

Article

Sustainable Regional Tourism Resilience in U.S. Counties During and After COVID-19: Economic, Social, and Environmental Determinants

Luyi Han ^{1,*} , Daniel Eades ², Doug Arbogast ² and Stephan J. Goetz ³

¹ Department of Agricultural Economics, Sociology, and Education, Pennsylvania State University, University Park, PA 16802, USA

² Family and Community Development, Extension Service, West Virginia University, Morgantown, WV 26505, USA; daniel.eades@mail.wvu.edu (D.E.); douglas.arbogast@mail.wvu.edu (D.A.)

³ Northeast Regional Center for Rural Development, Department of Agricultural Economics, Sociology, and Education, Pennsylvania State University, University Park, PA 16802, USA; sgoetz@psu.edu

* Correspondence: lkh5474@psu.edu

Abstract

The COVID-19 pandemic caused uneven employment losses and recovery across tourism economies. Using county-level Quarterly Census of Employment and Wages data for 2010–2023, we estimate a 2020 third-quarter decline index and recovery indexes for 2021–2023, each benchmarked against national leisure and hospitality (L&H) employment change. In the full sample, a one-percentage-point higher 2019 L&H employment share was associated with a 0.0127 lower 2020 decline index and a 0.0495 lower 2021 recovery index. Pollution and population density were also negatively associated with both outcomes, whereas the share of second homes was positively associated with 2021 recovery. Natural amenities were positively associated with 2021 recovery. Social capital was not significant in the 2020 decline or 2021 recovery full sample but was negatively associated with decline and recovery in metro counties. The findings show that regional tourism employment resilience is shaped by economic dependence, environmental quality, settlement patterns, and amenity-based tourism resources. These are sustainability-relevant regional conditions, although the employment indexes do not directly measure sustainability outcomes. Policies should combine economic diversification with environmental protection and place-specific urban and rural resilience strategies.

Keywords: regional tourism; sustainable tourism development; leisure and hospitality; economic resilience; COVID-19



Academic Editors: Krzysztof Widawski and Federica Burini

Received: 19 June 2026

Revised: 17 July 2026

Accepted: 24 July 2026

Published: 3 August 2026

Copyright: © 2026 by the authors.

Licensee MDPI, Basel, Switzerland.

This article is an open access article distributed under the terms and conditions of the [Creative Commons Attribution \(CC BY\)](https://creativecommons.org/licenses/by/4.0/) license.

1. Introduction

Government statistics and early analyses show that tourism employment was severely disrupted during the early COVID-19 pandemic [1–3]. In the United States, leisure and hospitality (L&H) employment declined by more than half at the onset of the shock [1]. The effects were uneven across activities and places. Cruise-dependent destinations were especially exposed [4], whereas outdoor recreation participation increased as many travelers sought less crowded settings [5,6]. Consistent with these shifts, remote and rural counties often experienced smaller L&H employment losses than densely populated counties [1,7].

Economic resilience is an economy's capacity to absorb a shock and subsequently recover [8]. In this study, sustainable regional tourism resilience refers to the capacity of a

regional tourism system to withstand and recover from disruption while maintaining the economic viability, community conditions, and environmental resources on which tourism depends. Our dependent variables measure L&H employment resilience, not sustainability outcomes directly. The economic, social, and environmental covariates instead represent regional conditions that may support or constrain a more sustainable recovery [9–11].

Most tourism-resilience research has emphasized firms, organizations, or individual destinations, and U.S. county-level studies have generally covered either earlier recessions or short pandemic windows [1,4]. We extend the literature by using county data from 2010 through 2023 to distinguish immediate shock resistance from subsequent recovery; examining economic, social, and environmental determinants; testing heterogeneity across metro, nonmetro, recreation, and non-recreation counties; and evaluating spatial, detrended, and annual employment robustness. The analysis therefore identifies regional conditions associated with tourism employment resilience while maintaining a clear distinction between resilience and broader sustainability outcomes.

2. Theoretical Background and Hypotheses

2.1. Economic Resilience

Regional economic resilience is commonly understood as the ability to resist, recover from, and adapt to shocks while maintaining essential functions and longer-term development prospects [12,13]. Stability-oriented approaches emphasize the magnitude of an initial decline and the speed of rebound [4,8,14], whereas adaptation-oriented approaches emphasize whether a region returns to, departs from, or improves upon its pre-shock trajectory [13,15]. These perspectives are complementary: resistance captures short-run exposure, while recovery performance captures different dimensions of adjustment.

Tourism dependence can increase vulnerability because a large share of local employment is directly exposed when travel demand decreases. Watson and Deller [4] found that tourism dependence reduced county resilience during the Great Recession, while Han et al. [1] found larger early-pandemic losses in more tourism-dependent and densely populated counties. These findings motivate the expectation that a larger pre-pandemic L&H employment share reduced both initial shock resistance and subsequent recovery.

2.2. Tourism Recovery Following COVID-19

Tourism resilience operates at multiple levels, including tourism systems and destinations, organizations and networks, and workers and residents [16–18]. Nevertheless, regional evidence remains limited. Studies of the Great Recession found that some recreation-oriented and rural regions benefited when travelers substituted lower-cost domestic and nature-based trips for more expensive travel [4,15]. Gaki and Koufodontis [19] similarly documented variation in tourism-region performance during economic crises.

COVID-19 intensified the importance of spatial context. Research documented substantial short-run tourism losses but comparatively stronger subsequent recovery in many counties, with pronounced geographic clustering [1,20]. Other studies emphasized organizational transformation, resident attitudes, and community adaptation [16,21,22], but they did not jointly estimate a short-run decline and multi-year recovery together with regional economic, social, and environmental determinants.

2.3. Sustainable Regional Tourism Resilience

Resilience and sustainability are related but distinct concepts. Resilience concerns the capacity to withstand and adapt to disturbance, while sustainability concerns the long-term balance of economic viability, social well-being, and environmental integrity [23]. The pandemic renewed calls to reduce the social and environmental costs of mass tourism and

to pursue recovery strategies centered on people, planet, and prosperity [24–29]. A resilient employment path can support sustainable development by preserving local economic capacity, but it does not demonstrate sustainability unless environmental and community outcomes are also considered.

Accordingly, we examine sustainability-relevant regional conditions rather than claiming to measure sustainability itself. Pollution and crime represent environmental and social disamenities; natural amenities and second homes capture recreation-oriented assets and seasonal tourism; unemployment, income, education, and tourism dependence describe economic and human-capital conditions; and social capital captures community organizational capacity. The framework is consistent with multi-scale tourism research that emphasizes interactions among economic, social, institutional, and natural forms of capital [29–31].

2.4. Research Gap and Hypotheses

Existing studies therefore leave three connected gaps. First, most research focuses on firms or individual destinations rather than comparable regional units such as U.S. counties used in our study. Second, many COVID-19 studies cover only the initial shock or an early recovery window, while we extend our analysis to a longer period. Third, few studies combine short- and longer-term employment-resilience measures with economic, social, and environmental county characteristics. We address these gaps using 2010–2023 county data to assess decline and recovery.

H1. *A higher pre-pandemic L&H employment share is associated with lower shock resistance and weaker subsequent recovery.*

H2. *Better environmental quality and stronger nature- and recreation-based amenities are associated with greater tourism employment resilience.*

H3. *Stronger socioeconomic and community capacity—reflected in lower unemployment and crime and higher income, education, and social capital—is associated with greater tourism employment resilience.*

H4. *The determinants of tourism employment resilience differ between metro and nonmetro counties and between recreation and non-recreation counties, with lower-density and recreation-oriented places expected to perform relatively better during the COVID-19 shock.*

3. Methodology

We first assembled county-level L&H employment and regional covariates. We then constructed indexes of the 2020 employment decline and recovery through 2023, estimated cross-sectional regression models with regional fixed effects and robust standard errors, and evaluated heterogeneity and robustness using county subsamples, spatial models, a detrended measure, and annual employment data.

3.1. Data and Variables

County-level L&H employment was obtained from the Quarterly Census of Employment and Wages (QCEW) for 2010–2023. QCEW is well suited to this analysis because it is based on employer administrative records, applies consistent industry classifications, reports employment at the county level, and supports comparisons of the same industry and geography over time. These features are preferable to small-sample survey estimates for measuring localized employment changes. QCEW excludes some self-employment, may suppress observations to protect confidentiality, and may be revised.

The principal analysis uses third-quarter employment. Q3 was selected before estimation because it includes July and August, major tourism months in the United States, and permits the same seasonal period to be compared across years [32]. The baseline period is 2010–2019, the initial decline is measured from 2019 Q3 to 2020 Q3, and recovery is measured from 2019 Q3 to 2021, 2022, and 2023 Q3. As a broader seasonality check, Appendix A Tables A8 and A9 re-estimate the 2020 decline and 2021 recovery models using the mean of all available quarterly observations within each year.

The covariates were measured before or near the pandemic and were selected from the regional-resilience and sustainable-tourism literature. Natural amenities, rurality, unemployment, and population density came from the U.S. Department of Agriculture; pollution and crime came from the National Neighborhood Data Archive; social capital came from the updated county index developed by [33]; and household income, bachelor's-degree attainment, and second-home prevalence came from the American Community Survey. Pre-pandemic L&H employment share captures tourism dependence. The natural-amenity index is unavailable for Alaska and Hawaii, so the regression sample is limited to the contiguous United States.

