

Looking at Pandemics Through the Geographic Lens of the 5 Themes: Focus on COVID-19

by Heather Moll and Gale Olp Ekiss



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Presenters:

Heather Moll

- ▶ Taught 13 years in Scottsdale Unified
- ▶ Current Co-coordinator AZ Geographic Alliance
- ▶ AzGA Project Coordinator for STEMSS Grant
- ▶ 3rd year Ph.D. Student in the School of Geographical Sciences and Urban Planning



Gale Ekiss

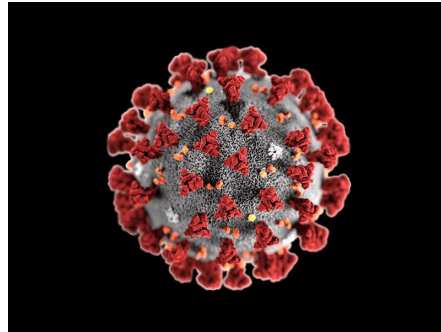
- ▶ Taught 28 years in Mesa Public Schools
- ▶ Former Co-coordinator AZ Geographic Alliance
- ▶ Grant Manager for GeoLiteracy, GeoMath, GeoLit for Diverse Learners, and STEMSS



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Session Outcomes:

- ▶ Why geography is the best social science for analyzing pandemics?
- ▶ A review of the 5 Themes of Geography
- ▶ Applying a geographic lens to look at COVID-19
- ▶ Sharing of lessons
- ▶ Sharing of websites



At any time you have a question, please type it in the chat box so it can be answered.

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Why Geography?

- ▶ Geography includes both human and physical features, it is in a unique position to study pandemics.
- ▶ Relying on the work of Dr. Helen Hazen, University of Denver, we will look at pandemics through a geographic lens. ([Journal of Geography](#), Apr-June 2020)
- ▶ Because many teachers are familiar with the 5 Themes of Geography and use these in their classrooms, we will use this reference tool to explain how pandemics can be studied in way easily assimilated by students.
- ▶ We will focus on COVID-19 as we apply the 5 Themes. And then branch out to the Flu of 1918-19 and then a local example of hantavirus.
- ▶ Finally, we will present a list of web-based resources including links to a lesson on the Black Death.

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Review of the 5 Themes of Geography

AzGA Lesson Plans:

<https://geoalliance.asu.edu/5Themes>

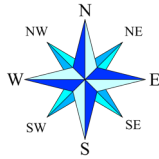
<https://geoalliance.asu.edu/Cookie>

<https://geoalliance.asu.edu/Japan5Themes>

STAR IT Simplify the Article's Really Important Topic Focus: The 5 Themes of Geography

Location: Where is it?

- ▶ **Absolute:** the point where 2 lines intersect (lat & long, street address)
- ▶ **Relative:** where it is in relation to something else (north of, 5 miles east)



Place: What is it like there?

- ▶ Physical characteristics (landforms, vegetation, wild animals, soil)
- ▶ Human characteristics (demographics, political systems, religions, languages)



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Review of the 5 Themes of Geography

Human/Environment

Interaction (HEI): What is the relationship between humans and their environment?

- ▶ How humans **depend** on the environment
- ▶ How humans **modify** the environment
- ▶ How humans **adapt** to the environment



Movement: How are places connected?

- ▶ Goods
- ▶ People
- ▶ Ideas
- ▶ Physical systems (animals, plants, storms)



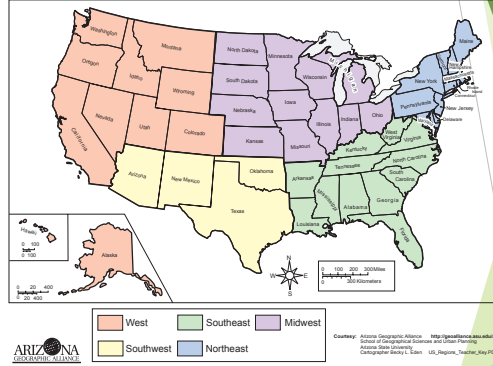
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Review of the 5 Themes of Geography

Region: How are areas linked together by commonalities?

- ▶ Political (cities, states, countries)
- ▶ Physical features (climate, vegetation, currents)
- ▶ Cultural features (religion, language, customs)

Regions of the United States - Teacher's Key



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5 Themes and COVID-19

Introduction

Everything about COVID-19 is **geographical**. As the virus continues to impact our daily lives, it is important to look at the pandemic through a geographic lens. Our intent in this session is to share good and timely information to help instructors teach about the virus. Depending on the level of the students, these ideas could be 5-minute classroom activities or a complete learning experience. History books will have their time to reflect on this event but as we are living it, **geography rules!**



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Early Tracking—Avi Schiffmann

- ▶ Webby Person of the Year
- ▶ Preeminent COVID-19 case tracker
- ▶ Epidemiologist have used it to predict the disease's spread
- ▶ Dr. A. Fauci called the site “essential”
- ▶ Attends high school in Washington state
- ▶ 17 years old
- ▶ 30 million visitors a day
- ▶ Started tracking the disease in early January

