Socio-demographic constraints to travel behavior

Uraiporn Kattiyapornpong and Kenneth E. Miller

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Abstract

Purpose – *This study aims to ascertain the effect of socio-demographic constraints on dimension of travel choice. This study also seeks to derive personal ecological explanations for variation in travel preference, travel intention and travel choice behavior of a wide range of destinations.*

Design/methodology/approach – *A large representative sample of 49,105 Australian respondents is utilized. Binary logistic regression is used to determine the impact of constraint variables.*

Findings – *Age, income and life stage have significant differential and interactive effects on travel behavior. Socio-demographic variables act in different ways to constrain/free different types of travel behavior. However there are significant levels of travel by even the most constrained groups as well as significant amounts of non-travel by the least constrained sectors of our society. These impacts are country specific.*

Research limitations/implications – *The travel motivations of constraint groups need to be considered to order better understand travel behavior. Investigation of psychological and ecological facilitators and constraints to travel is needed.*

Practical implications – *This information is most useful for market segmentation and the development of constraint group destination marketing plans. Managers can use utilize such results to minimize the barriers to travel by particular groups.*

Originality/value – *This paper utilizes a large database to provide insights into the personal ecological constraints to travel.*

Keywords *Travel, Behavior, Self esteem, Australia*

Paper type *Research paper*

Consumer behavior and travel and tourism marketing researchers devote considerable attention to understanding the nature of travel choice. For example, the work of Woodside *et al.* (2007) extends and applies ecological systems theory using a narrative case study method to examine consumer leisure and travel behavior.

Samdahl and Jekubovich (1997) view constraints as a subset of reasons for not engaging in a particular behavior. Several researchers (for example, Hudson, 2000; Samdahl and Jekubovich, 1997; Tian *et al.*, 1996; Woodside and Lysonski, 1989) study influences of constraints on activities participation. Woodside *et al.* (2007) confirm the usefulness of the constraints interaction proposition for understanding and describing the factors resulting in participation, as well as nonparticipation, behaviors. Many researchers (for example, Hsieh *et al.*, 1992; Taylor *et al.*, 1993; Teaff and Turpin, 1996) find that demographic variables are related to aspects of travel choice. Woodside and Pitts (1976) suggest that demographic variables may act as qualifying variables or constraining variables rather than determining variables of travel behavior.

Empirical research on the role demographic and socioeconomic variables as travel constraints is limited. This study aims to ascertain the effect of socio-demographic

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constraints on dimensions of travel choice. A multidimensional measure of travel behavior is used which combines destination choice sets and duration of travel. The effects of specific nonlinear combinations of demographic variables, selected according to the leisure constraint model on travel preference and choice are investigated. This study also seeks to derive personal ecological explanations for variation in travel intention and travel choice behavior of a wide range of destinations.

Background literature

A particularly comprehensive framework of a purchase consumption system applied to leisure travel behavior was developed by Woodside *et al.* (2007). This framework illustrates how demographic variables, socioeconomic variables and family effect travel intentions and travel decisions. Travel preferences are generally less constrained by income and family considerations and represent the places where persons would like to go. Actual travel behavior can be more constrained by macrosystem variables such as age, income and life stage. This research posits that age, income and life stage will have less of an effect on travel preferences and a greater effect on travel choice (Samdahl and Jekubovich, 1997).

Ecological system theory

Ecological systems theory can be used to explain travel choice behavior by providing valuable insights for predicting travel choice and behavior through the individuals' environment. Bronfenbrenner (1986) proposes that the microsystem and the macrosystem both influence behavior. Microsystem factors include the personal influences that effect an individual's decisions and choices. Prior activities in which an individual has participated in are part of an individual's microsystem because maintaining participation in this activity is relatively easy (Woodside *et al.*, 2004). The microsystem includes activities that a person has experienced as well as past and present roles of the individual. The macrosystem is the larger context in which the individual functions and includes belief systems such as societal conceptions of ethnicity, socioeconomic status, and gender, and other structures of society and its institutions, including social class, gender, culture, money, and ethnicity (Floyd *et al.*, 1994). Many authors (for example, Brown and Boston, 1994; Hsieh *et al.*, 1992; Lang *et al.*, 1997; Taylor *et al.*, 1993; Teaff and Turpin, 1996) find that demographic variables are related to aspects of travel choice.

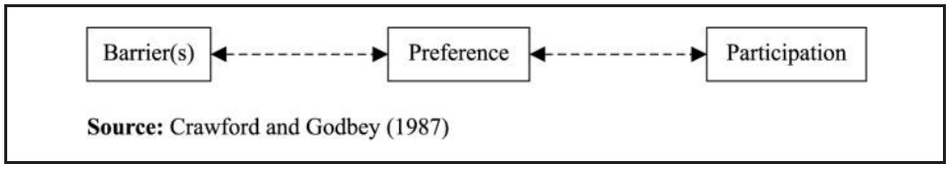
The leisure constraint model

The leisure constraint model is one of a number of theories that can be extended and related to travel choice behavior. Crawford and Godbey (1987) propose a model of the relationship of leisure barriers, preference and participation of family leisure. Figures 1, 2, and 3 illustrate three barriers that affect the relationship between leisure preferences and participation: intrapersonal barriers (Figure 1), interpersonal barriers (Figure 2) and structural barriers (Figure 3).