Table 1 presents descriptive statistics. Figures 1 and 2 show the sharp 2020 fall in the L&H employment share and employment level, followed by recovery through 2023. Figure 3 maps the 2020 decline index. Counties with stronger relative performance were widely distributed in the interior United States, while many coastal counties and counties in Alaska and Hawaii experienced larger declines. These descriptive patterns motivate the regression analysis for associations, but we do not interpret the results as causal estimates. Figure 4 shows the recovery index and Figure 5 shows the detrended recovery index.

Table 1. Summary statistics.

Variable	Obs	Mean	Std. Dev.	Min	Max
Decline index 2020	3042	0.51	0.54	−2.39	5.8
Recovery index 2021	3047	0.76	1.76	−5.84	37.96
Recovery index 2022	3037	1.25	5.53	−18.48	94.51
Recovery index 2023	3039	21.59	140.49	−418.1	2072.1
Detrended recovery index 2021	3021	0.62	1.13	−6.24	16.87
Detrended recovery index 2022	3014	0.64	1.51	−9.06	17.54
Detrended recovery index 2023	3015	0.62	2.24	−12.94	20.65
L&H emp. share 2019 (%)	3053	13.63	7.83	0.45	91.29
Natural amenity	3107	0.05	2.28	−6.4	11.17
Pollution site per 1k sqmile	3136	12.01	28.37	0	554.53
Crime per 1k pop.	3133	30.24	21.22	0	429.52
Social capital	3141	0	1.26	−3.18	21.81
Non-adjacent metro	3142	0.3	0.46	0	1
1k pop. per sqmile. 2019	3133	0.23	1.27	0	48.23
Median household income (\$1k)	3139	55.73	14.49	24.73	151.81
Unemployment rate 2019	3139	3.94	1.45	0.8	20.9
% of bachelor 2015–2019	3139	21.98	9.57	0	77.6
Second homes (%)	3139	7.49	10.29	0	84.18

Note: Sample includes all 50 U.S. states and the District of Columbia. Data are from QCEW, USDA, NaNDA, ACS, and [33]. All the decline, resilience, and net resilience indexes are based on Q3 L&H employment data. L&H emp. pct share 19 represents the percentage share of employment in the Leisure and Hospitality sector in 2019; Natural amenity measures the physical characteristics of an area (e.g., climate, topography, water area); Pollution per 1k sqmile indicates pollution density per 1000 square miles; Crime per 1k pop. shows crime rate per 1000 population; Social capital index measures the strength of social networks and community engagement; Non-adjacent metro is a binary indicator for areas not adjacent to metropolitan areas; 1k pop. per sqmile represents population density as thousands of people per square mile; Median household income is measured in thousands of dollars; Unemployment rate 19 represents the county unemployment rate in 2019; % of bachelor 15–19 shows the percentage of population aged 15–19 with a bachelor's degree; % Second Home Share indicates the percentage of housing units classified as second homes.

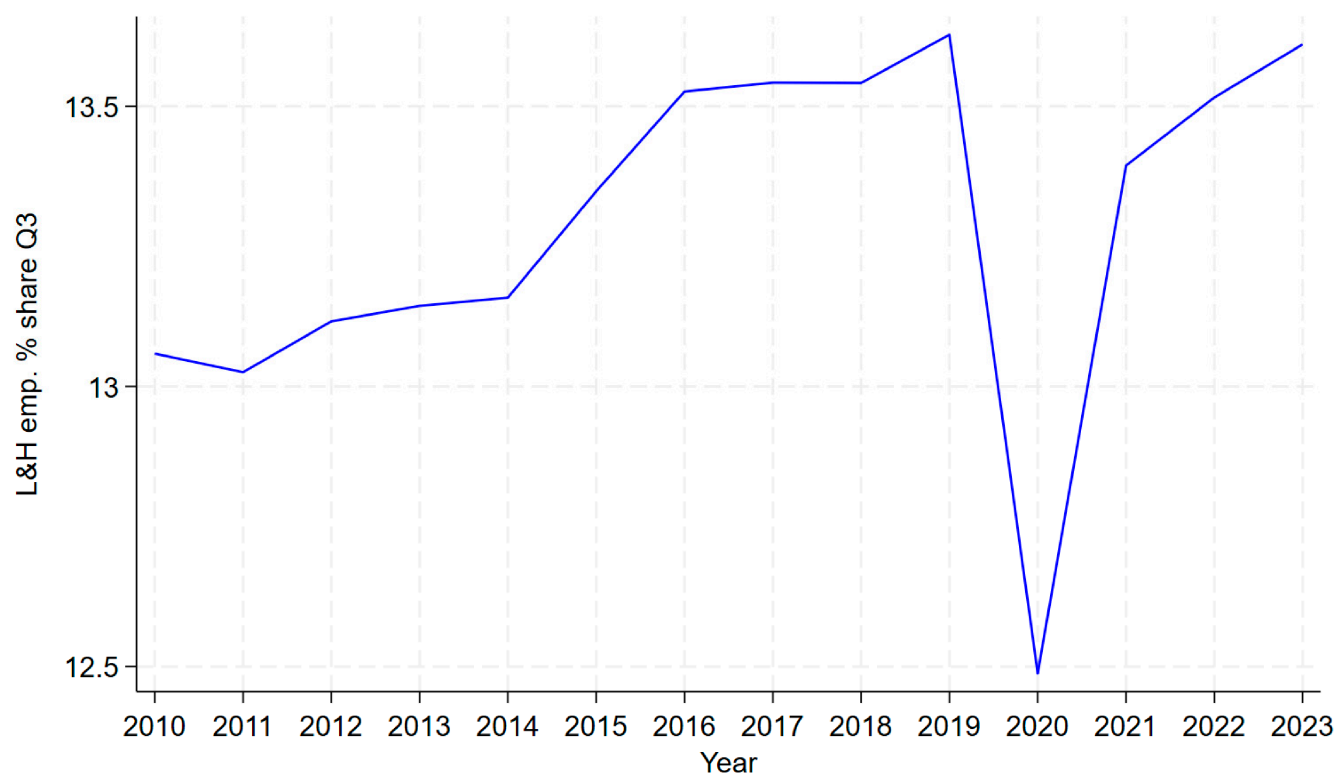


Figure 1. Time trend for L&H employment percentage share 2010–2023. *Source:* Authors' calculations using QCEW data.

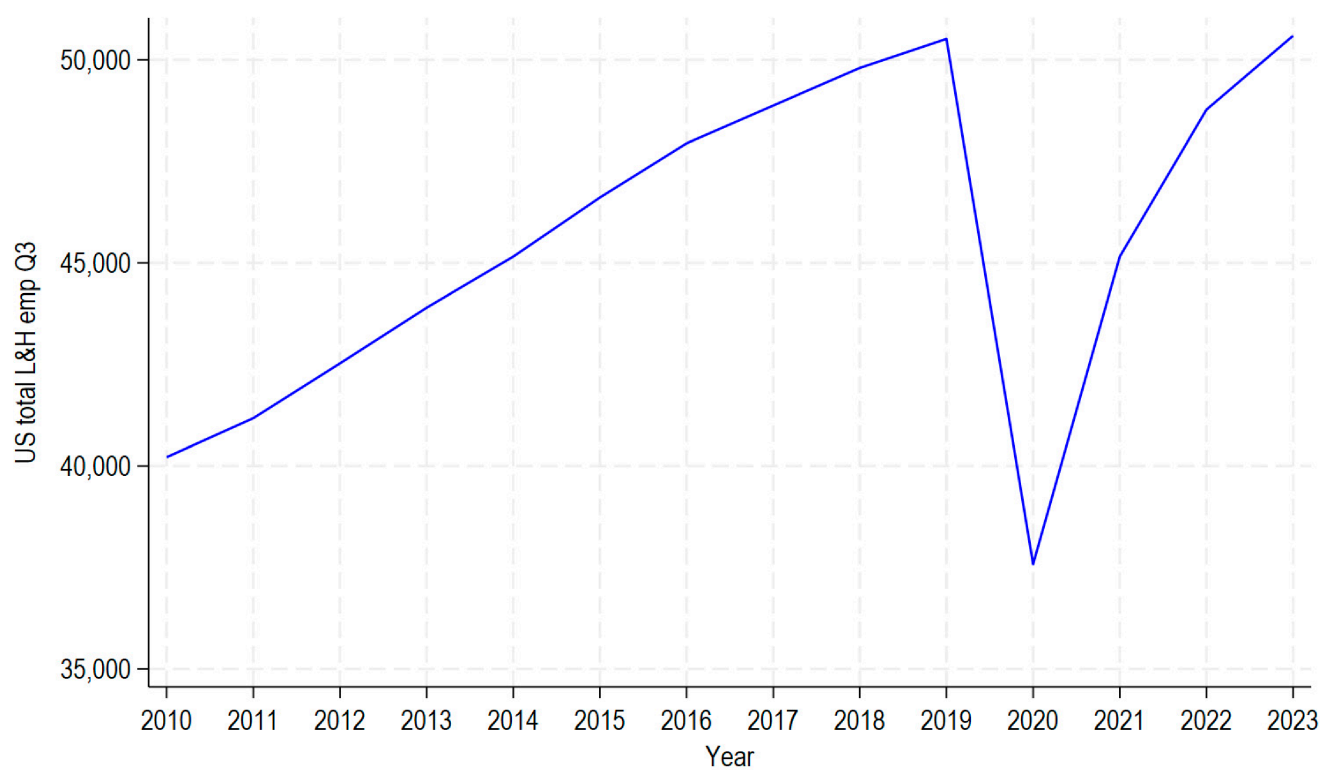


Figure 2. Time trend for L&H employment in one thousand 2010–2023. *Source:* Authors' calculations using QCEW data.

