TEACH
GEOCIVICS

GeoCivics Lesson: Population Pyramids: USA 1920 - 2050
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Teacher(s): Samuel D Francés Vázquez	Unit Title: States & Territories; Understanding Them in My Context Lesson Title: Population Pyramids: USA 1920 - 2050	Grade Level: 8th

Notes: This is lesson 2 of 3. The lesson presented here is designed for a Social Study period of 60-80 minutes; therefore, the lesson can take a couple of class periods to complete based on the timeframe scheduled for your class.

Pre-existing Knowledge:
The students should be familiar with calculating percentages and citing their supporting details from the text. Additionally, students should have a general understanding of pyramids and their use to represent populations - i.e. trophic level pyramids. **Note:** Students should have completed Lesson #1 learning how to create a population pyramid and they will need their Exit Ticket completed in Lesson #1 to use in the ENGAGE section of this lesson.

Overview of Content:
The characteristics of a country's population can provide insight into that particular country's current and future needs; the same applies to states, territories, counties, and municipalities. One way that demographers predict a country's needs is by looking at its population distribution. Demographers build population pyramids which are graphic representations of the distribution of population by gender and age brackets, to facilitate the visualization of some characteristics of the population. Furthermore, creating population pyramids for different places allows demographers to compare and contrast the populations and with it, the current and future needs of the places which can inform changes at the national, state, or local level.

Purpose: *What will students learn?*
In this lesson, 8th-grade students will analyze data to compare and contrast the US populations for decades and will compare and contrast these to changes in the population of US territories. Students will address different aspects of National Geography Standard number 9b to compare the structures of populations in different places using key demographic concepts. Upon creating the population pyramids, the students will present their population pyramids and their analysis - compare and contrast.

National & State Social Studies Standard(s):
National Curriculum Standards for Social Studies:
Theme 2: Time, Continuity, and Change

Arizona State Social Studies Standard:
Disciplinary Skills & Processes: Historians and Social Scientists gather, interpret, and use evidence to develop claims and answer historical, economic, geographical, and political questions and communicate their conclusions: 8.SP 3.8 Present arguments and explanations on topics of interest to others to reach multiple audiences in and outside of the classroom print, oral, and digital technologies.

National & State Geography Standard(s):
National Geography Standard:
Element 9: Human Systems; B. Compare the structures of populations in different places through the use of key demographic concepts.

Arizona State Geography Standard: The use of geographic representations and tools helps individuals understand their world: 8.G1.1 Use geographic tools and representations to analyze historical and modern political and economic issues and events. (Key tools and representations such as maps, globes, aerial and other photos, remotely sensed images, tables, graphs, and geospatial technology)

ELA Standards:
6-12 Literacy Standards in History/Social Studies, Science, and Technical Subjects:
- Integration of Knowledge and Ideas: 7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.
- Research to Build and Present Knowledge: 5. Conduct short as well as more sustained research projects based on focused questions, demonstrating an understanding of the subject under investigation.

ISTE Teacher and/*or* Student Standard:
Teacher:
- 2.6.c Facilitator: Teach Computational and Design Thinking: Create learning opportunities that challenge students to use a design process and computational thinking to innovate and solve problems.

Language Functions:
- Comparing and Contrasting: Students use language to describe similarities and differences in objects or ideas: Students will compare and contrast the population pyramids.
- Analyzing: Students use language to separate whole into parts, and identify relationships and

patterns: Students will analyze given populations by determining the division of the population into age. brackets and genders.
- Inferring, Predicting, and Hypothesizing… Students will make predictions of the future needs of a locality/place based on their analysis of its corresponding population pyramid.

Culturally Responsive Lesson Strategies:
- VOICE: Lesson/Assignment allows places for students to work together cooperatively or share their learning experiences: Students will work together cooperatively and share throughout the creation and analysis of the Population Pyramids.
- CONNECTION: Lesson/Activity incorporates real-life connections: Students will have real-life connections by exploring the characteristics of the US population at different points in time.

Objective(s):
Students will be able to:
- Develop a US population pyramid for an assigned decade.
- Make predictions about the US population pyramid of the following and preceding decade.
- Compare and contrast the population pyramid of their assigned territory with that of the US.

SIOP

SIOP Elements		
Preparation Adapting content Linking to background **Linking to past learning** Strategies used	**Scaffolding** **Modeling** **Guided practice** Independent practice Comprehensible input	**Grouping Option** **Whole class** **Small groups** **Partners** **Independent**
Integrating Processes **Reading** **Writing** **Speaking** **Listening**	**Application** **Hands-On** **Meaningful** **Linked to objectives** **Promotes engagement**	**Assessment** **Individual** Group **Written** Oral

Evidence of Mastery (Measurable):

Formative: After creating a population pyramid for an assigned decade, the students will each write a short paragraph - four or five sentences to explain the process of creating a population pyramid and tell how they use the information on the population pyramid to make predictions about future populations. They will turn in their completed paragraph for use as a formative assessment.