Intrapersonal barriers involve individual psychological states and attributes such as stress, depression anxiety, reference group attitudes, which interact with leisure preferences rather than intervening between preferences and participation (Crawford and Godbey, 1987). These barriers are somewhat unstable and possibly temporal.

Interpersonal barriers are the result of the relationship between individuals' characteristics (Crawford and Godbey, 1987). These are either the product of the intrapersonal barriers which accompany spouses into the marital relationship, thus affecting joint preference for

Figure 1 Crawford and Godbey (1987)'s intrapersonal constraints



Source: Crawford and Godbey (1987)

Figure 2 Crawford and Godbey (1987)'s interpersonal constraints

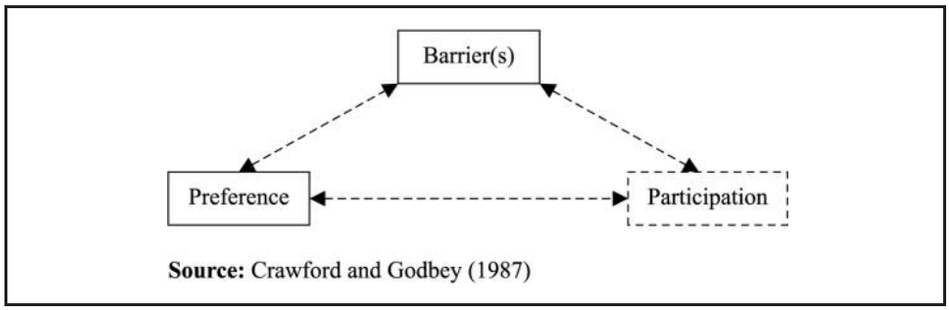
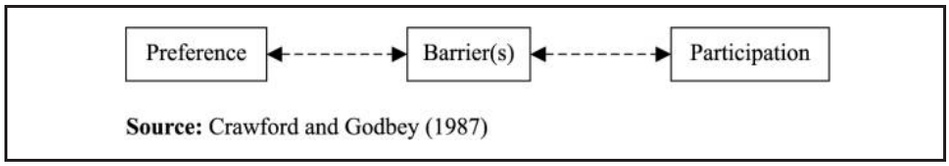


Figure 3 Crawford and Godbey (1987)'s structural constraints



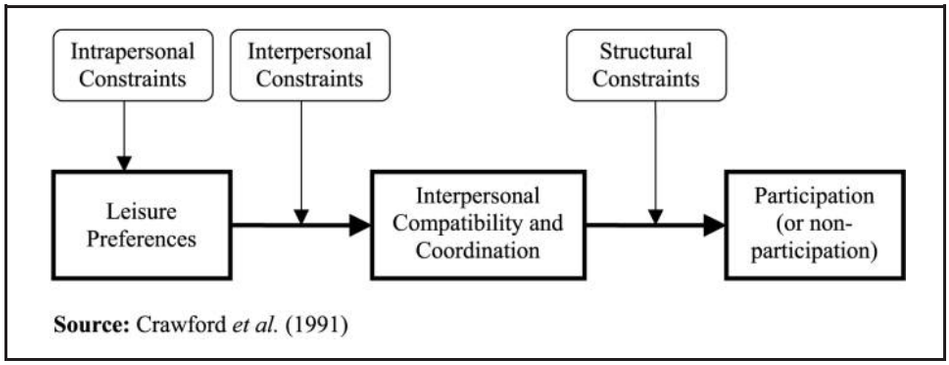
specific leisure activities, or those barriers which arise as the result of spousal interaction. Barriers of this sort may interact with both preference for and participation in leisure activities.

Structural barriers represent constraints are conceptualized as intervening factors between leisure preference and participation (Crawford and Godbey, 1987). Examples of structural barriers are family life-cycle stage, family financial resources, season, time, and work commitments.

Crawford *et al.* (1991) extend and develop a classic model of leisure constraints (Figure 4) and illustrate the important of understanding of how constraints effect choices among people who are already participating. Leisure preferences are developed when intrapersonal constraints are absent or their effects have been mitigated. The individual may encounter constraints at the interpersonal level in the next step depending on the type of activity. It occurs only when this type of constraint has been overcome that structural constraints begin to be encountered (Crawford *et al.*, 1991). Participation will result in the absence of, or negotiation through, structural constraints. If structural constraints are sufficiently strong, however, the outcome will be nonparticipation.

An important contribution is made by Jackson (1997) and Samdahl and Jekubovich (1997) who develop and discuss the roles of constraints and facilitators in choice of leisure activity.