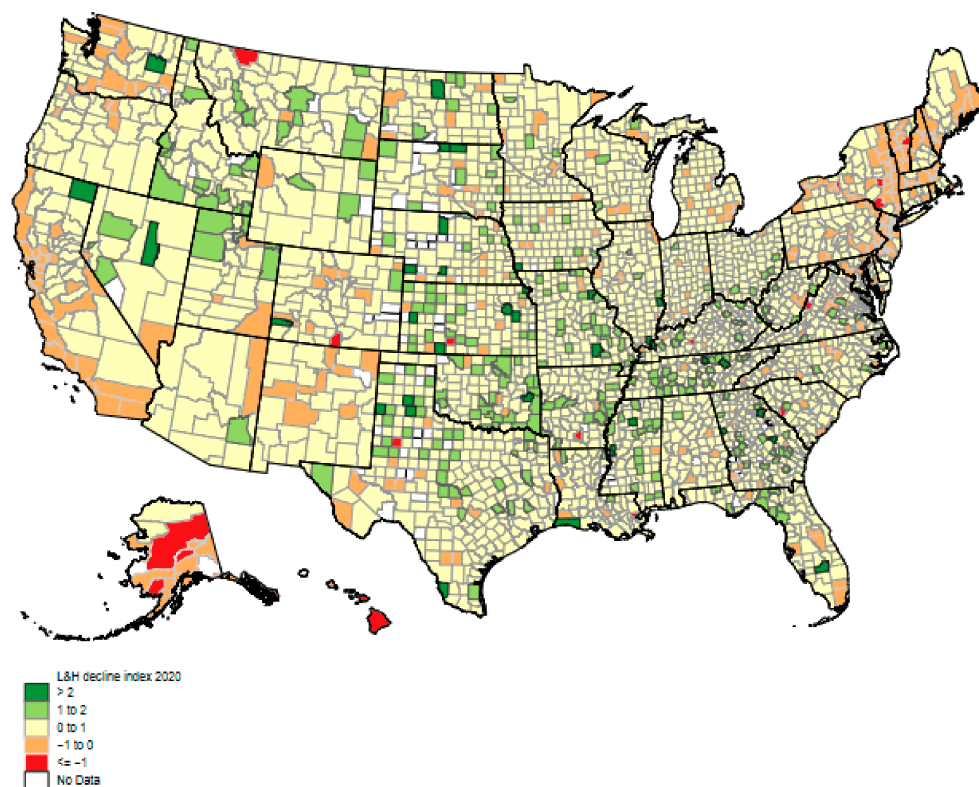


Figure 3. L&H decline index 2020. *Source:* The definition of the decline index is reported in Equation (2). Authors' calculations using QCEW data.

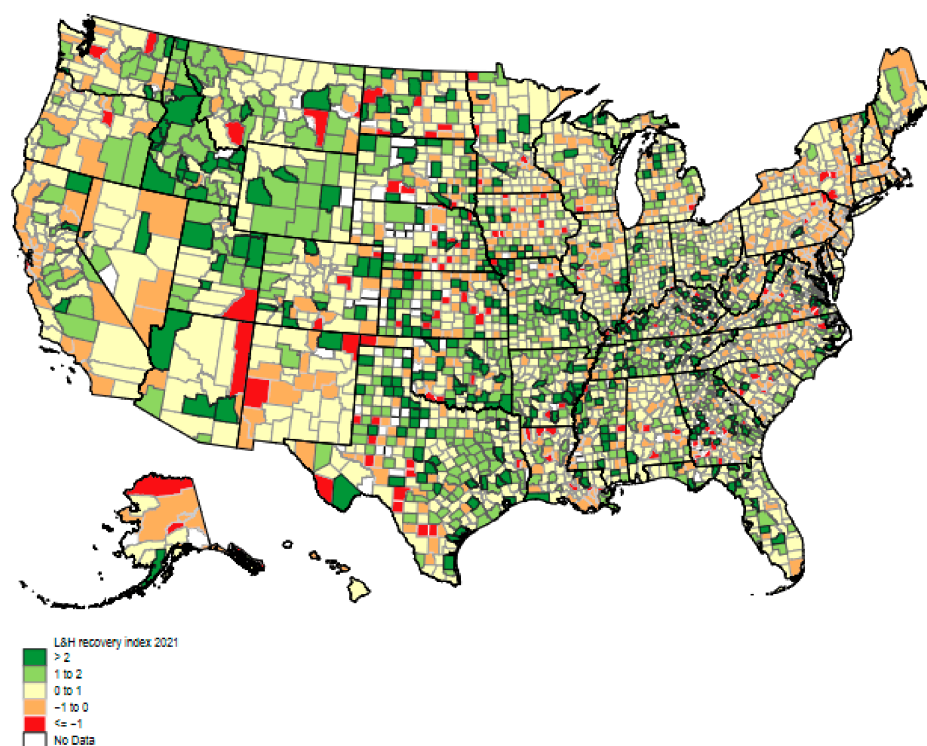


Figure 4. L&H recovery index 2021. *Source:* The definition of the resilience index is reported in Equation (3). Authors' calculations using QCEW data.

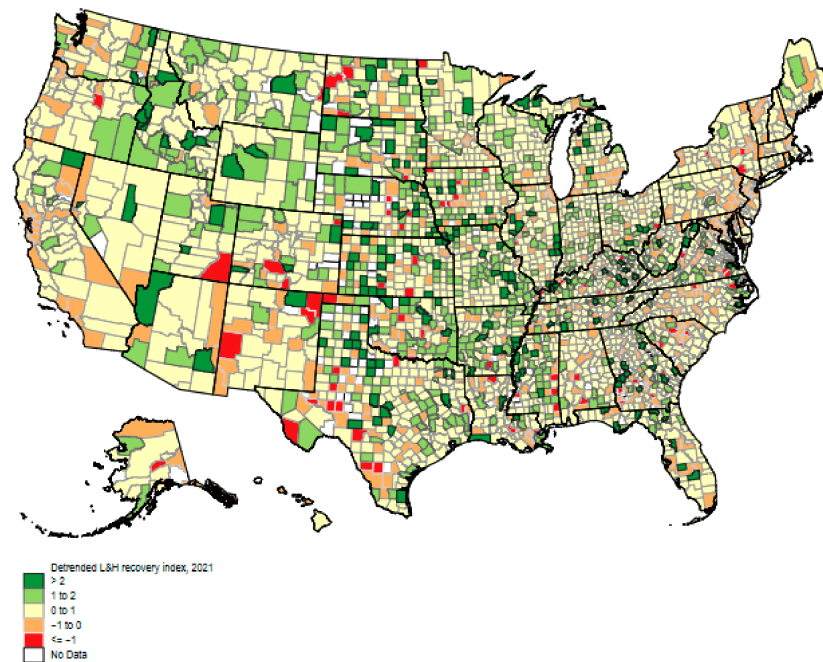


Figure 5. Detrended L&H recovery index, 2021. *Source:* The definition of the detrended recovery index is reported in Equation (4). Authors' calculations using QCEW data.

3.2. Decline and Recovery Measures

We estimate the following county-level model, where the dependent variable is either the decline index or a recovery index and the explanatory variables are measured before the pandemic:

$$Index_i = \beta_0 + \beta_1 L\&H_share_i^{2019} + \beta_2 X_i + \varepsilon_i \quad (1)$$

Following prior work on normalized regional-resilience measures [12,13,34,35], Equation (2) defines the 2020 decline index by comparing each county's 2019–2020 Q3 L&H employment change with the national change and normalizing the difference by the national change.

$$Decline_i^{2020Q3} = \frac{\frac{Emp_i^{2020Q3} - Emp_i^{2019Q3}}{Emp_i^{2019Q3}} - \frac{Emp_{US}^{2020Q3} - Emp_{US}^{2019Q3}}{Emp_{US}^{2019Q3}}}{\left| \frac{Emp_{US}^{2020Q3} - Emp_{US}^{2019Q3}}{Emp_{US}^{2019Q3}} \right|} \quad (2)$$

A larger decline-index value indicates that a county experienced a smaller employment decline relative to the nation. Equation (3) applies the same national benchmarking to the change from 2019 Q3 to each recovery year. A larger recovery-index value indicates stronger L&H employment performance relative to the national change.

$$Recovery_i^{2021Q3} = \frac{\frac{Emp_i^{2021Q3} - Emp_i^{2019Q3}}{Emp_i^{2019Q3}} - \frac{Emp_{US}^{2021Q3} - Emp_{US}^{2019Q3}}{Emp_{US}^{2019Q3}}}{\left| \frac{Emp_{US}^{2021Q3} - Emp_{US}^{2019Q3}}{Emp_{US}^{2019Q3}} \right|} \quad (3)$$

Similar to [1], we first define our resilience index as the quarter-to-quarter (2019 Q3–2021 Q3) percentage change in L&H employment, presented in Equation (3), normalized by the national changes. To assess longer-term resilience, we also analyze data from 2022 and 2023 Q3, using the same 2019 Q3 as the base quarter for comparison.

