



# **YOUTH TOBACCO USAGE IN INDIANA: THE TRENDS, EFFECTS, & SOLUTIONS**

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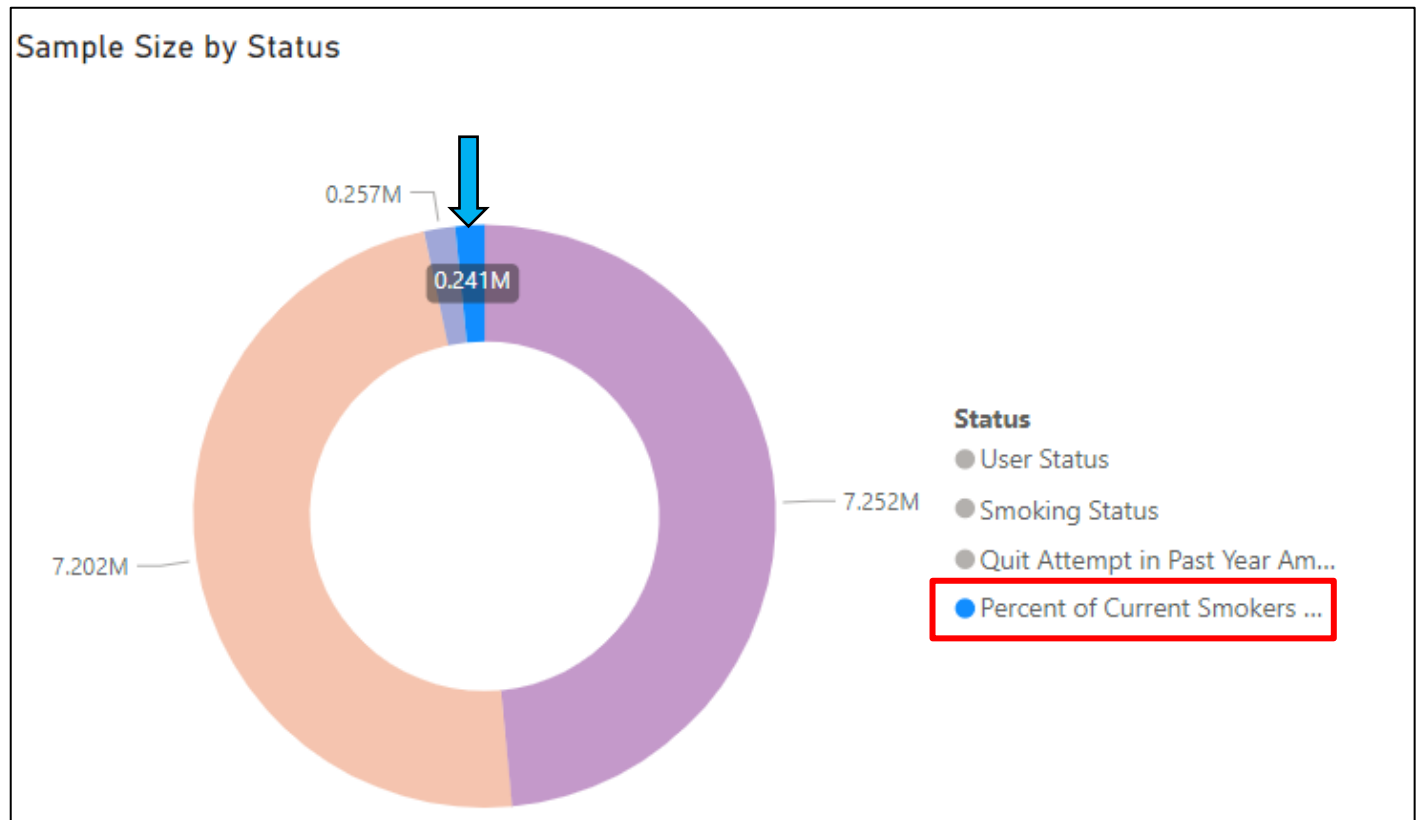
# STUDY SIGNIFICANCE

## Question

Out of 14,952,802 middle and high school smokers and tobacco users across the United States from 1999-2017, how many of them do you think **wanted to quit** when initially surveyed?

## Answer

241,245 students, which is **only 1.61%** of those surveyed that smoke or use tobacco.



# STUDY SIGNIFICANCE (CONT.)

MeasureDesc	Sum of Sample_Size
Percent of Current Smokers Who Want to Quit	241245
Quit Attempt in Past Year Among Current Cigarette Smokers	257343
Smoking Status	7202152
User Status	7252062
<b>Total</b>	<b>14952802</b>

~3.33%

~96.67%



**Important Mention:** The CDC originally "suppressed the data" included in the green region because of "a small sample size". (CDC, 2023)



**1) Research  
Question**

**2) Project  
Methodology**

**3) Background  
Information**

**4) Data Analysis  
& Results**

**5) Our Solution**

**6) Conclusion**

# AGENDA





# MY RESEARCH QUESTION

- What are the trends of cigarette and tobacco usage in the youth across Indiana, and based on those trends, what can be done to decrease the number of adolescents who use those products?





