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THE CHOICE BEHAVIOUR OF CARIBBEAN WINTER BEACH VACATIONERS - AN EXPERIMENTAL STUDY IN THE OTTAWA AREA

by

Wolfgang Haider

A Thesis submitted to the Faculty of Graduate Studies
in partial fulfilment of the requirements
for the Degree of Doctor of Philosophy
at McGill University

@ Wolfgang Haider 1991

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ABSTRACT

The choice behaviour of winter beach vacationers to the Caribbean is modelled with an experimental multiattribute research technique, the discrete choice experiment. Hypothetical destination scenarios are defined using ten variables, each having three levels. The variables refer to the accommodation, its price, its distance from the beach, the airport and various tourist services. These scenarios are located in one of five Caribbean islands.

Distance to beach and price are the most significant variables, and only hotel size is not. Estimates of the relative utility of each of the attributes make the approach relevant for destination planning. Segmentation by socio-demographic characteristics and past vacation behaviour makes the research relevant for destination marketing. Choice probabilities can be estimated for any of the scenarios.

The discrete choice experiment can contribute to narrowing the paradigmatic split between destination-oriented and market-oriented tourism research. It is also attractive to applied tourism research because simulation constitutes a convenient tool for managers and decision-makers.

RESUME

L'expérience de choix discret, une technique de recherche expérimentale à variables multiples, est utilisée pour modéliser le choix de destination des vacanciers dans les Caraïbes. Des scénarios hypothétiques de destination pour cinq iles des Caraïbes sont définis par rapport à dix variables qui ont chacune trois niveaux. Ces variables on trait à la qualité et au coût de l'hébergement ainsi qu'à son éloignement par rapport à la plage, l'aéroport et les services touristiques.

Les variables les plus significatives sont le coût et la distance par rapport à la plage. La seule variable non significative est la dimension de l'hotel. L'estimation de l'importance relative des variables ainsi que la segmentation suivant les caractéristiques socio-démographiques et les habitudes des vacanciers confèrent une pertinence àla méthode quant au choix et àla mise en marché des destinations. On peut estimer la probabilité des choix pour chacun des scénarios.

La méthode pourrait éventuellement permettre un rapprochement entre les deux avenues de recherche traditionnellement distinctes en tourisme que sont le marché et la destination. La méthode est d'autant plus intérwssante pour les chercheurs que la simulation qu'elle permet constitue un outil pratique pour les gestionnaires et les responsables.

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Thanks to all the people who assisted in the distribution of questionnaires: Donald Cyr (President, Ottawa Travel - Sparks Street), twenty other travel agencies in Ottawa, my personal friends, and also my advisors in Montreal.

A special place of thanks is reserved for my wife Elisabeth. Beyond the mental support she actually provided most of the financial assistance for my student existence as well as the cost of the survey. Towards the end of the project, days were brightened by the company of Lisbeth Jamila and more recently Wolfgang Emanuel.

TABLE OF CONTENT

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

INTRODUCTION AND STATEMENT OF PROBLEM

1. 1. STATEMENT OF PROBLEM

Tourism has become a leading sector in the economies of many Caribbean nations. Their beaches and agreeable climate during the winter months make them prime attractions for "sun-lust tourists" from the industrialized nations of the temperate zone. In 1986 the Caribbean region attracted 8.4 million visitors (excluding cruise ship passengers), a 22% increase over 1980 and a 257% increase over 1970. Seventy percent of these tourists originated in North America, making the region highly dependent on this market (Holder, 1988).

Trends in international tourism in general and Third World winter beach vacations in particular will pose new challenges and opportunities to the heliotropic destinations. On the demand side, the more experienced travellers of the future will seek a wider and more sophisticated range of holiday experiences (Likorish, 1987; Davies, 1987). At the same time a global increase in supply of accommodation units (Lee, 1987) will further increase competition among individual Caribbean islands, as well as between this region and other winter beach vacation areas such as Hawaii, Mexico, Africa, and Asia. The driving forces behind this increase in supply are a renewed interest in tourism's potential contributions to economic development in otherwise resource starved Third World nations (CTRC, 1988), and also the availability

of cheaper and more convenient air links to more remote parts of the world. Researchers now suggest that these trends together with new information technology will change winter beach tourism from its present "mass, standardized, and rigidly-packaged" nature to a form characterized by more "flexibility, segmentation, and diagonal integration" (Poon, 1988a). These trends constitute a challenge to, and an opportunity for, each individual destination.

The central theme of this study is to present the potential contribution of one behavioural research method, the discrete choice experiment. With this experimental method it is possible to model the spatial and environmental nature of tourism demand in a destination, as well as to gain insights into the variation of that demand between different market segments.

1. 2. STUDY OUTLINE

In the remainder of Chapter 1 the phenomenon of tourism and its most important aspects will be defined and characterized, its present importance on a global scale appraised, and finally the major phases of tourism development in the Caribbean discussed.

Chapter 2 provides a critical literature review of tourism research on the destination. The discussion is organized around the themes of micro- and macro-planning, spatial analysis of the destination and tourism impact in the destination on the one side, and around behavioural tourism research and

tourism market research on the other side. The strengths and weaknesses of each of the two areas will be emphasized. Three dualities will be at the center of the discussion: the dichotomy of planning vs. marketing, the contributions and lacunae of applied vs. academic research in the field, and the potentials and limitations of research based on revealed vs. stated preferences within the behavioural approach.

Chapter 3 contains the theoretical presentation of the methodology chosen. This includes a discussion of the basic psychological and mathematical assumptions and features of the decompositional multiattribute preference model, such as choice theory and discrete choice modelling (multinomial logit model), and the basics of experimental research, such as functional measurement, factorial designs and fractional factorial designs.

Chapter 4 presents the design and operationalization of the actual research, which was conducted in Ottawa, Canada. Chapter 5 presents the results, tests different model specifications, discusses the importance of individual parameters, compares the reaction of different market segments, and provides examples for the ultimate application of choice modelling, namely the simulation of actual choices expressed in probabilistic terms.

Chapter 6 provides the synthesis of the study by discussing the relevance of the findings (Chapter 5) in the context of the general discussion and literature review of tourism research (Chapter 2). Emphasis is on the applicability of the results to destination planning and marketing, their

common concern in identifying the appropriate product-market mix for a destination, and aspects of tourism theory, in particular the destination life-cycle model. The chapter concludes with a summary of the entire study.

1. 3. THE TOURISM PHENOMENON (CHARACTERISTICS AND DEFINITIONS)

Tourism has existed for centuries in the form of pilgrimages, educational travel, and business travel. Mass tourism as we know it today is a relatively recent phenomenon, closely associated with the emergence of late/post-industrial societies (Mieczkowski, 1981; Krippendorf, 1987), first in North America and post-war Europe, later in other parts of the world. Shorter work hours, increased levels of disposable income, improved transportation and communication facilities, all contributed to the growth of travel for pleasure and recreation purposes (Murphy, 1985:21-26).

It is important to distinguish the term "tourism" from such terms as "leisure", "recreation", and "travel". Leisure involves the use of "discretionary time", that is, time that remains after work, sleep, and other necessary personal and household chores have been completed (Wall, 1979:3). The other three terms refer to activities that can be performed during leisure time. Recreation may involve travel, while tourism by definition must involve travel. That is, the tourist must leave his regular place of residence, travel to, and sojourn in the destination for a certain period of time. For many forms of

recreation and tourism the discrimination between the two is anything but clear. The distinction is more obvious in the case of international tourism, whose participants have been defined as:

> ...temporary visitors staying at least twenty-four hours in the country visited and the purpose of the journey can be classified under one of the following headings:
> a) Leisure (recreation, holiday, health, study, religion, sport).
> b) Business, family, friends, meeting, mission.
> (IUOTO - International Union of Travel Organizations, 1963; as quoted in Peters, 1969:16).

In short, tourism results

> ...from the travel of non-residents (tourists, including excursionists) to destination areas, as long as their sojourn does not become a permanent residence (Murphy, 1985:9).

From a spatial perspective tourism revolves around three different localities: the tourist origin area (market), the tourist receiving area (destination), and certain linkage mechanisms (airplane, automobile, etc.). These three components provide the basis for many conceptual models of tourism, be they descriptive and general (Matley, 1976; Leiper, 1979), or a more specific attempt to explain the functional movement of tourists and the resulting economic structure (Hills and Lundgren, 1977), or the political dimensions of international tourism (Matthews, 1978), or the domination of Third World destinations by metropolitan based economic interests (Britton, 1982). The spatial triad is also present in Gunn's (1979:36) functional system of tourism, as well as Mill and Morrison's (1985:99) conceptualization of the tourism system, although in both models the linkage is broken up into the

physical aspect of travel and the aspect of information and marketing.

For the individual, tourism is a travel experience consisting of physical and physiological, cultural, social, and fantasy motivations. These motivations together with perceptions and expectations constitute the behavioural dimension of demand (Murphy, 1985:10). They are closely related to what Krippendorf (1987:16-29) lists as social factors and motivations behind tourism, such as escape from a mundane urban environment, holiday as a right as opposed to a luxury, recuperation, regeneration and escape, self-realization and freedom.

Most modern tourist experiences depend on the availability of commercial services. The degree of commercialization varies with the type of holiday chosen and with the expectations of the individual. Hence many definitions stress the economic significance of tourism and might wrongly equate the commercial aspect of tourism, the tourist industry, with the entire phenomenon:

> Tourism is a composite of activities, services and industries that deliver a travel experience (McIntosh and Goeldner, 1986:4).

while a more appropriate definition should read

> The tourist industry is highly fragmented with many different types of businesses and many levels of industrialization - their common purpose is to help a visitor enjoy his trip (Murphy, 1985:10).

One would assume that in the presence of an industry there should also be a product. Some economists, especially compilers of industrial classifications

deny this, because the tourist industry does not produce a distinct product (Chadwick, 1981:193). Other researchers and practitioners are not deterred from using the term tourist product, albeit there are two different notions associated with it. Tourism planners and impact researchers agree that

> The resources and created facilities of a destination combine to produce an amalgam of activities and functions called the tourist product (Murphy, 1985:14).

This tourist product could be labelled "tourist product in the narrow sense". A few pages later Murphy concedes that other commercial institutions, i.e. travel intermediaries, are needed to market the product. The perception of these intermediaries, such as tour operators, is that the destination is merely one component of their product, because they add further essential travel services and package them into a more complete travel experience. This aspect of the tourist product could be termed "tourist product in the wider sense". Poon (1988b) describes this tourist product, although she wrongly equates it with international tourism[1]:

1) it is an invisible, heterogenous, perishable, volatile and integrated non-factor traded service;
2) it is a complex and diverse service, both from the points of view of producers and consumers;
3) it is an information intensive service.

(Poon, 1988b).

---

[1]Poon (1988b) defines international tourism as follows: "It involves the movement, accommodation, entertainment and general servicing of persons or groups from one geographical location to another". The present author would argue that this definition actually describes the tourist industry, while international tourism is a wider phenomenon than just a service. It also includes other non-commercial aspects such as motivations, perceptions etc..

Poon also makes a crucial contribution to the more theoretical discussion of the commercial aspects of the tourist industry as she observes that "...tourism suppliers possess dual production systems, comprising products/services and information components" (Poon, 1988b). She predicts that international tourism will be changed dramatically with the current revolution in information technology, but this revolution "...will leave untouched the human-intensive functions of service delivery and producer-consumer interactions" (Poon, 1988b). This latter aspect should make the tourism sector of the Caribbean nations an attractive alternative for national and regional development for the foreseeable future. Important for the discussion below is that according to this all-encompassing business oriented definition of tourism, the destination is only one element or component in a much larger system.

So far, a destination has been presented simply as an entity which is spatially separated from the regular place of residence of the tourist. Most books and articles on tourism use the terms destination and resort implicitly, without providing a clear definition. One travel industry textbook defines a destination as a:

> ...specific area that travellers choose to visit and where they may spend a significant amount of time....Areas as large as a continent or as small as a village may be considered as destinations in the mind of travellers....In any case the services and facilities in an area must be sufficient to meet the needs of visitors (Gee et al. , 1984:90,92).

This definition implies that a destination is the activity space of the tourist for the entire period of absence from home and this spatial unit may exist on any scale.

The term "resort" is applied at two different scales. One definition refers to a spatial unit (e.g. Pearce, 1981; 1987), such as a community with a certain level of touristic development. The term was first applied in this context 100 years ago to refer to the British coastal recreational centers along the Channel. In the case of the winter beach vacation tourism such a "resort town", or "resort area" to be more precise, equals more or less a destination as it is the functional unit or activity space of the tourist.

In North America, in contrast, "resort" refers to a partially or completely self-contained unit in terms of amenities and services provided (Gee et al., 1984:91, 217). In that sense, a resort is an element of a destination (Gunn, 1979:55).

1. 4. TOURISM IN THE CARIBBEAN

This section provides a definition of the Caribbean, a brief history of tourism in the region, and presents background data on tourism in the region with particular emphasis on the five nations included in this study.

On a global scale tourism has over the past 40 years developed from modest beginnings to one of the most dynamic economic sectors. By 1985, 325 million international arrivals were registered worldwide, which created a total

of $ 105 000 million in receipts (Lee, 1987). The bulk of travel occurs between the developed countries, while the Third World accounts only for approximately 13% of international travel (Lodahl and Wilkens, 1980:23).

Winter beach vacations are only one type of tourism, but the most important one for many Third World countries. Weaver (1986) outlined the "pleasure periphery", of which "heliotropic tourism" is the most important component. The Caribbean region belongs entirely to this zone.

The Caribbean Sea is defined clearly in its geographic location as being surrounded by Central America in the West, South America in the South, and the chain of islands in the East and North. No such clear-cut definition exists for the Caribbean Region. From a geo-political perspective, Demas (1979:vii) integrated the many different existing definitions into three major concepts:

(a) the English-speaking Caribbean or Commonwealth Caribbean;

(b) the Caribbean archipelago which includes all the islands of the Caribbean Sea plus the mainland "extensions" of Guyana, Surinam, and Cayenne on the South America mainland and Belize on the Central American mainland; and

(c) the Caribbean basin, consisting of the countries of the Caribbean archipelago plus the littoral nations of Central and South America.

He concluded that despite the different languages and cultural influences from the various colonial powers, it is precisely that long history of colonialism, economic dependence, sugar plantations, and the legacy of slavery, which provide a "...unity underlying so much diversity that makes the

Caribbean Archipelago a 'culture-area'. In his view this area constitutes the 'true' Caribbean (Demas, 1979:ix).

In the context of tourism the term Caribbean has been used with a special connotation and the concept has shown a spatial dynamic. Until the early 60's the term "Caribbean" referred strictly to destinations in the archipelago, whereas by now it includes all the beaches along the Central and South American littoral, but in most cases excludes the remains of the respective country. The only exception is Mexico, which is regarded as a tourist region by itself. The dynamic probably is due to marketing policies of travel intermediaries, tour operators in particular, who prefer to apply the term "Caribbean" as widely as possible[2], because it conjures up

> ... a tropical sea with typical tropical flora, mood and sea breezes ... palm trees waving in balmy breezes, the limbo dance, straw markets, new hotels set in scenic beauty. (Lundberg, 1972:207).

The Caribbean received winter beach vacationers even before World War II. At that time visitors arrived by boat from the major markets along the east coast of America. After the war visits to some islands intensified. In 1949 Jamaica received 68,628 visitors, and the Bahamas 37,578 (Weaver, 1986:49). The introduction of jet travel at the end of the 50's initiated further growth, and together with the Cuban crisis, led to a major restructuring of Caribbean

[2]This trend is also reflected in the membership to the Caribbean Tourism Research Centre: all islands except Cuba, plus Belize, Costa Rica, Venezuela, and Surinam (EIU, 1984b).

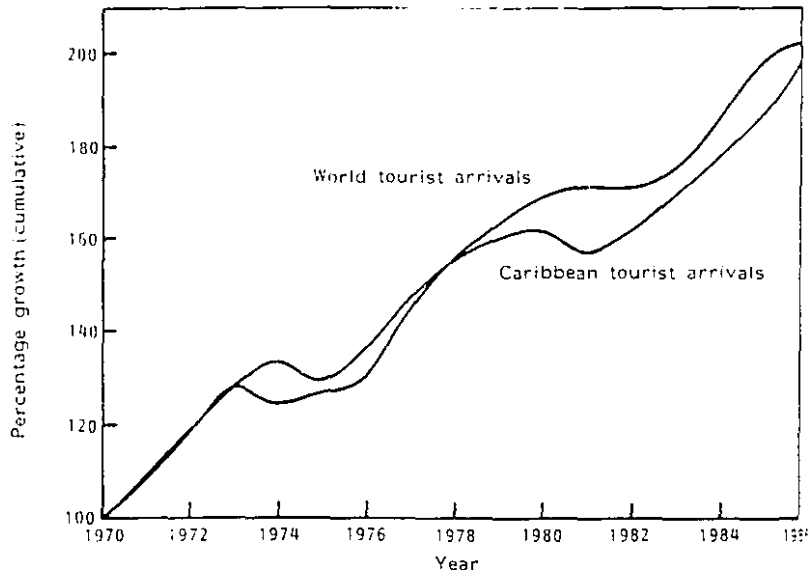
tourism. Tourism development in the Caribbean took its present shape at the end of the 60's, when two factors in particular contributed to the emergence of modern mass tourism. These were firstly increased capacity and range of aircraft, which initiated a considerable decline in airfares, and second, vertical and horizontal integration among tourist enterprises. Both contributed to the rapid emergence and institutionalization of those commercial aspects of the tourism system that preconditioned mass tourism.

For the region as a whole, the performance of the tourism sector has been a consistently positive one. As Fig. 1. 1 shows (see also Table 1. 1), the increase in annual arrivals runs parallel to the performance of international tourism on a global scale. Both were equally affected by the cycles of the global economy, such as the first and second oil crises and accompanying recessions of 1974 and 1981, and the subsequent recovery. The region receives approximately 2.5% of global arrivals (Poon, 1988a).

For a number of Caribbean nations tourism has been the most successful economic sector. It has proven to be the most reliable earner of foreign exchange. The accommodation sector alone provides approximately 80,000 jobs, while another 100,000 employment opportunities are indirectly associated with tourism (E.I.U., 1984b). Therefore governments in many countries view tourism as an important element in their development strategy. They hope that aid donors will soon view this economic sector more positively and contemplate the fact that the two major economic programs initiated in the

FIGURE 1.1

COMPARATIVE GROWTH OF INTERNATIONAL AND CARIBBEAN TOURIST ARRIVALS (1970-1986)



(Poon, 1988a)

TABLE 1.1

SELECTED TOURISM STATISTICS FOR 5 CARIBBEAN NATIONS
AND THE ENTIRE CARIBBEAN

	BAR	CUB	JAM	MAR	S.V.	CAR
STAYOVER ARRIVALS TO SELECTED CARIBBEAN COUNTRIES						
1970	156.4		309.1	33.4	16.4	
1979	370.9		426.5	159.4	32.8	
1980	369.9	94.0	395.3	158.5	50.4	
1981	352.6	121.0	406.4	157.0	44.7	
1982	303.8	139.3	467.8	176.2	37.1	
1983	328.3	162.3	566.2	176.0	37.7	
1984	367.7	206.6	603.4	183.8	38.5	
1985	359.1	240.0	571.7	193.5	42.1	
1986	369.8	280.0	663.6	183.3	42.1	
NUMBER OF ROOMS 1986						
Total	6745	15200	13338	2924	985	106500
in Hotels (>100 R.)	1599	n.a.	5497	1183	-	46200
NUMBER OF HOTELS WITH MORE THAN 200 ROOMS						
	7	n.a.	11	1	-	92
CRUISE SHIP PASSENGERS						
1980	156.5		133.4	203.4	32.1	360.3
1981	135.8		139.7	202.5	33.4	341.0
1982	110.8		194.4	148.0	28.9	331.9
1983	102.5		231.0	158.6	34.4	336.0
1984	99.2		231.0	135.5	64.0	357.0
1985	112.2		261.5	153.0	34.0	415.0
1986	145.3		277.8	214.2	38.1	500.0
EXPENDITURE (in $ US Million)						
1980	251.0	47.5	241.7	74.6	13.7	3503
1981	261.9	52.4	284.3	75.2	15.0	3776
1982	251.1	61.2	337.8	81.6	16.0	4007
1983	251.6	74.3	399.2	82.6	16.7	4264
1984	284.2	95.5	406.6	87.0	19.0	4492
1985	309.0	116.4	406.8	92.8	23.0	5038
1986	323.7	136.5	512.0	92.3	25.0	5552

Note: BAR = Barbados
CUB = Cuba
JAM = Jamaica
MAR = Martinique
S.V.= St. Vincent
CAR = Caribbean

TABLE 1.1 (continued)

	BAR	CUB	JAM	MAR	S.V.	CAR
EMPLOYMENT (latest year available)						
	6000	n.a.	4200	1750	950	100000
NO. OF ROOMS BY TYPE OF ACCOMMODATION 1986						
Hotels	2025	9160	7985	1981	468	
Apt. complexes	2198	2403	2867	630	200	
Bungalows indiv.	2509	3649	35	-	208	
Guesthouses	120	-	128	-	109	
Other	-	-	-	313	-	
Total	6852	5212	1015	2924	985	
OCCUPANCY RATES						
1980	68.6		41.6	n.a.		
1981	57.5		41.5	56.3		
1982	48.8		53.3	63.5		
1983	51.8		58.4	58.4		
1984	57.0		60.4	60.8		
1985	40.9		51.8	66.5		
1986	48.1		56.7	63.0		
ARRIVALS BY TYPE OF ACCOMMODATION (% of total 1986 or latest)						
Hotels	57		47	45	27	
Ap. + Gh.	15			7	4	
Private, Not reg.	28		53	42	6	
Other	-			6	1	
LENGTH OF STAY (by year)						
1980	9.6	8.7	9.9	n.a.	7.0	
1981	9.8	9.1	9.0	5.3	9.0	
1982	9.1	9.3	9.7	5.6	8.0	
1983	8.6	8.9	9.2	5.3	n.a.	
1984	9.6	9.3	9.0	5.1	n.a.	
1985	9.7	n.a.	9.8	5.4	9.4	
1986	9.8	n.a.	10.2	5.3	9.4	
LENGTH OF STAY (by origin)						
USA	7.7		8.1	6.3	10.3	
Canada	11.5		9.6	9.0	12.2	
Europe	15.4		13.0	5.1	11.1	
Caribbean	8.5		7.4	2.9	7.8	

TABLE 1.1 (continued)

	BAR	CUB	JAM	MAR	S.V.	CAR
ARRIVALS FROM SELECTED COUNTRIES						
from USA						
1980	89.0	15.0	31.7	39.2	11.0	4037.5
1981	74.5	15.9	72.4	27.3	6.2	3900.6
1982	75.5	17.8	23.0	33.8	7.1	4085.0
1983	14.0	14.6	25.1	22.0	8.1	4521.9
1984	40.2	16.2	467.9	41.7	6.1	4710.2
1985	48.1	20.0	433.1	44.1	6.8	4987.9
1986	66.3	24.0	494.3	37.6	8.8	5306.5
from Canada						
1980	84.9	22.0	70.7	9.9	4.2	505.0
1981	69.9	23.0	66.0	8.3	3.0	457.5
1982	59.6	28.6	80.2	11.3	2.6	439.8
1983	53.2	32.3	76.3	9.7	2.8	428.9
1984	67.3	24.8	78.9	11.6	2.6	467.0
1985	70.6	30.0	82.3	18.4	3.1	548.5
1986	60.3	35.0	100.6	15.5	3.0	556.1
from Europe						
1980	94.6	16.0	63.7	85.0	7.4	823.2
1981	01.7	21.1	41.3	96.9	6.0	759.2
1982	72.7	27.1	37.4	104.0	5.5	746.2
1983	65.0	38.6	36.7	99.7	4.7	712.2
1984	62.8	71.2	32.5	89.6	4.6	673.6
1985	55.1	88.0	31.9	85.8	4.8	682.2
1986	66.3	90.0	42.2	87.2	5.9	759.4
from UK						
1980	56.3	1.5	12.1	.7	3.8	208.0
1981	72.1	1.5	14.5	.7	1.8	216.0
1982	51.1	1.1	18.0	.7	2.6	197.0
1983	47.7	1.2	22.4	.7	2.7	187.0
1984	46.3	1.7	20.2	.9	3.0	184.0
1985	38.8	2.0	22.0	.7	3.1	186.0
1986	47.6	2.0	30.0	.8	3.7	219.0
from Caribbean						
1980	89.3		13.6	17.0	14.3	550.0
1981	90.7		17.6	15.0	n.a.	625.0
1982	84.6		18.8	22.5	15.6	645.0
1983	85.8		19.8	29.5	16.4	660.0
1984	84.2		15.6	35.2	17.4	700.0
1985	71.8		16.0	39.7	13.9	685.0
1986	62.2		15.0	35.9	16.7	670.0

Sources: CTRC, Caribbean Tourism Statistics Report, 1980 and 1986.

Caribbean region during the 1980's, the Caribbean Basin Initiative of the USA, and the CARICAN program of Canada, never included tourism in their agenda (Zagaris and Emery, 1988).

Americans account for over 60% of all arrivals to the Caribbean, Canadians for another 7%. The most noteworthy developments of the eighties was the region-wide decrease in Canadian arrivals, who increasingly preferred Hawaii and Mexico as sun-lust destinations. Visitors from South America, Venezuela in particular, also decreased (CTRC, 1986).

The importance and performance of tourism vary widely among individual countries. Thurot (1973, as quoted in Pearce, 1987:14) observed

> ...a hierarchy of development in the Commonwealth Caribbean, with the development of tourism in Jamaica preceding that of Trinidad and Barbados, which occurs before that of the smaller Leeward and Windward Islands.

Over the last 15 years most smaller and previously lagging islands outperformed the larger and more reputable destinations in terms of growth of arrivals (McElroy and de Albuquerque, 1989). The star among these newcomers has been St. Maarten, where arrivals more than doubled between 1982 and 1987 from 204,800 to 429,200 (EIU, 1988). Many of these smaller islands have by now caught up with the larger islands in terms of infrastructural development, particularly the availability of an international size airport. Tourism development in more peripheral islands is also fuelled by demand, as some market segments are always in search of the novel (the allochtonic segment after Plog, 1973).

The characteristics of the tourism sector in the five islands that are included in this study can serve as examples of the diversity of development within the Caribbean region. From 1960 to 1980 the tourism sector in Barbados enjoyed almost constant growth (E.I.U., 1984a) (see also Table 1. 1). The success was based on an image of political stability, friendly people and good service to tourists. Yet, in the first half of the 1980's, suddenly Barbados' performance was the worst among all Caribbean nations, provoking two researchers to seek explanation in Catastrophy Theory (Romsa and Blenman, 1987). With the exception of arrivals from the USA, until 1986 Barbados could not regain the arrival figures of 1980/81. The most severe setback came in the loss of Canadian visitors, who accounted for one third of all arrivals. In absolute terms Canadian arrivals fell from 84,900 in 1980 to 60,300 in 1985. More recently Barbados' arrivals have rebounded, mainly due to the increasing numbers of British visitors.

With 272,000 arrivals in 1957, Cuba was the most popular Caribbean destination of its time, when political turmoil suddenly paralysed its tourism industry. After 20 years of neglect, the government began to view tourism more favourably again in the 1980's. Between 1980 and 1986 Cuba managed to triple its arrivals from 94,000 to 280,000. Generally, the Cuban product lacks modern facilities, a disadvantage which is offset by more favourable prices. It has a unique structure of visitors as only 2% come from the USA, while one quarter are Canadian, one third are from Western Europe (mainly

Spain, Italy, and Germany), and they also receive a significant number of visitors from Socialist countries (E.I.U., 1986).

Among the large and established islands, Jamaica has been the success story of Caribbean tourism in the 1980's. It suffered greatly during the 1970's, when immediately after the first oil crisis of 1974, tourism continued to stagnate due to domestic political turmoil. During that period many hotels were brought under public ownership in order to keep them operational. The turnaround occurred after 1980, when the government leased 14 of the 15 publicly owned hotels to dynamic private entrepreneurs, who experimented with a new concept, the all-inclusive vacation resort (E.I.U., 1985; Poon, 1988a). The first establishments catered to the young, active and hedonistic singles market. Later entries focused on other market segments, such as couples and families.

Martinique, a French overseas territory, has a very different tourism structure. About 50% of visitors are Europeans, and the 'Club Med' serves as a special attraction. Its use of a European currency explains at least partly the island's success during the mid-eighties when it was relatively affordable for North American visitors (E.I.U., 1985, 1988).

In St. Vincent tourism has stagnated during the 1980's, most likely due to its inferior accessibility. Among the five islands surveyed here, it is the only one lacking an international airport.

Overall Caribbean tourism is still largely dependent on the above-

mentioned mass tourism system. However, some recent developments, like the example of Jamaica, might be indicative of the changes that can be expected. In the future, one can expect increased competition between the Caribbean islands, but at the same time the region as a whole will find itself in harder competition with "sun-lust" holiday destinations in other parts of the world. These more remote destinations become increasingly competitive, because of the improvements of the global aviation network, and because their production costs, particularly labour, are comparatively cheaper. With these new challenges ahead, destinations are in need of new approaches to assist marketing and planning decisions. The next chapter will review the research undertaken in tourism marketing and planning.

CHAPTER 2

TOURISM RESEARCH ON THE DESTINATION

2. 1. INTRODUCTION

The organization of this literature review revolves around the major concerns of a tourist destination: planning on the micro and macro-level, spatial modelling of the destination, impact studies, market research, and behavioural research in general. This structure makes it clear that all aspects of the tourism system will be considered, as long as they are relevant to the destination. The discussion in this chapter will revolve around three issues: the disparity between applied and basic research; the dichotomy between research on the destination as compared to research on the tourism market which is prevalent in much of basic tourism research; and the revealed versus stated preference discussion, which has always been prominent in behavioural research.

2. 2. GENERAL ISSUES

Practitioners in the field describe the purpose of tourism research as the objective, systematic, logical, and empirical provision of assistance for management decisions (Gunn, 1987:3; Pizam, 1987:63), which in effect limits its scope to applied research. In the social sciences applied research contrasts with basic research in that :

> Applied research aids in the solution of 'real world' problems, while basic research enhances the knowledge of a phenomenon .... In other words, the one is technology, while the other is science" (Beaman and Meis, 1987)[3].

Within applied research one can distinguish further between proprietory and universal tourism research. The former is conducted privately and is therefore more prone to subjectivity, because it eludes the scrutiny of other researchers (Gunn, 1987:4).

Both applied and basic tourism research use mainly descriptive research methods, more generally also referred to as ex post facto research, because experimental methods are supposedly ill-suited for most applications in tourism research (Pizam, 1987)[4]. This issue will be taken up again later, as it leads to the fundamental discussion in behavioural research over the merits of basing research on revealed or stated preferences.

The point about applied tourism research is that it can at the same time have a profound effect on the concrete manifestation of the tourism phenomenon in an area. By definition, its purpose is to support management

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[3]Based on Rossi et al., 1978.

[4]Pizam uses the term as defined by Kerlinger (1973:379):

> Ex post facto research is systematic empirical inquiry in which the scientist does not have direct control of independent variables because their manifestations have already occurred or because they are inherently not manipulable. Inferences about relations among variables are made, without direct intervention, from concomitant variation of independent and dependent variables.

decisions! Tourism is the result of human agency, particularly economic activities. Irrespective of the quality of applied research, its findings influence decisions on tourism projects. Therefore, applied tourism research is involved as much in the creation of the tourism phenomenon as it is an ex-post facto analyzer. Much of the basic research, in contrast, describes and analyzes the patterns and impact of developments, after they have occurred. Its findings are elucidating, but rarely do they find consideration in management decisions.

Within academic tourism research, the complex nature of tourism has attracted researchers from a variety of social sciences which has led to a breakdown of traditional disciplinary barriers. In many cases an issue can only be researched in depth by borrowing and adopting methods from neighbouring disciplines. This borrowing is by no means unique to tourism research, but tourism is a prime example of a social phenomenon that cuts across traditional social science barriers. As traditional paradigmatic barriers in the social sciences break down, new subfields emerge within tourism research. These subfields typically are strongly associated with certain social science disciplines, but at the same time, new jargons and methods arise within the new subfields, which can lead to the development of a new paradigm (see Smith, 1983:184-186).

An example of such a conceptual division within tourism research, coming close to a paradigmic barrier, is the division between destination oriented and market oriented tourism research. The schism reflects both the

nature of the tourism phenomenon itself, and the divergent approaches taken by the traditional social sciences towards the subject. Research on the destination is conducted by members of such diverse disciplines as geography, political science, economics, sociology, social psychology and anthropology. In many respects their research objectives are complementary rather than contradictory as they focus on such issues as destination planning, tourism as an agent of economic development, and the social, economic, cultural and ecological impacts associated with tourism development in the destination area.

Research on the tourism market, by contrast, focuses on observation and analysis of trends and developments in the market place (i.e. the tourist generating area) in general, or of some specific target groups in particular. In the context of the destination it addresses such issues as tourist motivation, behaviour, preferences, perceptions, attitudes, and choice. Social psychology and marketing are the most active academic disciplines in tourism market research. Despite Pearce's (1979) call for further integration of tourism research from a geographical perspective:

> ...future research should go beyond the merely descriptive to provide a better theoretical and behavioural understanding of tourism and enable geographers to make more applied contributions in such fields as planning and development (Pearce,1979:263),

over the past ten years the situation has not changed significantly. In order to achieve these goals, tourism geographers

> ...must expand their research to embrace a wider range of topics ....[and] must adopt approaches and techniques appropriate to the study of the phenomenon of tourism, rather than relying wholly on existing geographical concepts (Pearce, 1979:263).

It should be noted that the problem is not peculiar to geography alone, and that other areas of tourism research are equally insular.

Before suggesting how to alleviate this situation, the following discussion briefly characterizes the major areas of tourism research: tourism planning, spatial patterns in the destination, impact studies, and behavioural and market research.

2. 3. TOURISM PLANNING

There exist two fairly separate levels of destination planning. Planning on the micro-level is concerned with individual projects such as hotels and larger resort complexes. Planning on the macro-level typically is concerned with the formulation of land use plans, zoning, and master plans on the community, regional or national level. Most planning on both levels has for a long time been dominated by economic objectives and has been "...conducted by individual entrepreneurs or individual communities with little regard for potential impact on others" (Murphy, 1985:155). Only slowly has a more critical and all-encompassing attitude to planning, more specifically macro-planning, emerged. Planning should be

> ...concerned with anticipating and regulating change in a system, to promote orderly development so as to increase

> the social, economic, and environmental benefits of the development process. To do this, planning becomes 'an ordered sequence of operations, designed to lead to the achievement of either a single goal or to a balance between several goals' (Hall, 1970:4) (Murphy, 1979:156).

Gunn (1979:191-194) defined user satisfaction, increased rewards to ownership and development, and finally the protection of environmental resource assets as the major goals of destination planning, while McIntosh (1977, as cited in Murphy, 1985:157) also included the concern for the host community in his framework of tourism development. This concern for the host community in the context of tourism planning culminated in Murphy's (1985) book "Tourism - A Community Approach".

The host community is unquestionably the group most affected by tourism development. However, no tourism development can be successful without being accepted by the tourist as client. Gunn (1979, Chapter 6 "The Tourist"; 1988a, Chapter 4 "The Market") stresses the importance of including tourist behaviour and preferences into the planning process. He cites several studies on tourist behaviour in the destination, but unfortunately he does not elaborate on how such behavioural approaches can be truly integrated into the planning process, or which methods would be of particular significance. Similar limitations can be found in other textbooks on tourism planning (Baud-Bovy and Lawson, 1977; Mills, 1983; Gunn, 1988b).

These three textbooks also provide good overviews on the technical aspects of micro-level or project planning. After a general discussion they

present numerous case studies, i.e. "A Gallery of Well-Designed Places" (Gunn, 1988b). The prime objective of micro-level planning is to enhance the profitability of the respective businesses, within the legal framework of the respective country and region. Decisions in favour of a specific project are often supported by feasibility studies or other forms of applied research. Most of it is of a proprietory nature and therefore difficult to obtain. Usually they contain a description or analysis of general economic and tourism trends in the host country and region, some visitor statistics, a catalogue of the present and perhaps immediately planned infrastructure and superstructure, a projection of future demand and development, and most importantly a detailed project description including a financing plan.

Two aspects of feasibility studies in particular warrant further discussion. The first is that often the assumptions made about the future development of the destination area under consideration are rather naive. Often studies assume no growth or a linear growth pattern for the destination in question. A stationary scenario is the most conservative, and therefore economically appropriate, approach to project financing. However, both assumptions of destination growth can be at odds with reality, because they fail to include the future behaviour of their competitors, i.e. other tourist entrepreneurs, in their projections. These competitors operate in a similar framework. They deem a project feasible only if certain threshold criteria are met, such as minimum requirements of infrastructure and superstructure that

must be in place, or a minimum flow of tourists. This leads to the paradox that the sum of sound conservative economic decisions based on static or linear assumptions of destination growth, lead on an aggregated scale to an entirely different pattern of destination development, best captured by the concept of the destination life-cycle (Butler, 1980).

Second, actual planning and/or design of such projects usually lacks concern for the host population, a feature which has been criticized by the tourism impact research group (see below). More surprising is the absence of any form of behavioural research input in the project planning phase such as consideration of the tourist's attitudes and preferences regarding certain design features. This lack of behavioural input in architecture has been criticized lately for the discipline as a whole (Heimsath, 1977; Sommer, 1983). Instead, successful formulae are continually copied, while alternative forms of development are introduced rather slowly. This is surprising, because the ultimate success of resort hotels or destinations depends on the acceptance of the product by the tourist and also by the travel intermediaries. One noteworthy exception to that pattern is Bjorklund's (1977) experimental study, which included tourist preferences in the design process of a Caribbean resort destination (see also Bjorklund and King, 1982).

2.4. SPATIAL PATTERNS IN THE DESTINATION

The spatial structure of tourism on a global scale was discussed briefly

in Chapter 1. In this section the emphasis is on the spatial structure of tourism on the regional and local levels. Two of the models presented in Chapter 1 also elaborated on the spatial organization of tourism in the destination. Hills and Lundgren (1977) observe that in a destination area tourists are dispersed from one port of entry to the various resort areas. Britton (1982) refines this idea by describing the destination as a system of resort enclaves ("environmental bubbles") and tourist attractions, which are well connected to the international transportation and information system via the regional urban centre, but have very limited interaction with their immediate surroundings.

Other models combine spatial and evolutionary aspects of a tourist region. Miossec (1976; as quoted by Pearce, 1987) distinguishes four stages of development in terms of changes in the resort structure, the transportation network, tourist behaviour, and host attitude and decision. This model constitutes one of the few attempts to link spatial structure and behaviour - both of the host population and the tourists - conceptually. Gormsen (1981) describes the long-term evolution of beach centered tourism and how it always grew at the periphery of the tourist generating area. The first European seaside resorts along the English Channel comprise Periphery I, Periphery II refers to Southern Europe, Periphery III to North Africa, the Balearic and Canary Islands, and Periphery IV to the Third World destinations in the Caribbean, Africa and Asia. He observes that in the course of development in

each periphery, social and economic patterns repeat themselves in the sense that (a) the impetus for development generally comes from outside (or is at least non-regional), but that over time local participation increases; (b) more diverse social classes tend to participate as tourists; and (c) non-hotel types of accommodation, such as second homes, guesthouses and camping become increasingly important for that region.

If both these models are applied to the Caribbean situation, several questions arise. Firstly, placing the Caribbean in Periphery IV, as Gormsen (1981) suggests, constitutes too much of an abstraction. While this may reflect accurately a European perspective, the touristic relationship between a number of islands and North America more closely resembles the situation in North Africa vis-a-vis Europe, and the longstanding tourism development in Cuba and the Bahamas might even place them into Periphery II. Secondly, the nature of Third World beach tourism is fundamentally different from traditional European seaside resorts, because most tourists arrive at the destination by airplane. As long as this centralized and standardized mode of transportation prevails, any more decentralized forms of accommodation and camping are rather unlikely to develop. Thirdly, if Gormsen's observations regarding changes in the entrepreneurial participation also apply to the Third World, then Britton's (1982) model of dependency must be regarded as being of temporary validity only. At the moment it is too early to judge if Jamaica's successful recovery (Poon 1988a) is a first indication of a more general trend

towards a weakening of the rigid and largely metropolitan controlled tourism system.

On a regional scale this coastal oriented development has been modelled by Weaver (1986), who for the island nation of Antigua observed the gradual intensification of tourism development along the coast, while the hinterland remained relatively untouched. The question is whether the pattern of development along the coast will be homogeneous, or if a hierarchical structure will emerge. Pearce (1987:153-157) argues that a hierarchical structure is still very likely, and is particularly characteristic of islands. Major forces for clustering and concentration are the limited number of good sites available, the lack of concentration of basic infrastructure such as roads and water, closeness to the airport, the lack of capital which usually leads to foreign involvement, and economies of scale for hotel operators and tour operators.

Dispersed forms of tourism development are more likely to occur in the second stage of touristic expansion. This has been observed in highly developed places, such as Hawaii, where outer islands now get developed because of a reaction to overcrowding in the touristic centers, the relative increase of attractiveness of other sites, the desire to generate new development, and improved access to and infrastructural facilities in the more remote places (Pearce, 1987:162).

Concepts and models on the local level - the resort area - are the least developed. Again, development occurs in a linear pattern parallel to the beach.

Barrett (1958; as quoted in Pigram, 1977) conceptualized the traditional British resort as a linear phenomenon along the coast where the immediate coastline is occupied by the various seafront activities and in many cases a promenade, paralleled by a road or railroad, beyond which the first line of buildings, i.e. the most prestigious hotels, are located by lower cost types of accommodation further inland.

In many cases, this predominantly linear development is overlaid by a centrifugal pattern of commercial activities, radiating in semicircular fashion from a recreational business district (RBD) (Stansfield and Rickert, 1970). The RBD is usually located at the beach, and comprises "...an aggregation of seasonal retail establishments catering exclusively for leisure-time shopping" (Pigram, 1977). Meyer-Arendt (1985, 1987) combines these conceptual models with the destination life-cycle (Butler, 1980) to describe tourism development in case studies of resorts along the Mexican and American shoreline of the Gulf of Mexico.

The structural characteristics of a resort area are determined to a large extent by the location of the major road and access to the beach. If the road runs parallel to the beach, two basic types can be distinguished, with fundamentally different effects for access to the beach and therefore also on the perception of a destination by the tourists. If a road runs adjacent to the beach, easy access for everybody is assured, with the drawback that everybody must cross this road from the accommodation. Accommodations directly

adjacent to the beach may be preferred by guests, but curtail public access to the beach. A third possible type of development is that the major road runs further inland, and individual resort hotels or resort clusters are accessed by spur roads from the major road to the beach.

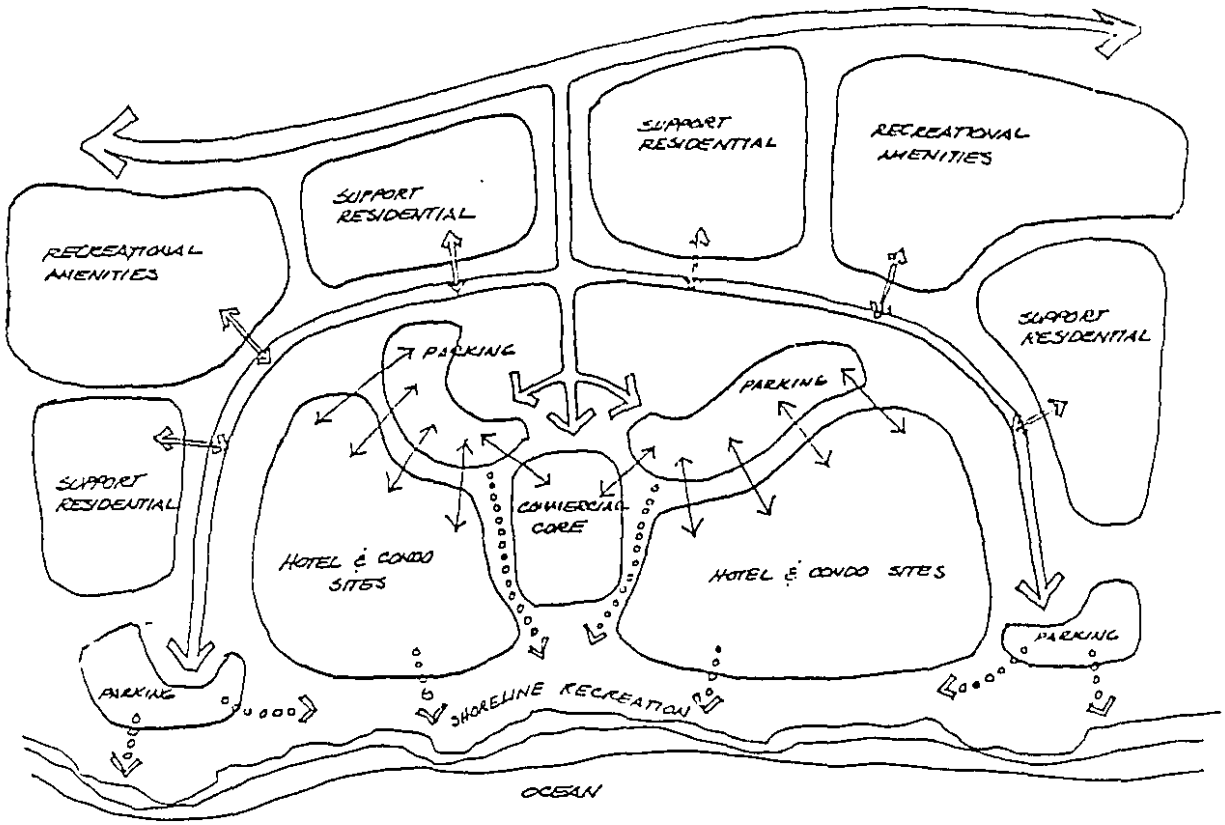
Often the actual pattern of development is influenced by the traditional landholding system and settlement pattern. Completely planned resort areas, such as Cancun in Mexico (Gormsen 1982), where planning can be implemented without consideration of any preexisting social structures, are the exception.

Much can be said about the necessity for a certain amount of concentration. Besides infrastructural economies of scale concentration might be behaviourally desirable to create "...the convivial atmosphere of a coastal resort, which really only comes about when facilities are concentrated to some extent in the beach area" (Gormsen, 1982). One can only refer to Cancun, a prime example of a completely planned resort, where considerable spatial segregation of functions has been accomplished, but at the same time a spatial concentration of each function is maintained as much as possible (Gormsen, 1982). A typical example of resort planning is provided in Figure 2.1.

In summary, research on spatial patterns of tourism in the destination is almost exclusively of an ex post facto nature. Despite many important findings, its influence on applied research and decision-making is limited. Therefore it will be suggested below how experimental behavioural research

FIGURE 2.1

CONCEPTUAL MASTER PLAN FOR A BEACH RESORT



(Gee, 1981)

can contribute to a fuller understanding of the spatial behaviour of tourists in the destination with more relevance to planning and marketing.

2. 5. TOURISM IMPACT STUDIES

Impact studies attempt to explain the effect of tourism on the host community, region, or country in economic, social, cultural, and environmental terms (e.g. Mathieson and Wall, 1982). In contrast to the research on spatial patterns described above, many of the impact studies evaluate tourism development in the Third World critically, yet most of their concerns continue to be ignored by tourism planners and managers. The following discussion will attempt to explain this unsatisfactory situation.

Economic impact studies generally adopt a macro-analytic perspective and focus on such issues as ownership structures as indicators of foreign control, capital leakages and linkages, the demonstration effect enacted by tourists, tourism as employment opportunity, and the ratio between tourism employment and investment (Britton, 1982; Bryden, 1973; English, 1986; Haider, 1982; Maurer, 1980; Rodenburg, 1980; Seward and Spinrad, 1982). Some of these studies are very critical of tourism per se. Others compare the performance of different types of tourism development. One frequently discussed issue has been the scale of development. Several studies (Maurer, 1980; Rodenburg, 1980; Haider, 1982) found that communities benefit generally more from development based on smaller, locally-owned

accommodations than from larger, foreign-controlled, and more standardized establishments. Based on such analysis, impact researchers frequently suggest that future tourism development should favour various "alternative" forms, such as small accommodations.

Unfortunately, most of these recommendations remain just that. To structuralist researchers this is not surprising, as effective control over the tourism system rests largely with tour operators, hotel chains, and airlines (Ascher, 1985). Implementing alternatives would require the industry to break with its two fundamental principles, namely profit maximization, achieved mainly by the introduction of economies of scale, and risk minimization, achieved by standardization and westernization of the various physical elements such as accommodations.

Once researchers understood the effects of the tourism system on the destination, they started to include other elements of the tourism system in their analysis in an attempt to answer the question of how this system could be adapted to make the alternatives (i.e. the products which would mitigate negative impacts for the host population) viable. Suggestions have varied from altering some of the elements of the system to restructuring it entirely. For example, articles have focused on the political environment in a specific country or in less developed countries in general (Jenkins, 1982), have evaluated how existing information and marketing channels could be used or alternative ones erected (Britton, 1977), or have analyzed the functional

mechanisms of the very system (Britton, 1982) and the role of multinational corporations within that system in particular (Ascher, 1985). In any case, it remained beyond the scope of their work to analyze actual marketing conditions for the proposed alternatives.

2. 6. BEHAVIOURAL AND MARKET RESEARCH

Social psychology and marketing are the most active academic disciplines in behavioural tourism research. Given the emphasis of this research on the market, it should be noted that relatively few studies have dealt explicitly with attitudes, perception, or choice behaviour in regard to the spatial (i.e. locational) aspects of facilities in the destination.

The major contribution has been the analysis of tourist images and preferences for nations or other political units as destinations (Haahti and Yavas, 1983; Haahti, 1986; Pearce, 1982; Crompton, 1979; Goodrich, 1977, 1978a, 1978b; Woodside and Ronkainnen, 1979a and 1979b; Woodside and Charr, 1988; Bronner and de Hoog, 1985; Scott et al., 1978). Haahti and Yavas (1983) explain this emphasis on perception from a marketing perspective:

> [Market] segmentation has fallen short of explaining the traveller's perception of the position of a travel destination relative to other competing destinations along selected salient destination choice factors.

