

STUDENT ATLAS OF NEBRASKA – Teacher’s Guide

The *Student Atlas of Nebraska* is designed to be integrated throughout the 4th grade Nebraska Studies curriculum in order to enhance and improve the understanding of concepts in history, geography, civics, and economics.

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PAGE NOTES

1. What is Geography?

Ask students for their definition of geography.

Just as football or soccer teams organize players into positions on offense or defense, geographers are often classified as to whether they specialize in physical or human geography. Indeed, *Physical Geography* and *Human Geography* are often popular introductory courses at colleges and universities, introducing students to how their natural world works and how people and places differ around the globe.

Geographers try to describe where things are found, analyze why they are there, and understand how places develop and change over time.

Thinking geographically helps people to be aware of the connections between places and to see how events are shaped by where they take place.

People who like geography are usually curious about their world. They look for patterns, study environments, and learn about people who make up the endlessly fascinating and varied planet on which we live. Ask students to look for patterns in these Atlas maps.

How is geography different from geology? Geology focuses on earth materials of the earth’s crust and interior. Geologists study the physical processes that create, and the resulting characteristics that define, rock formations and mineral properties. Geography and geology often complement each other in efforts to better understand our Earth.

2. What is a Map?

Ask students for their definition of a map.

A map is a model of the real world, usually created on a flat surface. Maps were likely used by virtually all early human civilizations and were painted on stone, pressed into mud, carved onto bark, or woven out of grass and sticks. In the modern world, maps today are created using sophisticated computer programs.

Each of us carries a *mental map* of the world inside our head. Wayfinding, navigation, and giving directions are all skills that humans possess to a greater or lesser degree and that develop throughout our lives.

Maps help teach us about the surface of our planet by showing the shape, size, and location of continents and countries, states and provinces. They can also indicate the arrangement of features, both of the natural and civilized worlds.

But maps must also, by necessity, leave out many features found in the real world so as not to clutter or overlap and thus confuse the map reader.

An atlas is a collection of maps, pictures, and tables that helps the reader gain a better understanding of a particular place.

3. Nebraska's Place in the World

Ask students to describe Nebraska's location using this map.

Answering the question "*Where is Nebraska?*" affords students an opportunity to express their answer in one of several ways. This map also allows for instruction on global place-finding and directionality using the Prime Meridian and the Equator.

For instance, students might correctly respond that Nebraska is found in either the Northern Hemisphere or the Western Hemisphere. More specifically, our state is also located in the mid-latitudes (between 30° to 60° latitude) of the Northern Hemisphere. Nebraska is also found near the center of the North American continent. Answers will vary based on the student's imagination, ingenuity, and interpretation of the world.

The global representation of Earth on this page is based on a cylindrical projection. Projection refers to portraying a three-dimensional globe onto a two-dimensional surface, a process whereby distortion of shapes and sizes is always inevitable.

On this projection, relative sizes of land masses shown near the Equator are fairly accurate, but become exaggerated in area when moving toward the north or south Poles. For example, Greenland (the world's largest island shown at the top of the map) appears to be almost the same size as South America. In reality, more than eight islands the size of Greenland could fit inside the continent of South America.

4. Nebraska's Place in the United States

Ask students to describe Nebraska's location using this map.

Transitioning from the world map on page 3 to the U.S. map on page 4 allows for a brief discussion of Scale. Map scale is the ratio of distance on a map to the corresponding actual distance. Changing scale allows the mapmaker to “zoom in” or “zoom out” on the Earth's surface. Map scale determines how much surface area can be shown.

The U.S. map on page 4 was created at a larger scale than the world map on page 3. A larger scale map shows less area than one at smaller scale, but with more detail. In other words, the amount of land shown on page 4 is much smaller than the area of the world shown on page 3. But more details may be seen on the U.S. map including rivers, lakes, state names, and county boundaries.

The rank of Nebraska as our 16th largest state in size is based on consideration of both land and water area.

5. Latitude and Longitude

Using this map, ask students to determine the coordinates of Mullen and Stapleton.