# PROJECT METHODOLOGY

- Analyze data from the Center for Disease Control and Prevention (CDC) regarding the youth's usage of cigarettes and other tobacco-related products to find trends.
- Illustrate the significance of why I've chosen Indiana over other areas of interest within the United States.
- Use causes and trends of youth cigarette and tobacco use from analysis to formulate potential solutions.





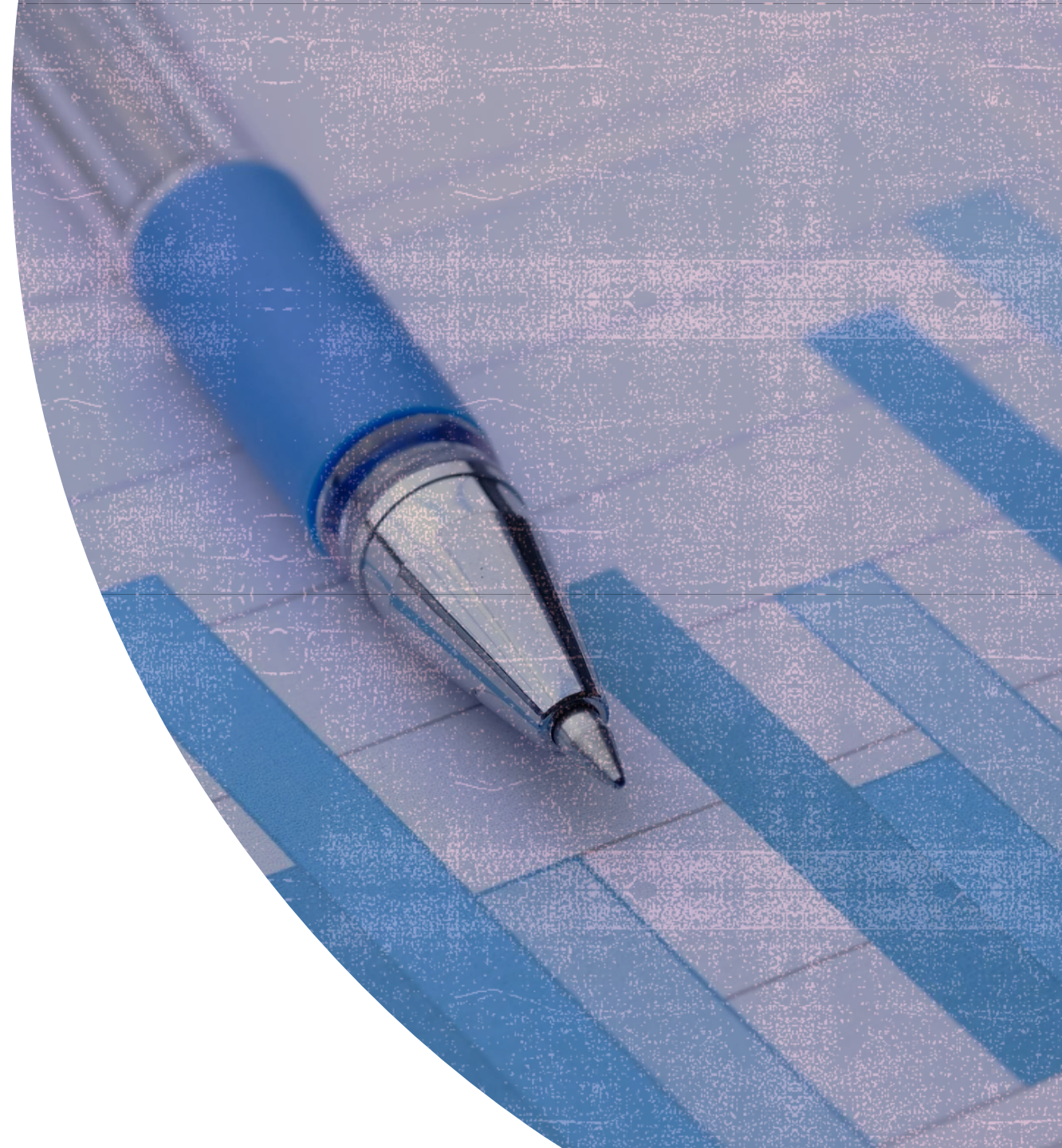
# BACKGROUND INFORMATION

- CDC Data Collection
- Data Information & Explanation



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**HOW DID THE  
CDC COLLECT  
THE DATA?**





# DATA COLLECTION

The Center for Disease Control & Prevention collected data under three main parameters.

