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Vaccines! How can we use science to help our community make decisions about vaccines?

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Welcome!

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A Couple of Zoom Notes

- Click the ”live transcript” button to turn closed captioning on or off.
- Please add any questions to the Q&A box. Our staff is monitoring it.
- Feel free to converse with your fellow participants by choosing “all participants” in the chat.

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What are we doing today?

1. Brief introduction to the *Vaccines!* Community Response Guide
2. Engage in some of the activities from the guide
3. Q&A

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The Smithsonian Science Education Center and Smithsonian Science for Global Goals Project

Smithsonian Institution

The Smithsonian is the world's largest museum, education, and research complex with 19 museums, 5 education centers, 9 research centers and a zoo.
We have 154 million objects, artworks, and specimens in its collection.

The Smithsonian believes in lifelong experiential learning.

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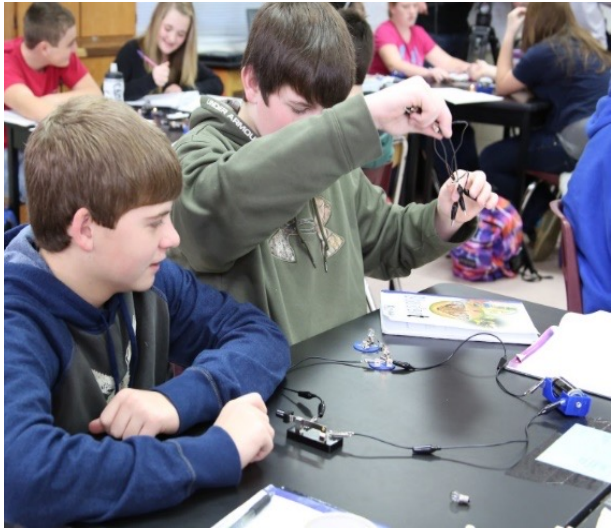
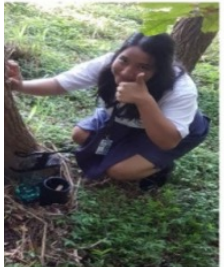
What is our mission?

Transforming *K-12 Education Through Science*™ in collaboration with communities across the globe





Photos Courtesy of Escuela Rafael Maduro Garibaldo, Panama and Escuela San Carlos, Panama

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What is Smithsonian Science for Global Goals?

- Started January 2016
- Collaboration with IAP
- Supports young people to understand the science and social science of the SDGs and how to take action to address complex global issues.
- Designed for ages 8-17

https://www.ssec.si.edu/global-goals

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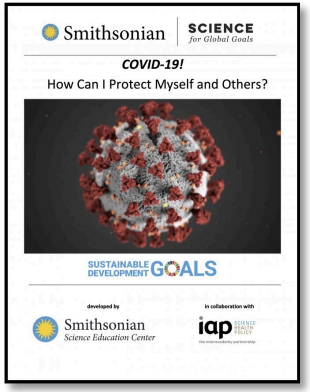
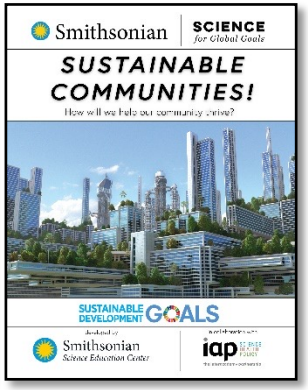
Smithsonian | SCIENCE for Global Goals

- Young people carry out local investigations on global problems, using their communities as their laboratories.
- They examine the problem through social, environmental, economic, and ethical lenses as they go.
- Ultimately, they take local action to address the issue in their own community.