These studies apply a wide variety of quantitative methods, and are based on stated preferences. Most of them compare several destinations on a number of different attributes. Attributes may relate to types of touristic

facilities, such as accommodation, restaurants and sports facilities, or may be based on judgement of qualitative attributes, such as cleanliness, friendliness, etc. Of particular interest is a study that compared images for one destination between first time and repeat visitors, and then observed how the images of the first-timers had changed upon completion of the trip (Phelps, 1986). Another experimental study asked respondents to design their perfect holiday on an imaginary island in terms of 50 descriptive statements (Stringer, 1984). Mazanec (1983) built an elaborate LISREL model to analyze the demand for one destination by different market segments.

Research of revealed preferences has been applied to measure visitor satisfaction (Pizam et al., 1978). Husbands (1983) attempted to model aggregated visitor flows between countries and infer preferences based on this overt behaviour. Other aggregate studies of overt behaviour observed and modelled the choice behaviour of customers for accommodations (Mayo, 1974; Howey, 1987), and package tours (Sheldon, 1987; Sheldon and Mak, 1987).

An interesting experimental study on the other hand, provides new insights about vacation booker's attitudes towards tourist brochures (Stringer, 1984). A conjoint experiment that unfortunately has not found any replication, at least in the published literature, was applied to elicit the preferred design features and design combinations for a new Caribbean resort (Bjorklund, 1977; Bjorklund and King, 1982).

In applied market research, which is conducted mostly by or on behalf

of the various tourist industries and government tourist offices, the destination is treated perfunctorily. Most of these studies contain little more than an aggregate description of passenger flow and visitor arrivals, which frequently provide the basis for projections of supply and demand. Where truly behavioural issues are addressed, such as the individual tourist's behaviour and experiences during, and satisfaction with, his or her holiday, the focus of the research is usually on the observation of actual behaviour (e.g. Travel and Tourism Consultants International, 1982).

It is not uncommon for practitioners to deny the relevance of market research almost completely. Riley (1983) pointed out that tour operators, for example, concluded that product research on currently non-existing alternatives is not possible because of the intangibility of the product. They rather evaluate the potential of new products in test markets.

Rovelstad and Blazer (1983) substantiated this lack of research commitment when they found in a survey that

> Travel and tourism organizations ...were substantially less committed to the use of market research than their counterparts in the consumer goods industry, as well as in the rest of the US industry.... [tourism has] only recently reached a level of market maturity where the market intelligence becomes vital for survival. Market research professionals, most notably in the academic world have given little attention to the subject of tourism, possibly because of the lower level of industry interest.

On the other hand, some recently conducted studies at the interface of applied and academic tourism research indicate that modern quantitative methods,

such as the multinomial logit model are gradually being accepted in applied research (Howey, 1987; Sheldon and Mak, 1987).

Behavioural tourism research has not been spared the debate about the validity of stated versus revealed preference. Many practitioners believe that if they require market research then data collection ought to be based on observed behaviour, because the intangibility of the product makes tourism ill-suited for experiments (Pizam, 1987). The fundamental question in this discussion is whether one can infer the likelihood of actual choice from stated preference. For that reason Husbands (1983) concludes that only the observation of actual behaviour, such as the tourist flow between countries is a true and accurate measure of the desirability of a destination. Smith (1985) agrees with Husband's scepticism of the "lab-methods" because several studies in geography documented that

> Subjective or perceptual predictors produced through experimental designs have, at best, performed only marginally better than objective measures and frequently have failed to perform as well.

In tourism, no studies exist to date, which could allow any such conclusions. Several issues, such as images cannot be researched adequately by observing behaviour alone. One can actually claim that it is exactly the intangibility of the tourism product that makes experiments an ideal research approach, because even in reality tourists, particularly first-time visitors and long-distance travellers, must base their choice on secondary information and images they have formed based on this information.

The lack of experimental studies in tourism is somewhat surprising (exceptions are Goodrich, 1977, 1978a, 1978b; Bjorklund and King, 1982). The experimental approach has been used widely in recreation and parks research (for an example see Allton, 1981; and Lieber and Allton, 1983) and in consumer research for service products closely related to the tourist product, such as restaurants (Filiatrault and Ritchie, 1988) and fast-food restaurants (Louviere, 1984).

2. 7. DISCUSSION - REASONS FOR A BEHAVIOURAL EXTENSION OF TOURISM RESEARCH

In the discussion above it was found that tourism planning has an integrated approach and that planners are aware of the diverse interests and potential of conflict between investors, the community at large, and the tourist. Actual planning however, is still mostly a normative top-down exercise, and even elaborate models of the planning process provide no mechanisms to truly include tourist behaviour. This is surprising when one considers the destination as a product or product component. Its success ultimately depends on its acceptance by the tourist as consumer. One question is whether the developers not only create the tourist space as outlined above, but at the same time also influence the structure of demand in the form of tourist expectations and preferences. No research has been reported on this intricate and complex problem.

Both descriptive research of tourism in the destination and tourism impact studies have made major contributions in uncovering the drawbacks associated with conventional tourism development. However, their findings and recommendations do not always find adequate reflection in the tourism planning and decision-making process. The destination - market dichotomy and the division between academic and applied tourism research, which are not necessarily overlapping, have been identified as major sources for these shortcomings. In academic research, integration among the various social sciences has progressed significantly within the destination-oriented tourism research group, and has not been such a pressing issue for the market-oriented tourism research group. Between the two groups, however, the destination - market dichotomy, inherent to the phenomenon of tourism, is upheld and reinforced by a different outlook and definition of tourism, and different research methods. Lately researchers on both sides have suggested integration. Pearce (1979:256) as a geographer calls for "...more research on decision-making and how destinations and routes are selected and trips planned". Fridgen (1984:33), a social psychologist, quotes Pearce and emphasizes that the investigation should include "...not only personal characteristics, but also site choice and knowledge factors, information and communication variables, and environmental preferences and attributes". Fenton and Pearce (1988) arrive at similar conclusions in their discussion on the potential of multidimensional scaling in tourism research. The same issue

was raised by applied tourism researchers (Reime and Hawkins, 1979).

The first question arising out of this discussion is why research on the destination should adopt a behavioural or market research approach. Could it not run a test market the same way tour operators do? Unfortunately, the lack of control over the tourism system, combined with the fact that by nature the destination is far from the market, prevents them from adopting the conventional approach of the industry, i.e. test the market via an addition to the tourist brochure the same way as tour operators do. Reality so far has shown that the industry will only adopt a product if it suits their needs. Second, once a destination has developed a product, it cannot implement any drastic changes. Besides the natural resources, a destination environment is composed of the various man-made attractions and tourist services, both of which constitute fixed long-term investments. For a destination it would be extremely important to identify potential markets for its present product(s) as accurately as possible, and even more so to know - as opposed to speculate - about the tourist's attitudes and preferences regarding the actual destination environment. Such knowledge could assist destination planners at the outset in identifying those physical elements of a tourist product that are socially less disruptive, but at the same time conform to the desires and expectations of tourists.

Once the destination's decision-makers agree on the merits of behavioural information, they can choose between two strategies to acquire it.

They can maintain the present attitude concerning the tourist as research object, that is, simply consider the tourist as beyond the scope of their domain. If information on the tourist is needed, one can simply draw from the results of existing behavioural or market research. The inadequacy of that option has been discussed above. Alternatively they can incorporate a behavioural paradigm and formulate the research objectives in such a way that they are truly relevant to the concerns of destination planning and decision-making.

Such an integrated approach to destination planning and marketing has been proposed previously (Reime and Hawkins, 1979). The need for integration is also reflected in the term "product-market mix" (Gunn, 1988a:190), which refers to the ideal state any destination planning should aim for. Unfortunately this concept proved difficult to operationalize. The remainder of this study tests the applicability of one experimental behavioural research method to enhancing knowledge about tourist behaviour in the destination.

CHAPTER 3

METHODOLOGY

3. 1. INTRODUCTION

This chapter presents the theoretical foundations for one experimental behavioural research approach, the discrete choice experiment (DCE). As an experimental technique, the DCE emerged from conjoint analysis. While the DCE remains a truly experimental approach in all its assumptions, at the same time several of its aspects closely resemble the discrete choice model (DCM), so that it can actually be regarded as a hybrid of the discrete choice model and conjoint analysis. In order to gain an understanding of the theoretical background and to appreciate its innovativeness, it is essential to review both approaches to choice modelling.

The review of the DCM, focusing on the multinomial logit model (MNL) in particular, will be followed by a discussion of the major experimental behavioural approaches to preference research and choice modelling, usually referred to as conjoint analysis and decompositional multiattribute preference model (DMPM). Here attention will be paid to the clarification of the terminology and some technical aspects, such as factorial and fractional factorial designs.

3. 2. THE DISCRETE CHOICE MODEL (DCM)

The recent increase in popularity of the DCM in econometrics is due to

the recognition of the individual as the decisionmaker in much of the economic behaviour that leads to aggregate patterns of supply and demand. Also, better survey data combined with new analytical methods have improved parameter estimation (Train, 1986:3). Among the many econometric methods, DCMs[5]

> ...are used to analyze situations in which a decisionmaker can be described as facing a choice among a finite and exhaustive set of mutually exclusive alternatives .... All qualitative choice models calculate the probability that a decisionmaker will choose a particular alternative from [this set]... (Train,1986:7).

Most basic texts (Henscher and Johnson, 1981; Ben-Akiva and Lerman, 1985) describe discrete choice models as conceptual extensions of classical consumer theory, such as the one proposed by Lancaster (1971). Classical consumer theory is regarded as deficient on two accounts:

(1) it only accommodates continuous variables, which is inappropriate for describing discrete choice alternatives (Ben-Akiva and Lerman, 1985:58);

(2) it postulates that utility is derived from the goods per se rather than properties or characteristics (in an objective dimension) which goods possess (Hensher and Johnson, 1981:14).

The first deficiency is overcome by designing discrete choice models from utility functions directly, instead of the usual demand functions (Ben-Akiva and Lerman, 1985:43-45). The second limitation is corrected by accounting for cognitive processes prior to choice, and by considering that

---

[5]With reference to the alternatives, Train prefers the term qualitative over discrete, although the latter is the accepted one in the literature.

> ...individuals arrive at an overall preference by cognitively integrating the part-worth utilities associated with the attributes of the choice alternatives according to some mathematical function (Golledge and Timmermans, 1988:xx).

Among the wide range of discrete choice models the multinomial logit model (MNL) stands out for its ease of estimation and interpretation. The estimation of probabilities is based on a specific assumption regarding the relationship between random utility and probability:

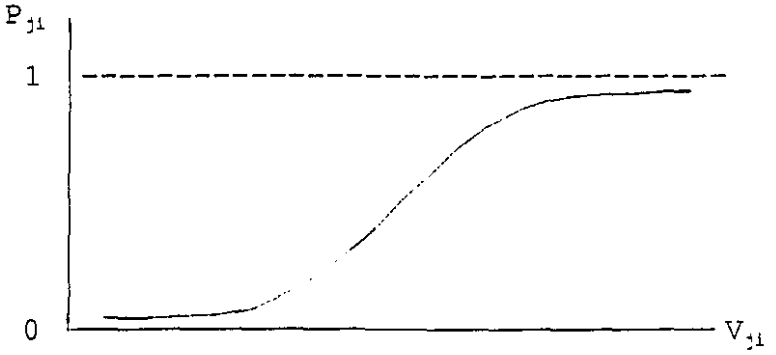
> Suppose a decisionmaker, denoted i, faces a set of J_i alternatives. The utility that the decisionmaker obtains from alternative j in J_i, denoted U_{ji}, is decomposed into (1) a part that is known by the researcher, labelled as V_{ji}, and (2) an unknown part that is assumed to be a random variable, labelled e_{ji}. This is expressed as $U_{ji}=V_{ji}+e_{ji}$ ...the known part of utility V_{ji} is a function that depends on the observed characteristics of the alternative as faced by the decisionmaker (z_{ji}), the observed characteristics of the decisionmaker (s_i), and a vector of parameters (b) that are either known a priori by the researcher or estimated: $V_{ji}=V(z_{ji},s_i,b)$. For notational simplicity this functional dependence is suppressed; however, it is important to remember that V_{ji} depends on observed data and known or estimated parameters.
> Assume that each e_{ji}, for all j in J_i, is distributed independently, identically in accordance with the extreme value distribution. Given this distribution for the unobserved components of utility, the probability that the decisionmaker will choose alternative j is
>
> $$P_{ji}=\frac{\exp(V_{ji})}{\sum_{j\in J}\exp(V_{ji})}, \quad \forall_j \in J \qquad (3.1)^6$$
>
> (Train, 1986:15).

[6]In this and other quotations, the mathematical notation has been modified to correspond with that used in the body of the thesis.

In Train's own words, "The proof of this fact, while straightforward, is tedious and not particularly illuminating". It can be found in Train (1986:53-54) as well as other texts (Henscher and Johnson, 1981; Ben-Akiva and Lerman, 1985).

The properties of the choice probabilities are as follows:

> (1) each choice probability is necessarily between 0 and 1;
> (2) the choice probabilities necessarily sum to one. This follows from the fact that the choice set in a qualitative choice situation is exhaustive, ...and the alternatives are mutually exclusive;
> (3) the relation of the choice probability for an alternative to the representative utility [V_{ji}] of that alternative, holding the representative utilities of the other alternatives fixed, is sigmoid, or S-shaped



(Train, 1986:16).

These properties lead to the following interpretation:

> If the representative utility of one alternative is very low compared with other alternatives, a small increase in the utility of this alternative will not much affect the probability of being chosen; the other alternatives will still be generally preferred. Similarly, if one alternative is far superior to the others, so that its representative utility is very high, an additional increase in its utility will not much affect the probability of its being chosen; it will usually be chosen even without the extra utility. The point

> at which an increase in the representative utility of an alternative has the greatest effect on its probability of being chosen is when its representative utility is very similar to that of other alternatives. In this case, a small increase in the utility of one alternative could, in a way 'tip the balance', and thereby induce a large increase in the probability of the alternative being chosen (Train, 1986:16-17).

The most important property of MNL models is the "Independence from Irrelevant Alternatives" (IIA) assumption. It is both an advantage and a disadvantage in the modelling process. The IIA axiom states that given the ratio of the choice probabilities for two alternatives, j and k,

> the ratio of these two probabilities does not depend on any alternatives other than j and k. That is, the ratio of probabilities is necessarily the same no matter what other alternatives are in J_i or what the characteristics of other alternatives are (Train, 1986:19).

The disadvantage of the IIA axiom is that it is not always an accurate reflection of reality in choice situations, such as the red bus / blue bus problem (Train, 1986:19) in which the presence of a third alternative that is similar to one of two other alternatives is likely to reduce that one's probability of being chosen by a larger proportion.

Advantages associated with the IIA axiom on the other hand are that

> it is possible to estimate model parameters consistently on a subset of alternatives for each sampled decisionmaker (Train, 1986:20)

which is important if the number of alternatives in a choice situation is large, or the researcher is interested in examining a subset of alternatives only. Secondly it enables

> the researcher to predict demand for alternatives that do not currently exist (Train, 1986:20).

3. 3. CONJOINT ANALYSIS AND INFORMATION INTEGRATION THEORY

While discrete choice models are used to model actual behaviour, its experimental counterpart in multiattribute research has been referred to as decompositional multiattribute preference model DMPM (Timmermans, 1984; Golledge and Timmermans, 1988) or conjoint analysis (Green and Srinivasan, 1978). These models are used to

> estimate the structure of a consumer's preference (e.g. part-worth, importance estimates, ideal points), given his/her overall evaluations of a set of alternatives, that are prespecified in terms of different levels of attributes (Green and Srinivasan, 1978).

There are advantages and disadvantages associated with this terminology. Regarding the decompositional multiattribute preference model, the term "decompositional" makes reference to the fact that the respondent evaluates an alternative as a whole, and the analyst decomposes the evaluation into part-worth utilities through the modelling procedure. The term "preference" indicates that information is gathered from stated not revealed preference, where the respondent evaluates each alternative separately, and choice is inferred from the preference. The discrete choice experiment (DCE) goes beyond the traditional domain of the DMPM[7], as will be explained below.

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[7]This fact has not been acknowledged by Golledge and Timmermans (1988) in the organization of their book, where they emphasize the polarity between

Regarding the term "conjoint analysis" there is unfortunately no one concise definition of its exact scope. Frequently, it is implicitly equated with DMPM (Green and Srinivasan, 1978). The group developing the DCE has been much looser in their use of the term conjoint analysis. The confusion is complicated due to the existence of a similar expression, conjoint measurement. Conjoint measurement actually is a compositional approach to multiattribute preference research, and depending on the definition of conjoint analysis may be perceived as one of the latter's techniques.

Given these constant misconceptions, the classification provided by Aaker and Day (1986) might contribute to a clarification, although it takes the term conjoint analysis beyond its traditional definition. For them conjoint analysis "... provides a quantitative measure of the relative importance of one attraction as opposed to another" (:493), thus referring to any trade-off analysis. Data can be collected in the full profile approach (equal to DMPM, and conjoint analysis as used by Green and Srinivasan, 1978), or in the trade-off approach (equal to the compositional approach, or conjoint measurement).

The following discussion will focus on conjoint analysis in the narrow sense, i.e. DMPM only. Its theoretical foundations for conducting experiments on the individual are rooted in social psychology, in particular in information

---

DCM and DMPM.

integration theory (IIT) and functional measurement[8] (Anderson, 1981).

Basically, information integration theory is a theory of multiattribute stimuli judgement at the individual level and is characterized by two aspects:

> (1) ...it is based on an explicit theory of how people reach decisions;
> (2) ...it uses laboratory-like experimental measurement methods to estimate models rather than relying on observations of people's revealed preferences (Louviere et al., 1981: I-5).

Figure 3.1 schematizes this integration process, where individuals transform the objective physical reality (X_{jk}) via perceptions (S_{jk}) to attribute valuations ($V(S_{jk})$) and eventually to overall evaluations (U_j) and choice probabilities (P_j). These behavioural assumptions can be expressed algebraically as a series of equations:

$$S_{jk} = f_{1k}(X_{jk}),\ (k=1,2,...,K;\ j=1,2,...,J), \tag{3.2}$$

$$V(S_{jk}) = f_{2k}(S_{jk}), \tag{3.3}$$

$$U_j = f_3[V(S_{jk})], \tag{3.4}$$

$$p(j \mid A) = f_4(U_j), \tag{3.5}$$

where

X_{jk} represents a J by K array of physical variables (J represents the total number of brands [alternatives]; K the total number of determinant decision attributes) that underlie a consumer's attribute beliefs. For simplicity we subscript X in two dimensions; however, each decision

[8]In theory the distinction between IIT and Functional Measurement is straightforward: the former refers to the general theory, while the latter describes the method of implementation (Louviere, personal communication). In the relevant literature, however, the terms have frequently been used interchangeably.

attribute may have multiple physical variable antecedents;

S_{jk} is an array of dimension J by K that constitutes the consumer's beliefs about the level of the k^{th} determinant decision attribute for the j^{th} brand of interest.

$V(S_{jk})$ is an array of dimension J by K that contains measures of the part-worth utilities of every element of S_{jk}; $V(S_{jk})$ therefore represents the consumer's opinions or feelings regarding the worth of the j^{th} brand's position on the k^{th} attribute.

U_j is a single dimensional array of dimension J by 1 representing a consumer's overall values or utilities for the j^{th} brand.

$p(j \mid A)$ represents a single dimensional array of dimension J by 1 that refers to the probability of selecting the j^{th} brand from a choice set A of (j=1,2,. . .,J) brands, of which j is a member; $p(j \mid A)$ is defined over all elements of A (brands in A).

f_{1k}, f_{2k}, f_3, f_4 are mappings [see Fig.3.1].

By elementary substitution, we derive:

$$p(j \mid A) = f_4\{f_3[f_{2k}(f_{1k}(X_{kj}))]\}, \text{ or,} \quad (3.6)$$

$$p(j \mid A) = F(X_{jk}), \quad (3.7)$$

where F is a composite function of the indicated mappings in Equation (3.5).

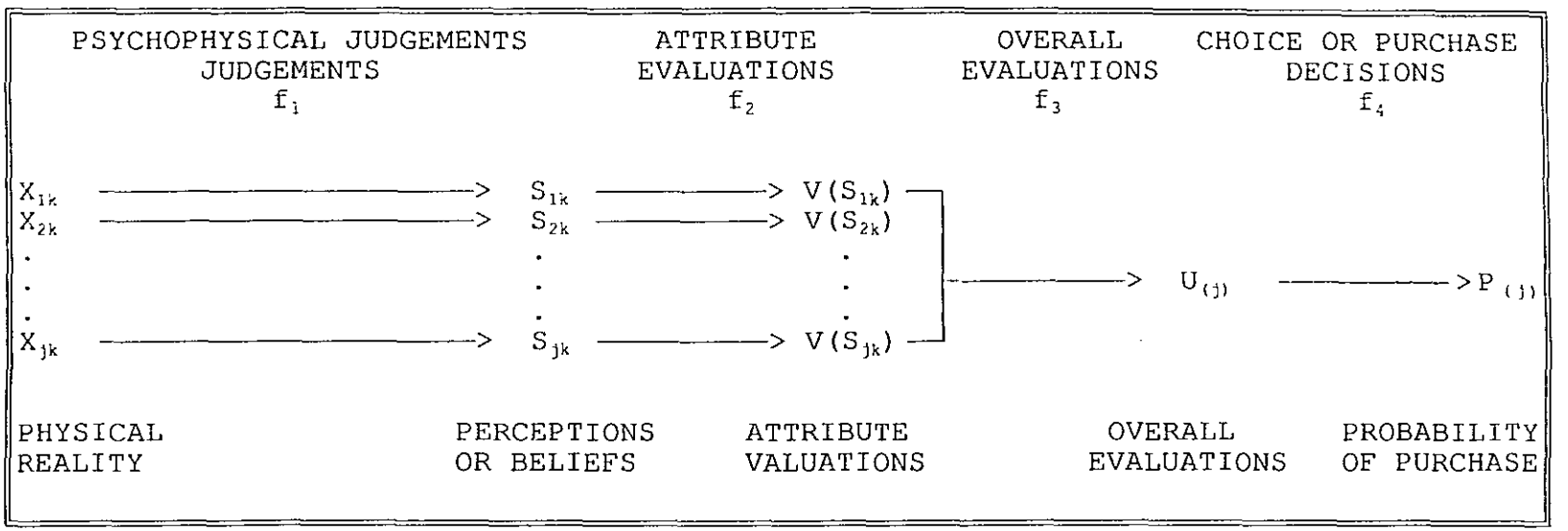
This composite function indicates that several different levels of explanation of choice behavior are possible:(a) explanations based entirely on physical variables, (b) explanations based only on belief (or positioning) variable, (c) explanations using only part-worth, and/or (d) explanations containing combinations of these variables.

(Louviere, 1988b:13-14).

This observation explains the versatility of functional measurement. In most applications, DMPMs focus attention on overall evaluations (f_3 in Equation 3.4) of an object or product by focusing on the attribute valuations a respondent places on it. In conjoint measurement separate part-worth utilities are derived from the respondent ($V(S_{jk})$ in Equation 3.3), while the

FIGURE 3.1

COMPLEX DECISION MAKING



(Louviere, 1988a:10)

Note: Subscripts have been changed from the original to conform with usage in text.

DCE, to be discussed fully in the next section, focuses on the choice probability $p(j \mid A)$ (Equation 3.5).

The basic assumptions of information integration theory (IIT) are:

(1) The unknown and unobservable overall utility that a consumer has in his or her mind regarding the j^{th} brand is linearly related to a consumer's response on a category-rating scale. That is,

$$U_j = a+bR_j+e_j, \qquad (3.8)$$

where U_j is as previously defined, R_j is the observed response on a category-rating scale, and e_j is a normally distributed error term with zero expectation and constant variance, which satisfies assumptions of analysis of variance or multiple regression.

(2) The category-ranking (sic) scale used by a consumer under appropriate experimental instructions and task conditions approximates an interval measurement level.

(3) A consumer's response strategy reveals his or her decision strategy. The response strategy can be approximated by algebraic conjoint models amenable to experimental investigation and statistical parametrization. (Louviere, 1988b:15).

In summary,

> IIT posits that simple algebraic conjoint models are valid approximations to the unknown and unobservable judgement and decision processes of consumers .... The process that subjects 'really use' is presently unknowable (Louviere, 1988b:16).

In the following the operationalization of a simple additive three attribute conjoint model[9] will be outlined:

$$U_j = C+V(S_{1j})+V(S_{2j})+V(S_{3j})+e_j \qquad (3.9)$$

[9]The term "conjoint model" as applied here is synonymous to "functional measurement" as used by Louviere et al. (1981).

where C is an additive constant, necessary to set a zero point on an interval scale, and $V(S_{1j}) - V(S_{3j})$ are part-worth utilities for the three attributes [=levels] of the j^{th} brand (Louviere, 1988b:16).

Given that U_j cannot be observed, but an individual's evaluation or response on a category-rating scale can be observed, Equation 3.8 can be linearized and consequently estimated empirically by substituting and transposing equation (3.8):

$$R_j = C+V(S_{1j})+V(S_{2j})+V(S_{3j})+e_j \qquad (3.10)$$

where R_j refers to a consumer's response on a category-rating scale (Louviere, 1988b:19). Other model forms, such as multiplicative, distributive and dual-distributive are possible (Louviere, 1988b:21-24), but will not be discussed at this stage.

In addition to functional measurement, axiomatic conjoint measurement or axiomatic utility theory could also be used for model estimation. All three of them are theories "... about the way in which data must behave in order to be presented by some algebraic polynomial multiattribute expression" (Louviere et al., 1981:I-32). However, conjoint models possess two decisive advantages: firstly they can use rating scales as well as ordinal scales and secondly, they are the only group of models among the three that have an error theory in multiple regression and analysis of variance. Furthermore, results can be obtained on the individual level but can as easily be combined for market segmentation (Louviere et al., 1981:I-32; see also Louviere, 1988b:25-27; Veldhuisen, 1988 compares the performance of conjoint measurement and

functional measurement).

3.4. FACTORIAL AND FRACTIONAL FACTORIAL EXPERIMENTS

All DMPMs require some experimental design to manipulate the experimental variables. A design that encompasses all possible combinations of attributes and their respective levels is called a factorial design. However, with an increasing number of attributes and levels or both, the evaluation becomes unmanageable for the individual. In that case researchers have suggested using fractional factorial designs, which provide

> ... a small number of hypothetical choice alternatives at the cost of being no longer able to measure all possible [higher order] interaction effects (Timmermans, 1984)[10].

Specific fractional factorial plans can be found readily in texts such as Connor and Zelen (1959), and Hahn and Shapiro (1966). The relevant details on the selection of appropriate designs are discussed in the next chapter.

3. 5. DISCRETE CHOICE EXPERIMENTS AND SIMULATION

The previous three sections provided the theoretical underpinnings to choice modelling in general. The peculiarity of the DCE is that two separate designs are involved, one for the selection of choice alternatives, as is usual for DMPMs, and a second design for the selection of choice sets, i. e. groups of

[10]For the basics on factorial and fractional factorial designs and their analysis see Winer (1971), Snedecor and Cochran (1974), and Holland and Cravens (1973).

choice alternatives (Louviere, 1988a,b). Respondents are confronted with the more realistic task of having to choose one from among a predetermined set of alternatives, instead of the more artificial task of rating or ranking each alternative in the set. The theoretical development of the DCE is based largely on work by Louviere and Woodworth (1983) and Louviere and Hensher (1983). A more complete presentation of the relevant issues can be found in Louviere (1988a), on which the following elaborations are based.

If the MNL or basic Luce (1959) model is assumed valid, then Equation (3.5) can be expressed as:

$$p(a|A) = \frac{\exp(V_a)}{\sum_{a \in A} \exp(V_a)} \quad , \forall a \in A \qquad (3.11)$$

where,

$p(a|A)$ is the probability that alternative a is chosen from a set A in which a is included;

V_a is the logarithm of the utility associated with alternative a and is assumed to be a function of the various characteristics of the alternative;

exp is the base of natural logarithms;

$\sum_{a \in A}$ is a summation over all a contained in A.

If a research design consists of several choice sets, parameter estimation is still possible, provided a base alternative (that is an alternative which is common to every choice set), is included in the model specification. Then the MNL takes the following form:

$$\frac{p(a|A)}{p(b|A)} = \frac{\dfrac{\exp(V_a)}{\sum_a \exp(V_a)}}{\dfrac{\exp(V_b)}{\sum_a \exp(V_a)}} \quad , \forall a \in A \qquad (3.12)$$

where b refers to the base alternative.

The summation terms in (3.12) cancel, and transforming both sides logarithmically gives:

$$\text{Log}_e \left[\frac{p(a|A)}{p(b|A)}\right] = V_a - V_b \qquad (3.13)$$

With the dependent variable being the natural logarithm of this odds ratio of choosing alternative a in set A relative to the choice of the base alternative in set A, the linear parameters of the expression defining the logs of the utilities, V_a[11] and V_b, can be estimated in a weighted least squares regression of the following form[12]

$$\text{Log}_e \left[\frac{p(a|A)}{p(b|A)}\right] = \sum_{j=1}^{J} b_j \, (X_{ja} - X_{jb}) + e_{ia} \qquad (3.14)$$

where,
X_{ja}, X_{jb} are the quantities of attribute j present in alternative a and b respectively;

---

[11] $V_a = b_o + \sum_{j=1} b_j X_{ja} + e_{ia}$.

[12]The common intercept b_o in the expressions for V_a and V_b disappears when V_b is subtracted from V_a.

b_j is an empirically estimated parameter;
e_{ia} is a disturbance term for the i^{th} individual and a^{th} alternative in a choice set.

The resulting estimates can be used subsequently to predict the choice probability of any one alternative belonging to a synthetic choice set, S, consisting of any combination of alternatives drawn from the entire experimental domain:

$$p(a|S) = \frac{\exp(V_a)}{1 + \sum_{\substack{s \in S \\ s \neq b}} \exp(V_s)} \qquad (3.15)$$

Equipped with this theoretical base for the DCE, one can proceed to design an experiment on the choice behaviour of winter beach vacationers.

CHAPTER 4

MODEL OPERATIONALIZATION

4. 1. INTRODUCTION

This chapter will describe the actual procedures involved in designing the discrete choice experiment. Discussion begins with the selection of attributes (factors) and levels, followed by the selection of a double constrained fractional factorial design, model specification, questionnaire design, sample selection and questionnaire distribution. It should be emphasized at the outset, that in reality operationalization does not follow that sequence step by step. Frequently considerations and problems of one aspect affect the others, such as the effects of the properties of designs on attribute selection.

The advantages of experimental behavioural research are:

(1) it allows for the design of experiments in which a relatively large number of salient destination attributes can be combined so that they actually describe a hypothetical destination, and in which research subjects evaluate the destination as a whole instead of attributes singly;

(2) it allows attributes to be uncorrelated, i.e. orthogonal designs, obviating the problem of multicollinearity often encountered in observational studies;

(3) it allows the researcher to control the choice alternatives and choice sets presented to the respondent;

(4) truly different alternatives, some of which may not presently exist, can be designed and presented to the respondent for evaluation.

Furthermore, the intangibility of the tourist product, mentioned in the introduction, does not pose an insurmountable problem for experimental research. On the contrary, the experiment places the respondent in a situation very similar to that faced by winter beach vacationers when selecting a holiday.

4. 2. DEFINITION OF ATTRIBUTES AND LEVELS

As discussed in Chapter 2, the overall goal of this study is to model the choice behaviour of winter beach vacationers in such a way that the survey is of relevance to destination planning as well as marketing. This dual purpose might pose a problem for the selection of attributes, because attributes perceived as salient by tourists and of interest to marketers may not necessarily be of equal relevance to planners. However, most tourist brochures contain a more or less complete list of tourist services available in the accommodation as well as the destination, and frequently they also contain information on the location of services and their distances from the accommodation under consideration. Hence, one can infer that both the availability of services as well as their locational characteristics are seen by the tourist industry as important variables in the choice process. If tourist choices are indeed affected both by the availability and location of services,

then the attributes to be examined will be of relevance for planning as well as marketing.

The basic assumption made here regarding the tourist's choice process when selecting a winter beach vacation is that (s)he decides on the accommodation and destination simultaneously. For many individuals this may be a simplification of the actual cognitive process underlying choice - some tourists may obey a sequential choice rule as they either select a destination first and an accommodation afterwards, or they select a destination only if a specific type of accommodation or activity is available in that destination - but describes well the net result of the choice process, which is the selection of a destination which includes accommodation arrangements, and possibly other trip components such as airfare, ground transportation, car rental, use of sports facilities, etc.. Due to the nature of holidays to the Caribbean only a small minority of people find accommodation on speculation. The simultaneous consideration of accommodation and destination enables the researchers to incorporate these attributes into a single MNL-model.

Ideally, an objective and/or quantitative method, such as repertory grid analysis (Kelly, 1955) and multidimensional scaling should be used to elicit the salient attributes for a discrete choice experiment[13]. However, this would have required an additional survey, which was beyond the financial means of

[13]See Allton (1981) and Allton and Lieber (1983) for an example of a thorough application of an objective approach to attribute definition.

this study. Instead, salient factors were identified in consultation with travel agents and by analyzing tourist brochures and consulting previous studies on tourist destination attributes and preference. Of the ten attributes selected, two describe the accommodation, seven refer to the tourist infrastructure and other destination characteristics, while the price of food, lodging, and travel for that particular scenario constitutes the tenth variable. Each of these attributes in turn was defined on three levels (see Table 4.1).

The accommodation under consideration is described in terms of *size*[14] ('12', '60', or '250 rooms') and what services are provided on the premises. Without examining Caribbean data in detail, the three size classes appear as reasonable representations of the scale of accommodations in the region. It proved difficult to compress the variety of services an accommodation might offer into three levels. The distinction between restaurants, shopping and entertainment, and sports facilities is an obvious one, but their combination in the tripartite manner proposed in Table 4.1 is arbitrary. The assumption is that basic sports facilities such as a swimming pool and tennis court(s) will be found ubiquitously and are therefore not referred to explicitly, while others, such as a golf course and scuba diving facilities, which have been referred to explicitly in the instruction to the questionnaire, will be found in specialized establishments only. Other variables, such as style of construction (i.e.

[14]Throughout the study, variables will always be referred to in italics, and the levels will be highlighted by single inverted commas, e.g. *services* 'restaurant only'.

TABLE 4.1

EXPERIMENTAL VARIABLES AND THEIR LEVELS

VARIABLE	LEVEL AND DEFINITION[1]
1 COUNTRY	Barbados, Cuba, Jamaica, Martinique, St.Vincent;
YOUR ACCOMMODATION	
2 SIZE	250 rooms, 60 rooms, 12 rooms;
3 SERVICES	(on premise) R.....restaurant only R,SE.....restaurant and shopping and entertainment R,SE,Sp...restaurant, shopping and entertainment,and sports facilities
AREA AROUND THE ACCOMMODATION	
4 LOCATION	in town, town close, rural;
5 BEACH	on beach, 10 minutes, or 30 minutes walking distance;
6 AIRPORT	international: 25 min, or 1 hour driving distance; (direct link to Canada) local: (implies that you must transfer after your international flight to a small commuter plane in order to reach your final destination);
7 OTHER ACCO	(-mmodations in 5 km radius) many, few, none
8 OTHER R	(Restaurants) } 10 or 30 min walking distance; or none;
9 OTHER SE	(Shops and Entertainment) }
10 OTHER Sp	(Sports facilities e.g. Golf, Scuba, Sailing); }
11 PRICE	in Can $ for each trip includes: return airfare from Ottawa via Toronto or Montreal; accommodation for 7 days, European Plan (no meals incl.); high season; price per person, double occupancy.

1) Underlining highlights the form of abbreviation used in choice sets.

highrise or bungalow type), may be of equal importance but were not included in the design in order to keep the number of variables manageable.

The seven variables describing the destination at large refer to the major components of the touristic infrastructure (other *restaurants*, *shopping and entertainment*, and *sports facilities*), the *beach* as the major resource and attraction, the *density* of tourism development, and the *location* of the accommodation within the local settlement structure. It is possible to assign levels that refer to spatial structure for all these variables, by indicating the distance from the chosen accommodation in walking or driving time. In the absence of any previous studies on the distance decay or other spatial characteristics of tourist facilities, most levels for this exploratory study were chosen by intuitive judgement.

The superiority of a hotel located right 'at the beach' is obvious. A walking distance of '10 minutes' is considered as short and acceptable, while '30 minutes' is considered as too arduous and close to unacceptable for most people. The locational pattern of resort areas on any given Caribbean island reflects the orientation towards the *airport*. Therefore two levels describe this variation in distance, while the third level is used to describe the situation of those islands, some of them independent nations, which do not possess an airport that accommodates wide-bodied aircraft and are therefore not directly accessible from the major market areas. Walking distance ('10 minutes' and '30 minutes') is taken as a measure of distance again between the chosen

accommodation and the three major tourist services (*restaurants, shopping and entertainment, sports facilities*). In the case of these attributes, one level is reserved for the possibility that the service is 'not available' within the prescribed distance. Another spatial variable refers to the *location* of the accommodation within the local settlement system ('in town', 'town close', 'rural'), and the final attribute describes the *density* of tourism development in the vicinity of the chosen accommodation ('many', 'few', 'none', referring to other accommodations in the surrounding area).

Price is also represented on three levels. The price quoted refers to the given scenario and includes airfare and accommodation. Each scenario is a description of a trip, not necessarily a package. Because each scenario is located in one of five Caribbean countries (see below), it was deemed necessary to adapt each price level to the variation in airfare. Therefore the Apex-fare is taken as the base for calculation, and added to the cost of accommodation per person:

High-priced scenario: Apex-fare to each country	+ $ 700+10%
Medium-priced scenario: Apex-fare	+ $ 400
Low-priced scenario: Apex-fare	+ $ 200-10%

In the process of creating choice alternatives from combinations of attribute levels (see below) it is possible to introduce *country* as the eleventh variable. The reason for this was to increase the realism of the alternatives to be compared by respondents. The five islands selected were chosen in order

to represent the spectrum of Caribbean destinations as widely as possible: Barbados and Jamaica represent large and well established English-speaking destinations; St. Vincent exemplifies a smaller and less known English-speaking counterpart; Martinique as a French-speaking territory constitutes an important alternative for Canadians; while Cuba represents the culturally and politically most different destination, which over the past few years has made strenuous attempts to improve its image and product.

4. 3. SELECTION OF DESIGN PLANS

Before the selection of attributes and their number of levels is finalized the researcher must verify the existence of an appropriate fractional factorial design plan. Generally, the more variables and levels there are, the fewer effects can be estimated. There also exist designs that accommodate different numbers of levels for attributes, but they are usually more complicated in their analysis and again reduce the number of attributes that can be included. Given these considerations and that the purpose of this study is exploratory research, the emphasis in the selection of a design for the creation of choice alternatives ought to be on maximizing the number of variables in the model. Taking all these aspects into consideration it was found that a 1/2187 fraction of a 3^{10} design (Table 4.2) is appropriate for the creation of hypothetical choice

TABLE 4.2

THE BASIC DESIGN PLAN

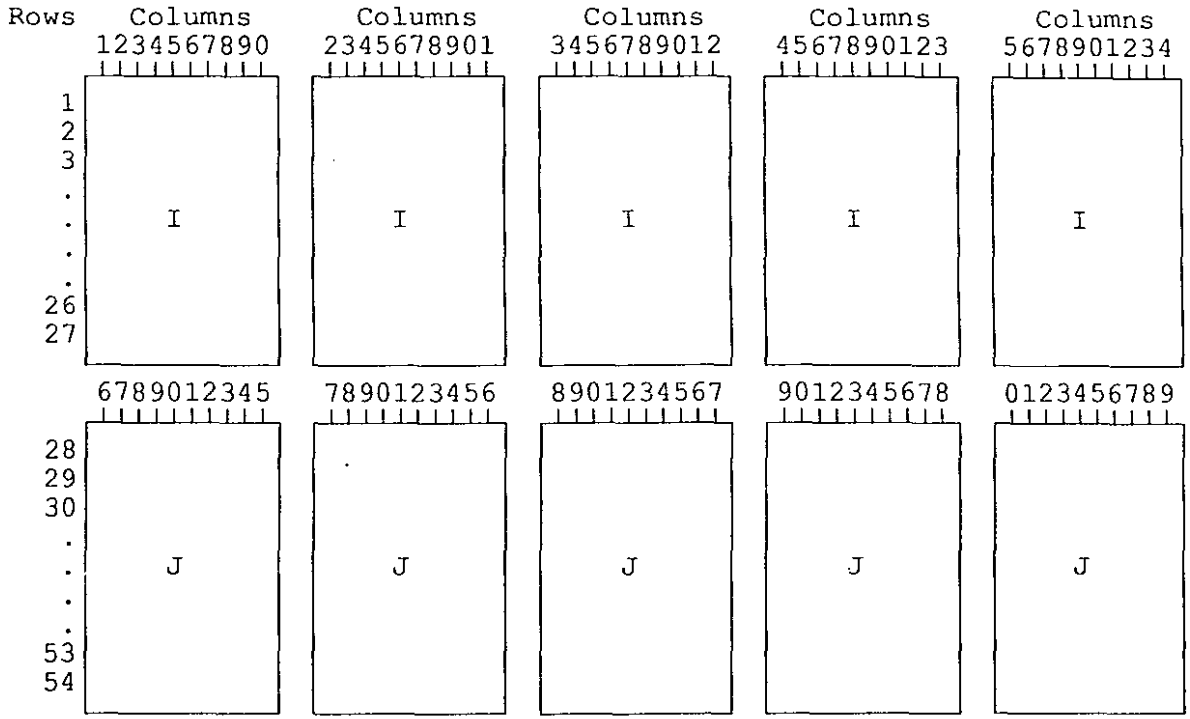
ROW	COLUMN									
	1	2	3	4	5	6	7	8	9	10
01	0	0	0	0	0	0	0	0	0	0
02	0	0	1	1	2	1	1	2	1	2
03	0	0	2	2	1	2	2	1	2	1
04	0	1	0	0	0	1	1	1	2	2
05	0	1	1	1	2	2	2	0	0	1
06	0	1	2	2	1	0	0	2	1	0
07	0	2	0	0	0	2	2	2	1	1
08	0	2	1	1	2	0	0	1	2	0
09	0	2	2	2	1	1	1	0	0	2
10	1	0	0	1	1	0	1	1	1	1
11	1	0	1	2	0	1	2	0	2	0
12	1	0	2	0	2	2	0	2	0	2
13	1	1	0	1	1	1	2	2	0	0
14	1	1	1	2	0	2	0	1	1	2
15	1	1	2	0	2	0	1	0	2	1
16	1	2	0	1	1	2	0	0	2	2
17	1	2	1	2	0	0	1	2	0	1
18	1	2	2	0	2	1	2	1	1	0
19	2	0	0	2	2	0	2	2	2	2
20	2	0	1	0	1	1	0	1	0	1
21	2	0	2	1	0	2	1	0	1	0
22	2	1	0	2	2	1	0	0	1	1
23	2	1	1	0	1	2	1	2	2	0
24	2	1	2	1	0	0	2	1	0	2
25	2	2	0	2	2	2	1	1	0	0
26	2	2	1	0	1	0	2	0	1	2
27	2	2	2	1	0	1	0	2	2	1

Source: Hahn and Shapiro, 1966: Plan 8.

Note: each factor is represented by one of the 10 columns, with
0=level 1 of a factor
1=level 2 of a factor
2=level 3 of a factor.
Thus the first row defines an alternative consisting of the first level of all 10 factors.

FIGURE 4.1

SCHEMATIC REPRESENTATION OF CHOICE SET CREATION



I = 1/2187 th fractional factorial (Table 4.2)
J = foldover of I

The column numbers 1-10 refer to the 10 experimental variables; each section of 10 columns in one row refers to one choice alternative; and an entire row refers to the five alternatives that make up one of the 54 different choice sets.

alternatives[15]. The 27 replications (in Table 4.2 each row represents one replication) required allow estimation of all main effects and one two-way interaction. It is an orthogonal plan, implying that all the independent variables in the model are uncorrelated with one other.

Regarding the selection of the second design for the purpose of choice set creation, Louviere and Woodworth (1983) point out that any 2^N design (where N = the number of variables in first design) can be used. A Latin Square design constitutes a special case of such a design. Its characteristic is that its column vectors are permuted in sequence so that each column vector appears in each possible column position once (see Figure 4.1). The 10 columns represent the 10 variables and need to be rotated 10 times to satisfy the Latin Square design.

Further explanation is needed for the understanding of Figure 4.1. Each block (10 columns,27 rows) contains the complete information of the original design matrix. The five blocks in rows 1 to 27 contain the original design matrix (I) with their columns permuted, the five blocks of rows 28 to 54 each contain the foldover of the original design matrix (J). The purpose of "folding over" the primary design is to double the estimable interactions of the primary design. This is accomplished by replacing the codes 0,1,2 (which refer to the

[15] 3^{10} indicates that given 10 variables with 3 levels each, a total of 59,049 alternatives can be created. If 27 replications are required to make up a fractional factorial design, this is referred to as a 1/2187 fraction, because $27/3^{10}=1/2187$.

three possible levels of any given variable) of the original design with the codes 2,1,0 (the middle level remains unchanged) in the 27 folded replications (Louviere, 1988b:59).

If the original design matrix and its foldover are duplicated five times, a total of 10 matrices exist, for which the 10 required column permutations can be performed. As explained above, each of the 5 countries must appear in each choice set once. For that purpose the five original matrices and the five foldovers have been placed on top of each other, so that each of the rows now corresponds to one choice set giving a total of 54 different choice sets, and each group of 10 columns within a row corresponds to one choice alternative (see Appendix 1 for the complete design matrix). If one respondent were to evaluate 27 separate choice sets, individual preference functions can be estimated. This, however, was considered too strenuous a task for one person and it was decided to forfeit totally disaggregate analysis and instead ask each respondent to evaluate only 9 choice sets. This was done by dividing the original 54 choice sets into 6 mutually exclusive groups, each composed of 9 choice sets, i.e. 9 rows from the 54. The result of this operation, which provides the basis for the empirical analysis, is presented in Appendix 1. As was explained in Chapter 3, analysis on the aggregate level is possible even though not all respondents evaluate the same alternatives, as long as each choice set contains a common alternative. A convenient base alternative is the option 'would not go', because by default it encompasses all other possibilities

not considered by the experimental design.

4. 4. MODEL SPECIFICATION

For the 3^{10} fractional factorial design described above, Equation (3.15) needs to be rewritten as:

$$\text{Log}_e \left[\frac{p(a|A)}{p(b|A)}\right] = \sum_{j=1}^{10} \sum_{k=1}^{3} b_{jk}(X_{jka}-X_{jkb}) + e \qquad (4.1)$$

where,

b_{jk} is a parameter for level k of attribute j to be estimated empirically in a weighted least squares regression;

X_{jka}, X_{jkb} are dummy variables defining whether level k of attribute j is present in alternative a and b respectively where only one level of any attribute can be present in any alternative.

Since the base alternative (would not go) is characterized by level zero of each attribute (i.e. all $X_{jkb}=0$), Equation 4.1 simplifies to

$$\text{Log}_e \left[\frac{p(a|A)}{p(b|A)}\right] = \sum_{j=1}^{10} \sum_{k=1}^{3} b_{jk}X_{jka} + e \qquad (4.2)$$

Since only two dummy variables are required to specify which of three levels of an attribute is possessed by any alternative, Equation 4.2 can be further simplified as follows:

$$\text{Log}_e \left[\frac{p(a|A)}{p(b|A)}\right] = \sum_{j=1}^{10} \sum_{k=2}^{3} b_{jk}X_{jka} + e \qquad (4.3)$$

Finally the role of country in influencing choice is handled by allowing each country to have a different intercept term as shown in 4.4

$$\log_e \left[\frac{p(a|A)}{p(b|A)}\right] = \sum_{m=1}^{5} b_{om}C_{ma} + \sum_{j=1}^{10} \sum_{k=2}^{3} b_{jk}X_{jka} + e \qquad (4.4)$$

where

C_{ma} is a dummy variable defining the country m, to which alternative a belongs;

b_{om} is the country-specific parameter estimated in the weighted least squares regression analysis.

4. 5. QUESTIONNAIRE DESIGN

An example of a questionnaire is provided in Appendix 2. Each questionnaire consists of two parts. The first contains nine choice sets preceded by three practice sets, because previous experience by other researchers had shown that respondents need some practice sets to familiarize themselves with the task and to stabilize their responses. The peculiar feature of such a choice experiment is that initially the task appears very complicated, but once a respondent has understood the basics, (s)he will develop an individual routine.

The second part of the questionnaire contains mostly multiple choice questions about socio-demographic characteristics of the respondent, his/her general vacation habits, and a detailed account of the last winter beach vacation.

Once the decision in favour of a mailed questionnaire was made (see

below), the questionnaire was designed accordingly, and a cover letter and instructions were written.

4. 6. SAMPLE SELECTION AND QUESTIONNAIRE DISTRIBUTION

Two options were considered for data collection: a mailed survey and group panel sessions. The latter might be the most suitable method for a DCE because it provides the researcher with the opportunity to introduce the purpose of the survey and to provide explanation on the use of choice sets. Unfortunately panel sessions inconvenience respondents as they have to meet at a specific place and time. By contrast, a mailed survey is completed by the respondent at his/her convenience. Its drawbacks are that the instructions have to be written carefully, and despite trial runs to minimize misunderstandings, any further misinterpretations will go undetected. Mailed surveys also suffer from poor response rates and lack control over the research setting (Pizam, 1987).

Because of the cost involved in either of the approaches and the potential commercial applications of the study, Toronto based tour operators were approached for support of the project. Letters were sent to 15 companies[16] and followed up by a telephone call. They were informed of the nature and the merits of the research and asked if they would support the project in one or both of the following ways: (1) distribution of questionnaires

[16]Identified from the 1985 ACTA-Directory.

to their clients, or funding for a random distribution; (2) provision of an incentive to respondents in the form of a booking voucher that participants could redeem with their next booking, or provision of a free trip to a winter beach destination, to be raffled off among all respondents. In return, the tour operators were offered the opportunity to participate in the design of the choice experiment as well as the multiple choice questions, and to decide on the sample and area of study. Unfortunately no company was willing to provide any support.

