

M113B Performance Task

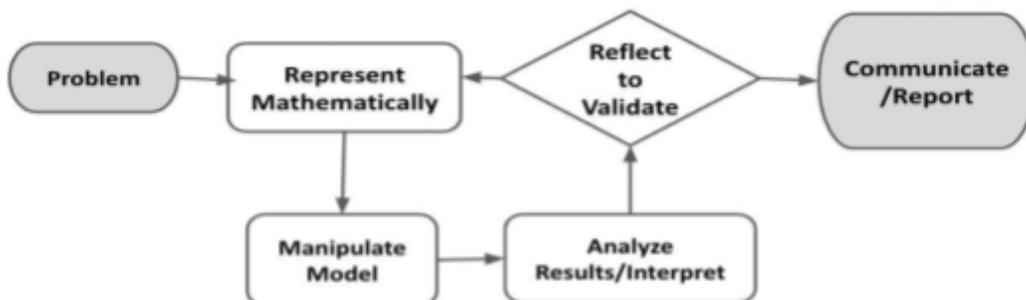
Voting for Us!

Modeling with Probability
Teacher Version

Design Notes

In this task, students will explore different trends in voting to better understand disproportionality in how different groups of people participate in elections. Students will decide on a target audience, such as young voters or candidates in an election, and develop a product that summarizes some of their key concerns or messages for that group.

Student-teacher consultations have been built in to scaffold the process. Consider using those structured check-in points as places where select student(s) share their approach/findings with the class to support the collective learning of the class. This learning experience centers around the CCSSM modeling cycle as illustrated below:



Source: Diagram of Modeling Process. From "Progressions for the Common Core State Standards for Mathematics."

Connections to Learning Principles

Students will:

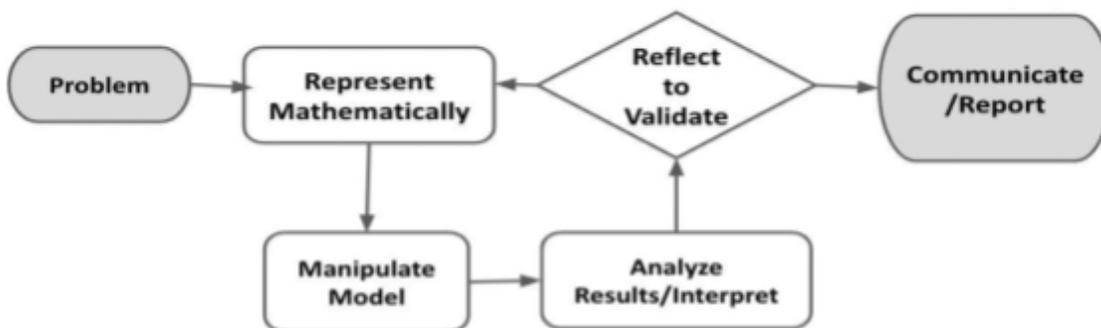
- look at voter data trends and consider things like the consequences of groups not voting, all within the context of probability (LP1);
- consider diverse perspectives on voting (related to personal experiences, barriers to voting, key issues of interest, etc.) and consider the consequences of some groups voting in a higher proportion than others in midterm elections (LP4); and
- see probability as a tool for examining voting trends, attending to how to share important information with a target audience, such as young voters or candidates running for office (LP6).

The following pages provide teacher versions of this task with guidance, suggestions, and comments in **red** and sample student responses in *blue italics*.

The Modeling Cycle

The United States is known for promoting civic engagement. However, these efforts do not always translate to voter turnout, especially with certain groups of citizens. Relatedly, data have been gathered that show which groups of people vote, which groups of people do not vote, and even why some people might decide not to vote. In this task, you will look at voter data trends and consider things like the consequences of groups not voting, all within the context of probability. To demonstrate your learning, you will identify a target audience, such as young voters or candidates running for office, and craft a message to that group which represents what you learned about voting trends and associated implications.

The process of modeling can help with tasks like this one in which you examine data, analyze trends, and predict outcomes. Mathematical models are used to make sense of ideas and phenomena in our world. As illustrated in the diagram below, the modeling cycle is a process of collecting data about an idea or problem, creating models of that data, analyzing the story told by those models, and reporting the results to the appropriate audience.



Source: *Diagram of Modeling Process*. From "Progressions for the Common Core State Standards for Mathematics."

In this task, you will be engaging with this mathematical modeling cycle to analyze data, evaluate findings, and identify trends related to which groups of people are voting in national elections. You will use the models and your takeaways from this task to identify a target audience and craft and deliver a persuasive message informing people about the proportional differences across groups of voters and the potential implications of those disparities. Your final product may be creative, but your ultimate message must be effective and supported by evidence. This task is designed to help support you in achieving this in your resulting product.

