A Cross-Sectional Survey of Risky Travel and Leisure Behaviors During the COVID-19 Pandemic

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Abstract

Purpose: COVID-19 is largely spread through close contact with infected people in indoor spaces. Avoiding these spaces is one of the most effective ways to slow the spread. This study assessed who had engaged in risky travel and leisure behaviors before the availability of vaccines.

Design: National cross-sectional on-line survey collected in November and December 2020. Setting: United States; Participants: 2589 adults representative by gender and race/ethnicity to the US population; Measures: The survey assessed if people had resumed 11 risky behaviors during the pandemic, prior to vaccines. Independent variables included age, race/ethnicity, region of the country, education, income, preexisting conditions, perceived severity and susceptibility, positive COVID diagnosis, and political ideology.

Analysis: Univariate analysis and logistic regressions were used to assess demographic and psychological factors of those resuming these behaviors. Results: Most (60.3%) of people had resumed at least 1 behavior with eating inside of restaurants (33.2%) and visiting family and friends (37.5%) being the most prevalent. In the multivariate analyses, perceived susceptibility was significant across all behaviors. Young people, fiscal conservatives, and people with higher perceived severity were more likely to perform several of the behaviors. Preexisting conditions did not predict any of the behaviors.

Conclusions: Travel and leisure behaviors vary by type of risk and may need specific tailored, prevention messages to promote risk reduction during future pandemics.

Keywords
COVID-19, pandemics, leisure, logistic regressions, United States, Health Belief Model

WHAT DO WE ALREADY KNOW ABOUT THIS TOPIC?

The COVID-19 pandemic has caused millions of infections in the United States and over half a million deaths. Risky behaviors including eating indoors at a restaurant, eating or drinking indoors at a bar, taking a flight, staying in a hotel, and visiting family and friends by car were commonplace with spikes occurring in COVID-19 cases in July 2020 and October 2020 through December 2020.

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HOW DOES YOUR RESEARCH CONTRIBUTE TO THE FIELD?

The analyses reveal what types of people were more likely to perform a variety of risky travel and leisure behaviors during the COVID-19 pandemic and prior to the availability of vaccines.

WHAT ARE YOUR RESEARCH'S IMPLICATIONS TOWARDS THEORY, PRACTICE, OR POLICY?

Travel and leisure behaviors vary by type of risk and may need specific tailored, prevention messages to promote risk reduction during future pandemics.

Purpose

The COVID-19 pandemic has caused millions of infections in the United States and over half a million deaths.[1] Early in the pandemic, strong evidence emerged that COVID-19 was mainly spread through droplets and airborne particles.[2] In response to this emerging evidence, the Centers for Disease Control and Prevention recommended avoiding indoor bars and restaurants as well as stopping travelling.[3] In March and April, most states closed in-person businesses including bars and restaurants. However, by the summer, many states allowed these businesses to reopen.[4] Relatedly, messaging about the severity of the disease from state and federal government authorities was mixed and largely based on political party.[5] While many people stayed home and avoided crowded areas, many people did not. Risky behaviors including eating indoors at a restaurant, eating or drinking indoors at a bar, taking a flight, staying in a hotel, and visiting family and friends by car were commonplace with spikes occurring in COVID-19 cases in July 2020 and October 2020 through December 2020.[1] As vaccines became widespread in high-income countries during the interpandemic phase, lessons were learned that can be applied to the next pandemic. Given the speed of global transmission of COVID-19, there is an urgent need to understand the myriad of risky travel and leisure behaviors to inform messaging and public health recommendations in the event of a future pandemic.

Perceived Susceptibility and Perceived Severity

The Health Belief Model (HBM) is a framework that "has been one of the most widely used conceptual frameworks in health behavior research, both to explain change and maintenance of health-related behaviors and as a guiding framework for interventions."[6] The HBM consists of the following constructs: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, self-efficacy to engage in a behavior, and cues to action. Since the target behavior was not engaging in travel and leisure behaviors verses engaging in these behaviors, the research team felt that perceived susceptibility and perceived severity were the most relevant constructs where cues to action were ubiquitous, benefits and behaviors were travel and leisure behavior specific and self-efficacy was less relevent.[7] Perceived susceptibility refers to an individual's beliefs about their vulnerability to infection while perceived severity refers to one's beliefs about the degree of seriousness of the disease and potential health effects from contracting an infection.[7-9] Prior studies have evidenced that both perceived susceptibility and perceived severity are strongly related to preventing the spread of infectious disease.[10] Further, Manika and Golden[11] identified that perceived threat strongly influences disease prevention behaviors during a pandemic. In the current context of COVID-19 risk, there is a strong possibility that susceptibility to the infection and severity of symptoms would be significant predictors of travel and leisure behaviors during to the pandemic.

