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Glass half-full? A comprehensive PLS-SEM approach to explore the pandemic's effect on wine tourism intentions

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Abstract

Purpose – This study aims to provide a comprehensive overview on positive drivers and negative factors connected to the Covid-19 pandemic which can jointly shape wine tourism intentions.

Design/methodology/approach – The present study relies on a large sample of 399 US wine tourists. Partial least square structural equation modelling is adopted for data analysis.

Findings – Results reveal that willingness to avoid Covid risk while travelling negatively impacts wine tourism intentions and competitively mediates the effect of Covid phobia. Both situational and personal involvement with wine are key antecedents of future wine tourism intentions.

Research limitations/implications – This research contributes to understand the role of willingness to avoid travel-related risks during health crises. Furthermore, it improves existing knowledge on the effect of wine involvement on wine tourism intentions, highlighting the predictive relevance of situational involvement in explaining this relationship.

Practical implications – Results constitute critical information to practitioners and destination management operators for improving their resilience under similar circumstances. Updated information on wine tourists' profile is also provided.

Originality/value – To the best of the authors' knowledge, this is among the first studies exploring how positive and negative drivers act synergically in affecting wine tourism intentions after the Covid-19 outbreak.

Keywords Wine tourism, Consumer behaviour, PLS-SEM, Covid-19, Risk attitude, Situational involvement, USA, Wine involvement

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Introduction

The Covid-19 pandemic disrupted most of the world's economic and social systems worldwide (Villacé-Molinero *et al.*, 2021). In this context, tourism was severely affected by the combination of legal limits imposed by many governments like lockdowns, stay-at-home orders, capacity limits, non-essential business shutdowns (Chinazzi *et al.*, 2020) and consumer fear of contracting, spreading Severe Acute Respiratory Syndrome (SARS)-Cov2, or having to quarantine after potential exposures. According to the United Nations World Tourism Organization (UNWTO, 2020), no country has avoided the pandemic's economic drawbacks with a dramatic global drop in international tourism arrivals (−56% in the first six months of 2020) and a knock-on impact on tourism-related businesses and jobs. The extent of the damage is three times higher than the one caused by the 2009 economic crisis (UNWTO, 2020). Covid-19 and SARS represent the two biggest crises faced by the tourism sector (Ying *et al.*, 2021).

Before Covid-19, wine tourism was a thriving and expanding niche market (Tafel and Szolnoki, 2021; Yue *et al.*, 2019) and a vital source of income for many wineries, especially smaller ones (Koch *et al.*, 2013). In USA, the tourism gives a high contribution to the national gross domestic product (GDP). In 2019, tourism accounted for 10.4% of the national GDP, with domestic visitor spending accounting for 85% of total tourism one (World Travel and Tourism Council, 2021). In 2020, though, international and domestic spending experienced double-digit drops of 76.7% and 37.1%, respectively (World Travel and Tourism Council, 2021).

Therefore, domestic tourism flows did not compensate for the dramatic reduction of international visitors to the USA. Indeed, domestic tourism was affected by between and within-states limitations to mobility. Wine tourism was not spared, particularly in California and Oregon, wine-making states with some of the strictest anti-Covid policies (CNN, 2020). As a result, the majority of the wineries experienced a turnover decrease in wine tourism from 10% up to 80%, with most California wineries declaring a 50%–80% loss (Winetourism.com, 2020). This is concerning data since wine tourism has long been acknowledged as a strategic tool for marketing, direct sales and brand loyalty (Bruwer *et al.*, 2013; Hall *et al.*, 2009) and key for local and rural development (Cavicchi and Santini, 2014). Moreover, this phenomenon has gradually scaled and passed from being a domestic-driven market to expanding internationally (Alba and Williams, 2013).

Lockdowns have paradoxically limited people's freedom of action physically and spatially while offering more time that could be freely used to engage in other leisure activities (Gammon and Ramshaw, 2020). As in-person activities became limited, some wineries presented wine tastings as an attractive alternative to other more Covid risky activities, with tasting possible to conduct in the open air and reservations limiting the number of other customers to the tasting.

Despite the undeniable impacts of Covid-19 on the wine industry, limited research has explored how the pandemic impacted wine tourism intentions, which are known to be a vital determinant of people behaviour (Ajzen, 1991). Since the Covid-19 pandemic will have long-lasting effects on consumer behaviour, understanding how the pandemic impacts wine tourists' travel intentions could provide helpful insights to both sector stakeholders and practitioners to improve their resilience. The present study aims to fill this gap by exploring how Covid-19 affected wine tourism intentions while accounting for potentially positive and adverse effects. Finally, this study also contributes to improving comprehension of the role of risk perception in travel decisions.

Background and hypotheses development

The Covid-19 pandemic has deeply impacted tourism dynamics economically, physically and psychologically. Most of these consequences are expected to affect tourists' intentions and, consequently, their travel behaviour (Villacé-Molinero *et al.*, 2021). In line with Ajzen's theory of planned behaviour (1991), intentions are the primary antecedent of behaviour.

Bearing in mind the life-threatening nature of the illness caused by Covid-19, one of the critical aspects to consider is the impact of perceived risk and risk attitudes towards Covid-19 on tourists willingness to adjust their travel behaviour and intentions, more generally.

Although the definition of risk is fuzzy, it can be identified as a state of uncertainty implying some consequences (Hillson and Murray-Webster, 2017) . Willingness to take or avoid risks depends on how risk is perceived, leading people to evaluate expected gains and losses and adjust their risk-taking behaviour accordingly (Sarin and Weber, 1993). Individual risk perception and behaviour changes can be driven by past experiences and context-related factors such as official communications (Neuburger and Egger, 2020). Individuals adjust their risk-taking behaviour and their attitude towards perceived risk according to their evaluated trade-offs (Hillson and Murray-Webster, 2017).

Recent research pointed out how willingness to change behaviour to avoid risk exposure can affect travel intentions during pandemics (Luo and Lam, 2020). Using Zhu and Deng's risk attitude scale (2020), the authors find that greater scores for risk attitude, corresponding to a higher willingness to avoid pandemic-related risks connected to travel, negatively impact travel intentions.

In line with this, we hypothesize as follows:

H1. Willingness to avoid Covid-related wine tourism risks negatively affects future wine tourism intentions (FUTWTINT).

With the rapid spread of the Covid-19 virus, the severity of the Sars-Cov2 illness and the constant exposure to news, new infections and Covid-related deaths, individuals were exposed to an increasing state of fear and anxiety (Arpaci *et al.*, 2020). Fear and anxiety, the two constructs embodied in the concept of phobia, belong to the complex realm of emotions. As past research highlighted, emotions are connected to the so-called "now or later trade-off" when deciding to take action.

