



HUNGER FIGHTERS UNITE!

A Simulation Lesson for the
World Food Prize Michigan Youth Institute Pre-College Program

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Slides 1-13 are used for the first hour or session.

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Office of the Assistant Secretary for Civil Rights
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correo postal:
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Page 3027A-1, United States Department of Agriculture, 2019

This slide represents Michigan State University's commitment to all to be able to access our programs, resources, and materials.



Suggested Outline for Hour or Session 1

5 Minutes	Welcome and name tents
10 Minutes	Topic Introduction
10 Minutes	Pre-Test
10 Minutes	Building knowledge/concepts for today
10 Minutes	Sticky note/rank leadership roles
10 Minutes	Post-Test
5 Minutes	Reflect and pick challenge topic and role

Suggested agenda and timing for hour or session 1.



Welcome!



Calling all Hunger Fighters!

Travel the globe with us to impact change in food security. Cultivate your passions for food and citizenship as you take on one of the **world's greatest challenges!** Discover and experience careers, cultures, and connections. Fill your suitcase with ideas and resources for future engagement as you are inspired to become a **future Hunger Fighter!**

(Some PPT slides adapted with permission from the World Food Prize Foundation)

This is the purpose and overview of the session.

Share verbally what is viewed on the slide.

Calling all Hunger Fighters! Travel the globe with us to impact change in food security. Cultivate your passions for food and citizenship as you take on one of the world's greatest challenges! Discover and experience careers, cultures and connections in this simulation style session. Fill your suitcase with ideas and resources for future engagement as you are inspired to become a future Hunger Fighter!



Let's get started...

1. Got internet or WIFI ready?
2. Pre-test : Scan and fill out.

Add the current QR code and Menti passcode here or use handout pre-test.

Complete the pre-test. This will either be done with the PDF handout, or you may enter the QR code and passcode on this slide from the Mentimeter you created..



Introduction to Food Security

The four essential pillars of food security:



Availability:
food has to be physically present in adequate quantities within communities



Access:
people have the ability and resources (income) to obtain food



Utilization:
food is prepared safely and effectively to provide nutritional value



Stability:
food is present at all times without disruptions



This slide shows the four essential components of food security. Share verbally what is viewed on the slide.



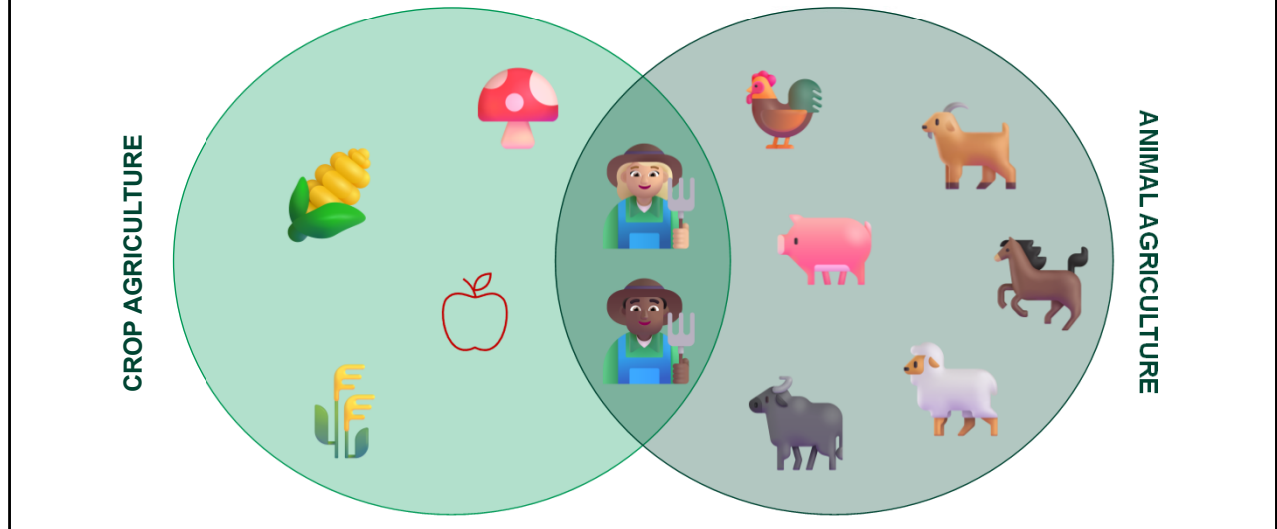
Introduction – the Data



Share verbally what is viewed on the slide.