Because the normalized recovery index does not account for different pre-pandemic county growth paths, Equation (4) provides a detrended robustness measure. It subtracts

the county's 2010–2019 compound annual growth rate from its post-2019 growth rate and then normalizes the difference by the corresponding national value. We treat this detrended index as a robustness measure.

$$Net_Recovery_i^{2021Q3} = \frac{[(\frac{Emp_i^{2021Q3}}{Emp_i^{2019Q3}})^{\frac{1}{2}} - 1] - [(\frac{Emp_i^{2019Q3}}{Emp_i^{2010Q3}})^{\frac{1}{9}} - 1]}{[(\frac{Emp_{US}^{2021Q3}}{Emp_{US}^{2019Q3}})^{\frac{1}{2}} - 1] - [(\frac{Emp_{US}^{2019Q3}}{Emp_{US}^{2010Q3}})^{\frac{1}{9}} - 1]} \quad (4)$$

3.3. Regression Model and Estimation Strategy

We estimate Equation (1) by ordinary least squares with heteroskedasticity-robust standard errors, and Census-region fixed effects for the Northeast, Midwest, South, and West. The initial L&H employment share captures tourism dependence and a potential convergence effect. The remaining covariates measure natural amenities, pollution, crime, social capital, remoteness, population density, household income, unemployment, education, and second-home prevalence. The estimates identify conditional associations and are not interpreted as causal effects.

We first estimate the full sample for the entire U.S. We then estimate the same specification separately for metro and nonmetro counties and for recreation and non-recreation counties. These splits were selected before examining the estimates because pandemic travel behavior plausibly differed by density, metropolitan access, and the presence of recreation-based tourism assets. The recreation classification follows the U.S. Department of Agriculture Economic Research Service. In robustness checks, we add spatial-lag and spatial-error models, the detrended index in Equation (4), and annual employment versions of the 2020 decline and 2021 recovery specifications.

4. Results

4.1. Full-Sample Results Across Years

The mean recovery index rose from 0.76 in 2021 to 1.25 in 2022 and 21.59 in 2023 (Table 1). Table 2 reports the full-sample regression results across the four core outcomes. Consistent with H1, the 2019 L&H employment share was negative and statistically significant in every year: -0.0127 for the 2020 decline index, -0.0495 for 2021 recovery, -0.1531 for 2022 recovery, and -4.0926 for 2023 recovery. The 2023 value should not be interpreted as a proportionate increase in substantive recovery. National L&H employment in 2023 Q3 was close to its 2019 Q3 level, leaving a small denominator in the normalized index and amplifying county-level variation and extreme observations.

Pollution was negatively associated with all four outcomes, and population density was negative and significant in 2020 and 2021. Crime was negatively associated with the 2020 decline and 2021 recovery indexes but was not significant in later full-sample models. Natural amenities were positively associated with 2021 recovery at the 10% level, while second-home prevalence was positive in all years and strongly significant during recovery. These results provide partial support for H2 and are consistent with an early-pandemic shift toward lower-density and recreation-oriented destinations.

The evidence for H3 was mixed. Higher 2019 unemployment and bachelor's-degree attainment were associated with a lower 2020 decline index, and both remained negative in the 2021 recovery model. Median income and social capital were not significant in the principal 2020 or 2021 full-sample specifications. The negative education coefficient should not be interpreted as evidence that human capital reduces resilience; it may instead capture exposure to dense urban labor markets and activities that were particularly constrained during the pandemic.

Table 2. Full-sample associations with L&H employment decline and recovery.

	(1)	(2)	(3)	(4)
	2020 Decline	2021 Recovery	2022 Recovery	2023 Recovery
L&H employment share, 2019 (%)	−0.0127 *** (0.0019)	−0.0495 *** (0.0088)	−0.1531 *** (0.0248)	−4.0926 *** (0.6157)
Natural amenities index	0.0006 (0.0063)	0.0369 * (0.0217)	0.1098 (0.0679)	2.3503 (1.6555)
Pollution sites per 1000 sq. miles	−0.0016 *** (0.0003)	−0.0035 *** (0.0008)	−0.0089 *** (0.0022)	−0.1271 ** (0.0504)
Crime per 1000 population	−0.0014 * (0.0008)	−0.0048 ** (0.0020)	−0.0012 (0.0079)	−0.1303 (0.1717)
Social capital index	−0.0208 (0.0127)	−0.0387 (0.0413)	−0.1992 (0.1309)	−8.8938 *** (2.7304)
Nonmetro, not adjacent to metro	0.0344 (0.0240)	0.0584 (0.0798)	−0.0919 (0.2634)	−8.4713 (6.6673)
Population density, 2019 (1000/sq. mile)	−0.0324 *** (0.0118)	−0.0485 *** (0.0113)	−0.0559 * (0.0285)	−0.2660 (1.0710)
Median household income (\$1000)	−0.0013 (0.0009)	−0.0011 (0.0031)	0.0108 (0.0099)	0.4944 * (0.2631)
Unemployment rate, 2019	−0.0301 *** (0.0072)	−0.0466 * (0.0277)	−0.1173 (0.0880)	−5.2387 ** (2.2944)
Bachelor's degree or higher (%)	−0.0117 *** (0.0014)	−0.0100 ** (0.0043)	−0.0080 (0.0148)	−0.0045 (0.3821)
Second homes (%)	0.0024 * (0.0013)	0.0259 *** (0.0075)	0.0885 *** (0.0203)	3.0149 *** (0.4928)
Observations	2999	3004	2994	2996
Adjusted R-squared	0.2253	0.0737	0.0469	0.0542

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Heteroskedasticity-robust standard errors are in parentheses. All models include Census-region fixed effects and the contiguous U.S. county sample. The dependent variables are defined in Equations (2) and (3).

4.2. Heterogeneity Across County Types

Appendix A Tables A1–A4 report the detailed metro/nonmetro and recreation/non-recreation estimates. Tourism dependence was negative in every subsample and year, but its adverse association was generally larger in non-recreation counties. Pollution remained most consistently negative in metro and non-recreation counties. Crime and social capital were also more negative in metro counties, including significant metro social-capital coefficients of −0.0573 for the 2020 decline index and −0.1252 for 2021 recovery.

Natural amenities were positively associated with performance in several nonmetro specifications but were negative or insignificant in metro and recreation specifications. Second-home prevalence was most consistently positive during the recovery period, including both metro and nonmetro counties. Overall, the results support H4 by showing meaningful heterogeneity, although they do not imply that every nonmetro or recreation county was more resilient.

4.3. Additional Results

The spatial models are reported in Appendix A Tables A5 and A6. For the 2020 decline index, the dependent-variable spatial lag was positive and significant (0.1558), and the spatial-error term was also positive and significant. For the 2021 recovery index, the dependent-variable spatial-lag estimates were negative but statistically insignificant, while the spatial-error terms remained positive and significant. The signs and significance of the principal explanatory variables were stable, indicating that the main associations were not driven by omitting spatial dependence.

Appendix A Table A7 reports the detrended recovery estimates for 2021–2023. Tourism dependence and pollution remained negative, while second-home prevalence remained positive, with substantially smaller and more stable magnitudes than in the normalized 2023 model. Appendix A Tables A8 and A9 use annual mean employment. The annual estimates broadly confirmed the Q3 results: tourism dependence and pollution were negative in both the 2020 decline and 2021 recovery models, population density was negative, and second-home prevalence was positive in the recovery model. Some magnitudes and significance levels differed, as expected when quarter-specific seasonality was smoothed.

5. Discussion and Limitations

5.1. Discussion

The consistently negative association between pre-pandemic L&H dependence and employment resilience supports H1 and extends evidence from the Great Recession [4] and the initial COVID-19 shock [1]. Tourism specialization can generate growth in normal periods, but it also concentrates exposure when mobility and face-to-face services are disrupted. The findings therefore support diversification as a risk-management strategy rather than an argument against tourism development.

The environmental and spatial findings help connect regional employment resilience to sustainable tourism. Pollution was consistently associated with poorer performance, while natural amenities and second homes were associated with recovery in several models. These patterns align with research documenting increased outdoor recreation and preferences for less dense destinations during the pandemic [5,6,36–38] and with evidence that lower-cost domestic and nature-based travel supported some regions during earlier downturns [4,15,19]. Environmental quality and recreation assets thus appear to have functioned as resilience resources, although their long-term sustainability depends on managing congestion, ecosystem pressure, seasonality, and housing impacts.

The stronger negative coefficients for density, crime, and social capital in metro counties are also consistent with the distinctive public-health character of the COVID-19 shock. Prior disaster research often finds that social capital supports organizational recovery through networks and mutual assistance [39,40]. In our data, however, the organizational-density measure was negative mainly in metro areas. Similar negative or insignificant regional results were reported by Watson and Deller [4], while other work shows that the effects of social capital depend on its definition and scale [41–44]. The result should therefore be interpreted as evidence of contextual heterogeneity, not as a general claim that community ties undermine resilience.

More broadly, the study supports a qualified sustainability–resilience connection. Employment recovery preserves regional economic capacity, and environmental quality, amenities, settlement patterns, and community characteristics help explain that recovery, while employment resilience alone cannot establish sustainable tourism development. A destination can recover jobs while experiencing environmental degradation, housing pressure, seasonal insecurity, or unequal distribution of benefits. The results should therefore inform, rather than substitute for, broader social and environmental monitoring [23,28–31].

5.2. Limitations

Several limitations qualify the findings. First, QCEW is an employer-based administrative series and does not fully capture proprietors, informal work, or other self-employment that can be important in tourism. Confidentiality suppression, revisions, and possible changes in reporting may also introduce measurement error, and the annual robustness measure averages only the quarters available for each county-year. Second, county aggregation masks differences among establishments, workers, communities, and tourism

subsectors and creates a risk of ecological inference. The analysis cannot observe business-model innovation, technology adoption, service quality, visitor experience, or distributional effects within counties.