Generally, the literature highlights that rural areas tend to be perceived as safer in case of shock (Park *et al.*, 2021; Song *et al.*, 2019b). Proximity to the place of residence, a crucial driver of wine tourism (Getz and Brown, 2006), may make wine holidays "less scary" as travellers can easily reach closer wine regions by car, thus avoiding public transportation.

Nevertheless, there is evidence of Covid fear and anxiety (i.e. Covid phobia) discouraging wine tourists from making a wine trip (Gastaldello *et al.*, 2022), although to a minor extent. This result is partially consistent with Luo and Lam (2020), who recently explored the psychological consequences of Covid on tourists' behaviour towards "travel bubble" destinations, e.g. travel corridors established among countries where the pandemic is considered to be under control. In this case, the authors find a significant negative effect of Covid-related anxiety on travel intentions, while the effect of fear alone is not significant. Despite insignificant, the Covid-fear effect is positive, suggesting that destinations perceived as safer could be more attractive to scared tourists.

Since the beginning of the pandemic, several researchers have developed or adapted scales to capture these distinct emotions (i.e. fear and anxiety, like Ahorsu *et al.*, 2022). Arpaci *et al.* (2020) design and validate a diagnostic tool that embodies both Covid-related fear and anxiety: the Covid phobia scale. Specifically, the scale includes four dimensions: the *economic* dimension, focused on food and supply shortages and access, the *psychosomatic* dimension, focused on physical feelings induced by fear and anxiety (e.g. stomach aches, chest pain), the *psychological* dimension, which evaluates perceived feelings of anxiety, panic and fear, and the *social* dimension, which reflects the anxiety associated with being around other people who are potentially contagious. While the *economic* dimension does not directly apply to tourism and the *psychosomatic* reflects the presence of a pathological condition, the last two dimensions are particularly relevant for travel research. Specifically, social aspects of Covid fear and anxiety are paramount since travelling implies many uncontrolled interactions with potentially infectious people.

In light of this, we hypothesize that:

H2. Covid phobia negatively impacts FUTWTINTs.

Emotions can impact choices under risk (Haushofer and Fehr, 2014; Engelmann and Hare, 2018) and affect risk preferences (DellaVigna, 2009). Particularly, fear is associated with a lower willingness to take risks (Meier, 2022).

Luo and Lam's (2020) tourism research highlights that both fear and anxiety towards Covid amplify risk avoidance attitudes, which significantly reduce travel intentions. Similarly, Zhu and Deng (2020) find an adverse effect of risk aversion on travel intentions. In addition, Luo and Lam highlight that risk aversion fully mediates the effect of Covid-19 fear on travel intention while having a partial control on Covid-related anxiety. According to the authors' findings, risk attitude governs the negative relationship between fear-anxiety and respondent's travel intentions while being enhanced by the latters. Since Covid phobia embodies both fear and anxiety, we expect Covid phobia to amplify the willingness to avoid Covid-related risks in wine tourism while mediating Covid phobia's effect on FUTWTINTs. We then formulate the following hypothesis:

H3. Willingness to avoid Covid-related wine tourism risks mediates the relationship between Covid phobia and FUTWTINTs, producing a complementary mediation.

The pandemic may have paradoxically produced some positive effects for wine tourism. Although lockdowns and home confinement physically limited people's freedom, they have also provided an unoccupied time that individuals spend on out of reach activities (Gammon and Ramshaw, 2020). Not surprisingly, social media and online shopping use have increased significantly after the Covid-19 pandemic (UNCTAD, 2020). Wine tourism destinations have adapted to these profound changes by implementing delivery services and offering wine-related online content such as online wine tastings (Szolnoki *et al.*, 2021). In the context created by the Covid pandemic, wine tourists, who are acknowledged to possess a degree of personal involvement (PI) in wine, have plausibly dedicated their newly found free lockdown time to further engage with the product also through this new offer. Statistics on US wine consumption support this hypothesis since per-capita wine consumption increased by 6.2% in 2020 respect to 2019, despite Covid-restrictions (Wine Institute, 2021)

This strengthened interest in wine during the lockdown could result in a situational involvement (SI) that may have fuelled the intention to visit a wine region in the near future (Hong *et al.*, 2014). Coherently, situational involvement reflects a temporary state of heightened involvement triggered by a specific stimulus or situation (Rothschild, 1984) which in this case corresponds to the lockdowns.

According to this definition, SI is, therefore, likely to be driven by, and to happen in the presence of, a pre-existing PI with wine. Accordingly, PI (also called ego-involvement) reflects the importance of an object or service to an individual (Zaichkowsky, 1985). Among the several types of involvement, PI is permanent and long-lasting (Laurent and Kapferer, 1985; Sparks, 2007; Ogbeide and Bruwer, 2013; Brown *et al.*, 2007). Coherently, it is widely acknowledged as an essential positive antecedent for wine tourism (Sparks, 2007; Brown *et al.*, 2007; Getz and Carlsen, 2008; Nella and Christou, 2014).

Past research found SI to mediate effect PI on flow during leisure activities (Havitz and Mannell, 2005), to foster memorability (Campos *et al.*, 2017), and to promote satisfaction (Li *et al.*, 2019b). Still, the effect of SI on future travel intentions is rather unexplored.

Thus, we expect PI with wine to impact intentions directly, in line with extant literature. Similarly, SI is likely to push wine tourists to dedicate their leisure time to wine during Covid-related isolation periods, boosting their interest in wine and intention to go on a wine holiday. This acquired wine interest (AQWINT) during lockdowns, acting as a form of SI, will also mediate the effect of PI on wine travel intentions. Accordingly, we test the following hypotheses:

H4. PI with wine positively affects FUTWTINTs.

H5. AQWINT during lockdowns positively affects FUTWTINTs.

H6. AQWINT during lockdowns mediates the relationship between personal wine involvement (WI) and FUTWTINTs, producing a complementary mediation.

Beyond these hypotheses, we expect economic hardship from the pandemic to limit the budget (red_trav$) and the time (red_travtTIME) for wine tourism. Many people have lost their jobs, resulting in a severe employment reduction (BBC, 2020; BBC, 2021) while worsening family income. People who did not lose their jobs experienced higher pressure and workloads, increasing the number of hours worked per day (The Guardian, 2021). Before Covid-19, Americans worked more hours per week than other countries (Bick *et al.*, 2019) and hardly used their assigned day-offs (Robert Wood Johnson Foundation and Harvard School of Public Health, 2016). In line with these observations, we postulate as follows:

H7. A reduction of the budget available to travel negatively impacts FUTWTINTs.

H8. A reduction of the time available to travel negatively impacts FUTWTINTs.

