Smithsonian | SCIENCE *for Global Goals*

PART TWO. COMMUNITY TASK LIST

This is the list of tasks for Part Two. Community

Check them off as you complete them.

TASKS

- 2-1 ☐ Mapping Research Sites
- 2-2 ☐ Analyzing Team Surveys
- 2-3 ☐ Surveying Community
- 2-4 ☐ Analyzing Community Surveys
- 2-5 ☐ Identifying Community Partners
- 2-6 ☐ Debriefing Community

In this part, the team will focus on collecting evidence about what the local community thinks and knows about mosquitoes. The team will also establish their research sites and begin identifying local partners they could potentially work with throughout their research.




2-1 Mapping Research Sites

Welcome to Part Two. Community and Task 2-1. The team will now begin researching mosquitoes in your local community. To do this, the team will first need to identify the areas you would like to research about mosquitoes. This will be the area where you will conduct experiments, make observations, and collect information. So think about a place you would like to know more about. The research areas could be as small as the area outside and around your house or where the team meets, such as at school. It must include one outside area. It can also include inside areas. It could also be larger and include a neighborhood or all of the homes of the team members. It could even be very large and include your entire town, village, or city. Your team will have to make these decisions together. You will also have to decide if you want more than one research site. These decisions are all up to you.

Objective

In this task, the team will determine their research sites and start creating a map of these sites.

1. Go to the Task 2-1 folder and get the Mapping Research Sites instructions and examples. This task has only one version.
2. As a team, determine the following:
   - How many research sites do we want?
   - Where are good locations for our research sites to study mosquitoes?
   - Will the research sites include both indoor and outdoor areas?
   - If we have more than one research site, which team members will be responsible for each site?
3. When the team has determined the locations of your research sites, follow the instructions in the task instructions to start making your map. Look at the examples.
4. Include maps of both outdoor and indoor areas, if you're researching both.
5. Mark the boundaries of your research site on your map. If you can (it's not required), place markers in the actual research site to mark the corners or edges. Measure and calculate the area of your research sites. Use your math skills to help!

Research Tip

This map will be used throughout your research, so keep it in a safe place. Other information will be added to this map as you learn more about the sites. So keep it safe!

Hooray! You completed Task 2-1. Check it off the task list. *Go to Task 2-2!*

2-2 Analyzing Team Surveys

In Task 1-3, the team took a survey about what they think about mosquitoes and mosquito-borne diseases. Since the team is part of the research site you mapped in Task 2-1, the team should begin their research of their local community by analyzing parts of the compiled team surveys. So you will need to find and take out these surveys for this task.

Objective

In this task, the team will be focusing on the following questions from the question map you made in Task 1-10: What do people in our local community think and know about mosquitoes and mosquito-borne diseases?

What are effective ways to share and communicate mosquito-borne disease evidence with the community?

1. Go to the Task 2-2 folder and get the Survey Analysis instructions and questions.
   - Choose the Mosquito A or Mosquito B task from the task folder.
2. Each team member should locate and look over only parts one and two, Background Information and Community, on their completed survey from Task 1-3.
3. As a team, determine how to compile the answers for parts one and two for all team members. You will want to analyze the compiled data from the entire team. Develop your own method for compiling the data for parts one and two, or use one of the methods in the instructions.
4. Create some graphs about this compiled data. Use the instructions and examples in the task folder to help you. Be creative!
5. Use the graphs and data to answer these questions:

A. What interesting patterns do you see in the data from parts one and two questions of the team survey?

Research Tip

As you may have noticed, the survey is broken into the same parts as this research guide. Analyze only the results from that part of the survey while working on that Part of the guide to make the analysis more manageable.

2-2

B. Which questions did most people on the team agree about?

C. Which questions did people on the team have different responses for?

D. Discuss how this survey evidence could be useful when thinking about the question: What do people in our local community think about mosquitoes and mosquito-borne diseases?

E. Discuss how this survey evidence could be useful when thinking about the question: How can we effectively share and communicate mosquito-borne disease evidence with the community?

F. Discuss how this survey evidence could be useful when thinking about the problem question: How can we ensure health for all from mosquito-borne diseases?

6. Select two or three questions from these survey questions, write a claim, and provide the supporting evidence for the claim based on the question and data evidence collected.

Examples:

- People on our team are not concerned at all about mosquitoes and mosquito-borne diseases.
- Social media is a useful way to communicate to our team.

7. What evidence supports your claims?

8. As a team, share some claims you created and the evidence that supports each claim.

Hooray! You completed Task 2-2. Check it off the task list. *Go to Task 2-3!*

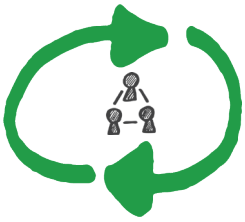
2-3 Surveying Community

In Task 2-2, you learned more about what the team thinks about mosquitoes. Now it is time to survey other people in your community to see what they know. This will help the team understand what people think about these various parts of the mosquito problem. This survey will also provide evidence that will be useful to understand what things people might not understand about mosquitoes.

Objective

In this task, the team will be focusing on the following questions from the question map in Task 1-10: What do people in our local community think and know about mosquitoes and mosquito-borne diseases? How can we effectively share and communicate mosquito-borne disease evidence with the community?

Go to the Task 2-3 folder and get the Survey and Meet the Team reading. Use the same version (A or B) of the survey the team used for the team survey in Task 1-3.



1. Read the Meet the Team reading on Mosquito Misconceptions. These are things people around the world commonly do not understand about mosquitoes.

- Watch the Mosquito Hunter video in the Task 2-3 folder on the Smithsonian Learning Lab.

2. Determine who the team will survey in the community. The survey will help you understand any misconceptions in your community.

   a. If you're surveying your family, friends, or people at school, decide who you will survey and why.

Research Tip

Use the field safety tips in the safety documents on Learning Lab before going out into the community to survey or interview people. Be polite, never go alone, and always be aware of your surroundings.

2-3

b. You can survey more than one person if you want.

c. If you're surveying someone in your community, decide who this person is and set up a way to conduct or provide them with the survey.

d. Whenever you're surveying people in your community, get permission from your team leader before contacting these people. Read through the safety documents concerning surveying or interviewing people in the Task 2-3 folder.

3. Determine how team members would like to conduct the survey.

   a. Oral interview: You ask the questions and document the responses.

   b. Provide each person a paper version of the survey and have them complete the survey on their own.

   c. If you have access to digital survey tools, figure out how you could use them. Tools such as SurveyMonkey and Google Forms/ Docs can be used, if available.

   d. If you have another strategy that works best for your team, do that!

4. Before you start surveying people, complete the following based on your team claims from Task 2-2.

   Write a hypothesis about which form of communication you think will be most available to your community.

   Example: Television is the most useful way to communicate to the community.

5. Conduct the survey and bring the results back to the next team meeting. In Task 2-4, the team will compile and analyze the results of parts one and two of these surveys.

Hooray! You completed Task 2-3. Check it off the task list. *Go to Task 2-4!*

2-4 Analyzing Community Surveys

In Task 2-2, the team learned how to analyze the team survey results for parts one and two. In task 2-3, you then surveyed people in your local community. In this task, you will do the same kind of analysis you did during Task 2-3. Now you will focus on the community survey results only for parts one and two, Background and Community, of the survey. The team will use this analysis to think about the social perspecitve of the problem. The team will analyze the other parts of the survey in future tasks. So keep the survey results in a safe place.

Objective

In this task, the team will be focusing on the following questions from the question map in Task 1-10: What do people in our local community think and know about mosquitoes and mosquito-borne diseases? How can we effectively share and communicate mosquito-borne disease evidence with the community?

1. Go to the Task 2-4 folder and get the survey analysis instructions and questions.
   - Choose Mosquito A or Mosquito B task from the task folder.
2. As a team, determine how to compile the community survey results for parts one and two for all team members. You will want to analyze the compiled data from the entire team. Develop your own method for compiling the data for parts one and two, or use one of the methods in the instructions.
3. Create some graphs about this compiled community survey data. Use the instructions and examples in the task folder.
4. Use your graphs and data to answer these questions:

- What interesting patterns do you see in the data from part one or two questions of the survey.

Research Tip

As you may have noticed, the survey is broken into the same parts as this research guide. Analyze only the results from that part of the survey while working on that Part of the guide to make the analysis more manageable.

2-4

- Which questions did most people in the community agree on?
- Which questions did people in the community have different responses for?
- Discuss how this survey evidence could be useful when thinking about the question: What do people in our local community think about mosquitoes and mosquito-borne diseases?
- Discuss how this survey evidence could be useful when thinking about the question: How can we effectively share and communicate mosquito-borne disease evidence with the community?
- Discuss how this survey evidence could be useful when thinking about the problem question: How can we ensure health for all from mosquito-borne diseases?

5. In Task 2-3, you wrote a hypothesis about which form of communication would be most available to the community.

- Example: Television is the most useful way to communicate to the community.

6. Using your team and community survey results, analyze the data from the question about availability of communication media to determine whether or not your hypothesis was supported by the evidence.
7. As a team, discuss different hypotheses and the evidence that supported it or not.
8. Select two or three survey questions, write a claim, and provide the supporting evidence for the claim based on the surveys you collected.
9. Examples:

- People in our community are not concerned at all about mosquitoes and mosquito-borne diseases.
- Social media is a useful way to communicate to our community.

10. Explain how the data evidence from the community survey supports your claims.
11. As a team, share some claims you created and the evidence that supports them.

Hooray! You completed Task 2-4. Check it off the task list. *Go to Task 2-5!*

2-5 Identifying Community Partners

In Task 2-3 and 2-4, you learned more about what the community thinks about mosquitoes and the mosquito problem. Now it is time to identify some community partners. A community partner is any resource that has the potential to improve the quality of life within a community. Examples of community partners are:

People. Health workers, school staff, doctors, and teachers all have knowledge that could be helpful for the team during your research.

Places. Hospitals, health centers, libraries, police stations, and community centers all have information that could be helpful for the team during your research.