Political Ideology

Since the start of the COVID-19 pandemic, political parties and media outlets were politically polarized on how to stop the spread of infection.[5] Both at the Federal and State level, business openings, messaging about the severity of illness, and need for protective behaviors differed by political party. Specifically, Democrats emphasized the threat of the virus[12] and the potential benefits of restrictions including travel and leisure behavior[13,14] while Republicans focused on the potential cost of broad restrictions on the economy and other factors.[15] The United States President continually compared COVID-19 to common influenzas and downplayed the spread of the disease, potentially reducing perceived susceptibility and perceived severity in politically aligned individuals.[16] As early as March 2020, individuals who identified as Democrats or leaned Democrat were significantly more likely to support COVID-19 restrictions policies than Republicans.[17]

Increased Risk of COVID-19

COVID-19 infections, hospitalizations, and deaths were not evenly distributed in the US population. Black and Hispanic communities were infected at higher rates and had excess mortality rates.[18,19] People with several preexisting conditions experienced more severe cases of COVID-19. These conditions included obesity, diabetes, asthma, chronic obstructive pulmonary disease (COPD), and hypertension.[20] Since many COVID-19 restrictions were implemented at the state and local level, state of residence and rurality of

residence were also related to the likelihood of contracting COVID and being able to access high quality medical care.

The goal of this study was to assess the interplay of factors including perceived susceptibility, perceived severity, fiscal and social political ideology, risk factors for COVID-19, and demographics with performing travel and leisure activities (eg, eating inside of a restaurant and taking a flight) during the COVID-19 pandemic, prior to the availability of vaccines.

Methods

Design and Sample

The sample for the study was acquired through a panel from Qualtrics of US adult residents aged 18 or older. Respondents included in Qualtrics' database were self-selected to be part the present study. To minimize self-selection bias, Qualtrics sends a survey link to its panel members so that respondents participate in the survey without knowing the nature of the survey beforehand, effectively facilitating a more random sampling procedure. Furthermore, Qualtrics engineers requests to complete surveys that enable better targeting, and randomly assigns respondents to a survey that they will likely qualify for based on certain responses. This helps further minimize self-selection bias and ensures that non-response is more of a random event vs a systematic event, compared to other sampling platforms.[21] Data collection was completed over a six-day period and respondents were stratified by age, gender, and region within the US to obtain a representative sample. On average, the survey took 20.8 minutes to complete. Data were collected between November 18 and December 11, 2020, prior to public availability of vaccines. Participants were presented with an informed consent informational sheet prior to receiving the survey. All study procedures were conducted according to the World Medical Association Declaration of Helsinki and conform to the ICMJE Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals. All study procedures were approved by the Texas A&M University Institutional Review Board (protocol #IRB2020-1057M).

Measures

Travel and Leisure Behaviors. Participants were asked when they would resume performing 11 different travel and leisure activities. These behaviors included 1. Eating inside of a restaurant; 2. Eating or drinking inside of a bar; 3. Staying at a hotel; 4. Taking a flight; 5. Attending a concert or large social event; 6. Visiting family and friends by car; 7. Going on a cruise; 8. Visiting a theme park; 9. Attending a large sporting event; 10. Going to a museum; and 11. Riding on a bus or a shuttle. Responses included "already have" as well as winter 2020–2021, spring 2021, summer 2021, later and

only when I have had a COVID-19 vaccine. For the purpose of this study, participants who reported having already resumed these activities were coded as yes and the rest were coded as no.

