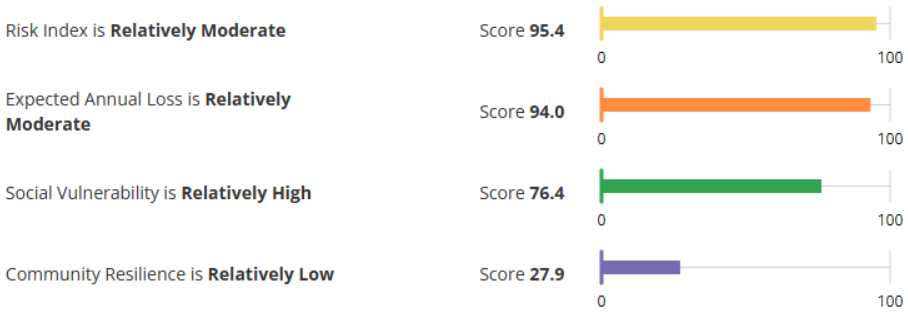
Appendix G Colusa County FEMA National Risk Index Report

National Risk Index

March 27, 2024

Colusa County, California

Summary

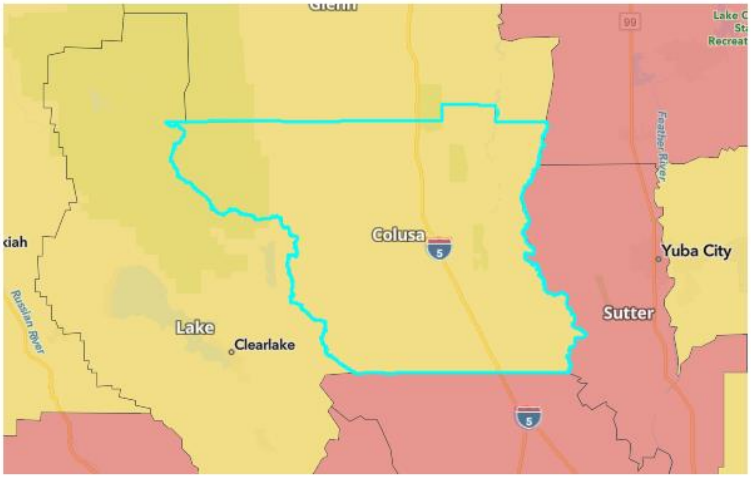


While reviewing this report, keep in mind that low risk is driven by lower loss due to natural hazards, lower social vulnerability, and higher community resilience.

For more information about the National Risk Index, its data, and how to interpret the information it provides, please review the **About the National Risk Index** and **How to Take Action** sections at the end of this report. Or, visit the National Risk Index website at hazards.fema.gov/nri/learn-more to access supporting documentation and links.

Risk Index

The Risk Index rating is **Relatively Moderate** for **Colusa County, CA** when compared to the rest of the U.S.



Score	95.42

National Percentile
95.42

Percentile Within California
50.00

0 100

95% of U.S. counties have a lower Risk Index

50% of counties in California have a lower Risk Index

Risk Index Legend

Very High | Relatively High | Relatively Moderate | Relatively Low | Very Low

No Rating | Not Applicable | Insufficient Data

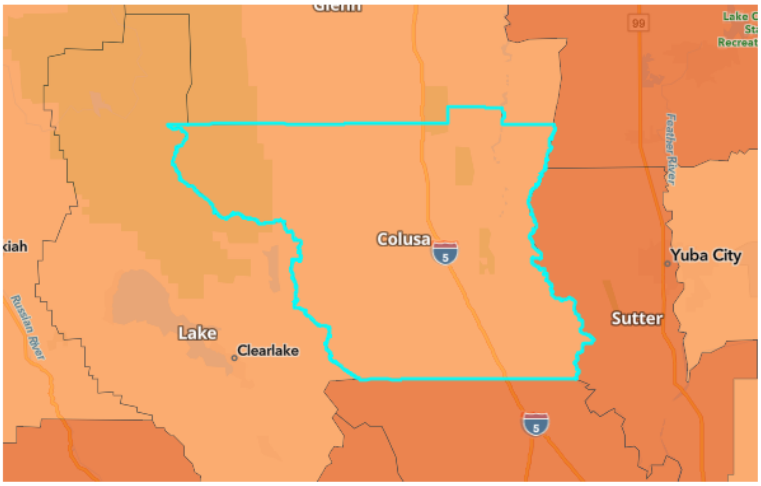
Hazard Type Risk Index

Hazard type Risk Index scores are calculated using data for only a single hazard type, and reflect a community's Expected Annual Loss value, community risk factors, and the adjustment factor used to calculate the risk value.

