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Segmenting and predicting prosocial behaviours among tourists: a latent class approach

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ABSTRACT

In building sustainable post-pandemic destinations, it is critical to understand the typologies of tourists' prosocial behaviours. Consequently, this study innovatively applied a latent class cluster analysis to segment the prosocial behaviours of 403 Macau tourists. Three ordered discrete segments were derived based on consistent tourists' probabilities of performing prosocial behaviours on the trip namely: *the Self-centred*, the *Intermediate*, and *the Philanthropist*. The associated ordered logistic regression predicting the segments revealed that relative to *the Self-centred*, *the Intermediate* and *the Philanthropist* are more likely to face death terror, are sociable – seek vacation friends – and believe in cultural and heritage conservation. Not only does this research expand the theoretical application of Terror Management Theory, the Scrooge effect, and the self-esteem concept, it contributes to prosocial alternative tourism with novel destination management implications for marketing and promoting prosocial tourism performance.

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Prosocial behaviour; latent class analysis; tourist segmentation; terror management theory; Scrooge effect; destination management

1. Introduction

Given the increased need for tourism to foster justice and social inclusion (Bazrafshan et al., 2023; Higgins-Desbiolles, 2020), it is important to understand behaviours that can cultivate greater cohesion between tourists and the community as well as among tourists with different personalities (Fan & Jia, 2023; Huo et al., 2023). A renewed research interest in tourists' prosocial behaviours has emerged since understanding such behaviours is significant to the host community's quality of life and social sustainability (Chi, Cai, & Han, 2021; Ramkissoon, 2020; Tung, 2019; Wakasugi & Ito, 2023). For example, current tourism and hospitality literature is replete with various studies investigating prosocial behaviours among festival tourists (Chi, Cai, et al., 2021; Chi, Han, & Kim, 2021), airline customers (Han, Chi et al., 2020), responsible tourists (M. J. Kim et al., 2018), and volunteer tourists (Coghlan, 2015; Han, Meng et al., 2020). While these studies offer a significant contribution to prosocial behaviours, some argue that different individual inclinations account for variability in prosocial behaviours (Luengo Kanacri et al., 2021). As visitors come with different prosocial profiles (Domènech et al., 2023), those who regularly (versus irregularly) volunteer, share, donate, or help others are readily attracted to assist with community-based activities (Hardy & Carlo, 2011; Lapsley & Narvaez, 2004).

Previous studies confirm the COVID-19 pandemic has triggered anti-social xenophobic and discriminatory attitudes in both online and offline communities (Awal et al., 2020; Brammer & Clark, 2020). These arguments question earlier research that assumes a homogeneous group in prosocial behaviour research fuelled

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by the fact that prosocial behaviours are determined by the nature of the relationship; those with affinity are more likely to increase than those with strangers (Maner & Gailliot, 2007). Hence, assuming that prosocial behaviours are similar across all tourists' interactions is questionable as such behaviours differ based on the setting and the group characteristics. Studies investigating different segments of prosocial behaviours are scarce and non-existent. Yet, it is crucial to identify personality groups of prosocial tourists who either consistently engage or disengage in prosocial behaviours (McGinley et al., 2022). More importantly in this post-COVID-19 dispensation, the high prosocial characteristic is beneficial for tourist volunteering (Coghlan, 2015), willingness to pay/donate for conservation (Schuhmann et al., 2019), avoiding the spread of COVID-19 (Jeon et al., 2022), wearing a mask and observing hygienic practices (Chi, Cai, et al., 2021; Chi, Han, et al., 2021). Such behaviours contribute to reinvigorating tourism activities in destinations by promoting host societies' quality of life and well-being. It is, therefore, critical to identify and examine how the afore-discussed highly prosocial tourist group differs from others, an overlooked area.

Extant studies explaining the triggers of tourists' prosocial behaviours during the pandemic used a structural equation model that treats tourists' prosocial behaviours as one homogeneous group sharing the parameters of the model (Chi, Cai, et al., 2021; Chi, Han, et al., 2021; Jeon et al., 2022). This study accounts for prosocial heterogeneity by applying a Latent Class Analysis (LCA) that identifies multiple tourist prosocial personality groups with each sharing the same parameters of a regression that explains their prosocial segment. While the pandemic prosocial studies also explain prosocial from a moral point of view (Chi, Cai, et al., 2021; Chi, Han, et al., 2021; Jeon et al., 2022), the concurrent role of socio-cultural factors, individual factors, and COVID-19 pandemic role as a mortality salient factor have been largely ignored. Previous studies have shown that the type of relationship influences prosocial behaviours. For example, Maner and Gailliot (2007) through an experimental study found that in the context of a kinship relationship, participants demonstrate a high willingness to help their kin member than strangers. Such a meaningful prosocial act is influenced by empathetic concern among close social relations. Some studies put forth the influential role of personal worldviews (C. Wei et al., 2020) and demographics in prosocial behaviours (Hine & Leman, 2013; Xiao et al., 2019). A simultaneous examination of various theoretical predictors is pertinent for a comprehensive analysis of myriad causes of prosocial behaviour types – a gap we seek to fill.

This paper innovatively employs the model-based Latent Class Logit Analysis to simultaneously identify segments of tourists' prosocial behaviours and holistically capture relationships among different prosocial personality types. Thus, these two broad research objectives are advanced:

(1) To investigate existing unobserved segments of prosocial behaviours among tourists to establish different prosocial personalities; and
(2) To investigate the predictors of each identified prosocial personality segment using their perceived mortality salience (Terror Management Theory and the Scrooge effect), worldviews, social relations, self-esteem, and demographics.

In so doing, this study makes various contributions to literature. First, its novelty to segmentation research lies in its ability to identify the latent segments of tourists' prosocial behaviours using a person-centred approach, the LCA. It seeks to identify the unobserved segments/classes made up of similar tourist profiles based on their predisposition to adopt a particular set of prosocial behaviours (Weerts & Cabrera, 2017). Second, the paper uniquely adds to the determinants of prosocial behaviour by treating the entire dataset as heterogeneous to provide a more robust, reliable, and realistic way to predict the established prosocial personality types. Third, it tests the relevance of various predictor theories and concepts that can explain different prosocial personality types.