Perceived Susceptibility and Severity. Five items measuring perceived susceptibility (eg, The chances that I would get COVID-19 from travel are great; $\alpha = .78$) and perceived severity (eg, The flu is worse that COVID-19; $\alpha = .78$) were adapted to the context of travel and COVID-19 from the Arthritis Health Belief Scale[22] and the AIDS Health Belief Scale.[23]

Political Ideology. Political ideology was measured by two questions: "When it comes to social (fiscal) issues, which of the following would best describe you?" Responses were on a 5 point Likert scale from -2 very liberal to $+2$ very conservative.[24] Both questions were used independently in the analysis.

Demographic Variables. Demographic variables included age, gender, education, income, race/ethnicity, region of the country, rurality, height, weight, and having been diagnosed with a chronic health condition that increases the risk of COVID (ie, hypertension, diabetes, COPD, and asthma).

Analyses

The prevalence of each of the travel and leisure behaviors was assessed first. Those with an adequate number of people performing the behavior (>10%) were selected for further analysis. T-tests and chi-squared analysis were used to assess bivariate relationships between the leisure behavior and demographics, COVID-19 risk factors, perceived susceptibility and severity, and political ideology. Variables that were significant in the bivariate analysis were then selected for inclusion in logistic regressions.

Results

Sample Characteristics

A total of 2589 responses from individuals in the US were collected. Respondents ranged in age from 18-93 with a mean of 46.0 (sd = 18.3). Females (53.1%) were slightly more likely to participate. The sample was ethnically diverse with 62.7% White, non-Hispanic, 17.2% Hispanic, 11.4% Black, non-Hispanic, and 8.7% other. Respondents resided in all 50 states and came from the Northeast (17.2%), South (38.4%), Mid-West (21.3%), and West (23.1%). Participants lived in urban (38.3%), suburban (42.1%), and rural (19.6%) areas.

Most of the participants were either overweight (31.5%) or obese (28.8%). About half of the participants had a college degree (51.3%) and most (58.2%) made less than US$60,000 a year.

Overall, 39.7% of the population had performed none of the behaviors and 17.5% had performed four or more. Visiting family and friends by car (37.5%) was the most common behavior followed by eating inside of a restaurant (33.2%), staying at a hotel (25.1%), drinking or eating inside of a bar (19.8%), taking a flight (15.1%), and riding on a bus or shuttle (14.1%). All other behaviors were performed by less than 10% of the population. Table 1 displays prevalence for each of these behaviors. The six behaviors that were performed by 10% or more of the population were retained for more in-depth analysis.

Bivariate Analysis

Age was a significant predictor for all of the six behaviors except for eating in a restaurant with younger people more likely to engage in the behavior. Males were more likely to go to a bar, take a flight, or ride a shuttle or bus, while women were more likely to visit friends and family by car. Education was only significant for taking a flight where people with advanced degrees were more likely to fly. Income was significant for four of the variables but followed different non-linear patterns. White and Hispanic respondents were more likely to eat in a restaurant, while Black respondents were more likely to take a bus or shuttle. People living in the Northeast were the least likely to eat inside of a restaurant but most likely to ride on a bus or shuttle. Rural respondents were more likely to eat in a restaurant and visit friends and family by car while urban residents were more likely to take a flight or ride a bus or shuttle. Obese people were more likely to eat in a restaurant but less likely to take a flight or ride a bus or shuttle. People with hypertension were less likely to perform four of the behaviors. Asthma and COPD were not significantly related to any of the behaviors and diabetes was only related to visiting friends and family and taking a flight.

Perceived susceptibility and perceived severity were significantly related with all variables in the expected direction. Fiscal and social conservatives were more likely to visit friends and family, eat inside a restaurant and eat or drink inside of a bar. Significant independent variables ranged from six for staying in a hotel to 11 for taking a flight. Table 2 displays the bivariate results.

Logistic Regressions

All six of the logistic regressions were significant. Nagelkerke pseudo R^2 ranged from .08 to .15 across the regressions. Age was a significant predictor in all of the regressions except for eating inside of a restaurant, with younger people being more likely to perform the behavior. Males were significantly more likely to eat and drink inside of a bar and take a flight. People with a high school education or less were less likely to take a flight than someone with an advanced degree. Lower income people were less likely to take a flight or stay in a hotel than higher income people. Black respondents were less likely to eat in a restaurant or go to a bar than White respondents, while Hispanic respondents were more likely to eat inside of a restaurant. People living in the south and Midwest were more likely to go to a restaurant than people in the Northeast. However, people in the Northeast were more likely than people in the West to take a flight. People in the Northeast were more likely to take a bus or shuttle than people elsewhere in the country. Rural people were more likely than urban dwellers to visit friends and family by car and go to a restaurant. Obese people were more likely than underweight people to eat in a restaurant. There were no significant relationships between having diabetes or hypertension and any of the behaviors.