Third, national relief programs affected all counties, but state and local restrictions, enforcement, health conditions, and program implementation varied and were not modeled directly. Fourth, although we do not claim any causal effects in our paper, the covariates may be correlated with omitted factors such as governance quality, destination marketing, infrastructure, health-system capacity, or the composition of tourism demand. Region fixed effects and spatial models reduce some sources of bias but do not establish causality. Finally, the study ends in 2023 Q3 and describes a particular recovery period rather than a confirmed post-pandemic equilibrium.

6. Conclusions and Policy Implications

Using U.S. county-level data from 2010–2023, this study distinguished the immediate 2020 L&H employment decline from recovery through 2023 and examined their economic, social, environmental, and spatial correlates. Tourism dependence, pollution, and density were the most consistent negative factors, while second-home prevalence and, in some specifications, natural amenities were associated with stronger recovery. County-type heterogeneity, spatial models, detrended estimates, and annual employment tests generally supported these conclusions.

The results suggest four policy implications. First, highly tourism-dependent counties may reduce concentration risk by strengthening complementary sectors, transferable workforce skills, and links between tourism and local supply chains. Second, environmental protection and well-managed outdoor recreation infrastructure can support both destination quality and shock resilience. Third, strategies should be place-specific: urban destinations may require plans for safe mobility, public-space management, and continuity of dense service economies, while rural and recreation destinations need infrastructure and management capacity for rapid visitor growth.

Fourth, amenity- and second-home-based recovery should be managed rather than pursued unconditionally. Second homes and seasonal accommodation can support demand during a shock, but they may also intensify housing costs, labor seasonality, infrastructure burdens, and environmental pressure. Regional policy should therefore pair tourism diversification and amenity investment with housing monitoring, resident participation, ecosystem safeguards, and measures of job quality and benefit distribution. Such an approach treats employment resilience as one component of sustainable regional tourism development rather than as its sole measure [23,28,45].

Author Contributions: Conceptualization, L.H., D.E., D.A. and S.J.G.; Methodology, L.H. and S.J.G.; Software, L.H.; Validation, L.H., D.E. and D.A.; Formal analysis, L.H.; Investigation, L.H. and D.E.; Data curation, L.H.; Writing—original draft, L.H., D.E., D.A. and S.J.G.; Writing—review & editing, L.H., D.E., D.A. and S.J.G.; Supervision, D.A. and S.J.G.; Funding acquisition, D.A. and S.J.G. All authors have read and agreed to the published version of the manuscript.

Funding: This work was supported in part by the United States Department of Agriculture, National Institute of Food and Agriculture (NIFA) under project #2022-68006-36453 & #2023-51150-41113, and by the USDA NIFA and Hatch Multistate Appropriations under Projects #PEN05090 & PEN04806 and Accession #7010745 & 7003410, and by the Pennsylvania State University and NIFA Multi-state/Regional Research.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: The raw data supporting the conclusions of this article will be made available by the authors on request.

Conflicts of Interest: The authors declare no conflict of interest.

Appendix A

Table A1. County-type heterogeneity in the 2020 L&H decline index.

	(1)	(2)	(3)	(4)	(5)
	Full Sample	Metro	Nonmetro	Recreation	Non-Recreation
L&H employment share, 2019 (%)	−0.0127 *** (0.0019)	−0.0130 *** (0.0028)	−0.0141 *** (0.0026)	−0.0063 *** (0.0020)	−0.0183 *** (0.0031)
Natural amenities index	0.0006 (0.0063)	−0.0188 ** (0.0076)	0.0168 * (0.0090)	−0.0307 ** (0.0120)	0.0094 (0.0074)
Pollution sites per 1000 sq. miles	−0.0016 *** (0.0003)	−0.0013 *** (0.0003)	−0.0015 *** (0.0006)	−0.0014 (0.0050)	−0.0018 *** (0.0003)
Crime per 1000 population	−0.0014 * (0.0008)	−0.0033 *** (0.0010)	−0.0003 (0.0010)	−0.0014 (0.0013)	−0.0013 (0.0009)
Social capital index	−0.0208 (0.0127)	−0.0573 *** (0.0148)	−0.0042 (0.0130)	−0.0002 (0.0223)	−0.0268 ** (0.0133)
Nonmetro, not adjacent to metro	0.0344 (0.0240)		0.0131 (0.0248)	0.0013 (0.0493)	0.0333 (0.0267)
Population density, 2019 (1000/sq. mile)	−0.0324 *** (0.0118)	−0.0290 *** (0.0096)	−0.0361 (0.0819)	−0.1635 (0.1445)	−0.0327 *** (0.0116)
Median household income (\$1000)	−0.0013 (0.0009)	−0.0007 (0.0011)	−0.0019 (0.0016)	0.0009 (0.0023)	−0.0018 * (0.0010)
Unemployment rate, 2019	−0.0301 *** (0.0072)	−0.0600 *** (0.0102)	−0.0128 (0.0094)	−0.0259 (0.0178)	−0.0291 *** (0.0081)
Bachelor's degree or higher (%)	−0.0117 *** (0.0014)	−0.0149 *** (0.0014)	−0.0077 *** (0.0024)	−0.0099 *** (0.0033)	−0.0109 *** (0.0016)
Second homes (%)	0.0024 * (0.0013)	0.0045 (0.0028)	0.0012 (0.0015)	0.0045 *** (0.0017)	0.0020 (0.0031)
Observations	2999	1143	1856	403	2596
Adjusted R-squared	0.2253	0.3895	0.1170	0.2578	0.2059

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The definition of the decline index is reported in equation (2). U.S. Census region dummies are included in the regression, and robust standard errors are used. Column (1) is for all the contiguous U.S. states except AK and HI, where the natural amenity variable is missing; column (2) is for all metro counties; column (3) is for all the nonmetro counties; column (4) is for all recreation counties according to USDA ERS definition; and column (5) is for all non-recreation counties.

Table A2. County-type heterogeneity in the 2021 L&H recovery index.

	(1)	(2)	(3)	(4)	(5)
	Full Sample	Metro	Nonmetro	Recreation	Non-Recreation
L&H employment share, 2019 (%)	−0.0495 *** (0.0088)	−0.0345 *** (0.0093)	−0.0586 *** (0.0124)	−0.0286 *** (0.0065)	−0.0733 *** (0.0118)
Natural amenities index	0.0369 * (0.0217)	−0.0181 (0.0187)	0.0775 ** (0.0322)	−0.0193 (0.0297)	0.0457 (0.0284)
Pollution sites per 1000 sq. miles	−0.0035 *** (0.0008)	−0.0028 *** (0.0006)	−0.0051 * (0.0029)	−0.0069 (0.0096)	−0.0035 *** (0.0011)
Crime per 1000 population	−0.0048 ** (0.0020)	−0.0078 *** (0.0029)	−0.0039 (0.0026)	0.0100* (0.0058)	−0.0059 *** (0.0022)
Social capital index	−0.0387 (0.0413)	−0.1252 ** (0.0552)	0.0151 (0.0498)	0.0752 (0.0815)	−0.0678 * (0.0408)
Nonmetro, not adjacent to metro	0.0584 (0.0798)		0.0276 (0.0833)	0.0016 (0.1595)	0.0571 (0.0883)
Population density, 2019 (1000/sq. mile)	−0.0485 *** (0.0113)	−0.0434 *** (0.0083)	−0.3460 (0.2733)	−0.0582 (0.2634)	−0.0504 *** (0.0109)

Table A2. Cont.

	(1)	(2)	(3)	(4)	(5)
	Full Sample	Metro	Nonmetro	Recreation	Non-Recreation
Median household income (\$1000)	−0.0011 (0.0031)	0.0018 (0.0034)	−0.0068 (0.0063)	0.0002 (0.0065)	−0.0022 (0.0036)
Unemployment rate, 2019	−0.0466 * (0.0277)	−0.0655 ** (0.0283)	−0.0306 (0.0381)	−0.1003 (0.0614)	−0.0337 (0.0312)
Bachelor's degree or higher (%)	−0.0100 ** (0.0043)	−0.0186 *** (0.0043)	−0.0029 (0.0085)	−0.0175 ** (0.0088)	−0.0049 (0.0050)
Second homes (%)	0.0259 *** (0.0075)	0.0250 *** (0.0077)	0.0258 *** (0.0096)	0.0205 *** (0.0047)	0.0310 (0.0207)
Observations	3004	1145	1859	403	2601
Adjusted R-squared	0.0737	0.1494	0.0486	0.1336	0.0770

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The definition of the recovery index is reported in equation (3). U.S. Census region dummies are included in the regression, and robust standard errors are used. Column (1) is for all the contiguous U.S. states except AK and HI, where the natural amenity variable is missing; column (2) is for all metro counties; column (3) is for all the nonmetro counties; column (4) is for all recreation counties according to USDA ERS definition; and column (5) is for all non-recreation counties.

Table A3. County-type heterogeneity in the 2022 L&H recovery index.

