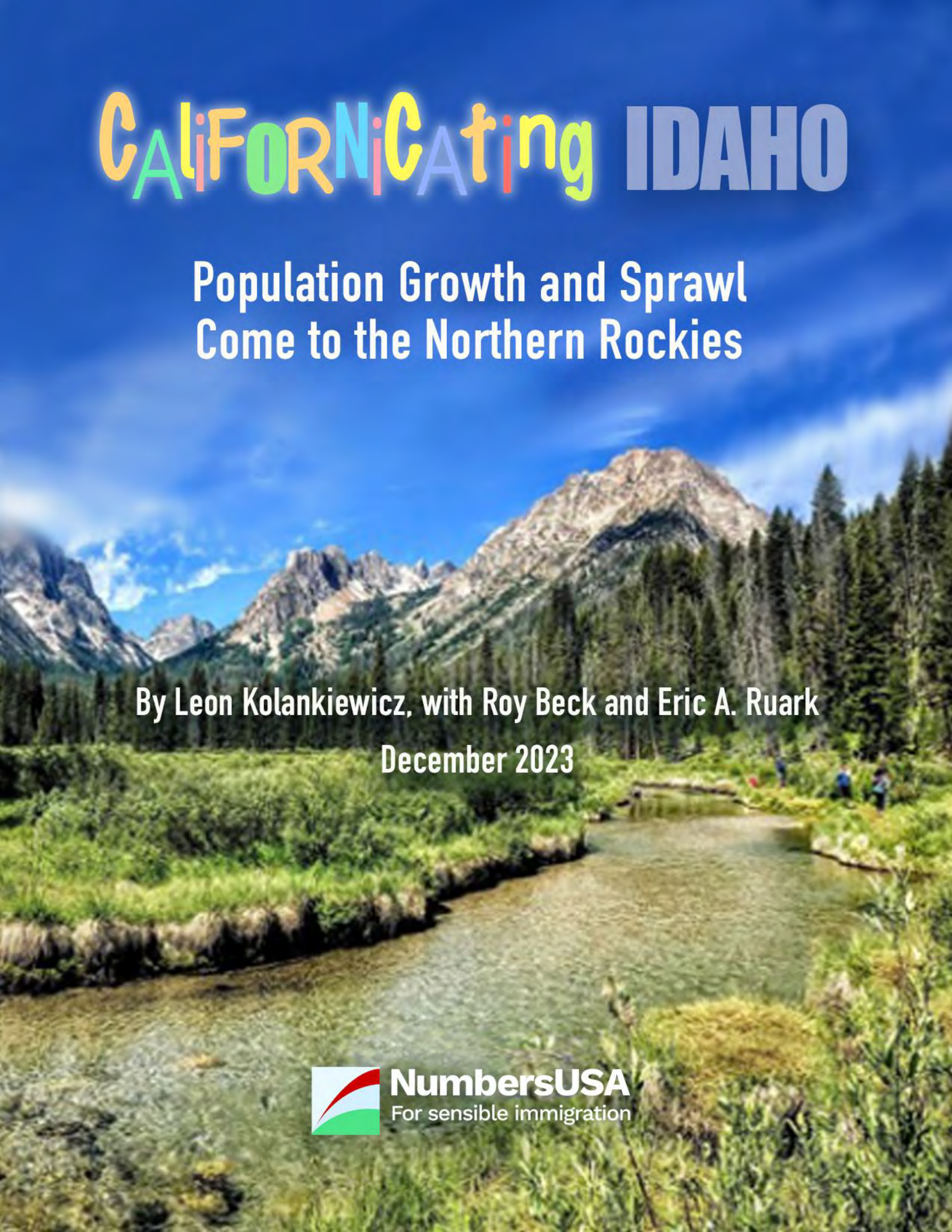
CaliFORNiCating IDAHO

Population Growth and Sprawl Come to the Northern Rockies



By Leon Kolankiewicz, with Roy Beck and Eric A. Ruark

December 2023

NumbersUSA
For sensible immigration

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Population Growth and Sprawl Come to the Northern Rockies

Analysis of National Resources Inventory & U.S. Census Data on Sprawl, Development, and Habitat Loss in the Gem State

By Leon Kolankiewicz, with Roy Beck and Eric A. Ruark

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About the Authors

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ROY BECK was one of the nation's first environment-beat newspaper reporters in the 1960s. A graduate of the University of Missouri School of Journalism, he won national recognition for his coverage of urban expansion issues. A former Washington bureau chief for a chain of daily newspapers, he is the author of five public policy books, including *Recharting America's Future*, and the latest, *Back of The Hiring Line: a 200-year history of immigration surges, employer bias, and depression of Black wealth*. His articles have appeared in scores of magazines, newspapers and journals. He has lectured widely on the ethical aspects of U.S. population issues and testified before Congress on many occasions. He has co-authored more than a dozen studies on sprawl in the last two decades. He founded NumbersUSA in 1996 to educate the public on the recommendations of two federal commissions on population and environmental sustainability and on economic justice.

ERIC A. RUARK is the Director of Research of NumbersUSA Education & Research Foundation. He attended Virginia Commonwealth University and the University of Maryland, College Park and has an M.S. in modern European history. He has worked as a researcher on U.S. immigration policy since 2008 and has written extensively on the effects of population growth. His work has been cited in national and international media reports and in his testimony in the U.S. Senate. He is an original signatory in the International Network for Immigration Research.

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Idaho Sprawl Study
Executive Summary

Idaho remains the relatively sparsely-populated, agricultural and natural wonderland that residents love. But those qualities are threatened by **Idaho's fastest population growth rate in the country** over the last decade – growth that most Idahoans want to slow down or stop, according to a poll commissioned for this study.

Driving most of the rapid population growth are people moving from much more densely or heavily populated states (especially California) and countries to enjoy in Idaho what their home areas are losing or have lost.

But this in turn creates loss in Idaho:

- **More than 370,000 acres (580 square miles) of Idaho farmland and natural habitat were lost to development** between 1982 and 2017 (latest data from the U.S. Department of Agriculture's National Resources Inventory).
- **Cropland – Idaho's most valuable farmland – was reduced by 16%** (1982-2017).
- The **state's population nearly doubled** (1980-2020), surging by almost 900,000 people to a total of 1.8 million. Present trends suggest the population may grow by that much again by 2050.
- Our study finds that **77% of the farmland and habitat loss** (1982-2017) **was related to accommodating Idaho's increased population** (**Figure ES-1**).
- **The other 23% of loss was related to all other factors** that led to increased average developed-land consumption for each resident (per capita sprawl).

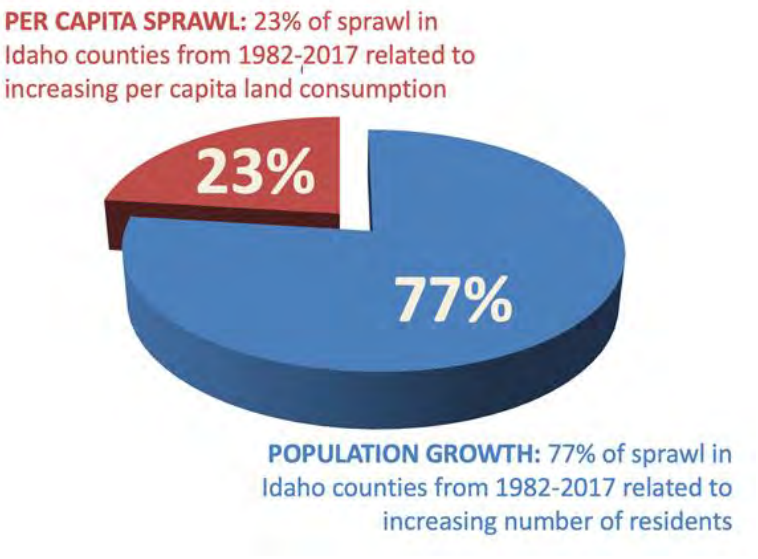


Figure ES-1. Factors contributing to sprawl in all Idaho Counties, 1982-2017

Trends for the Future

As this study shows, trends can be changed. Idaho voters can choose to accept the trends or to mitigate them. They can decide how much agricultural land they are ultimately willing to sacrifice to population growth, as well as how much increased density of living they are willing to accept.

Polling of Idaho voters in August 2023 in conjunction with our study found nearly all wanting to at least slow down the recent rate of population growth.

5% wanted to continue to grow rapidly
47% wanted to slow down the growth
23% preferred to stop growth and stay the current population size
23% desired a reduction in the current size

Figure ES-2 depicts these results graphically:

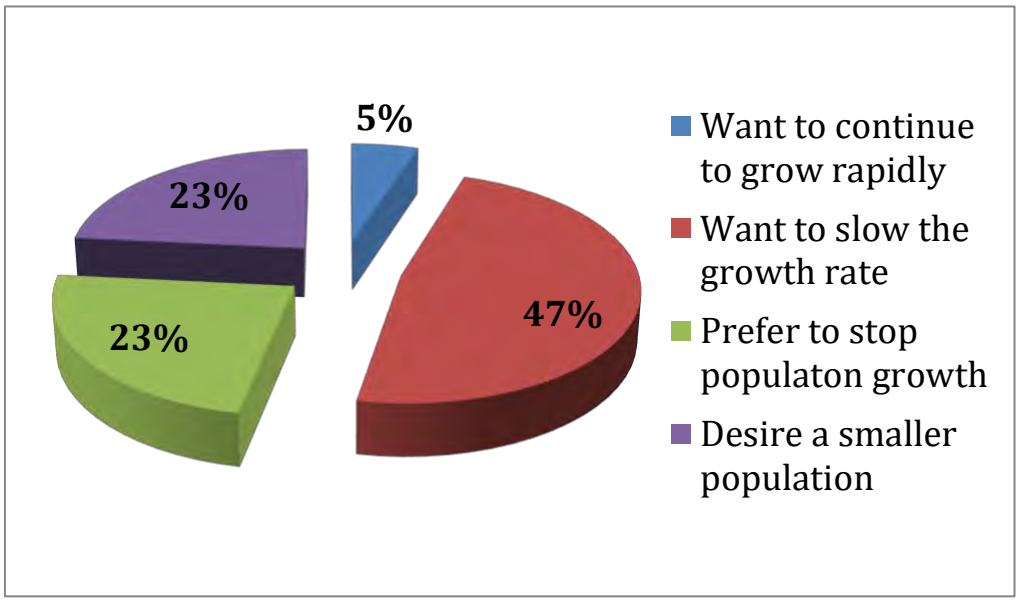


Figure ES-2. Preferences of 1,017 Idaho likely voters toward state's population growth in August 2023 public opinion survey (see Appendix D for specific wording and other poll questions)

The state's overall vital signs remain healthy enough that it has room to preserve much of what its voters say they value. But this study finds current trends are in the wrong direction for preservation, with little indication of government entities acting to change the trends. For example:

- The American Farmland Trust **projects that more than 100,000 additional acres of Idaho's agricultural land will be lost by 2040** under current trends and policies.

- By 2050, based on recent rates of development, approximately **180,000 more acres of Idaho's irreplaceable rural lands of all kinds will have been paved** or covered with additional subdivisions, streets, hotels, schools, and commercial strips; industrial, office and theme parks; places of employment, leisure, culture and waste disposal – all a great and permanent loss to Idaho's agricultural lands, wildlife habitat, natural heritage, quality of life, and environmental sustainability.

Our poll of 1,017 Idaho likely voters found strong support for their state's agricultural industry which is the nation's No. 1 producer of potatoes, barley, peppermint, and alfalfa hay; the No. 2 producer of sugar beets and hops; and the No. 3 producer of cheese and milk, as well as a significant source of more than a hundred other products.

> 73% oppose diverting water from agricultural irrigation to handle more residents (only 12% support).
>
> 81% said it is "very important" to "protect U.S. farmland from development so the United States is able to produce enough food to feed Americans in the future" (14% said "somewhat important" and 3% said not very or at all important.).

Idaho's fate tied to California's?

Perhaps the greatest pressure on Idaho's future comes from California having apparently reached some kind of tipping point after a century of massive population expansion to nearly 40 million residents – 20 times the size of Idaho. Since 1982, more than 2 million acres of California have been converted from farmland and natural habitat to developed land while the population boomed.

People fleeing California's extensively documented and heavily publicized socioeconomic and environmental problems – particularly the high cost of housing – are the largest single source of Idaho newcomers.

Idaho, with its population density of 23 residents per square mile, can look awfully alluring to Californians living at a density of 258 residents per square mile and seeking more elbow room and lower housing prices. As high levels of foreign immigration continued into California in the last decade, nearly 8 million Americans moved from California to other states from 2010 through 2021.

Even a tiny fraction of disgruntled Californians spilling into Idaho can swamp efforts to preserve the state's character and elbow room. Thus, Idaho's future appears inextricably linked to the fate of California, a state that Idaho residents overwhelmingly say they don't want to emulate. Bumper stickers and other signs with slogans such as "Don't Californicate Idaho" attest to the fear.

Sources of Idaho population growth

Net migration from other states and countries (new residents minus those leaving) accounted for 59% of Idaho's population growth from 1990 to 2020. The impact is even higher than the 59% because of births to those newcomers after they arrive, but data are not available to quantify that.

The states sending the most new residents to Idaho have been California, Washington, Oregon, Utah, Arizona, and Texas, all of which have themselves grown rapidly in recent decades, though that can change year-over-year.

Data *do* exist to determine the full population impact of *foreign*-born newcomers to Idaho. The Idaho residents in 2017 who arrived in the U.S. as immigrants after 1982, or who were the U.S.-born children and grandchildren of post-1982 immigrants, were equal to 18% of Idaho's population growth 1982-2017.

Even that calculation understates the role of federal immigration policies in Idaho's rapid population growth. As noted in the discussion of California, problems from population pressures play a significant role in driving so many Americans from the prime-sending states to Idaho. And the population growth in those states is heavily fueled by federal immigration policies that have more than tripled annual national admissions over their 1960s levels.

California, for example, has for decades tried to absorb around a quarter of the nation's annual immigration. In the process, it has ceased to be a net desired destination for Americans in the rest of the country.

In every year but 1999 and 2000 over the last three decades, more Americans have moved out of California than have moved in. The net out-migration has routinely been between 100,000 and 300,000 a year. Last year, it was more than 400,000.

When considering a continuation of current state trends and federal immigration policies, California analysts project that the state will continue to shed large numbers of residents for at least several more decades.

Because California's population growth has been overwhelmingly due to foreign immigration, much of California's hemorrhaging into Idaho and other western states must be considered as another consequence of the more than tripled level of annual federal immigration.

Nationwide, fertility rates have not been a long-term factor in population growth since 1972. Idaho's Total Fertility Rate is among the 10 highest in the country but is still below "replacement-level fertility," and, thus, cannot produce long-term population growth.[1]

Preferences of Idaho voters

Opinion polls, at best, can only capture a snapshot of public sentiment. In Idaho, that snapshot reveals that voters in the state oppose the continuation of recent rapid growth. If a concerted public debate emerges, voters may modify those opinions. The percentage of "not sure" answers on some questions indicates that many voters may not have thought much about the issues. And voter opinions don't easily translate into action; politicians and influential business leaders often take the position that more growth is always good. But most Idaho voters who were polled felt differently.

Only 11% of voters said Idaho's recent development of farmland and natural habitat has been "too little." About a third (36%) indicated that the amount of development is "about right," while nearly half (48%) said there has been "too much" development already.

Voters reacted even more negatively to the idea of more population growth.

> A study of government data found that three-quarters (77%) of the loss of Idaho's open space, natural habitat, and farmland to development in recent decades was related to the state's rapid population growth. Would continuing this level of population growth into the future make Idaho better, worse or not much different?
>
> 7% better
> **77% worse**
> 12% not much different

Other survey questions revealed what changes Idaho voters would support to reduce the state's population growth. They indicated a strong preference for reducing federal immigration and for restricting development to make it more difficult to move into Idaho from other states:

[1] National Center for Health Statistics. 2023. Fertility Rates by State. Available online at: https://www.cdc.gov/nchs/pressroom/sosmap/fertility_rate/fertility_rates.htm.

A major source of Idaho's population growth is people moving in from other states, especially places like California. Should local and state governments in Idaho **make it more difficult for people to move to Idaho from other states by restricting development?**

56% yes
27% no
18% not sure

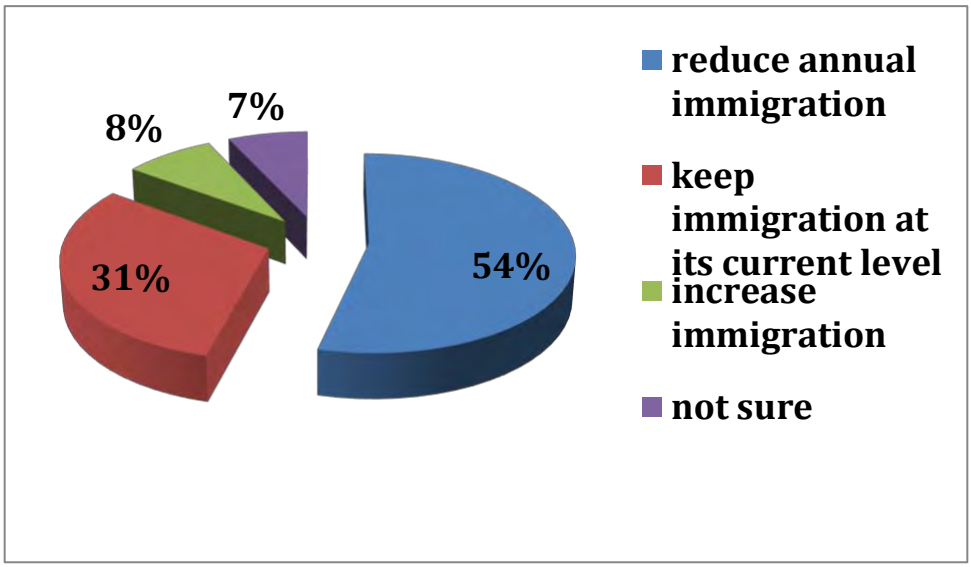
One potential way of controlling new growth is by limiting the number of new hook-ups to sewage lines and wastewater treatment plants. Do you favor using this as a tool to manage or control growth?

52% yes
26% no
22% not sure

Another major source of Idaho population growth is immigration from other countries. **Should the federal government reduce annual immigration** to slow down Idaho's population growth, keep immigration and population growth at the current level, or increase annual immigration and population growth?

54% reduce annual immigration
31% keep immigration at its current level
8% increase immigration
7% not sure

Figure ES-3. Attitudes of 1,017 Idaho likely voters toward national immigration rates (see Appendix D for specific wording and other poll questions)



Forcing more density in housing development to mitigate the damage of population growth had fairly strong support but was still opposed by 47% to 42%.

> One way for Idaho communities to handle continued population growth without losing as much open space, natural habitat, and farmland is to change zoning and other regulations to funnel more current and future residents into apartments and condo buildings instead of single-family houses with yards. Do you strongly favor that change, somewhat favor it, somewhat oppose it or strongly oppose it?
>
> 15% strongly favor
> 27% somewhat favor
> 24% somewhat oppose
> 23% strongly oppose
> 12% not sure

Idaho voters had no interest in sharing the additional costs of accommodating population growth:

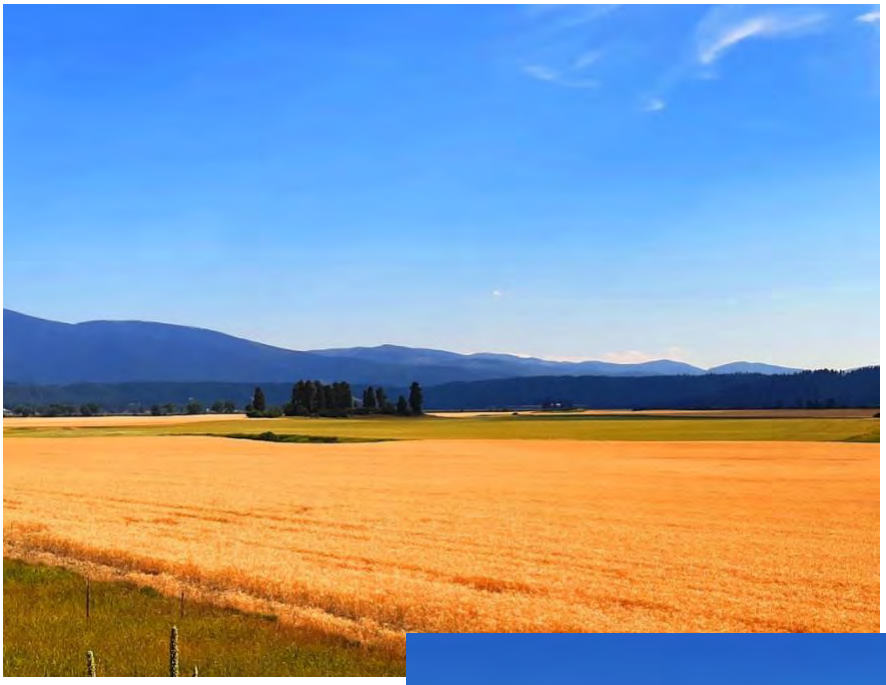
> Residential development (building subdivisions) to perpetually accommodate new population growth imposes economic costs on the existing residents of municipalities. Do you favor paying higher property taxes to perpetually accommodate new residents in your community?
>
> 10% yes
> **79% no**
> 11% not sure

If Idaho is to avoid "Californication," there are real, substantial actions that will have to be taken. Without remedial action, the population pressures from other states noted above appear certain to continue to make Idaho less agricultural and filled with more urban sprawl. That sprawl in 21st Century America is predictable – strip malls, fast food restaurants, big-box retail stores, more congestion, high-density subdivisions, and rustic, low-density dwellings chewing into the remaining countryside. As unique as Idaho is in its natural splendor, its settlements will expand the same way as other growing urban areas, by eliminating farmland and natural habitat.

Combating urban sprawl begins with the simple acknowledgement that it is occurring and then taking a stand against its continuance. It is easy to succumb to the notion that growth is inevitable or preordained, that it is synonymous with "progress." However, a clear-headed approach recognizes the trade-offs and considers whether those trade-offs are worth it.

Idaho contains about 32 million acres (50,000 square miles) of federally-owned public lands, comprising more than 60 percent of the state. That is a lot of nature and open space. It would be easy to take it for granted. But this study examines facets of Idaho's swelling human numbers that over the next decades could negatively change Idahoans' access to wildlands and the quality of the outdoor recreational experience, water availability, wildlife, the ecological footprint, and economic and environmental sustainability.

With the projected population growth both in Idaho (from 1.9 million in 2023 to a projected 2.7 million by 2060) and surrounding states and the country as a whole, increasing pressures on Idaho's wildlands are to be expected, both from increasing recreational demand itself, and demands for natural resource commodities (forest products, minerals, etc.) from those lands in public ownership. Opportunities for solitude in Idaho's wilds will decrease accordingly.



The state's overall vital signs remain healthy enough that it has room to preserve much of what its voters say they value.

But this study finds current trends are in the wrong direction for preservation, with little indication of government entities acting to change the trends -- except to accelerate them.

1. THE GEM THAT IS IDAHO

"You'd have to come from a test tube and think like a machine to not engrave all of this in your head so that you never lose it."

-- "Papa" Ernest Hemingway, a Nobel Laureate in Literature, spoken to a hunting companion, as they gazed across at Idaho's Sawtooth Mountains and the headwaters of the Salmon River from Galena Summit[2]

Figure 1. Salmon River Valley from Galena Summit, Idaho
Credit: Acroterion, Wikipedia Commons

[2] Phil Huss. 2017. Hemingway and Wilderness: A local legacy endures. *SunValleymag.com*. Comment reported by Lloyd Arnold in the 1968 book *High on the Wild with Hemingway* ("A pictorial recollection of 'Papa' Hemingway by a close friend and photographer. Covers years from 1939 - to 1961. Recounts Hemingway's love of Idaho.") . https://sunvalleymag.com/articles/hemingway-and-wilderness/?fbclid=IwAR1JS_zc20NDAARce0V2TFL3csKn6hz-m0apA9tDXPtgGWvHjnwoTAXytv8

Figure 2. Idaho's pristine wilderness is renowned (Sawtooth Range)
Image courtesy of whisperwoodsgoods at Pixabay

Tucked away in the northern Rocky Mountains just south of the Canadian border (**Figure 3**) Idaho's extraordinary beauty and wild essence captured the heart of "Papa" Ernest Hemingway (**Figure 4**) in the middle of the 20th century and continues to capture the hearts of millions of Idahoans and Americans today, well into the 21st century. Hemingway is buried in Ketchum, Idaho. The "gem state" embraces large areas of productive farms and ranches, scenic lakes and rivers, breathtaking mountain peaks, iconic wilderness areas and wilderness wildlife, and forests galore. It is a sportsman's paradise. In a region nicknamed the "Inland Empire" by professional foresters early in the 20th century, Idaho is home to seven national forests managed by the U.S. Forest Service – Salmon-Challis, Nez Perce-Clearwater, Caribou-Targhee, Boise, Idaho Panhandle, Payette, and Sawtooth – in total covering some 20.4 million acres and comprising 40 percent of the state's land area.[3]

Idaho also boasts 15 congressionally-designated wilderness areas on its ample federal lands, protected from all development or resource extraction (e.g., logging, mining) as part of the National Wilderness Preservation System established under the Wilderness Act of 1964: Big

[3] U.S. Forest Service, Intermountain Region. 2017. National Forests of Idaho. Available online at: https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprd3852339.pdf.

Jacks Creek, Bruneau-Jarbidge Rivers, Cecil D. Andrus-White Clouds, Craters of the Moon **(Figure 5),** Frank Church-River of No Return, Gospel-Hump, Hells Canyon, Hemingway-Boulders, Jim McClure-Jerry Peak, Little Jacks Creek, North Fork Owyhee, Owyhee River, Pole Creek, Sawtooth, and Selway Bitterroot.[4] At 2.4 million and 1.3 million acres in size, respectively, Idaho's Frank Church-River of No Return Wilderness and Selway Bitterroot Wilderness are the second and third-largest designated wilderness areas in the lower 48 states (i.e., outside of Alaska).[5]

Figure 3. Relative Location of Idaho in the United States

In addition to its bountiful natural resources, Idaho is blessed with abundant agriculture (**Figure 6**). Its 24,000 farms and ranches produce more than 185 agricultural commodities. Among all states, it is #1 not just in potato production (of course), but barley, peppermint, and alfalfa hay as well. It is #2 in sugar beets and hops, and the third-largest producer of cheese and milk in the United States. At #1 in barley and #2 in hops, it is perhaps unsurprising that more than 90 craft breweries have popped up in Idaho. In spite of its rapid human population

[4] Mountain Journey. 2018. Idaho Wilderness Areas – List and Map. Available online at: http://mountainjourney.com/idaho-wilderness-areas-list-map/ .
[5] Mountain Journey. 2018. 10 Largest Wilderness Areas in the Lower 48. Available online at: http://mountainjourney.com/largest-wilderness-areas-lower-48/.

growth in recent decades, Idaho's population of cattle (2.5 million) still outnumbers its population of people (1.9 million).[6]

Figure 4. Ernest Hemingway (1899-1961) hunting in Idaho

Figure 5. Big Southern Butte: Craters of the Moon National Monument, Idaho
Photo courtesy of James Neeley, Bureau of Land Management

[6] Idaho State Department of Agriculture. 2023. Idaho Agriculture: Our Success Story (Fact Sheet).

Figure 6. Farm on the Rathdrum Prairie north of Coeur d'Alene

1.1 California, Californians (and Others) Come to Idaho

In recent decades, Idaho's many virtues and qualities have attracted many newcomers, more of them from overpopulated California than any other single state, leading to the title of this report, "Californicating Idaho." The lead author (Kolankiewicz) himself is a former California resident, and it is certainly not the authors' intention to impugn or shame those former and ex-Californians who have contributed to the massive exodus of humanity from that once-"golden" state. Although large numbers of foreign migrants continue to move to California, even more previous residents have moved to other states, leading to an actual net loss of population for the past three consecutive years. This is an historic reversal of California's booming demographic trajectory over the past 120 years. If boom-and-bust cycles apply here, its "bust" phase may have arrived at last.

However, California's extensively documented and heavily publicized socioeconomic and environmental problems (**Figure 7**), many of them related to its swollen population of nearly 40 million – 20 times the size of Idaho's population! – is indeed related to the population

growth that Idaho (among many other Western states) is now experiencing, and there is no point in sweeping that hard truth under the rug.

Figure 7. Near-constant traffic congestion is one of the consequences of overpopulation on the quality of life that has triggered many Californians to flee the state

In fact, as shown in **Tables 1 and 2**, when measured by percentage change, Idaho has experienced the fastest growth of any state in the country in both the past five years and the past decade (10 years), exceeding even Utah and Nevada, which between them have traded this dubious distinction back and forth for many of the preceding years.

Table 1. State Population Growth 2018-2023 (last 5 years), Ranked by Percentage

Rank	State	2018 population	2023 population	Change 2018-2023	% Change 2018-2023
1	**Idaho**	**1,754,208**	**1,947,858**	**193,650**	**11.0%**
2	Utah	3,161,105	3,448,703	287,598	9.1%
3	Nevada	3,034,392	3,252,800	218,408	7.2%
4	Montana	1,062,305	1,124,741	62,436	5.9%
5	Delaware	967,171	1,022,096	54,925	5.7%
6	New Hampshire	1,356,458	1,425,235	68,777	5.1%
7	Texas	28,701,845	30,007,132	1,305,287	4.5%
8	Tennessee	6,770,010	7,074,443	304,433	4.5%

Rank	State	2018 population	2023 population	Change 2018-2023	% Change 2018-2023
9	Florida	21,299,325	22,247,502	948,177	4.5%
10	South Carolina	5,084,127	5,294,194	210,067	4.1%
11	Georgia	10,519,475	10,952,191	432,716	4.1%
12	Maine	1,338,404	1,393,445	55,041	4.1%
13	Alabama	4,887,871	5,085,842	197,971	4.1%
14	Arizona	7,171,646	7,449,502	277,856	3.9%
15	New Jersey	8,908,520	9,230,094	321,574	3.6%
16	Vermont	626,299	648,737	22,438	3.6%
17	South Dakota	882,235	913,797	31,562	3.6%
18	Washington	7,535,591	7,792,167	256,576	3.4%
19	Rhode Island	1,057,315	1,092,872	35,557	3.4%
20	Colorado	5,695,564	5,876,157	180,593	3.2%
21	North Carolina	10,383,620	10,706,596	322,976	3.1%
22	Oklahoma	3,943,079	4,052,588	109,509	2.8%
23	Nebraska	1,929,268	1,975,878	46,610	2.4%
24	Indiana	6,691,878	6,843,463	151,585	2.3%
25	Virginia	8,517,685	8,690,736	173,051	2.0%
26	Wisconsin	5,813,568	5,924,235	110,667	1.9%
27	Minnesota	5,611,179	5,714,798	103,619	1.8%
28	Maryland	6,042,718	6,149,725	107,007	1.8%
29	Iowa	3,156,145	3,207,779	51,634	1.6%
30	Kentucky	4,468,402	4,533,776	65,374	1.5%
31	Arkansas	3,013,825	3,057,716	43,891	1.5%
32	Wyoming	577,737	585,587	7,850	1.4%
33	Hawaii	1,420,491	1,439,247	18,756	1.3%
34	Oregon	4,190,713	4,242,753	52,040	1.2%

Rank	State	2018 population	2023 population	Change 2018-2023	% Change 2018-2023
35	Connecticut	3,572,665	3,616,060	43,395	1.2%
36	Missouri	6,126,452	6,200,301	73,849	1.2%
37	New Mexico	2,095,428	2,118,411	22,983	1.1%
38	Massachusetts	6,902,149	6,954,017	51,868	0.8%
39	Pennsylvania	12,807,060	12,900,590	93,530	0.7%
40	Ohio	11,689,442	11,751,762	62,320	0.5%
41	North Dakota	760,077	763,657	3,580	0.5%
42	Kansas	2,911,505	2,925,198	13,693	0.5%
43	Michigan	9,995,915	10,008,641	12,726	0.1%
44	New York	19,542,209	19,507,994	-34,215	-0.2%
45	Alaska	736,624	730,916	-5,708	-0.8%
46	California	39,557,045	39,017,686	-539,359	-1.4%
47	Louisiana	4,659,978	4,587,552	-72,426	-1.6%
48	Mississippi	2,986,530	2,937,585	-48,945	-1.6%
49	Illinois	12,741,080	12,485,597	-255,483	-2.0%
50	West Virginia	1,805,832	1,766,945	-38,887	-2.2%

Source: https://www.populationu.com/gen/us-states-by-population (From U.S. Census Bureau data)

Table 2. State Population Growth 2013-2023 (last decade), Ranked by Percentage

Rank	State	2013 population	2023 population	Change 2013-2023	% Change 2013-2023
1	**Idaho**	**1,611,530**	**1,947,858**	**336,328**	**20.9%**
2	Utah	2,897,927	3,448,703	550,776	19.0%
3	Nevada	2,776,972	3,252,800	475,828	17.1%
4	Florida	19,563,166	22,247,502	2,684,336	13.7%
5	Texas	26,489,464	30,007,132	3,517,668	13.3%
6	Arizona	6,634,999	7,449,502	814,503	12.3%

Rank	State	2013 population	2023 population	Change 2013-2023	% Change 2013-2023
7	Washington	6,962,906	7,792,167	829,261	11.9%
8	Colorado	5,270,482	5,876,157	605,675	11.5%
9	South Carolina	4,764,153	5,294,194	530,041	11.1%
10	Montana	1,013,564	1,124,741	111,177	11.0%
11	Delaware	923,638	1,022,096	98,458	10.7%
12	Georgia	9,973,326	10,952,191	978,865	9.8%
13	Tennessee	6,493,432	7,074,443	581,011	8.9%
14	North Carolina	9,843,599	10,706,596	862,997	8.8%
15	South Dakota	842,270	913,797	71,527	8.5%
16	Oregon	3,922,908	4,242,753	319,845	8.2%
17	New Hampshire	1,326,408	1,425,235	98,827	7.5%
18	Nebraska	1,865,414	1,975,878	110,464	5.9%
19	North Dakota	721,999	763,657	41,658	5.8%
20	Minnesota	5,413,693	5,714,798	301,105	5.6%
21	Virginia	8,253,053	8,690,736	437,683	5.3%
22	Alabama	4,830,460	5,085,842	255,382	5.3%
23	Oklahoma	3,853,205	4,052,588	199,383	5.2%
24	Maine	1,328,196	1,393,445	65,249	4.9%
25	New Jersey	8,858,362	9,230,094	371,732	4.2%
26	Indiana	6,568,367	6,843,463	275,096	4.2%
27	Maryland	5,923,704	6,149,725	226,021	3.8%
28	Iowa	3,093,078	3,207,779	114,701	3.7%
29	Vermont	626,212	648,737	22,525	3.6%
30	Rhode Island	1,055,122	1,092,872	37,750	3.6%
31	Massachusetts	6,713,944	6,954,017	240,073	3.6%
32	Arkansas	2,959,549	3,057,716	98,167	3.3%

Rank	State	2013 population	2023 population	Change 2013-2023	% Change 2013-2023
33	Wisconsin	5,736,952	5,924,235	187,283	3.3%
34	Kentucky	4,404,817	4,533,776	128,959	2.9%
35	Missouri	6,040,658	6,200,301	159,643	2.6%
36	Hawaii	1,408,453	1,439,247	30,794	2.2%
37	California	38,280,824	39,017,686	736,862	1.9%
38	Ohio	11,576,576	11,751,762	175,186	1.5%
39	New Mexico	2,092,792	2,118,411	25,619	1.2%
40	Kansas	2,893,510	2,925,198	31,688	1.1%
41	Pennsylvania	12,776,621	12,900,590	123,969	1.0%
42	Michigan	9,913,349	10,008,641	95,292	1.0%
43	Wyoming	582,123	585,587	3,464	0.6%
44	Connecticut	3,594,915	3,616,060	21,145	0.6%
45	New York	19,628,043	19,507,994	-120,049	-0.6%
46	Louisiana	4,624,577	4,587,552	-37,025	-0.8%
47	Alaska	737,626	730,916	-6,710	-0.9%
48	Mississippi	2,988,797	2,937,585	-51,212	-1.7%
49	Illinois	12,898,269	12,485,597	-412,672	-3.2%
50	West Virginia	1,853,873	1,766,945	-86,928	-4.7%

Source: https://www.populationu.com/gen/us-states-by-population (From U.S. Census Bureau data)

It is understandable that having the fastest population growth in America may strike many economists, business boosters, politicians, and some Idaho residents as something to brag about. This is because it implies economic prosperity, opportunity, and a sought-after quality of life that other Americans and foreigners alike can only envy, and are willing to "vote with their feet" to seek out and attain. Yet at the same time, Idahoans must ask themselves and their political leaders how continuation of such population growth and its implications will transform the state. How will Idaho's character, environment, and quality of life change? Will it become a better place for existing residents, those who have long commitments to, investments in, and deep ties with Idaho? Or will Idaho eventually become another

overcrowded, congested, overpriced, overburdened place, like its unfortunate, beleaguered neighbor on the Pacific Coast?

This study closely examines in detail only one aspect of these profound questions: the ongoing loss of open space triggered by development. All of this open space is either natural habitat or agricultural land, and its loss (permanent conversion to developed land) is due either to: 1) population growth, 2) changes in per capita consumption or use of developed land by existing and new Idaho residents, or 3) some combination of both #1 and #2. We touch on other issues related to this growth – such as protection of aquifers (groundwater) on which Idaho residents, industry, and agriculture depend, and the loss of Idaho's irreplaceable cropland itself to urban sprawl and development. We also broach how Idaho sprawl and development are connected to quality of life concerns, and to such topics as global and national food security, ecological balance, and environmental sustainability.

This report is one in a long series of studies of sprawl, development, and population growth which the authors have conducted on behalf of NumbersUSA, beginning back in 2000 (**Table 3**). Three of these have been national-level studies, while others have focused on states and regions. Fittingly, our very first sprawl study focused on California, which practically invented the phenomenon and made it infamous. Also fittingly, our most recent study, released earlier this year, was on Texas, which is now adding more people than any other state, as well covering up more rural land with pavement and buildings. As of 2023, Texas is by far the most sprawling state in America (a fact about which few Texans are proud). Last but not least in this sequence, we now turn our sights towards Idaho, the state with the fastest-growing population of them all, when measured by percentage.

Table 3. Previous NumbersUSA Studies on Urban Sprawl

Year	NumbersUSA Sprawl Study
2000	*Sprawl in California*: A report on quantifying the role of the state's population boom
2000	*Overpopulation = Sprawl in Florida*: A report quantifying the impact of Florida's population boom on sprawl
2001	*Weighing Sprawl Factors in Large U.S. Cities*: A report on the nearly equal roles played by population growth and land use choices in the loss of farmland and natural habitat to urbanization
2003	*Outsmarting Smart Growth*: Population, Immigration, and the Problem of Sprawl
2003	*Sprawl in the Chesapeake Bay Watershed*

Year	NumbersUSA Sprawl Study
2004	*Sprawl in Minnesota*
2014	*Vanishing Open Spaces*: Population Growth and Sprawl in America
2015	*Vanishing Open Spaces in Florida*: Population Growth and Sprawl in the Sunshine State
2017	*Paving the Piedmont*: Weighing Sprawl Factors in the Emerging Piedmont Megalopolis
2017	*Population Growth and Sprawl in Texas*: How an Exploding Population Consumes Natural Habitat and Agricultural Land in the Lone Star State
2020	*Population Growth & Sprawl in Oregon*: Analysis of U.S. Census Bureau and National Resources Inventory Data on Loss of Open Space in the Beaver State
2021	*Population Growth and the Diminishing Natural State of Arizona*: Analysis of National Resources Inventory & U.S. Census Data on Development and Habitat Loss in the Grand Canyon State
2022	*From Sea to ~~Shining~~ Sprawling Sea*: Quantifying the Loss of Open Space in America
2022	*Disappearing Colorado*: How population growth, sprawl, and density are devouring open space and Colorado's quality of life
2023	*Population Growth and Sprawl in Texas*: How an Exploding Population Consumes Natural Habitat and Agricultural Land in the Lone Star State [new and updated study from the 2017 Texas study]

Most of the studies listed in Table 3 are available online from NumbersUSA.

Figure 8. How Big Is Too Big? With about 230,000 residents, Boise, Idaho strikes many as being just about the right size for an urban area

Credit: Image by Pinpals from Pixabay

As of 2023, fortunately, Idaho can still brag that it has one of the lowest population densities in the entire United States. Using 2022 data, **Table 4** shows that Idaho is in 44th place among all 50 states for population density, with 23 residents per square mile average population density. America's average density is 210 residents per square mile, almost ten times higher than Idaho's. Only New Mexico, the Dakotas, Montana, Wyoming, and of course, Alaska, enjoy fewer residents per square mile than Idaho.

Table 4. Population Density in all 50 States (2022), from Highest to Lowest

Rank	State	2022 Population Density (residents per square mile)
1	New Jersey	1,283
2	Rhode Island	1,074
3	Massachusetts	920
4	Connecticut	747
5	Maryland	649
6	Delaware	522
7	New York	434
8	Florida	417

Rank	State	2022 Population Density (residents per square mile)
9	Pennsylvania	293
10	Ohio	291
11	California	258
12	Hawaii	231
13	Illinois	231
14	Virginia	223
15	North Carolina	220
16	Indiana	192
17	Georgia	192
18	Michigan	179
19	South Carolina	175
20	Tennessee	172
21	New Hampshire	156
22	Washington	120
23	Texas	116
24	Kentucky	115
25	Wisconsin	110
26	Louisiana	109
27	Alabama	101
28	Missouri	90
29	West Virginia	74
30	Minnesota	73
31	Vermont	70
32	Arizona	65
33	Mississippi	63

Rank	State	2022 Population Density (residents per square mile)
34	Oklahoma	59
35	Arkansas	58
36	Iowa	58
37	Colorado	58
38	Oregon	45
39	Maine	45
40	Utah	42
41	Kansas	36
42	Nevada	29
43	Nebraska	26
44	**Idaho**	**23**
45	New Mexico	18
46	South Dakota	12
47	North Dakota	12
48	Montana	8
49	Wyoming	6
50	Alaska	1

Source: https://wisevoter.com/state-rankings/state-densities/

Average population density per state is actually a rather coarse measure – a "first-order approximation" – of how crowded or how uncrowded a given state feels to its residents and visitors, because populations can be distributed differently across the landscape. If a state's population is concentrated into one or a few large cities, rather than dispersed into a greater number of smaller towns or scattered across rural areas, for example, it might feel crowded, congested, or oppressive in the cities and suburbs even as there are large areas with very low population density out in the countryside, i.e., wildlands or even wilderness. (California exemplifies this.) Yet most Idahoans and those fond of and familiar with the state would probably agree that its 44th-place ranking on population density among all states does convey an accurate sense of ample elbow room one feels in Idaho, rather than feeling squeezed in. For

many long-time residents, however, this may be changing, given the precipitous pace of growth in recent decades.

In an August 2023 public opinion poll of 1,017 Idaho likely voters conducted for this study by Rasmussen Reports and NumbersUSA (Appendix D), respondents were asked: "Do you find the prospect of adding another 800,000 residents in the coming decades to be more positive or more negative?" Only 21% responded "more positive," compared to 67% who responded "more negative."[7]

Figure 9. Idaho Backcountry and Mountains
Credit: Image by Extremis from Pixabay

1.2 STATUS OF IDAHO'S AGRICULTURAL LAND – "THREATENED"

Section 1.1 cited some of the salient statistics about Idaho agriculture, which is a vital part of the state's economy. As a percentage of state GDP, Idaho's agricultural economy is fifth-largest among all states, with 17 percent of annual state sales generated by agriculture and the food & beverage processing.[8] The non-governmental organization (NGO) American Farmland Trust (AFT), a research and advocacy group, states that Idaho agriculture earned $7.6 billion

[7] JuPoll of 1,017 Idaho Likely Voters, conducted August 18-26, 2023 by Rasmussen Reports and NumbersUSA. Entire poll contained in Appendix D of this study.
[8] Op. cit. Footnote #5.

in cash receipts in 2017, including $114 million from local food and $2 billion from agricultural exports.[9]

Figure 10. Wheat Harvest in Idaho *Credit*: Jim Black from Pixabay

However, the future abundance of Idaho's agricultural land and the robust agricultural industry it enables are not assured. According to the AFT, which has been working to safeguard America's productive farmlands for four decades, while the agricultural land conversion threat faced by Idaho is low compared to other states, nevertheless, "**development threatens Idaho's agricultural land.**"[10]

Bearing out this less than upbeat assessment, the National Resources Inventory (NRI) of the U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS, formerly the Soil Conservation Service or SCS) indicates that Idaho had 16 percent less cropland in 2017 than it did in 1982.[11] **Table 5** shows changes in cropland acreage in Idaho, county-by-county, in five-year increments over the 35 years from 1982 to 2017. While a relative handful of counties (five) gained cropland acreage over that time period, 38 Idaho counties experienced a net loss of cropland acreage. Overall, the amount of cropland in Idaho dwindled from 6,432,600 acres to 5,423,300 acres, a net loss of over one million acres (16 percent).

[9] American Farmland Trust. 2020. The State of the States: Agricultural Land Conversion Highlight Summary – Idaho. 2 pp.
[10] Ibid.
[11] USDA Natural Resources Conservation Service, *2017 National Resources Inventory, Summary Report* (September 2020), Table 2.

Table 5. Idaho Cropland by County (thousands of acres), 1982-2017

County	1982	1987	1992	1997	2002	2007	2012	2017	Change 1982-2017	% change 1982-2017
Ada	100.3	101.5	88.4	76.2	58.6	56.7	60.2	61.5	-38.8	-37%
Adams	15.3	15.2	13.2	11.4	13.0	10.5	11.5	10.2	-5.1	-33%
Bannock	186.2	149.6	129.1	127.8	94.4	79.2	101.9	109.1	-77.1	-41%
Bear Lake	76.4	69.8	55.8	57.9	55.0	51.9	47.0	46.0	-30.4	-40%
Benewah	148.5	161.4	151.9	151.9	147.3	139.1	142.7	140.0	-8.5	-6%
Bingham	367.5	380.1	367.9	364.1	367.0	352.3	341.8	340.8	-26.7	-7%
Blaine	34.2	48.6	37.4	31.1	25.0	26.4	35.6	34.5	+0.3	+1%
Boise	4.7	2.4	0.0	0.0	2.8	2.8	2.8	2.8	-1.9	-40%
Bonner	47.2	44.5	43.5	48.2	43.0	36.2	41.4	40.1	-7.1	-15%
Bonneville	357.2	338.2	265.7	258.0	274.1	260.1	266.7	264.2	-93.0	-26%
Boundary	33.1	37.1	37.0	37.1	35.1	34.9	35.3	35.3	+2.2	+7%
Butte	70.2	71.9	57.6	67.8	55.9	63.5	61.9	60.1	-10.1	-14%
Camas	87.2	79.5	76.4	78.7	66.9	69.9	61.2	59.1	-28.1	-32%
Canyon	257.1	254.0	248.0	241.8	236.8	223.9	225.8	224.2	-32.9	-13%
Caribou	253.6	201.7	155.3	154.1	150.4	150.9	164.0	163.8	-89.8	-35%
Cassia	383.2	387.3	367.1	344.0	348.1	337.1	351.6	351.8	-31.4	-8%

County	1982	1987	1992	1997	2002	2007	2012	2017	Change 1982-2017	% change 1982-2017
Clark	57.5	49.9	44.1	43.6	40.4	42.9	38.2	38.8	-18.7	-33%
Clearwater	31.0	32.0	32.0	26.9	26.8	22.5	25.3	25.7	-5.3	-17%
Custer	67.8	62.6	58.1	49.6	54.3	52.2	50.3	47.1	-20.7	-31%
Elmore	153.6	141.4	113.2	110.6	131.2	142.4	134.7	134.7	-18.9	-12%
Franklin	128.2	115.8	95.0	94.1	90.9	88.4	87.3	93.0	-35.2	-27%
Fremont	175.0	166.0	153.7	162.5	159.3	152.4	154.0	154.0	-21.0	-12%
Gem	29.7	27.4	25.1	24.0	24.7	20.8	15.2	18.4	-11.3	-38%
Gooding	109.2	117.8	123.0	112.3	118.7	113.1	113.7	119.9	+10.7	+10%
Idaho	222.9	226.7	200.9	201.2	215.9	205.3	205.3	209.0	-13.9	-6%
Jefferson	226.1	217.0	212.0	217.5	216.5	215.9	214.4	214.8	-11.3	-5%
Jerome	167.0	174.5	176.6	176.5	183.1	183.7	178.6	175.4	+8.4	+5%
Kootenai	123.4	123.3	118.2	104.1	99.5	96.3	99.0	92.6	-30.8	-25%
Latah	262.2	260.9	234.8	204.0	194.2	189.3	188.2	215.6	-46.6	-18%
Lemhi	82.6	83.4	82.1	81.5	85.0	76.1	75.6	72.2	-10.4	-13%
Lewis	153.7	154.1	145.8	141.9	143.8	143.8	136.0	135.4	-18.3	-12%
Lincoln	86.8	85.9	93.2	84.1	79.9	78.0	79.3	82.7	-4.1	-5%
Madison	171.7	166.8	155.9	158.5	153.3	150.3	148.4	154.1	-17.6	-10%

County	1982	1987	1992	1997	2002	2007	2012	2017	Change 1982-2017	% change 1982-2017
Minidoka	200.8	203.7	205.5	206.4	215.3	210.5	209.0	207.9	+7.1	+4%
Nez Perce	241.5	240.2	236.2	238.4	241.3	238.4	239.2	241.1	-0.4	0%
Oneida	215.7	142.7	143.3	147.9	125.6	126.4	143.5	154.0	-61.7	-29%
Owyhee	122.2	131.3	110.8	111.4	122.0	104.2	104.8	108.5	-13.7	-11%
Payette	55.0	55.6	54.3	53.1	48.0	46.7	44.4	47.8	-7.2	-13%
Power	365.3	247.0	238.8	239.0	206.8	207.2	254.1	275.6	-89.7	-25%
Shoshone	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A	N/A
Teton	112.1	111.2	95.8	91.4	74.4	65.6	66.5	68.2	-43.9	-39%
Twin Falls	350.6	347.6	344.1	336.7	345.4	329.2	320.3	317.7	-32.9	-9%
Valley	3.5	4.9	6.1	6.1	2.5	2.0	2.0	2.0	-1.5	-43%
Washington	95.6	79.0	66.1	67.2	71.4	80.7	76.8	73.6	-22.0	-23%
Total	**6,432.6**	**6,111.5**	**5,659.0**	**5,540.6**	**5,443.6**	**5,279.7**	**5,355.5**	**5,423.3**	**-1,009.3**	**-16%**

Source: NRI 2017 (2020) – USDA NRCS

Non-federal pastureland, rangeland, and forestland (that is, lands not managed by the U.S. Forest Service or Bureau of Land Management) fared rather better than cropland in Idaho over these years, according to the NRI. Pastureland actually increased by over 167,000 acres – rising from 1,237,200 to 1,399,900 acres (13 percent) from 1982 to 2017. (A goodly share of this increase is likely from former cropland.) Non-federal rangeland barely changed at all, decreasing slightly from 6,830,100 acres in 1882 to 6,799,000 acres in 2017, a slight decline of 31,100 acres, or 0.4%. And the area in non-federal forestland also registered barely any change: from 4,045,000 acres in 1982 to 4,047,700 acres in 2017.[12]

Figure 11. Center Pivot Irrigation in Idaho. In 2017, 3.4 million acres of Idaho farmland were irrigated.[13] *Image*: USDA NRCS

The AFT has conducted detailed studies of agriculture in Idaho and other states throughout the country. In their 2020 *Farms Under Threat: The State of the States* report, AFT mapped agricultural land conversion (farmland lost to development) and evaluated policy responses of the various states. Their analysis identified the "extent, diversity, and quality of each state's agricultural land—and where this land has been converted to both urban and highly developed (UHD) and low-density residential (LDR) land uses."[14]

Overall, Idaho's "relative conversion threat" was rated "low" compared to other states. Idaho was ranked among those states least vulnerable to the loss ("conversion") of farmland to UHD and low density residential (LDR) uses. Perhaps because of this relatively low perceived threat

[12] Ibid.

[13] USDA. National Agricultural Statistics Service (NASS). 2017 Census of Agriculture – State Data (Idaho). Table 9 – Land in Farms, Harvested Cropland, and Irrigated Land by Size of Farm: 2017 and 2012. Available online at: https://www.nass.usda.gov/Publications/AgCensus/2017/Full_Report/Volume_1,_Chapter_1_State_Level/Idaho/st16_1_0009_0010.pdf.