Many methods exist to identify the location of a place on the earth's surface. This map allows students the opportunity to use Lat-Long interpolation to calculate locations for several cities. For example, it is fairly clear that Mullen is located at 42° N, 101° W.

But determining the location of Stapleton is more challenging as its map symbol does not lie along or near any of the given map lines. One could visually “ballpark” Stapleton's location at about 41.5° N and 100.5° W. Other cities' locations could be calculated using a ruler and interpolating. Answers can be easily checked online.

Discuss parallels and meridians. Ask students to identify the lines that serve as Nebraska's borders. Which meridian divides the state in half? Have students note that, from south to north, Nebraska spans exactly three degrees of latitude. Parallels of latitude are about 70 miles apart (due S→N). Bear this in mind for the next map.

6. Measuring Nebraska

Ask students to answer the questions at the bottom of page 6.

This page introduces students to the concepts of legend, scale bar, and compass rose. It also allows for practice with directionality, an underappreciated concept.

For measuring distances on the map, have students use a ruler and the scale bar to make their calculations. The green line is ~210 miles long (or 3 x 70 miles, see page 5 above). The red line is almost 425 miles long, the blue line almost 500 miles.

From the High Plains Museum to Wayne State College, go northeast for ~230 miles.

7. Elevation

Ask students about the two red triangles on the map. Have them try to determine their own elevation by interpolating numbers on the map (easily checked online).

Most importantly, ask students to observe the elevation numbers and the shading patterns. Ask if they notice the rise in elevation as one moves west across the state.

That rise can be calculated. Ask students to:

Subtract Plattsmouth's elevation from Panorama Point's ($5424 - 981 = 4443$ feet).

Then divide that number by the distance between them (~425 miles, previous page).

$4443 \text{ feet} / 425 \text{ miles} =$ a rise in elevation of approximately 10 feet per mile on average.

8. Jail Rock

This picture was taken (at great personal risk) from on top of nearby Courthouse Rock. Ask your students if there are any prominent landmarks near where they live.

9. Average Annual Precipitation

Ask students to answer the questions at the bottom of page 9.

Precipitation is condensed water vapor falling to the ground. The most common types are rain, snow, sleet, and hail. We measure all precipitation by converting it to liquid form, thus several feet of snow may only total up to a few inches of precipitation.

Students should note a decline in precipitation from east to west. Much of Nebraska lies in the *rain shadow* of the Rocky Mountains. In fact, much of the precipitation that falls in Nebraska actually originates from evaporation in the Gulf of Mexico.

The 100th Meridian roughly parallels the 20 inch average annual precipitation line. In homesteading days, it was felt that dryland farming would be unlikely to succeed in areas receiving less than that amount.

10. The 100th Meridian

The citizens of Cozad are very proud of being located along the 100th Meridian. There is a Meridian Avenue running through the heart of downtown, and the 100th Meridian Museum is owned and operated by the Cozad Historical Society.

11. Rivers and Reservoirs

Ask students to read and respond to the questions at page bottom.

Nebraska is the only state entirely within the Missouri River drainage basin, where all our water (both above and below ground) eventually flows into.

Historically, the presence of surface water greatly influenced human mobility/settlement.

12. Niobrara River Valley

Trails, railroads, and highways have all paralleled the Niobrara River in history. Today, the Niobrara National Scenic River is a treasured recreational destination.

13. Ogallala Aquifer

Ask students to read and respond to the questions at page bottom.

Around 90% of groundwater pumped in Nebraska goes toward irrigating crops and watering livestock. Almost all private water supplies and about 80% of Nebraska's public drinking water come from groundwater sources. Our state is the fourth largest user of groundwater in the nation behind California, Texas, and Arkansas.

Nebraska has over 100,000 registered wells, and we lead all states in the number of irrigated acres (over 8 million in a state of 50 million total acres).

14. Natural Vegetation

Ask students to read and respond to the questions at page bottom.

The height of grasses in an area will vary by annual average precipitation. Historically, tallgrass prairies covered eastern Nebraska, grading to shortgrass *steppe* in the west.

