

RECREATION USE VALUE EVIDENCE SUPPORTING RESCISSION OF THE 2001 ROADLESS RULE

October 6, 2026



A literature review for the administrative record, Docket FS-2025-0001

35

STUDIES REVIEWED: 31
SUPPORT, 4 CUT THE
OTHER WAY OR
REMAIN UNVERIFIED

\$110

PER DAY, NATIONAL
FOREST OHV
RECREATION,
NATIONALLY

\$155–\$265

PER DAY,
SNOWMOBILING ON
IDAHO NATIONAL
FOREST LANDS

\$107

WILDFIRE SMOKE
COST PER PERSON
PER TRIP

\$2.3B

WILDFIRE SMOKE
COST A YEAR TO
WESTERN
RECREATIONISTS

1 SUMMARY OF FINDINGS

The peer-reviewed recreation valuation literature supports a finding that rescinding the 2001 Roadless Rule will produce recreation benefits, through two channels. First, access-dependent uses of national forests carry substantial net economic values per visitor day, and studies of access restrictions show welfare losses that grow as access moves from limited to prohibited. Second, wildfire, smoke, insect mortality and related closures measurably reduce recreation value, so management that reduces those disturbances protects recreation value.

This review draws on the Recreation Use Values Database (RUVDB), the USDA Forest Service–sponsored compilation of 527 valuation studies and 4,023 estimates maintained at Oregon State University (Rosenberger 2026). From that bibliography, 35 studies are reviewed: 31 support the findings below, and 4 cut the other way or remain unverified (Section 8). The core findings, in constant 2025 dollars per person per day, are:

- ▶ National forest off-highway vehicle (OHV) recreation is worth about \$110 per day nationally and \$108 in the Interior West (Bowker et al. 2009), within a literature range of roughly \$25 to \$250 for study-level estimates.

- ▶ OHV riders on Roosevelt National Forest trails valued their use at about \$121 per day, and the authors framed the result around the cost of trail closures (Deisenroth et al. 2009).
- ▶ In Utah, shifting OHV access from open to limited caused small welfare losses, but prohibiting access caused much larger ones (Jakus et al. 2010).
- ▶ Snowmobiling on Idaho national forest lands is valued at \$155 to \$265 per day (Larsen et al. 2020); firewood and special forest products gathering at \$29 to \$63 per day in the author-favored estimates on Roosevelt and Gifford Pinchot National Forests.
- ▶ Wildfire smoke costs western recreationists about \$107 per person per trip, and roughly \$2.3 billion a year (Gellman et al. 2025). Severe crown fire can depress mountain biking and hiking demand for decades (Hesseln et al. 2003).

The literature does not measure the effect of the Roadless Rule itself. These values become benefits only when multiplied by the visitor days that rescission adds, retains, or protects from disturbance. Section 9 sets out how the Forest Service should make that calculation, and Section 8 identifies the contrary studies opponents will cite and how to answer them.

2 SOURCE AND SELECTION METHOD

All studies come from the 2025 update of the Recreation Use Values Database and its companion bibliography, released by Oregon State University in April 2026 with Forest Service sponsorship. The database reports consumer surplus, the net willingness to pay above costs, standardized to dollars per person per activity day and indexed to 2025 dollars. Because the Forest Service funded the update and the database is built for benefit transfer, citing it puts a value source the agency itself sponsored in the record.

Studies were selected if they met at least one of four tests:

- 1 They value recreation on National Forest System lands, especially at national or regional scale.
- 2 They value an activity that depends on roads or motorized routes: OHV riding, snowmobiling, driving for

pleasure, firewood and forest products gathering, road-accessed hunting, or camping.

- 3 They measure welfare changes from opening, restricting, or closing recreational access.
- 4 They measure how wildfire, smoke, insect outbreaks, or fuels management change recreation demand or value.

Two cautions from the database author bear on how these studies are used. RUVD values measure access to a site or activity, not marginal changes in site quality. And the summary averages by activity and region are not intended for benefit transfer; study-specific estimates matched to the policy setting should be used instead (Rosenberger 2026). Every figure below is a study-specific estimate, converted to 2025 dollars by the RUVD unless noted.

Sources: [RUVD database page](#); Rosenberger, *Recreation Use Values Bibliography 1958–2025* (April 1, 2026) and *2025 Updated Recreation Use Values Database – Summary* (April 21, 2026), both distributed through the RUVD page.

3 HOW RESCISSION CONNECTS TO RECREATION VALUE

Rescission affects recreation through three pathways, and the record is strongest when each claim is tied to one of them. The 2001 Rule prohibits road construction, road reconstruction, and most timber cutting in inventoried roadless areas, with limited exceptions (36 CFR 294.12–294.13). The proposed rule would return those decisions to forest-level planning and, as USDA has stated, does not itself mandate road building or harvest ([USDA, Aug. 18, 2026](#)).