Figure 4 Crawford *et al.* (1991)'s hierarchical model of leisure constraints



These authors argue that leisure constraints help to understand the influences that shape people's everyday leisure behavior and the differences in leisure choices for different segments of the population (Samdahl and Jekubovich, 1997). While structural constraints effect the type of leisure activity that people undertake, they do not prevent people from engaging in leisure altogether. Applying these ideas to travel implies that degrees of travel behavior should be studied, for example, travel distance and duration of holiday.

Raymore (2002) defines facilitators to leisure as ''factors that are assumed by researchers and perceived or experienced by individuals to enable or promote the formation of leisure preferences and to encourage or enhance participation'' (Raymore, 2002, 39). Clearly, constraints and facilitators have been defined in almost identical ways. Constraints are in fact negative versions of facilitator variables. Constraints and facilitators act together to produce participation or nonparticipation, and considering both must is necessary when discussing participation or nonparticipation from an ecological perspective (individuals interact with the contexts in which they live their lives). He develops a multi-layer ecological approach to understanding influences on leisure participation. Intrapersonal facilitators are those individual characteristics, traits and beliefs that enable and encourage the formation of leisure preferences (Raymore, 2002). Interpersonal facilitators are those individuals or groups that encourage participation in leisure. Finally, structural facilitators those social and physical institutions, organizations, or belief systems of a society that operate externally to the individual to enable or promote the formation of leisure preferences and encourage or enhance participation in leisure.

Woodside *et al.* (2007) confirm the usefulness of the constraints (and facilitators) interaction proposition in understanding and describing the factors which determine participation, as well as nonparticipation behaviors. Travel constraints researchers (Hudson and Gilbert, 2000; Norman, 1995; Plog, 1974; Stemerding *et al.*, 1996) focus on non-participants. Several researchers (Aas, 1995; Kay and Jackson, 1991; Shaw *et al.*, 1991; Wright and Goodale, 1991) find differences among participants exhibiting different levels of participation frequency and interest but find no relationship between the reporting of some constraints and actual leisure participation.

Travel constraints theory

A number of studies investigate constraints to travel behavior. It can be argued that travel constraints are quite different from general leisure behavior in ways such as cost, duration and commitment. It is likely that constraints and facilitators operate differently in impacting travel behavior.

Many factors influence and constrain leisure travel. Age is a most important travel constraint. For example, Romsa and Blenman (1989) study and compare the vacation patterns of the elderly Germans in order to ascertain the influence of age and environmental factors on tourist participation including modes of travel, destinations, length of vacation, accommodations, popularity of activities, and vacation memories. They conclude that socioeconomic, physical, psychological, and physiological (age related) constraints play an important role in the underlying processes related to the behavior of the elderly vacationer. Motivations for taking holidays vary by age group. Therefore taking vacations as leisure or recreational experience declines with age. The more delicate physical condition of seniors constrains the choice of vacation destination and holiday activities. Intergenerational effects are likely to impact the travel of these older persons. Similarly, in the study of the relationship between travel and the elderly, Teaff and Turpin (1996) find that older Americans travel more frequently and longer distances, stay away longer, and rely more on travel agents than other segments of the population. Older people place a higher priority on visiting friends and relatives. Some evidence shows that longer vacations are taken after the age of retirement. Retirees are significantly more likely to be constrained by the perception of age, disability, health conditions, and physical energy. Being too busy to travel constrains the pre-retirees, while physical infirmity and less of an adventuresome spirit constrains retirees.

Income also significantly influences travel choice behavior. Nicolau and Más (2005) study tourist choice process using tourist expenditure. They find that income, household size,

education, size of the city of origin and opinion of going on holiday are determinants that affect the decision to go on holiday. Personal restriction (income and household size) significantly relates to the decision to go on holiday, while socio-demographic characteristics (age) is not significant.

Children influence family travel decision. For example, Nickerson and Jurowski (2000) study the influences of children on vacation travel patterns. They provide a perspective on planning and development with a view to increase child satisfaction at the destination. The family life cycle is also a significant constraint to travel choice behavior. In a study of the family life cycle (FLC) of German travelers, Oppermann (1995) concludes that FLC effects travel patterns considerably. Many aspects of the tourists' travel patterns relate to their stages of the family life cycle.

In summary, age, income and life cycle are likely to be significant constraints to leisure and recreation activity. Prior empirical research is limited on the role demographic and socioeconomic variables as travel constraints. This study aims to understand the role of socio-demographic constraints on shaping travel behavior and investigate the amount of travel by severely constrained groups. The effect of critical constraint interactions is examined. This study also seeks to derive personal ecological explanations for variation in travel intention and travel choice behavior.

Method

This research utilizes data generated from the Roy Morgan Research Centre in Australia (RMRC). RMRC collected these data in 2003 and 2004 from a face-to-face survey and a self-completion questionnaire survey. A large representative sample of 49,105 Australian respondents was interviewed. Data were collected on a wide range of variables including media habits, demographics, travel motivations, AIOs, consumer travel attitudes and information of travel preferences, travel intentions over the next 12 months and travel behavior over the last 12 months.