Community organizations and associations. Organizations and associations are groups of people that are working together around a common goal.

Government agencies. The Ministry of Health, or Department of Health have information that could be helpful for the team during your research.

Objective

In this task, the team will be focusing on the following questions from the question map in Task 1-10: Who are local people, organizations, and associations that can provide valuable information related to this problem?

In this task, the team will identify some local community partners that could help us better understand the problem question: How can we ensure health for all from mosquito-borne diseases?

Go to the Task 2-5 folder and get the Identifying Community Partners instructions, Meet the Team reading, and Data Sheet. There is only one version of this task.

1. As a team, read the Meet the Team reading about why it is important to identify and work with partners. Have each person state one important reason why it is important to identify and work with partners during research.
2. Use the instructions and data sheet in the task folder to develop a list of team partners.
3. Identify whether any of the community partners are within the research site map you created in Task 2-1. If so, mark and identify those on your research map.
4. If the community partners are mainly outside of your research site map, consider making a new map that is focused specifically on the community partners. Plot the locations of all partners on a community map.

Hooray! You completed Task 2-5. Check it off the task list. *Go to Task 2-6!*

2-6 Debriefing Community

This is the last task of Part Two: Community.

Objective

In this task, we will debrief Part Two: Community. This is good to do before we move on to the next part. Each debrief will be very similar and is broken down into the same parts. The objective is to think about and discuss helpful information that was gathered during that part.

1. Remember the team norms.
   - Recognize the benefits of listening to a range of different perspectives and viewpoints.
   - Be open to new ideas and perspectives that challenge your own.
   - Be willing to cooperate with others to change things for the better.
2. Remember to use your meaningful conversation starters as needed throughout this discussion.
   - I agree with _____ because…
   - I disagree with _____ because…
   - I'd like to go back to what _____ said about …
   - I'd like to add_____
   - I noticed that …
   - Another example is …
3. Remember when you are making claims from evidence to use the following sentences.
   - I think this claim is best supported because …
   - I do not think this claim is best supported because …
   - I think this piece of evidence supports this claim because …
   - I do not think this piece of evidence supports this claim because …

2-6

4. Go to the Task 2-6 folder to get Debriefing Community instructions. There is only one version of the debrief.

5. Follow the instructions in the task folder to complete the five sections of the debrief.
   - Question Map Analysis
   - Community Partners
   - Perspectives
   - Identity
   - Problem Question

Hooray! You completed Task 2-6 and Part Two. Check it off the task list.

Congratulations, you have completed Part Two of your research. Give yourself a pat on the back. You now know more about what your community thinks about mosquitoes. Keep this research easily available. The next part of your research will focus on understanding the life of the mosquito. The team will need to learn more about the mosquito as an animal. This includes learning about:

- Different types of mosquitoes
- Life cycle of mosquitoes
- Where mosquitoes live
- What mosquitoes eat
- What are the behaviors of mosquitoes

Continue to Part 3: Life

Notes:

Task 2-1. Mapping Research Sites

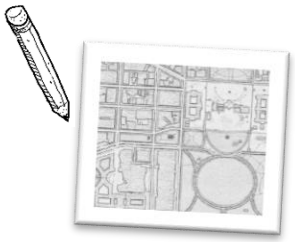
Step 1

Pick a location outside, inside, or both where you would like to research mosquitoes. Examples: inside and/or outside your house, inside and/or outside your school, inside and/or outside the place where your team meets.

On your own, explore the selected area.

Record details about everything you see, such as structures, trees, plants, animals, water, hills, shade, bushes, and more.

Step 2

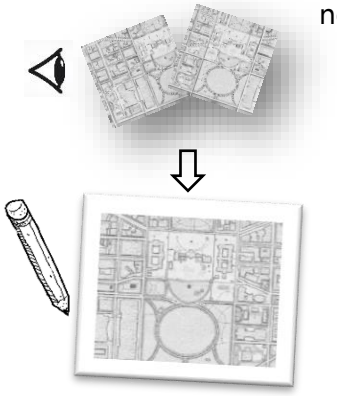


Draw a map of the selected area.

Sketch and label everything you noticed in step 1.

Step 3

Meet with your team and compare or combine maps, as needed.



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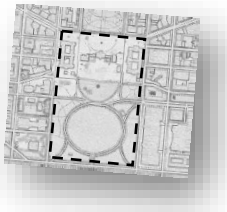
Step 4

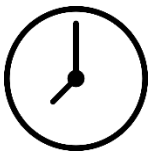


Select and draw boundaries on your map to mark where you will conduct your research.

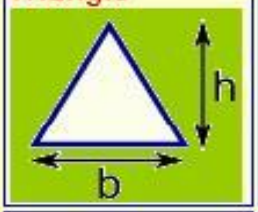
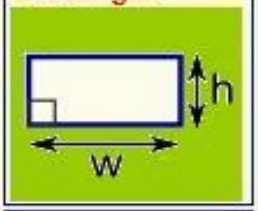
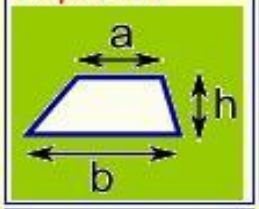
If you can (it's not required), place markers on the actual research site to mark the corners.

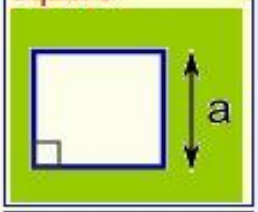
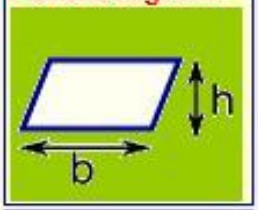
Use a measuring tool and calculate the area of your research site. Use your math skills to help!

Just remember there are formulas for quickly finding the area of different shapes.



10 min.

Shape	Formula
Triangle 	Area = ½b × h b = base h = height
Rectangle 	Area = w × h w = width h = height
Trapezoid 	Area = ½(a+b) × h h = vertical height a, b are the parallel sides
Ellipse 	Area = πab a= half of minor axis b= half of major axis

Shape	Formula
Square 	Area = a^2 a = length of side
Parallelogram 	Area = b × h b = base h = vertical height
Circle 	Area = πr^2 r = radius
Sector 	Area = ½r^2θ r = radius θ = angle in radians

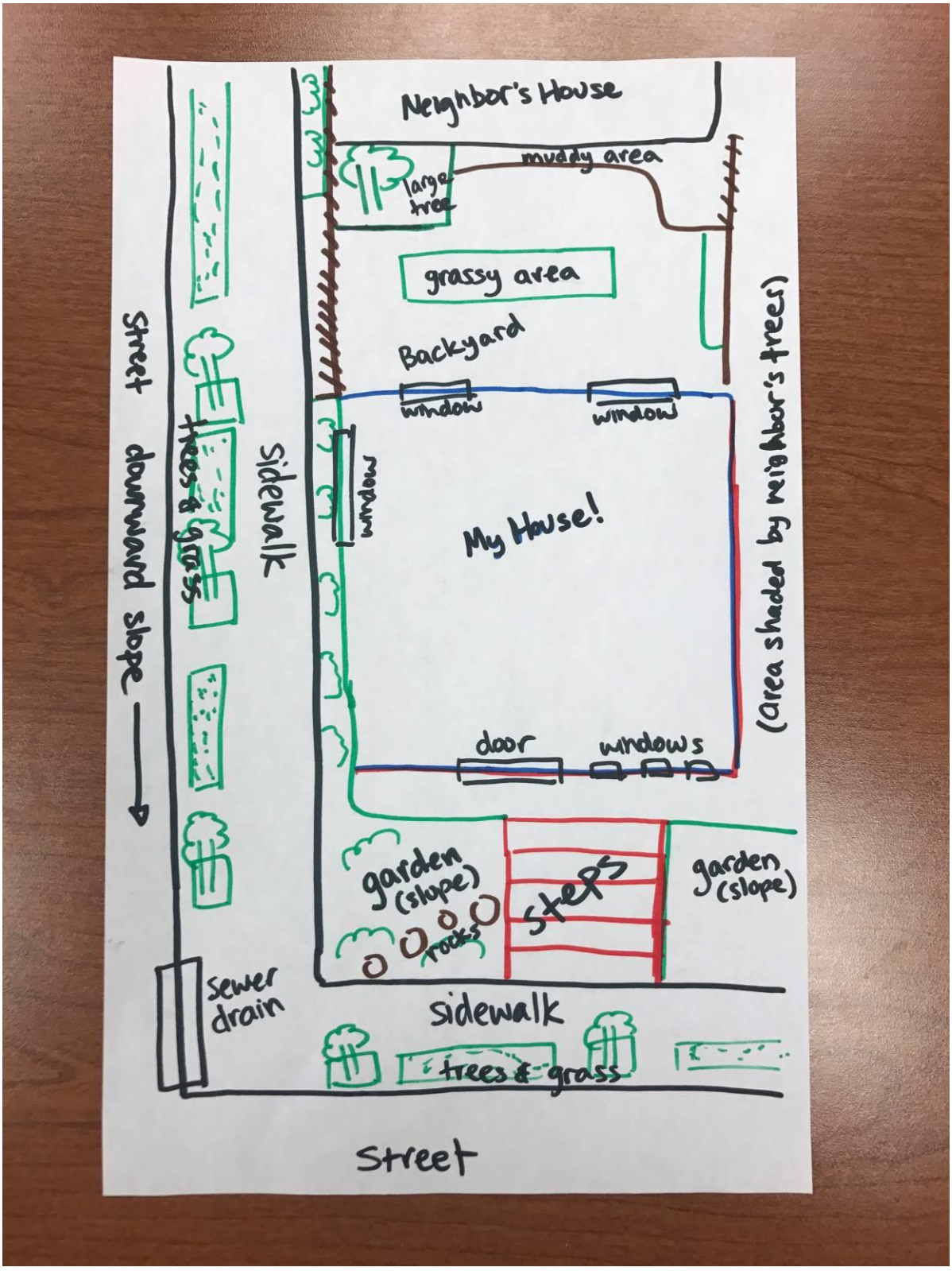
Digital Option: *If you have access to technology, such as a computer, smartphone, or table, use a free mapping program, such as Google Maps, to identify and map your research site. Save and share the map so you can add information to it later. This is also a good option if your research site is very large, such as an entire neighborhood, town, or city.*

You can also use both handdrawn maps and digital maps. Digital satellite maps are useful for seeing the big picture. Look at them first to set a boundary for your research site. Then use them to explore your research site in person and add more information to them on the ground.

