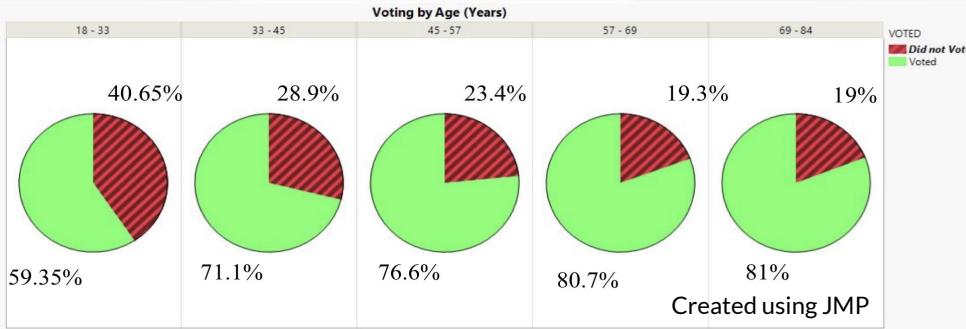


The background of the slide features a stylized American flag. The top half shows the stars in the upper left corner, transitioning from dark blue to light blue. The bottom half shows the horizontal stripes, transitioning from dark red to light red. A large, semi-transparent white rectangular box covers the middle portion of the flag, containing the title text.

# Improving Voter Turnout

By James Anderson, Kevin Huang, Prathik Kaklamudi,  
Angela Tsang, Zack Zhuang

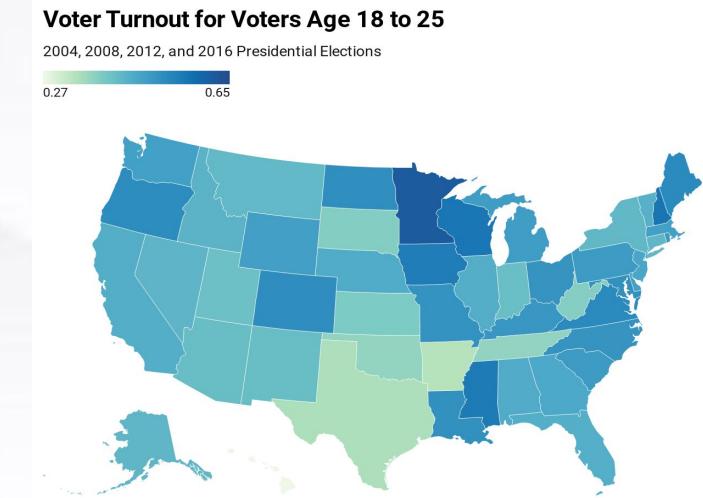
# Analysis of Voter Turnout by Age



The choropleth map on the right shows the average voter turnout rates for **voters age 18 to 25** in all 50 states for the **4 most recent presidential elections**. States with high turnout rates are shaded darker, while those with low turnout rates are shaded lighter. From this map, it is apparent that youth voter turnout rates **vary widely** across the country, ranging from under 30% to over 60%.

Based on the data shown on the map to the right, we decided to conduct a case study using two states: Minnesota, which has high youth turnout, and Arizona, which has average youth turnout.

The voter turnout rate **varies widely** across different age brackets, as can be seen in the pie charts at left. The pies show the proportion of registered voters who voted in the **2016 presidential election** across **five age brackets**. There seems to be a **positive correlation** in voter turnout with respect to age, with the **youngest group** of voters (ages 18-33) having **significantly lower turnout** than all other groups. The voter turnout rate of 59.35% is over 10% lower than that of voters 33 to 45 and over 20% lower than that of voters 69 and older. Seeing this discrepancy, we decided to investigate possible **causes of low youth voter turnout rates** in the United States and **solutions** to this problem.



# Voter Turnout in Minnesota and Arizona

The stacked bar graphs on the left show voter turnout rates in Minnesota and Arizona by election for the **past four presidential elections**. Voter turnout rates in Minnesota are **consistently higher** (average 74.76%) than turnout rates in Arizona (average 60.17%). Based on historical voter turnout rates, we will predict the voter turnout rates in Minnesota\* and Arizona for the 2020 presidential election.