Introduction – Animal and Crop Agriculture



Share:

This is a simple visual of crop and animal agriculture, and the crossover between the two. It does not include all factors. Animal agriculture does not just include the animals, but involvement of humans. Crops are also grown with the involvement of humans. In the crop circle, items shown are mushroom, corn, wheat, and apple. The animal circle includes images of poultry, goat, horse, sheep, cattle, and a hog. The farmers or producers in the overlap show where the two sectors link. Other words for farmer or producer are entrepreneur or business owner.



Global Leadership Roles – Working Together to Make Change

Non-governmental organization



1. Improve quality of life



Business owner

1. Growth
2. Operations
3. Future



Researcher

1. Investigate
2. Solutions



Farmer/producer

1. Manage
2. Raise
3. Produce

Government

1. Laws
2. Policies
3. Assisting



Share:

These are the 5 leadership roles that may collaborate to make change. Individuals representing each of these 5 areas work together daily to make change across the globe and in local communities.

Think about the 5 roles... which one is most important to you?

Image crediting:

Farmer/producer – Image by [melaniko](#) from [Pixabay](#)

Non-governmental Organization (NGO)

Government - Image by [Clker-Free-Vector-Images](#) from [Pixabay](#)

Researcher -

Business owner - Image by [helpsq](#) from [Pixabay](#)



Challenges to Food Security

- Animal Agriculture**
The care and breeding of livestock, poultry and other animals for food, fibers or other products.
- Animal Health**
Protect and improve the health, safety and quality of livestock, poultry and aquaculture.
- Climate Change**
Adapt agricultural practices and policies to respond to significant changes in the Earth's climate.
- Conflict**
Political, economic, environmental or social disagreements. May involve violence or armed conflict.
- Dietary Diseases**
Disease caused by lack of nutrition or a lack of exercise.
- Education**
The delivery of knowledge, skills and information.
- Fisheries and Aquaculture**
Catching or harvesting fish, shellfish and other aquatic organisms for human consumption through wild-caught or farmed operations.
- Food Loss and Waste**
Food that is lost, spoiled or discarded in production, postharvest, processing or consumption.
- Foreign Aid**
Assistance given by one country to another for humanitarian relief or development efforts.
- Human Rights**
Rights that all people are equally entitled to regardless of their nationality, sex, race, ethnicity, religion, language, etc.
- Infectious Diseases**
Infections and illnesses that can be spread from one person to another, among animals or between animals and humans.
- Infrastructure**
The physical structures and facilities critical for the operation of a society, such as roads, bridges, schools, power, etc.
- International Trade**
The exchange of capital, goods and services between countries.
- Malnutrition**
Deficiencies, excesses or imbalances in a person's intake of energy, protein and nutrients.
- Plants**
Utilizing plants to increase and improve food, nutrition, medicine, fibers, fuels and other products.
- Policy and Governance**
The implementation of policies, processes and structures that determine how power is distributed and shared.
- Populations**
The characteristics and movements of the inhabitants of a country including urbanization, migration and growth.
- Poverty**
Lack of financial resources needed to afford basic necessities such as food, housing, education, health care and clean drinking water.
- Renewable Energy**
Energy created from naturally occurring sources such as water, wind, solar and biofuels.
- Sustainable Agriculture**
Best practices to grow food and fiber with a focus on protecting the environment and natural resources.
- Water and Sanitation**
Clean drinking water and adequate sewage disposal to improve human hygiene and health.
- Water Scarcity**
The lack of available water resources to meet the demands within a region.

The four essential pillars of food security:



WORLD FOOD PRIZE FOUNDATION GLOBAL CHALLENGE

Share that on the left, these are the 22 global challenge topics used by the World Food Prize Foundation in working with their youth institutes. These topics reflect important and significant issues that effect citizens, communities, and food security across the globe.