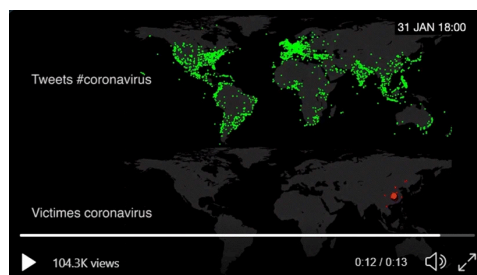


<https://ncov2019.live/>

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5 Themes and COVID-19 Location

- ▶ GIS Data
 - ▶ Outbreaks
 - ▶ #coronavirus



<https://coronavirus.jhu.edu/map.html>
<https://ncov2019.live/>

Absolute: the point where 2 lines intersect (lat & long, street address)
Relative: where it is in relation to something else (north of, 5 miles east)



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5 Themes and COVID-19

HEI (Human Environment Interaction)

- ▶ Diseases have their own ecology.
 - ▶ When people interact with these environments, possibilities exist for disease to transfer from the environment to humans.
 - ▶ Majority (60-80%) of pandemic diseases are zoonotic
 - ▶ When “spillover events” occur (logging, agriculture, hunting), disease can be transmitted from the environment to humans.
- ▶ In the case of COVID-19, the focus is on “wet markets” as the potential site for exposure to the virus.
 - HIV likely came from a butchered primate in Africa.
 - SARS was likely contracted from a masked palm civet although the pathogen likely originated with a bat.
 - H7N9 was likely wild birds combining with the flu strains of domestic birds before moving on to humans.

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5 Themes and COVID-19

HEI (Human Environment Interaction)

- ▶ Most zoonotic pathogens initially spread poorly to humans.
- ▶ Then the virus evolves into a strain with the ability to spread directly from one person to another.
- ▶ Now it can become a pandemic.

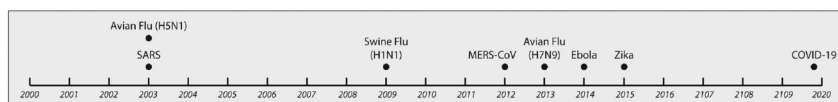


Figure 1. Timeline of major infectious disease outbreaks of the 21st century. Figure by Peter Anthamatten; data from WHO (n.d.).

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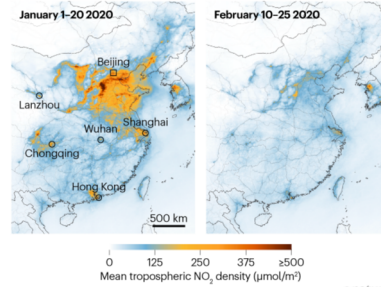
5 Themes and COVID-19 HEI (Human Environment Interaction)

Benefits?

- ▶ Awareness of dangers for zoonotic pathogens might protect wildlife from hunters and markets
- ▶ Cleaner Air due to Less Traffic and Business Closures
- ▶ Might be a short-lived benefit to environment as money spent to protect the environment could be diverted to pandemic issues

CLEANER AIR

Measures to contain the coronavirus outbreak seem to have reduced nitrogen dioxide pollution across China.



Source: NASA Earth Observatory

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5 Themes and COVID-19 Movement

- ▶ How do we teach about a concept students can not see?
- ▶ Many examples...
 - ▶ Glitter on the floor, where some but not all students would step.
 - ▶ Side of doorway, pencil sharpener, bathroom pass.
 - ▶ Flinn Scientific has a kit. "The Glowing Germ Contamination"
 - ▶ You place a small quantity of a substance somewhere... discuss how virus and germs spread, explaining what happened in the room. Turn off lights and use the ultraviolet light to show how fast it has spread.



<https://storymaps.arcgis.com/stories/4fd0d03d3a34aa485de1fb0d2650ee0>

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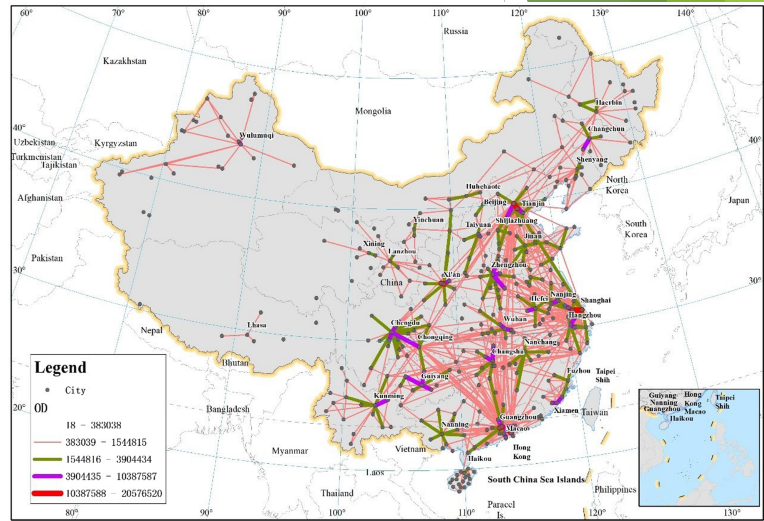
5 Themes and COVID-19 Movement

► Storymaps

► <https://storymaps.arcgis.com/stories/4fdc0d03d3a34aa485de1fb0d2650ee0>

► Now using maps to project where COVID-19 will go based on where movements patterns existed.