2. Literature review

2.1. Prosocial behaviours and segmentation

Prosocial behaviours are positive social acts voluntarily performed to produce and maintain the well-being and integrity of others (Brief & Motowidlo, 1986). Recent research emphasizes its multi-

dimensional aspect with acts including helping, sharing, donating, cooperating, comforting, and volunteering emerging as forms of prosocial behaviours (Dunfield, 2014; Luengo Kanacri et al., 2021; Paulus, 2018). Topical developments of social exclusion and injustices have heightened the need for prosocial behaviours in tourism (Eichhorn, 2020). Within tourism, rather than multidimensional concepts of prosocial, existing studies usually assess specific concepts such as volunteering (Coghlan, 2015; Han, Meng, et al., 2020) and COVID-19 prosocial behaviours (Chi, Cai, et al., 2021; Chi, Han, et al., 2021). In the context of COVID-19, emerging empirical studies examine prosocial intentions to explicate actions geared toward avoiding the spread of the virus in various events (Chi, Cai, et al., 2021; Chi, Han, et al., 2021; Jeon et al., 2022). For example, focusing on specific prosocial and protective behaviours among festival travellers, Chi, Cai, et al. (2021) investigate the cognitive, normative, and moral triggers that determine prosocial intentions for mask-wearing, social distancing, sanitary practices, and adherence to COVID-19 regulations. Despite the mounting interest, two much-debated questions are whether tourists' prosocial behaviours are limited to these specific types and whether tourists are homogeneous in their prosocial behaviours. Luengo Kanacri et al. (2021) argue that while assessing specific prosocial behavioural types is useful to understand the psychological mechanisms and motivations of those behaviours, the assessment of a broader and multidimensional set of prosocial behaviours illuminates dispositions that are less determined by specific needs and situations.

From the perspective of segmentation studies, global consumers are different with unique needs and behaviours. Hence, segmentation is a useful tool for aligning consumer needs with specific behavioural patterns (Martin, 2011). Tourism studies have equally confirmed the differences in motivations, and sustainable behaviours among different clusters of tourists (Adam et al., 2021; Lee et al., 2004). There are many reasons to believe the visitor population exhibits heterogeneous prosocial behaviours. One such reason could be inferred from Penner et al. (2005) who assert that prosocial behaviours are voluntary acts of some segments of people (tourists here) that are beneficial to others without expecting a reward. This definition portrays aspects of different prosocial typologies among tourists; hence, our primary focus of examining the prosocial clusters.

2.2. Theoretical predictors of prosocial behaviours

2.2.1. Mortality salience and prosocial behaviours

Mortality salience is used to denote the accessibility of death-related thoughts (Burke et al., 2010; Gobrecht & Marchand, 2023), death reminders, or death awareness (Kasser & Sheldon, 2000; Landau et al., 2004). Two death-related foundations, Terror Management Theory (TMT) and the Scrooge effect, have been employed in various experimental research to explain prosocial behaviours (Lyu et al., 2023; Zaleskiewicz et al., 2015). Originating from social psychology, Terror Management Theory argues that behaviours that give one a sense of value and meaning safeguard individuals against death-related anxiety. Once a person's death awareness is activated, the need for a sense of value to buffer these death thoughts stimulates the engagement in prosocial behaviours dubbed the Scrooge effect (Gobrecht & Marchand, 2023; Zaleskiewicz et al., 2015). The 'Scrooge effect' relates to Ebenezer Scrooge in Charles Dickens's novella, A Christmas Carol, who was a miserly man devoted to accumulating wealth but was later transformed into a generous man after encountering death (Joseph, 2013).

Extensive works in social psychological studies have revealed that when people are reminded of their own deaths, it triggers increased prosocial behaviours and charitable actions. For example, Jonas et al. (2002) demonstrate that respondents interviewed near a funeral home reported more positive attitudes to charity than those interviewed several blocks away. Zaleskiewicz et al. (2015) employed both dictator and ultimatum economic games to further support the hypothesis that respondents reminded of mortality were more generous to others than the control group indicating a 'Scrooge effect'. A recent study examining terror management mechanisms in heritage tourism shows that travellers' increased mortality anxiety increases their search for meaning in life triggering

heritage protection intention (Gobrecht & Marchand, 2023). Thus, death salience during this post-pandemic emanates from the fear of the COVID-19 outbreak, unpredictable COVID-19 waves, asymptomatic infections, and media reports of increased cases in other countries which remind people of their own death (Klümper & Sürth, 2023; Peng & Luo, 2023). Consequently, we propose our first hypothesis:

H1: Mortality salience from Covid-19 induces a high prosocial personality.

2.2.2. Cultural worldviews and prosocial behaviours

Cultural worldview beliefs and perceptions explain the general attitudes of individuals (C. Wei et al., 2020); they are pro-cultural attitudes (Choi & Fielding, 2016). From the perspective of TMT, cultural worldviews are 'humanly created symbolic perceptual constructions shared by groups of people to minimize the anxiety associated with the awareness of death' (Solomon et al., 1991, p. 96). Therefore, the preservation of cultural worldviews and the awareness that one is contributing to such worldviews motivate social behaviours (Goldenberg et al., 2001; Solomon et al., 1991). Once an individual's cultural worldviews are threatened by COVID-19 fears, the need to act prosocial increases. Many studies in both tourism and sociopsychology concur that the COVID-19 environment stimulates prosocial behaviours as people naturally have a tendency to bond with others in difficult times (Chi, Cai, et al., 2021; Jeon et al., 2022; Zaleskiewicz et al., 2015). Chi, Han, et al. (2021) found a relationship between COVID-19 awareness and attitudes toward prosocial behaviours though the role of cultural worldviews was muted in their framework. According to the terror management theory, cultural worldviews and a sense of value in society can minimize death-related anxiety and affect individuals' reactions to others including donation (Kheibari & Cerel, 2021). Recently, Agudelo and Cortes-Gómez (2021) found that religious worldviews can significantly affect people's prosocial behaviours. In a conceptual study, Moran (2022) argues that while both worldview and life purpose could be obtained from one's culture, a shared worldview has the potential to strengthen prosocial interdependence. Lyu et al. (2023) contend that prosocial engagement establishes individual's belief in their worldviews suggesting a possible association between these two constructs. Hence, this study posits that:

H2: The visitors' cultural worldviews are associated with strong intentions to engage in prosocial behaviours.