Today, approximately 3% of Nebraska is forested, a number thought to be a little higher than when Lewis and Clark came up the Missouri River. Most stands of natural forest occurred along river valleys where the water table was high enough for tree roots to slake their thirst even in times of drought. It's not that prairies can't support more trees, but natural fires in past times often cleared trees that may have started growing. This favored the spread of faster-growing grasses with deep roots that did not die in fires.

Very little natural grassland remains today. Most of it has been plowed up or grazed.

15. Wildcat Hills

Though western Nebraska (where this picture was taken) is a semi-arid climate, running water created by occasional cloudbursts and flash floods is the primary driver of erosion. The Wildcat Hills were less attractive for farming and ranching, and today they sustain habitat that shelters and nurtures a wide variety of animals.

16. Tornadoes

One of nature's most frightening hazards, tornadoes occur more frequently in the eastern half of Nebraska than in the western half of the state. This is because contrasting air masses collide more often in the east, and also probably because more tornadoes are reported in areas of higher population density. Once in contact with the ground, most tornadoes in Nebraska (though certainly not all) generally move in a northeasterly direction along with the thunderstorms that spawn them.

17. Native American Tribes

Paleo-Indian cultures dependent upon hunting bison existed on the Great Plains more than 10,000 years ago. Throughout the millennia, many of these tribes were nomads, communities who moved periodically from one place to another seeking (or anticipating) available game, fish, migratory animals, and native plants.

Tribes in eastern Nebraska often created and maintained earth lodges. These structures were built partially underground, framed with available logs, and covered with packed earth. Nearby garden plots were utilized to grow a variety of crops including corn, beans, and squash.

Tribes in western Nebraska tended to follow the bison herds and lived in tents made of animal skins. Prairie fire would sometimes be used to drive animals toward hunters or off cliffs. During the 17th century, Plains Indian tribes acquired horses from Spanish settlements in the American southwest. Horses soon became the most important measure of wealth among the western tribes and were used in both hunting and war.

18. Massacre Canyon

The event at Massacre Canyon was one of the last large-scale battles between Indian tribes in the U.S. Roughly 1,000 Oglala/Brulé Sioux warriors attacked a Pawnee hunting party numbering approximately 700, half of whom were women and children. The massacre was a major reason the Pawnee eventually accepted a move to reservation land in Oklahoma. Massacre Canyon Monument was dedicated in 1930 and was the first historical monument erected in Nebraska using federal grant money. The obelisk was created out of pink granite imported from Minnesota.

19. Expeditions

Early Spanish expeditions into land later to become Nebraska were attempts to secure territorial rights over other European powers in this area. The doomed Villasur mission in 1720 notably failed at communicating with Pawnee and Otoe Indians living here.

Both Lewis & Clark and Zebulon Pike were sent by Thomas Jefferson. They were military parties ordered to explore the recently acquired Louisiana Purchase. Pike was later captured and released by Lt. Melgares, though the men became good friends.

The Long expedition was a scientific exploration of the Platte River valley. President Monroe also ordered Major Long, a U.S. Army engineer, to follow the Platte tributaries to their sources and to assess the lands along the way for potential settlement. Long's mapmaker wrote of encountering a "Great Desert" on his journey, a term that would influence a later generation of migrants to bypass Nebraska for the Oregon Country.

These expeditions and others like them moved along rivers, followed Indian trails, and navigated using the stars, a sextant, and a compass. They moved under an endless sky-scape though a rolling sea of grass populated by large herds of animals interspersed with Indian tribes.

20. Platte River Valley

Crucial to humans even in prehistoric times, the Platte River was never used as a major transportation artery. Broad but shallow, and braided with sand bars and small islands, it was at best a difficult canoe route. It did, however, serve as a trail route for Indians on foot and then for the mule trains of fur trappers who, in turn, paved the way for later wagon trains of European migrants.

21. Historic Trails

Ask students to read and respond to the questions at page bottom.