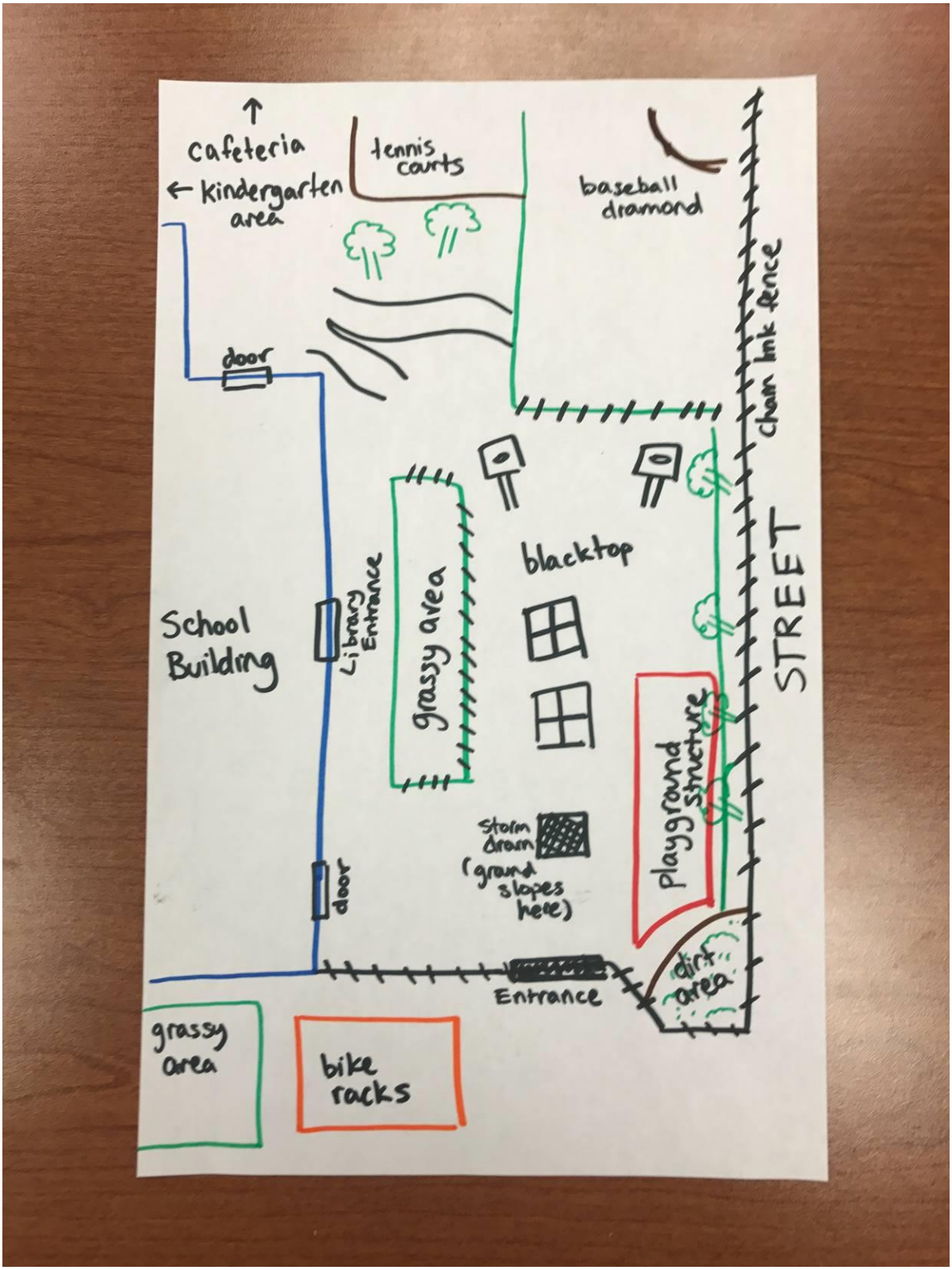
See some examples of hand-drawn research site maps below.

Examples of Different Types of Research Sites and Maps

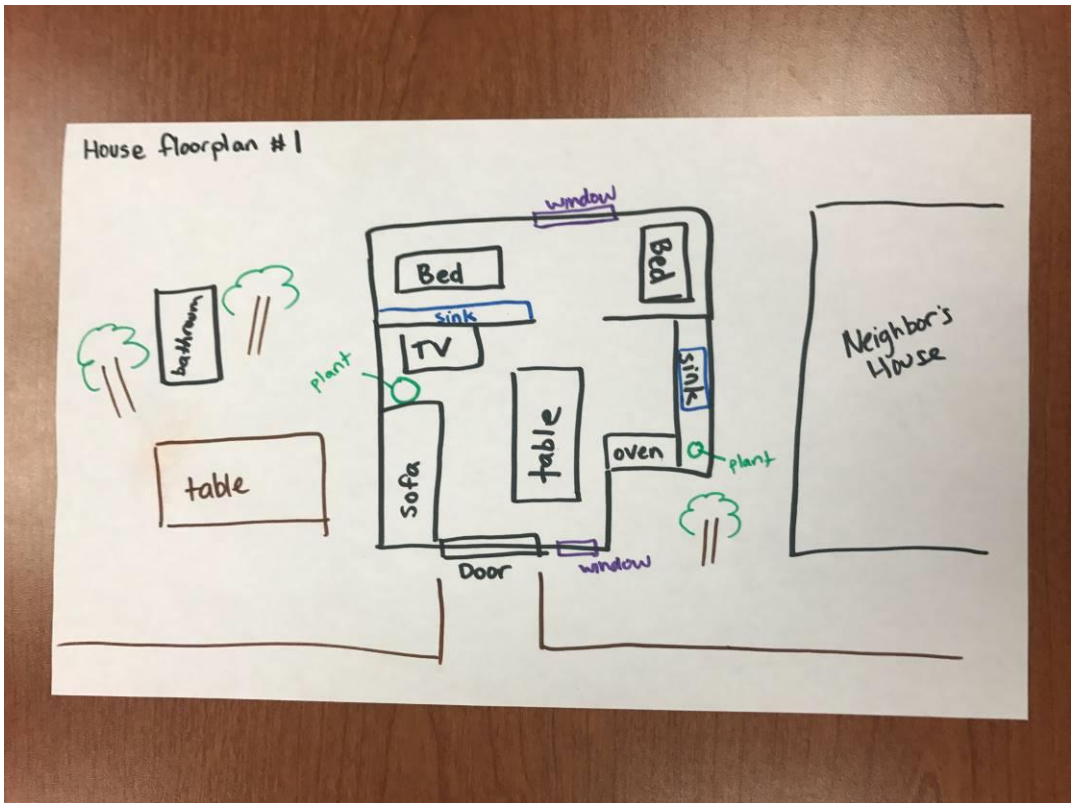
Make a map like this if you plan to do research in the area outside **around your house**.



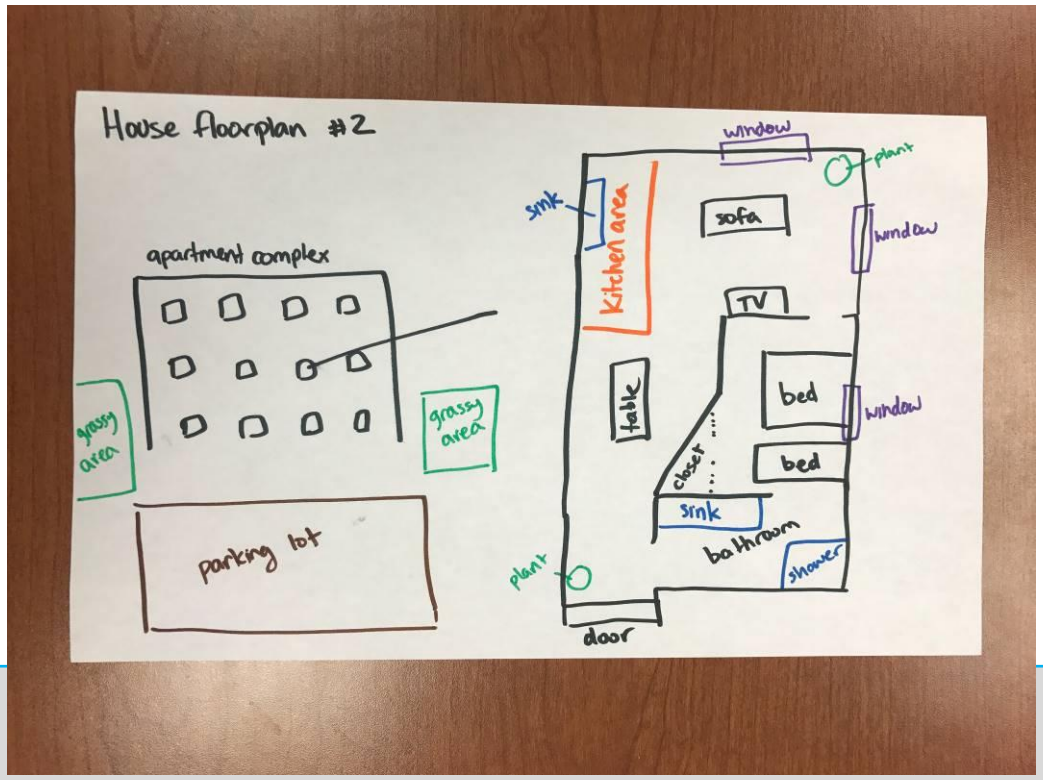
Make a map like this if you plan to do research in the area outside **around your school or meeting place.**