- 1 **Access.** Forest managers regain the option to build or reconstruct roads that reach trailheads, dispersed campsites, hunting units, firewood areas, and routes later designated for motorized use under the Travel Management Rule (36 CFR part 212, subpart B). Recreation benefit = added or retained visitor days for access-dependent activities × the per-day values in Sections 4–6.
- 2 **Disturbance avoided.** Fuels reduction, insect response, and suppression access become easier to carry out

where the Rule constrained them. Recreation benefit = visitor days and per-day value protected from fire, smoke, closures, and insect mortality, per Section 7.

- 3 **Existing routes kept usable.** Reconstruction is prohibited even for existing roads, so realignment or upgrading of a washed-out or eroding road that doubles as a recreation route is foreclosed. Recreation benefit = visitor days that would otherwise be lost as those routes degrade.

Two limits should be stated plainly in any comment. Motorized designation remains governed by travel management, so rescission enables but does not itself open any route. And the valuation studies measure the worth of access and the cost of disturbance; none measures the Roadless Rule directly. The argument is that these values apply to the visitor days the Rule's prohibitions foreclose.

4 EVIDENCE 1: THE VALUE OF NATIONAL FOREST RECREATION ACCESS

The two largest national forest valuation studies show that road-dependent activities carry per-day values at or above those of primitive, roadless-setting activities measured with the same data and methods.

Bowker et al. (2009) applied travel cost models to the Forest Service's own National Visitor Use Monitoring (NVUM) data, producing author-favored values by primary activity for every region. Because every activity is valued

from the same survey with the same method, the comparisons within it are clean. In 2025 dollars per person

per day:

ACTIVITY (BOWKER ET AL. 2009)	NATIONAL	INTERIOR WEST	PACIFIC (CA, OR, WA)
OHV use	\$110	\$108	\$92
Snowmobiling	\$72	\$86	\$81
Sightseeing and driving categories (two estimates)	\$80 / \$115	\$78 / \$129	\$49 / \$53
Hunting	\$98	\$63	\$41
Backpacking	\$37	\$35	\$21
Camping	\$34	\$31	\$31

Interior West: AZ, CO, ID, KS, MT, ND, NE, NM, SD, UT, WY.

National forest OHV use is worth three to four times backpacking per visitor day in this study, nationally and in both western regions. That matters because access-dependent activities are the ones the Rule’s road prohibitions constrain, while backpacking is the use most associated with roadless settings.

McCollum et al. (1990), the Forest Service’s earlier national study, valued twelve trip types across nine regions and reported hiking separately for designated wilderness and for the general forest, again with one method. General-forest hiking values exceeded wilderness hiking values in every region:

FOREST SERVICE REGION	GENERAL-FOREST HIKING (\$/DAY, 2025)	WILDERNESS HIKING (\$/DAY, 2025)
Northern (ID, MT)	\$70	\$11
Rocky Mountain (CO, WY)	\$90	\$40
Southwestern (AZ, NM)	\$67	\$21
Intermountain (ID, UT, WY)	\$79	\$14
Pacific Southwest (CA)	\$40	\$9
Pacific Northwest (OR, WA)	\$105	\$7
Southern	\$58	\$22
Eastern	\$89	\$9

This comparison must be used carefully. Designated wilderness is not the same as an inventoried roadless area, and multi-day wilderness trips spread trip value over more days, which lowers per-day figures. The defensible point is narrower: the agency’s own national studies give no support to the claim that unroaded settings generate higher per-day recreation value than the roaded general forest.

RUVD document codes: Bowker et al. 2009 (544); McCollum et al. 1990 (226).

5 EVIDENCE 2: MOTORIZED RECREATION AND THE COST OF ACCESS RESTRICTIONS

Motorized recreation is one of the higher-valued activities in the database, and the two studies that model access restrictions directly find that closures impose real welfare losses. Across all 47 OHV estimates in the RUVD, the mean is \$109 per person per day; across 16 snowmobiling estimates it is \$122 (Rosenberger 2026, Table 1).

Access-restriction studies. These are the most directly relevant to a rule that forecloses road access.

► **Jakus, Keith, Liu and Blahna (2010)** surveyed Utah OHV owners and modeled site choice across public lands. They found that moving land from “open” to “limited”

OHV access caused relatively small welfare losses, but prohibiting access caused much larger losses ([Treeseearch abstract](#)). Per-day values were \$81 (author-favored) to \$125. The finding supports the principle that blanket prohibitions cost far more than managed, route-specific access, which is the choice rescission returns to local managers.