Topics include subjects that might come to mind when we think about food and agriculture such as plants and animal agriculture, but also education, infrastructure, and human rights which also have a big impact on food security and hunger.

There is also the opportunity to cross-over or link topics together. As we work through this simulation the small group work will focus on some of these topics.



Sticky Notes Activity

Using the sticky notes, rank the roles of leadership that were just discussed in order of importance as you see them:

1 being highest and 5 being lowest.



- Sticky note activity slide — each student will rank the leadership roles that are involved with decision-making and solution-planning on a sticky note. Encourage students to rank the roles. There is no wrong answer, this is simply a warmup activity.
- If students decide that ranking is not accurate for their thoughts, then have students write or draw out their concept of leadership roles.
- Post sticky notes in a shared space within the room and reflect on the activity. This is to get the students to start to think about these different roles and who the players are in helping make change happen.
- Are there any obvious patterns or observations to the students' rankings to share with the whole group?

- Photo by [spekulator](/photographer/spekulator-53353) on [Freeimages.com](#)



Post-Test

1. Internet, WIFI is connection needed.
2. Scan and fill out.

Add the current QR code and Menti passcode here or use handout post-test.

Complete the post-test.

The current Menti QR code and Menti passcode may be added to the slide, or the PDF handout may be used for the post-test.

If there is extra time within the first hour, the facilitator may have the participants self-select or assign them to which of the four small groups they will be in for the remainder of the simulation.



Time to Shift into Small Groups

- Group 1 – Water and Sanitation
- Group 2 – Animal Agriculture and Health
- Group 3 – Renewable Energy
- Group 4 – Infrastructure

(Each group needs their data slides)

Students will work together to identify factors contributing to food insecurity related to their assigned challenge topic and propose potential solutions to make improvements. Each participant should contribute to the conversation from the perspective of the role they are assigned.

It is time to put participants into their small groups if they are not already there and give them their data slides.

Students will work together to identify factors contributing to food insecurity related to their assigned challenge topic and propose potential solutions to make improvements. Each participant should contribute to the conversation from the perspective of the role they are assigned.



Suggested Outline for Hour or Session 2

10 Minutes	Total group overview of the U.S. Virgin Islands
5 Minutes	Get in small groups and assume individual roles
5 Minutes	Real Life examples of making a difference
10 Minutes	Cultural snack break
25 Minutes	Small group research and discussion
5 Minutes	Total Group Reflection

Suggested agenda and timing for session 2.

Slides 14-33 are used for hour or session 2.

All groups will need access to slides 16-22 for their small group work, plus their topic slides.



UNITED STATES (U.S.) VIRGIN ISLANDS

- The Caribbean -
St. Croix
St. John
St. Thomas

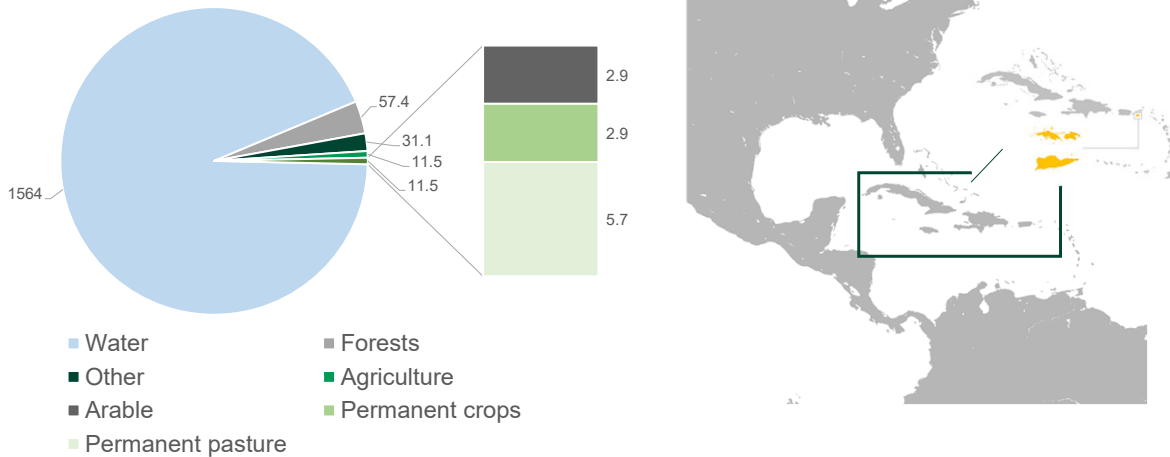
<https://www.cia.gov/the-world-factbook/countries/virgin-islands/>

Share slide content. Now we will start a conversation about food security change for the Virgin Islands. Here is a glimpse of data and statistics for us all to start to think about before we brainstorm in small groups.