Summative: After creating a population pyramid for an assigned US territory, students will write a paragraph answering Inquiry Question #2: (**How do the changes in the population of the US territories compare with that of the US as a whole?)** where they will describe how the changes in the population of their assigned US territory compares with that of the US as a whole. The teacher will use the US Territories-US Population Comparison Rubric below to assess students' paragraphs with a score of 5 or more indicating mastery.

<center>US Territories-US Population Comparison Rubric</center>

Exceeds Expectations	The paragraph provides a very thorough and accurate response to the question that is well documented with multiple pieces of evidence based on accurate data from both population pyramids (US territory and the US as a whole). The paragraph also accurately incorporates the lesson vocabulary (population, population pyramid, demographer, cohort) in the explanation given.	**8 - 10**
Meets Expectations	The paragraph provides an accurate and well-documented claim as to how changes in the population of the US territory compare to changes in the US population as a whole by providing at least 2 clear and accurate pieces of evidence based on data from both the US territory population pyramid and the US as a whole population pyramid to support the claim made.	**5 - 7**
Approaches Expectations	The paragraph provides a clear response to the question about how changes in the population of the US territory compare to the changes in the US population as a whole and provides 1 clear and accurate piece of evidence based on some data from either the US territory population pyramid or the US as a whole population pyramid, but lacks a full set of evidence to support the claim being made.	**3 - 4**
Fails to Meet Expectations	The paragraph attempts to respond to the question about how changes in the population of the US territory compare to the changes in the US population as a whole, but lacks evidence based on data from either population pyramid to support the claim being made.	**0 - 2**

Key vocabulary:	Materials:

- Population: the whole number of people or inhabitants in a country or region; the total of individuals occupying an area or making up a whole.
- Population Pyramids: A graph that shows the age-sex distribution of a given population.
- Demographer: An expert in the study of statistics relating to the changing structure of human populations.
- Cohort: a group of subjects with a common defining characteristic, for example, age group.

Students' Exit Tickets from the previous lesson
- Student copies of 1920 US Population Pyramid (Link in Sources)
- Pictorial Representation of each Vocabulary Word (in Lesson Materials Document)
- 1940 - 2050 Census Data (Link in Sources)
- Copies of US Population Change Predictions Handout (In Lesson Materials Document)
- Completed Student Vocabulary Cards (Lesson #1- Reference) (Sample In Lesson Materials Document)
- Population Pyramid template- located in *Mysteries of the US Pyramid* Website (link in Sources)
- Colored pencils, rulers, markers, calculators
- Territories Population Data for 2000, 2020, 2050 (In Lesson Materials Document)
- US Territories-US Population Comparison Rubric (In Lesson Materials Document)

Sources:
- **Website: *Mysteries of the U.S. Pyramid*** (Find the resources bulleted below)
  https://populationeducation.org/teachpop/wp-content/uploads/2016/03/mysteries_of_the_us_pyramids.pdf
  - Data: Population Pyramid of the US in 1920-2050
  - Population Pyramid template
- **1940 Census Data** - Download Part 1 - United States Summary - Full Report, page 3 has population data: https://www.census.gov/library/publications/1943/dec/population-vol-4.html
- Territories Data: https://www.census.gov/data-tools/demo/idb/#/dashboard?COUNTRY_YEAR=2024&COUNTRY_YR_ANIM=2010&CCODE_SINGLE=**&CCODE=**

Engage:

Teacher Will:	Students Will:
For ELL/SPED support, the teacher will post sentence stems in the classroom to help with the development of their responses. 1. Say to the students: "Today, we will continue our journey as demographers. Who remembers what the job of a demographer is?" The teacher will explain that first, they are going to start by determining whether the predictions made in their Exit Ticket from the previous lesson for the US Population in 1920	1. Listen to the teacher's directions, clarify any directions,if needed, and answer the questions posed by the teacher. Students will think about the predictions made on their Lesson #1 Exit Tickets.

were made based on whether the Population Pyramid of 1880 are accurate or not, and they will briefly discuss potential reasons for their accuracy/inaccuracy. The teacher will ask, "Are we ready to continue the journey?"

2. Distribute to the students their Exit Tickets from the previous day with students' predictions about the US Population in 1920.