- **Deisenroth, Loomis and Bond (2009)** valued OHV use on the Sevenmile Creek, Kelly Flats, and Moody Hill trails on the Roosevelt National Forest, framing the work around the implications of trail closures. The RUVd records \$121 per person per day. The underlying thesis reported \$87 to \$207 per day across specifications, in nominal dollars of the study year, and \$283,000 to \$675,000 in consumer surplus per trail per summer ([Deisenroth 2008, CSU](#)).

National forest OHV site studies. Holmes and Englin (2005, 2010) and Englin, Holmes and Niell (2006) valued four OHV areas on the national forests of western North Carolina: Badin Lake, Brown Mountain, Upper Tellico, and Wayehutta. Most site values ranged from about \$39 to \$246 per day,

with author-favored estimates of \$51 to \$94 at Brown Mountain and Badin Lake. These studies show that individual motorized areas on national forests generate substantial, site-specific consumer surplus that is lost when the area closes.

Western OHV studies. Silberman and Andereck (2006) valued Arizona OHV recreation at \$52 to \$82 per day. Duval, Frisvold and Bickel (2020) valued Arizona motorized trail use at \$168 per day. Loomis (2006) valued OHV use in BLM's Little Snake Resource Area, Colorado, at \$13 to \$46. The spread reflects site and method; the Interior West NVUM value of \$108 sits near the middle.

Snowmobiling and driving. Larsen, Taylor, McKean and Johnson (2020) valued snowmobiling in Valley County, Idaho, largely on national forest land, at \$155 to \$265 per day. Coupal et al. (2001) valued Wyoming resident snowmobiling at \$87. Keske and Loomis (2009) found that visitors driving the Pikes Peak Highway on the Pike National Forest valued their trip at \$86 to \$157 per day, versus \$50 for hikers on the same peak, evidence that road access to scenic terrain creates value rather than merely displacing it.

RUVd document codes: Jakus et al. 2010 (572); Deisenroth et al. 2009 (540); Holmes and Englin 2005 (571); Englin et al. 2006 (558); Holmes and Englin 2010 (542); Silberman and Andereck 2006 (462); Duval et al. 2020 (803); Loomis 2006 (567); Larsen et al. 2020 (843); Coupal et al. 2001 (295); Keske and Loomis 2009 (552).

6 EVIDENCE 3: CAMPING, FOREST PRODUCTS, HUNTING, AND OTHER ROAD-DEPENDENT USES

Several uses that are rarely called "motorized recreation" still depend on roads to reach the resource, and the literature values each of them.

- **Camping.** Dispersed camping along forest roads is among the uses most directly tied to road access. Bowker et al. (2009) value national forest camping at \$31 to \$37 per day across regions, and McCollum et al. (1990) report \$7 to \$54 across regions. Daniels (1987) valued Montana national forest camping at \$48 to \$60 per day; Findeis and Michalson (1984) report \$7 to \$66 on the Targhee National Forest. Camping is also the activity in which Gellman et al. (2025) measured smoke losses (Section 7), so camping value runs through both the access and the disturbance pathways.
- **Firewood and forest products gathering.** Markstrom and Rosenthal (1987) valued Roosevelt National Forest firewood permits at \$29 per day. Starbuck, Alexander, Berrens and Bohara (2004) valued special forest products harvesting on the Gifford Pinchot National Forest at \$63 per day in the author-favored model.

McCollum et al. (1990) valued gathering trips at \$28 to \$42 per day across seven Forest Service regions.

Firewood cutting depends on road access to downed and dead timber, which the reconstruction prohibition limits.

- **Hunting.** Bowker et al. (2009) value national forest hunting at \$98 per day nationally. Mingie, Poudyal, Bowker and coauthors (2019) found big-game hunting access values of \$40 to \$194 per day across Georgia ownership types, showing that the value of hunting is tied to the terms of access. Roads govern hunter distribution, access to units, and game retrieval.
- **River access.** Chapagain et al. (2021) valued nonmotorized boating access on national forest rivers nationally at \$45 to \$58 per day. Put-ins and take-outs are road-served, so even nonmotorized users rely on road access.
- **Opening access.** Keske and Loomis (2008) valued the opening of access to three Colorado fourteeners at \$268

per hiker day. It is the clearest example in the database of a study valuing new access as a gain.

The common thread is that access is the product being valued. RUVD values are, by construction, the value of

access to a site or activity (Rosenberger 2026), so where rescission allows a forest to restore or create access, these figures are the appropriate per-day measures.