Hazard Type	Risk Index Rating	Risk Index Score	National Percentile
Avalanche	Not Applicable	--	
Coastal Flooding	Not Applicable	--	
Cold Wave	No Rating	0	0 100
Drought	Very High	99.9	0 100
Earthquake	Relatively Moderate	95.5	0 100
Hail	Very Low	17.1	0 100
Heat Wave	Relatively Moderate	79.7	0 100
Hurricane	Not Applicable	--	
Ice Storm	Not Applicable	--	
Landslide	Relatively Moderate	93.3	0 100
Lightning	Very Low	8.8	0 100
Riverine Flooding	Relatively Low	70.9	0 100
Strong Wind	Very Low	5.6	0 100
Tornado	Very Low	10.8	0 100
Tsunami	Not Applicable	--	
Volcanic Activity	Not Applicable	--	
Wildfire	Relatively Low	82.1	0 100
Winter Weather	Very Low	2.5	0 100

Expected Annual Loss

In **Colusa County, CA**, expected loss each year due to natural hazards is **Relatively Moderate** when compared to the rest of the U.S.



Score	93.96

National Percentile
93.96
Percentile Within California
46.60
0 100

94% of U.S. counties have a lower Expected Annual Loss

47% of counties in California have a lower Expected Annual Loss

Expected Annual Loss Legend

Very High | Relatively High | Relatively Moderate | Relatively Low | Very Low
No Expected Annual Losses | Not Applicable | Insufficient Data

Composite Expected Annual Loss	**$71,260,808.48**
Composite Expected Annual Loss Rate National Percentile	**99.6**

Building EAL	**$7,109,815.34**	Population EAL	**0.20** fatalities
Building EAL Rate	**$1 per $600.42 of building value**	Population EAL Rate	**1 per 106.95K people**
Agriculture EAL	**$61,785,303.30**	Population Equivalence EAL	**$2,365,689.84**
Agriculture EAL Rate	**$1 per $10.28 of agriculture value**		

Expected Annual Loss for Hazard Types

Expected Annual Loss scores for hazard types are calculated using data for only a single hazard type, and reflect a community's relative expected annual loss for only that hazard type.

12 of 18 hazard types contribute to the expected annual loss for **Colusa County, CA**.

Hazard Type	Expected Annual Loss Rating	EAL Value	Score
Drought	Very High	$61,575,357	99.9
Earthquake	Relatively Moderate	$7,935,200	94.3
Riverine Flooding	Relatively Low	$776,230	65.4
Wildfire	Relatively Low	$389,689	79.2
Heat Wave	Relatively Moderate	$362,004	76.7
Landslide	Relatively Moderate	$138,787	88.0
Tornado	Very Low	$46,316	11.4
Hail	Very Low	$13,171	16.7
Strong Wind	Very Low	$12,553	6.9
Lightning	Very Low	$11,062	6.7
Winter Weather	Very Low	$439	5.0
Cold Wave	No Expected Annual Losses	$0	0.0
Avalanche	Not Applicable	--	--
Coastal Flooding	Not Applicable	--	--
Hurricane	Not Applicable	--	--
Ice Storm	Not Applicable	--	--
Tsunami	Not Applicable	--	--
Volcanic Activity	Not Applicable	--	--

Expected Annual Loss Values

Hazard Type	Total	Building Value	Population Equivalence	Population	Agriculture Value
Avalanche	--	--	--	--	--
Coastal Flooding	--	--	--	--	--
Cold Wave	$0	$0	$0	0.00	$0
Drought	$61,575,357	n/a	n/a	n/a	$61,575,357
Earthquake	$7,935,200	$5,960,313	$1,974,887	0.17	n/a
Hail	$13,171	$63	$2,471	0.00	$10,638
Heat Wave	$362,004	$30	$203,327	0.02	$158,647
Hurricane	--	--	--	--	--
Ice Storm	--	--	--	--	--
Landslide	$138,787	$24,927	$113,860	0.01	n/a
Lightning	$11,062	$253	$10,809	0.00	n/a
Riverine Flooding	$776,230	$742,359	$3,489	0.00	$30,382
Strong Wind	$12,553	$1,529	$3,063	0.00	$7,961
Tornado	$46,316	$35,750	$8,784	0.00	$1,782
Tsunami	--	--	--	--	--
Volcanic Activity	--	--	--	--	--
Wildfire	$389,689	$344,549	$44,603	0.00	$537
Winter Weather	$439	$41	$398	0.00	$0