During the Westward Expansion of the mid-nineteenth century, wagon trains followed the well-worn Oregon and Mormon Trails across Nebraska toward the promise of forested Oregon valleys, potential gold and silver riches in California and Nevada, or the safety of religious freedom in the valley of the Great Salt Lake.

Finding grass and water along the route, migrants saw few landmarks until they neared Chimney Rock. Lightning and severe storms encountered on the trails were both frightening and dangerous. Indian tribes were seen but rarely attacked migrant groups. One of the greatest hazards faced along the trails were infectious diseases such as cholera, waterborne bacteria capable of causing severe dehydration and sometimes killing within hours.

From 1841-1866, it is now generally accepted that nearly 500,000 settlers passed through Nebraska on their way west. Approximately 1 in 10, or nearly 50,000 of these migrants, died along the way and were buried in mostly unmarked graves. This mass migration in our history holds a special place in American folklore.

22. Oregon Trail

Westward routes were actually a series of interwoven trails, rarely a single track. Along the Oregon Trail, migrants could find game to eat and grass for their animals. But wood was scarce and they were cautioned about drinking the cholera-tainted river water.

In this photo, taken in the shadow of Chimney Rock, the width of the Oregon Trail would have been miles across, stretching to the trees along the North Platte River in the distance.

23. Frontier Forts

Forts in Nebraska served as trading posts and military strongholds to protect both regional commerce and passing migrants. Names for these forts most often came from notable and/or deceased U.S. Army officers and men.

Nebraska has seen dozens of camps and forts come and go over the decades. Little remains of most, though several reconstructed sites are popular tourist destinations.

24. Railroads

The Union Pacific Railroad has been based in Omaha since President Abraham Lincoln created the company by signing the Pacific Railroad Act on July 1, 1862.

Today, the UP maintains more than 1,110 miles of track in Nebraska. North Platte is the site of UP's Bailey Yard, the largest rail freight car classification yard in the world. Over 10,000 rail cars are handled daily within the facility. UP's main line in central Nebraska is the busiest rail freight corridor in the world, with more than 130 trains operating over the line every 24 hours.

Omaha is also home to the UP's Harriman Dispatching Center, one of the largest and most technologically advanced rail traffic control facilities in the world.

The Burlington Northern Santa Fe, headquartered in Fort Worth, Texas, is one of the nation's largest railroads and operates approximately 1,700 miles of track in Nebraska.

25. Group Settlements 1860-1910

In addition to white settlers from the eastern U.S., large numbers of European immigrants also settled in Nebraska during the late 19th century. Sometimes entire communities came over together, sponsored by ethnic land companies and whose heritage was supported by fraternal organizations.

Among the largest immigrant groups that came to our state were Germans, Scandinavians (particularly Swedes), Czechs, Irish, and English. Another distinct group, the Germans from Russia, had first migrated to the Volga region (by invitation of Catherine the Great in the 1760s) before immigrating to Nebraska starting in the 1870s.

Immigrants also added to the religious diversity of Nebraska. Large numbers of Roman Catholics came from Bohemia, Germany, and Ireland; Lutherans arrived from Germany and Scandinavia; and Mennonites were counted among the German-Russian immigrants. While the linguistic identity of the non-English-speaking groups faded with each passing generation, other aspects of these diverse cultures survived.

African Americans moved to Nebraska early in the history of the state. Some formed homesteading communities in the Sand Hills. Most eventually settled in Omaha which, by 1900, had an African American population of more than 3,000, a figure that would increase 10 times over by the late 20th century. The concentration of this community in north Omaha became increasingly associated with social and economic problems common to racially-segregated neighborhoods in other large U.S. cities.

During the end of the 20th century, Nebraska experienced a new wave of immigration that consisted of Latinos (mostly from Mexico) and of Asians from Cambodia, Laos, and Vietnam. Many were attracted by, or recruited to, job opportunities provided by the meatpacking plants in Lexington, Dakota City, and Omaha. More recently, Muslims from east Africa have brought their cultures to Nebraska as well.