Overall, the key objective of this study is to provide a comprehensive view of the effects of the pandemic on wine tourism by modelling positive and negative effects together. The set of chosen hypotheses focuses on pandemic-associated risks, attitudes and changes in wine tourism patterns. The section below discusses the specific survey constructs and scales used for hypothesis modelling and testing.

Materials and methods

Data collection and survey structure

Data for the present study was collected through an online survey with a large set of US wine tourists ($N = 399$).[AQ5] Respondents were recruited by the survey agency Qualtrics, which maintains a large US pool of survey participants, nationally representative as age, gender, income and area of residence. Specifically, participants who have either visited a wine region and/or attended a wine festival at least once before (in line with O'Neill and Palmer, 2004), over 21 and residing in one of the two large US wine production and wine tourism regions (Oregon and California), were invited to participate in the survey. Data collection started on 20 June, 2021 and lasted one month. Out of our recruited sample, 201 wine tourists resided in California, while 198 were from Oregon. These two wine regions were chosen due to their geographical proximity and similarity in Covid restrictions at the time of data collection, given the budget availability.

Survey instrument

The survey includes three sections: Section 1 consists of all the scales used for partial least square structural equation modelling (PLS-SEM) modelling and hypotheses testing, Section 2 addresses pre-Covid wine tourism patterns and any related changes and Section 3 elicits socio-demographic information. The variables in Section 2 capture the location of the wine regions visited before Covid, the usual length of stay, accommodation preferences and travel habits in the past.

The socio-demographic section (Section 3) collects respondents' general characteristics of interest. The household economic situation is captured through descriptive sentences adapted from the Eurostat survey on living conditions, adding one level to record the wealthier populations. An examples of the levels used is: "My monthly household income usually allowed me to cover expenses, save part of it and satisfy most of my/our desires" for good income. Household composition questions, education levels, Covid vaccination status, location, gender and age of the respondent are also collected.

For section 1 scales, we adapted the original Covid-phobia scale developed by Arpaci *et al.* (2020) to include the two dimensions hypothesized to be relevant for the wine tourism context: the social and psychological dimensions. Three items are further selected for each dimension based on their relevance and applicability to the study, and were adapted to fit the research context. The final six-item scale includes the items reported in Table 1.

The willingness to avoid Covid-related wine tourism risks is measured through a travel-risk attitude scale adapted from Zhu and Deng (2020; see Table 1). Zhu and Deng (2020) scale is selected since it has been designed for tourism applications. For this scale, higher scores represent a lower tolerance for Covid-related risks connected to wine holidays.

FUTWTINTs were captured through a single item adapted from Sparks (2007): "Considering COVID-19 mobility restrictions, I am very likely to plan a trip to a wine region in the next 12 months". We chose to measure intentions with a single item to reduce the length of the survey. This choice is rigorously implemented according to the methodological guidelines for SEM analysis (Hair *et al.*, 2020; Petrescu, 2013), and is supported by the high homogeneity among items emerged in past research using multi-item constructs to capture travel intentions (Zenker *et al.*, 2019)

WI scale is adapted from Brown *et al.* (2007; WI = 14 items). Brown *et al.*'s scale is deemed the most appropriate for the study as it is explicitly developed for wine-related travel. The AQWINT in lockdowns, measured as 5-item scale and representing SI with wine induced by Covid, is adapted from Gastaldello *et al.* (2022). An example if the items included is: "While in lockdown, I deepened my knowledge about wine" (Table 1).

All the scales discussed above rely on seven-point Likert scales (from 1 – *strongly disagree* to 7 – *strongly agree*).

Finally, Section 1 captured information on Covid-related economic constraints to wine tourism through the following questions:

Q1. Has the time you plan to spend on travel changed following the Covid pandemic?

Q2. Has the budget you plan to spend on travel changed following the Covid pandemic?

Economic constraints are proposed as multiple-choice questions with three answer options: *reduced*, *unchanged* and *increased*.

The survey scales used for PLS-SEM modelling are summarized in Table 1.

Quantitative methods

As a preliminary data analysis step, we performed an exploratory factor analysis (EFA) on all scales using IBM SPSS 27. EFA is helpful in identifying the underlying structure of

Scale	Item description	Item coding
Covid Phobia (CPH)	The fear of coming down with coronavirus makes me very anxious	*CPH1*
	I am extremely afraid that by traveling me/ my family might become infected by the coronavirus	*CPH2*
	News about coronavirus-related deaths causes me great anxiety	*CPH3*
	After the coronavirus pandemic, I feel extremely anxious when I see people coughing	*CPH4*
	The idea of traveling with big groups of people (e.g. by train or plane) makes me anxious	*CPH5*
	The fear of coming down with coronavirus seriously impedes my social relationships	*CPH6*
Willingness to avoid Covid-related wine tourism risks (RISKAVOID)	Due to the risks connected with the Covid pandemic, I cannot accept going to travel to a wine region with family and friends	*RAV1*
	Due to the risks connected with the Covid pandemic, I cannot accept that local friends and relatives travel to wine regions	*RAV2*
	I will avoid eating with local friends and relatives after their trip to a wine region	*RAV3*
Involvement with wine (WI)	I like to purchase wine to match the occasion	*WI1*
	Many of my friends share my interest in wine	*WI2*
	Deciding which wine to buy is an important decision	*WI3*
	I like to gain the health benefits associated with drinking wine	*WI4*
	For me, drinking wine is a particularly pleasurable experience	*WI5*
	I wish to learn more about wine	*WI6*
	I have a strong interest in wine	*WI7*
	My interest in wine has been very rewarding	*WI8*
	My interest in wine makes me want to visit wine regions	*WI9*
	I am knowledgeable about wine	*WI10*
	People come to me for advice about wine	*WI11*
	Much of my leisure time is devoted to wine-related activities	*WI12*
	I have invested a great deal in my interest in wine	*WI13 (dropped)*
	Wine represents a central life interest for me	*WI14*
Acquired Wine Interest in lockdown (AQWINT)	While in lockdown, deepened my knowledge about wine	*AQWI1*
	I feel that during lockdown(s), I became more passionate about wine	*AQWI2*
	While in lockdown, I watched and/or read online content (e.g. YouTube videos, blogs) and/or documentaries about wine	*AQWI3*
	While in lockdown, I started following profiles of wineries/wine experts on social media	*AQWI4*
	While in lockdown, I started looking for more information about the wines I want to purchase	*AQWI5*

Table 1.
Description of the survey scales included in the PLS-SEM model

relationships between the measured variables in the survey instrument. In line with Ye *et al.* (2017), we run an EFA prior to SEM as our study includes originally multidimensional scales (i.e. involvement with wine and covid phobia). EFA is performed with principal axis factor analysis and oblique rotation, the recommended method for behavioural studies where correlation among items is expected (Sparks, 2007). The decision on the factors retained for the analysis is based on the results of the EFA, discussed in the results section of the paper.