Students Discover, Understand, Act

Discover

Students examine the socio-scientific issue affecting their local and global communities

Understand

Students investigate the underlying science and social science of the issue using their community as their laboratory

Act

Students use their new knowledge to do social good

https://ssec.si.edu/sustainable-development

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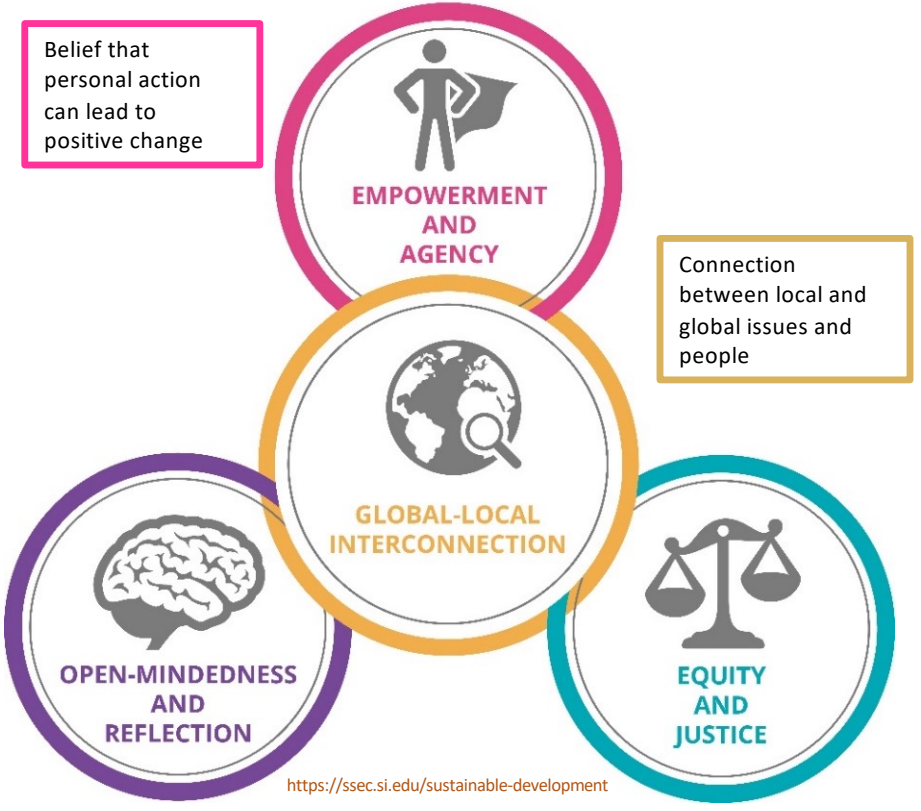
Goal: Build Students' Sustainability Mindsets



https://ssec.si.edu/sustainable-development

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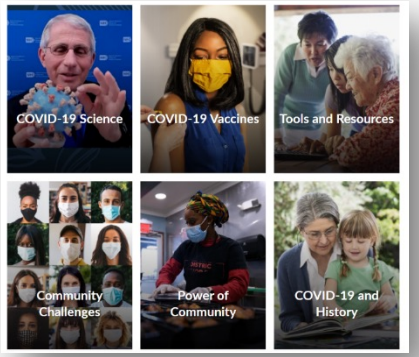
Why Vaccines?

VACCINES&US
Cultural Organizations *for* Community Health

- Misinformation about vaccines is common
- The Smithsonian and other organizations across the nation are collaborating to bring the facts that you need to make an informed decision about COVID-19 and vaccines
- By educating young people on the history and underlying science of vaccines, and how we know they are safe and effective, they gain the tools to communicate this to others, and become advocates in their own communities



https://vaccinesandus.org #VaccinesAndUS

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Vaccines! How can we use science to help our community make decisions about vaccines?

Exploring the content

Accessing the Materials

- https://ssec.si.edu/vaccines
- *If you missed last week's webinar you can find it here!*

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What do young people do?

- Understand the science of vaccines and clinical trials
- Investigate perspectives of others
- Develop communication skills
- Consider ethics and equity
- Critically analyze sources of information
- Develop and implement an integrated action plan to help their community better understand vaccines

What features are included?

- PDF with accessibility features and suggestions for differentiation and changes based on the needs of the users
- Consistent structure and glossary to scaffold understanding
- Letter to students to engage them in self-directed learning
- Call-out boxes with information on methods and scientific content
- Support for young people to plan their own actions
- StoryMap with additional resources and quotes from experts

Who Do Students Learn From?