[14] American Farmland Trust. 2020. *Farms Under Threat: The State of the States.* 68 pp. Available online at: https://farmlandinfo.org/wp-content/uploads/sites/2/2022/08/AFT_FUT_Abundant-Future-7_29_22-WEB.pdf.

level, Idaho's "relative policy response" was also rated as low (**Figure 12**), with the state receiving among the lowest scores for its policies and programs aimed at protecting farmland from development, promoting farm viability, and facilitating the transfer of agricultural land.[15]

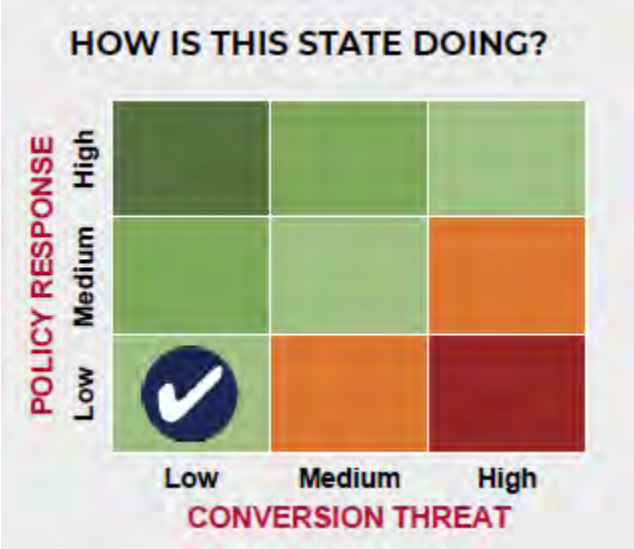


Figure 12. According to AFT, Idaho's farmland protection policy response is aligned with its conversion threat; both are rated as low

Source: American Farmland Trust

In spite of these "low" ratings compared to the threats facing farmland in other states, AFT still considers Idaho's farmland to be at serious risk of conversion, that is, of urban development. From 2001-2016, according to AFT, some 68,800 acres of agricultural land in the state were developed or otherwise compromised. This occurred in two ways:

- UHD land use, including commercial, industrial, and moderate-to-high-density residential development

- LDR land use, characterized by scattered large-lot development, e.g., minimum 5-acre lot size

LDR development fragments the agricultural land base and limits production, marketing, and management options for working farms and ranches that linger. LDR encroachment often facilitates further, much denser development. AFT estimates that farmland in LDR areas was 122 times more likely to be converted to UHD land use within 15 years than other farmland not located in LDR areas.[16] In other words, rather than LDR representing a long-term or ultimate land use, it is often the first step in a process or transition: the eventual development, conversion, and permanent loss of agricultural land.

[15] Ibid.
[16] Op. cit. Footnote #8. American Farmland Trust. 2020. The State of the States: Agricultural Land Conversion Highlight Summary – Idaho.

Figure 13, from AFT, is a map showing Idaho agricultural land lost to development in the 15 years from 2001 to 2016.

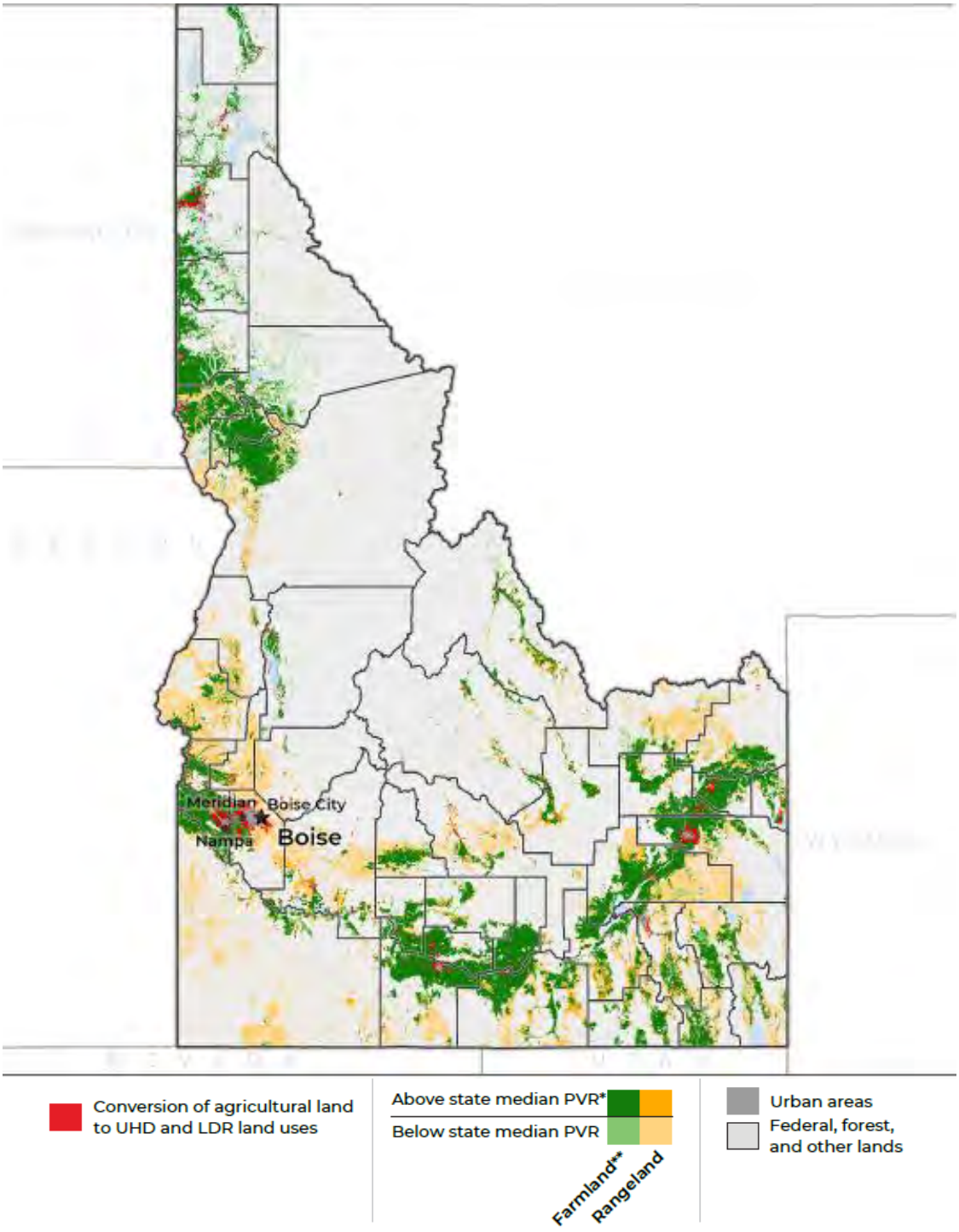


Figure 13. Agricultural Land Conversion in Idaho, 2001-2016
Source: American Farmland Trust; see Footnote #7

In the 15 years between 2001 and 2016 alone, AFT estimates that 68,800 acres, 108 square miles) of farmland in Idaho were converted (lost) to urbanization. This included 38,500 acres of cropland, 14,700 acres of pastureland, 12,600 acres of rangeland, and 3,000 acres of woodland. 45 percent (31,100 acres) of this conversion was to UHD and 55 percent (37,700 acres) was to LDR land uses.[17]

Figure 14. Multi-generational Idaho rancher Laurin Scarcello gazes out across the Rathdrum Prairie, a rapidly developing area north of Coeur d'Alene

And what of the future? AFT has also peered into the crystal ball and prepared a range of future scenarios for Idaho (and other states) for the year 2040. The AFT report *Farms Under Threat 2040: Choosing an Abundant Future* postulated three development scenarios between 2016 and 2040. If recent trends were to continue ("business as usual") 113,100 additional acres of Idaho agricultural land would become urbanized or fragmented between 2016 and 2040, i.e., converted to uses that eliminate or compromise agriculture.[18]

[17] Op. cit. Note #7.
[18] American Farmland Trust. 2022. 2040 Future Scenarios: Idaho. Available online at: http://development2040.farmland.org/.

Eighty-three percent of this conversion would occur on Idaho's best agricultural land, and would be associated with the loss of 700 farms, $72 million in farm output, and approximately 1,500 agriculture-related jobs. Ada, Canyon, and Kootenai counties would undergo the heaviest losses. However, if Idaho policies were to encourage compact development to minimize urban sprawl, under what AFT calls the "better built cities" scenario, farmland conversion could be limited to an estimated 64,800 acres, which is 81,500 acres less than the 146,300 acres that would be converted under the "runaway sprawl" scenario.[19]

Figure 15. New (2023) residential development in Kootenai County

As this study will demonstrate, Idaho farmlands and agriculture will continue to be faced with tremendous development pressure from demographic forces as long as the state's rapid population growth continues.

Idahoans are very concerned about preserving productive farmland, as revealed by their responses to one question in particular in the recent August 2023 public survey conducted for this study by Rasmussen Reports.[20]

[19] Ibid.

[20] Op. cit. Footnote #6. See also Appendix D of this report for full survey.

Government data show that the United States now has about one-third less cropland for each American than it did 30 years ago. How important is it to protect U.S. farmland from development so the United States is able to produce enough food to feed Americans in the future?

81% very important
14% somewhat important
3% not very important
0% not at all important
2% not sure

More than nine in ten respondents (95%) thought it is "very important" (81%) or "somewhat important" (14%) to protect U.S. farmland from development, compared to 3% who thought it is "not very important" and zero percent who responded that it is "not at all important."

If anything, Idahoans are even more concerned about protecting farmland from development than Americans as a whole are, judging by the results of a scientific public opinion survey conducted in 2020 for NumbersUSA.[21] In the U.S. poll of 1,500 likely American voters, 62% chose the most passionate response of "very important" to protect farmland, compared to 81% of Idahoans who answered the same in the 2023 poll.

(U.S. poll) How important is it to protect farmland from development so the United States is able to produce enough food to completely feed its own population in the future?

62% Very important
27% Somewhat important
6% Not very important
1% Not important at all
3% Not sure

Figure 16. Idahoans want to protect their farmland

Credit: NRCS photo of farming equipment in Idaho

[21] National Survey of 1,500 Likely Voters conducted for NumbersUSA by Pulse Opinion Research on May 25-27, 2020. See Appendix E of this report.

1.3 IDAHO'S AQUIFERS – INVALUABLE ICE AGE LEGACY

In Idaho, approximately 3.4 million acres of farmland are irrigated, and irrigation is crucial to food production in the state. Cities and towns, like all human settlements, of course, are also absolutely dependent upon adequate supplies of clean freshwater. In Idaho, as in most places, these vital sources of water are both surface (lakes, rivers, streams) and groundwater (aquifers) in origin. An aquifer is an underground "reservoir" of water contained in one or more layers or strata of permeable rock or unconsolidated materials. Groundwater from aquifers can then be pumped from water wells and distributed for use on farms, in factories, and across municipalities, whether to cook food, take a bath, or irrigate exterior landscaping.

In sum, the term aquifer refers to "an economically useful and retrievable source of groundwater."[22] Aquifers are generally characterized by and often named for the rock formations and/or unconsolidated sediments that hold the groundwater. Aquifers can either be *confined* – bordered by a stratum of low-permeability rock or clay above (an "aquitard") – or *unconfined*, without a low-permeability layer above.

Three of Idaho's aquifers – the Eastern Snake River Plain, Spokane Valley-Rathdrum Prairie, and Lewiston Basin – are classified by the Environmental Protection Agency (EPA) as sole source aquifers. That is, these aquifers are the only or principal source of drinking water for the hundreds of thousands of residents in those regions. This section focuses on the 370-square mile Spokane Valley-Rathdrum Prairie Aquifer (**Figure 17**), located in one of the fastest-growing areas of Idaho, the panhandle region north of Coeur d'Alene. The threats the Spokane Valley-Rathdrum Prairie (SVRP) faces from this growth exemplify the tradeoffs that rapid population growth imposes on a region.[23]

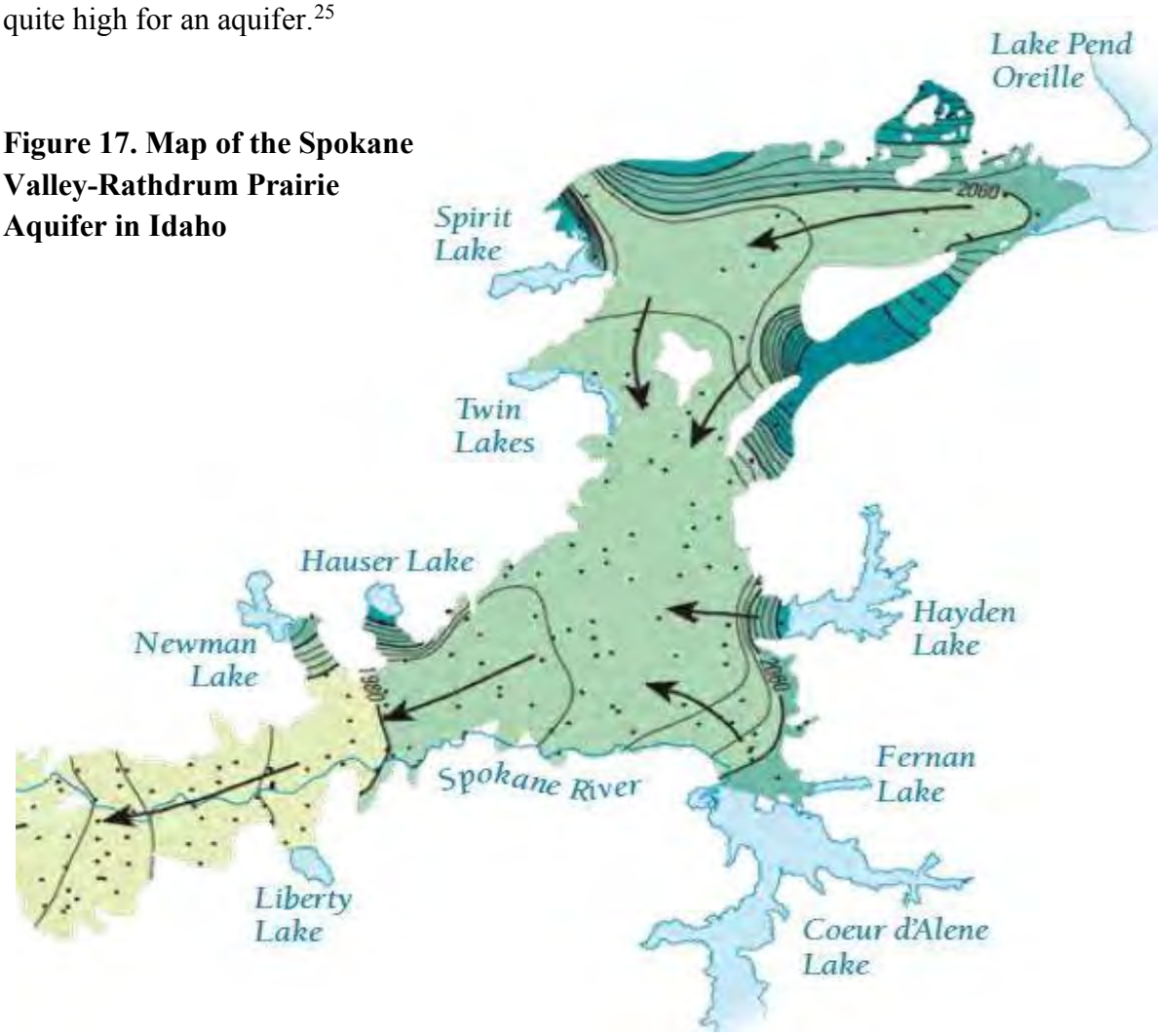
The SVRP is an unconsolidated aquifer, composed of sediments left behind by long-ago flooding associated with a Pleistocene Epoch (Ice Age) glacial lake known as Glacial Lake Missoula. These sands, gravels, cobbles, and boulders can hold immense volumes of groundwater in the spaces between them. However, the SVRP Aquifer is also vulnerable to pollution: no continuous layers of clay or silt are found across the SVRP Aquifer to prevent toxins and contaminants from the ground surface from infiltrating down into the aquifer.[24]

The elevation of groundwater in the northern Rathdrum Prairie is about 2,110 feet above sea level and approximately 1,550 feet near Lake Spokane. Thus, groundwater in the SVRP Aquifer flows from the northern Rathdrum Prairie area southward to Coeur d'Alene–Post Falls, then westward, toward and into Washington. All water in the SVRP eventually drains into the

[22] Spokane Valley-Rathdrum Prairie Atlas, Fifth Edition. 2023.
[23] Ibid.
[24] Ibid.

Spokane and Little Spokane Rivers that flow into Lake Spokane. Because of the highly permeable character of the aquifer, flow velocities can attain about 50 feet per day, which is quite high for an aquifer.[25]

Figure 17. Map of the Spokane Valley-Rathdrum Prairie Aquifer in Idaho



Precipitation (rain and snow) falling onto the ground surface above the SVRP Aquifer infiltrates and recharges the aquifer. ("Infiltration" in the context of groundwater is the downward flow of moisture through a porous medium.) Little precipitation that falls onto impermeable bedrock areas infiltrates directly; instead, water moves laterally, eventually uniting with other waters in the drainage basin (watershed) to form small streams. These in turn flow downhill and eventually discharge onto permeable soils above the aquifer, where they quickly infiltrate downward toward the water table. Some SVRP Aquifer watersheds have lakes that recharge the aquifer either through seepage from their bottom or overflow to streams that discharge onto the land surface above the aquifer.[26]

[25] Ibid.
[26] Ibid.

Low annual rainfall and rocky soils initially deterred the development of agriculture above the SVRP Aquifer. But by 1905, the newly discovered aquifer began to be pumped to provide irrigation water for apple orchards. With newly built railroads providing transport of the apple crop to distant markets, by 1922, there were more than 1.6 million apple trees in the Spokane Valley. The main road connecting Spokane and Coeur d'Alene was named the Apple Way (or Appleway) because of mile after mile of apple trees (**Figure 18**).[27]

Figure 18. A century ago water from the SVRP Aquifer supported a large commercial apple industry

The apple boom didn't last, however. As early as 1925, farmers began to remove their orchards due to a variety of problems, including disease, insect outbreaks, low prices, ill-timed freezes, and tough competition from the Wenatchee and Yakima valleys in Washington, where the better climate and nearby rivers for irrigation facilitated commercial apple production. For a while, truck farms cultivating fruits and vegetables took the place of commercial apple orchards above the SVRP Aquifer, but these two proved ephemeral. At present, persisting large-scale agriculture is located on the Rathdrum Prairie portion of the aquifer, producing livestock crops such as grain, hay, and pasture for grazing; in the Spokane Valley, most commercial farming today is in greenhouses. Large agricultural sprinklers, such as center pivot

[27] Ibid.

sprinklers, appeared in the late 20th century, allowing water to be sprayed downward to reduce evaporative losses before reaching the ground and the crop. [28]

Figure 19. Cattle grazing on the Rathdrum Prairie

In the meantime, nearby virgin stands of coniferous forests enabled the emergence of a forest products industry, starting with pulp and paper and the manufacture of matches. The forest products industry continues to be an important part of the regional economy today in northern Idaho (**Figure 20**). Gravel mining and cement-making were also developing into important industries locally. Back in the 1940s, cheap electricity from newly constructed Grand Coulee Dam on the Columbia River encouraged the development of manufacturing, which replaced even more agriculture above the SVRP Aquifer. These new natural resource-based enterprises – dependent on extraction of raw materials (both renewable and non-renewable natural resources) attracted people to the region as the economy grew, and after World War II, a population boom in the 1950s triggered substantial residential development, supplanting even more agriculture, especially in the Spokane Valley.[29]

[28] Ibid.
[29] Ibid.

Figure 20. Large lumber yard with tall stacks of tree trunks in the Rathdrum Prairie

In the 21st century, steady, rapid population growth in the counties over the SVRP Aquifer (**Figure 21**) has been reflected in rapid development, residential expansion, and conversion from rural to urban and suburban land uses. Kootenai County alone has more than doubled in population size since 1990. (Eighty-eight percent of the county's population depends on water from the SVRP Aquifer.) This growth and development is replacing agricultural water use (primarily irrigation) with domestic and municipal water use. The SVRP Aquifer is now used mostly for municipal purposes: indoor water uses such as cooking and cleaning, and exterior residential and commercial landscapes. As the *Spokane Valley – Rathdrum Plain Aquifer Atlas* notes: **"More people = more water use."**[30]

Just as human demands on the SVRP Aquifer are increasing, a changing climate is also putting pressure on the aquifer by creating earlier springs and drier summers. Higher temperatures for longer periods lead to more evaporation; increased evaporation results in more intensive storms and faster melt of the snowpack; this in turn means less water infiltrating into soil and the

[30] Ibid.

aquifer; finally, less soil moisture leads to an increase in summer water use, as well as more drought and wildland fires.[31]

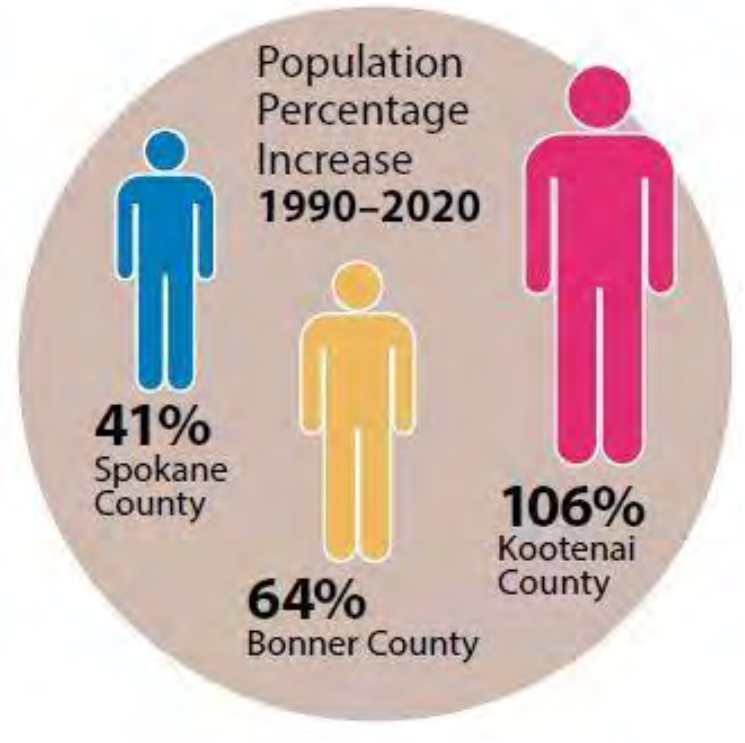


Figure 21. Population Growth in SVRP Aquifer Counties, 1990-2020
Source: SVRP Aquifer Atlas

Projected future population growth in the SVRP Aquifer counties will increase the number of water consumers. At what point the increasing population will begin to overdraft and draw down the aquifer is uncertain. At the same time, what is certain is that increasing land development, impervious surfaces (pavement and roofs), and human and industrial activities will expose this unconfined aquifer to an increasing amount and variety of pollutants.

One of those pollutants is chlor*ide*, which is the negatively-charged ion of the element chlor*ine.* Chlorine is purposely injected into drinking water to kill parasites, bacteria, and viruses (via the process of chlorination). Chlor*ide,* on the other hand, in high enough concentrations, is harmful to aquifers and other water supplies because it is toxic to fish, amphibians, and aquatic macroinvertebrates, as well as aquatic plants.

Some chlor*ide* enters groundwater naturally when dissolved from soils and rocks. But chloride generally becomes a problem with the addition from anthropogenic (human) sources derived from wastewater (human sewage and other wastes), septic drain fields, leaking landfills, industrial waste, fertilizer and deicer.[32]

[31] Ibid.
[32] Ibid.

Deicer is one of the biggest human sources of chloride in the form of salt used every winter on sidewalks, roads, and parking lots. Hundreds of pounds of salt are sprinkled for every mile of roads to make them safer for driving when it is snowy and icy. (Road salt, or sodium chloride [NaCl], works by reducing the freezing point of water, causing ice to melt even when the air temperature is below water's normal freezing point of 32 degrees Fahrenheit.) Once dissolved in water, chloride is carried easily down through the ground to the water table and into the aquifer, where it can disperse and spread. As noted above, because the SPRP Aquifer is unconfined, unprotected from above by an impenetrable aquitard, chloride and other pollutants can readily reach and contaminate it.

Since the mid-1990s, concentrations of chloride in the SVRP Aquifer have increased slightly, typically in areas with higher populations. The lowest concentrations in the SVRP Aquifer are less than 1 milligram per liter (mg/L, or parts per million) and the highest levels have been found to be near 30 mg/L, which is still significantly below the drinking water standard of 250 mg/L. Still, the observed trend of increasing chloride concentrations in the SVRP Aquifer is disquieting.[33]

Other groundwater pollutants of concern in the SVRP Aquifer include the element (and important plant nutrient) phosphorus and such emerging contaminants as poly alkyl fluorinated alkanes (PFAS) microplastics; pharmaceuticals/personal care products (PPCPs); Polybrominated Diphenyl Ethers (PBDEs), which are used in flame retardants in a wide variety of furniture, upholstery, and electrical equipment; Polybrominated Biphenyls (PBBs), which are no longer manufactured in the US but served similar flame retardant functions as PBDEs; and Polychlorinated Biphenyls (PCBs), a group of persistent organic pollutants.

U.S. production of PCBs was banned in 1979, but their impact continues even today in many places because of their stubborn persistence in the environment. (Naturally-occurring physical, chemical, and biological processes do not readily break down or decompose the chemical bonds of these man-made organic compounds.) Their most common use was in electrical equipment, especially transformers. Legacy PCBs are also found in a variety of other products, including oil-based paints, oil used in motors and hydraulic systems adhesives, tapes, carbonless copy paper, floor finish, and fluorescent light ballasts. Persistent PCBs in lakes and rivers bioaccumulate and biomagnify in the aquatic food chain. In some cases they can reach sufficiently high concentrations that they pose significant health risks to both humans and wildlife such as fish and the birds that each fish, such as eagles and ospreys. The health risk extends to those humans who eat fish as well. Human populations – Asian Pacific Islanders, Native American tribes, and recreational fishers, for example – who consume large amounts of fish in their diet are especially at greater risk of adverse health effects.[34]

[33] Ibid.
[34] Ibid.

While phosphorus (P) is an important macronutrient in plant growth, excessive P in aquatic environments can trigger overabundant algae (phytoplankton) and aquatic plant growth (sometimes called algal blooms), clogging surface water bodies, causing unsightly conditions and bad odors. When these aquatic plants die en masse, their decomposition depletes dissolved oxygen and endangers the health of fish populations. (Like all vertebrates, fish require oxygen, but are able to obtain it from water via their gills.) "Anoxic" or "hypoxic" (oxygen-deleted) waters are a major cause of fish kills around the world. Efforts to reduce pollution (P) since the 1970s have led to reductions of P in household products like laundry and dishwater detergent and turf fertilizer. Minimizing the P in these common products helps protect groundwater and surface water and the creatures that live in or depend on the latter.[35]

Other potential anthropogenic sources of polluted groundwater in the SVRP Aquifer include stormwater and human sewage from the growing number of residents. Stormwater runoff is a type of "nonpoint source" water pollution. During and after storm events, rain turned to runoff surges into storm drains and streams from areas of pavement and slopes stripped of their protective vegetative cover. Stormwater can carry pet waste; dirt and sand (suspended sediments); herbicides, insecticides, and fertilizers; pool chemicals; paint; trash; leaves and grass clippings; motor oil and grease; asbestos from vehicle brake linings; toxic particles from tires; among other substances and chemicals. Engineered swales can help filter out and reduce the amounts of pollutants reaching surface and ground waters.[36]

The SVRP region's wastewater management strategies and capabilities have evolved over the past century as recognition grew, along with the increasing population, of the need for newer measures to protect water quality in the SVRP Aquifer and the Spokane River. Like most places, outhouses were used originally, sometimes located even right above streams, the better to quickly remove fecal matter out of sight, out of smell, and out of mind. This practice was common even in cities, which eventually installed underground pipes systems to convey wastewater and stormwater from residences directly to the river.

Rural areas without access to city sewers and wastewater treatment used septic systems, which allow for some treatment of household wastewater as it percolates through the ground. Even today, many rural areas continue to use septic systems to dispose of domestic wastewater; when properly built and maintained, these systems can be safe and efficient.

However, as population density increases, septic systems can no longer protect the SVRP Aquifer from nutrient pollution (e.g., nitrogen, phosphorus). Thus, over time, municipalities have constructed sewage systems and wastewater treatment facilities to clean and dispose of wastewater (**Figure 22**).

[35] Ibid.
[36] Ibid.

Wastewater (sewage) treatment facilities (**Figure 23**) have three basic levels: primary, secondary, and tertiary, increasing in treatment efficacy and cost. In **primary** treatment, the largest solids settle out of the waste stream while oils and grease float to the top, similar to a septic tank. Solids are removed and processed in a digester and further dewatered before reuse or disposal. **Secondary** treatment utilizes biological processes to remove organic materials from the water. **Tertiary** treatment is a more state-of-the-art and costlier technology which uses microscopic filtration to remove tinier particles, and whose final step disinfects water to remove viruses and bacteria before discharging it to the environment. Facilities in the region (and around the country) are still implementing tertiary treatment. The Coeur d'Alene wastewater treatment facility has tertiary treatment, which helps maintain the water quality of Lake Coeur d'Alene itself (**Figure 24**).

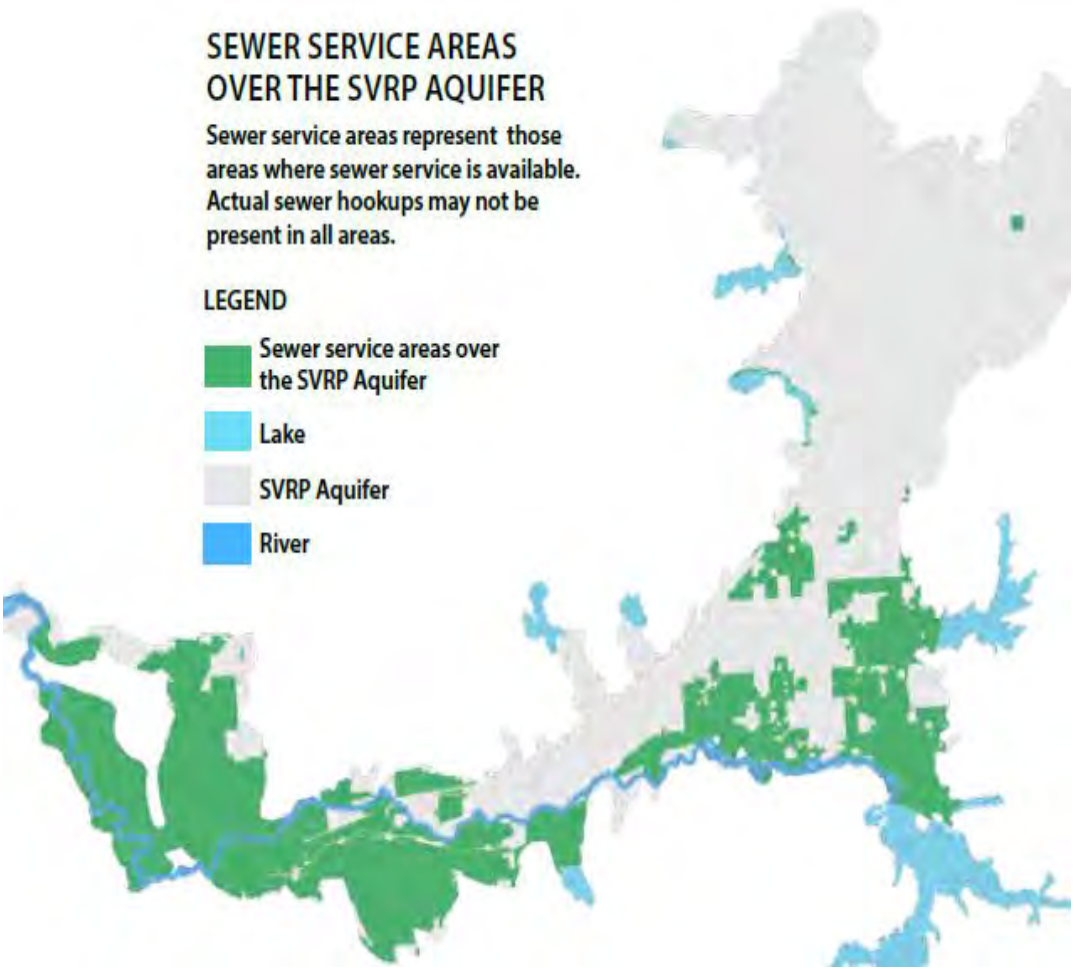


Figure 22. Coverage of SVRP Aquifer by Sewage Collection and Treatment

Figure 23. Sign at Coeur d'Alene Advanced Wastewater Treatment Facility, which includes Tertiary Treatment

Figure 24. Advanced wastewater treatment helps maintain high water quality in Lake Coeur d'Alene, in which it is safe to swim, even in the city proper

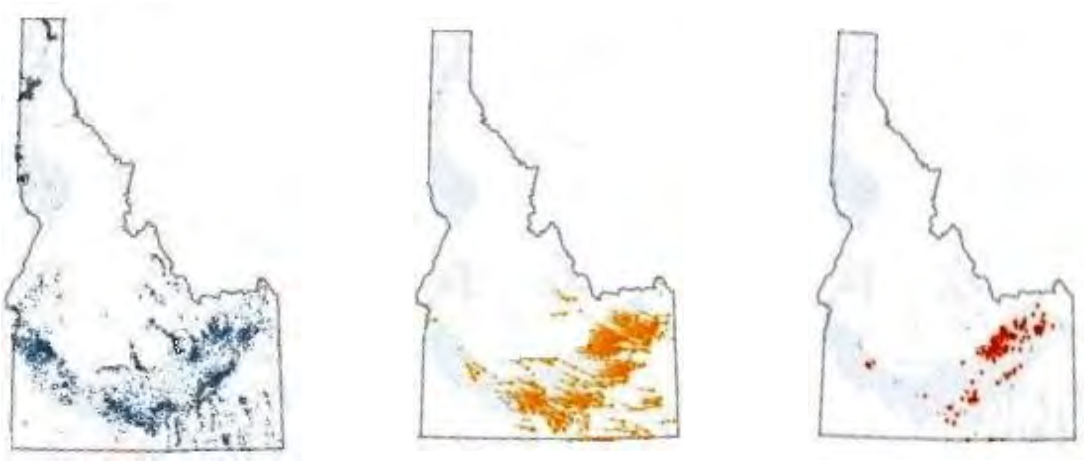
In sum, while the SVRP Aquifer is still healthy today in spite of the population growth and development that have occurred over the past century and more, as the 21st century proceeds, increasing human numbers and a changing climate are likely to place it under greater and greater stress. A century from now, or perhaps much sooner, whether or not it can continue to meet human and ecological needs for clean water in the region is an open question.

To conclude this section on vulnerable groundwater resources, let us step back for a moment to consider not just Idaho in general but the United States as a whole, courtesy of a recent study conducted by and reported in *The New York Times*. After crisscrossing the United States for half a year, examining data from more than 84,000 groundwater monitoring wells, and consulting with more than 100 experts on the nation's groundwater resources and their management and depletion, the *Times* authors concluded that:

> "A wealth of underground water helped create America, its vast cities and bountiful farmland. Now, Americans are squandering that inheritance.
>
> "America's life-giving [groundwater] resource is being exhausted in much of the country, and in many cases it won't come back. Huge industrial farms and sprawling cities are draining aquifers that could take centuries or millenniums to replenish themselves if they recover at all."[37]

Water levels at nearly half of the 84,544 groundwater monitoring wells included in the nationwide database the authors developed have declined "significantly" over the last 40 years, due to pumping rates exceeding replenishment rates. In the past decade, four out of every 10 wells reached all-time lows, and 2022 was the worst of all. As one groundwater expert, Warigia Bowman at the University of Tulsa, told *The Times*, "From an objective standpoint, this is a crisis. There will be parts of the U.S. that run out of drinking water."

Maps from the NYT study featuring Idaho are shown in **Figure 25**.



All wells | **Wells with falling water levels since 1980** | **Wells with record low water levels in last decade**

Figure 25. Location of Idaho sites included in the NYT national database of 84,544 groundwater monitoring wells

Judging from the results of our 2023 public opinion poll of Idahoans for this report, conducted by Rasmussen, state residents and likely voters are well aware of the importance of their water resource, and particularly their aquifers and groundwater.[38] Two of the questions focused on water resources and aquifers.

[37] Mira Rojanasakul, Christopher Flavelle, Blacki Migliozzi and Eli Murray. 2023. America Is Using Up Its Groundwater Like There's No Tomorrow. *The New York Times*.
[38] Op. cit. Footnote #6. See also Appendix D of this report for full survey.

In Idaho, approximately 3.3 million acres of farmland are irrigated, and irrigation is crucial to food production in the state. Cities and towns compete for scarce water with agriculture. Should water used to irrigate farmland be diverted to support additional human population growth in Idaho?

12% water should be diverted from agriculture to support more residents
73% water should not be diverted from agriculture to support more residents
14% not sure

Nearly three-quarters (73%) of respondents did not believe that water used for irrigation in agriculture should be diverted to cities and towns (municipal and residential uses) merely to support a higher population ("more residents"), while only 12% did.

Three of Idaho's aquifers are classified as sole source aquifers. These aquifers are the only or principal source of drinking water for residents in those regions. How important is it to protect Idaho's sole-source aquifers from over-pumping and depletion?

79% very important
16% somewhat important
2% not very important
1% not at all important
2% not sure

Fully 95% thought it was "very important" (79%) or "somewhat important" (16%) to protect Idaho's aquifers from overdraft (over-pumping and depletion).

Figure 26. Idahoans have a great appreciation for their water resources

1.4 IDAHO WILDS

As noted in the introduction, Idaho is justly celebrated for its wilds. The state boasts 15 federal wilderness areas designated by Congress, areas that are "forever" set aside from development and resource exploitation and extraction – while in most cases being open to public hunting and fishing and other forms of dispersed, self-propelled, consumptive and non-consumptive outdoor recreation (e.g., hiking, camping, backpacking, rafting, kayaking). Overall, there are about 32 million acres (50,000 square miles) of federally-owned public lands in Idaho, comprising more than 60 percent of the state. That includes lands managed by the main federal land management agencies: the U.S. Forest Service (USFS) in the Department of Agriculture, the Bureau of Land Management (BLM), National Park Service (NPS), and U.S. Fish and Wildlife Service (UWFWS) in the Department of the Interior, and the Department of Defense (DoD).

The 2.4-million acre Frank Church-River of No Return Wilderness (**Figure 27**), for example, is a region of steep, rugged mountains, deep gorges, and whitewater rivers in Central Idaho. The massive Salmon River Mountains dominate the Wilderness. North of the Main Salmon River (**Figure 28**) – a tributary of the Snake River, which itself is tributary to the mighty Columbia River – are the Clearwater Mountains; east of the Middle Fork are the Bighorn Crags.

Figure 27. Frank Church-River of No Return Wilderness (Salmon-Challis National Forest)
Courtesy: U.S. Forest Service

The Salmon River Canyon is the second-deepest in North America (after only Hells Canyon on the Snake River), deeper even than the Grand Canyon in Arizona. Congress designated the Frank Church-River of No Return Wilderness in 1980. It is the largest contiguous congressionally-designated wilderness area in the Lower 48 and the second largest unit of the National Wilderness Preservation System in the Lower 48 after California's Death Valley Wilderness.[39]

Figure 28. Salmon River and the Sawtooth Mountains
Credit: Fredlyfish4 at Wikipedia Commons

These wild habitats provide homes and sanctuaries for beleaguered wild creatures that have been eliminated or imperiled by human activities and development in more heavily populated parts of the United States. The grizzly bear (*Ursus arctos*) (**Figure 29**), for instance, was once found throughout most of the American West. But it was *extirpated* (driven extinct in given locales) over almost all of its native range by the late 1800s and early 1900s. Grizzlies historically lived in every part of Idaho, but today they are only found in northern Idaho (e.g., the Selkirk Range that extends northward into British Columbia, Canada) and eastern Idaho in and near Yellowstone

[39] U.S. Forest Service, Salmon-Challis National Forest. Frank Church River of No Return Wilderness. Available online at: https://www.fs.usda.gov/detail/scnf/specialplaces/?cid=stelprdb5360033.

National Park (**Figure 30**). Grizzly bear populations are all listed as threatened by the USFWS. The best habitat for grizzlies is forest mixed with meadows and grasslands.[40]

Figure 29. Grizzly Bear (*Ursus arctos*) in Yellowstone National Park
Courtesy: U.S. Fish and Wildlife Service

Grizzly bears are omnivores, eating both meat and plant material. In Idaho, and the Northern Rockies generally, they have an extremely diverse diet. Among other things, they consume whitebark pine nuts and army cutworm moths. They have been known to eat as many as 40,000 moths in a day and can gain up to 30 pounds each week eating these insects, which are high in fat.

To find food and survive, grizzly bears rely on very acute senses. They see about as well as humans do and like us, they have color vision. A grizzly's sense of hearing is good, but by far its most important sense is olfactory, its sense of smell. It is estimated that a grizzly's nose is about 1,000 times better than a human's nose. Bears remember places and the location of food sources by their smells.

[40] Idaho Fish and Game. 2023. Grizzly Bear Conservation and Management. Available online at: https://idfg.idaho.gov/conservation/grizzly-bears#:~:text=Grizzly%20bears%20historically%20lived%20in,and%20grasslands%20mixed%20within%20it.

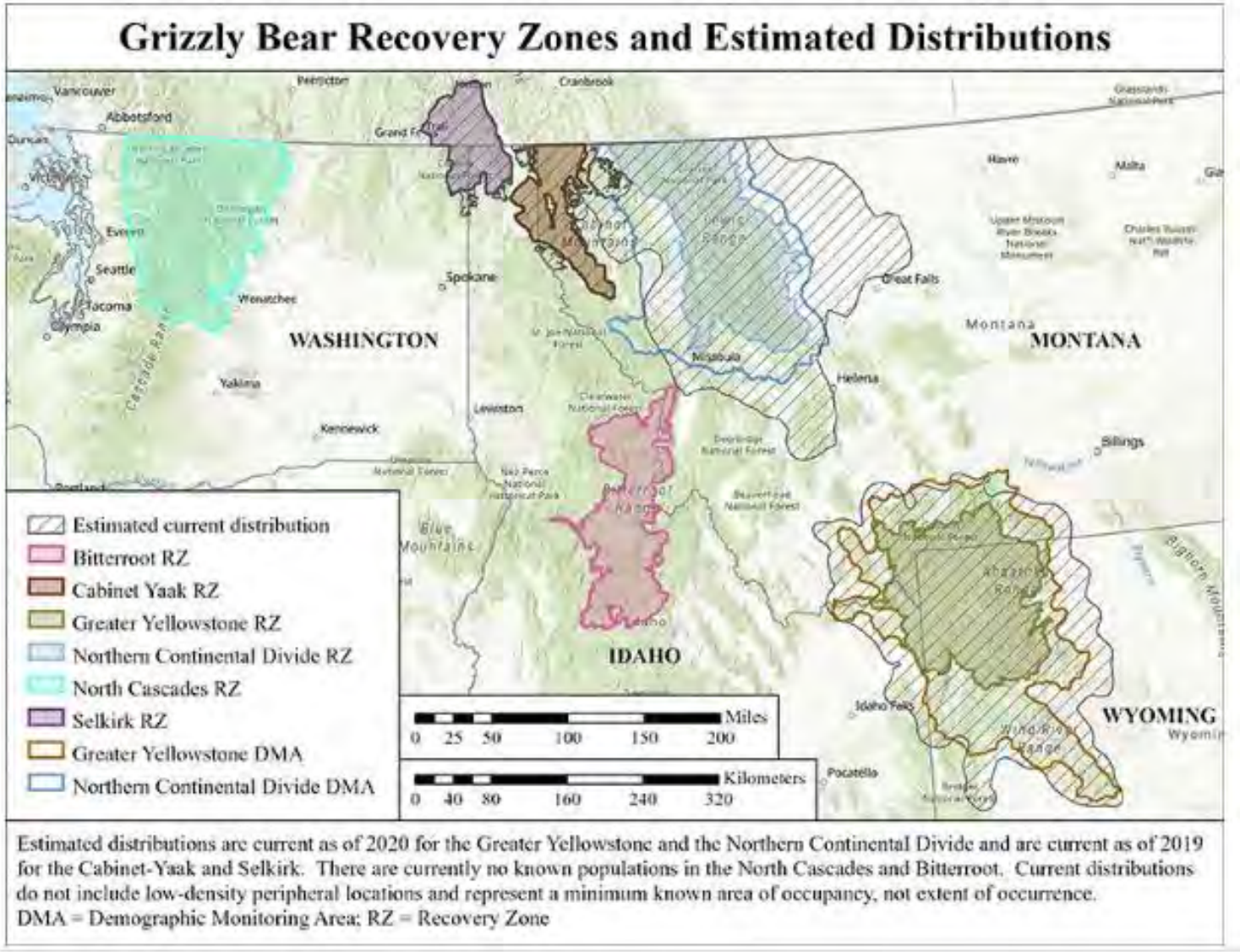


Figure 30. Grizzly Bear Locations and Status in Idaho & Neighboring States
Source: Idaho Fish and Game

Grizzly bear fur varies from blond to black in color. They have a large hump made of powerful muscle on their back, between their shoulders, which distinguishes them from black bears. (Their head is also shaped differently than black bears', in addition to generally being larger.) An adult grizzly's front claws range from 2-4 inches in length, are light colored and slightly curved. Adults can weigh between 200 to 600 pounds and are three and a half to four feet high at the shoulder and six to seven feet when standing on their hind feet.[41]

Other large denizens of the wilds in Idaho include the aforementioned black bears, coyotes, timber wolves, Canada lynx, wolverines (**Figure 31**), mountain lions, river otters, mountain goats, mountain sheep, Rocky Mountain elk, woodland caribou, pronghorn antelope, and moose.

Figure 31. Wolverine (*Gulo gulo*), a member of the weasel family (Mustelidae)
Courtesy: Idaho Fish and Game

All of these wildlife species and others not listed depend on wild habitats that furnish food, water, and shelter. Some of them, such as the wolverine and grizzly bear, also depend on a minimum of human disturbance and either do not thrive in the presence of high human population densities and concomitant development and heavy-handed activities, including noise; or their sometimes aggressive or unpredictable behaviors may clash with human expectations and public safety.

[41] Ibid.

Idaho's wilderness, wild lakes and rivers, gorgeous natural scenery, mountains, wildlife, game, and fish all attract outdoor recreationists participating in both "consumptive" (e.g., sport fishing, trapping, and hunting) and "non-consumptive" recreation (e.g., camping, wildlife observation, hiking, mountain-biking, snowmobiling, off-roading). The fact that about 70 percent of Idaho is in public ownership (**Figure 32**) facilitates outdoor recreation by the public on these lands.

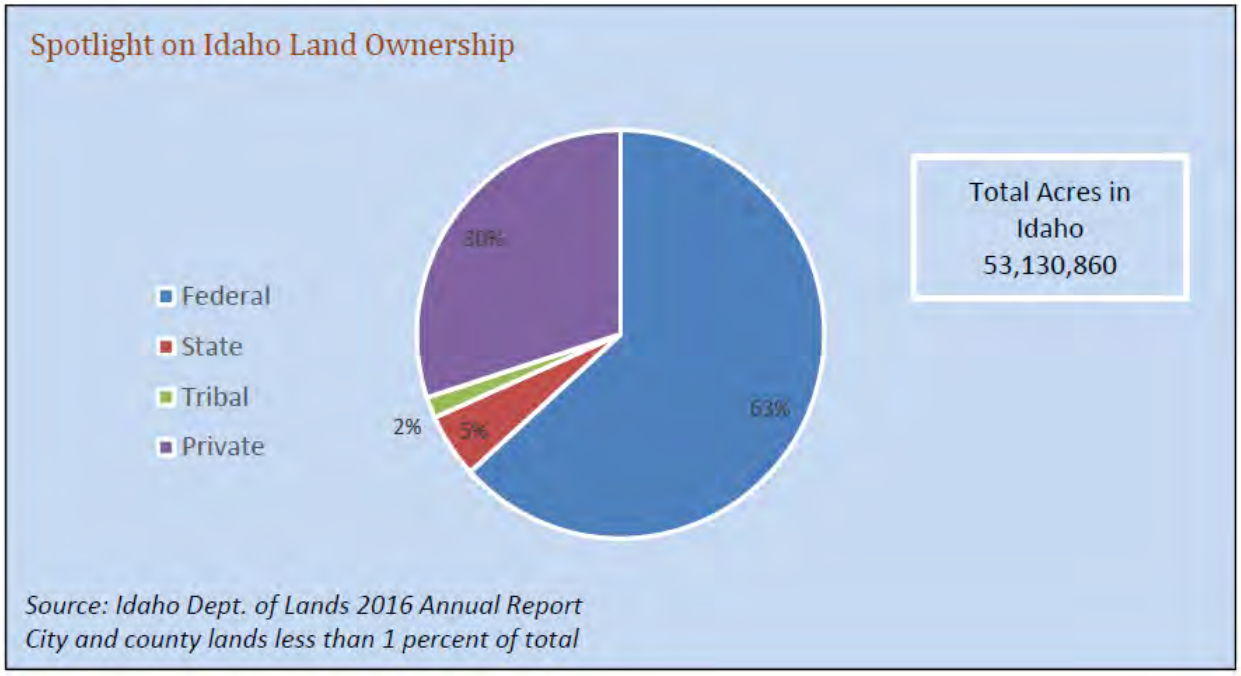


Figure 32. Land Ownership in Idaho
Source: Idaho Department of Parks & Recreation

In 2016 alone, BLM lands alone in Idaho attracted 5.7 million visitors, many of them participating in outdoor recreation activities such as hiking (**Figure 33**), backpacking, sport fishing, hunting, off-road vehicle (ORV) riding (**Figure 34**), mountain biking, horseback riding, and boating. All of these activities generate economic activity. Overall, the Idaho Department of Parks & Recreation has estimated that outdoor recreation in the state generates $7.8 billion in annual spending, creating 78,000 direct jobs, $2.3 billion in wages and salaries, and $447 million in state and local tax revenues.[42]

With the projected population growth both in Idaho (from 1.9 million in 2023 to a projected 2.7 million by 2060) and surrounding states and the country as a whole, increasing pressures on Idaho's wildlands are to be expected, both from increasing recreational demand itself, and demands for natural resource commodities (forest products, minerals, etc.) from those lands in public ownership. Opportunities for solitude in Idaho's wilds will decrease accordingly.

[42] Idaho Department of Parks & Recreation. Idaho Statewide Comprehensive Outdoor Recreation Plan, 2018-2022.

Figure 33. Hikers on a Mountain Trail in a Coniferous Forest in Idaho

Figure 34. ORV Riding in Idaho
Source: Idaho Department of Parks & Recreation

2. SEEING THE FOREST AS WELL AS THE TREES: IDAHO IN THE LARGER CONTEXT

2.1 A SPECIAL SILVER ANNIVERSARY

2021 marked a number of anniversaries and near-anniversaries in the annals of political and scholarly endeavors to understand and oppose human population growth's increasing encroachment on the environment. It marked two decades since NumbersUSA began our long-running series of national, regional, and state-level studies investigating the role of our nation's persistent population growth in accelerating urban sprawl. It also marked approximately a half-century since the founding of Earth Day, when the population growth factor as a force multiplier of environmental impacts was virtually unchallenged – widely accepted by politicians, environmentalists, and scientists alike.

2021 also marked the quarter-century or silver anniversary of the last high-profile, official government recognition that halting U.S. population growth (achieving population stabilization) needs to be an integral part of any successful policy to safeguard and sustain America's environment and natural resources. The year 1996 is when the Clinton White House released the findings of the Population and Consumption Task Force, part of the efforts of the President's Council on Sustainable Development (PCSD).[43]

President Bill Clinton established the PCSD early (1993) in his first term because he was inspired by the U.N. Conference on Environment and Development[44] held in Rio de Janeiro, Brazil in June 1992, when Clinton was still a candidate. Dubbed the "Earth Summit," this landmark gathering was attended by 38,000 people, including, famously, the leaders of 130 countries (among them then-U.S. President George H.W. Bush) – more heads of state than any prior event in world history (**Figure 35**).

The Earth Summit and the earlier (1987) Brundtland Commission[45] popularized the concept of "sustainable development," which was defined as meeting the needs of the present without compromising the ability of the future to meet its own needs. In other words, it was

[43] President's Council on Sustainable Development, Task Force on Population and Consumption. 1996. Available online at: https://clintonwhitehouse2.archives.gov/PCSD/Publications/TF_Reports/pop-toc.html.

[44] United Nations Conference on Environment and Development, Rio de Janeiro, Brazil, 3-14 June 1992. See https://www.un.org/en/conferences/environment/rio1992.

[45] World Commission on Environment and Development (Brundtland Commission). 1987. *Our Common Future*. The Brundtland Commission was named for its chairwoman, Gro Harlem Brundtland, Prime Minister of Norway (1981, 1986-89, and 1990-96), and later Director-General of the World Health Organization, 1998-2003.

unacceptable for our current generation to mindlessly deplete natural resources and pollute the planet in the here-and-now, while thoughtlessly leaving future generations to fend for themselves on a depleted, polluted planet.