U.S. Virgin Islands – Overview of Land Availability and Use

Composition of land availability, km²



CIA, 2012 estimates

<https://www.cia.gov/the-world-factbook/countries/virgin-islands/>

Things to highlight for this slide:

Total land composition is 1910 sq km. That includes Water: 1564, Land: 346

- Agriculture: 11.5, Arable: 2.9, Permanent crops: 2.9, Permanent pasture: 5.7, Forests: 57.4, and Other: 31.1



U.S. Virgin Islands – Overview of Land Availability and Use – Slide 1

- Climate and terrain

- Mountainous with rugged hills
- Subtropical climate with low humidity and little temperature variation
- Rainy season is normally September-November
- Primarily saltwater access points

565
farms



9,324
acres



16.5 acres
average farm size



CIA, 2012 estimates; USDA National Agricultural Statistics Service, 2018

<https://www.cia.gov/the-world-factbook/countries/virgin-islands/>

<https://www.nass.usda.gov/Publications/Highlights/2020/census-virginislands.pdf>

Description – hilly, rugged and mountainous, subtropical, low humidity, little temp variation, rainy from September through November. Average farm is 16.5 acres. There are density hotspots in St. Thomas and St. Croix. Common to have multiple hurricanes, droughts, floods, and earthquakes.



U.S. Virgin Islands – Overview of Land Availability and Use – Slide 2

- Climate challenges
 - Hurricanes and earthquakes
 - Droughts and floods

565
farms



9,324
acres



16.5 acres
average farm size



CIA, 2012 estimates; USDA National Agricultural Statistics Service, 2018

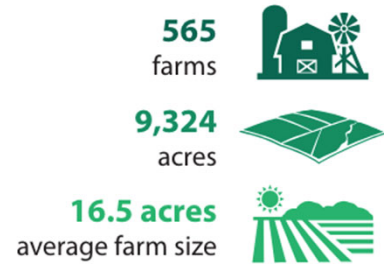
<https://www.cia.gov/the-world-factbook/countries/virgin-islands/>
<https://www.nass.usda.gov/Publications/Highlights/2020/census-virginislands.pdf>

Share content of the slide.



U.S. Virgin Islands – Overview of Land Availability and Use – Slide 3

- Development challenges
 - Lack natural freshwater access
 - Coastal development and oceanic preservation
 - Sanitation



CIA, 2012 estimates; USDA National Agricultural Statistics Service, 2018

<https://www.cia.gov/the-world-factbook/countries/virgin-islands/>
<https://www.nass.usda.gov/Publications/Highlights/2020/census-virginislands.pdf>

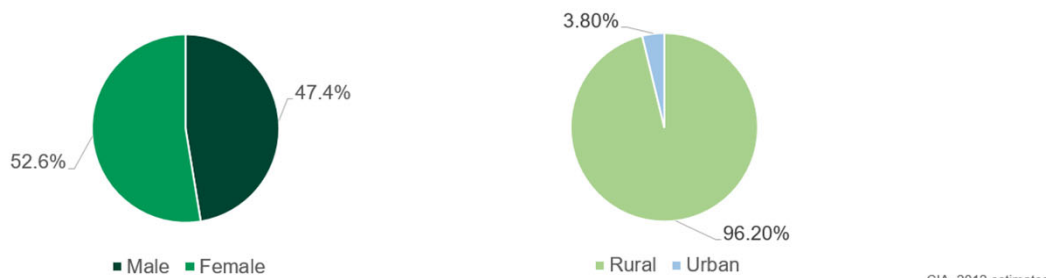
Development Challenges:

- 98.7 have access to improved water and 99.4 access to sanitation
- Lack of natural freshwater, protection of coral reef, solid waste management, coastal development, increase in boating and overfishing
- Municipal solid waste: 146,500 tons



U.S. Virgin Islands Country Demographics and Population

- Overall, the population is **shrinking but** maintains a fertility rate of **1.97 children/woman**.
- Approximately, 28.9% of the population is **below the poverty line**, 12.9% are **unemployed** and the island generates ~146,500 tons of **municipal solid waste**.
- The main diet consists of typical island foods (**seafood, fungi, etc.**).
- The Virgin Islands are a territory of the United States and **operates within the U.S. government** with an elected governor.



<https://www.cia.gov/the-world-factbook/countries/virgin-islands/>

Total: 104,377

Male: 49,520 and Female: 54,857

Growth rate: $-.54 + 1.97/\text{woman}$

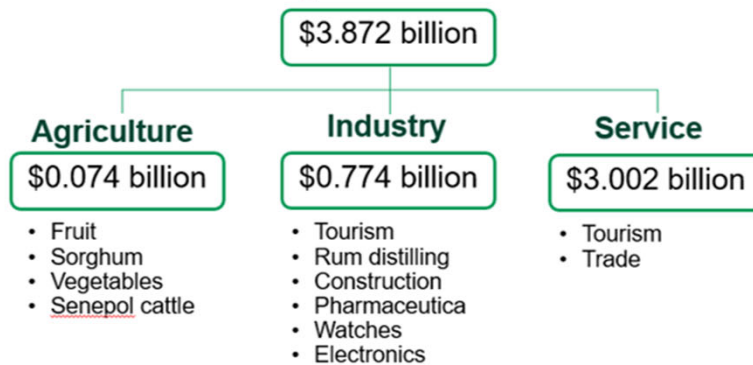
96.2 urban



U.S. Virgin Islands Economic Health

A country's gross domestic product (**GDP**) is an indicator of economic health by providing a summary of all services and products produced within that country.

U.S. Virgin Islands Real GDP



CIA, 2012 estimates

<https://www.cia.gov/the-world-factbook/countries/virgin-islands/>

Unincorporated territory of United States w/ local self government

For your information, Gross Domestic Product (GDP) consumption:

- household consumption: 68.2% (2016 est.)
- government consumption: 26.8% (2016 est.)
- investment in fixed capital: 7.5% (2016 est.)
- investment in inventories: 15% (2016 est.)
- exports of goods and services: 46.7% (2016 est.)
- imports of goods and services: -64.3% (2016 est.)

Public debt: 53.3 Taxes: 28.9

- Exports: refined petroleum, jewelry, recreational boats, watches, and rum going to - Haiti, Guadeloupe, Malaysia, Martinique, Barbados, and British Virgin Islands
- Imports: refined petroleum, crude petroleum, rubber piping, jewelry, and beer coming from - India, Algeria, SK, Argentina, Sweden, and Brazil



U.S. Virgin Islands Economic Health Continued



- Refined petroleum
- Jewelry and watches
- Recreational boats
- Rum

Exports

Imports

U.S. Virgin Islands Real GDP

\$3.872 billion

- Refined petroleum
- Crude petroleum
- Rubber pipping
- Jewelry
- Beer

CIA, 2012 estimates

<https://www.cia.gov/the-world-factbook/countries/virgin-islands/>

- Exports: refined petroleum, jewelry, recreational boats, watches, and rum going to - Haiti, Guadeloupe, Malaysia, Martinique, Barbados, and British Virgin Islands
- Imports: refined petroleum, crude petroleum, rubber piping, jewelry, and beer coming from - India, Algeria, SK, Argentina, Sweden, and Brazil



Real Life Examples of Making a Difference

Deb teaches career exploration and workforce development. She helps young people find opportunities, develop their skills, and set goals for their futures.

Paiton works in animal science research that will potentially have positive long-term impact on animal health.

What have you done locally? Have you ever...

- Helped with or donated to a food drive?
- Helped provide a meal for others?
- Donated or made items for a cause?



Image by [Ray Shrewsberry](#) • from [Pixabay](#)

Slide includes examples from the authors (an Extension educator and an animal researcher) of how their work ties into making a difference in local communities and globally. Share these verbally.