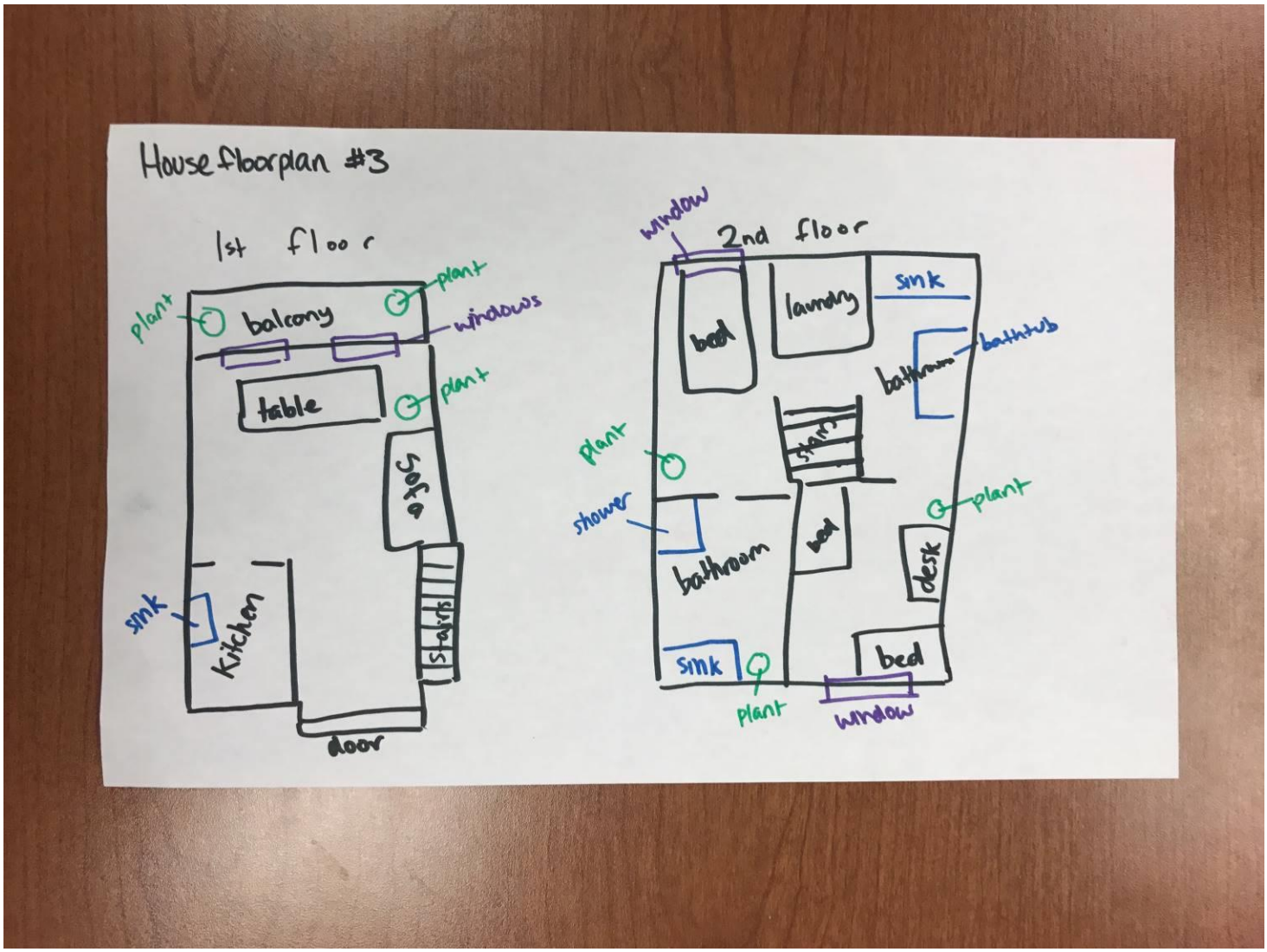
Make a map like this if you plan to do research that includes the **inside of your house**.



Make a map like this if you plan to do research that includes the **inside of your apartment**.



Make a map like this if you plan to do research that includes the inside of your house and it has **more than one floor**.



Go back to Research Guide now

Task 2-2 Analyzing Team Surveys—Mosquito A

Compiling Survey Data Options

First we must compile the answers from every person on the team to all of the questions from Parts One and Two: Background Information and Community. The team will look at the other parts in later tasks.

Compile the data only for Parts One and Two of the survey. We will analyze only these parts at this time. We will do the other parts later. Here are some options for compiling the answers to the survey questions. But, as always, if you have different method you prefer, do that!

Option 1

Hand out a survey to each person.

Go through each question and team members can raise their hands to vote for the answer they prefer. Some team members can count up the votes and others can write down the totals for the team.

Option 2

Have questions on a board, paper, or computer where each team member can mark their individual responses. Tally the responses and share the results.

Option 3

Digital survey: If you did the survey digitally, you should be able to see the results for each question.

Option 4

Create your own way of compiling survey data.

Graphing Survey Data

How could you graph parts of these survey results?

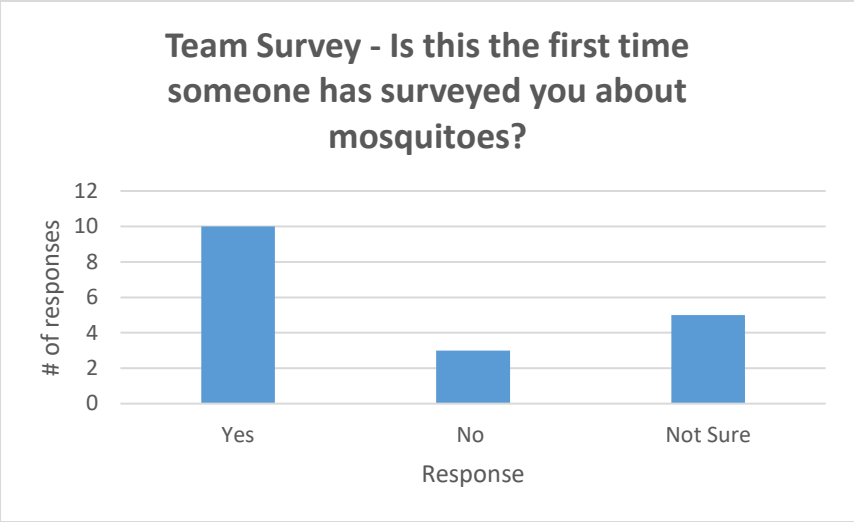
Which questions could you graph?

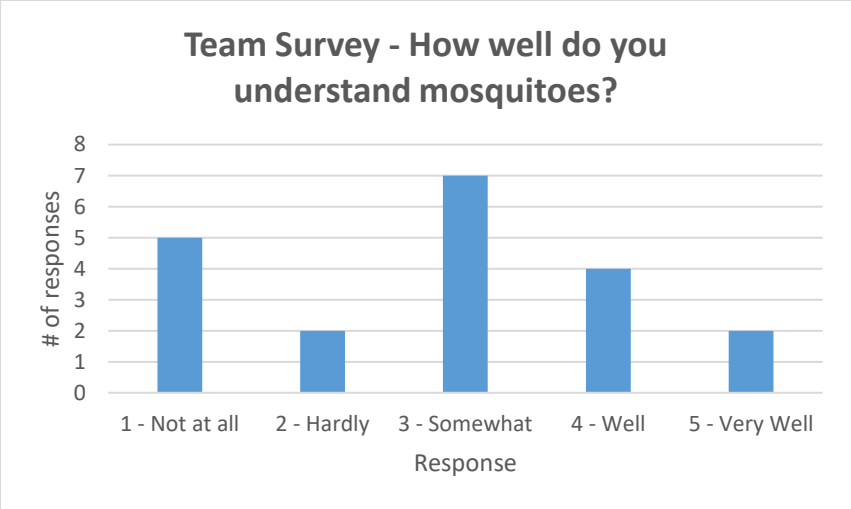
View the Task 2-2 graph examples.

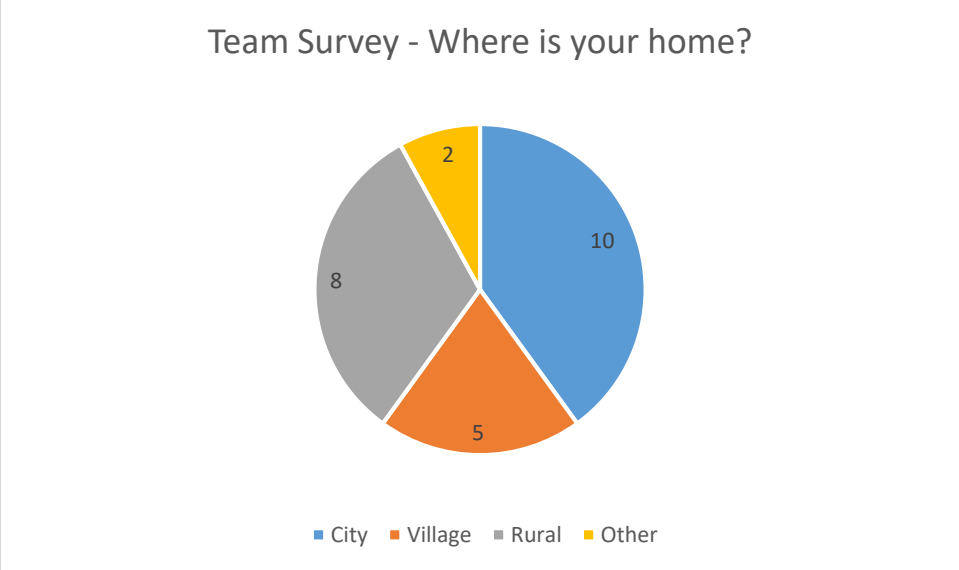
If you have the resources, pick some questions to graph that you think would be useful.

How would these graphs be useful when supporting claims with evidence?

Team Survey Graph Examples







Team Survey–Mosquito A

Use this survey to compile data.