	(1)	(2)	(3)	(4)	(5)
	Full Sample	Metro	Nonmetro	Recreation	Non-Recreation
L&H employment share, 2019 (%)	−0.1531 *** (0.0248)	−0.1314 *** (0.0291)	−0.1699 *** (0.0346)	−0.0774 *** (0.0206)	−0.2297 *** (0.0366)
Natural amenities index	0.1098 (0.0679)	−0.0209 (0.0712)	0.2014 ** (0.0993)	0.0820 (0.1081)	0.1119 (0.0867)
Pollution sites per 1000 sq. miles	−0.0089 *** (0.0022)	−0.0069 *** (0.0019)	−0.0230 *** (0.0084)	−0.0147 (0.0312)	−0.0090 *** (0.0028)
Crime per 1000 population	−0.0012 (0.0079)	−0.0262 ** (0.0102)	0.0053 (0.0090)	0.0180 (0.0178)	−0.0019 (0.0087)
Social capital index	−0.1992 (0.1309)	−0.4490 *** (0.1499)	−0.0389 (0.1748)	0.0806 (0.2625)	−0.2963 ** (0.1369)
Nonmetro, not adjacent to metro	−0.0919 (0.2634)		0.0268 (0.2750)	−0.3227 (0.5166)	−0.0891 (0.2930)
Population density, 2019 (1000/sq. mile)	−0.0559 * (0.0285)	−0.0480 ** (0.0237)	2.3332 * (1.2509)	0.0810 (0.8406)	−0.0642 ** (0.0289)
Median household income (\$1000)	0.0108 (0.0099)	0.0011 (0.0124)	0.0008 (0.0191)	−0.0018 (0.0226)	0.0090 (0.0113)
Unemployment rate, 2019	−0.1173 (0.0880)	−0.2478 ** (0.1091)	−0.0605 (0.1196)	−0.1066 (0.1891)	−0.0974 (0.0996)
Bachelor's degree or higher (%)	−0.0080 (0.0148)	−0.0217 (0.0170)	−0.0050 (0.0275)	−0.0147 (0.0303)	0.0066 (0.0175)
Second homes (%)	0.0885 *** (0.0203)	0.0871 *** (0.0256)	0.0917 *** (0.0259)	0.0687 *** (0.0153)	0.1081 ** (0.0546)
Observations	2994	1143	1851	403	2591
Adjusted R-squared	0.0469	0.0976	0.0385	0.0834	0.0507

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The definition of the recovery index is reported in equation (3). U.S. Census region dummies are included in the regression, and robust standard errors are used. Column (1) is for all the contiguous U.S. states except AK and HI, where the natural amenity variable is missing; column (2) is for all metro counties; column (3) is for all the nonmetro counties; column (4) is for all recreation counties according to USDA ERS definition; and column (5) is for all non-recreation counties.

Table A4. County-type heterogeneity in the 2023 L&H recovery index.

	(1)	(2)	(3)	(4)	(5)
	Full Sample	Metro	Nonmetro	Recreation	Non-Recreation
L&H employment share, 2019 (%)	−4.0926 *** (0.6157)	−3.2499 *** (0.7475)	−4.6613 *** (0.8346)	−2.2385 *** (0.5058)	−5.6166 *** (0.9228)
Natural amenities index	2.3503 (1.6555)	−0.9212 (1.7372)	4.5393 * (2.4362)	0.3476 (3.0574)	2.5384 (1.9148)
Pollution sites per 1000 sq. miles	−0.1271 ** (0.0504)	−0.1316 *** (0.0487)	−0.3571 ** (0.1703)	−0.8772 (0.8009)	−0.1184 * (0.0612)
Crime per 1000 population	−0.1303 (0.1717)	−0.5190 ** (0.2460)	−0.0718 (0.2140)	0.2476 (0.3527)	−0.1578 (0.1914)
Social capital index	−8.8938 *** (2.7304)	−14.7966 *** (4.4023)	−4.4011 (3.8893)	1.1672 (5.5024)	−11.4181 *** (3.0368)
Nonmetro, not adjacent to metro	−8.4713 (6.6673)		−3.1457 (7.0732)	−18.7989 * (10.6206)	−8.0458 (7.5389)
Population density, 2019 (1000/sq. mile)	−0.2660 (1.0710)	0.1090 (1.0802)	80.440 *** (22.6878)	24.0420 (24.4090)	−0.6582 (1.0376)
Median household income (\$1000)	0.4944 * (0.2631)	0.3824 (0.3426)	0.1091 (0.5160)	0.2976 (0.4956)	0.4510 (0.2977)
Unemployment rate, 2019	−5.2387 ** (2.2944)	−8.7677 *** (2.8563)	−4.1950 (3.3196)	−0.8769 (4.1317)	−5.7658 ** (2.6003)
Bachelor's degree or higher (%)	−0.0045 (0.3821)	−0.6277 (0.5204)	0.0684 (0.6035)	−0.2841 (0.7040)	0.3852 (0.4826)
Second homes (%)	3.0149 *** (0.4928)	2.5457 *** (0.6387)	3.3029 *** (0.6275)	2.0526 *** (0.3881)	3.9405 *** (1.3607)
Observations	2996	1143	1853	402	2594
Adjusted R-squared	0.0542	0.0937	0.0499	0.0996	0.0565

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The definition of the recovery index is reported in equation (3). U.S. Census region dummies are included in the regression, and robust standard errors are used. Column (1) is for all the contiguous U.S. states except AK and HI, where the natural amenity variable is missing; column (2) is for all metro counties; column (3) is for all the nonmetro counties; column (4) is for all recreation counties according to USDA ERS definition; and column (5) is for all non-recreation counties.

Table A5. Spatial models for the 2020 L&H decline index.

	(1)	(2)	(3)
	Dependent-Variable Spatial Lag	Spatial-Error Term	Both Spatial Terms
L&H employment share, 2019 (%)	−0.0125 *** (0.0019)	−0.0134 *** (0.0019)	−0.0130 *** (0.0019)
Natural amenities index	0.0014 (0.0062)	−0.0019 (0.0069)	0.0002 (0.0065)
Pollution sites per 1000 sq. miles	−0.0015 *** (0.0003)	−0.0016 *** (0.0003)	−0.0015 *** (0.0003)
Crime per 1000 population	−0.0015 * (0.0007)	−0.0015 * (0.0008)	−0.0015 ** (0.0008)
Social capital index	−0.0188 (0.0129)	−0.0245 * (0.0137)	−0.0209 (0.0135)
Nonmetro, not adjacent to metro	0.0256 (0.0244)	0.0189 (0.0259)	0.0198 (0.0254)
Population density, 2019 (1000/sq. mile)	−0.0306 *** (0.0101)	−0.0330 *** (0.0118)	−0.0311 *** (0.0104)
Median household income (\$1000)	−0.0006 (0.0009)	−0.0004 (0.0010)	−0.0002 (0.0010)
Unemployment rate, 2019	−0.0254 *** (0.0074)	−0.0235 *** (0.0080)	−0.0231 *** (0.0078)
Bachelor's degree or higher (%)	−0.0114 *** (0.0014)	−0.0115 *** (0.0014)	−0.0115 *** (0.0014)
Second homes (%)	0.0028 ** (0.0013)	0.0037 *** (0.0014)	0.0034 ** (0.0013)

Table A5. Cont.

	(1)	(2)	(3)
	Dependent-Variable Spatial Lag	Spatial-Error Term	Both Spatial Terms
Dependent-variable spatial lag	0.1558 *** (0.0548)		0.1399 ** (0.0556)
Spatial-error term		0.3423 *** (0.0366)	0.2176 *** (0.0682)
Observations	2999	2999	2999

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The definition of the decline index is reported in equation (2). Compared to Table 2, column (1), Table A5 adds a dependent-variable spatial lag in column (1), an error spatial lag in column (2), and both dependent-variable and error spatial lags in column (3).

Table A6. Spatial models for the 2021 L&H recovery index.

	(1)	(2)	(3)
	Dependent-Variable Spatial Lag	Spatial-Error Term	Both Spatial Terms
L&H employment share, 2019 (%)	−0.0495 *** (0.0088)	−0.0514 *** (0.0089)	−0.0514 *** (0.0089)
Natural amenities index	0.0369 * (0.0214)	0.0300 (0.0230)	0.0305 (0.0228)
Pollution sites per 1000 sq. miles	−0.0035 *** (0.0008)	−0.0035 *** (0.0008)	−0.0035 *** (0.0008)
Crime per 1000 population	−0.0048 ** (0.0020)	−0.0046 ** (0.0020)	−0.0046 ** (0.0021)
Social capital index	−0.0388 (0.0415)	−0.0431 (0.0441)	−0.0438 (0.0441)
Nonmetro, not adjacent to metro	0.0589 (0.0826)	0.0293 (0.0844)	0.0358 (0.0865)
Population density, 2019 (1000/sq. mile)	−0.0485 *** (0.0113)	−0.0503 *** (0.0112)	−0.0510 *** (0.0118)
Median household income (\$1000)	−0.0012 (0.0033)	0.0002 (0.0032)	−0.0002 (0.0033)
Unemployment rate, 2019	−0.0468 (0.0292)	−0.0358 (0.0298)	−0.0382 (0.0310)
Bachelor's degree or higher (%)	−0.0100 ** (0.0043)	−0.0103 ** (0.0043)	−0.0103 ** (0.0044)
Second homes (%)	0.0259 *** (0.0074)	0.0285 *** (0.0079)	0.0284 *** (0.0078)
Dependent-variable spatial lag	−0.0037 (0.1019)		−0.0522 (0.0990)
Spatial-error term		0.2194 *** (0.0469)	0.2973 *** (0.0991)
Observations	3004	3004	3004

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The definition of the recovery index is reported in equation (3). Compared to Table 2, column (2), Table A6 adds a Y spatial lag in column (1), an error spatial lag in column (2), and both Y and error lags in column (3).