Figure 35. United Nations Conference on Environment and Development (dubbed the "Earth Summit"), in Rio de Janeiro, Brazil, 1992

President Clinton's PCSD was a bipartisan group of 25 leaders appointed from government, industry, and NGOs, organized into eight task forces. Each task force addressed various facets of the broad sustainability agenda and drafted recommendations for a National Sustainable Development Action Strategy. The Population and Consumption Task Force, created in 1994, was one of those eight subgroups and its final report was part of that Action Strategy.

Nine members of the Population and Consumption Task Force also served on the wider PCSD. Two of these nine were prominent Democratic officials: Tim Wirth, a former U.S. Senator from Colorado, and then Under-Secretary for Global Affairs in the State Department, and Ron Brown, Secretary of Commerce. Among the other seven were other high-ranking government officials and senior representatives from industry and prominent environmental NGOs, namely the Sierra Club, Natural Resources Defense Council, Environmental Defense Fund, and Zero Population Growth.

Another 14 members of the Population and Consumption Task Force were not members of the wider PCSD. These additional members hailed mostly from academia and other NGOs.

In late 1994 and early 1995, the Task Force convened roundtables, soliciting both expert presentations and public comment in Washington, D.C.; Chattanooga, Tennessee; and New York City. It issued its final report and findings in 1996.

The Population and Consumption Task Force's 1996 report concluded that:

> "The size of our population and the scale of our consumption are essential determinants of whether or not the United States will be able to achieve sustainability. U.S. population and consumption trends demonstrate that a great deal of work needs to be done."

In addition, the 1996 report stated unequivocally that:

> "the two most important steps the United States must take toward sustainability are: **1) to stabilize U.S. population promptly;** and 2) to move toward greater material and energy efficiency in all production and use of goods and services."[46] [emphasis added]

More germane to the mission of NumbersUSA, the Task Force report also noted:

> "…legal and illegal immigration [are now] now at an all-time high. **This is a sensitive issue, but reducing immigration levels is a necessary part of population stabilization and the drive toward sustainability**." [emphasis added]

When the Task Force released its findings and recommendations in 1996, the U.S. population was estimated at 263 million; today in 2023 it stands at about 335 million, **an increase of 72 million residents, each one a large consumer of natural resources and producer of environmental wastes,** by the mere act of living and consuming in a modern, affluent society.

In the more than quarter-century since the Task Force admonished America to stabilize its population, U.S. population growth has averaged about 2.7 million per year, or 27 million per decade. Clearly its findings and recommendations fell on deaf ears. Indeed, two of the national environmental community's leading voices on population – the Sierra Club and Zero Population Growth, both of which actually participated in the Task Force – soon made it abundantly clear they wanted nothing to do with calls for lower immigration levels, even when those calls emanated from a Democratic administration.

2.2 30 x 30…WITH 370,000,000?

Many of the same politicians and groups who have been idealistically calling for protecting 30 percent of the United States land area from development by 2030, just seven years from now, have at the same time been pushing for "immigration reform" that would increase the U.S. population by tens of millions of additional residents and resource consumers over the coming years.[47] This would boost our numbers from about 335 million[48] at present to 370 million and

[46] Op. cit. Note #37.

[47] Michael D. Shear and Zolan Kanno-Youngs. 2021. Biden aims to rebuild and expand legal immigration *New York Times*. May 31; Leon Kolankiewicz. 2021. Woke Dems and Enviros Scoff at Original Earth Day Concern: Population Growth. *Townhall*. April 20. Available online at: https://townhall.com/columnists/leonkolankiewicz/2021/04/20/woke-dems-and-enviros-scoff-at-original-earth-day-concern-population-growth-n2588176 .

[48] U.S. Census Bureau. U.S. and World Population Clock. 2023. https://www.census.gov/popclock/.

counting, well on the way to 400 million and more. This same dubious "reform" and lack of border enforcement would guarantee that subsequent decades continue to experience massive, unending flows of immigration across an essentially open southern border for as far as the eye can see or demographers can project, all the way to 2100 and beyond. The U.S. population would grow precipitously and demographic pressures on American cities, services, and the landscape would increase exponentially.

All human beings and every American – even those who are conscientious and profess to be environmentally aware – inexorably impose certain burdens (or what ecologists call a "load") on the land and resources of the biosphere through consumption and waste generation (including carbon dioxide, now accumulating in the atmosphere and linked to climate change). The mere act of living with the comforts and conveniences of the modern world necessarily causes environmental impacts, which can be reduced or mitigated through better technologies and more environmentally enlightened behaviors and virtues, but never entirely eliminated. No amount of wishful thinking or technical wizardry will ever erase our ecological footprint completely (**Figures 36 and 37**).

Figure 36. Every human being has an ecological footprint, imposing an environmental load on the ecosystems and renewable and nonrenewable natural resources of the biosphere

In view of this reality, are today's environmental leaders deluding themselves and the American public by claiming one can be a staunch defender of land and biodiversity while accepting endless U.S. population growth via mass immigration? Is nonstop U.S. population growth and the additional development it would inevitably entail compatible with redoubled efforts that can actually succeed in conserving increasing amounts of open space and natural habitats? The iconic conservationists and environmentalists – such as David Brower, Gaylord

Nelson, Stewart Udall, Paul Watson, and Dave Foreman – who founded and galvanized the modern environmental movement half a century and more ago clearly did not believe so.

Figure 37. Heavy per capita use of natural resources in high-consumption, affluent societies results in each consumer becoming, in effect, a "Bigfoot" in terms of his or her ecological footprint

In May 2020, the Biden-Harris Administration formally released its grand vision to conserve "at least" 30 percent of America's land and waters by 2030 in a report called "Conserving and Restoring America the Beautiful."[49] Co-authored by the U.S. Departments of Interior, Commerce, and Agriculture, along with the White House Council on Environmental Quality, the document characterized itself stirringly as a "preliminary report to the National Climate Task Force recommending a ten-year, locally led campaign to conserve and restore the lands and waters upon which we all depend, and which bind us together as Americans."

The Biden-Harris Administration places the 30 percent land and water conservation goal firmly in the context of the administration's wider pursuit of solutions to the "climate crisis" and environmental justice, all while "growing our economy":

> This report is a first step toward developing a national conservation effort that reflects the President's ambition, his determination to combat the climate crisis and address environmental injustice while also growing our economy, and his commitment to listening, learning, and supporting the extraordinary conservation work that is already underway across America. [p. 11]

[49] U.S. Department of the Interior, U.S. Department of Commerce, U.S. Department of Agriculture, President's Council on Environmental Quality. 2021. Conserving and Restoring American the Beautiful. Available online at: https://www.doi.gov/sites/doi.gov/files/report-conserving-and-restoring-america-the-beautiful-2021.pdf .

The report never once cited increased land and environmental demands from incessant human population growth in the United States as an impediment to achieving its land and water conservation goal. While the word "population" was mentioned several times, it was only with reference to wildlife and fish populations, not human population size and growth. Population stabilization was mentioned once, but only with regard to stabilizing the populations of wildlife species most at risk of extinction in the near future.

The complete absence of any acknowledgement of human population growth in this report raises suspicion that population was being deliberately elided rather than recognized as a factor in land conservation. Today only about 12 percent of the U.S. land area enjoys some form of protection, as does 26 percent of the area of ocean under American jurisdiction.[50] The 12 percent figure is the result of two centuries of interaction between demographic, conservation, economic development, and market forces. In one sense, the idea that the aggregate area of conserved lands can be nearly tripled almost overnight (in under a decade) from 12 to 30% – to an area equal to twice the size of Texas – seems utterly far-fetched. It would require enormous and unprecedented participation by millions of private and rural landowners, who collectively own about 60 percent of the land in the United States. These are the same proud, independent Americans who have always been skeptical, if not downright suspicious of and hostile towards, federal government initiatives and programs that smack of curtailing their freedom to use their properties and the natural resources on those properties as they see fit.

Yet at the same time, the 30 percent conservation goal was framed vaguely enough for bureaucrats and activists to ensure it is attainable even with the conversion and development of more than 10 million additional acres of rural lands and natural habitats during the decade of the 2020s to accommodate projected population growth and related urban sprawl.

In 2018, a paper in *Science Advances* by a team of scientists tried to quantify what 21 types of "interventions" on America's natural and agricultural lands could accomplish on behalf of carbon sequestration and reducing or slowing the increase of carbon emissions as part of multi-pronged national campaign to contribute to the global war on climate change.[51] At least two of those interventions bear examination because of their explicit connection to population growth:

- **Avoiding conversion of forests to other uses.** The *Science Advances* authors observed that much of the most rapid forest conversion are taking place near growing

[50] Bruce Lieberman. 2021. Details behind Biden's '30 by 30'U.S. lands and oceans climate goal. Yale Climate Connections. Available online at: https://yaleclimateconnections.org/2021/03/details-behind-bidens-30-by-30-u-s-lands-and-oceans-climate-goal/.

[51] Joseph E. Farigone et al. 2018. Natural climate solutions for the United States. *Science Advances*. 14 November. Available online at: https://advances.sciencemag.org/content/4/11/eaat1869.

urban areas, as well as in agricultural areas like the Central Valley of California, where urban growth pressures are also enormous.

- **Avoiding conversions of grasslands to cropland.** Converting natural grasslands to cultivated cropland is of course a result of having to feed larger populations of people and livestock in America and around the globe.

Figure 38. Bison grazes on rangeland in the American West. The Biden-Harris Administration's 30 x 30 campaign aims to increase scenes like this, all while accommodating approximately tens of millions of additional Americans on the landscape in the coming decades.

At the same time that they are hoping to admit tens of millions more immigrants – ensuring faster and unending U.S. population growth – in its campaign to reduce U.S. carbon emissions and combat global warming, the Biden-Harris Administration is supporting a vast expansion of renewable energy sources. Because the renewables possess much lower energy density than the fossil fuels they would replace, this would necessitate a huge increase in the presence of solar panels and wind turbines on the American landscape – onto the very same beleaguered landscape that the administration claims it wants to conserve. These conflicting goals of protecting more land from development and radically increasing renewable energy production are never acknowledged. The center cannot and will not hold. A comparison recently made in 2021 by energy expert and systems thinker Nate Hagens, PhD is apropos:

> "…a 200-megawatt wind farm might require spreading turbines over 19 square miles. A natural gas power plant with that same generating capacity would fit onto a single city block."[52]

The Biden-Harris Administration's 30 x 30 plan has been considered an interim measure and America's contribution in the international campaign to drastically increase the share of the landscape dedicated to nature conservation. Ecologists, conservationists, environmental groups, and many others have long pushed for protecting natural habitats – primarily to preserve wilderness and biodiversity. Eminent entomologist and late author Edward O. Wilson (1929-2021), for example, in his landmark 2017 book, *Half Earth: Our Planet's Fight for Life* advocated that 50 percent of the planet be preserved in its natural condition[53] to forestall the mass extinction of thousands of species, including perhaps our own. In what was called his most "impassioned" book, Wilson argued that humanity must move rapidly to preserve the biodiversity of our ecosphere. In *Half-Earth,* he maintained that our dilemma is too great to be approached in a piecemeal fashion; he thus proposed a solution appropriate to the scale of the problem: dedicating fully half the Earth's surface area to nature. Conserving thirty percent by 2030 in the United States and elsewhere is thus regarded as an interim goal.

Like the great conservationists cited above, scientist Wilson did not consider perpetual human population growth to be compatible with the preservation of biological diversity. In an earlier (1992) book, *The Diversity of Life*, he wrote: "The raging monster upon the land is population growth. In its presence, sustainability is but a fragile theoretical concept." In a 2001 *Scientific American* article, Wilson explained: "The pattern of human population growth in the 20th century was more bacterial than primate. When *Homo sapiens* passed the six- billion mark we had already exceeded by perhaps as much as 100 times the biomass of any large animal species that ever existed on the land. We and the rest of life cannot afford another 100 years like that." Wilson referred to rapid human population growth as "our reproductive folly."[54]

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[52] Nate Hagens. 2021. Earth and Humanity: Myth and Reality. Myth #21: "Renewables Can Power THOS Civilization. May 16. Available online at: https://www.youtube.com/watch?v=qYeZwUVx5MY. At 45:29.

[53] Edward O. Wilson. 2017. *Half Earth: Our Planet's Fight for Life.* Liveright/W.W.Norton. https://eowilsonfoundation.org/half-earth-our-planet-s-fight-for-life/

[54] E.O. Wilson. 2002. The Bottleneck. *Scientific American*, February.

2.3 SPRAWL STILL A PROBLEM AFTER ALL THESE YEARS (AND AMERICANS AND IDAHOANS ARE STILL CONCERNED)

NumbersUSA published its first national level study on sprawl over two decades ago in 2001.[55] At that time, sprawl was a hot topic with many environmental organizations and the general public concerned about the impacts of ever-expanding cities and the nation's steadily disappearing rural land.[56] Vice-president and later presidential candidate Al Gore had made it a personal cause in the late 1990s.[57] More than two decades later, sprawl is still devouring valuable farmland and wildlife habitat throughout the United States, but national and state environmental groups, by and large, have shifted their focus away from domestic environmental and conservation issues toward more global issues like global warming and "climate justice".[58] The loss of habitat and open space due to the unsustainable outward expansion of cities in America, i.e., urban and suburban sprawl, has fallen out of fashion; it is no longer seen as "sexy."

Despite our country's economic setbacks since the Great Recession of 2008, sprawl continues to be a major threat to rural land and natural habitats in the United States. Nationally, in just the 10 years from 2007 to 2017, some 5,697,000 acres (about 8,900 square miles) – an area larger than New Jersey (8,723 square miles) – of previously undeveloped land succumbed to the bulldozer's blade.

Although urban sprawl by name is not particularly salient in the news anymore, the results of sprawl continue to fuel numerous local controversies and are a factor in many of the nation's most pressing environmental challenges. Americans remain concerned and would like these unfavorable trends halted or at least curbed. The very first question in a May 2020 survey of 1,500 likely American voters revealed that 79 percent overall thought that the destruction of farmland and natural habitat because of urban sprawl was a "major problem" (44%) or

[55] Kolankiewicz, L. and R. Beck. 2001. Weighing Sprawl Factors in Large U.S. Cities: A report on the nearly equal roles played by population growth and land use choices in the loss of farmland and natural habitat to urbanization. NumbersUSA: Arlington, VA. 64 pp. Available at: https://www.numbersusa.com/content/resources/publications/publications/studies/weighing-sprawl-factors-large-us-cities.html.

[56] David P. Fan, David N. Bengston, Robert S. Potts, Edward G. Goetz. 2005. The Rise and Fall of Concern about Urban Sprawl in the United States: An Updated Analysis. Bengston, David N., tech. ed. 2005. Policies for managing urban growth and landscape change: a key to conservation in the 21st Century. Gen. Tech. Rep. NC-265. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Research Station. 51 pp.

[57] Terry M. Neal. 1999. Gore Taps Voter Concern on 'Livability.' *Washington Post*. May 5. Available online at: https://www.washingtonpost.com/wp-srv/politics/campaigns/wh2000/stories/sprawl050599.htm.

[58] Daisy Simmons. 2020. What is 'climate justice'? It begins with the idea that the adverse effects of a warming climate are not felt equitably among people. *Yale Climate Connections*. July 29. Available online at: https://yaleclimateconnections.org/2020/07/what-is-climate-justice/.

"somewhat of a problem" (35%). In that fourth question of that same poll, when asked if it "is unethical to pave over and build on good cropland," or if "the need to for more housing is a legitimate reason to eliminate cropland," 62% responded that it is unethical to do so, more than three times the percentage (18%) who thought that the need for more housing is a legitimate reason.[59]

> The U.S. Department of Agriculture calculates that in recent decades urban sprawl has destroyed 43 million acres of farmland and natural habitat, an area about equal in size to all of New England. If this trend were to continue, would it be a major problem, somewhat of a problem, not much of a problem, or not a problem at all?
>
> 44% A major problem
> 35% Somewhat of a problem
> 11% Not much of a problem
> 4% Not a problem at all
> 6% Not sure
>
> Which do you agree with more: That it is unethical to pave over and build on good cropland or that the need for more housing is a legitimate reason to eliminate cropland?
>
> 62% It is unethical to pave over and build on good cropland
> 18% The need for more housing is a legitimate reason to eliminate cropland
> 20% Not sure

In the 35-year (1982-2017) period measured by the most recent National Resources Inventory (NRI), conducted by the United States Department of Agriculture's (USDA) Natural Resources Conservation Service (or NRCS, formerly the Soil Conservation Service or SCS), approximately 69,000 square miles (44,175,300 acres) of open space, natural habitats, and farmland in the United States were converted into "Developed Land," including housing, shopping malls, streets, schools, government buildings, utility infrastructure, waste treatment facilities, parking lots, vacation homes, resorts, highways, and places of work, worship, and entertainment.[60] An area larger than Florida, our 22nd largest state, was "paved over" in just 35 years.

By 2017, according to the most recent iteration of the NRI (released in 2020), some 116,303,000 acres of land – 181,723 square miles – in the United States had been developed. This is an area nearly 20,000 square miles larger than the state of California (163,700 square

[59] Pulse Opinion Research. 2020. National Survey of 1,500 Likely Voters. Conducted May 25-27, 2020. Margin of Sampling Error, +/- 2.5 percentage points with a 95% level of confidence. See Appendix G of this study for entire survey.

[60] USDA Natural Resources Conservation Service (NRCS). 2020. *2017 National Resources Inventory, Summary Report* (September). Table 1. Available online at: https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/technical/nra/nri/results/.

miles), our third largest state. Only Alaska and Texas are larger. Another way of conveying the comparative extent of this developed land area is that it is approximately equal to the states of Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, Delaware, New Jersey, New York, and Pennsylvania combined, that is, all of New England and much of the Mid-Atlantic States. **Figure 39** depicts the approximate area of developed land by coloring these states in red.

Figure 39. As of 2017, cumulative developed land in the United States is approximately equal to the combined area of those states shown in red – Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, Delaware, New Jersey, New York, and Pennsylvania

Of course, developed lands are not all contiguous in a single blob or polygon covering one part of the country and leaving the rest untouched, but are distributed unevenly in blotches and spots across the landscape from the Atlantic to the Pacific (east to west), and the Gulf of Mexico and Mexican border to the Canadian border (from south to north). **Figure 40** depicts the actual distribution of "urbanized lands" across America in 2010, the most recent year for which such a graphic exists. Urbanized land areas, as defined and delineated for many years by the U.S. Census Bureau, are a similar category to NRI developed lands. The much greater extent of urbanization in the eastern USA and on East and West Coasts is quite evident on this map.

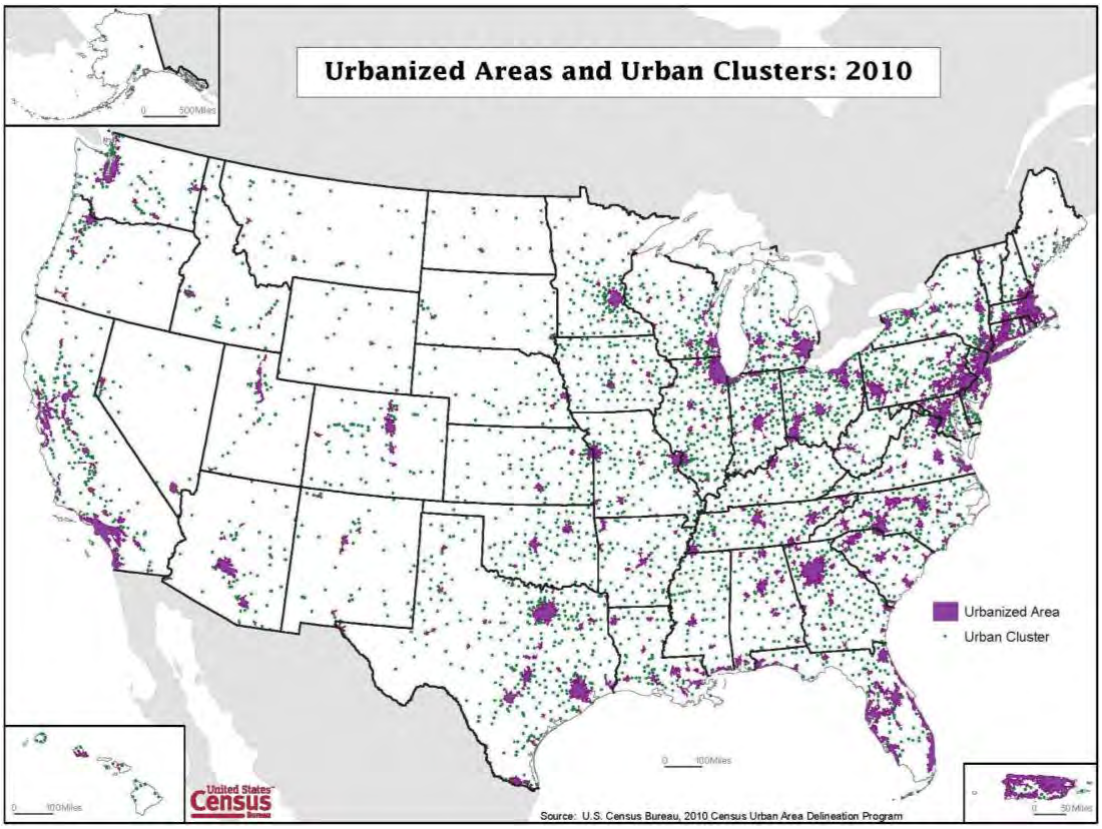

Figure 40 – Urbanized Areas and Urban Clusters in the United States, 2010

Source: U.S. Census Bureau

We can appreciate the degree to which urbanization has expropriated much of the American landscape by viewing a composite nighttime satellite image of the USA as a whole. Viewing this image (**Figure 41**), one can see why astronomers say that residents of the United States east of the Mississippi River may live out their entire lives without ever once seeing the Milky Way, the galaxy in which we reside. This is due to the combination of the glow and glare from artificial lighting (light pollution) that cloak urbanized areas and the air pollution generated by the traffic, factories, and power plants associated with these areas. In contrast, less densely populated states like Idaho, blessed with dark and dry skies at night, away from its urban areas, are a blessing for astronomers and amateur stargazers who want to see, know, and appreciate humanity's place in the universe.

Figure 39, depicting all of America's developed land as a single polygon, may also be misleading or deceptive if it gives the impression that the rest of the country, about 94 percent of it – now undeveloped lands or open space – is simply unused, empty, or wasted land that could be readily urbanized at no cost to society. In fact, most of these lands are already in use, serving valuable functions meeting the needs of urban residents for raw materials, food, fiber, water, watershed protection, energy, carbon sequestration, outdoor recreation, energy, and national defense, among other purposes (**Figure 42**).

Figure 41. Composite Satellite Image of the United States at Night

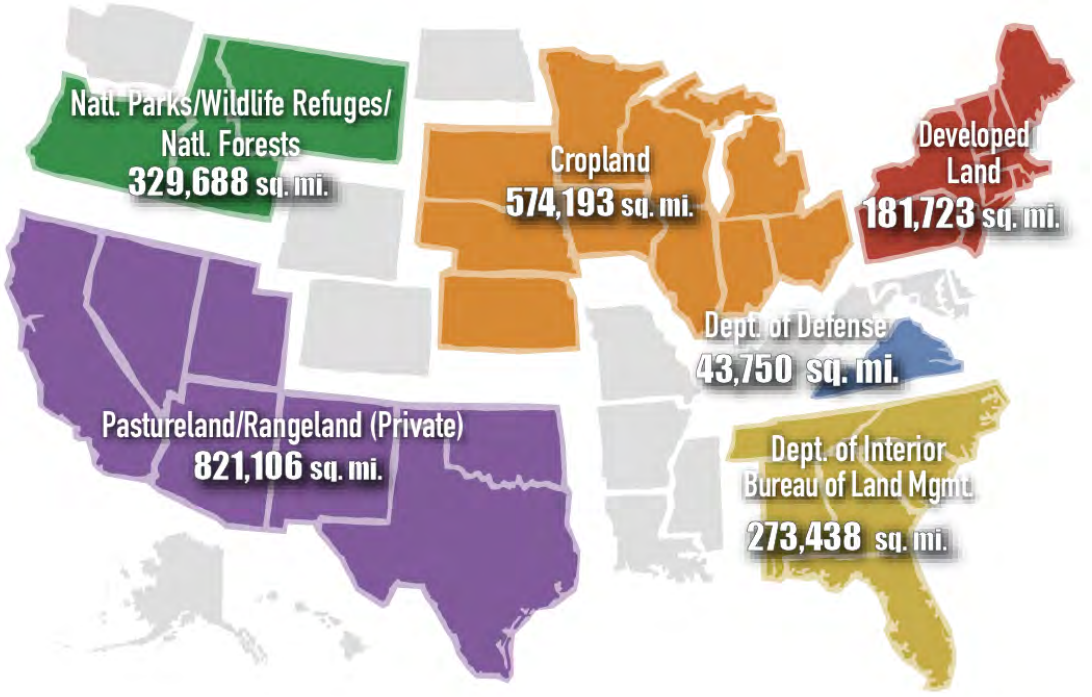

Figure 42. Equivalent Areas of Cumulative Developed Land (2017) and Other Designated Land Uses*

**not a comprehensive inventory of all other designated and recognized land uses*

Figure 42, as noted, is not intended as a comprehensive inventory of all other official, designated, or recognized land uses in the USA. Rather, it is a mix of most public (federal, but not state, county, or local) and private land uses (privately owned cropland, pastureland, rangeland, but not forestland) which furnish Americans with valuable ecological services and economic goods and products. For example, the U.S. Department of the Interior's Bureau of Land Management (BLM) manages some 273,438 square miles of land of the Lower 48 States – approximately equal in size to Tennessee, North Carolina, South Carolina, Georgia, Alabama, and Florida. These lands are used for livestock grazing, renewable and nonrenewable energy development, timber harvest, and many forms of outdoor recreation, all while "ensuring natural, cultural, and historic resources are maintained for present and future use," according to the Bureau. Thus, it is a serious error to think of the approximately 94 percent of the land in the Lower 48 states that is still undeveloped as unused, useless, vacant, "empty and yearning for development," or "wasted."

Figure 43. Urban Sprawl in Houston, Texas, the most sprawling state of all

How much total sprawl was there by 2017? **Table 6** ranks the contiguous 48 states plus Hawaii by the cumulative total area of developed land in the state. That is, the numbers in this table include the area of sprawl that occurred from 1982 to 2017, plus all sprawl that took place prior to 1982. In total, there were almost 180,000 square miles of sprawl (total area of developed land) in the United States by 2017. There are no more recent data on developed land (2017 to 2023), but that number would have increased since then. Idaho sits in 40th place out of the 49 states measured for their conversion of rural to developed land.

Table 6. Cumulative Sprawl in 49 States, Ranked by Total Developed Land Area in 2017

Cumulative Sprawl Ranking	State	Cumulative Sprawl (square miles) in 2017
1	Texas	14,891
2	California	9,822
3	Florida	8,750
4	North Carolina	7,681
5	Georgia	7,390
6	Pennsylvania	7,045
7	Michigan	6,610
8	Ohio	6,601
9	New York	6,083
10	Illinois	5,447
11	Virginia	5,052
12	Tennessee	4,924
13	Missouri	4,717
14	Alabama	4,588
15	Wisconsin	4,360
16	South Carolina	4,269
17	Indiana	3,999

Cumulative Sprawl Ranking	State	Cumulative Sprawl (square miles) in 2017
18	Washington	3,951
19	Minnesota	3,845
20	Oklahoma	3,454
21	Kentucky	3,352
22	Kansas	3,338
23	Arizona	3,280
24	Louisiana	3,122
25	Colorado	3,084
26	Iowa	3,069
27	Mississippi	3,045
28	Arkansas	2,940
29	New Jersey	2,925
30	Massachusetts	2,776
31	Maryland	2,398
32	Oregon	2,212
33	New Mexico	2,141
34	Nebraska	1,981
35	West Virginia	1,824

Cumulative Sprawl Ranking	State	Cumulative Sprawl (square miles) in 2017
36	Montana	1,749
37	Connecticut	1,701
38	North Dakota	1,652
39	South Dakota	1,525
40	**Idaho**	**1,458**
41	Utah	1,451
42	Maine	1,368
43	New Hampshire	1,152
44	Wyoming	1,088
45	Nevada	850
46	Vermont	636
47	Delaware	466
48	Hawaii	393
49	Rhode Island	367
	Total Sprawl	**179,807.3**

Source: 2017 NRCS National Resources Inventory; Table 1
Note: Includes all states except Alaska; does not include territories

Perhaps unsurprisingly, the top five sprawling states to date, that is, those with the most cumulative sprawl or area of developed land as of 2017, are the same five states that shared the top five rankings for the most amount of sprawl from 1982 to 2017 and 2002 to 2017: Texas, California, Florida, North Carolina, and Georgia, in that order. The alert reader will

perhaps grasp that these same five states have something else in common as well, which subsequent sections of this report will delve into.

The five states with the least cumulative amount of sprawl by 2017 were Rhode Island, Hawaii, Delaware, Vermont, and Nevada. Four of these five are small northeastern states with small land areas, so that smaller amounts of total developed land are to be expected. Nevada, in contrast, is a large Southwestern state (110,572 square miles, 7th largest) with an extremely arid and hot climate, whose growth and development, until the latter half of the 20th century, were impeded by these inhospitable conditions; these obstacles were overcome by the advent of air conditioning and legalized gambling, as well as by hydroelectricity and water from the Hoover Dam and Lake Mead on the Colorado River.

2.4 SPRAWL VERSUS ECOLOGICAL FOOTPRINT

Developed land includes much more than urban residential areas alone. It also includes other built-up land uses, including transportation, light and heavy industrial, warehouse, utility infrastructure, commercial retail and office, institutional (e.g., governmental and educational facilities), and even urban park space. In 2017, American consumers/residents on average used or "consumed" 0.356 acre of developed land per capita, or a little over one-third of an acre per person. This 0.356-acre/resident metric does not include relatively unpopulated rural lands – farmlands (cropland, pasture, and rangeland), forests, reservoirs, mines – that furnish crucial raw materials and products used by every consumer/resident, namely food, fiber, fuels, water, energy, metals, and minerals. The hoped-for "renewable energy transition" does not change this ecological reality; instead, if anything, the amount of land used for energy production by centralized wind and solar energy facilities (wind and solar "farms") and for mines to extract the nonrenewable minerals and metals needed to build and maintain these facilities will only increase.

Nor does it include the forestlands needed to absorb each American resident's or consumer's carbon dioxide (CO_2) emissions from fossil fuel combustion to produce electricity and propel our vehicles. All of these ecologically productive lands not covered with pavement and buildings, but used indirectly by each and every U.S. resident (and all human consumers), contribute to each average American's per capita ecological footprint. This entails a much larger amount of land, 56 times greater as much in fact, or approximately 20 global acres (8.0 global hectares) per person, according to the Global Footprint Network (**Figure 44**).[61]

[61] Global Footprint Network. 2021. Accessed online June 5, 2021 at: https://data.footprintnetwork.org/#/?

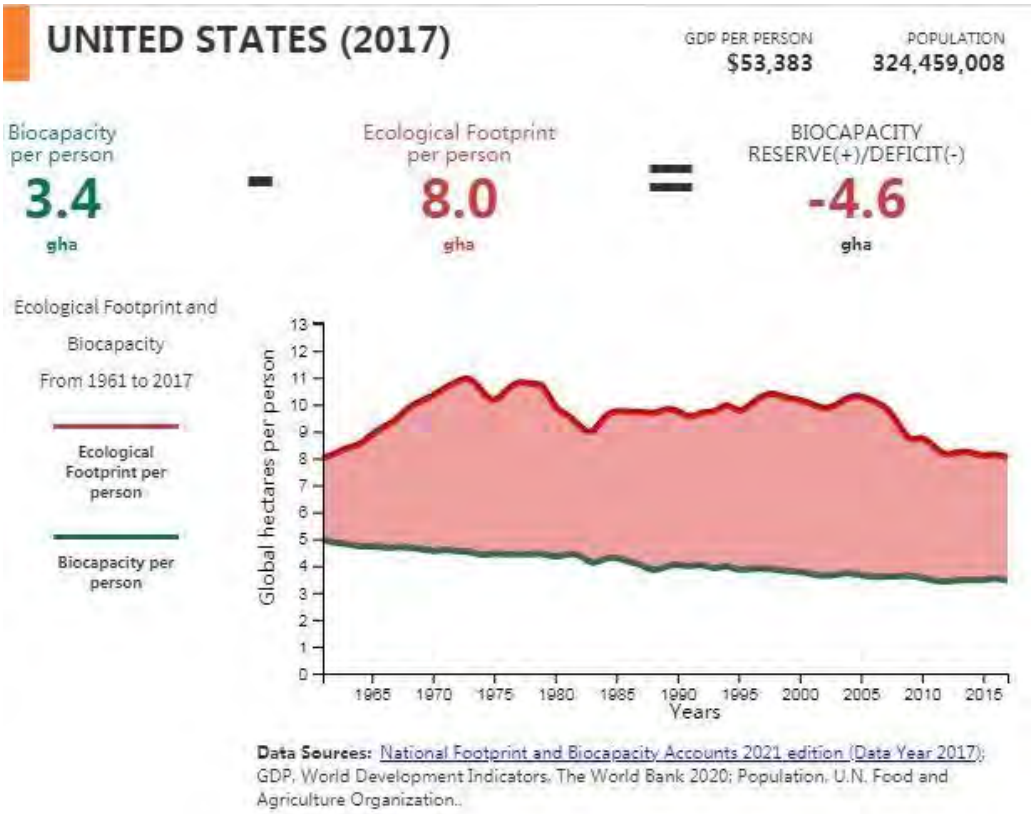

Figure 44. Per Capita Ecological Footprint of the United States in 2017
Source: Global Footprint Network

In 2017, the United States had a per capita ecological deficit of 4.6 global hectares (one hectare equals 2.47 acres). According to the Global Footprint Network, an ecological deficit occurs when the Ecological Footprint of a given population exceeds the "biocapacity" (ecologically productive lands capable of large-scale photosynthesis) of the area available to that population. A national ecological deficit means that the United States is importing biocapacity through trade, "liquidating" national ecological assets, or emitting the CO_2 waste product or "residual" into the atmosphere. (In contrast, an ecological reserve exists when the Biocapacity of a region or country exceeds its population's Ecological Footprint.)

In 2015, the Global Footprint Network conducted a State of the States report, which examined the Ecological Footprint and Biocapacity of each state in the U.S. Even with its relatively small population (compared to other states) in 2015 of 1.5 million, Idaho's Ecological Footprint in Global Acres Per Person of 15.3 still almost matched its Biocapacity in Global Acres Per Person of 17.0 (i.e., the Ecological Footprint was 90% of the Biocapacity).[62] In 2023, with a population of 1.9 million, more than 25% larger than its 2015 population, Idaho's per capita Ecological Footprint now exceeds its per capita Biocapacity.

[62] Global Footprint Network. 2015. State of the States Report. Available online at: https://www.footprintnetwork.org/2015/07/14/states/.

Figure 45. America's bountiful Biocapacity per capita – represented by this productive cropland – is surpassed by its per capita Ecological Footprint, the aggregate demands Americans place on ecosystems, resulting in what ecological economists refer to as an "ecological deficit."

2.5 Loss of Farmland, Wildlife Habitat, and Open Space

2.5.1 Developing and Converting (Losing) Farmland

One of the primary concerns about urban sprawl has been that it is replacing our nation's forests, wetlands, and prime farmland with subdivisions, new and expanded roads, strip malls, and business parks. As the NRCS put it in the 2007 NRI summary report, reviewing the 1982-2007 quarter-century:

> The net change of rural land into developed land has averaged 1.6 million acres per year over the last 25 years, resulting in reduced agricultural land, rangeland, and forest land. Loss of prime farmland, which may consist of agriculture land or forest land, is of particular concern due to its potential effect on crop production and wildlife.[63]

Nationwide, from 1982 to 2017, about 69,000 square miles (44,175,300 acres) – an area than Florida – of previously undeveloped, non-federal rural land was paved over to accommodate

[63] Natural Resources Conservation Service (NRCS). 2013. 2007 National Resources Inventory: Development of Non-Federal Rural Land. March.

our growing cities and towns (**Figure 46**). The total amount of developed land was 72.1 million acres in 1982. By 2017, this had risen to 116.3 million acres.

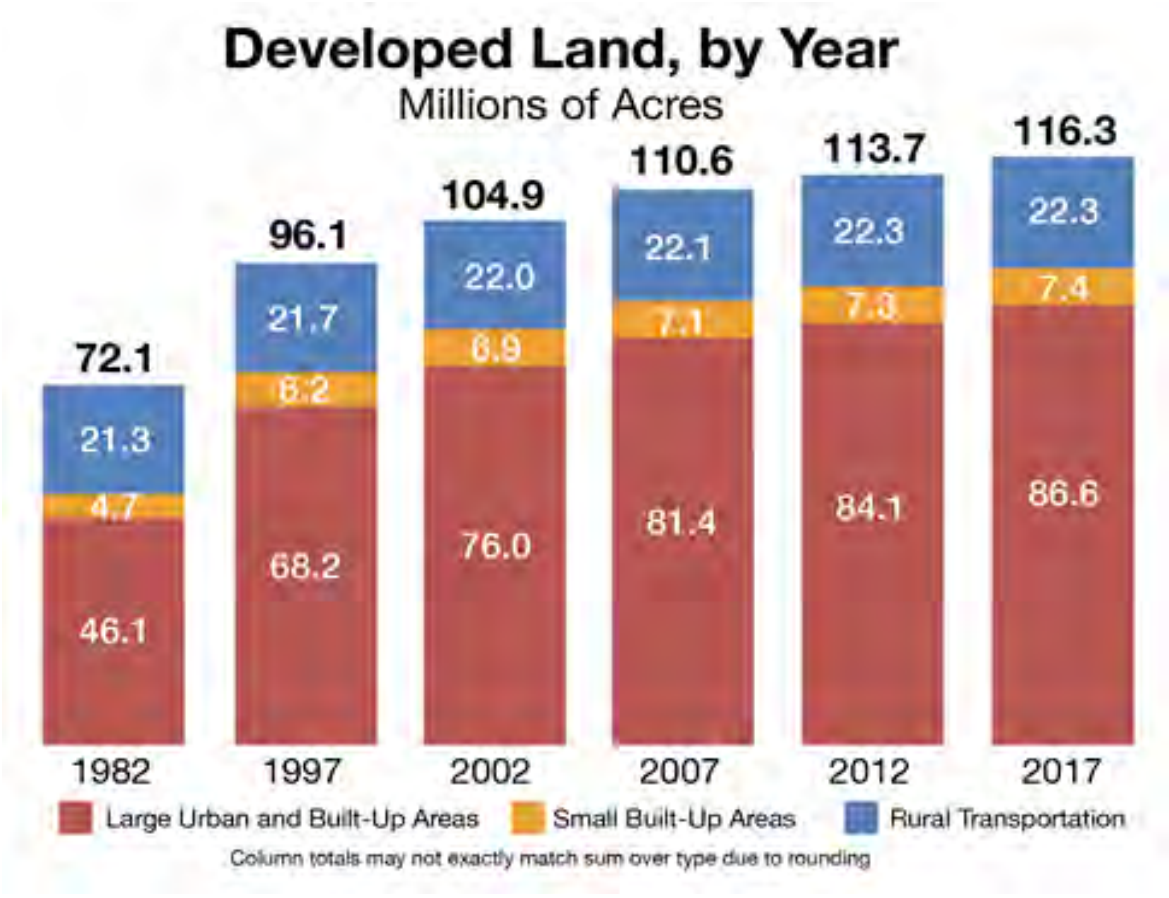

Figure 46. Cumulative Growth in Area of Developed Land Nationwide, 1982-2017
Source: *2017 National Resources Inventory, Summary Report*, p. 2-6.

Where did these developed lands come from? What types of rural land uses were converted into developed land? These are quantified in **Figure 47**, the sources of newly developed land, including cropland, pastureland, rangeland, forestland, and other rural lands.

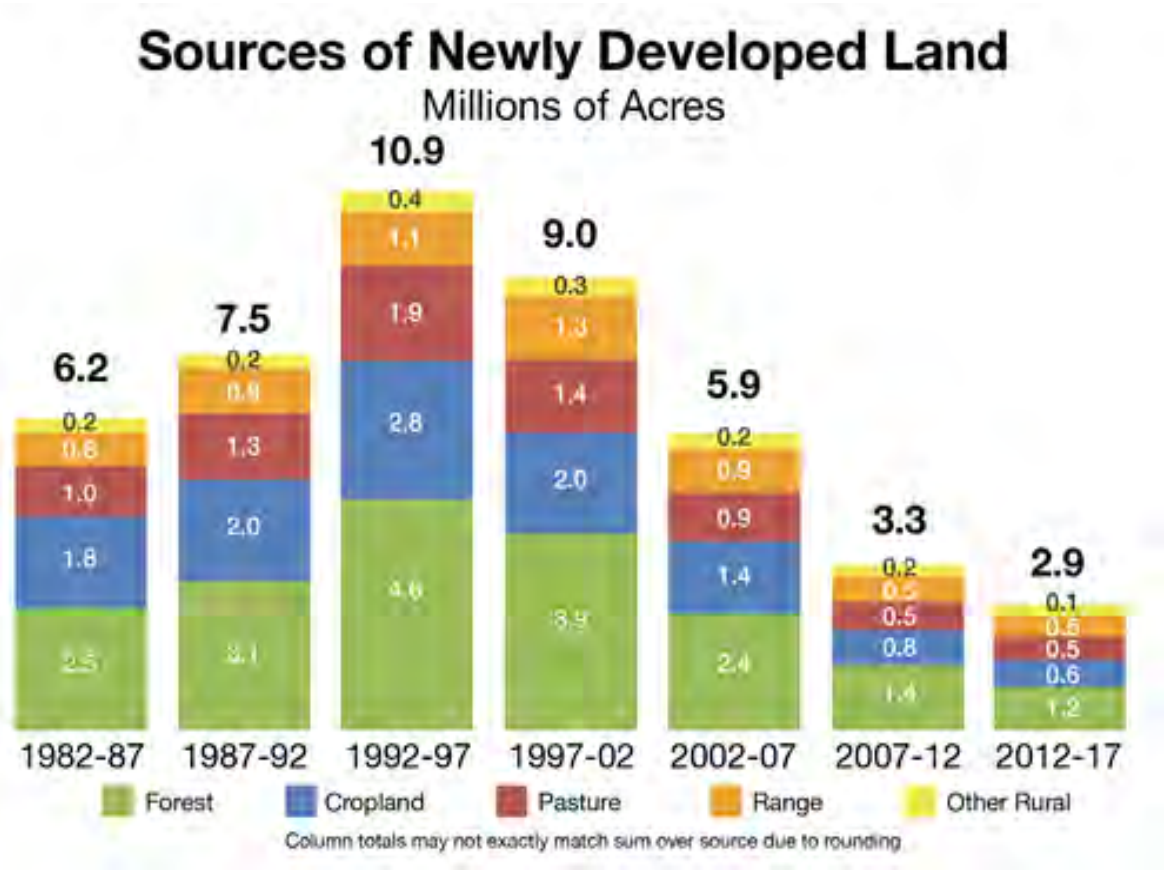

Figure 47. Sources of Newly Developed Land, 1982 to 2017

Source: *2017 National Resources Inventory, Summary Report*, p. 2-7.

Of these 44 million acres lost – or "converted" as land managers and planners generally refer to it – approximately 11.1 million acres were cropland, 13.1 million acres were pasture and rangeland, and 18.8 million acres were forestland. "Other Rural" comprised 0.15 acre.

However, "as the population has increased, the acres developed per person has [sic] dropped off." The five-year period from 1992 to 1997 witnessed the greatest loss of open space because of development, at 10.9 million acres. A decade later, from 2002 to 2007, this figure had dropped by almost half to 5.9 million acres. Population growth at 5-year intervals over the same 35-year time frame is shown by NRCS in **Figure 48.** The U.S. population grew by nearly 90 million during this period, at a rate of about 27 million new residents per decade, a very rapid (and unsustainable) rate of increase that adds nearly a new Texas (our second-most populous state after California) to the U.S. population every decade.

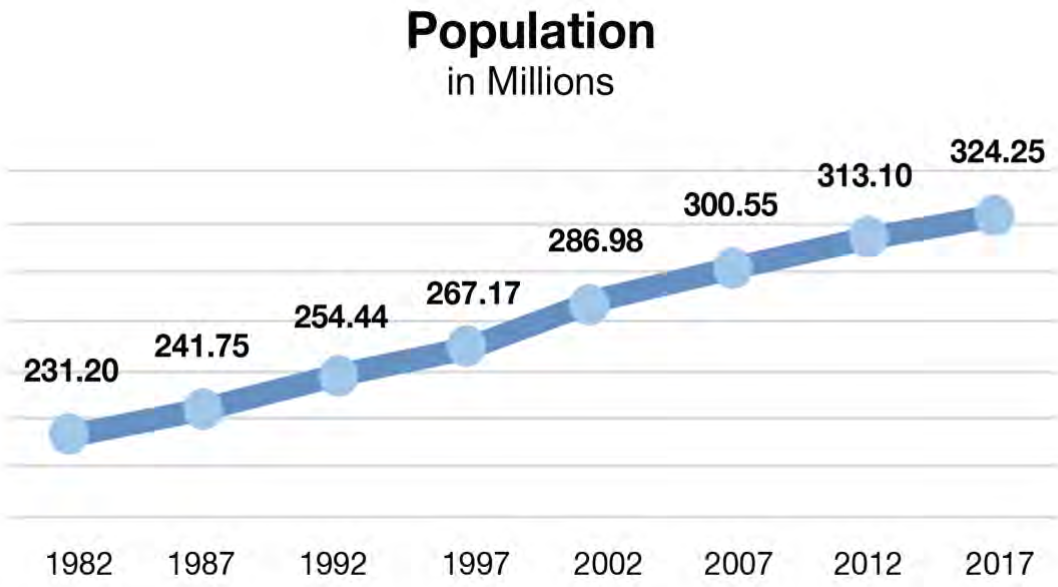

Figure 48. U.S. Population Growth from 1982 to 2017
Source: *2017 National Resources Inventory, Summary Report*, p. 2-7 (Footnote #6).

Figure 46 above shows the increase in the cumulative total of developed land in the United States from 1982 to 2017. By 2017, approximately 116.3 million acres of land (or 181,720 square miles) had been developed in the 48 conterminous states, Hawaii, Puerto Rico, and the U.S. Virgin Islands. Thus, more than one-third (38 percent) of all land developed in our nation's entire history has been developed in just the last 35 years. This is a rapid, accelerating rate of change. If this rate (1.26 million acres developed/year) had persisted for the entire 245-year history of the United States (since 1776), the total area of developed land in the country would be 309 million acres rather than 116 million acres, over two-and-a-half times as much. Another way of stating this is that the annual rate of land development in the U.S. in recent decades is 2.66 times greater than the average rate throughout our history as a country.

As noted above, the aggregate area of developed land in 2017 was about equal in size to the 10 states of Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, Delaware, New Jersey, New York, and Pennsylvania combined, that is, all of New England and much of the Mid-Atlantic States.

On average, on each of the 12,785 days in the 35 years between 1982 and 2017, approximately 3,455 acres (5.4 square miles) of open space in United States succumbed to the bulldozer's blade, asphalt, concrete, and buildings (**Table 7**). It is noteworthy that the amount of rural land converted to developed land rose and fell significantly during the 35-year time period. It went from 3,301 acres per day in the mid-1980s to a peak of 5,858 acres per day in the mid-1990s, and back down to 1,439 acres per day by 2012 to 2017, a reflection of increasing residential population density and also a response to the Great Recession of 2008 and its aftermath.

Table 7. Cumulative Increase in Developed Land in the United States, 1982-2017

Year	Area of Developed Land (thousand acres)	Period	Added ANNUAL increment of Developed Land during period (acres)	Average DAILY amount of land consumed by sprawl during period (acres)
1982	72,127.7			
1987	78,152.7	1982-1987	1,205,000	3,301
1992	85,399.2	1987-1992	1,449,300	3,971
1997	96,090.4	1992-1997	2,138,240	5,858
2002	104,880.8	1997-2002	1,758,080	4,817
2007	110,606.1	2002-2007	1,145,060	3,137
2012	113,676.2	2007-2012	614,020	1,682
2017	116,303.0	2012-2017	525,360	1,439
Average		**1982-2017**	**1,262,151**	**3,455**

Source: Calculated from NRCS, 2020. *Summary Report: 2017 National Resources Inventory*, Table 1.

The area of cropland in the United States decreased from 420.3 million acres in 1982 to 367.5 million acres in 2017, a reduction of 13 percent. Some of this former cropland (16 million acres in 2017) was temporarily protected under the federal Conservation Reserve Program (CRP)[64] – administered by USDA's Farm Service Agency (FSA) – the acreage of which rose from 14 million acres in 1987 to 33 million acres in 1997 before falling back down to 16 million acres in 2017. However, CRP lands are considered more "environmentally sensitive" or ecologically marginal lands, often on steeper slopes more vulnerable to erosion, or more generally

[64] From the CRP website: "CRP is a land conservation program administered by FSA. In exchange for a yearly rental payment, farmers enrolled in the program agree to remove environmentally sensitive land from agricultural production and plant species that will improve environmental health and quality. Contracts for land enrolled in CRP are 10-15 years in length. The long-term goal of the program is to re-establish valuable land cover to help improve water quality, prevent soil erosion, and reduce loss of wildlife habitat. Signed into law by President Ronald Reagan in 1985, CRP is one of the largest private-lands conservation program [sic] in the United States. Thanks to voluntary participation by farmers and landowners, CRP has improved water quality, reduced soil erosion, and increased habitat for endangered and threatened species." https://www.fsa.usda.gov/programs-and-services/conservation-programs/conservation-reserve-program/index

vulnerable to degradation from plowing, tilling, planting, harvesting, irrigation, fertilization, and other modern industrial farming practices.

Other former croplands were retired from cultivation and converted to pastureland, rangeland, and other rural land categories. However, some cropland was also developed: 11.1 million acres from 1982 to 2017, according to the NRI. "Asphalt is the land's last crop," quipped former U.S. Assistant Secretary of Agriculture and conservationist Rupert Cutler back in the 1970s.[65] Once a tract of farmland with its soils and the micro and macro-ecosystems they support are paved over or built on, the probability of that patch of the Earth being restored within the foreseeable future to a functioning ecological habitat or productive agricultural land is miniscule.

The area of U.S. pastureland (**Figure 49**) declined from 131.2 million acres in 1982 to 121.6 million acres in 2017, a decrease of seven percent. The much larger area of non-federal (tribal, state, and private) rangeland declined slightly over these 35 years, from 418.6 million acres to 403.9 million acres, a decrease of four percent. However, the NRI does not indicate whether the quality of that rangeland may have changed, either positively from implementation of conservation measures, or negatively from agents such as erosion or invasive species like the inedible creosote bush (*Larrea tridentata*), the spread of which in arid Southwestern rangeland has been facilitated by overgrazing of livestock.

Figure 49. Beef Cattle Grazing on Pastureland in Wisconsin

[65] Lester R. Brown and Ed Ayers (eds.), 1998. *World Watch Reader on Global Environmental Issues*. W.W. Norton & Company (New York, London).

While the NRCS estimates that rates of erosion on the nation's cropland decreased by 35 percent on average between 1982 and 2017, staggering amounts of topsoil are still being lost in spite of improved awareness and implementation of soil conservation measures. Every year, more than four and a half tons per acre are washed or blown away from the nation's cultivated and non-cultivated croplands. This totaled 1.7 billion tons in aggregate at the national scale in 2017. Sheet and rill erosion from water accounted for 58 percent of this, while wind erosion was responsible for the other 42 percent.[66]

Most soil scientists concur that it takes at least 100 years for natural processes to form just one inch of soil; the specific rate of soil formation depends on climate, vegetation, slope gradient, and other factors.[67] Overall, scientists estimate that we are losing soils some 10 to 40 times faster than the rate of soil formation or renewal.[68] Obviously, this is unsustainable.

2.5.2 Beleaguered Wildlife Habitats and Open Space

The adverse effects of encroaching development extend beyond the zone of impervious surfaces, pavement, and rooftops and penetrate into nearby natural habitats. The fact is that development disturbs adjacent natural habitat even without destroying or altering it directly with bulldozers and construction. Development can cause habitat fragmentation, that is, breaking up large, intact areas of natural habitat into smaller strips, shreds, and fragments.[69]

In such cases, these smaller, disparate, disconnected habitat bits and pieces may be too small to support viable populations of various wild flora and fauna, which are prevented from interacting and breeding due to development barriers like buildings, walls, fences, and streets. Genetic diversity is lost and the risk of inbreeding and reduced survival fitness grows. Housing-induced habitat fragmentation aids the introduction of exotic or invasive species.[70] Due to "edge effects", "patch-size effects," and "isolation effects," fragmentation is accompanied by biodiversity impoverishment and species loss, of both wild plants and wild animals.[71]

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[66] Op cit. Note #9. Page 2-8.
[67] Natural Resources Conservation Service. No date. Soil Formation. Accessed online 6-12-2021 at: https://www.nrcs.usda.gov/wps/portal/nrcs/detail/wa/soils/?cid=nrcs144p2_036333.
[68] David Pimentel. 2006. Soil Erosion: A Food and Environmental Threat. *Environment, Development and Sustainability*. 8: 119-137. Available online at: http://saveoursoils.com/userfiles/downloads/1368007451-Soil%20Erosion-David%20Pimentel.pdf.
[69] The Wildlife Society. Fact Sheet – Wildlife Habitat Fragmentation. Available at: http://wildlife.org/wp-content/uploads/2014/05/Wildlife-Habitat-Fragmentation.pdf.
[70] V.C. Radeloff, R.B. Hammer, and S. I. Stewart. 2005. Rural and Suburban Sprawl in the U.S. Midwest from 1940 to 2000 and Its Relation to Forest Fragmentation. *Conservation Biology*. 19(3): 793-805.
[71] Ibid.

