

## = Geography of South Dakota =

South Dakota is a state located in the north @-@ central United States . It is usually considered to be in the Midwestern region of the country . The state can generally be divided into three geographic regions : eastern South Dakota , western South Dakota , and the Black Hills . Eastern South Dakota is lower in elevation and higher in precipitation than the western part of the state , and the Black Hills are a low , isolated mountain group in the southwestern corner of the state . Smaller sub @-@ regions in the state include the Coteau des Prairies , Coteau du Missouri , James River Valley , the Dissected Till Plains , and the Badlands . Geologic formations in South Dakota range in age from two billion @-@ year @-@ old Precambrian granite in the Black Hills to glacial till deposited over the last few million years . South Dakota is the 17th @-@ largest state in the country .

South Dakota has a humid continental climate in the east and in the Black Hills , and a semi @-@ arid climate in the west outside of the Black Hills , featuring four very distinct seasons , and the ecology of the state features plant and animal species typical of a North American temperate grassland biome . A number of areas under the protection of the federal or state government , such as Badlands National Park , Wind Cave National Park , and Custer State Park , are located in the state .

In 2011 , the population of South Dakota was estimated to be 824 @,@ 082 , and the state ranks fifth @-@ lowest in both total population as well as population density in the United States . Sioux Falls , with a population of just over 150 @,@ 000 , is the largest city in the state . Rapid City ranks as South Dakota 's second @-@ largest city , and Pierre is the state capital . Historically a very agricultural state , the service and tourism sectors have grown in economic importance in recent years .

## = Location and size =

South Dakota is situated in the north @-@ central United States , and is considered to be a part of the Midwest by the U.S. Census Bureau , although the Great Plains region also covers the state . Additionally , the culture , economy , and geography of western South Dakota has more in common with the West than the Midwest . The state has a total land area of 77 @,@ 116 sq. miles ( 199 @,@ 905 km<sup>2</sup> ) , making it the 17th largest in the Union . South Dakota is bordered to the north by North Dakota ; to the south by Nebraska ; to the east by Iowa and Minnesota ; and to the west by Wyoming and Montana . The western border is the Black Hills meridian , a north @-@ south line set out at a certain distance from Washington , D.C. , to separate South Dakota from Montana and Wyoming during the transition to statehood .

Two time zones cover South Dakota ; the state is split roughly in half between the Central Time Zone ( UTC @-@ 6 ) in the east and the Mountain Time Zone ( UTC @-@ 7 ) in the west . The boundary between the two zones runs south down the Missouri River until Pierre , at which point the boundary roughly continues due south while the river turns southeast .

The North American continental pole of inaccessibility is in Bennett County , located 1024 mi ( 1650 km ) from the nearest coastline , between Allen and Kyle ( Oglala Lakota County ) at 43 @.@ 36 ° N 101 @.@ 97 ° W ? / 43 @.@ 36 ; -101.97 ? ( Pole of Inaccessibility North America ) .

## = Regions =

South Dakota can generally be divided into three regions : eastern South Dakota , western South Dakota , and the Black Hills . The Missouri River serves as a somewhat stark boundary in terms of geographic , social and political differences between eastern and western South Dakota , and the geography of the Black Hills differs from its surroundings to such an extent that it can be considered separate from the rest of western South Dakota . South Dakotans also at times combine the Black Hills with the rest of western South Dakota , and refer to the two resulting regions , divided by the Missouri , as West River and East River .

Eastern South Dakota is generally wetter and features lower topography than the western part of

the state . Smaller geographic regions of this area include the Coteau des Prairies , the Dissected Till Plains , and the James River Valley . The Coteau des Prairies is a higher region bordered on the east by the Minnesota River Valley and on the west by the James River Basin . Numerous glacial lakes cover the Coteau , and it is largely drained by the Big Sioux River , a tributary of the Missouri . Further to the west , the James River Basin is mostly low , flat , highly eroded land , following the flow of the James River through South Dakota from north to south . The Dissected Till Plains , an area of rolling hills and fertile soil that covers much of Iowa and Nebraska , also extends into the southeastern corner of South Dakota .

