

## **Understanding Travel Behavior using Demographic and Socioeconomic Variables as Travel Constraints**

Uraiporn Kattiyapornpong, Thammasat University  
Kenneth E Miller, University of Technology, Sydney

### **Abstract**

Samdahl and Jekubovich (1997) view constraints as a subset of reasons for not engaging in a particular behavior. There is limited empirical research on the role of demographic and socioeconomic variables as travel constraints. This study investigates the relationships between a wide range of short and long trip planning and travel behaviors and socio-demographic constraints comprised of age, income and life cycle.

This research uses data generated from a cross-sectional, self-completed survey on travel and tourism which was collected during 2003 and 2004 from 49,105 Australian respondents.

This paper utilizes binomial regression to find 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. Implications are provided for national and state based tourism authorities. There is a need to understand these phenomena. Current research is addressing these issues.

### **Introduction**

This study seeks to determine the effect of socio-demographic constraints on multidimensional measures of travel choice behavior. Samdahl and Jekubovich (1997) view constraints as a subset of reasons for not engaging in a particular behavior. Several researchers (Hudson, 2000; Samdahl and Jekubovich, 1997; Tian, Crompton, and Witt, 1996; Woodside and Lysonski, 1989) examine influences of constraints on activities participation. Woodside *et al.* (2005) confirm the usefulness of the constraints interaction proposition for understanding and describing the factors resulting in participation, as well as nonparticipation, behaviors.

Consumer behavior and travel and tourism marketing researchers devote considerable attention to understanding the nature of travel choice. For example, a narrative case study method was extended and applied by Woodside *et al.* (2005) to examine consumer leisure and travel behavior using ecological systems theory.

Researchers (Hsieh, O'Leary, and Morrison, 1992; Taylor, Fletcher, and Clabaugh, 1993; Teaff and Turping, 1996) have found that demographic variables are related to aspects of travel choice. Lang, O'Leary, and Morrison, (1997) study found that Taiwanese pleasure travelers have different socio-demographic characteristics. Income was one of the variables that positively related to the choice of out-of-Asia vacation destinations. Their results support the prior literature which indicates that socio-demographic variables are determinants of destination choice (McIntosh and Geoldner, 1990; Moscardo *et al.*, 1995; Um and Crompton, 1990; Woodside and Lysonski, 1989). Gilbert and Hudson (2000) view life cycle as a useful conceptual and analytical frame work to investigate the experience of leisure constraints. Many life cycle issues (Buchanan and Allen, 1985; Hultsman, 1993; McGuire, 1984;

McGuire, Dottavio, and O'Leary, 1986; Raymore, Godbey, and Crawford, 1994; Searle and Jackson, 1985; Witt and Goodale, 1981) contribute to personal ecology research. Vacation behavior is related to a number of demographic variables such as family life cycle, gender, education, income, marital status and cultural background (Kozak, 2002; Lawson, 1991; Madrigal, Havitz, and Howard, 1992; McGehee, Loker-Murphy, and Uysal, 1996; Shoemaker, 2000).

Others (Anderson and Langmeyer, 1982; Backman, Backman and Silverberg, 1999; Javalgi, Thomas and Rao 1992; Norvell, 1985; Romsa and Blenman, 1989) have explored the relationship between age and choice of holiday, such as outdoor recreational activities participation, preplanning of pleasure trips, motivation for travel (for example, visiting friends and relatives), length of stay and travel preferences. Researchers (Bojanic, 1992; Bojanic and Warnick, 1995; Fodness, 1992; Lawson, 1991; Oppermann, 1995) consistently report that tourist behavior varies throughout the stages of the family life cycle. In summary, there is evidence that age, income and life stage are related to travel behavior in spite of past studies using a wide range of travel behaviors as dependent variables.

However limited empirical research is available on the role demographic and socioeconomic variables as constraints and opportunities. The leisure constraints model of Samdahl and Jekubovich (1997) has not been empirically tested in a travel and tourism context using a range of travel planning and travel choice dependent variables. Researchers have concluded that constraints are not experienced in the same way by people of different ages. The literature reports no consistent relationships among constraints, opportunities, and travel behavior (Gilbert and Hudson, 2000; Kay and Jackson 1991; Plog, 1974; Shaw, Bonen, and McCabe, 1991; Stemmerding, Oppewal, and Timmermans, 1996; Wright and Goodale, 1991). More constrained respondents are expected to travel less.