It is estimated that about one-third of new houses in the United States are now constructed in undisturbed natural habitats.[72] Roads connecting newly built residential subdivisions and commercial development break up the landscape and create hazards and barriers through wildlife home ranges.[73] As any motorist knows from observing the carnage of roadkill, paved roads and streets are deathtraps for hapless vertebrates: mammals, reptiles, amphibians, and even some birds. An estimated one million animals are killed on American roads every day.[74] Roadkill (**Figure 50**) is now the leading cause of wild vertebrate mortality in the United States.

Figure 50. Roadkill is the leading cause of wild vertebrate mortality in the United States

Anthropogenic noise from cars, trucks, and motorcycles, railroads, airport takeoffs and landings, compressors, factories, oil and gas exploration and development, and even amplified music from loudspeakers encroaches deeply into natural habitats and adversely affects wildlife through behavioral disruption, acoustic masking, and increased stress response.[75] One recent

[72] Radeloff, V. C., R. B. Hammer, S. I. Stewart, J. S. Fried, S. S. Holocomb, and J. F. McKeefry. 2005. The wildland-urban interface in the United States. *Ecological Applications* 15:799-805.
[73] Carroll, C., R. F. Noss, P. C. Paquet, and N. H. Schumaker. 2004. Extinction debt of protected areas in developing landscapes. *Conservation Biology* 18:1110-1120.
[74] Marc Bekoff. 2010. Animals and cars: One million animals are killed on our roads every day. *Psychology Today*. Accessed online 7-13-19 at: https://www.psychologytoday.com/us/blog/animal-emotions/201007/animals-and-cars-one-million-animals-are-killed-our-roads-every-day.
[75] M. Brittingham. Noise impacts to wildlife: A review of pertinent studies. Department of Ecosystem Science and Management, Penn State University. Available online at: http://www.docs.dcnr.pa.gov/cs/groups/public/documents/document/dcnr_20028837.pdf; Francis, C., C. Ortega, and A. Cruz. 2009. Noise Pollution Changes Avian Communities and Species Interactions.

study found that human noise doubled background sound levels in a majority of our nation's protected natural areas, caused a 10-fold or greater increase in noise in 21 percent of these areas (surpassing noise levels known to interfere with human visitor experience), and significantly impaired habitats of endangered species.[76]

In a 2010 paper in the *Proceedings of the National Academy of Sciences* entitled, "Housing growth in and near United States protected areas limits their conservation value," the authors noted that protected areas are: "crucial for biodiversity conservation because they provide safe havens for species threatened by land-use change and resulting habitat loss." However, the effectiveness of protected areas in the United States is threatened by rural sprawl and housing development in particular. The study's findings show that housing development in close proximity may severely limit the ability of protected areas to serve as a modern "Noah's Ark." The authors found that between 1940 and 2000, 28 million housing units were built within 50 km of protected areas in the United States, and 940,000 homes were even constructed on private inholdings within national forest boundaries.[77]

Further, they found that in the 1990s, housing built within 1 km of protected areas grew at a decadal rate of 20 percent, outpacing the national average of 13 percent. If these trends continue over the long term, another one million housing units would be built within 1 km of protected areas by 2030 (and 17 million housing units within 50 km), greatly reducing their value for wildlife and biodiversity conservation. The habitats protected as national parks, national wildlife refuges, national wilderness areas, and national forests are increasingly isolated spatially in an increasingly fragmented national landscape. In sum, protected areas in America, "are thus threatened similarly to those in developing countries. However, housing growth poses the main threat to protected areas in the United States whereas deforestation is the main threat in developing countries."

Urban expansion, of course, is not merely an American or a North American phenomenon; it is a global one. And globally, urban expansion is also driven by population growth, among other factors, but unsurprisingly, population's role in driving expansion and sprawl varies from continent to continent, region to region, and country to country. For example, population

Current Biology 19:1415-1419; National Park Service. 2018. Effects of Noise on Wildlife. Available at: https://www.nps.gov/subjects/sound/effects_wildlife.htm.

[76] Rachel T. Buxton, Megan F. McKenna, Daniel Mennitt, Kurt Fristrup, Kevin Crooks, Lisa Angeloni, and George Wittemyer. 2017. Noise pollution is pervasive in U.S. protected areas. *Science*. Vol. 356, Issue 6337, pp. 531-533.

[77] Volker C. Radeloff, Susan I. Stewart, Todd J. Hawbaker, Urs Gimmi, Anna M. Pidgeon, Curtis H. Flather, Roger B. Hammer, and David P. Helmers. 2010. Housing growth in and near United States protected areas limits their conservation value. *Proceedings of the National Academy of Sciences*. 107 (2): 940-945.

growth contributes to urban expansion more in North America than in Europe,[78] which has very low rates of population growth compared to Canada and the United States. Likewise, urban population growth is more closely related to urban expansion in Africa and India (both of which still experience rapid to very rapid population growth), than in China, where population growth is slowing and GDP growth is a greater factor in urban expansion.[79]

Figure 51. Low density residential development in Idaho (and elsewhere) contributes to cumulative habitat fragmentation and degradation

Across the world, scholars and planners widely regard population growth as one of the most important factors driving "land take" and urban land expansion, along with income growth (higher GDP per capita), increased transport accessibility, weak or inadequate planning, and subsidies encouraging land consumption and automobile use.[80]

Recognition by scholars that population growth is a major (not the only) driver of urban land expansion and sprawl is sharply at odds with the way the news media and anti-sprawl activists in the United States have tended to portray the causes of sprawl. The news media and anti-

[78] Karen C. Seto, Michail Fragkias, Burak Güneralp, Michael K. Reilly. A Meta-Analysis of Global Urban Land Expansion. 2011. *PLoS One*. Vol. 6, Issue 8, August.
[79] Ibid.
[80] Alice Colsaet, Yann Laurans, and Harold Levrel. What drives land take and urban land expansion? A systematic review. *Land Use Policy*. 79 (2018): 339-349.

sprawl activists have chosen to accept that rapid, unending U.S. population growth on the order of 25 to 30 or more million new residents per decade is a given and a fait accompli. They have no intent of questioning or challenging it.

Thus, since they want to convince Americans that something can still be done to halt or slow sprawl substantially in spite of never-ending U.S. population growth, they tend to downplay or minimize population growth's importance as a causal factor in sprawl. In their efforts to publicize sprawl to the American public and enlist support for anti-sprawl measures – e.g., "smart growth" policies, higher residential densities, multifamily housing (apartments and condominiums), mixed land uses and zoning, and infill that eliminates existing urban open space (such as golf courses) – they reserve their criticism for "low-density sprawl," essentially giving a pass to other new development on the urban periphery, as long as it is not low-density, even though it still devours rural land and open space, permanently converting rural lands to urbanized ones.

2.6 IMPERILED HABITATS AND SPECIES

A biome is a floristic region, that is, a large, naturally-occurring community of flora and fauna consisting of a dominant habitat, e.g., forest, grassland, or desert. The United States boasts a number of diverse biomes (**Figure 52**) that reflect its varied climates and geology. Two biomes are found in Idaho: Rocky Mountain Evergreen Forest and Cool Desert.

Within the biomes and landscapes threatened by sprawl are found some of our most critical natural habitats. According to the World Wildlife Fund, habitat loss poses the single greatest threat to endangered species around the world. The United States is home to approximately 1,660 species and sub-species of plants and animals formally listed as federally endangered or threatened by the federal government (specifically, by the U.S. Fish and Wildlife Service and the National Marine Fisheries Service). Most of these are seriously harmed by ever-expanding sprawl and ever-encroaching development of one form or another that modifies, degrades, or eliminates the habitats they need to survive.

A school teachers' guide explains the process that steals habitats and puts species at risk:

> As the human population increases, cities, farms, ranches, factories, and shopping malls grow larger and expand into the wilderness….This leaves less habitat for animals and plants. Many of them cannot survive in other places. Their populations drop, and they become in danger of extinction.[81]

[81] Desert Museum. "Endangered and Threatened Species of the Sonoran Desert Region." Desert Discovery Class Teacher Information ©2000, revised 2008 ASDM.

Habitat loss imperils wildlife much more than other factors such as pollution, toxics, invasive species, road mortality, overhunting, or poaching.

Figure 52. Biomes of North America
Source: Virginia Tech Dendrology Factsheets

Endangered species, sub-species, or populations are those rare plants or animals that, if recent trends continue, will likely become extinct within the foreseeable future, barring heroic measures to save them. Threatened species or sub-species may become endangered within the foreseeable future (**Figure 53**). American habitats support flora and fauna, some of which have become imperiled in the state (in danger of "extirpation" or elimination over part of their overall range) but enjoy healthy populations elsewhere in their range, and others of which are

threatened or endangered over large parts of their overall range, throughout their entire U.S. range, or are imperiled on a global scale (that is, they have no healthy populations anywhere).

Figure 53. The Canada Lynx, a Federally Threatened Species, Occurs in Idaho
Photo: U.S. Fish and Wildlife Service

A 2019 study by scientists with Conservation Science Partners for the Center for American Progress identified urban, agricultural, energy, and transportation "stressors" as the major causes in the loss and fragmentation of natural habitat in the lower 48 states.[82] Population growth exacerbates each of these factors. For example, more people need more farmland to cultivate the crops that become the food that feed those additional numbers. More people require more aggregate energy production to meet more aggregate consumption, hence more land is needed for petroleum exploration and development, access roads, pipelines, coal mines, wind farms, solar arrays, and so forth.

The Conservation Science Partners study concluded that expansion and intensification of land uses in the U.S. resulted in a steady, inexorable loss of natural areas between 2001 and 2017. In these 16 years alone, more than 24 million acres of natural lands and habitats were permanently modified or lost to development, at an average of 1.5 million acres per year. Just how enormous this loss is can be understood by comparing it to the areas of some of America's largest, most beloved national parks, our "crown jewels." The natural habitats lost in just 16 years were equivalent in size to almost nine Grand Canyon National Parks, more than 10 Yellowstone NPs, or 49 Great Smoky Mountains NPs.

[82] Conservation Science Partners. 2019. Loss and fragmentation of natural lands in the conterminous U.S. from 2001 to 2017. Available online at: https://www.csp-inc.org/public/CSP%20Disappearing%20US%20Exec%20Summary%20011819.pdf.

The urban stressor accounted for 57 percent of all the natural lands lost during the 16-year study period. Thus, urban sprawl devours more natural habitat than all other major causes of habitat loss combined.

2.7 STABILITY OF ECOSYSTEMS AND THE BIOSPHERE

In 2017, the population of 49 of America's 50 states (all but Alaska) – 324 million strong – sprawled across an area of 179,807 square miles (115.1 million acres) of developed land, according to the NRCS and its NRI. Much of this developed land was not occupied by residential areas per se, but by the widespread artificial structures, facilities, and infrastructure needed to support modern, high-consumption human settlements. The average land consumption per person (per capita) in 2017 in the United States was 0.356 acre. That is, on average, each American resident accounted for more than a third of an acre of developed land. This area, which is about 15,050 square feet, is much larger (5 or 10 times) than the size (square footage) of a typical American dwelling (private single family home).

For every three residents in America then, on average, slightly more than one acre of land has been converted from open space – both natural habitat and agricultural land – to asphalt and concrete, a wide variety of manmade structures, and artificial landscaping.

As noted above, this 0.356-acre/resident metric does not include relatively unpopulated rural lands – farmlands (cropland, pasture, and rangeland), forests, reservoirs, mines – that furnish crucial raw materials and products used by every resident, namely food, fiber, fuels, water, energy, metals, and minerals. Nor does it include the bioproductive (photosynthesizing) forestlands needed to absorb or assimilate each resident's carbon dioxide (CO_2) emissions from fossil fuel combustion to produce electricity and propel our vehicles.

All of these ecologically productive lands not covered with pavement and buildings, but used directly and indirectly by each and every state resident (and all human consumers), contribute to each average American's and Idahoan's ecological footprint (EF). This entails a much larger amount of land than that delineated by the NRI as developed land, approximately 60 times as much in fact, or 20 global acres per American resident, according to the Global Footprint Network (GFN).[83] According to GFN, the biocapacity in United States is 8.4 global acres per person. Thus, the U.S. has an ecological deficit of 11.6 global acres per person. In essence, America's human population survives ecologically only by importing carrying capacity from other geological times (e.g., the fossil fuels) and geographic places (e.g., food imports from South America, and forestlands in Canada, Russia, and Brazil sequestering our CO_2 emissions).

[83] Global Footprint Network. 2015. State of the States Report. Accessed on 1-4-20 at: https://www.footprintnetwork.org/2015/07/14/states/

Globally, human civilization as a whole is also already well into overshoot of planetary carrying capacity, according to EF analysis conducted by the GFN. **Figure 54** illustrates that it would take the biocapacity of approximately 1.7 Planet Earths to sustainably provide for the aggregate resource consumption of some 7.8 billion human consumers on the planet.[84]

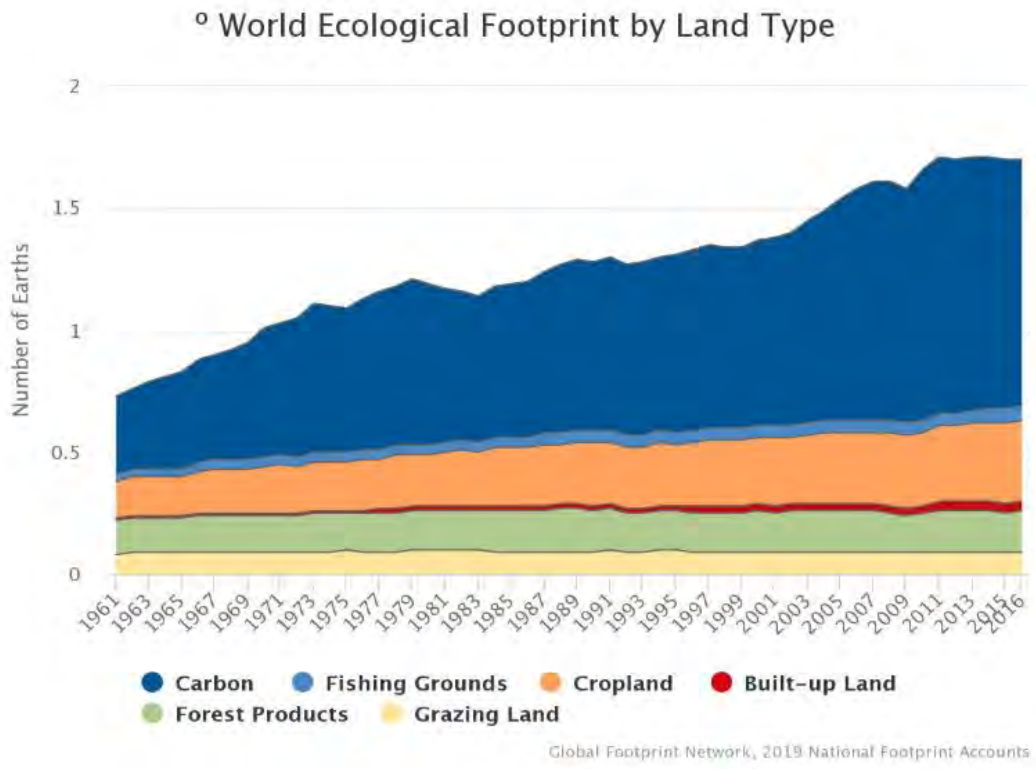

Figure 54. World Ecological Footprint in 2016 by Land Type

The elimination of forest, grassland, desert, and wetland habitat from sprawl not only threatens native species, but has serious human health, safety, and economic consequences as well. Wild habitats and ecosystems perform "ecosystem services." For example, wetlands (including vegetated riparian areas alongside watercourses) are important filters that clean pollutants out of our water. Wetlands can also moderate the devastating effects of floods by acting as natural buffers and sponges, soaking up and storing floodwaters. According to the Environmental Protection Agency, nearly two-thirds of all fish we Americans consume spend some portion of their lives in wetlands, which often serve as "nurseries" for juveniles. Continuing to pave over our nation's breadbasket and valuable habitats with unrelenting sprawl entails serious long-term economic and human health and safety costs that we simply cannot afford.

In addition, sprawl in the United States is more than a domestic environmental or quality-of-life issue. It also has global implications. The relentless and accelerating disappearance of natural habitats dominated by communities of wild plants and animals (ecosystems), replaced

[84] Global Footprint Network. 2019. Data/Methodology. https://www.footprintnetwork.org/resources/data/

by biologically impoverished artificial habitats – often "monocultures" – dominated by human structures and communities, contributes cumulatively to what may become a "state shift" or "tipping point" in Earth's biosphere. This would be an uncontrolled, sudden switch to a less desirable condition in which the biosphere's ability to sustain us and other species would be severely compromised. A 2012 paper in the prestigious British scientific journal *Nature* reviews the evidence that: "…such planetary scale critical transitions have occurred previously in the biosphere, albeit rarely, and that humans are now forcing another such transition, with the potential to transform Earth rapidly and irreversibly into a state unknown in human experience."[85]

Documented declines or collapses in insect, bird, and vertebrate populations in recent decades as a result of the ever-increasing human appropriation of the biosphere's habitats, spaces, energy flows, and water are a sign that human civilization may be surpassing certain "planetary boundaries."[86] Ten such boundaries have been identified and quantified, and we are approaching or have already exceeded four of them: climate change, biosphere integrity, land-system change, freshwater change, biogeochemical flows, and novel entities (**Figure 55**).[87] A massive extinction of species is now underway and accelerating – the sixth in the history of life on Earth, and the first caused entirely by a single species: man.[88]

Biodiversity scholars have predicted that the world could lose up to half or two-thirds of its species of wild flora and fauna by 2100, if not sooner.[89] In North America, scientists estimate that the number of birds has dwindled by approximately 30 percent since 1970. About three billion fewer birds now grace our skies, lawns, forests, prairies, deserts, and wetlands than just half a century ago. The number of breeding birds in the United States and Canada was estimated at 10 billion in 1970. Today that number has plunged to approximately 7.1 billion.[90]

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[85] Barnosky, A.D. et al. 2012. "Approaching a state shift in Earth's biosphere." *Nature*, Vol. 486, 7 June.
[86] Rockstrom, J., Steffen, W., Noone, K. et al. 2009. Planetary boundaries: Exploring the safe operating space for humanity. *Ecology and Society*, *14*(2): 32; Steffen, W., Richardson, K., Rockström, J. et al. (2015). Planetary boundaries: Guiding human development on a changing planet. *Science*, *347*(6223).
[87] Stockholm Resilience Centre, Stockholm University. 2023. Planetary boundaries. Accessed online 9-17-2023 at: https://www.stockholmresilience.org/research/planetary-boundaries.html.
[88] Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). 2019, Media Release: Nature's Dangerous Decline 'Unprecedented'; Species Extinction Rates 'Accelerating'. Retrieved 1-5-2020 at: https://ipbes.net/news/Media-Release-Global-Assessment.
[89] Wilson, E.O. 2003. *The Future of Life*. New York: Vintage Books; Raven, P., Chase, J. & Pires, J. 2011. Introduction to special issue on biodiversity. *American Journal of Botany*, *98*, 333-335; Chivian, E. & A. Bernstein, eds. 2008. *Sustaining Life: How Human Health Depends on Biodiversity*. Center for Health and the Global Environment. New York: Oxford University Press.
[90] Kenneth V. Rosenberg et al. 2019. Decline of the North American Avifauna. *Science*, 04 Oct 2019, Vol. 366, Issue 6461, pp. 120-124. DOI: 10.1126/science.aaw1313; Carl Zimmer. 2019. Birds Are Vanishing From North America. *New York Times*. Available online at: https://www.nytimes.com/2019/09/19/science/bird-populations-america-canada.html.

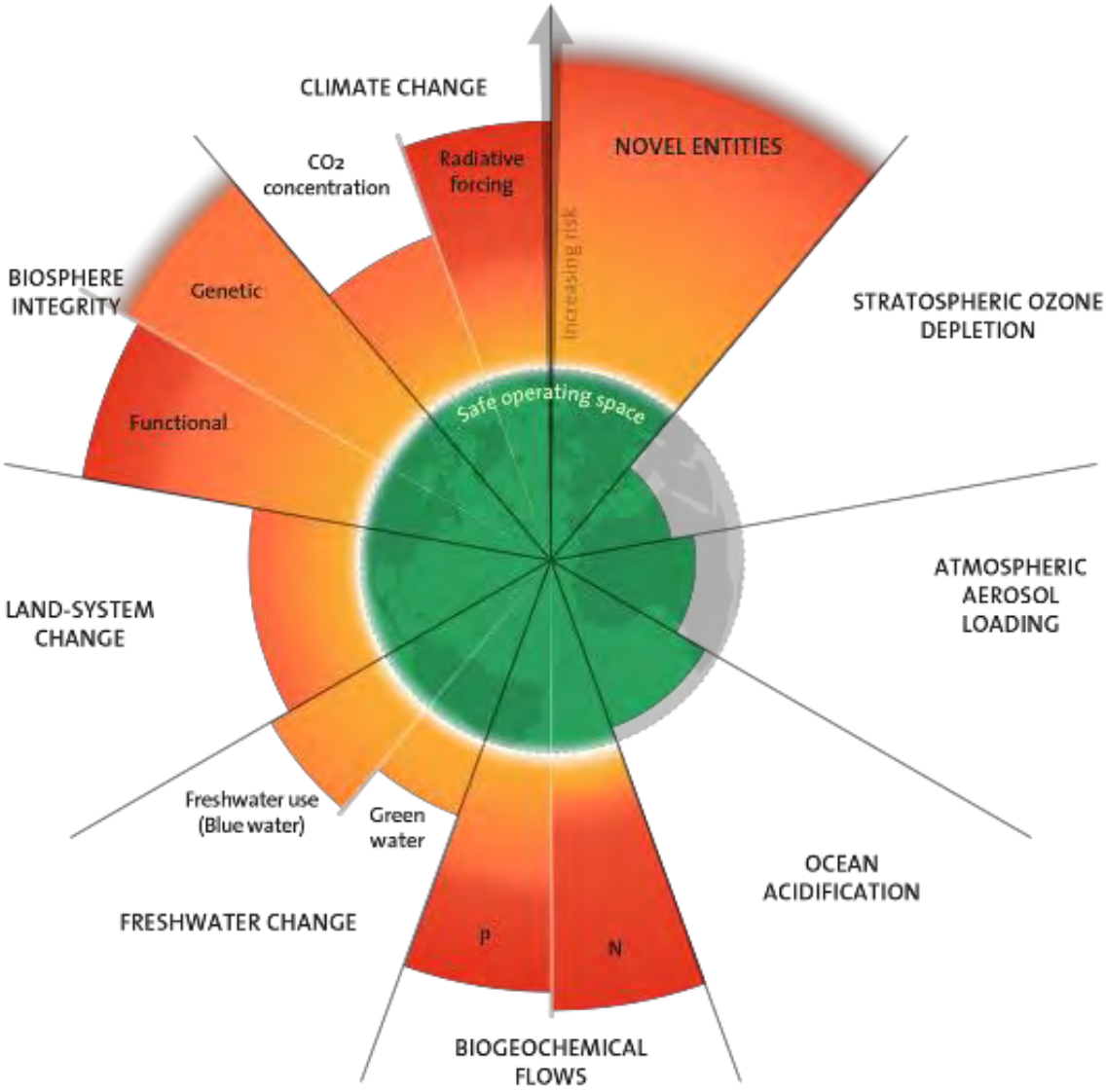

Figure 55. Planetary Boundaries
Source: Stockholm Resilience Centre; Footnote #86

2.8 National Security Implications of Farmland Loss

Development is not the only factor responsible for the degradation and disappearance of high-quality agricultural land. Arable land is also vulnerable to other damaging natural and anthropogenic forces such as soil erosion from wind and water (**Figure 56**), and salinization and waterlogging from irrigation, which can compromise the fertility, productivity, and depth of soils, and possibly even lead to their premature withdrawal from agriculture. Many of these adverse effects are due to over-exploitation by intensive agricultural practices needed to

constantly raise agricultural productivity (yield per acre) in order to provide ever more food for the world's ever-increasing populations and more meat- and dairy-intensive diets.

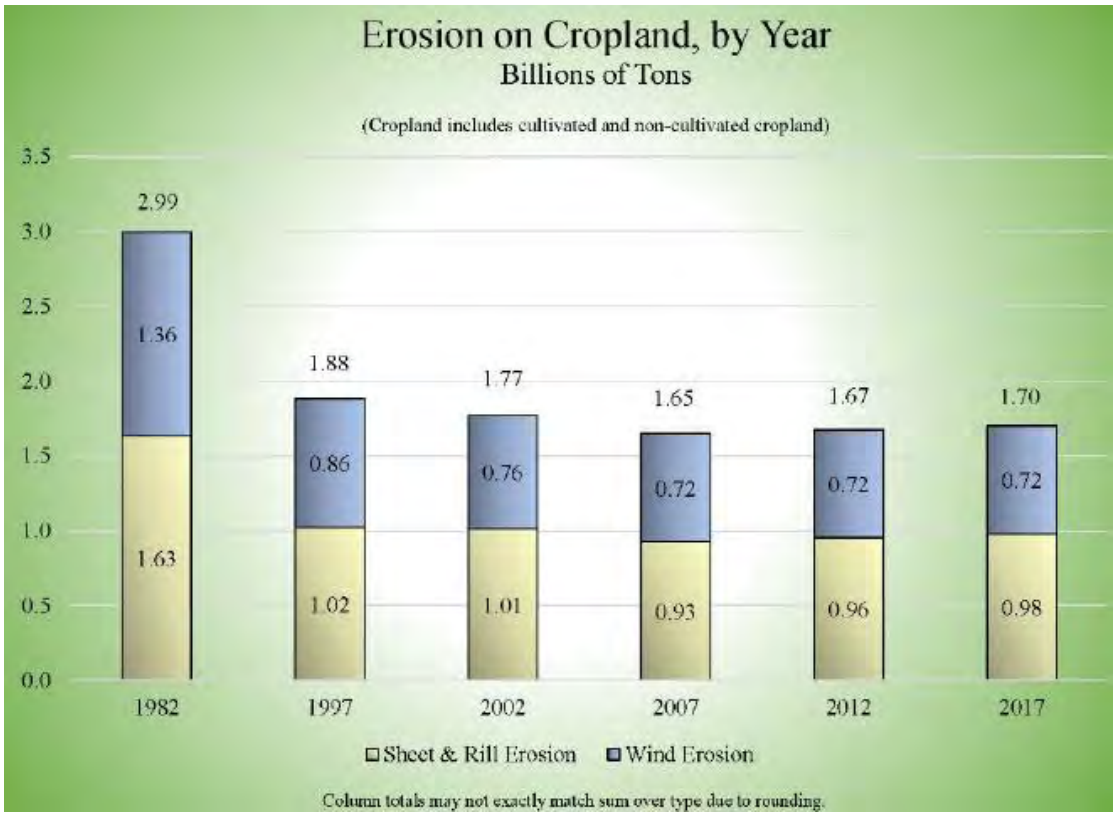

Figure 56. Annual Erosion on America's Croplands in Billions of Tons

Thus, the potent combination of unrelenting development and land degradation from soil erosion and other factors is reducing America's productive agricultural land base even as the demands on that same land base from a growing population are increasing. As noted above, the 2017 NRI estimated that the amount of cropland in the United States declined from 420.3 million acres in 1982 to 367.5 million acres in 2017, a decrease of 53 million acres (13 percent) in 35 years (**Figure 57**), an average (mean) of 1.5 million acres per year.

Some of this cropland (cumulatively, 27 million acres in 2010) was withheld from active farming with federal government support and subsidies and placed into the Conservation Reserve Program (CRP), but these tend to be marginal or fragile sites on which cultivation is not deemed to be sustainable or recommended in any case. With the federal ethanol mandate and strong financial incentives over much of the last couple of decades to grow corn in order to produce ethanol as fuel for vehicles, and with higher food and grain prices overall, farmers had tangible motivation to convert CRP land and pastureland into cropland from 2012 to 2017 as shown in **Figure 58**. Approximately 89 percent of the modest 3.3% gain in cropland area from 2012 to 2017 (5.6 million acres) came from pastureland and CRP land.

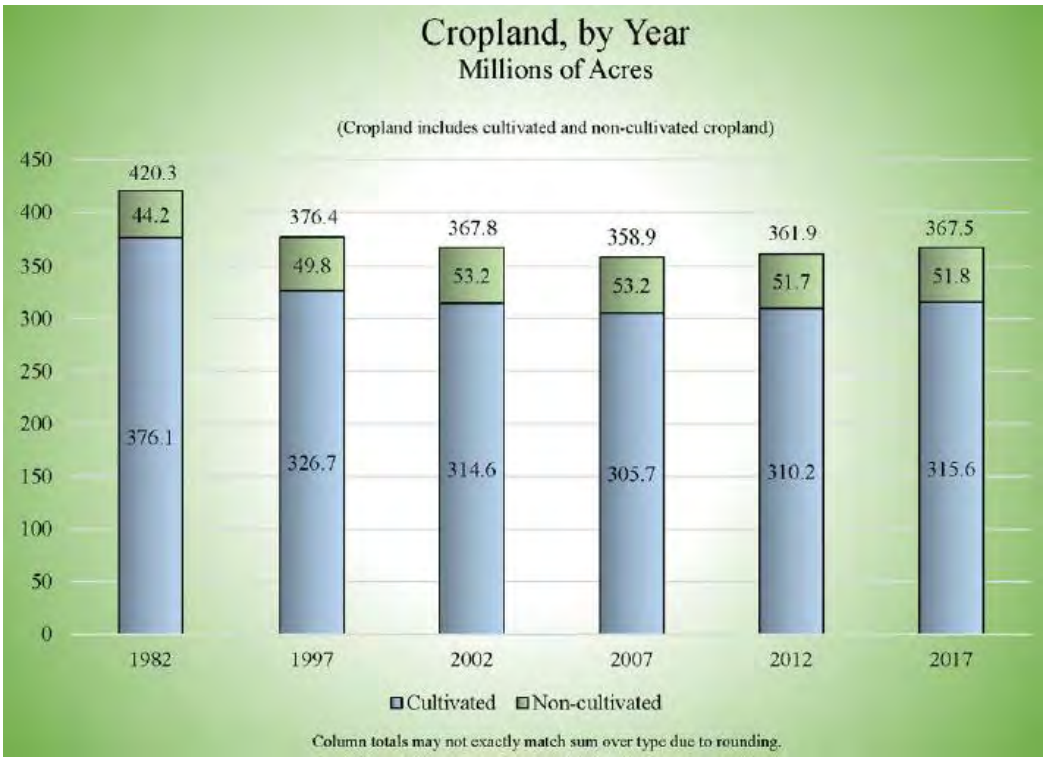

Figure 57. Area of Cropland in the United States, 1982-2017

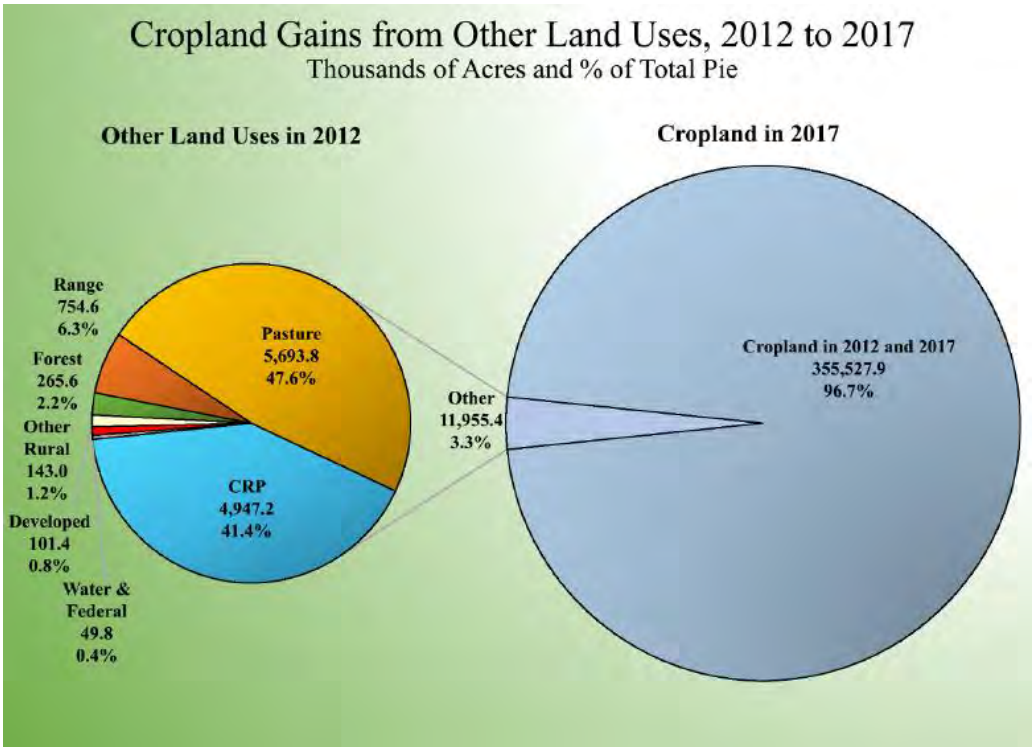

Figure 58. Cropland Gains from Other Land Uses from 2012 to 2017
Source: NRCS, 2017. *Summary Report: 2017 National Resources Inventory*. P. 2-4.

Using somewhat earlier estimates, if the same rate of cropland conversion and loss that prevailed from1982 to 2010 were to continue to the year 2100, the United States would have lost an additional 193 million acres of its remaining 361 million acres of cropland, for a total cumulative loss of 253 million acres. Only 168 million acres would then remain – about 40 percent of the original allotment – and none of this acreage would be in pristine condition after two centuries or so of intensive exploitation. Its soils and nutrients, while perhaps not exhausted, would require even greater inputs of costly fertilizers. Two of the most crucial fertilizers – ammonium nitrate, manufactured from ammonia produced from natural gas (Haber-Bosch process), and phosphorus, produced from phosphate mines – may be far more expensive, perhaps prohibitively so, in 2100 than at present, due to the inexorable depletion of the highest-quality reserves of these non-renewable resources.

Table 8 shows the amount of cropland per capita in the United States in 1982, and 2017 (according to the estimates in the 2020 NRI), and projected to 2050 and 2080, assuming the same rate of cropland decline from 1982 to 2017, and using November 2023 Census Bureau U.S. population projections to 2080.[1] By 2080, available cropland per person would have declined to just a little more than one-third of what it was a century earlier, from 1.9 acres per person in 1982 to 0.7 acre per person in 2080. **Figure 59** graphically depicts this striking loss in the form of a bar chart.

Table 8. Observed and Projected Long-term Decline in Cropland per Person

Year	Cropland in 48 contiguous states (millions of acres)[1]	U.S. Population in Millions[2]	Acres of cropland per capita
1982	420	232	1.9
2017	367	325	1.1
2050	317[3]	361	0.9
2080	272[3]	369	0.7

[1]*2017 National Resources Inventory, Summary* Report (September 2020), Table 2.
[2]Estimages for 1982 and 2017, projections for 2050 and 2080.
Projected using annual rate of cropland loss from 1982-2010 (2.1 million acres)
[2]Most recent projections from the United States Census Bureau
[3]Assuming same rate of cropland decline as from 1982-2017 (1.5 million acres per year)

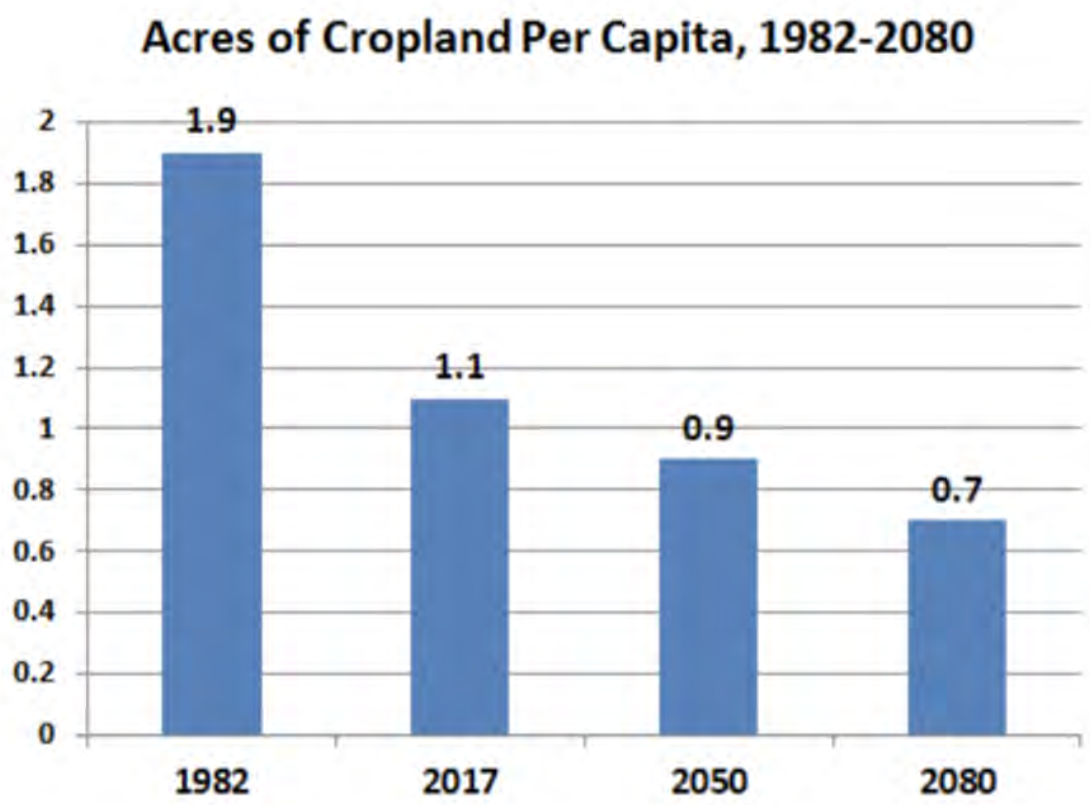

Figure 59. Projected Long-term Decline in Cropland per Person

However, this dire scenario is unlikely to come to pass, even if the United States continues to reject population stabilization as an acceptable course of action or to enact more aggressive farmland protection measures. This because rising demand and prices for foodstuffs would increase the value of land maintained as cropland vis-à-vis developed land, and because conversion from other types of lands to cropland, including pastureland, rangeland, forested land and other natural areas, would certainly occur (**Figure 58**).

As noted above, this actually did occur from 2012 to 2017, during which the area in cropland increased by 5.6 million acres; most of this was pastureland or CRP land pulled back into production because high agricultural commodity prices encouraged farmers to plant it. Again, in an ideal world, erosive or sensitive CRP lands and steeper, less-than-ideal pasturelands should *not* be cultivated and would best be conserved as wildlife habitat and for pasture and grazing; that is why the voluntary Conservation Reserve Program was established in the first place in the 1980s.

[1] U.S. Census Bureau, Population Division. 2023. Projected Population Size and Annual Total Population Change for the United States for the Main Series and Alternative Immigration Scenarios: 2023 to 2100. November.

Furthermore, the decrease from 1982 to 2017 in the acreage of highest quality soils classified as Prime Farmland, which constitutes only 21 percent (or 313.7 million acres) of the non-Federal rural land base was "only" 15.2 million acres, compared to the 52.8-million-acre decrease in cropland (**Figure 60**). NRCS states that "most of this loss was due to development." As shown in **Figure 61,** not all designated Prime Farmland is cultivated as cropland; indeed, only 65 percent of it is cropland; the rest is in other non-developed land uses or cover types.

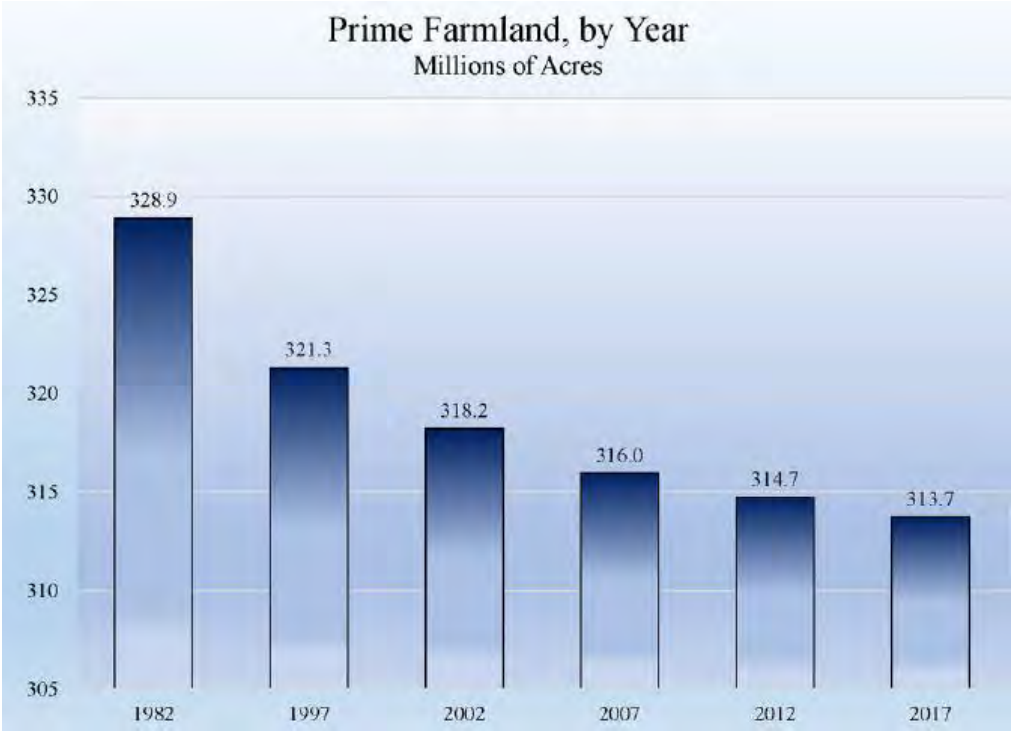

Figure 60. Decrease in Nation's Inventory of Prime Farmland, 1982-2017

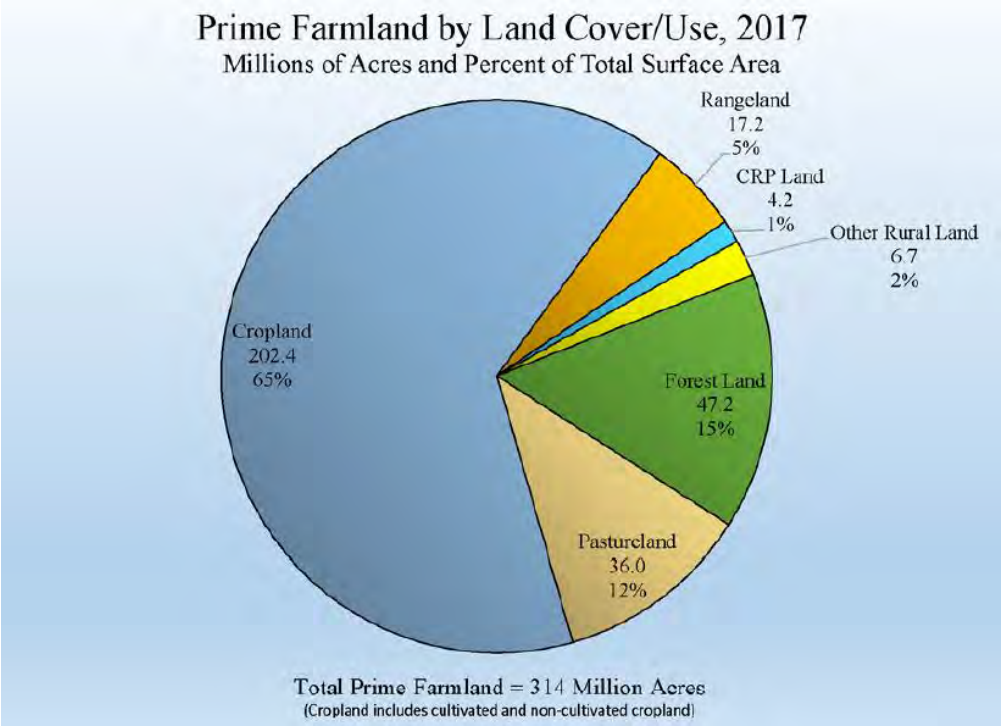

Figure 61. Prime Farmland by Type in 2017
Source: NRCS, 2020. *Summary Report: 2017National Resources Inventory*. *P. 5-2*

Nevertheless, given the projected decline in cropland per capita, that is, the acreage of land on which to cultivate grains and other crops for each resident, biotechnology would have to work miracles in constantly raising yields per acre in order to maintain the diverse, meat-and-dairy-rich diet Americans came to expect in the late 20th and early 21st centuries.

Ominous, divergent trends – an increasing population, a decreasing arable land base, diversions of water supplies needed for irrigated agriculture to urban populations, and a modern, mechanized agriculture that is heavily dependent on limited fossil fuels at all stages – have led some scientists to conclude that someday within this century the United States may cease to be a net food exporter.[91] Food grown in this country would be needed for domestic consumption. By mid-century, the ratio of arable land per capita may have dropped to the point that, "the diet of the average American will, of necessity, include more grains, legumes, tubers, fruits and vegetables, and significantly less animal products."[92] While this may in fact

[91] Pimentel, D. and M. Giampietro. 1994. "Food, Land, Population and the U.S. Economy." Washington, D.C.: Carrying Capacity Network; David Pimentel and Marcia Pimentel. 1997. "U.S. Food Production Threatened by Rapid Population Growth." Washington, D.C.: Carrying Capacity Network; D. Pimentel, M. Whitecraft, Z. R. Scott, L. Zhao, P. Satkiewicz, T. J. Scott, J. Phillips, D. Szimak, G. Singh, D. O. Gonzalez, and T. L. Moe. 2010. Will Limited Land, Water, and Energy Control Human Population Numbers in the Future? *Human Ecology*. 12 August.
[92] Ibid.

constitute a healthier diet, it would also represent a significant loss of choice for a country that has always prided itself on its abundant agriculture, plentiful consumer options, and comparative freedom from want.

Preserving farmland and maintaining its fertility is more than a question of producing an adequate supply of food and engendering a healthy diet for Americans, it is a matter of national security. According to Brig. Gen. (Ret.) W.E. King, Ph.D., P.E., Dean of Academics, U.S. Army Command and General Staff College, Fort Leavenworth, Kansas, without a sustainable environment and resources that meet basic human needs, instability and insecurity will be the order of the day.[93] The World Food Summit held in Rome, Italy in 1996 revived interest in the issue of food security, and thus, in farmland preservation because of its bearing on food security.[94] As the late Oxford ecology professor Norman Meyers noted in a now-classic 1986 article:

> "…national security is not just about fighting forces and weaponry. It relates to watersheds, croplands, forests, genetic resources, climate and other factors that rarely figure in the minds of military experts and political leaders…"[95]

One of the lasting effects on the world food system of the global crisis in food prices from 2007 to 2008 has been the accelerating acquisition of farmland in poorer countries by wealthier countries which seek to ensure their own food supplies. As the International Food Policy Research Institute states:

> "Increased pressures on natural resources, water scarcity, export restrictions imposed by major producers when food prices were high, and growing distrust in the functioning of regional and global markets have pushed countries short in land and water to find alternative means of producing food."[96]

By 2009, foreign governments and investors had already purchased more than 50 million acres (78,000 square miles) of farmland – an area the size of Nebraska – in Africa and Latin

[93] King, W.E. A Strategic Analytic Approach to the Environmental Security Program for NATO. W. Chris King, Ph.D. P.E.is Brigadier General, US Army retired and Dean of Academics, US Army Command and General Staff College, Fort Leavenworth, Kansas.
[94] Tweeten, L. 1998. Food Security and Farmland Preservation. *Drake Journal of Agricultural Law*. 3:237-250.
[95] Meyers, N. 1986. The Environmental Dimension to Security Issues. *The Environmentalist*. 6(4): 251-257; Liotta, P.H., et al. (eds.). 2007. Proceedings of the NATO Advanced Research Workshop on Environmental Change and Human Security: Recognizing and Acting on Hazard Impacts. Newport, Rhode Island, 4-7 June 2007.
[96] International Food Policy Research Institute. 2009. "Land grabbing" by foreign investors in developing countries. Available online at: http://www.ifpri.org/publication/land-grabbing-foreign-investors-developing-countries.

America.[97] Between 2000 and 2013, more than 1,200 deals had taken place, selling more than 205 million acres (320,313 square miles) of land to foreign investors; 62 percent of these deals took place in hungry Africa, encompassing 138 million acres (215,625 square miles), an area almost twice the size of Nevada, the 7th largest U.S. state.[98] And it isn't just Third World farmland that is being bought by well-heeled foreigners. "'American Soil' Is Increasingly Foreign Owned was the headline on a 2019 story on NPR's *All Things Considered*.[99] As of 2019, almost 30 million acres of American farmland was owned by foreign investors, a figure which had doubled in the last two decades.

Finally, U.S. agriculture and related food industries contribute nearly $1 trillion to our national economy annually. They comprise more than 13 percent of the GDP and employ 17 percent of the labor force. World demand for U.S. agricultural exports is only expected to increase over the foreseeable future due to a rapidly growing world population, increasing demand for meat and dairy products, and expanding global markets.[100]

Americans are well aware of these food security implications, according to a national poll[101] of 1,500 likely voters in 2020 conducted for this sprawl study (see Appendix E for the entire survey results). The very first question showed that 79 percent overall believed that the destruction of farmland and natural habitat because of urban sprawl in the United States was a "major problem" (44%) or "somewhat of a problem" (35%). In that fourth question of that same poll, when asked if it "is unethical to pave over and build on good cropland," or if "the need to for more housing is a legitimate reason to eliminate cropland," 62% responded that it is unethical to do so, more than three times the percentage (18%) who thought that the need for more housing is a legitimate reason.[102]

Questions two and three from the 2020 survey are shown here:

[97] Leahy, S. 2009. Wealthy Countries and Investors Buying Up Farmland in Poor Countries. Available online at: http://stephenleahy.net/2012/05/17/wealthy-countries-and-investors-buying-up-farmland-in-poor-countries/.
[98] Brian Bienkowski. 2013. Corporations Grabbing Land and Water Overseas. *Scientific American*. Available online at: https://www.scientificamerican.com/article/corporations-grabbing-land-and-water-overseas/.
[99] National Public Radio. 2019. 'American Soil' Is Increasingly Foreign Owned. Accessed online on 6-30-21 at: https://www.npr.org/2019/05/27/723501793/american-soil-is-increasingly-foreign-owned.
[100] American Farmland Trust. 2013. Farmland Protection. Available on the World Wide Web at: http://www.farmland.org/programs/protection/.
[101] Op. cit. Footnote #20, Pulse Opinion Research. Appendix G includes the entire poll's results.
[102] Op. cit. Footnote #20.

2. How important is it to protect farmland from development so the United States is able to produce enough food to completely feed its own population in the future?

62% Very important
27% Somewhat important
6% Not very important
1% Not important at all
3% Not sure

3. How important is it for the United States to have enough farmland to be able to feed people in other countries as well as its own?

32% Very important
45% Somewhat important
16% Not very important
4% Not important at all
3% Not sure

As stated above in Section 1.2, if anything, Idahoans are even more concerned about protecting farmland from development than Americans as a whole are. In our 2023 poll, 95% of Idahoans thought it was very or somewhat important to protect farmland from development, compared to 89% of Americans as a whole in the 2020 survey.

2.9 Rejuvenating the Human Spirit: Physiological and Psychological Benefits of Nature and Open Space

Open space, parks, green spaces, natural areas – including wetlands, riparian corridors, farmland, beaches, rivers, lakes, the ocean, fields and forests – provide demonstrable mental and physical health benefits. They have proven to be preventative measures that can actually lower health care costs and reduce the need for health interventions. Exploring or even just gazing upon natural areas – such as a swamp or mangrove-fringed estuary next to a city – gives human beings a sense of perspective, continuity in a changing world, spiritual renewal, well-being, and a feeling of harmony with the world around us. The presence of open space within and adjacent to our urban areas (**Figures 62 and 63**) – and the assurance that this open space will outlast us – serves to counter-balance the stress and strain of modern life.

