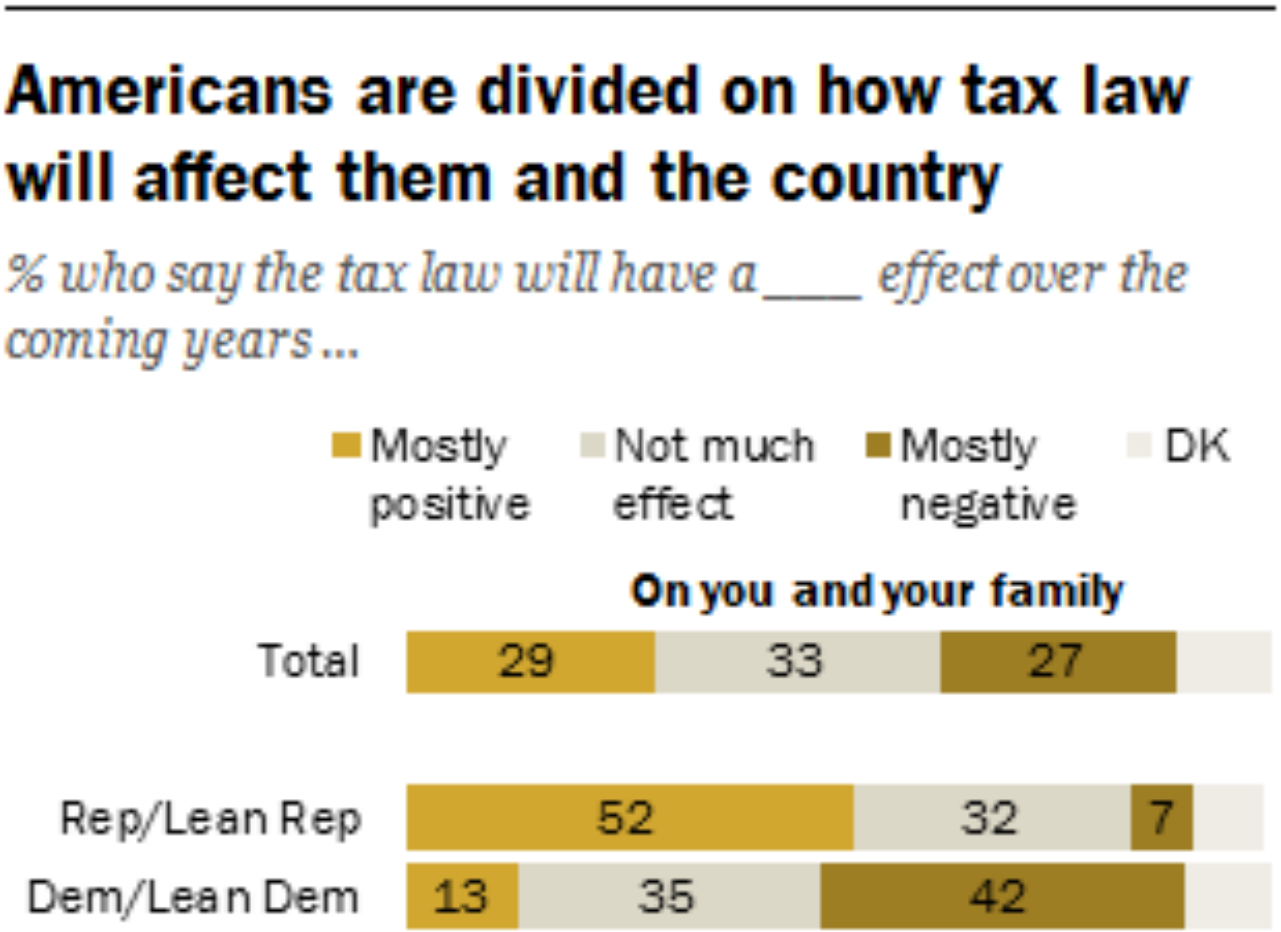

There were 571 Republicans and 767 Democrats in this sample.

Difference in Proportions Test: Test for Significance

- $\hat{p}_{Rep} = .52$
- $\hat{p}_{Dem} = .13$
- $N_{Rep} = 571$
- $N_{Dem} = 767$

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Standard Error for Republicans:

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Standard Error for Republicans:

$$\frac{\sqrt{(\hat{p}_{Rep})(1-\hat{p}_{Rep})}}{\sqrt{N_{Rep}}} = \frac{\sqrt{(.52)(1-.52)}}{\sqrt{571}} =$$

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Standard Error for Republicans:

$$\frac{\sqrt{(\hat{p}_{Rep})(1-\hat{p}_{Rep})}}{\sqrt{N_{Rep}}} = \frac{\sqrt{(.52)(1-.52)}}{\sqrt{571}} = \frac{\sqrt{0.2496}}{\sqrt{571}} \approx$$

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Standard Error for Democrats:

$$\frac{\sqrt{(\hat{p}_{Dem})(1-\hat{p}_{Dem})}}{\sqrt{N_{Dem}}} = \frac{\sqrt{(.13)(1-.13)}}{\sqrt{767}} = \frac{\sqrt{0.1131}}{\sqrt{767}} \approx 0.01$$

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No.

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No. Therefore, we can **reject the null hypothesis** that there is no difference in opinion between Democrats and Republicans. We can conclude with 95% confidence that the true proportion of Democrats with positive opinions about the new tax law is different from the true proportion of Republicans with positive opinions about the new tax law. We find that a significantly greater proportion of Republicans has positive opinions of the tax law than the proportion of Democrats.

Questions??

The Colbert Bump

The Colbert Bump in Campaign Donations: More Truthful than Truthy

James H. Fowler, *University of California, San Diego*

▸ Link to Video

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  - We can't randomly assign people to come on the show or not...
  - But we can come close: **Matching!**

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- THEN, we're going to get a list of all politicians who did not come on the show and find a "twin" or a "match" based on incumbency, party, and donations
- This allows us to **hold confounds constant** to try to *isolate the effect of going on the show*

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- Democrats who go on the show earn about 44% more in donations in the month after going on the show than Democrats who don't go on the show
- No Colbert Bump for Republicans
- Overall, no evidence of a statistically significant difference in **votes** between those who went on the show and those who did not.
  - Fail to reject the null hypothesis that the Colbert Bump is not real.

To Stata!