The Coteau du Missouri lies between the James River Basin of the Drift Prairie and the Missouri River . This region is the southern section of a large plateau extending into Canada .

The Great Plains cover most of the western two @-@ thirds of South Dakota . West of the Missouri River the landscape becomes more rugged and consists of rolling hills , plains , ravines , and steep flat @-@ topped hills called buttes . These buttes sometimes rise 400 to 600 feet ( 120 to 180 m ) above the plains . In the south , east of the Black Hills , lie the South Dakota Badlands .

The Black Hills are in the southwestern part of South Dakota and extend into Wyoming . This range of low mountains covers 6 @,@ 000 sq. miles ( 15 @,@ 500 km<sup>2</sup> . ) with mountains that rise from 2 @,@ 000 to 4 @,@ 000 feet ( 600 to 1 @,@ 200 m ) above their bases . The highest point in South Dakota , Harney Peak ( 7 @,@ 242 ft or 2 @,@ 207 m above sea level ) , is in the Black Hills . This is the highest point in the United States east of the Rocky Mountains . Other Black Hills mountains that are over 7 @,@ 000 ft ( 2 @,@ 133 m ) in elevation include Bear Mountain , Crooks Tower , Terry Peak , and Crows Nest Peak . The Black Hills are rich in minerals such as gold , silver , copper , and lead . The Homestake Mine , the largest and deepest gold mine in North America , was located in the Black Hills and produced over \$ 1 billion in gold since it started operation in 1876 . The mine is now a scientific laboratory .

= = Geology = =

South Dakota geologic formations and deposits range in age from several billion to several thousand years , and the age of the rocks generally decreases as one moves from west to east across the state . The oldest geologic formations in the state were created over two billion years ago during the Precambrian , and consist of metamorphic and igneous rocks . These form the central core of the Black Hills , but they can also be found in two isolated locations in eastern South Dakota near Milbank and Sioux Falls . Formations from the Paleozoic Era form the outer ring of the Black Hills ; these were created between roughly 540 and 250 million years ago . This area features rocks such as limestone which were deposited here when the area formed the shoreline of an ancient inland sea .

Outside of the Black Hills , much of western South Dakota features rock formed during the Mesozoic Era , from 250 million to 66 million years ago . At the time , much of western and central South Dakota was again covered by a shallow inland sea . Marine skeletons from this ocean settled to the seafloor and were compacted to form the sedimentary rocks in the area today . During this period , the Black Hills , which had been pushed up to an elevation of around 15 @,@ 000 feet ( 4 @,@ 500 m ) , lost around 6 @,@ 000 feet ( 1 @,@ 800 m ) worth of rock layers due to erosion . Many of these sediments ended up in the same area as the marine deposits from the inland sea , and both contribute to western South Dakota 's present @-@ day geological makeup . In several areas in western South Dakota , tertiary deposits may also be found . These were formed between 66 and 2 @.@ 5 million years ago from eroded mountains to the west . There is also volcanic material deposited here that presumably came from the Yellowstone area . These layers of sedimentary rock are distinctly visible in the multi @-@ colored rocks and cliffs of Badlands National Park .

Layers deposited during the Pleistocene epoch , starting around two million years ago , cover most of eastern South Dakota . These are the youngest rock and sediment layers in the state , and are the product of several successive periods of glaciation which deposited a large amount of rocks and soil , known as till , over the area . The thickness of the glacial till layer ranges between 100 and 900

feet ( 30 and 270 m ) . This till is also what makes agriculture more prevalent in eastern South Dakota as it is extremely fertile .

Much of the human history of South Dakota was shaped by its geology . Gold seekers founded most of the larger cities around the Black Hills , and quarrying was an important economic activity in several areas in eastern South Dakota . Mines and quarries in present @-@ day South Dakota produce gold , Sioux quartzite , Milbank granite , sand , gravel , limestone , mica , and uranium . The state also produces a very limited amount of oil and natural gas .

