106 The effect of COVID-19 on visitation to US forest service wilderness

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COVID-19 affected multiple aspects of human behavior in the United States, including choices for outdoor recreation. State-level stay-at-home orders were enacted across most of the country during spring and early summer of 2020. Access to many indoor leisure activities and settings was restricted; outdoor recreation was promoted as a safer alternative, notably in dispersed forested settings to ensure social distancing. Wilderness may have been perceived as especially safe in that it epitomizes uncrowded and natural outdoor settings. Using data from the Forest Service's National Visitor Use Monitoring (NVUM) program, we examine the impact of Covid-19 on visitation volume to Forest Service Wilderness. NVUM results estimated about 9 million visits to Wilderness in fiscal year 2019. The estimate for 2020 was just over 16 million visits. Nearly all the increased visitation occurred from May through September, the last 5 months of the fiscal year.

Our analysis draws on data from 22 national forest units across 11 states that were surveyed from October 2019 through September 2020 (FY2020). Access portals to Wilderness are one spatial component of the sampling framework. Sampling strata are also defined according to the expected volume of daily exiting recreation traffic. Observed on-site counts of exiting traffic are converted to estimates of daily exiting recreation visits.

Our analysis focused on daily visitation rates to designated Wilderness. We differentiated sample days taken throughout the survey year according to whether they occurred (a) before any state-level pandemic-related closures or stay-at-home restrictions, or (b) after any relevant state-wide closures ended. The analysis was performed within each sampling stratum to account for normal differences in visitation patterns across sites caused by seasons and/or days of the week. States in the Southeastern portion of the US did not enact any closures or travel restrictions. As a result, visitation patterns for two forest units in that region serve as a control. Sample sizes for the FY2020 pre-pandemic period were troublesomely small. Tests showed the distribution was not significantly different from visitation counts observed in FY2015 on the same forests, which allowed us to pool the FY2015 and pre-pandemic FY2020 to represent baseline visitation.

Evaluating visitation changes through the lens of statewide orders as opposed to county or forest-level restrictions held two advantages. First, most Wilderness visits come from people who live more than 50 miles from the area visited. So visitors may not be attuned to local guidance. Second, the forest units in our sample largely did not enact forest-level closures and instead opted for use restrictions at developed recreation sites. Given our focus on Wilderness visitation, these closures were not relevant. In addition, some forests that did enact broad closures continued to have visitation to dispersed settings. One surveyor noted, "Dispite [sic] there being a sign at the trailhead saying "National Forest Closed to All" and bright red and yellow ribbons blocking the trail, there were still a reasonably large number of people usimg [sic] the trail."

Internet searches yielded dates for statewide stay-at-home (SAH) orders prompted by Covid-19. For our work, the pre-pandemic portion of the fiscal year runs from October 1, 2020 to the start date of the relevant state SAH order. We assumed visitation patterns during this part of the year followed normal patterns, and thus serve as baseline visitation volumes. The post-closure order period begins on the first Saturday after the relevant state SAH order expiration. We posited that visitation could shift soon after SAH orders ended; the ensuing weekend could start to see release of pent up demand stemming from the SAH order period. The post-closure period runs until the end of September when data collection on these forest units stopped. For the statis in our study, this period started May 2 in Colorado, Idaho, and Montana; May 9 in California and Pennsylvania; May 16 in Arizona, Louisiana, and Pennsylvania; June 6 in Washington and June 20 in New Hampshire.

Our results show that daily visitation rates were significantly higher after closure or stay-at-home orders ended for all visitation volume strata (Table 1). Across the entire sample, post closure visitation rates were more than twice as high as pre-pandemic rates in High volume locations, and nearly three times higher in low volume locations. Moreover, the patterns of increased visitation differed across visitation volume strata and for weekdays versus weekends/holidays. For High volume locations, visitation rates for both weekend/holidays and weekdays were a little more than double the pre-pandemic rate. For medium volume locations, weekend/holiday visitation rates showed much higher increases than weekdays. Low volume locations had greater increases on weekdays.

In our presentation we discuss regional comparisons and examine the effect of the demographics in nearby populations. The results indicate the role Wilderness plays in the mindset of the American public. We suggest some implications for Wilderness managers.

Table 1. Average daily exiting visitation to Wilderness, by volume stratum and type of day.

	PRE-PANDEMIC	POST-STAY-AT-HOME	T-STATISTIC (P-VALUE)
ALL DAYS			
HIGH	*111.4*	*221.0*	3.58 (0.0004)
MEDIUM	*42.9*	*89.3*	4.00 (<0.0001)
LOW	*10.6*	*28.6*	3.97 (<0.0001)
WEEKDAY			
HIGH	*87.9*	*175.6*	3.32 (0.0012)
MEDIUM	*46.1*	*69.7*	1.72 (0.0856)
LOW	*8.5*	*31.9*	4.13 (<0.0001)
WEEKEND/HOLIDAY			
HIGH	*125.8*	*257.9*	2.63 (0.0097)
MEDIUM	*39.9*	*121.2*	3.72 (0.0004)
LOW	*15.1*	*17.6*	0.54 (0.5851)