Journal of Smart Tourism

Who Uses Travel Websites? A Comparison of Demand Across Websites

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Abstract

Understanding demand for travel websites can help hoteliers better evaluate their own multi-channel distribution and reputation management strategies. In this study, we estimated demand for eight major travel websites based on the user percentage in 3,120 U.S. counties. Results highlighted the importance of four types of factors: sociodemographic, economic, Internet use–related, and travel-related. Differences between websites were also compared based on estimated coefficients. For example, the demand for Expedia.com appeared to be driven by age, education background, income, and foreign travel history, whereas the demand for Hotels.com was driven by the proportion of the African American population and domestic travel history. Lastly, implications are provided.

1. Introduction

In the last two decades, with the evolution of web 2.0 along with the expanding popularity of e-commerce (Cantoni & Tardini, 2010; Holzner, 2009; Lee et al., 2012), travel platforms have become commonplace in offering services as online agents. These websites' online review systems broadcast consumers' opinions (Belarmino & Koh, 2018; Marchiori et al., 2011) and help prospective customers assess travel options (O'Connor, 2008). Different from web 1.0 (also known as the "read-only" web), web 2.0 (the "read & write" web) enables users to communicate with each other and to express their feelings (Inversini et al., 2010). User–website interaction is similarly possible (Marchiori et al., 2010). By capitalizing on travel websites, hospitality professionals can actively connect with hotel guests and therefore better discern and fulfill guests' needs (Albee, 2010; Bonsón & Flores, 2011). Enduring firm–guest relationships may emerge accordingly (Dwivedi et al., 2011; Escobar-Rodríguez & Carvajal-Trujillo, 2013). Given hospitality products' unique characteristics, such as intangibility and inseparability, hotels' attributes are difficult to sense prior to consumption (Öğüt & Onur Taş, 2012). Travel websites thus serve as a key information source for tourists.

Importantly, travel websites provide myriad functions apart from simply serving as booking channels. The user-generated content (UGC) on these sites has reduced information asymmetry and shaped hotel guests' decision making; modern consumers increasingly rely on hotel reviews from other guests (Chatterjee, 2001; Marchiori et al., 2011). Vermeulen and Seegers (2009) pointed out that the number of reviews for a hotel positively informs potential guests' booking intentions. Öğüt and Onur Taş (2012) came to the same conclusion, finding guest reviews to be as influential as hotel price. Relatedly, Ye et al. (2011) noted that the number of positive reviews was significantly correlated with a hotel's reservation rate. A report in 2016 also indicated that 92%

of U.S. travelers read online reviews, with 68% stating that positive reviews led them to trust a service provider (Shrestha, 2016).

The growing penetration of these travel websites has brought to light two questions: who is using these websites, and are there systematic differences among popular platforms (e.g., Expedia.com, Booking.com, and TripAdvisor.com)? To explore these lines of inquiry, we leveraged a unique dataset of website usage among U.S. consumers in different counties. Several regression analyses were conducted to estimate the demand function of certain travel websites and to categorize demand determinants. Our work makes several contributions to the tourism literature. First, this study represents a pioneering effort to estimate the demand function based on revealed preference data using a nationally representative sample. Results illuminate the systematic mechanism of demand patterns in consumers' use of major platforms. Second, by comparing demand functions, hoteliers can more precisely implement multi-channel distribution and online reputation management depending on the demand functions of particular websites according to organizations' clientele portfolios. Finally, the demand function can compensate for demand heterogeneity in online review scores across sources, allowing for more reliable cross-platform comparison and synchronization of these scores.

2. Literature Review

2.1 Demand for Travel Websites

Travelers and prospective hotel guests are the main users of travel websites. According to a survey by the United Nations World Tourism Organization (WTO, 2014), many consumers visit at least 14 websites before making an online hotel reservation and carry