Student Task

Voting for Us

Launch

ACTION 1



Consider these quotes about voting and what they mean to you:

"Democracy only works when we work for it, when we fight for it, when we demand it."
~Stacey Abrams

"By voting, we add our voice to the chorus that forms opinions and the basis for actions."
~ Jens Stoltenberg, Secretary General of NATO

QUESTION 1



Voting is an important decision. People must decide whether to vote or not. What are some factors that might contribute to a person's decision to vote or not vote?

Answers will vary. Possible student responses:

- *Whether they feel strongly about some of the issues*
- *Registration Status*
- *Knowledge of and/or access to polling locations*
- *Whether they have time*
- *Ability to rearrange their work or schedule*
- *Whether they need help discerning true/false news*
- *Apathy*

- All students have rich and varied experiences and home lives. This question offers students an opportunity to share their personal perspective on barriers to voting.
- To read more about barriers to voting among young people, teachers might want to access or consider sharing with students the article [What is unique about young voters?](#).

ACTION 2



Watch [this video](#) about voting. Think about the trends mentioned and what exactly those being interviewed are advocating for. Think about what the video means to you and your understanding of being a citizen and voting.

QUESTION 2



In the video, you found out that less than 50% of the largest and most diverse group of citizens in our country (those between the ages of 18-29) actually vote. What might be some of the implications of the largest group of citizens voting in such low numbers?

Answers will vary. Possible student responses:

- *The things they care about may not become important in the election*
- *Younger voters' perspectives are not counted as much as voters over 30*
- *Might allow/encourage inequalities in political participation to continue indefinitely.*

To read more about the potential implications of voting disparities, teachers might want to access or consider sharing with students the article [Growing Voters: Engaging Youth Before they Reach Voting Age to Strengthen Democracy](#).

QUESTION 3



When people vote, they also must decide how they want to vote on certain issues. What are some issues that are important to you? How might you vote on those issues if you had the chance?

Answers will vary. Possible student responses:

- *Environmental issues—I would vote in favor of things that support long term positive environmental changes*
- *Lowering the driving age—I would vote in favor because I want to drive sooner*
- *Employment issues—Since I am too young to be eligible to vote, I don't think I should have to pay taxes.*
- *Social Media Use—I would vote in opposition to banning TikTok.*

Students may have a misconception that only *people* are voted on during midterm elections. Consider sharing a local sample ballot so students can see how people *and* issues/bills are usually featured on traditional ballots; students can also become familiar with examples of typical issues of interest that are being voted upon.

Problem and Represent Mathematically

In the **Problem** and **Represent Mathematically** sections, you will look at trends in voting data, consider outcomes, and create a data table. The **Problem and Represent Mathematically Checklist** can be used to ensure you have the necessary components before moving on to the remaining parts of the task.

Problem

ACTION 3



In this task, you will examine voting trends for different age groups. You will consider the consequences of some groups voting in a higher proportion than others. In addition, you will determine the ideal target audience, such as young voters or candidates running for office, and decide how to share important information with them.

Examine [this data](#) for the November 2022 midterm election that provides breakdowns by different age categories. Before you access the data, conduct any research necessary to ensure you understand the purpose of midterm elections and their potential impact upon larger national elections.

Teachers will want to have a conversation with students about the units in the table being in “thousands.” This is an opportunity to have students interpret those numbers to ensure clarity around what the table is communicating. Students may choose to build their tables using the numbers in millions.

QUESTION 4



What do you see in the data that might help you think about differences in voting trends by age group?

Answers will vary.

Possible student response: Some things that might contribute to the younger generation voting at lower rates might be knowledge of politicians, limited free time, apathy, intimidation, trouble filling out ballots, or missing the deadline to register.

Represent Mathematically

ACTION 3



Now, you will use the data you examined above to complete the table. Complete the table below to show the number of people in different age groups:

- Who were registered to vote and voted;
- Who were registered to vote, but didn't vote;
- Who were not registered; and
- The corresponding totals.

Considerations:

→ What does the data reveal about differences in registration and voting across groups?

Age Ranges <i>(in years old)</i>	Registered + Voted	Registered + Didn't Vote	Not Registered	Total
18-24	7372	5758	7387	20,517
25-34	15,396	8997	7252	31,645
35-44	18,401	7566	5285	31,252
45-54	19,546	6308	3910	29,764
55-64	24,115	5044	4000	33,159
65-74	22,369	3269	2775	28,413
75+	14,717	2563	1922	19,202
Total	121,916	39,505	32,531	193,952

- *The values in the column "Registered + Didn't Vote" cannot be directly inferred; let students know that some computation will be necessary to complete this column. Please refer to the November 2022 midterm election TEACHER pdf for help if needed. The columns are color coded to help you start. Use the total in RED to subtract from to help you solve for the other columns*
- *Filling out the table can be labor intensive. For differentiation consider having certain values filled in the table for students.*

Students may have a misconception that only *people* are voted on during midterm elections. Consider sharing a local sample ballot so students can see how people *and* issues/bills are usually featured on traditional ballots; students can also become familiar with examples of typical issues of interest that are being voted upon.