► This map depicts the spatial distribution of population movement before and during the most recent Chinese Spring Festival.



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5 Themes and COVID-19 Place (and Space)

Physical Space

- Limitations on “wet markets”
- Because the virus is self-replicating and can be transmitted, this makes them a greater threat to humans. There are few places to hide.

Human Space (an issue of scale)

► **Local Level**

- Social Distancing
- Home Offices
- School at Home
- Gatherings Curtailed
- Closure of Businesses



Human Features (cont.)

► **State and National Level**

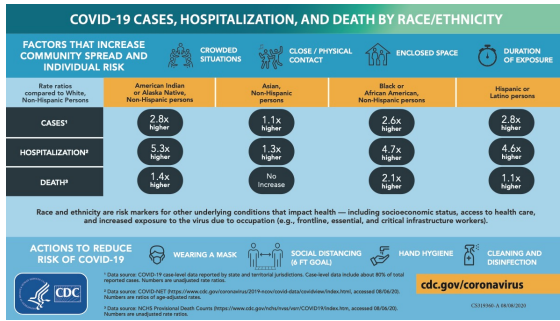
- Restrictions on Travel
- Masks
- Essential Workers

► **Global Level**

- Border Closures
- Economic impact

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5 Themes and COVID-19 Place (Demographics)



Human Features

Who Is at the Most Danger?

- Elderly
- Those with medical conditions
- Those without health insurance
- Those who live in communal spaces
- Workers in lower socio-economic groups including those who must work
- Essential workers (newly defined)
- Exposure for prolonged time
- Isolated places (Navajo Reservation)
- Those with genetic or culture-based differences
- Those with “O” blood type seem to do better.
- Young seem to do better.

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5 Themes and COVID-19 Region

- Early and aggressive reactions
 - China
 - South Korea
- U.S. and Europe
 - ✓ Political
 - ✓ Voluntary isolation
 - ✓ Contact Tracing and Civil Liberties
 - ✓ Closing of businesses and events
 - ✓ Social distancing and masks

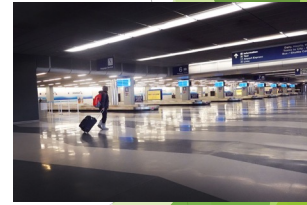


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5 Themes and COVID-19 Region

U.S. Economic Implications

- ▶ Job Losses—Travel and tourism esp.
- ▶ Manufacturing
 - Loss of work force
 - Accommodating needs of pandemic
- ▶ Supply Chains
 - Closing of borders
 - Air/shipping disruptions
 - Incidents of panic buying



Global Implications

Comparing effects on U.S. workers to workers in affluent countries with strong welfare states.

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Photo Credits

<https://www.smithsonianmag.com/smart-news/everything-you-need-know-about-covid-19-180974313/>

https://en.wikipedia.org/wiki/File:Compass_rose_simple.svg <https://www.ruineagestein.at/en.html>

<https://www.thinklink.com/scene/787738917985058816>
<https://sites.google.com/site/nisearchiv/home/cartographic-d/desire-lines>

<https://sites.google.com/site/mmsheogeography/academics>

<https://www.smalljoys.tv/saint-savior-teenager-montv/>

<https://quizlet.com/107830990/the-five-themes-of-geography-flash-cards/>
<https://coronavirus.jhu.edu/map.html> <https://ncov2019.live/>

<https://www.aramcoworld.com/Articles/July-2020/Disease-Detectives-of-Lebanon>
<https://www.tandfonline.com/doi/full/10.1080/19338341.2020.1764375>

<https://www.nature.com/articles/d41586-020-00758-2>

<https://www.schoolpaints.com/2016/11/school-elitter-painting-using-messy.html>
<https://www.weareteachers.com/elitter-in-the-classroom/>

<https://www.flinnsci.com/the-glowing-germ-contamination---demonstration-kit/ap9080/>
<https://teeherivar.com/product/elitcident-when-you-have-the-best-intentions-of-using-elitter-in-the-classroom/>

<https://www.littleguidedetroit.com/3-best-strategies-to-working-from-home-with-kids/>

<https://www.cdc.gov/coronavirus/2019-ncov/covid-data/investigations-discovery/hospitalization-death-by-race-ethnicity.html>

<https://qz.com/299003/a-quick-history-of-why-asians-wear-surgical-masks-in-public/>

<https://www.bangkokpost.com/business/1848069/coronavirus-quarantine-will-ripple-through-global-manufacturing>

<https://www.latimes.com/food/story/2020-04-09/who-should-do-the-grocery-shopping-coronavirus-pandemic>
<https://mvmag.com/intelligencer/2020/04/heres-why-so-many-planes-are-still-flying-nearly-empty.html>

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