out more than nine trip-related searches via search engines. A TripAdvisor (2013) study showed that roughly 80% of hotel guests read online reviews before booking. More than half of German respondents reported using review websites to make travel plans in 2008 (FUR, 2008). Carroll (2014) surveyed 2,500 travelers in the United States and found that 46% of respondents perused online reviews before choosing a hotel. People particularly referred to reviews to decide amongst a smaller choice set they already had in mind (instead of browsing reviews to filter hotels directly). Expedia.com was deemed most popular in this case, followed by TripAdvisor.com (Carroll, 2014). Interestingly, seniors (i.e., people aged > 65) were the second largest user group on hotel review websites, followed by college-aged individuals (ages 18–24). Forty percent of respondents found comments from other guests to be most effective in guiding their purchase decisions (Carroll, 2014). This result is consistent with WTO's (2014) study, in which 87% of respondents said that guest reviews boosted their purchase confidence; over half admitted they would not book a hotel that had no guest reviews. Most recently, data shows booking pace for travel in the spring of 2022 is about 50% higher than 2021, and 26% higher than pre-pandemic 2019 (Oladipo, 2022). The evolution of the Internet, coupled with travel websites' provision of ample information (e.g., hotels' popularity, destination rankings, and hotel attributes such as service quality, cleanliness, and sleep quality), has reshaped prospective travelers' information searches.

Hotel guests also share their personal experiences on travel websites, producing highly accessible reviews and ratings in the form of UGC (Chatterjee, 2001; Vermeulen & Seegers, 2009). UGC and guest reviews create a virtuous circle that enhances consumers' awareness of hotels while amplifying commentary to guide booking decisions. Leung et al. (2013) concluded that online review websites influence all phases of guests' decision-making process (i.e., in the pre-purchase, during-purchase, and post-purchase phases). Purchase quality is elevated as a result.

Travel service providers are another main user group on travel websites, especially upon realizing these platforms' impacts on business performance. Most hotel service providers harness these websites for market research (Schegg & Fux, 2010) and to promote electronic word-of-mouth (eWOM) (Xiang & Gretzel, 2010). Schegg and Fux (2008) investigated more than 300 tourism service providers in Switzerland and demonstrated that these providers increasingly turn to hotel review websites to conduct market research. Indeed, nearly every provider conceded they checked guests' reviews and evaluations at least once a week on various websites. Almost all hotels integrate review functions on their own websites (Escobar-Rodríguez & Carvajal-Trujillo, 2013; Park & Gretzel, 2007) to capitalize on interaction. Doing so transforms static content into dynamic details (Kaplan & Haenlein, 2010; Shang et al., 2011). As a widely acknowledged cost-effective and convenient distribution channel (Gilbert & Powell-Perry, 2001; Park & Huang, 2017), hotels' websites continue to improve by featuring new business models and incorporating online evaluation mechanisms (Fong et al., 2017; Law, 2019; Xiang et al., 2015).

As discussed, a core contribution of travel websites lies in users' creation and sharing of UGC. Active communication among users, and between users and service providers, is essential. Collaborative review websites embody a form of collective intelligence in the context of web 2.0; they showcase guests' perceptions of providers' services to expedite market research (Kilian et al., 2008). Nonetheless, the sheer volume of data available via online resources can overwhelm hotel managers: websites can present inconsistent information (Marchiori et al., 2011). In the same vein, because hotel guests tend to search for reviews from multiple distribution channels prior to booking in order to avoid a disappointing experience, prospective consumers can easily become confused when reviews vary across websites (Mayzlin et al., 2014). A study of hotels' star ratings on third-party review websites revealed discrepancies in guests' scores, which adversely influenced users' perceptions and booking intentions

(Guillet & Law, 2010). Hotel managers are also concerned about the authenticity of online travel reviews. Research suggests that some travel service providers incentivize guests to write positive reviews of their businesses and to post negative reviews about their competitors (WTO, 2014). Websites can even face conflict themselves and label certain reviews as fake. Most websites thus only accept reviews from verified purchasers. For instance, Booking.com hosts more than 30 million qualified reviews posted by guests who purchased a room through the website. Over 20 million qualified reviews are available through the combined pool of reviews from Expedia.com and Hotels.com. Although TripAdvisor does not require reviewers to have made certified hotel purchases, the website continuously updates its filters to screen out potentially fraudulent feedback (Carroll, 2014). As discussed above, different platforms have their own functions to meet users' needs, the following section further compare the differences among these travel websites.