Figure 62. Central Park Has Been Called a "Green Oasis" in New York City

Contact with nature and open space provides both physiological and psychological benefits. Research on the physiological benefits of open space has centered on how direct or indirect (vicarious) experience with vegetated and/or natural landscapes reduces stress, and anxiety.[103] A series of studies spanning nearly 20 years in the seventies and eighties linked photo simulations of natural settings to reduced stress levels as measured by heart rate and brain waves. One study revealed that subjects experienced more "wakeful relaxation" in response to slides showing vegetation only and vegetation with water compared to urban scenes without vegetation. These data were corroborated by attitude measures which indicated lower levels of fear and sadness when experimental subjects observed nature-related slides, as opposed to urban slides.[104] In studies of hospital patients, recovery was faster, there were fewer negative evaluations in patient reports, and there was less use of anesthetic medication among post-surgery patients with views of exterior greenery than among control group patients with views of buildings.[105]

[103] Rubenstein, N.R. The Psychological Value of Open Space. Chapter 4 in *The Benefits of Open Space*. The Great Swamp Watershed Association. 1997. Available on the World Wide Web at: http://www.greatswamp.org/publications/rubinstein.htm.
[104] Ulrich, R. 1979. Visual landscapes and psychological well-being. *Landscape Research*, 4(1): 17-23.
[105] Ulrich, R. 1983. Aesthetic and affective response to natural environment. Chapter 3 in I. Altman, & J. F. Wohlwill (Eds.), *Human Behavior and Environment*: Volume 6 (pp. 85-126). New York: Plenum

Figure 63. Lake Coeur d'Alene provides wholesome outdoor recreation and direct contact with nature right in the City of Coeur d'Alene

In new research published in 2023 in the peer-reviewed journal Science Advances, epidemiologists found that long-term exposure to more greenery can increase life expectancy by up to 2.5 years. "Our study shows that being near green space caused some biological or molecular changes that can be detected in our blood," said the study's principal investigator Lifang Hou, a preventive medicine professor at Northwestern University's Feinberg School of Medicine. Apparently, exposure to nature, and living near or in greener spaces can actually modify how genes are expressed (epigenetics), in effect, "getting under our skin" in a positive way.[106]

Press; Ulrich, R. 1984. Views through a window may influence recovery from surgery. *Science*, 224, 420-421.

[106] Allyson Chiu. 2023. Living near green spaces could add 2.5 years to your life, new research finds. *Washington Post*. June 28. Available online at: https://www.washingtonpost.com/climate-solutions/2023/06/28/aging-green-spaces-nature-health/; Kyeezu Kim et al. 2023. Inequalities in urban greenness and epigenetic aging: Different associations by race and neighborhood soicioeconomic status. Science Advances. 28 June. Vol. 9, Issue 26. Available online at: https://www.science.org/doi/10.1126/sciadv.adf8140.

In other research, breast cancer survivors who engaged in personally enjoyable and nature-related "restorative activities" showed dramatic effects on their cognitive process and quality of life.[107] At the end of three months, the experimental group showed significant improvements in attention and self-reported quality of life measures; they had begun a variety of new projects. Control group members, meanwhile, who had been given no advice regarding nature exposure activities, continued with deficits in measures of attention, had started no new projects, and had lower scores on quality of life measures. This research underscored that difference between nature as an amenity and as a human need. As one reviewer of the study observed:

> "People often say that they like nature; yet they often fail to recognize that they need it...Nature is not merely 'nice.' It is not just a matter of improving one's mood, rather it is a vital ingredient in healthy human functioning."[108]

There is an important distinction between nature as amenity and nature as need. As one book affirms:

> "Viewed as an amenity, nature may be readily replaced by some greater technological achievement. Viewed as an essential bond between human and other living things, the natural environment has no substitutes."[109]

While there are many anecdotal reports linking the natural environment or open space to everything from increased self-esteem to stress reduction, there are few studies attempting to categorize the many phrases used to identify the worth of a walk in the woods or a day bird-watching beside a marsh.[110] Few studies track long-term longitudinal effects on changed attitudes and behavior. While it is difficult to characterize and quantify the long-term, intangible manner in which lives are modified, it is easy to acquire narrative accounts about the effect of a favorite overlook, trail, or patch of woods on one's psyche. One of the best known of such testimonials is from pioneering naturalist-conservationist John Muir:

> "Climb the mountains and get their good tidings. Nature's peace will flow into you as sunshine flows into trees. The winds will blow their own freshness into you, and the storms their energy, while cares will drop away from you like the leaves of Autumn."[111]

Natural settings are unparalleled in their ability to furnish solitude, privacy, and tranquility. They also have "existence value," that is, there is value to knowing that they are simply *there*

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[107] Cimprich, B. E. 1990. Attentional fatigue and restoration in individuals with cancer. Unpublished Doctoral Dissertation, University of Michigan.

[108] Kaplan, S. (1992). The Restorative Environment: Nature and human experience. In D. Relf (ed.), *The Role of horticulture in human well-being and social development: A National Symposium* [Proceedings of Conference Held 19-21 April 1990, Arlington, VA] (pp. 134-142). Portland, OR: Timber Press.

[109] Kaplan, R., & Kaplan, S. (1989). *The Experience of nature: A Psychological perspective*. New York: Cambridge University Press.

[110] Op. cit. Footnote #48, Rubenstein.

[111] John Muir. *The Mountains of California*. First published in 1894.

and to the very idea that we *could* get away into them, if we so chose; this is a value in and of itself, which provides for a psychological "time-out" and a sense of wellbeing.

The May 2020 national survey[112] mentioned above of 1,500 American likely voters found that most of them recognize the value of nature and open space for their emotional well-being. Questions 7 and 8 on that survey addressed this connection directly:

> 7* Do you feel an emotional or spiritual uplift from time spent in natural areas like woodlands, wetlands and grasslands?
>
> 73% Yes
> 16% No
> 11% Not sure
>
> 8* How important is it that you can get to natural areas fairly quickly from where you live?
>
> 45% Very important
> 40% Somewhat important
> 10% Not very important
> 2% Not important at all
> 3% Not sure

Idahoans express similar attitudes about the value of wild nature and open space, as well as the importance of ready access to these natural assets. Four questions in our 2023 public opinion poll of 1,017 Idaho likely voters pertained to the recreational and spiritual value of Idaho's wildlands.[113]

> From an environmental standpoint, how important is it to preserve Idaho's forests, rivers, lakes, natural grasslands, mountains, and wilderness areas?
>
> 77% very important
> 16% somewhat important
> 4% not very important
> 1% not at all important
> 2% not sure

More than 90% of respondents thought that it is important to preserve Idaho's wild areas and natural habitats.

[112] Op. cit. Footnote #20. Pulse Opinion Research, 2020; see Appendix E in this report.
[113] Op. cit. Footnote #6. Entire poll contained in Appendix D of this study.

How important is it to you that you can easily get to Natural Areas and Open Space?

65% very important
26% somewhat important
6% not very important
1% not at all important
2% not sure

More than 9 in 10 Idahoans thought it was very or somewhat important to be able to easily access open space and natural areas.

A study of government data found that three-quarters (77%) of the loss of Idaho's open space, natural habitat, and farmland to development in recent decades was related to the state's rapid population growth. Would continuing this level of population growth into the future make Idaho better, worse or not much different?

7% better
77% worse
12% not much different
4% not sure

More than three out of four (77%) poll respondents disliked the loss of Idaho's open space, natural habitat, and farmland to development from the state's population growth at current levels.

In recent years, have you sensed that Idaho's parks and natural areas have become much more crowded, somewhat more crowded, somewhat less crowded, or much less crowded?

52% much more crowded
35% somewhat more crowded
4% somewhat less crowded
1% much less crowded
8% not sure

Almost 90 percent (87%) sensed that Idaho's parks and natural areas are becoming "much more" or "somewhat more" crowded.

Figure 64. Upper Twin Lake

Figure 65. Rathdrum Prairie

3. THE FACTORS IN SPRAWL AND HABITAT LOSS

Over the past few decades, dozens of diverse factors have been suggested as causes of America's relentless, unending sprawl, defined here as the expansion of urban land at the expense of rural land.

1. One factor is population growth.
2. All the other factors combine to increase per capita land consumption (which is the same as decreasing population density on developed or urbanized lands).

This study examines the relative importance of those two overall factors.

3.1 SPRAWL DEFINED

The word "sprawl" is not a precise term. But we do indeed use the term "Overall Sprawl" in a precise way in this study – it is the amount of rural land lost to development.

Fortunately, we can measure or quantify the amount of Overall Sprawl over time because of two distinct, painstaking processes conducted by two unrelated federal agencies: the U.S. Census Bureau (Census) and the Natural Resources Conservation Service (NRCS) of the U.S. Department of Agriculture (USDA). Using data from decennial censuses, Census has tabulated changes in the geographic sizes, shapes, and population sizes of the nation's Urbanized Areas (or UAs, now Urban Areas) every 10 years for more than a half a century (since 1950), while the NRCS has estimated county-level changes in the amount of America's Developed Lands in inventories conducted every five years since 1982. These National Resources Inventories or NRIs now run for 35 years, from 1982 to 2017).

The Census Bureau uses a rather complicated and changing set of criteria to measure the spread of cities into surrounding rural land. The Bureau defines the contiguous developed land of a central city and its suburbs as an "Urban Area", formerly called Urbanized Areas (for the larger areas) and Urban Clusters (for the smaller ones). Previously, it was possible to measure sprawl from decade to decade by calculating the change in overall acreage of a specific UA. Unfortunately, methodological changes in the Bureau's most recent urban-rural delineations based on the 2020 Census preclude our being able to use these most recent data because they do no longer permit an "apples versus apples" comparison with 2010 and earlier urban-rural delineations. Therefore, the 2023 study on sprawl in Idaho cannot avail itself of these newest data, and thus we refer only in passing to previous UA delineations, namely those of 2000 and 2010, which are now becoming dated.

The NRCS uses remote sensing, survey, and statistical techniques to derive estimates of changes in land use on the nation's non-federal (private, tribal, state-owned, and municipal) lands. Built-up or developed lands are one of the categories of land use the NRCS delineates and quantifies. The NRI allows for consistent, quantitative, longitudinal (through time) measures of expanding development – converting rural lands to urban or developed lands – by cities, towns, and transportation corridors outside those towns and cities in all regions of the country (including U.S. territories in the Caribbean Sea such as Puerto Rico and the U.S. Virgin Islands), except for Alaska.

3.2 OUR DATA SOURCES

Available NRI Developed Land estimates span an uninterrupted 35-year period from 1982-2017 in seven 5-year intervals (1982-1987, 1987-1992, 1992-1997, 1997-2002, 2002-2007, 2007-2012, 2012-2017). These estimates quantify how much rural land was converted into developed or built-up land over these discrete, sequential time intervals, as well as over the 35-year time period in its entirety. Census Bureau Urbanized Area delineations are available only for 2000 to 2010, so we can see how much Idaho's UA's grew or changed during that decade, but not in the 2010-2020 decade, as a result of methodological changes in the 2020 delineation procedures that prevent an accurate, direct comparison between the physical size of Urban Areas in 2020 with UA's in 2010 or 2000.

3.2.1 NRCS's National Resources Inventory and Developed Lands

The NRI is based on rigorous scientific and survey protocols. The U.S. Department of Agriculture's NRCS began developing the NRI in 1977 in response to several Congressional mandates. The first NRI published in 1982 used most of the survey methodology and protocols utilized by earlier inventories. However, the scope and sample size of the 1982 NRI were expanded to meet the demands of the Soil and Water Resources Conservation Act (RCA) of 1977, as well as to better address emerging issues like the permanent loss of agricultural lands to nonagricultural uses, such as transportation, industry, commercial and residential land uses.[114]

The NRI covers the entire surface area (both land and water) of the United States, except Alaska, including 49 states, Puerto Rico, the U.S. Virgin Islands, and certain Pacific Basin islands. The sample includes all land ownership categories, including federal lands (e.g., national parks, national wildlife refuges, national forests, Bureau of Land Management lands, Department of Defense military installations), although NRI data collection activities have

[114] U.S. Department of Agriculture. 2009. *Summary Report: 2007 National Resources Inventory*, Natural Resources Conservation Service, Washington, DC, and Center for Survey Statistics and Methodology, Iowa State University, Ames, Iowa. 123 pages. http://www.nrcs.usda.gov/technical/NRI/2007/2007_NRI_Summary.pdf.

historically focused on non-federal lands. Sampling is conducted on a county-by-county basis, using a stratified, two-stage, area sampling scheme. The two-stage sampling units are nominally square segments of land and points within these segments. The segments are typically half-mile-square parcels of land equal to 160-acre quarter-sections (a section is a square of territory one mile on each side, and comprising one square mile or 640 acres in area) in the Public Land Survey System, but there are a number of exceptions in the western and northeastern U.S. Three specific sample points are selected for most segments, although two are selected for 40-acre segments in irrigated portions of some western States, and some segments originally contained only one sample point.[115]

The 1997 NRI sample contained about 300,000 sample segments and 800,000 sample points (**Figure 66**). Whereas the NRI was conducted every five years up to 1997, an annual or continuous approach was begun in 2000. Each year a subset of between 71,000 and 72,000 segments from the 1997 sample is selected for observation. The subset is selected using a "supplemented panel rotation" design, meaning that a "core panel" of about 40,000 segments is observed each year along with a different supplemental or rotation panel chosen for each year.

Figure 66. Diagram of Hypothetical Landscape with Three Fixed Sample Points

Source: U.S. Department of Agriculture. 2020. *Summary Report: 2017 National Resources Inventory*, Natural Resources Conservation Service, Washington, DC, and Center for Survey Statistics and Methodology, Iowa State University, Ames, Iowa.

https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/technical/nra/nri/results/

[115] Ibid.

The NRI survey system uses points as the sampling units rather than farms or fields, because land use and land unit boundaries often change in some parts of the country. Utilizing points has allowed the survey process to generate a database with dozens of factors or data elements that are properly correlated over many years. Thus, analyses and inferences based on these data are using proper combinations of longitudinal data.[116]

Data for the initial 1982 NRI were collected by thousands of field staff of the Soil Conservation Service (SCS – predecessor agency to NRCS), whose efforts were supplemented by contractors and employees of other agencies working under SCS supervision. Data collection began in the spring of 1980 and ran for more than two years, finishing in the autumn of 1982. For the 1987 NRI, data were also collected by teams of trained personnel. Remote sensing techniques (via aircraft or satellite) were used to update 1982 conditions for about 30 percent of the sample sites. Reliance upon remote sensing increased during the 1990s. Beginning in 2000, special high-resolution imagery was obtained for each NRI sample site.[117]

In 2004, NRCS established Remote Sensing Laboratories (RSLs) in Greensboro, NC; Fort Worth, TX; and Portland, OR. These three labs were designed, equipped, and staffed to take advantage of modern geospatial technologies, enabling efficient collection and processing of NRI survey data. The RSLs are now staffed with permanent employees whose full-time job is NRI data collection and processing.[118]

A number of quality control and quality assurance (QC/QA) processes are conducted by NRCS and contract staff as well as by the Statistical Unit and NRCS resource inventory specialists. Many of these QC/QA processes are embedded within the survey software developed by NRCS and the Statistical Unit. The QC/QA processes ensure that differences in the data over time reflect actual changes in resource conditions, rather than differences in the perspectives of two different data collectors, or changes in technologies and protocols.

One of the special features of the NRI is its genuine longitudinal nature, that is, its reliability and consistency through time, so that users of this dataset can be confident that, for example, differences in the area of developed land shown for 2017, 1997, and 1982 accurately reflect true differences "on the ground" or in reality. Even though many operational features of the NRI survey program have evolved over the years, processes have been implemented to ensure that data contained within the 2007 NRI database are longitudinally consistent. Data collection protocols always include review and editing of historical data for the particular NRI sampling units being observed.[119]

[116] Ibid.
[117] Ibid.
[118] Ibid.
[119] Ibid.

NRI's broadest classification divides all U.S. territory into three categories: federal land, water areas, and non-federal land. Non-federal land is broken out into developed and rural. Rural lands are further subdivided into cropland, Conservation Reserve Program (CRP) land, pastureland, rangeland, forestland, and other rural land. In the present study we are concerned only with developed land.

NRI's category of developed land differs from that used by other federal data collection entities. While other studies and inventories emphasize characteristics of human populations (e.g., Census of Population) and housing units (e.g., American Housing Survey), for the NRI, the intent is to identify which lands have been permanently eliminated from the rural land base. The NRI Developed Land category includes: (a) large tracts of urban and built-up land; (b) small tracts of built-up land less than 10 acres in size; and (c) land outside of these built-up areas that is in a rural transportation corridor (roads, interstates, railroads, and associated rights-of-way).

Since 1982, the NRI has inventoried land use in all 3,000+ counties in the contiguous 48 states plus Hawaii. It does not, however, count population, and for that our study relies on U.S. Census Bureau population estimates by county. Thus, we can observe how the area of developed land and population size have changed over time, county by county in Idaho, and how these two fundamental variables are correlated…or not.

3.2.2 Census Bureau's Urbanized Areas

Our previous national sprawl studies (2001, 2003, 2014, 2022) as well as our many studies conducted since 2000 for individual states, and regions (such as the Southern Piedmont in the Southeast), relied heavily on the U.S. Census Bureau's delineations of urbanized areas and changes in their respective populations over time, as well as the NRCS's NRI discussed just above.

However, and unfortunately, in the current study for Idaho, we are unable to use the Bureau's most recent (December 2022) urban / rural delineations based on the 2020 Census. This is because changes in criteria and definitions between 2020 and 2010 prevent the comparison of the geographic sizes and population sizes of 2020's urban areas with those delineated in the earlier 2010 and 2000 Censuses.

First, a little background is in order. The Census Bureau classifies all geographic areas of the United States as either urban or rural. Urban places are those characterized by densely populated and developed land above a minimum population threshold; they include residential, commercial, industrial and other non-residential urban land uses. The Census Bureau has been making these classifications for a long time: it first defined urban places in reports following the 1880 and 1890 censuses.

The Bureau adopted the 2010 minimum population threshold for urban areas of 2,500 a century earlier back in the 1910 Census; any incorporated place that contained at least 2,500 people within its boundaries was designated as urban. All territories outside of these urban places, regardless of their population densities, were considered rural.

The Bureau started designating and delineating densely populated Urbanized Areas (UAs) of 50,000 or more residents beginning with the 1950 Census, accounting for the increased presence of densely inhabited suburban development on the expanding periphery of large cities. Outside of UAs, the Bureau continued to identify as urban any incorporated place or census designated place of at least 2,500 and less than 50,000 people.

In both the 2000 and 2010 Census urban versus rural delineations, the Bureau introduced the concept of "urban clusters" (UCs), representing smaller urban places located outside of UAs. These were defined based on the same criteria as UAs, but represented built-up areas containing at least 2,500 and less than 50,000 people. "Rural" areas continued to be defined as any population, housing, or territory outside of designated urban areas (UAs and UCs).

According to the Census Bureau, in the 2010 Census, an urban area consisted of a "densely settled core of census tracts and/or census blocks that meet minimum population density requirements, along with adjacent territory containing non-residential urban land uses as well as territory with low population density included to link outlying densely settled territory with the densely settled core." In essence, these represented America's "urban footprint."

For the 2020 Census, the Bureau's urban / rural classification delineates all geographic areas, identifying both individual urban areas and the nation's rural area outside of those urban areas. As the Bureau states: "…urban areas represent densely developed territory, and encompass residential, commercial, and other non-residential urban land uses. 'Rural' encompasses all population, housing, and territory not included within an urban area."[120]

In the 2020 Census, areas classified as "urban" comprise a densely-settled core of census blocks that meet minimum housing unit density and/or population density requirements. Adjacent territories containing non-residential urban land uses are included. To qualify as an urban area, the territory identified according to criteria must include at least 2,000 housing units or a population of at least 5,000.[121]

Tables 9, 10, and 11 display some basic facts on Census-delineated Urban Areas from the 2020 Census. The first row of Table 9 shows that the total geographic size (land area) of all Urban Areas in the U.S. actually declined by 2.4% between 2010 and 2020, even though the

[120] U.S. Census Bureau. 2023. Urban And Rural. Accessed online 2-17-23 at: https://www.census.gov/programs-surveys/geography/guidance/geo-areas/urban-rural.html.
[121] Ibid.

population of those same UA's grew by almost 16 million. It is highly unlikely that these areas actually shrank in reality, "on the ground," and much more likely that recent changes in the Bureau's criteria for what qualifies as "urban" account for this apparent change.

Table 9. 2020 Census Urban Areas in U.S. by the Numbers	
Total number of 2020 Census Urban Areas	2,612
Total urban population	265,149,027
Percent population living within urban areas	80.0%
Total rural population	66,300,254
Percent population living within rural areas	20.0%

Source: https://www.census.gov/programs-surveys/geography/guidance/geo-areas/urban-rural/2020-ua-facts.html

Table 10. Urban Area / Population Change in U.S. Over Time	
Land area change for urban areas between 2010 and 2020	-2.4%
Population density change for urban areas between 2010 and 2020	9.0%
Total urban population change between 2010 and 2020	6.4%
Total population change between 2010 and 2020	7.4%
Total 2020 urban population	265,149,027
Total 2010 urban population	249,253,271
Total population - 2020	331,449,281
Total population - 2010	308,754,538

Source: Same as for Table 9.

Table 11. Ten Most Populous 2020 Urban Areas in the United States

Urban Area	Population	Land Area (square miles)	Population Density (per sq. mi.)
New York--Jersey City--Newark, NY--NJ	19,426,449	3,248.12	5,981
Los Angeles--Long Beach--Anaheim, CA	12,237,376	1,636.83	7,476
Chicago, IL--IN	8,671,746	2,337.89	3,709

Miami--Fort Lauderdale, FL	6,077,522	1,244.18	4,885
Houston, TX	5,853,575	1,752.69	3,340
Dallas--Fort Worth--Arlington, TX	5,732,354	1,746.90	3,281
Philadelphia, PA--NJ--DE--MD	5,696,125	1,898.19	3,001
Washington--Arlington, DC--VA--MD	5,174,759	1,294.51	3,997
Atlanta, GA	4,999,259	2,450.52	2,040
Boston, MA--NH	4,382,009	1,655.89	2,646

Source: Same as for Table 9.

Unsurprisingly, and thankfully, we would add, none of the top ten largest urban areas in the United States are in Idaho. In fact, Boise, the largest city and urban area in Idaho, is the 94th-largest urban area by population size in the United States, according to the 2020 Census.[122]

Table 12 from the Census Bureau illustrates the differences in the criteria used for the 2010 and 2020 Urban Area delineations.[123] It is these differences, or some of them, that account for why the geographic size of America's urban areas ostensibly decreased between 2010 and 2020, when in actuality, the opposite occurred on the ground, as shown by the NRI's county-level estimates, which are based on longitudinally consistent survey methods and criteria.

Table 12. Differences between the 2010 and 2020 Census Urban Area Criteria

Criteria	2010 Census Criteria	2020 Census Criteria
Identification of Initial Urban Area Cores	Census tracts and blocks meeting population density, count, and size thresholds. Use of land cover data to identify territory with a high degree of impervious land cover.	Census block or aggregation of census blocks with a housing unit density of 425. Use of land cover data to identify territory with a high degree of impervious land cover.

[122] https://www.census.gov/programs-surveys/geography/guidance/geo-areas/urban-rural.html

[123] U.S. Census Bureau. 2022. This table summarizes the key differences between the final 2020 Census Urban Area criteria described in the March 24, 2022, *Federal Register* (87 FR 16706) and the *Federal Register* Notice Clarification (scheduled publication December 29, 2022), and the 2010 Census Urban Area criteria. Available online at: https://www2.census.gov/geo/pdfs/reference/ua/Census_UA_CritDiff_2010_2020.pdf.

Criteria	2010 Census Criteria	2020 Census Criteria
Qualifying Urban Areas	Based on a minimum threshold of 2,500 people.	Based on a minimum threshold of 2,000 housing units or 5,000 people.
Urban Area Type	Urbanized areas and urban clusters identified using a 50,000-population threshold.	Urban areas are no longer distinguished as either an "urbanized area" or an "urban cluster." All qualifying areas are designated as an "urban area."
Group Quarters Blocks	No additional criteria to specifically account for group quarters qualifying as urban.	Census blocks that do not meet the minimum housing unit density threshold but contain group quarters and a population density of at least 500 population per square mile adjacent to already qualified urban blocks will be included in an urban area.
Inclusion of Noncontiguous Territory via Hops and Jumps	Maximum hop distance 0.5 miles, maximum jump distance 2.5 miles. Intervening low-density jump corridor blocks included in urban area.	Maximum hop distance 0.5 miles, maximum jump distance 1.5 miles. Intervening low-density jump corridor blocks not included in urban area.
Inclusion of Noncontiguous Territory Separated by Exempted Territory	Bodies of water.	Bodies of water and wetlands as identified in land cover data. The intervening, low-density blocks of water and/or wetlands are not included in the urban area.
Additional Nonresidential Urban Territory	Inclusion of groups of census blocks with a high	

Criteria	2010 Census Criteria	2020 Census Criteria
	degree of impervious land cover and are within 0.25 miles of an urban area and have a total area of at least 0.15 square miles.	Inclusion of groups of census blocks with a high degree of impervious land cover or contain a three-year average of at least 1,000 commuter destinations that are within 0.5 miles of an urban area and have a total area of at least 0.15 square miles.
Inclusion of Airports	Currently functioning airport with an annual enplanement of at least 2,500 passengers and is within 0.5 miles of an urban area.	Currently functioning airport with an annual enplanement of at least 2,500 passengers and is within 0.5 miles of an urban area or is a qualified cargo airport within 0.5 miles of an urban area. Additional census blocks adjacent to an urban area not initially identified by automated delineation that have a high association with airports.
Merging Individual Urban Areas	Merge qualifying territory from separately defined 2010 Census urban cores that share territory contained within the boundaries of the same Census 2000 urban area. Merge only occurs if an area is at risk of losing urbanized area or urban status and is preventable by the merge.	Merge qualifying territory from separately defined 2020 Census Urban Areas in cases where the combined territory contains at least one area with a high-density nucleus and one without, the component areas are within 0.25 miles, both have at least 1,000 housing units or 2,500 population, and there is a 3- year mean worker-flow of at least 50 percent between candidate urban area pairs.
Splitting Large Urban Agglomerations	Split location is guided by location of Census 2000 urbanized area boundaries. Potential split locations also consider metropolitan statistical area, county, incorporated place, census designated place, and/or minor civil division	2010 Census Urban Areas and areas connected via low density fill during the 2020 Census Urban Area delineation are used to identify split candidates. The location of the split boundary is identified using worker flow data between candidate urban

Criteria	2010 Census Criteria	2020 Census Criteria
	boundaries as well as distance from each component urbanized area.	area pairs. If necessary, split location is further guided by other commuter-based communities and secondarily by other geographic area boundaries and/or physical features.
Assigning Urban Area Titles (Names)	Clear, unambiguous name based on commonly recognized place names derived from incorporated places, census designated places, minor civil divisions, and the Geographic Names Information System.	Clear, unambiguous name primarily based on commonly recognized names of places within a high- density nucleus, derived from incorporated places, census designated places, governmental minor civil divisions, and the Geographic Names Information System.

Source:
https://www2.census.gov/geo/pdfs/reference/ua/Census_UA_CritDiff_2010_2020.pdf

As noted above, one or more of the changes in the criteria listed and described in Table 11 are responsible for the total or aggregate geographic area in the United States classified as Urban *decreasing* by 2.4% from 2010 to 2020, even as the number of residents living in these designated Urban Areas *increased* by 15,895,756 or 6.4%. We are uncertain as to precisely which of the modified criteria account for this counterintuitive outcome, and thus preclude us from being able to compare on an even footing the land areas and populations of 2020 Urban Areas with those of 2010 (and earlier) Urbanized Areas, but one of the likely suspects is the criterion labeled "Inclusion of Noncontiguous Territory via Hops and Jumps." The Census Bureau describes this modified criterion in the following manner:

> The Census Bureau reduces the maximum jump distance from 2.5 miles in 2010 to 1.5 miles in 2020. Data users, analysts, and some urban geographers expressed concern that the 2.5-mile maximum jump distance adopted for the 2000 Census was too generous and resulted in overextension of urban areas. The Census Bureau proposed reverting to 1.5 miles in the proposed criteria for the 2010 Census, but responses from commenters were inconclusive and, as a result, no change was made. The impervious surface criteria adopted in 2010 better accounted for non-residential urban land uses, many of which also were in mind when extending the jump distance to 2.5 miles for the 2000 Census. Thus,

> the two criteria serve largely the same purpose, but are applied separately, and when taken together, they can **result in overextension of urban territory** [emphasis added].
>
> The Census Bureau also no longer includes within an urban area the low-density territory intervening between the main body of the urban area and the outlying qualifying urban territory that is the destination of a hop or a jump. Review of 2010 Census Urban Areas indicates that, due to their often irregular and relatively large geographic extent, **including the corridor blocks resulted in the inclusion of population, housing, and territory that is otherwise of a rural nature and contains land uses that are not consistent with those found in the densely developed urban blocks on either end of the hop or jump corridor** [emphasis added]. A primary reason in the past for including the corridor blocks was to create contiguous geographic areas that were easier for cartographers to map rather than for any reason to improve the urban-rural classification and its resulting data. Geospatial cartographic tools and technology have progressed and some degree of noncontiguity is no longer as significant of an issue.

In essence, the Bureau decided that its earlier 2010 criterion with regard to "jumps" and "hops" resulted in an "overextension of urban territory," in other words, it exaggerated the actual size of Urban Areas; delineated Urbanized Areas were being made artificially larger on their ragged peripheries than they actually are on the ground, in reality. Thus, the net effect of the change in the 2020 delineation / classification criteria is to reduce the delineated extent of certain Urban Areas in a manner that the Bureau believes is more faithful to the concept and character of what an urban area actually is. That is all well and good, but it means that the both the geographic sizes (land areas) and population sizes of the 2020 Census' Urban Areas cannot be compared and contrasted with 2010 or 2000 Urbanized Areas, because they are not being measured consistently.

As shown in Table 9, on average, the population density of all Urban Areas in the country increased by nine percent between 2010 and 2020. This is consistent with an aggregate Urban-classified land area that shrunk by 2.4% at the same time that the aggregate Urban population grew by 6.4%. Applying our methodology for attributing shares of sprawl to the population growth factor and the growth in per capita land consumption factor (explained later), the mere fact that the total area of land in the U.S. occupied by urban land cover decreased by 2.4% on an aggregate national scale, would mean that no sprawl had occurred at all between 2010 and 2020. Anyone who has lived in America since 2010 knows that this is patently false. Enormous expanses of open space and countryside have been converted to concrete, asphalt, subdivisions, and strip malls since 2010.

The upshot of the foregoing discussion is that in this 2023 Idaho sprawl study, we are unable to use the Urban Area data from the 2020 Census to examine how much those areas have sprawled and their populations have grown and changed since 2010 or 2000. We will still refer

to the sprawl that occurred in Idaho Urbanized Areas from 2000 to 2010, but as that decade recedes further into the past, its findings become ever more dated and ever less relevant.

3.3 POPULATION GROWTH

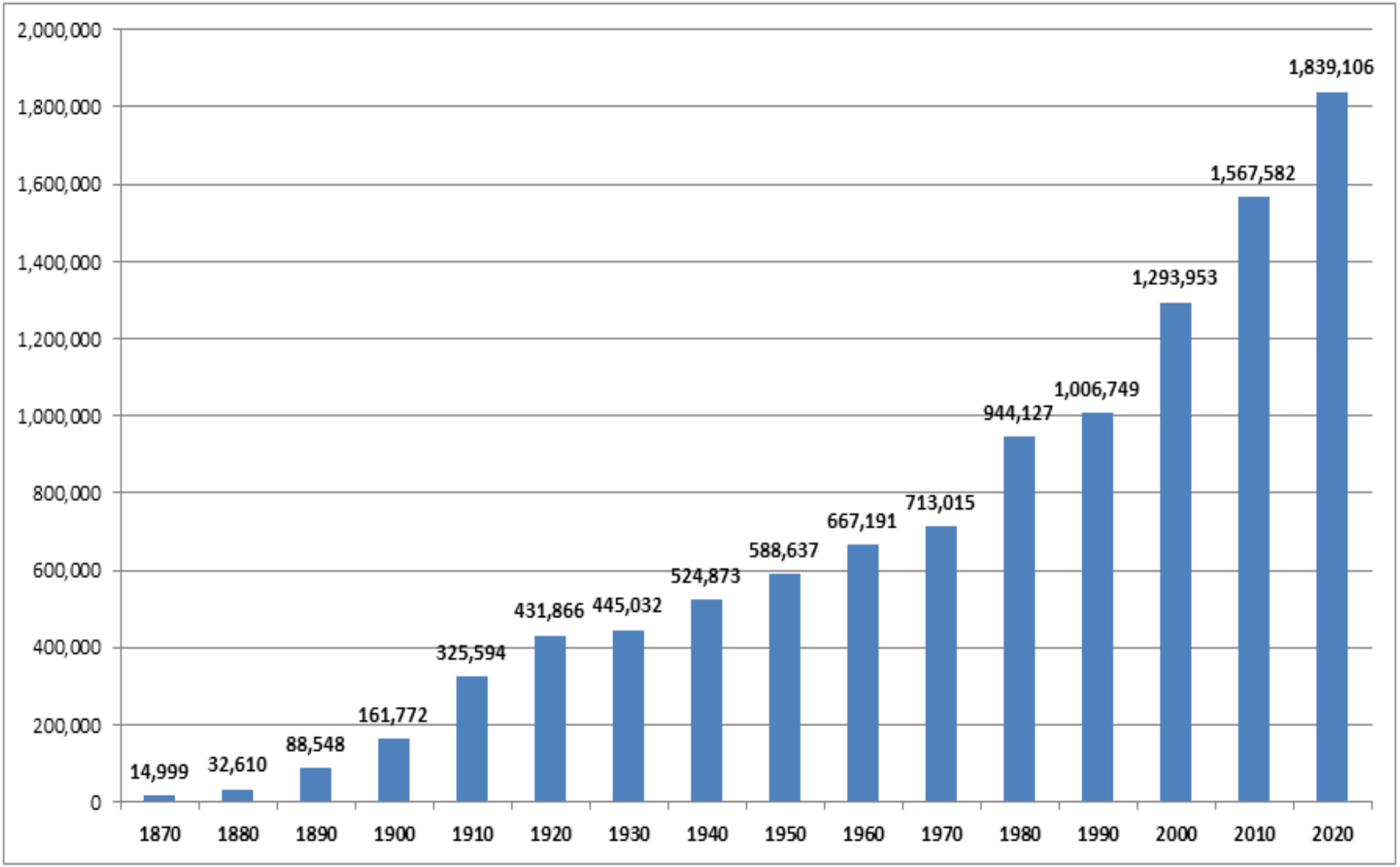
A city, county, state, or country's population grows based on personal behavior – births and in-migration – and on local, state, and national governmental actions and policies. Looking more closely, the net increase (or decrease) in population in any given time period (e.g., one year, one decade) is due to the number of births minus the number of deaths plus the number of in-migrants minus the number of out-migrants.

Table 13 and Figure 67 show population growth in Idaho from 1870 to 2020. In 1870, there were barely 15,000 residents in the entire state; 150 years later (2020), the number of Idahoans had exploded by approximately 122 times to more than 1.8 million. The fact that this curve is bending upward suggests exponential growth for much of the period of record. On average, over these 150 years, Idaho's population grew at the exponential (compound) rate of 3.26% annually, an extraordinary rate. From 1990 to 2020, the exponential annual growth rate slowed to 2.03%, and from 2000 to 2020, to 1.77%. But the absolute numbers added to the population each decade – the decadal increment – has changed little in the past three decades, varying from about 270,000 to 290,000.

Table 13. Population Growth in Idaho, 1870-2020

Year	Population	Year	Population
1870	14,999	1950	588,637
1880	32,610	1960	667,191
1890	88,548	1970	713,015
1900	161,772	1980	944,127
1910	325,594	1990	1,006,749
1920	431,866	2000	1,293,953
1930	445,032	2010	1,567,582
1940	524,873	2020	1,839,106

Figure 67. Population Growth in Idaho, 1870-2020



Nowadays, rapid growth in an urban area's or state's population is much more likely to be the result of enticing residents to relocate from elsewhere. Local and state governments can and do create many explicit incentives or subsidies that encourage people to move into a particular urban area. These include aggressive campaigns to persuade industries and corporations to move their factories, offices, headquarters, and jobs from another location, public subsidies for the infrastructure that supports businesses, tax breaks, expansion of water service and sewage lines into new areas, new housing developments and new residents, and general public relations that increase the attractiveness and "business friendliness" of a city to outsiders and the business community. Even without trying, a city can attract new residents just by maintaining amenities, good schools, low crime rates, pleasant parks, and a high quality of life, especially if the nation's population is growing significantly, as continues to be the case today.

3.3.1 Population Growth in Idaho Counties

Idaho has 44 counties (shown on the map in **Figure 69**) which vary tremendously in their size, shape, geography, topography, and natural ecosystems.

Figure 68. Idaho Shepherd with his Horse, Sheepdog, and Flock
Credit: David Mark from Pixabay

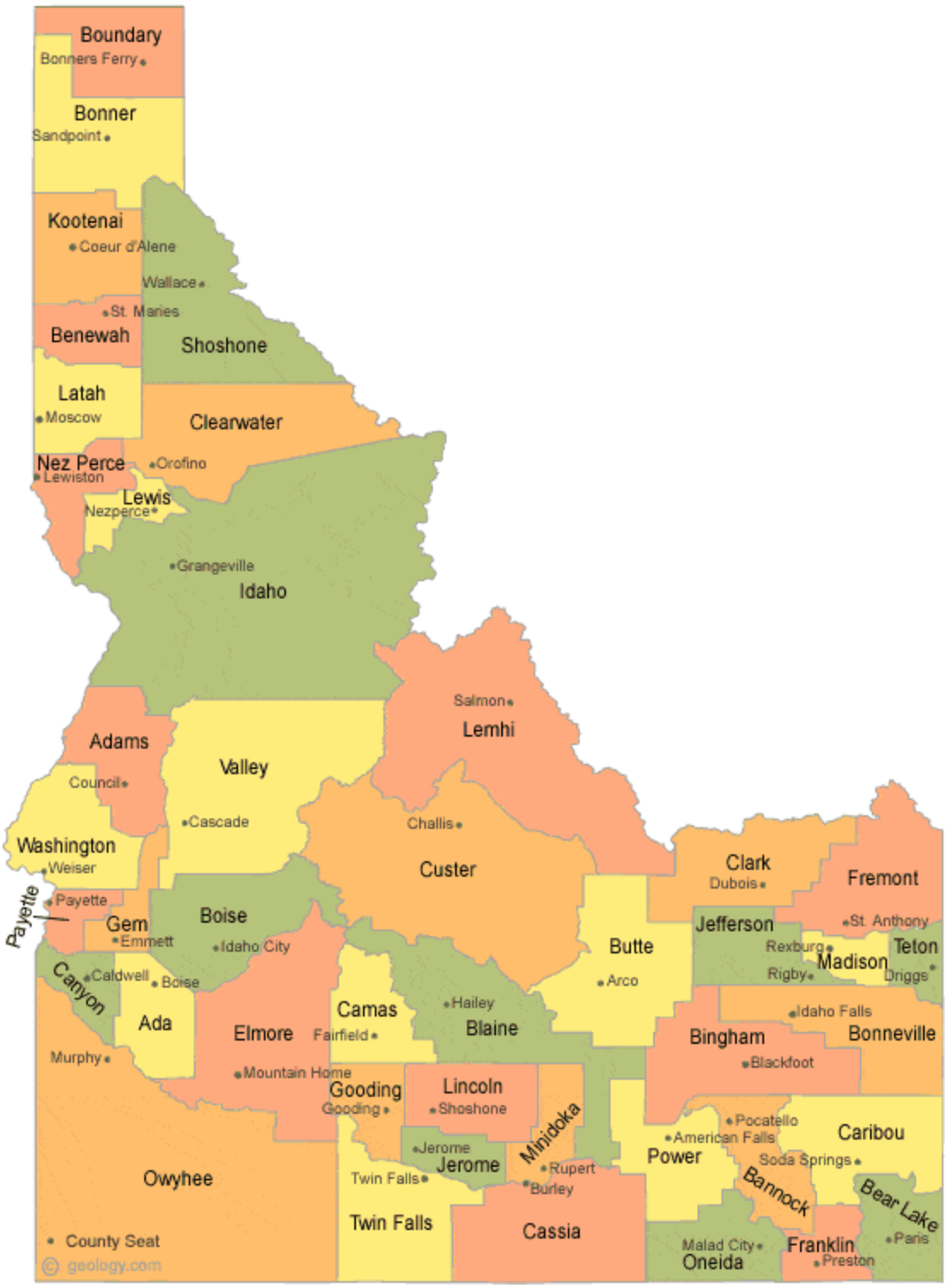


Figure 69. Idaho's Counties

Table 14 shows the population change in all 44 Idaho counties from 1982 to 2017. On average during those 35 years, these 44 counties grew by 76 percent, at an annual compound (exponential) rate of 1.64 percent. The populations of 36 counties increased, while the populations of eight counties decreased. In total, Idaho grew from a population of 973,719 in 1982 to 1,717,715 in 2017.

Table 14. Population Growth in Idaho Counties – 1982 to 2017

County	Population in 1982	Population in 2017	% growth
Ada	180,481	456,548	153%
Adams	3,237	4,127	27%
Bannock	67,081	85,482	27%
Bear Lake	7,385	6,023	-18%
Benewah	8,378	9,157	9%
Bingham	37,516	45,884	22%
Blaine	11,256	22,373	99%
Boise	3,059	7,347	140%
Bonner	25,137	43,654	74%
Bonneville	66,865	114,488	71%
Boundary	7,458	11,965	60%
Butte	3,490	2,585	-26%
Camas	804	1,096	36%
Canyon	85,537	216,858	154%
Caribou	8,873	6,973	-21%
Cassia	20,066	23,650	18%

County	Population in 1982	Population in 2017	% growth
Clark	831	879	6%
Clearwater	10,333	8,646	-16%
Custer	5,031	4,135	-18%
Elmore	21,849	26,881	23%
Franklin	9,465	13,467	42%
Fremont	11,080	13,122	18%
Gem	11,787	17,311	47%
Gooding	12,402	15,121	22%
Idaho	14,865	16,373	10%
Jefferson	15,596	28,439	82%
Jerome	15,699	23,768	51%
Kootenai	62,436	157,320	152%
Latah	29,908	39,741	33%
Lemhi	8,036	7,829	-3%
Lewis	4,056	3,884	-4%
Lincoln	3,605	5,376	49%
Madison	20,912	39,370	88%
Minidoka	20,228	20,722	2%
Nez Perce	32,858	40,289	23%
Oneida	3,279	4,389	34%

County	Population in 1982	Population in 2017	% growth
Owyhee	8,499	11,618	37%
Payette	15,999	23,163	45%
Power	6,935	7,606	10%
Shoshone	19,010	12,519	-34%
Teton	3,185	11,445	259%
Twin Falls	53,958	85,374	58%
Valley	6,292	10,667	70%
Washington	8,962	10,051	12%
All Idaho Counties	**973,719**	**1,717,715**	**76%**

Table 15 compares population growth in Idaho with 48 other states during the same 1982-2017 time period, by percentage change. Idaho was the 8th-fastest growing state in the United States (not including Alaska) during these 35 years, by percentage increase.

Table 15. Population Growth in 49 States, 1982-2017, Ranked by Percentage

Ranking (by percentage) 1982-2017	State	Percentage Increase in Population, 1982-2017
1	Nevada	236.9%
2	Arizona	143.7%
3	Florida	100.2%
4	Utah	99.0%
5	Texas	84.6%

Ranking (by percentage) 1982-2017	State	Percentage Increase in Population, 1982-2017
6	Georgia	84.3%
7	Colorado	83.3%
8	**Idaho**	**76.4%**
9	Washington	73.6%
10	North Carolina	70.6%
11	Delaware	59.7%
12	California	58.6%
13	South Carolina	56.5%
14	Oregon	55.5%
15	Virginia	54.1%
16	New Mexico	53.4%
17	Tennessee	44.4%
18	Hawaii	43.3%
19	New Hampshire	42.3%
20	Maryland	40.6%
21	Minnesota	34.7%
22	Montana	30.9%
23	Arkansas	30.8%

Ranking (by percentage) 1982-2017	State	Percentage Increase in Population, 1982-2017
24	South Dakota	26.4%
25	Alabama	24.2%
26	Missouri	23.9%
27	Oklahoma	22.6%
28	Wisconsin	22.4%
29	Indiana	21.8%
30	Kansas	21.1%
31	Nebraska	21.1%
32	Kentucky	20.9%
33	Vermont	20.3%
34	New Jersey	19.6%
35	Massachusetts	18.9%
36	Maine	17.4%
37	Mississippi	16.9%
38	Wyoming	14.3%
39	Connecticut	13.8%
40	North Dakota	12.9%
41	Illinois	11.9%

Ranking (by percentage) 1982-2017	State	Percentage Increase in Population, 1982-2017
42	New York	11.4%
43	Rhode Island	10.6%
44	Michigan	9.4%
45	Iowa	8.8%
46	Ohio	8.4%
47	Pennsylvania	8.0%
48	Louisiana	7.3%
49	West Virginia	-6.8%

These tables cover a period that started in 1982, when the first federal NRI results were published, and ended in 2017, the year of the last available developed land data at the time of this report.

Table 16 shows the more recent sub-period from 2002 to 2017. The aggregate population of Idaho's 44 counties increased by 28 percent during these 15 years, from 1,340,372 to 1,717,715, at an annual compound (exponential) rate of 1.67 percent.

Table 16. Population Growth in Idaho Counties – 2002 to 2017

County	Population in 2002	Population in 2017	% growth
Ada	321,616	456,548	42%
Adams	3,559	4,127	16%
Bannock	76,487	85,482	12%
Bear Lake	6,219	6,023	-3%
Benewah	8,917	9,157	3%
Bingham	42,101	45,884	9%
Blaine	20,189	22,373	11%
Boise	6,854	7,347	7%
Bonner	37,634	43,654	16%
Bonneville	85,060	114,488	35%
Boundary	9,834	11,965	22%
Butte	2,906	2,585	-11%
Camas	1,025	1,096	7%
Canyon	145,160	216,858	49%
Caribou	7,161	6,973	-3%
Cassia	21,504	23,650	10%
Clark	948	879	-7%
Clearwater	8,579	8,646	1%
Custer	4,143	4,135	0%

County	Population in 2002	Population in 2017	% growth
Elmore	27,047	26,881	-1%
Franklin	11,687	13,467	15%
Fremont	12,029	13,122	9%
Gem	15,488	17,311	12%
Gooding	14,342	15,121	5%
Idaho	15,495	16,373	6%
Jefferson	19,802	28,439	44%
Jerome	18,730	23,768	27%
Kootenai	113,667	157,320	38%
Latah	35,183	39,741	13%
Lemhi	7,590	7,829	3%
Lewis	3,673	3,884	6%
Lincoln	4,242	5,376	27%
Madison	28,478	39,370	38%
Minidoka	19,542	20,722	6%
Nez Perce	37,111	40,289	9%
Oneida	4,125	4,389	6%
Owyhee	10,876	11,618	7%
Payette	20,966	23,163	10%
Power	7,371	7,606	3%

County	Population in 2002	Population in 2017	% growth
Shoshone	13,044	12,519	-4%
Teton	6,849	11,445	67%
Twin Falls	65,473	85,374	30%
Valley	7,762	10,667	37%
Washington	9,904	10,051	1%
All Idaho Counties	**1,340,372**	**1,717,715**	**28%**

Table 17 compares population growth in Idaho with 48 other states during the same 2002-2017 time period, by percentage change. Idaho was the 5th-fastest growing state in the United States (not including Alaska) during these 15 years, by percentage increase, following Texas (4th place) and ahead of Florida (6th place).

Table 17. Population Growth in 49 States, 2002-2017, Ranked by Percentage

Ranking (by percentage) 2002-2017	State	Percentage Increase in Population, 2002-2017
1	Nevada	36.6%
2	Utah	33.4%
3	Arizona	30.5%
4	Texas	30.5%
5	**Idaho**	**28.2%**
6	Florida	25.6%
7	Colorado	25.0%
8	North Carolina	23.3%

Ranking (by percentage) 2002-2017	State	Percentage Increase in Population, 2002-2017
9	Washington	22.7%
10	Georgia	22.4%
11	South Carolina	22.2%
12	Delaware	18.7%
13	North Dakota	18.3%
14	Oregon	17.9%
15	Virginia	16.1%
16	Wyoming	15.8%
17	Tennessee	15.8%
18	Montana	15.4%
19	Hawaii	14.9%
20	South Dakota	14.8%
21	California	12.9%
22	New Mexico	12.7%
23	Oklahoma	12.7%
24	Arkansas	10.9%
25	Minnesota	10.9%
26	Nebraska	10.9%

Ranking (by percentage) 2002-2017	State	Percentage Increase in Population, 2002-2017
27	Maryland	10.7%
28	Kentucky	8.9%
29	Alabama	8.8%
30	Indiana	8.2%
31	Missouri	7.6%
32	Kansas	7.2%
33	Iowa	7.1%
34	Massachusetts	6.9%
35	Wisconsin	6.3%
36	New Hampshire	6.3%
37	Mississippi	4.5%
38	New Jersey	3.9%
39	Louisiana	3.9%
40	Pennsylvania	3.7%
41	Connecticut	3.3%
42	Maine	3.0%
43	New York	2.4%
44	Ohio	2.2%

Ranking (by percentage) 2002-2017	State	Percentage Increase in Population, 2002-2017
45	Illinois	2.0%
46	Vermont	1.4%
47	West Virginia	0.6%
48	Michigan	-0.4%
49	Rhode Island	-1.0%

Figure 70. Northern Rockies in Idaho
Credit: Jim Black from Pixabay

3.3.2 Population Growth in Idaho Urbanized Areas (2000-2010)

Table 18 shows population growth in Idaho Urbanized Areas from 2000 to 2010. In aggregate, the state's UAs grew from 623,122 in 2000 to 812,027 in 2010, an increase of 30 percent.

Table 18. Population Growth in Idaho Urbanized Areas – 2000 to 2010

Urbanized Area	Population in 2000	Population in 2010	% growth
Boise City, ID	272,625	349,684	28.3%
Nampa, ID	95,909	151,499	58.0%
Coeur d'Alene, ID	74,800	98,378	31.5%
Idaho Falls, ID	66,973	90,733	35.5%
Pocatello, ID	62,498	69,809	11.7%
Lewiston, ID--WA	50,317	51,924	3.2%
All Idaho UAs	**623,122**	**812,027**	**30.3%**

Figure 71. Fall Colors on the Lochsa River

Credit: Jim Black from Pixabay

3.3.3 Causes of Idaho's Population Growth

Idaho's population nearly doubled between the 1980 and 2020 U.S. Censuses (**Table 19**).

Table 19. Idaho Population by Decennial Census, 1980 to 2020

Year	Population
1980	947,983
1990	1,011,882
2000	1,293,953
2010	1,567,582
2020	1,839,106

From 2010 to 2020, Idaho's population increased by 271,524 and the state had the second fastest growth rate behind Utah.[124] This population growth, reflecting a trend beginning in the late 1980s, was concentrated in southwestern Idaho around the Boise metropolitan area. According to the Census Bureau:

> [Southwestern Idaho] ranks high nationally for levels of in-migration, community amenities and livability, although the increased population continues to drive up real estate prices. The in-migration is also creating stress throughout the state as communities determine how best to pay for growth without pricing out its long-standing residents. Southwestern Idaho contributed to more than half of the decade-long growth in the state and has the largest share of the population among the regions at 46%, an uptick of two points from Census 2010.[125]

In one form of analysis, all of Idaho's population growth can be measured in two sources:

- Natural Increase: births in the state minus deaths in the state.
- Net migration: number of people who moved into the state minus those who moved out of the state.

Idaho's annual population growth rate was relatively modest from 1980-1989 (0.7%), considerably slower than the previous decade's aggressive annual rate (2.9%).[126] The Boise

[124] Idaho Department of Labor, "Census 2020 Confirms Idaho Ranks Second Nationally in Population Growth," https://idahoatwork.com/2021/09/03/census-2020-confirms-idaho-ranks-second-nationally-in-population-growth/, accessed September 2, 2023.
[125] Ibid.
[126] Census Bureau Decennial Censuses, Idaho Regional Economic Project, "Population Growth by Decade, Counties of Idaho, 1970-2021," Pacific Northwest Regional Economic Project, https://idaho.reaproject.org/analysis/comparative-indicators/growth_by_decade/population/reports/, accessed September 2, 2023.

metropolitan area had the highest total growth, with Blaine, Custer, and Valley counties leading the way. Migration was not a growth factor in the 1980s, which saw a **negative** net migration, with approximately 52,000 more residents leaving Idaho than moving into the state. But in the 1990s, in-migration outpaced out-migration and that net migration into Idaho began to outpace natural increase.

Figure 72 shows that natural increase was responsible for 41% of Idaho's population growth from 1990 to 2020.[127] Net migration into Idaho was responsible for the other 59%.