Alike other authors (Rahman *et al.*, 2021; Zatori *et al.*, 2018), we apply PLS-SEM. PLS-SEM is an advanced non-parametric, variance-based technique for multivariate data analysis. Although it is still less common than the widely applied covariance-based structural equation modelling (CB-SEM), in the last decade the PLS_SEM has been applied in in many social science fields like hospitality management (Ali *et al.*, 2018) and strategic management (Hair *et al.*, 2012).

Similar to CB-SEM, PLS-SEM allows the estimation of complex latent constructs from several items while accounting for the measurement error; the PLS-SEM algorithm maximizes the R^2 of the constructs rather than the covariance matrix between observed and estimated values, as well (Hair *et al.*, 2020). In addition, PLS-SEM is more robust in small sample sizes, does not require multivariate normality and is deemed more appropriate for exploratory or prediction-oriented research, while CB-SEM is indicated when theory testing is involved. Similarly to Zatori *et al.* (2018), we explore the effect of different factors (including Covid-related ones) on FUTWTINTs based on existing theory which, in the case of SI, is not well established. Therefore, this technique is deemed more appropriate than CB-SEM. In addition, PLS-SEM allows to handle single-item constructs, which we adopted to measure FUTWTINT, avoiding identification issues (Hair *et al.*, 2020; Hair *et al.*, 2019).

PLS-SEM model evaluation is a two-stage approach: measurement model (MM) testing is first carried out, followed by structural model (SM) estimation if the results are satisfactory. We use PLS algorithm in its consistent form for SM estimation, consistent Bootstrapping (5,000 re-samplings with 95% confidence interval) and Blindfolding procedures (Hair *et al.*, 2019) with SmartPLS software. The consistent PLS algorithm allows us to use pre-determined reliability for the single-item construct FUTWTINT, accounting for measurement error in the estimation (best-guess reliability threshold = 0.85, based on Hair *et al.*, 2020).

MM testing involves the confirmatory factor analysis (CFA) of the MM. Specifically, it assesses MM validity by considering both single-item (i.e. FUTWTINT) and multi-item constructs (e.g. CPH, RISKAVOID scales) in the model, and testing their convergent validity and discriminant validity.

Convergent validity represents the capability of the items to explain the construct: items capturing the same construct are expected to share a high proportion of variance (Hair *et al.*, 2019). To assess convergent validity, we first check items reliability by looking at the strength and the significance of the reflective paths between the constructs and the related items, i.e. single factor loadings. We then detect collinearity issues among items through VIF method ($VIF \geq 5$ indicates high multicollinearity; Hair *et al.*, 2020). Finally, we observed overall constructs internal reliability (Cronbach's alpha), composite reliability and average variance extracted (AVE). Advisable Cronbach's alpha and composite reliability values should be above 0.70, while AVE scores should be equal or greater than 0.50 (Hair *et al.*, 2019).

Discriminant validity represents the extent to which a construct truly differs, conceptually and statistically, from the others included in the model (Hair *et al.*, 2019). For PLS-SEM, discriminant validity is assessed through the Heterotrait–Monotrait ratio

(HTMT), representing the ration between the correlation among items measuring different constructs (between-trait) and that of items measuring the same construct (within-trait). These values must be below 0.85 for conceptually different constructs and below 0.90 for conceptually similar constructs and none of the related bias-corrected confidence intervals should include 1 (Hair *et al.*, 2020).

Evaluation of the SM estimates follows Hair *et al.*'s (2020) six-steps procedure after MM.

We evaluate collinearity issues (step 1) using VIF method; then we explore paths strength and significance (step 2) and adjusted R^2 values for all endogenous constructs (step 3). Latent constructs effect size is assessed through the f^2 statistic (step 4), representing the contribution of each exogenous construct to explaining the variance of an endogenous one, i.e. to its R^2 (Table 5). Although no specific ranges have been defined yet, reference values of 0.02, 0.15 and 0.35 usually indicate small, medium and large effects (Hair *et al.*, 2020).

Out-of-sample predictive relevance (Q^2) is calculated using consistent blindfolding estimations (construct cross-validated redundancy approach; step 5) to evaluate the model's potential and precision in predicting the outcome variable outside of the specific sample analysed. Q^2 estimates are produced for each endogenous variable and values greater than 0 provide empirical evidence of construct's predictive relevance (Hair *et al.*, 2020).

Finally, we calculated q^2 effect size – i.e. constructs relative predictive relevance – as follows [step 6; equation (1)]:

$$q^2 = \frac{Q^2 included - \quad Q^2 excluded}{1 - \quad Q^2 included} \tag{1}$$

where Q^2*included* is the Q^2 value obtained through blindfolding for a specific endogenous construct, and Q^2*excluded* is the Q^2 value estimated if a specific predictor is excluded from the model. Reference thresholds are the same as for f^2 (Hair *et al.*, 2020).

Mediation effects (i.e. *H3* and *H6*) can then be assessed by checking direct and indirect effects significance. Mediation occurs when the relationship between an exogenous variable *A* and an endogenous variable *B* ($A \rightarrow B$) is affected by third variable *Z*. Specifically, a change in variable *A* affects the third variable *Z* which, on its turn, impacts on *B*. This three-stages effect is called an *indirect effect* (Hair *et al.*, 2020). A third construct *Z* mediates their relationship when both *A* (*B* direct and indirect effects are present. If the indirect effect goes in the same direction of the A→B direct effect, it is called *complementary mediation*. Diversely, when the indirect effect shows an opposite sign compared to $A \rightarrow B$ direct effect, we observe a *competitive* or *inconsistent mediation,* where the mediator *Z* acts as a suppressor variable. If only the indirect effect is significant, $A \rightarrow B$ relationship is defined as *indirect-only mediation* (Hair *et al.*, 2020).

Results

Descriptive statistics

Respondents are wine-tourists residents of the USA, 49.6% hailing from Oregon and 50.4% from California. Males and females are equally represented, with most respondents over 30 years old, married or living with their partner, and 32.8% had at least one child. Most respondents enjoyed good financial standing. Before Covid-19, most respondents used to visit wine regions located in their state of residence either for day trips or for two to three-day holidays.

Since the beginning of the Covid-19 pandemic, 36.3% of respondents has a low-travel budgets, and 38.8% has less time for travel. The detailed age distribution, education level and changes in financial standing since the pandemic and (wine) travels-related summary statistics are provided in Table 2.