RMRC selects respondents using a stratified random probability sample to ensure correct representation of all Australian states, major metropolitan and country areas. The interviewing method ensures complete coverage spread evenly across all electorates, with interviewers visiting different randomly selected clusters of dwellings.

RMRC conducts face-to-face interviews in the city and country areas of all six states and the two territories, namely, Sydney, NSW country, including the ACT, Melbourne, Victoria country, Brisbane, Queensland country, Adelaide, South Australia country and the Northern Territory, Perth, Western Australia country, and Tasmania. Approximately 500 people were interviewed each weekend for 12 weekends per quarter during 2003 and 2004.

RMRC designs the sample to be representative of the Australian population 14 years and over. Only one person per household was interviewed. Re-contacting was used as a quality control measure after each round of interviewing for a proportion of respondents. Collecting the sample continuously over a two-year period means that samples of lower incidence populations can be accumulated week by week to the desired size, both accurately and economically. The RMRC used a consistent methodology over the two-year data collection period.

After the face-to-face interview, respondents were asked to complete a self-completion questionnaire administered survey including activities and interests, attitudes and opinions, internet usage and other product data. Data from the establishment survey and product poll were merged for each respondent to form a large, single-source database.

Findings

Combinations of age, income and life stage are utilized to develop 45 constraint groups. The dependent variables of travel destination planned for the next 12 months and past travel destination in the last 12 months are compared across the 45 constraint groups. Travel dependent variables are measured according to the categories of intrastate travel, interstate travel, close vs. distant proximity international travel (New Zealand, Asia, Americas and

Europe) and duration of stay (short and long trips). Variables measuring the difference between travel plans and past travel behavior are also operationalized for both short and long trips duration. Table I shows the means of travel behavior for intrastate, interstate and international long trips across the 45 constraint groups. Travel behavior is significantly different across combinations of age, income and life stage.

The relative main and interactive effects of the independent variables on the dependent variables are confirmed using binary logistic regression. The dependent variables used in the analyses are destination planned intrastate short trips, destination planned interstate short trips, past places intrastate short trips, past places interstate short trips, last places intrastate short trips, last places interstate short trips, destination planned intrastate long trips, destination planned interstate long trips, destination planned New Zealand long trips, destination planned Asia long trips, destination planned America and Europe long trips, past

Table I Respondent travel choice set behavior for long trip

Constraint group	*Past places Intra State Mean*	*Past places Inter State Mean*	*Past places EU and USA Mean*	*Past places Asia Mean*	*Past places New Zealand Mean*
Group 1 Low inc, single, 20 to 24 yrs	0.29	0.24	0.03	0.05	0.01
Group 2 Low inc, couple, 20 to 24 yrs	0.37	0.21	0.05	0.04	0.02
Group 3 Low inc, family, 20 to 24 yrs	0.20	0.12	0.00	0.00	0.02
Group 4 Medium inc, single, 20 to 24 yrs	0.34	0.34	0.04	0.04	0.02
Group 5 Medium inc, couple, 20 to 24 yrs	0.42	0.36	0.05	0.03	0.02
Group 6 Medium inc, family, 20 to 24 yrs	0.32	0.21	0.01	0.01	0.01
Group 7 High inc, single, 20 to 24 yrs	0.32	0.34	0.13	0.07	0.04
Group 8 High inc, couple, 20 to 24 yrs	0.41	0.42	0.07	0.06	0.01
Group 9 High inc, family, 20 to 24 yrs	0.22	0.22	0.00	0.04	0.09
Group 10 Low inc, single, 25 to 34 yrs	0.25	0.22	0.02	0.01	0.01
Group 11 Low inc, couple, 25 to 34 yrs	0.29	0.30	0.11	0.05	0.04
Group 12 Low inc, family, 25 to 34 yrs	0.29	0.19	0.01	0.02	0.01
Group 13 Medium inc, single, 25 to 34 yrs	0.30	0.35	0.07	0.07	0.03
Group 14 Medium inc, couple, 25 to 34 yrs	0.34	0.37	0.05	0.04	0.03
Group 15 Medium inc, family, 25 to 34 yrs	0.36	0.27	0.02	0.01	0.02
Group 16 High inc, single, 25 to 34 yrs	0.35	0.48	0.12	0.12	0.06
Group 17 High inc, couple, 25 to 34 yrs	0.43	0.51	0.11	0.09	0.08
Group 18 High inc, family, 25 to 34 yrs	0.45	0.38	0.03	0.02	0.04
Group 19 Low inc, single, 35 to 44 yrs	0.24	0.17	0.01	0.01	0.01
Group 20 Low inc, couple 35 to 44 yrs	0.25	0.22	0.03	0.04	0.02
Group 21 Low inc, family 35 to 44 yrs	0.27	0.18	0.01	0.02	0.01
Group 22 Medium inc, single 35 to 44 yrs	0.31	0.33	0.05	0.03	0.02
Group 23 Medium inc, couple 35 to 44 yrs	0.33	0.29	0.04	0.03	0.02
Group 24 Medium inc, family 35 to 44 yrs	0.43	0.27	0.02	0.02	0.01
Group 25 High inc, single 35 to 44 yrs	0.32	0.39	0.09	0.12	0.05
Group 26 High inc, couple 35 to 44 yrs	0.36	0.43	0.09	0.08	0.04
Group 27 High inc, family 35 to 44 yrs	0.48	0.45	0.06	0.04	0.03
Group 28 Low inc, single 45 to 54 yrs	0.19	0.19	0.02	0.01	0.01
Group 29 Low inc, couple 45 to 54 yrs	0.26	0.25	0.03	0.02	0.01
Group 30 Low inc, family 45 to 54 yrs	0.26	0.19	0.01	0.02	0.00
Group 31 Medium inc, single 45 to 54 yrs	0.31	0.35	0.07	0.05	0.02
Group 32 Medium inc, couple 45 to 54 yrs	0.37	0.34	0.04	0.04	0.03
Group 33 Medium inc, family 45 to 54 yrs	0.38	0.30	0.02	0.03	0.02
Group 34 High inc, single 45 to 54 yrs	0.32	0.40	0.10	0.04	0.04
Group 35 High inc, couple 45 to 54 yrs	0.42	0.47	0.08	0.07	0.05
Group 36 High inc, family 45 to 54 yrs	0.50	0.41	0.07	0.06	0.03
Group 37 Low inc, single 55 yrs and over	0.25	0.26	0.03	0.01	0.02
Group 38 Low inc, couple 55 yrs and over	0.34	0.32	0.03	0.02	0.01
Group 39 Low inc, family 55 yrs and over	0.21	0.19	0.02	0.04	0.01
Group 40 Medium inc, single 55 yrs and over	0.28	0.36	0.08	0.05	0.03
Group 41 Medium inc, couple 55 yrs and over	0.41	0.43	0.07	0.04	0.03
Group 42 Medium inc, family 55 yrs and over	0.27	0.30	0.06	0.03	0.03
Group 43 High inc, single 55 yrs and over	0.33	0.41	0.16	0.11	0.04
Group 44 High inc, couple 55 yrs and over	0.40	0.51	0.13	0.08	0.06
Group 45 High inc, family 55 yrs and over	0.35	0.41	0.07	0.05	0.04