Part 1: Background Information

Age				
0-10	11-20	21-40	41-64	65+

Gender					
Male	Female	Non-binary/third gender	Prefer to self-describe: _____	Prefer not to say	

What town do you live in?

Is your home in the city, village, or rural?			
City	Village	Rural	Other

Availability of communication media in the house (check all that apply)			
Television	Newspaper	Radio	Computer
Tablet	Internet	Telephone	Mobile phone
SMS	Social media	Mobile phone with Internet	Other

Part 2: Community

How well do you understand mosquitoes?				
1. Not at all	2. Hardly	3. Somewhat	4. Well	5. Very well

How concerned are you about mosquitoes in your community?				
1. Not at all	2. Hardly	3. Somewhat	4. Concerned	5. Very concerned

Go back to Research Guide now

Task 2-2 Analyzing Team Surveys—Mosquito B

Compiling Survey Data Options

First we must compile the answers from every person on the team to all of the questions from Parts One and Two: Background Information and Community. The team will look at the other parts in later tasks.

Compile the data only for Parts One and Two of the survey. We will analyze only these parts at this time. We will do the other parts later. Here are some options for compiling the answers to the survey questions. But, as always, if you have different method you prefer, do that!

Option 1

Hand out a survey to each person.

Go through each question and team members can raise their hands to vote for the answer they prefer. Some team members can count up the votes and others can write down the totals for the team.

Option 2

Have questions on a board, paper, or computer where each team member can access and mark their individual responses. Tally the responses and share the results.

Option 3

Digital survey: If you did the survey digitally, you should be able to see the results for each question.

Option 4

Create your own way of compiling survey data.

Graphing Survey Data

How could you graph parts of these survey results?

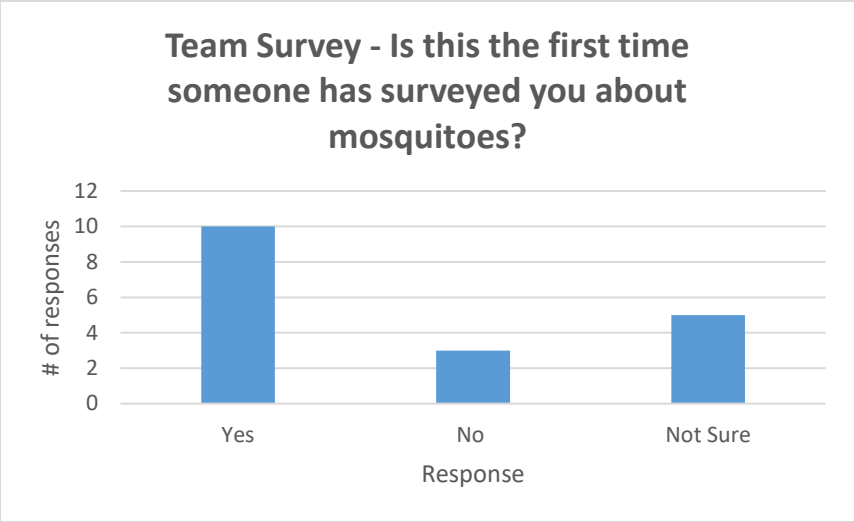
Which questions could you graph?

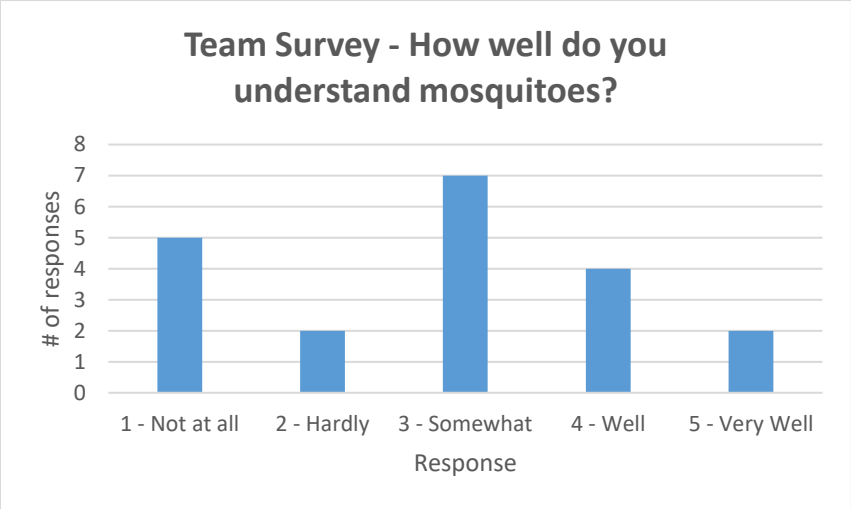
View the Task 2-2 graph examples.

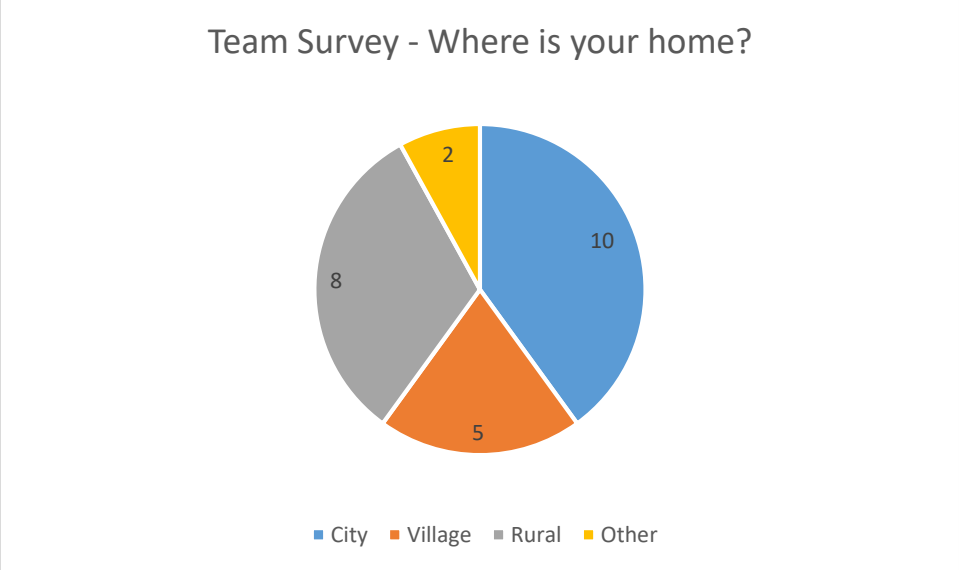
If you have the resources, pick some questions to graph that you think would be useful.

How would these graphs be useful when supporting claims with evidence?

Team Survey Graph Examples







Team Survey—Mosquito B

Use this survey to compile data.

Part 1: Background Information

Age:				
0-10	11-20	21-40	41-64	65+

Gender					
Male	Female	Non-binary/third gender	Prefer to self-describe: _____	Prefer not to say	

What town do you live in?

Is your home in the city, village, or rural?			
City	Village	Rural	Other

Availability of communication media in the house (check all that apply)			
Television	Newspaper	Radio	Computer
Tablet	Internet	Telephone	Mobile phone
SMS	Social media	Other	

Part 2: Community

Is this the first time someone has surveyed you about mosquitoes?		
Yes	No	Not sure

How well do you understand mosquitoes?				
1. Not at all	2. Hardly	3. Somewhat	4. Well	5. Very well

How concerned are you about mosquitoes in your community?				
1. Not at all	2. Hardly	3. Somewhat	4. Concerned	5. Very concerned

During the worst times of the year, how severe are the mosquitoes around your home?				
1. Not severe	2. Minimal	3. Average	4. Fairly severe	5. Extremely severe

During the worst times of the year, how many times do you get bitten by mosquitoes in a day?						
0 bites	1-5 bites	5-10 bites	10-20 bites	20-40 bites	40+ bites	

What impact do mosquitoes have on your quality of life?			
Health risk	Nuisance	No impact	Other

Go back to Research Guide now

Task 2-3 Surveying Community—Mosquito A

If technology is available, watch the videos in the Learning Lab Task folder to understand why it is important to learn about what your local community knows about mosquitoes, and how you can educate your community to help ensure health for all.

The survey starts on the next page.

Task 2-3: Community Mosquito—Survey A

Name:_____

Part 1: Background Information

Age:				
0-10	11-20	21-40	41-64	65+

Gender					
Male	Female	Non-binary/third gender	Prefer to self-describe: _____	Prefer not to say	

What town do you live in?

Is your home in the city, village, or rural?			
City	Village	Rural	Other

Availability of communication media in the house (check all that apply)			
Television	Newspaper	Radio	Computer
Tablet	Internet	Telephone	Mobile phone
SMS	Social media	Mobile phone with Internet	Other

Part 2: Community

How well do you understand mosquitoes?				
1. Not at all	2. Hardly	3. Somewhat	4. Well	5. Very well

How concerned are you about mosquitoes in your community?				
1. Not at all	2. Hardly	3. Somewhat	4. Concerned	5. Very concerned

Part 3: Life

Are both male and female mosquitoes able to transmit diseases to humans?			
Only male mosquitoes are able to transmit diseases to humans	Only female mosquitoes are able to transmit diseases to humans	Both male and female mosquitoes can transmit diseases to humans	Not sure

What time of the day do mosquitoes bite? (check all that apply)			
Day time	Night time	Morning	Not sure

Part 4: Transmission

Can mosquito-borne diseases be transmitted simply by being near people who are sick?		
Yes, mosquito-borne diseases can be transmitted by being near people who are sick	No, mosquito-borne diseases are not transmitted simply by being near people who are sick	Not sure

Can some mosquito-borne diseases be transmitted to other animals (birds, horses, dogs)?		
Yes, some mosquito-borne diseases can be transmitted to other animals	No, mosquito-borne diseases cannot be transmitted to animals	Not sure

Part 5: Habitats

Where do mosquitoes breed? (check all that apply)				
Still, stagnant water	Moving water	Drain	Water storage container	Garbage
Trash container	Old tire	Old car	Old boat	Holes in tree
Animal shell	Other	Not sure		

Do you have any containers holding water, or low areas with standing water around your home?		
Yes	No	Not sure

Part 6: Management

Where do you receive information on mosquitoes in the community? (check all that apply)				
Personal experience/observation	Family/friends	School/university	Television	Radio
Print/newspaper	Social media	Internet	Mobile phone	Doctors/health workers
Government	Other	Not sure		

Do you currently take any action to prevent yourself from getting a mosquito-borne disease?		
Yes	No	Not sure
If yes, please describe your action.		