Exposure Values

Hazard Type	Total	Building Value	Population Equivalence	Population	Agriculture Value
Avalanche	--	--	--	--	--
Coastal Flooding	--	--	--	--	--
Cold Wave	$0	$0	$0	0.00	$0
Drought	$615,246,746	n/a	n/a	n/a	$615,246,746
Earthquake	$257,601,186,000	$4,268,786,000	$253,332,400,000	21,839.00	n/a
Hail	$257,911,765,560	$4,268,859,170	$253,007,600,000	21,811.00	$635,306,390
Heat Wave	$257,911,765,558	$4,268,859,170	$253,007,600,000	21,811.00	$635,306,388
Hurricane	--	--	--	--	--
Ice Storm	--	--	--	--	--
Landslide	$4,135,461,717	$136,399,267	$3,999,062,450	344.75	n/a
Lightning	$257,276,459,170	$4,268,859,170	$253,007,600,000	21,811.00	n/a
Riverine Flooding	$20,869,013,811	$572,175,453	$20,027,489,024	1,726.51	$269,349,335
Strong Wind	$257,911,765,560	$4,268,859,170	$253,007,600,000	21,811.00	$635,306,390
Tornado	$257,911,765,560	$4,268,859,170	$253,007,600,000	21,811.00	$635,306,390
Tsunami	--	--	--	--	--
Volcanic Activity	--	--	--	--	--
Wildfire	$5,772,432,279	$107,029,974	$5,653,388,735	487.36	$12,013,569
Winter Weather	$257,911,765,558	$4,268,859,170	$253,007,600,000	21,811.00	$635,306,388

Annualized Frequency Values

Hazard Type	Annualized Frequency	Events on Record	Period of Record
Avalanche	--	--	--
Coastal Flooding	--	--	--
Cold Wave	0 events per year	0	2005-2021 (16 years)
Drought	61.7 events per year	1,365	2000-2021 (22 years)
Earthquake	0.772% chance per year	n/a	2021 dataset
Hail	0.1 events per year	3	1986-2021 (34 years)
Heat Wave	3.1 events per year	50	2005-2021 (16 years)
Hurricane	--	--	--
Ice Storm	--	--	--
Landslide	0 events per year	1	2010-2021 (12 years)
Lightning	0.7 events per year	16	1991-2012 (22 years)
Riverine Flooding	0.5 events per year	13	1996-2019 (24 years)
Strong Wind	0 events per year	1	1986-2021 (34 years)
Tornado	0.2 events per year	5	1950-2021 (72 years)
Tsunami	--	--	--
Volcanic Activity	--	--	--
Wildfire	0.382% chance per year	n/a	2021 dataset
Winter Weather	1.4 events per year	23	2005-2021 (16 years)

Historic Loss Ratios

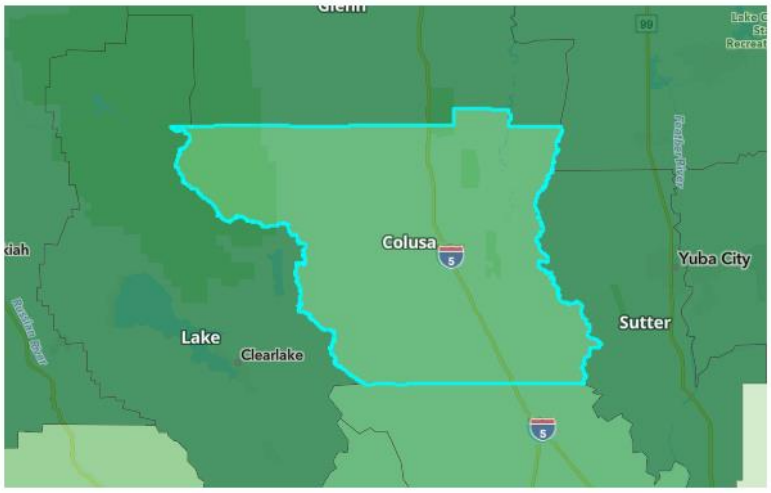
Hazard Type	Overall Rating
Avalanche	--
Coastal Flooding	--
Cold Wave	No Rating
Drought	Relatively Moderate
Earthquake	Relatively High
Hail	Relatively Moderate
Heat Wave	Very Low
Hurricane	--
Ice Storm	--
Landslide	Relatively High
Lightning	Very High
Riverine Flooding	Relatively Low
Strong Wind	Relatively High
Tornado	Very Low
Tsunami	--
Volcanic Activity	--
Wildfire	Relatively High
Winter Weather	Very Low