2.2 Differences Among Travel Websites

Web 2.0 includes a range of applications such as social networking sites, review websites, and opinion-sharing platforms (Herrero et al., 2015). Users can document their experiences by posting recommendations, pictures, videos, and beliefs (Buhalis & Law, 2008; Herrero et al., 2015). Yet users of travel-related platforms do more than search for information from traditional sources, such as hotel websites and online travel agencies (OTAs); they also reference social media sites such as Facebook, online review portals like TripAdvisor and Yelp, and even online communities (e.g., TravBuddy and Virtualtourist) (Schegg & Fux, 2010). Levy et al. (2013) outlined three types of online travel review websites: hotel websites (i.e., Hilton.com), OTAs (i.e., Expedia), and third-party review websites (i.e., TripAdvisor). Belarmino and Koh (2018) pointed out that these types of websites are the most prominent sources of online reviews. Hwang et al. (2018) added that blogs and social networking sites, as interactive online platforms, are equally as effective as review websites in offering hotel-related commentary. The top nine hotel review websites are Google.com, TripAdvisor, Booking.com, Expedia, Hotels.com, Yelp, Facebook, Orbitz, and Travelocity (Penaflorida, 2020)—but how do they differ?

Hotel websites have a vested interest in presenting a positive image and are hence often seen as less credible than non-transactional websites (Mauri & Minazzi, 2013). As mentioned, many hotel websites include a review-posting function which doubles as an eWOM marketing tool. It is unsurprising that guests perceive hotel websites as solely displaying positive comments (Xiang & Gretzel, 2010). Some hotels actually do so (i.e., publish only positive reviews or limit negative reviews) given the extent to which reviews affect sales. A mere 1% improvement in reviewers' ratings has been shown to boost hotel revenues by 0.44%; a 1% rise in review variance can lower revenue by 0.28% (McDermott, 2021). Farely (2012) asserted that major hotel brands allow guests to freely post reviews—even less-than-stellar ones—on their websites. Yet irrespective of whether guests can post negative reviews, they generally publish reviews on hotels' websites upon having highly positive or negative experiences (Hennig-Thurau et al., 2004). Equity theory (Pritchard, 1969) implies that pleasant experiences likely motivate guests to compose reviews because guests can account for input from the hotel (i.e., high-quality service) by enhancing their output (i.e., positive feedback) (Hennig-Thurau et al., 2004). On the contrary, negative service experiences convey an asymmetrical relationship between guests and service providers. Guests may therefore strive to re-balance this relationship by posting negative feedback. Equity theory further posits that hotel guests are less likely to write reviews after receiving neutral service (Belarmino & Koh, 2018).

Guests' justifications for posting reviews also differ substantially across travel websites (Belarmino & Koh, 2018): self-

enhancement and social comparison predominantly compel review-posting behavior on hotel websites; guests are inclined to publish reviews on OTAs to share social information; and reviews on third-party review websites are normally composed to promote altruism and social belonging. Belarmino and Koh (2018) also concluded that hotel guests are principally motivated to either punish or reward a hotel, consistent with Hennig-Thurau et al.'s (2004) finding that guests are apt to post reviews on hotels' websites to describe remarkably exceptional or frustrating experiences.

Travel websites also vary with respect to review ratings. Guillet and Law (2010) uncovered inconsistencies in ratings across review websites in Hong Kong. Belarmino and Koh (2018) observed that ratings for the same hotel significantly differed across hotel review websites; their findings showed that hotels' own websites featured the highest ratings, followed by OTAs and then third-party websites. Irregular ratings capture hotel guests' unique preferences for these platforms but may call reviews' authenticity into question. Levy et al. (2013) claimed that consumers typically consider TripAdvisor and other third-party review websites to be optimal for travel planning because users trust other travelers and see themselves as belonging to the same group. Mangold and Smith (2012) determined that millennials prefer to reading reviews on hotel websites because these reviews are from verified guests.