This study investigates the relationship between the constraint variables of age, income and life cycle and dependent variables comprising travel plans and past travel behavior. Prior research shows that leisure constraints assist in understanding the factors and influences that shape people's everyday leisure behavior (Samdahl and Jekubovich, 1997). Demographic variables as suggested by Woodside and Pitts (1976) may act as qualifying variables or constraining variables rather than determining variables of travel behavior.

As a result, the following hypotheses will be tested:

H<sub>1</sub>: Travel behavior relates to respondent age. Younger and older respondents will travel more than middle aged respondents.

H<sub>2</sub>: Travel behavior relates to household income. Respondents with higher income will travel more than lower income respondents.

H<sub>3</sub>: Travel behavior relates to life stage. Singles and couples will travel more than respondents with children.

H<sub>4a</sub>: Travel behavior will be related to the two way interactions of age and income.

H<sub>4b</sub>: Travel behavior will be related to the two way interactions of income and life stage.

H<sub>4c</sub>: Travel behavior will be related to the two way interactions of age and life stage.

## **Method**

This research utilizes data generated from a cross-sectional self-completed survey on travel and tourism which was collected during 2003 and 2004. A large representative sample of 49,105 Australian respondents was interviewed. The unit record data was provided by the Roy Morgan Research Centre, Australia.

Combinations of age, income and life stage are utilized to develop socio-demographic groups. The dependent variables of travel during the last 12 months and travel plans are compared across these groups. The dependent variables are dichotomous and are measured according to the categories of intrastate, interstate and international travel and duration of stay.

The 21 dichotomous dependent variables used in this study 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 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.

## Findings

The relative main and interactive effects of the independent variables on each of the 21 dependent variables are confirmed using binomial logit regression. 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 variables except the reference category is compared to the overall effect. The summary of the analyses for short trips is shown in Table 1. In total, 21 separate binomial regression analyses are conducted.

Travel behavior is significantly different across levels of age, income and life stage. There are destination specific explanations of the difference between past domestic travel and domestic travel planning. Age is generally significantly related to the dependent variables except for middle aged respondents whose responses approximate the average and for the dependent variable last places stayed interstate short trip. Younger travelers (20 to 24 years) are not significantly different on places stayed but are different in their planning behavior. Therefore  $H_1$  is supported. Income and life stage are significantly related to all dependent variables. Hence  $H_2$  and  $H_3$  are supported.

The interaction between income and life stage is significantly different for five of six short trip dependent variables. An example of a significant interaction between age and life stage with past places interstate short trips is shown in Figure 1. The interaction between age and income is significant for three of six dependent variables. The interaction between age and life stage provides mixed results with significant relationships found for three of six dependent variables. The interaction between life stage (couples) and age exhibits a greater number of significant relationships. In general short trip planning behavior is significantly related to the income and life stage interaction and the income and age interaction. Past places visited is related to the interaction with age and life stage. There is mixed support for the Hypotheses:  $H_{4a}$ ,  $H_{4b}$ , and  $H_{4c}$ .

The analysis was also conducted for long trip travel behavior. The relationships are generally significant for interstate and Asian travel and not significant for New Zealand travel. All results are significant with the exception of planning and past trip to New Zealand. In conclusion hypotheses 1 to 4 are supported. Generally age is not significant across long trip travel behaviors. The main exception is the over 55 year old age group.

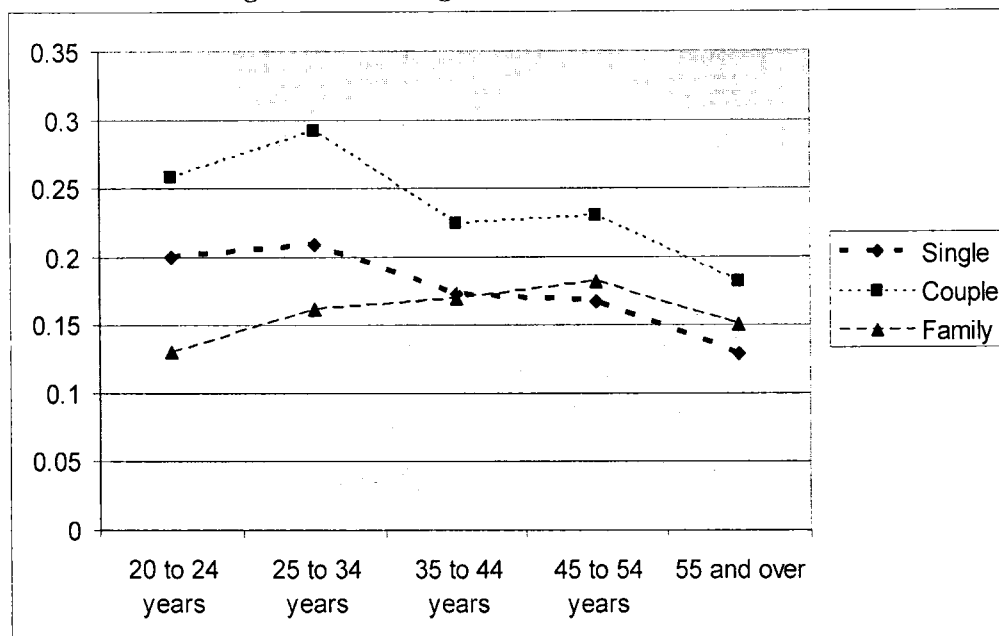
**Table 1 Summary of Significance Levels from Binomial Regression Results for Short Trips**