= = Rivers and lakes = =

The Missouri River is the largest and longest river in the state . Other major South Dakota rivers include the Cheyenne , the James , the Big Sioux , and the White . Essentially all of South Dakota 's rivers are part of the Missouri River Valley . Dams on the Missouri River create four large reservoirs : Lake Oahe , Lake Sharpe , Lake Francis Case , and Lewis and Clark Lake . Hydroelectricity generated from power plants at the dams provides approximately half of the electricity used by South Dakotans .

The vast majority of South Dakota 's natural lakes are located in the eastern half of the state , and most are the product of the most recent ice age . The title of largest natural lake is somewhat disputed ; Lake Thompson is larger than Lake Poinsett , but Lake Poinsett has maintained its current size for a much longer period of time . Other major natural lakes include Lake Kampeska , Waubay Lake , Lake Madison , Lake Whitewood , and Lake Herman . Additionally , two large lakes , Big Stone Lake and Lake Traverse , form part of the border between South Dakota and Minnesota . The continental divide separating the drainage basin of Hudson Bay from that of the Gulf of Mexico is situated between these two lakes .

= = Ecology = =

Much of South Dakota , with the notable exception of the Black Hills , is dominated by a temperate grasslands biome . Although grasses and crops cover most of this region , deciduous trees such as cottonwoods , elms , and willows are common near rivers and in shelter belts . In open , uncultivated areas of the plains , grasses such as buffalograss , western wheatgrass , switchgrass , big bluestem and little bluestem thrive . Mammals in this area include bison , deer , pronghorn , coyotes , beavers , and prairie dogs , while reptiles include the snapping turtle , the box turtle , and various types of snakes . The prairie rattlesnake is South Dakota 's only venomous snake . Rivers and lakes of the grasslands support populations of walleye , carp , pike , and bass , along with other species . The Missouri River also contains the pre @-@ historic paddlefish , and chinook salmon , native to the Pacific Northwest , have been successfully introduced in Lake Oahe .

= = = Tall grass prairies = = =

With the state 's highest precipitation , southeastern South Dakota once had 3 @-@ foot ( 0 @. @ 91 m ) to 6 @-@ foot ( 1 @. @ 8 m ) -tall grasses , herbs , and low shrubs . The region has plenty of groundwater and , because of common spring floods , does not have many burrowing animals . Before modern agriculture , the tall grass prairies had large numbers of big bluestem , little bluestem , Indian grass , switchgrass , sand dropseed , and other tall grasses . Flood plains along the Missouri and Big Sioux Rivers are habitat for wild rye , bluejoint , and panicgrass . The tall grass prairies have wild rose and buck bush shrubs , and goldenrod , sunflower , cinquefoil , and milkweed herbs . Marsh hawks , bobolink , short @-@ eared owl , and short @-@ billed marsh wren birds make their home in this prairie , and jackrabbits , cottontail rabbits , meadow mice , and deer are common animal life .

= = = Mid and tall grass prairies = = =

Plants in the mid and tall grass prairies grow 1 foot ( 0 @. @ 30 m ) to 3 feet ( 0 @. @ 91 m ) tall . Precipitation here averages 18 inches ( 460 mm ) to 22 inches ( 560 mm ) per year . This region is a transition zone between the tall grasses to the southeast and the mid and short grasses to the west . In this zone , the eastern portion and river valleys have characteristics of the tall grass region , and the western part as well as well @-@ drained land have similarities to the mid and short grass prairies . Common grasses here are needlegrass and needle @-@ and @-@ thread grass .

= = = Mid and short grass prairies = = =

Plants in the mid and tall grass prairies average about 6 inches ( 150 mm ) with a maximum height of about 1 foot ( 0 @. @ 30 m ) . Short grasses live in well @-@ drained regions and mid grasses are in lowlands . Porcupine grass , needlegrass , western wheatgrass and prairie June grass are the predominant grasses , while the lead plant and prairie rose are the most common shrubs . Prairie clover and goldenrod are herbs in this region ; the pineapple flower and pasque flower are seasonal flowers . The pasque flower is the South Dakota state flower . While antelope and bison were common in prior centuries , modern animal life consists of deer , jackrabbit , skunk , badger , pocket gopher , and weasel . Pheasants , ducks , geese , sparrows , hawks , owls , and larks are the common birds , while bull snakes and blue racers have replaced the prairie rattler as the most common reptiles .