places intrastate long trips, past places interstate long trips, past places New Zealand long trips, past places Asia long trips, past places America and Europe long trips, last places intrastate long trips, last places interstate long trips, last places New Zealand long trips, last places Asia long trips and last places America and Europe long trips.

Binary logistic regression is used to analyze the data as the dependent variables are dichotomous. The deviation measure is used to calculate contrasts where each category of the predictor variable except the reference category is compared to the overall effect. Table II shows the means of the dependent variable (planned intrastate short trip) on all independent variables.

Table III shows the results of the binary logistic regression using the dependent variable of destination planned intrastate short trip plus the categorical independent variables of age, income and life stage plus all interactions. Firstly, age significantly contributes to the discrimination. The results reveal that the probability to plan intrastate travel of the younger respondents was the highest ($p < 0.05$) while older respondents are less likely to travel. Secondly, household income constitutes to the discrimination in consumer planning of a short intrastate trip within the next 12 months. A closer inspection of the results reveals that the highest income group is more likely to plan intrastate travel than lower income consumers ($p < 0.05$). Thirdly, life stage also significantly contributes to the discrimination. The results reveal that the probability to plan intrastate travel of the single life-stage consumers is the lowest (beta $= -0.245$, $p < 0.05$). Families are more likely to plan intrastate travel.

Importantly, two interaction effects are significant. Figure 5 illustrates the interaction effect of income and life stage of consumers is significant. For example, the interaction effect between the low income and single group is 0.087 ($p < 0.05$). Figure 6 illustrates the interaction effect of income and age of consumers is also significant. For example, the interaction effect between the middle household income group and the 35 to 44 age group is 0.069 ($p < 0.05$). The interaction between age and life stage is not significant (Figure 7). This analysis is repeated for all dependent variables, that is, interstate travel, close vs. distant proximity international travel destinations (New Zealand, Asia, Americas and Europe) and duration of stay (short and long trips).

Table IV provides a summary of the levels of significance from binary logistic regression using the dependent variables of travel planning and travel choice for Asian and NZ destinations. For Asia, consistent results are found for income and life stage. Age is less of a discriminator and therefore less useful as a segmentation variable. Travel to New Zealand is

Table II Mean value of destination planned intrastate short trip within the next 12 months by age, income, and life stage

Demographic groups	*Destination planned intrastate short trip*
Age groups	
20 to 24 years old	0.54
25 to 34 years old	0.59
35 to 44 years old	0.57
45 to 54 years old	0.52
55 years old and over	0.36
Household income groups	
Low income (under 30K)	0.35
Medium income (30K to 79.9K)	0.53
High income (80K or more)	0.59
Life stage groups	
Single	0.41
Couple	0.46
Family	0.58