2.2.3. Self-esteem and prosocial behaviours

Self-esteem is defined as an individual's global assessment of him/herself in either positive or negative affective positions (Rosenberg, 1979; Servidio, 2023). It involves individual confidence in their capability to think and cope with life challenges (Branden, 1990). Linked with a variety of (mal)adaptive practices, people with high self-esteem tend to possess high self-worth and respect, while those with less self-esteem tend to be less happy with harmful impacts (Roberts et al., 1996). Several sociopsychologists have confirmed that individuals' evaluation of themselves influences their behaviours (e.g. Bandura, 1989; Brown & Smart, 1991; Servidio, 2023). More specifically, research on prosocial behaviours suggests that individuals who perceive themselves as caring and understanding are more inclined to behave prosocially (Brown & Smart, 1991). Additionally, feelings of competence were associated with prosocial behaviours (Eisenberg et al., 2016). This is because self-representation is a critical behavioural guide such that when people evaluate themselves as worthy, they tend to volunteer longer (Thoits & Hewitt, 2001). Hence, it is logical to posit that tourists with higher levels of self-esteem are more likely to engage in prosocial behaviours. While the association between self-esteem and prosocial has gained momentum in adolescent research (Christner et al., 2020; Fu et al., 2017), tourism scholars are yet to disentangle how tourists' self-esteem could propel their prosocial actions at the destination. Recent studies among hospitality employees reveal that organization-based self-esteem is positively associated with prosocial behaviours (H. Kim & Qu, 2023). Based on previous studies, we test the research question – How is self-esteem related to travellers' prosocial behaviours?

2.2.4. Social relations and prosocial behaviour

Defined as existing connections between people with recurring social interactions that are meaningful, social relations include friends, family members, neighbours, and co-workers (August & Rook, 2013). The theory of reciprocal altruism argues that individuals prefer to help others for future repayment (Trivers, 1971). At the psychological level, people naturally prefer to help those they share familial relations and close bonds (Nastina & Deviatko, 2023; Preston & De Waal, 2002). The link between social relations and prosocial behaviour is acknowledged in both primate research and social psychological research (Cronin, 2012; Maner & Gailliot, 2007). Social psychologists have demonstrated that empathetic concern for helping is more pronounced in close social relations and affinity than among strangers (Maner & Gailliot, 2007). However, tourism scholars have given limited attention to the significant role of social relationships. Yet, research has shown that tourism is a key context where social relationships are created and strengthened (Mura & Tavakoli, 2014). It is possible for tourists who (want to) share close social bonds with others or the community to act more prosocial towards them. Several studies demonstrate a positive relationship between social relations and prosocial behaviours. For example, a recent study among Tibetan adolescents reveals that their primary social relationships positively impact their prosocial behaviours (Kong & Lu, 2023). Fritz et al. (2023) argue that closer connections predict social connectedness with consequences on prosocial actions. Hence, we hypothesize that:

H3: Strong social relationships encourage high prosocial behaviours towards travellers or the community.

2.2.5. Demographic factors and prosocial behaviours

Defined to encapsulate personal characteristics, demographic factors provide a deeper understanding of different market segments (Agyeiwaah et al., 2013). Few extant studies in psychology have examined the influence of demographic differences on prosocial behaviours (Eime et al., 2018). The connection between gender differences and prosocial behaviours has been established through gender role expectations, which indicate that women are more altruistic than men. Nonetheless, other studies suggest, unlike women, men tend to act prosocial in heroic and public situations including helping strangers in instances where initiatives are required (Diekman & Clark, 2015; Xiao et al., 2019). Hence, these prosocial differences among gender are likely to occur in the tourism setting. Further, studies established age differences in prosocial acts. Younger adults familiar with the digital world tend to act less prosocial than their older counterparts due to unstable life and relationships with others (Freund & Blanchard-Fields, 2014). In the same vein, high educational status has been argued to influence volunteer activities (Independent Sector, 2002). We, therefore, hypothesize that:

H4: Demographic characteristics of a tourist influence prosocial personalities.

3. Materials and methods

3.1. Research setting, questionnaire design, and measures

This research was conducted in Macau, a special administrative region of the People's Republic of China. As a gaming giant in the world, Macau also has vibrant shopping, cultural and heritage attractions that draw tourists, particularly from its biggest source market, mainland China (Statistics and CensusService, 2021). Macau was chosen for two reasons. First, the choice of Macau, a tourism-dependent economy, as a context for segmenting tourists offers lessons for destination managers within and outside Macau to understand the diverse profile of their tourists and their prosocial behavioural characteristics. Tourism marketers in other countries/cities (e.g. Hong Kong, Singapore & Australia) targeting Chinese tourists (Pham et al., 2018; S. Wei et al., 2023); as well as those working on a strategic plan to target the Chinese market [e.g. Egypt](Nour El-Din et al., 2023) could use

Macau's case as an example to design prosocial tourism activities to target a specific group of interest. In so doing, such destinations could position themselves as a context to achieve prosocial benefits to those with high volunteering dispositions. Second, it was a convenient setting at the point of the pandemic for the researchers of this study to collect field data. To reach tourists from this source market, this paper employed a quantitative approach based on a questionnaire survey. The questionnaire employed a multi-measurement approach to allow a comprehensive assessment of each construct. Our questionnaire had six sections with questions designed to follow existing validated psychometric measures in the literature.

The first section captured prosocial behaviours with 10 items covering volunteering, sharing, donating, comforting, caring, rescuing, compassion, sympathy, risk lending, and helping others. The items represent both action and emotionally-oriented prosocial behaviours. Examples of such questions include 'I help immediately those who are in need during my local trip' and 'I am emphatic with those who are in need during my local trip' (Luengo Kanacri et al., 2021). To capture mortality salience through COVID-19, the second section inquires how COVID-19 reminds participants of their death using the fear of death scale (Borges & De Miguel, 2020). The items used in this second section include, for example, 'COVID-19 reminds me that death is the end of one's existence' and 'COVID-19 makes me feel that death is the end of one's existence'. The third section asks about cultural worldview using statements such as 'The cultural values of our forefathers are important to me' and 'Culture helps me to identify myself' based on literature (Choi & Fielding, 2016). Following literature (see Ciarrochi & Bilich, 2006; Franck et al., 2008), the last three sections asked about self-esteem (e.g. I am able to do things as well as most other people during my travel), social relations (e.g. I actively pursue friendships through travel), and demographic questions (age, gender, and education). Except for demographics, all five constructs were measured on a 7-Likert scale from strongly disagree to strongly agree. The demographic section took a categorial design where respondents were made to choose suitable options.