Consequently any plans for controlled sampling schemes had to be cancelled. As a matter of convenience it was decided to conduct the survey in the Ottawa area in the cheapest possible manner. All 96 Ottawa area travel agencies[17] were informed by mail of the purpose of the study and approximately three weeks later owners or managers of the agencies were contacted by telephone to determine if they had an interest in participating. Twenty-one agencies agreed to distribute some questionnaires. Due to the voluntary nature of their cooperation they could be expected to distribute a limited number of questionnaires only. Most of them were provided with 24 or 30 questionnaires, and they were asked to mail them to previous customers. However, at that point the researcher surrendered control over actual

[17]As identified from the 1985 ACTA-Directory and the Telephone Directory. Note that of these 96 agencies not all have an interest in selling winter beach vacations. Numerous agencies are specialized in business travel, others have regional specializations such as ethnic markets.

questionnaire distribution. It may well be that some agents simply handed questionnaires to presently booking or inquiring clients. There was also no control over how many questionnaires were actually distributed, and in order to ensure the privacy of respondents, no follow-up strategy could be devised.

Significant help came from one travel agent who agreed to mail a questionnaire to each of his 594 vacation clients. In total, travel agencies distributed 1100 questionnaires, of which 150 were returned (119 usable). A response rate of 14% is typical for a mailed survey without follow-up.

Further avenues were used to solicit participation in the survey. The local newspaper placed a small note in a column of its weekend travel section, describing the nature of the research and encouraging volunteers to contact the researcher. This approach yielded 9 contacts and 8 useful questionnaires. The sample size was increased by the direct participation of friends and friends of friends (34 returned questionnaires). Finally, 8 questionnaires originated in Montreal, where members of the thesis advisory committee distributed some surveys. This brought the total sample size of usable questionnaires to 159. The reader is reminded that six different questionnaires were used. Among them the number of usable returns varied between 24 and 28.

The analysis in the next chapter will show that these 159 responses are sufficient to derive meaningful and statistically significant results from the DCE on the aggregate scale of all respondents. The sample size only poses a limitation when market segmentation is attempted.

CHAPTER 5

RESULTS OF THE DISCRETE CHOICE EXPERIMENT

5. 1. INTRODUCTION

In this chapter, the results of the discrete choice experiment are presented and discussed, together with tests on the internal and external validity of the various models. First the major characteristics of the sample are highlighted, and some general issues, such as dummy coding and the distinction between generic and alternative-specific variables are described. Then the results for the generic variable model are discussed in detail. This generic variable model provides the basis for the evaluation of other model specifications, such as more parsimonious forms. The other model specifications are used to test the validity of underlying assumptions of the discrete choice experiment, i.e. the MNL model.

Using the generic variables model, the sample is segmented in terms of various socio-economic and behavioural characteristics. Finally, a demonstration is given of how the estimates of discrete choice experiments can be used in simulation, that is, for predicting choice probabilities for any hypothetical scenario that can possibly be designed within the experimental domain.

5. 2. THE SAMPLE

Tables 5.1 and 5.2 provide summaries of the socio-demographic and behavioural characteristics[18] of the sample population. Wherever possible, the appropriate figures for the population of the Ottawa-Carleton region are included (Statistics Canada, 1989). The sample characteristics are based on information that was collected in Part 2 of the questionnaire[19]. The advantage of having this detailed data on personal and travel characteristics is that it enables the researcher to aggregate subjects in terms of each of these characteristics into two, three, or more possibly meaningful subgroups for the purpose of market segmentation. To effectively test for distinct market segments the subgroups should be as different as possible, but at the same time their frequencies should not be too unbalanced. Furthermore, too many categories are to be avoided, because they complicate the analysis and quickly thin the frequency counts in the respective subgroups.

Of the total of 159 returned and usable questionnaires, 44% (70) were contributed by the clients of one travel agent, while of the other 56%, 25% were supplied by other participating travel agencies, 21% by friends and friends of friends, 5% in response to the newspaper article, and finally 5% by participants

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[18]Throughout the study, the socio-demographic and behavioural characteristics of the sample will be referred to as "characteristics" in order to avoid confusion with the "variables" used in the experimental design.

[19] A more detailed tabulation of the information in Tables 5.1 and 5.2, which also distinguishes the various modes of data collection, can be found in Appendix 3.

TABLE 5.1

MAJOR SOCIO-DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS

	SAMPLE		REGION
	N	%	%
SEX			2)
missing	1	0.63	
male	90	56.60	47.92
female	68	42.77	52.08
AGE			2)
missing	1	0.63	
18-34	58	36.48	46.17
35-44	60	37.74	15.31
45+	40	25.16	36.62
MAR.STATUS			2)
single +	63	39.62	39.12
married +	96	60.38	60.88
PLACE OF BIRTH			1)
missing	1	0.63	
Canada	116	72.96	83.22
other	42	26.42	16.78
MOTHERTONGUE			1)
missing	4	2.52	
English	99	62.26	69.22
other	56	35.22	30.78
LANGUAGES			1)
Engl, no F	52	32.70	60.64
Engl and F	107	67.30	39.36

	SAMPLE		REGION
	N	%	%
INCOME			3)
missing	4	2.52	
< $45,000	71	44.65	71.10
> $45,000	84	52.83	28.90
EDUCATION			2)
other	92	57.86	79.81
grad/prof.	67	42.14	20.19
OCCUPATION			
missing	1	0.63	
professio.	81	50.94	
other	77	48.43	
OWNERSHIP OF RESIDENCE			3)
missing	4	2.52	
owned	98	61.64	51.89
rented	57	35.85	48.11
TYPE OF RESIDENCE			3)
missing	7	4.40	
single family home	75	47.17	41.23
other	77	48.43	58.77

1) % of Regional Total Population 1980 (Base: 600,540)
2) % of Regional Adult Population 1986 (15 years and over; Base:485,815)
3) % of Families 1986 (Base: 158,790)

Source: Statistics Canada, 1989

TABLE 5.2

MAJOR BEHAVIOURAL CHARACTERISTICS OF RESPONDENTS

LAST WINTER BEACH VACATION

	SAMPLE	
	N	%
ACCOMMODATION		
missing	17	10.69
hotel, gh.	80	50.31
other	62	38.99
PLAN NEXT VAC.		
missing	1	0.63
yes	74	46.54
no	84	52.83
DESTINATION		
Carib	83	52.20
Florida	38	23.90
other	38	23.90
RECOMMENDATION		
missing	31	19.50
repeat	43	27.04
friends	42	26.42
other	43	27.04
TRANSPORTATION		
other,mis.	28	17.41
air	131	82.39

	SAMPLE	
	N	%
TYPE OF ARRANGEMENT		
missing	18	11.32
ITC	74	46.54
separate	67	42.14
PLACE OF BOOKING		
other,mis.	51	32.08
agent	108	67.92
EVER VISITED CARIB.		
missing	7	4.40
yes	89	56.97
no	63	39.62
COMPANY		
other,mis.	18	11.32
alone	15	9.43
couple	54	33.96
family	43	27.04
friends	29	18.24

residing in Montreal. Judging from Appendix 3 there appear to exist no major differences in the characteristics of the respondents between the various modes of data collection.

The overrepresentation of males in the sample is probably explained by the fact that in the case of couples, the male was more likely to act as the respondent. Regarding age, one can see that the 35-44 years age group is grossly overrepresented in comparison to the regional population. Persons under 20 and sometimes even 25 years of age are under-represented either because they travel as dependents, or, once independent, simply cannot afford this type of a holiday. The relatively low representation of older people in the sample may indicate major differences in the travel behaviour of that generation. In the post-survey stratification, the characteristic marital status combined married respondents with those living-together in one category, and all forms of living alone in another. On this characteristic the sample conforms closely to the adult population of the Ottawa-Carleton Regional Municipality. Respondents are less likely to be born in Canada than the regional population. Despite the fact that the questionnaire was distributed in English only, the English language is not as predominant in the sample as in the population, both as mother tongue as well as being the only language spoken. A full two thirds of the sample indicated bilingualism. An average household income of $48,000 for the region of Ottawa-Carleton in 1986 makes the income categories chosen for the questionnaire appear too low. However,

several of the comments received on the questionnaires indicated the sensitivity of respondents towards this question, justifying the rather crude classification scheme. One can simply argue that a family income of over $45,000 is required for a family to have sufficient discretionary income for a more expensive holiday, such as most Caribbean travel normally entails. An obvious discrepancy occurs in the characteristic "education", where a full 42% of respondents hold a university degree, as compared to only 20% of the entire population. Finally, respondents are more inclined to be home owners (62% as compared to 52% in the population), reflecting the fact that higher income groups are more likely to consume a winter beach vacation. Overall the sample contains a larger proportion higher income, better educated individuals in the 35-44 years age bracket than the region. Much of the discrepancy between the sample and the regional population simply reflects the characteristics of the richer, travel-prone segment of the population.

This view is confirmed by the sample's overall vacation behaviour: 87% take a vacation annually, and 87% had previously taken a winter beach vacation. However, only 56% of the sample have ever visited the Caribbean before, which apparently reflects the special and expensive status of the region.

As can be seen in Table 5.2 just over one half of the respondents took their last winter beach vacation in the Caribbean, while the rest was split evenly between Florida and other destinations. Again about half stayed in hotels or guesthouses, while as many used other forms of accommodation,

ranging from condominiums and clubs to cruiseships and private yachts. The predominant mode of transportation from Canada to the winter beach destination is by aircraft, land transport being feasible only for visits to mainland destinations. The "mode of booking" distinguished between respondents purchasing transportation and accommodation services separately as opposed to those buying an inclusive tour package (ITC). The sample is approximately split in half. However, a closer examination of the cross tabulation of this variable with destination reveals that 75% of the visitors to the Caribbean purchased an ITC, as opposed to 19% of vacationers to Florida. For the category "other destinations", the selection is fairly evenly distributed. An explanation for this pattern can be found in the greater flexibility of car travelers to the US, versus air travelers to places outside the US. The next variable, "place of booking", suggests similar behavioural trends: of the Caribbean visitors, only three made their own arrangements, while 60 used a travel agent (as opposed to 11 for Florida). It comes as something of a surprise that, at least for the sample, the heavy use of travel agents does not translate into the travel agents having a major influence on the actual choice of the destination. Respondents stated that they were most influenced in their choice by recommendations of friends and relatives, and their own previous visits (repeat visitors). These two categories alone accounted for well over 50% of all choices. Only the tourist brochure gets close to being a medium of influence, while recommendations by travel agents and other advertising media are of

very little significance. This finding contrasts with other reports which emphasized the crucial and dominant position of the travel retailer (e.g. Travel and Tourism Consultants International, 1982). One can only speculate that the more random position of these questions within the questionnaire do not allow any firm conclusions.

Almost half (46%) of the respondents were in the process of planning a winter beach vacation for the 1985/86 season, but only 27% had actually made arrangements at the time of their response. These last two figures may be lower than the actual intention of going, because questionnaire distribution extended until the month of February, by which time several respondents had already taken their vacation.

Finally, respondents were asked to rank at least 3 attributes out of a list of 13 in terms of their importance in the choice of their last holiday selection. Unfortunately, many participants did not comply with the ranking but merely indicated the categories of importance to them with a checkmark. Therefore, all answers were translated into simple dichotomous statements of whether the category was of importance to the respondent or not. The results are summarized in Table 5.3. The importance of the beach (mentioned by 90% of respondents) lies in the nature of the subject and price was mentioned by almost 70% of all respondents. Between 40% and 50% of respondents mentioned beautiful scenery, safe environment, and convenient air linkages, followed by friendly local people and exotic atmosphere. Next on the list were

TABLE 5.3

ATTRIBUTES INFLUENCING THE CHOICE OF THE LAST WINTER BEACH VACATION

	ALL	
	N	PCTN
BEACH		
no	16	10.06
yes	143	89.94
EXOTIC ATMOSPHERE		
no	104	65.41
yes	55	34.59
BEAUTIFUL SCENERY		
no	82	51.57
yes	77	48.43
NIGHTLIFE		
no	129	81.13
yes	30	18.87
PRICE		
no	48	30.19
yes	111	69.81
SAFE ENVIRONMENT		
no	92	57.86
yes	67	42.14
WATERSPORT		
no	115	72.33
yes	44	27.67

	ALL	
	N	PCTN
OTHER SPORTS		
no	122	76.73
yes	37	23.27
CULTURAL		
no	120	75.47
yes	39	24.53
FRIENDLY PEOPLE		
no	102	64.15
yes	57	35.85
NORTH AMERICAN FOOD		
no	134	84.28
yes	25	15.72
LOCAL FOOD		
no	126	79.25
yes	33	20.75
CONVENIENT AIR LINK		
no	95	59.75
yes	64	40.25
OTHER		
no	136	85.53
yes	23	14.47

the availability of sports facilities, local food, and culture (all between 20% and 30%), while nightlife, availability of North American food, and the category other were the least mentioned criteria. However one should bear in mind that many of the less frequently mentioned attributes can become important considerations in the choices of certain groups of vacationers. The identification of these differences is a major concern of market segmentation research.

The last part of the questionnaire attempted to repeat the same questions asked about the last holiday, but for the planned vacation. However, with 93 out of 159 records missing, data are too scarce for any further analysis.

5. 3. THE ANALYSIS OF DISCRETE CHOICE EXPERIMENTS

Before the results of the discrete choice experiment are presented, two more issues of a theoretical nature need clarification: firstly, the different types of explanatory variables that might be used, and secondly, some peculiarities associated with the dummy coding of the independent variables in the discrete choice experiment.

In choice modelling, the independent variables are either generic variables (GV), alternative specific variables (ASV), or alternative specific constants (ASC). A generic variable

> varies in value across all response categories and has an associated generic parameter which remains *constant* in

value across all response categories (Wrigley, 1985:74).

Alternative specific variables

> do not vary in value across all response categories (response alternatives) and ... therefore, take an 'assigned' value of zero for certain response categories (alternatives) in the choice set. ASVs can be said to have identifiable correspondence with particular response categories (alternatives), and they have associated alternative specific parameters which are specific to particular response categories (alternatives) (Wrigley, 1985:74).

Finally, the constants in a discrete choice model are always associated with a particular alternative, and hence referred to as alternative specific constants.

As will become apparent below, these distinctions are important ones for the discrete choice experiment, because they permit the researcher to test if an assumption underlying the MNL- model (i.e. the IIA) is correct.

The dummy-coding used in the discrete choice experiment is slightly complicated by the double constrained nature of the design. The choice alternatives, except the base alternative are coded as they would be in any conjoint analysis, preferably using orthogonal polynomial codes (i. e. +1,-1) in order to minimize estimation errors (Louviere, 1988b:84). In this study, each variable has three levels, therefore two dummy variables are sufficient to represent the three levels of each variable with the codes of -1-1, 1-1, -1 1 (see Table 5.4 as an example). These codes correspond to the 0s, 1s, and 2s of the original design plan (Appendix 1). The alternative specific constants, relating to the variable *country*, are corner effects coded with 1 and 0. The base

alternative of *would not go* (every sixth row in Table 5.4) is simply coded uniformly zero (Louviere, 1988b:83-84).

5. 4. THE GENERIC-VARIABLE (GV) MODEL

The GV Model has been specified in Equation (4.4) above:

$$\log_e \left[\frac{p(a|A)}{p(b|A)}\right] = \sum_{m=1}^{5} b_{om}C_{ma} + \sum_{j=1}^{10} \sum_{k=2}^{3} b_{jk}X_{jka} + e \qquad (5.1)$$

In the analysis below, the variable *price* will be treated as a continuous variable. In that case Equation (5.1) changes to:

$$\log_e \left[\frac{p(a|A)}{p(b|A)}\right] = \sum_{m=1}^{5} b_{om}C_{ma} + \sum_{j=1}^{9} \sum_{k=2}^{3} b_{jk}X_{jka} + b_{10}X_{10} + e \qquad (5.2)$$

where $b_{10}X_{10}$ is the parameter estimate and *price* variable.

The appropriate dummy coding is schematized in Table 5.4. Parameter estimation for this type of MNL models is accomplished by iteratively reweighted least squares analysis (Louviere, 1988a; Wrigley, 1985:183ff) and calculations were performed with the LOGIT program (Woodworth, Gilbert, and Fox, 1990). The dependent variable is the log of the relative frequency of choice of one of five alternatives rather than the base alternative in any one of the 54 different choice sets used[20].

[20]The total number of choice alternatives (54x6=324) defines the number of degrees of freedom available in each model.

TABLE 5.4

CODING FOR THE GV-MODEL

CS	FR	A T T R I B U T E S															
		V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	COUNTRY				
		L1L2	L1L2	L1L2	L1L2	L1L2	L1L2	L1L2	L1L2	L1L2		B	C	J	M	S
1	4	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0	0	0	0	0	0
1	1	-1 1	-1 1	1-1	-1-1	-1-1	1-1	-1-1	-1 1	1-1	1410	1	0	0	0	0
1	1	-1-1	1-1	-1 1	1-1	-1 1	-1-1	1-1	-1-1	-1 1	690	0	1	0	0	0
1	4	-1 1	-1 1	1-1	-1-1	-1 1	-1-1	-1-1	-1-1	-1 1	740	0	0	1	0	0
1	0	1-1	1-1	-1-1	-1 1	-1 1	1-1	-1-1	-1-1	-1-1	1380	0	0	0	1	0
1	1	1-1	1-1	1-1	1-1	1-1	1-1	1-1	1-1	1-1	730	0	0	0	0	1
2	4	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0	0	0	0	0	0
2	4	-1 1	-1-1	1-1	-1 1	-1-1	-1-1	1-1	-1 1	-1 1	1020	1	0	0	0	0
2	0	-1-1	1-1	-1 1	-1 1	1-1	-1 1	-1-1	1-1	-1 1	1290	0	1	0	0	0
2	1	-1-1	-1 1	-1 1	-1-1	-1-1	1-1	1-1	1-1	-1 1	1035	0	0	1	0	0
2	0	-1-1	1-1	-1-1	-1 1	1-1	-1 1	-1-1	1-1	-1 1	725	0	0	0	1	0
2	3	1-1	-1-1	-1 1	-1-1	-1-1	-1-1	-1 1	1-1	-1 1	1050	0	0	0	0	1
3	5	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0	0	0	0	0	0
3	2	-1-1	-1 1	1-1	-1-1	-1 1	-1 1	1-1	-1-1	-1-1	1410	1	0	0	0	0
.	.	. .	. .	. .	. .	. .	. .	. .	. .	. .	.	.	.	.	.	.
.	.	. .	. .	. .	. .	. .	. .	. .	. .	. .	.	.	.	.	.	.
.	.	. .	. .	. .	. .	. .	. .	. .	. .	. .	.	.	.	.	.	.
.	.	. .	. .	. .	. .	. .	. .	. .	. .	. .	.	.	.	.	.	.
53	1	-1-1	1-1	1-1	-1-1	-1 1	-1 1	1-1	-1-1	-1-1	1415	0	0	1	0	0
53	1	1-1	1-1	1-1	1-1	1-1	1-1	1-1	1-1	1-1	725	0	0	0	1	0
53	5	-1-1	-1 1	-1 1	-1-1	-1 1	1-1	1-1	-1 1	-1-1	1050	0	0	0	0	1
54	1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0	0	0	0	0	0
54	1	1-1	-1-1	1-1	-1 1	1-1	-1 1	-1-1	1-1	-1-1	1020	1	0	0	0	0
54	1	-1 1	1-1	-1-1	1-1	-1-1	-1 1	1-1	-1 1	-1-1	690	0	1	0	0	0
54	2	-1 1	-1-1	-1 1	-1-1	-1-1	-1 1	-1-1	1-1	1-1	1415	0	0	1	0	0
54	3	1-1	1-1	-1 1	-1-1	-1-1	1-1	-1 1	-1 1	-1 1	1060	0	0	0	1	0
54	8	-1-1	1-1	-1-1	-1-1	-1-1	-1-1	1-1	-1-1	-1-1	730	0	0	0	0	1

EXPLANATION OF COLUMN LABELS:

CS	Choice Set
FR	Frequency of Choice
V1-V10	Variables
L1, L2	Levels
B	Barbados
C	Cuba
J	Jamaica
M	Martinique
S	St. Vincent

TABLE 5.5

GENERIC VARIABLE MODEL

VARIABLE LEVEL	ESTIMATE	ERROR	T-VALUE
1 size 250 r	-0.06266	0.051498	-1.2168
2 size 60 r	-0.05498	0.052508	-1.0471
3 rest only	-0.42768	0.054416	**-7.8594**
4 rest & se	-0.21111	0.050645	**-4.1685**
5 loc rural	0.11676	0.052960	**2.2046**
6 loc town cl	0.07487	0.052833	1.4171
7 beach 30min	-1.09981	0.061967	**-17.7484**
8 beach 10min	-0.74106	0.050073	**-14.7995**
9 airpt 25min	0.17992	0.051971	**3.4620**
10 airpt 1 h	0.02701	0.053457	0.5053
11 o.acco-many	0.09709	0.051718	1.8774
12 o.acco-few	0.13653	0.052927	**2.5796**
13 o.rst 10min	0.23534	0.053062	**4.4351**
14 o.rst 30min	0.12491	0.053921	**2.3165**
15 o.s&e n.a.	-0.15244	0.052633	**-2.8963**
16 o.s&e 30min	-0.01498	0.050539	-0.2963
17 o.sp 10min	0.16420	0.052270	**3.1414**
18 o.sp 30min	-0.00351	0.056865	-0.0617
19 barbados	0.74168	0.213293	**3.4773**
20 cuba	0.05691	0.209316	0.2719
21 jamaica	0.27624	0.217976	1.2673
22 martinique	0.83412	0.213605	**3.9050**
23 st.vincent	0.64670	0.210439	**3.0731**
24 price	-0.00279	0.000175	**-15.9423**

$\mathcal{L}(0)$ = -1747.86
$\mathcal{L}(c)$ = -1208.05
$\mathcal{L}(b)$ = - 256.76
Q = 2982.2
Q_c = 1902.5
ρ^2 = 0.787
$\bar{\rho}^2$ = 0.723
DF = 246

The results of the GV-Model can be found in Table 5.5, where the parameter estimates, their standard errors, and t-values are listed. The t-values relate to the informal (or quasi) t-test, in which values greater than +2 or less than -2 indicate significance of the respective parameter at the .05 level[21] (Wrigley, 1985:128; Ben-Akiva and Lerman, 1985:29). A detailed discussion of each variable follows.

It comes as little surprise that for winter beach vacationers, *price*[22] and *distance to a beach* constitute the two most significant variables. The coefficient for 'Beach 10' indicates that, compared to accommodation 'on the beach', the utility of accommodation a ten minute walk from the beach is forty-seven percent of that of accommodation 'on the beach'[23]. With a further increase in distance, the locational disadvantage continues to increase, but at a slower rate. The coefficient for *price*, the only continuous variable, indicates that a price increase of $100 decreases the utility for a given scenario by approximately twenty-three percent. The effect of price is estimable only within the range that was represented in the choice sets, namely $690 to

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[21]Emphasized in **bold** in all the Tables which will follow.

[22]Here *price* is treated as a continuous variable. This simplification of the model became possible because analysis revealed that within the confines of the low and high levels of price (see Chapter 4), price behaves in a linear fashion. The estimates for the GV-Model in which price is treated as a categorical variable can be found in Appendix 4.

[23]The calculation of relative utility is based on the ratio exp(-0.741)/exp(0). See Equations (3.11) and (3.12) and Footnote 11 on page 59 for the relevant general expressions of relative utility.

$1,450 Canadian.

The *services* provided on the premises of the chosen hotel constitute the third most important variable, while *size* of establishment proved to be the only variable that was not significant on any level.

Among the other locational attributes, an international *airport* within 25 minutes of the chosen accommodation is also considered important by tourists. Apparently they make little distinction between an international airport that is 'one hour's drive' from the resort area, and one that can be reached only by a further short flight ('local').

The density of tourism development (*other accommodation*) in the prospective destination area was expressed as the number of other accommodations near the chosen accommodation ('none', 'few', 'many'). The preferred type of destination is one where 'few' other accommodation establishments surround the one chosen. One can perhaps infer from this that most tourists would feel insecure in an entirely non-touristic environment, but are at the same time critical of too densely developed places. It is also an example of a non-monotonic preference function, which can be detected only as long as the variable is defined categorically in three or more levels. Interestingly, in the real world this preference might be incompatible with the preference shown for a hotel located in a 'rural' setting, which was the most preferred level for the variable *location* of chosen accommodation. The regression coefficients are in a theoretically plausible order with 'rural' more

preferred to 'town nearby' which is more preferred to 'in town', documenting a rural-urban preference spectrum.

Also of interest is the fundamentally different reaction of the respondents towards the various types of tourist services located beyond the actual hotel site. Each of the three (*restaurants*; *shopping and entertainment*; and *sports facilities*) was described in terms of its proximity to the accommodation ('not available', '30 minutes walk', or '10 minutes walk'). In general people preferred having an off-site *restaurant* closer rather than further and further rather not available. By contrast, for *shopping and entertainment* facilities, respondents, though indifferent between the '10 minutes' and '30 minutes' options, showed a distinct preference for such facilities to be available somewhere in the vicinity. This attitude may be explained by the fact that shopping in particular is a leisure activity that is frequently pursued in connection with sightseeing or strolling in town and for these latter activities one is presumably prepared to take a slightly further excursion. Furthermore, in the case of *sports facilities* not located at the hotel, respondents want them to be in the immediate vicinity, with the '30 minutes' and 'not available' options having equally low appeal.

In the GV-Model, the estimates for the five islands are represented by the intercepts in the regressions, and only gain meaning after they are transformed into probabilities, as is explained below.

A first check for the adequacy of the model specification is whether the

signs of the parameters are in the expected direction (informal test of coefficient estimates, Ben-Akiva and Lerman, 1985:157). For example, the preference for variables that describe the distance of the accommodation from a certain attraction can be expected to decline with increasing distance. This is the case for all such variables. Only for two variables is there no intuitive ranking of levels, (*location* of accommodation, and *other accommodation*) and therefore no meaningful a priori hypotheses regarding expected signs can be made.

The discussion above gives the impression that the GV-Model is an appropriate representation of the data. However, it allows no conclusions as to whether the underlying assumptions about individual choice behaviour implicit in the MNL model are correct. Several test procedures exist that allow one to examine the validity of the various model specifications as well as to compare different model forms with one another.

5. 5. MODEL TESTING

Besides the asymptotic t-test, which is used to assess the significance of individual parameter estimates (see above), two widely applied testing procedures are the likelihood ratio test and the informal goodness-of-fit measure. In the following they will be described briefly and discussed for the GV-Model. In the next section the tests will be applied to other model specifications, and one form of the likelihood ratio test will be used to compare

the performance of different models. All these testing procedures rely on certain summary statistics such as

> $\mathcal{L}(0)$, which is the value of the log likelihood function [of the null model] when all the parameters are zero;
> $\mathcal{L}(c)$, which is the value of the log likelihood function when only the alternative specific constants are included;
> $\mathcal{L}(b)$, which is the value of the log likelihood function at its maximum [for the parameter estimates, b] (Ben-Akiva and Lerman, 1985: 90-91).

The likelihood ratio test (Ben-Akiva and Lerman, 1985:164), is similar to the F-Test in multiple regression, a joint test of the goodness-of-fit of several parameters.

> Under the null hypothesis that all coefficients are zero, that is, $b_1=b_2=...=b_k=0$, the statistic
>
> $[Q=]^{24}\ -2(\mathcal{L}(0)-\mathcal{L}(b))$
>
> is χ^2 distributed with K degrees of freedom (Ben-Akiva and Lerman, 1985:165).

where K is the number of additional parameters estimated by the less parsimonious model. If the value of the test statistic is greater than the tabulated value of χ^2, the null hypothesis can be rejected. This is certainly true for the GV-Model. The value of Q is 2982.21, as compared to a critical χ^2 value of approximately 160 for 246 degrees of freedom at the .001 level of significance. Textbooks indicate that such high levels of significance are very

---

[24]Note that the term Q has been suggested by Wrigley (1985:126) for this statistic. His deduction of the test statistic and use of symbols are more complex. Therefore Ben-Akiva and Lerman's formulation has been repeated here. They do not list the test statistic in the form of an equation.

common for this test, which limits its usefulness.

More information is gained by testing the null hypothesis

> that all coefficients, except for the alternative-specific constants, are zero. In this case the test statistic is
>
> $[Q_c=]\ -2(\mathcal{L}(c)-\mathcal{L}(b))$
>
> with K-J+1 degrees of freedom, where J is the number of alternatives in the universal choice set ... (Ben-Akiva and Lerman, 1985:166)

(see also Wrigley, 1985:126-127). Again, for the GV-Model, the null hypothesis can be rejected with high confidence (see bottom of Table 5.5).

The likelihood ratio test can also be used to compare any two model specifications derived from the same data. A more general (or unrestricted) model is compared to a more restricted form, in which at least two parameters in the general model have not been estimated. The test statistic is

$$[Q_d=]\ -2(\mathcal{L}(b_R)-\mathcal{L}(b_U))$$

> where b_R denotes the estimated coefficients of the restricted model - the model that is true under the null hypothesis - and b_U denotes the coefficient estimates of the unrestricted model. This statistic is χ^2 distributed with (K_U-K_R) degrees of freedom, where K_U and K_R are the numbers of estimated coefficients in the restricted and unrestricted models respectively (Ben-Akiva and Lerman, 1985:166).

By analogy to R^2 as a goodness-of-fit measure in multiple regression, a pseudo-R^2 (rho-square) has been developed for logit models, "...which utilizes a ratio of maximized log likelihood values rather than a ratio of sum of squares" (Wrigley, 1985:49). The ratio takes the form

$$\rho^2 = 1 - (\mathcal{L}(b)/\mathcal{L}(c))$$

and can be corrected for the number of parameters estimated:

$$\bar{\rho}^2 = 1 - (\mathcal{L}(b) - (K - K_c))/\mathcal{L}(c)$$

where K_c is the number of country parameters. Its major application is to compare two specifications developed on the exact same data (Ben-Akiva and Lerman,1985:91).

> The principal practical difference between the two measures is that the correction factor of K [in the case of this study $(K-K_c)$] will favor more parsimonious model specifications, unless the added explanatory power of the variable is quite significant (Ben-Akiva and Lerman, 1985:168).

Table 5.6 contains the summary statistics and test results for all those models to be discussed below, and Table 5.7 provides the results of the likelihood ratio test of model comparison between the GV-Model and each of the other model specifications.

5. 6. MORE PARSIMONIOUS MODEL FORMS

The most common procedure to formulate more parsimonious model specifications is to drop insignificant parameters from the model. Thus, in Model 5.8 the variable *size* is deleted entirely, and for three more variables two levels are combined in one (*airport* 'local' and '2.5 minutes'; *shopping and entertainment* '10 minutes' and '30 minutes'; *other sports facilities* 'not available' and '30 minutes'). The estimates for the remaining parameters stay fairly similar to those of the GV-Model (see Table 5.8). According to the

comparative likelihood ratio test as well as the $\bar{\rho}^2$, the overall fit of the model does not decrease significantly (see Tables 5.6 and 5.7).

Another more parsimonious model specification is to combine several of the ASCs into one variable. In the GV-Model, the estimates of these constants are similar for Barbados, Martinique, and St. Vincent on the one hand, and Cuba and Jamaica on the other hand. The results of this "quasi GV-Model" can be found in Table 5.9. While the $\bar{\rho}^2$ does not change significantly, the likelihood ratio comparison test (Table 5.7) indicates a significant improvement in the fit of this model over the GV-Model. But given the overall importance of the ASCs in the experimental design, it appears inappropriate to use this quasi-generic model specification for further modelling purposes. However, the finding itself is an important one and this issue will be discussed briefly in the next section.

Another model specification, though less parsimonious, but which might contribute significantly to the explanation of the choice behaviour at hand, includes the interaction between variables[25]. The design underlying this experiment permits testing for all possible first-order interactions only. Usually, interactions are found among the more significant variables. The results of such a model specification with selected first-order interaction terms

[25]Note that this refers to interaction between the variables describing the choice alternatives, as opposed to interaction between choice alternatives, which will be tested in the next section.

TABLE 5.6

SUMMARY TABLE OF THE TEST STATISTICS FOR ALL MODELS

MODEL	$\mathfrak{L}(0)$	$\mathfrak{L}(c)$	$\mathfrak{L}(b)$	Q	Q_c	ρ^2	$\overline{\rho^2}$	DF
5.5	-1747.86	-1208.05	-256.76	2982.2	1902.5	0.787	0.723	246
5.8	-1747.86	-1208.05	-259.01	2977.7	1898.1	0.786	0.725	251
5.9	-1747.86	-1214.08	-261.98	2971.7	1904.2	0.784	0.722	249
5.10	-1747.86	-1208.05	-236.30	3023.1	1943.5	0.804	0.719	221
5.12	-1747.86	-1208.05	-186.43	3122.8	2043.3	0.846	0.718	170
5.14	-1747.86	-1208.05	-166.11	3163.5	2083.9	0.846	0.718	150
5.15	-1747.86	-1214.08	-253.43	2988.8	1921.3	0.791	0.713	230

1) Model Numbers refer to Tables in text

$\mathfrak{L}(0)$ - Null-Model
$\mathfrak{L}(c)$ - Constants Only Model
$\mathfrak{L}(b)$ - Best Fit Model
Q - Goodness-of-fit or Likelihood-Ratio-Test
Q_c - Goodness-of-fit or Likelihood-Ratio-test
DF - Degrees of Freedom

TABLE 5.7

MODEL COMPARISON

MODELS COMPARED	Q_d	DF	χ^2 at .005	sign. at .005
5.8 - 5.5	4.5	5	11.1	N
5.9 - 5.5	10.4	3	7.8	Y
5.5 - 5.15	15.2	16	15.5	N
5.5 - 5.12	140.6	76	106	Y
5.5 - 5.14	180.6	96	120	Y
5.12- 5.14	40.6	20	31.4	Y

1) Model Numbers refer to Tables in text

Table 5.5 GV-Model
Table 5.8 GV-Model, most parsimonious spec.
Table 5.9 Quasi-GV-Model
Table 5.10 GV-Model with Selected Interactions
Table 5.12 ASV-Model
Table 5.14 ASV-Model with Cross-Effects
Table 5.15 Quasi-ASV-Model

TABLE 5.8

GV-MODEL, MOST PARSIMONIOUS SPECIFICATION

VARIABLE LEVEL	ESTIMATE	S.ERROR	T-VALUE
1 rest only	-0.42680	0.053881	**-7.9212**
2 rest & se	-0.21027	0.050519	**-4.1621**
3 loc rural	0.12026	0.052062	**2.3100**
4 loc town cl	0.07065	0.052578	1.3438
5 beach 30min	-1.09744	0.061578	**-17.8220**
6 beach 10min	-0.73197	0.049481	**-14.7929**
7 airpt 25min	0.16711	0.043492	**3.8423**
8 o.acco-many	0.09578	0.051003	1.8779
9 o.acco-few	0.13796	0.051848	**2.6608**
10 o.rst 10min	0.23874	0.052669	**4.5328**
11 o.rst 30min	0.12763	0.053282	**2.3953**
12 o.s&e n.a.	-0.14865	0.046132	**-3.2223**
13 o.sp 10min	0.16801	0.042831	**3.9226**
14 barbados	0.77942	0.207510	**3.7561**
15 cuba	0.09088	0.203312	0.4470
16 jamaica	0.31798	0.212798	1.4943
17 martinique	0.87396	0.207130	**4.2194**
18 st.vincent	0.68835	0.204456	**3.3667**
19 price	-0.00279	0.000174	**-15.9988**

$\mathcal{L}(0)$ = -1747.86
$\mathcal{L}(c)$ = -1208.05
$\mathcal{L}(b)$ = - 259.01
Q = 2977.7
Q_c = 1898.1
ρ^2 = 0.786
$\overline{\rho}^2$ = 0.725
DF = 251

TABLE 5.9

QUASI-GV-MODEL

ATTRIBUTE LEVEL	ESTIMATE	S.ERROR	T-VALUE
1 size 250 r	-0.06191	0.051409	-1.2043
2 size 60 r	-0.05519	0.052353	-1.0541
3 rest only	-0.42434	0.054293	**-7.8158**
4 rest & se	-0.20912	0.050362	**-4.1522**
5 loc rural	0.12031	0.052795	**2.2789**
6 loc town cl	0.08091	0.052823	1.5317
7 beach 30min	-1.09959	0.061795	**-17.7941**
8 beach 10min	-0.74448	0.049881	**-14.9252**
9 airpt 25min	0.18162	0.051845	**3.5032**
10 airpt 1 h	0.03140	0.053252	0.5896
11 o.acco-many	0.09627	0.051599	1.8658
12 o.acco-few	0.12892	0.052650	**2.4487**
13 o.rst 10min	0.23240	0.052858	**4.3967**
14 o.rst 30min	0.12249	0.053834	**2.2753**
15 o.s&e n.a.	-0.15620	0.052612	**-2.9690**
16 o.s&e 30min	-0.01646	0.050220	-0.3278
17 o.sp 10min	0.16351	0.052245	**3.1298**
18 o.sp 30min	-0.00698	0.056888	-0.1227
19 b,m,s	0.70922	0.201165	**3.5256**
20 c,j	0.12417	0.201582	0.6160
21 price	-0.00275	0.000174	**-15.8278**

$\mathfrak{L}(0)$ = -1747.86
$\mathfrak{L}(c)$ = -1214.08
$\mathfrak{L}(b)$ = - 261.98
Q = 2971.7
Q_c = 1904.2
ρ^2 = 0.784
$\bar{\rho}^2$ = 0.722
DF = 249

TABLE 5.10

GV-MODEL (PRICE CATEGORICAL) WITH SELECTED INTERACTIONS

VARIABLE LEVEL	ESTIMATE	S.ERROR	T-VALUE
1 size 250 r	-0.05045	0.056822	-0.8878
2 size 60 r	-0.04619	0.055078	-0.8386
3 rest only	-0.50989	0.124102	**-4.1086**
4 rest & se	-0.17776	0.110503	-1.6086
5 loc rural	0.11777	0.058068	**2.0281**
6 loc town cl	0.06240	0.058394	1.0686
7 beach 30min	-1.26115	0.112880	**-11.1725**
8 beach 10min	-0.81925	0.093002	**-8.8090**
9 airpt 25min	0.13544	0.094469	1.4337
10 airpt 1 h	-0.04784	0.096409	-0.4963
11 o.acco-many	0.10674	0.056127	1.9017
12 o.acco-few	0.14482	0.059463	**2.4355**
13 o.rst 10min	0.29889	0.091078	**3.2816**
14 o.rst 30min	0.15030	0.082841	1.8143
15 o.s&e n.a.	-0.13874	0.056898	**-2.4384**
16 o.s&e 30min	0.01690	0.054447	0.3104
17 o.sp 10min	0.13233	0.077990	1.6968
18 o.sp 30min	0.05067	0.079191	0.6398
19 price low	0.85867	0.127195	**6.7508**
20 price med	0.38810	0.141073	**2.7511**
21 barbados	-1.82262	0.187929	**-9.6985**
22 cuba	-2.31257	0.193360	**-11.9599**
23 jamaica	-2.33912	0.196610	**-11.8973**
24 martinique	-1.73447	0.188967	**-9.1787**
25 st. Vincent	-1.95508	0.189556	**-10.3140**
26 3*19	0.09275	0.088399	1.0493
27 3*20	-0.02323	0.093871	-0.2475
28 4*19	0.10477	0.077600	1.3501
29 4*20	0.05053	0.082004	0.6161
30 7*19	-0.13253	0.091626	-1.4465
31 7*20	-0.14422	0.098773	-1.4601
32 8*19	-0.06433	0.078894	-0.8154
33 8*20	0.03831	0.085614	0.4475
34 3*7	-0.10086	0.091973	-1.0966
35 3*8	-0.10168	0.080545	-1.2624
36 4*7	-0.01388	0.083168	-0.1669
37 4*8	0.01278	0.064080	0.1994
38 9*7	-0.03294	0.085082	-0.3871
39 9*8	-0.02716	0.068042	-0.3991
40 10*7	-0.06199	0.085823	-0.7223
41 10*8	-0.05960	0.068643	-0.8682
42 3*13	0.04294	0.085343	0.5031
43 3*14	0.04545	0.072395	0.6278

Table 5.10 (continued)

VARIABLE LEVEL	ESTIMATE	S.ERROR	T-VALUE
44 4*13	0.00020	0.072796	0.0027
45 4*14	0.02333	0.077587	0.3006
46 3*17	-0.05637	0.072711	-0.7752
47 3*18	0.07087	0.075463	0.9391
48 4*17	-0.04080	0.069561	-0.5865
49 4*18	0.01064	0.681533	0.1561

$\mathcal{L}(0)$ = -1747.86
$\mathcal{L}(c)$ = -1208.05
$\mathcal{L}(b)$ = - 236.30
Q = 3023.1
Q_c = 1943.5
ρ^2 = 0.804
$\bar{\rho}^2$ = 0.719
DF = 221

are shown in Table 5.10[26]. No significant interactions were detected. However, insignificance alone should not lead to the automatic acceptance of the null hypothesis, because with an increasing sample size, the standard errors might drop to the extent that significant interactions become detectable.

5. 7. TESTING THE MNL ASSUMPTION

One important theoretical improvement of the DCE over other forms of conjoint analysis is that the validity of the assumption of the underlying model form can be tested. In the present case of the MNL model one can test the IIA assumption (the ratio of the choice probabilities of two alternatives is not affected by any other alternatives - see Section 3.2) and the consistency of cross-product terms within the experimental design, albeit

> it cannot be determined if ... violations are the result of faulty assumptions programmed into the simulation or true departures reflecting important aspects of consumer choice behaviour (Louviere, 1988b:76).

The test is based on the fact that[27]

> The main effects and interaction columns of a 2^N design are orthogonal; hence the number of times a brand is chosen given that it is available is an estimate of its marginal choice probability. If the main effects are orthogonal, the

---

[26]This is only one possible specification. In order to test if the significance of interactions increases if only a few are specified, one model was specified which included only the interaction between *price* and *services* on premise. However, the respective t-values increased only slightly.

[27]Note that the Latin Square design used for the creation of choice sets in this study is a special case of a 2^N design.

> estimates of the marginals are independent, which satisfies the necessary and sufficient conditions of MNL models. Because each cross-product or interaction is orthogonal, such factorial designs have additional, important statistical properties. In particular, the interaction effects represent joint choice probabilities; and if the MNL model is correct, these joint choice probabilities are completely determined by the marginal probabilities. These "interactions" must be zero in theory; and, if significant, disconfirm the simple MNL model, suggesting alternative choice models are more appropriate. Thus these interactions permit one to test the assumptions or deductions of various choice models such as the MNL model. (Louviere, 1988b:78).

A specification that accounts for all these interactions between choice alternatives is the ASV-Model. In it, a separate set of parameters is estimated for each of the five country alternatives, i.e. all interactions between each of the variables and the country alternative are measured. If the estimated utility of any particular combination of attributes is not sensitive to the set of alternatives available to a respondent, then a formal expression of the ASV-Model can be written as the following expansion of the GV-Model (Equation 5.2):

$$\log_e \left[\frac{p(a|A)}{p(b|A)}\right] = \sum_{m=1}^{5} b_{om}C_{ma} + \sum_{j=1}^{9}\sum_{k=2}^{3}\sum_{m=1}^{5} b_{jkm}X_{jkma} + \sum_{m=1}^{5} b_{10m}X_{10ma} + e \qquad (5.3)$$

where,

b_{jkm} is a parameter for level k of attribute j to be estimated empirically in a weighted least squares regression for each country m separately;

X_{jkma} is a dummy variable defining whether level k of attribute j is present in alternative a for each country separately, where only one level of any attribute can be present in any alternative.

TABLE 5.11

CODING FOR THE ASV-MODEL

CS	FR	A T T R I B U T E S																														
		V1										. . .	V9										V10					COUNTRY				
		L1	L2	L1	L2	L1	L2	L1	L2	L1	L2	. . .	L1	L2	L1	L2	L1	L2	L1	L2	L1	L2						B	C	J	M	S
1	4	0	0	0	0	0	0	0	0	0	0	. . .	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1	-1	1	0	0	0	0	0	0	0	0	. . .	1	-1	0	0	0	0	0	0	0	0	1410	0	0	0	0	1	0	0	0	0
1	1	0	0	-1	-1	0	0	0	0	0	0	. . .	0	0	-1	1	0	0	0	0	0	0	0	690	0	0	0	0	1	0	0	0
1	4	0	0	0	0	-1	1	0	0	0	0	. . .	0	0	0	0	-1	1	0	0	0	0	0	0	740	0	0	0	0	1	0	0
1	0	0	0	0	0	0	0	1	-1	0	0	. . .	0	0	0	0	0	0	-1	-1	0	0	0	0	0	1380	0	0	0	0	1	0
1	1	0	0	0	0	0	0	0	0	1	-1	. . .	0	0	0	0	0	0	0	0	1	-1	0	0	0	0	730	0	0	0	0	1
2	4	0	0	0	0	0	0	0	0	0	0	. . .	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	4	-1	1	0	0	0	0	0	0	0	0	. . .	-1	1	0	0	0	0	0	0	0	0	1020	0	0	0	0	1	0	0	0	0
2	0	0	0	-1	-1	0	0	0	0	0	0	. . .	0	0	-1	1	0	0	0	0	0	0	0	1290	0	0	0	0	1	0	0	0
2	1	0	0	0	0	-1	1	0	0	0	0	. . .	0	0	0	0	-1	-1	0	0	0	0	0	0	1035	0	0	0	0	1	0	0
2	0	0	0	0	0	0	0	-1	-1	0	0	. . .	0	0	0	0	0	0	-1	1	0	0	0	0	0	725	0	0	0	0	1	0
2	3	0	0	0	0	0	0	0	0	1	-1	. . .	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	1050	0	0	0	0	1
3	5	0	0	0	0	0	0	0	0	0	0	. . .	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	2	-1	-1	0	0	0	0	0	0	0	0	. . .	-1	-1	0	0	0	0	0	0	0	0	1410	0	0	0	0	1	0	0	0	0
.	.	.	.	.	.	.	.	.	.	.	.	. . .	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
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53	1	0	0	0	0	-1	-1	0	0	0	0	. . .	0	0	0	0	-1	-1	0	0	0	0	0	0	1415	0	0	0	0	1	0	0
53	1	0	0	0	0	0	0	1	-1	0	0	. . .	0	0	0	0	0	0	1	-1	0	0	0	0	0	725	0	0	0	0	1	0
53	5	0	0	0	0	0	0	0	0	-1	-1	. . .	0	0	0	0	0	0	0	0	-1	-1	0	0	0	0	1050	0	0	0	0	1
54	1	0	0	0	0	0	0	0	0	0	0	. . .	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
54	1	1	-1	0	0	0	0	0	0	0	0	. . .	-1	-1	0	0	0	0	0	0	0	0	1020	0	0	0	0	1	0	0	0	0
54	1	0	0	-1	1	0	0	0	0	0	0	. . .	0	0	-1	-1	0	0	0	0	0	0	0	690	0	0	0	0	1	0	0	0
54	2	0	0	0	0	-1	1	0	0	0	0	. . .	0	0	0	0	1	-1	0	0	0	0	0	0	1415	0	0	0	0	1	0	0
54	3	0	0	0	0	0	0	1	-1	0	0	. . .	0	0	0	0	0	0	-1	1	0	0	0	0	0	1060	0	0	0	0	1	0
54	8	0	0	0	0	0	0	0	0	-1	-1	. . .	0	0	0	0	0	0	0	0	-1	-1	0	0	0	0	730	0	0	0	0	1

For definition of column labels see Table 5.4.