= = = Short and mid grass prairies = = =

Steppe grasslands predominate in the western two @-@ thirds of South Dakota . Precipitation is irregular and averages 13 inches ( 330 mm ) to 18 inches ( 460 mm ) per year . Hailstorms , blizzards , and thunderstorms rush across the prairie , which has little shelter for plants or animals . Nevertheless , many animals make their home here : among them , grey wolf , coyote , antelope , jackrabbit , kit fox , and bison . The rattlesnake and bull snake live in this prairie , as well as the blue racer . Many birds have their habitat here : geese , ducks , falcons , hawks , turkey buzzards , owls , sparrows , larks , blackbirds , and more . Evening primroses , prairie lilies , blazing star , aster , goldenrod , sunflower , and wild onions are common plants . So too are wild alfalfa , buffalo bean , and prairie clover legumes . Vegetation is predominantly blue grama , little bluestem , bunchgrass , buffalograss , wheatgrass , and green needleleaf .

= = = The coniferous Black Hills = = =

Due to higher elevation and precipitation , the ecology of the Black Hills differs significantly from that of the plains . The mountains are thickly blanketed by coniferous needleleaf evergreens : various types of pines ? including ponderosa ( covering 1 @, @ 000 @, @ 000 acres ( 400 @, @ 000 ha ) , or 80 % of the Black Hills forest ) , lodgepole , white , and timber ? as well as western red cedar and spruces . Western yellow ponderosa is the most important lumber tree in the area . The South Dakota state tree is the Black Hills spruce . The Red Valley is home to blue @-@ joint and bluegrasses , and wild plum , Juneberry , and chokecherry shrubs grow in the Hills . Violets , thistles , and horse mint are prevalent herbs . Vines grow widely : the woodbine , bittersweet , and wild grape , which is the pattern for Black Hills gold jewelry .

Black Hills mammals include deer , elk ( wapiti ) , bighorn sheep , mountain goats , and mountain lions , while the streams and lakes contain several species of trout . Cottontail rabbits and wood rabbits live throughout the Hills , as do squirrels , raccoons , chipmunks , and porcupines . Wild burro and bobcat can be found , as well as bison in limited quantity . Woodpecker , robin , sparrow , jay , bobwhite , and wren are Black Hills birds .

= = = Birds = = =

South Dakota 's varied geography is inhabited by many species of birds . The state bird , the ring

@-@ necked pheasant , has adapted particularly well to the area after being introduced from China , and growing populations of bald eagles are spread throughout the state , especially near the Missouri River . The wild turkey is another large bird found in many areas of the state . The numerous lakes and wetlands of eastern South Dakota support migratory populations of Canada geese , snow geese , mallards , pelicans , and wood ducks . The prairie serves as home to songbirds such as meadowlarks ( both the eastern and western varieties ) , goldfinches , and bluebirds , and the open landscape of the plains also suits many carnivorous birds , such as hawks , falcons , and owls .

#### = = Climate = =

South Dakota has a continental climate , semi @-@ arid in the west outside of the Black Hills , with four distinct seasons , ranging from very cold winters to hot summers . During the summers , the average high temperature throughout the state is often close to 90 ° F ( 32 ° C ) , although it generally cools down to near 60 ° F ( 15 ° C ) at night . It is not unusual for South Dakota to have severe hot , dry spells in the summer with the temperature climbing above 100 ° F ( 38 ° C ) several times every year . Winters are cold with January high temperatures averaging below freezing and low temperatures averaging below 10 ° F ( - 12 ° C ) in most of the state . The highest temperature recorded in the state was 120 ° F ( 49 ° C ) on July 5 , 1936 in Gann Valley , and the lowest was ? 58 ° F ( - 50 ° C ) on February 17 , 1936 in McIntosh .