- 1) A two-stage cluster for representative samples.
- 2) Overall response rate for proper survey inclusion.
- 3) Respondent refusal for proper survey inclusion.

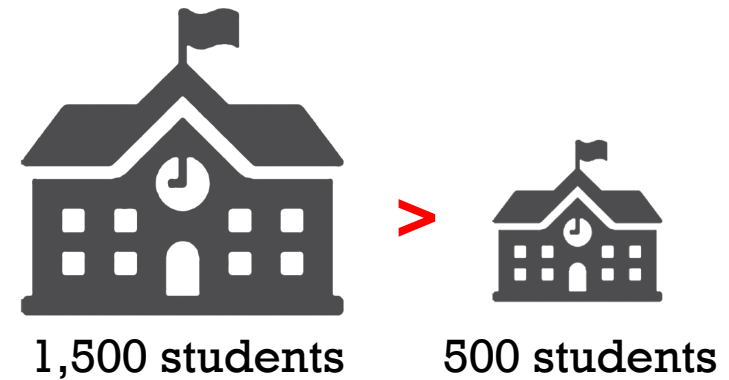


# CLUSTER SAMPLE: STAGE ONE

1) "The first sampling frame includes separate lists for middle schools and high schools". (CDC, 2023)



2) Schools were selected with the probability proportional to their enrollment size.



*The larger school was 3x more likely to be chosen.*

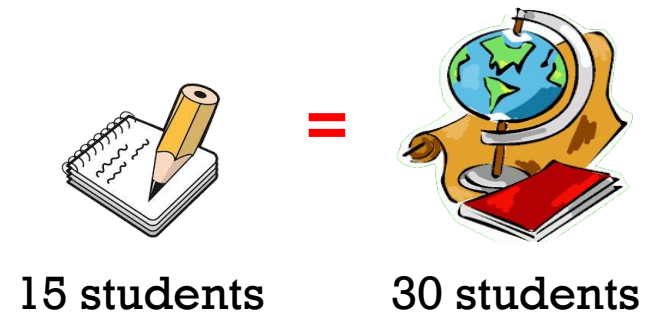


# CLUSTER SAMPLE: STAGE TWO

1) Classes were randomly selected from the list of classes obtained from each participating school.



2) Unlike Stage One, regardless of size, each class had an equal opportunity to be selected.



# OTHER PARAMETERS

1) To ensure each class (sample) didn't overrepresent the school (population), a minimum overall response rate of **60%** was required for each class to be included in the Youth Tobacco Survey (YTS).



2) If a respondent refused to answer a particular question, their answer would be excluded rather than considered as "null" or "refused to answer".





# **DATA INFORMATION & EXPLANATION**

# SIX KEY VARIABLES

## Education

The schooling level a student was in when surveyed.

- Middle School
- High School

## Gender

The gender of the surveyed student (if answered).

- Male
- Female

## LocationAbbr

The state or U.S. territory where the school was located.

- [Appendix 1]

## MeasureDesc

The status of what a student uses and if they want to or have tried to quit.

- Smoking Status
- User Status
- Smokers (Users) Who Want to Quit
- Quit Attempt in Past Year Among Smokers (Users)

## Response

The relevance in how recent a person used a tobacco product.

- Frequent
- Current
- Ever

*Note: Those in either of the "quit-related" (last two) groups for "MeasureDesc" were excluded from "Response".*

## Year

The year in which the survey was conducted.

- 1997
- ...
- 2017

*Note: Nearly all states and U.S. territories were interviewed in different years between 1997-2017.*



# DATA ANALYSIS & RESULTS

- Nationwide Results
- State-by-State Comparisons; Why Indiana?