TABLE 5.12

ALTERNATIVE SPECIFIC VARIABLE MODEL

VARIABLE (LEVEL)	COUNTRY	ESTIMATE	S.ERROR	T-VALUE
Barbados		0.58202	0.392523	1.48278
Cuba		0.25557	0.558434	0.45765
Jamaica		-0.34679	0.491110	-0.70613
Martinique		0.89939	0.382800	**2.34950**
St. Vincent		0.45947	0.425027	1.08103
size 250 r	B	-0.14648	0.130867	-1.11931
size 60 r	B	-0.03827	0.129521	-0.29548
size 250 r	C	-0.00489	0.149710	-0.03267
size 60 r	C	-0.03935	0.137628	-0.28593
size 250 r	J	-0.17479	0.161825	-1.08010
size 60 r	J	-0.00883	0.139968	-0.06310
size 250 r	M	0.06591	0.121361	0.54310
size 60 r	M	0.06085	0.123957	0.49088
size 250 r	S	-0.09153	0.126250	-0.72498
size 60 r	S	-0.10981	0.128297	-0.85588
rest only	B	-0.52794	0.139326	**-3.78927**
rest &se	B	-0.34935	0.120371	**-2.90225**
rest only	C	-0.49329	0.161246	**-3.05922**
rest &se	C	-0.00831	0.136625	-0.06085
rest only	J	-0.31866	0.157312	**-2.02563**
rest &se	J	-0.13115	0.147438	-0.88950
rest only	M	-0.53118	0.126777	**-4.18989**
rest &se	M	-0.17914	0.109574	-1.63486
rest only	S	-0.47150	0.140127	**-3.36484**
rest &se	S	-0.33213	0.125960	**-2.63678**
loc rural	B	0.09208	0.128478	0.71673
loc town cl	B	-0.05995	0.141221	-0.42449
loc rural	C	-0.14842	0.146826	-1.01084
loc town cl	C	0.01572	0.150241	0.10461
loc rural	J	0.30424	0.155377	1.95810
loc town cl	J	0.08218	0.169366	0.48519
loc rural	M	0.06769	0.132260	0.51180
loc town cl	M	0.08422	0.128042	0.65777
loc rural	S	0.15943	0.136582	1.16727
loc town cl	S	0.07823	0.125714	0.62232

TAELE 5.12 (continued)

VARIABLE (LEVEL)	COUNTRY	ESTIMATE	S.ERROR	T-VALUE
beach 30 min	B	-1.23055	0.150280	**-8.18838**
beach 10 min	B	-0.84397	0.120898	**-6.98078**
beach 30 min	C	-1.16040	0.200624	**-5.78397**
beach 10 min	C	-0.73081	0.141824	**-5.15293**
beach 30 min	J	-1.10950	0.176175	**-6.29773**
beach 10 min	J	-0.79755	0.147945	**-5.39086**
beach 30 min	M	-1.12549	0.135924	**-8.28031**
beach 10 min	M	-0.77571	0.115575	**-6.71179**
beach 30 min	S	-1.08786	0.151290	**-7.19056**
beach 10 min	S	-0.79464	0.122425	**-6.49082**
airpt 25 min	B	0.31427	0.131686	**2.38648**
airpt 1 h	B	0.08300	0.133380	0.62230
airpt 25 min	C	0.41646	0.142139	**2.92995**
airpt 1 h	C	0.25366	0.154097	1.64612
airpt 25 min	J	0.08002	0.148308	0.53957
airpt 1 h	J	-0.36772	0.167121	**-2.20030**
airpt 25 min	M	0.18425	0.122457	1.50458
airpt 1 h	M	0.21709	0.121251	1.79043
airpt 25 min	S	0.02909	0.130262	0.22329
airpt 1 h	S	-0.12420	0.135765	-0.91478
o.acco-many	B	0.09678	0.144338	0.67053
o.acco-few	B	0.14499	0.137314	1.05590
o.acco-many	C	0.29120	0.161090	1.80766
o.acco-few	C	0.21558	0.173456	1.24287
o.acco-many	J	0.09412	0.139882	0.67288
o.acco-few	J	-0.06937	0.157404	-0.44072
o.acco-many	M	0.08933	0.128495	0.69521
o.acco-few	M	0.26253	0.128725	**2.03945**
o.acco-many	S	0.19642	0.132625	1.48104
o.acco-few	S	0.18941	0.141662	1.33703
o.rst 10 min	B	0.24335	0.136241	1.78616
o.rst 30 min	B	-0.05013	0.141725	-0.35369
o.rst 10 min	C	0.25893	0.172967	1.49699
o.rst 30 min	C	0.33075	0.155628	**2.12523**
o.rst 10 min	J	0.09374	0.159515	0.58766
o.rst 30 min	J	0.02524	0.147429	0.17120
o.rst 10 min	M	0.22304	0.123213	1.81018
o.rst 30 min	M	0.24284	0.121213	**2.00338**
o.rst 10 min	S	0.25347	0.130728	1.93890
o.rst 30 min	S	0.11016	0.133720	0.82381

TABLE 5.12 (continued)

VARIABLE (LEVEL)	COUNTRY	ESTIMATE	S.ERROR	T-VALUE
o.s&e n.a.	B	-0.06298	0.131453	-0.47911
o.s&e 30 min	B	0.05592	0.126834	0.44091
o.s&e n.a.	C	-0.33253	0.174991	-1.90025
o.s&e 30 min	C	0.08161	0.139783	0.58385
o.s&e n.a.	J	-0.42687	0.147602	**-2.89205**
o.s&e 30 min	J	-0.21315	0.155312	-1.37238
o.s&e n.a.	M	-0.00065	0.120803	-0.00539
o.s&e 30 min	M	0.10251	0.120094	0.85361
o.s&e n.a.	S	-0.27215	0.125368	**-2.17082**
o.s&e 30 min	S	-0.07073	0.130945	-0.54012
o.sp 10 min	B	0.40258	0.129404	**3.11102**
o.sp 30 min	B	0.23165	0.132466	1.74878
o.sp 10 min	C	0.23490	0.167794	1.39995
o.sp 30 min	C	0.27333	0.157801	1.73211
o.sp 10 min	J	0.20098	0.157211	1.27841
o.sp 30 min	J	-0.19759	0.156464	-1.26285
o.sp 10 min	M	0.01441	0.114324	0.12601
o.sp 30 min	M	-0.30105	0.130700	**-2.30334**
o.sp 10 min	S	0.23476	0.138854	1.69072
o.sp 30 min	S	0.09241	0.142508	0.64843
price	B	-0.00276	0.000373	**-7.39881**
price	C	-0.00279	0.000525	**-5.31681**
price	J	-0.00268	0.000497	**-5.39900**
price	M	-0.00277	0.000345	**-8.03010**
price	S	-0.00274	0.000398	**-6.88758**

$\mathcal{L}(0)$ = -1747.86
$\mathcal{L}(c)$ = -1208.05
$\mathcal{L}(b)$ = - 186.43
Q = 3122.8
Q_c = 2043.3
ρ^2 = 0.846
$\overline{\rho^2}$ = 0.718
DF = 170

(see Table 5.11 for a schematic representation of the dummy-coding for the ASV-Model, and Table 5.12 for the model results). As for all the previous model specifications, the $\overline{\rho}^2$ of .718 indicates no significant difference between the two models. In other words the ASV-Model only explains marginally more of the variance and does not add sufficient explanatory power to the model to compensate for the additional degrees of freedom taken up by the more complete specification (Table 5.7). This finding can also be verified by inspecting single parameter estimates in Table 5.12. The alternative specific parameter estimates for each of the variables vary to a certain degree, but generally they follow similar trends[28]. The only exception to this general trend is the variable *other accommodations*, which will be discussed in more detail below.

Testing of the validity of the MNL model assumption can be carried one step further.

> One can generalize a MNL model by adding cross-product terms that represent differential effects of one alternative over another (Louviere, 1988b:79)

The concern over cross-product interaction effects is a real one for highly significant variables such as *price*. That is, the price stated for one alternative

[28]A more formal method to compare parameter estimates among different variables is the asymptotic t-test for equality, presented in the next section. The results of this test for each set of alternative-specific estimates can be found in Appendix 5. Note that the number of significant t-values of equality is less than the 5% proportion of significant t-values which can be expected by chance when α=0.05. This finding holds true also for the cross-product interaction effects (see below).

might have some differential effect on the choice of any other alternative within the same choice set. Again the fit of the more complex model specification, the ASV-Model including the cross-effect of price (see Tables 5.13 and 5.14), increased only marginally, and in the comparison to the GV-Model with the likelihood ratio test (Table 5.7), the GV-Model constitutes a more efficient specification. Also, with one exception, all the estimates for the cross-effects are insignificant. The results of these last two model forms allow one to conclude safely that in this experimental design the rules of choice behaviour underlying the MNL model are based on appropriate assumptions.

One further avenue to be explored is to test if an alternative specific form of the Quasi-GV-Model contributes any more to the explanation of the choice behaviour of winter beach vacationers. In this Quasi-ASV-Model the five country alternatives are combined into two groups based on similarity of the country estimates in the GV-Model (Table 5.5) (Group 1 with estimates above 3.0 contains Barbados, Martinique, and St. Vincent; Group 2 with estimates below 1.3 consists of Cuba and Jamaica), and separate parameters are estimated for each of these groups (Table 5.15). The overall fit of this model does not improve significantly over any of the previously specified models. More importantly, the estimates and t-values now document more clearly the earlier observation that they follow a similar pattern within each alternative group of countries, except for the variable *other accommodations in area*.

TABLE 5.13

CODING FOR THE CROSS-EFFECTS MODEL

CS	FR	ATTRIBUTES																																							
		V1										. . .	V9										V10					COUNTRY					CROSSEFFECTS								
		B		C		J		M		S		. . .	B		C		J		M		S		B	C	J	M	S	B	C	J	M	S	OF B				OF C		.	OF S	
		L1	L2	L1	L2	L1	L2	L1	L2	L1	L2	. . .	L1	L2	L1	L2	L1	L2	L1	L2	L1	L2																			
1	4	0	0	0	0	0	0	0	0	0	0	. . .	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.	0	0
1	1	-1	1	0	0	0	0	0	0	0	0	. . .	1	-1	0	0	0	0	0	0	0	0	1410	0	0	0	0	1	0	0	0	0	0	0	0	0	690	0	.	0	0
1	1	0	0	-1	-1	0	0	0	0	0	0	. . .	0	0	-1	1	0	0	0	0	0	0	0	690	0	0	0	0	1	0	0	0	1410	0	0	0	0	0	.	0	0
1	4	0	0	0	0	-1	1	0	0	0	0	. . .	0	0	0	0	-1	1	0	0	0	0	0	0	740	0	0	0	0	1	0	0	0	1410	0	0	0	690	.	730	0
1	0	0	0	0	0	0	0	1	-1	0	0	. . .	0	0	0	0	0	0	-1	-1	0	0	0	0	0	1380	0	0	0	0	1	0	0	0	1410	0	0	0	.	0	730
1	1	0	0	0	0	0	0	0	0	1	-1	. . .	0	0	0	0	0	0	0	0	1	-1	0	0	0	0	730	0	0	0	0	1	0	0	0	1410	0	0	.	0	0
2	4	0	0	0	0	0	0	0	0	0	0	. . .	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.	0	0
2	4	-1	1	0	0	0	0	0	0	0	0	. . .	-1	1	0	0	0	0	0	0	0	0	1020	0	0	0	0	1	0	0	0	0	0	0	0	0	1290	0	.	0	0
2	0	0	0	-1	-1	0	0	0	0	0	0	. . .	0	0	-1	1	0	0	0	0	0	0	0	1290	0	0	0	0	1	0	0	0	1020	0	0	0	0	0	.	0	0
2	1	0	0	0	0	-1	1	0	0	0	0	. . .	0	0	0	0	-1	-1	0	0	0	0	0	0	1035	0	0	0	0	1	0	0	0	1020	0	0	0	1290	.	1050	0
2	0	0	0	0	0	0	0	-1	-1	0	0	. . .	0	0	0	0	0	0	-1	1	0	0	0	0	0	725	0	0	0	0	1	0	0	0	1020	0	0	0	.	0	1050
2	3	0	0	0	0	0	0	0	0	1	-1	. . .	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	1050	0	0	0	0	1	0	0	0	1020	0	0	.	0	0
3	5	0	0	0	0	0	0	0	0	0	0	. . .	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.	0	0
3	2	-1	-1	0	0	0	0	0	0	0	0	. . .	-1	-1	0	0	0	0	0	0	0	0	1410	0	0	0	0	1	0	0	0	0	0	0	0	0	690	0	.	0	0
.	.	.	.	.	.	.	.	.	.	.	.	. . .	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
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53	1	0	0	0	0	-1	-1	0	0	0	0	. . .	0	0	0	0	-1	-1	0	0	0	0	0	0	1415	0	0	0	0	1	0	0	0	1410	0	0	0	1290	.	1050	0
53	1	0	0	0	0	0	0	1	-1	0	0	. . .	0	0	0	0	0	0	1	-1	0	0	0	0	0	725	0	0	0	0	1	0	0	0	1410	0	0	0	.	0	1050
53	5	0	0	0	0	0	0	0	0	-1	-1	. . .	0	0	0	0	0	0	0	0	-1	-1	0	0	0	0	1050	0	0	0	0	1	0	0	0	1410	0	0	.	0	0
54	1	0	0	0	0	0	0	0	0	0	0	. . .	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.	0	0
54	1	1	-1	0	0	0	0	0	0	0	0	. . .	-1	-1	0	0	0	0	0	0	0	0	1020	0	0	0	0	1	0	0	0	0	0	0	0	0	690	0	.	0	0
54	1	0	0	-1	1	0	0	0	0	0	0	. . .	0	0	-1	-1	0	0	0	0	0	0	0	690	0	0	0	0	1	0	0	0	1020	0	0	0	0	0	.	0	0
54	2	0	0	0	0	-1	1	0	0	0	0	. . .	0	0	0	0	1	-1	0	0	0	0	0	0	1415	0	0	0	0	1	0	0	0	1020	0	0	0	690	.	730	0
54	3	0	0	0	0	0	0	1	-1	0	0	. . .	0	0	0	0	0	0	-1	1	0	0	0	0	0	1060	0	0	0	0	1	0	0	0	1020	0	0	0	.	0	730
54	8	0	0	0	0	0	0	0	0	-1	-1	. . .	0	0	0	0	0	0	0	0	-1	-1	0	0	0	0	730	0	0	0	0	1	0	0	0	1020	0	0	.	0	0

EXPLANATION OF COLUMN LABELS:

CS	Choice Set
FR	Frequency of Choice
V1-V10	Variables
L1, L2	Levels
B	Barbados
C	Cuba
J	Jamaica
M	Martinique
S	St. Vincent

TABLE 5.14

ASV-MODEL INCL. CROSS-EFFECT OF PRICE

VARIABLE (LEVEL)	COUNTRY	ESTIMATE	S.ERROR	T-VALUE
Barbados		0.75925	1.02251	0.74254
Cuba		-1.61714	1.33021	-1.21571
Jamaica		0.43518	1.17865	0.36922
Martinique		1.06224	0.99042	1.07251
St. Vincent		0.40948	1.16887	0.35032
size 250 r	B	-0.20830	0.14475	-1.43900
size 60 r	B	0.01602	0.13812	0.11597
size 250 r	C	-0.04289	0.18196	-0.23571
size 60 r	C	-0.10007	0.17394	-0.57529
size 250 r	J	0.00259	0.17556	0.01474
size 60 r	J	0.09912	0.15498	0.63955
size 250 r	M	0.09695	0.13794	0.70284
size 60 r	M	0.03612	0.12838	0.28136
size 250 r	S	-0.06594	0.13817	-0.47723
size 60 r	S	-0.07887	0.16979	-0.46450
rest only	B	-0.53168	0.14978	**-3.54961**
rest &se	B	-0.32887	0.12999	**-2.53001**
rest only	C	-0.44060	0.19828	**-2.22209**
rest &se	C	-0.10166	0.18112	-0.56129
rest only	J	-0.46850	0.21138	**-2.21637**
rest &se	J	-0.16906	0.16131	-1.04803
rest only	M	-0.53503	0.13154	**-4.06754**
rest &se	M	-0.19938	0.12016	-1.65929
rest only	S	-0.40511	0.15274	**-2.65224**
rest &se	S	-0.25222	0.15270	-1.65169
loc rural	B	0.04426	0.14572	0.30377
loc town cl	B	-0.11608	0.16927	-0.68580
loc rural	C	-0.15878	0.15525	-1.02272
loc town cl	C	-0.02775	0.16285	-0.17044
loc rural	J	0.37615	0.17143	**2.19424**
loc town cl	J	-0.00242	0.18116	-0.01335
loc rural	M	0.15653	0.15029	1.04150
loc town cl	M	0.13205	0.15397	0.85766
loc rural	S	0.14430	0.14842	0.97220
loc town cl	S	0.04929	0.13018	0.37866
beach 30 min	B	-1.25557	0.15598	**-8.04964**
beach 10 min	B	-0.87790	0.13659	**-6.42751**
beach 30 min	C	-1.22043	0.21294	**-5.73145**
beach 10 min	C	-0.80724	0.16694	**-4.83555**

TABLE 5.14 (continued)

VARIABLE (LEVEL)	COUNTRY	ESTIMATE	S.ERROR	T-VALUE
beach 30 min	J	-1.11997	0.18984	**-5.89941**
beach 10 min	J	-0.80495	0.15870	**-5.07217**
beach 30 min	M	-1.09270	0.14100	**-7.74940**
beach 10 min	M	-0.75906	0.12975	**-5.85006**
beach 30 min	S	-1.14688	0.16473	**-6.96226**
beach 10 min	S	-0.85782	0.14927	**-5.74693**
airpt 25 min	B	0.29414	0.13825	**2.12754**
airpt 1 h	B	0.06009	0.13590	0.44219
airpt 25 min	C	0.41187	0.14499	**2.84068**
airpt 1 h	C	0.40457	0.16990	**2.38116**
airpt 25 min	J	0.00400	0.16711	0.02392
airpt 1 h	J	-0.45983	0.19171	**-2.39859**
airpt 25 min	M	0.16913	0.12704	1.33131
airpt 1 h	M	0.22962	0.13127	1.74922
airpt 25 min	S	0.04967	0.15624	0.31791
airpt 1 h	S	-0.11069	0.15193	-0.72853
o.acco-many	B	0.17357	0.18605	0.93294
o.acco-few	B	0.24415	0.18747	1.30233
o.acco-many	C	0.30005	0.19916	1.50656
o.acco-few	C	0.41452	0.19795	**2.09404**
o.acco-many	J	0.09175	0.15557	0.58977
o.acco-few	J	-0.03451	0.18786	-0.18368
o.acco-many	M	0.02419	0.14279	0.16944
o.acco-few	M	0.19117	0.14759	1.29525
o.acco-many	S	0.18984	0.13664	1.38937
o.acco-few	S	0.20693	0.15342	1.34883
o.rst 10 min	B	0.31056	0.17535	1.77115
o.rst 30 min	B	0.00683	0.15323	0.04457
o.rst 10 min	C	-0.06667	0.21111	-0.31580
o.rst 30 min	C	0.22242	0.17024	1.30650
o.rst 10 min	J	0.20724	0.16703	1.24074
o.rst 30 min	J	0.01722	0.16908	0.10185
o.rst 10 min	M	0.23865	0.13192	1.80905
o.rst 30 min	M	0.26385	0.13458	**1.96055**
o.rst 10 min	S	0.24444	0.13810	1.77008
o.rst 30 min	S	0.16807	0.14734	1.14067
o.s&e n.a.	B	-0.11451	0.13475	-0.84982
o.s&e 30 min	B	0.04948	0.12890	0.38389
o.s&e n.a.	C	-0.31270	0.19885	-1.57257
o.s&e 30 min	C	0.02660	0.14825	0.17946
o.s&e n.a.	J	-0.45019	0.17109	**-2.63136**
o.s&e 30 min	J	-0.25044	0.16342	-1.53252

TABLE 5.14 (continued)

VARIABLE (LEVEL)	COUNTRY	ESTIMATE	S.ERROR	T-VALUE
o.s&e n.a.	M	-0.06130	0.13181	-0.46503
o.s&e 30 min	M	0.08182	0.12636	0.64751
o.s&e n.a.	S	-0.29792	0.18233	-1.63402
o.s&e 30 min	S	-0.10682	0.14833	-0.72015
o.sp 10 min	B	0.46164	0.13501	**3.41929**
o.sp 30 min	B	0.27068	0.13697	**1.97612**
o.sp 10 min	C	0.12850	0.18404	0.69823
o.sp 30 min	C	0.08787	0.23068	0.38094
o.sp 10 min	J	0.07752	0.17216	0.45029
o.sp 30 min	J	-0.09847	0.16932	-0.58159
o.sp 10 min	M	-0.04272	0.12670	-0.33715
o.sp 30 min	M	-0.32566	0.13357	**-2.43814**
o.sp 10 min	S	0.23241	0.14689	1.58220
o.sp 30 min	S	0.09044	0.14922	0.60611
price	B	-0.00245	0.00049	**-4.94568**
price	C	-0.00259	0.00069	**-3.78260**
price	J	-0.00252	0.00056	**-4.52520**
price	M	-0.00259	0.00043	**-6.00503**
price	S	-0.00265	0.00042	**-6.28764**
crosseffect of price	B on C	0.00006	0.00073	0.08828
	B on J	-0.00136	0.00091	-1.48911
	B on M	-0.00031	0.00044	-0.70831
	B on S	0.00037	0.00061	0.60937
	C on B	-0.00066	0.00080	-0.83232
	C on J	-0.00039	0.00073	-0.53219
	C on M	0.00012	0.00063	0.19533
	C on S	-0.00030	0.00055	-0.54077
	J on B	0.00071	0.00049	1.44302
	J on C	-0.00077	0.00089	-0.85995
	J on M	0.00020	0.00043	0.46052
	J on S	-0.00004	0.00061	-0.06204
	M on B	-0.00012	0.00055	-0.20946
	M on C	0.00054	0.00062	0.86705
	M on J	0.00121	0.00077	1.57845
	M on S	-0.00010	0.00049	-0.19606
	S on B	-0.00043	0.00051	-0.83606
	S on C	0.00142	0.00055	**2.57633**
	S on J	-0.00041	0.00049	-0.83537
	S on M	-0.00037	0.00045	-0.82349

$\mathcal{L}(0)$ = -1747.86
$\mathcal{L}(c)$ = -1208.05
$\mathcal{L}(b)$ = - 186.11
Q = 3163.5
Q_c = 2083.9
ρ^2 = 0.846
$\overline{\rho}^2$ = 0.718
DF = 150

TABLE 5.15

QUASI ASV-MODEL

VARIABLE (LEVEL)	Q-ASV	ESTIMATE	S.ERROR	T-VALUE
size 250 r	G1	-0.06004	0.065259	-0.9200
size 60 r	G1	-0.05861	0.063676	-0.9204
size 250 r	G2	-0.04408	0.095765	-0.4603
size 60 r	G2	-0.02359	0.092985	-0.2537
rest only	G1	-0.44486	0.068360	**-6.5077**
rest & se	G1	-0.25151	0.064418	**-3.9043**
rest only	G2	-0.39404	0.097425	**-4.0445**
rest & se	G2	-0.12445	0.088941	-1.3993
loc rural	G1	0.11096	0.069172	1.6042
loc town cl	G1	0.08918	0.068905	1.2942
loc rural	G2	0.10964	0.091893	1.1932
loc town cl	G2	0.06828	0.095099	0.7180
beach 30min	G1	-1.11918	0.076115	**-14.7039**
beach 10min	G1	-0.76364	0.060681	**-12.5844**
beach 30min	G2	-1.06410	0.116528	**-9.1317**
beach 10min	G2	-0.70604	0.092615	**-7.6234**
airpt 25min	G1	0.16033	0.065306	**2.4550**
airpt 1 h	G1	0.04559	0.066896	0.6815
airpt 25min	G2	0.22200	0.092710	**2.3945**
airpt 1 h	G2	0.00671	0.098557	0.0681
o.acco-many	G1	0.09503	0.068391	1.3894
o.acco-few	G1	0.15838	0.067986	**2.3297**
o.acco-many	G2	0.18963	0.098666	1.9220
o.acco-few	G2	0.11434	0.101850	1.1226
o.rst 10min	G1	0.23497	0.065023	**3.6136**
o.rst 30min	G1	0.09309	0.068375	1.3614
o.rst 10min	G2	0.23435	0.100565	**2.3303**
o.rst 30min	G2	0.17665	0.093336	1.8926
o.s&e n.a.	G1	-0.11068	0.064581	-1.7138
o.s&e 30min	G1	0.00436	0.065795	0.0662
o.s&e n.a.	G2	-0.29490	0.100999	**-2.9198**
o.s&e 30min	G2	-0.03108	0.095053	-0.3269
o.sp 10min	G1	0.17207	0.065623	**2.6221**
o.sp 30min	G1	-0.03901	0.071655	-0.5444
o.sp 10min	G2	0.14513	0.097889	1.4826
o.sp 30min	G2	0.01942	0.099268	0.1957
G1 (b,m,s)		0.66521	0.236162	**2.8167**
G2 (c,j)		0.16983	0.348131	0.4878
price	G1	-0.00275	0.000207	**-13.3047**
price	G2	-0.00272	0.000327	**-8.3073**

$\mathcal{L}(0)$ = -1747.86 Q_c = 1921.3

$\mathcal{L}(c)$ = -1208.05 ρ^2 = 0.791

$\mathcal{L}(b)$ = - 264.36 ρ^2 = 0.713

Q = 1988.8 DF = 230

G1 = Group 1 (Barbados, Martinique, St. Vincent)
G2 = Group 2 (Cuba, Jamaica)

For *other accommodations* the estimates reverse their pattern in the two groups. While respondents prefer 'few' other accommodations around the one chosen for Group 1 (the t-values are 2.33 for 'few' and 1.39 for 'many'), their preference is for 'many' in Group 2 (the t-values are 1.12 for 'few' as compared to 1.92 for 'many'). Consulting the country specific estimates for this variable in the ASV-Model (Table 5.14) it becomes apparent that the responses are consistent among the three countries of Group 1, but not between the two of Group 2. A plausible explanation for the consistency of Group 1 would be that even though these destinations are perceived as relatively "safe", most respondents feel insecure in a touristically undeveloped environment, but at the same time are sensitive to certain forms of overdevelopment as is implied in the level 'many'. Hence 'few' *other accommodations* is the preferred alternative. Regarding Cuba the relationship between 'few' and 'many' is similar to Group 1, but either of these two levels is significantly preferred over an undeveloped destination. Given the political image of Cuba this is understandable. There is no obvious reason for the significant differences for Jamaica. It is important to note, that despite the t-values for the individual parameters being significant at the .05 level for one level of *other accommodation* in each submodel of the Quasi-GV-Model, the "...asymptotic t-test of equality of individual coefficients between two market segments" (Ben-Akiva and Lerman, 1985:202; see below) did not reveal a statistically

significant difference between the two groups of countries at the .05 level[29].

In summary, no significant improvements are gained with any of the more elaborate model forms, suggesting that the MNL assumption is not violated by the collected data. Of the more parsimonious model forms, only the Quasi-Generic Model constitutes a significant improvement in fit, but will not be used for the purpose of market segmentation, because it appears too risky to combine ASCs. Instead the simple GV-Model will be used for any further modelling exercises.

5. 8. MARKET SEGMENTATION (COMPARISON OF SUBGROUPS)

The information collected in Part 2 of the questionnaire, and briefly described in Section 5.2, can be used to split the total sample into appropriate socio-demographic and behavioural subgroups to test for possible market segmentation. The respective estimates derived from modelling the choice behaviour of different subgroups of respondents are comparable among each other as well as with the estimates of the overall model as long as these groups are mutually exclusive and exhaustive subsets of the total sample (Louviere, personal communication; see also Louviere, 1988b:87). This implies that respondents who cannot be allocated to any one of the subgroups (usually due to missing information) must be assigned randomly to any one of the respective

[29]-0.78807 for 'many' and 0.35970 for 'few'.

groups[30]. Two slightly different approaches, which lead to the same results are available. For simplicity, the two methods will be described for the case of two subgroups only.

Firstly, one can estimate a separate model for each of the subgroups under question, and compare the respective estimates in the "...asymptotic t-test of equality of individual coefficients between two market segments..." (Ben-Akiva and Lerman, 1985:202) according to the following formula[31]:

$$t_{equ} = \frac{E_1 - E_2}{\sqrt{s_1^2 + s_2^2}}$$

where,
E_1, E_2 are the two estimates,
s_1, s_2 are the respective standard errors.

This formula simply compares the difference between two estimates with their pooled standard error, and a resulting t-value of greater than +2 or less than -2 strongly suggests the population parameters are different.

Secondly, the same results can be achieved by modelling the differences directly (Figure 5.1). For that purpose the matrix containing the original dummy-coding (Table 5.4; denoted as matrix A in Figure 5.1) is extended to include an interaction effect with the new variable (e. g. sex). The first step of the matrix extension entails matching of the choice frequencies for each of

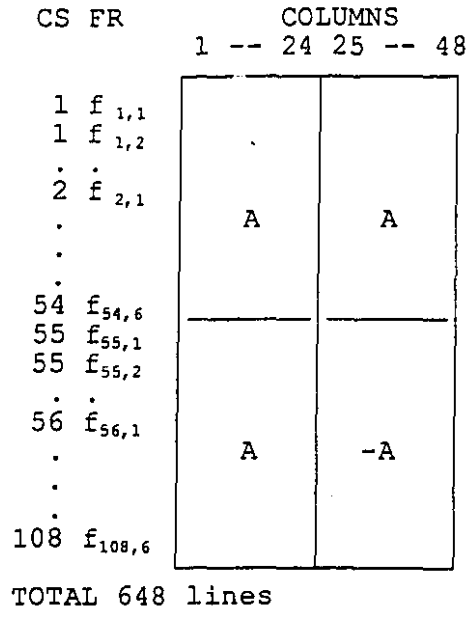
---

[30]For any individual with missing information, each of his (her) nine choice sets is assigned at random to one of the two groups in order to minimize any imbalance caused by the random allocation process.

[31]From here onwards, this test will be referred to as "t-test of equality" or t_{equ}.

FIGURE 5.1

DIRECT MODELLING OF THE DIFFERENCES BETWEEN MARKET SEGMENTS



where

A represents the complete dummy file (Table 5.4)

-A represents the reverse of this dummy file (-1 changed to +1, +1 changed to -1)

CS = Choice Set
FR = Frequency of Choice

the two sub-groups (Choice Sets 1-54 and 55-128 respectively) with the dummy coding file (i.e. the GV-Model), and combining it into one 108 X 24 matrix, as in Columns 1-24 of Figure 5.1. Then the interaction of the socio-demographic variable with the other independent variables can be modelled by multiplying an imaginary column vector representing the socio-demographic variable, coded with centered effects codes (+1,-1), with all other independent variables. This operation produces columns 25-48. These columns actually consist of another A matrix for Choice Sets 1-54, and, because multiplication by -1 changes the sign of the multiplicands, the sub-matrix for Choice Sets 55-128 is labelled -A. Note that the multiplier (the dummy code for the socio-demographic variable) is not included in the design matrix. Also, choice sets 1-54 refer to the first subset of data, e.g. males, while choice sets 55-108 refer to the second subset. The first 24 parameter estimates represent the average of the two subgroups, while the next 24 estimates for columns 25-48 indicate the difference of each of the two subgroups from the average[32]. Consequently, the resulting t-values (estimate/s.error) derived from these latter columns can be used as an indicator of the difference between the two subgroups and corresponds exactly with the results of the asymptotic t-test of equality described above.

These t_{equ} values can also be calculated for more than two segments, as long as the subgroups fulfil the demand of exhaustiveness and mutual

[32]The actual estimates for each of the submodels can be obtained by adding/subtracting the difference estimates from the respective main estimates.

exclusivity, and as long as each of the subgroups retains a sufficiently large number of observations[33]. Both of the above methods can be extended for the calculation of the t_{equ} values. However, in the following analysis only the first method has been used for the cases with three and four segments, because with the more elegant direct modelling technique the dummy files grow to enormous proportions. Furthermore it makes interpretation of t_{equ} values easier, to have the actual estimates for subgroups available for inspection, because if, say four segments are to be compared with each other, six two-way comparisons need to be considered.

5. 9 RESULTS OF MARKET SEGMENTATION

Some caution is in order when interpreting the results of this market segmentation. The common practice is to accept a t_{equ}-value of over 2.0 (absolute) as significant at the .05 level (1.96 for the two-tailed test to be precise). This implies that 5 out of 100 or 1 in 20 estimates will be significant simply by chance.

If the levels within each three-level variable had been arranged so that in all cases the most (or least) preferred level was defined as level 1, the implicit parameter estimate of which is always zero, the estimates for the two

[33]The statistical literature considers as few as five observations per cell as "sufficiently large" (Wrigley, 1985:125). The iterative reweighted least squares regression used in this analysis functions only as long as each of the 54 choice sets contains at least one frequency recorded for one of its six alternatives.

other corresponding levels would be consistently negative (or positive). Then for the entire table the signs of the t_{equ}-values could be read directly as indicating whether the first or the second market segment has the higher (lower) preference for any given level. Unfortunately, the original tables do not have this consistency. Therefore the interpretation is more complex and the signs can only be used to interpret groups' different preferences for any level of variables across the characteristics. For example, a positive t_{equ}-value for the variable *distance to beach* '30 minutes' indicates that the first of the two segments (as listed at the bottom of the table) is less sensitive to the inferior levels, i.e. increasing distance to beach, while a negative t_{equ}-value indicates the opposite.

5.9.1 SEGMENTATION BASED ON SOCIO-DEMOGRAPHIC CHARACTERISTICS

Tables 5.16 and 5.17 contain the results of t-tests of parameter equality for a total of 16 bi-polar socio-demographic and behavioural characteristics[34]. In the following an interpretation of the choice behaviour of the various subgroups will be attempted, bearing in mind the limitations stated above.

For the characteristic sex a total of 5 of the 24 estimates are significant at the .05 level. Thus one can conclude safely that there are significant

[34]For ease of interpretation, the estimates for all the segments are included in Appendix 6.

TABLE 5.16

ASYMPTOTIC T-TEST OF EQUALITY BETWEEN SUBGROUPS

(SOCIO-DEMOGRAPHIC CHARACTERISTICS; 2 SUBGROUPS)

VARIABLE (L)	SEX	INC	MAR	LANG	BIRTH	EDU	OCCU	RESO	REST
1 size 250 r	-1.11	0.07	-0.26	-0.45	1.31	0.62	0.39	0.26	-0.67
2 size 60 r	-0.64	0.73	0.35	-0.68	1.16	-0.10	-0.37	-1.21	-0.77
3 rest only	0.69	**-2.31**	**-3.41**	**2.15**	0.09	-0.21	**2.49**	**2.41**	**2.26**
4 rest & se	0.12	-0.78	-0.70	-0.55	-0.60	-0.05	1.07	0.96	1.63
5 loc rural	0.22	1.64	1.52	-1.34	0.15	-0.13	0.00	1.23	0.05
6 loc town cl	1.21	1.33	0.97	-1.30	-0.45	-1.84	-0.26	-0.62	-0.41
7 beach 30min	0.78	0.59	-0.41	**2.49**	-0.79	1.66	-1.27	**2.26**	0.62
8 beach 10min	**3.44**	-1.00	1.25	0.05	-0.32	0.59	0.83	1.10	0.42
9 airpt 25min	-0.06	**3.21**	1.39	-0.52	-1.16	-0.25	1.15	0.59	-1.67
10 airpt 1 h	1.83	0.90	0.78	0.27	-1.07	-1.07	0.15	-1.75	-1.35
11 o.acco-many	1.25	-0.13	-0.39	-0.24	1.28	0.61	-0.27	-0.33	0.66
12 o.acco-few	1.79	-1.69	-0.52	-0.54	1.56	-0.73	0.10	-0.91	0.30
13 o.rst 10min	**-2.28**	0.95	**2.02**	-0.20	-1.13	**2.44**	**-2.53**	-0.15	1.10
14 o.rst 30min	**-2.23**	0.95	1.80	-0.69	-0.37	0.96	-1.45	-0.00	0.67
15 o.s&e n.a.	**1.97**	-0.39	0.36	-1.75	-0.55	-1.38	**2.08**	1.36	0.06
16 o.s&e 30min	1.22	0.25	-0.12	-0.97	-0.89	0.19	1.56	0.95	-0.40
17 o.sp 10min	0.58	-0.45	-0.55	-0.01	0.26	0.64	0.44	-0.13	0.19
18 o.sp 30min	0.36	0.00	-1.02	1.03	0.32	1.38	-0.70	-0.72	-0.56
19 barbados	1.51	**2.84**	1.22	-0.36	0.49	-0.35	**2.01**	-0.18	-0.43
20 cuba	**2.32**	**3.49**	**2.67**	**-2.25**	-0.48	-0.10	1.25	-0.44	-0.47
21 jamaica	1.08	**2.77**	1.52	-1.10	0.52	0.15	1.09	0.28	0.23
22 martinique	1.30	**2.59**	1.29	-1.25	0.29	-0.22	1.34	-0.18	0.26
23 st.vincent	**2.16**	**2.32**	1.08	-1.20	0.65	-0.07	1.12	0.31	0.46
24 price	-0.78	**-2.66**	-1.10	1.31	-0.52	1.32	-1.53	1.68	**2.02**

DEFINITION OF CHARACTERISTICS AND SEGMENTS

SEX	Sex (Male, Female)
INC	Income (Low, High)
MAR	Marital Status (Single, Married)
LANG	Languages Spoken (English only, English and French)
BIRTH	Place of Birth (Canada, Other)
EDU	Education (Low, High)
OCCU	Occupation (Professional, Other)
RESO	Residence - Ownership type (Owned, Rented)
REST	Residence Type (Single dwelling, Apartment)

NOTE: For a concise description of the segments see Table 5.1.

TABLE 5.17

ASYMPTOTIC T-TEST OF EQUALITY BETWEEN SUBGROUPS

(BEHAVIOURAL CHARACTERISTICS; 2 SUBGROUPS)

VARIABLE (L)	PLAN	ACCO	TRANS	BOKM	BOKP	E CAR	AGT
1 size 250 r	0.10	1.78	-1.29	-1.44	-1.88	-1.72	0.58
2 size 60 r	-0.44	-0.25	-0.60	-0.37	-1.08	-0.10	-0.50
3 rest only	-0.35	**2.58**	-1.45	0.64	-1.23	-1.47	0.19
4 rest & se	1.34	**4.27**	-0.66	1.53	0.16	-0.32	0.03
5 loc rural	-0.60	-0.43	-0.64	-1.76	-1.09	0.88	-0.41
6 loc town cl	-0.10	0.07	0.77	-0.43	1.09	0.44	-0.47
7 beach 30min	0.71	-1.86	**-2.21**	-1.90	**-4.36**	**-3.17**	1.22
8 beach 10min	-0.72	-1.25	**-3.02**	**-2.12**	**-3.46**	**-3.50**	0.63
9 airpt 25min	0.05	-0.50	0.73	-1.08	-1.90	-0.25	-0.44
10 airpt 1 h	0.95	-0.16	-0.04	-0.29	-1.92	0.67	-1.25
11 o.acco-many	-0.12	0.65	0.02	-0.37	-1.01	-0.35	0.59
12 o.acco-few	0.26	1.65	0.06	0.75	0.14	-0.42	0.30
13 o.rst 10min	-0.62	**-2.06**	-1.44	**-2.18**	**-2.57**	-0.34	-0.44
14 o.rst 30min	0.16	-0.34	-0.13	-1.56	-1.74	-0.72	-1.29
15 o.s&e n.a.	0.93	0.87	1.69	1.89	1.28	1.94	-0.99
16 o.s&e 30min	0.49	0.13	-0.96	0.97	-0.22	-0.34	-0.83
17 o.sp 10min	-0.28	-0.95	0.96	-0.10	-0.16	1.94	-0.45
18 o.sp 30min	-0.33	-1.29	0.38	0.00	-0.87	0.99	-0.41
19 barbados	-0.21	-0.67	**-2.49**	**-2.36**	**-3.51**	**-2.86**	-1.55
20 cuba	-0.96	-0.34	**-2.22**	-1.87	**-2.48**	**-2.43**	**-2.27**
21 jamaica	-1.01	-0.88	**-2.90**	-1.56	**-3.19**	**-3.09**	-1.52
22 martinique	-1.19	-0.91	**-2.14**	-1.57	**-3.09**	**-2.78**	-1.78
23 st.vincent	-1.27	-0.90	**-2.42**	-1.33	**-2.35**	**-2.29**	**-2.20**
24 price	0.67	0.16	1.13	0.13	-0.08	0.52	0.99

DEFINITION OF CHARACTERISTICS AND SEGMENTS

PLAN	Currently Planning a Winter Beach Vacation (yes, no)
ACCO	Type of Accommodation (hotel or guesthouse, other)
TRANS	Mode of Transportation (air, other)
BOKM	Type of Arrangement (ITC, other)
BOKP	Place of Holiday Purchase (travel agent, other)
E CAR	Ever Visited the Caribbean Before (yes, no)
AGT	Mode of Data Collection (1 agent, other)

NOTE: For a concise description of the segments see Table 5.2.

differences in the factors affecting choice behaviour of males and females. However, this finding alone is not satisfactory, because one would also like to know which variables are the major contributors to these differences, even if some statistical uncertainty underlies the discussion. The significant difference for the variable *beach* '10 minutes' implies that females are much more sensitive than males to their accommodation being even 10 minutes from the beach. Interestingly, if the distance of the chosen accommodation from the beach increases further to '30 minutes', the sex-dependent difference is not statistically significant, although the direction of difference remains the same. Furthermore, the availability of *other restaurants* in the vicinity of the chosen accommodation is significantly more important for females, and finally, females have a significantly lower propensity to travel to Cuba and St. Vincent.

Between the higher and lower income groups (INC) a total of 8 significantly different parameters can be observed, including the parameter for each of the 5 countries, indicating that these particular Caribbean destinations are more attractive to the lower than to the higher income group. It comes as little surprise that the lower income group is much more price-sensitive in its vacation choice process. At the same time the lower income group is also less attracted to basic accommodations and inconvenient travel.

As for marital status (MAR), the group representing the various types of single respondents has a particular dislike for more basic accommodation ('restaurant only' on premise), and at the same time regards the availability

of *other restaurants* in the vicinity of the accommodation as much more important when compared to the group encompassing married respondents and couples. Note that besides the t-value of equality being significant for the level *other restaurant* '10 minutes', it is close to being significant on the '30 minutes' level, corroborating the significant difference between the two groups on this particular variable. Also, the singles group evaluates the country alternatives generally higher, although the difference is significant only for Cuba.

Age was divided into three categories in Table 5.1, and this grouping is maintained for the market segmentation (Table 5.18). Interestingly, the only significant difference among the three is that the over 45 years age group is less sensitive to a location that is a considerable distance from the beach ('30 minutes'). One could argue that one significant t-value out of 24 is bound to appear, but by the same token, a t-value of over 3 actually corresponds to a .002 level of significance.

The other socio-demographic characteristics warrant only brief discussion. The place of birth of respondents (BIRTH; Canada vs. foreign born) apparently does not affect the choice behaviour of winter beach vacationers at all. Similarly, a segmentation between the two major modes of data collection, i.e. clients of one particular travel agent vs. others (AGT in Table 5.17), does not produce any noteworthy differences except for two countries. Bilingual respondents (LANG) are less likely to favour both a basic type of an accommodation ('restaurant only') and a location of the chosen

accommodation too far from the beach ('30 minutes'). Segmentation based on the characteristic education (EDU) yields only one significant difference, while for occupation (OCCU), a differentiation between professionals and others produces several significant differences. Noteworthy in this latter segmentation is that the non-professional segment gives higher importance to having *shopping and entertainment* facilities available in the vicinity of the accommodation. Finally, respondents who rent their principal residence (RESO) place higher emphasis on the most favourable levels of the variables *services on premise* and *distance to beach* when compared to home owners, while apartment dwellers are more *price*-sensitive than single-family home dwellers (REST).

5. 9. 2 SEGMENTATION BASED ON BEHAVIOURAL CHARACTERISTICS

Notable differences emerge when segmentation is performed along behavioural characteristics defined around the last winter beach vacation (Table 5.17). Differences occur most frequently on the variables *distance to beach* and *country*, and to a lesser extent on the availability of *other restaurants* in the area.

Regarding the type of accommodation chosen on the last holiday (ACCO), respondents who did not spend their last holiday in a hotel or guesthouse evaluate anything but a fully equipped accommodation as significantly less desirable, and at the same time give higher priority to having a restaurant

close to the chosen accommodation. However, for the second level of this variable differences remain insignificant. Segmentation based on the mode of transportation (TRANS) produces differences in evaluation of the various countries, with respondents who did not use air transportation for travelling to their last destination (i.e. the Florida visitors), generally perceiving the Caribbean islands as more desirable. At the same time this segment is also more likely to find a location further away from the beach as acceptable.

Segmentation along other behavioural characteristics such as whether the respondents ever visited the Caribbean (E CAR), the place of booking (BOKP), and the type of arrangement (BOKM) also rendered significant differences for the variables *beach* and *country*. The implication is that a strong collinearity exists between these variables in the sample insofar as travel to the Caribbean at the same time implies the use of air transportation and the reliance on the service of a travel agent and the purchase of an ITC. On the other hand, segmentation between respondents who were currently planning (PLAN) a winter beach vacation as opposed to those who were not did not produce any significant differences.

Two of the variables relating to the last vacation were grouped into three (Table 5.18). Regarding the location of the last winter beach vacation, the multitude of destinations was grouped into three distinct regions. Visitors to Florida appear much less sensitive to increases in the distance of the selected accommodation from the beach. This group most likely contains a

TABLE 5.18

T-VALUES OF DIFFERENCES WITHIN SOCIO-DEMOGRAPHIC GROUPS

VARIABLES (LEVELS)	L DEST		INFO		AGE	
	C/O	C/F	R/A	R/F	Y/O	M/O
1 size 250 r	-1.55	-0.35	-0.78	0.10	0.89	-0.21
2 size 60 r	-0.17	-0.32	-1.48	0.61	0.78	-0.43
3 rest only	-0.27	-0.25	1.33	-1.00	1.69	1.57
4 rest & se	-0.68	-0.39	0.10	-0.24	-1.25	1.61
5 loc rural	0.23	0.71	0.75	0.58	-0.55	-1.08
6 loc town cl	-0.28	0.14	0.67	0.05	1.73	-0.63
7 beach 30min	-0.35	**-2.42**	**-2.04**	-0.32	**3.39**	**3.14**
8 beach 10min	-0.62	**-2.70**	**-2.83**	0.04	0.47	0.10
9 airpt 25min	-0.74	-1.72	0.38	0.26	-0.38	0.46
10 airpt 1 h	0.77	1.12	0.92	-0.27	-0.47	1.56
11 o.acco-few	-1.31	-0.65	-0.54	1.57	0.25	-0.02
12 o.acco-many	-0.51	-0.22	-0.39	0.08	0.26	-0.06
13 o.rst 10min	-1.10	-1.24	1.77	-1.66	-1.40	1.29
14 o.rst 30min	-0.39	-0.43	**2.71**	**-2.69**	-1.13	0.88
15 o.s&e n.a.	-1.09	-0.42	0.40	**2.18**	0.61	1.51
16 o.s&e 30min	-0.38	-0.25	1.57	1.24	1.04	-0.03
17 o.sp 10min	1.45	0.08	0.82	-0.84	-0.70	-0.51
18 o.sp 30min	1.19	0.07	0.44	-0.52	-0.40	-0.11
19 barbados	-0.92	-1.50	0.28	0.49	0.17	-0.99
20 cuba	-0.91	-1.13	0.23	1.10	0.36	-0.83
21 jamaica	-1.12	-1.34	0.82	1.46	0.01	-0.92
22 martinique	-0.63	-1.22	0.72	1.01	0.80	0.14
23 st.vincent	-0.74	-1.00	0.61	1.13	0.18	-0.49
24 price	-0.17	-0.24	-0.14	-1.30	1.20	0.06

EXPLANATION OF CHARACTERISTICS AND THEIR SEGMENTS:

L DEST — Destination of last winter beach vacation
- C — Caribbean
- F — Florida
- O — Other

INFO — Recommendation by
- R — Repeat visit
- F — Friends, etc.
- A — Travel Agent, Tourist Brochure

AGE
- Y — 18-34 Years
- M — 35-44 Years
- O — 45 Years and over

relatively large number of respondents who had never visited the Caribbean before, and apparently many of them simply project their standard Florida vacation behaviour, i.e. mobility with own car or cheap rental cars, into the Caribbean context, without knowing about the constraints that exist in terms of cost and limited space on the small Caribbean islands.

Each of the three segments relating to the various sources of information which most influence destination choice has one outstanding characteristic: the repeat visitors are less sensitive to *distance to beach* on both levels; those who relied on the recommendation of friends are particularly keen on having *shopping and entertainment* facilities available, while those who relied on the established formal marketing channels (travel agents, brochures and advertising) rate the availability of *other restaurants* in the area as much less important (the t_{equ}-value is significant for '30 minutes', and still high for '10 minutes').

Finally, for two characteristics a four-fold segmentation was performed. In the first case, for the last destination the Caribbean was divided further into the five islands included in the survey and the other Caribbean destinations (Table 5.19). The distinct behaviour of Florida vacationers remains in regard to *distance to beach*, but now their attitude towards the five islands also appears to differ significantly, with the Florida segment stating the highest preference for the five islands included in the survey. The differences with regard to *location*, *shopping and entertainment*, and *sports*

TABLE 5.19

ESTIMATES AND ASYMPTOTIC T-TEST OF EQUALITY FOR DESTINATION OF LAST HOLIDAY (4 SEGMENTS)

VARIABLE (LEVEL)	5 ISLANDS		OTH. CAR.		FLORID		OTHER		T-VALUES OF DIFFERENCE					
	EST	SE	EST	SE	EST	SE	EST	SE	5/C	5/F	5/O	C/F	C/O	F/O
1 size 250 r	-.0442	.11	-.2335	.11	-.0520	.09	.0839	.10	1.17	0.05	-0.81	-1.25	**-2.08**	-0.97
2 size 60 r	.1311	.11	-.1291	.10	-.0487	.09	-.1741	.11	1.62	1.18	1.85	-0.56	0.28	0.84
3 rest only	-.4169	.12	-.4693	.11	-.3473	.09	-.5286	.11	0.31	-0.44	0.65	-0.82	0.36	1.19
4 rest & se	-.2133	.11	-.3731	.10	-.1853	.09	-.0944	.10	1.02	-0.19	-0.76	-1.33	-1.86	-0.64
5 loc rural	.3256	.12	.0223	.10	.1337	.09	.0449	.10	1.85	1.22	1.71	-0.75	-0.14	0.60
6 loc town cl	.2500	.12	-.1245	.11	.0942	.09	.1408	.10	**2.28**	1.00	0.68	-1.47	-1.72	-0.32
7 beach 30min	-1.2505	.14	-1.3771	.14	-.7813	.10	-1.2184	.13	0.60	**-2.63**	-0.16	**-3.35**	-0.79	**2.60**
8 beach 10min	-.7902	.11	-.9179	.11	-.4984	.08	-.9205	.10	0.81	**-2.05**	0.84	**-2.95**	0.01	**3.04**
9 airpt 25min	.1235	.11	.2283	.10	.2754	.09	.0542	.11	-0.66	-1.03	0.43	-0.32	1.11	1.51
10 airpt 1 h	-.1127	.12	.1268	.11	.0826	.09	-.0449	.10	-1.45	-1.24	-0.41	0.29	1.10	0.87
11 o.acco-few	-.0347	.11	.1320	.10	.0642	.09	.2314	.10	-1.04	-0.64	-1.66	0.47	-0.66	-1.16
12 o.acco-many	.2265	.11	.0446	.11	.0985	.09	.1716	.11	1.11	0.84	0.34	-0.36	-0.79	-0.49
13 o.rst 10min	.4993	.12	.1864	.10	.1825	.09	.1656	.10	1.89	**1.98**	**2.00**	0.02	0.13	0.11
14 o.rst 30min	.2686	.12	.0556	.10	.1477	.09	.0574	.11	1.27	0.75	1.25	-0.62	-0.01	0.60
15 o.s&e n.a.	-.2399	.11	.0211	.10	-.1844	.09	-.2468	.11	-1.65	-0.36	0.04	1.40	1.71	0.41
16 o.s&e 30min	-.1944	.11	.1292	.10	.0315	.09	-.0663	.10	**-2.08**	-1.55	-0.84	0.68	1.31	0.70
17 o.sp 10min	.2995	.12	.2151	.10	.0839	.09	.1038	.10	0.51	1.39	1.20	0.91	0.72	-0.13
18 o.sp 30min	.2568	.12	.0940	.11	-.0897	.10	-.1850	.12	0.93	**2.09**	**2.48**	1.17	1.65	0.60
19 barbados	.9112	.48	-.0375	.43	1.5430	.39	.3281	.44	1.45	-1.00	0.87	**-2.71**	-0.58	**2.03**
20 cuba	.1057	.47	-.6613	.42	.8601	.38	-.3792	.44	1.20	-1.23	0.74	**-2.67**	-0.46	**2.10**
21 jamaica	.6011	.49	-.7289	.44	1.0749	.40	-.1310	.46	**2.00**	-0.74	1.08	**-3.00**	-0.93	1.96
22 martinique	.9986	.48	.0480	.43	1.7065	.39	.3874	.44	1.46	-1.13	0.92	**-2.83**	-0.54	**2.20**
23 st.vincent	.9091	.47	.0143	.42	1.2564	.39	.1434	.44	1.40	-0.56	1.17	**-2.14**	-0.21	1.86
24 price	-.0028	.00	-.0027	.00	-.0030	.00	-.0026	.00	-0.15	0.45	-0.30	0.64	0.15	-0.80

DEFINITION OF SEGMENTS (Symbol in brackets refers to acronym used for segment)

5 ISLANDS	(5)	Visited any of the five islands incl. in survey;
OTH. CAR	(C)	Visited any of the other Caribbean destinations;
FLORIDA	(F)	Visited Florida;
OTHER	(O)	Visited any other winter beach vacation destination.

facilities are not clearly interpretable. The second case analyses the sample with respect to the companions on the last vacation: travelling alone, as a couple, with family, with friends (Table 5.20). The group that travelled with friends disliked a basic 'restaurant only' accommodation when compared to the three other groups; respondents travelling alone are much more likely to accept an accommodation at some distance from the beach; this group also has a higher preference for other restaurants within '10 minutes' walking distance; the five islands have the lowest appeal to couples, i.e. the difference is significant when compared to single travellers and family vacationers; finally, regarding price, couples constitute the least price-sensitive segment, while families are the most price-sensitive segment and single travellers and groups of friends fall in between.