Problem and Represent Mathematically Checklist

Requirement	Teacher Notes
I have a complete data table with accurate cell data.	(Teachers, please add your notes here.)
(Teachers, please add your notes here.)	

Compute and Interpret

In the **Compute** and **Interpret** sections, you will compute some probabilities to understand the voting trends of different groups of people. The **Compute and Interpret Checklist** can be used to ensure you have the necessary components before moving on to the remaining parts of the task.

Compute

QUESTION 5



If a person who was **not** registered was selected at random, compute the following probabilities:

- The person selected is aged 18-24
- The person selected is aged 45-54
- The person selected is younger than 35

Choose 1 additional probability to compute based on the two-way table that will help contribute important information to your overall messaging for this task.

- $\frac{7387}{32531} \approx 0.227$
- $\frac{3910}{32531} \approx 0.120$
- $\frac{14639}{32531} \approx 0.450$

Interpret

QUESTION 6



Considering the probabilities you calculated in Question 5 and the previous thinking you did around voting trends, answer the following questions:

- What might be some of the implications of those probabilities on the 2022 midterm elections?
- What do your computed probabilities mean related to the context of voter trends?

Compute and Interpret Checklist

Requirement	Teacher Notes
I computed probabilities of specific events, and 3 additional probabilities.	(Teachers, please add your notes here.)
I interpreted the implications of the probabilities I calculated on the 2022 midterm elections and on overall voter trends.	(Teachers, please add your notes here.)
(Teachers, please add your notes here.)	

Validate, Reflect, and Report

In the **Validate, Reflect, and Report** sections, you will identify and explore additional resources that will help you finalize your message to your target audience. The additional resources should help you to further understand the differences across voters and the implications of those disparities. The **Validate, Reflect, and Report Checklist** will be used to ensure you have the necessary components before finalizing your work on this task.

Validate and Reflect

QUESTION 7



What other information do you think would be helpful as you finalize your message to your targeted audience? Locate one or more additional resources that will help you explore the trends you have noticed throughout your exploration of the differences in proportion across groups of voters and the potential implications of those disparities.

Considerations:

- How might this information be used to refine the message you plan to share with your targeted audience?

Teachers may want to help students locate some resources around various voting group topics such as:

Reasons for not voting:

- [Table 10: Reasons for Not Voting, By Selected Characteristics](#) [Voting and Registration in the Election of November 2022](#)
- What the data look like in local context (such as the specific state data): [Table 4a: Reported Voting and Registration of the Total Voting-Age Population for States: High Registration and Early Voting in 2022 Midterm Elections](#)
- Ideas about lowering the voting age: [Top Ten Reasons to Lower the Voting Age - NYRA](#)

Report

ACTION 4



Consider what you have learned about the proportional differences across groups of voters and the potential implications of those disparities. Identify a target audience who you think would benefit most from hearing about these disparities and implications. In any traditional or creative medium of your choice, craft a message to be delivered to this audience.

- Think of who is in your target audience, what they need to hear/learn, as well as the medium which might be best to deliver your message for that particular audience so that it is as memorable and effective as possible.
- Don't let format limit you — you can think of anything from writing a speech, making an informational video or commercial, writing a children's book with an underlying message for the adults reading it, designing a poster or comic strip or graphic novelette, or anything unique and memorable you can use to communicate your message.
- Your communication format will ultimately determine what your product is. Your product should explicitly note who the intended audience is, how the product would best be delivered, and, if the message is not explicit in the product (e.g., not scripted in a speech or written in paragraphs), then a brief overview of the intended message. Be creative, have fun, and affect some change with your message!

Validate, Reflect, and Report Checklist

Requirement	Fulfilled?
I located at least one additional resource and used it to further explore the trends in voter turnout and the implications of the disparities.	<input type="checkbox"/>
I identified a target audience that would benefit the most from hearing about the disparities in voter turnout and crafted a message to be delivered to them.	<input type="checkbox"/>
Teacher Consultation:	_____

References

Boston University. (n.d.). *Why Young People Should Vote*. YouTube. Retrieved October 22, 2023, from

<https://www.youtube.com/watch?v=bvS80YLpNeA>

U. S. Census Bureau. (2022). *November 2022 Midterm Election (Student)* [Table 1. Reported Voting and Registration, by Sex and Single Years of Age: November 2022]. U. S. Census Bureau.

https://drive.google.com/file/d/1LVuBLyBEUw_fAgHcj7rCeV_6xpC5j1-L/view