Table III Binary logistic regression results for destination planned intrastate short trips

	B	*SE*	*Wald*	*df*	*Sig.*	*Exp(B)*
Age group 20 to 24 years old	0.31	0.06	31.09	1	0.00	1.36
Age group 25 to 34 years old	0.27	0.03	80.91	1	0.00	1.31
Age group 35 to 44 years old	0.05	0.03	3.12	1	0.08	1.05
Age group 45 to 54 years old	−0.11	0.03	17.64	1	0.00	0.90
Age group 55 years old and over	−0.52		339.08	4	0.00	
HH inc. low income	−0.32	0.02	191.36	1	0.00	0.73
HH inc. medium income	0.08	0.02	17.12	1	0.00	1.09
HH inc. high income	0.24		192.68	2	0.00	
Life stage single	−0.25	0.02	101.52	1	0.00	0.78
Life stage couple	0.11	0.03	20.09	1	0.00	1.12
Life stage family	0.13		102.10	2	0.00	
HH income * Life stage			15.94	4	0.00	
HH inc. low income by single	0.09	0.03	10.03	1	0.00	1.09
HH inc. low income by couple	−0.01	0.03	0.06	1	0.81	0.99
HH inc. medium income by single	0.05	0.03	3.73	1	0.05	1.05
HH inc. medium income by couple	−0.05	0.02	4.24	1	0.04	0.95
Age group * HH income			18.89	8	0.02	
Age 20 to 24 yrs by low income	0.11	0.07	2.48	1	0.12	1.11
Age 20 to 24 yrs by medium income	−0.12	0.06	3.86	1	0.05	0.89
Age 25 to 34 yrs by low income	0.04	0.05	0.65	1	0.42	1.04
Age 25 to 34 yrs by medium income	−0.01	0.04	0.15	1	0.70	0.99
Age 35 to 44 yrs by low income	0.00	0.04	0.00	1	0.95	1.00
Age 35 to 44 yrs by medium income	0.07	0.03	4.41	1	0.04	1.07
Age 45 to 54 yrs by low income	−0.02	0.04	0.37	1	0.54	0.98
Age 45 to 54 yrs by medium income	0.01	0.03	0.07	1	0.79	1.01
Age group * Life stage			10.37	8	0.24	
Age 20 to 24 yrs by single	−0.10	0.06	2.63	1	0.11	0.91
Age 20 to 24 yrs by couple	0.14	0.07	3.72	1	0.05	1.15
Age 25 to 34 yrs by single	0.01	0.04	0.08	1	0.77	1.01
Age 25 to 34 yrs by couple	−0.05	0.04	1.06	1	0.30	0.96
Age 35 to 44 yrs by single	0.03	0.04	0.55	1	0.46	1.03
Age 35 to 44 yrs by couple	−0.08	0.04	3.25	1	0.07	0.93
Age 45 to 54 yrs by single	0.05	0.04	1.78	1	0.18	1.05
Age 45 to 54 yrs by couple	−0.06	0.03	3.02	1	0.08	0.94
Constant	0.08	0.02	20.02	1	0.00	1.09

Figure 5 Interactions between age and life stage with planned destination intrastate short trips

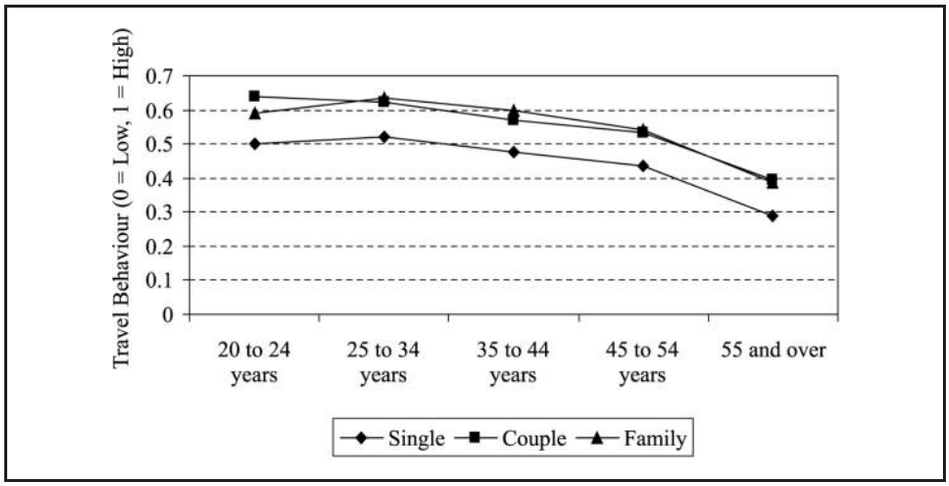


Figure 6 Interactions between income and life stage with planned destination intrastate short trip