# NATIONWIDE RESULTS

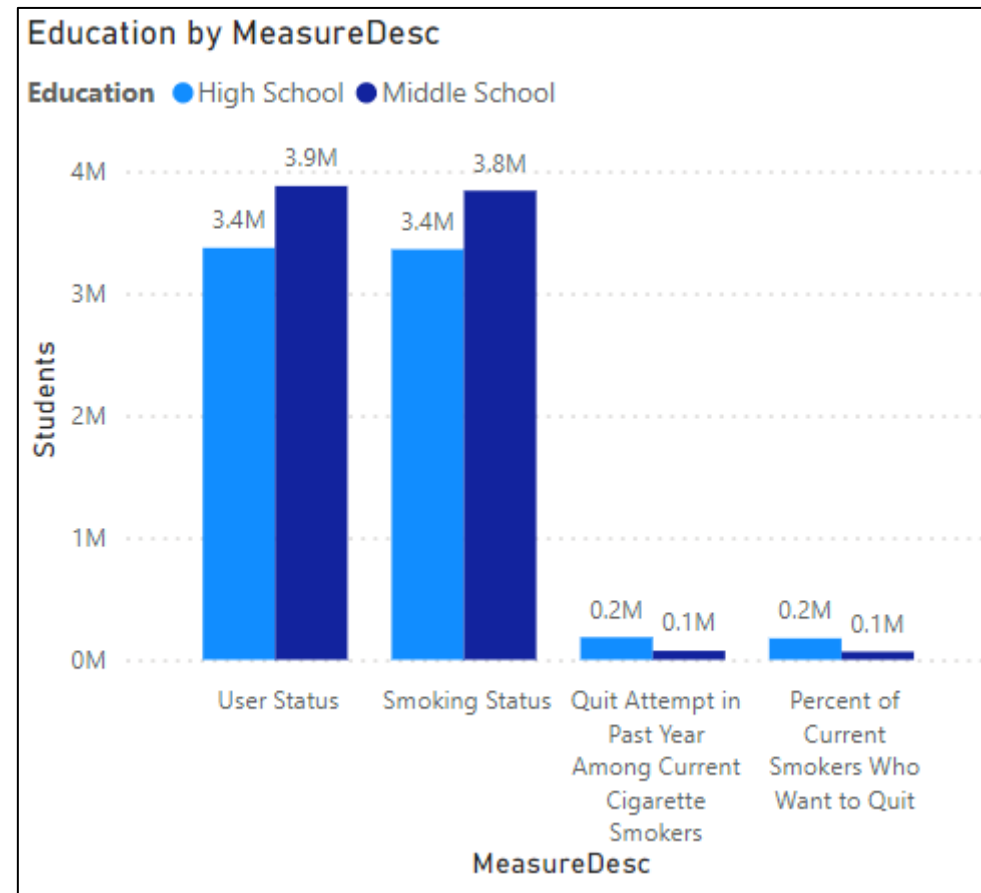
## Education By MeasureDesc

### Noteworthy Results

- There are significantly more middle school students using tobacco products than high school students.
- There are significantly fewer middle school students who wanted or tried to quit than high school students.

### Conclusions

- Based on nationwide data, middle school students need more assistance than high school students in the quitting process.