Do a quick group brainstorm on other examples from participants.

- What service have you helped with in your local community?
- Who has helped by donating to a food drive?
- Who has helped prepare or serve a meal to others?
- Who has donated items for a cause?

This is a good place to share either online resource links or handouts that may list a variety of agricultural jobs and careers.



Small Groups Again – Time to Shift

- Group 1 – Water and Sanitation
- Group 2 – Animal Agriculture and Health
- Group 3 – Renewable Energy
- Group 4 – Infrastructure

(Each group needs their data slides)

Students will work together to identify factors contributing to food insecurity related to their assigned challenge topic and propose potential solutions to make improvements. Each participant should contribute to the conversation from the perspective of the role they are assigned.

It is time to put participants into their small groups if they are not already there and give them their data slides.

Slides 25-33 are to be distributed to the four small groups or each group needs access to their slides digitally. These slides will also be used for session or hour 3.

Students will work together to identify factors contributing to food insecurity related to their assigned challenge topic and propose potential solutions to make improvements. Each participant should contribute to the conversation from the perspective of the role they are assigned.



GROUP 1: U.S. Virgin Islands - Water and Sanitation (Slide 1)



- 98.7% of population has access to improved water sources while 99.4% has access to improved sanitation facilities.
- However, ~**25% of homes access** municipal water and most collect rainwater in cisterns.
- After testing, ~**80%** of cistern water tested positive for *Escherichia coli*.

CIA, 2012 estimates; EPA in the USVI, 2024; Reef Resilience Network, 2024

<https://www.cia.gov/the-world-factbook/countries/virgin-islands/>
<https://www.epa.gov/vi/us-virgin-islands-drinking-water#:~:text=Background%3A,in%20samples%20from%2036%20locations.>

<https://reefresilience.org/case-studies/u-s-virgin-islands-wastewater-pollution/>

Slide 25 and 26 are to be given to small group 1.



GROUP 1: U.S. Virgin Islands - Water and Sanitation (Slide 2)



- In September and October 2023, the Environmental Protection Agency (EPA) responded to discolored drinking water.
 - Analysis revealed that 36 sites had **high lead and copper** levels.
 - Houses that sourced water had lower contamination than at distribution meters.
 - Limited sites provide drinking water and treat wastewater.
 - Geography presents challenges to traditional septic systems.

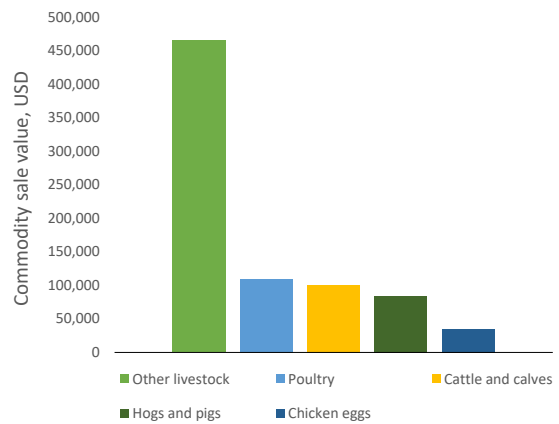
CIA, 2012 estimates; EPA in the USVI, 2024; Reef Resilience Network, 2024

<https://www.cia.gov/the-world-factbook/countries/virgin-islands/>
<https://www.epa.gov/vi/us-virgin-islands-drinking-water#:~:text=Background%3A,in%20samples%20from%2036%20locations.>
<https://reefresilience.org/case-studies/u-s-virgin-islands-wastewater-pollution/>



GROUP 2: U.S. Virgin Islands - Animal Agriculture and Health

- Due to cold storage limitations, St. Croix currently provides humane animal harvest to all three Virgin Islands to increase access to local meat.
- Producers have limited freshwater access.
- Islands are at risk for droughts.
- Reports suggest livestock harbor *Leptospira* bacteria.
 - This bacteria can lead to **abortions**, **infertility** and **poor production**.