3.2. Data collection and target participants

As part of the data collection, this study targeted tourists visiting Macau in 2021 at various tourist attractions including various integrated resorts and cultural and heritage attractions. During this period, tourists from the predominant market, Mainland China, were allowed to enter Macau with a negative Nucleic Acid Test Certificate. Both local and international tourists were targeted since Macau has local tours that allow residents to travel within the city. Before data collection, enumerators were trained in identifying and administering the survey. Before the training, we first examined the content and face validity of the instruments with the help of tourism academics and research assistants trained in quantitative research (Chen & Huang, 2017). Subsequently, bilingual Chinese postgraduates assisted with translating the instrument into Chinese. This study employed a back-to-back translation method where the original language, English, is translated into Chinese for data collection after which the content of the final data is retranslated back to the source language, English, for presentation (Liu et al., 2023). Hence, the instrument contained both English and Chinese versions to enhance the comprehension of the survey. The study was later piloted on 40 tourists. This pre-test revealed that our translation reflected what it was meant to be from the respondents' perspectives. Hence, our actual survey commenced.

This study employed a convenience sampling technique to select the target respondents because these respondents were conveniently accessible to the researchers during a pandemic period where data collection on-site was challenging. By choosing this sampling technique both reliable and effective data collection procedures were ensured (Speak et al., 2018). Using the convenience sampling approach, we began the actual data collection by distributing 500 questionnaires to participants. In the end, 403 questionnaires were returned completed, and useful for analysis.

3.3. Common method bias (CMB)

Before the data analysis, we first employed Harman's single-factor approach to inspect any possibility of CMB (Podsakoff et al., 2003). This involved examining the factors using exploratory factor analysis to ensure that the major factor does not explain more than 50% of the variance. Through EFA, we found that the first factor accounted for 12.9% less than the 50% cut-off point. We confirmed through this procedure that there is no common method bias in the data.

3.4. Data analysis plan

Table 1 shows the 10-item measures of prosocial behaviours capturing their multidimensionality (Luengo Kanacri et al., 2021). Notably, some of the categories for each behavioural item displayed very low frequencies; hence, adjacent scores were merged, a widespread practice (Iannario et al., 2021). Thus, the indicator variables were rescaled from the 7-Likert scale to binary/dichotomous, which reveals the presence (= 1) or absence (= 0) of prosocial behaviour such as volunteering, sympathizing, helping, or sharing. The binary coding was derived from merging scores 5, 6, and 7–1; otherwise, 0. A Latent Class Analysis (LCA) is then applied to the ensuing set of 10 observable individual indicators/items to split the prosocial behavioural data into two or more categorical clusters/segments having homogeneous preferences. The classes are unobserved or latent. They capture the psychological heterogeneity in the data set. Like the conventional cluster analysis (Adam et al., 2021), LCA identifies groups sharing similar values on cluster indicators. However, LCA is considered superior in many aspects. First, LCA does not specify the number of clusters or label individual observations in advance. Instead, various statistical criteria are utilized to detect the optimal number of clusters (Chang et al., 2019). Second, whereas the traditional cluster analysis is an exploratory restrictive technique, the LCA is a model-based clustering procedure that allows for more flexible model specification (De Ona et al., 2013). LCA is, thus, used to analyse the 10 binary response items. Third, covariates (i.e. independent variables) can be included in the LCA model to predict participants' prosocial segments i.e. latent class membership.

To enable the classification of our observed items, there are logistic regression models for each of the 10 observed binary items, conditional on being in class 1, so-called item-response probabilities:

$$\Pr(volunteer) = 1 \mid Class = 1) = \frac{e_{\alpha_{1,1}}}{1 + \alpha_{1,1}} \tag{1}$$

…

$$Pr(carer) = 1 \mid Class = 1) = \frac{e_{\alpha_{10,1}}}{1 + \alpha_{10,1}} \tag{2}$$

Table 1. 10 Prosocial behavioural item responses.

Behavioural item	Description	Mean	Std Dev	Min	Max
Volunteer	I am available for volunteer activities to help those who are in need during my local trip.	4.61	1.57	1	7
Sympathy	I am emphatic with those who are in need during my local trip	4.80	1.37	1	7
Helper	I help immediately those who are in need during my local trip	4.83	1.37	1	7
Rescuer	I do what I can to help others avoid getting into trouble during my local trip	4.97	1.29	1	7
Empathy	I intensely feel what others feel during my local trip	4.94	1.43	1	7
Share knowledge	I am willing to make my knowledge and abilities available to others during my local trip.	5.40	1.25	1	7
Comforter	I try to console those who are sad during my local trip.	4.78	1.46	1	7
Risky lender	I easily lend money or other things during my local trip	3.50	1.80	1	7
Compassion	I easily put myself in the shoes of those who are in discomfort during my local trip	4.21	1.57	1	7
Carer	I try to be close to and take care of those who are in need during my local trip	4.68	1.42	1	7

where $e_{\alpha_{1,1}}, \ldots, \alpha_{10,1}$ are the intercepts. Equations (1) and (2) show the probability of agreeing to volunteer given membership in latent class 1 and so forth up to the probability of agreeing to be a carer given membership in class 1. There are also similar logistic regression models, conditional on being in classes 2 and 3. Thus, the LCA model uses logistic regressions to fit these 10 observed items of prosocial behaviour. It splits the sample population into 3 classes based on the tourists' predisposition to adopt the 10 behaviours. Hence, each visitor (*i*) was classified into a latent class/group (*j*) based on their posterior probability, H_{ij}. This classification of visitors into a particular class can be associated with observed visitor characteristics and modelled using the ordered logit regression. More precisely, to predict the visitors' group membership, the LCA model is adjusted to include an ordered logistic regression model that is allowed to differ across classes.

The latent class prevalence predictor model estimated the probability of belonging to latent class *j* across *i* tourists as:

$$H_{ij} = \frac{exp\ (\boldsymbol{X}_i^{'}\boldsymbol{\beta}_j)}{\sum_{j=1}^{3} exp\ (\boldsymbol{X}_i^{'}\boldsymbol{\beta}_j)} \tag{3}$$

where $\boldsymbol{\beta}$ is the set of coefficients associated with the independent variables, $\boldsymbol{X}$, covering mortality salience through COVID-19, cultural worldviews, self-esteem concept, social relationships, and demographics. Given that it is one model estimation, by default, the first class was treated as the base (i.e. as reference regression).

4. Results

4.1. Respondents' profile

Domestic tourists dominated our sample with domestic visitors constituting 43.9% while Mainland China and Hong Kong contributed 33% and 14.9% respectively (see Table 2). Women were overrepresented constituting 56% of the sample, while men accounted for the remaining 44%. Most visitors were low-income earners with the lead category (34%) earning US$625 or less (i.e. RMB5,000 or less) per month.[1] The next income group (US$625–938) and the highest income group (exceeding US$1,562) constituted 20% each. The bottom two income categories account for about half of the sample. Approximately 41.4% of respondents attained a bachelor's degree (41.4%) and 32% are high school graduates (see Table 2).