3. Research Methods

We collected data to understand the factors spurring travel website usage in the United States. Information was obtained at the county level via the SimplyAnalytics platform. A cross-sectional regression analysis was performed to pinpoint sociodemographic, economic, Internet usage, and travel attributes that elucidate travel website usage. Table 1 lists the descriptions of variables. Our dataset covered 3,120 U.S. counties. Dependent variables consisted of the percentage of actual visits (in the past 30 days) to eight major travel websites, including Booking.com, Expedia.com, Hotels.com, Kayak.com, Orbitz.com, Travelocity.com, TripAdvisor.com, and Priceline.com. These eight websites are the most popular travel websites for online hotel booking, and Table 2 provides details about these websites. Data were acquired from SimmonsLOCAL Fall 2019 based on a survey of 209 American designated market areas; data were estimated using roughly 30,000 respondents nationwide aged 18 and above (Martin & Delmelle, 2021). These data reflected website usage behavior across various websites, from which we chose eight travel websites. Based on the mean value, Expedia.com appeared most popular, followed by Hotels.com and Booking.com. Orbitz.com was least popular. Figure 1 maps Expedia.com usage across U.S. counties; usage was generally low in the Southeast.

Table 1. Description and statistics of variables

Variable	Description	Obs	Mean	Std. Dev.	Min	Max
Booking_com	Percentage of actual visits to Booking.com in the past 30 days in the county	3,120	0.056	0.018	0.004	0.300
Expedia_com	Percentage of actual visits to Expedia.com in the past 30 days in the county	3,118	0.081	0.025	0.008	0.433
Hotels_com	Percentage of actual visits to Hotels.com in the past 30 days in the county	3,116	0.060	0.018	0.005	0.364
Kayak_com	Percentage of actual visits to Kayak.com in the past 30 days in the county	3,098	0.034	0.014	0.002	0.158
Orbitz_com	Percentage of actual visits to Orbitz.com in the past 30 days in the county	3,073	0.022	0.011	0.001	0.249
Travelocity_com	Percentage of actual visits to Travelocity.com in the past 30 days in the county	3,103	0.039	0.013	0.004	0.244
TripAdvisor_com	Percentage of actual visits to Tripadvisor.com in the past 30 days in the county	3,110	0.049	0.017	0.004	0.261
Priceline_com	Percentage of actual visits to Priceline.com in the past 30 days in the county	3,094	0.034	0.012	0.003	0.166
Lnmedian_age	Log of median age in the county	3,120	3.716	0.133	3.098	4.213
Bachelor	Percentage of population holding a bachelor's degree and above in the county	3,120	0.220	0.096	0.000	0.760
Owner_occupied	Percentage of housing units occupied by owners in the county	3,120	0.715	0.084	0.200	1.000
Family_household	Percentage of family households in the county	3,120	0.660	0.057	0.378	0.911
Hispanic	Percentage of Hispanic population in the county	3,120	0.097	0.140	0.000	0.998
White	Percentage of white population in the county	3,120	0.824	0.166	0.051	1.000
African_american	Percentage of African American population in the county	3,120	0.092	0.145	0.000	0.877
American_indian	Percentage of American Indian and Alaska Native population in the county	3,120	0.019	0.070	0.000	0.929
Asian_american	Percentage of Asian American population in the county	3,120	0.015	0.027	0.000	0.424
Lnmedian_income	Log of median household annual income in the county	3,120	10.856	0.252	9.968	11.863
Internet	Percentage of Internet users in the county	3,120	0.898	0.035	0.756	1.000
Foreign_travel	Percentage of population that traveled internationally in the past 3 years in the county	3,120	0.381	0.058	0.164	0.694
Domestic_travel	Percentage of population that traveled domestically in the past 12 months in the county	3,120	0.635	0.068	0.291	1.000

Table 2. Characteristics of eight major travel websites.