26. Pilgrim Baptist Church

The Great Migration from 1910-1925 was the largest relocation of a single group of people in American history, with a massive shift of nearly 5 million blacks from the South to other parts of the U.S. In some instances, entire church congregations migrated together. In other cases, the pastor moved first and the congregation followed later. These people and the cities into which they moved faced great challenges. Social barriers to upward mobility included racial segregation and economically depressed environments. But Omaha's black population tripled during World War I as jobs lured people from even worse economic and social conditions in the South.

27. Hispanic (Latino) Population

Think of these two terms in this context: Hispanic refers to a cultural element (language) in someone's background, a family origin that can be traced back to a predominantly Spanish-speaking country. Latino (or Latina) refers to a geographic origin in someone's background, specifically Latin America. Thus, persons in the U.S. who descend from ancestry that traces directly back to Spain may consider themselves Hispanic but not Latino. In a similar vein, persons in the U.S. who descend from ancestry that traces directly back to Brazil may consider themselves Latino but not Hispanic (if their family traces back to the predominant Portuguese-speaking Brazilian majority). Mexican immigrants to Nebraska, in most cases, self-identify as either Hispanic or Latino.

While there is only one human race, the U.S. Census Bureau still asks about ancestry on its survey forms. Many government agencies and social scientists collect and utilize this data in a variety of ways. The map on this page shows the distribution of Nebraskans who self-identify as Hispanic or Latino on the census form. About 10% of Nebraskans self-identify as Hispanic or Latino (approximately 12% in Douglas County). The vast majority (~80%) of Nebraska's Hispanics and Latinos originate from, or are descendants of those who arrived here from, Mexico. But many other Latin American countries are represented within this population as well.

28. Pictures

In U.S. history, descendants from those absorbed via the 1848 Mexican Cession as well as subsequent Latin American immigrants have been here longer than a number of other later-arriving groups. Over the generations, their eventual impact on our country's economy and culture has been profound. Hispanics and Latinos have tilled soil in every U.S. state. They fought for the U.S. military at Omaha Beach, Vietnam, and in the Middle East. The pictures on page 28 barely scratch the surface of the Hispanic or Latino experience in Nebraska's history. But it's in the often simple and sometimes celebratory acts portrayed on this page that one may see how they have contributed most to Nebraska.

29. Ancestry and Race

Today, even as new immigrants from around the world arrive in the state, many Nebraskans look back proudly on their ethnic or ancestral heritage.

30. State Symbols I

Clockwise from upper left: Western meadowlark (state bird), goldenrod (state flower), channel catfish (state fish), honeybee (state insect), whitetail deer (state mammal), cottonwood (state tree), and mammoth (state fossil).

31. State Symbols II

Many symbolic elements of Nebraska are embedded within these two icons. The state quarter evokes what is arguably our most recognized state landmark, Chimney Rock, with migrants aboard a prairie schooner that is pulled by a team of oxen.

The symbols on the great seal of Nebraska are described in an 1867 legislative bill:

"The eastern part of the circle to be represented by a steamboat ascending the Missouri River; the mechanic arts to be represented by a smith with a hammer and anvil; in the foreground, agriculture to be represented by a settlers cabin, sheaves of wheat, and stalks of growing corn; in the background a train of cars heading towards the Rocky Mountains, and on the extreme west, the Rocky Mountains to be plainly in view; around the top of the circle, to be in capital letters, the motto: "Equality Before the Law," and the circle to be surrounded with the words, "Great Seal of the State of Nebraska March 1, 1867."

32. Landform Regions

Ask students to answer the questions at page bottom.

Loess is wind-blown silt found in thick deposits throughout eastern Nebraska and western Iowa. In the Midwest, loess often overlies glacial deposits that were washed out approximately 11,000 years ago at the end of the last Ice Age. These deposits often form the foundation of exceptional agricultural soils. A large region south and east of the Nebraska Sandhills is layered over with loess.

33. Sandhills

The Nebraska Sandhills are the largest grass-anchored sand dunes in the Western Hemisphere. They are found in 20 of Nebraska's 93 counties and cover roughly 20,000 of the state's nearly 80,000 square miles. The Sandhills sit atop the Ogallala Aquifer and, as such, are dotted with numerous small lakes both temporary and permanent.