\*Currently, Minnesota is on track to achieve over 78% overall turnout, surpassing turnout from the 2008, 2012, and 2016.

## Predicted Voter Turnout Rates for 2020\*

### Assumptions:

1. Simple random sample
2. Independent sample
3. Sample size is less than 10% of the population size.
4. Sample size is large enough to be approximately normally distributed by the central limit theorem.

Let  $p_1$  = the true proportion of registered voters in Minnesota who will vote in the 2020 presidential election

$$p_1 = 6011/8040 = 0.7476$$

95% Confidence Interval: (0.7381, 0.7571)

We are 95% confident that the true proportion of registered voters in Minnesota who will vote in the 2020 presidential election is between 73.81% and 75.71%.

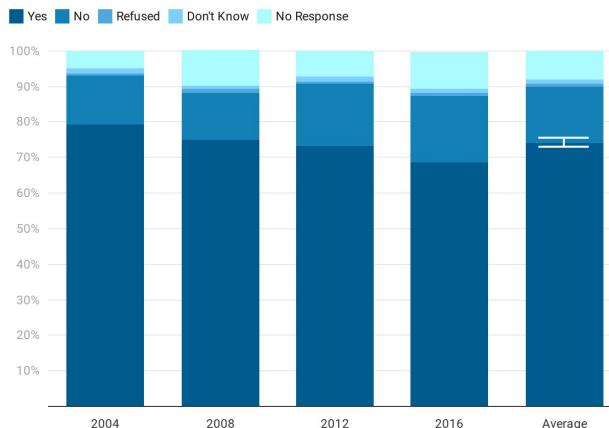
Let  $p_2$  = the true proportion of registered voters in Arizona who will vote in the 2020 presidential election

$$p_2 = 2879/4785 = 0.6017$$

95% Confidence Interval: (0.5878, 0.6155)

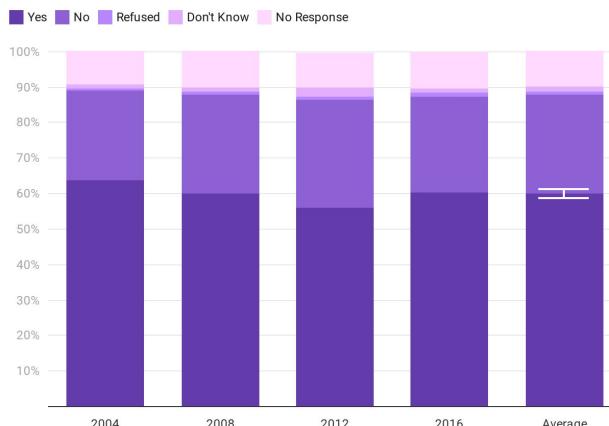
We are 95% confident that the true proportion of registered voters in Arizona who will vote in the 2020 presidential election is between 58.78% and 61.55%.

### Minnesota Voter Turnout Rates



Source: IPUMS-CPS • Created with Datawrapper

### Arizona Voter Turnout Rates



Source: IPUMS - CPS • Created with Datawrapper

\*Predictions made using data from the 2004, 2008, 2012, and 2016 presidential elections. Predictions are made assuming all conditions remain the same. 1-proportion z-intervals are marked in white.

# State Voting Regulations

## Minnesota

- Early voting starts 9/18 and ends 11/2 (46 Days)
- Don't need ID if voter registration is current
- Photo ID can be expired
- Election-day registration