Table 2. Profile of 403 tourist respondents.

Profile	*N*	%	Profile	*N*	%
Country of origin			***Age***		
Mainland China	134	33.3	18–24 years	188	46.7
Macau	177	43.9	25–34 years	86	21.3
Hong Kong	60	14.9	35–44 years	34	8.4
Taiwan	12	3.0	45–54 years	36	8.9
Other	20	5.0	55–64 years	19	4.7
Gender			65 and above	40	9.9
Male	176	43.7			
Female	227	56.3	***Education***		
Monthly Income			High school graduate or less	129	32.0
RMB5000 or less	137	34.0	College graduate- undergraduate	167	41.4
RMB5001–7500	84	20.8	Postgraduate degree	54	13.4
RMB7501?10,000	47	11.7	Ph.D. degree	22	5.5
RMB10,001–12,500	52	12.9	Professional qualification	29	7.2
RMB12,501 or more	83	20.6	Others	2	0.5

4.2. Identification of latent classes of prosocial behaviours

The analysis was conducted using Stata 16.1 Statistical Software. Table 3 presents the descriptive analysis of the 10 prosocial behavioural statements. To start with, a Cronbach Alpha reliability analysis was conducted to measure the internal consistency of the 10 behavioural items used to profile prosocial personalities. The alpha coefficient ranged between 0.82 and 0.85, which is above the recommended 0.7 cut-offs in the literature. Next, we address research objective one. Based on the degree of consistency in performing prosocial behaviours, three ordered class clusters were identified among tourists (see Table 4). Relative to 2 and 4-class models, the 3-class model exhibited

Table 3. Descriptive statistics for explanatory variables.

Explanatory variables	Description	Mean	Std. Dev.	Min	Max
Mortality salience through COVID-19					
Covid death reminder	COVID-19 reminds me that death is the end of one's existence	4.43	1.82	1	7
Covid ends one's existence	COVID-19 makes me feel that death is the end of one's existence	4.25	1.87	1	7
Covid no afterlife	COVID-19 makes me fear there is no afterlife	3.62	1.94	1	7
No cremation	If I die of COVID-19, I do not like to be cremated	3.60	1.72	1	7
Covid destroys everything	I have a fear of not accomplishing my goals in life if I die of COVID-19	5.03	1.73	1	7
Covid death upsets friends	If I die of COVID-19, my friends would be upset for a long time	5.52	1.40	1	7
Fear of covid killing family	I have a fear of people in my family dying of COVID-19	5.90	1.60	1	7
Cultural worldview					
Cultural value protection	The cultural values of our forefathers are important to me	5.79	1.17	2	7
Cultural identification	Culture helps me to identify myself	5.81	1.07	1	7
Traditional culture	I want to know the foods our grandmothers made	5.37	1.39	1	7
Not losing cultural heritage	We are not losing our cultural heritage	5.12	1.48	1	7
Heritage conservation	We need to conserve more cultural heritage for future generations	6.14	1.08	1	7
Embody cultural heritage	Cultural heritage must be a part of our life	5.79	1.22	1	7
Traditional dress	I would like to know our traditional style of dress	5.52	1.29	1	7
Self-esteem					
Self-satisfied	I am satisfied with myself through this travel	5.55	1.15	1	7
I'm not good	During this trip, I think that I am no good at all	3.00	1.80	1	7
Good qualities	I feel that I have a number of good qualities during my travel	5.39	1.11	1	7
Self sufficient	I am able to do things as well as most other people during my travel	5.54	1.15	1	7
Low self esteem	I feel that I do not have much to be proud of during my travel	3.82	1.72	1	7
Useless feeling	I certainly feel useless at times	4.65	1.53	1	7
Equal level with others	I feel that I am a person of worth, at least on an equal plane with others while travelling	5.66	1.16	1	7
Self-respect	I wish I could have more respect for myself during my travel	5.73	1.21	1	7
Sense of failure	All in all, I am inclined to feel that I am a failure during this travel	3.07	1.88	1	7
Positive attitude	I take a positive attitude toward myself during my travel	5.77	1.23	1	7
Social relationships					
Make friends from travel	Travel is one way for me to make friends	5.20	1.55	1	7
Pursue friends	I actively pursue friendships through travel	5.18	1.49	1	7
Meet travelling people	Travel provides a way to meet new people	5.39	1.47	1	7
Group travel	Travelling is one way to be included in the groups that are important to me	5.12	1.37	1	7
Successful friends	I've been successful where friendships are concerned during travel.	5.15	1.37	1	7
Ice breaker	Even when someone seems unapproachable, I know I can find a way to break the ice when I travel.	4.99	1.33	1	7
Past social relationships	My past social experiences have prepared me to make friends in this trip	5.01	1.39	1	7
Make friends on sight	When I meet someone, I want to be friends with when I travel, I usually succeed	4.94	1.39	1	7

the best model fit with the least Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC) criterion. Each tourist was classified into a particular class with the highest posterior class probability.

4.2.1. Class 1: the self-centred

Of the 403 sampled tourists, Class 1 is the largest segment constituting 46.2% ($n = 186$). It represents visitors consistently displaying low probabilities of undertaking each prosocial behaviour; hence, it was labelled *Self-centred*. More precisely, the chances of individuals agreeing to volunteer are 5%, displaying sympathy is 2%, helping is 2%, … , to caring with 1%. Apart from sharing knowledge, all probabilities are at most 10%. In short, it is extremely unlikely for *the Self-centred* to exhibit prosocial acts while on the trip. Such tourists have a low preference for prosocial acts. Hence, this group travels for self-gratification purposes. Indeed, 'tourism is about letting go, not acting responsibly' (Dolnicar et al., 2017, p. 995). For this reason, while tourists may appreciate the idea of being prosocial, they may not necessarily engage in these actions during travel since they prioritize their needs at the expense of others.

4.2.2. Class 2: the intermediate

Class 2 profile represents 36% ($n = 145$) of the sample and is referred to as *the Intermediate* because these respondents report a moderate likelihood of displaying each of the 10 prosocial behavioural items. The probability of agreeing to perform prosocial acts generally ranges from 30 to 58%. These are tourists with a medium preference for prosocial behaviours. This moderation could be explained by the context of interaction. Studies have shown that prosocial behaviours are common among travellers with affinity (Maner & Gailliot, 2007). Hence, this group may display prosocial based on who is at the receiving end. In this case, prosocial depends on other factors and may not be consistent in all travels.