Go back to Research Guide now

Task 2-3 Surveying Community—Mosquito B

If technology is available, watch the videos in the Learning Lab Task folder to understand why it is important to learn about what your local community knows about mosquitoes and how you can educate your community to help ensure health for all.

The survey starts on the next page.

Task 2-3: Community Mosquito Survey—Mosquito B

Name:_____

Part 1: Background Information

Age:				
0-10	11-20	21-40	41-64	65+

Gender					
Male	Female	Non-binary/third gender	Prefer to self-describe: _____	Prefer not to say	

What town do you live in?

Is your home in the city, village, or rural?			
City	Village	Rural	Other

Availability of communication media in the house (check all that apply)			
Television	Newspaper	Radio	Computer
Tablet	Internet	Telephone	Mobile phone
SMS	Social media	Mobile phone with Internet	Other

Part 2: Community

Is this the first time someone has surveyed you about mosquitoes?		
Yes	No	Not sure

How well do you understand mosquitoes?				
1. Not at all	2. Hardly	3. Somewhat	4. Well	5. Very well

How concerned are you about mosquitoes in your community?				
1. Not at all	2. Hardly	3. Somewhat	4. Concerned	5. Very concerned

During the worst times of the year, how severe are the mosquitoes around your home?				
1. Not severe	2. Minimal	3. Average	4. Fairly severe	5. Extremely severe

During the worst times of the year, how many times do you get bitten by mosquitoes in a day?						
0 bites	1-5 bites	5-10 bites	10-20 bites	20-40 bites	40+ bites	

What impact do mosquitoes have on your quality of life?			
Health Risk	Nuisance	No Impact	Other

Part 3: Life

Are there different types of mosquitoes, or are they all the same?		
There are different types of mosquitoes	They are all the same	Not sure

Are both male and female mosquitoes able to transmit diseases to humans?			
Only male mosquitoes are able to transmit diseases to humans	Only female mosquitoes are able to transmit diseases to humans	Both male and female mosquitoes can transmit diseases to humans	Not sure

What time of the day do mosquitoes bite? (check all that apply)			
Day time	Night time	Morning	Not sure

Where do mosquitoes get their food from? (check all that apply)		
Flowers	Sap from plants	Garbage
Blood from animals	Other	Not sure

Do mosquitoes lay eggs or give birth to developed mosquitoes?		
Lay eggs	Developed mosquitoes	Not sure

Part 4: Transmission

Can mosquito-borne diseases be transmitted simply by being near people who are sick?		
Yes, mosquito-borne diseases can be transmitted by being near people who are sick	No, mosquito-borne diseases are not transmitted simply by being near people who are sick	Not sure

Can some mosquito-borne diseases be transmitted to other animals (birds, horses, dogs)?		
Yes, some mosquito-borne diseases can be transmitted to other animals	No, mosquito-borne diseases cannot be transmitted to animals	Not sure

Part 5: Habitats

Where do mosquitoes breed? Check all that apply				
Still stagnant water	Moving water	Drain	Water storage container	Garbage
Trash container	Old tire	Old car	Old boat	Holes in tree
Animal shell	Other	Not sure		

Do you have any containers holding water, or low areas with standing water around your home?		
Yes	No	Not sure

Part 6: Management

Where do you receive information on mosquitoes in the community? (check all that apply)				
Personal experience/observation	Family/friends	School/university	Television	Radio
Print/newspaper	Social media	Internet	Mobile phone	Doctors/health workers
Government	Other	Not sure		

Which source do you most trust for accurate information about mosquito-borne diseases?				
Personal experience/observation	Family/friends	School/university	Television	Radio
Print/newspaper	Social media	Internet	Mobile phone	Doctors/health workers
Government	Other	Not sure		

Are you aware of the mosquito control services in the community?		
Yes	No	Not sure
If yes, please describe which services.		

Do you currently take any action to prevent yourself from getting a mosquito-borne disease?		
Yes	No	Not sure
If yes, please describe your action.		

How concerned are you about mosquito-borne diseases in your community in the future?				
1. Not concerned	2. Hardly concerned	3. Somewhat concerned	4. Concerned	5. Very concerned

Go back to Research Guide now

Task 2-3 Surveying Community

What things do people commonly not understand about mosquitoes?

David Pecor - Research Technician - Walter Reed Biosystematics Unit (WRBU)

I have encountered one misconception constantly. This misconception is about how many different types of mosquitoes there are in the world. Some people think of the "mosquito" as a single type of insect. They think all mosquitos are the same throughout the world. In fact, there are thousands of different species of mosquitoes. Less than 10 percent of them play a role in the spread of disease. People must understand that there are different types of mosquitoes. Each type has different behaviors. The behaviors will directly affect how effective control measures will be. Most types of mosquitoes are not harmful to humans. They actually play essential roles in the environment as pollinators and food for other organisms. Even within the small number of mosquitoes that spread disease, behaviors vary widely (what and when they like to eat, where they rest and reproduce). It is important that all people in a community understand these behaviors so they can design effective control strategies. What do people in your community think about mosquitoes? Ask them.

Meera Venkatesan - Malaria Technical Advisor - President's Malaria Initiative - United States Agency for International Development (USAID)

Many people in countries with mosquito-borne diseases know about the mosquitoes that carry the disease. They also know how to protect themselves. However, there are still misconceptions about when to use a net. Sometimes people will only use the net during the rainy season. People do not know that malaria can be transmitted all year round. The goal is to get net use to be regular, day in and day out. This is so people receive maximum protection from mosquitoes. It is important that all people in a community understand these things about the mosquito problem. What do people in your community think about mosquitoes? Ask them.

Rusty Low - Senior Earth Scientist - Institute for Global Environmental Strategies

Many people have misunderstandings about mosquitoes. For example, most people do not realize adult mosquitoes feed on plants and nectar. Only the female mosquitoes of some species bites people. Some mosquitoes do not bite at all! For example, Toxorhynchites are day-flying mosquitoes that do not need a blood meal to produce eggs, so they do not bite. As larvae these mosquitoes eat the larvae of its own kind and also other possibly dangerous mosquitoes. They eat so much that when they mature, they are ready to lay eggs without a blood meal! So these are good mosquitoes! (Ever hear of a good mosquito?) These are important mosquitoes in our ecosystems. They naturally reduce the number of other problem mosquitoes, like those that can spread diseases if allowed to mature into adults. Many people also do not know that mosquito larvae do not transmit disease. Diseases are transmitted through bites from a female preparing to lay eggs. It is important that all people in a community understand these things about the mosquito problem. What do people in your community think about mosquitoes? Ask them.

What things do people commonly not understand about mosquitoes?

Kelly Bennett - Biologist - Smithsonian Tropical Research Institute (STRI)

One misconception I encounter is that mosquito infestation can be successfully counteracted just with insecticides. This understanding causes many countries to rely only on this method to control mosquito-borne disease at great expense. However, due to the increase in insecticide resistance in mosquito populations worldwide, the application of chemical control is largely ineffective and can also have adverse environmental impacts.

Lee Cohnstaedt - Research Entomologist - United States Department of Agriculture (USDA)

If we do not understand a problem, we cannot hope to solve it. Therefore, people cannot protect themselves or their pets if they fear mosquitoes or worse, the tools used to reduce mosquito populations. For example, many people fear using DEET and other repellents because they are chemicals. However, being bitten by an infected mosquito and contracting malaria or dengue is much worse than the minimal risk of protecting oneself. Individuals should always try to be educated about what works, how it works, and how to use it. Then they can balance the risks between personal protection and exposure to chemicals.

Bridget Giles - Research Assistant Professor - Virginia Modeling Analysis & Simulation Center at Old Dominion University

Many people have misunderstandings concerning mosquito-borne diseases that affect their behaviors. Some people believe, “Oh, it will never happen to me” when it comes to getting bitten by a mosquito with a harmful virus like Zika. Therefore they do not take protective measures, like putting on insect repellent or wearing long pants and long-sleeve shirts. One challenge people are currently working on is a safe and effective Zika vaccine. Although pregnant women are usually excluded from vaccine research, pregnant women are at the center of the Zika epidemic, so bioethics groups have to really weigh the pros and cons of including pregnant women in Zika vaccine research. It will then be very important for this information to be understood by the public to move forward appropriately.

Team News Article Links for Task 2-3

Mosquito Hunter - Frontline Video
Description:
Good video to present overview of mosquito problem and community involvement.
https://youtu.be/0n6VtSam9To

Task 2-4 Analyzing Community Surveys—Mosquito A

Compiling Survey Data Options

First we must compile the answers from the community surveys to all of the questions from Parts One and Two: Background Information and Community. The team will look at the other parts in later tasks.

Here are some options for compiling the answers to the survey questions. But, as always, if you have different method you prefer, do that!

Option 1

Hand out a survey to each person.

Go through each question and team members can raise their hands to vote for the answer they prefer. Some team members can count up the votes and others can write down the totals for the team.

Option 2

Have questions on a board, paper, or computer where tallies can be compiled. Tally the responses and share the results.

Option 3

Digital survey: If you did the survey digitally, you should be able to see the results for each question.

Option 4

Create your own way of compiling survey data.

Graphing Survey Data

How could you graph parts of these survey results?