RUVD document codes: Daniels 1987 (184); Findeis and Michalson 1984 (154); Markstrom and Rosenthal 1987 (188); Starbuck et al. 2004 (465); McCollum et al. 1990 (226); Bowker et al. 2009 (544); Mingie et al. 2019 (800); Chapagain et al. 2021 (625); Keske and Loomis 2008 (550).

7 EVIDENCE 4: WILDFIRE, SMOKE, CLOSURES, AND INSECT DISTURBANCE

A well-developed literature, much of it funded by the Forest Service and the Joint Fire Science Program, shows that severe wildfire and its smoke reduce recreation visits and value on national forests. Where rescission makes fuels and forest-health work feasible, avoided losses count as recreation benefits.

Smoke. Gellman, Walls and Wibbenmeyer (2025), using millions of campground reservation records and satellite smoke data, estimate that wildfire smoke reduces welfare by \$107 per person per trip. Losses rise to about \$432 per trip when smoke persists all week, and they total roughly \$2.3 billion a year across 21.5 million affected western visits ([RFF summary](#)). This is the most recent, largest-sample, revealed-preference estimate in the database, and it is published in the *Journal of Environmental Economics and Management*.

Crown fire on trails. The Forest Service–sponsored series by Loomis, Englin, Hesseln, Gonzalez–Caban and coauthors surveyed trail users on national forests in Colorado, Idaho, Montana, New Mexico, and Wyoming.

- ▶ In New Mexico, Hesseln et al. (2003) projected that a crown fire crossing a trail would cut mountain bikers' annual trips from 6.2 to near zero in the fire year and their annual benefits from \$151 to \$10 ([Headwaters Economics summary](#)).
- ▶ In Colorado, Loomis, Gonzalez–Caban and Englin (2001) found crown fires significantly reduced mountain biking

trips and the value per biking trip ([JARE abstract](#)).

- ▶ Comparing Colorado and Montana, Hesseln, Loomis and Gonzalez–Caban found that demand responded to crown fire with declines in visitation and value over time, and concluded this supports increased fuels management under the National Fire Plan ([NRFSN abstract](#)).
- ▶ Englin, Loomis and Gonzalez–Caban (2001) traced recreation values after fire in three Intermountain states and found an S-shaped path of gains and losses over the following years ([FRAMES abstract](#)).

Closures and fuels scenarios. Starbuck, Berrens and McKee (2006) linked fire and fuels management scenarios to New Mexico forest recreation demand, and simulated the regional economic impact of summer forest closures. Sanchez, Baerenklau and Gonzalez–Caban (2016) and Garnache and Lupi (2018) value hypothetical and actual wildfire impacts on southern California national forest recreation, where trail and area closures follow large fires.

Insects. Three early studies valued how beetle outbreaks affect forest recreation: Walsh and Olienyk (1981) on the Arapaho, Roosevelt, Pike, and San Isabel National Forests; Michalson (1975) on the Targhee National Forest; and Leuschner and Young (1978) on southern pine beetle damage at Texas reservoir campsites. They are dated, but they establish that the agency has long treated forest–health disturbance as a recreation cost.

RUVD document codes: Gellman et al. 2025 (865); Hesseln et al. 2003 (444); Loomis et al. 2001 (446); Hesseln et al. 2004 (560); Englin et al. 2001 (447); Starbuck et al. 2006 (463); Sanchez et al. 2016 (827); Garnache and Lupi 2018 (643); Walsh and Olienyk 1981 (129); Michalson 1975 (420); Leuschner and Young 1978 (114).

8 CONTRARY AND COMPLICATING EVIDENCE

The same bibliography contains studies rescission opponents will cite. A literature review for the record is more credible, and harder to dismiss as cherry-picked, if it names them and answers them.

- 1 Wilderness hikers avoid roads and clearcuts.** Englin and Mendelsohn (1991) found that overnight hikers bound for four Washington wilderness areas avoided trails with long dirt-road approaches and visible

clearcuts, paying about \$1.08 (1982 dollars) to avoid each added mile of dirt road ([Headwaters Economics summary](#)). *Response*: the study measures preferences of one user group approaching designated wilderness, which rescission does not touch. It is an argument for siting decisions in forest plans, which is what rescission enables, not for a national prohibition.