- A range of experts including:
  - Doctors and practitioners
  - Public health experts
  - Researchers
- These experts include representatives from:
  - The World Health Organization
  - Johns Hopkins, Emory, and Morehouse School of Med. , USA
  - Bryce Institute for Indigenous Health, Canada
  - Fiocruz Foundation, Brazil
  - Ministry of Health, Cameroon

Frequently Asked Questions

What ages is this designed for?	8-17 years old
How long will it take to complete?	8-12 hours
Do young people use this in a group?	It can be a classroom or group project, or done independently at home
Can children do this at home?	Absolutely! It is a great intergenerational project.
Do I have to pay to use it?	Nope. Smithsonian Science for Global Goals is always free!
Why doesn't it look like the other Smithsonian Science for Global Goals modules?	1. Quick translation 2. Quick distribution 3. Ease of adaptation
What languages is it available in?	English: Available Now! Spanish: Available by June 1 Brazilian Portuguese, Arabic, Twi, and Vietnamese: Coming soon *NOTE: If you are interested in translating these materials, please reach out to Katherine!*

Meet the Developers

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Sampling the Activities

Vaccines! How can we use science to help our community make decisions about vaccines?

- Task 1: How does my community think and feel about vaccines?
- Task 2: Why are vaccines important? The history of vaccines.
- Task 3: How do vaccines work?
- Task 4: How do we know vaccines are safe?
- Task 5: How do we know vaccines work?
- Task 6: How should we make decisions about vaccines?
- Task 7: How do I get information about vaccines?
- Task 8: How can I share the science of vaccines with others?

https://ssec.si.edu/vaccines
https://www.si.edu/vaccinesandus

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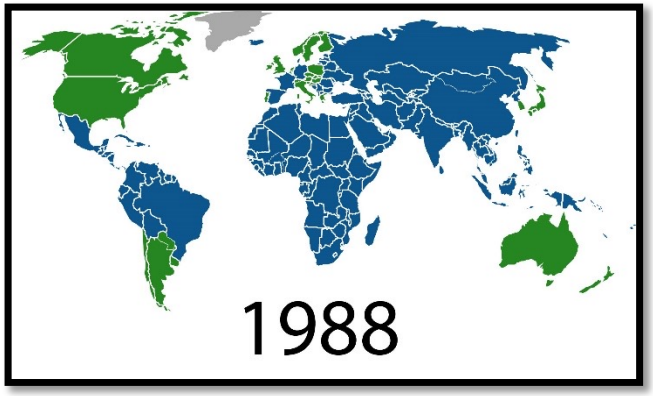
Task 1: Understanding ourselves and our community

- Develop individual identity maps
- Baseline assessment of vaccine knowledge and opinion
- Survey community to understand concerns

Task 2: Why are vaccines important?

- Discover: Identifying personal knowledge of diseases and compare that to a person from a different generation
- Sample activity from Understand: Herd Immunity
- Historically there have been diseases eliminated and nearly eliminated. What causes the decrease in cases?

What Do You Think Happened?



Blue- Countries with the disease present
Green- Countries where disease has been eliminated

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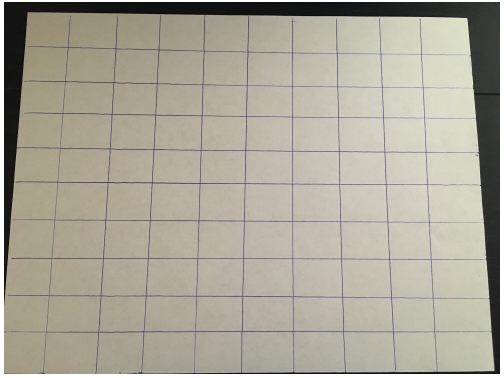
Modeling Herd Immunity

- You will need these materials
  - Paper- printer or notebook paper is best (8.5”x11”)
  - A writing utensil- multiple colors make it more fun
  - A ruler or straight edge

Representing the Community

- Take the piece of paper
- Draw 9 evenly spaced vertical lines- (7/8" or 2.2cm)
- Draw 9 evenly spaced horizontal lines (1 1/8" or 2.8cm)
- Your paper should now have 100 boxes on it
- These boxes represent a community of 100 people