Descriptive and symmetry statistics of the scale items elicited in section 1 of the survey are reported in Appendix 1. Skewness and kurtosis values of all items fall between −2 and + 2 (maximum skewness value = − 1.01; maximum kurtosis = − 1.29), which according to Hair *et al.* (2019) represent acceptable values to assume univariate normality and to obtain reliable estimates from PLS-SEM analysis. Variables related to changes in time and budget available for travelling after Covid (i.e. travtAC and trav$AC) are further operationalized in the PLS-SEM model as dummy variables with 1 representing a reduction in vacation time (red_travTIME) or money (red_trav$), respectively.

Using the EFA analysis, we find that in our sample the scale for Covid phobia is one-dimensional, while two dimensions (i.e. factors) can be extracted for the 14-item WI scale. Specifically, the full scale can be separated into a 6-items dimension representing *wine expertise* (explaining 7.0% of the variance) and a second 8-item dimension representing *wine enjoyment and relevance* (explaining 59.4% of the variance). We have retained both factors as they show a high correlation (0.68) and, in line with general recommendations for applying PLS-SEM analysis, the final observations/parameters ratio is still adequate (13:1; Hair *et al.*, 2019).

Measurement model testing

The MM testing results suggest that almost all item loadings are above the recommended 0.7 threshold (Hair *et al.*, 2020) except WI10 in the WI scale, which shows a 0.66 loading. Nevertheless, WI10's removal does not increase composite reliability or Cronbach's alpha, and the factor loading is significant and above the minimum acceptance threshold (0.4), so the item is retained. WI13 is dropped as its VIF is above the 5 threshold (5.51; Hair *et al.*, 2020), leaving the final WI scale with 13 items. All outer weights are significant, providing empirical support for items' relevance in the model. All Cronbach's alpha and composite reliability values are above the advised 0.7 threshold), and all constructs show an average variance extracted (AVE) higher than 0.5 (Hair *et al.*, 2019).

The sample records HTMT values ranging from 0.09 to 0.78, thus, providing evidence of discriminant validity (conservative threshold = 0.85; Hair *et al.*, 2020). Discriminant validity is also supported by none of the confidence intervals of HTMT including the value of 1. Detailed tables of MM testing results are presented in Appendix 2. Overall, MM testing suggested we can proceed with the SM estimation.

Partial least squares structural equation modelling estimation results

Figure 1 illustrates the SM standardized path estimates and their significance, reported in brackets. Standardized root mean square error (SRMR) is 0.071, which is below the advised 0.08 threshold for model fit (Hair *et al.*, 2020). In addition, collinearity statistics (VIF) reveal all items are within the safe value of 5 (Table 5A; Appendix 3).

All direct path estimates are significant at 5% except reduced budget for travel, which is significant only at 10% ($p = 0.063$). Specifically, WI is confirmed to be a positive antecedent of FUTWTINTs (*H4*). Moreover, both the path from WI to AQWINT (i.e. SI) and the path from AQWINT to FUTWTINTs are positive and significant, suggesting that a mediation effect is present (*H6*). Willingness to avoid covid-related travel risks have a significant negative effect on FUTWTINTs, confirming the hypothesis that a lower propensity for risk taking corresponds to a lower intention to go on a wine holiday in the next 12 months (*H1*).

Results show that, diversely from what we postulated (*H2*), the direct effect of Covid phobia on FUTWTINTs is significant but positive: people with greater Covid-related fear and anxiety show stronger intentions to go on a wine holiday when controlling for their

Variable	Freq.	Valid (%)
State (n = 399)		
Oregon	198	49.6
California	201	50.4
Age (n = 399)		
21–29	65	16.3
30–39	78	19.5
40–49	76	19.0
50–59	52	13.0
60–69	58	14.5
over 70	70	17.5
Marital Status (n = 399)		
Married/In a domestic partnership	263	65.9
Single	63	15.8
Dating	19	4.8
Separated/divorced	42	10.5
Widowed	12	3.0
Household income before Covid (n = 399)		
Insufficient	9	2.3
Just sufficient	58	14.5
Sufficient	136	34.1
Good	196	49.1
Vaccinated (n = 389)		
Yes	308	79.2
No	81	20.8
Usual length of stay before Covid (n = 316)		
Day trip	180	45.5
2–3 days	162	40.9
4–7 days	42	10.6
> 7 days	12	3.0
Preferred accommodation before Covid (n = 216)		
Hotel	116	53.7
B&B	36	16.7
Private lodging	44	20.4
Camping-village	17	7.9
Agritourism	1	0.5
Other	2	0.9
Gender (n = 399)		
Male	197	50.3
Female	201	49.4
Other	1	0.3
Education (n = 398)		
High school or lower	49	12.3
Associate degree/college	97	24.4
Bachelor’s degree	130	32.7
Graduate degree	44	11.1
Postgraduate	78	19.6

(*continued*)

Table 2.
Descriptive statistics of the sample

Variable	Freq.	Valid (%)
Household composition (n = 399)		
No. of adults (average)	2	
Families with children	131	32.8
Visited a wine region in the last 3 years (n = 399)		
Yes	324	81.2
No	75	18.8
Household income variation after Covid (n = 399)		
Much worse	30	7.5
Worse	99	24.8
Unchanged	204	51.1
Improved	42	10.5
Much improved	24	6.0
Location of the wine regions visited before Covid		
In my State BC	347	87.0
In a neighbouring State	93	23.3
In a US wine-making region far from my home state	2	0.5
Overseas	1	0.3
Changes in budget for travelling after Covid (trav$AC) (n = 399)		
reduced	145	36.3
unchanged	197	49.4
increased	57	14.3
Changes in time for travelling after Covid (travtAC) (n = 399)		
reduced	155	38.8
unchanged	182	45.6
increased	62	15.5

Note: percentages do not necessarily sum up to 1 as some questions were multiple answer (e.g. location of the wine regions visited before Covid)

Table 2.

willingness to take covid-risks related explicitly to wine tourism. Specifically, we find that Covid phobia impact on FUTWTINTs is mediated by the willingness to avoid Covid-related wine tourism risks (*H3*). In slight conflict with our initial hypotheses, the direction of the indirect effect is negative and thus the mediation is competitive.

Economic constraints to travelling are included in the model as dummy variables representing a reduction of available time and budget for travel. The effect of reduced time on FUTWTINTs is negative and significant, supporting *H8*. A positive impact is also estimated for a reduced budget (*H7*), even if limited as size and poorly significant.

The effect of age and gender control variables on model fit and the endogenous constructs are tested and do not considerably change SRMR, paths size or direction. Estimates of the SM with and without controls are reported in Appendix 3, Table 7A.

Mediation analysis suggests significant complementary mediation role of AQWINT between WI and FUTWTINTs (*H6*) . Results of the mediation analysis are presented in Table 3, while Table 4 summarizes the results of the hypotheses tested.