Table A7. Detrended L&H recovery indexes, 2021–2023.

	(1)	(2)	(3)
	Detrended Recovery Index 2021	Detrended Recovery Index 2022	Detrended Recovery Index 2023
L&H employment share, 2019 (%)	−0.0342 *** (0.0052)	−0.0462 *** (0.0066)	−0.0693 *** (0.0093)
Natural amenities index	0.0124 (0.0137)	0.0052 (0.0182)	−0.0000 (0.0263)
Pollution sites per 1000 sq. miles	−0.0025 *** (0.0006)	−0.0025 *** (0.0007)	−0.0020 ** (0.0009)

Table A7. Cont.

	(1)	(2)	(3)
	Detrended Recovery Index 2021	Detrended Recovery Index 2022	Detrended Recovery Index 2023
Crime per 1000 population	−0.0038 ** (0.0015)	−0.0020 (0.0019)	−0.0046 (0.0035)
Social capital index	−0.0172 (0.0361)	−0.0428 (0.0466)	−0.0709 (0.0593)
Nonmetro, not adjacent to metro	0.0496 (0.0543)	−0.0206 (0.0756)	−0.1244 (0.1119)
Population density, 2019 (1000/sq. mile)	−0.0423 *** (0.0084)	−0.0261 *** (0.0083)	−0.0205 (0.0173)
Median household income (\$1000)	−0.0047 ** (0.0021)	−0.0054 * (0.0029)	−0.0056 (0.0045)
Unemployment rate, 2019	−0.0123 (0.0188)	−0.0008 (0.0266)	−0.0230 (0.0383)
Bachelor's degree or higher (%)	−0.0055 * (0.0031)	0.0021 (0.0043)	0.0036 (0.0064)
Second homes (%)	0.0156 *** (0.0040)	0.0235 *** (0.0047)	0.0431 *** (0.0062)
Constant	1.5521 *** (0.1656)	1.4712 *** (0.2168)	1.7847 *** (0.3344)
Observations	2978	2971	2972
Adjusted R-squared	0.0983	0.0588	0.0568

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The definition of the detrended recovery index is reported in Equation (4). U.S. Census region dummies are included in the regression, and robust standard errors are used. All the contiguous U.S. states are included in the sample.

Table A8. Annual employment robustness: 2020 L&H decline index.

	(1)	(2)	(3)	(4)	(5)
	Full Sample	Metro	Nonmetro	Recreation	Non-Recreation
L&H employment share, 2019 (%)	−0.0134 *** (0.0019)	−0.0146 *** (0.0029)	−0.0138 *** (0.0025)	−0.0071 *** (0.0020)	−0.0182 *** (0.0031)
Natural amenities index	0.0060 (0.0058)	−0.0090 (0.0066)	0.0185 ** (0.0084)	−0.0129 (0.0113)	0.0122 * (0.0072)
Pollution sites per 1000 sq. miles	−0.0017 *** (0.0003)	−0.0013 *** (0.0003)	−0.0017 ** (0.0007)	−0.0007 (0.0040)	−0.0018 *** (0.0003)
Crime per 1000 population	0.0001 (0.0007)	−0.0020 ** (0.0009)	0.0011 (0.0008)	−0.0011 (0.0016)	0.0004 (0.0007)
Social capital index	−0.0121 (0.0114)	−0.0535 *** (0.0100)	0.0047 (0.0128)	0.0104 (0.0187)	−0.0197 * (0.0120)
Nonmetro, not adjacent to metro	0.0471 ** (0.0228)		0.0169 (0.0237)	−0.0020 (0.0433)	0.0501 ** (0.0254)
Population density, 2019 (1000/sq. mile)	−0.0226 ** (0.0108)	−0.0185 ** (0.0081)	−0.1645 * (0.0912)	−0.1071 (0.1227)	−0.0222 ** (0.0105)
Median household income (\$1000)	−0.0004 (0.0008)	0.0008 (0.0011)	−0.0018 (0.0016)	0.0005 (0.0019)	−0.0005 (0.0010)
Unemployment rate, 2019	−0.0283 *** (0.0074)	−0.0485 *** (0.0104)	−0.0160 (0.0097)	−0.0345 * (0.0196)	−0.0231 *** (0.0083)
Bachelor's degree or higher (%)	−0.0118 *** (0.0013)	−0.0154 *** (0.0014)	−0.0069 *** (0.0023)	−0.0098 *** (0.0031)	−0.0113 *** (0.0016)
Second homes (%)	0.0010 (0.0013)	0.0026 (0.0025)	−0.0005 (0.0015)	0.0047 *** (0.0016)	0.0012 (0.0033)
Constant	1.0159 *** (0.0669)	1.1457 *** (0.1094)	0.9609 *** (0.1020)	0.6834 *** (0.1610)	1.0489 *** (0.0889)

Table A8. Cont.

	(1)	(2)	(3)	(4)	(5)
	Full Sample	Metro	Nonmetro	Recreation	Non-Recreation
Observations	3028	1148	1880	405	2623
Adjusted R-squared	0.2396	0.4137	0.1412	0.2765	0.2156

Note: The employment measure is the mean of all available Q1–Q4 county observations within each year. Heteroskedasticity-robust standard errors are in parentheses. All models include Census-region fixed effects. The dependent variable follows Equation (2) using annual rather than Q3 employment. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table A9. Annual employment robustness: 2021 L&H recovery index.

	(1)	(2)	(3)	(4)	(5)
Variables	Full Sample	Metro	Nonmetro	Recreation	Non-Recreation
L&H employment share, 2019 (%)	−0.0314 *** (0.0045)	−0.0273 *** (0.0081)	−0.0353 *** (0.0058)	−0.0189 *** (0.0051)	−0.0473 *** (0.0073)
Natural amenities index	0.0234 * (0.0132)	−0.0145 (0.0145)	0.0508 *** (0.0191)	−0.0200 (0.0228)	0.0318 ** (0.0161)
Pollution sites per 1000 sq. miles	−0.0031 *** (0.0006)	−0.0022 *** (0.0005)	−0.0046 ** (0.0020)	−0.0049 (0.0067)	−0.0032 *** (0.0006)
Crime per 1000 population	−0.0033 ** (0.0013)	−0.0066 *** (0.0022)	−0.0020 (0.0016)	0.0075 ** (0.0037)	−0.0041 *** (0.0015)
Social capital index	−0.0230 (0.0275)	−0.0890 ** (0.0385)	0.0105 (0.0322)	0.0611 (0.0547)	−0.0441 (0.0283)
Nonmetro, not adjacent to metro	0.0568 (0.0555)		0.0241 (0.0570)	−0.0036 (0.1146)	0.0604 (0.0611)
Population density, 2019 (1000/sq. mile)	−0.0405 *** (0.0124)	−0.0349 *** (0.0085)	−0.3524 * (0.1816)	−0.1713 (0.2240)	−0.0403 *** (0.0115)
Median household income (\$1000)	0.0006 (0.0022)	0.0032 (0.0026)	−0.0032 (0.0043)	0.0029 (0.0046)	−0.0004 (0.0025)
Unemployment rate, 2019	−0.0327 * (0.0168)	−0.0438 * (0.0237)	−0.0219 (0.0222)	−0.0710 (0.0443)	−0.0215 (0.0189)
Bachelor's degree or higher (%)	−0.0143 *** (0.0030)	−0.0211 *** (0.0033)	−0.0064 (0.0053)	−0.0188 *** (0.0069)	−0.0112 *** (0.0035)
Second homes (%)	0.0154 *** (0.0030)	0.0208 *** (0.0060)	0.0133 *** (0.0036)	0.0165 *** (0.0035)	0.0155 ** (0.0077)
Constant	1.5489 *** (0.1636)	1.5992 *** (0.2375)	1.6152 *** (0.2811)	1.0876 *** (0.3379)	1.7096 *** (0.2046)
Observations	3024	1147	1877	405	2619
Adjusted R-squared	0.1067	0.2002	0.0583	0.1833	0.1087

Note: The employment measure is the mean of all available Q1–Q4 county observations within each year. Heteroskedasticity-robust standard errors are in parentheses. All models include Census-region fixed effects. The dependent variable follows Equation (3) using annual rather than Q3 employment. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

References

1. Han, L.; Goetz, S.J.; Eades, D.; Entsminger, J.; Arbogast, D. An early assessment of COVID-19's impact on tourism in US counties. *Tour. Econ.* **2023**, *29*, 1355–1375.
2. Gössling, S.; Scott, D.; Hall, C.M. Pandemics, tourism and global change: A rapid assessment of COVID-19. *J. Sustain. Tour.* **2020**, *29*, 1–20. [CrossRef]
3. Williams, C.C. Impacts of the coronavirus pandemic on Europe's tourism industry: Addressing tourism enterprises and workers in the undeclared economy. *Int. J. Tour. Res.* **2021**, *23*, 79–88.
4. Watson, P.; Deller, S. Tourism and economic resilience. *Tour. Econ.* **2022**, *28*, 1193–1215.
5. Taff, B.D.; Rice, W.L.; Lawhon, B.; Newman, P. Who started, stopped, and continued participating in outdoor recreation during the COVID-19 pandemic in the United States? Results from a national panel study. *Land* **2021**, *10*, 1396. [CrossRef]
6. Outdoor Foundation. *2021 Outdoor Participation Report*; Outdoor Foundation: Boulder, CO, USA, 2021.
7. Khizar, H.M.U.; Younas, A.; Kumar, S.; Akbar, A.; Poulova, P. The progression of sustainable development goals in tourism: A systematic literature review of past achievements and future promises. *J. Innov. Knowl.* **2023**, *8*, 100442. [CrossRef]