4.2.3. Class 3: the philanthropist

The smallest group is Class 3 comprising 17.9% ($n = 72$) of the respondents and is characterized by individuals who constantly report elevated chances of undertaking the 10 prosocial behaviours. The probability of engaging in prosocial behaviours generally exceeds 80%. These are naturally altruistic tourists; therefore, the class was named *the Philanthropist*. It is merely a charity preference group. Support for the philanthropic group of prosocial behaviours is found within the volunteer tourism research that argues a growing number of travellers are actively seeking assurance that their tourism behaviours express a positive influence beyond their self-enhancement or self-esteem to also benefit destination communities (Han, Meng, et al., 2020). Hence, volunteer tourists not only

Table 4. Identifying prosocial behavioural classes.

	Probabilities of giving a yes response to each behavior by class		
Behavior	Class 1 – 186 tourists (The Self-centered)	Class 2 – 145 tourists (The Intermediate)	Class 3 – 72 tourists (The Philanthropist)
Volunteer	5%	31%	82%
Sympathy	2%	33%	93%
Helper	2%	37%	89%
Rescuer	10%	30%	97%
Empathy	3%	48%	96%
Share knowledge	24%	58%	94%
Comforter	3%	42%	89%
Risky lender	5%	14%	55%
Compassion	2%	24%	53%
Carer	1%	40%	80%

Note:
• The total number of observations is 403.

seek to gain authentic travelling experiences and emotional/functional values by performing prosocial acts but also directly contribute to the local destination's sustainability (Coghlan & Weiler, 2018). Volunteer tourism tends to benefit less-affluent societies, so it relies on the Philanthropist personality of prosocial behaviours. Moreover, Philanthropic tourists are generally willing to pay/donate high amounts for natural-resource conservation in tourist destinations (Schuhmann et al., 2019). Unlike the *Intermediate, the Philanthropist* prosocial behaviours could be directed to all kinds of people even without any affiliation.

4.3. Predictors of latent class membership- regression results

To address objective two which investigates the predictors of each identified prosocial personality segment, the LCA model was further adjusted to include an ordered logistic regression model whose determinants varied across classes. Table 5 reports the model results for class 2 and class 3 (the Intermediate and Philanthropist) relative to the reference group, class 1 (the self-centred). Significant differences were found among the classes. Consistent with H1, visitors who acknowledged 'COVID-19 reminds me that death is the end of one's existence', are more likely to belong to medium or high prosocial classes (i.e. the intermediate or the Philanthropist) relative to the low prosocial class (i.e. self-centred). It is also notable that the Philanthropist (coefficient 0.229) exhibits even more prosocial behaviour than the Intermediate (coefficient 0.145). Moreover, unlike the Self-centred and the Intermediate, tourists who believe their death will upset friends for a prolonged period are more likely to belong to the Philanthropists class.

Our findings also concur that cultural worldviews help explain differences in prosocial tourist segments in support of H2. Visitors deeply invested in traditional culture are revealed through their knowledge of what their grandmothers made. These visitors are more prosocial with the Philanthropists' prosocial magnitude being higher (coefficient 0.464) than the Intermediate (coefficient 0.310). Likewise, tourists who are advocates of heritage conservation exhibit more Philanthropic (coefficient 0.518) and Intermediate prosocial acts (coefficient 0.244) than the Self-centred ones. Further evidence shows that low self-esteem is positively associated with Philanthropist acts only, contrary

Table 5. Three class membership model (reference group: class 1).

	Class 1		Class 2		Class 3	
	The Self-centred		*The Intermediate*		*The Philanthropist*	
Predictor	(reference group)		Coefficient	(Std Error)	Coefficient	(Std Error)
Mortality salience through COVID-19						
Covid death reminder			0.145*	(0.0865)	0.229**	(0.114)
Covid death upsets friends			0.119	(0.105)	0.318*	(0.164)
Fear covid will kill family			−0.149	(0.108)	0.0241	(0.198)
Cultural Worldview						
Cultural value sprotection			−0.147	(0.141)	−0.0615	(0.209)
Traditional culture			0.310**	(0.129)	0.464**	(0.181)
Heritage conservation			0.244*	(0.151)	0.518**	(0.261)
Self Esteem						
Low self esteem			−0.0148	(0.0860)	0.356***	(0.114)
Social relationships						
Make friends from travel			0.255***	(0.0953)	0.790***	(0.179)
Demographics						
Age squared			0.014	(0.0141)	0.0498***	(0.0188)
At least a degree			0.376	(0.305)	0.072	(0.396)
Model Fits						
3 class model, selected		AIC	3661.36			
		BIC	3867.81			
2 class model		AIC	3914.75			
		BIC	3998.73			

Note: ***, **, and * indicates significant at 1%, 5%, and 10% level.
AIC is Akaike Information Criterion.
BIC is Bayesian Information Criterion.

to the research question. As expected from H3, tourists who believe 'Travel is one way for me to make friends' are more likely to behave prosocially. This set of tourists belongs to either the Intermediate or the Philanthropist classes. Age is the only relevant demographic variable concurrent with H4. It only matters for the Philanthropist segment in a nonlinear U-shape relation. As tourists grow older, their prosocial behaviour falls up to a certain age, after which prosocial behaviour rises with age.

5. Discussion

To achieve sustainable destination development, extensive effort has been directed toward examining the volunteer tourism traveller segment. Though this allows for a better understanding of the tourists in that niche market (Han, et al., 2019), it is a narrow focus on prosocial behaviour. In the quest for a holistic perspective, this study expands the prosocial aspects to encompass 10 prosocial acts that were scientifically analyzed to identify three latent prosocial classes i.e. the high, medium, or low prosocial dubbed Philanthropist, Intermediate, and Self-centred. Further, we concurrently analyzed the drivers of the three market segments in comparative terms, recognizing the heterogeneity among visitors' prosocial behaviours. This enables an understanding of the formation and causes of different prosocial behavioural types, which is key for policymakers to entice tourists to improve their prosocial behaviours. Using latent class logit analysis (LCA), a novel three-class empirical model was developed to simultaneously explain the drivers of Philanthropist and Intermediate prosocial segments relative to the Self-centred prosocial segment. We strongly found that prosocial motivations vary across different types of prosocial behavioural personalities. The degree of prosocial motivation determines how often people perform kind acts for other people during a vacation in Macau.