Constraint Groups	Short Trip					
	Dest Plan Intra State	Dest Plan Inter State	Past Places Intra State	Past Places Inter State	Last Places Intra State	Last Places Inter State
Age Group 20 to 24 years	0.000	0.000	0.492	0.743	0.213	0.177
Age Group 25 to 34 years	0.000	0.000	0.000	0.007	0.000	0.119
Age Group 35 to 44 years	0.077	0.305	0.097	0.031	0.012	0.086
Age Group 45 to 54 years	0.000	0.163	0.352	0.868	0.346	0.424
Age Group 55 years and over	0.000	0.000	0.000	0.016	0.000	0.098
HH Inc Low Income	0.000	0.000	0.000	0.000	0.000	0.000
HH Inc Medium Income	0.000	0.794	0.000	0.150	0.000	0.380
HH Inc High Income	0.000	0.000	0.000	0.000	0.000	0.000
Life Stage Single	0.000	0.000	0.000	0.008	0.000	0.009
Life Stage Couple	0.000	0.510	0.000	0.000	0.000	0.001
Life Stage Family	0.000	0.000	0.000	0.000	0.000	0.000
HH Income 3 group * Life Stage 3 group	0.003	0.000	0.095	0.000	0.021	0.001
HH Inc- Low Income by Life Stage Single	0.002	0.000	0.092	0.000	0.023	0.001
HH Inc Low Income by Life Stage Couple	0.814	0.353	0.643	0.129	0.555	0.027
HH Inc Med Income by Life Stage Single	0.054	0.052	0.032	0.268	0.046	0.937
HH Inc Med Income by Life Stage Couple	0.040	0.112	0.157	0.031	0.644	0.047
Age Group * HH Income 3 group	0.015	0.000	0.270	0.024	0.720	0.026
Age Grp 20 to 24 years by Low Income	0.116	0.054	0.042	0.004	0.246	0.001
Age Grp 20 to 24 years by Med Income	0.050	0.195	0.736	0.340	0.891	0.697
Age Grp 25 to 34 years by Low Income	0.420	0.005	0.917	0.566	0.400	0.849
Age Grp 25 to 34 years by Med Income	0.703	0.094	0.050	0.160	0.367	0.210
Age Grp 35 to 44 years by Low Income	0.949	0.981	0.192	0.073	0.778	0.045
Age Grp 35 to 44 years by Med Income	0.036	0.372	0.499	0.665	0.536	0.719
Age Grp 45 to 54 years) by Low Income	0.543	0.177	0.267	0.080	0.234	0.014
Age Grp 45 to 54 years by Med Income	0.792	0.768	0.761	0.668	0.483	0.545
Age Grp * Life Stage 3 group	0.240	0.187	0.000	0.000	0.009	0.100
Age Grp 20 to 24 years by Life Stage Single	0.105	0.537	0.357	0.691	0.190	0.262
Age Grp 20 to 24 years by Life Stage Couple	0.054	0.591	0.001	0.002	0.017	0.030
Age Grp 25 to 34 years by Life Stage Single	0.772	0.427	0.825	0.263	0.727	0.801
Age Grp 25 to 34 years by Life Stage Couple	0.303	0.846	0.398	0.510	0.181	0.457
Age Grop 35 to 44 years by Life Stage Single	0.460	0.575	0.476	0.294	0.100	0.093
Age Grp 35 to 44 years by Life Stage Couple	0.072	0.137	0.001	0.002	0.059	0.021
Age Grp 45 to 54 years by Life Stage Single	0.182	0.628	0.157	0.567	0.553	0.574
Age Grp 45 to 54 years by Life Stage Couple	0.082	0.054	0.016	0.009	0.063	0.118

This study confirms that travel behavior is significantly influenced by the respondent's socio-demographics background such as age, income and life stage and by travel characteristics such as length of trip and trip distance. The effect of these constraint variables is significantly different across travel and tourism destinations.