CIA, 2012 estimates; USDA National Agricultural Statistics Service, 2018; Virgin Islands Department of Health, 2021

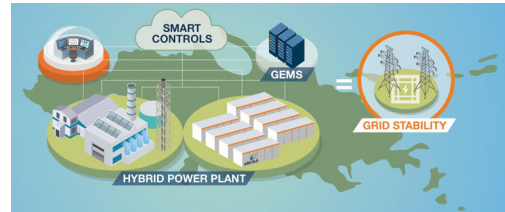
https://doh.vi.gov/pantheon/VIDOH%20Epidemiology%20Report%202021_FINAL.pdf

Slide 27 goes to small group 2.



GROUP 3: U.S. Virgin Islands - Renewable Energy (Slide 1)

- The islands have no fossil fuel reserves and import petroleum to meet most of their energy needs.
 - They have limited use of renewable energy but do have limited solar energy resources.
 - Around **70% of petroleum** is used for electricity and desalination.
 - Petroleum use is responsible for most of the carbon monoxide emissions.



CIA, 2012 estimates; USDA National Agricultural Statistics Service, 2018; U.S. Energy Information Administration, 2024

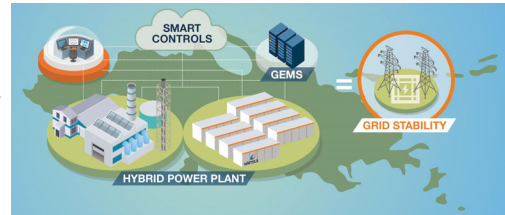
<https://www.eia.gov/state/analysis.php?sid=VQ>

Slides 28-30 go to small group 3.



GROUP 3: U.S. Virgin Islands - Renewable Energy (Slide 2)

- The crude oil refinery is currently closed due to lasting chemicals from previous facilities.
 - The Water and Power Authority (WAPA) is trying to convert from fuel oil to propane.



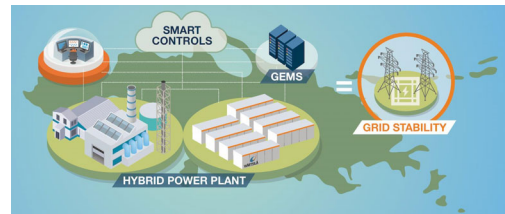
CIA, 2012 estimates; USDA National Agricultural Statistics Service, 2018; U.S. Energy Information Administration, 2024

<https://www.nass.usda.gov/Publications/Highlights/2020/census-virginislands.pdf>



GROUP 3: U.S. Virgin Islands - Renewable Energy (Slide 3)

- WAPA is planning to install underground electrical lines and composite poles due to weather risks. This entity has also purchased property for wind and solar farms.
 - 100% of people have access to electricity, but it can be expensive.
 - **80%** of the population has a mobile phone and **64.8%** have internet access.
 - Only **41%** of farms have internet access.



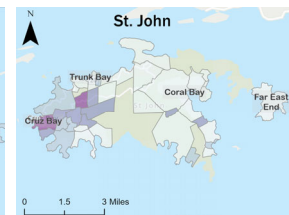
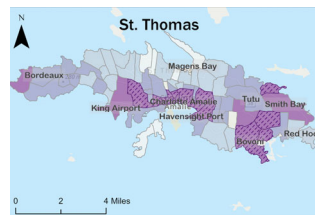
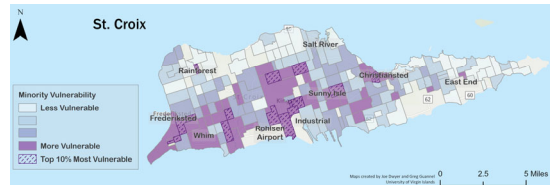
CIA, 2012 estimates; USDA National Agricultural Statistics Service, 2018; U.S. Energy Information Administration, 2024

<https://www.nass.usda.gov/Publications/Highlights/2020/census-virginislands.pdf>



GROUP 4: U.S. Virgin Islands – Infrastructure (Slide 1)

- The islands have several cargo and ferry ports in addition to two international airports.
- 20% of each mile of road is in poor condition.