## Arizona

- Vote Early
- Requires ID for first time and mail voters
- ID verification

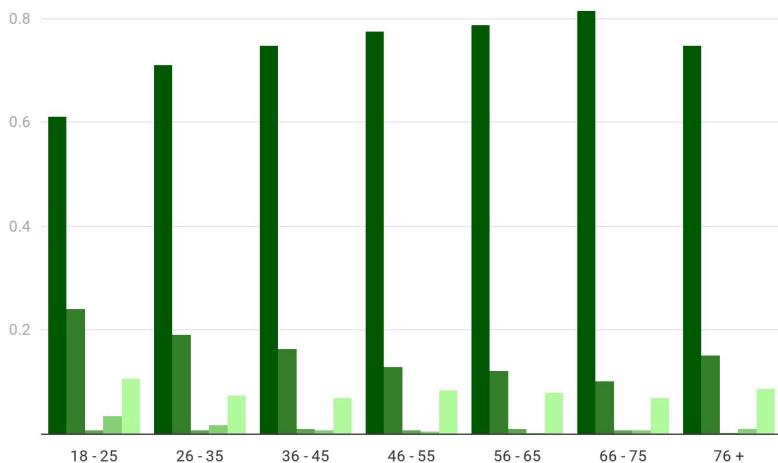
- Early voting starts 10/7 and ends 10/30 (24 Days)
- Requires Voter ID present or 2 non photo IDs
- IDs can not be expired
- Conditional Voting ballots

Minnesota has a significantly longer early voting period than Arizona as well as election-day voting, which Arizona does not have. This could potentially correlate with voter turnout since Minnesota gives its residents more freedom to register and vote based on their schedules.

## Minnesota Voter Turnout Rates by Age

2004, 2008, 2012, and 2016 Presidential Elections

■ Yes ■ No ■ Refused ■ Don't Know ■ No Response



Source: IPUMS-CPS • Created with Datawrapper

The grouped bar graph above show voter turnout rates in Minnesota for the past four presidential elections by age bracket. Although turnout for voters age 18-25 is slightly lower than for the other age groups in Minnesota, it is the **highest in the country** at 61.81%.

# Age and Turnout Rates in Minnesota

Analysis and Predictions\* for the 2020 Presidential Election

Assumptions:

1. Simple random sample
2. Independent sample
3. Sample size is less than 10% of the population size.
4. Sample size is large enough to be approximately normally distributed by the central limit theorem.

Let  $p_1$  = the true proportion of registered voters age 18 to 35 (inclusive) in Minnesota who will vote in the 2020 presidential election

$$p_1 = 1542/2309 = 0.6678$$

99% Confidence Interval: (0.6426, 0.6931)

We are 99% confident that the true proportion of registered voters in Minnesota age 18 to 35 who will vote in the 2020 presidential election is between 64.26 % and 69.31%.

Let  $p_2$  = the true proportion of registered voters age 36 to 65 (inclusive) in Minnesota who will vote in the 2020 presidential election

$$p_2 = 3387/4373 = 0.7745$$

99% Confidence Interval: (0.7583, 0.7908)

We are 99% confident that the true proportion of registered voters in Minnesota age 36 to 65 who will vote in the 2020 presidential election is between 75.83% and 79.08%.

Let  $p_3$  = the true proportion of registered voters age 66 and older in Minnesota who will vote in the 2020 presidential election

$$p_3 = 1082/1358 = 0.7968$$

99% Confidence Interval: (0.7686, 0.8249)

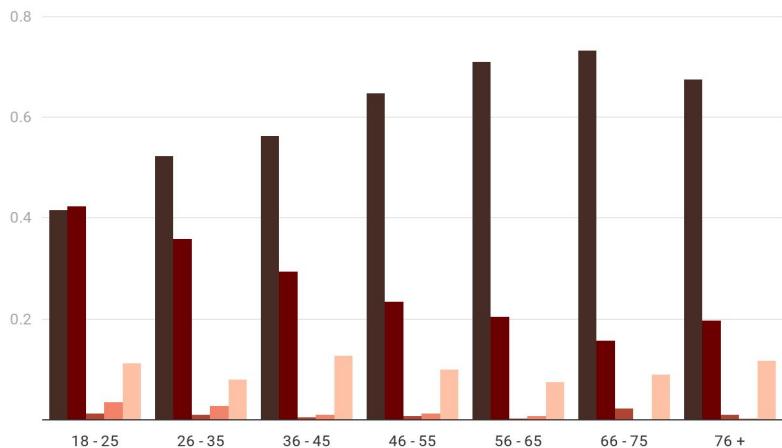
We are 99% confident that the true proportion of registered voters in Minnesota age 66 and older who will vote in the 2020 presidential election is between 76.86% and 82.49%.