# NATIONWIDE RESULTS (CONT.)

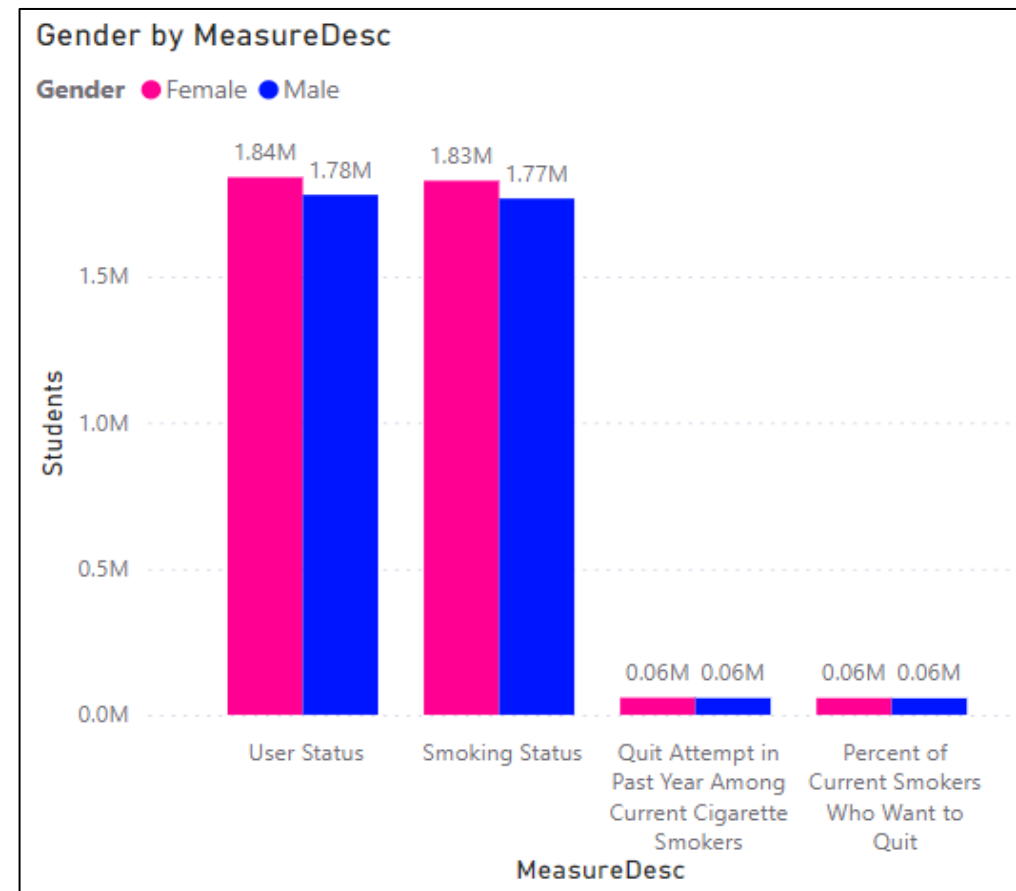
## Gender by MeasureDesc

### Noteworthy Results

- Proportionally, female students are slightly less prone to want or try to quit using tobacco-related products.

### Conclusions

- The results between 'Gender' and 'MeasureDesc' are not significant enough to form any conclusions.



# NATIONWIDE RESULTS (CONT.)

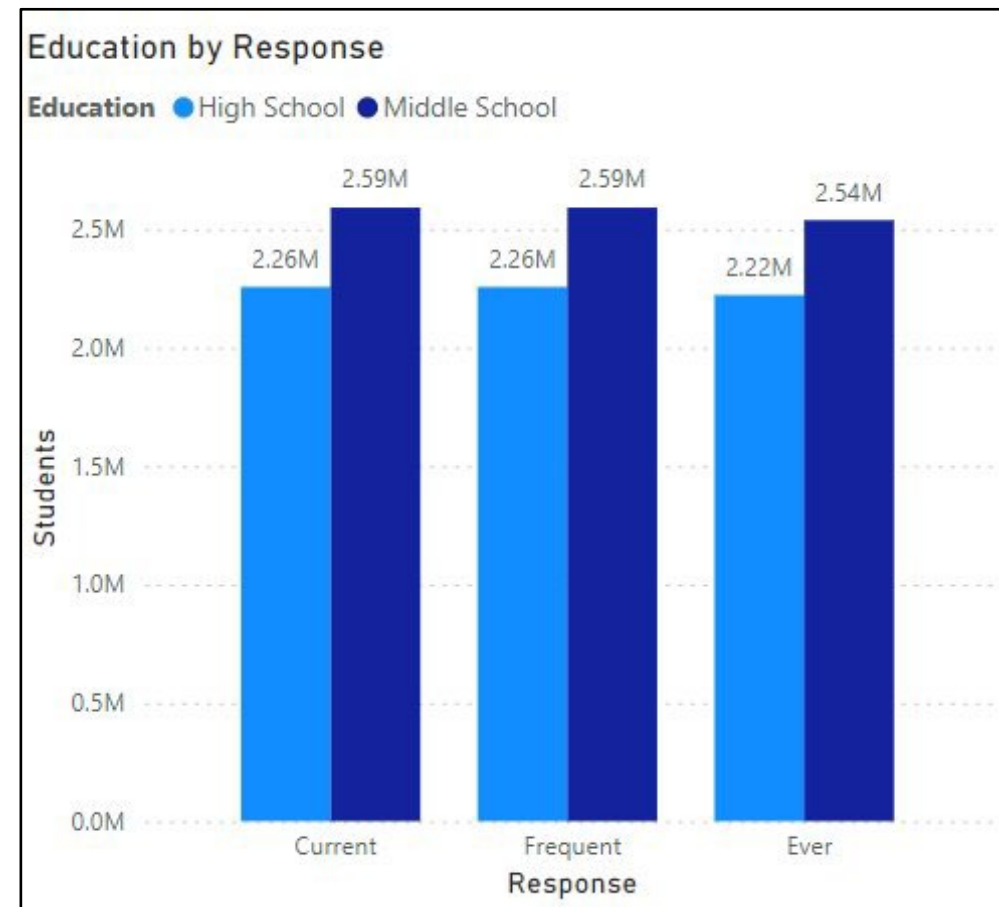
## Education By Response

### Noteworthy Results

- There are significantly more middle and high school students fall into the "Current" and "Frequent" categories as opposed to the "Ever" category.

### Conclusions

- Based on nationwide data by education, middle and high students were more actively using tobacco products than not.