3. Present each student with a copy of the 1920 US Population Pyramid and direct them to observe the pyramid, compare their predictions with the data shown on it, and determine whether they were accurate or inaccurate.

(Scaffolding: Guided Practice)

4. Direct students to get together with their assigned partner from the day before. If any pair is incomplete, partner the students accordingly with other missing partners or in trios, as well as strategically grouping to support the needs of ELLs/ SPED or Gifted students as needed.

5. Ask students to share with their partners their findings regarding their predictions for 1920 based on data from 1880. (A person with darker-colored hair speaks first.)

6. Tell the class: "Let's review the vocabulary we learned yesterday that we need to master to demonstrate understanding of the topic at hand." "Remember our vocabulary words are Demographer, population, cohort, and population pyramid." The teacher will present a Pictorial Representation of each Vocabulary Word (in Lesson Materials Document). Ask the students which vocabulary word it represents. (Ask for choral response) Then select a volunteer to present their definition, correct misconceptions, etc. The teacher will ask:

   "Who can explain to the class what a demographer does in their own words?"
   "How did we define population?"
   "What are cohorts for our purpose in this unit of study?"
   "What is a Population Pyramid?"

2. Get their Exit Ticket and revisit their predictions, reflecting on what data they based their prediction on.

(Grouping: Independent) (Preparation: Linking to past learning)

3. Observe the 1920 US Population Pyramid, and compare the predictions they made previously with the data shown on the pyramid. Determine whether their predictions were accurate or inaccurate by finding data to verify or oppose their predictions.

(Grouping: Independent (Application:Hands-on/ Meaningful/ Promotes engagement)

4. Get together with their partners from the previous day or with their new partners as assigned.

5. Discuss their findings regarding their predictions with their partners.

(Grouping: Partners) (Application: Meaningful/ Promotes engagement) (Integrating Processes: Reading/Speaking/Listening)

6. Listen to the teacher's directions and try to identify the vocabulary word represented by each picture shown by the teacher. Students will then try to define the vocabulary words in their own words, and they will volunteer to share the definitions with the teacher and class members.

(Preparation: Linking to past learning) (Application: Promotes engagement) (Grouping: Independent/Whole class)

"How are these population pyramids helpful for demographers?"
 	
(NOTE): To support ELLs/SPED students as needed, the teacher will provide sentence frames for students to use in response to the questions asked. The teacher can also allow students to use notes written previously in their journals that define the vocabulary words and have the students use these to restate the word meanings in their own words.
 	
    ● Demographer: An expert in the study of statistics relating to the changing structure of human populations.
    ● Population: the whole number of people or inhabitants in a country or region; the total of individuals occupying an area or making up a whole.
    ● Cohort: a group of subjects with a common defining characteristic, for example, age group.
    ● Population Pyramids: A graph showing a given population's age-sex distribution.
 	
7. Tell the class that "Today, we will continue our demographer adventure. We will work together to construct a Population Pyramid for 1940 - as a review - and you will be assigned data for a specific decade (1960, 2000, 2020, 2050) to complete your own US Population Pyramid." Students will work collaboratively in building the Population Pyramid for that decade. Additionally, they will predict the population for the previous and next decade based on their pyramid.
	7. Listen to the teacher's instructions and reflect on what they have learned about how to create a Population Pyramid and ask clarifying questions if needed.
	(Preparation: Linking to past learning)

Explore:

Teacher Will: *Provide sentence stems posted in the classroom to help ELL/SPED students develop their responses.* **IQ 1# *How has the US population changed over time? How is the US population predicted to change in the future?***	**Students Will:**

Part 1:
1. Assign two to three students to distribute the <u>1940 Census Data</u> (Link in Sources), colored pencils, rulers, markers, calculators, and <u>Population Pyramid template</u> (Link in Sources) to be used for the Guided Practice of the lesson.

Data: Population Pyramid of the US in 1940
(Link in Sources)