5.9.3 SEGMENTATION BASED ON CRITERIA INFLUENCING PREVIOUS CHOICE

An interesting pattern can also be observed when the various criteria influencing the selection of the respondent's last winter beach vacation are used for segmentation (Table 5.21). Most prominent is the variable *distance to beach,* for which significant differences exist between the level 'on beach' as opposed to at least one or both other levels for all but three criteria (exotic atmosphere, price and watersports) and even for these three criteria in half the cases the *distance to beach* parameters are close to being significant. It is usually the segment that did not consider a criterion as important in its last

TABLE 5.20

ASYMPTOTIC T-TEST OF EQUALITY FOR
COMPANY DURING LAST WINTER BEACH VACATION

VARIABLE (L)		A/C	A/F	A/Fr	C/F	C/Fr	F/Fr
1	size 250 r	1.01	**2.42**	1.22	1.60	0.40	-0.95
2	size 60 r	0.83	1.88	0.94	1.18	0.26	-0.73
3	rest only	-0.05	1.06	**3.83**	1.21	**4.08**	**2.99**
4	rest & se	0.35	1.22	1.44	0.97	1.22	0.33
5	loc rural	0.54	0.06	0.08	-0.47	-0.39	0.02
6	loc town cl	0.47	0.87	-0.30	0.48	-0.74	-1.09
7	beach 30min	**2.07**	**2.30**	**2.99**	0.37	1.46	1.12
8	beach 10min	**3.97**	**3.61**	**4.09**	-0.10	0.83	0.88
9	airpt 25min	**1.99**	0.23	0.16	-1.74	-1.58	-0.04
10	airpt 1 h	0.51	-0.41	-0.96	-0.98	-1.51	-0.60
11	o.acco-few	-0.78	0.00	-0.41	0.79	0.26	-0.42
12	o.acco-many	-0.45	0.29	0.74	0.77	1.20	0.48
13	o.rst 10min	1.92	**2.04**	**2.08**	0.28	0.53	0.26
14	o.rst 30min	1.67	1.59	0.90	0.01	-0.58	-0.56
15	o.s&e n.a.	-1.65	-1.09	-1.02	0.48	0.34	-0.06
16	o.s&e 30min	0.07	-0.47	-1.07	-0.58	-1.20	-0.64
17	o.sp 10min	-0.27	-0.24	1.13	0.01	1.46	1.39
18	o.sp 30min	0.38	0.79	1.43	0.46	1.17	0.70
19	barbados	**2.59**	0.70	1.94	-1.90	-0.21	1.35
20	cuba	**3.09**	1.04	1.57	**-2.05**	-1.04	0.67
21	jamaica	**4.02**	1.46	**2.11**	**-2.52**	-1.27	0.84
22	martinique	**3.72**	0.92	**2.53**	**-2.84**	-0.51	1.77
23	st.vincent	**2.98**	0.07	**2.11**	**-3.07**	-0.39	**2.13**
24	price	-1.79	1.66	0.16	**3.57**	1.76	-1.34

LABELS OF SEGMENTS:

A Travelling Alone
C Travelling as Couple
F Travelling with Family
Fr Travelling with Friends

TABLE 5.21

ASYMPTOTIC T-TEST OF EQUALITY FOR CRITERIA INFLUENCING DECISION FOR LAST HOLIDAY CHOICE

VARIABLE (L)	ATMOS	SCENE	NIGHT	PRICE	SAFEE	WATSP	OSPO	CULT	LPEOP	AMFO	LCFO	AIRL
1 size 250 r	0.95	-0.95	-0.15	0.84	-1.75	-0.29	-0.38	0.26	-0.72	-1.16	0.07	**2.15**
2 size 60 r	0.75	-1.24	-0.12	0.89	-0.38	-0.40	-1.51	1.25	0.06	-0.61	0.54	1.15
3 rest only	-0.61	1.74	-1.20	**-3.27**	-1.53	0.58	-0.18	-1.92	-0.31	-1.78	-1.34	**-3.08**
4 rest & se	-0.62	**2.37**	-0.50	**-4.04**	-0.99	0.34	0.85	-2.18	-0.03	-0.87	-1.83	**-2.86**
5 loc rural	1.49	0.12	-0.06	0.10	-0.92	-1.55	-0.17	0.57	0.80	-0.66	-0.15	-1.13
6 loc town cl	0.69	0.14	0.37	0.01	0.34	-1.25	-0.72	-0.64	1.27	0.00	-0.28	-0.77
7 beach 30min	0.19	**2.07**	**-2.04**	1.56	**-2.98**	-0.56	**-4.60**	-1.86	**-2.70**	**-3.33**	**-2.58**	**-2.42**
8 beach 10min	-1.71	0.62	-1.81	1.79	**-2.68**	0.07	**-4.51**	**-2.56**	**-3.00**	**-3.66**	-1.93	**-2.41**
9 airpt 25min	0.13	**1.96**	-0.25	0.39	0.14	0.00	0.35	-0.11	0.98	1.69	0.78	-0.36
10 airpt 1 h	-0.05	0.58	1.03	-0.32	0.10	-0.78	0.72	0.46	0.01	0.85	0.84	0.20
11 o.acco-few	0.17	-0.05	1.15	1.29	-0.35	0.52	1.47	0.40	0.44	0.06	0.62	0.85
12 o.acco-many	-0.25	0.30	0.02	1.03	0.13	0.25	0.82	0.16	0.07	0.19	0.56	0.72
13 o.rst 10min	**-2.14**	-1.60	-0.35	-1.64	1.31	0.16	0.43	-1.41	**-2.52**	-0.93	-1.07	-0.23
14 o.rst 30min	-0.79	-0.98	-0.21	-0.67	0.71	0.78	0.64	-1.74	**-2.26**	-0.93	-1.13	-1.47
15 o.s&e n.a.	0.60	-0.11	0.36	-0.13	0.52	-0.11	-0.23	**2.15**	1.94	1.11	1.19	-0.76
16 o.s&e 30min	-0.32	-0.40	-0.14	-1.04	-0.35	0.02	0.86	0.67	1.75	-0.19	1.22	-0.23
17 o.sp 10min	-0.03	0.84	0.00	1.12	1.15	0.79	-0.29	0.56	0.19	0.57	0.39	0.37
18 o.sp 30min	-1.27	0.24	0.20	0.21	0.71	-0.03	-0.60	0.74	-0.89	-0.32	-0.59	-0.02
19 barbados	-0.08	0.82	-1.60	**-2.92**	0.38	-0.61	-0.58	**-2.60**	0.07	-1.34	-0.72	-0.64
20 cuba	-0.86	-0.38	-0.41	**-3.59**	0.38	0.17	0.08	**-2.06**	0.22	-1.32	-0.40	-0.37
21 jamaica	-0.95	-0.51	**-2.37**	**-2.74**	-0.64	-1.58	**-2.21**	**-3.17**	-1.19	**-2.37**	-1.50	-0.58
22 martinique	-1.20	-0.27	**-2.00**	**-3.54**	0.25	-1.43	-1.15	**-2.31**	-1.04	-1.31	-1.54	-0.68
23 st.vincent	-0.82	-0.00	**-2.09**	**-3.32**	0.62	-0.81	-0.44	**-2.22**	-0.11	-1.50	-1.39	-0.13
24 price	-0.31	0.86	0.73	**4.74**	**-2.17**	1.17	-0.06	0.62	-0.65	0.31	0.68	-0.96

CRITERIA (t_{equ}-values compare the YES-segment with the NO-segment for each criterion)

ATMOS Exotic Atmosphere
SCENE Beautiful Scenery
NIGHT Nightlife
PRICE Price
SAFEE Safe Environment
WATSP Good Watersports
OSPOR Other Sports Activities
CULTU Cultural Activities
LPEOP Friendly Local People
AMFOD North American Food avail.
LCFOD Local Food avail.
AIRLK Convenient Air Link to Can

vacation choice that is more sensitive to increasing distance from the beach. An explanation for this phenomenon could be that those respondents who consider a particular criterion important attach less importance to access to the most basic resource of a beach vacation. This interpretation actually amounts to a trade-off between specific variables, i.e. *distance to beach* vs. one or the other activity-related variables. Such a trade-off might well be significant for certain market segments, but was not detected in the overall model (Table 5.10). The fact that the criterion "watersports" constitutes an exception to this trend (no differences between the two segments) corroborates the overall explanation given above, because watersport activities by definition will be located at the beach, and therefore water sports enthusiasts should favour the location at the beach at least as much as general vacationers do. For the same reasons the segment interested in "other sports facilities" attached less importance to the variable *distance to beach*, because for them the beach definitely becomes a secondary criterion compared to facilities such as a tennis camp or a golf course.

The variable *distance to beach* is not significant for people who cited the criterion "atmosphere" as a criterion influencing the choice of their last vacation. The positive t_{equ}-values indicate that *distance to beach* mattered significantly more to those who cited "beautiful scenery" as a choice criterion (at least at the level '30 minutes'), and is almost significant for the people who cited "price".

The second most frequent differentiations occur with respect to the variable *services on premise*. Here it is invariably the segment that did not list a particular criterion as important, that emphasizes more services on the premise.

The emphasis on segmentation of respondents by the criterion influencing their last choice of a beach vacation now turns from its focus on variables to an emphasis on major issues for each of the criterion groups.

Respondents who listed beautiful scenery (SCENE) as an important element in their decision prefer more services on the premises of the accommodation, and are also more sensitive to a location distant from the beach.

Of particular interest is the segmentation in terms of price consciousness because it corroborates the previous findings made when segmentation was performed on the characteristic "income". The price-conscious segment behaves similarly to the low income group and thus attributes more importance to location on the beach, and evaluates the Caribbean islands themselves as more attractive, while the opposing group considers the services on the premises as more important. The criterion "nightlife" does not produce any significant differences aside from location relative to the beach, and for water sports no significant differences can be observed whatsoever. As is to be expected, the segment interested in culture evaluates the Caribbean destinations as more attractive. Somewhat surprising is the lack of any significant differences for

such criteria as "sports facilities" and "local food" on the variables *other sports facilities* and *other restaurants* respectively. The latter variable is considered an important one for respondents interested in local people and the fact that the segment with cultural interests attributes more importance to the availability of shopping and entertainment facilities could be a plausible finding - at least as long as it involved shopping for souvenirs and regionally produced goods.

5.9.4. SEGMENTATION BASED ON COMBINING TWO CHARACTERISTICS OR CRITERIA

Market segmentation can also be based on subgroups derived from contingency tables which combine two characteristics. The attraction of this rather complex task is the prospect of defining more precisely the group of respondents which reacts differently to a certain variable. Among the many crosstabulations possible, only a selected few will be discussed here, because an exhaustive interpretation of the results requires a lengthy discussion of each of the many tables, and also because for many crosstabulations one or more of the cells contained too few observations to derive any meaningful interpretations.

Table 5.22 contains the $t_{\sim\gamma u}$ values between the four segments of the 2x2 contingency table for the characteristics sex and income[35]: high income males,

[35]For the results of their separate segmentations see Table 5.16.

TABLE 5.22

ASYMPTOTIC T-TEST OF EQUALITY (2 CHARACTERISTICS)
SEX - INCOME

VARIABLES (L)	ML MH	ML FL	ML FH	MH FL	MH FH	FL FH
1 size 250 r	0.54	-1.49	-1.05	-1.18	-0.70	0.23
2 size 60 r	0.65	-1.51	0.16	-1.09	0.74	1.47
3 rest only	0.87	0.71	-1.28	-1.80	-0.68	**-2.00**
4 rest & se	0.43	0.14	-0.73	0.64	-0.44	-0.90
5 loc rural	-0.73	0.23	1.45	-0.55	1.01	1.37
6 loc town cl	-0.94	0.75	1.75	-0.15	1.15	1.19
7 beach 30min	0.11	0.01	1.09	0.15	1.31	1.14
8 beach 10min	1.91	0.48	**2.73**	**2.72**	**4.39**	**2.49**
9 airpt 25min	**-2.61**	0.67	**2.10**	**-2.13**	-0.02	1.63
10 airpt 1 h	-1.29	1.73	1.80	0.67	0.88	0.30
11 o.acco-few	-0.70	1.24	1.12	0.67	0.62	0.08
12 o.acco-many	1.19	0.70	0.48	**2.26**	1.67	-0.12
13 o.rst 10min	-0.68	-0.93	-1.01	-1.82	-1.77	-0.18
14 o.rst 30min	-0.18	-1.56	-0.84	**-2.06**	-1.12	0.54
15 o.s&e n.a.	-0.48	1.36	1.13	1.11	0.85	-0.07
16 o.s&e 30min	-1.11	1.64	1.13	0.76	0.49	-0.11
17 o.sp 10min	-0.51	1.21	-0.71	0.98	-1.27	-1.87
18 o.sp 30min	-0.37	0.67	0.12	0.38	-0.19	-0.47
19 barbados	**-2.57**	1.88	**3.31**	-0.63	1.37	1.79
20 cuba	**-2.68**	**2.01**	**4.51**	-0.57	**2.68**	**2.95**
21 jamaica	-1.77	0.89	**2.90**	-0.94	1.67	**2.32**
22 martinique	-1.69	0.99	**2.85**	-0.71	1.70	**2.15**
23 st.vincent	-1.90	1.76	**3.37**	-0.00	**2.11**	1.96
24 price	**2.47**	-1.65	**-2.23**	0.84	-0.21	-0.85

SEGMENTS: ML - Males, low income
MH - Males, high income
FL - Females, low income
FH - Females, high income

low income males, high income females, and low income females. Significant differences in the attitude towards the variable *distance to beach* '10 minutes walking' (originally a significant difference was observed between males and females, but not between high income and low income groups) are primarily due to the "high income female" segment, who are much more sensitive to being 10 minutes from the beach than the other three segments. Also "high income males" differ significantly from "low income females". The gender-specific preference difference between the two low income groups, on the other hand, is insignificant. It comes as little surprise that higher income groups are more sensitive to *distance to beach*, however it would warrant further research to find out why the high income females react so much more strongly than the high income males or the low income females.

The divergent attitude towards the variable *airport* '25 min driving distance' (originally more important for the low income group) cannot be specified any further by the introduction of the characteristic sex, as three of the four possible income differences remain significant and the fourth is close to it. As for the variable *price* (previously more significant for the low income groups), the more detailed segmentation now reveals that only the low income male segment contributes to two significant differences (against both high income segments - as is to be expected). Further indication for the different attitude towards price by this one segment can be found in the fact that the gender-specific difference in price-sensitivity between the two low income

groups is closer to being significant than any of the remaining income-based differences.

The divergent attitude towards the five Caribbean *countries*, which was previously observed between the two income segments is reinforced by introducing gender as a second criterion of differentiation. The "low income male" segment has the highest preferences for each of the five Caribbean islands, while the "high income female" segment is the one showing least preference for these destinations.

One can only speculate on any causal links between the attitudes of the various segments towards some of these variables. Given the findings on the last two variables, *price* and *country*, one can assume a direct relationship insofar as the "high income female" segment is much more choosy about its holiday destination and therefore shows the most negative attitude towards the five islands while the lower income groups, and males in particular find the Caribbean more desirable. Some relationship seems to exist, but given the fact that for *price* only the "high income female" segment stands out, while for *country* a true polarization between the "high income females" and "low income males" emerges suggests that the relationship is more complex than simply a linear one.

For three other variables one of the six possible differences reaches significance. For the variable *other services on premise* (originally a difference was observed between the two income segments), the discrepancy is due

mainly to a difference between the two female income groups as the "low income females" regard any deficiency of services as much less desirable when compared to the "high income females". Regarding the variable *other restaurants* '30 minutes', again it is the "low income female" group demanding this service more so than any other segment (though only statistically significant in comparison to one of the three other segments). Furthermore, for one level of a variable ('many' *other accommodations*) which did not produce any significant differences between either of the two subgroups of the sample in the separate analysis, one can now observe a difference between the "high income males" and "low income females". Interpretation of these isolated cases of significant differences must be undertaken with care because some significant differences may occur by chance.

It is obvious already from the discussion of this one example, that a number of interesting observations can be made from such a detailed analysis, but also, that the discussion is voluminous and complex. Further discussion will only highlight some of the results and will suggest the design of a more concise form of presentation. For that purpose, the focus will be on two characteristics only, namely "sex" and "accommodation", for which interesting patterns of segmentation were observed above. In the following discussion the focus is on the relationship of each of these two characteristics to a number of other characteristics.

Combination of the Characteristic SEX with Selected Other Characteristics

Table 5. 23 provides a summary of the significant t_{equ}- values between subgroups based on a two-way grouping on "sex" and in turn on each of the characteristics "income", "age", "marital status", "type of residence", "planning of winter beach vacation for next season", "mode of data collection", "type of accommodation during last winter beach vacation", and "the importance of safety"[36]. Each of the columns refers to one of these 2x2 groupings. Each block of six rows refers to one variable, containing the six possible pairings of the four segments. If the significant differences are in rows one and/or six then sex is the primary discriminator, but if they are in rows two and/or five then the other characteristic is the main discriminator. Differences in rows three and/or four reflect differences based on a combination of the two characteristics. Generally the trend observed in the previous, less detailed segmentation analysis continues in that the significant differences between segments concentrate on a few variables, or levels to be more precise, such as *distance to beach* '10 minutes', and to a lesser extent *services on premise* 'restaurant only' and *other restaurants* '10 minutes'. At the same time, significant differences are also very unevenly distributed among the various contingency tables with the table sex vs. accommodation containing by far the largest number of significant differences, followed by sex vs. age and sex vs. income.

[36]A detailed discussion of this last contingency table will follow later.

TABLE 5.23

SUMMARY OF ASYMPTOTIC T-TEST OF EQUALITY BETWEEN
SEX AND SELECTED OTHER CHARACTERISTICS

	SEX INC	SEX AGE	SEX MAR	SEX RES	SEX PLN	SEX AGT	SEX ACCO	SEX SAFE
size 250 r	MP-FP	MY-FY	MS-FS	MO-FO	MY-FY	MT-FT	MH-FH	MN-FN
	MP-MR	MY-MO	MS-MC	MO-MR	MY-MN	MT-MN	**MH-MN**	MN-MY
	MP-FR	MY-FO	MS-FC	MO-FR	MY-FN	MT-FN	MH-FN	**MN-FY**
	FP-MR	FY-MO	FS-MC	FO-MR	FY-MN	FT-MN	**FH-MN**	FN-MY
	FP-FR	FY-FO	FS-FC	FO-FR	FY-FN	FT-FN	FH-FN	FN-FY
	MR-FR	MO-FO	MC-FC	MR-FR	MN-FN	MN-FN	MN-FN	MY-FY
size 60 r	MP-FP	MY-FY	MS-FS	MO-FO	MY-FY	MT-FT	MH-FH	MN-FN
	MP-MR	MY-MO	MS-MC	MO-MR	MY-MN	MT-MN	MH-MN	MN-MY
	MP-FR	MY-FO	MS-FC	MO-FR	MY-FN	MT-FN	MH-FN	MN-FY
	FP-MR	FY-MO	FS-MC	FO-MR	FY-MN	FT-MN	FH-MN	FN-MY
	FP-FR	FY-FO	FS-FC	FO-FR	FY-FN	FT-FN	FH-FN	FN-FY
	MR-FR	MO-FO	MC-FC	MR-FR	MN-FN	MN-FN	MN-FN	MY-FY
restaurant only	MP-FP	MY-FY	**MS-FS**	MO-FO	MY-FY	MT-FT	MH-FH	MN-FN
	MP-MR	MY-MO	MS-MC	MO-MR	MY-MN	MT-MN	**MH-MN**	MN-MY
	MP-FR	MY-FO	MS-FC	**MO-FR**	MY-FN	MT-FN	**MH-FN**	MN-FY
	FP-MR	FY-MO	FS-MC	FO-MR	FY-MN	FT-MN	**FH-MN**	FN-MY
	FP-FR	FY-FO	**FS-FC**	**FO-FR**	FY-FN	FT-FN	**FH-FN**	FN-FY
	MR-FR	MO-FO	**MC-FC**	MR-FR	MN-FN	MN-FN	MN-FN	MY-FY
rest. and s&e	MP-FP	MY-FY	MS-FS	MO-FO	MY-FY	MT-FT	MH-FH	MN-FN
	MP-MR	MY-MO	MS-MC	MO-MR	MY-MN	MT-MN	**MH-MN**	MN-MY
	MP-FR	MY-FO	MS-FC	MO-FR	MY-FN	MT-FN	**MH-FN**	MN-FY
	FP-MR	FY-MO	FS-MC	FO-MR	FY-MN	FT-MN	**FH-MN**	FN-MY
	FP-FR	FY-FO	FS-FC	FO-FR	FY-FN	FT-FN	**FH-FN**	FN-FY
	MR-FR	MO-FO	MC-FC	MR-FR	MN-FN	MN-FN	MN-FN	MY-FY
loc. rural	MP-FP	MY-FY	MS-FS	MO-FO	MY-FY	MT-FT	MH-FH	MN-FN
	MP-MR	MY-MO	MS-MC	MO-MR	MY-MN	MT-MN	MH-MN	MN-MY
	MP-FR	MY-FO	MS-FC	MO-FR	MY-FN	MT-FN	MH-FN	MN-FY
	FP-MR	FY-MO	FS-MC	FO-MR	FY-MN	FT-MN	FH-MN	FN-MY
	FP-FR	**FY-FO**	FS-FC	FO-FR	FY-FN	FT-FN	FH-FN	FN-FY
	MR-FR	MO-FO	MC-FC	MR-FR	MN-FN	MN-FN	MN-FN	MY-FY
loc. town close	MP-FP	MY-FY	MS-FS	MO-FO	MY-FY	MT-FT	**MH-FH**	MN-FN
	MP-MR	MY-MO	MS-MC	MO-MR	MY-MN	MT-MN	MH-MN	MN-MY
	MP-FR	MY-FO	MS-FC	MO-FR	MY-FN	MT-FN	MH-FN	MN-FY
	FP-MR	FY-MO	FS-MC	FO-MR	FY-MN	FT-MN	FH-MN	FN-MY
	FP-FR	**FY-FO**	FS-FC	FO-FR	FY-FN	FT-FN	FH-FN	FN-FY
	MR-FR	MO-FO	MC-FC	MR-FR	MN-FN	MN-FN	MN-FN	MY-FY

TABLE 5.23 (continued)

	SEX INC	SEX AGE	SEX MAR	SEX RES	SEX PLN	SEX AGT	SEX ACCO	SEX SAFE
beach 30 min	MP-FP	MY-FY	MS-FS	MO-FO	**MY-FY**	MT-FT	MH-FH	MN-FN
	MP-MR	MY-MO	MS-MC	MO-MR	**MY-MN**	MT-MN	**MH-MN**	**MN-MY**
	MP-FR	MY-FO	MS-FC	**MO-FR**	MY-FN	MT-FN	MH-FN	MN-FY
	FP-MR	FY-MO	FS-MC	FO-MR	FY-MN	FT-MN	FH-MN	**FN-MY**
	FP-FR	FY-FO	FS-FC	FO-FR	FY-FN	FT-FN	FH-FN	FN-FY
	MR-FR	MO-FO	MC-FC	MR-FR	MN-FN	MN-FN	MN-FN	MY-FY
beach 10 min	MP-FP	MY-FY	MS-FS	**MO-FO**	**MY-FY**	**MT-FT**	MH-FH	MN-FN
	MP-MR	MY-MO	MS-MC	MO-MR	MY-MN	MT-MN	**MH-MN**	**MN-MY**
	MP-FR	**MY-FO**	**MS-FC**	**MO-FR**	MY-FN	**MT-FN**	MH-FN	MN-FY
	FP-MR	**FY-MO**	**FS-MC**	FO-MR	**FY-MN**	**FT-MN**	FH-MN	**FN-MY**
	FP-FR	FY-FO	FS-FC	FO-FR	FY-FN	FT-FN	**FH-FN**	FN-FY
	MR-FR	**MO-FO**	**MC-FC**	**MR-FR**	MN-FN	MN-FN	**MN-FN**	**MY-FY**
airport 25 min	MP-FP	MY-FY	MS-FS	MO-FO	MY-FY	MT-FT	MH-FH	MN-FN
	MP-MR	MY-MO	MS-MC	MO-MR	MY-MN	MT-MN	MH-MN	MN-MY
	MP-FR	MY-FO	MS-FC	MO-FR	MY-FN	MT-FN	MH-FN	MN-FY
	FP-MR	FY-MO	FS-MC	FO-MR	FY-MN	FT-MN	FH-MN	FN-MY
	FP-FR	FY-FO	FS-FC	FO-FR	FY-FN	FT-FN	FH-FN	FN-FY
	MR-FR	MO-FO	MC-FC	MR-FR	MN-FN	MN-FN	MN-FN	MY-FY
airport 1 h	MP-FP	**MY-FY**	MS-FS	MO-FO	MY-FY	MT-FT	MH-FH	MN-FN
	MP-MR	MY-MO	MS-MC	MO-MR	MY-MN	MT-MN	MH-MN	MN-MY
	MP-FR	**MY-FO**	MS-FC	MO-FR	MY-FN	MT-FN	MH-FN	MN-FY
	FP-MR	FY-MO	FS-MC	**FO-MR**	FY-MN	**FT-MN**	FH-MN	FN-MY
	FP-FR	FY-FO	FS-FC	FO-FR	FY-FN	FT-FN	FH-FN	FN-FY
	MR-FR	MO-FO	MC-FC	MR-FR	**MN-FN**	MN-FN	MN-FN	**MY-FY**
o.acco. many	**MP-FP**	MY-FY	MS-FS	MO-FO	MY-FY	MT-FT	**MH-FH**	MN-FN
	MP-MR	MY-MO	MS-MC	MO-MR	MY-MN	MT-MN	MH-MN	MN-MY
	MP-FR	MY-FO	MS-FC	MO-FR	MY-FN	MT-FN	**MH-FN**	MN-FY
	FP-MR	FY-MO	FS-MC	FO-MR	FY-MN	FT-MN	FH-MN	FN-MY
	FP-FR	FY-FO	FS-FC	FO-FR	FY-FN	FT-FN	FH-FN	FN-FY
	MR-FR	MO-FO	MC-FC	MR-FR	MN-FN	MN-FN	MN-FN	MY-FY
o.acco. few	MP-FP	MY-FY	MS-FS	MO-FO	MY-FY	MT-FT	MH-FH	MN-FN
	MP-MR	MY-MO	MS-MC	MO-MR	MY-MN	MT-MN	MH-MN	MN-MY
	MP-FR	MY-FO	MS-FC	MO-FR	MY-FN	MT-FN	MH-FN	MN-FY
	FP-MR	FY-MO	FS-MC	FO-MR	FY-MN	FT-MN	FH-MN	FN-MY
	FP-FR	FY-FO	FS-FC	FO-FR	FY-FN	FT-FN	FH-FN	FN-FY
	MR-FR	MO-FO	MC-FC	MR-FR	MN-FN	MN-FN	MN-FN	MY-FY
o. rest 10 min	MP-FP	MY-FY	**MS-FS**	**MO-FO**	MY-FY	MT-FT	**MH-FH**	MN-FN
	MP-MR	**MY-MO**	**MS-MC**	MO-MR	MY-MN	MT-MN	MH-MN	MN-MY
	MP-FR	MY-FO	**MS-FC**	MO-FR	MY-FN	MT-FN	**MH-FN**	MN-FY
	FP-MR	**FY-MO**	FS-MC	FO-MR	FY-MN	FT-MN	FH-MN	**FN-MY**
	FP-FR	FY-FO	FS-FC	FO-FR	FY-FN	FT-FN	FH-FN	FN-FY
	MR-FR	**MO-FO**	MC-FC	MR-FR	MN-FN	**MN-FN**	MN-FN	MY-FY

TABLE 5.23 (continued)

	SEX INC	SEX AGE	SEX MAR	SEX RES	SEX PLN	SEX AGT	SEX ACCO	SEX SAFE
o. rest 30 min	**MP-FP**	MY-FY	**MS-FS**	MO-FO	MY-FY	MT-FT	MH-FH	MN-FN
	MP-MR	**MY-MO**	MS-MC	MO-MR	MY-MN	MT-MN	MH-MN	MN-MY
	MP-FR	MY-FO	MS-FC	MO-FR	MY-FN	**MT-FN**	**MH-FN**	MN-FY
	FP-MR	**FY-MO**	FS-MC	FO-MR	FY-MN	FT-MN	FH-MN	FN-MY
	FP-FR	FY-FO	FS-FC	FO-FR	FY-FN	FT-FN	FH-FN	FN-FY
	MR-FR	**MO-FO**	MC-FC	MR-FR	MN-FN	MN-FN	**MN-FN**	MY-FY
o. s&e n.a.	MP-FP	MY-FY	MS-FS	MO-FO	MY-FY	MT-FT	MH-FH	MN-FN
	MP-MR	MY-MO	MS-MC	MO-MR	MY-MN	MT-MN	MH-MN	MN-MY
	MP-FR	MY-FO	MS-FC	**MO-FR**	MY-FN	MT-FN	**MH-FN**	MN-FY
	FP-MR	**FY-MO**	FS-MC	FO-MR	FY-MN	FT-MN	FH-MN	FN-MY
	FP-FR	FY-FO	FS-FC	FO-FR	FY-FN	FT-FN	FH-FN	FN-FY
	MR-FR	MO-FO	MC-FC	MR-FR	MN-FN	MN-FN	**MN-FN**	MY-FY
o. s&e. 30 min	MP-FP	MY-FY	MS-FS	MO-FO	MY-FY	MT-FT	MH-FH	MN-FN
	MP-MR	MY-MO	MS-MC	MO-MR	MY-MN	MT-MN	MH-MN	MN-MY
	MP-FR	MY-FO	MS-FC	MO-FR	MY-FN	MT-FN	MH-FN	MN-FY
	FP-MR	FY-MO	FS-MC	FO-MR	FY-MN	FT-MN	FH-MN	FN-MY
	FP-FR	FY-FO	FS-FC	FO-FR	FY-FN	FT-FN	**FH-FN**	FN-FY
	MR-FR	MO-FO	MC-FC	MR-FR	MN-FN	MN-FN	**MN-FN**	MY-FY
o. sp. 10 min	MP-FP	MY-FY	MS-FS	MO-FO	MY-FY	MT-FT	MH-FH	MN-FN
	MP-MR	MY-MO	MS-MC	MO-MR	MY-MN	MT-MN	**MH-MN**	MN-MY
	MP-FR	MY-FO	MS-FC	MO-FR	MY-FN	MT-FN	MH-FN	MN-FY
	FP-MR	FY-MO	FS-MC	FO-MR	FY-MN	FT-MN	**FH-MN**	FN-MY
	FP-FR	FY-FO	FS-FC	FO-FR	FY-FN	FT-FN	FH-FN	FN-FY
	MR-FR	MO-FO	MC-FC	MR-FR	MN-FN	MN-FN	**MN-FN**	MY-FY
o. sp. 30 min	MP-FP	MY-FY	MS-FS	MO-FO	MY-FY	MT-FT	MH-FH	MN-FN
	MP-MR	MY-MO	**MS-MC**	MO-MR	MY-MN	MT-MN	**MH-MN**	MN-MY
	MP-FR	MY-FO	MS-FC	MO-FR	MY-FN	MT-FN	MH-FN	MN-FY
	FP-MR	FY-MO	FS-MC	FO-MR	FY-MN	FT-MN	FH-MN	FN-MY
	FP-FR	FY-FO	FS-FC	FO-FR	FY-FN	FT-FN	FH-FN	FN-FY
	MR-FR	MO-FO	**MC-FC**	MR-FR	MN-FN	MN-FN	MN-FN	MY-FY
country	MP-FP	**MY-FY**	MS-FS	MO-FO	MY-FY	**MT-FT**	MH-FH	MN-FN
	MP-MR	MY-MO	MS-MC	MO-MR	MY-MN	MT-MN	MH-MN	MN-MY
	MP-FR	**MY-FO**	MS-FC	MO-FR	MY-FN	MT-FN	MH-FN	MN-FY
	FP-MR	FY-MO	FS-MC	FO-MR	FY-MN	**FT-MN**	FH-MN	FN-MY
	FP-FR	FY-FO	FS-FC	FO-FR	FY-FN	**FT-FN**	FH-FN	FN-FY
	MR-FR	MO-FO	MC-FC	**MR-FR**	MN-FN	MN-FN	MN-FN	MY-FY
price	MP-FP	MY-FY	MS-FS	MO-FO	MY-FY	MT-FT	MH-FH	MN-FN
	MP-MR	**MY-MO**	MS-MC	**MO-MR**	MY-MN	MT-MN	MH-MN	MN-MY
	MP-FR	**MY-FO**	MS-FC	MO-FR	MY-FN	MT-FN	MH-FN	MN-FY
	FP-MR	FY-MO	FS-MC	**FO-MR**	FY-MN	FT-MN	FH-MN	FN-MY
	FP-FR	FY-FO	FS-FC	FO-FR	FY-FN	FT-FN	FH-FN	FN-FY
	MR-FR	MO-FO	MC-FC	MR-FR	MN-FN	MN-FN	MN-FN	MY-FY

For explanation see next page.

TABLE 5.23 (continued)

Note on interpretation:
each column compares two segments at a time;
two letters are used to describe one segment;
the first letter always refers to SEX (M=Male, F=Female);
the second letter refers to one of the other characteristics;

INC	Income	P- Low
		R- High
AGE		Y- 18-44 years
		O- 45 years and over
MAR	Marital Status	S- Single, Separated, Widowed
		C- Married, Living Together
RES	Residence Ownership	O- Owned
		R- Rented
PLN	Planning a Vacation	Y- Yes
		N- No
AGT	Source of Data	T- One Travel Agent
		N- Other
ACCO	Accommodation	H- Hotel or Guesthouse
		N- Other
SAFE	Safety Mattered	Y- Yes
		N- No

In the main model, the variable *size* had turned out as the least important criterion for choice. This table provides no evidence to change that conclusion despite the finding of a significant preference for small accommodations by the "male non-hotel or guesthouse accommodation" segment when compared to the two segments frequenting standard accommodations. Though these differences could be attributed to chance, they may also reveal some tourists' dissatisfaction with the more traditional types of accommodation and the consequent increasing popularity of alternatives.

Regarding the variable *services on premises*, most pairings produce differences for the attitude towards the least preferred alternative ('restaurant only'), but only the column sex vs. accommodation also contains differences for the level 'restaurants and shopping and entertainment'. The consistency with which the group of "hotel and guesthouse clients" documented a lower preference for any of the levels of this variable when compared to "non-traditional forms of vacationers" on both levels is remarkable. A conclusive explanation of that behaviour would require more thorough research, because of the heterogeneity of the latter group.

Previous segmentations have shown already that major differences exist between the sexes regarding their attitude towards the variable *distance to beach*, particularly for the case of '10 minutes' walking distance. In Table 5.23 it is of interest to ask which of the other socio-demographic or behavioural characteristics contribute to this divergent attitudes between males and

females. Except for the columns including accommodation and safety, rows two and five contain no significant differences (except for the "high income female" segment which is so negative to any walking to the beach that they are even significantly different from the "low income female" segment). Hence one can conclude that the gender-specific difference is the predominant one when compared to these other socio-demographic characteristics. The results suggest a different interpretation for the pairing with accommodation, with accommodation specific-differences clearly dominating. For the level '30 minutes' significant differences are fewer, but all of them observed for the level '30 minutes' are also significant at the level '10 minutes', thus basically confirming consistency in the responses.

No clear patterns emerge on any of the differences for the variables *airport* and *other accommodations*, while *other restaurants* is an important variable. For both levels of the latter, the "older male" segment attributes significantly less importance to having other restaurants in the vicinity when compared to the other three segments. "Single males" react in a similar way, although they are slightly more sensitive to an increase in the walking distance. The "female non-hotel or guesthouse" segment demands *other shopping and entertainment facilities* with a much higher frequency. *Other sports facilities* by contrast (especially at the '10 minute' level) are significantly more important for the "male non-traditional accommodation" segment. For a conclusive interpretation it would be essential to define the "non-hotel or

guesthouse" group more concisely, but one can speculate that this finding reflects a behavioural consistency, as real sports enthusiasts frequently rely on alternative forms of accommodation in order to pursue their major interests, be it scuba diving, or tennis camps.

For simplicity, differences regarding the variable *country* are pooled by considering them as significant only if at least three of the five country differences are significant, and the two others are nearly so. While the "high income females" have by far the most negative attitude towards the five actual Caribbean islands, in the context of age the "young male segment" stands out as having significantly more positive attitude. The relatively large number of significant differences for the pairing of sex with mode of data collection is worthy of note, but defies explanation.

In their attitude towards *price*, the "low income male" segment, the "young male" segment, and the "male renting" segment resemble each other in their significantly higher price sensitivity when compared to their respective opposite segments.

In summary, the fact that only a few significant differences have been observed for the characteristic "mode of data collection", suggests that at least in the context of the gender-based differentiation, the sample is not overly biased due to the various non-random sampling procedures. The lack of significant differences between respondents "planning" to take another winter beach vacation in the near future suggests that respondents are not overly

influenced by whether they are close to actually selecting a winter beach vacation or not at the time of response, which again increases confidence in the validity of the experimental approach.

Combination of the Characteristic ACCOMMODATION and Selected Other Characteristics

Given the significant revelations about people's previous "accommodation" ("hotel and guesthouse" vs. "other") it is worth probing its effects on choice in relationship to other socio-demographic and behavioural criteria (Table 5.24). The overall pattern of the distribution of significant differences among the variables is similar to the one observed for sex (Table 5.23). The most striking finding is that for all the characteristics included, numerous significant differences emerge for the variable *services on premise*, but now the medium level 'restaurants and shopping and entertainment' on premise is the level with more differences. For all six pairings the "non-hotel and guesthouse vacationers" are significantly more sensitive to incomplete services.

The attitude towards *distance to beach* also differs significantly for several of the pairings. The higher level of tolerance of the "male non-hotel or guesthouse accommodation" segment for the level '10 minutes' has been mentioned before. It is now opposed by an extremely low level of tolerance towards '30 minutes' walking distance by the "young hotel and guesthouse" segment, implying that expectations regarding the convenience of location are

TABLE 5.24

SUMMARY OF ASYMPTOTIC T-TEST OF EQUALITY BETWEEN ACCOMMODATION AND SELECTED OTHER CHARACTERISTICS

	ACCO SEX	ACCO AGE	ACCO INC	ACCO RES	ACCO PLN	ACCO AGT
size 250 r.	**HM-NM**	HY-NY	HL-NL	HO-NO	HY-NY	HT-NT
	HM-HF	HY-HO	HL-HH	HO-HR	HY-HN	HT-HN
	HM-NF	HY-NO	HL-NH	HO-NR	HY-NN	HT-NN
	NM-HF	NY-HO	NL-HH	NO-HR	NY-HN	NT-HN
	NM-NF	NY-NO	NL-NH	NO-NR	NY-NN	NT-NN
	HF-NF	HO-NO	HH-NH	HR-NR	**HN-NN**	HN-NN
size 60 r.	HM-NM	HY-NY	HL-NL	HO-NO	HY-NY	HT-NT
	HM-HF	HY-HO	HL-HH	HO-HR	HY-HN	HT-HN
	HM-NF	HY-NO	HL-NH	HO-NR	HY-NN	HT-NN
	NM-HF	NY-HO	NL-HH	NO-HR	NY-HN	NT-HN
	NM-NF	NY-NO	NL-NH	NO-NR	NY-NN	NT-NN
	HF-NF	HO-NO	HH-NH	HR-NR	HN-NN	HN-NN
restaurant only	**HM-NM**	HY-NY	HL-NL	**HO-NO**	HY-NY	HT-NT
	HM-HF	HY-HO	HL-HH	HO-HR	HY-HN	HT-HN
	HM-NF	HY-NO	HL-NH	**HO-NR**	HY-NN	**HT-NN**
	NM-HF	**NY-HO**	**NL-HH**	NO-HR	NY-HN	NT-HN
	NM-NF	NY-NO	NL-NH	NO-NR	NY-NN	NT-NN
	HF-NF	HO-NO	HH-NH	HR-NR	HN-NN	**HN-NN**
rest. and s&e.	**HM-NM**	**HY-NY**	**HL-NL**	**HO-NO**	**HY-NY**	**HT-NT**
	HM-HF	HY-HO	HL-HH	HO-HR	HY-HN	HT-HN
	HM-NF	**HY-NO**	**HL-NH**	**HO-NR**	**HY-NN**	**HT-NN**
	NM-HF	**NY-HO**	**NL-HH**	**NO-HR**	**NY-HN**	**NT-HN**
	NM-NF	NY-NO	NL-NH	NO-NR	NY-NN	NT-NN
	HF-NF	**HO-NO**	**HH-NH**	**HR-NR**	**HN-NN**	**HN-NN**
loc. rural	HM-NM	HY-NY	HL-NL	HO-NO	HY-NY	HT-NT
	HM-HF	HY-HO	HL-HH	HO-HR	HY-HN	HT-HN
	HM-NF	HY-NO	HL-NH	HO-NR	HY-NN	HT-NN
	NM-HF	NY-HO	NL-HH	NO-HR	NY-HN	NT-HN
	NM-NF	NY-NO	NL-NH	NO-NR	NY-NN	NT-NN
	HF-NF	HO-NO	HH-NH	HR-NR	HN-NN	HN-NN
loc. town close	HM-NM	HY-NY	HL-NL	HO-NO	HY-NY	HT-NT
	HM-HF	HY-HO	HL-HH	HO-HR	HY-HN	HT-HN
	HM-NF	HY-NO	HL-NH	HO-NR	HY-NN	HT-NN
	NM-HF	NY-HO	NL-HH	NO-HR	NY-HN	NT-HN
	NM-NF	NY-NO	NL-NH	NO-NR	NY-NN	NT-NN
	HF-NF	HO-NO	HH-NH	HR-NR	HN-NN	HN-NN

TABLE 5.24 (continued)

	ACCO SEX	ACCO AGE	ACCO INC	ACCO RES	ACCO PLN	ACCO AGT
beach 30 min	**HM-NM**	**HY-NY**	**HL-NL**	HO-NO	**HY-NY**	**HT-NT**
	HM-HF	**HY-HO**	HL-HH	HO-HR	HY-HN	HT-HN
	HM-NF	**HY-NO**	HL-NH	HO-NR	HY-NN	HT-NN
	NM-HF	NY-HO	NL-HH	**NO-HR**	**NY-HN**	**NT-HN**
	NM-NF	NY-NO	NL-NH	NO-NR	**NY-NN**	NT-NN
	HF-NF	HO-NO	HH-NH	**HR-NR**	HN-NN	HN-NN
beach 10 min	**HM-NM**	HY-NY	HL-NL	**HO-NO**	**HY-NY**	HT-NT
	HM-HF	HY-HO	HL-HH	HO-HR	HY-HN	HT-HN
	HM-NF	HY-NO	HL-NH	HO-NR	HY-NN	HT-NN
	NM-HF	NY-HO	NL-HH	**NO-HR**	**NY-HN**	NT-HN
	NM-NF	NY-NO	NL-NH	NO-NR	NY-NN	NT-NN
	HF-NF	HO-NO	HH-NH	HR-NR	HN-NN	HN-NN
airport 25 min	HM-NM	HY-NY	HL-NL	HO-NO	HY-NY	**HT-NT**
	HM-HF	HY-HO	HL-HH	HO-HR	HY-HN	**HT-HN**
	HM-NF	HY-NO	HL-NH	HO-NR	HY-NN	HT-NN
	NM-HF	NY-HO	**NL-HH**	NO-HR	NY-HN	NT-HN
	NM-NF	NY-NO	NL-NH	NO-NR	NY-NN	NT-NN
	HF-NF	HO-NO	HH-NH	HR-NR	HN-NN	HN-NN
airport 1 h	HM-NM	HY-NY	HL-NL	HO-NO	HY-NY	HT-NT
	HM-HF	HY-HO	HL-HH	HO-HR	HY-HN	HT-HN
	HM-NF	HY-NO	HL-NH	HO-NR	HY-NN	HT-NN
	NM-HF	NY-HO	NL-HH	NO-HR	NY-HN	NT-HN
	NM-NF	NY-NO	NL-NH	NO-NR	NY-NN	NT-NN
	HF-NF	HO-NO	HH-NH	HR-NR	HN-NN	HN-NN
o.acco. many	HM-NM	HY-NY	HL-NL	HO-NO	HY-NY	HT-NT
	HM-HF	HY-HO	HL-HH	HO-HR	HY-HN	HT-HN
	HM-NF	HY-NO	HL-NH	HO-NR	HY-NN	HT-NN
	NM-HF	NY-HO	NL-HH	NO-HR	NY-HN	NT-HN
	NM-NF	NY-NO	NL-NH	NO-NR	NY-NN	NT-NN
	HF-NF	HO-NO	HH-NH	HR-NR	HN-NN	HN-NN
o. acco. few	HM-NM	HY-NY	HL-NL	HO-NO	HY-NY	HT-NT
	HM-HF	HY-HO	HL-HH	HO-HR	HY-HN	HT-HN
	HM-NF	HY-NO	HL-NH	HO-NR	HY-NN	HT-NN
	NM-HF	NY-HO	NL-HH	NO-HR	NY-HN	NT-HN
	NM-NF	NY-NO	NL-NH	NO-NR	NY-NN	NT-NN
	HF-NF	HO-NO	HH-NH	HR-NR	HN-NN	HN-NN

TABLE 5.24 (continued)

	ACCO SEX	ACCO AGE	ACCO INC	ACCO RES	ACCO PLN	ACCO AGT
o. rest. 10 min	HM-NM	HY-NY	HL-NL	HO-NO	HY-NY	HT-NT
	HM-HF	HY-HO	HL-HH	HO-HR	HY-HN	HT-HN
	HM-NF	HY-NO	HL-NH	HO-NR	HY-NN	**HT-NN**
	NM-HF	NY-HO	NL-HH	NO-HR	NY-HN	NT-HN
	NM-NF	NY-NO	NL-NH	NO-NR	NY-NN	NT-NN
	HF-NF	HO-NO	HH-NH	**HR-NR**	HN-NN	**HN-NN**
o. rest. 30 min	HM-NM	HY-NY	HL-NL	HO-NO	HY-NY	HT-NT
	HM-HF	HY-HO	HL-HH	HO-HR	HY-HN	HT-HN
	HM-NF	HY-NO	HL-NH	HO-NR	HY-NN	HT-NN
	NM-HF	NY-HO	NL-HH	NO-HR	NY-HN	NT-HN
	NM-NF	NY-NO	**NL-NH**	NO-NR	NY-NN	NT-NN
	HF-NF	HO-NO	HH-NH	HR-NR	HN-NN	HN-NN
o. s&e. n.a.	HM-NM	HY-NY	HL-NL	HO-NO	**HY-NY**	HT-NT
	HM-HF	HY-HO	HL-HH	HO-HR	HY-HN	**HT-HN**
	HM-NF	HY-NO	HL-NH	HO-NR	HY-NN	HT-NN
	NM-HF	NY-HO	NL-HH	NO-HR	NY-HN	**NT-HN**
	NM-NF	NY-NO	NL-NH	NO-NR	NY-NN	NT-NN
	HF-NF	HO-NO	HH-NH	HR-NR	HN-NN	HN-NN
o. s&e. 30 min	HM-NM	HY-NY	**HL-NL**	HO-NO	HY-NY	**HT-NT**
	HM-HF	HY-HO	HL-HH	HO-HR	HY-HN	**HT-HN**
	HM-NF	HY-NO	HL-NH	HO-NR	HY-NN	HT-NN
	NM-HF	NY-HO	NL-HH	NO-HR	NY-HN	NT-HN
	NM-NF	NY-NO	NL-NH	**NO-NR**	NY-NN	NT-NN
	HF-NF	HO-NO	HH-NH	**HR-NR**	HN-NN	HN-NN
o. sp. 10 min	**HM-NM**	HY-NY	HL-NL	HO-NO	HY-NY	HT-NT
	HM-HF	HY-HO	HL-HH	HO-HR	HY-HN	HT-HN
	HM-NF	**HY-NO**	HL-NH	HO-NR	HY-NN	HT-NN
	NM-HF	NY-HO	NL-HH	NO-HR	NY-HN	NT-HN
	NM-NF	NY-NO	NL-NH	NO-NR	NY-NN	NT-NN
	HF-NF	HO-NO	HH-NH	HR-NR	HN-NN	HN-NN
o. sp. 30 min	**HM-NM**	HY-NY	**HL-NL**	HO-NO	HY-NY	**HT-NT**
	HM-HF	HY-HO	HL-HH	HO-HR	HY-HN	HT-HN
	HM-NF	HY-NO	HL-NH	HO-NR	HY-NN	HT-NN
	NM-HF	NY-HO	NL-HH	NO-HR	NY-HN	NT-HN
	NM-NF	NY-NO	NL-NH	NO-NR	NY-NN	NT-NN
	HF-NF	HO-NO	HH-NH	HR-NR	HN-NN	HN-NN

TABLE 5.24 (continued)

	ACCO SEX	ACCO AGE	ACCO INC	ACCO RES	ACCO PLN	ACCO AGT
country	HM-NM	HY-NY	HL-NL	HO-NO	**HY-NY**	HT-NT
	HM-HF	HY-HO	**HL-HH**	HO-HR	**HY-HN**	**HT-HN**
	HM-NF	HY-NO	HL-NH	HO-NR	HY-NN	**HT-NN**
	NM-HF	NY-HO	NL-HH	NO-HR	NY-HN	NT-HN
	NM-NF	NY-NO	NL-NH	NO-NR	NY-NN	NT-NN
	HF-NF	**HO-NO**	HH-NH	HR-NR	HN-NN	HN-NN
price	HM-NM	HY-NY	HL-NL	HO-NO	**HY-NY**	HT-NT
	HM-HF	**HY-HO**	**HL-HH**	**HO-HR**	**HY-HN**	**HT-HN**
	HM-NF	HY-NO	HL-NH	HO-NR	HY-NN	**HT-NN**
	NM-HF	NY-HO	NL-HH	**NO-HR**	NY-HN	**NT-HN**
	NM-NF	NY-NO	NL-NH	NO-NR	NY-NN	**NT-NN**
	HF-NF	**HO-NO**	HH-NH	HR-NR	**HN-NN**	HN-NN

Note on interpretation:
each column compares two segments at a time;
two letters are used to describe one segment;
the first letter always refers to ACCO (H=Hotel or Guesthouse; N=all other Forms of Accommodation);
the second letter refers to one of the other characteristics;

SEX		M- Male
		F- Female
AGE		Y- 18-44 years
		O- 45 years and over
INC	Income	L- Low
		H- High
RES	Residence Ownership	O- Owned
		R- Rented
PLN	Planning a Vacation	Y- Yes
		N- No
AGT	Source of Data	T- One Travel Agent
		N- Other

more complex than previously explained as a function of sex and income. The finding that the young segment is more sensitive to long distances must be considered as an important finding with implications for planning and marketing alike.

