



LEVEL

2

Dust Bowl: Population Shift

from the Esri Geolnquiries™ collection for U.S. History

Target audience – U.S. history learners

Time required – 15 minutes

Activity	Investigate the farms in Dust Bowl states by summarizing to the state level.
Social Studies Standards	C3: D2.His.14.9-12. Analyze multiple and complex causes and effects of events in the past. C3: D2.His.1.9-12. Evaluate how historical events and developments were shaped by unique circumstances of time and place, as well as broader historical contexts.
Learning Outcomes	<ul style="list-style-type: none">• Students will be able to analyze the effect on Dust Bowl farms in 1930 and 1940 at a state level.• Students will be able to evaluate the change in farm acreage from 1930 to 1940 at the state level due to the Dust Bowl.
Level 2 Geolnquiry Requirements	<ul style="list-style-type: none">• A free school ArcGIS Online organization account. Instructors or students must be signed in to the account to complete this activity.• Approximately 0.68 credits will be used per person in the completion of this activity as scripted.

Map URL: <http://esriurl.com/historyGeolnquiry10>

? Ask

How many counties and states were most involved on the map provided?

- Click the link above to launch the map.
- In the upper-right corner, click Sign In and use your ArcGIS Online organization credentials to sign in.
- With the Details button underlined, click the button, Show Contents of Map (Content).
- Turn on the layer, % Counties In Farms 1930.
- Hover over the layer name, % of Counties In Farms 1930. Click the button, Show Table.
- ? How many counties (features) are there? (Hint: In the table, look at the top-left corner.) *[676 counties]*
- Sort the layer table by the State field. (See the Table ToolTip on page 2.)
- ? How many states are there in the Dust Bowl sample? *[Seven]*
- Turn off the layer, % of Counties In Farms 1930.

! Acquire

What type of political divisions are the data classified in?

- The Summarize Within tool can be used to add up the data from all 676 counties into their seven states.
- Click the button, Analysis. Expand Summarize Data. Choose Summarize Within. (See ToolTip on page 2.)
- For the Summarize Within tool, set the following parameters:
 - 1 Set to: Polygon. Set drop-down to: USA State Boundaries.
 - 2 Set to: % of Counties In Farms 1930.
 - 3 Click the box, Sum Area in. Set units to: Acres.
Click the Field down arrow, set to: Farms30. Set Statistic to: Sum.
Create a second, third, and fourth field with Farms40 and Sum, FarmAcre30 and Sum, and FarmAcre40 and Sum.
 - 5 At the end of the default layer name, add a unique string such as: **_<your initials_date>**.
Leave Use Current Map Extent selected to only compute farm acreage in the map view.
Always click Show Credits to ensure acceptable credit usage.
Click Run Analysis.
- ? What type of political divisions do you see on the map now? *[Data is shown by states, not counties.]*
- Hover over the layer name, SummarizeFarmsandFarmAcres_REED_ABC_20180606. Click the button, Show Table.
- ? What fields did the Summarize Within tool create? *[SumFarmAcr30, SumFarmAcr40, SumFarms30, SumFarms40, Sum A00AA1930, Sum A00AA1940; the final two are sums of the population in 1930 and 1940.]*

Explore

What happened to the amount of farm acres compared to the number of farms?

- In the table, compare the Sum FarmAcr30 field with the Sum FarmAcr40 field for each of the seven states.
- ? Did the number of acres in farms increase or decrease from 1930 to 1940 for each state? *[The number of acres in farms actually increased from 1930 to 1940.]*
- ? When you compare the number of farms in the same way, are the number patterns the same as the farm acres? *[From 1930 to 1940, there was a decrease in the number of farms for all states except New Mexico.]*

Analyze

What happened to the amount of population from 1930 to 1940?

- In the table, compare the Sum A00AA1930 field (Pop in 1930) with the Sum A00AA1940 field (Pop in 1940) field for each of the seven states.
- ? What is the number pattern in population between 1930 and 1940? *[Four of the seven states increased in population, but Nebraska, Kansas, and Oklahoma decreased in population.]*

Act

What was the Dust Bowl states' population shift related to?

- ? In 1930 to 1940, if farm acres increased in each state but the number of farms decreased, what might that indicate? *[Increased amount of farm acres indicates that farmland may have recovered by 1940. Also, farm sizes had to have increased because the number of farms decreased.]*
- ? What can you say about the population shifts in the 10-year period between 1930 and 1940? *[Four of the Dust Bowl states recovered in population. However, Oklahoma, Nebraska, and Kansas lost what is assumed was farmers and their families.]*

VIEW AND SORT A TABLE

- Tables are only available for certain map layers.
- In the Contents pane, point to a layer and click the Show Table button that appears under the layer name.
- Click the field name and choose Sort Ascending or Sort Descending.

SUMMARIZE WITHIN

- Summarizes an area layer to other features within its boundaries. The area layer is states in this operation.
- The result layer name must be unique, so consider adding three initials, school code, and a number after the layer name (example: FileName_REED_ABC1).

Next Steps

Continue using an ArcGIS Online organizational account (www.esri.com/schools) to dig deeper into data using the analysis tools, and save your maps to your account.

THEN TRY THIS...

- Make copies of the newly summarized layer that you created and click the Change Style button to thematically map the ratio of farm acres to total acres for 1940. Do the same for number of farms in 1930/1940 and population numbers 1930/1940. Save the map in your organization account.
- Create a story map of the relationships between the acres in farms, numbers of farms, and population shifts during the Dust Bowl.

TEXT REFERENCES

This GIS map has been cross-referenced to material in sections of chapters from these high school texts.

- *World History* by Glencoe — Chapters 2 & 3
- *World History: Human Journey* by Holt — Chapters 1–4
- *World History* by Prentice Hall — Chapter 1