\*Predictions made using data from the 2004, 2008, 2012, and 2016 presidential elections. Predictions are made assuming all conditions remain the same. 1-proportion z-intervals were calculated.

## Arizona Voter Turnout Rates by Age

2004, 2008, 2012, and 2016 Presidential Elections

■ Yes ■ No ■ Refused ■ Don't Know ■ No Response



Source: IPUMS-CPS • Created with Datawrapper

The grouped bar graph above show voter turnout rates in Arizona for the **past four presidential elections by age bracket**. There seems to be a **positive correlation** between age and turnout rate (except for the oldest age bracket of 75 and older). The turnout rate for voters age 18 to 25 is 41.05%, which is considered **average** in the United States.

# Age and Turnout Rates in Arizona

Analysis and Predictions\* for the 2020 Presidential Election

Assumptions:

1. Simple random sample
2. Independent sample
3. Sample size is less than 10% of the population size.
4. Sample size is large enough to be approximately normally distributed by the central limit theorem.

Let  $p_1$  = the true proportion of registered voters age 18 to 35 (inclusive) in Arizona who will vote in the 2020 presidential election

$$p_1 = 688/1469 = 0.4683$$

99% Confidence Interval: (0.4348, 0.5019)

We are 99% confident that the true proportion of registered voters in Arizona age 18 to 35 who will vote in the 2020 presidential election is between 43.48% and 50.19%.

Let  $p_2$  = the true proportion of registered voters age 36 to 65 (inclusive) in Arizona who will vote in the 2020 presidential election

$$p_2 = 1572/2444 = 0.6432$$

99% Confidence Interval: (0.6183, 0.6682)

We are 99% confident that the true proportion of registered voters in Arizona age 36 to 65 who will vote in the 2020 presidential election is between 61.83% and 66.82%.

Let  $p_3$  = the true proportion of registered voters age 66 and older in Arizona who will vote in the 2020 presidential election

$$p_3 = 619/872 = 0.7099$$

99% Confidence Interval: (0.6703, 0.7495)

We are 99% confident that the true proportion of registered voters in Arizona age 66 and older who will vote in the 2020 presidential election is between 67.03% and 74.95%.

\*Predictions made using data from the 2004, 2008, 2012, and 2016 presidential elections. Predictions are made assuming all conditions remain the same. 1-proportion z-intervals were calculated.

# Voting Education Resources in Minnesota

## For K-12 Students and Teachers

- **Students Voting Program** - statewide mock election for presidential and midterm elections
  - Teachers are given resources to help students learn about candidates, issues, voter registration, and the voting process
- Teachers are given resources to help students with voter registration and hold **registration drives**
- **Your Vote Matters Program** - high school voter education program
  - Support for civics and government teachers
  - Help students become election judge trainees



## For College Students:

- **Democracy Cup** - statewide competition for presidential and midterm elections
  - Two-year and four-year institutions compete to achieve the highest voter turnout in the state
  - First implemented in 2016 as voter registration competition (Ballot Bowl)
- Resources for college students studying abroad
- University of Minnesota integrates voter registration into **online class registration system**
- Public colleges in Minnesota are required to have **on-campus polling places**



From our research, it is clear that Minnesota has a **robust and interactive civics education program for K-12 students**, which allows students to be familiar with the registration and voting processes. This also ensures that students will be more likely to vote when they are of age since they are more likely to feel that their vote matters. The **Democracy Cup** also appears to be an effective initiative that gives colleges incentive to encourage their students to vote. In states that don't have comprehensive automatic voter registration, colleges can also help **simplify the voter registration process** by integrating it into the online system used by students to register and pay for classes, similar to what the University of Minnesota does.