- 2 Fire effects are mixed by activity and region.** Loomis et al. (2001) found crown fires raised the value per hiking trip in Colorado even as they cut mountain biking. Hesseln et al. (2003) found prescribed burning also reduced hiker and biker demand in New Mexico ([EPA HERO abstract](#)). In Montana, fire effects on demand were statistically significant but small (Hesseln et al. 2004, RUVd 445). *Response*: rest the fire argument on smoke (Gellman et al. 2025) and on closures, which are consistently costly, rather than claiming every treatment raises recreation value. A 2024 study of Collaborative Forest Landscape Restoration projects found no wholesale change in visitation within treated landscapes ([International Journal of Wildland Fire, WF24036](#)), which rebuts the claim that fuels work itself drives recreationists away.
- 3 Primitive recreation is also high-value.** Wilderness access values can be large; Zhu (2007) valued national forest wilderness access at \$160 to \$341 per day, and Bowker et al. (2009) value national forest hiking at \$162. *Response*: rescission does not remove nonmotorized opportunity, and the Jakus et al. (2010) result cuts

toward managed allocation: limits cost little, prohibitions cost much. Local planning can serve both groups; a blanket prohibition serves one. Hikers also depend on roads to reach trailheads.

- 4 Fire-science dispute.** Opponents cite a Forest Service review of 2014–2024 data finding little relative difference in acreage burned or fire intensity among wilderness, roadless, and other national forest lands ([Pew, Oct. 5, 2026](#)). *Response*: recreation valuation cannot settle that question. The Pathway 2 benefit depends on the agency’s own fire analysis, so the access pathways (1 and 3) should carry the recreation argument.
- 5 The one direct roaded/nonroaded comparison is unverified.** Walsh, Radulaski and Lee (1984) valued hiking and cross-country skiing in roaded and nonroaded areas of the Arapaho–Roosevelt National Forest, at \$35 to \$59 per day. The RUVd does not label which estimate belongs to which setting. *Action*: obtain the chapter before citing it for either side.
- 6 Age and method of the evidence.** Several studies predate 1990 or rely on contingent valuation. *Response*: lead with the recent, revealed-preference, national-scale work (Bowker et al. 2009, Jakus et al. 2010, Larsen et al. 2020, Gellman et al. 2025) and use older studies only as corroboration.

RUVd document codes: Englin and Mendelsohn 1991 (233); Hesseln et al. 2004 (445); Zhu 2007 (802); Walsh et al. 1984 (162).

9 APPLYING THE VALUES IN THE AGENCY COST-BENEFIT ANALYSIS

The comment should ask the Forest Service to quantify recreation benefits in its cost-benefit analysis, not describe them qualitatively. The standard benefit-transfer calculation is visitor days times a matched per-day value, summed across activities:

$$\text{Annual recreation benefit} = \sum \text{over activities } a \text{ of } (\Delta D_a \text{ from access} + \Delta D_a \text{ from disturbance avoided}) \times V_{a,r}$$

Here ΔD is the change in visitor days for activity a , and V is the study-specific value for that activity in region r , in 2025 dollars per person per day.

- 1 Visitor days.** Use the agency’s National Visitor Use Monitoring estimates for each affected forest, with

activity shares, to estimate visits that depend on access the Rule forecloses. The agency holds these data; the comment should ask it to use them.

- 2 Matched values.** Use region-matched, author-favored estimates rather than database averages, which the

- RUVD author says are not intended for transfer. For the Interior West, Bowker et al. (2009) supply OHV (\$108), snowmobiling (\$86), hunting (\$63), camping (\$31) and sightseeing (\$78–\$129); for the Pacific states, OHV (\$92), snowmobiling (\$81), hunting (\$41) and camping (\$31).
- 3 Disturbance avoided.** Where the agency’s fire analysis projects fewer smoke days, closures, or high-severity acres, apply Gellman et al. (2025) for smoke (\$107 per affected trip) and the Hesseln and Loomis values for trail-level fire losses.
- 4 Ranges, not points.** Report low and high cases using the study ranges in Section 10, and state which

estimates are author-favored.

5 Distributional note. Access-dependent recreation serves older visitors and visitors with mobility limits, who rely on vehicles to reach the forest. This is a qualitative point to pair with the dollar figures, not a value from these studies.

Illustration (hypothetical numbers). If rescission let an Interior West forest restore access supporting 10,000 OHV days and 5,000 dispersed camping days a year, the annual benefit would be about $10,000 \times \$108 + 5,000 \times \$31 = \$1.24$ million, before disturbance effects. The visitor-day figures here are placeholders; the agency must supply real ones.

10 SUMMARY TABLE OF REVIEWED STUDIES

Lead studies carry the argument; support studies corroborate it; address studies are the contrary or unverified evidence in Section 8. Values are RUVD estimates in 2025 dollars per person per day unless noted.