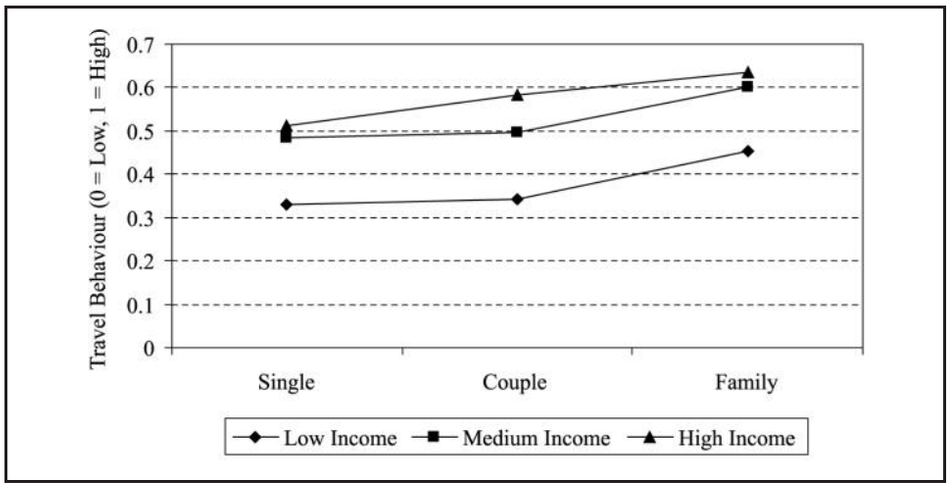


Figure 7 Interactions between income and age with destination planned intrastate short trip

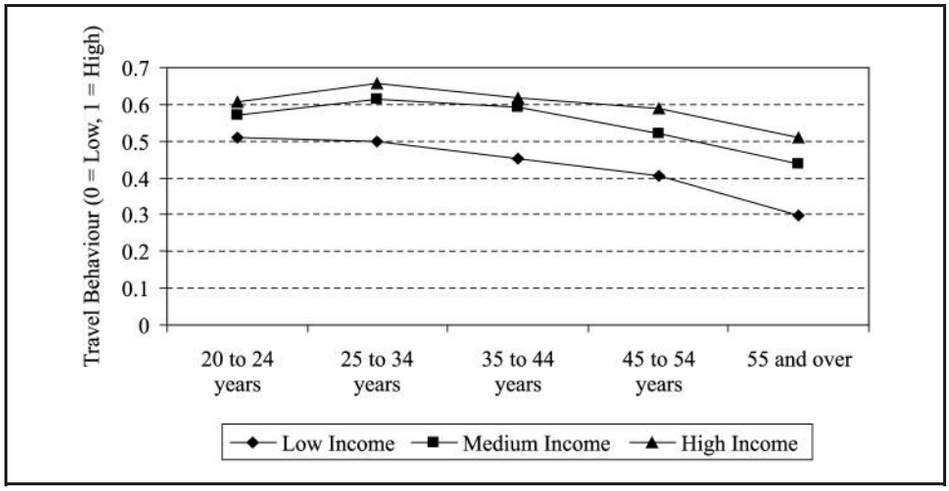


Table IV Summary of the levels of significance in the binary logistic regression results for long trip dependent variable

	Long trips					
Constraint variables	*Planned places Asia*	*Planned places NZ*	*Past places Asia*	*Past places NZ*	*Last stayed places Asia*	*Last stayed places NZ*
Age 20 to 24 years old	0.09	0.01	0.32	0.45	0.44	0.80
Age 25 to 34 years old	0.91	0.06	0.93	0.06	0.89	0.16
Age 35 to 44 years old	0.81	0.41	0.65	0.12	0.99	0.10
Age 45 to 54 years old	0.99	0.63	0.29	0.20	0.69	0.22
Age 55 years old and over	0.16	0.00	0.31	0.01	0.66	0.04
Low income	0.00	0.00	0.00	0.00	0.00	0.00
Medium income	0.13	0.97	0.35	0.75	0.87	0.84
High income	0.00	0.00	0.00	0.00	0.00	0.00
Single	0.00	0.48	0.00	0.27	0.02	0.81
Couple	0.35	0.07	0.01	0.14	0.00	0.26
Family	0.00	0.10	0.00	0.11	0.00	0.44

not demographically determined. This destination appeals equally to all demographic groups.

The constrained respondent groups are identified and compared to the less constrained respondents. For example, low income families are particularly constrained for short stay interstate travel. However, 10 percent of this group did travel interstate within the last 12 month period compared to nearly 40 percent of high income persons (both singles and couples) who are aged between 25 and 34 years. Findings are also illustrated for longer stay domestic and international travel. Explanation should be sought for the case where respondents preferred a travel destination but did not plan to travel to this destination.

Tables V, VI and VII show summaries of the level of significance in the binary logistic regression results for the long trip dependent variables and the two-way interactions of income and life stage, age and income, and age and life stage, respectively.

As expected, significant interactions are more prevalent for the Asian destinations than for New Zealand. The Asian destinations appeal to particular constraint groups more than others. This might be due to distance, perceived security and language differences. New Zealand has more consistent appeal regardless of the constraint group, however significant age and life stage interactions exist.