The important differences regarding the variables *other accommodations*, *other shopping and entertainment facilities*,and *other sports facilities* for the segmentation based on accommodation combined with sex have been discussed above. These differences are much less pronounced when accommodation is combined with other characteristics. Regarding attitude towards *country* on the other hand it is interesting to note that for income, planning of next vacation, and mode of data collection significant differences occur within the hotel and guesthouse group.

Finally, *price* is an important discriminator for most combinations. Except for the column including sex, price sensitivity causes a differentiation within the hotel and guesthouse group (row 2), reflecting consistently the heterogeneity of this group. Another noteworthy differentiation is based on the mode of data collection, indicating strong heterogeneity there.

Selected Combinations of Characteristics and/or Criteria

Above (Table 5.23 and 5.24) a systematic method was presented to determine which of the two characteristics, if any, contributed more to the significant differences between the four segments. If such a contingency tables

is created between one of the socio-demographic characteristic and one of the choice criteria (factors influencing the choice of the last winter beach vacation; see Table 5.3) one can determine whether the characteristic or the criterion contribute more. The importance of this distinction is that certain assumptions regarding behaviour can be tested in more detail. This analysis is now performed for "sex" and "safety", "income" and "price", "accommodation" and "price", and finally as an interesting example for a combination of two criteria "local people" and "culture".

Characteristic SEX and Criterion SAFETY

Initially, some of the significant differences between males and females were attributed to the higher safety or convenience concern of female vacationers, reflected in the different attitude towards such a variable as *distance to beach*. If the respondents' attitude towards safety is included (Table 5.25) it turns out that all significant differences on both levels of *distance to beach* reveal that the "safety concerned males" are in fact less concerned about distance to beach. Therefore a lower preference for more distant hotels does not have anything to do with safety, but simply convenience.

Characteristic INCOME and Criterion PRICE

Table 5.26 contains the modelling results for the characteristic "income"

TABLE 5.25

ASYMPTOTIC T-TEST OF EQUALITY (2 CHARACTERISTICS)
SEX - SAFE ENVIRONMENT

		MN FN	MN MY	MN FY	FN MY	FN FY	MY FY
1	size 250 r	-0.66	-1.25	**-2.13**	-0.54	-1.50	-1.07
2	size 60 r	0.47	0.42	-1.10	-0.09	-1.46	-1.47
3	rest only	0.11	-1.45	-0.67	-1.46	-0.74	0.58
4	rest & se	-0.88	-1.80	-0.24	-0.83	0.51	1.25
5	loc rural	0.01	-0.78	-0.42	-0.75	-0.42	0.27
6	loc town cl	0.98	0.37	1.26	-0.61	0.35	0.92
7	beach 30min	0.13	**-2.34**	-1.24	**-2.38**	-1.32	0.93
8	beach 10min	1.07	**-3.02**	1.44	**-3.90**	0.48	**3.87**
9	airpt 25min	-0.71	-0.38	0.30	0.33	0.92	0.63
10	airpt 1 h	0.07	-0.93	1.69	-0.94	1.54	**2.46**
11	o.acco-few	1.32	0.33	0.19	-0.99	-0.99	-0.10
12	o.acco-many	0.92	-0.10	1.31	-1.02	0.46	1.40
13	o.rst 10min	-1.53	0.90	-0.68	**2.40**	0.69	-1.46
14	o.rst 30min	-1.53	0.26	-0.82	1.78	0.56	-1.05
15	o.s&e n.a.	1.13	0.18	1.79	-0.92	0.73	1.59
16	o.s&e 30min	-0.22	-1.19	0.75	-0.90	0.92	1.79
17	o.sp 10min	1.25	1.92	1.09	0.55	-0.06	-0.58
18	o.sp 30min	0.26	0.63	0.85	0.33	0.59	0.32
19	barbados	0.58	-0.03	1.63	-0.61	1.02	1.64
20	cuba	0.75	-0.43	**2.25**	-1.14	1.50	**2.57**
21	jamaica	0.09	-0.97	0.51	-1.03	0.40	1.39
22	martinique	0.25	-0.38	1.46	-0.61	1.16	1.79
23	st.vincent	0.68	-0.29	**2.39**	-0.94	1.67	**2.58**
24	price	-0.99	-1.94	-1.86	-0.87	-0.90	-0.12

SEGMENTS: MN - Male, safety did not influence last choice
FN - Female, safety did not influence last choice
MY - Male. saftey influenced last choice
FY - Females, safety influenced last choice

TABLE 5.26

ASYMPTOTIC T-TEST OF EQUALITY (2 CHARACTERISTICS)
INCOME - PRICE

VARIABLE (LEVEL)	LN HN	LN LY	LN HY	HN LY	HN HY	LY HY
1 size 250 r	-0.17	0.10	0.09	0.32	0.32	-0.01
2 size 60 r	-0.18	0.04	0.35	0.27	0.63	0.40
3 rest only	**-2.20**	**-2.69**	**-3.58**	-0.41	-1.40	-1.07
4 rest & se	-1.76	**-3.85**	**-3.76**	**-2.17**	**-2.05**	0.16
5 loc rural	0.09	-0.64	0.90	-0.80	0.87	1.86
6 loc town cl	0.58	-0.20	0.61	-0.93	-0.03	1.04
7 beach 30min	0.00	0.97	**2.24**	1.01	**2.33**	1.55
8 beach 10min	-1.89	-0.10	0.31	**2.28**	**2.82**	0.56
9 airpt 25min	0.76	-0.46	**2.04**	-1.39	1.28	**3.11**
10 airpt 1 h	-1.41	**-2.00**	-0.60	-0.55	1.09	1.87
11 o.acco-few	0.17	0.60	0.67	0.45	0.53	0.08
12 o.acco-many	-0.53	0.84	-0.31	1.56	0.30	-1.45
13 o.rst 10min	0.45	-0.88	-0.07	-1.57	-0.67	1.08
14 o.rst 30min	0.61	-0.25	0.79	-1.03	0.13	1.34
15 o.s&e n.a.	-0.05	-0.00	-0.02	0.06	0.03	-0.02
16 o.s&e 30min	0.43	-0.38	-0.12	-0.94	-0.67	0.34
17 o.sp 10min	0.10	1.06	0.89	1.06	0.87	-0.24
18 o.sp 30min	0.50	0.68	0.70	0.13	0.14	0.00
19 barbados	0.69	**-2.50**	-0.05	**-3.66**	-0.93	**3.18**
20 cuba	0.83	**-3.05**	-0.26	**-4.40**	-1.33	**3.75**
21 jamaica	0.20	**-2.79**	-0.33	**-3.34**	-0.62	**3.19**
22 martinique	-0.66	**-4.00**	-1.30	**-3.81**	-0.68	**3.62**
23 st.vincent	-0.44	**-3.35**	-1.01	**-3.24**	-0.59	**3.10**
24 price	-0.98	**3.40**	1.74	**4.92**	**3.15**	**-2.11**

SEGMENTS: LN - Low income, Price did not matter
HN - High income, Price did not matter
LY - Low income, Price did matter
HY - High income, Price did matter

with the choice criterion "price". One would expect no logical contradictions to emerge between two such obviously related variables, but at the same time it is also of interest to see if one characteristic takes precedence over the other.

In this context naturally the attitude towards the variable *price* is of crucial concern. The analysis reveals that the criterion "price" takes precedence over the socio-demographic characteristic income, because the low as well as the high income groups for whom price mattered are more sensitive to any price increases in the experiment compared to the same two income groups for whom price did not matter. Within the two attitudinal segments, the two income segments react as expected. The dominance of the groups for which price mattered (within the low income group in particular) is also reflected in their attitude towards the variable *services on premise*. However, preferences diverge regarding *distance to beach*, where the "high income - price mattered" segment is significantly less tolerant towards a '30 minute' walk, while the "high income - price did not matter" segment is significantly more tolerant towards a '10 minute' walk when compared to the others. When it comes to the variable *country* the polarization is reinforced by the two characteristics involved, as the "low income - price mattered" segment significantly prefers any of the five Caribbean islands when compared to any of the other three segments.

Characteristic ACCOMMODATION and Criterion PRICE

The strength of the differentiation between price conscious vs. non-price conscious respondents is also reflected in the crosstabulation between price and past accommodation (Table 5.27). The "non-hotel or guesthouse - price did not matter" segment has a much higher demand for a complete range of *services on premise*, indicating an attitude that cost does not matter as long as the product is the right one. In contrast, the "non - hotel or guesthouse - price did matter" segment views the availability of *other restaurants* as much more important, perhaps because this group consists of budget conscious travellers staying in non-traditional cheap accommodations and one important element in the holiday of such vacationers apparently is the opportunity to find restaurants cheaper than the hotel's close by.

Sensitivity to the variable *price* by the price conscious group remains highly significant, regardless of type of accommodation chosen, documenting the stronger polarization created by price sensitivity segmentation when compared to income-based segmentation. Similarly, as can be expected from the results of previous segmentations, the attitude towards the five islands is determined by price sensitivity in the first instance, although it is reinforced by the introduction of accommodation as the second characteristic. The "price-conscious - non-hotel and guesthouse" segment evaluates the five islands significantly more positively when compared with both non-price-sensitive segments, and even the difference vs. the "price-sensitive - hotel and

TABLE 5.27

ASYMPTOTIC T-TEST OF EQUALITY (2 CHARACTERISTICS)
ACCOMMODATION - PRICE

VARIABLE (LEVEL)	HN ON	HN HY	HN OY	ON HY	ON OY	HY OY
1 size 250 r	0.89	0.74	**2.19**	-0.27	1.14	1.66
2 size 60 r	0.35	1.58	1.57	1.09	1.10	0.06
3 rest only	**2.44**	-1.81	-0.52	**-4.27**	**-3.01**	1.33
4 rest & se	**3.54**	**-2.46**	-0.16	**-6.05**	**-3.82**	**2.43**
5 loc rural	0.83	0.90	-0.27	-0.03	-1.11	-1.22
6 loc town cl	0.08	-0.01	-0.50	-0.10	-0.56	-0.55
7 beach 30min	-1.00	1.06	0.36	**2.21**	1.46	-0.77
8 beach 10min	0.53	**2.69**	1.20	1.85	0.52	-1.54
9 airpt 25min	-1.91	-0.46	-0.37	1.65	1.63	0.07
10 airpt 1 h	-0.54	-0.18	-1.04	0.41	-0.37	-0.94
11 o.acco-few	-0.00	0.62	1.04	0.60	1.00	0.50
12 o.acco-many	1.81	1.41	1.46	-0.63	-0.54	0.08
13 o.rst 10min	0.35	0.33	-1.88	-0.08	**-2.11**	**-2.44**
14 o.rst 30min	1.02	0.58	-1.05	-0.57	**-2.03**	-1.78
15 o.s&e n.a.	-0.29	-1.79	0.06	-1.38	0.36	1.97
16 o.s&e 30min	0.07	-1.26	-0.46	-1.22	-0.50	0.80
17 o.sp 10min	-0.45	0.40	-0.36	0.87	0.12	-0.84
18 o.sp 30min	0.07	0.89	-0.78	0.72	-0.80	-1.80
19 barbados	0.56	-1.08	**-2.40**	-1.66	**-2.91**	-1.51
20 cuba	0.70	-1.77	**-3.07**	**-2.45**	**-3.67**	-1.58
21 jamaica	1.32	-0.12	**-2.02**	-1.54	**-3.28**	**-2.09**
22 martinique	0.26	-1.58	**-3.40**	-1.82	**-3.57**	**2.11**
23 st.vincent	0.71	-1.14	**-2.63**	-1.87	**-3.29**	-1.73
24 price	-0.48	**2.92**	**3.58**	**3.32**	**3.93**	0.89

SEGMENTS: HN - Hotel and guesthouse, Price did not matter
ON - Other accommodation, Price did not matter
HY - Hotel and guesthouse, Price did matter
OY - Other accommodation, Price did matter

guesthouse" segment is close to being significant. For the variable *distance to beach* only one significant difference can be observed on each level (in both cases the "hotel and guesthouse -price mattered" segment differed significantly: for the level '10 minutes' walking distance from the beach when compared to the "hotel and guesthouse - price did not matter" segment, for the level '30 minutes' from the beach when compared "non-hotel or guesthouse - price did not matter segment).

Criteria LOCAL PEOPLE and CULTURE

Finally an interesting example of a crosstabulation between two choice criteria can be provided by combining the two criteria "local people" and "culture" (Table 5.28). Only a few significant differences emerge, and as is to be expected, they relate to differences between the segment for which neither of the two criteria mattered as opposed to the segment for which both criteria did matter. The latter is less sensitive to distance to beach, favours *other restaurants* in the vicinity, and desires *shopping and entertainment* opportunities nearby. In these respects the "cultural and people" interested respondents (only 28 or 18% of the sample), behave in the expected manner of not minding walking so much, and also being more interested in the services outside the actual hotel premises. Regarding *price* the "people matter - culture did not matter" segment is the least sensitive one, producing significant differences to the "both did matter" segment as well as the "both did not

TABLE 5.28

ASYMPTOTIC T-TEST OF EQUALITY (2 CHARACTERISTICS)
FRIENDLY LOCAL PEOPLE - CULTURE

VARIABLE (LEVEL)	LNCN LYCN	LNCN LNCY	LNCN LYCY	LYCN LNCY	LYCN LYCY	LNCY LYCY
1 size 250 r	-0.34	1.24	-0.21	1.34	0.11	-1.27
2 size 60 r	0.43	**2.06**	0.74	1.63	0.25	-1.47
3 rest only	0.26	-1.33	-1.42	-1.36	-1.39	0.22
4 rest & se	1.36	-0.53	-1.67	-1.37	**-2.46**	-0.59
5 loc rural	1.12	1.20	0.65	0.36	-0.38	-0.65
6 loc town cl	1.81	-0.48	0.11	-1.63	-1.42	0.51
7 beach 30min	-1.58	0.04	**-2.54**	1.05	-0.75	-1.64
8 beach 10min	-1.86	-0.67	**-3.14**	0.60	-0.96	-1.36
9 airpt 25min	0.51	-1.01	0.59	-1.24	0.05	1.28
10 airpt 1 h	-0.35	0.17	0.30	0.37	0.54	0.03
11 o.acco-few	-0.52	-0.76	0.87	-0.33	1.15	1.24
12 o.acco-many	-0.46	-0.99	0.45	-0.59	0.75	1.17
13 o.rst 10min	-1.09	0.25	**-2.57**	0.92	-1.22	-1.86
14 o.rst 30min	-1.34	-0.93	**-2.40**	0.03	-0.90	-0.75
15 o.s&e n.a.	1.52	1.14	**2.22**	0.10	0.60	0.34
16 o.s&e 30min	1.23	-0.42	1.44	-1.19	0.16	1.32
17 o.sp 10min	-0.43	-0.21	0.54	0.09	0.80	0.54
18 o.sp 30min	-1.08	0.77	-0.01	1.38	0.90	-0.72
19 barbados	1.32	**-2.00**	-1.63	**-2.62**	**-2.45**	0.80
20 cuba	1.93	-0.99	-1.51	**-2.09**	**-2.80**	-0.04
21 jamaica	1.05	-1.34	**-2.88**	-1.86	**-3.25**	-0.53
22 martinique	0.42	-1.44	**-2.11**	-1.58	**-2.12**	0.03
23 st.vincent	1.51	-0.97	-1.74	-1.80	**-2.67**	-0.19
24 price	**-2.05**	-0.60	0.71	0.74	**2.25**	0.99

SEGMENTS: LNCN - People did not matter, Culture did not matter
LYCN - People mattered, Culture did not matter
LNCY - People did not matter, Culture mattered
LYCY - People mattered, Culture mattered

matter" segment. At the same time this segment perceives the five Caribbean destinations most negatively, significantly so when compared to the "people and culture mattered" segment, which has the biggest interest in these islands, again as expected.

5. 10 SIMULATION

An interesting application of the Discrete Choice Experiment is in simulating demand for any of the numerous destination scenarios that can be designed within the experimental domain. Simulation involves calculating the probability of choice for different alternatives in hypothetical choice sets[37]. Under the assumption of additivity the utility of a scenario is derived by adding the estimates for the ten attributes plus the respective ASC (=*country*) (see Equation 3.15 and Footnote 11 in Chapter 3). For the purpose of simulation one choice set may consist of the same five scenarios (generic scenario), or any other combination of scenarios as long as they are specified within the experimental domain. This distinction is important for the understanding of the first two applications discussed below.

The following discussion will distinguish three slightly different

[37]The reader is reminded here that one choice set consists of five choice alternatives. Theoretically a "choice alternative" and a "scenario" are the same. A distinction is made here regarding the context of usage of the terms insofar as "choice set" and "choice alternative" refers only to those variable combinations which actually were included in the survey (see Chapter 4), while "scenario" refers to any one of the possible variable combinations.

applications of the simulation procedure. First, the probabilities can be used to compare generic scenarios, i.e. to compare one combination of attribute levels to another, without any interaction with the variable *country*. In this case, the difference in the utility of alternatives within a choice set depends solely on the difference in their *country* parameter estimates, i.e. their intercepts. Secondly, simulation can also be used to estimate probabilities of choice when scenarios differ among the five countries. And thirdly, probabilities of choice can be simulated for each of the above described market segments, an analysis which, given the number of market segments and scenarios can escalate into an endless venture.

Table 5.29 contains three different generic scenarios. The first two scenarios, labelled "0-Level", constitute the simplest cases, because each of the nine categorical variables is represented by its 0-level (see Table 4.1 for definition; in Table 5.5 the estimate for this 0-level is always 0.0). These two scenarios differ only regarding the one continuous variable in the design, *price*. In the first case price is defined at the upper end of the spectrum ($1400), while in the second scenario it is defined at the lower end ($700). For the calculation of utility and probability of choice for these two scenarios, only the parameter estimates for *price* and the five ASCs, which represent the five countries and at the same time constitute the intercepts in the model, need to be included. In the third scenario each variable is represented by its most preferred level. The lower portion of Table 5.29 contains the respective

TABLE 5.29

CHOICE PROBABILITIES FOR SELECTED SCENARIOS

VARIABLE	SCENARIO		
	0-LEVEL (Price= $ 1400)	0-LEVEL (Price= $ 700)	MOST PREFERRED
SIZE	12	12	12
SERVICES	R,SE,SP	R,SE,SP	R,SE,SP
LOCATION	in town	in town	rural
BEACH	on beach	on beach	on beach
AIRPORT	local	local	25 min
O. ACCOMMOD.	none	none	few
O. RESTAURANTS	n.a.	n.a.	10 min
O. SH. & ENT.	n.a.	n.a.	10 min
O. SPORTS F.	n.a.	n.a.	10 min
PRICE	$ 1400.-	$ 700.-	$ 700.-
PROBABILITY			
BARBADOS	.036	.133	.178
CUBA	.018	.067	.102
JAMAICA	.023	.084	.110
MARTINIQUE	.039	.146	.201
ST. VINCENT	.033	.121	.164
WOULD NOT GO	.851	.448	.246

probabilities of choice. The general interpretation is that, given the changes described in the composition of a scenario, the total probability of choosing any of the five islands over the 'would not go' alternative increases from 14.9% to 55.2% and 75.4%.

As mentioned above, the generic variables model does not account for any country-specific interaction effects, and therefore within the limitations of the model, the proportional probability of choice among the five islands remains the same for all scenarios at approximately 24.2% for Barbados, 12.2% for Cuba, 15.2% for Jamaica, 26.5% for Martinique, and 21.9% for St.Vincent.

An important application for both marketing and planning is the simulation of presently non-existent alternatives. One example for that purpose is given in Table 5.30, where various scenarios reflecting possible stages in the development of a destination are simulated. First consider the scenarios labelled "Resort 1" and "Resort 2" only. The "Resort 1" scenario refers to a secluded, all inclusive resort. The question of interest is how the choice probability for this resort will be affected if it serves as a nucleus for further development in the surrounding area. Therefore, in the "Resort 2" scenario the attribute *other accommodations in area* has been changed from 'none' to 'few'. The model predicts that the sum of the destination choice probabilities will have a proportionate increase of about 8%. With the emergence of other accommodations in the destination the choice model can now of course also be applied to them. For simplicity only two possible

TABLE 5.30

CHOICE PROBABILITIES FOR SCENARIOS
EMULATING STAGES OF DESTINATION DEVELOPMENT

VARIABLE	SCENARIO					
	RESORT 1	RESORT 2	RESORT 2a	RESORT 2b	RESORT 2c	RESORT 2d
SIZE	250	250	12	12	250	250
SERVICES	R,SE,SP	R,SE,SP	R	R	R,SE,SP	R,SE,SP
LOCATION	rural	rural	rural	rural	rural	rural
BEACH	on beach	on beach	on beach	on beach	on beach	on beach
AIRPORT	local	local	local	local	local	25 min
O. ACCOMMOD.	none	few	few	few	few	few
O. RESTAURANTS	n.a.	n.a.	10 min	n.a.	10 min	10 min
O. SH. & ENT.	n.a.	n.a.	10 min	n.a.	10 min	10 min
O. SPORTS F.	n.a.	n.a.	10 min	n.a.	10 min	10 min
PRICE	$ 900.-	$ 900.-	$ 700.-	$ 700.-	$ 900.-	$ 900.-
PROBABILITIES						
BARBADOS	.103	.111	.155	.123	.144	.155
CUBA	.052	.056	.078	.062	.073	.078
JAMAICA	.065	.070	.097	.077	.091	.097
MARTINIQUE	.113	.122	.170	.135	.158	.170
ST. VINCENT	.094	.101	.141	.112	.131	.141
WOULD NOT GO	.573	.539	.357	.491	.403	.360

scenarios will be considered: that these *other accommodations* are made up of small hotels or guesthouses, or that a second equally large all integrated resort is added.

Small accommodation units may be started by local entrepreneurs with limited financial resources and know-how. Typically, the only service such enterprises offer on their premise are 'restaurant only'. Also their rooms are most likely more basic and therefore will be cheaper (*Price* = $700). Such an enterprise adjacent to an all inclusive resort can find itself in two quite different situations. Either the resort and its services are accessible to non-hotel guests, in which case the three variables referring to the auxiliary services enter the simulation at the '10 minutes walking distance' level (Resort 2a), or large resorts establish policies to prevent outsiders from using its facilities, in which case the levels for these support services must remain 'not available' (Resort 2b). At 64% the probability of choice for "Resort 2a" is extremely favourable, as the lack of services on the premises is partly offset by the availability of all these services nearby, and particularly because the lower price contributes to a higher propensity of going. As soon as the auxiliary services are not available in the vicinity the probability of choice decreases to about 50%.

If a second all inclusive resort (Resort 2c) is constructed nearby, the most accurate scenario now must include all the auxiliary services at the '10 minutes' level. Consequently the probability of choice now increases from

42.7% in "Resort 1" to 59.7% in "Resort 2c". In other words, according to the model the existence of two resorts adjacent to each other reinforces each other's attractiveness. Modelling based on detailed market segmentation might suggest divergent attitudes among tourists towards such different settings.

The development process of a destination can be simulated further by assuming that in the next stage an international *airport* is constructed in proximity to these resorts ("Resort 2d"). As a result the probability of choice now increases by another 4.3%.

Simulation of generic scenarios can also be used to express the trade-offs between scenarios in monetary terms. For example, it may be of interest to know by how much the price for a holiday must decrease to offset the locational disadvantage of an accommodation '10 minutes' walking distance from the beach as opposed to 'on beach'. Scenario "A" in Table 5.31 contains the most preferred scenario with price = $1400, which gives a 31.9% probability that one or other of the islands will be chosen. If the variable *distance to beach* is changed to '10 minutes' (Scenario "B"), then the price must decrease to $1135 in order to derive the same choice probability. In other words, for this scenario the value of a location 'on beach' is worth $265 more than a location in '10 minutes' walk from the beach. Expressed in relative terms which hold valid for any scenario, the price for any scenario with a '10 minutes' *distance to beach* must be 81% of the price of the scenario containing

TABLE 5.31

EXAMPLE FOR CALCULATION OF MONETARY VALUES

VARIABLE	SCENARIO	
	A	B
	MOST PREFERRED ($1400.-)	MOST PREFERRED (BEACH=10) ($1135.-)
SIZE	12	12
SERVICES	R,SE,SP	R,SE,SP
LOCATION	rural	rural
BEACH	on beach	10 min
AIRPORT	25 min	25 min
O. ACCOMMOD.	few	few
O. RESTAURANTS	10 min	10 min
O. SH. & ENT.	10 min	10 min
O. SPORTS F.	10 min	10 min
PRICE	$ 1400.-	$ 1135.-
PROBABILITY		
BARBADOS	.077	.077
CUBA	.039	.039
JAMAICA	.048	.048
MARTINIQUE	.085	.085
ST. VINCENT	.070	.070
WOULD NOT GO	.681	.681

'on beach' for them to be chosen with equal probability.

The second application is to use simulation to derive choice probabilities when scenarios differ among the various alternatives (countries). Table 5.32 shows an example predicting choice associated with infrastructural improvements in a single destination. For example, of the five islands used in the survey, only St. Vincent lacks an international airport. The question arises as to whether and by how much tourist arrivals in St. Vincent would increase, if it too had a direct air link to the major market areas. The predictions are that within this particular choice set, i.e. the five competing Caribbean islands, the market share of St. Vincent would increase from 12.3% to 14.4%, implying a 17% increase in the volume of visitors to St. Vincent.

Thirdly, simulation can also be used to predict the demand for different scenarios by the various market segments (see Section 5. 9). This involves the separate calculation of probabilities of choice for each of the previously defined market segments. Table 5.33 provides a summary of these probabilities for the various socio-demographic and behavioural segments. This particular simulation is based on the generic variable model with all categorical variables on the most preferred level and *price* = $700 (see Table 5.29). The column 'would not go' enables one to compare directly the probabilities of choice among the mutually exclusive segments. However, it is important to keep in mind that the probabilities of 'would not go' depend on the specific scenario used in the simulation. Therefore it is more useful for any analysis to perform

TABLE 5.32

CHOICE PROBABILITIES FOR ST. VINCENT WITH/WITHOUT AN INTERNATIONAL AIRPORT

VARIABLE	SCENARIO	
	ST.V 1	ST.V. 2
SIZE	12	12
SERVICES	R,SE,SP	R,SE,SP
LOCATION	rural	rural
BEACH	on beach	on beach
AIRPORT	local	25 min
O. ACCOMMOD.	few	few
O. RESTAURANTS	10 min	10 min
O. SH. & ENT.	10 min	10 min
O. SPORTS F.	10 min	10 min
PRICE	$ 900.-	$ 900.-
PROBABILITY		
BARBADOS	.162	.158
CUBA	.082	.080
JAMAICA	.102	.099
MARTINIQUE	.178	.173
ST. VINCENT	.123	.144
WOULD NOT GO	.354	.346

TABLE 5.33

PROBABILITIES OF CHOICE FOR SELECTED SEGMENTS
(ALL VARIABLES AT MOST PREFERRED LEVEL FOR TOTAL SAMPLE)

CHARACTERISTIC	SEGMENT	PROBABILITY FOR					
		BARB	CUBA	JAM	MART	ST.V	WNG
SEX	Male	.188	.108	.108	.195	.190	.208
	Female	.183	.075	.126	.208	.141	.265
AGE	18-34	.182	.107	.121	.226	.171	.191
	35-44	.151	.072	.094	.200	.153	.326
	45+	.232	.101	.141	.166	.178	.179
MARITAL STATUS	Single +	.191	.133	.129	.213	.169	.162
	Married +	.178	.066	.104	.192	.168	.290
PLACE OF BIRTH	Canada	.189	.083	.120	.202	.175	.228
	Other	.174	.123	.108	.205	.150	.237
LANGUAGES	English	.224	.058	.110	.184	.156	.266
	Eng.+ Fr.	.169	.107	.119	.211	.173	.219
INCOME	Low	.212	.119	.130	.216	.167	.153
	High	.162	.071	.100	.184	.162	.319
EDUCATION	Other	.189	.099	.127	.209	.181	.191
	Grad./Prof	.176	.083	.095	.185	.149	.309
OCCUPATION	Profess.	.208	.088	.107	.200	.155	.239
	Low	.163	.097	.124	.209	.180	.223
RESIDENCE OWNERSHIP	Owned	.186	.089	.123	.204	.182	.213
	Rented	.178	.096	.094	.195	.138	.296
RESIDENCE TYPE	Single hom	.176	.087	.122	.214	.182	.217
	Other	.205	.102	.103	.179	.139	.269
ACCOMMODATION	Hotel, Gh.	.173	.092	.104	.180	.152	.296
	Other	.192	.088	.127	.221	.185	.182
PLANNING VAC.	Yes	.203	.086	.106	.179	.146	.277
	No	.167	.098	.124	.224	.188	.196
LAST VACATION	Florida	.236	.102	.147	.222	.169	.121
	Other	.167	.090	.113	.184	.159	.285
	Caribbean	.152	.083	.091	.196	.161	.314
RECOMMENDATION	Friends	.188	.112	.137	.209	.185	.166
	Repeat	.156	.070	.120	.220	.173	.258
	Other	.205	.090	.087	.171	.143	.302

TABLE 5.33 (continued)

CHARACTERISTIC	SEGMENT	PROBABILITY FOR					
		BARB	CUBA	JAM	MART	ST.V	WNG
TRANSPORTATION	Air	.172	.089	.102	.196	.155	.283
	Other	.226	.096	.169	.210	.194	.102
TYPE OF ARRANGEMENT	ITC	.127	.072	.096	.167	.146	.388
	Other	.234	.106	.128	.219	.172	.137
PLACE OF BOOKING	Agent	.132	.076	.086	.155	.142	.405
	Other	.262	.093	.151	.253	.165	.073
EVER VISITED THE CARIBBEAN	Yes	.155	.086	.091	.174	.160	.332
	No	.212	.096	.142	.230	.169	.147
COMPANY	Alone	.192	.102	.184	.289	.172	.059
	Couple	.200	.081	.078	.155	.141	.342
	Family	.161	.069	.094	.211	.214	.248
	Friends	.132	.092	.107	.126	.105	.435
SOURCE	1 Agent	.187	.078	.116	.196	.146	.275
	Other	.183	.103	.114	.211	.187	.199

WNG = 'Would not go'

simulations for several scenarios. The resulting probabilities for 'would not go' are compiled in Table 5.34.

Some of the most salient differences in Table 5.34 are as follows. The choice probabilities of the male and female segments differ most if the *distance to beach* is '10 minutes', but a higher price greatly diminishes the difference. Similarly the low income segments' preference for any of the five Caribbean destinations under the most favourable scenario diminishes with an increase in price at a much faster rate than the high income group's. The propensity for visiting any of the five islands by those travelling alone is very high. By and large the results in this table parallel the findings about significant differences for individual variables (t_{equ} above), although it is possible that several significant differences between two segments counterbalance each other and therefore do not show in the simulation tables.

Given the variations in the probabilities of 'would not go' among the segments, no meaningful comparisons among the five islands can be derived unless they are expressed in relative terms, i.e. disregarding the option 'would not go' (Table 5.35). Now a number of interesting observations can be made about the appeal which each of the five islands holds for the various segments, or vice versa, which segments each of the islands is more likely to attract.

Barbados is preferred by the older, unilingual, professional segments, and also by those who are currently planning another winter beach vacation. Of the segments formed according to previous vacation behaviour, those who

TABLE 5.34

PROBABILITY OF 'WOULD NOT GO' FOR SELECTED SCENARIOS BY SEGMENTS

CHARACTERISTIC	SEGMENT	SCENARIO			
		BEST	BEST BEACH 10	BEST BEACH 30	BEST PRICE 1400
SEX	Male	.208	.324	.432	.672
	Female	.265	.487	.535	.698
AGE	18-34	.191	.345	.462	.688
	35-44	.326	.499	.623	.750
	45+	.179	.313	.318	.579
MARITAL STATUS	Single +	.162	.279	.376	.622
	Married +	.290	.279	.376	.622
PLACE OF BIRTH	Canada	.228	.386	.479	.684
	Other	.237	.389	.464	.662
LANGUAGES	English	.266	.433	.466	.666
	Eng.+ Fr.	.219	.372	.483	.688
INCOME	Low	.153	.290	.346	.653
	High	.319	.488	.595	.713
EDUCATION	Other	.191	.327	.397	.595
	Grad./Pro	.309	.494	.608	.795
OCCUPATION	Profess.	.239	.389	.507	.732
	Low	.223	.388	.445	.631
RESIDENCE OWNERSHIP	Owned	.213	.354	.427	.616
	Rented	.296	.491	.617	.811
RESIDENCE TYPE	Single ho	.217	.367	.450	.646
	Other	.269	.446	.542	.760
ACCOMMODATION	Hotel, Gh	.296	.488	.589	.747
	Other	.182	.307	.375	.619
PLANNING VAC.	Yes	.277	.457	.525	.713
	No	.196	.332	.434	.652
LAST VACATION	Florida	.121	.182	.238	.513
	Other	.285	.477	.571	.738
	Caribbean	.314	.531	.618	.755

TABLE 5.34 (continued)

CHARACTERISTIC	SEGMENT	SCENARIO			
		BEST	BEST BEACH 10	BEST BEACH 30	BEST PRICE 1400
RECOMMENDATION	Friends	.166	.323	.411	.651
	Repeat	.258	.372	.460	.694
	Other	.302	.511	.590	.730
TRANSPORTATION	Air	.283	.475	.562	.726
	Other	.102	.152	.211	.527
TYPE OF ARRANGEMENT	ITC	.388	.602	.686	.817
	Other	.137	.234	.302	.537
PLACE OF BOOKING	Agent	.405	.623	.724	.831
	Other	.073	.118	.148	.360
EVER VISITED THE CARIBBEAN	Yes	.332	.557	.650	.767
	No	.147	.234	.301	.566
COMPANY	Alone	.059	.081	.123	.323
	Couple	.342	.556	.621	.686
	Family	.248	.556	.621	.686
	Friends	.435	.681	.768	.862
SOURCE OF DATA	1 Agent	.275	.434	.511	.681
	Other	.199	.348	.444	.680

TABLE 5.35

RELATIVE PROBABILTIES OF CHOICE FOR THE FIVE CARIBBEAN ISLANDS

CHARACTERISTIC	SEGMENT	RELATIVE PROBABILITIES FOR				
		BARB	CUBA	JAM	MART	ST.V.
SEX	Male	.238	.137	.137	.247	.240
	Female	.249	.102	.172	.283	.192
AGE	18-34	.225	.132	.150	.280	.211
	35-44	.225	.108	.140	.298	.227
	45+	.282	.124	.171	.202	.218
MARITAL STATUS	Single +	.228	.159	.154	.255	.201
	Married +	.251	.093	.146	.270	.237
PLACE OF BIRTH	Canada	.245	.108	.155	.262	.227
	Other	.228	.161	.142	.269	.196
LANGUAGES	English	.305	.079	.149	.252	.212
	Eng.+ Fr.	.216	.138	.152	.270	.221
INCOME	Low	.251	.141	.153	.255	.197
	High	.238	.104	.147	.270	.238
EDUCATION	Other	.234	.122	.158	.259	.224
	Grad./Prof	.255	.120	.137	.268	.217
OCCUPATION	Profess.	.273	.116	.141	.263	.205
	Low	.210	.125	.160	.269	.233
RESIDENCE OWNERSHIP	Owned	.236	.113	.157	.260	.231
	Rented	.253	.137	.134	.277	.196
RESIDENCE TYPE	Single hom	.225	.111	.155	.274	.232
	Other	.280	.140	.141	.246	.190
ACCOMMODATION	Hotel, Gh.	.247	.131	.148	.256	.216
	Other	.235	.108	.156	.271	.227
PLANNING VAC.	Yes	.281	.120	.146	.248	.202
	No	.208	.122	.155	.279	.234
LAST VACATION	Florida	.269	.116	.168	.253	.192
	Other	.234	.126	.158	.258	.223
	Caribbean	.222	.121	.133	.286	.235
RECOMMENDATION	Friends	.226	.135	.165	.251	.222
	Repeat	.210	.095	.161	.297	.234
	Other	.293	.129	.125	.246	.205

TABLE 5.35 (continued)

CHARACTERISTIC	SEGMENT	RELATIVE PROBABILITIES FOR				
		BARB	CUBA	JAM	MART	ST.V.
TRANSPORTATION	Air	.240	.124	.143	.273	.217
	Other	.252	.107	.189	.234	.216
TYPE OF ARRANGEMENT	ITC	.208	.118	.158	.274	.240
	Other	.272	.123	.148	.255	.200
PLACE OF BOOKING	Agent	.223	.129	.145	.262	.239
	Other	.283	.101	.163	.274	.178
EVER VISITED THE CARIBBEAN	Yes	.232	.129	.136	.260	.240
	No	.249	.113	.166	.270	.199
COMPANY	Alone	.204	.108	.195	.307	.183
	Couple	.305	.124	.119	.235	.215
	Family	.214	.093	.125	.281	.285
	Friends	.234	.164	.190	.224	.186
SOURCE	1 Agent	.258	.108	.160	.270	.201
	Other	.228	.129	.142	.264	.233

vacationed in Florida the last time, as well as the segments using other than ITC types of holiday arrangements, not using a travel agent, and travelling as couples showed a higher propensity of choosing Barbados. Segments which are less likely to opt for Barbados are the bi- or multilingual one, the repeat visitors, and those travelling alone or with family. Overall it appears from these results that Barbados appeals to a more conservative clientele. These are more likely to be found among those respondents using a travel agent to purchase their arrangements, to have vacationed in Florida the last time, and to consider safety an important element in their choice. For these tourists Barbados apparently constitutes a low risk alternative.

Given the political situation in Cuba and its distinct culture and language as compared to the other four islands, it comes as little surprise that it is the least preferred of the five islands, and it apparently appeals to the less conservative segments of the sample: the male, the single, the non-Canadian born, and the bi- or multilingual segments. The preference for Cuba by the low income segment as well as home renters indicates that even when the variable *price* is held constant, a residual image of a cheap holiday still remains with this island. It ranks relatively high with the segment that was influenced by the recommendations from friends in their last choice, and also with those travelling with friends, while repeat visitors are less likely to select Cuba.

Jamaica appeals to the female and older segments as well as to the ones

who took their last vacation in Florida, which now appears to be overlapping with the non-air travelling segment. Also respondents travelling alone or with friends prefer this island significantly over couples or families. Of interest is also the rather negative perception towards this island by Caribbean travellers, both those who visited a Caribbean destination for their last winter beach vacation as well as those who have visited the Caribbean at least once before. Apparently these segments are more aware of, or attribute a greater importance to the instability found in Jamaica in the years prior to the survey. The same reason would explain Jamaica's low probability of choice for the segment "recommendation - other", which basically implies recommendation by travel agent or other professionals.

Martinique has the least variation in the choice probabilities over all the segments. It scores high with the medium age group, repeat visitors and those travelling alone, while couples and those travelling with friends are much less likely to select this French island. Interestingly no significant differences emerged between the two language related segments.

Finally, St. Vincent is preferred by males, those who purchased an ITC the last time, those who have Caribbean experience, and those who travelled with family. Its image ranks poorly with the low income segment, Florida vacationers and, unlike Jamaica, with single travellers as well as with those accompanied by friends.

In summary, it is interesting to see that probabilities of choice vary

between the five islands but also among the segments. The best differentiation among all the socio-demographic characteristics occurs in terms of sex, while in terms of behavioural characteristics "recommendation" and especially "company on the last vacation" delivered the biggest variation in choice probability, while choice differs only minimally between the two types of accommodation segments.

5.11. CONCLUSION

In this chapter the results of the discrete choice experiment (DCE) were presented, a number of tests on the internal and external validity of the models were performed, and the usefulness of the models for two purposes in particular, namely market segmentation and choice simulation, was documented. The results were discussed in the immediate context of the survey only, with little attempt to link the findings to relevant issues of tourism research in general. This is the purpose of the next and final chapter.

The tests performed on the overall fit of the models are of limited use only because the goodness-of-fit measure ($\overline{\rho}^2$) was extremely high for all models specified. Slightly more useful was the LR-test. This test revealed a significant difference between the Quasi-GV-Model and the GV-Model, but it was decided that any aggregation of the alternative specific constant terms (Countries) was not desirable. The fact that the ASV-Model (with and without

cross-effects) did not produce significant improvements over the GV-Model allowed the conclusion that the IIA assumption (independence of irrelevant alternatives), which is fundamental to the multinomial logit model, has not been violated.

This left the asymptotic t-test (separate test) on individual parameters as the most important test statistic. In the GV-Model all variables except *size* contained at least one significant level, implying that variations within variables are important.

The choice behaviour, as documented in the GV-Model, by and large follows intuitive expectations and judgement, but at the same time relationships between variables (e.g. the significance of *price* and *distance to beach* when compared to other variables) as well as between the levels of single variables (utility functions or distance decay functions) have been substantiated and expressed more objectively. A more detailed discussion follows is Section 6.2. Furthermore, the major reason for the adoption of the DCE as a representative of a decompositional multiattribute research approach is that variables can be combined to simulate choice probabilities for entire scenarios.

Two issues need to be pointed out which impede a wider and stronger application of the results. Both of them relate to the data, not to the method itself. Firstly, the non-random sampling procedure permits one to draw only very limited conclusions as to the choice behaviour of the Ottawa or even

Canadian population at large. Any estimation of the size of market segments definitely remains elusive. Secondly, if a method were available for creating factors through factor analysis from the numerous socio-demographic and behavioural characteristics much of the multicollinearity in the data could be eliminated and the results for segmentation as well as simulation could be strengthened. Recently correspondence analysis (Greenacres, 1984) has been suggested for that purpose.

So far the findings have not been tied to issues of tourism research. The testing and the discussion of the DCE in this chapter proved it to be a powerful method for the analysis of a complex problem. The results are statistically sound for the overall model, but care must be taken when interpreting findings based on segmentation of the sample. The simulation procedure in particular makes the method relevant for management and decision-making purposes, which are the focus of the next and final chapter.

CHAPTER 6

SYNTHESIS - RELEVANCE OF THE STUDY AND SUMMARY OF FINDINGS

6.1. INTRODUCTION

The purpose of this chapter is to relate the results of the discrete choice experiment (DCE) (Chapter 5) to the various aspects of tourism research discussed in Chapter 2. There the literature review disclosed that research on tourist behaviour within the destination is conspicuously absent. On that basis it was argued that more detailed knowledge about tourist behaviour could potentially contribute to tourism planning and marketing, as well as decision-making in general. The improvements could manifest themselves in closer links between academic and applied research, and an emerging paradigmatic link between the various fields of tourism research.

These issues are now addressed, first for tourism planning and tourism marketing separately. Then from a more encompassing perspective the DCE is evaluated as a tool of integration between tourism theories, as well as between academic and applied tourism research. The chapter concludes with a summary of the entire research project.

6.2. SOME ISSUES IN DESTINATION PLANNING

Given the emphasis on distance to or between the various attractions

and services the potential contributions of the results to destination planning are obvious. Two major issues come to mind. First, each of these distances is an expression of the location of this particular attraction within the activity space of the tourist and as such, contributes to the overall image the tourist holds of the destination. This is important because from the tourist's point of view the holiday is actually an experience. In other words, the behavioural experiment is an approach for defining that experience in a more tangible way, producing results that are applicable to planning and marketing.

As in planning problems in other contexts, the importance of the optimal location of services in a destination is certainly well known, but frequently cannot be obtained for two reasons: optimal locations are limited and different land uses (touristic and non-touristic) compete for them. Also the optimal locational arrangements may not be the most desirable ones from a social or environmental perspective. Therefore, during the planning stage decision-makers are forced to make trade-offs between different forms of land-use and locational options. It was shown in Section 5.10 that it is actually possible to express these trade-offs in monetary terms. Traditionally decisions are taken by experts, with little or no consideration of behavioural issues. The results of this study support much of the expert's previous judgement, but for the first time attitudes towards distance and location within holiday destinations are measured objectively. As such, they constitute valuable additional behavioural information for decision-makers.

Second, each variable was defined on three levels and therefore it is possible to obtain indications about the shape of its distance decay function and possible distance thresholds. Basically distance decay implies a negative relationship between any increase in distance and frequency of use. Even with only three levels for any of the variables it is apparent that distance decay functions take very different shapes for the various variables and in most cases are not linear.

Concerning *distance to beach*, any walking distance is perceived as extremely negative. The acceptable limit of distance to beach is reached fairly quickly by the majority of respondents. In the study, the major decline of utility occurs within the first 10 walking minutes. With any further increase in distance, utility declines much more slowly simply because the threshold of tolerance has already been reached. Therefore it would be of interest to model distance to beach on more than just three levels, and to differentiate the locations closer to beach in more detail. For that purpose other issues than distance alone may become important, such as more specific descriptors of location. For example, an accommodation may be located immediately adjacent to the high water mark, or a pedestrian walkway (promenade) may divide the beach from the hotel compound, or access to the beach from hotels may be impeded more severely by a road or boulevard between the two. Given the findings of this exploratory survey, one might suspect that attitudes of tourists towards such different situations will differ enormously. So far no research

has tackled these issues of comparing such fundamental development options from a behavioural perspective. Aspects of safety and crime should also be included in such a study.

This study applied a non-hierarchical choice model, i.e. destination choice and accommodation choice were treated on the same level. One should keep in mind that attitudes towards a destination scenario might vary depending on which accommodation the respondent has selected. The results concerning the importance of the variable *distance to beach* confirm previous "...motivational and satisfaction surveys..." (E.I.U., 1984b) conducted by the various Caribbean destinations. In them "Almost half of all hotels used are located on the beach, which is rated amongst visitors far more important in the Caribbean in general than location near to sports facilities or nightlife" (E.I.U., 1984b)[38].

Nevertheless the variations in the shape of the distance decay functions for the three auxiliary services are worthy of attention. The utility of *other restaurants* declines gradually with increasing distance, whereas for *other shopping and entertainment facilities* the average respondent's tolerance of distance is much higher. *Other sports facilities* on the other hand are desirable only if they are located nearby. These findings have implications for any locational decisions taken about such facilities (see discussion on Jamaica

[38]Typical of applied (proprietory) research, most of these studies are not readily available through regular academic channels.

below). A limitation to the interpretation of the results is that given the structure of the design, no conclusions can be drawn on how willing tourists are to actually use such services. The choice alternatives only indicated whether they are available or not. Therefore the preference for more convenient levels does not necessarily imply actual use, especially if the same services are available on the compound. Nevertheless, given the fundamentally different structure of the distance decay functions, respondents apparently thought about their usage. For more conclusive evidence future designs should refine the concepts of distance and location, and perhaps one further variable, distinguishing between services in another hotel compound, as opposed to services provided by local entrepreneurs, should be introduced.

The fact that *size* did not produce any significant parameter estimates at all, has repercussions for the argument about scale of development. In the early eighties this issue led to a classical confrontation between the tourism impact researchers (Rodenburg, 1980; Jenkins, 1982; Haider, 1982, 1985), who suggested that among other changes to the structure of the tourism system, smaller accommodation units would be more beneficial to the host community in socio-economic terms, and the tourist industry which disputed the existence of any demand for small scale development. Based on the findings of this study one can conclude that from the consumer's perspective, size by itself is not an impediment to small-scale development, though "small is beautiful" does not seem to figure in respondents' accommodation preferences. The dominance

of large-scale development must thus be explained purely in terms of the economies of scale associated with it.