| Name	Business type	Founding year	Headquarters	Parent company /Owner	Products
Booking.com	Subsidiary	1996	Amsterdam, Netherlands	Booking Holdings	Travel and accommodation services
Expedia.com	Subsidiary	2001	Seattle, Washington, US	Expedia Group	Travel agency, metasearch engine
Hotels.com	Subsidiary	1991	Dallas, Texas, US	Expedia Group	Hotel booking service
Kayak.com	Subsidiary	2004	Stamford, Connecticut, US	Booking Holdings	Travel agency, metasearch engine
Orbitz.com	Subsidiary	2001	Chicago, Illinois, US	Expedia Group	Travel agency, metasearch engine
Travelocity.com	Subsidiary	1996	Dallas, Texas, US	Expedia Group	Travel agency
TripAdvisor.com	Public (Nasdaq: TRIP)	2000	Needham, Massachusetts, US	Liberty TripAdvisor Holdings	Hotel and flight bookings, Vacation rentals, Table reservations, Guidebooks
Priceline.com	Subsidiary	1997	Norwalk, Connecticut, US	Booking Holdings	Online travel agency
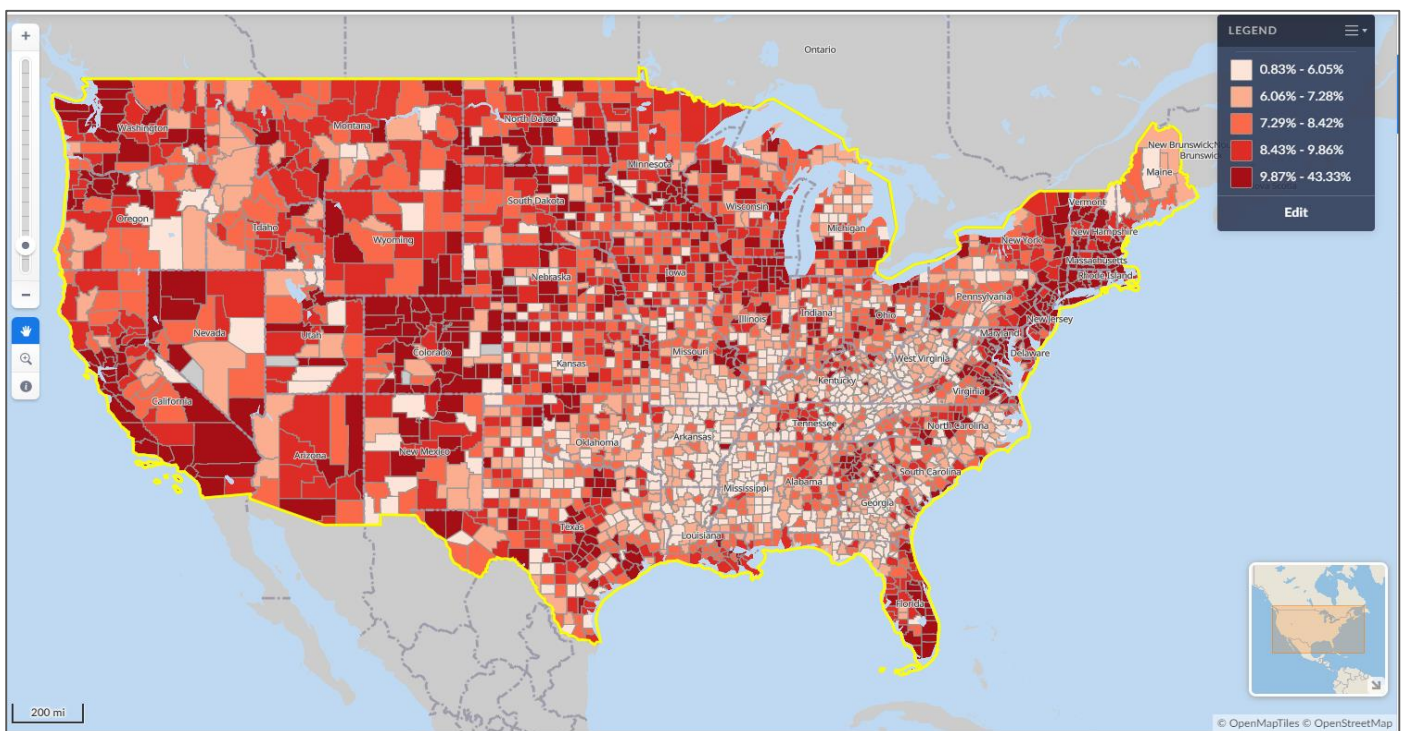
Fig. 1. Map of Expedia.com usage across U.S. counties in 2019. (*Source*: simplyanalytics.com)