People with a high perceived susceptibility to COVID-19 were less likely to perform all six of the behaviors. Perceived severity was only related to going to a bar or taking a flight. Fiscal conservatives were more likely to visit friends and

Table 1. Prevalence of Travel and Leisure Behaviors during the COVID-19 Pandemic (n = 2589).

Approximately, when will you resume the following behaviors?	Already have (%)
Eating inside at a restaurant	33.2
Drinking or eating inside at a bar	19.8
Staying at a hotel	25.1
Taking a flight	15.1
Attend concerts/large social events	7.9
Visit family and friends by car	37.5
Going on a cruise	5.8
Going to a theme park	8.2
Attend a large sporting event	6.5
Going to a museum	9.3
Ride on a bus or shuttle	14.1

Table 2. Bivariate Analysis of Travel and Leisure Behaviors.

	Visiting Family and Friends by Car	Eating Inside of a Restaurant	Eating or Drinking Inside of a Bar	Staying in a Hotel	Taking a Flight	Riding a Shuttle or Bus
	M(sd) or % performing the behavior	M(sd) or % performing the behavior	M(sd) or % performing the behavior	M(sd) or % performing the behavior	M(sd) or % performing the behavior	M(sd) or % performing the behavior
Age (p <)	.01	n.s.	.001	.001	.001	.001
Yes	44.8 (17.9)	46.8 (18.4)	42.1 (16.6)	41.9 (17.0)	39.0 (15.0)	39.1 (14.8)
No	46.8 (18.5)	45.6 (18.3)	46.8 (18.5)	47.4 (18.5)	47.2 (18.5)	47.1 (18.6)
Gender (p <)	.05	n.s.	.05	n.s.	.001	.01
Female	39.6	34.6	18.1	25.4	11.5	12.3
Male	35.1	31.8	21.6	24.3	19.3	16.1
Education (p <)	n.s.	n.s.	n.s.	n.s.	.001	n.s.
High school or less	37.8	32.1	18.9	22.5	10.0	13.9
Some college	38.7	36.6	20.2	25.7	13.3	13.9
College graduate	40.0	34.4	19.2	24.2	14.8	12.2
Advanced degree	32.9	29.5	20.9	28.5	22.7	16.7
Income (p <)	.05	.01	n.s.	.01	.001	n.s.
<US$30,000	37.0	30.5	17.0	20.6	10.5	15.0
US$30,000–US$59,999	42.4	38.2	20.5	27.3	12.5	12.4
US$60,000–US$89,999	34.5	33.4	20.0	24.3	15.1	11.8
US$90,000+	34.9	31.1	22.2	28.9	23.4	16.3
Race/ethnicity	n.s.	.01	.01	.01	n.s.	.001
White	36.7	34.9	18.7	23.3	14.0	12.5
Black	38.4	24.9	19.5	30.0	15.4	21.2
Hispanic	39.3	33.9	22.8	27.2	18.2	16.3
Region (p <)	n.s.	.001	n.s.	n.s.	.001	.001
Northeast	35.9	26.0	22.4	24.9	19.5	23.6
South	40.0	37.3	21.0	27.9	15.9	12.3
Midwest	37.5	34.2	18.6	23.6	9.2	10.5
West	34.6	30.9	16.8	22.1	15.8	13.2
Place of residence (p <)	.001	.001	n.s.	n.s.	.001	.001
Urban	33.8	28.3	20.6	26.8	20.0	18.5
Suburban	37.9	34.4	19.4	23.7	12.2	10.8
Rural	43.7	40.2	19.1	24.6	11.3	12.4
Body mass (p <)	n.s.	.05	n.s.	n.s.	.001	.01
Underweight	35.2	24.3	18.8	22.9	13.9	16.1
Normal	36.2	34.3	21.9	26.8	16.8	15.9
Overweight	38.2	35.1	17.1	22.7	12.0	10.8
Obese	41.9	36.5	19.2	24.8	8.5	10.8
Hypertension (p <)	n.s.	n.s.	.01	.01	.001	.01
Yes	36.6	33.0	16.5	21.9	11.8	11.5
No	38.2	33.2	21.5	26.9	16.9	15.6
Asthma (p <)	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Yes	38.9	29.6	20.5	28.6	16.8	15.9
No	37.5	34.1	19.5	24.4	14.6	13.7
COPD (p <)	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.