34. Natural Landscapes

Clockwise from the upper left: Toadstool State Park, Smith Falls, the Niobrara Valley, Missouri River, Indian Cave, Platte River, Chimney Rock, and Scotts Bluff.

35. Wildlife

Clockwise from the upper left: Bighorn sheep, mountain lion, whitetail deer, bald eagle, wild turkey, rattlesnake, mule deer; in the center: Sandhill crane.

36. Snake River Falls

Many people know that Smith Falls in Cherry County, at 68 feet, is Nebraska's highest waterfall. But our state's widest waterfall, and the largest measured by volume, is Snake River Falls (also located in Cherry County). Once past Merritt Reservoir, the Snake River turns north and eventually joins the Niobrara River about 15 miles southwest of Valentine, Nebraska. But not before creating this beautiful natural feature.

37. Corn

Corn is a relatively thirsty crop that often requires irrigation, hence it is largely found in the eastern (wetter) half of the state. In recent years, Nebraska usually ranks third in U.S. production after Iowa and Illinois (though we are 1st in production of popping corn).

Field corn is not consumed directly by humans (we eat sweet corn). Instead, field corn is fed to livestock or used in the production of ethanol or high fructose corn syrup.

38. Soybeans

Nebraska is a top 10 state (usually ranking around 5th) in the production of soybeans. The geographic distribution of soybean production in the U.S. is very similar to that of corn production. Soybeans are a good rotation crop because their nutritious bean (high in protein and fiber) commands a good price on the commodities market and also because, as a legume, the plant fixes nitrogen back into the soil.

The seeds are used for both human and animal consumption or for the production of oils for industrial uses. Humans do not eat soybeans directly (it would cause digestive problems) but instead consume them as an additive in many kinds of processed foods.

Currently, the U.S. and Brazil each produce about 1/3 of the world's soybeans annually.

39. Wheat

Wheat is produced in almost every U.S. state and is the principal cereal grain grown in our country. Nebraska is a top 10 producer of wheat (usually ranking around 8th in the nation). We lie between the two top-producing states, Kansas and North Dakota.

In Kansas, varieties of *winter wheat* are planted in the fall and go into stasis during winter. The stalks then mature in spring and are harvested soon after. In North Dakota, *spring wheat* is planted in the spring and harvested in autumn.

Hard red winter wheat is produced throughout Nebraska; however, 75% of our wheat production is in the western half of the state, with approximately 45% grown in the Panhandle. About 92% of Nebraska's winter wheat acreage is in dryland production.

40. Sugar Beets, Dry Beans, and Popcorn

This map suggests the importance of several specialty crops in Nebraska, particularly in the semi-arid Panhandle region. Dry edible beans are nutritious legumes that thrive in the climate and elevation of the Panhandle and, according to historical records, were first cultivated in Nebraska near Bayard in 1895. According to the Nebraska Dry Bean Commission, "In 2015, Nebraska ranked 1st in the nation in Great Northern bean production, 2nd for pinto bean production, and 4th for all dry edible bean production. Our state production is equal to approximately 1 billion servings of dry beans per year."

Sugar beets were first cultivated in Nebraska in the 1890s, with about 90% of today's production concentrated in the Panhandle. Our state is usually ranked among the top 5 or 10 states in terms of sugar beet production. Availability of irrigation water and the presence of railroads were critical to the success of Western Nebraska sugar beets.

Popping corn is different from sweet corn or field corn. It also requires a little more management effort than field corn. Overall, farmers in 30 Nebraska counties grow more than 300 million pounds of popping corn annually, the most in any U.S. state.

Today, over 9 million acres of field corn are grown in Nebraska and most of it is used for livestock feed or ethanol production. Popping corn, on the other hand, is grown on less than 70,000 acres in our state, and is a tasty food crop for humans.

41. Loup River Valley

This is a typical landscape in central Nebraska cattle country. In the 1870s, cattlemen discovered (by accident, following a blizzard) that this country was good land for pasturing cattle. Sandy soil is a challenge to farm, but the land is suitable for grazing.