STUDY (RUVD CODE)	SETTING	ACTIVITY	VALUE (\$/DAY, 2025)	ROLE
Bowker et al. 2009 (544)	National forests, all regions (NVUM)	All activities	OHV \$92–\$110; camping \$31–\$37	LEAD
Jakus et al. 2010 (572)	Utah public lands	OHV access restrictions	\$81 (favored)–\$125	LEAD
Deisenroth et al. 2009 (540)	Roosevelt NF, CO	OHV, trail closures	\$121	LEAD
Gellman et al. 2025 (865)	Western public campgrounds	Smoke losses	\$107 per trip	LEAD
Larsen et al. 2020 (843)	Valley County, ID (NF)	Snowmobiling	\$155–\$265	LEAD
McCollum et al. 1990 (226)	National forests, nine regions	Twelve trip types	\$7–\$105	LEAD
Hesseln et al. 2003 (444)	Five NFs, NM	Hiking, biking after fire	\$237–\$274	LEAD
Holmes and Englin 2005 (571)	NC national forests	OHV	\$51–\$94 (favored)	SUPPORT
Englin et al. 2006 (558)	NC national forests	OHV	\$48–\$246	SUPPORT
Holmes and Englin 2010 (542)	NC national forests	OHV	\$39–\$128	SUPPORT
Silberman and Andereck 2006 (462)	Arizona	OHV	\$52–\$82	SUPPORT
Duval et al. 2020 (803)	Arizona trails	Motorized and other trail use	\$63–\$168	SUPPORT
Loomis 2006 (567)	Little Snake RA, CO (BLM)	OHV	\$13–\$46	SUPPORT
Coupal et al. 2001 (295)	Wyoming	Snowmobiling	\$87	SUPPORT

STUDY (RUVD CODE)	SETTING	ACTIVITY	VALUE (\$/DAY, 2025)	ROLE
Keske and Loomis 2009 (552)	Pikes Peak, Pike NF, CO	Driving vs hiking	\$86–\$157 vs \$50	SUPPORT
Keske and Loomis 2008 (550)	Three Colorado fourteeners	Opening access	\$268	SUPPORT
Chapagain et al. 2021 (625)	National forest rivers	Boating access	\$45–\$58	SUPPORT
Mingie et al. 2019 (800)	Georgia forestland	Hunting access	\$40–\$194	SUPPORT
Markstrom and Rosenthal 1987 (188)	Roosevelt NF, CO	Firewood gathering	\$29	SUPPORT
Starbuck et al. 2004 (465)	Gifford Pinchot NF, WA	Forest products	\$63 (favored)	SUPPORT
Daniels 1987 (184)	Montana national forest	Camping	\$48–\$60	SUPPORT
Findeis and Michalson 1984 (154)	Targhee NF, ID	Camping and other	\$7–\$66	SUPPORT
Loomis et al. 2001 (446)	Three NFs, CO	Hiking, biking after fire	\$60–\$220	SUPPORT
Hesseln et al. 2004 (560)	National forests, CO and MT	Hiking after fire	\$22–\$284	SUPPORT
Englin et al. 2001 (447)	Bridger-Teton, Sawtooth NFs	Hiking after fire	\$255–\$439	SUPPORT
Starbuck et al. 2006 (463)	New Mexico national forests	Fuels and closure scenarios	\$219 (favored)	SUPPORT
Sanchez et al. 2016 (827)	San Jacinto Wilderness, CA	Hiking, wildfire scenarios	\$4–\$428	SUPPORT
Garnache and Lupi 2018 (643)	Four southern CA NFs	Thomas Fire effects	\$26–\$44	SUPPORT
Walsh and Olienyk 1981 (129)	Four Front Range NFs, CO	Beetle damage	\$22–\$64	SUPPORT
Michalson 1975 (420)	Targhee NF, ID	Beetle damage	\$113	SUPPORT
Leuschner and Young 1978 (114)	Texas reservoirs incl. USFS sites	Beetle damage	\$10–\$22	SUPPORT
Englin and Mendelsohn 1991 (233)	Four WA wilderness areas	Road and clearcut avoidance	\$224	ADDRESS
Hesseln et al. 2004 (445)	Four NFs, MT	Fire effects small	\$22–\$67	ADDRESS
Zhu 2007 (802)	National forest wilderness	Wilderness access	\$160 (favored)–\$341	ADDRESS
Walsh et al. 1984 (162)	Arapaho–Roosevelt NF, CO	Roaded vs nonroaded	\$35–\$59	ADDRESS

11 REFERENCES

Citations follow the RUVB bibliography; the bracketed number is the RUVB document code for cross-reference.

Source database

- ▶ Rosenberger, R.S. 2026. Recreation Use Values Bibliography: 1958–2025. April 1, 2026. Corvallis, OR: Oregon State University, College of Forestry.
- ▶ Rosenberger, R.S. 2026. 2025 Updated Recreation Use Values Database – Summary. April 21, 2026. Corvallis, OR: Oregon State University, College of Forestry. Database and both documents available at recvaluation.forestry.oregonstate.edu/database.