Table 2. (continued)

	Visiting Family and Friends by Car	Eating Inside of a Restaurant	Eating or Drinking Inside of a Bar	Staying in a Hotel	Taking a Flight	Riding a Shuttle or Bus
	M(sd) or % performing the behavior	M(sd) or % performing the behavior	M(sd) or % performing the behavior	M(sd) or % performing the behavior	M(sd) or % performing the behavior	M(sd) or % performing the behavior
Yes	31.7	27.4	20.3	23.1	18.4	15.6
No	38.1	33.7	19.6	25.3	14.8	14.0
Diabetes (p <)	.05	n.s.	n.s.	n.s.	.05	n.s.
Yes	32.6	31.7	17.3	24.6	18.4	14.3
No	38.8	33.7	20.3	25.4	14.8	14.1
Perceived susceptibility (p <)	.001	.001	.001	.001	.001	.001
Yes	9.3 (3.5)	9.1 (3.6)	8.6 (3.9)	9.2 (3.7)	9.4 (3.8)	9.3 (3.7)
No	10.9 (3.0)	10.9 (2.9)	10.8 (3.0)	10.7 (3.1)	10.5 (3.2)	10.5 (3.2)
Perceived severity (p <)	.001	.001	.001	.001	.001	.001
Yes	7.4 (2.3)	7.3 (2.3)	6.9 (2.5)	7.3 (2.3)	7.2 (2.3)	7.4 (2.3)
No	8.1 (1.8)	8.1 (1.8)	8.1 (1.8)	8.0 (1.9)	7.9 (2.0)	7.9 (2.0)
Fiscal ideology (p <)	.001	.001	.001	n.s.	n.s.	.01
Yes	.28 (1.24)	.40 (1.24)	.32 (1.29)	.19 (1.31)	.21 (1.40)	.17 (1.24)
No	.06 (1.25)	.02 (1.23)	.09 (1.24)	.13 (1.23)	.13 (1.22)	-.03 (1.30)
Social ideology (p <)	.001	.001	.001	n.s.	n.s.	n.s.
Yes	.20 (1.31)	.31 (1.31)	.27 (1.33)	.12 (1.34)	.15 (1.45)	-.02 (1.36)
No	-.01 (1.29)	-.05 (1.28)	.00 (1.29)	.04 (1.29)	.04 (1.27)	.07 (1.29)

family by car, eat in restaurant, and drink in a bar compared to more liberal respondents. Social ideology was not significantly related to any of the behaviors. Table 3 displays the logistic regression results.

Discussion

More than half of the study population had resumed at least one risky travel and leisure behavior. Local leisure behaviors including eating in a restaurant, going to a bar and visiting family and friends by car were the most common. Older adults were significantly less likely to engage in five of the behaviors. Since COVID-19 outcomes are much poorer for older adults, this is positive.[25] While odds ratios were quite modest (.97–.99), the mean difference was as large as 8 years for some of the behaviors. Males were more likely to go to a bar or take a flight. This is similar to many other studies which show that men are more likely to engage in risky behaviors.[26]

Unlike most risk and health behaviors, education level was only significantly related with taking a flight.[27] Even in this case, it was in the opposite direction that is typically seen with people with advanced degrees who are much more likely to take a flight than people with a high school education or less. Similarly, income was only related to taking a flight or staying

in a hotel where the lowest income group was less likely than the highest income group to engage in these behaviors. These differences may be due to socio-economic status or job demands rather than an effect of education and income and willingness to engage in risky behaviors. Black respondents were less likely to eat in a restaurant or go to a bar than White respondents. However, Hispanic respondents were more likely to eat in a restaurant. The reason for this is unclear.