Settlement in the area was greatly aided by the 1904 Kinkaid Act, which allowed homesteaders to claim 640 acres of land (as compared to the 160 acres allowed under the 1862 Homestead Act). The act specifically applied to 37 counties in Nebraska. Between 1910 and 1917, nearly nine million acres of land were claimed under this act.

Large ranches created from this law were broken up, however, via regulations preventing ranchers from fencing federal rangelands and monopolizing access to water.

42. Beef

Cattle are raised in every county in Nebraska, and the state is annually among the leaders in U.S. beef production (ranked 2nd in most years, after Texas). In any given year, Nebraska ranchers typically run approximately 6-7 million head.

More than half our state's land area is comprised of pasture and rangeland which supports a large cow-calf sector and provides a large calf crop to Nebraska feeders.

43. Counties

Much of Nebraska was surveyed prior to the arrival of white settlers, hence the abundance of rectangular shapes and similar sizes among many of the 93 counties. Omaha and its surrounding metropolitan area dominate Douglas and Sarpy Counties (relatively few cattle are found here), while the city of Lincoln and its environs occupy a share of Lancaster County.

44. County Populations – table

This table allows students the opportunity to numerically visualize the large drop-off in county populations after the first three on the list (Douglas, Lancaster, and Sarpy).

45. Population I

The maps on pages 45 and 46 provide students with two different ways of visualizing the distribution and density of Nebraska's human population.

Page 45 is a choropleth, or thematic, map in which areas are shaded in proportion to the value of the statistical variable being displayed (in this case, raw population totals within counties). Rather than give every county its own shade of red, counties are grouped into classes (along a color ramp) for easier study.

Nebraska's population pattern is sometimes compared to a 'fish hook' with the barb set in Columbus and curling around the 'bend' through Fremont, Omaha and Lincoln before stretching west along I-80 (the 'shank') and ending in the 'eye' of North Platte.

46. Population II

A dot distribution map (also known as a dot density map) uses dot symbols to show the presence of a feature or phenomenon. Dot maps rely on visual scatter to show spatial pattern.

In this representation of the distribution and density of Nebraska's population, each red dot is equal to 1,000 people. In most counties, students should be able to determine a rough estimate of population and can compare their figure to the table on page 44.

Many explanations for the distribution of dots on this map can be brainstormed by students. For instance, there are clearly more dots in the eastern half of the state (more precipitation, settled sooner) than in the west. Also, the two major metropolitan centers of Omaha and Lincoln tend to stand out. Further west, the Platte River Valley (parallel with the Oregon Trail, I-80, and good farmland) also attracted more settlers looking to farm or find work in towns that served the early railroads.

47. Cities and Villages

This map helps reinforce the notion that almost every community in Nebraska began either along a river or a railroad line. As some of the rail lines went defunct, so did the cities near or along them. Nebraska consists of a few large cities and a thousand small towns. Some people might argue that the most common type of town in Nebraska today is a ghost town!

48. City Populations – table

Similar to the list of counties on page 44, this table allows students to numerically visualize the large drop-off in city populations after the first two (Omaha and Lincoln).

49. County Seats

Most county seats in Nebraska are the largest city in that county, but not in all cases. A county seat is an administrative center, or seat of government, for a county. Often, they are the location of important services or even the annual county fair. Many county seats in the United States feature an historic courthouse, and Nebraska courthouses are some of the most extraordinary structures in our state. This would be a good place to show a picture of, and lead a discussion centered on, your county's courthouse.

50. Congressional Districts

A good discussion of civics can be organized around this map. Article I, Section II of the U.S. Constitution mandates an "enumeration" of the country's population every ten years (we started in 1790). The primary purpose of this enumeration is to apportion representation by state in the U.S. House of Representatives.

Nebraska once had six representatives in the House, and our eight electoral votes in the 1890s (one of the higher totals among states west of the Mississippi) gave us a somewhat higher standing as a player in national politics than we have today.