Expected Annual Loss Rate

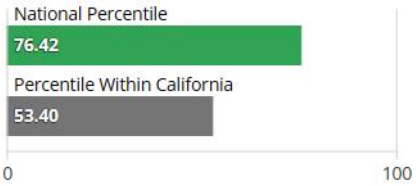
Hazard Type	Building EAL Rate (per building value)	Population EAL Rate (per population)	Agriculture EAL Rate (per agriculture value)
Avalanche	--	--	--
Coastal Flooding	--	--	--
Cold Wave	--	--	--
Drought	--	--	$1 per $10.32
Earthquake	$1 per $716.21	1 per 128.11K	--
Hail	$1 per $68.17M	1 per 102.40M	$1 per $59.72K
Heat Wave	$1 per $140.88M	1 per 1.24M	$1 per $4.00K
Hurricane	--	--	--
Ice Storm	--	--	--
Landslide	$1 per $171.25K	1 per 2.22M	--
Lightning	$1 per $16.86M	1 per 23.41M	--
Riverine Flooding	$1 per $5.75K	1 per 72.51M	$1 per $20.91K
Strong Wind	$1 per $2.79M	1 per 82.60M	$1 per $79.80K
Tornado	$1 per $119.41K	1 per 28.80M	$1 per $356.48K
Tsunami	--	--	--
Volcanic Activity	--	--	--
Wildfire	$1 per $12.39K	1 per 5.67M	$1 per $1.18M
Winter Weather	$1 per $103.76M	1 per 636.03M	$1 per $5.97T

Social Vulnerability

Social groups in **Colusa County, CA** have a **Relatively High** susceptibility to the adverse impacts of natural hazards when compared to the rest of the U.S.



Score **76.42**

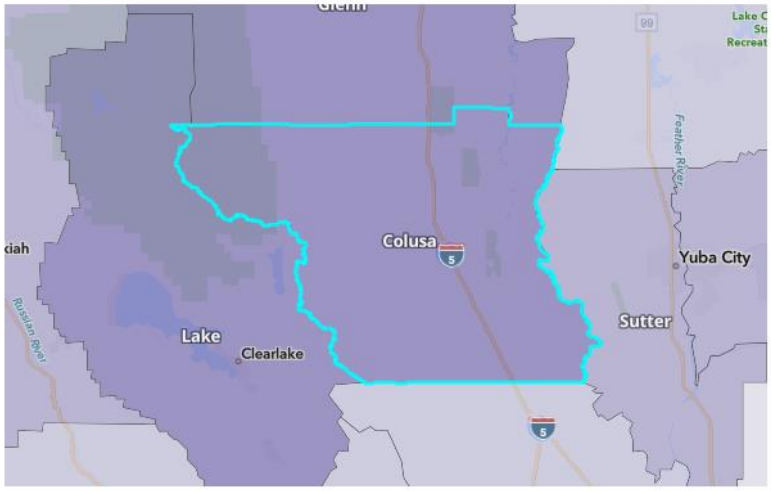


76% of U.S. counties have a lower Social Vulnerability

53% of counties in California have a lower Social Vulnerability

Community Resilience

Communities in **Colusa County, CA** have a **Relatively Low** ability to prepare for anticipated natural hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions when compared to the rest of the U.S.