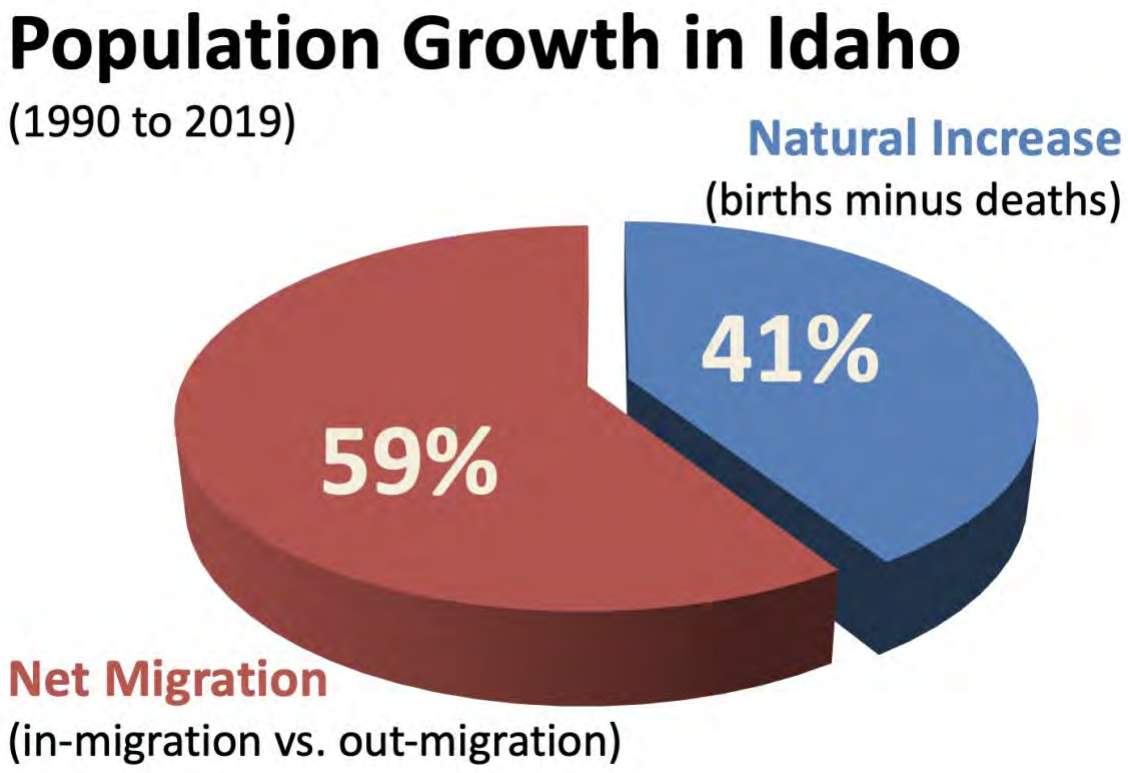


Figure 72. Percentage of Population Growth in Idaho Due to Natural Increase and Net Migration from 1990 to 2019

[127] U.S. Census Bureau, "State Population Totals and Components of Change: 2010-2019," https://www.census.gov/data/tables/time-series/demo/popest/2010s-state-total.html; "State Population Estimates and Demographic Components of Population Change: April 1, 1990 to July 1, 1999, https://www2.census.gov/programs-surveys/popest/tables/1990-2000/state/totals/st-99-02.txt; "1981 to 1989 Intercensal Estimates of the Resident Population of States, and Year-to-Year Components of Change," accessed September 2, 2023.

The 59% contribution of net migration to Idaho's population growth from 1990 to 2019 includes people who moved to Idaho directly from abroad and people (both U.S.-born and foreign-born) who moved into Idaho from other states.

Another way to measure a state's population growth is to divide all growth between these two sources:

- growth related to international migration (**Table 20**).
- all other growth that is not related to international migration.

Table 20. Idaho Foreign-born Population, 1980 to 2020

Year	Population
1980	23,404
1990	28,905
2000	64,080
2010	87,098
2020	106,668

Idaho's foreign-born population grew almost five times larger from 1980 to 2020, though the state's foreign-born population was only 23,404 and just 2.4% of the total population in 1980, making even modest growth seem substantial. While Idaho's foreign-born population has increased at a much more rapid rate than the state's total population, at 5.8% of the state population in 2020, it was still considerably below the 13.7% figure for the United States as a whole.

Figure 73 shows that 8% of Idaho's population growth from 1990 to 2020 is due to net migration into the state by the foreign-born who moved to Idaho directly from another country. That means 92% of the state's growth in those years came from the combination of natural increase (41%) and net migration from other states (51%), which includes both those born in the United States and those born abroad who lived in another state before moving to Idaho.

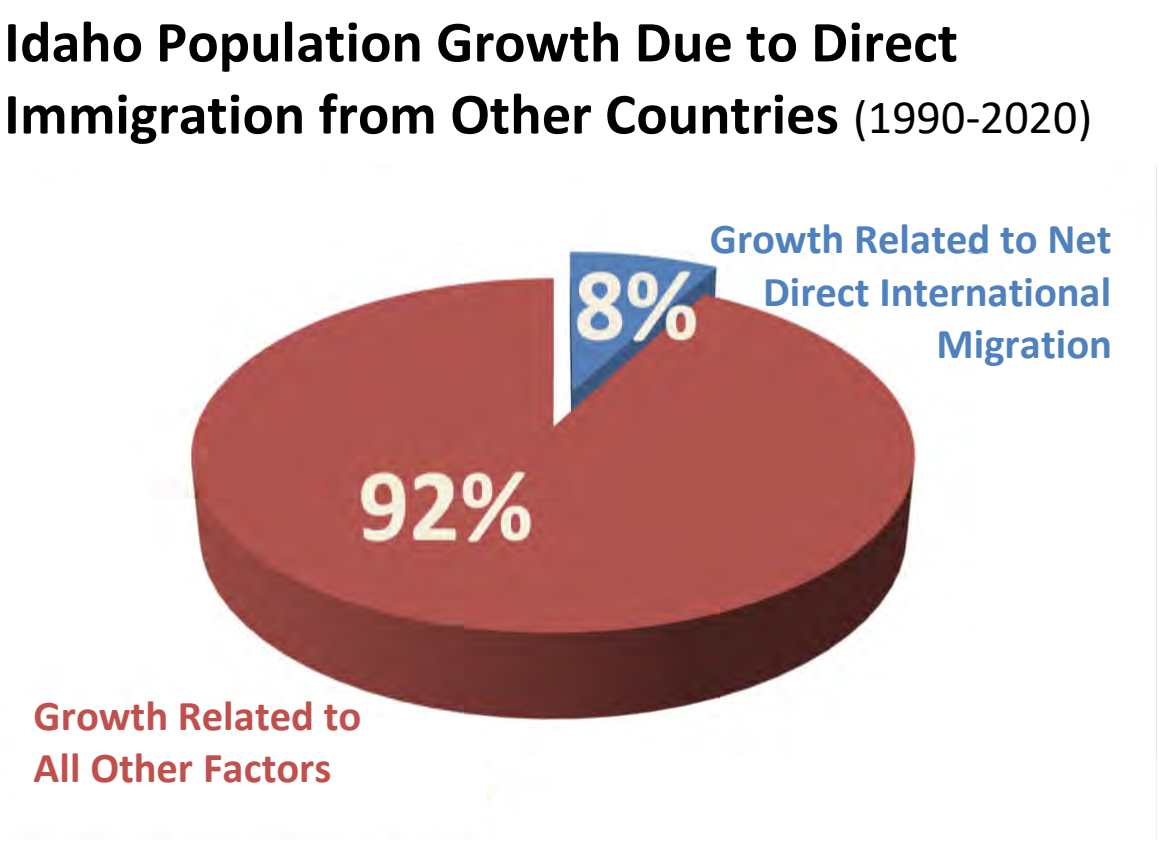


Figure 73. Percentage of Idaho Population Growth Related to Immigrants Moving Directly from Other Countries, 1990-2020

International migration, though, has a greater effect on Idaho's population growth beyond immigrants arriving directly in Idaho from other countries. Immigrants who move to Idaho after living in another state also contribute, as they would not have been able to migrate to Idaho if they had not first immigrated to the United States and lived elsewhere. Children who are born to immigrant parents in Idaho, or to immigrant parents living in another state who subsequently move to Idaho, are also contributors and would not have added to Idaho's population if their parents had not immigrated in the first place.

Figure 74 shows that 18% of Idaho's population growth from 1982 to 2017 (the specific period of our sprawl study) was due to foreign immigration in that period.[128] This is based on growth in four groups of residents who would not have been in Idaho if not for foreign migration:

[128] Our estimate of immigration's impact on Idaho's population growth between 1982 and 2017 is based on an analysis of the public use files of the 2017 American Community Survey (ACS) and the 1999 and 2017 Current Population Survey Annual Social and Economic Supplements (CPS ASEC). It is well established that these Census Bureau surveys capture both legal and illegal immigrants. The ACS and CPS identify immigrants (also called the foreign born) and ask what year they came to the United States.

- Foreign-born Idaho residents in 2017 who arrived in the U.S. after 1982 and came directly to Idaho or through another state (75,000).
- Minors (under age 18) in 2017 who were born in the U.S. to post-1982 immigrants (38,000).
- Adults in 2017 who were born in the U.S. to post-1982 immigrants (14,000).
- Minors (under age 18) who are the U.S.-born grandchildren of post-1982 immigrants (6,000).

We use the 2017 ACS to measure the number of immigrants living in Idaho who entered in 1982 or later. In addition to identifying immigrants and their year of arrival, the CPS asks respondents the birthplace of their parents, allowing us to measure the progeny of post-1982 immigrants in the state.

The 2017 ACS shows 75,000 immigrants living in Idaho who arrived in the country in 1982 or later. This number has been adjusted to exclude half of those who indicated in 2017 that they arrived in the year 1982. This is necessary because the ACS and the population estimate on which overall state population growth is based reflect the population on July 1 of each year. In contrast, the ACS measures immigrant arrivals by calendar year. In addition to immigrants who arrived 1982-2017, we also find based on 2017 CPS ASEC, that there were 38,000 U.S.-born children (under age 18) of post-1982 immigrants in the state. We do this by only counting those with immigrant fathers. We exclude those with only an immigrant mother to avoid double counting. All these children still live with their parents, estimating their number is straightforward.

To estimate the number of U.S.-born adults in 2017 with post-1982 immigrant parents, we use the 1999 CPS ASEC. In 1999, these individuals were still minors and lived with their immigrant parents so we are able to determine the year that the parents arrived. In 1999, 50 percent of second-generation children born 1982 to 1999 with a foreign-born father were the child of a parent who came in 1982 or later. The remainder of U.S.-born second-generation Americans in this age group were born to immigrant parents who arrived prior to 1982. Applying this percentage to the adult children of immigrants 18 to 35 in 2017 means there were 14,000 U.S.-born adult offspring of post-1982 immigrants in Idaho.
Finally, we find that there were 12,000 minor children (<17) with a second-generation parents who are ages 15 to 35 in 2017. We use this age for the second-generation parents as they are old enough to have a child, but young enough to have been born to a post-1982 immigrant. To be clear, these minor children are the grandchildren of immigrants. We again assume that 50 percent of these second-generation parents are the offspring of a post-1982 immigrant giving us an estimated 6,000 U.S.-born grandchildren of post-1982 immigrants in Idaho in 2017.
In total, we estimate there were 133,000 post-1982 immigrants, their children and grandchildren in Idaho in 2017. The state's total population was 965,000 in 1982 and 1,719,745 in 2017. Immigration therefore accounted for almost 18 percent of the 754,745 increase over this time period. (Note the actual percentage is 17.6.)

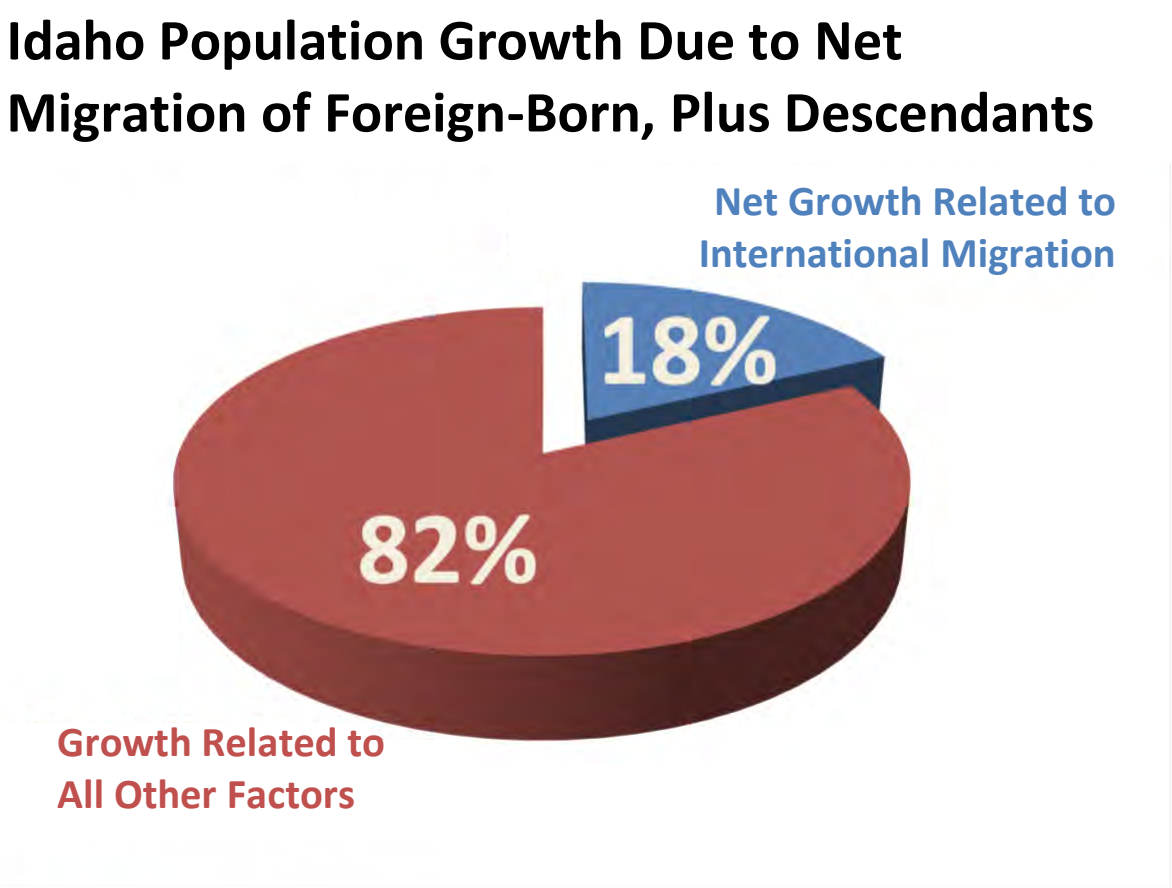


Figure 74. Percentage of Idaho Population Growth Related to Migration of Foreign-Born, Plus Their U.S.-Born Children/Grandchildren, 1982 to 2017

In sum, approximately 133,000 residents of Idaho in 2017 would not have moved to the United States or been born in the United States if not for the flow of foreign immigration between 1982 and 2017. That amounts to about 18% of the state's total population growth. (Footnote #122 explains the methodology, including ways to avoid double-counting.)

The 18% of total Idaho population growth related to immigration (international migration) compares to 56% for the entire United States. The last three state sprawl studies published by NumbersUSA were for Texas, Colorado, and Arizona. The percentage of population growth related to immigration for those states were 47%, 26%, and 44% respectively. Idaho had the lowest percentage of immigration-related population growth of any state we've examined so far. Still, with almost 1/5 of the state's growth due to immigration, it is a factor to consider when discussing growth in Idaho.

In addition, federal immigration policies have indirectly further contributed to Idaho's population growth above the 18% level. A large percentage of U.S.-born migrants to Idaho (not counted in the above categories) have left other Western states that have experienced many

negative quality-of-life developments stemming from their own massive population growth. **Table 21** shows the states sending the most people to Idaho. All are nearby Western states with high rates of population growth. All but Oregon are also states of high immigration (by numbers or rate of growth).

Table 21. Top Five Sending States to Idaho (2019)

Rank	State
1.	California
2.	Washington
3.	Oregon
4.	Utah
5.	Arizona

Perhaps the greatest pressure on Idaho's future comes from California having apparently reached some kind of tipping point after a century of massive population expansion to nearly 40 million residents – 20 times the size of Idaho. Since 1982, more than 2 million acres of California have been converted from farmland and natural habitat to developed land while the population boomed.

People fleeing California's extensively documented and heavily publicized socioeconomic and environmental problems – particularly the high cost of housing – are the largest single source of Idaho newcomers.

Idaho, with its population density of 23 residents per square mile, can look awfully alluring to Californians living at a density of 258 residents per square mile and seeking more elbow room and lower housing prices. As high levels of foreign immigration continued into California in the last decade, nearly 8 million Americans moved from California to other states from 2010 through 2021. [fn American Community Survey]

Even a tiny fraction of disgruntled Californians spilling into Idaho can swamp efforts to preserve the state's character and elbow room. Thus, Idaho's future appears inextricably linked to the fate of California, a state that Idaho residents overwhelmingly say they don't want to emulate. Bumper stickers and other signs with slogans such as "Don't Californicate Idaho" attest to the fear.

3.3.4 Idaho Population Projections

There are many factors that will determine Idaho's future population. There are year-to-year fluctuations in population growth, especially when it comes to net migration into the state. What is important is the long-term trend. As it now stands, there are good reasons to believe that Idaho's population growth will remain relatively steady over time unless Idahoans decide to effect a change going forward.

Given Idaho's popularity as a destination for out-of-state migrants, it is reasonable to assume that it will remain so for the next two-and-a-half decades, especially given its lower cost of living compared to many states, including those in its proximity. The Idaho Department of Labor projected that the state's population will be 2,116,413 in 2031. Extending that projection using the Idaho Department of Labor's 1.1% projected rate of growth would put Idaho's population in 2050 at 2,605,388, an increase of 645,026 or 33% or from its current population. If that rate of growth is cut in half, Idaho's projected population would be 2,348,875 in 2050. Compare these figures with the projection of 2,677,606 in Section 5.1 of this study. All of these forecasts are in the same rough ballpark of 2.3 to 2.7 million.

Jaap Vos, a professor in the Department of Natural Resources and Society at the University of Idaho, has researched and published on growth in the state. A 2022 study by Vos found that a quarter of Idaho's population had moved to the state within the last ten years, bringing the state's rapid growth into sharp focus.

Vos' research also reveals that the rate of Idaho residents leaving the state has also increased over the past decade.

> Vos found that, on an average day in 2021, 180 people moved into Idaho and 137 moved out of state…. Any place will change when it loses longtime residents, and more than replaces them with transplants. In Idaho, that shift happened rapidly in the past decade, Vos said.
>
> Such rapid change can affect Idaho's commerce, politics, economy, housing and job market.[129]

Vos further states:

> While the census already shows we are one of the fastest growing states, the actual demographic changes are much more dramatic, and I believe this change is what most people are noticing… The census data provides population numbers, but it hides the dynamics of change.'[130]

[129] Audrey Dutton, "It's not just growth. Idaho is also losing residents and changing fast," Idaho Capital Sun, August 22, 2022, https://idahocapitalsun.com/2022/08/22/its-not-just-growth-idaho-is-also-losing-residents-and-changing-fast/, accessed September 2, 2023.

[130] "Idaho's Demographics Changing at Unprecedented Rates, U of I Analysis Finds," University of Idaho, *News*, https://www.uidaho.edu/news/news-articles/news-releases/2022/081822-demographics, accessed September 23, 2013.

3.4 PER CAPITA DEVELOPED LAND CONSUMPTION

Per capita land consumption statistics are a useful way to understand the combined power of numerous land use and consumption choices that can lead to urban sprawl. See Appendices B and C for how this statistic is calculated.

When Census Bureau data show that per capita developed land consumption was 0.36 acre in 2017 in Blaine County, Idaho, it means that it takes a bit more than one-third of an acre to provide the average resident with space for housing, work, retail, transportation, education, religious assembly, government, recreation, utilities, and all other urban needs. Because of the interconnected, interdependent nature of economies between counties and states – the flows of raw materials, manufactured products, and labor (workforce) – some unknown percentage of the developed land in certain counties is supplying the needs and demands of resident of other counties. For example, a regional shopping mall or a large factory located in a given county may provide jobs and products for residents of other nearby or even counties. And this accounts for some of the variation observed in developed land per capita between counties.

Looked at another way, the per capita developed land consumption of a county is determined by dividing all the developed acreage by the total number of residents. The lower the per capita consumption number, overall, the more efficiently the population is using the land for urban purposes.

3.4.1 Per Capita Developed Land Consumption in Idaho Counties

Table 22 shows the change in per capita developed land consumption in Idaho's 44 counties from 1982 to 2017. Thirty of the 44 counties showed an increase, which means residents and their officials were using land less efficiently (or at least more extravagantly) in 2017 than in 1982. And 14 counties showed a decrease in per capita land consumption, which means residents were living, working, and shopping at higher density.

In the state as a whole, overall land consumption per capita (developed acres/person) decreased by six percent during this 35-year period, signifying that, even though 30 of 44 counties showed more developed land per capita, this was outweighed by the increases in density of the 14 counties where that effect prevailed. Overall, in 2017, at 0.543 acre of developed land per person, Idaho held 19th place in developed land consumption per capita. All of the states with higher developed land consumption per capita than Idaho – e.g., North Dakota, Wyoming, South Dakota, Montana, Kansas – tend to be low-population and low-population-density states with rural, agricultural, or resource extraction-oriented economies.

Table 22. Per Capita Developed Land Consumption in Idaho Counties – 1982 and 2017

County	Per Capita Developed Land Consumption – 1982 (acre)	Per Capita Developed Land Consumption - 2017 (acre)	% Change in Per Capita Land Consumption, 1982-2017
Ada	0.28	0.27	-2%
Adams	1.88	1.79	-5%
Bannock	0.27	0.29	10%
Bear Lake	1.04	1.54	48%
Benewah	0.93	1.81	95%
Bingham	0.66	0.88	33%
Blaine	0.36	0.36	2%
Boise	1.86	3.47	86%
Bonner	0.69	0.78	13%
Bonneville	0.42	0.37	-11%
Boundary	1.01	0.76	-24%
Butte	0.77	1.55	100%
Camas	3.48	2.46	-29%
Canyon	0.33	0.29	-12%
Caribou	1.15	3.97	246%
Cassia	0.94	1.00	7%
Clark	5.42	5.57	3%

County	Per Capita Developed Land Consumption – 1982 (acre)	Per Capita Developed Land Consumption - 2017 (acre)	% Change in Per Capita Land Consumption, 1982-2017
Clearwater	1.41	2.08	47%
Custer	0.95	1.38	44%
Elmore	0.86	1.06	23%
Franklin	0.57	0.63	11%
Fremont	1.26	1.22	-3%
Gem	0.48	0.57	19%
Gooding	0.60	0.68	14%
Idaho	1.11	0.98	-12%
Jefferson	0.62	0.45	-28%
Jerome	0.57	0.63	9%
Kootenai	0.80	0.57	-29%
Latah	0.40	0.40	-2%
Lemhi	1.05	1.28	22%
Lewis	0.86	1.11	28%
Lincoln	0.28	0.60	115%
Madison	0.40	0.36	-10%
Minidoka	0.48	0.62	30%
Nez Perce	0.62	0.67	7%
Oneida	1.86	1.71	-8%

County	Per Capita Developed Land Consumption – 1982 (acre)	Per Capita Developed Land Consumption - 2017 (acre)	% Change in Per Capita Land Consumption, 1982-2017
Owyhee	1.48	1.63	10%
Payette	0.58	0.54	-5%
Power	1.57	1.74	10%
Shoshone	0.83	1.47	77%
Teton	0.88	0.93	5%
Twin Falls	0.44	0.52	19%
Valley	1.45	1.34	-7%
Washington	0.80	0.86	7%
All Idaho Counties	**0.58**	**0.54**	**-6%**

At a minimum, the per capita developed land consumption figure reflects the combined outcome of all the following individual and institutional choices and factors:

- Development
  - Consumer preferences for size and type of housing and yards
  - Developer preferences for constructing housing, offices and retail facilities
  - Governmental subsidies that encourage land consumption, and fees and taxes that discourage consumption
  - Quality of urban planning and zoning
  - Level of affluence
  - Size of the entire built-up urbanized land area comprised of non-residential land uses, such as industrial, institutional, government, commercial, etc.
- Transportation
  - Governmental subsidies and programs for highways, streets and mass transit

    - Consumer preferences favoring the mobility and flexibility offered by using private vehicles rather than public transit
    - Price of gasoline (cheap gas encourages sprawl)
- Quality of existing communities and ability to hold onto their residents
    - Quality of schools
    - Reality and perceptions concerning crime and personal safety
    - Ethnic and cultural tensions or harmony
    - Quality of government leadership
    - Job opportunities
    - Levels of pollution
    - Quality of parks, other public facilities and infrastructure
- Number of people per household
    - Marriage rate and average age for marriage
    - Divorce rate
    - Recent fertility rate
    - Level of independence of young adults
    - Level of affluence enabling single people to live separately

As noted earlier, states and counties with economies that are more oriented towards agriculture and/or extraction of raw materials and energy (e.g., mining, oil and gas development, and increasingly, large wind and solar farms) would also tend to have low population densities for any given amount of developed land. However, that development goes to support, underwrite, or accommodate – that is, is connected to – higher and denser human populations elsewhere in the country or the world.

Figure 75. Potato Field in Idaho
Credit: J. Stephen Conn, Flickr Creative Commons

Table 23 ranks the 49 states in our study by 2017 developed land consumption per capita and then divides them into four groups of 10 states and one group of nine states. It is noteworthy but not surprising that, on average, the states with the highest developed land consumption per capita are the states with the lowest overall population densities (residents per square mile), in other words, there is an inverse relationship between developed land consumption per capita and overall state population density.

Table 23. Developed Land Consumption Per Capita in 49 States in 2017, From Highest to Lowest

Rank	State	Developed Land Consumption Per Capita – 2017 (acres/person)	Overall State Population Density[1]	Average Population Density[2]
1	North Dakota	1.401	10.7	28.1
2	Wyoming	1.203	5.9	

Rank	State	Developed Land Consumption Per Capita – 2017 (acres/person)	Overall State Population Density[1]	Average Population Density[2]
3	South Dakota	1.118	11.3	
4	Montana	1.064	7.2	
5	Kansas	0.735	35.4	
6	Nebraska	0.662	24.8	
7	Maine	0.656	40.7	
8	New Mexico	0.655	17.2	
9	Mississippi	0.652	62.7	
10	Vermont	0.652	64.9	
11	West Virginia	0.643	75.0	
12	Arkansas	0.627	56.4	
13	Iowa	0.625	55.8	
14	Alabama	0.602	93.3	
15	Oklahoma	0.562	56.2	
16	New Hampshire	0.547	145.3	86.2
17	South Carolina	0.544	161.2	
18	**Idaho**	**0.543**	20.6	
19	Missouri	0.494	87.6	
20	Kentucky	0.482	110.2	

Rank	State	Developed Land Consumption Per Capita – 2017 (acres/person)	Overall State Population Density[1]	Average Population Density[2]
21	Wisconsin	0.482	103.2	163.2
22	North Carolina	0.479	195.0	
23	Tennessee	0.470	159.2	
24	Georgia	0.454	176.5	
25	Minnesota	0.442	66.0	
26	Louisiana	0.428	95.3	
27	Michigan	0.424	170.9	
28	Indiana	0.384	184.0	
29	Virginia	0.382	200.0	
30	Ohio	0.362	282.2	
31	Pennsylvania	0.353	282.3	203.3
32	Colorado	0.352	53.9	
33	Oregon	0.342	42.7	
34	Washington	0.341	107.9	
35	Texas	0.337	105.9	
36	Delaware	0.312	399.3	
37	Connecticut	0.305	715.8	
38	Utah	0.299	36.5	

Rank	State	Developed Land Consumption Per Capita – 2017 (acres/person)	Overall State Population Density[1]	Average Population Density[2]
39	Arizona	0.298	61.8	
40	Illinois	0.273	226.8	
41	Florida	0.267	357.5	
42	Massachusetts	0.259	822.3	
43	Maryland	0.255	489.9	
44	Rhode Island	0.222	830.7	
45	New Jersey	0.211	1090.3	498.4
46	New York	0.199	399.2	
47	Nevada	0.183	26.9	
48	Hawaii	0.177	221.1	
49	California	0.160	248.1	

[1] Number of residents per square mile (i.e., state population / state land area in square miles)
[2] Average population density per square mile for these groupings of states

In **Table 24,** we review changes in per capita developed land consumption in the latter part of the 1982-2017 period in Idaho counties. Between 2002 and 2017, per capita land consumption for the entire state declined slightly from 0.61 acre to 0.54 acre – an 11% reduction.

Table 24. Per Capita Developed Land Consumption in Idaho Counties – 2002 and 2017

County	Per Capita Developed Land Consumption – 2002 (acre)	Per Capita Developed Land Consumption - 2017 (acre)	% Change in Per Capita Land Consumption, 2002-2017
Ada	0.32	0.27	-16%
Adams	2.05	1.79	-13%
Bannock	0.28	0.29	6%
Bear Lake	1.45	1.54	7%
Benewah	1.81	1.81	0%
Bingham	0.82	0.88	8%
Blaine	0.33	0.36	11%
Boise	3.43	3.47	1%
Bonner	0.66	0.78	17%
Bonneville	0.41	0.37	-11%
Boundary	0.79	0.76	-4%
Butte	1.17	1.55	32%
Camas	2.24	2.46	10%
Canyon	0.36	0.29	-18%
Caribou	3.84	3.97	3%
Cassia	1.06	1.00	-5%
Clark	5.06	5.57	10%

County	Per Capita Developed Land Consumption – 2002 (acre)	Per Capita Developed Land Consumption - 2017 (acre)	% Change in Per Capita Land Consumption, 2002-2017
Clearwater	2.02	2.08	3%
Custer	1.23	1.38	12%
Elmore	0.94	1.06	13%
Franklin	0.63	0.63	0%
Fremont	1.26	1.22	-4%
Gem	0.46	0.57	22%
Gooding	0.66	0.68	3%
Idaho	0.99	0.98	-1%
Jefferson	0.60	0.45	-26%
Jerome	0.64	0.63	-2%
Kootenai	0.71	0.57	-20%
Latah	0.42	0.40	-6%
Lemhi	1.25	1.28	2%
Lewis	1.14	1.11	-3%
Lincoln	0.64	0.60	-6%
Madison	0.42	0.36	-16%
Minidoka	0.62	0.62	1%
Nez Perce	0.67	0.67	0%
Oneida	1.72	1.71	-1%

County	Per Capita Developed Land Consumption – 2002 (acre)	Per Capita Developed Land Consumption - 2017 (acre)	% Change in Per Capita Land Consumption, 2002-2017
Owyhee	1.58	1.63	3%
Payette	0.55	0.54	-2%
Power	1.79	1.74	-3%
Shoshone	1.36	1.47	8%
Teton	0.99	0.93	-7%
Twin Falls	0.56	0.52	-6%
Valley	1.60	1.34	-16%
Washington	0.82	0.86	5%
All Idaho Counties	**0.61**	**0.54**	**-11%**

3.4.2 Per Capita Urbanized Land Consumption in Idaho (2000-2010)

On average, each resident of an Idaho Urbanized Area consumed or utilized less than one-third of an acre of urbanized land in 2010. That is to say, per capita urbanized land consumption was 0.279 acre. It had decreased slightly from ten years earlier in 2000, that is, each resident of the six Idaho UAs used a bit less urbanized land on average in 2010 than in 2000 (**Table 25**). The 0.279 acre per Urbanized Area resident was considerably smaller than the 0.54 acre average in 2017 for all Idaho residents, which included towns and rural areas.

Table 25. Change in Per Capita Urbanized Land Consumption in Idaho Urbanized Areas – 2000 to 2010

Urbanized Area	Per Capita Urbanized Land Consumption – 2000 (acre)	Per Capita Urbanized Land Consumption -2010 (acre)	% Change in Per Capita Urbanized Land Consumption, 2000-2010
Boise City, ID	0.255	0.245	-4.0%

Urbanized Area	Per Capita Urbanized Land Consumption – 2000 (acre)	Per Capita Urbanized Land Consumption -2010 (acre)	% Change in Per Capita Urbanized Land Consumption, 2000-2010
Nampa, ID	0.307	0.293	-4.5%
Coeur d'Alene, ID	0.361	0.307	-14.8%
Idaho Falls, ID	0.296	0.314	6.0%
Pocatello, ID	0.307	0.284	-7.3%
Lewiston, ID--WA	0.360	0.348	-3.4%
All Idaho UAs	**0.294**	**0.279**	**-5.0%**

3.5 POPULATION VERSUS CONSUMPTION

Table 26 compares change in population to change in per capita land consumption in Idaho counties from 1982 to 2017. On average, across these 35 years, all Idaho counties increased their combined population by 76 percent, while their aggregate per capita land consumption actually decreased by six percent. While one of the two factors that drive urban sprawl grew in prominence, the other contracted, at least in aggregate for the state as a whole (when all counties are aggregated or considered together). It should be noted, however, that per capita developed land consumption did actually increase in 28 of the 44 Idaho counties, well more than half of them.

Table 26. Population Growth vs. Growth in Per Capita Developed Land Consumption in Idaho Counties, 1982-2017

County	% POPULATION GROWTH, 1982-2017	% GROWTH IN PER CAPITA LAND CONSUMPTION, 1982-2017
Ada	153%	-2%
Adams	27%	-5%
Bannock	27%	10%
Bear Lake	-18%	48%

County	% POPULATION GROWTH, 1982-2017	% GROWTH IN PER CAPITA LAND CONSUMPTION, 1982-2017
Benewah	9%	95%
Bingham	22%	33%
Blaine	99%	2%
Boise	140%	86%
Bonner	74%	13%
Bonneville	71%	-11%
Boundary	60%	-24%
Butte	-26%	100%
Camas	36%	-29%
Canyon	154%	-12%
Caribou	-21%	246%
Cassia	18%	7%
Clark	6%	3%
Clearwater	-16%	47%
Custer	-18%	44%
Elmore	23%	23%
Franklin	42%	11%
Fremont	18%	-3%
Gem	47%	19%
Gooding	22%	14%
Idaho	10%	-12%
Jefferson	82%	-28%
Jerome	51%	9%
Kootenai	152%	-29%
Latah	33%	-2%
Lemhi	-3%	22%

County	% POPULATION GROWTH, 1982-2017	% GROWTH IN PER CAPITA LAND CONSUMPTION, 1982-2017
Lewis	-4%	28%
Lincoln	49%	115%
Madison	88%	-10%
Minidoka	2%	30%
Nez Perce	23%	7%
Oneida	34%	-8%
Owyhee	37%	10%
Payette	45%	-5%
Power	10%	10%
Shoshone	-34%	77%
Teton	259%	5%
Twin Falls	58%	19%
Valley	70%	-7%
Washington	12%	7%
All Idaho Counties	**76%**	**-6%**

Table 27 compares recent change in population to change in per capita land consumption in Idaho counties from 2002 to 2017. On average, across these 15 years, all Idaho counties combined increased in population by 28 percent, while their aggregate per capita land consumption actually decreased by 11 percent. In the same pattern as for the longer 1982 to 2017 time period, one of the two factors (population growth) that drive urban sprawl grew in prominence while the other (per capita land consumption) contracted, at least when aggregated at the statewide level. It should be noted, however, that per capita developed land consumption did actually increase in 16 of the 44 Idaho counties, or roughly a third of them. However, the counties without increases or with declines had the larger population, which resulted in the statewide average reflecting the 11 percent per capita decline.

Table 27. Recent Population Growth vs. Recent Growth in Per Capita Developed Land Consumption in Idaho Counties, 2002-2017

County	% POPULATION GROWTH, 2002-2017	% GROWTH IN PER CAPITA LAND CONSUMPTION, 2002-2017
Ada	42%	-16%
Adams	16%	-13%
Bannock	12%	6%
Bear Lake	-3%	7%
Benewah	3%	0%
Bingham	9%	8%
Blaine	11%	11%
Boise	7%	1%
Bonner	16%	17%
Bonneville	35%	-11%
Boundary	22%	-4%
Butte	-11%	32%
Camas	7%	10%
Canyon	49%	-18%
Caribou	-3%	3%
Cassia	10%	-5%
Clark	-7%	10%
Clearwater	1%	3%
Custer	0%	12%
Elmore	-1%	13%
Franklin	15%	0%
Fremont	9%	-4%
Gem	12%	22%

County	% POPULATION GROWTH, 2002-2017	% GROWTH IN PER CAPITA LAND CONSUMPTION, 2002-2017
Gooding	5%	3%
Idaho	6%	-1%
Jefferson	44%	-26%
Jerome	27%	-2%
Kootenai	38%	-20%
Latah	13%	-6%
Lemhi	3%	2%
Lewis	6%	-3%
Lincoln	27%	-6%
Madison	38%	-16%
Minidoka	6%	1%
Nez Perce	9%	0%
Oneida	6%	-1%
Owyhee	7%	3%
Payette	10%	-2%
Power	3%	-3%
Shoshone	-4%	8%
Teton	67%	-7%
Twin Falls	30%	-6%
Valley	37%	-16%
Washington	1%	5%
All Idaho Counties	**28%**	**-11%**

3.6 MEASURING OVERALL SPRAWL

Using the National Resources Inventory (Developed Land) data, along with county by county Census Bureau population estimates for 1982, 2002, and 2017, we were able to measure the

increase in the overall amount of developed land in each Idaho county, along with what fraction or percentage of that sprawl could be attributed to population growth and what portion was a result of an increase in per capita land use.

The NRI provided the estimates, county by county, on how many acres of rural land had been converted into developed land in 5-year increments (and a three-year final increment) within their 35-year time span.

Figure 76. Idaho Natural Beauty

Credit: Drew Tad from Pixabay

4. FINDINGS

This study focuses on the loss or "conversion" of previously undeveloped, or rural, land that includes cropland, pastureland, rangeland, forest, and other natural habitat and open space in the state of Idaho.

At its most basic level, there are three possible reasons for an increase in the area of developed or urbanized land: 1) each individual, on average, is consuming more developed land; 2) there are more people consuming the land; or 3) a combination of both factors is working together to create sprawl. This study attempts to quantify the relative roles of the two fundamental factors behind sprawl: rising per capita land consumption (that is, declining population density) and population growth.

Figure 77. Subdivisions and sprawl on the edge of Boise encroach further and further into Idaho's natural habitats and farmlands

4.1 PER CAPITA SPRAWL AND OVERALL SPRAWL

Many respected environmental organizations and urban planners contend that implementing Smart Growth, New Urbanism, and LEED[131] building strategies into our new and existing cities is the best way to rein in sprawl in American cities. However, this is based on the premise that it is only or primarily our land-use choices that cause sprawl in Idaho. As our multiple studies over the past two decades demonstrate conclusively, Per Capita Sprawl by itself could not explain Overall Sprawl in the great majority of America's urbanized or developed areas.

[131] LEED stands for Leadership in Energy & Environmental Design. According to the U.S. Green Building Council, LEED "is transforming the way we think about how our buildings and communities are designed, constructed, maintained and operated across the globe. Comprehensive and flexible, LEED is a green building tool that addresses the entire building lifecycle recognizing best-in-class building strategies." http://www.usgbc.org/leed

Idaho is no exception. By comparing the aggregate percentage change in per capita land consumption (Per Capita Sprawl) with the aggregate percentage growth of Overall Sprawl (increased in developed land area) in the 44 counties, in **Figure 78**, we find that the Per Capita Sprawl percentage is much smaller than the Overall Sprawl percentage: -6 percent versus 67 percent. In fact, in aggregate, Per Capita Sprawl was negative in Idaho counties from 1982 to 2017, meaning that, on average, the typical resident used less developed land, not more. This is not to denigrate Smart Growth, New Urbanism, and the LEED program, but to recognize their limitations when they omit the population growth factor. These multi-faceted, multi-jurisdictional approaches have indeed slowed the pace at which sprawl is converting the countryside into pavement and buildings. However, given incessant population growth, they are capable only of slowing sprawl, not stopping it.

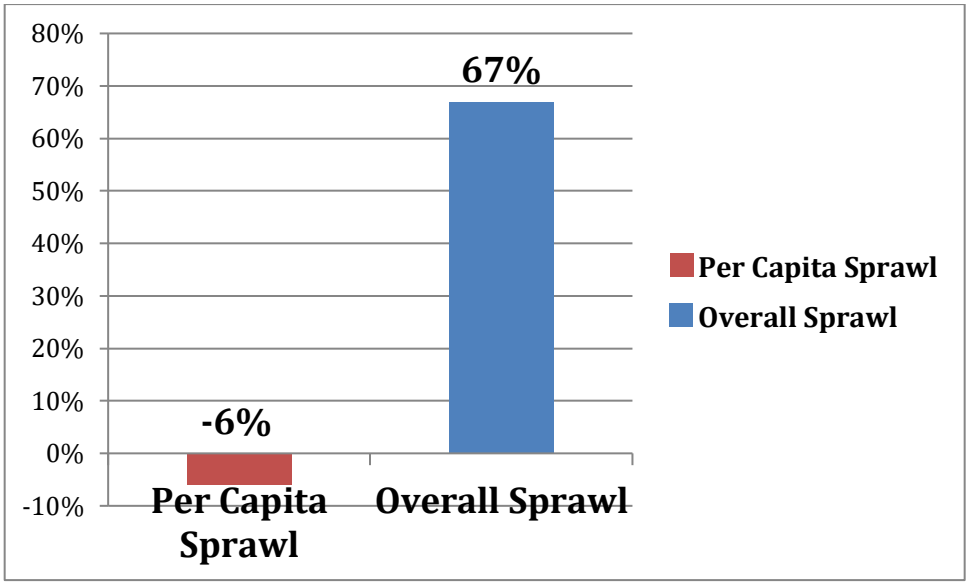


Figure 78. Recent Per Capita Sprawl vs. Overall Sprawl in Idaho counties, 1982-2017

Note**:** Per Capita Sprawl is % growth in per capita developed land consumption and Overall Sprawl is % growth in developed land area.

Table 28 compares the percentages of Per Capita Sprawl and Overall Sprawl from 1982 to 2017 in all 44 counties in the state of Idaho. In all but a relatively small number of cases (eight counties out of 44 in the state) in which the county in question experienced a population decline from 1982 to 2017, Per Capita Sprawl was only a small fraction of Overall Sprawl.

Figure 79. Coniferous Forests of Northern Idaho

Figure 80. Hiker on Mineral Ridge Trail above Lake Coeur d'Alene

Table 28. Per Capita Sprawl vs. Overall Sprawl
Idaho Counties – 1982 to 2017

County	% PER CAPITA SPRAWL, 1982-2017	% OVERALL SPRAWL, 1982-2017
Ada	-2%	148%
Adams	-5%	21%
Bannock	10%	40%
Bear Lake	48%	21%
Benewah	95%	113%
Bingham	33%	63%
Blaine	2%	103%
Boise	86%	347%
Bonner	13%	96%
Bonneville	-11%	52%
Boundary	-24%	21%
Butte	100%	48%
Camas	-29%	-4%
Canyon	-12%	124%
Caribou	246%	172%
Cassia	7%	26%
Clark	3%	9%
Clearwater	47%	23%
Custer	44%	19%
Elmore	23%	52%
Franklin	11%	57%
Fremont	-3%	14%
Gem	19%	75%
Gooding	14%	39%
Idaho	-12%	-3%

County	% PER CAPITA SPRAWL, 1982-2017	% OVERALL SPRAWL, 1982-2017
Jefferson	-28%	31%
Jerome	9%	66%
Kootenai	-29%	79%
Latah	-2%	30%
Lemhi	22%	19%
Lewis	28%	23%
Lincoln	115%	220%
Madison	-10%	70%
Minidoka	30%	33%
Nez Perce	7%	31%
Oneida	-8%	23%
Owyhee	10%	50%
Payette	-5%	37%
Power	10%	21%
Shoshone	77%	16%
Teton	5%	279%
Twin Falls	19%	88%
Valley	-7%	57%
Washington	7%	19%
All Idaho Counties	**-6%**	**67%**

Even the best Smart Growth, New Urbanism, and LEED strategies are able to engineer only so much population density. As long as the population is still growing, the land area taken up by Idaho towns and cities will almost certainly continue to grow.

4.2 RELATIVE WEIGHT OF SPRAWL FACTORS IN IDAHO COUNTIES

To better understand and quantify the respective roles of population growth and per capita developed or urbanized land consumption in generating Overall Sprawl, we can use a more mathematically sophisticated method that is sometimes used to apportion consumption of natural resources between two or more factors. Physicist John Holdren, Ph.D., former Director of the White House Office of Science and Technology Policy and former president of the American Association for the Advancement of Science (AAAS), developed and applied this methodology in a scientific paper evaluating how much of the increase in energy consumption in the United States in the latter part of the 20th century was due to population growth, and how much to increasing per capita energy consumption.[132] This method can be applied to virtually any type of resource in which use of the resource in question is increasing over time, and the number of resource consumers is changing, the amount of the resource being used by each consumer on average is changing, or both.

This study, as have our other studies over the past two decades, applies this method to sprawl. Rural, undeveloped land is thus the resource in question. As in the case of examining energy consumption, the issue here is how much of the increased total consumption of rural land (Overall Sprawl) is related to the increase in per capita developed land consumption (Per Capita Sprawl) and how much is related to the increase in the number of land consumers (Population Growth).

Table 29 applies this apportioning methodology to Idaho counties for the entire 1982-2017 study period. Population growth accounted for 77 percent of the 583 square miles of sprawl in the state, while growth in per capita developed land consumption (Per Capita Sprawl) was related to 23 percent of the state's sprawl over these 35 years.

[132] John P. Holdren. 1991. "Population and the Energy Problem." *Population and Environment*, Vol. 12, No. 3, Spring 1991. Prior to being Director of the White House Office of Science and Technology Policy in the Obama Administration between 2009 and 2017, Holdren was Teresa and John Heinz Professor of Environmental Policy and Director of the Program on Science, Technology, and Public Policy at Harvard University's Kennedy School of Government, as well as Professor of Environmental Science and Public Policy in the Department of Earth and Planetary Sciences at that university. Trained in aeronautics/ astronautics and plasma physics at MIT and Stanford, he co-founded and for 23 years co-led the campus-wide interdisciplinary graduate degree program in energy and resources at the University of California, Berkeley. On April 12, 2000 he was awarded the Tyler Prize for Environmental Achievement at the University of Southern California, which administers the award. The Tyler Prize is the premier international award honoring achievements in environmental science, energy, and medical discoveries.

Table 29. Sources of Sprawl in Idaho Counties, 1982-2017

County	Total Sprawl 1982 to 2017 (square miles)	% of Total Sprawl Related to POPULATION GROWTH	% of Total Sprawl Related to GROWTH IN PER CAPITA DEVELOPED LAND CONSUMPTION
Ada	115.5	100%	0%
Adams	2.0	100%	0%
Bannock	11.3	72%	28%
Bear Lake	2.5	0%	100%
Benewah	13.8	12%	88%
Bingham	24.5	41%	59%
Blaine	6.4	97%	3%
Boise	30.9	58%	42%
Bonner	25.9	82%	18%
Bonneville	22.7	100%	0%
Boundary	2.5	100%	0%
Butte	2.0	0%	100%
Camas	-0.2	0%	100%
Canyon	54.7	100%	0%
Caribou	27.3	0%	100%
Cassia	7.7	71%	29%
Clark	0.6	66%	34%
Clearwater	5.3	0%	100%

County	Total Sprawl 1982 to 2017 (square miles)	% of Total Sprawl Related to POPULATION GROWTH	% of Total Sprawl Related to GROWTH IN PER CAPITA DEVELOPED LAND CONSUMPTION
Custer	1.4	0%	100%
Elmore	15.2	50%	50%
Franklin	4.8	78%	22%
Fremont	3.1	100%	0%
Gem	6.6	69%	31%
Gooding	4.5	60%	40%
Idaho	-0.8	0%	100%
Jefferson	4.7	100%	0%
Jerome	9.2	82%	18%
Kootenai	61.4	100%	0%
Latah	5.6	100%	0%
Lemhi	2.5	0%	100%
Lewis	1.3	0%	100%
Lincoln	3.4	34%	66%
Madison	9.1	100%	0%
Minidoka	5.0	8%	92%
Nez Perce	9.8	76%	24%
Oneida	2.2	100%	0%
Owyhee	9.8	77%	23%

County	Total Sprawl 1982 to 2017 (square miles)	% of Total Sprawl Related to POPULATION GROWTH	% of Total Sprawl Related to GROWTH IN PER CAPITA DEVELOPED LAND CONSUMPTION
Payette	5.3	100%	0%
Power	3.6	48%	52%
Shoshone	4.1	0%	100%
Teton	12.2	96%	4%
Twin Falls	32.8	73%	27%
Valley	8.1	100%	0%
Washington	2.2	65%	35%
Total Sprawl	**582.7**	100%	0%
Weighted Average*	**582.7**	**77%**	**23%**

*Each county's contribution to aggregate total weighted by relative amount of its sprawl and % sprawl due to population constrained to between 0-100%.

Figure 81 is a pie chart which graphically illustrates the percentage of the sprawl in Idaho counties between 1982 and 2017 related to Population Growth and to Per Capita Sprawl.

Figure 82 is a bar chart which graphically displays how many square miles of sprawl between 1982 and 2017 are related to Population Growth and how many to Per Capita Sprawl.

Table 30 applies the same apportioning methodology to Idaho counties for the more recent 15-year, 2002-2017 period, a subset of the entire 35-year period of study. From 2002 to 2017, population growth accounted for 83 percent of the 176 square miles of sprawl in the state, while growth in per capita developed land consumption (Per Capita Sprawl) was related to 17 percent of the state's sprawl over these 15 years.