Region of the country and rurality were both significant factors for some risky behaviors. People in the Northeast were less likely to eat in a restaurant and more likely to take a bus or shuttle than people in other parts of the country. This may due to closures of indoor restaurants in the Northeast and higher baseline prevalence of buses in northeastern cities. For example, Texas allowed restaurants to reopen in May 2020, while New York State did not allow indoor dining to open until February 2021.[28] People living in rural parts of the US were also more likely to eat in restaurants or go to bars than urban respondents. This is similar to findings in China where rural residents were less likely to follow COVID-19 restrictions.[29]

Despite the clear evidence that people with preexisting conditions fared worse with complications from COVID-19 than people without conditions, only a minor relationship with behaviors were seen. Asthma and COPD were not

Table 3. Logistic Regression Predicting Travel and Leisure Behaviors.

	Visiting Family and Friends by Car	Eating Inside of a Restaurant	Eating or Drinking Inside of a Bar	Staying in a Hotel	Taking a Flight	Riding a Shuttle or Bus
	$\chi^2(12) = 188.1, P < .001, R^2 = .10^1$	$\chi^2(19) = 291.9, P < .001, R^2 = .19$	$\chi^2(10) = 231.4, P < .001, R^2 = .15$	$\chi^2(15) = 136.7, P < .001, R^2 = .08$	$\chi^2(20) = 175.2, P < .001, R^2 = .15$	$\chi^2(15) = 128.1, P < .001, R^2 = .12$
	OR [95% CI]	OR [95% CI]	OR [95% CI]	OR [95% CI]	OR [95% CI]	OR [95% CI]
Age	.992 [.987–.997]*	—	.982 [.974–.989]***	.983 [.976–.990]***	.973 [.964–.982]***	.978 [.967–.988]***
Gender						
Female ref	.876 [.730–1.050]	—	1.364 [1.096–1.697]**	—	.1.467 [1.090–1.973][a]	1.125 [.844–1.500]
Education						
Advanced degree ref	—	—	—	—		—
High school or less	—	—	—	—	.449 [.275–.734]**	—
Some college	—	—	—	—	.830 [.533–1.29]	—
College graduate	—	—	—	—	.767 [.510–1.155]	—
Income						
US$90,000+ ref			—			—
< US$30,000	.922 [.722–1.177]	.774 [.572–1.047]	—	.625 [.479–.816]**	.623 [.402–.963][a]	—
US$30,000–US$59,999	1.145 [.893–1.467]	1.28 [.763–1.386]	—	.895 [.689–1.164]	.738 [.485–1.122]	—
US$60,000–US$89,999	.891 [.675–1.176]	1.086 [.774–1.523]	—	.846 [.626–1.142]	.834 [.532–1.307]	—
Race/ethnicity						
White ref	—				—	
Black	—	.597 [.420–.847]**	.654 [.450–.950]*	.897 [.644–1.247]	—	1.044 [.682–1.597]
Hispanic	—	1.347 [1.017–1.785]*	.893 [.647–1.233]	.802 [.598–1.074]	—	.675 [.442–1.030]
Other	—	.934 [.574–1.518]	1.245 [.752–2.061]	1.210 [.754–1.942]	—	.685 [.345–1.362]
Region						
Northeast ref	—		—	—		
South	—	1.716 [1.232–2.392]**	—	—	.713 [.457–1.110]	.542 [.372–.790]**
Midwest	—	1.484 [1.03–2.133][a]	—	—	.963 [.676–1.371]	.547 [.353–.848]**
West	—	1.294 [.899–1.862]	—	—	.636 [.408–.991][a]	.620 [.404–.952][a]
Place of Residence						
Rural ref			—	—		
Urban	.678 [.529–.870]*	.719 [.541–.955]*	—	—	1.13 [.744–1.720]	1.411 [.953–2.089]
Suburban	.802 [.637–1.011]	.887 [.687–1.147]	—	—	.833 [.557–1.245]	.869 [.590–1.28]
Obesity obese ref	—		—	—		
Underweight	—	.613 [.412–.912][a]	—	—	.865 [.503–1.485]	.955 [.575–1.588]
Normal	—	.779 [.597–1.016]	—	—	1.392 [.948–2.043]	1.243 [.862–1.79]
Overweight	—	.887 [.687–1.147]	—	—	.728 [.487–1.088]	.964 [.662–1.403]