Score **27.85**

National Percentile
27.85

Percentile Within California
27.60

0 100

72% of U.S. counties have a higher Community Resilience

73% of counties in California have a higher Community Resilience

Community Resilience Legend

Very High | Relatively High | Relatively Moderate | Relatively Low | Very Low | Data Unavailable

About the National Risk Index

The National Risk Index is a dataset and online tool to help illustrate the United States communities most at risk for 18 natural hazards: Avalanche, Coastal Flooding, Cold Wave, Drought, Earthquake, Hail, Heat Wave, Hurricane, Ice Storm, Landslide, Lightning, Riverine Flooding, Strong Wind, Tornado, Tsunami, Volcanic Activity, Wildfire, and Winter Weather.

The National Risk Index leverages available source data for Expected Annual Loss due to these 18 hazard types, Social Vulnerability, and Community Resilience to develop a baseline relative risk measurement for each United States county and Census tract. These measurements are calculated using average past conditions, but they cannot be used to predict future outcomes for a community. The National Risk Index is intended to fill gaps in available data and analyses to better inform federal, state, local, tribal, and territorial decision makers as they develop risk reduction strategies.

Explore the National Risk Index Map at **hazards.fema.gov/nri/map**.

Visit the National Risk Index website at **hazards.fema.gov/nri/learn-more** to access supporting documentation and links.

Calculating the Risk Index

Risk Index scores are calculated using an equation that combines scores for Expected Annual Loss due to natural hazards, Social Vulnerability and Community Resilience:

$$\text{Risk Index} = \text{Expected Annual Loss} \times \text{Social Vulnerability} \div \text{Community Resilience}$$

Risk Index scores are presented as a composite score for all 18 hazard types, as well as individual scores for each hazard type.

For more information, visit hazards.fema.gov/nri/determining-risk.

Calculating Expected Annual Loss

Expected Annual Loss scores are calculated using an equation that combines values for exposure, annualized frequency, and historic loss ratios for 18 hazard types:

> **Expected Annual Loss = Exposure × Annualized Frequency × Historic Loss Ratio**

Expected Annual Loss scores are presented as a composite score for all 18 hazard types, as well as individual scores for each hazard type.

For more information, visit **hazards.fema.gov/nri/expected-annual-loss**.

Calculating Social Vulnerability

Social Vulnerability is measured using the Social Vulnerability Index (SVI) published by the Centers for Disease Control and Prevention (CDC).

For more information, visit **hazards.fema.gov/nri/social-vulnerability**.

Calculating Community Resilience

Community Resilience is measured using the Baseline Resilience Indicators for Communities (HVRI BRIC) published by the University of South Carolina's Hazards and Vulnerability Research Institute (HVRI).

For more information, visit **hazards.fema.gov/nri/community-resilience**.

How to Take Action

There are many ways to reduce natural hazard risk through mitigation. Communities with high National Risk Index scores can take action to reduce risk by decreasing Expected Annual Loss due to natural hazards, decreasing Social Vulnerability, and increasing Community Resilience.

For information about how to take action and reduce your risk, visit **hazards.fema.gov/nri/take-action**.

Disclaimer

The National Risk Index (the Risk Index or the Index) and its associated data are meant for planning purposes only. This tool was created for broad nationwide comparisons and is not a substitute for localized risk assessment analysis. Nationwide datasets used as inputs for the National Risk Index are, in many cases, not as accurate as available local data. Users with access to local data for each National Risk Index risk factor should consider substituting the Risk Index data with local data to recalculate a more accurate risk index. If you decide to download the National Risk Index data and substitute it with local data, you assume responsibility for the accuracy of the data and any resulting data index. Please visit the **Contact Us** page if you would like to discuss this process further.

The methodology used by the National Risk Index has been reviewed by subject matter experts in the fields of natural hazard risk research, risk analysis, mitigation planning, and emergency management. The processing methods used to create the National Risk Index have produced results similar to those from other natural hazard risk analyses conducted on a smaller scale. The breadth and combination of geographic information systems (GIS) and data processing techniques leveraged by the National Risk Index enable it to incorporate multiple hazard types and risk factors, manage its nationwide scope, and capture what might have been missed using other methods.

The National Risk Index does not consider the intricate economic and physical interdependencies that exist across geographic regions. Keep in mind that hazard impacts in surrounding counties or Census tracts can cause indirect losses in your community regardless of your community's risk profile.

Nationwide data available for some risk factors are rudimentary at this time. The National Risk Index will be continuously updated as new data become available and improved methodologies are identified.

The National Risk Index Contact Us page is available at **hazards.fema.gov/nri/contact-us**.