CIA, 2012 estimates; Virgin Islands Economic Development Authority, 2024; Guannel, G., Lohmann, H., & Dwyer, J., 2022

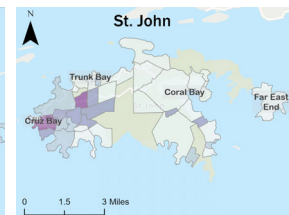
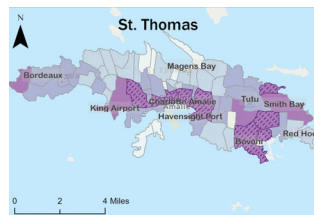
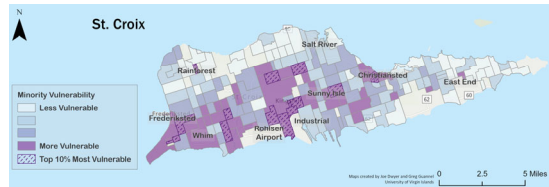
<https://usvieda.org/services/>
<https://hazards.colorado.edu/public-health-disaster-research/the-public-health-implications-of-social-vulnerability-in-the-u-s-virgin-islands>

Slides 31-33 go to small group 4



GROUP 4: U.S. Virgin Islands – Infrastructure (Slide 2)

- There are two school districts with elementary, middle and high school buildings.
 - Natural disasters have struck a few school buildings in **2017** which **they have just received funding** to rebuild three elementary schools.



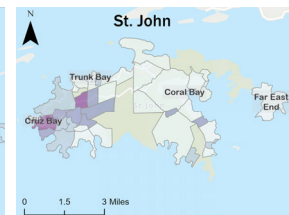
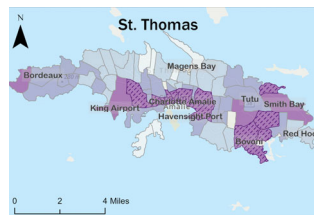
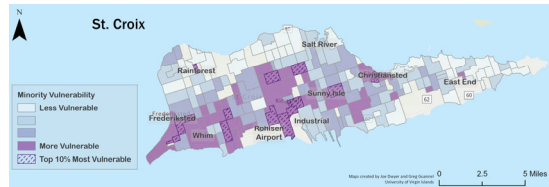
CIA, 2012 estimates; Virgin Islands Economic Development Authority, 2024; Guannel, G., Lohmann, H., & Dwyer, J., 2022

Group 4



GROUP 4: U.S. Virgin Islands – Infrastructure (Slide 3)

- The islands have no fossil fuel reserves and import petroleum to meet most energy needs.
- Two islands have their own hospital. St. John has a patient care facility.
- Few individuals have access to cold storage.
- Between the Virgin Island territories, there are five national parks.



CIA, 2012 estimates; Virgin Islands Economic Development Authority, 2024; Guannel, G., Lohmann, H., & Dwyer, J., 2022

Group 4



Suggested Outline for Hour or Session 3

30 Minutes	Complete small group discussion and prepare to share solution
20 Minutes	Solution proposal sharing to total group (5-minutes per small group)
10 Minutes	Total Group Reflection

Suggested agenda and timing for hour or session 3.



Time to Shift into Small Groups

- Group 1 – Water and Sanitation
- Group 2 – Animal Agriculture and Health
- Group 3 – Renewable Energy
- Group 4 – Infrastructure

(Each group needs their data slides)

Students will work together to identify factors contributing to food insecurity related to their assigned challenge topic and propose potential solutions to make improvements. Each participant should contribute to the conversation from the perspective of the role they are assigned.

Almost all the slides used in hour or session 2, are used for hour or session 3.

As participants complete their small group work, they will need access to slides 16-22 plus their topic slides that they used during hour or session 2. Again, this may be provided either digitally or with handouts.

It is time to put participants into their small groups if they are not already there and give them their data slides.

Students will work together to identify factors contributing to food insecurity related to their assigned challenge topic and propose potential solutions to make improvements. Each participant should contribute to the conversation from the perspective of the role they are assigned.



You Have Completed the Simulation!

Please let us know if you have any questions.

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Session or Hour 3:

After the small group time is complete and each small group has shared their solution, do a 5–10-minute total group reflection. If there are any questions that the presenter cannot answer, please send those questions to, or have a conversation with the lesson authors.