With respect to the location of the auxiliary services, a discussion has emerged about the merits of all-inclusive resort hotels, which have contributed significantly to the recent recovery of Jamaica's tourism sector. The question arose if they are examples of a new more indigenous Caribbean product, able to compete successfully in the international market place (Poon, 1988a, 1988b), or whether they are an impediment to any true progress in national development because they are detrimental to local entrepreneurial activities which traditionally provided a range of support services (Henry, 1989). Henry wonders why these resorts have been successful in Jamaica, but so far have not been introduced as enthusiastically in other Caribbean islands. Is their success based on marketing alone, or can it be explained by the high crime rate in Jamaica? Finding answers to these questions goes beyond the scope of an experimental design. However, with proper specification, an experimental design could contribute to test such hypotheses as whether - and for which reasons - the success of these all-inclusive resorts in Jamaica is demand-driven, or if Jamaica would be equally evaluated as a destination with more traditional types of accommodation, and also how successful, if at all, all-inclusive resorts would be in other islands.

Figure 6.1 depicts one possible spatial configuration of the "most preferred" scenario. In the discussion below inherent contradictions within

this ideal scenario are identified, and it is compared to the situation more likely to be found in the Caribbean. Regarding contradictions among the spatial variables, the combination of 'few' *other accommodations* in the area with *other restaurants* and *other sports facilities* in only '10 minutes' walking distance is rather unlikely to occur. Its likelihood diminishes even further in the context of a 'rural' *location*. At this low level of touristic development auxiliary services are unlikely to be economically viable, and even less so if similar services are provided on the premises of the accommodations anyway.

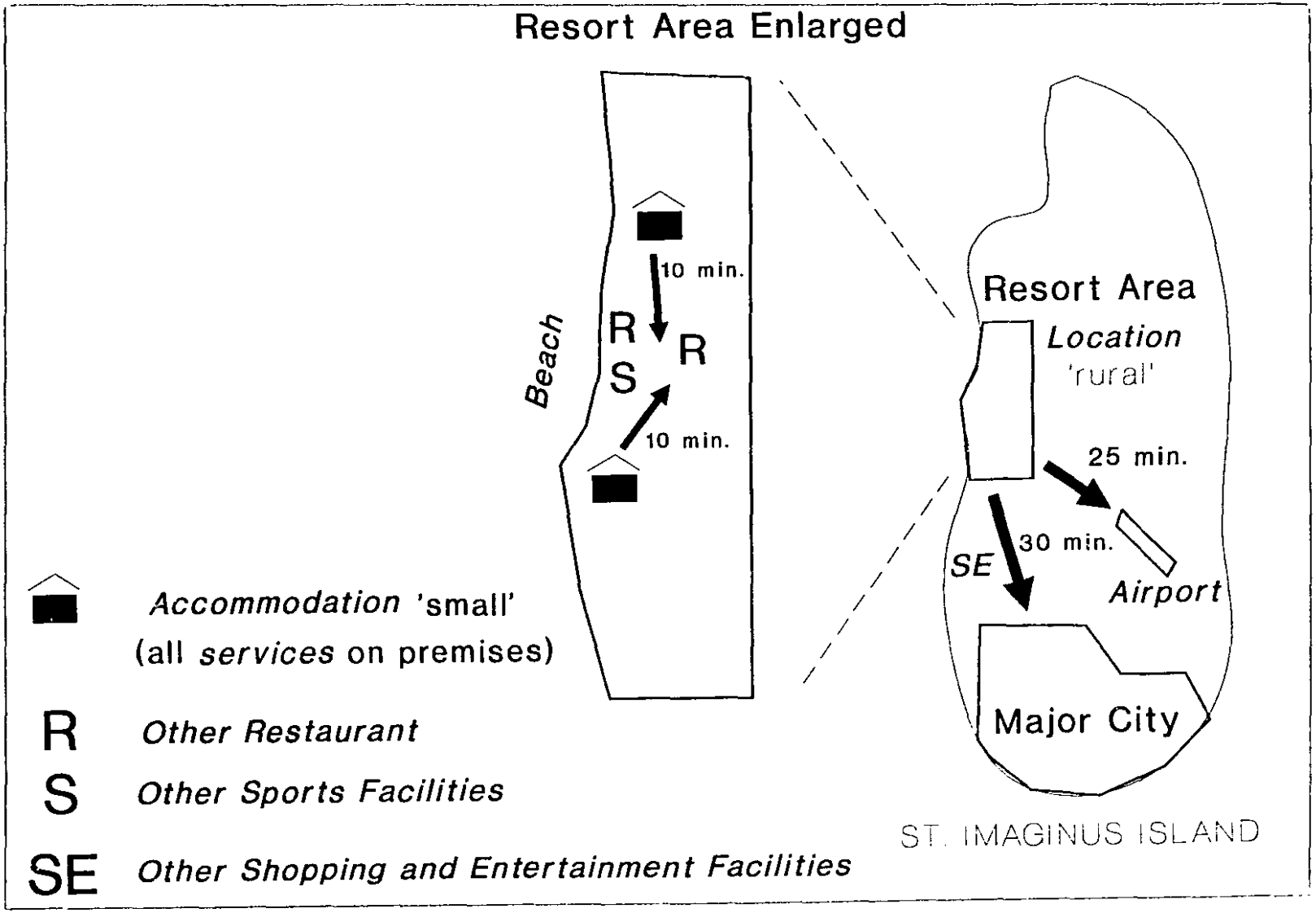
A further contradiction arises with the variable *price*. This finding is behaviourally consistent because at the extreme the market desires "luxury for nothing" the most. At the same time tourists are willing to pay up to a threshold to enjoy a satisfactory holiday experience. However, beyond the threshold they trade off less favourable aspects of the holiday for a more acceptable price.

These trade-offs also explain the major discrepancies between the most preferred scenario and the Caribbean reality. The most apparent difference is that only few resort areas remain on a low level of development (*other accommodations* 'few'). Again the explanation can be found in economies of scale, i.e. provision of auxiliary services and infrastructure, profitability of airlines and tour operators, etc..

Nevertheless this rational explanation of reality in Caribbean resorts should not lead to forsaking the experimental approach as irrelevant. One

FIGURE 6.1

POSSIBLE SPATIAL CONFIGURATION OF THE "MOST PREFERRED" SCENARIO



only needs to refer to the fact that the discussion around economies of scale is strictly based on micro-economic soundness without considering other externalities such as the social costs associated with a particular type of development.

Ultimately the decision about the type of tourism development rests with the policy-makers. Based on the results of this preliminary study the importance of locational factors is obvious. If, for example, decision-makers are serious about supporting small scale locally owned accommodation enterprises and/or auxiliary services, any incentives must go beyond mere financial assistance and include access to favourable locations as an equally important consideration.

As empirical evidence for the disadvantageous location of smaller accommodations, Haider (1982:208) found that in Tobago all six international standard hotels were located directly on the beach, while 13 medium sized establishments were located at an average distance of 680 m from the nearest beach, and small locally owned guesthouses were found at an average distance of 1400 m from the beach.

6.3. SOME ISSUES IN DESTINATION MARKETING

Despite the fact that the experimental design emphasized locational and distance variables, the results still are of relevance to marketing issues. Aspects of both these factors are frequently essential content in tourist

brochures and the information provided by travel agents. First-time visitors in particular may base their choice on such secondary information only. An indirect but nevertheless important concern for marketing is visitor satisfaction. It has been discussed before that the locational arrangement of attractions and tourist services contributes significantly to the overall image of a destination.

Potential applications to specific marketing issues are obvious. The DCE is, after all, a market research technique. One major asset of the DCE is that it requires respondents to make choices. Therefore the DCE is conceptually closer to consumer behaviour than other behavioural research techniques, which focus on the various behavioural antecedents such as perceptions, attitudes or preferences.

Its applicability for market segmentation has been discussed extensively in Section 5.9. The findings can be applied in the same manner as other market research for conceiving advertising strategies and recommending product changes. Destinations are particularly interested in issues relating to their specific situation. The segmentation results in Table 5.34 highlight country-specific differences, which are particularly useful for designing national marketing strategies. Given the intermediary function of the DCE between planning and marketing, it can be used by the destination to define the proper product-market mix (Gunn, 1988a), which basically refers to the optimal alignment between demand and supply. While Gunn assumes that the

identification of the proper mix is the expert's job, it should be self-evident from the discussion throughout this study that a properly designed DCE can be of tremendous assistance and effectively include the tourists' perspective in the decision-making process (see next section). DCE-based simulation (Section 5.10) enables the decision-maker to estimate the potential demand for a number of scenarios efficiently. Given the discussion in Chapter 1, where reference was made to the fact that in the near future one can expect the demand for all kinds of tourism products, including the winter beach vacation, to diversify further, more sophisticated market research techniques and product-market matching will gain significance.

6.4. THE DISCRETE CHOICE EXPERIMENT - AN INTEGRATIVE TOOL

From a theoretical point of view one major purpose of this study was to test the potential contribution of behavioural research to bridging the gap between destination-oriented and market-oriented tourism research. The discussion in Chapters 5 and 6 above has shown that the findings based on the DCE can be applied successfully to issues in tourism marketing and planning separately. This is because in this study the experimental design has been used to define the holiday experience in a more tangible way by specifying variables which are relevant to destination planning, and at the same time are important to the tourist's choice process as well as his/her holiday experience.

Does the behavioural approach truly provide the desired integration

between destination-oriented and market-oriented tourism research? Several interpretations about its effectiveness as a unifying approach can be made. From a neutral point of view it is obvious that the application of the same methods and behavioural assumptions by both camps leads to the same results, which in turn almost inevitably leads to the adoption of a similar jargon. Hence communication between the two tourism research camps should increase. At the one extreme, traditional destination-oriented tourism researchers will continue to argue that behavioural research - if focused on the tourist particularly - is a tradition of market-oriented tourism research. Given the paradigmatic differences between the two, they may argue that it simply remains irrelevant to the concerns and issues of destination-oriented tourism research. The opposite point of view would be that despite the biased origin of the behavioural approach, its adoption by destination-oriented tourism research actually broadens the latter's scope for several reasons. From an economic perspective an improved understanding of tourist needs is a prerequisite for any product improvement (the destination or any of its components). This fact finds acknowledgement in the term "product-market mix", explained before. For structuralists who perceive the international tourism system as unbalanced, with the locus of control in the metropolitan areas and their profit motivated corporations, one strategy to overcome the industry's lack of interest in assisting destinations in the design and marketing of socio-economically more beneficial forms of development could be precisely

the adoption of a behavioural approach partly as a "partisan strategy". This is because only if destination-oriented tourism research presents its arguments and opinions within the industry's paradigm (method, assumptions, jargon) is there any hope of achieving positive change. The discussion about the scale of development in Section 6.3 is such a case in point.

Another theoretical issue is the application of experimental research techniques and of the DCE in particular for testing theoretical concepts of tourism research. One of the examples from the simulation procedure in Section 5.10 provided some suggestions as to how the destination life-cycle (Butler, 1980) could be tested within an experimental behavioural framework.

In the example above the variable *other accommodation* accounted crudely for the changes occurring when a destination develops from one stage of the life-cycle to the next one. Unfortunately this destination choice model included aspects of the accommodation, which makes the modelling of more advanced stages of the destination life-cycle too complex a task. Future research could overcome that deficiency by combining aspects of the accommodation and destination in nested or hierarchical designs, and more importantly by specifying variables which relate to specific issues of the destination life-cycle, such as overdevelopment of the tourism capacity, which in turn leads to a too densely built up tourist area and subsequently to a perception of too crowded an environment, or environmental degradation, or hostility of the host population, or the sudden availability of more attractive

alternatives. If these issues are included in an experimental design the destination life-cycle could be operationalized from a behavioural perspective.

The connection between the destination life-cycle and experimental behavioural research is given by the fact that the life-cycle is basically demand-driven, and growth or decline of a destination depend on the tourist's satisfaction, i.e. the perceived quality of certain aspects of the destination.

If the tourist's perceptual threshold (perceptual carrying capacity) is surpassed to the point that s/he no longer perceives the destination experience as worthwhile, this particular tourist will cease to select the destination for his/her holiday. Apparently, this point is reached at stage six (decline) of Butler's destination life-cycle. This simple sequence of events in the life-cycle describes the net result of destination development, i.e. an increasing number of visitors until stage six is reached. It only holds true as long as all tourists are considered to belong to the same undifferentiated group. However, if one describes the destination life-cycle in terms of market segment composition, different market segments are predominant at different stages of the life-cycle (Haywood, 1986). This situation reflects the development process much more accurately. Visitor composition changes throughout the development process, because a tourist attracted in stage one, may find the same destination on a higher stage of development overdeveloped and therefore ceases to visit it. In other words, the perceptual carrying capacity has market segment specific thresholds.

After including market segmentation in the discussion of the destination life-cycle it should be obvious that there is also a close affiliation between the concept of the destination life-cycle, basically an academic conceptual model summarizing results of ex-post-facto research, and the concept of the proper product-market mix, which basically refers to the ideal situation decision-makers in tourist destinations desire to achieve. Given the discussion above, it is insufficient to identify the proper product-market mix for a destination at one single point in time and use it for future projections. Rather the proper product-market mix requires constant redefinition, which constitutes a balancing act of matching the dynamics of destination development (tourist facilities and infrastructure) with the appropriate market segment. If the dynamics of both demand and supply factors are actively incorporated in the decision-making process, pro-active management should become more successful. One goal of this study was to document the contribution experimental behavioural research, i.e. the discrete choice experiment, can make towards that desired integration between academic and applied research, and between destination-oriented and market-oriented tourism research. The DCE allows evaluation of numerous currently non-existent alternatives. Thus tourism managers in a destination can actually measure demand for certain preferred development options, or vice versa, can identify the development options required for attracting preferred market segments.

6.5. SUMMARY OF RESEARCH

The choice behaviour of Canadian winter beach vacationers to the Caribbean was modelled with an experimental multiattribute research technique, the discrete choice experiment (DCE). Given the lack of research on the preferences and attitudes tourists hold about destinations and/or their attributes, any assessment of the findings should be made with the understanding that the primary purpose of this study was exploratory. Thus one of the foremost objectives of this study was a rather modest one: to assess the importance of a number of variables which were deemed relevant in the destination choice process of tourists and to evaluate their relative importance among each other. Therefore emphasis in the design of the experiment was on accommodating a large number of variables. In it possible vacation scenarios were described with ten variables, each of which was manipulated on three levels. Two of these variables described the accommodation under consideration (*size*, and *services* on premise), seven referred to locational characteristics of various touristic services vis-a-vis the accommodation (*location* to local settlements, distance to *beach*, distance to *airport*, to *other accommodations* in area, to *other restaurants* in area, to *other shopping and entertainment* in area, and to *other sports facilities* in area), while the tenth variable quoted a *price* for the holiday package. Given the fact that respondents evaluated choice sets (groups of choice alternatives) instead of choice alternatives singly, five different Caribbean destinations (*country*) were

included as one further variable.

The relative importance attributed by the respondents to each of the variables included in the model was indicated by their respective t-values (Table 5.4) and produced no surprises, with distance to *beach* and *price* being by far the most significant variables. However, of the remaining eight variables, only one (*size*) did not contain at least one significantly differently preferred level.

With the emphasis of the design on the number of variables, the second purpose of the experiment, the observation of variations within each variable, i.e. its levels, suffered insofar as only three levels could be assigned to each variable. Nevertheless, interesting findings emerged on the relationship between the three levels of any one variable. For the most important locational variable, distance to *beach*, preferences for accommodations which are not directly at the beach declined rapidly with increasing distance. Similarly, the majority of respondents evaluated close proximity ('25 min') to an international *airport* as important, while an international airport in 'one hour' driving distance from the accommodation was considered only marginally preferable over a 'local airport'. Also the majority of respondents preferred a 'rural' location, while an accommodation 'in town' was the least preferred; by the same token the majority felt insecure in a completely non-touristic environment, hence 'few' *other accommodations* was the preferred level in that regard. Of particular interest were the divergent utility functions for the three

amenities which were measured in the same units of walking distance ('10 minutes', and '30 minutes' walking distance, and 'not available'). For *other restaurants* the associated utility diminished approximately linearly from the most to the least preferred level. *Shopping and entertainment facilities* proved to be much less distance sensitive, but respondents regarded their availability as important. On the other hand *sports facilities* located off the actual hotel compound had to be located in the immediate vicinity of the accommodation if they were to evoke the interest of the accommodation's clientele, because once the distance increased to 30 minutes walking they were already regarded as equal to being not available at all. Responses to the two variables referring to the accommodation were interesting, because *size* turned out to be the only variable which did not contain any significant level at all, while the variable *services* on the premise was regarded as more important than any of the locational variables with the exception of location relative to the beach. The utility function for *price* turned out to be approximately linear within the experimental domain ($690 to $1450). The results of the GV-Model suggested that respondents perceived two of the five islands (Cuba and Jamaica) much less favourably.

Market segmentation was another important aspect of the analysis. Segments were formed and analyzed for each of the socio-demographic characteristics, the behavioural characteristics relating to the respondent's last winter beach vacation, and the criteria which respondents stated as crucial in

their last choice of a winter beach vacation. For each group of segments the asymptotic t-test of equality was applied in order to identify significant differences between the respective segments.

For most of these characteristics the sample conveniently split into two segments. It turned out that significant differentiation between segments occurred more often on some variables than on others, with *distance to beach*, *services* on premises, and *other restaurants* being the variables for which most significant differences were observed, followed by *price* and *country*. For socio-demographic characteristics, significant differences occurred most frequently for the variable *services* 'restaurant only' (low income, single, bilingual, non-professional, home renters, and apartment dwellers were significantly more opposed to finding basic services only on the premises), while for the behavioural as well as the criteria based segments, both levels of *distance to beach* turned out to be the most crucial variable of distinction. Regarding the variable *country* it was of interest to observe that if significant differences occurred, they occurred between all five countries at the same time. The islands included in the study were significantly more preferred by the low income and price-sensitive segments, as well as by the culturally oriented respondents, and by those who had never visited the Caribbean before (a strong collinearity with the non-airtravelling segment and the segment not using a travel agency for their travel arrangements must be suspected).

Some characteristics required a three or four-fold segmentation. Among

these, the segment of respondents who visited Florida for their last winter beach vacation differed significantly from the other segments, especially in its attitude towards the variables distance to *beach* and *country*. Segmentation was also performed for combinations of characteristics (e.g sex and income). From the abundance of possible combinations only a few were actually modelled to serve as examples for examining how any one of the two characteristics in such a contingency table contributed more to the significant differences than the other. For example gender turned out to be one of the important characteristics, in most cases overriding any other characteristics. When the two segments of the socio-demographic characteristic income were combined with the two segments referring to price sensitivity when selecting the last vacation, the latter criterion turned out to be the stronger measure of price sensitivity as estimated in the choice model.

As expected the goodness-of-fit measure ($\bar{\rho}_2$) was extremely high for all models specified. The Likelihood-Ratio test produced a significantly better fit for the Quasi-GV-Model than the GV-Model, but it was decided that any aggregation of the alternative-specific constants (countries) was not desirable for the purpose of segmentation and simulation. At the same time, the fact that the ASV-Models (with and without cross-effects of price) did not produce significant improvements over the GV-Model allowed the conclusion that the IIA assumption (independence of irrelevant alternatives) has not been violated.

The findings enhance knowledge on the preferences tourists hold in

regard to locational aspects of a destination's facilities. The model allows separate estimates to be combined to derive probabilities of choice for any possible scenario within the domain of the experimental design. This feature also makes the model attractive for applied tourism research.

Beyond the applicability of the discrete choice experiment to tourism research, the method lends itself readily to modelling other kinds of geographical choices. The major advantage of the discrete choice experiment over other methods such as conjoint analysis, is its greater level of realism portrayed in the survey, with respondents required to select alternatives from synthetic choice sets, rather than simply rating or ranking alternatives. Therefore the DCE can realistically be applied to numerous spatial and environmental choice situations in the fields of recreation, housing, retailing, and migration.

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APPENDIX 1

COMPLETE DESIGN MATRIX

01	1102202102	2010120210	1102122210	0021102222	0000000000
02	1201220111	2011012012	2112200011	2021012010	0212221011
03	2102110222	1102200212	1120201220	0110012122	1220001121
04	2212211000	0000000000	2210102110	2000210121	0120210201
05	0011110102	1022021021	0110120122	2220201002	2201111201
06	2110220021	0111101020	1022002121	1012021020	1101020011
07	2201101201	0112020122	0122011112	1021222101	1221200212
08	2011202012	1101011110	0000000000	2012111202	0001202121
09	1121122000	0110212221	2121121001	0211120100	1010211022
10	1220110012	0001222102	1200021012	1000120212	2110002212
11	1011021222	1021102222	0220210211	2202102110	2020122011
12	0121211210	0002111201	1221100022	2211000221	1100121220
13	1022101021	1100122011	1001220111	1101201220	0121112022
14	2022012111	2201100121	2222020100	2101021102	2202010022
15	1212000210	2120002101	0211022221	0220021211	0002101212
16	0022220201	2012201111	2201211120	1220111120	1222102000
17	1000211120	0221010211	1010111101	1211210012	1102222102
18	0102021012	2122110002	0021112010	2110222210	2111201000
19	0110101111	1210001202	0202101201	0101111011	2021021102
20	2220021102	1211220001	0101202102	1202012201	0211022220
21	1110012201	0222202010	0012221020	1110102001	2200212110
22	0220202222	2121221200	2100012021	0202222022	0210120102
23	0000000000	1212112100	2020222202	2122120021	1012012201
24	2121000120	0220121112	2011001212	1122000112	0122011110
25	2000122210	2200211022	1121010200	0122210200	1011110110
26	0212122120	2202022220	2002110222	0000000000	2112100121
27	0201012021	1020210120	1212212002	0012201111	2022220220
28	2000020020	2201011200	1021222011	0012112010	0121120100
29	1101221010	0021111221	0000120112	2211011002	0012011200
30	2102100211	0111020021	2102120201	1121121211	2122201110
31	0220101120	0201202121	2010112002	0101120022	2001001122
32	0121021202	2102010122	2220010011	0020020200	0221111212
33	2012011200	2021220000	1112112121	2011200201	1002112102
34	1011102002	0210021102	2222222222	0120212102	2210101101
35	2201210102	1201120012	0211112210	1221010110	1020021011
36	2021002110	0222110110	1022010100	1202221000	1211212111
37	0010220101	0012022210	2012021210	1010021122	0100211221
38	1212022111	2000012011	2101002112	2111122100	1102100211
39	1110212220	2120221111	0001211201	1210102220	0112002012
40	2120112001	1222001001	1020101222	1110210021	2110110022
41	1122200100	0000200202	1200002201	2022111121	2222222222
42	2210201012	1000121120	0002002020	1002110202	2201010010
43	1221010021	0120112002	0120222100	2122000020	1011200220
44	0100012112	2210100211	1201120020	0212220111	1220000202
45	0211110210	2111102100	2221101100	2200100112	1202121020
46	0001202221	2222222222	2011200121	1102002101	0200202000
47	1200001201	0102201010	1110200210	0201012221	1111221002
48	1002111122	1120000220	2100211020	0112001212	0021102021
49	1020120212	2012101022	0212200002	2222222222	2010122210
50	2111121121	1111211212	0122101011	2100211210	2022210001
51	0202122000	1210212020	0121010222	0220101001	1120012120
52	0112000022	1102122201	0210021121	0001201120	0212020121
53	0022211011	1012210101	1111021002	1021202012	0000220112
54	2222222222	1021002112	1202211112	2000022011	2101022201

Notes: For details of generation see Section 4.3 in text, as well as Table 4.2 and Figure 4.1;
Each row refers to one choice set;
Each block of 10 numbers describes one choice alternative;
Each block of 9 choice sets constitutes one questionnaire;

PAGINATION ERROR.

TEXT COMPLETE.

ERREUR DE PAGINATION.

LE TEXTE EST COMPLET.

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APPENDIX 2

(pp.224-231)

EXAMPLE OF QUESTIONNAIRE

INSTRUCTIONS

When you answer PART 1, imagine each set to represent a tourist brochure that describes trips (not necessarily package tours) to several Caribbean holiday destinations. Each trip is described by 11 features which will be of varying importance to you. The descriptions are organized in sets of 5 trips each. Concentrate on and select from one set at a time. Read the descriptions of the 5 trips in one set, and then indicate in the bottom row which one of the 5 trips you would choose by placing an X into the O of the respective column. If none of the 5 trips appeals to you, you may choose between "would not go" and "would travel somewhere else". Example:

YOUR CHOICE →	O	X	O	O	O
	WOULD NOT GO	O	WOULD TRAVEL SOMEWHERE ELSE		O

Before you proceed to the questionnaire, please read the explanations below. You may refer to these explanations while making your choices.

1 COUNTRY.... Barbados, Cuba, Jamaica, Martinique, St.Vincent

YOUR ACCO

YOUR ACCOMMODATION

2 SIZE... ...250 rooms, 60 rooms, 12 rooms

3 SERVICES... (on premise)

R.....restaurant only

R,SE.....restaurant and shopping and entertainment

R,SE,Sp...restaurant, shopping and entertainment, and sports facilities

THE AREA

THE AREA AROUND THE ACCOMMODATION

4 LOCATION...in town, town close, rural

5 BEACH.....on beach, 10 minutes, or 30 minutes walking distance

6 AIRPORT....international: 25 min, or 1 hour driving distance; (direct link to Canada)

local: (implies that you must transfer after your international flight to a small commuter plane in order to reach your final destination)

7 OTHER ACCO. (-mmodations in 5 km radius) many, few, none

8 OTHER R....(Restaurants)

9 OTHER SE...(Shops and Entertainment)

10 OTHER Sp...(Sportsfacilities e.g.Golf,Scuba,Sailing)

} 10 or 30 min walking distance; or none

11 PRICE.....in Can $ for each trip includes: return airfare from Ottawa via Toronto or Montreal; accommodation for 7 days, European Plan (no meals incl.); high season; price per person, double occupancy.

For your information:

	BARBADOS	CUBA	JAMAICA	MARTINIQUE	ST.VINCENT
Size in sq.m.	166	44,200	4,400	400	100
Population	258,000	10,000 000	2,500,000	350,000	150,000
Language	English	Spanish	English	French	English
Febr.Temp. min-max °C	19-30	21-29	21-28	20-29	20-30

Survey of Beach Vacation Preferences - The Caribbean

PART 1

Set 1

	1 COUNTRY	BARBADOS	CUBA	JAMAICA	MARTINIQUE	ST•VINCENT
YOUR ACCO	2 SIZE	60	60	12	12	250
	3 SERVICES	R;SE	R;SE	R;SE;Sp	R;SE;Sp	R;SE;Sp
THE AREA	4 LOCATION	rural	rural	rural	rural	town close
	5 BEACH	on beach	on beach	10 min	on beach	on beach
	6 AIRPORT	local	local	local	intl 1h	local
	7 OTHER ACCO	many	many	few	many	none
	8 OTHER R	none	10 min	30 min	none	30 min
	9 OTHER SE	30 min	10 min	30 min	30 min	none
	10 OTHER Sp	10 min	30 min	none	30 min	30 min
	11 PRICE	$ 1410.-	$ 1415.-	$ 690.-	$ 725.-	$ 1060.-
	YOUR CHOICE →	0	0	0	0	0
		WOULD NOT GO 0		WOULD TRAVEL SOMEWHERE ELSE 0		

Set 2

	1 COUNTRY	BARBADOS	CUBA	JAMAICA	MARTINIQUE	ST•VINCENT
YOUR ACCO	2 SIZE	60	12	12	60	12
	3 SERVICES	R	R;SE;Sp	R;SE	R;SE	R;SE
THE AREA	4 LOCATION	rural	rural	rural	town close	town close
	5 BEACH	30 min	on beach	30 min	30 min	30 min
	6 AIRPORT	local	intl 25min	intl 25min	intl 1h	intl 25min
	7 OTHER ACCO	few	none	few	many	many
	8 OTHER R	30 min	none	none	none	none
	9 OTHER SE	30 min	10 min	none	none	10 min
	10 OTHER Sp	none	none	none	10 min	30 min
	11 PRICE	$ 735.-	$ 740.-	$ 960.-	$ 1060.-	$ 1380.-
	YOUR CHOICE →	0	0	0	0	0
		WOULD NOT GO 0		WOULD TRAVEL SOMEWHERE ELSE 0		

Set 3

	1 COUNTRY	BARBADOS	CUBA	JAMAICA	MARTINIQUE	ST•VINCENT
YOUR ACCO	2 SIZE	60	250	60	12	250
	3 SERVICES	R;SE	R;SE;Sp	R;SE;Sp	R;SE	R;SE
THE AREA	4 LOCATION	in town	in town	rural	rural	in town
	5 BEACH	10 min	on beach	30 min	10 min	on beach
	6 AIRPORT	intl 1h	local	intl 25min	intl 25min	intl 25min
	7 OTHER ACCO	none	many	none	none	few
	8 OTHER R	none	none	30 min	30 min	30 min
	9 OTHER SE	none	none	none	30 min	30 min
	10 OTHER Sp	10 min	30 min	30 min	10 min	30 min
	11 PRICE	$ 735.-	$ 740.-	$ 1290.-	$ 1380.-	$ 730.-
	YOUR CHOICE →	0	0	0	0	0
		WOULD NOT GO 0		WOULD TRAVEL SOMEWHERE ELSE 0		

Set 4

	1 COUNTRY	BARBADOS	CUBA	JAMAICA	MARTINIQUE	ST•VINCENT
YOUR ACCO	2 SIZE	60	12	60	250	250
	3 SERVICES	R;SE	R	R;SE	R	R
THE AREA	4 LOCATION	rural	town close	rural	in town	rural
	5 BEACH	on beach	30 min	on beach	10 min	30 min
	6 AIRPORT	local	intl 1h	intl 1h	intl 1h	intl 25min
	7 OTHER ACCO	many	none	none	many	many
	8 OTHER R	none	10 min	none	none	10 min
	9 OTHER SE	30 min	10 min	10 min	10 min	none
	10 OTHER Sp	10 min	30 min	30 min	none	10 min
	11 PRICE	$ 1410.-	$ 690.-	$ 740.-	$ 1380.-	$ 730.-
	YOUR CHOICE →	0	0	0	0	0
		WOULD NOT GO 0		WOULD TRAVEL SOMEWHERE ELSE 0		

Set 5

		1 COUNTRY	BARBADOS	CUBA	JAMAICA	MARTINIQUE	ST•VINCENT
YOUR	2	SIZE	60	12	12	12	250
ACCO	3	SERVICES	R;SE;Sp	R	R;SE	R	R;SE;Sp
	4	LOCATION	rural	town close	town close	in town	town close
	5	BEACH	10 min	10 min	on beach	10 min	on beach
THE	6	AIRPORT	local	intl 25min	local	intl 25min	local
AREA	7	OTHER ACCO	none	few	many	few	none
	8	OTHER R	10 min	none	10 min	none	30 min
	9	OTHER SE	30 min	none	none	none	none
	10	OTHER Sp	30 min	30 min	30 min	30 min	30 min
	11	PRICE	$ 1020.-	$ 1290.-	$ 1035.-	$ 725.-	$ 1050.-
		YOUR →	0	0	0	0	0
		CHOICE	WOULD NOT GO 0		WOULD TRAVEL SOMEWHERE ELSE 0		

Set 6

		1 COUNTRY	BARBADOS	CUBA	JAMAICA	MARTINIQUE	ST•VINCENT
YOUR	2	SIZE	12	60	60	250	60
ACCO	3	SERVICES	R;SE	R;SE	R;SE	R;SE	R;SE;Sp
	4	LOCATION	rural	rural	in town	town close	in town
	5	BEACH	on beach	on beach	30 min	30 min	30 min
THE	6	AIRPORT	intl 1h	local	local	intl 25min	intl 25min
AREA	7	OTHER ACCO	few	many	many	few	many
	8	OTHER R	10 min	10 min	30 min	none	30 min
	9	OTHER SE	10 min	10 min	10 min	30 min	30 min
	10	OTHER Sp	none	30 min	none	none	none
	11	PRICE	$ 1410.-	$ 1290.-	$ 740.-	$ 1380.-	$ 1050.-
		YOUR →	0	0	0	0	0
		CHOICE	WOULD NOT GO 0		WOULD TRAVEL SOMEWHERE ELSE 0		

Set 7

		1 COUNTRY	BARBADOS	CUBA	JAMAICA	MARTINIQUE	ST•VINCENT
YOUR	2	SIZE	12	250	12	12	250
ACCO	3	SERVICES	R;SE;Sp	R	R;SE;Sp	R	R;SE
	4	LOCATION	town close	rural	town close	rural	in town
	5	BEACH	on beach	30 min	30 min	30 min	30 min
THE	6	AIRPORT	local	intl 25min	intl 1h	local	local
AREA	7	OTHER ACCO	few	many	many	few	few
	8	OTHER R	30 min	10 min	none	10 min	10 min
	9	OTHER SE	none	none	30 min	30 min	10 min
	10	OTHER Sp	10 min	10 min	30 min	none	10 min
	11	PRICE	$ 735.-	$ 690.-	$ 740.-	$ 1060.-	$ 1050.-
		YOUR →	0	0	0	0	0
		CHOICE	WOULD NOT GO 0		WOULD TRAVEL SOMEWHERE ELSE 0		

Set 8

		1 COUNTRY	BARBADOS	CUBA	JAMAICA	MARTINIQUE	ST•VINCENT
YOUR	2	SIZE	250	60	250	12	12
ACCO	3	SERVICES	R	R	R;SE	R;SE;Sp	R;SE;Sp
	4	LOCATION	town close	in town	town close	in town	rural
	5	BEACH	10 min	on beach	30 min	30 min	10 min
THE	6	AIRPORT	intl 1h	intl 25min	intl 1h	local	intl 1h
AREA	7	OTHER ACCO	few	none	none	many	few
	8	OTHER R	10 min	30 min	10 min	30 min	30 min
	9	OTHER SE	30 min	none	30 min	none	10 min
	10	OTHER Sp	10 min	none	none	10 min	10 min
	11	PRICE	$ 1410.-	$ 960.-	$ 1415.-	$ 1380.-	$ 1050.-
		YOUR →	0	0	0	0	0
		CHOICE	WOULD NOT GO 0		WOULD TRAVEL SOMEWHERE ELSE 0		

Set 9

	1 COUNTRY	BARBADOS	CUBA	JAMAICA	MARTINIQUE	ST-VINCENT
YOUR	2 SIZE	12	250	60	60	60
ACCO	3 SERVICES	R;SE	R;SE	R	R	R;SE
	4 LOCATION	town close	town close	in town	town close	rural
	5 BEACH	30 min	10 min	on beach	on beach	10 min
THE	6 AIRPORT	local	intl 1h	intl 25min	intl 25min	intl 25min
AREA	7 OTHER ACCO	none	many	many	none	none
	8 OTHER R	10 min	30 min	none	30 min	10 min
	9 OTHER SE	none	none	30 min	none	none
	10 OTHER Sp	none	none	none	none	30 min
	11 PRICE	$ 1020.-	$ 690.-	$ 1035.-	$ 725.-	$ 1050.-
	YOUR →	0	0	0	0	0
	CHOICE	WOULD NOT GO 0		WOULD TRAVEL SOMEWHERE ELSE 0		

Set 10

	1 COUNTRY	BARBADOS	CUBA	JAMAICA	MARTINIQUE	ST-VINCENT
YOUR	2 SIZE	12	250	250	60	60
ACCO	3 SERVICES	R;SE;Sp	R;SE	R;SE	R	R;SE;Sp
	4 LOCATION	rural	town close	in town	in town	in town
	5 BEACH	10 min	on beach	on beach	10 min	10 min
THE	6 AIRPORT	intl 1h	intl 25min	intl 25min	local	local
AREA	7 OTHER ACCO	many	none	few	none	many
	8 OTHER R	30 min	10 min	30 min	none	10 min
	9 OTHER SE	10 min	30 min	30 min	30 min	10 min
	10 OTHER Sp	10 min	none	30 min	10 min	30 min
	11 PRICE	$ 1020.-	$ 1290.-	$ 1415.-	$ 1060.-	$ 1450.-
	YOUR →	0	0	0	0	0
	CHOICE	WOULD NOT GO 0		WOULD TRAVEL SOMEWHERE ELSE 0		

Set 11

	1 COUNTRY	BARBADOS	CUBA	JAMAICA	MARTINIQUE	ST-VINCENT
YOUR	2 SIZE	12	60	250	12	250
ACCO	3 SERVICES	R	R;SE	R	R	R
	4 LOCATION	town close	rural	rural	town close	rural
	5 BEACH	10 min	10 min	30 min	on beach	10 min
THE	6 AIRPORT	local	intl 25min	intl 25min	intl 1h	local
AREA	7 OTHER ACCO	many	few	many	few	many
	8 OTHER R	none	30 min	10 min	30 min	none
	9 OTHER SE	none	30 min	none	10 min	30 min
	10 OTHER Sp	30 min	30 min	10 min	10 min	none
	11 PRICE	$ 1410.-	$ 690.-	$ 740.-	$ 1380.-	$ 1050.-
	YOUR →	0	0	0	0	0
	CHOICE	WOULD NOT GO 0		WOULD TRAVEL SOMEWHERE ELSE 0		

Set 12

	1 COUNTRY	BARBADOS	CUBA	JAMAICA	MARTINIQUE	ST-VINCENT
YOUR	2 SIZE	60	250	12	250	60
ACCO	3 SERVICES	R;SE	R;SE	R;SE	R;SE;Sp	R
	4 LOCATION	in town	town close	in town	town close	town close
	5 BEACH	10 min	30 min	10 min	10 min	30 min
THE	6 AIRPORT	intl 1h	local	intl 1h	intl 1h	local
AREA	7 OTHER ACCO	none	few	none	none	few
	8 OTHER R	none	none	30 min	10 min	30 min
	9 OTHER SE	none	10 min	none	30 min	none
	10 OTHER Sp	10 min	none	10 min	10 min	none
	11 PRICE	$ 735.-	$ 960.-	$ 1035.-	$ 725.-	$ 1450.-
	YOUR →	0	0	0	0	0
	CHOICE	WOULD NOT GO 0		WOULD TRAVEL SOMEWHERE ELSE 0		

Beach Vacation Preferences — PART 2

1) Please indicate your sex.
- ☐ Male
- ☐ Female

2) Please indicate the age group you belong to.
- ☐ 18-24
- ☐ 25-34
- ☐ 35-44
- ☐ 45-54
- ☐ 55-64
- ☐ 65 and over

3) Please indicate your marital status.
- ☐ Single/never married
- ☐ Married
- ☐ Separated / divorced
- ☐ Widowed
- ☐ Living together

4) If you were not born in Canada, please state your country of birth. _____

5) Please specify your mother tongue. _____

6) Please indicate the languages you are able to converse in.
- ☐ English
- ☐ French
- ☐ Spanish
- ☐ Other

7) Please state the number of persons in your household. _____

8) Please indicate your total annual household income before taxes.
- ☐ under $25,000
- ☐ $25,000-$35,000
- ☐ $35,000-$45,000
- ☐ over $45,000

9) Please check the category that best describes your highest current educational level.
- ☐ Did not graduate from high school
- ☐ Graduated from high school
- ☐ Attended or finished vocational / technical school
- ☐ Attended college / university
- ☐ Finished college / bachelor's degree from university
- ☐ Attended or finished graduate / professional school

10) Please state your occupation.
- ☐ Professional
- ☐ Executive
- ☐ Manager
- ☐ Proprietor (own business)
- ☐ Clerical/white collar
- ☐ Manual/blue collar
- ☐ Student
- ☐ Housewife
- ☐ Retired

11) Please state the postal code of your home address _____

12) Please select one characteristic in both, the a) and b) section, that best describe your place of residence.

a)
- ☐ Owned
- ☐ Rented

b)
- ☐ Single family home
- ☐ Semi-detached or row house
- ☐ Apartment

13a) Do you take a vacation trip of a minimum of 7 days at least once a year?
- ☐ Yes
- ☐ No

13b) How many vacation trips have you taken within North America (Canada and US) over the past 5 years?
- ☐ 0
- ☐ 1
- ☐ 2-4
- ☐ 5 or more

13c) Have you ever taken a warm weather/beach vacation (between the month of November and April)?
- ☐ Yes
- ☐ No

14) Concerning your trips overseas or to Florida between 1980 and present, please list below to your best knowledge the month and year, length, the country or region visited, and the purpose of the trip:
e.g. 2/1982, 1 week, Jamaica, beach holiday vacation;
8/1984, 3 weeks, Western Europe, business and sightseeing.

Date	Length	Destination	Purpose

15) Please describe the following features of your last warm weather/beach vacation:

a) Destination (Country and Location): _____
Name of accommodation (if you remember): _____

b) Type of accommodation:
- ☐ All inclusive resort hotel
- ☐ Medium priced hotel
- ☐ Local guesthouse
- ☐ Condominium
- ☐ Cottage or Villa
- ☐ Club
- ☐ Other Specify: _____

c) Mode of transportation from Canada:
- ☐ Air
- ☐ Car
- ☐ Bus
- ☐ Other Specify: _____

d) Mode of booking:
- ☐ ITC (all inclusive tour charter; includes at least accommodation and transportation)
- ☐ Separate arrangements for accommodation and transportation

e) Place of booking:
- ☐ Travel agency
- ☐ Tour operator
- ☐ Airline ticket office
- ☐ Own arrangements
- ☐ Other Specify: _____

f) If you used the services of one of the businesses listed under e) for the purchase of only one component of your holiday, please indicate for which:
- ☐ Transportation from Canada
- ☐ Accommodation
- ☐ Other Specify: _____

g) Did you travel
- ☐ Alone
- ☐ As couple
- ☐ With family
- ☐ With friends
- ☐ Other Specify: _____

h) Please rank at least 3 of the criteria listed below according to their importance for your selection of this particular trip: (please assign a 1 to the most important criterion, a 2 to the second most important etc.)
- ☐ Beach
- ☐ Exotic atmosphere
- ☐ Beautiful scenery
- ☐ Nightlife
- ☐ Price
- ☐ Safe environment
- ☐ Good watersports
- ☐ Other sports activities
- ☐ Cultural activities
- ☐ Friendly local people
- ☐ North American food available
- ☐ Local food available
- ☐ Convenient air linkage to Canada

i) Which one of the following media was most influential in your destination choice:

- ☐ Repeat visit
- ☐ Recommendation by friends
- ☐ Recommendation by agent
- ☐ Tour operator brochures
- ☐ Newspaper ad
- ☐ Television ad
- ☐ Other Specify:_____

16) Are you planning to take a beach holiday vacation during the 1985/86 winter season?
- ☐ Yes
- ☐ No

17) Have you booked a beach holiday vacation for the 1985/86 winter season?
- ☐ Yes
- ☐ No

18) If you plan or have booked a warm weather/beach vacation trip for the 1985/86 season, please describe (as far as you know yet) the following features of the trip:

a) Destination (Country and Location):_____
Name of accommodation:_____

b) Type of accommodation:

- ☐ All inclusive resort hotel
- ☐ Medium priced hotel
- ☐ Local guesthouse
- ☐ Condominium
- ☐ Cottage or Villa
- ☐ Club
- ☐ Other Specify:_____

c) Mode of transportation from Canada:

- ☐ Air
- ☐ Car
- ☐ Bus
- ☐ Other Specify:_____

d) Mode of booking:

- ☐ ITC (all inclusive tour charter; includes at least accommodation and transportation)
- ☐ Separate arrangements for accommodation and transportation

e) Place of booking:

- ☐ Travel agency
- ☐ Tour operator
- ☐ Airline ticket office
- ☐ Own arrangements
- ☐ Other Specify:_____

f) If you use(d) the services of one of the businesses listed under e) for the purchase of only one component of your holiday, please indicate for which:

- ☐ Transportation from Canada
- ☐ Accomodation
- ☐ Other Specify:_____

g) Do you intend to travel

- ☐ Alone
- ☐ As couple
- ☐ With familys
- ☐ With friends
- ☐ Other Specify:_____

h) Which one of the following media was most influential in your destination choice:

- ☐ Repeat visit
- ☐ Recommendation by friends
- ☐ Recommendation by agent
- ☐ Tour operator brochures
- ☐ Newspaper ad
- ☐ Television ad
- ☐ Other Specify:_____

i) Please rank at least 3 of the criteria listed below according to their importance for your selection of this particular trip: (please assign a 1 to the most important criterion, a 2 to the second most important etc.)

- ☐ Beach
- ☐ Exotic atmosphere
- ☐ Beautiful scenery
- ☐ Nightlife
- ☐ Price
- ☐ Safe environment
- ☐ Good water sports
- ☐ Other sports activities
- ☐ Cultural activities
- ☐ Friendly local people
- ☐ North American food available
- ☐ Exotic food available
- ☐ Convenient air linkage to Canada

THANK YOU!

APPENDIX 3

SOCIO-DEMOGRAPHIC AND BEHAVIOURAL CHARACTERISTICS OF SAMPLE
BY MODE OF DATA COLLECTION

	ALL		SOURCE OF DATA									
			A		O. AGENT		FRIENDS		PAPER		MONTREAL	
	N	%	N	%	N	%	N	%	N	%	N	%
TOTAL	159		70		39		34		8		8	
SEX												
missing	1	0.63	1	1.43	.	.	.	.	.	.	.	.
male	90	56.60	40	57.14	24	61.54	21	61.76	3	37.50	2	25.00
female	68	42.77	29	41.43	15	38.46	13	38.24	5	62.50	6	75.00
AGE												
missing	1	0.63	1	1.43	.	.	.	.	.	.	.	.
18-24	13	8.18	4	5.71	7	17.95	1	2.94	.	.	1	12.50
25-34	45	28.30	24	34.29	8	20.51	9	26.47	.	.	4	50.00
35-44	60	37.74	19	27.14	14	35.90	21	61.76	5	62.50	1	12.50
45-54	26	16.35	13	18.57	7	17.95	3	8.82	2	25.00	1	12.50
55-64	13	8.18	8	11.43	3	7.69	.	.	1	12.50	1	12.50
65 +	1	0.63	1	1.43	.	.	.	.	.	.	.	.
MAR.STATUS												
single	44	27.67	22	31.43	10	25.64	8	23.53	1	12.50	3	37.50
married	82	51.57	36	51.43	20	51.28	17	50.00	5	62.50	4	50.00
sep./div.	18	11.32	5	7.14	4	10.26	6	17.65	2	25.00	1	12.50
widowed	1	0.63	1	1.43	.	.	.	.	.	.	.	.
liv. tog.	14	8.81	6	8.57	5	12.82	3	8.82	.	.	.	.
PLACE OF BIRTH												
missing	1	0.63	.	.	1	2.56	.	.	.	.	.	.
canada	116	72.96	53	75.71	26	66.67	28	82.35	5	62.50	4	50.00
usa	1	0.63	.	.	1	2.56	.	.	.	.	.	.
europe	31	19.50	15	21.43	8	20.51	5	14.71	1	12.50	2	25.00
carib	2	1.26	.	.	.	.	.	.	.	.	2	25.00
other	8	5.03	2	2.86	3	7.69	1	2.94	2	25.00	.	.
MOTHERTONGUE												
missing	4	2.52	1	1.43	3	7.69	.	.	.	.	.	.
english	99	62.26	39	55.71	25	64.10	26	76.47	5	62.50	4	50.00
french	41	25.79	22	31.43	8	20.51	7	20.59	2	25.00	2	25.00
spanish	5	3.14	3	4.29	1	2.56	.	.	.	.	1	12.50
other	10	6.29	5	7.14	2	5.13	1	2.94	1	12.50	1	12.50
LANGUAGES												
english	44	27.67	18	25.71	11	28.21	11	32.35	4	50.00	.	.
e + french	70	44.03	34	48.57	17	43.59	11	32.35	2	25.00	6	75.00
e + spanis	3	1.89	.	.	1	2.56	2	5.88	.	.	.	.
e + other	4	2.52	.	.	1	2.56	3	8.82	.	.	.	.
e + s + o	1	0.63	.	.	1	2.56	.	.	.	.	.	.
e + f + o	15	9.43	8	11.43	2	5.13	3	8.82	1	12.50	1	12.50
e + f + s	15	9.43	5	7.14	5	12.82	3	8.82	1	12.50	1	12.50
e + f +s+o	7	4.40	5	7.14	1	2.56	1	2.94	.	.	.	.