Studies reviewed

- ▶ Bowker, J.M., C.M. Starbuck, D.B.K. English, J.C. Bergstrom, R.S. Rosenberger and D.W. McCollum. 2009. Estimating the net economic value of national forest recreation: An application of the National Visitor Use Monitoring database. Faculty Series Working Paper FA 09–02. Athens, GA: University of Georgia, Department of Agricultural and Applied Economics. 222 p. [544]
- ▶ Chapagain, B.P., N.C. Poudyal, J.M. Bowker, A.E. Askew, D.B.K. English and D.G. Hodges. 2021. Demand for and economic value of nonmotorized boating access in rivers at U.S. national forests. *Journal of Forestry* 119(3):275–290. [625]
- ▶ Coupal, R.H., C. Bastian, J. May and D.T. Taylor. 2001. The economic benefits of snowmobiling to Wyoming residents: A travel cost approach with market segmentation. *Journal of Leisure Research* 33(4):492–510. [295]
- ▶ Daniels, S.E. 1987. Marginal cost pricing and the efficient provision of public recreation. *Journal of Leisure Research* 19(1):22–34. [184]
- ▶ Deisenroth, D., J. Loomis and C. Bond. 2009. Non-market valuation of off-highway vehicle recreation in Larimer County, Colorado: Implications of trail closures. *Journal of Environmental Management* 90(11):3490–3497. [540]
- ▶ Duval, D., G. Frisvold and A. Bickel. 2020. The economic value of trails in Arizona: A travel cost method study. Technical report. Tucson, AZ: University of Arizona. 122 p. [803]
- ▶ Englin, J. and R. Mendelsohn. 1991. A hedonic travel cost analysis for valuation of multiple components of site quality: The recreation value of forest management. *Journal of Environmental Economics and Management* 21:275–290. [233]
- ▶ Englin, J., J. Loomis and A. Gonzalez–Caban. 2001. The dynamic path of recreational values following a forest fire: A comparative analysis of states in the Intermountain West. *Canadian Journal of Forest Research* 31(10):1837–1844. [447]
- ▶ Englin, J., T. Holmes and R. Niell. 2006. Alternative models of recreational off-highway vehicle site demand. *Environmental and Resource Economics* 35:327–338. [558]
- ▶ Findeis, J.L. and E.L. Michalson. 1984. The demand for and value of outdoor recreation in the Targhee National Forest, Idaho. Bulletin No. 627. Moscow, ID: University of Idaho Agricultural Experiment Station. [154]
- ▶ Garnache, C. and F. Lupi. 2018. The Thomas Fire and the effect of wildfires on the value of recreation services in southern California. Paper, 2018 Agricultural and Applied Economics Association Annual Meeting. [643]
- ▶ Gellman, J., M. Walls and M. Wibbenmeyer. 2025. Welfare losses from wildfire smoke: Evidence from daily outdoor recreation data. *Journal of Environmental Economics and Management* 132:103166. [865]
- ▶ Hesseln, H., J.B. Loomis and A. Gonzalez–Caban. 2004. Comparing the economic effects of fire on hiking demand in Montana and Colorado. *Journal of Forest Economics* 10:21–35. Conference version: RMRS–P–29 (2003), pp. 177–186. [560]
- ▶ Hesseln, H., J.B. Loomis and A. Gonzalez–Caban. 2004. The effects of fire on recreational demand in Montana. *Western Journal of Applied Forestry* 19(1):47–53. [445]
- ▶ Hesseln, H., J.B. Loomis, A. Gonzalez–Caban and S. Alexander. 2003. Wildfire effects on hiking and biking demand in New Mexico: A travel cost study. *Journal of Environmental Management* 69:359–368. [444]
- ▶ Holmes, T.P. and J.E. Englin. 2005. User fees and the demand for OHV recreation. In S.D. Shultz (comp.), *W–1133 Benefits and Costs of Resource Policies Affecting Public and Private Land*. Fargo, ND: North Dakota State University. Pp. 413–433. [571]
- ▶ Holmes, T.P. and J.E. Englin. 2010. Preference heterogeneity in a count data model of demand for off-