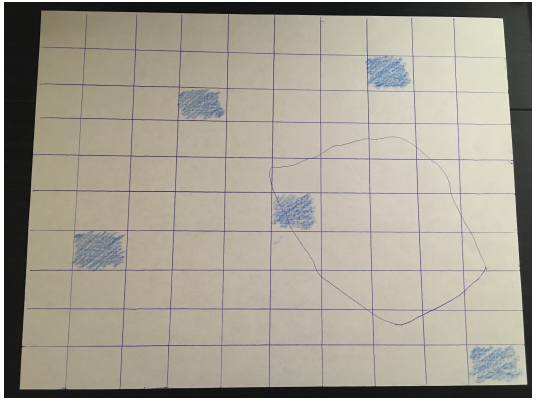


Representing the Vulnerable

- Take your pencil and color in 5 boxes scattered around the paper
- These colored in boxes represent the 5% of people who are not immune and are vulnerable to infection

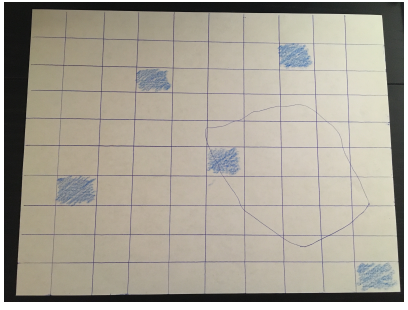
Representing Infection

- Make a fist
- Without looking put your fist palm side down on your paper
- Trace around your hand
- Move your hand and draw a line at your wrist



Representing the Newly Infected

- Count the number of colored in boxes that are touching or inside the outline of your fist
- That represents the number of vulnerable people who are now infected
- Put how many newly infected you got in the chat
- How would this compare to a lower percentage of immune people?



1 newly infected

The Role of Herd Immunity

- Repeat the activity at 80% immunity. Coloring in 20 boxes. How would the amount of newly infected compare?
- How does herd immunity affect global rates of a measles?
- Drop your ideas in the chat

Herd Immunity Activity: Questions?

- What questions do you have?
- How might you engage young people with this content?

Task 3: How do vaccines work?

- Develop an understanding of the human body's natural defenses against disease
- Model how vaccines activate these to fight specific pathogens

Task 4: How do we know vaccines are safe?

- Helping youth think about how to decide whether something is safe
- Then learn more about clinical trials and what makes a good clinical trial
- Sample activity from Discover: Choices about safety
  - Imagine someone asked you to try a product that was brand new, like a kind of snack or a hand lotion. What would make you feel safe?

What would make you feel safe using the new product?

- *Order the list below from feeling least safe to most safe?*
  a. *Your best friend said it was safe.*
  b. *The government in your country or town said it was safe.*
  c. *Your doctor said it was safe.*
  d. *Your religious leader said it was safe.*
  e. *The people who make the product described how they tested it to make sure it was safe.*
  f. *You watched a TikTok® video that said it was safe.*
  g. *Ten people tried it and nothing bad happened to them.*
  h. *Ten thousand people tried it and nothing bad happened to them.*

- *Put your order in the chat*

Task 5: How do we know vaccines work?

- Task 5 builds on the clinical trial information in Task 4 to determine how we know a vaccine works
- Discover: understand how clinical trials split into placebo and vaccine group to determine if the vaccine works
- Sample activity from Understand: model the severity of COVID-19 illness an unvaccinated person could get based on worldwide data and compare that to a person in a clinical trial vaccinated with a vaccine with 65% efficacy

Modeling How We Know Vaccines Work

- You will need these materials
  - one six-sided die
  - Paper and writing utensil
  - If you do not have a die, you can access a virtual die by using a computer search engine and the search term “virtual dice.”

Modeling An Unvaccinated Person

- Round 1
  - Roll the die four times
  - Write down the four numbers you get
  - Add the four numbers together. This is your score.

Modeling An Unvaccinated Person

- Read the type of COVID-19 sickness your score corresponds with on the chart

Score	Type of COVID-19 sickness	Score	Type of COVID-19 sickness	Score	Type of COVID-19 sickness
4	Mild	11	Mild	18	Mild
5	Mild	12	Mild	19	Mild
6	Mild	13	Mild	20	Severe
7	Mild	14	Mild	21	Severe
8	Mild	15	Mild	22	Severe
9	Mild	16	Mild	23	Severe
10	Mild	17	Mild	24	Death

Modeling A Vaccinated Person In A Trial

- Round 2
  - Roll the die four times
  - Write down the four numbers you get
  - Add the four numbers together. This is your score.