# NATIONWIDE RESULTS (CONT.)

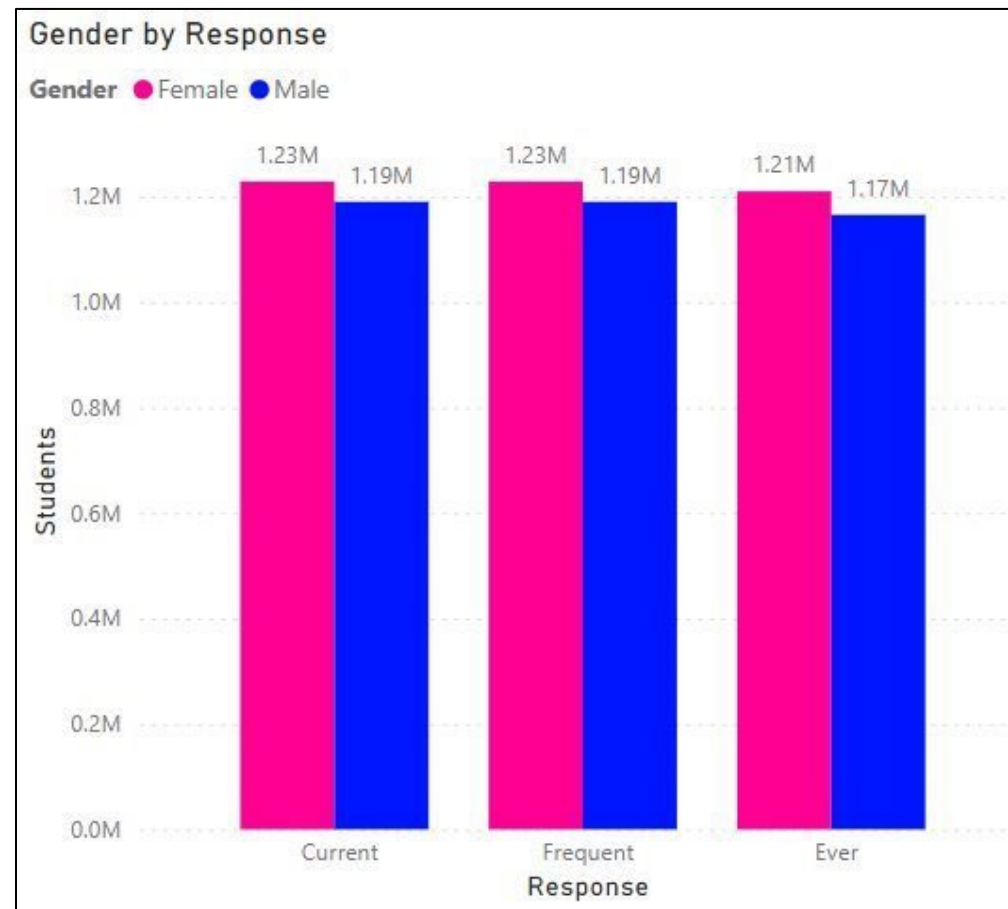
## Gender by Response

### Noteworthy Results

- There are more male and female students in the "Current" and "Frequent" categories as opposed to the "Ever" category.

### Conclusions

- Based on nationwide data by gender, male and female students were more actively using tobacco products than not.





# NATIONWIDE RESULTS RECAP

## Based on Education:

- Middle school students need more assistance than high school students in the quitting process.
- Middle and high students were more actively using tobacco products than not.

## Based on Gender:

- Male and female students were more actively using tobacco products than not.