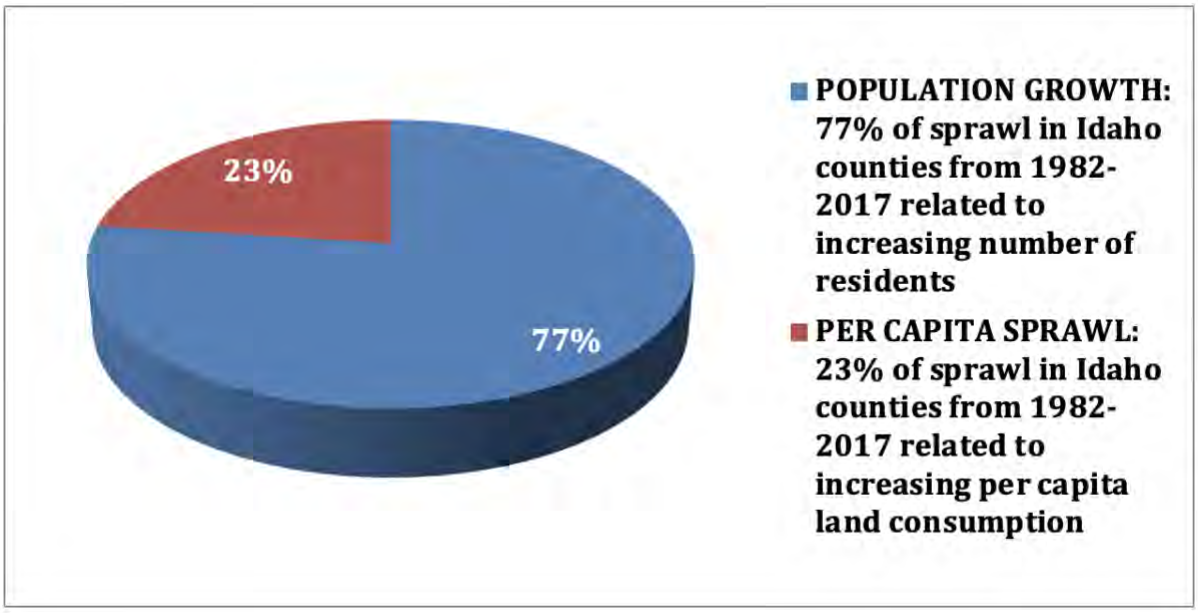


Figure 81. Sprawl Factors (Increasing Population and Increasing Per Capita Land Consumption) in all Idaho Counties, 1982-2017

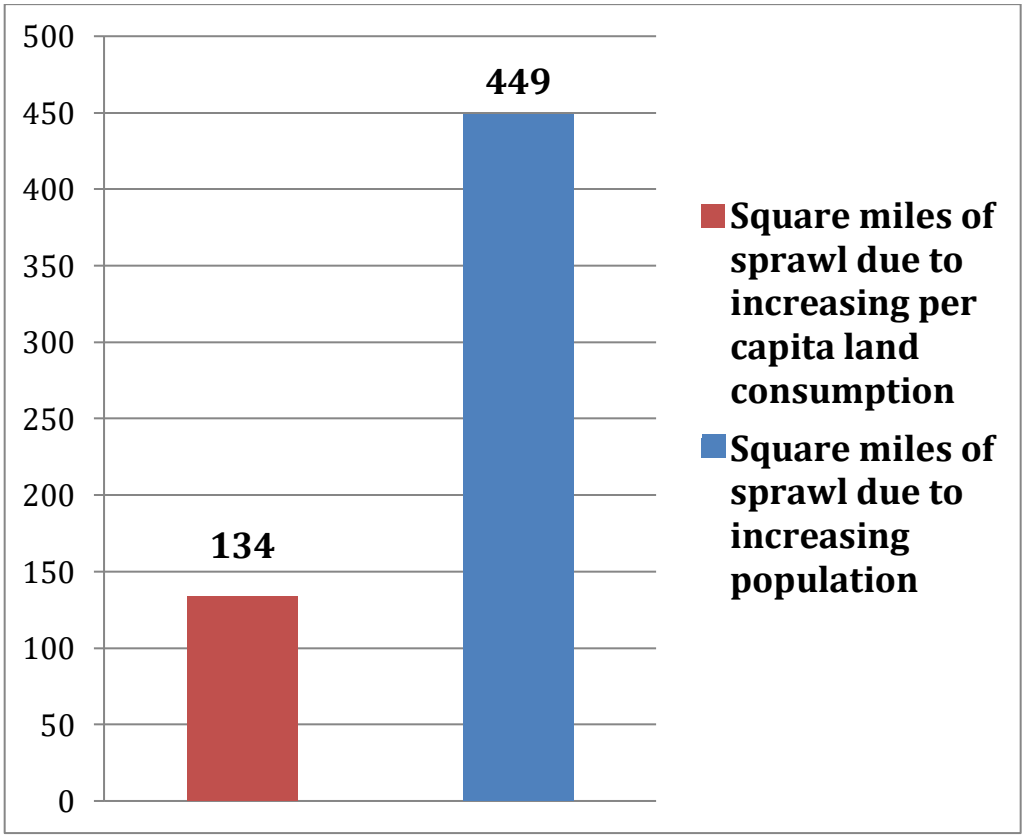


Figure 82. Rural Land Lost to Population Growth vs. Per Capita Sprawl in Idaho Counties, 1982-2017

Table 30. Sources of Sprawl in Idaho Counties, 2002-2017

County	Total Sprawl 2002 to 2017 (square miles)	% of Total Sprawl Related to POPULATION GROWTH	% of Total Sprawl Related to GROWTH IN PER CAPITA DEVELOPED LAND CONSUMPTION
Ada	30.3	100%	0%
Adams	0.2	100%	0%
Bannock	6.1	66%	34%
Bear Lake	0.5	0%	100%
Benewah	0.8	87%	13%
Bingham	9.5	53%	47%
Blaine	2.3	50%	50%
Boise	3.1	85%	15%
Bonner	13.9	49%	51%
Bonneville	11.1	100%	0%
Boundary	2.0	100%	0%
Butte	0.9	0%	100%
Camas	0.6	42%	58%
Canyon	18.0	100%	0%
Caribou	0.3	0%	100%
Cassia	1.4	100%	0%
Clark	0.2	0%	100%
Clearwater	1.1	20%	80%

County	Total Sprawl 2002 to 2017 (square miles)	% of Total Sprawl Related to POPULATION GROWTH	% of Total Sprawl Related to GROWTH IN PER CAPITA DEVELOPED LAND CONSUMPTION
Custer	0.9	0%	100%
Elmore	4.8	0%	100%
Franklin	1.7	100%	0%
Fremont	1.3	100%	0%
Gem	4.1	36%	64%
Gooding	1.3	65%	35%
Idaho	1.1	100%	0%
Jefferson	1.3	100%	0%
Jerome	4.5	100%	0%
Kootenai	13.6	100%	0%
Latah	1.4	100%	0%
Lemhi	0.8	60%	40%
Lewis	0.2	100%	0%
Lincoln	0.8	100%	0%
Madison	3.1	100%	0%
Minidoka	1.3	92%	8%
Nez Perce	3.1	100%	0%
Oneida	0.6	100%	0%
Owyhee	2.7	70%	30%

County	Total Sprawl 2002 to 2017 (square miles)	% of Total Sprawl Related to POPULATION GROWTH	% of Total Sprawl Related to GROWTH IN PER CAPITA DEVELOPED LAND CONSUMPTION
Payette	1.6	100%	0%
Power	0.0	0%	100%
Shoshone	0.9	0%	100%
Teton	5.9	100%	0%
Twin Falls	12.8	100%	0%
Valley	3.0	100%	0%
Washington	0.8	25%	75%
Total Sprawl	**175.8**	100%	0%
Weighted Average*	**175.8**	**83%**	**17%**

*Each county's contribution to aggregate total weighted by relative amount of its sprawl and % sprawl due to population constrained to between 0-100%.

Figure 83 is a pie chart which graphically illustrates the percentage of the sprawl in Idaho counties between 2002 and 2017 related to Population Growth and Per Capita Sprawl.

Figure 83. Sprawl Factors (Increasing Population and Increasing Per Capita Land Consumption) in all Idaho Counties, 2002-2017

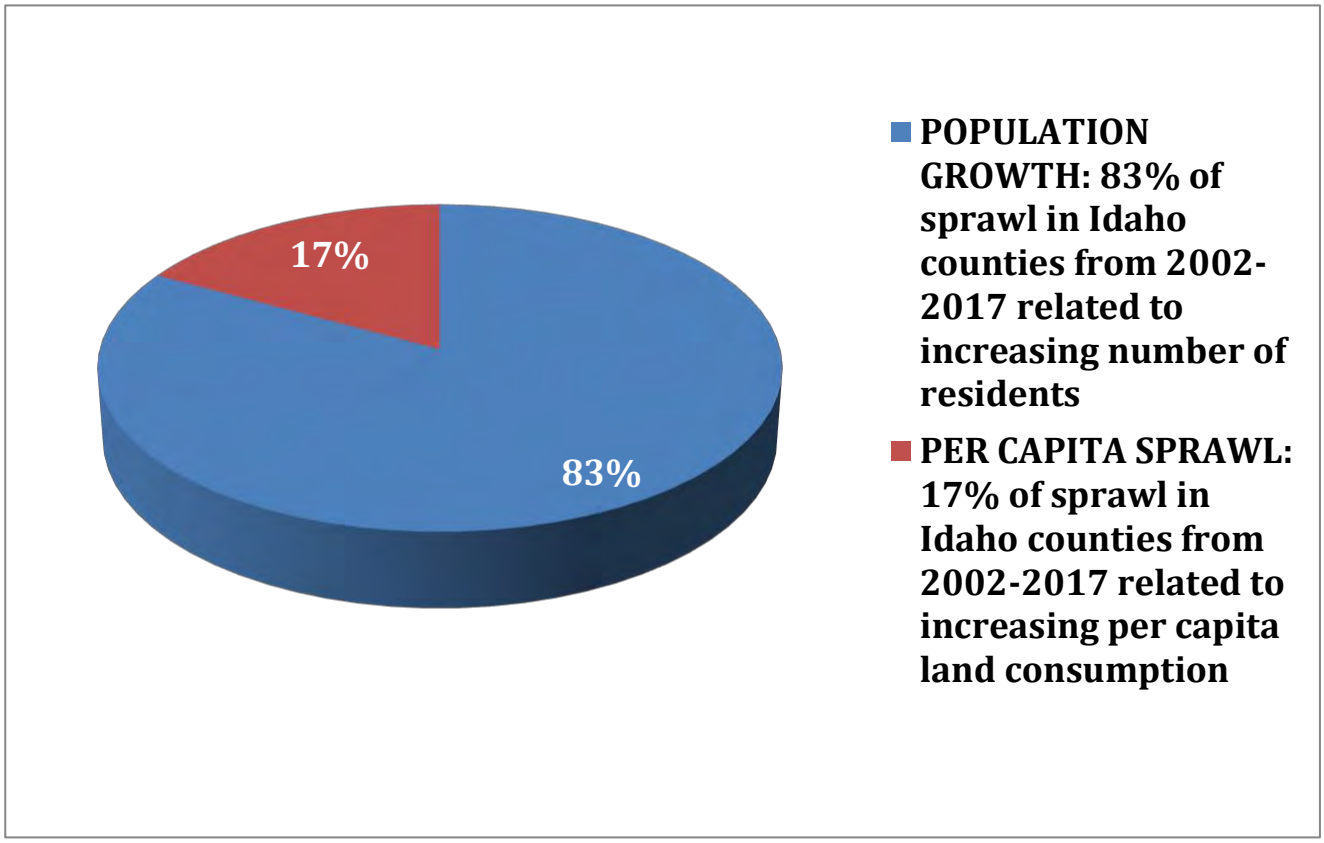


Figure 84 is a bar chart which graphically displays how many square miles of sprawl between 2002 and 2017 are related to Population Growth and how many to Per Capita Sprawl.

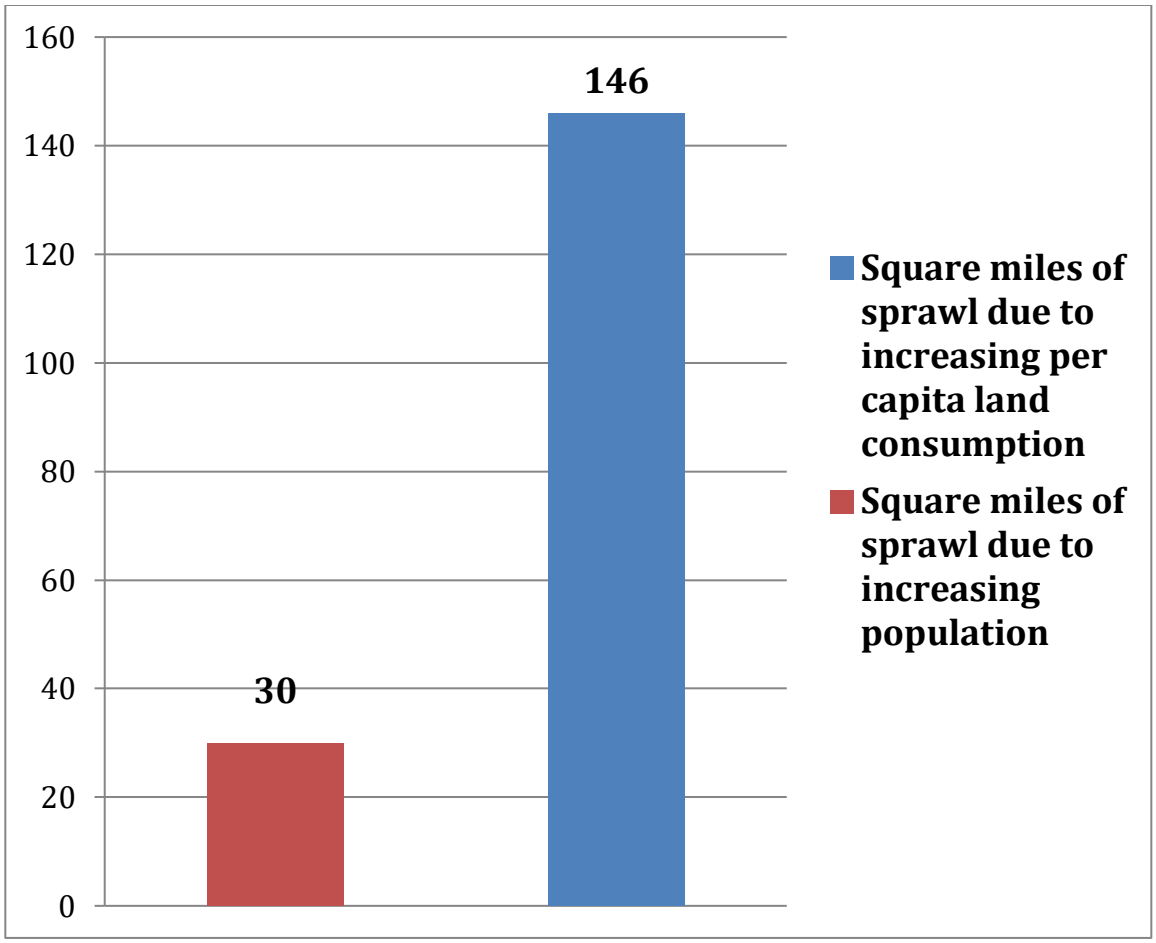


Figure 84. Rural Land Lost to Population Growth vs. Per Capita Sprawl in Idaho Counties, 2002-2017

4.3 Relative Weight of Sprawl Factors in Idaho Cities

As noted earlier, inconsistent criteria between the 2020 and 2010 and earlier Urban Areas delineations by the U.S. Census Bureau prevent our comparing the size of Urban Areas delineated in 2020 with those of 2010 and earlier. It would not be an "apples to apples" comparison. Therefore, we can only look at the shares of sprawl related to Population Growth and Per Capita Sprawl for the 2000 to 2010 time period, which is now receding into the past. Nevertheless, however dated, this analysis is worth including here, because the six Census-recognized Urbanized Areas in Idaho in 2000 and 2010 grew by an enormous 30 percent in aggregate. Conservatively, ninety-seven percent of this sprawl was related to population growth, as shown in **Table 31**.

Table 31. Sources of Sprawl in Idaho Urbanized Areas, 2000-2010

Urbanized Area	Total Sprawl 2000 to 2010 (square miles)	% of Total Sprawl Related to POPULATION GROWTH	% of Total Sprawl Related to GROWTH IN PER CAPITA LAND CONSUMPTION
Boise City, ID	25.15	100%	0%
Nampa, ID	23.38	100%	0%
Coeur d'Alene, ID	5.09	100%	0%
Idaho Falls, ID	13.52	84%	16%
Pocatello, ID	1.07	100%	0%
Lewiston, ID--WA	-0.09	N/A	N/A
Total Sprawl	**68.12**	**100%**	**0%**
Weighted Average*	**68.12**	**97%**	**3%**

*Each UA's contribution to aggregate total weighted by relative amount of its sprawl and % sprawl due to population constrained to between 0-100%.

Figure 85 is a pie chart which graphically illustrates the percentage of the sprawl in Idaho cities (Urbanized Areas) between 2000 and 2010 related to Population Growth and Per Capita Sprawl.

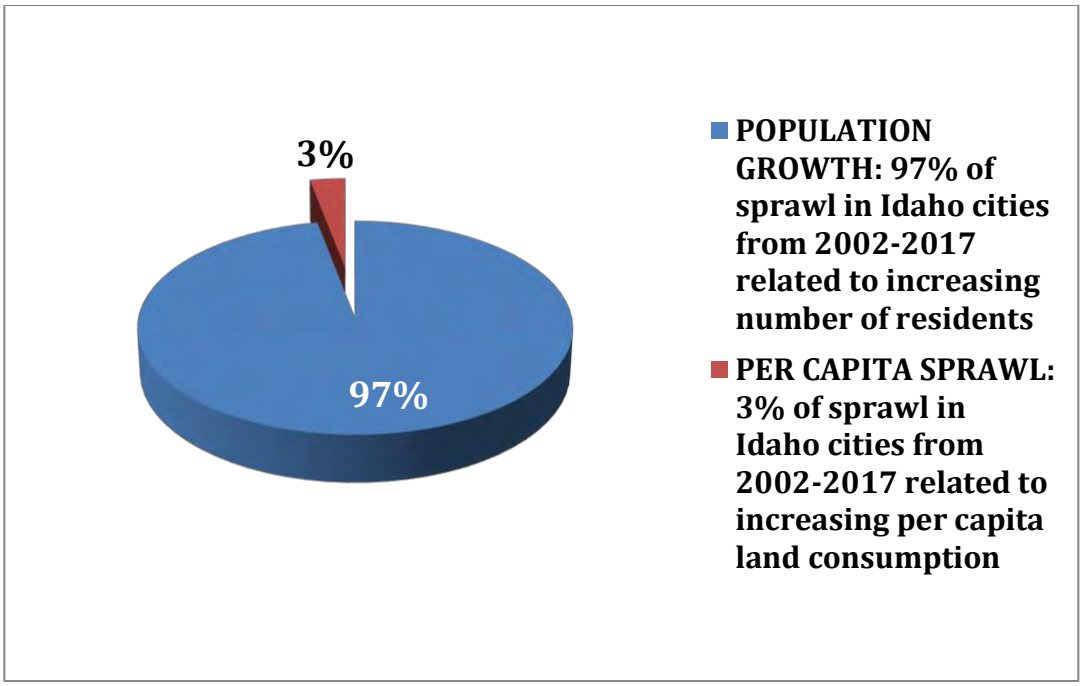


Figure 85. Sprawl Factors (Increasing Population and Increasing Per Capita Land Consumption) in Idaho Urbanized Areas, 2000-2010

Overall, given this lopsided apportionment or breakdown between the two sprawl factors in Idaho counties and cities, opponents of sprawl in Idaho should understand that three-quarters or more of the sprawl problem is the state's unrelenting, rapid population growth in recent decades.

4.4 IDAHO COMPARED TO OTHER STATES

It is interesting to compare the relative amounts and causes of sprawl in Arizona and other states using the NRI data on Developed Land. Here we do so for the entire NRI time period, from 1982 to 2017. This covers the complete three-decade-plus period of NRCS NRI land use data.

Figure 86 shows that across the entire 35-year time span between 1982 and 2017, about two-thirds (68%) of all open space developed in the United States was associated with population growth and about one-third of all open space developed (32 percent) was associated with increasing per capita land consumption or Per Capita Sprawl.

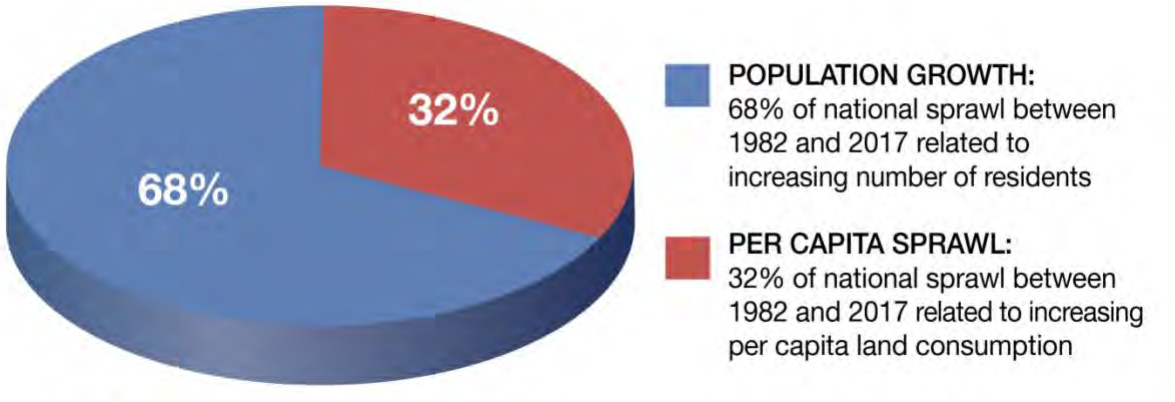


Figure 86. Sources of Sprawl in 48 Contiguous States, 1982-2017
Sources: National Resources Inventory, 1982-2017: population estimates for 1982 and 2017 for each state from U.S. Census Bureau population estimates.

During the same time period, 70 percent of Idaho's sprawl was related to population growth, almost identical to the national percentage of 68 percent. Thus, Idaho might be considered a fairly typical state in this regard.

Table 32 ranks the 49 states in our study by percentage of sprawl (% increase in area of developed land) between 1982 and 2017. Idaho is in 19th place at 66.5%, slightly higher than the national average of 61.1%.

Table 32. States Ranked by Percentage Overall Sprawl, 1982-2017

Rank	State	Overall Sprawl, 1982-2017*	Percentage Increase in Developed Land, 1982-2017
1	Nevada	514	152.8%
2	Arizona	1,744	113.6%
3	Georgia	3,910	112.4%
4	North Carolina	3,995	108.4%
5	South Carolina	2,136	100.1%
6	Florida	4,353	99.0%

Rank	State	Overall Sprawl, 1982-2017*	Percentage Increase in Developed Land, 1982-2017
7	Utah	713	96.5%
8	Tennessee	2,354	91.6%
9	New Mexico	1,019	90.8%
10	Kentucky	1,583	89.4%
11	Delaware	217	86.8%
12	New Hampshire	525	83.6%
13	West Virginia	827	83.0%
14	Texas	6,634	80.3%
15	Alabama	2,023	78.9%
16	Virginia	2,180	75.9%
17	Maine	581	73.9%
18	Mississippi	1,217	66.6%
19	**Idaho**	**583**	**66.5%**
20	Colorado	1,206	64.2%
21	Louisiana	1,192	61.7%
22	Pennsylvania	2,686	61.6%
23	Massachusetts	1,038	59.7%
24	New Jersey	1,077	58.3%
25	Maryland	877	57.6%

Rank	State	Overall Sprawl, 1982-2017*	Percentage Increase in Developed Land, 1982-2017
26	Washington	1,436	57.1%
27	Vermont	224	54.4%
28	Arkansas	1,035	54.3%
29	California	3,420	53.4%
30	Hawaii	136	53.0%
31	Michigan	2,208	50.2%
32	Oklahoma	1,133	48.8%
33	Ohio	2,149	48.3%
34	Oregon	688	45.1%
35	Indiana	1,203	43.1%
36	Minnesota	1,146	42.5%
37	Wisconsin	1,261	40.7%
38	Missouri	1,330	39.3%
39	Rhode Island	99	37.0%
40	New York	1,642	37.0%
41	Illinois	1,332	32.4%
42	Montana	416	31.2%
43	Wyoming	251	30.0%
44	Connecticut	382	28.9%

Rank	State	Overall Sprawl, 1982-2017*	Percentage Increase in Developed Land, 1982-2017
45	Kansas	627	23.1%
46	South Dakota	252	19.8%
47	Iowa	505	19.7%
48	North Dakota	233	16.4%
49	Nebraska	270	15.8%
Total / Overall	**49 States**	**68,561**	**61.1%**

*Change in area of developed land in square miles, 1982-2017

Figure 87. Kootenai Valley agricultural lands in the northern Idaho Panhandle

Table 33 ranks the 49 states in our study by percentage of recent sprawl (% increase in area of developed land) between 2002 and 2017. Idaho is in 10th place at 66.5%, slightly higher than the national average of 61.1%. Thus, we see that Idaho's rate of sprawl has been increasing in comparison with other states, moving from 19th place in the overall 1982-2017 study period to 10th place in the more recent 2002-2017 subset.

Table 33. States Ranked by Percentage Overall Sprawl, 2002-2017

Rank	State	Overall Sprawl, 2002-2007*	Percentage Increase in Developed Land, 2002-2017
1	Nevada	180	27.0%
2	Utah	299	25.9%
3	Texas	2,616	21.3%
4	Delaware	81	21.0%
5	Arizona	557	20.4%
6	Hawaii	58	17.1%
7	Mississippi	385	14.5%
8	Oklahoma	430	14.2%
9	Florida	1,065	13.9%
10	**Idaho**	**176**	**13.7%**
11	Arkansas	348	13.4%
12	Louisiana	362	13.1%
13	Georgia	846	12.9%
14	South Carolina	487	12.9%
15	Virginia	560	12.5%

Rank	State	Overall Sprawl, 2002-2007*	Percentage Increase in Developed Land, 2002-2017
16	Tennessee	534	12.2%
17	New Mexico	232	12.2%
18	North Carolina	821	12.0%
19	Alabama	481	11.7%
20	Colorado	321	11.6%
21	Maine	139	11.3%
22	Kentucky	310	10.2%
23	Montana	160	10.0%
24	New Hampshire	102	9.7%
25	Vermont	55	9.5%
26	Indiana	341	9.3%
27	California	831	9.2%
28	Wisconsin	362	9.1%
29	Maryland	192	8.7%
30	North Dakota	132	8.7%
31	Missouri	365	8.4%
32	Wyoming	84	8.4%
33	Ohio	490	8.0%
34	Washington	288	7.9%

Rank	State	Overall Sprawl, 2002-2007*	Percentage Increase in Developed Land, 2002-2017
35	Illinois	390	7.7%
36	West Virginia	129	7.6%
37	Pennsylvania	496	7.6%
38	Minnesota	266	7.4%
39	Michigan	426	6.9%
40	Oregon	141	6.8%
41	Rhode Island	23	6.8%
42	Iowa	189	6.6%
43	Massachusetts	163	6.2%
44	New York	346	6.0%
45	New Jersey	153	5.5%
46	Kansas	162	5.1%
47	Nebraska	94	5.0%
48	Connecticut	75	4.6%
49	South Dakota	51	3.5%
Total / Overall	**49 States**	**17,793**	**10.9%**

*Change in area of developed land in square miles, 2002-2017

4.5 SCATTER PLOT OF POPULATION GROWTH AND SPRAWL

Another useful way to examine the relationships between the factors in sprawl is by using scatter plot analysis. **Figure 88** is a scatter plot for Idaho that examines the relationship between each county's population in 2015 on the x-axis (horizontal axis) and the area of developed land (i.e., cumulative total sprawl) on the y-axis (vertical axis). The scatter plot has a "best fit" line that shows the linear relationship between the data points.

The left-to-right, upward-sloping "best fit" line for **Figure 88** indicates that there is a positive relationship between population size and overall cumulative area of developed land (Overall Sprawl). Counties with larger populations are also those where more land has been developed cumulatively over time to accommodate the diverse land use needs of that population, which encompass far more than residential land for housing only. Perhaps these results are unsurprising, but if population size and sprawl were unrelated, as some have always maintained, the trend line would be flat or negative (sloping downward toward the right instead of upward). While this scatter plot alone does not prove that population causes sprawl, it strongly suggests and reinforces the hypothesis that the two are closely correlated.

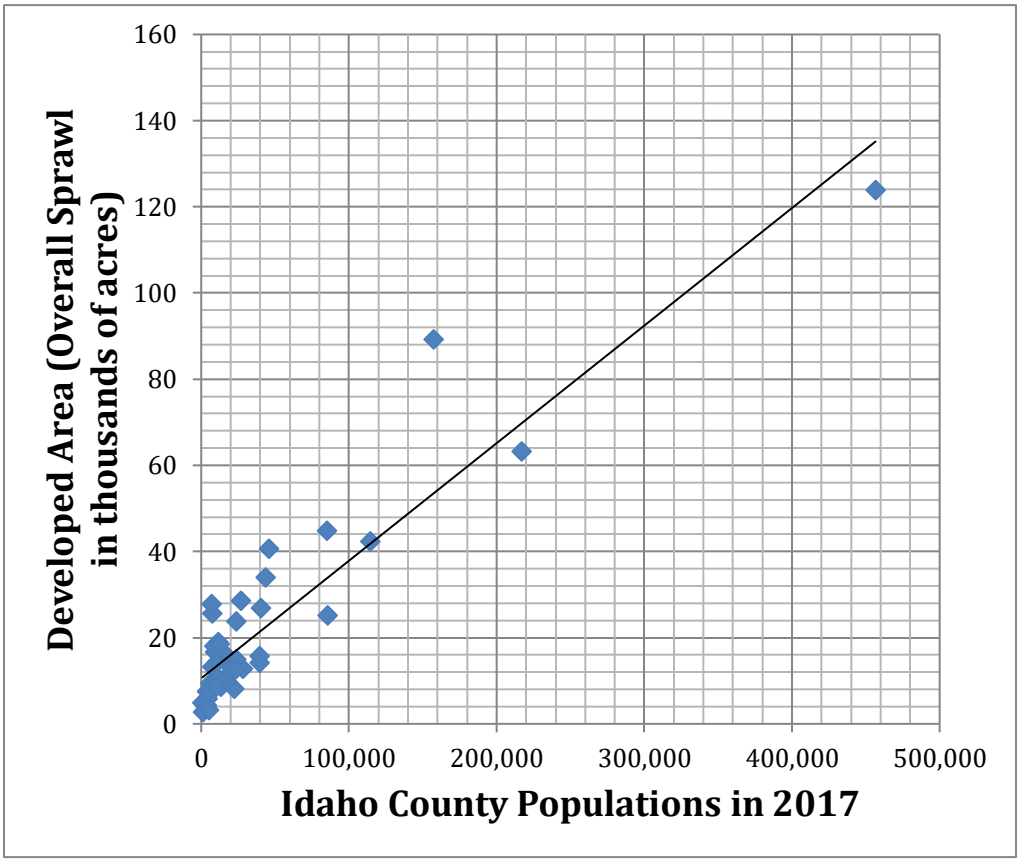


Figure 88. Scatter Plot of Population Size vs. Cumulative Developed Land (Overall Sprawl) in All Idaho Counties, 2017

Sources: Census Bureau 2017 population estimates and National Resources Inventory (2017)

Figure 89. Idaho High Country (alpine habitat)

Figure 90. Myrtle Creek and Selkirk Range at Kootenai National Wildlife Refuge

4.6 TRENDS

From 2000 to 2010 the most significant factor contributing to Overall Sprawl in the United States was the addition of more than 17 million new residents to our nation's Urbanized Areas, and the additional nine million residents who settled elsewhere. Per Capita Sprawl was halted in 192 of our cities, and was responsible for less than 30% of Overall Sprawl in Urbanized Areas during the same period of study.

Likewise, in Idaho, the addition of nearly 190,000 million new residents to Urbanized Areas between 2000 and 2010 was responsible for approximately 97 percent of sprawl in the Gem State.

At the national level, NRCS NRI data on development and sprawl in the 49 states inventoried from 1982-2017 and 2002-2017 were also broadly consistent with our findings for the cities.

From 1982 to 2017, population growth was the most important factor in the loss of non-federal rural land in its permanent conversion to developed land, accounting for approximately 67 percent of new development. By the 2002 to 2015 period, population growth accounted for about 84 percent of sprawl.

The ten states from 2002-2017 experiencing the most sprawl by percentage, 19% on average (Nevada, Utah, Texas, Delaware, Arizona, Mississippi, Oklahoma, Florida, **Idaho**, Arkansas) had populations that grew on average more than three times (23% vs. 7%) as fast as the ten least sprawling states by percentage, 6% on average (South Dakota, Connecticut, Nebraska, Kansas, New Jersey, New York, Massachusetts, Iowa, Rhode Island, Oregon) (**Figure 91**).

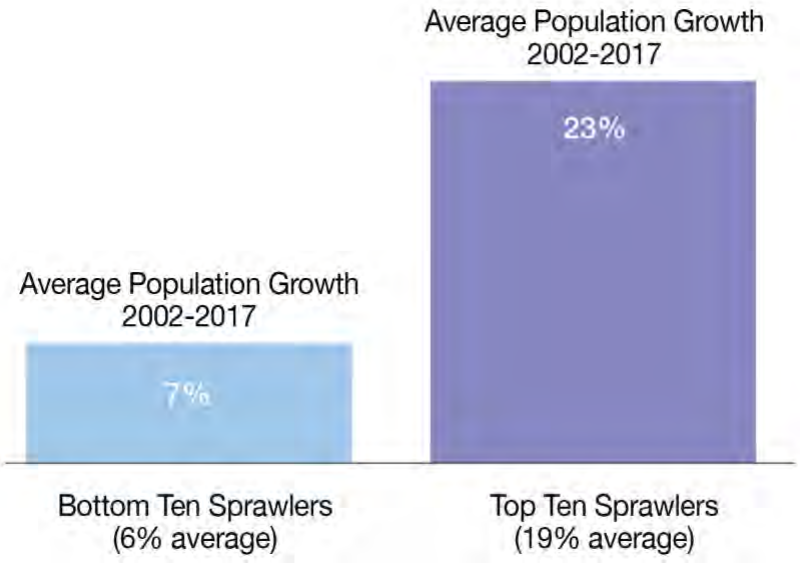


Figure 91. Comparison of Population Growth between High and Low Sprawling States, 2002 - 2017

Description: The populations of ten states experiencing the most sprawl by percentage between 2002 and 2017 (Nevada, Utah, Texas, Delaware, Arizona, Hawaii, Mississippi, Oklahoma, Florida, **Idaho**), grew on average more than three times faster than the ten least sprawling states (South Dakota, Connecticut, Nebraska, Kansas, New Jersey, New York, Massachusetts, Iowa, Rhode Island, Oregon)

Figure 92 visualizes the same data and the same 2002-2017 time period from a different perspective.

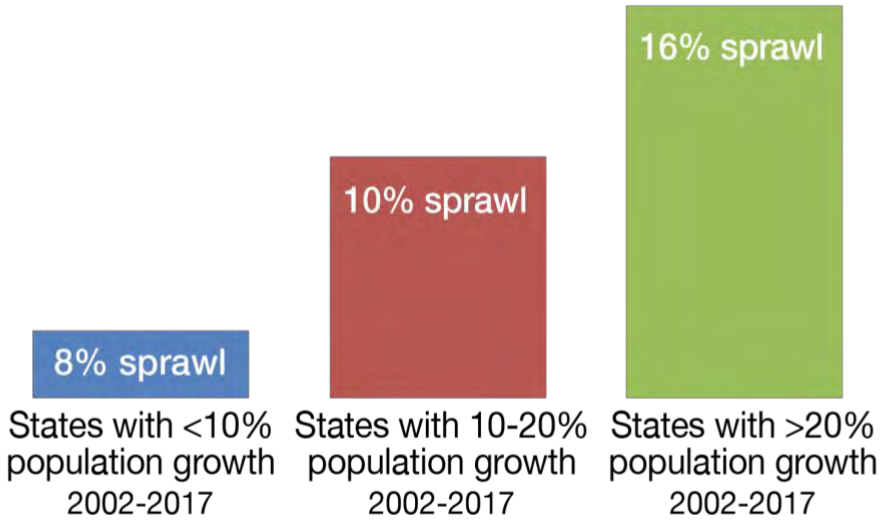


Figure 92. Comparison of Overall Sprawl in Slow-Population-Growth vs. Fast-Population-Growth States, 2002 - 2017

Those states that experienced less population growth (measured by percentage) from 2002 to 2017 also experienced proportionately less urban sprawl; the percentage increase in their area of developed land was smaller.

The 22 states that underwent less than 10 percent population growth in the 15 years between 2002 and 2017 averaged 8 percent increase in developed land area, or what we term Overall Sprawl. The 15 states whose populations increased between 10 percent and 20 percent averaged 10 percent Overall Sprawl. Meanwhile, the state's whose populations boomed by 20 percent or more experienced 16 percent Overall Sprawl on average.

Figure 93. Sport-fishing on Lake Pend Oreille

Figure 94. American Avocet in Idaho Wetlands

5. CONCLUSIONS AND POLICY IMPLICATIONS

5.1 CONCLUSIONS

At both the state level of Idaho and the national level there is a broad correlation between population size and sprawl: generally, the larger a city, county, or state's population, the larger the land area it will sprawl across.

This is shown clearly in **Figure 95**, a simple scatter plot of the 48 contiguous states' cumulative populations and developed land areas in 2017. The positive (upward tilting toward the right) slope of the best-fit line means that as a state's population increases, the area of built-up, developed land increases as well. This demolishes the whimsical notion entertained by those prone to wishful thinking and fairy tales that there is no connection or correlation between population size or growth rates and environmental consequences.

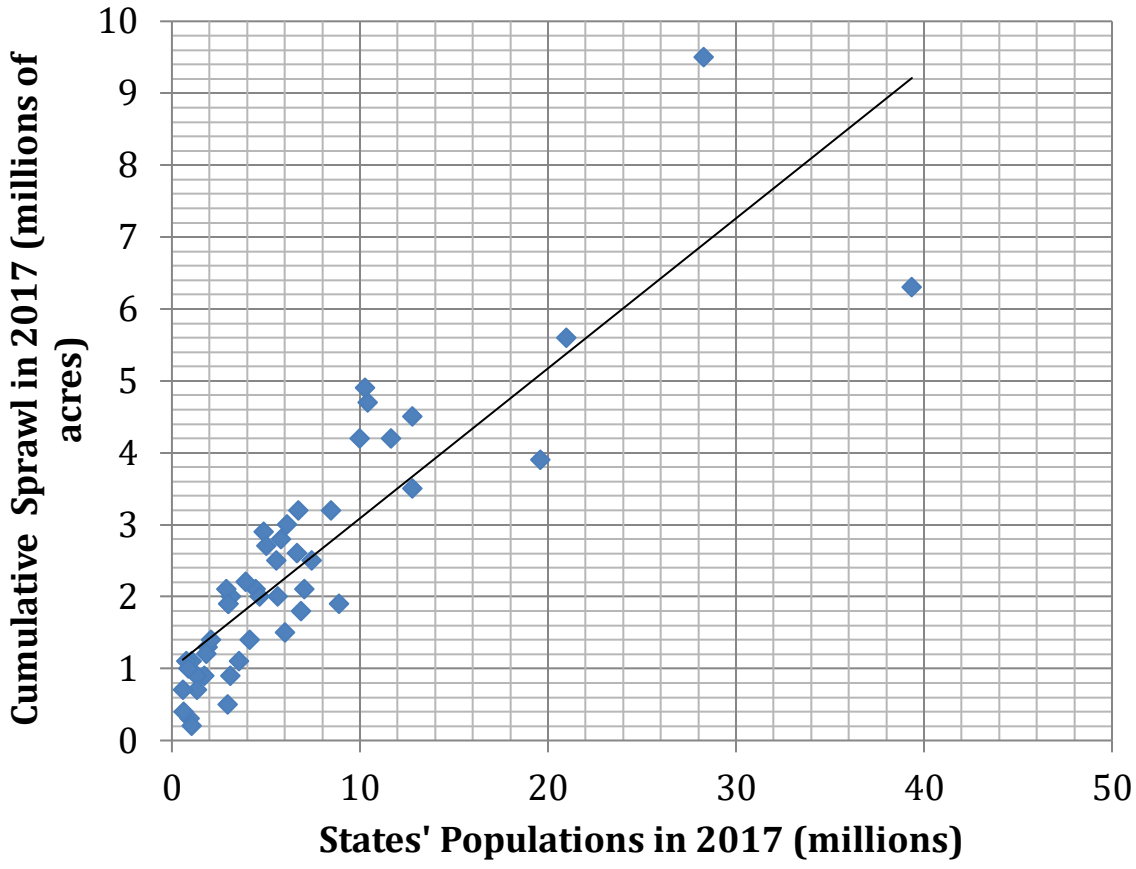


Figure 95. Cumulative Developed Land Area (Sprawl) Is a Function of Population Size
Source: U.S. Census Bureau; NRCS, 2020. *Summary Report: 2017 National Resources Inventory*

Sprawl continues to devour rural land around Idaho cities at a rapid rate.

Although the rate of sprawl in Idaho may have peaked in the 1990s (**Table 34**), our most recent data for the past decade or so show that it continues to devour open space at a rate of about 6,000 acres per year (nine square miles), or one square mile in less than six weeks. This averages out to about 17 acres per day. In all likelihood, this rate has accelerated with the gradual waning of the Great Recession, though we don't yet have the data to confirm this hypothesis. Even at this reduced rate, sprawl would continue to convert an additional 60,000 acres (>90 square miles) of Idaho's invaluable rural lands, open space, agricultural land and wildlife habitat into pavement and buildings every decade. By 2050, approximately 180,000 more acres (>280 square miles) of Idaho's irreplaceable rural lands will have been paved or covered with subdivisions; hotels; industrial, office and theme parks; schools; and commercial strips, a great and permanent loss to Arizona's agricultural lands, wildlife habitat, natural heritage, quality of life, and environmental sustainability.

Table 34. Cumulative Increase in Developed Land in the Idaho, 1982-2017

Year	Area of Developed Land (acres)	Period	Added annual increment of Developed Land during period (acres)	Average daily amount of land consumed by sprawl during period (acres)
1982	560,500			
1987	621,200	1982-1987	12,140	33
1992	679,100	1987-1992	11,580	32
1997	772,200	1992-1997	18,620	51
2002	820,900	1997-2002	9,740	27
2007	877,100	2002-2007	11,240	31
2012	902,700	2007-2012	5,120	14
2017	933,400	2012-2017	6,140	17
Average		**1982-2017**	**10,654**	**29**

Source: Calculated from NRCS, 2020. *Summary Report: 2017 National Resources Inventory*, Table 1.

Smart growth efforts, higher gasoline prices, fiscal and budgetary constraints (limiting new road-building, for example), the increasing popularity of denser city living and its cultural amenities, and the recession-inducing mortgage meltdown in 2008 may have all played roles

in slowing Idaho's rate of sprawl late in the first two decades of this century. The extent to which any of these and still other unforeseen factors and events – such as the coronavirus (COVID-19) pandemic of 2020 – may affect the rate of sprawl in the coming decades is unknown and unpredictable. It may well be that concerns about high density residential living in the face of disease pandemics could increase sprawl pressures by raising the preference of consumers for lower-density suburban neighborhoods.

Figure 96. Idaho's Ongoing Population and Development Boom in 2023

As an April 2020 article in *The New York Times* indicated:

> "The pandemic has been particularly devastating to America's biggest cities, as the virus has found fertile ground in the density that is otherwise prized. And it comes as the country's major urban centers were already losing their appeal for many Americans, as skyrocketing rents and changes in the labor market have pushed the country's youngest adults to suburbs and smaller cities often far from the coasts."[133]

[133] Sabrina Tavernise and Sarah Mervosh. 2020. America's Biggest Cities Were Already Losing Their Allure. What Happens Next? *New York Times*. April 19. Accessed online on 4/22/2020 at: https://www.nytimes.com/2020/04/19/us/coronavirus-moving-city-future.html. The article also quoted Harvard University economics professor Ed Glaeser, author of *Triumph of the City*, who said: "It feels like it's back to smallpox, back to cholera. Cities were killing fields for centuries because of contagious disease." Glaeser observed that the life expectancy of a baby born in a city in 1900 was seven years less than one born in a rural area, but that that gap had disappeared by the 1920s with advances in modern water supply and sewage systems.

The article quoted Brookings Institution demographer William Frey, who noted that even before the coronavirus pandemic, "millennials and older members of Generation Z were already increasingly choosing smaller metro areas like Tucson, Ariz.; Raleigh, N.C.; and Columbus, Ohio…. Also growing were exurbs and newer suburbs outside large cities. 'There was a dispersion from larger metros to smaller metros, from urban cores to suburbs and exurbs.'"

In any case, as more and more of rural Idaho succumbs to development – chipped away and clogged with roads, vehicles, people, facilities and infrastructure – at some point it will not be possible to maintain rapid rates of sprawl simply because other critical land uses – e.g., high-value crop and pastureland; national and state parks, forests, and wildlife refuges; mines; watersheds and reservoir buffer zones; utility corridors; and working forests (providing timber and pulp) – will represent a larger and larger fraction of the remaining undeveloped land. On the other hand, as the century proceeds, it may be that increasing water scarcity and climate change in the American Southwest and increasingly inhospitable, uninhabitable, and unviable living conditions for tens of millions of Americans may accelerate growth in the northern parts of the country, such as the Northern Rockies and the Pacific Northwest.

The role of population growth in driving sprawl in Idaho has remained consistently high over the past four decades.

Over the past four decades, population growth has accounted for approximately 80 percent of the sprawl in Idaho, depending on the city, county, and time period in question. In this century, in the nation as a whole, the percentage of sprawl attributable to population growth has risen to approximately 70-90 percent, catching up with Idaho. But Idaho has remained consistently higher than the national average.

In the meantime, the role of increasing per capita land consumption (what we have referred to as "land use choices") in driving sprawl has fallen in the country as a whole, but it has always been a minor factor in Idaho's sprawl.

In our 2014 study of national sprawl, *Vanishing Open Spaces*, using data from the same two federal agencies (U.S. Census Bureau and NRCS) and the same two long-term data gathering programs, during the decade just passed (2000-2010), population growth accounted for approximately 70-90% of sprawl on the national scale; declining density or increasing per capita land consumption accounted for about 10-30%. In other words, nationally, the relative role of the population growth factor has increased by about 20-40 percentage points (from 50 to 70-90) over the four-decade period from 1970 to 2010 that the study encompasses.

Attempts to concentrate and direct development into confined, denser areas are not enough to offset the pressures from population growth.

An important objective of Smart Growth is to preserve open space, farmland, natural beauty, wildlife habitat, and critical environmental areas by preventing declining population density. Thus, places where population density increases should be hailed as success stories. Between 2000 and 2010 in Idaho, population density increased in four out of six Urbanized Areas (i.e., two-thirds of all Idaho UAs) – in other words, their per capita land consumption decreased. However, these UAs still experienced appreciable sprawl. Overall, in the state as a whole, per capita land consumption ("per capital sprawl") in Idaho UA's decreased from 0.294 acre/person in 2000 to 0.279 in 2010.

No Urbanized Area in Idaho has come close to **Portland, Oregon** in the lengths it has gone to control sprawl, and perhaps no city in America better exemplifies the shortcoming and limitations of the Smart Growth approach as Portland.

Despite being lauded for its urban growth boundary (UGB), extensive light rail infrastructure, and high-density mixed-use developments, even Portland has been unable to contain its own sprawl. Between 2000 and 2010, the Portland UA decreased its per capita land consumption by five percent from 0.19 acre per person to 0.18 acre per person. (By comparison, the average per capita 2010 land consumption in Arizona Urbanized Areas was 0.22 acre/person, 22 percent higher than Portland.)

However, despite its modest gain in population density (reduction in per capita land consumption) over the decade, the Portland UA still sprawled outward an additional 50.4 square miles between 2000 and 2010. The addition of 266,760 people during the decade was more than enough to wipe out the increased population density and cause the urbanized area to swell by an additional 11 percent. While the UGB and other smart growth initiatives have certainly slowed the pace of sprawl in Portland, some contend that they have driven up real estate and housing prices within the city. This has led to spill-over sprawl in other nearby cities and along the scenic Willamette Valley as people seek sanctuary from higher home prices. Supporting this contention is the nearby city of Salem, Oregon, whose urbanized area population grew by 14 percent from 2000 to 2010, and which has quickly become the second largest city in Oregon.

Of the 192 Urbanized Areas in the United States which over the last decade experienced a decline in per capita land area, **Raleigh, North Carolina** is another informative example of the limits of gradually shrinking the acreage afforded to each person in which to live, work, shop, play. Its per capita land consumption decreased by 0.003 acre. At the same time, the population grew by over 300,000 people, causing the Raleigh UA to become more densely populated. But despite Raleigh's drop in per capita acreage, its 63 percent increase in population caused it to sprawl out across an additional 198.5 square miles in these 10 years.

The drop in per capita land consumption can be explained by the efforts of city planners to tame sprawl by directing development toward certain centers within the Urbanized Area.

These were not enough to prevent the construction of new suburban neighborhoods, the development of retail centers, and the creation of roads and highways to connect these sprawl products.

In Texas, the **Houston UA** reduced its per capita land use (increased its density) slightly from 0.2169 acre/person in 2000 to 0.2149 acre/person in 2010, a decrease of almost one percent. According to the conventional wisdom espoused by Smart Growthers, because density increased, by definition there was no sprawl on the Houston UA periphery from 2000 to 2010, yet the region still lost over 365 square miles of open space during this period.

In the first of our nationwide sprawl studies almost two decades ago, 18 of the 100 largest Urbanized Areas in the U.S. had reduced per capita land consumption, and during that time period all 18 of those Urbanized Areas still experienced Overall Sprawl. Between 2000 and 2010, 26 Urbanized Areas had a decline in their per capita land consumption, and 22 of those cities experienced Overall Sprawl. The four areas that did not sprawl saw a decrease in their total urbanized land area by an average of 18.5 square miles. While it is encouraging to see that some cities are stopping both their per capita and Overall Sprawl, 22 of the nation's major cities that stopped per capita growth still sprawled in an unsustainable manner. A stronger approach must be taken towards suppressing sprawl before our already dwindling rural lands disappear altogether.

Stabilized population alone does not prevent sprawl.

Throughout the country, many local officials see population growth as a driver of economic development and an indicator of the vibrancy of the locales they represent. This mentality is seen in the aggressive campaigns and taxpayer subsidies that local officials use to attract new residents. However, economic growth does not necessarily require growing populations and sprawling cities. According to a 2012 study by Eben Fodor and Associates, **cities experiencing rapid population growth had higher rates of unemployment** and were more affected by the 2007-2008 recession than were cities with slower growth rates.[134]

This can be seen in urbanized areas like **Pittsburgh (Figure 97)**, which have benefited from a stabilized population in recent years. From 2000 to 2010, Pittsburgh experienced no population-induced sprawl and had a relatively low level of Overall Sprawl. One benefit Pittsburgh has seen from a stabilized population is that it had an unemployment level well below the national rate in 2009 after the Great Recession. Energized largely by strong gains in the education, healthcare, financial, and natural gas industries, Pittsburgh has been able to distance itself from both the image of the "smoky city" of steel mills and the image of the city of shut-down steel mills.

[134] Eben Fodor. 2012. Relationship Between Growth and Prosperity in the 100 Largest U.S. Metropolitan Areas. *Economic Development Quarterly*. Available at: http://edq.sagepub.com/content/26/3/220.

Pittsburgh has also been making headlines in the 2000s as one of the country's most livable cities. In 2011 *The Economist* Intelligence Unit named it America's most livable city, and the 29th most livable city in the world. Despite having a stable population and diverse economy, the Pittsburgh Urbanized Area sprawled over an additional 52.8 square miles in the last decade. The reason was high levels of Per Capita Sprawl. One possible culprit could be that Pittsburgh has fewer people per household than the nationwide average. This means that the population of Pittsburgh requires more dwellings and more area for the same population size than do other American cities of comparable population size. Also, the decline of the steel industry left parts of the city abandoned as contaminated "brownfields", driving residents to build outward into the suburbs. Cases like Pittsburgh highlight the necessity of a two-pronged approach to addressing overall sprawl: both population growth – undertaken primarily at a national level, not a local one – and per capita consumption sprawl.

Figure 97. Downtown Pittsburgh, Pennsylvania, at the confluence of the Monongahela (right) and Allegheny Rivers (left), which combine to form the Ohio River at The Point

Recognition by scholars that population growth is a major (not the only) driver of urban land expansion and sprawl is sharply at odds with the way most news media and anti-sprawl activists in the United States have tended to portray the causes of sprawl. The news media and anti-sprawl activists appear to have accepted that rapid, unending U.S. population growth on the order of 20 to 30 or more million new residents per decade is a given and a fait accompli.

Thus, since they want to convince Americans that something can still be done to halt or slow sprawl substantially in spite of never-ending U.S. population growth, they tend to downplay or minimize population's importance as a causal factor in sprawl. In their efforts to publicize sprawl to the American public and enlist support for anti-sprawl measures – e.g., "smart growth" policies, higher residential densities, multifamily housing (apartments and

condominiums), mixed land uses and zoning, and infill that eliminates existing urban open space (such as golf courses) – they reserve their criticism for "low-density sprawl," essentially giving a pass to other new development on the urban periphery, as long as it is not low-density, even though it still permanently devours rural land and open space.

If current population trends are allowed to continue, Idaho will experience vast amounts of sprawl over the next half century.

Idaho has no official state population projections beyond 2030, but other reputable, professional demographers have made projections out to 2060 for the state, county-by-county. One such projection is shown in **Table 35**.

Table 35. Idaho Population Projections by County, 2020-2060

County	Population 2020	Population 2060	Percentage Increase or Decrease
Ada	494,399	805,117	63%
Adams	4,447	5,505	24%
Bannock	88,795	102,101	15%
Bear Lake	6,143	6,092	-1%
Benewah	9,430	9,711	3%
Bingham	47,202	45,345	-4%
Blaine	23,426	29,112	24%
Boise	8,065	11,401	41%
Bonner	46,817	61,389	31%
Bonneville	122,134	189,702	55%
Boundary	12,656	21,408	69%
Butte	2,646	1,317	-50%

County	Population 2020	Population 2060	Percentage Increase or Decrease
Camas	1,130	1,339	18%
Canyon	237,053	401,911	70%
Caribou	7,123	7,508	5%
Cassia	24,277	26,542	9%
Clark	852	1,067	25%
Clearwater	8,846	6,964	-21%
Custer	4,249	2,322	-45%
Elmore	27,448	23,380	-15%
Franklin	14,215	22,268	57%
Fremont	13,218	13,931	5%
Gem	18,703	23,267	24%
Gooding	15,618	17,662	13%
Idaho	16,823	16,058	-5%
Jefferson	30,581	45,283	48%
Jerome	24,578	32,127	31%
Kootenai	170,628	272,912	60%
Latah	40,830	53,557	31%
Lemhi	8,054	7,432	-8%
Lewis	3,838	4,485	17%

County	Population 2020	Population 2060	Percentage Increase or Decrease
Lincoln	5,358	5,027	-6%
Madison	40,318	81,283	102%
Minidoka	21,216	26,418	25%
Nez Perce	40,755	45,496	12%
Oneida	4,520	5,321	18%
Owyhee	12,133	11,945	-2%
Payette	24,771	29,134	18%
Power	7,643	7,700	1%
Shoshone	12,911	9,407	-27%
Teton	12,501	22,327	79%
Twin Falls	88,411	132,429	50%
Valley	11,792	20,561	74%
Washington	10,360	12,343	19%
Idaho (all counties)	**1,826,913**	**2,677,606**	**47%**

Source: http://proximityone.com/demographics2060.htm

If these projections play out, Idaho will lose vast amounts of countryside to pavement over the coming four decades. As noted above, by 2050, one reasonable estimate is that approximately 180,000 additional acres (>280 square miles) of Idaho's precious open space will have succumbed to sprawl.