According to the previous literature, socodemographics play a significant role in shaping consumer information searching behavior (Asgher & Saleem, 2021; Parmer et al., 2021). Our independent variables consisted of the following sociodemographic factors: median age (*Lnmedian_age*), educational attainment (*Bachelor*), housing tenure (*Owner_occupied*), household composition (*Family_household*), and ethnicity (*Hispanic*, *White*, *African_american*, *American_indian*, and *Asian_american*). In terms of economic factors, we measured median household annual income in the focal county (*Lnmedian_income*); for Internet usage, we evaluated the percentage of Internet users (*Internet*). Past empirical studies highlighted that travel frequency/expertise helps explain tourist online behavior (Park et al., 2019). As a result, two variables were included to assess travel experience: percentage of the population that had traveled internationally in the past 3 years (*Foreign_travel*) and percentage of the population that had traveled domestically in the past 12 months (*Domestic_travel*). Sociodemographic and economic factors were collected from the American Community Survey 2019, while Internet and travel factors were drawn from SimmonsLOCAL Fall 2019. We checked for potential multi-collinearity issues among independent variables. The variance inflation factors did not suggest relevant concerns in this dataset.

4. Empirical Results

We conduct the empirical analysis using STATA. Table 3 displays the estimation results of regression models using the proposed independent variables for each dependent variable. With regard to the goodness of fit across the eight models, Model 2 had the highest R^2 and adjusted R^2 values, followed by Model 4. The independent variables thus demonstrated high explanatory power in explicating people's usage of Expedia.com and Kayak.com, respectively. All models had an adjusted R^2 value larger than 0.20, demonstrating adequate explanatory power for a regression with more than 3,000 observations.

Table 3. Estimation results of regression models

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
	Booking.com	Expedia.com	Hotels.com	Kayak.com	Orbitz.com	Travelocity.com	TripAdvisor.com	Priceline.com
Lnmedian_age	0.000113	0.00922**	0.00123	0.00342	0.00340*	0.00574**	0.00715***	0.00315
	(0.003)	(0.004)	(0.004)	(0.002)	(0.002)	(0.002)	(0.003)	(0.002)
Bachelor	0.00900	0.0625***	-0.000678	0.0286***	0.0173***	0.0243***	0.0430***	0.00454
	(0.007)	(0.008)	(0.008)	(0.005)	(0.005)	(0.004)	(0.006)	(0.004)
Owner_occupied	-0.00744	-0.000966	-0.00865	-0.0133***	-0.00810**	0.00000673	-0.00608	-0.00545
	(0.006)	(0.007)	(0.007)	(0.004)	(0.004)	(0.005)	(0.005)	(0.004)
Family_household	0.0159*	-0.00839	0.0210	-0.0146***	0.0160**	0.00906	0.00860	-0.000467
	(0.009)	(0.013)	(0.013)	(0.005)	(0.007)	(0.010)	(0.007)	(0.007)
Hispanic	0.0253***	0.0176***	0.0104**	0.0103***	0.0124***	0.00700*	0.00336	0.0160***
	(0.004)	(0.005)	(0.005)	(0.003)	(0.003)	(0.004)	(0.003)	(0.003)
White	-0.00503	-0.00916	-0.00106	-0.00816*	0.00266	-0.00418	-0.00504	-0.00110
	(0.009)	(0.009)	(0.007)	(0.005)	(0.004)	(0.005)	(0.007)	(0.006)
African_american	0.0214**	-0.000108	0.0405***	-0.0110**	0.0184***	0.00978*	-0.00331	0.0106*
	(0.009)	(0.009)	(0.007)	(0.005)	(0.005)	(0.006)	(0.007)	(0.006)
American_indian	0.0348***	0.00699	0.0231**	0.00451	0.0180***	0.00214	-0.00266	-0.00346
	(0.012)	(0.011)	(0.011)	(0.006)	(0.006)	(0.007)	(0.009)	(0.007)
Asian_american	0.0160	0.0482**	0.0354**	0.0252**	0.0368***	0.00156	0.0339**	0.0152
	(0.017)	(0.021)	(0.016)	(0.012)	(0.010)	(0.012)	(0.014)	(0.012)
Lnmedian_income	0.00438	0.0177***	0.00191	0.00765***	-0.00291	0.00237	0.00407*	0.00540***
	(0.003)	(0.004)	(0.004)	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)
Internet	0.0705***	0.117***	0.0912***	0.0720***	0.0482***	0.0547***	0.0910***	0.0559***
	(0.015)	(0.018)	(0.015)	(0.008)	(0.010)	(0.010)	(0.013)	(0.008)
Foreign_travel	0.0619***	0.112***	0.0765***	0.0468***	0.0205*	0.0615***	0.0719***	0.0360***
	(0.014)	(0.019)	(0.019)	(0.009)	(0.011)	(0.014)	(0.010)	(0.011)
Domestic_travel	-0.00395	0.0205**	0.0315***	0.00460	0.00554	0.00787	0.00384	0.00762
	(0.009)	(0.009)	(0.009)	(0.006)	(0.005)	(0.005)	(0.006)	(0.005)
Constant	-0.0848***	-0.309***	-0.109***	-0.128***	-0.0278	-0.0954***	-0.140***	-0.104***
	(0.029)	(0.034)	(0.032)	(0.019)	(0.017)	(0.022)	(0.024)	(0.020)
N	3120	3118	3116	3098	3073	3103	3110	3094
R-sq	0.247	0.512	0.284	0.439	0.195	0.271	0.382	0.223
adj. R-sq	0.244	0.510	0.281	0.437	0.191	0.268	0.380	0.220