Total effects are significant at 5% except red_trav$→FUTWTINT, which is significant at 10%. CPH→FUTWTINT is significant and negative, which is expected based on direct path estimates. Both the CPH→FUTWTINT direct path and the CPH→RISKAVOID→FUTWTINT

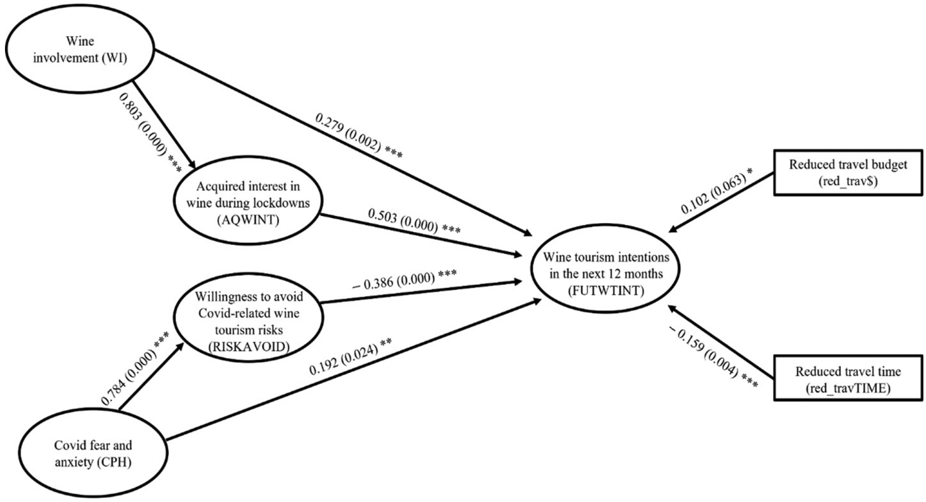

Figure 1. Structural model conceptualization and path estimates

Notes: Standardized path estimate (*p*-value) are reported on each arrow and path significance is represented as follows: ****p*-value < 0.01; ***p*-value < 0.05; **p*-value < 0.10. Adjusted R^2 values are the following: 0.530 for FUTWTINT; 0.633 for AQWINT; 0.614 for RISKAVOID

indirect path are significant, and the direct path was opposite in sign but greater in size than the total effect, highlighting the presence of a competitive mediation effect. Total effects of the model are presented in Appendix 3, Table 6A.

Overall, the adjusted R^2 values are satisfactory, scoring 0.530 for FUTWTINTs, 0.633 for AQWINT and 0.614 for willingness to avoid Covid-related wine tourism risks (Table 5). Effect size (f^2) of exogenous constructs on endogenous ones can be seen in Table 5. AQWINT and willingness to avoid Covid-related wine tourism risks record medium-size effects on FUTWTINTs in the next 12 months. Small-to-medium size effects emerged from WI, Covid phobia and reduced time availability for travel, while the effect of a reduced budget is below 0.02.

Looking at out-of-sample predictive relevance, Q^2 estimations revealed good scores for all endogenous constructs (Table 5). Finally, q^2 effect size confirms AQWINT has the largest relative effect in predicting FUTWTINT followed by willingness to avoid Covid-related wine tourism risks, and WI shows a medium-to-small predictive impact for the outcome variable. At the same time, economic constraints and Covid phobia effect sizes below 0.02, indicate they have no relative impact in predicting FUTWTINT (Table 5).

Discussion and conclusions

Our study is among the first to analyse the impact of the Covid-19 pandemic on wine tourism behavioural intentions, using a large sample of US wine tourists representative of two large wine regions: Oregon and California. The results are relevant for academia and wine tourism stakeholders, providing essential information in the short and the long run, for as long as Covid-19 or other infectious illnesses will impact tourism decision-making (Rosselló *et al.*, 2017).

We find that the effect of Covid phobia on FUTWTINTs is significantly mediated by people's attitude to avoid Covid-related wine tourism risks specifically. This has important implications for the industry: while changing consumer attitudes to the pandemic can be complex and counterproductive to public health measures, shaping consumer attitudes to

Table 3. Results of mediation analysis

Mediation effect tested	Direct effect	95% C.I.	*t*-Value	Indirect effect	95% C.I.	*t*-value
CPH → RISKAVOID→ FUTWTINT	0.192	0.027 – 0.357	2.260**	−0.303	−0.440 - −0.185	4.658***
WI → AQWINT → FUTWTINT	0.279	0.106 – 0.459	3.089***	0.403	0.251 – 0.554	5.181***

Notes: ***p-value < 0.01; **p-value < 0.05; *p-value < 0.10

Table 4. Hypotheses tested and related outcomes

Hypothesis tested	Standardized path estimate (significance)	Outcome
H1. Willingness to avoid Covid-related wine tourism risks negatively affects future wine tourism intentions	−0.386 (0.000)***	Supported
H2. Covid phobia negatively impacts future wine tourism intentions	0.192 (0.024)**	Path direction not supported; small significant effect found
H3. Willingness to avoid Covid-related wine tourism risks mediates the relationship between Covid phobia and FUTWTINTs, producing a complementary mediation	*Direct effect* 0.192 (0.024)** *Specific indirect effect* −0.303 (0.000)***	Path direction not supported; significant effect found
H4. Personal involvement with wine positively affects future wine tourism intentions	0.279 (0.002)***	Supported
H5. Acquired interest in wine during lockdowns positively affects future wine tourism intentions	0.503 (0.000)***	Supported
H6. Acquired interest in wine during lockdowns mediates the relationship between personal wine involvement and future wine tourism intentions, producing a complementary mediation	*Direct effect* 0.279 (0.002)*** *Specific indirect effect* 0.403 (0.000)***	Supported
H7. A reduction of budget available to travel negatively impacts future wine tourism intentions	0.102 (0.063)*	Not supported
H8. A reduction of the time available to travel negatively impacts future wine tourism intentions	−0.159 (0.004)***	Supported

Notes: Existing literature exploring travel intentions, including for wine tourism, underlined they can change based, among other things, on socio-demographic factors like gender and age (Li *et al.*, 2019a; Chew and Jahari, 2014; Bruwer and Huang, 2012). Therefore, we have also estimated the model with age and gender as control variables on endogenous constructs in the model, with similar results (Appendix 3)

Table 5. Effect size (f^2) of exogenous constructs on endogenous constructs, and predictive relevance Q^2 of endogenous constructs

	Effect size f^2				R^2	Q^2	q^2
Construct	AQWINT	CPH	FUTWTINT	RISKAVOID			FUTWTINT
AQWINT			0.159		0.633	0.481	0.110
CPH			0.026	1.596			0.005
FUTWTINT					0.530	0.413	
RISKAVOID			0.116		0.614	0.477	0.061
WI	1.812		0.057				0.058
red_travTIME			0.029				0.019
red_trav$			0.012				−0.002