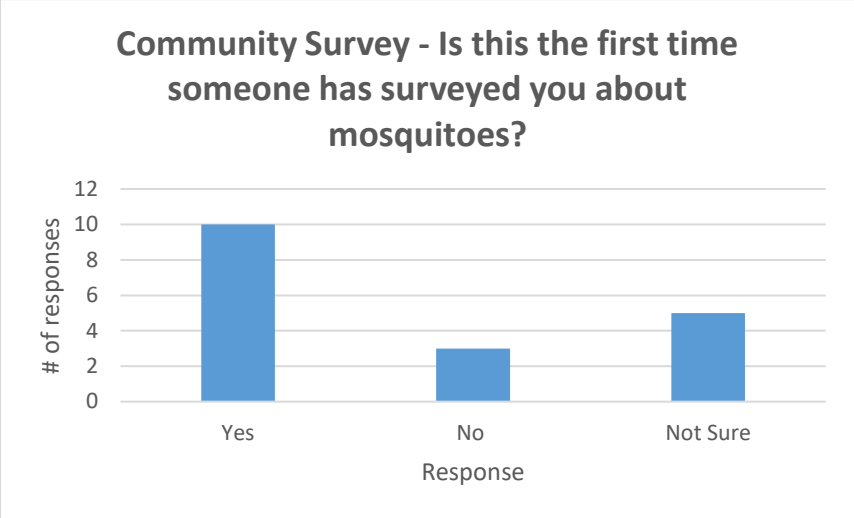
Which questions could you graph?

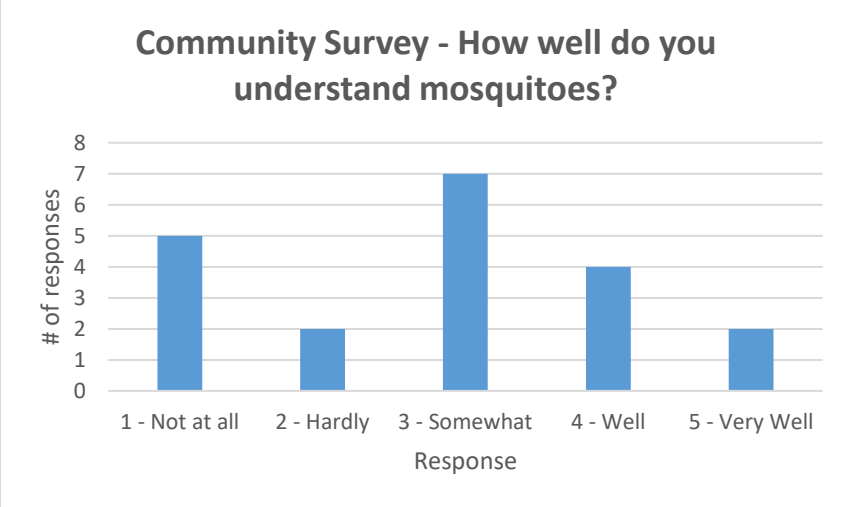
View the Task 2-4 graph examples.

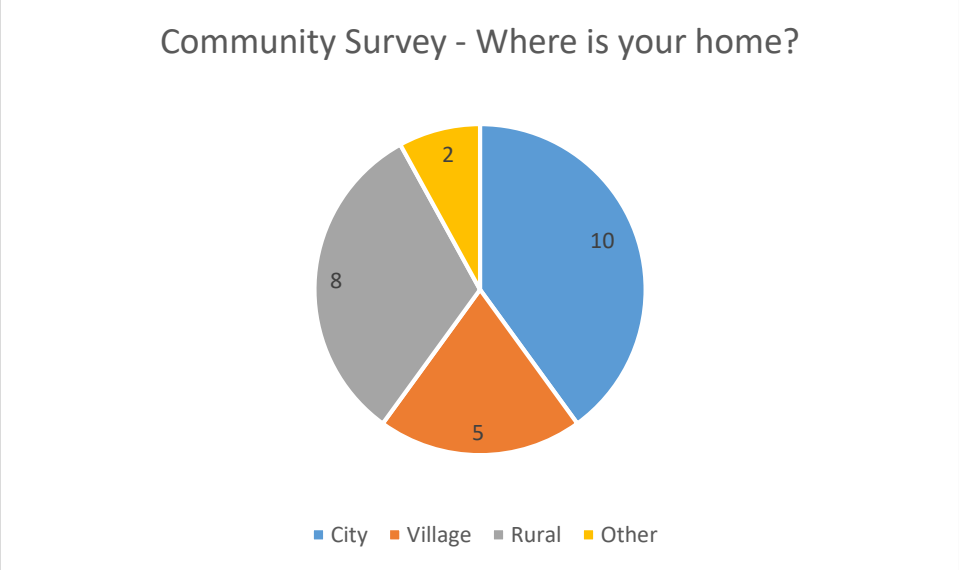
If you have the resources, pick some questions to graph that you think would be useful.

How would these graphs be useful when supporting claims with evidence?

Community Survey Graph Examples







Community Survey–Mosquito A

Use this survey to compile data.

Part 1: Background Information

Age				
0-10	11-20	21-40	41-64	65+

Gender					
Male	Female	Non-binary/third gender	Prefer to self-describe: _____	Prefer not to say	

What town do you live in?

Is your home in the city, village, or rural?			
City	Village	Rural	Other

Availability of communication media in the house (check all that apply)			
Television	Newspaper	Radio	Computer
Tablet	Internet	Telephone	Mobile phone
SMS	Social media	Mobile phone with Internet	Other

Part 2: Community

How well do you understand mosquitoes?				
1. Not at all	2. Hardly	3. Somewhat	4. Well	5. Very well

How concerned are you about mosquitoes in your community?				
1. Not at all	2. Hardly	3. Somewhat	4. Concerned	5. Very concerned

Go back to Research Guide now

Task 2-4 Analyzing Community Surveys—Mosquito B

Compiling Survey Data Options

First we must compile the answers from the community surveys to all of the questions from Parts One and Two: Background Information and Community. The team will look at the other parts in later tasks.

Here are some options for compiling the answers to the survey questions. But, as always, if you have different method you prefer, do that!

Option 1

Hand out a survey to each person.

Go through each question and team members can raise their hands to vote for the answer they prefer. Some team members can count up the votes and others can write down the totals for the team.

Option 2

Have questions on a board, paper, or computer where tallies can be compiled. Tally the responses and share the results.

Option 3

Digital survey: If you did the survey digitally, you should be able to see the results for each question.

Option 4

Create your own way of compiling survey data.

Graphing Survey Data

How could you graph parts of these survey results?

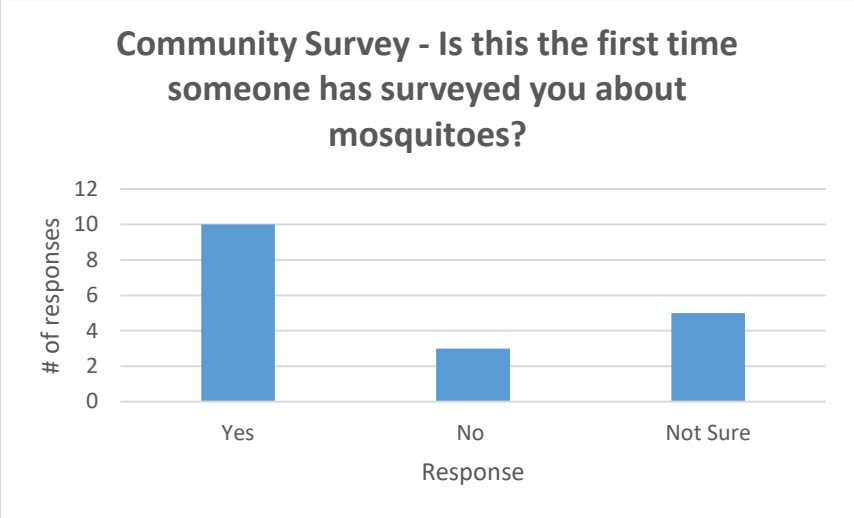
Which questions could you graph?

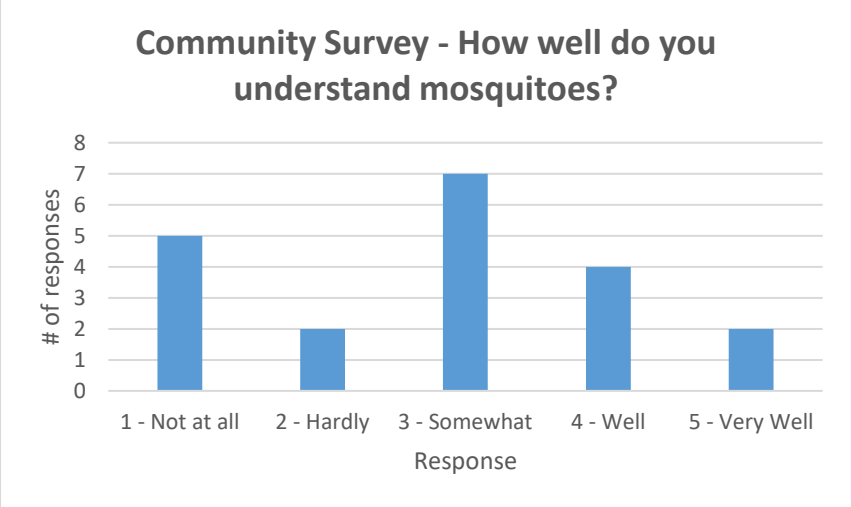
View the Task 2-4 graph examples

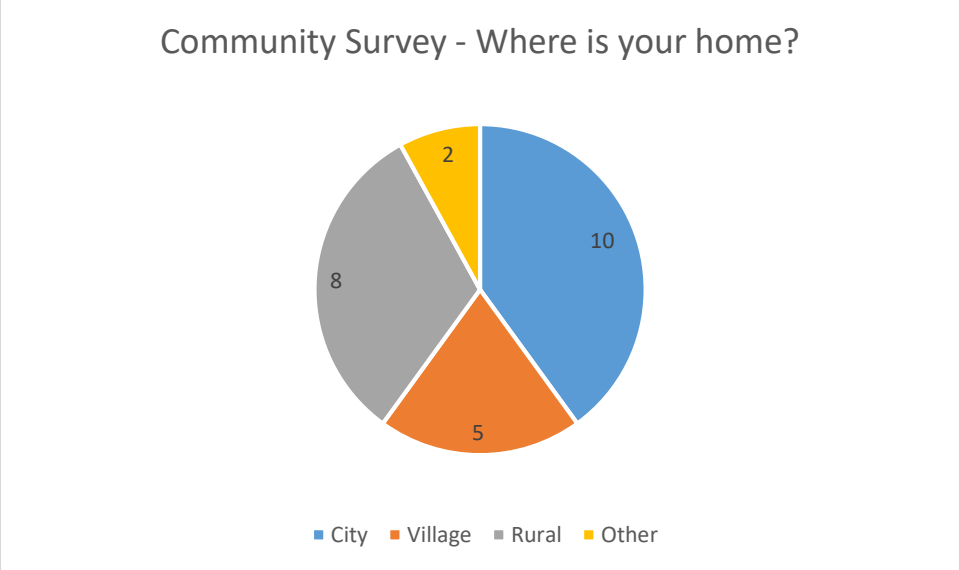
If you have the resources, pick some questions to graph that you think would be useful.