Modeling A Vaccinated Person In A Trial

- Read the type of COVID-19 sickness your score corresponds with on the chart

Score	Type of COVID-19 sickness	Score	Type of COVID-19 sickness	Score	Type of COVID-19 sickness
4	Not Sick	11	Not Sick	18	Mild
5	Not Sick	12	Not Sick	19	Mild
6	Not Sick	13	Not Sick	20	Mild
7	Not Sick	14	Not Sick	21	Mild
8	Not Sick	15	Not Sick	22	Mild
9	Not Sick	16	Not Sick	23	Mild
10	Not Sick	17	Not Sick	24	Mild

How We Know Vaccines Work

- How do the results from round 1 compare to round 2?
- The model you used of 65% efficacy is on the low end for COVID-19 vaccines. What could you tell someone about whether it was useful to get a vaccine that is at 65% efficacy or higher?
- Drop your ideas in the chat

Efficacy Activity: Questions?

- What questions do you have?
- How might you engage young people with this content?

Task 6: How should we make decisions about vaccines?

- Discover: Thinking about different experiences and communicating with empathy
- Sample activity from Understand: Ethics and Access
- Globally COVID-19 vaccine demand is far greater than supply. How should decisions about distribution of these vaccines be made?

Who should be vaccinated first?

Put the following people in the order (1, 2, 3, 4, 5,) you think they should be vaccinated:

- A 40-year-old Latina teacher who needs to be vaccinated before in-person school restarts.
- A 29-year-old Asian nurse who works with cancer patients.
- An 85-year-old white retiree who lives in a care home.
- A 59-year-old Indigenous (American Indian) grocery worker who cares for her elderly parent.
- A 34-year-old Black accountant working from home with a preexisting medical condition that puts him at high risk for COVID.

Share out in the Padlet

- In this padlet, like or “heart” the number you chose for each person. Pick a few and write a comment underneath explaining why you made that choice.

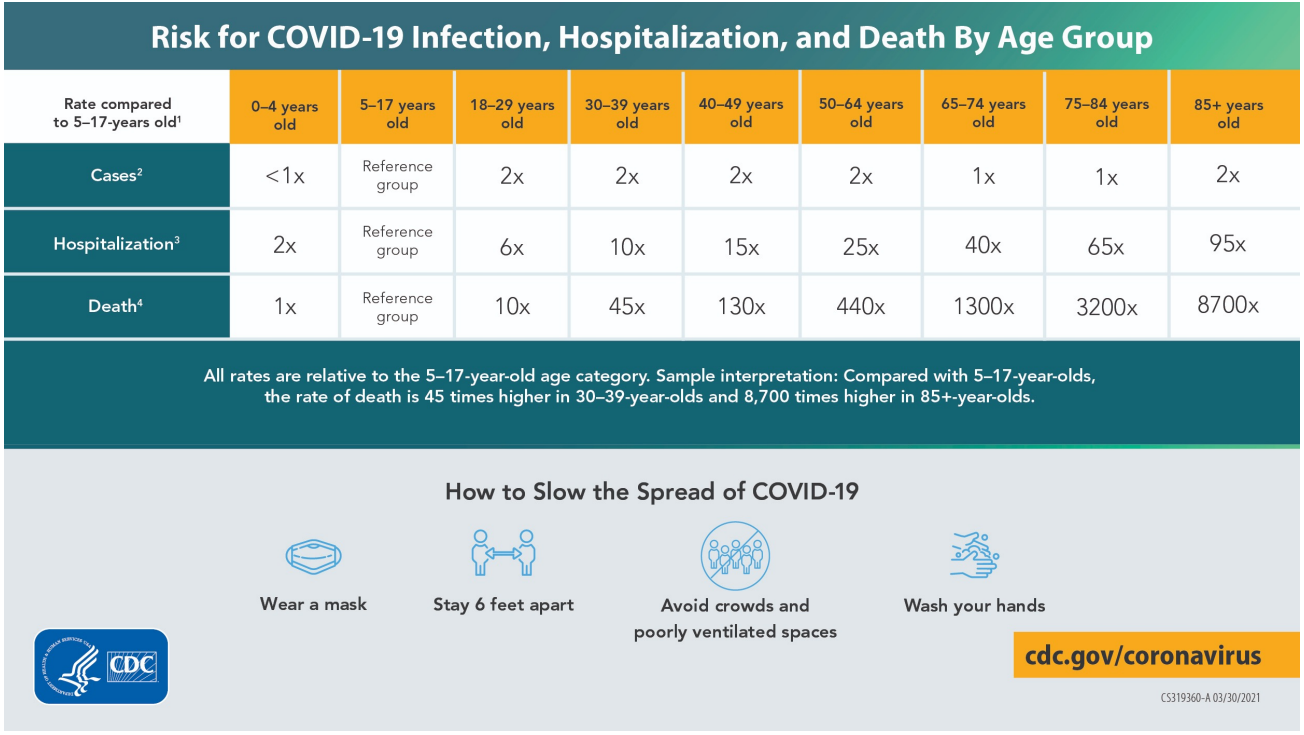
Use the QR code, or use the link found in the chatbox to get to Padlet.