Notes: Q^2 is only estimated for endogenous constructs. Similarly, q^2 can only be estimated for other constructs to FUTWTINT as AQWINT and RISKAVOID are only predicted by one construct, and its removal from the model would make them exogenous constructs for which Q^2 cannot be estimated. q^2 FUTWTINT reflect the size effect of each construct on FUTWTINT, intended as the change in FUTWTINT Q^2 produced by constructs removal from the model. Reference values for evaluating f^2, Q^2 and q^2 effect sizes are 0.02, 0.15 and 0.35 representing small, medium and large effects (Hair *et al.*, 2020) wine-tourism risks can be beneficial, specifically during the pandemic. For those who are unwilling to avoid Covid-related wine tourism risks, potentially due to assessing those risks to be relatively small or due to the utility they derive from wine tourism, higher Covid phobia increases FUTWTINTs in our sample. This is in line with existing literature suggesting that wine and rural tourism destinations provide an attractive option during pandemics and other types of increased risks (Song *et al.*, 2019a; Park *et al.*, 2021). Since in our sample Covid phobia significantly explains FUTWTINTs but shows a minimum relative impact in predicting them, more analysis is needed to assess its role and confirm our results. Diversely, the significant role of risk avoidance both as a predictor and as a mediator of Covid phobia effects suggests it is important to consider how risk is perceived, which, as past literature pointed out, can ultimately affect travel decisions (Sönmez *et al.*, 1999; Sönmez and Graefe, 1998). Moreover, how information is delivered impacts destinations' perceived safety (Kozak *et al.*, 2007). Specifically, ensuring high transparency in communicating risks helps increase travellers' confidence in the destination attracting them (Kozak *et al.*, 2007), while sensationalism damages perceived destination safety (Sönmez and Graefe, 1998). Media coverage plays a crucial role in this respect, allowing to manage the effects of risk on the intention to travel (Neuburger and Egger, 2020).

We find that the positive impact of personal WI on wine tourism intentions is partially mediated by having dedicated time to wine activities during times of Covid-related restrictions, i.e. by SI. Involvement created by dedicating time even to online wine-related content can affect and predict wine tourism intentions in the next 12 months, highlighting the importance of "being at the right time, in the right place" to capture tourists' attention. Therefore, adequately planned marketing and communication actions in the pre-visit stages of the travel experience – the dreaming and the planning phase (Gretzel, 2021; Fernández-Cavia *et al.*, 2020) – are vital to wineries and destination management operators (DMOs), and particularly important when tourism flows are affected by government regulation or seasonality.

Although this research focuses on the context of limitations created by the pandemic (e.g. lockdowns), our findings on SI can reasonably apply to other moments in which wine tourists have more free time to explore their interest in wine, like weekends or holidays. This leaves room for future wine tourism research to further explore the role of SI as a mediator of PI in circumstances other than Covid-19 restrictions.

Moreover, researchers should further examine the effect of online entertainment and marketing campaigns during low seasons on wine tourism intentions and behaviour. Indeed, tourism literature highlighted how online interactions connected to a specific product or brand could enhance consumers' intention to use such product or service (Casaló *et al.*, 2010), and claimed social media presence is strongly influential for tourism (Zeng and Gerritsen, 2014). Still, more studies should be conducted to provide a comprehensive overview of how online interactions can actually affect tourism dynamics to guide service providers in planning effective strategies.

Indeed, while tourism research explored the effects of (on-site) SI created during the travel experience on flow and post-visit aspects like memorability (Campos *et al.*, 2017), little is known about the potential impact of SI on travel intentions.

Only Oregon and California wine tourists are involved in the study. Although the sample is representative of wine consumers in the two large wine-producing states (Oregon and California), future studies should extend to other states to validate our results and assess potential state and country-related differences in wine tourists' behaviour. This last objective goes beyond the aim of the present research. Still, it could contribute to unveiling behavioural differences connected to culture or local differences in the severity of the pandemic.

The Covid phobia scale adopted in the study includes a more parsimonious version of the original scale from Arpaci *et al.* (2020), considering two of the four dimensions as only these dimensions are deemed relevant to capture Covid-related fear and anxiety for the context analysed (i.e. tourism). Future wine tourism research should try to implement the full scale and assess the impact of the different dimensions on tourists' behaviour. Finally, our results suggest information about Covid mitigation measures for wine tourism should be helpful. Still, specific effects of various mitigation efforts, such as limiting seating capacity, conducting activities outside and using mandatory reservations, are unclear and should be explored in the future. Indeed, similar information is vital to authorities and DMOs to choose the appropriate strategies to avoid adverse effects on the destination(s) attractiveness.

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Appendix 1

Observed variable	Mean	SD	Skewness (SE 0.122)	Kurtosis (SE 0.244)
AQWINT1	3.94	1.791	−0.136	−0.923
AQWINT2	3.95	1.846	−0.084	−1.028
AQWINT3	3.76	1.932	−0.006	−1.231
AQWINT4	3.46	1.968	0.206	−1.240
AQWINT5	3.94	1.957	−0.121	−1.240
CF1	4.25	1.889	−0.305	−1.050
CF2	4.18	1.918	−0.219	−1.167
CF3	4.10	1.916	−0.190	−1.140
CF4	4.25	1.942	−0.260	−1.099
CF7	4.29	1.912	−0.318	−1.056
CF8	3.94	1.967	−0.059	−1.230
RAV1	3.82	1.954	−0.028	−1.294
RAV2	3.55	1.937	0.212	−1.180
RAV3	3.33	1.961	0.407	−1.139
WI1	4.25	1.576	−0.275	−0.657
WI2	3.69	1.754	0.208	−0.957
WI3	4.01	1.732	−0.116	−0.945
WI4	4.07	1.688	−0.149	−0.902
WI5	4.98	1.604	−0.790	0.079
WI6	4.17	1.798	−0.216	−1.006
WI7	4.58	1.653	−0.496	−0.555
WI8	4.90	1.621	−0.684	−0.233
WI9	4.67	1.633	−0.586	−0.306
WI10	5.40	1.418	−1.100	1.091
WI11	5.02	1.572	−0.751	0.030
WI12	4.87	1.598	−0.645	−0.181
WI13 (dropped)	4.83	1.572	−0.692	−0.069
WI14	5.22	1.572	−1.013	0.593
FUTWTINT	5.29	1.433	−0.938	0.774

Notes: $N = 399$, COMMENT: constants numbers should be deleted. MIN e MAX may be deleted. Std errors of skewness and kurtosis may be deleted as well