Notes: (1) *, **, *** indicate significance at the 10%, 5%, and 1% level, respectively. (2) Robust standard errors are presented in parentheses.

When considering sociodemographic factors, *Lnmedian_age* was estimated to be positive and significant in four of the eight regression models. The largest coefficient appeared under Model 2 for Expedia.com, followed by Model 7 for TripAdvisor.com. Both websites were especially popular among senior-aged users. For educational attainment, *Bachelor* was estimated to be significant in five of the eight models. Demand for Expedia.com (Model 2) and TripAdvisor.com (Model 7) was greater in regions with higher educational attainment. Housing tenure (*Owner_occupied*) was negative and significant in two models, Kayak.com (Model 4) and Orbitz.com (Model 5); that is, the demand for these two websites was lower in areas with more owner-occupied housing units. *Family_household* was positive and significant in Models 1 and 5 but was negative and significant in Model 4. Demand for Booking.com and Orbitz.com was accordingly higher in regions with more family households, whereas demand for Kayak.com was lower in these regions. Ethnicity variables further contextualized website usage across U.S. counties. Specifically, the coefficient of *Hispanic* was positive and significant in seven out of eight models,

with the largest coefficient in Model 1. Booking.com was hence found to be popular in regions with a larger Hispanic population. *White* was estimated to be significant in only one model, suggesting its limited explanatory power for travel website usage. *African_american* was estimated to be positive and significant in five models and negative and significant in one model. As such, regions with a higher African American concentration preferred Hotels.com most, followed by Booking.com; demand for Kayak.com was lower than for other travel websites. The other two ethnicity variables, *American_indian* and *Asian_american*, were positive and significant in some models. As gauged by the magnitude of estimated coefficients, the concentration of the American Indian population had the most pronounced impact on demand for Booking.com. By contrast, the concentration of Asians affected the demand for Expedia.com most prevalently.

Turning to economic factors, *Lnmedian_income* was estimated to be positive and significant in four out of eight models, with the demand for Expedia.com seeming the most income-sensitive. Internet use factors showed that *Internet* was positive and

significant in all eight regression models. Regarding the last category, travel factors, the estimated coefficient of *Foreign_travel* was positive and significant in all eight regression models; the largest coefficient accompanied Model 2 for Expedia.com. The other travel factor, *Domestic_travel*, was positive and significant in only two models—Model 2 for Expedia.com and Model 3 for Hotels.com—with the second being larger.