The results provide a number of implications for tourism marketers. Groups of respondents with different combinations of age, income and life cycle exhibit vastly different probabilities of planning and undertaking interstate holiday trips. Around 25% of younger, low income families planned to take interstate trips while only 9% of this group actually took

**Figure 1 Interactions: Age and Life Stage with Past Places Interstate Short Trips**



an interstate trip. 26% of young, high income couples planned to take interstate trips compared to 33% of this group who actually traveled interstate. There is a significant differential in the planning to traveling ratio of these two groups. Younger, low income families, who plan to travel, are in fact much less likely to actually travel in contrast to the planning and traveling behavior of the young, high income couples. The second group is over three times more likely to travel interstate. They are also more likely to not follow through on their travel plans. They also spend more on their trip.

There are ramifications for constrained potential travelers. Travel incentives should be carefully targeted to the most constrained groups who will seek cheaper, family friendly, domestic holidays. Accommodation and tourism can be targeted toward this group. A much more attractive segment for interstate travel is the high income couple without children. One third of this group travel interstate every year. They could respond to more spontaneous travel offer. A special case is New Zealand where demand can not be differentiated using age, income and life cycle or a socio-demographic constraints framework. Alternate approaches for segmentation must be found for this market, for example travel experience. In general, these results are relevant to national and state based tourism authorities in developing market segmentation and promotional strategies.

## **Conclusion**

This paper finds that the socio-demographic constraint variables of age, income and life stage have significant differential and interactive effects on multidimensional travel behavior. Hypotheses 1 to 4 are supported. Socio-demographic variables act in different ways to constrain/free different types of travel behavior. Travel behavior across income groups and life cycle groups are significantly different. The exception is travel to New Zealand which appears to be not demographically determined. There are significant interaction effects which vary across planning activities, length of travel and destinations visited. There are significant levels of travel by even the most constrained groups of respondents. There is a need to understand these phenomena. Current research is addressing these issues.

## References

- Abbey, J.R., 1979. Does Life-Style Profiling Work? *Journal of Travel Research* 18 (Fall), 8-14.
- Backman, K. F., Backman, S. J., and Silverberg, K. E., 1999. An investigation into the psychographics of senior nature-based travelers. *Tourism Recreation Research* 24 (1), 13-22.
- Bojanic, D.C., 1992. A look at a modernized family life cycle and overseas travel. *Journal of Travel and Tourism Marketing* 1 (1), 61-79.
- Bojanic, D.C., and Warnick, R.B., 1995. Segmenting the market for winter vacations. *Journal of Travel & Tourism Marketing* 4 (4), 85-95.
- Buchanan, T., and Allen, L., 1985. Barriers to recreation participation in later life cycle stages. *Therapeutic Recreation Journal* 19, 39-50.
- Fodness, D., 1992. The impact of family life cycle on the vacation decision-making process. *Journal of Travel Research* 31 (Fall), 8-13.
- Gilbert, D., and Hudson, S., 2000. Tourism demand constraints: A skiing participation. *Annals of Tourism Research* 27 (4), 906-925.
- Hsieh, S., O'Leary, J.T., and Asastair M.M., 1992. Segmenting the international travel market by activity. *Tourism Management* (June), 209-223.
- Hudson, S., 2000. The segmentation of potential tourists: Constraint differences between men and women. *Journal of Travel Research* 38 (May), 363-368.
- Hultsman, W.Z., 1993. Is constrained leisure an internally homogeneous concept? An extension. *Journal of Leisure Research* 25, 215-334.
- Javalgi, R.G., Thomas, E. G., and Rao, S. R., 1992. US pleasure travelers' perceptions of selected European destinations. *European Journal of Marketing* 26 (7), 45-65.
- Kay, T., and Jackson, G., 1991. Leisure despite constraint: the impact of leisure constraints on leisure participation. *Journal of Leisure Research* 23, 301-313.
- Kozak, M., 2002. Comparative analysis of tourist motivations by nationality and destinations. *Tourism Management*, 23, 221-232.
- Lang, C.T., O'Leary, J.T., and Morrison, A.M., 1997. Distinguishing the destination choices of pleasure travelers from Taiwan. *Journal of Travel & Tourism Marketing*, 6 (1), 21-40.
- Lawson, R., 1991. Patterns of tourist expenditure and types of vacation across the family life cycle. *Journal of Travel Research* (Spring), 12-18.
- Madrigal, R. Havitz, M.E., and Howard, D.R., 1992. Married couples' involvement with family vacation. *Leisure Science*, 14 (4), 287-301.