TABLE III.—AGE, BY SEX, FOR THE UNITED STATES: 1940

AGE	Total	Male	Female	PERCENT DISTRIBUTION			Males per 100 females
				Total	Male	Female	
All ages	131,669,275	66,061,592	65,607,683	100.0	100.0	100.0	100.7
Under 5 years	10,541,524	5,354,808	5,186,716	8.0	8.1	7.9	103.2
5 to 9 years	10,684,622	5,418,823	5,265,799	8.1	8.2	8.0	102.9
10 to 14 years	11,745,935	5,952,329	5,793,606	8.9	9.0	8.8	102.7
15 to 19 years	12,333,523	6,180,153	6,153,370	9.4	9.4	9.4	100.4
20 to 24 years	11,587,835	5,692,392	5,895,443	8.8	8.6	9.0	96.6
25 to 29 years	11,096,638	5,450,662	5,645,976	8.4	8.3	8.6	96.5
30 to 34 years	10,242,388	5,070,312	5,172,076	7.8	7.7	7.9	98.0
35 to 39 years	9,545,377	4,745,659	4,799,718	7.2	7.2	7.3	98.9
40 to 44 years	8,787,843	4,419,135	4,368,708	6.7	6.7	6.7	101.2
45 to 54 years	15,512,071	7,962,019	7,550,052	11.8	12.1	11.5	105.5
55 to 59 years	5,843,865	3,011,364	2,832,501	4.4	4.6	4.3	106.3
60 to 64 years	4,728,340	2,397,816	2,330,524	3.6	3.6	3.6	102.9
65 to 69 years	3,806,657	1,896,088	1,910,569	2.9	2.9	2.9	99.2
70 to 74 years	2,569,532	1,270,967	1,298,565	2.0	1.9	2.0	97.9
75 years and over	2,643,125	1,239,065	1,404,060	2.0	1.9	2.1	88.2
21 years and over	83,996,629	42,004,816	41,991,813	63.8	63.6	64.0	100.0
Median age	29.0	29.1	29.0	------	------	------	------

2. (Real-life Connection): Today, we will continue practicing the creation of the population pyramids. You are well on your way to becoming a demographer!
3. Model calculating the percentage of populations per cohort. *Model (I do) demonstrates the percentage calculation for males and females under 5, 5-9, 10-14. Model (We do) ask probing questions for certain aspects of the percentage calculation per cohort. For instance, what numerator will I use for the cohort male 15-19? (6,180,153) What about the denominator? (131,669,275) and lastly, what do I multiply by to get the percent? (100) Follow a similar process for male and female cohorts 15-19, 20-24, 25-29.*
(Scaffolding: Modeling)
4. Guided Practice (you do it together). Assign four cohorts (males & females for two age brackets) per group to complete the

Part 1:
1. Gather their material and prepare to participate in the lesson.

2. Listen to the teacher's introduction.

3. Observe the teacher. Take notes on how to calculate the percentage of the population per cohort. Ask clarifying questions. Answer the teacher's question regarding the missing pieces of the percentage calculation.
(Grouping: Whole class/Independent)
(Preparation: Linked to past learning) (Application: promotes engagement)

4. Collaborate with their working group and calculate the percent of the population of the assigned cohorts. Ask questions if needed/Seek help if necessary.

percentage calculation. *Monitor students' work to ensure productive work and correct any misconceptions.*
(Scaffolding: Guided Practice)

5. Reconstitute the class and collect data from all groups, ensuring the correctness of the data.
6. Model creating the Population Pyramid on the graph template. (I do) 0-4 Males =(5,354808/131,669,275) * 100= 4.1% of the population; therefore, make a mark right after four and shade in from the 0 to mark to represent the 0-4 male cohort. Repeat the process with the other cohorts model in the previous step. (We do) What percentage of the population did we calculate 15-19 males to represent? (*4.7%*) Where should I place the end mark before or after 4 (*after*) closer to 4 or 5 (*5*)? What color should I shade it (*same as what I used for males*). Repeat the process for the cohorts used for We do in the previous modeling.
(Scaffolding: Modeling)
7. Guided Practice (You do together) Assign the rest of the cohorts to the group to complete. *Monitor students' work to ensure productive work and correct any misconceptions.*
(Scaffolding: Guided Practice)
8. Tell students: *"Now that you have seen the change in population from 1880 to 1940, how do you predict the population will change for 1960, 2000, 2020, and 2050? Predict the changes you think will happen in the US population for each of the decades listed and write them in the provided document US Population Change Predictions handout (in Lesson Materials). For instance, you can write, "In 1960, I expected the cohort 0-4 y/o males to be X% because of XYZ." If you are brave enough, make more than one prediction per decade."*
9. Assign a decade to each group and provide the data for each decade 1960, 2000, 2020, and 2050 (Linked in Sources) for them to collaborate in completing their Population Pyramid. *Ideally, two groups for each decade*

(Grouping: Small groups) (Application: Hands-on/Meaningful/promotes engagement)

5. Report the data for their assigned cohorts and respond to any questions from the teacher.
6. Observe the teacher's model, take notes, and ask clarifying questions. Answer the teacher's question regarding the missing pieces of the percentage calculation.
(Grouping: Whole class) (Integrating Processes: LIstening/Speaking)

7. Collaborate with the working group and complete the Population Pyramid portion of the assigned cohorts. Ask questions if needed/Seek help if necessary.