How would these graphs be useful when supporting claims with evidence?

Community Survey Graph Examples







Community Survey—Mosquito B

Use this survey to compile data.

Part 1: Background Information

Age:				
0-10	11-20	21-40	41-64	65+

Gender					
Male	Female	Non-binary/third gender	Prefer to self-describe: _____	Prefer not to say	

What town do you live in?

Is your home in the city, village, or rural?			
City	Village	Rural	Other

Availability of communication media in the house (check all that apply)			
Television	Newspaper	Radio	Computer
Tablet	Internet	Telephone	Mobile phone
SMS	Social media	Other	

Part 2: Community

Is this the first time someone has surveyed you about mosquitoes?		
Yes	No	Not sure

How well do you understand mosquitoes?				
1. Not at all	2. Hardly	3. Somewhat	4. Well	5. Very well

How concerned are you about mosquitoes in your community?				
1. Not at all	2. Hardly	3. Somewhat	4. Concerned	5. Very concerned

During the worst times of the year, how severe are the mosquitoes around your home?				
1. Not severe	2. Minimal	3. Average	4. Fairly severe	5. Extremely severe

During the worst times of the year, how many times do you get bitten by mosquitoes in a day?						
0 bites	1-5 bites	5-10 bites	10-20 bites	20-40 bites	40+ bites	

What impact do mosquitoes have on your quality of life?			
Health risk	Nuisance	No impact	Other

Go back to Research Guide now

Task 2-5 Identifying Community Partners Instructions

1. As a team, work together to start making a list of different community partners the team should use in your research.
2. Brainstorm a list of individual people in the community who could possibly help provide information for questions on the question map from Task 1-10.
3. Have team members ask their family, friends, and people in the community to help come up with some names of people, organizations, or agencies.
4. Do some research online, in local phone books, and by calling different organizations to find out what people, places, organizations, and agencies exist in your community that can help you learn more about mosquitoes. Examples include:
    - School or community center staff could have information about mosquitoes around the school.
    - Parents of team members might have professions that involve the mosquito problem.
    - Hospitals
    - Health centers
    - Community centers
    - Libraries
    - Police stations
    - Parks
    - Schools
    - Universities and colleges
    - School organizations
    - Ministry of Health
    - Department of Health
    - Department of Human Services
5. Compile a team list. Use a data table as needed.
6. Write a brief description of how the person, organization, or agency could be helpful to the team.
7. Determine how the team could contact the person, place, organization, or agency to get information from them.
8. With your team leader, develop a contact plan for reaching out to people in your community.

Task 2-5 Identifying Community Partners

Community Partner	Name	How it could be helpful to team	Contact information (address, phone, email)
Person			
Person			
Person			
Person			
Physical place			
Physical place			
Physical place			
Physical Place			
Organization			
Organization			
Organization			
Government agency			
Government agency			
Government agency			

Notes:

Go back to Research Guide now

Task 2-5 Identifying Community

Why is it important to identify and work with partners in your research?

David Pecor - Research Technician - Walter Reed Biosystematics Unit (WRBU)

Understanding mosquitoes and the transmission of diseases is very complicated. It is essential to identify partners you can work with to help one another. This helps us all work as a team to combat this problem on a large scale. We assemble our partners by first identifying experts in different parts of the problem. Then we work with each partner to choose the experts we think are appropriate for the team. We will have leaders in mosquito identification, disease analysis, geographic information systems (GIS) and data management. Each partner of the team is responsible for a key area. However, we all need to provide information to one another in order to be successful. What partners in your local community could you work with on your mosquito research?

Meera Venkatesan - Malaria Technical Advisor - President's Malaria Initiative - United States Agency for International Development (USAID)

Mosquito-borne disease is a global issue. This means we must partner with people all over the planet to be successful. Important partners in my work are global groups like the World Health Organization. They provide us very good global guidance on malaria control. However, each country has its own context and specific situation to take into account. This means we must partner and work with people in each country where we have projects. We must make sure to share all of the evidence with our partners in these countries. This will help them make the most informed decisions. They then help us measure the progress of the project in their country. This helps us as a team make any changes to the program, as needed. We could only do this with the help of partners and a team. What partners in your local community could you work with on your research?

Rusty Low - Senior Earth Scientist - Institute for Global Environmental Strategies

As individuals we tend to think only about what we want when working on a research project. It is important to realize that a team should always bring in different partners. The partners will bring in many more perspectives to your work. This shared knowledge is greater than what any one individual or team brings to a project. Diverse voices create strong outcomes! When you are in charge of a project, your personal vision might not make it into a final product. It is important to trust in the skill of your team and partners. Recognize that each viewpoint has importance, which needs to be part of the conversation. What partners in your local community could you include in your research conversation?

Mosquito! Task 2-5 Identifying Community Partners

Why is it important to identify and work with partners in your work?

Kelly Bennett - Biologist - Smithsonian Tropical Research Institute (STRI)

It is important to bring together people from different fields of mosquito research and to collaborate together to advance scientific understanding. The time should be taken to listen to views and ideas and to seek further scientific evidence when an important piece of information is insufficiently supported.

Lee Cohnstaedt - Research Entomologist - United States Department of Agriculture (USDA)

Vector-borne pathogens such as West Nile virus, malaria, and dengue have complicated transmission cycles that include animals, humans, insects, and pathogens. To study the complete cycle requires veterinarians, doctors, microbiologists, entomologists, ecologists, and a whole team of scientists. By working together, different perspectives and knowledge bases can be combined to provide new insight for a problem. If people remain open, a new strategy will likely emerge, which will be viewed (positively and negatively) by each individual. The ideas can be discussed among the scientists and a consensus best option or options can be pursued. However, during these discussions, all of the ideas should be considered, because some ideas lead to others and rarely will the first idea be the best. More discussion from more perspectives will provide the most solid path forward.

Bridget Giles - Research Assistant Professor - Virginia Modeling Analysis & Simulation Center at Old Dominion University

It is important to work with many different partners on a problem. For example, when thinking about something as simple as where to spray insecticide, we must work with city officials and city mosquito surveillance partners. The surveillance partners provide observation data such as the number of mosquitoes, species, and location collected. This data can then help officials make decisions about where and when to spray insecticides. We use numbers and science to help us make decisions, especially when people do not agree.

Task 2-6 Debriefing Community

Question Map Analysis

1. Look at your team question map from Task 1-10. Are there any questions on your map that were addressed in Part Two: Community?
2. What evidence did you collect during Part Two that could be useful to answer any questions on your question map?
3. How could this evidence or information be useful to help develop a solution to the problem question: How can we seek to ensure health for all from mosquitoes?
4. Take time to rearrange, update, or modify any questions on your question map at this time.

Community Partners

1. As a team, look over the list of community partners created in Task 2-5.

2. As a team, determine if there are any community partners you could contact to get more information about the research questions you identified on your question map from Task 1-10.

- Make a plan as a team to communicate with these partners.
- Create a list of questions you would like to ask the partners.
- Email, phone, or write to each partner with your questions.
- If your team decides it's appropriate, invite the partner to meet with the team. Use your list of questions to have a conversation with them.

Perspectives

1. Use the Research Perspective Opinion Continuum Activity setup from Task 1-7 (Mosquito A or Mosquito B setups from Task 1-7 both work here) to discuss each perspective statement below.
2. Do this activity as individuals or in small groups. If done in small groups, each group sends one representative to the continuum.
3. Remember, pose each statement, take a minute, and let each team member or group think about their position on that statement.

- Remember, the continuum goes from one side or corner of the room to the other; from "strongly agree" to "strongly disagree." Then there is "not sure" in the middle.
- Explain that relative location is also important; that is, standing closer to the strongly agree or strongly disagree side of the room means you feel very strongly about this statement. If you only agree or disagree slightly, then being closer to the midpoint is a physical way of stating the way you think and feel about the issue.

Social: I think it is acceptable that not everyone in our community has an understanding of mosquitoes.

Ethical: I think it is acceptable for some people to be affected more than others by mosquito-borne diseases in my community.

Environmental: I think understanding the number of times a mosquito bites in a day is not useful to solve the problem.

Economic: I think some parts of the community have a greater risk of mosquito-borne diseases because they cannot afford to have communication media or technology in their home.

Move to a whole team discussion.

- Remember, team members must back up opinions with information and other team members must listen carefully to one another.
- Can individual team members explain to the team the reasons for their position on the continuum?
- How many team members changed their positons after hearing people talk during the whole team discussion?
- What led you to change your mind?
- Ask team members on both sides of the issue to identify what they believe to be the strongest arguments and reasons they heard from the *opposing* side.

Identity

- Look at your personal and team identity maps from Tasks 1-1 and 1-5. What aspects of your or your team's Identity might influence your opinions on the perspective continuum?
- How might your decisions be influenced by these parts of your identity?
- Have any parts of your identity map changed?

Problem Question

Is there anything you learned in this discussion that would be useful when thinking about the problem question: How can we ensure health for all from mosquitoes?