(continued)

Table 3. (continued)

	Visiting Family and Friends by Car	Eating Inside of a Restaurant	Eating or Drinking Inside of a Bar	Staying in a Hotel	Taking a Flight	Riding a Shuttle or Bus
Hypertension	—	—	1.159 [.908–1.480]	1.001 [.807–1.248]	1.109 [.788–1.561]	.989 [.714–1.371]
Diabetes						
Yes ref	1.035 [.819–1.309]	—	—	—	.728 [.487–1.088]	—
Perceived susceptibility	.865 [.836–.894]**	.827 [.795–.860]***	.854 [.821–.889]***	.891 [.864–9.24]***	.883 [.837–.931]***	.876 [.833–.922]***
Perceived severity	.999 [.949–1.053]	.961 [.904–1.021]	.909 [.856–.965]**	.968 [.915–1.023]	.907 [.839–.982]**	.981 [.907–1.060]
Fiscal ideology	1.128 [1.013–1.256][a]	1.217 [1.069–1.386]**	1.161 [1.021–1.321]*	—	—	.935 [.830–1.052]
Social ideology	1.041 [.940–1.154]	1.070 [.948–1.209]	1.060 [.937–1.199]	—	—	—

$P < .05$; ** $P < .01$; *** $P < .001$ ref = reference group; 1—Nagelkerke pseudo R^2 is reported for all logistic regressions.
[a]Multivariable logistic comparing characteristics of the study respondents between those who performed a travel and leisure behavior and those that did not.

related to any of the behaviors even in the bivariate relationships. While diabetes and hypertension were significant in several bivariate analyses, they were not significant in any of the logistic regressions. Body mass index was only significant for eating inside a restaurant where obese respondents were more likely to eat inside restaurants than underweight respondents. Despite the clear increased risk to people with obesity and other preexisting conditions, the effect on behavior was minimal.[30]

The Health Belief Model was important in understanding our results. Perceived susceptibility was significant across all six of the behaviors, while perceived severity was only significant for going to bars. A review of studies published on the 2009 H1N1 pandemic found that across theoretical variables perceived susceptibility and perceived severity were the greatest predictors of protective behavior.[31] This was replicated for perceived susceptibility. For perceived severity, in the bivariate analysis, there was a consistent half a point difference between those who were engaging in the behavior and those who were not. However, the means were in the 7 to 8 range out of ten indicating that perceived severity was high across the population. This study did not assess benefits and barriers to performing each of the behaviors. This was seen as less relevant and would differ across each of the travel and leisure behaviors greatly increasing the length of the survey.

While social conservativism was not significant in the logistic regressions, fiscal conservatives were more likely to visit family and friends by car, eat inside of restaurants, and drink inside of bars than more liberal respondents. This finding is similar to cell phone data that showed Republicans were less likely to social distance during the pandemic.[32] A nationwide study early in the pandemic also showed that political affiliation was related to threat perception and government response to the pandemic.[33] A study on Twitter found strong partisan reactions to the pandemic.[34]

In conclusion, several factors were related to resuming travel and leisure behaviors during the pandemic and prior to the availability of vaccines. Some pseudo R^2 were low (<.10) indicating the other unmeasured factors also effects travel and leisure behavior. Local leisure behaviors including visiting family and friends by car, eating inside a restaurant, and eating and drinking inside a bar had similar relationship where younger people, fiscal conservatives, and people with lower perceived susceptibility were more likely to engage in the behavior. Longer distance travel behaviors (ie, taking a flight and staying in a hotel) were more related to higher socio-economic status. In preparing for future pandemics, reduction of political polarization of public health should be addressed. Messaging focusing on perceived susceptibility may be the most effective way to influence behavior.

Limitations

There are several limitations to this study. First, it was a self-administered online survey taken by paid respondents who were part of a panel. While targeting attempts to capture a sample that is representative of the general population, low-income people without internet access may be excluded. However, 30% of the sample reported less than US$30,000 in annual household income. The sample was collected based on gender and race/ethnicity matching the United States census but was not randomly sampled. Given the highly partisan election in November 2020, political ideology was collected rather than party affiliation to reduce bias. This study also did not test the entire Health Belief Model, but just two constructs perceived severity and perceived susceptibility.

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