Projections are not predictions and they are not set in stone.

Professional demographers hasten to emphasize that they do not have proverbial crystal balls when it comes to seeing the future. The population projections they make, based on reasonable, credible assumptions as to future rates of a state's or the country's mortality, fertility, in-migration, and out-migration, are decidedly not predictions. They are merely the possible outcomes of extended series of current demographic factors and trends that must be heavily caveated.

Unforeseen or unpredictable future events ("black swans" in the coinage of analyst and aphorist Nassim Nicholas Taleb) and policy reforms can lead to dramatic, even startling, changes in demographic destinies and trajectories. A prime example of this is a neighboring Western state – immense California – whose demographic fortunes and surprises have played such an outsized role in the demography of other Western states, including Idaho.

The California Department of Finance provides official demographic projections for the state. Throughout the 20th century, and up to and including its previous projections of 2013, the Department of Finance projected essentially endless population growth for California, or at least growth for as far as the demographers' eyes could see (**Figure 98**).

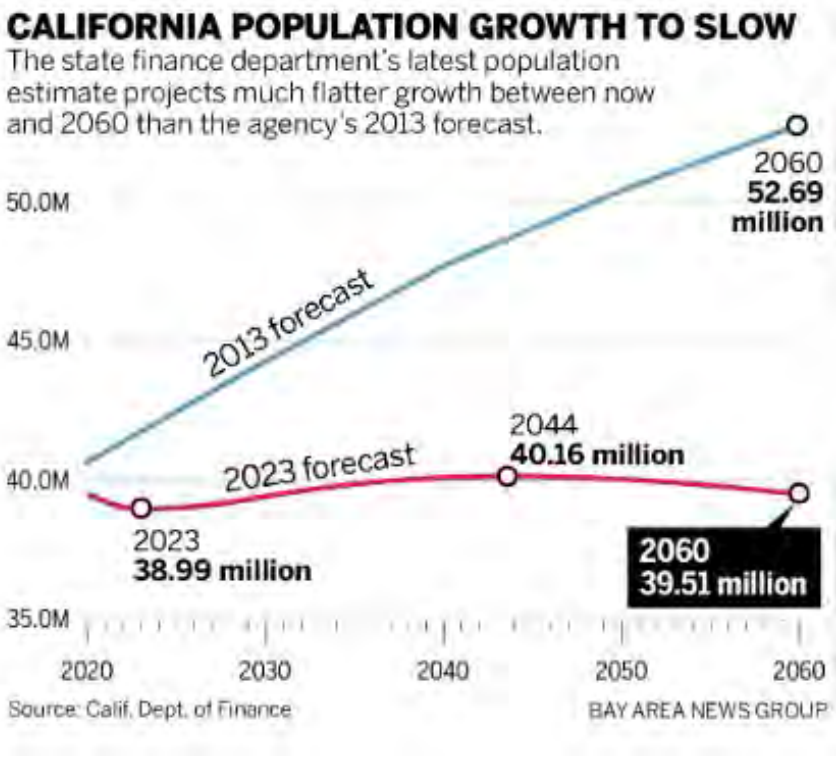


Figure 98. Changes in California's Official Demographic Projections
Sources: California Dept. of Finance and Bay Area News Group

In the previous official state demographic projections made in 2013 ("2013 forecast" in the figure), based on the best data then available to state demographers, California's population was projected to continue growing rapidly until 2060, at which point it would have topped 52 million and still be growing very rapidly (as indicated by the steep slope of the line in 2060.) However, in its more recent 2023 projections, released earlier this year, the Department of Finance now forecasts a decidedly distinct future for California from the one forecast a decade ago.

Instead of a population topping 52 million in 2060, and still increasing, California is now forecast to have a 2060 population under 40 million, or 39 million plus, essentially what it is today. For the time being at least, California's population appears to have more or less stabilized (it has declined for the past three years), although not because the large number of people continuing to move into the state from foreign countries has receded. Rather, it has stabilized because the exodus of Californians – fed up with and fleeing everything from soaring home prices to soul-crushing traffic, out-of-control crime, and draconian lockdown policies during the Covid-19 pandemic – out of the state now approximately offsets the foreign influx into the state and births.

The reason for going on this California tangent is just to emphasize that for Idaho as well, future population projections and their implications are not a fait accompli; they are not set in stone. Nor are endless losses of Idaho's open space to never-ending development and sprawl.

5.2 POLICY IMPLICATIONS

In order for Idaho policy-makers to reduce the negative impacts of sprawl and over-development, they must adopt a two-pronged approach. Building on the findings of our original sprawl studies in 2000 and 2001, and using the same analysis of U.S. Census Bureau and U.S. National Resource Conservation Service data, this study provides further evidence of the necessity for such a two-pronged approach in order to effectively combat loss of habitat and farmland to sprawl in Idaho. Furthermore, this study found that the role of population growth in contributing to Overall Sprawl has remained high in Idaho from the 1970s to the present. These findings further reinforce the need for measures that both reduce wasteful over-consumption of our land and resources as well as others that address the large population growth that persists in our country as a whole and in Idaho in particular.

While the findings of this study directly challenge the assumptions of many Smart Growth and New Urbanism advocates that population growth plays only an insignificant role in Overall Sprawl, they do not discount the necessity for smarter urban and regional planning that reduces per capita land consumption. The results of this study suggest that in Idaho less than a quarter of recent sprawl and open space los was caused by a complicated matrix of zoning laws, infrastructure subsidies, and complex socioeconomic forces. Efforts to make cities and

communities more space-efficient and livable are certainly needed, but they largely ignore the main concern that sprawl is eating away at the remaining undeveloped lands of Idaho.

Following the logic of this study's findings it isn't hard to conclude that even the most aggressive and well-intentioned policies promoting smarter growth, better urban planning, and higher residential densities cannot escape the immense population pressures facing many communities around the rapidly growing state of Idaho. In recent years, as noted in the first section of this study, Idaho's population has grown faster (by percentage) than any other state in the country.

5.2.1 Local Influence on Sprawl

Local policy makers truly trying to curb sprawl in Idaho towns and cities have a number of policy actions and instruments at their disposal. While most local officials see population growth as an indicator of the vibrancy and vitality of their respective communities, there is little evidence to suggest that unfettered population growth is any of those things. Well-known sprawl critic and urban planner Eben Fodor, author of *Better Not Bigger*, challenged this very notion in his 2010 study "Relationship between Growth and Prosperity in 100 Largest U.S. Metropolitan Areas." [135]

Fodor's study found that rapidly expanding metropolitan areas did not hold up well in terms of standard economic indicators such as unemployment rates, per capita income, and poverty rates in comparison with slower growing metropolitan areas. Yet, despite this, local officials and city planners continue to offer subsidies and tax breaks to attract new residents, investment and development. Many times these subsidies are born unfairly by existing residents, who see their property taxes rise and are stuck paying the bill for sprawling highways, new schools, water and wastewater treatment, and energy grids ever farther from the urban core.

Many cities have overly complicated or restrictive zoning laws that drive up home prices. New immigrants and low income families are being priced out and into the more affordable suburbs and Sunbelt cities. Sprawl in the Sunbelt is of particular concern because its growth puts added strain on already scarce water resources. In order for cities to properly address sprawl, taxpayer subsidies need to be removed and the true costs of development need to be borne by those developing the land. Also, as suggested by Harvard economist Edward Glaeser, author of *Triumph of the City*, the true social costs of activities such as driving should be paid for. More sensible planning policies and zoning ordinances can help curb sprawl and reduce the size of population booms in areas not suited to handle large populations.

The U.S. Environmental Protection Agency (EPA) has a website devoted to Smart Growth at: https://www.epa.gov/smartgrowth. It contains a number of practical resources for planners, activists, developers, and local officials to help promote smart growth, which EPA defines as:

[135] Eben Fodor. See footnote #121.

"a range of development and conservation strategies that help protect our health and natural environment and make our communities more attractive, economically stronger, and more socially diverse."

The EPA Smart Growth website lists the 10 principles of smart growth developed in 1996 by the Smart Growth Network, an alliance of environmental, affordable housing, real estate and development, historic preservation, public health, government, and other groups. The ten principles of Smart Growth are:

- Mix land uses
- Take advantage of compact building design
- Create a range of housing opportunities and choices
- Create walkable neighborhoods
- Foster distinctive, attractive communities with a strong sense of place
- Preserve open space, farmland, natural beauty, and critical environmental areas
- Strengthen and direct development toward existing communities
- Provide a variety of transportation choices
- Make development decisions predictable, fair, and cost effective
- Encourage community and stakeholder collaboration in development decisions

In recent years, a growing pro-development citizens' movement in urban centers has emerged and been making waves. This so-called YIMBY movement (for "Yes In My Backyard", in explicit contrast to the NIMBY or "Not In My Backyard" movement) began in San Francisco in the early 2010s, fueled by millennials fed up with astronomical housing prices that effectively priced them out of living in the city. According to *The Guardian*, YIMBY advocates see themselves as progressive housing activists welcoming higher density and rents and mortgages affordable to the middle class, while their detractors denounce them as dupes for luxury developers, contributing to the gentrification of urban centers.[136] In San Francisco,

[136] Erin McCormick. 2017. Rise of the yimbys: the angry millennials with a radical housing solution. *The Guardian*. October 2. Retrieved online April 26, 2020 at: https://www.theguardian.com/cities/2017/oct/02/rise-of-the-yimbys-angry-millennials-radical-housing-solution.

NIMBYs have clashed with Hispanic organizations over housing developments proposed for the low-income, traditionally Hispanic Mission District.

In the authors' view, in general, Smart Growth principles and strategies should be pursued for the sake of environmental sustainability and neighborhood livability in any case, regardless of the amount of population growth that is occurring. From the findings of this study however, as well as recent experience around the country, it is quite evident that Smart Growth alone will not stop urban sprawl from devouring the countryside. Physicist and famed population activist Dr. Albert Bartlett wrote that: "smart growth will destroy the environment, but it will do it in a sensitive way." The authors would phrase this idea somewhat differently: smart growth is necessary but not sufficient to save natural habitats an farmland from incessant sprawl.

In early 2020, the Covid pandemic threw a curve ball into all of these long-term trends and emerging considerations, and proponents of higher urban densities were put on the defensive. As the headline of an article in the *Los Angeles Times* expressed it: "Building dense cities was California's cure for the housing crisis. Then came coronavirus."[137]

In our August 2023 opinion survey of 1,017 Idaho likely voters, a joint effort of Rasmussen Reports and NumbersUSA (see Appendix XX), we asked what they thought of efforts to control sprawl by changing zoning and land use management to raise population densities in the state's residential areas. A plurality (47%) opposed increasing density as a way of accommodating further population growth while avoiding accompanying sprawl, while a slightly lower percentage (42%) "strongly" or "somewhat" favored such measures.

> One way for Idaho communities to handle continued population growth without losing as much open space, natural habitat, and farmland is to change zoning and other regulations to funnel more current and future residents into apartments and condo buildings instead of single-family houses with yards. Do you strongly favor that change, somewhat favor it, somewhat oppose it or strongly oppose it?
>
> 15% Strongly favor
> 27% Somewhat favor
> 24% Somewhat oppose
> 23% Strongly oppose
> 12% Not sure

On the other hand, in the same poll, a sharp majority (79%) opposed raising local property taxes to accommodate additional population growth and residential development:

> Residential development (building subdivisions) to perpetually accommodate new population growth imposes economic costs on the existing residents of municipalities.

[137] Liam Dillon. 2020. Building dense cities was California's cure for the housing crisis. Then came coronavirus. *Los Angeles Times*. April 26. Accessed online April 26, 2020 at: https://www.latimes.com/homeless-housing/story/2020-04-26/coronavirus-density-cities-urbanization-housing-climate-change.

Do you favor paying higher property taxes to perpetually accommodate new residents in your community?

10% yes
79% no
11% not sure

A majority also favored limiting growth by controlling new hook-ups to sewage lines and wastewater treatment plants:

One potential way of controlling new growth is by limiting the number of new hook-ups to sewage lines and wastewater treatment plants. Do you favor using this as a tool to manage or control growth?

52% yes
26% no
22% not sure

As described in Chapter 1 of the study, the American Farmland Trust promotes what they call the "Better Built Cities" approach. Under this "policymakers and land-use planners promote compact development and reduce sprawl, saving irreplaceable farmland and ranchland from conversion."[138] AFT claims that by implementing this, by embracing smart growth principles and improving land-use planning, Americans could "slash conversion" of farmland to developed land by up to 55 percent and save up to 13.5 million acres of farmland nationwide by 2040. AFT also advocates for permanently protecting more agricultural land via Purchase of Agricultural Conservation Easement (PACE) programs and providing incentives (such as property tax relief) for keeping land in agricultural production.[139]

In Idaho, significant financial benefits are available to landowners who protect their land from development with a conservation easement, including a federal income tax deduction and a credit for state income taxes, as well as a property tax credit and possible federal estate tax exemptions.[140]

5.2.2 National Influence of Population Growth

Beyond the short term, local Idaho officials supportive of growth control and management can hope only to slow population growth in their jurisdictions if the national population continues

[138] American Farmland Trust. Explore the Future of Farmland. Available online at: https://development2040.farmland.org/#:~:text=Better%20Built%20Cities%3A%20Policymakers%20and,other%20farms%20reinforces%20compact%20development.
[139] Hunter, M., A. Sorensen, T. Nogeire-McRae, S. Beck, S. Shutts, R. Murphy. 2022. *Farms Under Threat 2040: Choosing an Abundant Future*. Washington, D.C.: American Farmland Trust.
[140] Idaho Land Conservation Assistance Network. 2023. Available online at: https://www.idaholandcan.org/local-resources/Open-Space-Conservation--Property-Tax-Benefits/10344

to increase by some 2.0 to 2.5 million additional residents each year. These 20-25 million additional Americans each decade will nearly all settle in some community, inevitably leading to additional sprawl as far and as long as the eye can see. Many of these added millions will choose to seek a home in Idaho, as reflected in the state's current rapid growth.

In essence there are only three sources of national population growth: native fertility (in conjunction with slowly increasing life spans), immigration, and immigrant fertility. We know the following about their contribution to long-term growth:

- Native fertility: At approximately 1.7 births per woman, the total fertility rate (TFR) of the United States remains below the replacement level of 2.1 and has not been a source of long-term population growth in the U.S. since 1971.

- Immigration: The sole source of long-term population growth in the United States is immigration, due both to new immigrants (arriving at about four times higher than the "replacement level" where immigration equals emigration) and to immigrants' fertility, which despite declines during and since the "Great Recession" has remained above replacement level and above native fertility.

Thus, long-term population growth in the United States and Idaho is in the hands of federal policy-makers and lawmakers. It is they who have increased the annual intake and settlement of immigrants from one-quarter million in the 1950s and1960s to over a million since 1990, fluctuating between one million and nearly two million, once net illegal immigration is included. Under the Biden Administration's lax border policies, millions of more economic immigrants claiming asylum status have been essentially invited into the country. Until the level of immigration, and the unrelenting population growth it drives, is lowered, even the best local plans and political commitment will be unable to stop sprawl. Any serious efforts to halt the loss of open space, farmland, and wildlife habitat in Idaho must include reducing the rate of U.S. population growth, which requires lowering the level of immigrants entering the country each year, unless Americans and immigrants decide to move to a one-child per woman average.

A far more sustainable immigration policy would be the approximately half-million a year of legal immigrants, plus more serious efforts to reign in illegal immigration, recommended in 1995 by the bi-partisan U.S. Commission on Immigration Reform, established by President Clinton and chaired by former Congresswoman Barbara Jordan (D-TX). That would roll annual immigration back to around the level that was the norm as recently as the 1980s.

A poll of America's likely voters conducted in May 2020 by Pulse Opinion Research found that reducing immigration was a popular policy choice among most when linked with the goal of slowing down U.S. population growth (see Appendix E for the full survey questions and results).

QUESTION: Over the rest of this century, would you prefer that the nation's population continue to grow toward 500 million, grow much more slowly, stay about the same as it is now at 331 million, or slowly become smaller?

17% Continue to grow toward 500 million
43% Grow much more slowly
22% Stay about the same at 331 million
10% Slowly become smaller
8% Not sure

GROUPINGS: 17% Continue to grow at present pace
75% Substantially slow, stop, or reverse growth

QUESTION: Census data shows that since 1970, annual immigration has tripled and is now the cause of nearly all long-term population growth. Should the federal government reduce annual immigration to slow down population growth, keep immigration and population growth at the current level, or increase annual immigration and population growth?

47% Reduce annual immigration to slow down population growth
33% Keep annual immigration and population growth at the current level
12% Increase annual immigration and population growth
8% Not sure

QUESTION: Currently the government allows one million legal immigrants each year. How many legal immigrants should the government allow each year -- two million or more, one million, a half-million, or 100,000 or less?

17% Two million or more
27% One million
21% Half a million
22% 100,000 or less
14% Not sure
GROUPINGS: 44% Keep same level or increase
43% Cut immigration at least in half

In our August 2023 survey of 1,017 Idaho likely voters, included as Appendix D, we inquired as to preferences about population size and growth rates in the state of Idaho. We also asked Idahoans about what immigration levels would be appropriate in view of immigration driving America's and Idaho's future population growth, and population growth driving sprawl in the state.

A study of government data found that three-quarters (77%) of the loss of Idaho's open space, natural habitat, and farmland to development in recent decades was related to the state's rapid population growth. Would continuing this level of population growth into the future make Idaho better, worse or not much different?

7% better
77% worse

12% not much different
4% not sure

Only 7% of respondents feel that continuing the current level of population growth in Idaho would make the state better; 77% think it would make Idaho worse.

Figure 99. The vast majority (77%) of Idahoans think that continuing current population growth and development trends will make the state worse

The population of Idaho has nearly doubled since 1990. Would you prefer that the Idaho population continue to grow rapidly, that it grow more slowly, that it stay about the same size, or that it become smaller?

5% continue to grow rapidly
47% grow more slowly
23% stay about the same
23% become smaller
2% not sure

Only 5% of respondents want to see Idaho's population grow more rapidly, while 47% want to see growth slowed, 23% want growth to stop (stabilize Idaho's population where it is now), and 23% wish for a smaller Idaho population.

Another major source of Idaho population growth is immigration from other countries. Should the federal government reduce annual immigration to slow down Idaho's population growth, keep immigration and population growth at the current level, or increase annual immigration and population growth?

54% reduce annual immigration
31% keep immigration at its current level
8% increase immigration
7% not sure

More than half (54%) of Idahoans would prefer to reduce annual immigration, while 39% would prefer to keep it at its current level (31%) or increase it (8%).

Currently the federal government adds about one million legal permanent immigrants to the country each year. What annual level would you prefer:

8% two million or more
8% one and a half million
21% one million
19% half a million
28% one hundred thousand or less
17% not sure

Almost half (47%) of Idahoans would prefer legal immigration be cut in half (to half a million or 500,000 annually) or even lower. Legal immigration at around 500,000 a year would drive far less sprawl than the present levels exceeding a million a year. But unless Americans decide to lower their birth rates to far below replacement level, the 500,000 a year would still drive considerable population growth, sprawl, and environmental degradation indefinitely.[141]

That is why another federal commission recommended potentially greater reductions in immigration. The President's Council on Sustainable Development in 1996 recommended that the United States stabilize its population in order to meet various environmental and quality-of-life goals, and it called for reducing immigration to a level that would allow for a stable population. At current just below-replacement native fertility rates, that would require a return down to at least the quarter-million level of immigration in the 1950s and 1960s.

The Population and Consumption Task Force of President Clinton's Council on Sustainable Development concluded in 1996: "This is a sensitive issue, but reducing immigration levels is a necessary part of population stabilization and the drive toward sustainability."[142]

[141] Camarota, Steve, *Projecting Immigration's Impact on the Size and Age Structure of the 21st Century American Population*, Center for Immigration Studies, December 2012

[142] President's Council on Sustainable Development. 1996. *Population and Consumption Task Force Report.* 1996. Co-Chairs: Dianne Dillon-Ridgley, Co-Chair, Citizen's Network for Sustainable Development and Timothy E. Wirth, Under Secretary for Global Affairs, U.S. Department of State.

It is important to underscore that the additional sprawl that occurs because of high immigration levels has nothing to do with the caliber of immigrants as people or individuals but everything to do with the quantity of population growth that occurs because of immigration. This can be seen by simply observing that cities with high population growth have high amounts of sprawl, regardless of whether most of the incoming new residents come from another region of the United States or from another continent.

In our 2003 national-level study, we devoted several pages to our findings on ways in which an Urbanized Area's population growth from immigrants would have either a greater or lesser effect on sprawl than a net population growth of the same size from U.S.-born residents. We could find no precise method of quantification but concluded that the various factors largely balanced each other.

A key way in which growth from immigration has a somewhat smaller effect on sprawl is the lower average income level and, thus, a lower consumption level of the average immigrant. But we found that an assumption about immigrants having less of an effect because they presumably prefer central cities to suburbs was false. The majority of immigrants now live in suburbs where the sprawl occurs.[143] And the adult children of immigrants were found to be just as likely to shun living in core cities as the adult children of natives. In fact, the lower incomes were causing immigrants to move to the edges of cities and even to rural settlements beyond the cities to find cheaper housing.

As described in Section 3.3.3 on the sources of Idaho's population growth, immigration, while comprising just 18 percent of the state's year-on-year growth in recent decades, indirectly influences that growth in a major way not involving the immigrants actually settling in the state. Because California – the single largest domestic source of Idaho's "internal migrants" – has experienced so many ill effects from its massive population, for years Idaho has received a large number of California "refugees" fleeing the ill effects of this overpopulation. Because nearly all of California's population growth – until it stopped growing several years ago – has been due to immigration, much of California's hemorrhaging into Idaho and other western states must be considered as another consequence of the quadrupled level of annual federal immigration since 1970.

On a local level, the sprawl pressures of population growth are similar regardless of where the new residents originate. But very few towns and cities are likely to be able to subdue population growth and sprawl if the federal government continues policies that add 20 million or more people to the country decade after decade, all of whom have to settle in some place or

[143] Jill H. Wilson and Audrey Singer. October 2011. *Immigrants in 2010 Metropolitan America: A Decade of Change*. Metropolitan Policy Program at Brookings. Available online at: https://www.brookings.edu/research/immigrants-in-2010-metropolitan-americaa-decade-of-change/

another. The reality – which can only be mitigated but not eliminated by good planning or Smart Growth – is that all human settlements, large or small, occupy lands that were formerly productive agricultural lands or irreplaceable natural habitats.

This is not a sustainable path, and it is not one we believe that fully informed and engaged Idahoans would voluntarily choose.

Figure 100. The kind of view Idahoans would like to see preserved for the future

Appendix A
Glossary

Central Place – The Census Bureau delineates an urbanized area (UA) as one or more "central places" and the "urban fringe" (the adjacent densely settled surrounding territory) that together contain a minimum of 50,000 residents. A central place functions as the dominant center of each UA. The identification of a UA central place permits the comparison of this dominant center with the remaining territory in the UA. A central place generally is the most densely populated and oldest city in a metropolitan area.

Density – Shorthand for population density, or the number of residents per unit area, usually measured in number of residents per acre or square mile. Density is the mathematical inverse or opposite of land consumption per person (per capita). For example, a density of five persons or residents per acre equals 3,200 per square mile. This in turn equals a per capita land consumption of 0.2 acre per person.

Developed Land – As defined by the U.S. Department of Agriculture's Natural Resources Conservation Service in its National Resources Inventories (NRIs), issued every five years since 1982, built-up or paved land that is at least one-quarter acre in area. Developed land can include built-up areas outside of urbanized areas, towns, or cities. The NRI Developed Land category includes: (a) large tracts of urban and built-up land; (b) small tracts of built-up land less than 10 acres in size; and (c) land outside of these built-up areas that is in a rural transportation corridor (roads, interstates, railroads, and associated rights-of-way).

Foreign Born – Describing a person born in a country other than the United States. Excludes those born abroad to American parents. Can be used as a noun or an adjective.

High-Density – A large number of residents per unit area, usually measured in terms of residents per acre or square mile. While there is no one precise, agreed-upon criterion or threshold of high-density residential development, a density of approximately 5,000 per square mile would be considered relatively high-density.

Holdren Method – Mathematical methodology for determining the percentages of Overall Sprawl attributable to Per Capita Sprawl and Population-driven Sprawl, in other words, to increasing per capita land consumption (decreasing population density) and to population growth.

Hop – a connection from one urban area core to other qualifying urban territory along a road connection of half a mile (0.5 mile) or less in length; multiple hops may be made along any given road corridor. This criterion recognizes that alternating patterns of residential development and non-residential development are a typical feature of urban landscapes.

Immigration – Permanent movement (i.e., settlement) of a foreign-born person to the United States either with permission from U.S. authorities (legal immigration) or without such permission (illegal immigration).

Immigrant Fertility – Fertility of foreign-born immigrants to the United States, usually expressed in terms of the Total Fertility Rate (TFR) of women, which is the average total number of children born to women of a defined group during the course of their reproductive years.

Jump – a connection from one urban area core to other qualifying urban territory along a road connection between 0.5 mile and 2.5 miles in length; only one jump may be made along any given road connection.

Low-Density – Relatively low population density, or low number of residents per unit area (acre or square mile). Urban / suburban densities of 1,000-2,000 per square mile would be considered low-density, though still enough to qualify as urban.

Native Born – A person born in the United States.

Natural Habitat – That portion of rural or undeveloped land that consists of upland and bottomland forests, woodlands, savanna, scrub-shrub, natural grasslands or prairie, wetlands (marshes, swamps, bogs), ponds, watercourses, deserts, alpine meadow and tundra. Natural habitats support wildlife and provide other ecosystem services. They may be in public or private ownership.

New Urbanism – A movement that sees urban centers as potentially vibrant communities that can mix and harmonize residential and commercial uses in clever and innovative ways to make cities satisfying and safe places to live and work. New urbanism supports such concepts as higher density in urban cores, mixed uses, mass transit, close proximity of dwellings to workplace, walkable communities, bicycle lanes, community gardens, and others. New urbanism sees relentless sprawl in America as one consequence of the abandonment of our central cities.

Per Capita Land Consumption – Average amount of land used by each resident of an urbanized area or developed area. Includes not just residential land but all developed land used by urban residents, including commercial, institutional, small park, transportation (e.g., streets, roads, railroads, freeways, parking lots), and industrial land uses.

Open Space – Land lacking significant built structures or pavement. Includes rural and undeveloped lands and natural habitat outside of urban boundaries; also includes larger natural areas, parks and green space within urban areas, such as golf courses and extensive lawns or gardens. Yards or wooded lots on quarter-acre lots in residential areas would not qualify as open space.

Overall Sprawl – See "sprawl" below. Overall sprawl is the sum of Per Capita Sprawl and Population-driven sprawl [the total amount of open space converted to development over a period of time].

Per Capita Sprawl – Sprawl that is driven by increase in per capita land consumption, that is, land consumption per resident, of an urbanized area, developed area, city or town; Per Capita

Sprawl is measured in terms the increase in acres or square miles of developed or urbanized acres of land per person. Per Capita Sprawl and population-driven sprawl add up to 100 percent of Overall Sprawl.

Population-driven Sprawl – Sprawl that is driven by increase in the population of an urbanized or developed area. Population-driven and Per Capita Sprawl add up to 100 percent.

Population Growth – Increase in the number of residents of a given area, such as a town, city, urbanized area, state, or country over time. Population growth is equal to the total births of native-born residents minus the total deaths of native-born residents minus the emigration of native-born residents PLUS total immigration of the foreign born plus births to the foreign born minus deaths of the foreign born minus emigration of the foreign born (i.e., return to the country of their birth or a third country). In recent decades, annual population growth in the United States as a whole has been running about 2.5 million to 3 million per year on average, or roughly 30 million per decade.

Rural Land – Undeveloped lands outside of urban areas, including farmland, pastureland, rangeland, and natural or semi-natural habitats, like forests, woodlands, wetlands, grasslands or prairie, and deserts. Rural lands may be flat or mountainous, and publicly or privately owned.

Smart Growth – The use of a variety of land-use, planning, statutory, regulatory, taxing, and other tools by federal and state governments and local jurisdictions (municipalities) to reduce haphazard, low-density, and poorly planned development in a given region.

Smart Growth Movement – A loose, eclectic coalition of environmentalists, local growth-control activists, New Urbanists, municipal and regional planners, think-tanks, the federal government and many state governments, and even some home-builders united by their interest in slowing the rate of sprawl, and making existing communities more sustainable and livable.

Sprawl – As defined in this study, the increase in the physical area of a town or city over time – outward expansion – as undeveloped or rural land at its periphery is permanently converted to developed or urbanized land as population and/or per capita land consumption grow. More specifically, in this study, sprawl is 1) the increase in the area of the Census Bureau's Urbanized Areas, as delineated every 10 years in the decadal censuses, and/or 2) the increase in the area of a state's area of Developed Land, as determined by the Natural Resources Conservation Service.

Suburbs – Residential or commercial zones on the outskirts of a central city or town; generally corresponds to "urban fringe." Tend to have a lower population density than the central place or urban core, though not always, as when downtown districts are dominated by office, institutional, and commercial zones.

Urban Core – Used in this report as another description for "central location" as defined by the Census Bureau. The urban core is the entire city that anchors a metropolitan area, and usually is at its center. It generally is the oldest, most densely populated and most built-up portion of an urbanized area.

Urban Fringe – Built-up areas near the edge of an urbanized area, generally with lower population density than the urban core; generally corresponds to the inner and outer suburbs of a town or city.

Urban Sprawl – See "sprawl."

Urbanized Area – As defined by the U.S. Census Bureau, an area of contiguous census blocks or block groups with a population of at least 50,000 and an average population density of at least 1,000 residents per square mile.

Appendix B
Calculating Per Capita Land Consumption

The per person land consumption in each state or Urbanized Area can be expressed as:

(1) $a = A / P$

where:

a = area of developed or urbanized land area for the average resident
A = Area of total developed or urbanized land in a state
P = Population of that state

For example, in 2015 Arizona had 6,758,251 residents and approximately 2,108,600 developed acres. Thus, per capita developed land use for all purposes was around 0.31 acre (slightly more than a third of an acre) per resident.

The land used per person is the total developed or urbanized land area divided by the total number of people. This is the inverse of population density, which is the number of people per unit area of land. When per capita land consumption goes up, density goes down; when per capita land consumption goes down, density goes up.

The developed land area of any given state can be expressed as:

(2) $A = P \times a$

This can be stated as: the total developed area in square miles (or acres) of a state can be simply expressed or "factored" into the product of the Population of the state (*viz*., P) multiplied by the per capita urban land consumption (*viz*., a). This second equation (2) is the basis for attributing or apportioning the shares of sprawl (viz. growth in A) back onto two contributing factors, the growth in P and the growth in a.

Appendix C
Apportioning Shares of Overall Sprawl Between Population Growth and Per Capita Sprawl

A methodology for quantifying the respective contributions of population growth and changes in per capita consumption of any type of resource use was outlined in a 1991 paper by physicist John Holdren ("Population and the Energy Problem." *Population and Environment*, Vol. 12, No. 3, Spring 1991). Although Dr. Holdren's 1991 paper dealt specifically with the role of population growth in propelling the increase in U.S. energy consumption, the same methodology can also be applied to many types of population and resource consumption analyses.

In the case of sprawl, the natural resource under consideration is rural land, namely the expansion over time in the total acreage of rural land urbanized or converted into developed land and subsequently used for urban purposes, such as for housing, commerce, retail, office space, education, light and heavy industry, transportation, and so forth.

As stated in Appendix B, the total land area developed in a city (urbanized area) or state can be expressed as:

(1) $A = P \times a$

Where:

A = Area of total are (in acres or square miles) of development in city or state
P = Population of that city or state
a = area of city or state used by the average resident (per capita land use)

Following the logic in Holdren's paper, if over a period of time $\otimes$t (e.g., a year or a decade), the population grows by an increment $\otimes$P and the per capita land use changes by $\otimes$a, the total urbanized land area grows by ΔA, expressed as:

(2) $A + \Delta A = (P + \Delta P) \times (a + \Delta a)$

Subtracting eqn. (1) from eqn. (2) and dividing through by A to compute the relative change (i.e., $\Delta A/A$) in urbanized land area over time interval Δt yields:

(3) $\Delta A/A = \Delta P/P + \Delta a/a + (\Delta P/P) \times (\Delta a/a)$

Now equation (3) is quite general and makes no assumption about the growth model or time interval. On a year-to-year basis, the percentage increments in P and a are small (i.e., single digit percentages), so the second order term in equation (3) can be ignored. Hence following the Holdren paradigm, eqn. (3) states that the percentage growth in urbanized land area (viz., 100 percent x $\Delta A/A$) is the sum of the percentage growth in the population (100 percent x $\Delta P/P$) plus the percentage growth in the per capita land use (100 percent x $\Delta a/a$). Stated in words, equation (3) becomes:

(4) *Overall percentage land area growth = Overall percentage population growth + Overall percentage per capita growth*

In essence, the Holdren methodology quantifies population growth's share of total land consumption (sprawl) by finding the ratio of the overall percentage change in population over a period of time to the overall percentage change in land area consumed for the same period. This can be expressed as:

$$\text{(5)} \quad \textit{Population share of growth} = \frac{\textit{(Overall percentage population growth)}}{\textit{(Overall percentage land area growth)}}$$

The same form applies for per capita land use:

$$\text{(6)} \quad \textit{Per capita land use share of growth} = \frac{\textit{(Overall \% per capita land use growth)}}{\textit{(Overall \% land area growth)}}$$

The above two equations follow the relationship based on Prof. Holdren's equation (5) in his 1991 paper. A common growth model follows the form (say for population):

$$\text{(7)} \quad P(t) = P_0(1 + g_p)t$$

Where $P(t)$ is population at time t, P_0 is the initial population and g_p the growth rate over the interval. Solving for g_p the growth rate yields:

$$\text{(8)} \quad \ln(1 + g_p) = (1/t) \ln(P(t)/P_0)$$

Since $\ln(1 + x)$ approximately equals x for small values of x, equation (8) can be written as:

$$\text{(9)} \quad g_p = (1/t) \ln(P(t)/P_0)$$

The same form of derivation of growth rates can be written for land area (A) and per capita land use (a)

$$\text{(10)} \quad g_A = (1/t) \ln(A(t)/A_0)$$

$$\text{(11)} \quad g_a = (1/t) \ln(a(t)/a_0)$$

These three equations for the growth rates allow the result of equation (4) to be restated as:

$$\text{(12)} \quad gP + g_a = g_A$$

Substituting the formulae (equations 9 through 11) for the growth rates and relating the initial and final values of the variables P, a and A over the period of interest into equation (12), the actual calculational relationship becomes:

(13) $\ln$ (*final population / initial population*) + $\ln$ (*final per capita land area / initial per capita land area*) = $\ln$ (*final total land area / initial total land area*)

In other words, the natural logarithm (ln) of the ratio of the final to initial population, plus the logarithm of the ratio of the final to initial per capita land area (i.e., land consumption per resident), equals the logarithm of the final to the initial total land area.

In the case of, say, the state of Arizona from 1982 to 2015, this formula would appear as:

(14) ln (7,044,008 *residents* / 2,889,860 *residents*) + ln (*0.298 acre per resident / 0.340 acre per resident*) = ln (*2,098,900 acres / 982,700 acres*)

Computing the ratios yields:

(15) ln (2.4375) + ln (0.8765) = ln (2.1359)

0.8910 + (-0.1321) = 0.7589

Then, applying equations (5) and (6), the percentage contributions of population growth and per capita land area growth are obtained by dividing (i.e., normalizing to 100 percent) each side by 0.7589:

(16) $\frac{0.8910}{0.7589} - \frac{0.1321}{0.7589} = \frac{0.7568}{0.7589}$

Performing these divisions yields:

(17) 1.17 - 0.17 = 1.0

Thus, we note that in the case of Arizona from 1982 to 2015, the share of sprawl due to population growth was 117 percent [100 percent x (0.8910 / 0.7589)], while declining density (i.e., an increase in land area per capita) accounted for -13 percent [100 percent x (-0.1321 / 0.7589)]. Note that the sum of both percentages equals 100 percent.

In the main body of this report we modify this gross state-wide percentage of sprawl related to population growth by using a county-by-county weighting approach. This approach accounts for the sprawl that occurs in each county and lends a proportionately greater weight to those counties with greater amounts of sprawl. In essence, sprawl in counties around Boise, for example, should not be attributed to population growth in counties around Coeur d'Alene. In this method, the amount of sprawl related to population growth in each county is summed for all 44 counties in the state. This sum or aggregate is then divided by the total amount of sprawl in the state. Using this procedure, 77 percent of the sprawl in Idaho between 1982 and 2017 is shown to be associated with population growth, which the authors believe is a more accurate rendering of population growth's role than 111 percent, which exaggerates population's role, and implies that all sprawl (and then some) in Idaho is related to population growth; this is not the case.

Appendix D

Poll of 1,017 Idaho Likely Voters
Conducted August 18-26, 2023
By Rasmussen Reports and NumbersUSA

How would you rate the job Joe Biden has been doing as President?

17% strongly approve
16% somewhat approve
10% somewhat disapprove
56% strongly disapprove
2% not sure

Idaho's population has nearly doubled since 1990, and if recent migration and fertility trends continue, demographers project the state's 2023 population of 1.9 million to reach about 2.7 million by 2060 and still be increasing. Do you find the prospect of adding another 800,000 residents in the coming decades to be more positive or more negative?

21% more positive
67% more negative
12% not sure

Has Idaho developed its open lands into cities, housing, and highways too much, too little, or about as much as it should?

48% too much
11% too little
36% about right
5% not sure

Government data show that the United States now has about one-third less cropland for each American than it did 30 years ago. How important is it to protect U.S. farmland from development so the United States is able to produce enough food to feed Americans in the future?

81% very important
14% somewhat important
3% not very important
0% not at all important
2% not sure

In Idaho, approximately 3.3 million acres of farmland are irrigated, and irrigation is crucial to food production in the state. Cities and towns compete for scarce water with agriculture. Should water used to irrigate farmland be diverted to support additional human population growth in Idaho?

12% water should be diverted from agriculture to support more residents
73% water should not be diverted from agriculture to support more residents
14% not sure

Three of Idaho's aquifers are classified as sole source aquifers. These aquifers are the only or principal source of drinking water for residents in those regions. How important is it to protect Idaho's sole-source aquifers from over-pumping and depletion?

79% very important
16% somewhat important
2% not very important
1% not at all important
2% not sure

From an environmental standpoint, how important is it to preserve Idaho's forests, rivers, lakes, natural grasslands, mountains, and wilderness areas?

77% very important
16% somewhat important
4% not very important
1% not at all important
2% not sure

How important is it to you that you can easily get to Natural Areas and Open Space?

65% very important
26% somewhat important
6% not very important
1% not at all important
2% not sure

A study of government data found that three-quarters (77%) of the loss of Idaho's open space, natural habitat, and farmland to development in recent decades was related to the state's rapid population growth. Would continuing this level of population growth into the future make Idaho better, worse or not much different?

7% better
77% worse
12% not much different
4% not sure

In recent years, have you sensed that Idaho's parks and natural areas have become much more crowded, somewhat more crowded, somewhat less crowded, or much less crowded?

52% much more crowded
35% somewhat more crowded
4% somewhat less crowded
1% much less crowded
8% not sure

The population of Idaho has nearly doubled since 1990. Would you prefer that the Idaho population continue to grow rapidly, that it grow more slowly, that it stay about the same size, or that it become smaller?

5% continue to grow rapidly
47% grow more slowly
23% stay about the same
23% become smaller
2% not sure

A major source of Idaho's population growth is people moving in from other states, especially places like California. Should local and state governments in Idaho make it more difficult for people to move to Idaho from other states by restricting development?

56% yes
27% no
18% not sure

Another major source of Idaho population growth is immigration from other countries. Should the federal government reduce annual immigration to slow down Idaho's population growth, keep immigration and population growth at the current level, or increase annual immigration and population growth?

54% reduce annual immigration
31% keep immigration at its current level
8% increase immigration
7% not sure

Currently the federal government adds about one million legal permanent immigrants to the country each year. What annual level would you prefer:

8% two million or more
8% one and a half million
21% one million
19% half a million
28% one hundred thousand or less
17% not sure

One way for Idaho communities to handle continued population growth without losing as much open space, natural habitat, and farmland is to change zoning and other regulations to funnel more current and future residents into apartments and condo buildings instead of single-family houses with yards. Do you strongly favor that change, somewhat favor it, somewhat oppose it or strongly oppose it?

15% strongly favor
27% somewhat favor
24% somewhat oppose
23% strongly oppose
12% not sure

Residential development (building subdivisions) to perpetually accommodate new population growth imposes economic costs on the existing residents of municipalities. Do you favor paying higher property taxes to perpetually accommodate new residents in your community?

10% yes
79% no
11% not sure

One potential way of controlling new growth is by limiting the number of new hook-ups to sewage lines and wastewater treatment plants. Do you favor using this as a tool to manage or control growth?

52% yes
26% no
22% not sure

In trying to control illegal immigration, should the government mandate that all employers use the federal electronic E-Verify system to help ensure that they hire only legal workers for U.S. jobs?

69% yes
16% no
14% not sure

Do you live in a major city, the suburbs, a small city, a town or a rural area?

15% a major city
16% the suburbs
27% a small city
14% a town
26% a rural area
2% not sure

Where would you prefer to live – in a major city, the suburbs, a small city, a town or a rural area?

7% a major city
14% the suburbs
23% a small city
16% a town
39% a rural area
2% not sure

Have you lived in Idaho since childhood or did you move to Idaho as an adult?

57% since childhood
43% you moved in as an adult

About how long have you lived in Idaho, less than 10 years, 10 to 20 years, 20 to 30 years, or more than 30 years?

12% less than 10 years
18% 10 to 20 years
21% 20 to 30 years
49% more than 30 years

Were you born in Idaho, in another state, or another country?

40% Idaho
57% another state
3% another country

Appendix E
National Survey of 1,500 Likely Voters
Conducted May 25-27, 2020

By Pulse Opinion Research

1* The U.S. Department of Agriculture calculates that in recent decades urban sprawl has destroyed 43 million acres of farmland and natural habitat, an area about equal in size to all of New England. If this trend were to continue, would it be a major problem, somewhat of a problem, not much of a problem, or not a problem at all?

44% A major problem

35% Somewhat of a problem

11% Not much of a problem

4% Not a problem at all

6% Not sure

2* How important is it to protect farmland from development so the United States is able to produce enough food to completely feed its own population in the future?

62% Very important

27% Somewhat important

6% Not very important

1% Not important at all

3% Not sure

3* How important is it for the United States to have enough farmland to be able to feed people in other countries as well as its own?

32% Very important

45% Somewhat important

16% Not very important

4% Not important at all

3% Not sure

4* Which do you agree with more: That it is unethical to pave over and build on good cropland or that the need for more housing is a legitimate reason to eliminate cropland?

62% It is unethical to pave over and build on good cropland

18% The need for more housing is a legitimate reason to eliminate cropland

20% Not sure

5* The government reports that to make room for growing cities the last three decades, 19 million acres of surrounding woodlands have been cut down. How significant a problem is this loss of natural wildlife habitat?

51% Very significant

34% Somewhat significant

9% Not very significant

2% Not significant at all

4% Not sure

6* Does the United States have a responsibility to the rest of the world to preserve a certain amount of its natural habitat or is preserving the United States natural habitat not a matter of global concern?

62% The United States has a responsibility to the rest of world to preserve its natural habitat

27% Preserving the natural habitat is not a matter of global concern

11% Not sure

7* Do you feel an emotional or spiritual uplift from time spent in natural areas like woodlands, wetlands and grasslands?

73% Yes

16% No

11% Not sure

8* How important is it that you can get to natural areas fairly quickly from where you live?

45% Very important

40% Somewhat important

10% Not very important

2% Not important at all

3% Not sure

9* A study of government data found that most of the development destruction of farmland and natural habitat in the last decade has been related to the country's population growing by 22 million people. The Census Bureau projects the population is on pace to add another 86 million in the next 40 years. Would this rate of population growth in YOUR area make it a better place to live, a worse place to live, or would it not make much difference?

16% A better place to live

50% A worse place to live

25% Not make much difference

9% Not sure

10* If the population in YOUR AREA were to increase significantly, would the government be able to build enough extra transportation capacity to accommodate the extra people or would traffic likely become much worse?

28% The government would be able to build enough extra transportation capacity to accommodate the extra people

61% Traffic likely would become much worse

12% Not sure

11* Over the rest of this century, would you prefer that the nation's population continue to grow toward 500 million, grow much more slowly, stay about the same as it is now at 331 million, or slowly become smaller?

17% Continue to grow toward 500 million

43% Grow much more slowly

22% Stay about the same at 331 million

10% Slowly become smaller

8% Not sure

12* Census data shows that since 1970, annual immigration has tripled and is now the cause of nearly all long-term population growth. Should the federal government reduce annual immigration to slow down population growth, keep immigration and population growth at the current level, or increase annual immigration and population growth?

47% Reduce annual immigration to slow down population growth

33% Keep annual immigration and population growth at the current level

12% Increase annual immigration and population growth

8% Not sure

13* Currently the government allows one million legal immigrants each year. How many legal immigrants should the government allow each year -- two million or more, one million, a half-million, or 100,000 or less?

17% Two million or more

27% One million

21% Half a million

22% 100,000 or less

14% Not sure

14* One way to handle continued population growth without losing as much natural habitat and farmland would be to increase population density by changing zoning and other regulations so more residents live in apartments and condo buildings instead of single-family houses. Do you strongly favor, somewhat favor, somewhat oppose or strongly oppose this kind of change?

16% Strongly favor

32% Somewhat favor

24% Somewhat oppose

17% Strongly oppose

12% Not sure

15* Which best describes your current neighborhood -- is it higher population-density with at least some apartments or townhouses, is it less-densely populated with mostly single-family houses, or is it rural?

32% Your neighborhood is higher population-density with at least some apartments or townhouses

50% Less-densely populated with mostly single-family houses

14% If rural

3% Not sure

16* Would you prefer to live in a mixed higher-density neighborhood of stores, townhouses, apartments and condos, a neighborhood of single-family houses, or a rural area?

26% Mixed higher-density neighborhood of stores, townhouses, apartments and condos

45% Neighborhood of single-family houses

24% Rural area

5% Not sure

17* As a result of the coronavirus pandemic, does living in a more densely populated area appear more attractive, less attractive or has it not made much difference?

14% More attractive

50% Less attractive

32% It has not made much difference

3% Not sure

NOTE: *Margin of Sampling Error, +/- 2.5 percentage points with a 95% level of confidenc*

Appendix F
Advisors* to the 2001 study
"Weighing Sprawl Factors in Large U.S. Cities"

Urban Planning Oversight

Earl M. Starnes, *Ph.D., professor emeritus, urban and regional planning, University of Florida*
Eben Fodor, *urban planning consultant, Eugene (OR); author,* Better not Bigger: How to Take Control of Urban Growth and Improve Your Community
Gabor Zovanyi, *Ph.D., professor of urban planning*, *Eastern Washington University*
Robert Seaman, a*ssociate professor of environmental science, New England College; executive committee, American Society of Civil Engineers' Urban and Development Division*
Ruth Steiner, *Ph.D., professor of urban and regional planning, University of Florida*

Statistical Oversight

Alan J. Truelove, *Ph.D., statistician, retired professor, University of the District of Columbia*
B. Meredith Burke (1947-2002), *Ph.D., demographer*
Ben Zuckerman, *Ph.D.*, *professor of physics and astronomy, UCLA; member, UCLA Institute of the Environment*
David Simcox, *director, Migration Demographics*
Dick Schneider, *chair, Sierra Club Northern California Regional Sustainability Task Force*
Leon Bouvier (1922-2011), *Ph.D., demographer, Old Dominion University (VA)*
Mark C. Thies, *Ph.D., P.E., professor of chemical engineering, Clemson University*
Marshall Cohen, *Ph.D., professor emeritus of astronomy*, *California Institute of Technology*
Paul Nachman, *Ph.D., physicist*
Scott Briles, *Ph.D., engineer, Los Alamos National Laboratory, University of California*
Steven A. Camarota, *Ph.D., public policy analyst*
William E. Murray, Jr., *Ph.D., physicist*
Michael Mueller, *Ph.D., natural resource economist*

Continued on next page

***** The individuals on this list volunteered to provide advice and guidance to the 2001 Kolankiewicz-Beck sprawl study for NumbersUSA and to have their names listed prominently as Advisors inside the front cover.

The affiliations of the Advisors were listed for identification purposes only, and it was emphasized that the views in the report did not necessarily reflect the views either of the institutions listed alongside them or of all views of the Advisors. Several Advisors helped shape the methodology of the study during the 18 months it lasted, and also assisted with production of interim reports on California and Florida. As the national-level study neared completion, the authors sought the assurance of having many more Advisors with a broad array of expertise to read the results and examine the analysis and methodology. The authors gratefully acknowledged the detailed recommendations, rigorous reviews, and vigorous discussion from and among the Advisors.

Environmental and General Oversight

Albert Bartlett (1923-2013), *Ph.D., professor emeritus of physics, University of Colorado*
Betty B. Davis, *Ph.D.*, *psychologist*
Bill Smith, *Ph.D., dean, College of Global Economics, EarthNet Institute*
Craig Diamond, *adjunct faculty, environmental studies, Florida State University; technical advisor to the Sierra Club carrying capacity campaign*
David Pimentel (1925-2019), *Ph.D., professor of ecology and agricultural sciences, Cornell University*
Diana Hull (1924-2017), *Ph.D., behavioral scientist, retired, Baylor College of Medicine*
Edward G. Di Bella, *adjunct faculty, Grossmont Community College (CA); president, Friends of Los Penasquitos Canyon Preserve*
Garrett Hardin (1915-2003), *Ph.D., professor emeritus of human ecology, University of California, Santa Barbara*
George Wolford, *Ph.D., president, EarthNet Institute*
Herbert Berry, *Ph.D., retired associate professor of computer information systems, Morehead State University (KY)*
James G. McDonald, a*ttorney, civil engineer*
Jeffrey Jacobs, *Ph.D., National Academy of Sciences*
John Bermingham (1923-2020), *former Colorado state senator and Colorado Land Use Commissioner*
John Rohe, *attorney; board, Conservation News Service*
Linda Thom, *retired government budget analyst, Santa Barbara County (CA)*
Michael Hanauer, *member, Vision 2020, growth management project of Lexington, (MA)*
Ross McCluney, *Ph.D., principal research scientist, Florida Solar Energy Center,* University of Central Florida
Steve Miller, *former Las Vegas councilman, Clark County (NV) Regional Transportation Commissioner*
Stuart Hurlbert, *Ph.D., professor of biology, San Diego State University*
Terry Paulson, *Mayor Pro-tem, Aspen (CO) City Council*
Tom Reitter, *Livermore (CA) City Council*

Appendix G
Advisors to the 2022 NumbersUSA Study
FROM SEA TO SHINING SPRAWLING SEA: QUANTIFYING THE LOSS OF OPEN SPACE IN AMERICA

Bruce D. Anderson, U.S. Forest Service and Minnesota Department of Natural Resources, Retired

Phil Cafaro, Philosophy Professor and affiliated member of School of Global Environmental Sustainability, Colorado State University; author, *Thoreau's Living Ethics: Walden and the Pursuit of Virtu*e and author/co-editor, *Life on the Brink: Environmentalists Confront Overpopulation*, host, EarthX TV, *The Population Factor*

Trammell S. Crow, Founder of EarthX, the nation's largest annual exposition and forum showcasing/inspiring environmental leadership and innovations across non-profit, corporate and party lines; co-author of *In This Together: How Republicans, Democrats, Capitalists, and Activists Are Uniting to Tackle Climate Change and More*

Herman Daly (1938-2022), Ecological economist and emeritus professor at the University of Maryland, School of Public Policy; author of many books, papers, and articles on steady-state economics

Bob Fireovid, Executive Director, Better (not bigger) Vermont

Dave Foreman (1946-2022), Founder, The Rewilding Institute; author and leading continental-scale conservation advocate

Maria Fotopoulos, Founder, TurboDog Communications and syndicated columnist

Alice Friedemann, Founder, http://www.energyskeptic.com/; author of *Life After Fossil Fuels: A Reality Check on Alternative Energy*

Tom Horton, Author and former journalist, *The Baltimore Sun*; adjunct faculty, Salisbury University

Reed Noss, Chief Science Advisor, Southeastern Grasslands Initiative; past President, Society for Conservation Biology; former editor-in-chief of the journal *Conservation Biology*; elected Fellow, American Association for the Advancement of Science (AAAS); retired professor, University of Central Florida

Tim Palmer, Photographer and award-winning author of 31 books about rivers, conservation and adventure travel, including *Youghiogheny: Appalachian River*; *America's Great Forest Trails*; *America's Great River Journeys*; *Wild and Scenic Rivers: An American Legacy*; *Twilight of the Hemlocks and Beeches*; *Trees and Forests of America*; and *California Wild: Conserving the Spirit and Beauty of Our Land*

David Paxson, Founder and past President, World Population Balance

W.J. Van Ry, Founder, Foundation for Human Conservation

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