Prosocial behaviours play a vital role in coping with visitors' existential anxiety. Both Terror Management Theory (TMT) and the concept of the Scrooge effect assert that when death thoughts are salient, people are more prosocial and kinder in social interactions (Jonas et al., 2002; Zaleskiewicz et al., 2015). Hence, we test that COVID-19, which serves as a reminder of mortality, intensifies people's willingness to exhibit prosocial personalities. We found the COVID-induced Scrooge effect aligns with the Intermediate and Philanthropist prosocial personalities, with a greater or more pronounced effect on the Philanthropist segment. Hence, we can conclude that relative to the Self-centred, Philanthropist tourists and in certain circumstances the Intermediate engage in prosocial acts to ward off death anxiety. An additional Philanthropist association is their belief that friends will be upset of their death. It reveals the strength of their network connections.

The finding that visitors invested in traditional culture and heritage conservations tend to be more Philanthropists and to a lesser extent, Intermediate supports the idea that tourists embrace their cultural worldviews involving beliefs and perceptions of their culture that provide answers to basic questions about life and standards for valued behaviour (C. Wei et al., 2020). Thus, during travel, these tourists consciously seek experiences to support their beliefs (i.e. worldviews), which strongly influence their judgment relating to prosocial engagements. The findings also echo psychology's self-determination theory which suggests that greater autonomous or more controlled reasons are more likely to translate into positive behavioural outcomes (Deci & Ryan, 2008; Peetz & Milyavskaya, 2021). This study has shown that stronger beliefs on personal cultural values or interests are associated with increased prosocial acts for the Philanthropists and a smaller magnitude for the Intermediate visitors in host communities. The Philanthropists are genuinely interested in pursuing prosocial acts whenever they stem from personal values or interest which fulfils their autonomous motivations.

Social psychologists recognize the connection of a person's mood to their prosocial behaviours. While being in a good mood entices tourists to perform prosocial behaviours, a negative state of mind can either increase or decrease prosocial behaviours (Brief & Motowidlo, 1986). Though it is logical to presume that tourists with higher levels of self-esteem would engage in more prosocial

behaviour (Zaleskiewicz et al., 2015), it is not clear for visitors with low self-esteem. Our finding that low self-esteem is associated with the Philanthropists signal that for this segment they deliberately engage in prosocial behaviours to elevate their self-esteem. Prosocial acts serve as self-esteem elevation mechanism. This implies that the Philanthropist visitors relentlessly perform prosocial acts in search of positive self-esteem to buffer death anxiety as proposed by Terror Management Theory, which confirms the sociopsychologists' assertion that individuals' evaluation of themselves influences their behaviours (e.g. Bandura, 1989; Brown & Smart, 1991).

The result that tourists belonging to either the Intermediate or the Philanthropist classes find travel as a means to make friends reveals that seeking social relationships during a trip influences the expression of tourists' prosocial personalities. When tourists feel included during travel, their inclination to perform prosocial behaviours is intensified. It can be concluded that close interpersonal relationships provide consensual validation of one's worldviews, and the desired self-esteem to boost confidence and self-security.

Age is crucial in predicting the prosocial behaviour of the Philanthropist segment only. Our results show that at a young age, as visitors grow, their prosocial acts decrease until a threshold (e.g. high school students take a gap year to self-gratify before undertaking a university degree) after which prosocial acts increase with age (e.g. could be that as you age you become wiser). This corroborates with earlier findings that revealed prosocial behaviours are the lowest during young adulthood. This is due to the instability in life and relationships leading to a greater focalization on one's educational and work goals. However, as individuals achieve a more stable role in society in later adulthood and old age, greater empathy and the adoption of generative goals increase (Freund & Blanchard-Fields, 2014).

This study provided holistic determinants of prosocial typologies for tourists visiting Macau. Together, these results suggest that unique strategies for connecting and relating to visitors should be developed based on the tourist's prosocial class hierarchy. The destination cannot have blanket policies requiring donating, volunteering, or taxing to fund any post-disaster recovery or area of need as they will lose tourists, particularly the self-centred. Instead, the policymakers need to devise targeted policies that are specifically directed towards the Philanthropists and the Intermediate, though caution should be exercised in circumstances where the Intermediate is less or not responsive. A great importance lies in how the marketing and management team can distinguish the tourist types to match the community needs while gratifying the relevant tourist personalities.

5.1. Theoretical implications

Prosocial behaviours are highly sought after in hospitality and tourism research, particularly volunteer tourism. Our paper complements such literature in multiple ways. First, while volunteerism is one specific type of prosocial behaviour that benefits others (Bajrami et al., 2023), we have uniquely uncovered a wide range of prosocial behaviours as a basis for segmenting tourists to a tourist-dependent destination. By undertaking a micro-level perspective of 10 broad prosocial behaviours among tourists (including volunteering), scientifically classifying them, and explaining their group behaviours, we unveil a critical gap that has largely remained unnoticed in a tourism context. This study developed a (three-class) theoretical model that discovered three distinct groups of tourist individuals (having different prosocial behavioural levels across a wide spectrum of prosocial activities), each with similar patterns of engagement across a wide spectrum of prosocial activities. Based on the identified groups, we used the LCA method to describe the factors that differentiate these latent segments' prosocial acts.

Second, by showcasing the various influential factors across the heterogeneous prosocial personalities (Philanthropist and Intermediate versus Self-centred), this research represents a new significant contribution to literature. It gives researchers insights as to why some volunteers are 'episodic volunteers' because of their short-term duties and higher turnover intentions (Bajrami et al., 2023) while others consider volunteerism as undesirable as it is more about benefits accruing

to volunteers than the host communities being aided (Otoo & Amuquandoh, 2014). Previous volunteer research generally treats visitors as a homogeneous group by analyzing a structural equation model that shares the same parameters. Our study has different parameters and driving factors for each segment such that if the Self-centred tourists are dominant then their effect on the community will likely be negative. However, if the majority is the Philanthropist segment there will be positive effects. The Intermediate segment performs prosocial activities of specific causes of interest, hence, is more likely the 'episodic volunteers'. The effect of the dominant Intermediate segment is unclear since their involvement in prosocial activities depends on the cause they align with. Thus, these three prosocial segmentation groups are representatives of prosocial behaviours observed in the tourism and hospitality industry.

Third, there is widespread research investigating how much tourists are willing to donate for conservation funding, 'the willingness to pay for marine, beach, mangrove, or coral conservation in tourism-dependent destinations' (Schuhmann et al., 2019). What is fundamental about this research is the recognition that there are different amounts tourists are willing to donate, which confirms our concept of different typologies of tourists. However, a donation is also one such prosocial tourist behaviour. Based on 10 broad aspects of prosocial acts, this study established three prosocial personalities thereby revealing that those who are more willing to donate, the intermediate and the philanthropists to a greater extent, are usually more willing to also undertake the other nine prosocial behaviours studied here.