Research limitations/implications

This research considers the effects of important demographic and socioeconomic travel constraints but does not consider psychological constraints. These secondary data were collected between 2003 and 2004 and were designed by the Roy Morgan Research Centre. However, this research does not measure a full range of constraint variables. The travel motivations of constraint groups need to be considered in order to better understand travel

Table V Summary of the levels of significance in the binary logistic regression results of two-way interaction of income and life stage for long trip dependent variable

	Long trips					
Interactions	*Planned places Asia*	*Planned places NZ*	*Past places Asia*	*Past places NZ*	*Last stayed places Asia*	*Last stayed places NZ*
HH Income * Life stage	0.00	0.90	0.00	0.94	0.00	0.81
Low income by single	0.00	0.78	0.00	0.40	0.00	0.39
Low income by couple	0.91	0.34	0.97	0.98	0.51	0.90
Medium income by single	0.00	0.73	0.01	0.68	0.01	0.81
Medium income by couple	0.33	0.73	0.60	0.91	0.55	0.96

Table VI Summary of the levels of significance in the binary logistic regression results of two-way interaction of age and income for long trip dependent variable

	Long trips					
Interactions	*Planned places Asia*	*Planned places NZ*	*Past places Asia*	*Past places NZ*	*Last stayed places Asia*	*Last stayed places NZ*
Age group * HH income	0.00	0.80	0.01	0.82	0.01	0.97
Age 20 to 24 years by low income	0.02	0.36	0.00	0.21	0.00	0.57
Age 20 to 24 years by medium income	0.04	0.24	0.11	0.40	0.51	0.35
Age 25 to 34 years by low income	0.96	0.87	0.30	0.78	0.51	0.89
Age 25 to 34 years by medium income	0.31	0.71	0.27	0.95	0.30	0.68
Age 35 to 44 years by low income	0.25	0.92	0.77	0.88	0.55	0.72
Age 35 to 44 years by medium income	0.91	0.95	0.25	0.74	0.06	0.74
Age 45 to 54 years by low income	0.21	0.67	0.10	0.13	0.04	0.64
Age 45 to 54 years by medium income	0.14	0.73	0.35	0.12	0.24	0.25

Table VII Summary of the levels of significance in the binary logistic regression results of two-way interaction of age and life stage for long trip dependent variable

	Long trips					
Interactions	*Destination planned Asia*	*Destination planned NZ*	*Past place Asia*	*Past place NZ*	*Last stayed places Asia*	*Last stayed places NZ*
Age group * Life stage	0.00	0.74	0.0	0.73	0.00	0.03
Age 20 to 24 years by single	0.28	0.57	0.08	0.88	0.07	0.98
Age 20 to 24 years by couple	0.45	0.26	0.20	0.32	0.38	0.17
Age 25 to 34 years by single	0.02	0.73	0.06	0.50	0.09	0.42
Age 25 to 34 years by couple	0.24	0.98	0.22	0.07	0.23	0.02
Age 35 to 44 years by single	0.41	0.10	0.32	0.31	0.13	0.05
Age 35 to 44 years by couple	0.22	0.16	0.62	0.91	0.67	0.84
Age 45 to 54 years by single	0.28	0.48	0.02	0.57	0.03	0.13
Age 45 to 54 years by couple	0.01	0.53	0.04	0.41	0.18	0.07

behavior. Investigation of psychological and ecological facilitators and constraints to travel is needed.

Practical implications

Destination and tourism managers can utilize such results to minimize the barriers to travel by particular groups. For example, two-income younger households with no children are time constrained. Attractive destination packages can be designed around short get-away themes. Specific tour packages and tour incentives can be designed around constraint groups defined by age, income and life stage.

The similarities and differences between less and more constrained travellers, and less and more constrained non-travellers can be a critical base for market segmentation of the Australian market to both domestic and overseas destinations.

The results of this paper provide a profile of Australian travellers by age, income and life stage. These variables can be effectively used in designing market strategies for Australian travel markets. The findings are important for those interested in travel markets. For example, a nearby destination such as New Zealand should not necessarily utilize demographics as a basis for segmentation. Travel marketers might focus on developing attractive vacation packages addressing travellers' activities, interests and opinions (AIOs), lifestyle, and motivation for travel. Asian destinations should carefully review critical combinations of constraint variables to identify high potential groups. Minimization of the effects of constraints on low potential groups should also be considered. Marketers of tourism in general may wish to consider the marketing implications of this paper. A different marketing message should be communicated using different travel constraints and facilitators (macrosystems and microsystems) identified among the 45 constraint groups. Less constrained groups travel more than the more constrained groups; however the paper shows that particular segments within the constraint groups also undertake significant travel.

Conclusions

This paper finds that age, income and life stage have significant differential and interactive effects on travel behavior. The results show that socio-demographic variables act in different ways to constrain/free different types of travel behavior. Even the most constrained groups undertake significant travel. Many people in least constrained sectors of our society do not travel. These phenomena need to be understood and current research is addressing these issues.

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