Who did you choose and why?

There are no wrong choices in this activity, but people may have different ideas. When making big decisions it is important to consider different perspectives.

- Why did you make those choices?
- What did you base your decisions on?
- Why do you think others might make different choices?

COVID-19 and Age



Risk for COVID-19 Infection, Hospitalization, and Death By Age Group

Rate compared to 5–17-years old[1]	0–4 years old	5–17 years old	18–29 years old	30–39 years old	40–49 years old	50–64 years old	65–74 years old	75–84 years old	85+ years old
Cases[2]	<1x	Reference group	2x	2x	2x	2x	1x	1x	2x
Hospitalization[3]	2x	Reference group	6x	10x	15x	25x	40x	65x	95x
Death[4]	1x	Reference group	10x	45x	130x	440x	1300x	3200x	8700x

All rates are relative to the 5–17-year-old age category. Sample interpretation: Compared with 5–17-year-olds, the rate of death is 45 times higher in 30–39-year-olds and 8,700 times higher in 85+-year-olds.

How to Slow the Spread of COVID-19

Wear a mask

Stay 6 feet apart

Avoid crowds and poorly ventilated spaces

Wash your hands

CDC

cdc.gov/coronavirus

CS319360-A 03/30/2021

What's your perspective?

- A **social** perspective? For example, ordering based on what is needed to allow important community interactions to take place, like education or religious worship.
- A **health** perspective? For example, ordering based on who is most at risk of getting seriously sick.
- An **economic** perspective? For example, ordering based on what is needed to make sure the economy works and people have jobs.
- An **ethical** perspective? Ethical means what you think is morally right or wrong. For example, ordering based on who is most at risk or what is most fair.

Think about a global perspective

- The people listed were all in the United States, but what if half of them were in different countries, does that change your ideas?
- How should we decide globally how to distribute vaccines?
- Drop your ideas in the chat

Ethics and Access Activity: Questions?

- What questions do you have?
- How might you engage young people with this content?

Task 7: Information and Misinformation

- Investigating where you and your community get information.

- Using checklist to start to analyze sources and evaluate them for misinformation

TAKE ACTION!

- Scaffolding to help young people plan to share accurate information with their community to address vaccines concerns
- Directed and implemented by youth themselves
- Reflection and Iteration

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What's Next?

Share What You Do!

- Form available to collect dissemination data: https://forms.office.com/r/bR97F31Cjd

- Send photographs, videos or written testimonials through email to blanchardkp@si.edu. Please provide permissions to share this material.

- Tag us: #SSfGG
  - Facebook - @SmithsonianScienceEducationCenter
  - Twitter & Instagram - @SmithsonianScie

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We are here to support you

- If you are looking to use *Vaccines!* with your students or your community and are interested in additional training or support, please reach out to Katherine at BlanchardKP@si.edu

- We will be offering additional support and content around the *Vaccines!* guide in the coming months, so please make sure you are signed up for our mailing list!

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Final Q&A

Thank You!

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