Fourth, this research responds to calls to investigate the impact of tourists' psychological behavioural reactions to the pandemic (Sigala, 2020). In line with the Scrooge effect (Zaleskiewicz et al., 2015), the COVID-19 mortality salience drove the Intermediate and the Philanthropist's prosocial behaviours rather than the Self-centred group. This study also provides credence to the Terror Management Theory, self-esteem, social relations, culture, and demographics as eclectic predictors of prosocial segments among travellers. The finding that prosocial segments are multidimensionally influenced represents a timely valuable contribution to literature. No studies have used a blend of such theories as a lens through which prosocial acts manifest in tourism.

Lastly, framing the prosocial acts as a psychological mechanism in the prosocial context of tourism-dependent economies provides an understanding of how prosocial acts are realized. The drivers of prosocial are essential in psychologically connecting the destination community's developmental projects such as environmental conservations, community projects, healthcare, donations, and volunteerism to tourists (McGehee & Andereck, 2009). The use of terror management theory, the scrooge effect, and self-determination theory as theoretical foundations help extend the application of these theories to previously rarely used tourism context, culture, and novel institutional frameworks. We also contribute to the understanding that the Philanthropist's commitment to altruism is a characteristic of self-actualization and the Intermediate's prosocial acts reflect their priorities. Hence, different prosocial tourist behaviours are directed towards different goals.

5.2. Practical implications

The distinct prosocial clusters have practical implications for differentiated service design and marketing programmes of destination managers. First, the ability to identify the prosocial levels of different tourist segments enables Macau's destination managers and event organizers to efficiently target the most suitable market segments for specific community projects. Since different tourist segments are attracted to the destination's varied prosocial acts, it is important to devise event services, programmes, and promotional messages according to the motivations of prosocial behaviours that are suitable for the target prosocial market. In particular, customization of marketing communication is especially important during the post-COVID-19 rebuilding period. It should be targeted primarily to the Philanthropists who are keen to engage in highly prosocial activities as they are naturally inclined to do so due to their culture, self-esteem boost needs, and fear of COVID-

related death. The Philanthropists usually stick around after disasters and help to rebuild the destination faster.

Second, by empirically demonstrating the segments of tourists' prosocial behaviours and their driving forces, this study provides a practical tool for destination managers to develop a high prosocial (Philanthropic) or cause-specific prosocial (the Intermediate) tourist clientele, while respecting the privacy of Self-centred clientele. Policymakers can use the three-class model developed to make predictions about the likelihood of tourist individuals belonging to different latent classes based on their observed characteristics, such as COVID-19 mortality salience, self-esteem personality traits, cultural worldview attitudes and values, and traits for social relationships.

A third practical contribution to managers is to engage potential tourist philanthropists/Intermediates through their identified preexisting interests, which can be a productive form of outreach. This facilitates the policymakers in building a more loyal high prosocial visitor clientele (the Philanthropists) who will more likely recommend their network to the destination for similar acts. Additionally, Philanthropists can be used to rebuild destinations after major disasters like COVID-19, hurricanes, earthquakes, and wars as they are very helpful in mobilizing funds from their communities and will volunteer to help during times of need.

Fourth, this study offers significant managerial implications for tourism destination management and marketers in other regions. For example, a destination like Hong Kong where there have been negative resident sentiments towards the influx of Mainland tourists due to overcrowding in public places could benefit exceedingly from the segmentation groups identified in this study (Chen et al., 2023). Hong Kong, as part of targeting Mainland Chinese tourists, could gain insights from this study's findings to design tour packages for groups whose characteristics align with those of locals to avoid host–guest conflicts. Chinese tourists with philanthropist profiles could be described in local media platforms as possessing highly empathetic feelings with a willingness to help both other tourists and residents. This could reduce residents' negative perceptions of this group. Moreover, destination managers seeking to establish a better host-tourist relationship could use the identified groups in their positioning programmes. For example, countries like South Korea that also relies on the Chinese market could position Chinese tourists as an attractive group that generates meaningful tourist-resident relationship through their prosocial dispositions and volunteering tendencies (G. Kim et al., 2023).

6. Conclusion, limitation, and future research

In developing a sustainable tourism destination, it is critical to understand the typologies of tourists' prosocial behaviours. Innovatively using the Latent Class Logit Analysis, this research developed three multifaceted typologies of tourists' prosocial behaviours and concurrently investigated the predictors of the tourist's likelihood of belonging to each prosocial class. We found that some have a high propensity to help others, the Philanthropist, while the Self-centred are least likely to perform these acts and the Intermediate is peculiar as they help others in specific circumstances. The Philanthropist displays frequent and broad-based prosocial activities while the Intermediate exhibits targeted prosocial acts. This suggests that the Intermediate and the Philanthropists are generally more attracted to community-based activities. Community organizations may target these segments to recruit during times of emergency or in areas of need.

Our findings also reveal that the dominant group of tourists to Macau belong to the self-centred segment, who are relatively disengaged from actively helping others. However, the results show that in a gaming-dominant destination like Macau, there is an altruistic group, the Philanthropist, and at times the Intermediate. Together the Philanthropists and the Intermediate constitute more than half of the visitors (53%); the destination can count on these tourists in terms of sustained engagement in community development projects. Faced with the recent pandemic adversity, destinations can quickly rebuild by leveraging the Philanthropist and the Intermediate group's prosocial acts.

In addition to showing an innovative application of diverse theories in predicting three prosocial segments, a notable finding is that traditional culture and heritage conservation influence the Intermediate and the Philanthropist personality behaviours. Given that Macau is also popular for its cultural and heritage attractions, hosting responsible tourists connected to this cause is rewarding to the host society. The novel prosocial tourist segmentation model highlights the comprehensive multidimensionality of visitors' prosocial behaviours and how to promote high prosocial tourism performance, making it relevant to any destination seeking to revive tourism after the pandemic or other forms of tourism-related crisis such as hurricanes/cyclones. While we acknowledge the limitation of using a limited set of predictors, future studies could include other possible predictors. Moreover, future research can apply our study to other regions for a universal conclusion.

Note

1. USD1 was equivalent to RMB 6.4529 as at 2021 (source: https://www.exchangerates.org.uk/USD-CNY-spot-exchange-rates-history-2021.html).

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