8. Work with group members to write their predictions for each decade by completing the US Population Change Predictions handout.
(Grouping: Small groups) (Preparation: Linking to past learning) (Application: ands-on/Meaningful/ promotes engagement)

9. Work together in their groups to complete their population pyramid for their assigned decade.

will allow for students to compare their work later on and discuss any discrepancies.
10. Say: Your tasks are to:
    a. Determine who is going to be responsible for the calculation for each cohort.
    b. Calculate the percentage of the population that each cohort represents.
    c. Collaborate on the construction of the Population Pyramid based on your calculations.
11. Monitor students' progress and redirect or support them as needed.
	(Grouping: Small group) (Application: Hands-on/promotes engagement/Linked to objectives) (Integrating Processes: Listening/Speaking/Reading/Writing)

Explain: Formative Assessment

Teacher Will: Formative Assessment: 1. Have students write a short paragraph - four or five sentences - explaining the process of creating a population pyramid and how they use the information on the population pyramid to make predictions about future populations. **(NOTE):** The teacher can provide support for ELLs/SPED and Gifted Students as needed by partnering students if needed and/or providing written sentence stems to help students write out their paragraph. Students can also be allowed to use their completed worksheets and notes to help them write down their explanation about how to create a population pyramid and how to use it to make predictions. When completed. the students will turn in their paragraph for use as a formative assessment of student learning.	**Students Will:** 1. Each group will turn in its U.S. Population Pyramids for their assigned decade. Then, each student will write a short paragraph explaining the process of creating a population pyramid and explain how they use the population pyramid to make predictions about future populations. They will then turn in their paragraphs to the teacher. **(Assessment: Individual/Written) (Grouping: Small groups/Independent) (Assessment: Independent/Written)**

Elaborate:

Teacher Will:	Students Will:
IQ 2# *How do the changes in the population of the US territories compare with that of the US as a whole?* For ELL/SPED and Gifted Support, strategically assign students to groups to provide language and/or learning support as needed.) 1. Present Inquiry Question #2 to the class and let them know that in order to answer the question, they will be assigned a US territory for which they will create a population pyramid. Divide the class into groups and assign each group a US territory - American Samoa, Guam, Northern Mariana Islands, Puerto Rico, US Virgin Islands. Each group will be completing a population pyramid for their assigned territory at three points in 2000, 2020, and 2050. 2. Each group will be provided data tables for each decade 2000, 2020, and 2050 (in Lesson Materials Document) to calculate the percentage for each cohort and work to complete the population pyramids for their assigned territory. 3. When done, students will create a poster of population pyramids for their assigned territory. 4. Ask the students to use their population pyramids to reflect on how they would answer the Inquiry question: ***How do the changes in the population of the US territories compare with that of the US as a whole?***	1. Reflect on Inquiry Question #2 and get into their designated groups and learn which territory they will be assigned. Listen and learn which decade they are to complete their population pyramid for. **(Preparation: Linking to past learning) (Grouping: Small groups)** 2. Discuss the assigned tasks, divide the workload among group members, and work collaboratively to complete their Population Pyramid, ask clarifying questions, and use the time wisely**.** **(Preparation: Linking to past learning) Grouping: Small groups) (Application: Hands-on/Meaningful /Promotes engagement)** 3. Work with group members to create a poster showing their population pyramids for their assigned territory. **(Grouping; Small groups) (Application: Hands-on/Promotes engagement)** 4. Reflect on and discuss with group members how they could use their population pyramid to help answer Inquiry question #2. **(Grouping: Small group) (Preparation: Lining to past learning) (Integrating Processes: Listening/ Speaking)**
Evaluate - Summative Assessment	

Teacher Will:	**Students Will:**
1. Have students answer the IQ#2 posed during the Elaborate section by writing a paragraph describing how the changes in the population of their assigned US territory compares with that of the US as a whole. 2. Present and discuss the <u>US Territories-US Population Comparison Rubric</u> (In Lesson Materials Document) with students, discussing expectations and criteria for grading their paragraphs. A score of 5 or more will indicate mastery.	1. Reflect on the US Territories-US Population Comparison Rubric presented by the teacher and use what they have learned through creating their population pyramids and comparing them to the population pyramid of the US to write a paragraph answering Inquiry Question #2. Students will turn in their completed paragraph to be assessed. **(Assessment: Individual/Written) (Preparation: Linking to past learning) (Application: Linked to Objectives)**

Extensions:
- Provide the link to the US Census page for students to look at the population of their state and research the percentage of the state population that originates from the different territories.