Table A1. Descriptive and symmetry statistics of constructs items

Appendix 2. MM testing detailed results

Construct	Item	Standardized item loadings	Cronbach's alpha	Composite reliability	Average variance extracted (AVE)
AQWINT	AQWINT1	0.905	0.95	0.95	0.79
	AQWINT2	0.919			
	AQWINT3	0.915			
	AQWINT4	0.903			
	AQWINT5	0.923			
CPH	CPH1	0.913	0.95	0.95	0.78
	CPH2	0.921			
	CPH3	0.902			
	CPH4	0.868			
	CPH5	0.917			
	CPH6	0.900			
RISKAVOID	RAV1	0.945	0.93	0.93	0.81
	RAV2	0.936			
	RAV3	0.927			
WI	WI1	0.774	0.94	0.94	0.57
	WI10	0.663			
	WI11	0.747			
	WI12	0.869			
	WI13 (dropped)	0.869			
	WI14	0.782			
	WI2	0.763			
	WI3	0.832			
	WI4	0.834			
	WI5	0.804			
	WI6	0.793			
	WI7	0.743			
	WI8	0.791			
	WI9	0.701			

Notes: Convergent validity estimates focuses on multi-item latent constructs. Therefore, single-item variables were not reported in the table although they were included in the model

Table A2. Convergent validity assessment

Construct	AQWINT	CPH	FUTWTINT	RISKAVOID	WI	red_travTIME	red_trav$
AQWINT	–						
CPH	0.558	–					
FUTWTINT	0.595	0.264	–				
RISKAVOID	0.496	0.782	0.093	–			
WI	0.786	0.454	0.597	0.314	–		
red_travTIME	0.035	0.227	0.091	0.173	0.048	–	
red_trav$	0.064	0.212	0.011	0.206	0.083	0.670	–

Notes: Heterotrait–Monotrait Ratio (HTMT) values must be below 0.85 for conceptually different constructs, and below 0.90 for conceptually similar constructs (Hair *et al.*, 2020). Fornell–Larcker criterion supports discriminant validity as the square root of the average variance extracted by each construct is greater than their correlation with any other reflective construct in the model

Table A3. Results of HTMT for discriminant validity assessment

Direct effect	Original sample (O)	Sample mean (M)	Bias	95% CI 2.50%	95% CI 97.50%
CPH → AQWINT	0.558	0.558	0.000	0.469	0.638
FUTWTINT → AQWINT	0.595	0.594	−0.001	0.520	0.669
FUTWTINT → CPH	0.264	0.263	0.000	0.159	0.367
RISKAVOID → AQWINT	0.496	0.497	0.000	0.398	0.590
RISKAVOID → CPH	0.782	0.782	0.000	0.725	0.831
RISKAVOID → FUTWTINT	0.093	0.098	0.004	0.023	0.204
WI → AQWINT	0.798	0.798	0.000	0.751	0.838
WI → CPH	0.463	0.462	0.000	0.367	0.545
WI → FUTWTINT	0.597	0.596	−0.001	0.523	0.664
WI → RISKAVOID	0.332	0.334	0.003	0.227	0.432
red_travTIME → AQWINT	0.035	0.057	0.021	0.009	0.051
red_travTIME → CPH	0.227	0.227	0.000	0.129	0.321
red_travTIME → FUTWTINT	0.091	0.093	0.002	0.007	0.186
red_travTIME → RISKAVOID	0.173	0.174	0.001	0.080	0.269
red_travTIME → WI	0.045	0.072	0.027	0.022	0.048
red_trav$ → AQWINT	0.064	0.072	0.008	0.018	0.160
red_trav$ → CPH	0.212	0.211	0.000	0.112	0.304
red_trav$ → FUTWTINT	0.011	0.042	0.031	0.000	0.034
red_trav$ → RISKAVOID	0.206	0.206	0.000	0.106	0.305
red_trav$ → WI	0.081	0.096	0.015	0.043	0.155
red_trav$ → red_travTIME	0.670	0.670	0.000	0.595	0.744

Notes: To provide evidence of discriminant validity, none of the Heterotrait–Monotrait Ratio (HTMT) bias-corrected confidence intervals (CI) should include 1. CIs are obtained through complete bootstrapping procedure with 5,000 subsamples

Table A4. HTMT Bias-corrected confidence intervals for discriminant validity assessment

Appendix 3

Construct	AQWINT	CPH	FUTWTINT	RISKAVOID
AQWINT			3.411	
CPH			3.071	1.000
FUTWTINT				
RISKAVOID			2.770	
WI	1.000		2.948	
red_travTIME			1.877	
red_trav$			1.854	

Table A5. Inner VIF values of the SM for collinearity check

Table A6. Total effects of the SM without controls

Construct	AQWINT	CPH	FUTWTINT	RISKATT	WINV
AQWINT			0.503***		
CPH			−0.111**	0.784***	
FUTWTINT					
RISKAVOID			−0.386***		
WINV	0.803***		0.682***		
red_travTIME			−0.159***		
red_trav$			0.102*		

Table A7. SM Results with and without age and gender controls

Effects	Model without controls SRMR = 0.071		Model with controls (age; gender) SRMR = 0.067	
	Sample Mean (M)	*p*-Value	Sample mean (M)	*p*−Value
Direct effects				
AQWINT → FUTWTINT	0.503	0.000***	0.540	0.000***
CPH → FUTWTINT	0.192	0.024**	0.186	0.035**
CPH → RISKAVOID	0.784	0.000***	0.780	0.000***
RISKAVOID → FUTWTINT	−0.386	0.000***	−0.394	0.000***
WI → AQWINT	0.803	0.000***	0.766	0.000***
WI → FUTWTINT	0.279	0.002***	0.290	0.000***
red_travTIME → FUTWTINT	−0.159	0.004***	−0.162	0.003***
red_trav$ → FUTWTINT	0.102	0.063*	0.116	0.049**
Specific indirect effects				
CPH → RISKAVOID → FUTWTINT	−0.303	0.000***	−0.307	0.000***
WI → AQWINT → FUTWTINT	0.403	0.000***	0.414	0.000***
Control variables effects				
Age → AQWINT			−0.103	0.007***
Age → FUTWTINT			0.123	0.009***
Age → RISKAVOID			−0.009	0.797
Gender_Male → AQWINT			0.100	0.003***
Gender_Male → FUTWTINT			0.000	0.999
Gender_Male → RISKAVOID			0.133	0.000***

Notes: Despite significant effects emerged for both gender and age control variables on two endogenous constructs (AQWINT and RISKAVOID), their introduction in the model does not impact the outcome variable FUTWTINT. Moreover, path estimates do not change substantially either in terms of path strength or direction

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