Mathematically, the map visually portrays population density in a remarkable way. Each of the three districts, by law, must contain roughly the same number of people. Imagine 600,000 people and how they would live, and make a living, in each of the three very different-sized Congressional districts.

51. The State Capitol Building

Much classroom discussion can center on the construction of this magnificent piece of architecture. This was Nebraska's third try at an architecturally-stable legislative building. The first two were constructed of porous local rock and eventually crumbled. The present gem took ten years to build and was completed by the start of the Great Depression. It was made from imported high-quality Indiana limestone.

52. Legislative Districts

This map can facilitate classroom discussion of the penny-pinching ways of Nebraskans combined with the Herculean efforts of Sen. George Norris in the 1930s to improve legislative efficiency. Each citizen of Nebraska has one elected representative to whom we can turn for a voice in the Unicameral. Our state legislature consists of only 49 State Senators. Compare that to New Hampshire's House of Representatives which has a staggering 400 members! Who is to say which one of the two is the more effective lawmaking body?

Similar to the map on page 50, each of Nebraska's legislative districts must also contain roughly the same number of people. What is 1.8 million divided by 49? Today, each Nebraska State Senator represents approximately 37,000 citizens. And, as with our Congressional districts, Nebraska's legislative districts come in a wide variety of sizes depending upon population density.

53. Seedling Mile

The theme of pages 53 and 54 is movement. 'Seedling miles' started over a hundred years ago in towns across America and were eventually knitted into one of the world's greatest surface transportation grids. We are now the most mobile society in the history of the planet. A significant number of Americans no longer live in their state of birth and nearly 10% of our citizens change their address annually.

54. Major Highways

This map affords yet another opportunity to visualize population distribution and density. It reinforces the historical concentration of people in the eastern part of the state where migrants first entered Nebraska Territory and where climatic and soil conditions were better suited for agriculture.

Can your students find which major highways are near them? Interstate highways are multiple lanes and limited access, offering the opportunity to go farther faster. The primary businesses that grow along highways serve the needs of travelers and are centered around gas, food, and lodging.

55. State, Tribal, and Federal Lands

More than 97% of Nebraska is privately owned and, among the states, only Kansas and Rhode Island have a higher proportion of their lands held in private hands.

Among the less than 3% of Nebraska land that is not privately owned, this includes all of our state parks, recreation areas, and historical sites; all the remaining Indian reservations; and all of our National Monuments, National Forests, National Grasslands, and National Wildlife Refuges.

56. Nebraska by the Numbers

Take note of the histogram on this page. The median (not average) age of Nebraskans today is over 36 years old. This is quite a contrast to the 1890s when families were large and the great number of small children contributed in lowering our state's median age to around 21 years old. Today, on average, our children wait longer than ever before in history to get married and they tend to have fewer children than in past generations. More married couples are career-oriented whether by desire or necessity, and this sometimes delays having children as well. Even so, Nebraska's current rate of natural increase is about the same as that of the nation as a whole.

The second chart shows that, in 1870, more than 80% of Nebraskans lived in a rural place as compared to less than 20% who resided in an urban setting. Over time, the chart shows a dramatic reversal in these figures and parallels what has been happening in America for over a century. Called *rural flight*, this phenomenon can be primarily attributed to advances in farm mechanization that now require fewer hands to bring in the harvest and get it to market. Rural flight is made worse when population decline leads to the loss of rural services (such as businesses and schools), which then leads to greater loss of population as people leave to seek out entertainment, jobs and socializing opportunities in larger urban centers.

The table titled *Population of Nebraska: 1860-2016* demonstrates that, in every decade except the 1930s, the number of people in our state has increased. The state grew very quickly in the late 19th Century as immigrants poured in to claim free land. Since then, population growth in Nebraska over the past century has been very modest.

57. Credits – About GEON

Yes, I did almost every bit of work on this Atlas and on this Teacher's Guide by myself. But I owe a great deal to a great many people (especially my wife, Maureen Kingston) who helped me every step of the way with this labor of love.

I hope you enjoy using the *Student Atlas of Nebraska* in your classroom.

Randy Bertolas