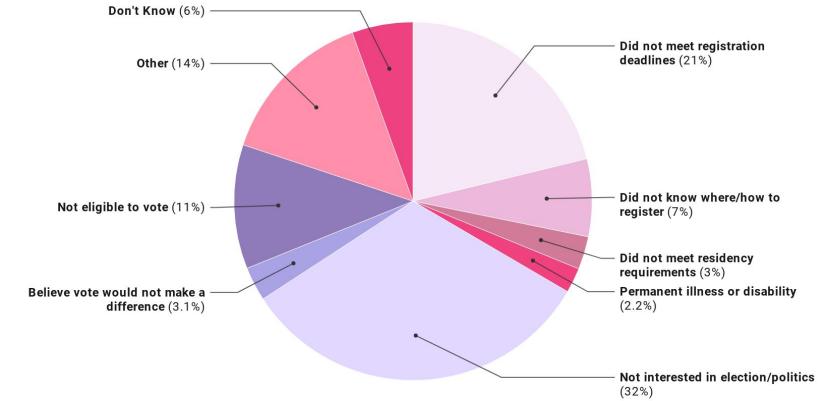
# Arizona

## Reasons for Not Voting and Not Registering Voters Age 18 to 25

- There were a variety of reasons given by young Arizona citizens for not registering to vote or not voting.
- The most common reasons people aged 18-25 did not register were **lack of interest in politics** (32%), followed by **not meeting the registration deadline** (21%).
- **Being too busy** (19%), **registration problems** (12%), and **lack of interest** or thinking their vote would not matter (12%) were the three most common reasons registered voters did not vote.
- Many issues regarding **lack of interest in politics** and/or **voting and unfamiliarity with the voting registration process** could be ameliorated with a more comprehensive and participatory civics curriculum
- Universities can also help encourage voting and registration by **simplifying the voting registration process** and **opening on-campus polling places**

### Reasons for Not Registering to Vote

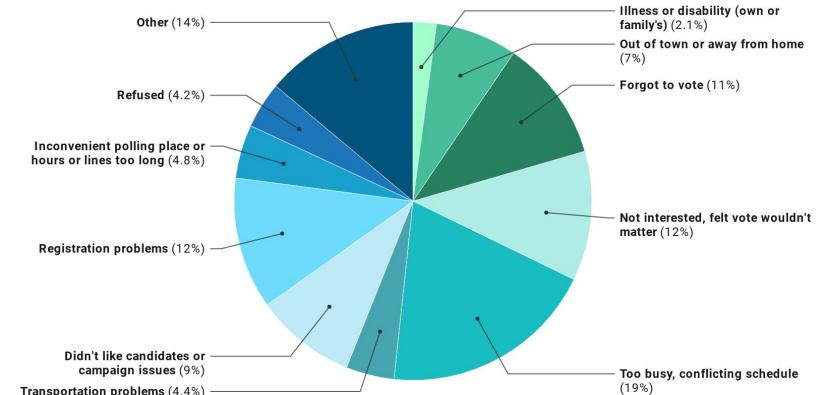
Voters age 18 - 25 in Arizona who did not register to vote in 2004, 2008, 2012, and 2016 presidential elections



Source: IPUMS-CPS • Created with Datawrapper

### Reasons for Not Voting

Registered voters age 18 - 25 in Arizona who did not vote in 2004, 2008, 2012, and 2016 presidential elections



Source: IPUMS-CPS • Created with Datawrapper

# Our Solutions

## Part I: Voter Education

- Voter education in high school
  - Begin teaching about voter registration and voting process in high school
  - Emphasize the importance of voting in the democratic process in civics education
- Hold voter education seminars and voter registration drives on college campuses

## Part II: College Initiatives

- Initiatives for colleges to encourage students to register vote
  - Tournaments modeled after Minnesota's Democracy Cup
  - ALL IN Campus Democracy Challenge
- Integrate voter registration into college course registration systems
- On-campus polling places
  - Early voting polling places at large universities
  - Election Day polling places at smaller institutions

## Part III: Government Initiatives

- Longer early voting period
- Make election day a holiday for those in the labor force and college students

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