- McGehee, N., Loker-Murphy, L., and Uysal, M., 1996. The Australian international pleasure travel market: Motivations from a gendered perspective. *Journal of Tourism Studies* 7 (1), 45-57.
- McGuire, A., Dottavio, D., and O'Leary, J., 1986. Constraints to participation in outdoor recreation across the life span: a nation-wide study of limitors and prohibitors. *The Gerontologist* 26, 538-44.
- McGuire, F.A., 1984. A factor analytic study of leisure constraints in advanced adulthood. *Leisure Sciences* 6, 313-26.
- McIntosh, R. and Goeldner, C., 1990. *Tourism; Principles, Practices, Philosophies* (6ed.). John Wiley & Sons, Inc., New York.
- Moscardo, G., Morrison, M. A., Philip, P., Lang, C., and O'Leary, J.T., 1995. Understanding vacation destination choice through travel motivation and activities. Unpublished paper submitted to *Journal of Vacation Marketing*.
- Norvell, H., 1985. Outlook for Retired/Older Traveller Market Segments. In *Proceedings of the Eleventh Annual Travel Outlook Forum*, Washington, DC, U.S. Travel Data Center, 135-143.
- Opperman, M., 1995. A model of travel itineraries. *Journal of Travel Research* 33 (4), 57-61.
- Plog, S.C., 1974. Why destination areas rise and fall in popularity. *Cornell Hotel and Restaurant Administration Quarterly* 14, 55-58.
- Raymore, L., Godbey, G., and Crawford, D., 1994. Self-esteem, gender and socioeconomic status: their relation to perceptions of constraint on leisure among adolescents. *Journal of Leisure Research* 26, 99-118.
- Romsa, G., and Blenman, M., 1989. Visitor patterns of elderly Germans. *Annals of Tourism Research* 16, 178-188.
- Samdahl, D.M., and Jekubovich, N.J., 1997. A critique of leisure constraints: Comparative analyses and understandings. *Journal of Leisure Research* 29 (4), 430-452.
- Searle, M., and Jackson, E., 1985. Socio-economic variations in perceived barriers to recreation participation among would-be participants. *Leisure Sciences* 7, 227-249.
- Shaw, S.M., Bonen, A., and McCabe, J.F., 1991. Do more constraints mean less leisure? Examining the Relationship between Constraints and Participation. *Journal of Leisure Research* 23, 286-300.
- Shoemaker, S., 2000. Segmenting the mature market: 10 years later. *Journal of Travel Research* 39 (1), 11-27.
- Stemmerding, M., Oppewal, H., and Timmermans, H., 1999. A constrained-induced model of park choice. *Leisure Sciences* 21, 145-158.



Taylor, D.T., Fletcher, R.R., and Clabaugh, T., 1993. A comparison of characteristics, regional expenditures, and economic impact of visitors to historical sites with other recreational visitors. *Journal of Travel Research* 32 (1), 30-35.

Teaff, J.D., and Turpin, T., 1996. Travel and elderly. *Parks and Recreation* 31(6), 16-19.

Tian, S., Crompton, J.L., and Witt, P.A., 1996. Integrating constraints and benefits to identify responsive target markets for museum attractions. *Journal of Travel Research* 35 (2), 34-45.

Um, S., and Crompton, J. L., 1990. Attitude determinants in tourism destination choice. *Annals of Tourism Research* 17, 432-448.

Witt, P.A., and Goodale, T.L., 1981. The relationship between barriers to leisure enjoyment and family stages. *Leisure Sciences* 4, 29-49.

Woodside, A.G., and Lysonski, S., 1989. A general model of traveler destination choice. *Journal of Travel Research* 27 (4), 8-14.

Woodside, A.G., and Pitts, R., 1976. Effects of consumer lifestyles, demographics, and travel activities on foreign and domestic travel behavior. *Journal of Travel Research* 14 (Winter), 13-15.

Woodside, A.G., Krauss, E., Caldwell, M., and Chebat, J., 2005. Advancing folk theory of behavior explanation, ecological systems theory, and the fit-like-a-glove model for understanding lifestyle, leisure, and travel behavior. Unpublished working paper.

Wright, B.A., and Goodale, T.L., 1991. Beyond non-participation: Validation of interest and frequency of participation categories in constraints research. *Journal of Leisure Research* 23, 314-31.