- highway vehicle recreation. *Agricultural and Resource Economics Review* 39(1):75–88. [542]
- ▶ Jakus, P.M., J.E. Keith, L. Liu and D. Blahna. 2010. The welfare effects of restricting off-highway vehicle access to public lands. *Agricultural and Resource Economics Review* 39(1):89–100. [572]
 - ▶ Keske, C.M. and J.B. Loomis. 2008. Regional economic contribution and net economic values of opening access to three Colorado fourteeners. *Tourism Economics* 14(2):249–262. [550]
 - ▶ Keske, C. and J. Loomis. 2009. The economic value of novel means of ascending high mountain peaks: A travel cost demand model of Pikes Peak cog railway riders, automobile users and hikers. *Tourism Economics* 15(2):426–436. [552]
 - ▶ Larsen, R., R.G. Taylor, J.R. McKean and D.M. Johnson. 2020. Willingness-to-pay for snowmobile recreation: Travel cost method models with and without post-season resurvey of trip count. *Applied Economics* 52(20):2178–2190. [843]
 - ▶ Leuschner, W.A. and R.L. Young. 1978. Estimating the southern pine beetle's impact on reservoir campsites. *Forest Science* 24:527–537. [114]
 - ▶ Loomis, J. 2006. Estimating recreation use, expenditures and economic benefits at Little Snake River Resource Area using visitor data and travel cost method. Working paper. Fort Collins, CO: Colorado State University, Department of Agricultural and Resource Economics. [567]
 - ▶ Loomis, J., A. Gonzalez-Caban and J. Englin. 2001. Testing for differential effects of forest fires on hiking and mountain biking demand and benefits. *Journal of Agricultural and Resource Economics* 26(2):508–522. [446]
 - ▶ Markstrom, D.C. and D.H. Rosenthal. 1987. Demand and value of firewood permits as determined by the travel cost model. *Western Journal of Applied Forestry* 2(2):48–50. [188]
 - ▶ McCollum, D.W., G.L. Peterson, J.R. Arnold, D.C. Markstrom and D.M. Hellerstein. 1990. The net economic value of recreation on the national forests: Twelve types of primary activity trips across nine Forest Service regions. Research Paper RM-289. Fort Collins, CO: USDA Forest Service, Rocky Mountain Forest and Range Experiment Station. [226]
 - ▶ Michalson, E.L. 1975. Economic impact of mountain pine beetle on outdoor recreation. *Southern Journal of Agricultural Economics* 7:42–50. [420]
 - ▶ Mingie, J.C., N.C. Poudyal, J.M. Bowker, M.T. Mengak and J.P. Siry. 2019. Comparing the net benefit of forestland access for big-game hunting across landownership types in Georgia, USA. *Forest Science* 65(2):189–200. [800]
 - ▶ Sanchez, J.J., K. Baerenklau and A. Gonzalez-Caban. 2016. Valuing hypothetical wildfire impacts with a Kuhn-Tucker model of recreation demand. *Forest Policy and Economics* 71:63–70. [827]
 - ▶ Silberman, J. and K.L. Andereck. 2006. The economic value of off-highway vehicle recreation. *Journal of Leisure Research* 38(2):208–223. [462]
 - ▶ Starbuck, C.M., S.J. Alexander, R.P. Berrens and A.K. Bohara. 2004. Valuing special forest products harvesting: A two-step travel cost recreation demand analysis. *Journal of Forest Economics* 10:37–53. [465]
 - ▶ Starbuck, C.M., R.P. Berrens and M. McKee. 2006. Simulating changes in forest recreation demand and associated economic impacts due to fire and fuels management activities. *Forest Policy and Economics* 8:52–66. [463]
 - ▶ Walsh, R.G. and J.P. Olienik. 1981. Recreation demand effects of mountain pine beetle damage to the quality of forest recreation resources in the Colorado Front Range. Final report to USDA Forest Service. Fort Collins, CO: Colorado State University, Department of Economics. [129]
 - ▶ Walsh, R.G., O. Radulaski and L. Lee. 1984. Value of hiking and cross-country skiing in roaded and nonroaded areas of a national forest. In F. Kaiser, D. Schweitzer and P. Brown (eds.), *Economic Value Analysis of Multiple-Use Forestry*. Pp. 176–187. [162]
 - ▶ Zhu, J. 2007. Estimating the demand for and value of recreation access to national forest wilderness: A comparison of travel cost and expenditure day models. M.S. thesis. Athens, GA: University of Georgia. [802]
- Other sources cited**
- ▶ USDA. Aug. 18, 2026. [USDA acts to remove roadless rule restrictions that exacerbate rising wildfire risk](#).
 - ▶ USDA. 2026. [Special Areas; Roadless Area Conservation, comment period extension](#), 91 FR 53827.

- ▶ Deisenroth, D. 2008. [The economic benefits of off highway vehicle recreation in Larimer County, Colorado](#). M.S. thesis, Colorado State University.
- ▶ International Journal of Wildland Fire 33, [WF24036](#) (2024), fuels reduction and recreation visitation in CFLR landscapes.
- ▶ Pew Charitable Trusts. Oct. 5, 2026. [U.S. Department of Agriculture proposes eliminating the Roadless Rule](#).

DEFEND YOUR GROUND

Defending Access to Public Lands Since 1987