Average annual precipitation in South Dakota ranges from semi @-@ arid in the northwestern part of the state ( around 15 inches , or 381 mm ) to semi @-@ humid around the southeast portion of the state ( around 25 inches , or 635 mm ) , although a small area centered on Lead in the Black Hills has the highest precipitation at nearly 30 inches ( 762 mm ) per year .

South Dakota summers bring frequent thunderstorms which can be severe with high winds , thunder , and hail . The eastern part of the state is often considered part of tornado alley , and South Dakota experiences an average of 29 tornadoes per year . Winters are somewhat more stable , although severe weather in the form of blizzards and ice storms can occur during the season . Severe weather in the state can occasionally turn deadly . Between 1950 and 1994 , 11 people were killed by tornadoes in the state , and the 1972 Black Hills flood tore through central Rapid City , killing 238 people and causing hundreds of millions of dollars in damage .

#### = = Protected areas = =

South Dakota contains several sites that are protected by the National Park Service . Two national parks have been established in South Dakota , both of which are located in the southwestern part of the state . Badlands National Park was created in 1978 . The park features a highly eroded , brightly colored landscape surrounded by semi @-@ arid grasslands . Wind Cave National Park , established in 1903 in the Black Hills , contains an extensive cave network as well as a large herd of bison . Mount Rushmore National Memorial in the Black Hills was established in 1925 . The well @-@ known attraction features a mountain carved by sculptor Gutzon Borglum to resemble four former U.S. presidents . Other areas managed by the National Park Service include Jewel Cave National Monument near Custer , the Lewis and Clark National Historic Trail , the Minuteman Missile National Historic Site , which features a decommissioned nuclear missile silo , and the Missouri National Recreational River . In addition to the National Park Service , the United States Forest Service manages several areas in the state . South Dakota contains two national forests , Black Hills National Forest and a small section of Custer National Forest , and three national grasslands : Buffalo Gap , Dakota Prairie , and Fort Pierre .

South Dakota also contains numerous state parks , all of which are managed by the South Dakota Department of Game , Fish , and Parks . Custer State Park in the Black Hills is a large state park with over 71 @,@ 000 acres , and includes Sylvan Lake , Needles Highway , and a wildlife loop featuring a large bison herd and the " begging burros " , among other species . Other notable parks in the state include Bear Butte State Park near Sturgis and Lewis and Clark State Recreation Area

near Yankton .

= = Human geography = =

According to the U.S. Census Bureau , in 2010 South Dakota had a population of 814 @, @ 180 . As of the 2010 census , the state ranked fifth @-@ lowest in the United States in both total population as well as population density . The center of population of South Dakota is located in Buffalo County , in the unincorporated county seat of Gannvalley .

The five largest ancestry groups in South Dakota are : German ( 40 @. @ 7 % ) , Norwegian ( 15 @. @ 3 % ) , Irish ( 10 @. @ 4 % ) , Native American ( 8 @. @ 3 % ) , and English ( 7 @. @ 1 % ) . German @-@ Americans are the largest ancestry group in most parts of the state , although there are also large Scandinavian populations in some counties . American Indians , largely Lakota , Dakota , and Nakota ( Sioux ) are predominant in several counties , mostly in the western part of the state . South Dakota has the third @-@ highest proportion of Native Americans of any state .

Rural areas in South Dakota are experiencing a trend of falling populations , despite an overall increase in population . The effect of rural flight has not been spread evenly through South Dakota , however . Although most rural counties and small towns have lost population , the Sioux Falls area and the Black Hills have gained population . In fact , Lincoln County , near Sioux Falls , is the ninth fastest @-@ growing county ( by percentage ) in the United States . The growth in these areas has compensated for losses in the rest of the state , and South Dakota 's total population continues to increase steadily , albeit at a slower rate than the national average .