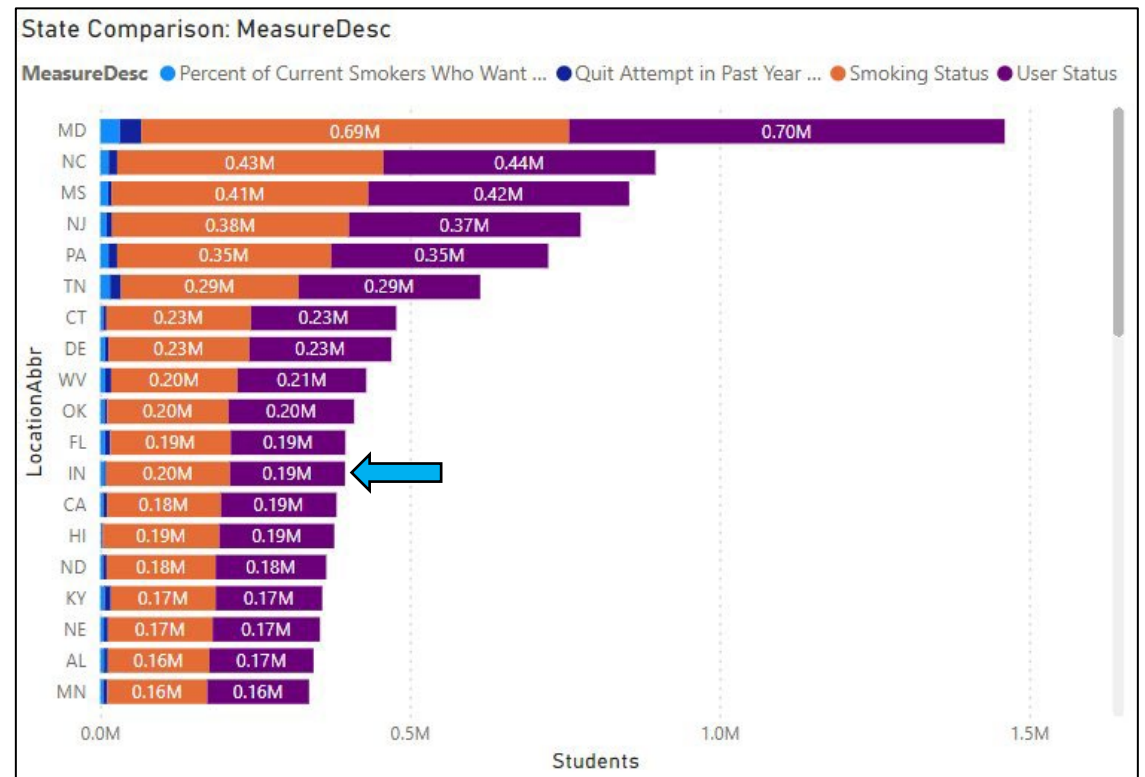


# STATE-BY-STATE COMPARISONS; WHY INDIANA?

## Overall Comparisons - MeasureDesc

Out of 47 states and U.S. territories that had significant samples, Indiana ranks...

- **2nd** based on the percentage of people who smoke out of all students surveyed. (50.52%)
- **45th** based on the percentage of people who use tobacco out of all students surveyed. (47.01%)
- **32nd** based on the percentage of people who wanted to quit out of all students surveyed. (1.66%)
- **4th** based on the percentage of people who attempted to quit out of all students surveyed. (0.08%)

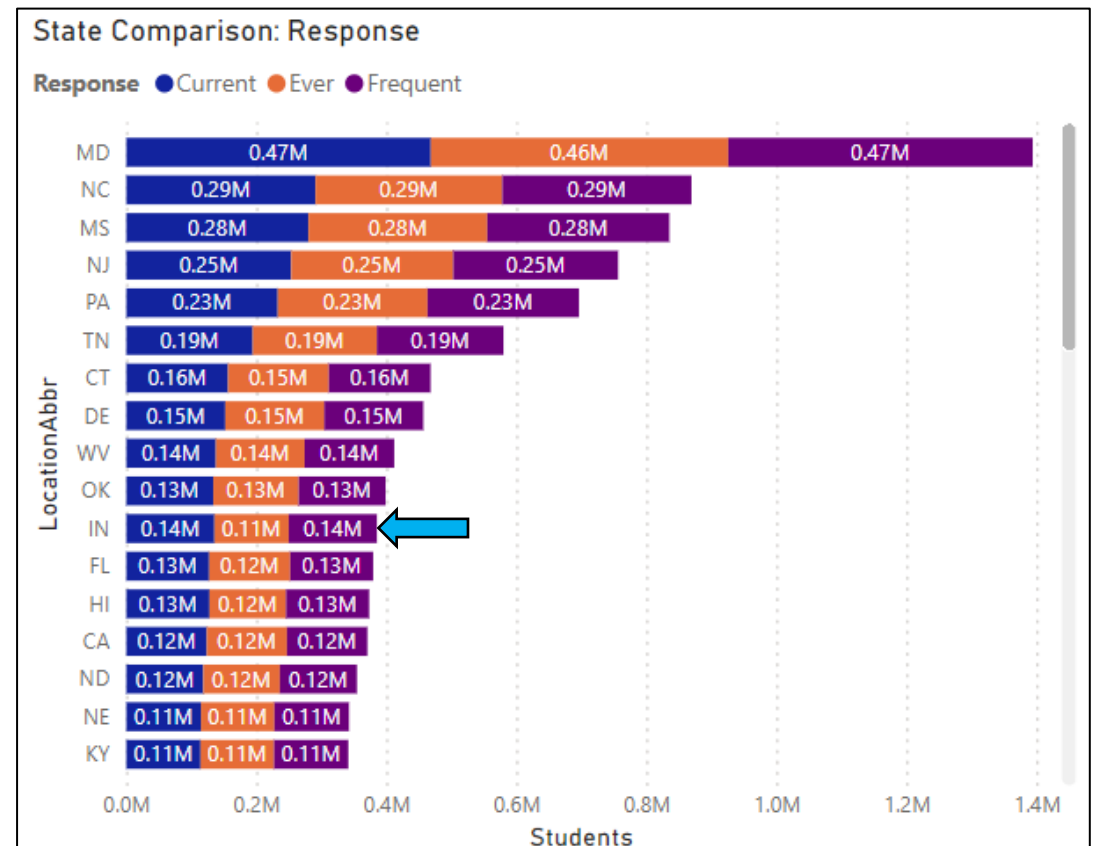


# STATE-BY-STATE COMPARISONS; WHY INDIANA? (CONT.)

## Overall Comparisons - Response

Out of 48 states and U.S. territories that had significant samples, Indiana ranks...