To better compare the results of different regressions, we conducted multi-dimensional scaling (MDS) based on the estimated coefficients for eight websites. MDS is a multivariate statistical tool that situates dissimilarities between observations from a high-dimensional space within a lower-dimensional space (StataCorp, 2019). In tourism, MDS has been applied to evaluate tourism firms' environmental and financial performance (Jackson et al., 2015) and destination competitiveness (Leung & Baloglu, 2013). We employed the modern MDS method with Procrustes rotation toward a classic solution as the normalization method (StataCorp, 2019). Results are illustrated in Figure 2. As shown in the graph, Expedia.com and Hotels.com are relatively distant from the others. Table 3 indicates that the demand for Expedia.com was driven more by age, education background, income, and foreign travel history, whereas the demand for Hotels.com was generated more by the African American population and domestic travel history.
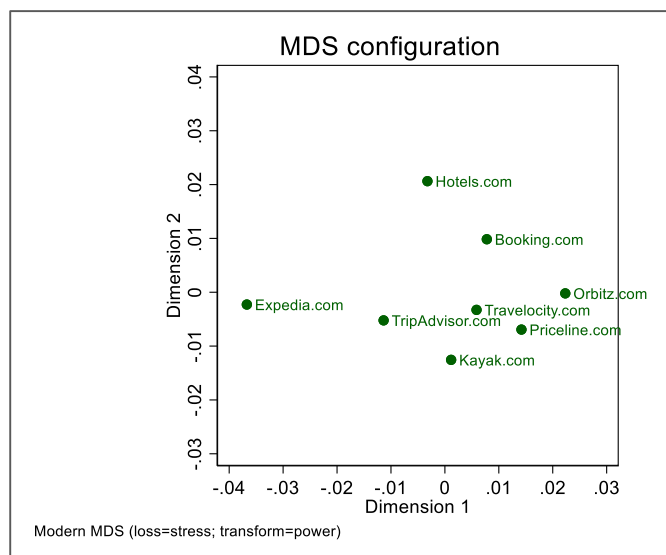

Fig. 2. Results of multidimensional scaling

5. Conclusion and Implications

Using unique data from 3,120 U.S. counties, we empirically investigated factors explaining the demand for eight major travel websites in 2019. Four categories of determinants were identified, including sociodemographic factors (e.g., age, educational attainment, housing tenure, household composition, and ethnicity), economic factors (e.g., income), Internet use factors (e.g., Internet penetration), and travel factors (e.g., foreign and domestic travel history). These aspects were found to explain demand for the selected travel websites. We also noticed disparities in these determinants across websites. Notably, regions with a higher African American concentration preferred Hotels.com most, followed by Booking.com; however, their demand for Kayak.com was lower compared with other travel websites. Variation was also observed in the estimated demand function of the top three websites: Expedia.com, Hotels.com, and Booking.com. For example, demand for Expedia.com was largely inspired by age, education background, income, and foreign travel history; that for Hotels.com was driven more by the African American population and domestic travel history. Regarding Booking.com, demand was largely stimulated by the concentration of the Hispanic population.

This research represents one of the first empirical attempts to investigate the aggregate demand of travel websites and to compare demand-based differences across websites using a nationally representative sample. These findings clarify users' travel website preferences (Xiang et al., 2017). Several categories were identified as determinants, further unearthing the mechanism behind website demand growth. Results facilitate our understanding of multi-channel distribution within the travel and tourism industry (Yang & Leung, 2018). Moreover, we leveraged MDS to compare the estimated regression results. The outcomes provide a concise, intuitive way to unpack the nuances in regression results based on estimated coefficients.

This paper presents several practical implications. Specific geo-fenced marketing strategies, such as digital advertisements and TV advertisements, can be crafted by identifying website demand determinants associated with a given region to promote travel websites (Tussyadiah, 2012). Furthermore, our results offer a deeper understanding of the potential effectiveness of multi-channel distribution strategies and hotel online reputation management across platforms (Teresa Borges-Tiago et al., 2021). Hoteliers can allocate their resources strategically depending on the market segments they wish to target. Last but not least, our work extends the ongoing conversation about correcting potential biases in online review scores across review platforms. In addition to negativity bias (Hu & Yang, 2021), (non-)response bias (Song et al., 2019), and scaling heterogeneity (Leung & Yang, 2020), we recognized demand heterogeneity across travel websites—which also serve as review platforms—when interpreting online review scores. Algorithms can be constructed based on our estimated demand function to mitigate this demand heterogeneity and render review scores more comparable and reliable across sources.

Some limitations should be noted in this research. First and foremost, we referred to cross-sectional data at a particular time point without investigating dynamic changes in factors over the year. We recommend a more comprehensive analysis through a longitudinal design to scrutinize the time-varying impacts of demand factors. Second, data were aggregated at the county level; some results might not be generalizable to the individual level. We call for additional micro-econometric analysis of travel website demand based on individual data. Lastly, information about the intensity of website use was unavailable, including website use duration and actual booking or reviewing behavior (Plaza, 2011). Subsequent studies should gather more detailed data to thoroughly encapsulate the demand for travel websites.

Declaration of competing interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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