8. Martin, R.; Sunley, P. Regional economic resilience: Evolution and evaluation. In *Handbook on Regional Economic Resilience*; Bristow, G., Healy, A., Eds.; Edward Elgar Publishing: Cheltenham, UK; Northampton, MA, USA, 2020; pp. 10–35.
9. Alanzi, E.; Sarabdeen, M.; Almugren, H.Z.; Kijas, A.M. Regional Tourism Development: The Role of Sustainable Practices, Logistics Infrastructure, Uncertainty, Safety and Economic Environment of the Countries in Attracting Inbound Tourists. *Sustainability* **2026**, *18*, 3968. [[CrossRef](#)]
10. Dong, H.; Zeng, J. Digital Empowerment and Sustainable Tourism: Spatiotemporal Coupling Coordination Analysis of Digital Technology and High-Quality Development in China's A-Level Scenic Spots. *Sustainability* **2025**, *17*, 10293. [[CrossRef](#)]
11. Yao, M.; Moghavvemi, S.; Thirumoorathi, T.A.P. Going Live, Going Alive: The Transformative Power of Digital Capital in Sustainable Tourism Development. *Sustainability* **2026**, *18*, 2666. [[CrossRef](#)]
12. Martin, R. Regional economic resilience, hysteresis and recessionary shocks. *J. Econ. Geogr.* **2012**, *12*, 1–32.
13. Sutton, J.; Arcidiacono, A.; Torrissi, G.; Arku, R.N. Regional economic resilience: A scoping review. *Prog. Hum. Geogr.* **2023**, *47*, 500–532. [[CrossRef](#)]
14. Giannakis, E.; Bruggeman, A.; Mamuneas, T.P. Regional economic resilience, productivity growth and sectoral interconnectedness. *Pap. Reg. Sci.* **2024**, *103*, 100010. [[CrossRef](#)]
15. Boettner, F.; Fedorko, E.; Hansen, E.; Collins, A.; Zimmerman, B.; Goetz, S.J.; Han, Y.; Gyovai, C.; Carlson, E.; Sentilles, A. *Strengthening Economic Resilience in Appalachia*; Appalachian Regional Commission: Washington, DC, USA, 2019.
16. Prayag, G. Time for reset? COVID-19 and tourism resilience. *Tour. Rev. Int.* **2020**, *24*, 179–184. [[CrossRef](#)]
17. Bui, P.L.; Chen, T.L.; Wickens, E. Tourism industry resilience issues in urban areas during COVID-19. *Int. J. Tour. Cities* **2021**, *7*, 861–879. [[CrossRef](#)]
18. Gaki, E.; Koufodontis, N.I. Regional tourism resilience and recovery in times of crises. *Geoj. Tour. Geosites* **2022**, *40*, 259–266. [[CrossRef](#)]
19. Yang, E.; Smith, J.W. The spatial and temporal resilience of the tourism and outdoor recreation industries in the United States throughout the COVID-19 pandemic. *Tour. Manag.* **2023**, *95*, 104661. [[CrossRef](#)]
20. Lamhour, O.; Safaa, L.; Perkumienė, D. What Does the Concept of Resilience in Tourism Mean in the Time of COVID-19? Results of a Bibliometric Analysis. *Sustainability* **2023**, *15*, 9797. [[CrossRef](#)]
21. Kamata, H. Tourist destination residents' attitudes towards tourism during and after the COVID-19 pandemic. *Curr. Issues Tour.* **2022**, *25*, 134–149.
22. de la Maza, F.; Ried, A.; Odone, C.; Le Moigne, J.P.; Villalobos, P.; Meneses, K. Indigenous tourism, crisis and resilience in times of COVID-19: Theoretical and methodological approaches from Chile. *Curr. Issues Tour.* **2024**, *27*, 3001–3016.
23. Espiner, S.; Orchiston, C.; Higham, J. Resilience and sustainability: A complementary relationship? Towards a practical conceptual model for the sustainability–resilience nexus in tourism. *J. Sustain. Tour.* **2017**, *25*, 1385–1400. [[CrossRef](#)]
24. Ateljevic, I. Transforming the (tourism) world for good and (re)generating the potential new normal. *Tour. Geogr.* **2020**, *22*, 467–475. [[CrossRef](#)]
25. Higgins-Desbiolles, F.; Carnicelli, S.; Krolikowski, C.; Wijesinghe, G.; Boluk, K. Degrowing tourism: Rethinking tourism. *J. Sustain. Tour.* **2019**, *27*, 1926–1944. [[CrossRef](#)]
26. Higgins-Desbiolles, F. The “war over tourism”: Challenges to sustainable tourism in the tourism academy after COVID-19. *J. Sustain. Tour.* **2020**, *29*, 551–569. [[CrossRef](#)]
27. Nepal, S.K. Travel and tourism after COVID-19—Business as usual or opportunity to reset? *Tour. Geogr.* **2020**, *22*, 646–650. [[CrossRef](#)]
28. One Planet Sustainable Tourism Programme. *One Planet Vision for a Responsible Recovery of the Tourism Sector*; One Planet Sustainable Tourism Programme: Madrid, Spain, 2020.
29. Hall, C.M.; Safonov, A.; Naderi Koupaie, S. Resilience in hospitality and tourism: Issues, synthesis and agenda. *Int. J. Contemp. Hosp. Manag.* **2023**, *35*, 347–368. [[CrossRef](#)]
30. Stotten, R.; Schermer, M.; Wilson, G.A. Lock-ins and community resilience: Two contrasting development pathways in the Austrian Alps. *J. Rural. Stud.* **2021**, *84*, 124–133. [[CrossRef](#)]
31. Rasoolimanesh, S.M.; Ramakrishna, S.; Hall, C.M.; Esfandiari, K.; Seyfi, S. A systematic scoping review of sustainable tourism indicators in relation to the sustainable development goals. *J. Sustain. Tour.* **2023**, *31*, 1497–1517. [[CrossRef](#)]
32. Bronner, F.; de Hoog, R. Tourist demand reactions: Symmetric or asymmetric across the business cycle? *J. Travel Res.* **2017**, *56*, 839–853. [[CrossRef](#)] [[PubMed](#)]
33. Rupasingha, A.; Goetz, S.J.; Freshwater, D. The production of social capital in US counties. *J. Socio-Econ.* **2006**, *35*, 83–101. [[CrossRef](#)]
34. Cainelli, G.; Ganau, R.; Modica, M. Does related variety affect regional resilience? New evidence from Italy. *Ann. Reg. Sci.* **2019**, *62*, 657–680. [[CrossRef](#)]
35. Lagravinese, R. Economic crisis and rising gaps North–South: Evidence from the Italian regions. *Camb. J. Reg. Econ. Soc.* **2015**, *8*, 331–342. [[CrossRef](#)]

36. Rice, W.L.; Mateer, T.J.; Reigner, N.; Newman, P.; Lawhon, B.; Taff, B.D. Changes in recreational behaviors of outdoor enthusiasts during the COVID-19 pandemic: Analysis across urban and rural communities. *J. Urban Ecol.* **2020**, *6*, juaa020. [[CrossRef](#)]
37. Landry, C.E.; Bergstrom, J.; Salazar, J.; Turner, D. How has the COVID-19 pandemic affected outdoor recreation in the US? A revealed-preference approach. *Appl. Econ. Perspect. Policy* **2021**, *43*, 443–457. [[CrossRef](#)]
38. Rahman, M.K.; Gazi, M.A.I.; Bhuiyan, M.A.; Rahaman, M.A. Effect of the COVID-19 pandemic on tourist travel risk and management perceptions. *PLoS ONE* **2021**, *16*, e0256486. [[CrossRef](#)] [[PubMed](#)]
39. Chowdhury, M.; Prayag, G.; Orchiston, C.; Spector, S. Postdisaster social capital, adaptive resilience and business performance of tourism organizations in Christchurch, New Zealand. *J. Travel Res.* **2019**, *58*, 1209–1226. [[CrossRef](#)]
40. Jia, X.; Chowdhury, M.; Prayag, G.; Chowdhury, M.M.H. The role of social capital on proactive and reactive resilience of organizations post-disaster. *Int. J. Disaster Risk Reduct.* **2020**, *48*, 101614. [[CrossRef](#)]
41. Sabatino, M. Economic resilience and social capital of the Italian region. *Int. Rev. Econ. Financ.* **2019**, *61*, 355–367. [[CrossRef](#)]
42. Hall, C.M. Resilience theory and tourism. In *Resilient Destinations and Tourism*; Routledge: Abingdon, UK, 2018; pp. 34–47.
43. Jang, S.; Kim, J. Remedying Airbnb COVID-19 disruption through tourism clusters and community resilience. *J. Bus. Res.* **2022**, *139*, 529–542. [[CrossRef](#)] [[PubMed](#)]
44. Jog, D.; Jena, S.K.; Mekoth, N. Stakeholder responsible behavior in tourism: Scale development and validation. *Tour. Anal.* **2024**, *29*, 47–67. [[CrossRef](#)]
45. Gössling, S.; Schweiggart, N. Two years of COVID-19 and tourism: What we learned, and what we should have learned. *J. Sustain. Tour.* **2022**, *30*, 915–931. [[CrossRef](#)]

Disclaimer/Publisher’s Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.