= = = Cities and counties = = =

South Dakota is relatively notable for its lack of large urban centers . Sioux Falls , the largest city in the state , only ranks as the 152nd largest in the country , and the state 's third @-@ largest city , Aberdeen , has a population of less than 25 @, @ 000 . However , because the population in many rural areas has decreased over the last 50 years , and many cities in the state have grown at a rapid pace ; the population has become more concentrated and less rural than it once was . According to 2007 census estimates , the three most populous counties in the state , Minnehaha , Pennington , and Lincoln , were home to 38 @. @ 8 % of South Dakotans , while in 1910 , those counties held only 9 @. @ 3 % of the population .

Sioux Falls is the largest city in South Dakota , with an estimated 2007 population of 151 @, @ 505 , and a metropolitan area population of 227 @, @ 171 . The city is located in the southeast corner of the state , and was founded in 1856 . The economy of Sioux Falls , originally focused on agri @-@ business and quarrying , has recently become largely centered on retail and financial services . Rapid City , with a 2007 estimated population of 63 @, @ 997 , and a metropolitan area population of 120 @, @ 279 , is the second @-@ largest city in the state . It is located on the eastern edge of the Black Hills in western South Dakota , and was founded in 1876 . Rapid City 's economy is largely based on tourism and defense spending , due to the close proximity of tourist attractions in the Black Hills and Ellsworth Air Force Base . The next eight largest cities in the state , in order of descending 2007 population , are Aberdeen ( 24 @, @ 410 ) , Watertown ( 20 @, @ 530 ) , Brookings ( 19 @, @ 463 ) , Mitchell ( 14 @, @ 832 ) , Pierre ( 14 @, @ 032 ) , Yankton ( 13 @, @ 643 ) , Huron ( 10 @, @ 902 ) , and Vermillion ( 10 @, @ 251 ) . Pierre is the state capital , and Brookings and Vermillion are the locations of the state 's two largest universities . Of the ten largest cities in the state , Rapid City is the only one located west of the Missouri River .

= = = Economy = = =

South Dakota 's early economy relied heavily on the soil , minerals and ecology of the area , as nearly all of the earliest white settlers in the area were farmers , miners , or trappers . Although other economic sectors have risen in prominence in recent years , early dependence on the land laid the foundation for the future economic activity of the state .

Agriculture has historically been a key component of the South Dakota economy . Although other industries have expanded rapidly in recent decades , agricultural production is still very important to the state 's economy , especially in rural areas . The five most valuable agricultural products in South Dakota are cattle , corn ( maize ) , soybeans , wheat , and hogs . Agriculture @-@ related industries such as meat packing and ethanol production also have a considerable economic impact on the state . South Dakota is one of the largest producers of ethanol in the nation .

Another important sector in South Dakota 's economy is tourism . Many travel to visit the national parks , state parks , and national monuments in the state , particularly those of the Black Hills region . South Dakota 's location between national parks in the west and large cities to the east also contributes to the state 's tourism and hospitality industry . In 2006 , tourism provided an estimated 33 @,@ 000 jobs in the state and contributed over two billion US \$ to the economy of South Dakota .

### == = Transportation == =

South Dakota has a total of 83 @,@ 609 miles ( 134 @,@ 556 km ) of highways , roads , and streets , along with 679 miles ( 1 @,@ 093 km ) of interstate highways . Two major interstates pass through South Dakota : Interstate 90 , which runs east and west ; and Interstate 29 , running north and south in the eastern portion of the state . Also located in the state are the shorter interstates 190 and 229 . Several major U.S. highways pass through the state . U.S. routes 12 , 14 , 16 , 18 , and 212 travel east and west , while U.S. routes 81 , 83 , 85 and 281 run north and south . Railroads have played an important role in South Dakota transportation since the mid @-@ nineteenth century . Some 4 @,@ 420 miles ( 7 @,@ 113 km ) of railroad track were built in South Dakota during the late nineteenth and early twentieth centuries , but only 1 @,@ 839 miles ( 2 @,@ 959 km ) of railroad are currently operational . South Dakota 's largest commercial airports are located at Sioux Falls and Rapid City .