- **1st** based on the percentage of people who either frequently or currently smoke or use tobacco products out of students surveyed. (70.36%)
  - 2nd Place: Hawaii (68.47%) [-1.89%]
  - 48th Place: Arizona (65.99%) [-2.48%]
- In other terms, Indiana's results for this particular comparison is **~5.72** standard deviations away from the mean.





# OUR SOLUTION

- Important Questions
- Secondary Research



# IMPORTANT QUESTIONS

**1st** based on the percentage of people who either frequently or currently smoke or use tobacco products out of students surveyed. (70.36%)

Does Indiana have a serious problem with the number of people who smoke or use tobacco products?

Yes.

**2nd** based on the percentage of **people who smoke** out of all students surveyed. (50.52%)

Does Indiana have a specific target audience they should help? If so, what audience?

Yes, specifically, students who smoke.

**4th** based on the percentage of people who **attempted to quit** out of all students surveyed. (0.08%)

Does Indiana have an extraordinarily low cessation rate? If so, how can we incentivize people to quit?

Yes, research-based question.

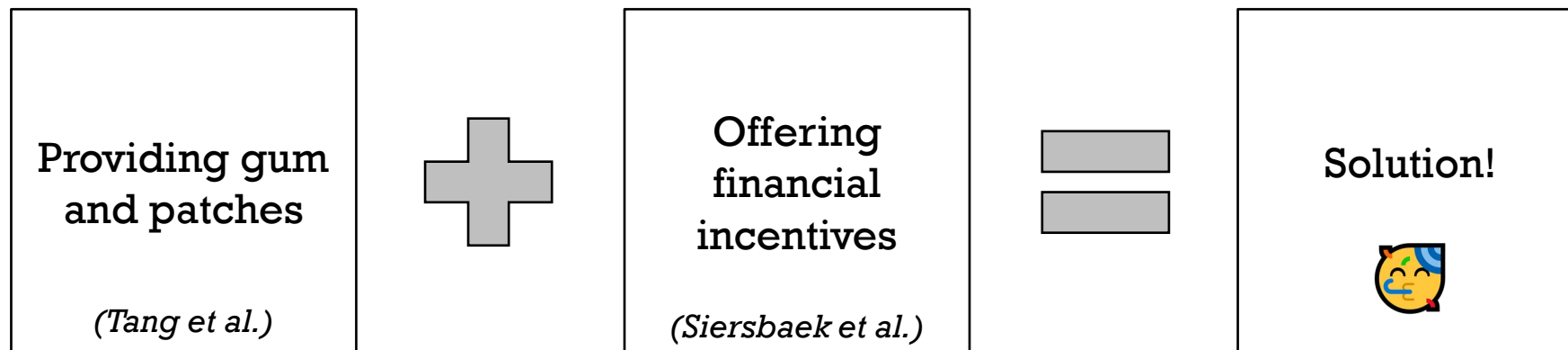




# SECONDARY RESEARCH

"Both gum and patch are effective aids to help nicotine dependent smokers who seek help in stopping". (Tang et al., 1994)

"A growing body of evidence shows that financial incentives are effective at helping people stop smoking". (Siersbaek et al., 2024)





# CONCLUSION

- Research Question
- Project Methodology
- Background Information
  - CDC Data Collection
  - Data Information & Explanation
- Data Analysis & Results
  - Nationwide Results
  - State-by-State Comparisons
- Our Solution



# APPENDIX

1) States and U.S. territories included in the survey: Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, District of Columbia (Washington D.C.), Florida, Georgia, Guam, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, "National", Nebraska, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Pennsylvania, Puerto Rico, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virgin Islands, Virginia, West Virginia, Wisconsin, and Wyoming.

2) [Excel Comparison Spreadsheet](#)

# REFERENCES

CDC. (2023, August 26). *U.S. Department of Health & Human Services - Youth Tobacco Survey (YTS) data*. Catalog. <https://catalog.data.gov/dataset/youth-tobacco-survey-yts-data>

Siersbaek, R., Kavanagh, P., Ford, J. *et al.* How and why do financial incentives contribute to helping people stop smoking? A realist review. *BMC Public Health* 24, 500 (2024). <https://doi.org/10.1186/s12889-024-17967-3>

Tang JL, Law M, Wald N. How effective is nicotine replacement therapy in helping people to stop smoking? *BMJ*. 1994 Jan 1;308(6920):21-6. doi: 10.1136/bmj.308.6920.21. Erratum in: *BMJ* 1994 Mar 5;308(6929):626. PMID: 8179658; PMCID: PMC2539178.