APPENDIX 3 (continued)

	ALL		SOURCE OF DATA									
			A		O. AGENT		FRIENDS		PAPER		MONTREAL	
	N	%	N	%	N	%	N	%	N	%	N	%
# OF PERSONS PER HOUSEHOLD												
.	3	1.89	2	2.86	1	2.56	.	.	.	.	.	.
1	39	24.53	18	25.71	3	7.69	12	35.29	3	37.50	3	37.50
2	49	30.82	27	38.57	11	28.21	7	20.59	.	.	4	50.00
3	22	13.84	5	7.14	8	20.51	5	14.71	3	37.50	1	12.50
4	30	18.87	9	12.86	13	33.33	6	17.65	2	25.00	.	.
5	12	7.55	6	8.57	2	5.13	4	11.76	.	.	.	.
6	4	2.52	3	4.29	1	2.56	.	.	.	.	.	.
INCOME												
missing	4	2.52	1	1.43	1	2.56	2	5.88	.	.	.	.
< $25,000	20	12.58	7	10.00	6	15.38	2	5.88	2	25.00	3	37.50
$25-$35,000	22	13.84	11	15.71	3	7.69	5	14.71	3	37.50	.	.
$35-$45,000	29	18.24	11	15.71	8	20.51	8	23.53	1	12.50	1	12.50
> $45,000	84	52.83	40	57.14	21	53.85	17	50.00	2	25.00	4	50.00
EDUCATION												
no hs	1	0.63	1	1.43	.	.	.	.	.	.	.	.
grad hs	15	9.43	9	12.86	4	10.26	2	5.88	.	.	.	.
vocational	9	5.66	4	5.71	3	7.69	.	.	2	25.00	.	.
at.coll/un	21	13.21	7	10.00	8	20.51	2	5.88	2	25.00	2	25.00
gr.coll/un	46	28.93	23	32.86	9	23.08	10	29.41	2	25.00	2	25.00
grad/prof.	67	42.14	26	37.14	15	38.46	20	58.82	2	25.00	4	50.00
OCCUPATION												
missing	1	0.63	.	.	1	2.56	.	.	.	.	.	.
profession	81	50.94	33	47.14	15	38.46	27	79.41	3	37.50	3	37.50
executive	14	8.81	10	14.29	2	5.13	2	5.88	.	.	.	.
manager	21	13.21	12	17.14	4	10.26	2	5.88	3	37.50	.	.
proprietor	3	1.89	1	1.43	2	5.13	.	.	.	.	.	.
w. collar	19	11.95	8	11.43	5	12.82	3	8.82	1	12.50	2	25.00
b. collar	4	2.52	2	2.86	2	5.13	.	.	.	.	.	.
student	7	4.40	1	1.43	4	10.26	.	.	.	.	2	25.00
housewife	4	2.52	1	1.43	3	7.69	.	.	.	.	.	.
retired	5	3.14	2	2.86	1	2.56	.	.	1	12.50	1	12.50
AREA OF RESIDENCE												
missing	13	8.18	5	7.14	4	10.26	2	5.88	2	25.00	.	.
Montreal	8	5.03	.	.	.	.	.	.	.	.	8	100.0
Hull	10	6.29	5	7.14	3	7.69	1	2.94	1	12.50	.	.
Ottawa	125	78.62	60	85.71	31	79.49	29	85.29	5	62.50	.	.
l	1	0.63	.	.	.	.	1	2.94	.	.	.	.
m	1	0.63	.	.	.	.	1	2.94	.	.	.	.
n	1	0.63	.	.	1	2.56	.	.	.	.	.	.
OWNERSHIP OF RESIDENCE												
missing	4	2.52	1	1.43	1	2.56	2	5.88	.	.	.	.
owned	98	61.64	43	61.43	29	74.36	21	61.76	5	62.50	.	.
rented	57	35.85	26	37.14	9	23.08	11	32.35	3	37.50	8	100.0

APPENDIX 3 (continued)

	ALL		SOURCE OF DATA									
			A		O. AGENT		FRIENDS		PAPER		MONTREAL	
	N	%	N	%	N	%	N	%	N	%	N	%
TYPE OF RESIDENCE												
missing	7	4.40	4	5.71	1	2.56	2	5.88	.	.	.	.
sing fam h	75	47.17	31	44.29	23	58.97	15	44.12	5	62.50	1	12.50
semi-det.	29	18.24	11	15.71	7	17.95	10	29.41	1	12.50	.	.
apartment	48	30.19	24	34.29	8	20.51	7	20.59	2	25.00	7	87.50
ANNUAL VACATION												
yes	136	85.53	64	91.43	33	84.62	26	76.47	6	75.00	7	87.50
no	23	14.47	6	8.57	6	15.38	8	23.53	2	25.00	1	12.50
# OF VACATION TRIPS OVER LAST 5 YEARS												
missing	1	0.63	.	.	1	2.56	.	.	.	.	.	.
0	9	5.66	6	8.57	1	2.56	1	2.94	1	12.50	.	.
1	18	11.32	6	8.57	4	10.26	8	23.53	.	.	.	.
2-4	69	43.40	30	42.86	16	41.03	16	47.06	3	37.50	4	50.00
5 +	62	38.99	28	40.00	17	43.59	9	26.47	4	50.00	4	50.00
EVER TAKEN A WARM WEATHER BEACH VACATION												
missing	1	0.63	1	1.43	.	.	.	.	.	.	.	.
yes	138	86.79	62	88.57	35	89.74	27	79.41	6	75.00	8	100.0
no	20	12.58	7	10.00	4	10.26	7	20.59	2	25.00	.	.
EVER VISITED THE CARIBBEAN												
missing	7	4.40	.	.	3	7.69	3	8.82	1	12.50	.	.
yes	89	55.97	35	50.00	24	61.54	17	50.00	6	75.00	7	87.50
no	63	39.62	35	50.00	12	30.77	14	41.18	1	12.50	1	12.50
LAST WINTER BEACH VACATION DESTINATION												
Missing	18	11.32	7	10.00	5	12.82	4	11.76	1	12.50	1	12.50
Barbados	9	5.66	3	4.29	1	2.56	2	5.88	1	12.50	2	25.00
Cuba	7	4.40	5	7.14	1	2.56	1	2.94	.	.	.	.
Jamaica	12	7.55	5	7.14	2	5.13	4	11.76	1	12.50	.	.
Martinique	1	0.63	1	1.43	.	.	.	.	.	.	.	.
Com. Car.	7	4.40	2	2.86	3	7.69	1	2.94	.	.	1	12.50
Fr. Car.	1	0.63	1	1.43	.	.	.	.	.	.	.	.
Dutch Car.	1	0.63	.	.	1	2.56	.	.	.	.	.	.
Mex. Car.	10	6.29	2	2.86	4	10.26	2	5.88	1	12.50	1	12.50
Venezuela	2	1.26	.	.	.	.	2	5.88	.	.	.	.
Puerto R.	1	0.63	.	.	1	2.56	.	.	.	.	.	.
Dom. Rep.	7	4.40	3	4.29	2	5.13	1	2.94	.	.	1	12.50
Bahamas	7	4.40	3	4.29	1	2.56	1	2.94	1	12.50	1	12.50
Bermudas	3	1.89	1	1.43	.	.	2	5.88	.	.	.	.
Florida	38	23.90	17	24.29	10	25.64	9	26.47	2	25.00	.	.
Mex. Pac.	10	6.29	4	5.71	5	12.82	1	2.94	.	.	.	.
Hawaii	3	1.89	1	1.43	1	2.56	1	2.94	.	.	.	.
Medit. Eu.	8	5.03	8	11.43	.	.	.	.	.	.	.	.
Medit.Oth.	5	3.14	2	2.86	1	2.56	1	2.94	.	.	1	12.50
Azores	2	1.26	1	1.43	1	2.56	.	.	.	.	.	.
South Pac.	1	0.63	1	1.43	.	.	.	.	.	.	.	.
US-Non Fl.	2	1.26	2	2.86	.	.	.	.	.	.	.	.
Ind. Ocean	2	1.26	.	.	.	.	1	2.94	1	12.50	.	.
Other 3.W.	2	1.26	1	1.43	.	.	1	2.94	.	.	.	.

APPENDIX 3 (continued)

	ALL		SOURCE OF DATA									
			A		O. AGENT		FRIENDS		PAPER		MONTREAL	
	N	%	N	%	N	%	N	%	N	%	N	%
TYPE OF ACCOMMODATION												
missing	17	10.69	7	10.00	5	12.82	4	11.76	1	12.50	.	.
incl.resor	36	22.64	12	17.14	12	30.77	9	26.47	1	12.50	2	25.00
med.hotel	44	27.67	19	27.14	10	25.64	11	32.35	3	37.50	1	12.50
guesthouse	2	1.26	2	2.86	.	.	.	.	.	.	.	.
condo	18	11.32	8	11.43	4	10.26	3	8.82	.	.	3	37.50
cottage	15	9.43	11	15.71	1	2.56	2	5.88	1	12.50	.	.
club	10	6.29	6	8.57	2	5.13	2	5.88	.	.	.	.
cruise	1	0.63	1	1.43	.	.	.	.	.	.	.	.
own boat	14	8.81	4	5.71	5	12.82	3	8.82	2	25.00	.	.
other	2	1.26	.	.	.	.	.	.	.	.	2	25.00
TRANSPORTATION FROM CANADA												
missing	18	11.32	7	10.00	5	12.82	5	14.71	1	12.50	.	.
air	131	82.39	57	81.43	34	87.18	25	73.53	7	87.50	8	100.0
car	8	5.03	6	8.57	.	.	2	5.88	.	.	.	.
bus	1	0.63	.	.	.	.	1	2.94	.	.	.	.
other	1	0.63	.	.	.	.	1	2.94	.	.	.	.
MODE OF BOOKING												
missing	18	11.32	8	11.43	5	12.82	4	11.76	1	12.50	.	.
ITC	74	46.54	31	44.29	23	58.97	14	41.18	3	37.50	3	37.50
separate	67	42.14	31	44.29	11	28.21	16	47.06	4	50.00	5	62.50
PLACE OF BOOKING												
missing	20	12.58	8	11.43	5	12.82	6	17.65	1	12.50	.	.
tr.agent	108	67.92	47	67.14	32	82.05	18	52.94	4	50.00	7	87.50
tour oper.	1	0.63	.	.	1	2.56	.	.	.	.	.	.
airline	7	4.40	3	4.29	.	.	2	5.88	2	25.00	.	.
own arrang	22	13.84	12	17.14	1	2.56	7	20.59	1	12.50	1	12.50
other	1	0.63	.	.	.	.	1	2.94	.	.	.	.
PARTIAL BOOKINGS												
missing	129	81.13	56	80.00	32	82.05	29	85.29	6	75.00	6	75.00
transpo	30	18.87	14	20.00	7	17.95	5	14.71	2	25.00	2	25.00
accommo	.	.	.	.	.	.	.	.	.	.	.	.
other	.	.	.	.	.	.	.	.	.	.	.	.
COMPANY												
missing	17	10.69	7	10.00	5	12.82	4	11.76	1	12.50	.	.
alone	15	9.43	8	11.43	1	2.56	2	5.88	2	25.00	2	25.00
as couple	54	33.96	28	40.00	13	33.33	9	26.47	2	25.00	2	25.00
as family	43	27.04	17	24.29	10	25.64	11	32.35	3	37.50	2	25.00
friends	29	18.24	9	12.86	10	25.64	8	23.53	.	.	2	25.00
other	1	0.63	1	1.43	.	.	.	.	.	.	.	.

APPENDIX 3 (continued)

	ALL		SOURCE OF DATA									
			A		O. AGENT		FRIENDS		PAPER		MONTREAL	
	N	%	N	%	N	%	N	%	N	%	N	%
MEDIA INFLUENCE												
missing	18	11.32	8	11.43	5	12.82	4	11.76	1	12.50	.	.
repeat vis	43	27.04	20	28.57	9	23.08	7	20.59	5	62.50	2	25.00
rec.friend	42	26.42	15	21.43	12	30.77	10	29.41	.	.	5	62.50
rec.agent	7	4.40	3	4.29	3	7.69	1	2.94	.	.	.	.
brochure	27	16.98	13	18.57	7	17.95	5	14.71	2	25.00	.	.
print adv.	7	4.40	5	7.14	1	2.56	1	2.94	.	.	.	.
tv adv.	2	1.26	1	1.43	1	2.56	.	.	.	.	.	.
other	13	8.18	5	7.14	1	2.56	6	17.65	.	.	1	12.50
PLANNED OR BOOKED VACATION FOR NEXT SEASON												
PLANNED												
missing	1	0.63	1	1.43	.	.	.	.	.	.	.	.
yes	74	46.54	36	51.43	25	64.10	10	29.41	1	12.50	2	25.00
no	84	52.83	33	47.14	14	35.90	24	70.59	7	87.50	6	75.00
BOOKED												
missing	1	0.63	1	1.43	.	.	.	.	.	.	.	.
yes	44	27.67	23	32.86	12	30.77	7	20.59	.	.	2	25.00
no	114	71.70	46	65.71	27	69.23	27	79.41	8	100.0	6	75.00
DESTINATION												
Missing	93	58.49	38	54.29	17	43.59	25	73.53	7	87.50	6	75.00
Barbados	5	3.14	.	.	4	10.26	.	.	1	12.50	.	.
Cuba	3	1.89	1	1.43	1	2.56	.	.	.	.	1	12.50
Jamaica	4	2.52	3	4.29	.	.	1	2.94	.	.	.	.
Martinique	1	0.63	.	.	1	2.56	.	.	.	.	.	.
Com. Car.	1	0.63	.	.	.	.	.	.	.	.	1	12.50
Fr. Car.	3	1.89	2	2.86	1	2.56	.	.	.	.	.	.
Dutch Car.	2	1.26	1	1.43	1	2.56	.	.	.	.	.	.
Mex. Car.	2	1.26	.	.	2	5.13	.	.	.	.	.	.
Venezuela	3	1.89	3	4.29	.	.	.	.	.	.	.	.
Colombia	2	1.26	1	1.43	1	2.56	.	.	.	.	.	.
Puerto R.	1	0.63	.	.	1	2.56	.	.	.	.	.	.
Dom. Rep.	5	3.14	.	.	2	5.13	3	8.82	.	.	.	.
Bahamas	3	1.89	3	4.29	.	.	.	.	.	.	.	.
Bermudas	1	0.63	.	.	.	.	1	2.94	.	.	.	.
Florida	16	10.06	8	11.43	5	12.82	3	8.82	.	.	.	.
Mex. Pac.	3	1.89	2	2.86	1	2.56	.	.	.	.	.	.
Hawaii	2	1.26	2	2.86	.	.	.	.	.	.	.	.
Medit. Eu.	2	1.26	2	2.86	.	.	.	.	.	.	.	.
Azores	1	0.63	.	.	1	2.56	.	.	.	.	.	.
Cruise	1	0.63	1	1.43	.	.	.	.	.	.	.	.
Car.unspec	1	0.63	1	1.43	.	.	.	.	.	.	.	.
Rio	1	0.63	1	1.43	.	.	.	.	.	.	.	.
US-Non Fl.	1	0.63	.	.	.	.	1	2.94	.	.	.	.
US-Virg.I.	1	0.63	1	1.43	.	.	.	.	.	.	.	.
Other 3.W.	1	0.63	.	.	1	2.56	.	.	.	.	.	.

APPENDIX 3 (continued)

	ALL		SOURCE OF DATA									
			A		O. AGENT		FRIENDS		PAPER		MONTREAL	
	N	%	N	%	N	%	N	%	N	%	N	%
TYPE OF ACCOMMADATION												
missing	88	55.35	35	50.00	15	38.46	25	73.53	7	87.50	6	75.00
incl.resor	20	12.58	8	11.43	4	10.26	6	17.65	.	.	2	25.00
med.hotel	25	15.72	12	17.14	12	30.77	1	2.94	.	.	.	.
condo	12	7.55	7	10.00	4	10.26	1	2.94	.	.	.	.
cottage	5	3.14	4	5.71	1	2.56	.	.	.	.	.	.
club	2	1.26	2	2.86	.	.	.	.	.	.	.	.
cruise	1	0.63	1	1.43	.	.	.	.	.	.	.	.
own boat	6	3.77	1	1.43	3	7.69	1	2.94	1	12.50	.	.
TRANSPORTATION FROM CANADA												
missing	89	55.97	35	50.00	16	41.03	25	73.53	7	87.50	6	75.00
air	67	42.14	34	48.57	22	56.41	8	23.53	1	12.50	2	25.00
car	1	0.63	.	.	1	2.56	.	.	.	.	.	.
other	2	1.26	1	1.43	.	.	1	2.94	.	.	.	.
MODE OF BOOKING												
missing	89	55.97	36	51.43	15	38.46	25	73.53	7	87.50	6	75.00
ITC	42	26.42	22	31.43	14	35.90	5	14.71	.	.	1	12.50
separate	28	17.61	12	17.14	10	25.64	4	11.76	1	12.50	1	12.50
PLACE OF BOOKING												
missing	87	54.72	34	48.57	15	38.46	25	73.53	7	87.50	6	75.00
tr.agent	64	40.25	31	44.29	22	56.41	8	23.53	1	12.50	2	25.00
tour oper.	3	1.89	2	2.86	1	2.56	.	.	.	.	.	.
own arrang	4	2.52	2	2.86	1	2.56	1	2.94	.	.	.	.
other	1	0.63	1	1.43	.	.	.	.	.	.	.	.
PARTIAL BOOKINGS												
missing	135	84.91	59	84.29	31	79.49	30	88.24	7	87.50	8	100.0
transpo	22	13.84	10	14.29	7	17.95	4	11.76	1	12.50	.	.
accomo	2	1.26	1	1.43	1	2.56	.	.	.	.	.	.
COMPANY												
missing	88	55.35	35	50.00	15	38.46	25	73.53	7	87.50	6	75.00
alone	6	3.77	5	7.14	.	.	1	2.94	.	.	.	.
as couple	35	22.01	15	21.43	15	38.46	2	5.88	1	12.50	2	25.00
family	16	10.06	9	12.86	4	10.26	3	8.82	.	.	.	.
friends	14	8.81	6	8.57	5	12.82	3	8.82	.	.	.	.
MEDIA												
missing	90	56.60	36	51.43	16	41.03	25	73.53	7	87.50	6	75.00
repeat	23	14.47	11	15.71	7	17.95	4	11.76	.	.	1	12.50
rec.friend	21	13.21	7	10.00	9	23.08	4	11.76	1	12.50	.	.
rec.agent	3	1.89	.	.	3	7.69	.	.	.	.	.	.
newsletter	3	1.89	.	.	3	7.69	.	.	.	.	.	.
brochure	9	5.66	8	11.43	.	.	1	2.94	.	.	.	.
print adv.	2	1.26	2	2.86	.	.	.	.	.	.	.	.
tv adv.	1	0.63	.	.	1	2.56	.	.	.	.	.	.
other	7	4.40	6	8.57	.	.	.	.	.	.	1	12.50

APPENDIX 4

GV-MODEL (PRICE CATEGORICAL)

ATTRIBUTE LEVEL	ESTIMATE	ERROR	T-VALUE
1 size 250 r	-0.06385	0.051621	-1.2369
2 size 60 r	-0.05275	0.052539	-1.0040
3 rest only	-0.42288	0.054456	**-7.7655**
4 rest & se	-0.21288	0.050844	**-4.1870**
5 loc rural	0.11517	0.052957	**2.1748**
6 loc town cl	0.07495	0.052829	1.4188
7 beach 30min	-1.09748	0.061964	**-17.7115**
8 beach 10min	-0.74329	0.050160	**-14.8184**
9 airpt 25min	0.18144	0.052194	**3.4763**
10 airpt 1 h	0.03195	0.053678	0.5952
11 o.acco-few	0.09505	0.051790	1.8354
12 o.acco-many	0.13332	0.052834	**2.5233**
13 o.rst 10min	0.24265	0.053239	**4.5577**
14 o.rst 30min	0.13169	0.053899	**2.4433**
15 o.s&e n.a.	-0.15304	0.052780	**-2.8997**
16 o.s&e 30min	-0.01727	0.050522	-0.3419
17 o.sp 10min	0.16374	0.052425	**3.1234**
18 o.sp 30min	-0.00599	0.057007	-0.1050
19 price low	0.92446	0.060145	**15.3704**
20 price medium	0.48778	0.064153	**7.6034**
21 barbados	-1.71944	0.138880	**-12.3808**
22 cuba	-2.22871	0.148391	**-15.0192**
23 jamaica	-2.21023	0.146507	**-15.0862**
24 martinique	-1.63396	0.137429	**-11.8895**
25 st.vincent	-1.84921	0.137674	**-13.4319**

APPENDIX 5

T_{EQU}-VALUES FOR THE ASV-MODEL

VARIABLE (LEVEL)	BB CU	BB JA	BB MA	BB SV	CU JA	CU MA	CU SV	JA MA	JA SV	MA SV
1 size 250 r	-0.71	0.13	-1.19	-0.30	0.77	-0.36	0.44	-1.18	-0.40	0.89
2 size 60 r	0.00	-0.15	-0.55	0.39	-0.15	-0.54	0.37	-0.37	0.53	0.95
3 rest only	-0.16	-0.99	0.01	-0.28	-0.77	0.18	-0.10	1.05	0.72	-0.31
4 rest & se	-1.87	-1.14	-1.04	-0.09	0.61	0.97	1.74	0.26	1.03	0.91
5 loc rural	1.23	-1.05	0.13	-0.35	**-2.11**	-1.09	-1.53	1.15	0.70	-0.48
6 loc town cl	-0.36	-0.64	-0.75	-0.73	-0.29	-0.34	-0.31	-0.00	0.01	0.03
7 beach 30min	-0.27	-0.52	-0.51	-0.66	-0.19	-0.14	-0.28	0.07	-0.09	-0.18
8 beach 10min	-0.60	-0.24	-0.40	-0.28	0.32	0.24	0.34	-0.11	-0.01	0.11
9 airpt 25min	-0.52	1.18	0.72	1.53	1.63	1.23	**2.00**	-0.54	0.25	0.86
10 airpt 1 h	-0.83	**2.10**	-0.74	1.08	**2.73**	0.18	1.83	**-2.83**	-1.13	1.87
11 o.acco-many	-0.89	0.01	0.03	-0.50	0.92	0.97	0.45	0.02	-0.53	-0.57
12 o.acco-few	-0.31	1.02	-0.62	-0.22	1.21	-0.21	0.11	-1.63	-1.22	0.38
13 o.rst 10min	-0.07	0.71	0.11	-0.05	0.70	0.16	0.02	-0.64	-0.77	-0.16
14 o.rst 30min	-1.80	-0.36	-1.57	-0.82	1.42	0.44	1.07	-1.14	-0.42	0.73
15 o.s&e n.a.	1.23	1.84	-0.34	1.15	0.41	-1.56	-0.28	**-2.23**	-0.79	1.55
16 o.s&e 30min	-0.13	1.34	-0.26	0.69	1.41	-0.11	0.79	-1.60	-0.70	0.97
17 o.sp 10min	0.79	0.99	**2.24**	0.88	0.14	1.08	0.00	0.95	-0.16	-1.22
18 o.sp 30min	-0.20	**2.09**	**2.86**	0.71	**2.11**	**2.80**	0.85	0.50	-1.37	**-2.03**
19 price-cont	0.04	-0.13	0.01	-0.04	-0.15	-0.03	-0.07	0.14	0.09	-0.05

T_{EQU}-VALUES FOR THE CROSSEFFECTS-MODEL

VARIABLE (LEVEL)	BB CU	BB JA	BB MA	BB SV	CU JA	CU MA	CU SV	JA MA	JA SV	MA SV
1 size 250 r	-0.71	-0.92	-1.52	-0.71	-0.17	-0.61	0.10	-0.42	0.30	0.83
2 size 60 r	0.52	-0.40	-0.10	0.43	-0.85	-0.62	-0.08	0.31	0.77	0.54
3 rest only	-0.36	-0.24	0.01	-0.59	0.09	0.39	-0.14	0.26	-0.24	-0.64
4 rest & se	-1.01	-0.77	-0.73	-0.38	0.27	0.44	0.63	0.15	0.37	0.27
5 loc rural	0.95	-1.47	-0.53	-0.48	**-2.31**	-1.45	-1.41	0.96	1.02	0.05
6 loc town cl	-0.37	-0.45	-1.08	-0.77	-0.10	-0.71	-0.36	-0.56	-0.23	0.41
7 beach 30min	-0.13	-0.55	-0.77	-0.47	-0.35	-0.50	-0.27	-0.11	0.10	0.24
8 beach 10min	-0.32	-0.34	-0.63	-0.09	-0.00	-0.22	0.22	-0.22	0.24	0.49
9 airpt 25min	-0.58	1.33	0.66	1.17	1.84	1.25	1.69	-0.78	-0.19	0.59
10 airpt 1 h	-1.58	**2.21**	-0.89	0.83	**3.37**	0.81	**2.26**	**-2.96**	-1.42	1.69
11 o.acco-many	-0.46	0.33	0.63	-0.07	0.82	1.12	0.45	0.31	-0.47	-0.83
12 o.acco-few	-0.62	1.04	0.22	0.15	1.64	0.90	0.82	-0.94	-0.99	-0.07
13 o.rst 10min	1.37	0.42	0.32	0.29	-1.01	-1.22	-1.23	-0.14	-0.17	-0.03
14 o.rst 30min	-0.94	-0.04	-1.26	-0.75	0.85	-0.19	0.24	-1.14	-0.67	0.48
15 o.s&e n.a.	0.82	1.54	-0.28	0.80	0.52	-1.05	-0.05	-1.80	-0.60	1.05
16 o.s&e 30min	0.11	1.44	-0.17	0.79	1.25	-0.28	0.63	-1.60	-0.65	0.96
17 o.sp 10min	1.45	1.75	**2.72**	1.14	0.20	0.76	-0.44	0.56	-0.68	-1.41
18 o.sp 30min	0.68	1.69	3.11	0.88	0.65	1.55	-0.00	1.05	-0.83	**-2.07**
19 price-low	0.17	0.09	0.21	0.30	-0.08	-0.00	0.06	0.10	0.18	0.09
20 price-med	1.22	0.44	-0.32	0.71	-1.03	-1.57	-0.60	-0.90	0.42	1.10

SEGMENTS (COUNTRIES) compared:

BB	Barbados	MA	Martinique
CU	Cuba	SV	St. Vincent
JA	Jamaica		

APPENDIX 6

(pp.241-251)

ESTIMATES FOR SELECTED MARKET SEGMENTS

APPENDIX 6

PARAMETER ESTIMATES FOR SELECTED MARKET SEGMENTS (GV-MODEL)

VARIABLE (LEVEL)	SEX				MARITAL STATUS				INCOME			
	Male		Female		Single		Married		Low		High	
	Est.	S.E.	Est.	S.E.	Est.	S.E.	Est.	S.E.	Est.	S.E.	Est.	S.E.
1 size 250 r	-.1127	.0684	.0050	.0801	-.0706	.0812	-.0423	.0676	-.0588	.0775	-.0669	.0699
2 size 60 r	-.0763	.0680	-.0061	.0839	-.0236	.0830	-.0617	.0693	-.0191	.0789	-.0975	.0717
3 rest only	-.4083	.0710	-.4863	.0871	-.6651	.0925	-.2703	.0693	-.5811	.0844	-.3230	.0728
4 rest & se	-.2132	.0662	-.2262	.0804	-.2503	.0795	-.1767	.0673	-.2529	.0751	-.1728	.0697
5 loc rural	.1315	.0706	.1075	.0816	.2149	.0832	.0487	.0701	.2166	.0799	.0400	.0720
6 loc town cl	.1366	.0699	.0057	.0821	.1420	.0840	.0359	.0690	.1582	.0803	.0152	.0712
7 beach 30min	-1.0622	.0829	-1.1611	.0946	-1.1341	.1013	-1.0813	.0786	-1.0695	.0886	-1.1440	.0881
8 beach 10min	-.6018	.0635	-.9661	.0844	-.6898	.0764	-.8186	.0684	-.8112	.0763	-.7090	.0675
9 airpt 25min	.1817	.0692	.1889	.0803	.2701	.0832	.1209	.0675	.3671	.0782	.0281	.0708
10 airpt 1 h	.1095	.0700	-.0917	.0845	.0862	.0854	-.0000	.0695	.0818	.0818	-.0166	.0714
11 o.acco-many	.1547	.0689	.0223	.0799	.0714	.0811	.1133	.0680	.0949	.0762	.1090	.0715
12 o.acco-few	.2279	.0710	.0300	.0814	.0919	.0829	.1494	.0699	.0382	.0797	.2201	.0721
13 o.rst 10min	.1359	.0689	.3871	.0854	.3765	.0882	.1514	.0677	.2906	.0816	.1868	.0709
14 o.rst 30min	.0268	.0703	.2742	.0857	.2512	.0887	.0478	.0691	.1829	.0815	.0780	.0730
15 o.s&e n.a.	-.0650	.0697	-.2785	.0823	-.1241	.0841	-.1635	.0688	-.1778	.0803	-.1352	.0707
16 o.s&e 30min	.0440	.0669	-.0828	.0788	-.0184	.0805	-.0058	.0662	-.0020	.0764	-.0279	.0683
17 o.sp 10min	.1893	.0688	.1269	.0824	.1351	.0824	.1947	.0684	.1432	.0788	.1917	.0708
18 o.sp 30min	.0141	.0747	-.0283	.0893	-.0683	.0898	.0514	.0742	-.0026	.0840	-.0033	.0784
19 barbados	1.0258	.2866	.3675	.3253	1.0843	.3530	.5400	.2725	1.4321	.3309	.1906	.2833
20 cuba	.4731	.2782	-.5212	.3239	.7286	.3435	-.4439	.2729	.8579	.3166	-.6294	.2846
21 jamaica	.4751	.2942	-.0049	.3312	.6969	.3606	.0028	.2786	.9404	.3317	-.2875	.2938
22 martinique	1.0632	.2860	.4951	.3274	1.1954	.3570	.6154	.2720	1.4471	.3278	.3181	.2853
23 st.vincent	1.0338	.2821	.1053	.3221	.9620	.3464	.4835	.2700	1.1898	.3242	.1941	.2802
24 price	-.0029	.0002	-.0026	.0002	-.0030	.0002	-.0026	.0002	-.0033	.0002	-.0023	.0002

APPENDIX 6

PARAMETER ESTIMATES FOR SELECTED MARKET SEGMENTS (GV-MODEL)

VARIABLE (LEVEL)	AGE						LANGUAGE				BIRTH			
	Medium		Old		Young		Engl.only		E + F		Canada		Other	
	Est.	S.E.	Est.	S.E.	Est.	S.E.	Est.	S.E.	Est.	S.E.	Est.	S.E.	Est.	S.E.
1 size 250 r	-.0247	.0840	.0023	.1014	-.1173	.0893	-.0943	.0964	-.0423	.0614	-.0198	.0606	-.1726	.0991
2 size 60 r	-.0471	.0852	-.1053	.1052	.0043	.0923	-.1107	.1004	-.0294	.0622	-.0170	.0621	-.1539	.0995
3 rest only	-.4716	.0873	-.2550	.1065	-.4986	.0970	-.2455	.0984	-.5008	.0660	-.4318	.0632	-.4434	.1083
4 rest & se	-.2824	.0818	-.0748	.0996	-.2425	.0890	-.2531	.0995	-.1893	.0594	-.2346	.0600	-.1667	.0952
5 loc rural	-.0023	.0861	.1425	.1034	.2191	.0931	.0075	.0992	.1655	.0634	.1268	.0615	.1081	.1060
6 loc town cl	.0351	.0847	-.0511	.1086	.1938	.0907	-.0285	.0996	.1251	.0629	.0581	.0620	.1123	.1024
7 beach 30min	-1.2269	.1078	-.7598	.1026	-1.2901	.1182	-.8800	.1047	-1.2057	.0781	-1.1327	.0736	-1.0242	.1151
8 beach 10min	-.7228	.0795	-.7362	.1072	-.8012	.0848	-.7447	.0993	-.7506	.0584	-.7557	.0586	-.7186	.0984
9 airpt 25min	.1621	.0838	.2229	.1019	.1703	.0916	.1373	.0988	.1989	.0617	.1445	.0607	.2824	.1017
10 airpt 1 h	-.0833	.0882	.1327	.1065	.0670	.0911	.0508	.0998	.0183	.0637	-.0097	.0622	.1218	.1059
11 o.acco-many	.0891	.0834	.0865	.1049	.1202	.0888	.0778	.0988	.1065	.0610	.1384	.0610	-.0110	.0991
12 o.acco-few	.1594	.0870	.1512	.1041	.1154	.0914	.0919	.0996	.1556	.0630	.1900	.0623	.0028	.1016
13 o.rst 10min	.0729	.0833	.2451	.1040	.4452	.0981	.2243	.0987	.2487	.0634	.2029	.0623	.3393	.1027
14 o.rst 30min	.0052	.0851	.1253	.1070	.2897	.0977	.0679	.1015	.1512	.0642	.1127	.0629	.1588	.1059
15 o.s&e n.a.	-.0054	.0847	-.2092	.1055	-.2948	.0931	-.3012	.0998	-.0946	.0626	-.1726	.0616	-.1069	.1023
16 o.s&e 30min	.0335	.0834	.0373	.0984	-.1003	.0875	-.0906	.0949	.0189	.0603	-.0435	.0591	.0590	.0985
17 o.sp 10min	.2350	.0849	.1679	.1007	.0725	.0924	.1654	.0999	.1668	.0619	.1751	.0615	.1436	.1004
18 o.sp 30min	.0204	.0920	.0039	.1105	-.0558	.0995	.0897	.1071	-.0416	.0674	.0083	.0670	-.0337	.1086
19 barbados	.4239	.3421	.9601	.4192	.8645	.3792	.6069	.3836	.7759	.2596	.7923	.2492	.5499	.4165
20 cuba	-.3112	.3438	.1359	.4139	.3325	.3631	-.7351	.3977	.3249	.2519	-.0251	.2475	.2015	.3960
21 jamaica	-.0514	.3525	.4619	.4299	.4580	.3824	-.1037	.3965	.4237	.2637	.3367	.2552	.0795	.4218
22 martinique	.7022	.3426	.6269	.4280	1.0820	.3771	.4152	.3859	.9983	.2595	.8576	.2491	.7156	.4177
23 st.vincent	.4342	.3409	.6996	.4168	.8018	.3725	.2468	.3830	.7990	.2546	.7165	.2465	.4000	.4089
24 price	-.0026	.0002	-.0026	.0003	-.0031	.0003	-.0024	.0003	-.0029	.0002	-.0028	.0002	-.0026	.0003

APPENDIX 6

PARAMETER ESTIMATES FOR SELECTED MARKET SEGMENTS (GV-MODEL)

VARIABLE (LEVEL)	EDUCATION				OCCUPATION				HOME OWNERSHIP			
	Low		High		Profes.		Other		Owned		Rented	
	Est.	S.E.	Est.	S.E.	Est.	S.E.	Est.	S.E.	Est.	S.E.	Est.	S.E.
1 size 250 r	-.0426	.0668	-.1082	.0819	-.0439	.0729	-.0848	.0735	-.0647	.0627	-.0941	.0927
2 size 60 r	-.0707	.0681	-.0592	.0841	-.0715	.0748	-.0318	.0745	-.0980	.0643	.0394	.0928
3 rest only	-.4384	.0707	-.4147	.0870	-.3027	.0746	-.5775	.0812	-.3399	.0656	-.6307	.1009
4 rest & se	-.2108	.0653	-.2047	.0813	-.1630	.0717	-.2727	.0725	-.1775	.0619	-.2824	.0891
5 loc rural	.1116	.0668	.1262	.0878	.1180	.0749	.1172	.0758	.1546	.0643	.0117	.0955
6 loc town cl	-.0188	.0688	.1815	.0842	.0675	.0753	.0962	.0749	.0537	.0653	.1240	.0915
7 beach 30min	-1.0218	.0761	-1.2432	.1088	-1.1854	.0919	-1.0264	.0847	-1.0141	.0719	-1.3430	.1261
8 beach 10min	-.7187	.0658	-.7800	.0783	-.7055	.0692	-.7902	.0735	-.7086	.0614	-.8277	.0882
9 airpt 25min	.1718	.0661	.1994	.0855	.2443	.0732	.1234	.0746	.2005	.0628	.1334	.0942
10 airpt 1 h	-.0157	.0692	.1032	.0861	.0310	.0763	.0146	.0756	-.0423	.0664	.1573	.0926
11 o.acco-many	.1275	.0663	.0612	.0843	.0769	.0729	.1057	.0742	.0818	.0626	.1192	.0934
12 o.acco-few	.1003	.0692	.1806	.0841	.1423	.0751	.1310	.0754	.0993	.0646	.2036	.0940
13 o.rst 10min	.3468	.0691	.0789	.0850	.1100	.0738	.3825	.0783	.2357	.0643	.2530	.0958
14 o.rst 30min	.1676	.0713	.0614	.0844	.0571	.0743	.2159	.0797	.1366	.0659	.1369	.0963
15 o.s&e n.a.	-.2169	.0684	-.0665	.0844	-.0436	.0749	-.2657	.0754	-.1103	.0642	-.2665	.0946
16 o.s&e 30min	-.0005	.0646	-.0208	.0825	.0627	.0726	-.0964	.0713	.0154	.0623	-.0881	.0883
17 o.sp 10min	.1929	.0675	.1232	.0848	.1885	.0732	.1412	.0760	.1577	.0630	.1732	.0952
18 o.sp 30min	.0593	.0732	-.1033	.0917	-.0474	.0798	.0331	.0818	-.0391	.0688	.0510	.1027
19 barbados	.6703	.2740	.8254	.3478	1.1754	.3050	.3083	.3030	.6867	.2582	.7732	.3849
20 cuba	.0263	.2680	.0718	.3430	.3224	.3002	-.2074	.2958	-.0451	.2559	.1588	.3742
21 jamaica	.2788	.2802	.2072	.3556	.5138	.3106	.0325	.3092	.2788	.2622	.1421	.4012
22 martinique	.7737	.2756	.8741	.3471	1.1351	.3048	.5554	.3035	.7801	.2592	.8644	.3845
23 st.vincent	.6300	.2702	.6620	.3439	.8858	.3031	.4089	.2964	.6640	.2554	.5184	.3803
24 price	-.0026	.0002	-.0030	.0002	-.0030	.0002	-.0025	.0002	-.0025	.0002	-.0033	.0003

APPENDIX 6

PARAMETER ESTIMATES FOR SELECTED MARKET SEGMENTS (GV-MODEL)

VARIABLE (LEVEL)	TYPE OF DWELLING				DATA COLLECTION				PLANNED NEXT VAC.			
	S.Home		Apartment		1 Agent		Others		Yes		No	
	Est.	S.E.	Est.	S.E.	Est.	S.E.	Est.	S.E.	Est.	S.E.	Est.	S.E.
1 size 250 r	-.0906	.0618	-.0142	.0950	-.0275	.0762	-.0878	.0705	-.0567	.0761	-.0672	.0702
2 size 60 r	-.0852	.0627	.0044	.0979	-.0872	.0803	-.0335	.0704	-.0801	.0784	-.0331	.0710
3 rest only	-.3427	.0647	-.6189	.1032	-.4213	.0818	-.4430	.0738	-.4490	.0822	-.4103	.0729
4 rest & se	-.1537	.0609	-.3348	.0926	-.2113	.0781	-.2153	.0672	-.1376	.0741	-.2741	.0696
5 loc rural	.1167	.0632	.1108	.0987	.0878	.0791	.1326	.0724	.0813	.0784	.1458	.0722
6 loc town cl	.0582	.0633	.1067	.0979	.0497	.0788	.1008	.0723	.0682	.0782	.0791	.0719
7 beach 30min	-1.0804	.0732	-1.1675	.1182	-1.0149	.0918	-1.1683	.0849	-1.0562	.0901	-1.1450	.0856
8 beach 10min	-.7351	.0601	-.7817	.0922	-.7037	.0744	-.7677	.0683	-.7864	.0759	-.7129	.0670
9 airpt 25min	.1292	.0624	.3223	.0966	.1555	.0790	.2019	.0700	.1849	.0776	.1793	.0704
10 airpt 1 h	-.0194	.0635	.1428	.1011	-.0514	.0809	.0844	.0719	.0817	.0790	-.0214	.0730
11 o.acco-many	.1178	.0613	.0407	.0979	.1325	.0788	.0697	.0695	.0874	.0773	.1008	.0699
12 o.acco-few	.1398	.0639	.1039	.0964	.1611	.0792	.1288	.0724	.1544	.0776	.1266	.0727
13 o.rst 10min	.2776	.0635	.1473	.0987	.2082	.0796	.2563	.0722	.1982	.0789	.2650	.0720
14 o.rst 30min	.1518	.0652	.0725	.0980	.0499	.0821	.1919	.0727	.1346	.0796	.1166	.0735
15 o.s&e n.a.	-.1533	.0628	-.1613	.0984	-.2184	.0798	-.1124	.0709	-.0986	.0783	-.1973	.0714
16 o.s&e 30min	-.0302	.0608	.0143	.0931	-.0661	.0758	.0189	.0683	.0126	.0754	-.0372	.0684
17 o.sp 10min	.1737	.0622	.1507	.0985	.1382	.0799	.1870	.0700	.1515	.0776	.1814	.0710
18 o.sp 30min	-.0221	.0682	.0480	.1041	-.0297	.0867	.0181	.0761	-.0237	.0844	.0145	.0773
19 barbados	.6789	.2562	.8825	.3912	.3754	.3146	1.0442	.2938	.6891	.3139	.7805	.2921
20 cuba	-.0255	.2518	.1919	.3860	-.4892	.3180	.4764	.2823	-.1618	.3103	.2460	.2847
21 jamaica	.3108	.2583	.1953	.4127	-.0973	.3258	.5736	.2974	.0377	.3237	.4835	.2963
22 martinique	.8758	.2552	.7506	.3978	.4216	.3145	1.1893	.2948	.5609	.3166	1.0734	.2911
23 st.vincent	.7111	.2519	.4960	.3909	.1268	.3153	1.0660	.2869	.3591	.3116	.8973	.2870
24 price	-.0026	.0002	-.0030	.0003	-.0024	.0002	-.0030	.0002	-.0026	.0002	-.0029	.0002

APPENDIX 6

PARAMETER ESTIMATES FOR SELECTED MARKET SEGMENTS (GV-MODEL)

VARIABLE (LEVEL)	EVER IN CARIB				LAST DESTINATION					
	Yes		No		Florida		Other		Caribbean	
	Est.	S.E.	Est.	S.E.	Est.	S.E.	Est.	S.E.	Est.	S.E.
1 size 250 r	-.1576	.0751	.0217	.0716	-.0141	.0921	.0324	.0967	-.1650	.0829
2 size 60 r	-.0683	.0746	-.0570	.0755	-.0349	.0940	-.0787	.1024	-.0559	.0823
3 rest only	-.5132	.0793	-.3513	.0760	-.3937	.0983	-.4296	.1027	-.4665	.0868
4 rest & se	-.2315	.0715	-.1987	.0731	-.2106	.0925	-.1587	.0965	-.2433	.0795
5 loc rural	.1581	.0761	.0636	.0750	.1729	.0970	.0741	.0992	.1036	.0844
6 loc town cl	.1003	.0764	.0532	.0741	.0825	.0979	.1014	.0972	.0660	.0841
7 beach 30min	-1.3208	.0988	-.9132	.0817	-.8208	.1023	-1.2066	.1223	-1.2635	.1049
8 beach 10min	-.9275	.0746	-.5702	.0693	-.4794	.0872	-.8281	.0950	-.9063	.0832
9 airpt 25min	.1797	.0744	.2068	.0740	.3064	.0945	.0705	.0995	.1662	.0821
10 airpt 1 h	.0700	.0758	-.0026	.0770	.0941	.1004	-.0626	.0982	.0369	.0843
11 o.acco-many	.0793	.0738	.1166	.0739	.1014	.0957	.1893	.0969	.0237	.0818
12 o.acco-few	.1174	.0758	.1627	.0756	.1393	.0955	.1693	.1014	.1029	.0833
13 o.rst 10min	.2239	.0754	.2612	.0757	.3014	.0966	.1286	.1011	.2722	.0833
14 o.rst 30min	.0900	.0769	.1688	.0770	.1540	.1004	.0934	.1001	.1445	.0853
15 o.s&e n.a.	-.0556	.0741	-.2628	.0766	-.1786	.0965	-.2375	.1027	-.0951	.0814
16 o.s&e 30min	-.0307	.0731	.0042	.0710	.0235	.0924	-.0090	.0943	-.0554	.0802
17 o.sp 10min	.2704	.0757	.0647	.0741	.0942	.0941	.0831	.0993	.2715	.0835
18 o.sp 30min	.0625	.0833	-.0520	.0792	-.0771	.1015	-.0669	.1080	.1019	.0914
19 barbados	.1256	.3033	1.3630	.3065	1.5137	.3899	.6629	.4096	.1752	.3344
20 cuba	-.4579	.2963	.5755	.3026	.6730	.3892	.0434	.3997	-.4281	.3258
21 jamaica	-.4079	.3125	.9600	.3124	1.0428	.4008	.2694	.4159	-.3341	.3432
22 martinique	.2396	.3035	1.4442	.3078	1.4519	.3960	.7592	.4057	.4274	.3335
23 st.vincent	.1597	.2966	1.1374	.3057	1.1762	.3904	.6150	.4065	.2312	.3253
24 price	-.0027	.0002	-.0028	.0002	-.0029	.0003	-.0027	.0003	-.0027	.0002

APPENDIX 5.6

PARAMETER ESTIMATES FOR SELECTED MARKET SEGMENTS (GV-MODEL)

VARIABLE (LEVEL)	MODE OF BOOKING				PLACE OF BOOKING				TRANSPORTATION			
	ITC		Other		Tr. Agency		Other		Air		Other	
	Est.	S.E.	Est.	S.E.	Est.	S.E.	Est.	S.E.	Est.	S.E.	Est.	S.E.
1 size 250 r	-.1398	.0757	.0112	.0716	-.1446	.0658	.0610	.0868	-.1039	.0581	.0627	.1146
2 size 60 r	-.0706	.0755	-.0304	.0743	-.0985	.0674	.0209	.0871	-.0800	.0592	-.0001	.1182
3 rest only	-.3955	.0787	-.4662	.0766	-.4936	.0701	-.3510	.0912	-.4756	.0616	-.2747	.1238
4 rest & se	-.1279	.0723	-.2850	.0719	-.1868	.0632	-.2050	.0874	-.2251	.0567	-.1383	.1174
5 loc rural	.0136	.0772	.2019	.0739	.0643	.0669	.1865	.0890	.0899	.0594	.1767	.1215
6 loc town cl	.0563	.0756	.1030	.0751	.1348	.0661	.0107	.0925	.0987	.0592	-.0064	.1224
7 beach 30min	-1.2379	.0954	-.9965	.0836	-1.3465	.0895	-.7832	.0928	-1.1781	.0719	-.8497	.1292
8 beach 10min	-.8673	.0752	-.6503	.0691	-.8862	.0651	-.5207	.0830	-.8286	.0576	-.4546	.1093
9 airpt 25min	.1236	.0749	.2376	.0729	.1145	.0649	.3273	.0907	.1995	.0584	.1022	.1179
10 airpt 1 h	.0049	.0766	.0361	.0754	-.0448	.0672	.1749	.0923	.0241	.0601	.0302	.1214
11 o.acco-many	.0767	.0755	.1156	.0721	.0593	.0661	.1709	.0873	.0948	.0584	.0918	.1172
12 o.acco-few	.1832	.0760	.1023	.0747	.1563	.0668	.1401	.0914	.1496	.0595	.1406	.1216
13 o.rst 10min	.1077	.0749	.3418	.0764	.1252	.0667	.4160	.0912	.1990	.0598	.3915	.1192
14 o.rst 30min	.0353	.0760	.2052	.0777	.0710	.0670	.2744	.0951	.1330	.0601	.1519	.1259
15 o.s&e n.a.	-.0514	.0755	-.2528	.0746	-.1066	.0661	-.2512	.0906	-.1105	.0587	-.3437	.1239
16 o.s&e 30min	.0304	.0729	-.0691	.0709	-.0268	.0636	-.0034	.0856	-.0443	.0571	.0774	.1118
17 o.sp 10min	.1522	.0747	.1637	.0742	.1464	.0658	.1652	.0901	.1856	.0589	.0584	.1184
18 o.sp 30min	-.0040	.0824	-.0046	.0794	-.0436	.0731	.0616	.0948	.0024	.0644	-.0512	.1254
19 barbados	.2032	.3048	1.2175	.3017	.1484	.2665	1.7414	.3659	.4693	.2387	1.8532	.5004
20 cuba	-.3620	.2999	.4263	.2946	-.3970	.2598	.7124	.3621	-.1881	.2350	.9993	.4787
21 jamaica	-.0725	.3112	.6137	.3075	-.2795	.2742	1.1911	.3700	-.0486	.2455	1.5651	.4976
22 martinique	.4771	.3073	1.1516	.2996	.3074	.2670	1.7088	.3659	.5987	.2392	1.7808	.4975
23 st.vincent	.3445	.2995	.9101	.2992	.2164	.2596	1.2783	.3682	.3676	.2349	1.7016	.4964
24 price	-.0027	.0002	-.0028	.0002	-.0028	.0002	-.0027	.0002	-.0027	.0001	-.0032	.0004

APPENDIX 6

PARAMETER ESTIMATES FOR SELECTED MARKET SEGMENTS (GV-MODEL)

VARIABLE (1EVEL)	ACCOMMODATION				RECOMMENDATION BY					
	Hotel, Gh		Other		Friends		Agent		Repeat V.	
	Est.	S.E.	Est.	S.E.	Est.	S.E.	Est.	S.E.	Est.	S.E.
1 size 250 r	.01863	.07064	-.16914	.07776	-.10940	.09282	-.09603	.08998	.00212	.08834
2 size 60 r	-.06167	.07216	-.03399	.07867	-.07273	.09298	-.15395	.09407	.03860	.08956
3 rest only	-.30654	.07461	-.59383	.08219	-.46419	.09858	-.32859	.09273	-.50668	.09617
4 rest & se	-.01064	.06867	-.45350	.07742	-.22998	.08993	-.19900	.08980	-.21177	.08708
5 loc rural	.08830	.07291	.13502	.07818	.19705	.09557	.11910	.09290	.02163	.09089
6 loc town cl	.07877	.07251	.07030	.07900	.09315	.09513	.09988	.09287	.01243	.09063
7 beach 30 min	-1.22571	.09067	-.99059	.08806	-1.25418	.11506	-1.20288	.11162	-.89619	.10041
8 beach 10 min	-.81650	.07010	-.68751	.07483	-.87602	.09212	-.88170	.08977	-.53401	.08357
9 airpt 25 min	.15507	.07057	.20809	.07871	.14938	.09313	.18386	.09241	.23226	.08831
10 airpt 1 h	.01582	.07258	.03421	.08022	.04198	.09308	.07794	.09440	-.04559	.09462
11 o.acco-many	.11500	.07075	.04578	.07750	.24910	.09043	.04496	.09385	-.02445	.08927
12 o.acco-few	.22226	.07268	.04496	.07904	.13134	.09955	.14220	.09116	.09201	.08929
13 o.rst 10 min	.13693	.07134	.36129	.08190	.31275	.09744	.09359	.08918	.32267	.09424
14 o.rst 30 min	.10982	.07190	.14788	.08298	.25172	.09821	-.11098	.09268	.24921	.09498
15 o.s&e n.a.	-.11177	.07189	-.20507	.07948	-.33816	.09664	-.04533	.09348	-.09694	.08839
16 o.s&e 30 min	-.01451	.06939	-.02881	.07571	-.04842	.08908	.10756	.08854	-.08970	.08962
17 o.sp 10 min	.11436	.07068	.21570	.07962	.28452	.09443	.17374	.09178	.06902	.08924
18 o.sp 30 min	-.07559	.07677	.07489	.08705	.06652	.10380	-.00833	.10011	-.06968	.09579
19 barbados	.58045	.29305	.87075	.31816	.95082	.38920	.68950	.37230	.54222	.36276
20 cuba	-.04989	.28516	.09754	.31601	.43587	.36693	-.13121	.36501	-.25094	.37223
21 jamaica	.06873	.29719	.46182	.32726	.63623	.38746	-.16369	.38786	.27862	.37195
22 martinique	.61737	.29486	1.01249	.31838	1.05457	.38681	.51241	.37276	.88835	.36405
23 st.vincent	.45041	.28975	.83564	.31440	.93271	.38050	.33206	.36909	.64747	.35730
24 price	-.00277	.00023	-.00283	.00026	-.00319	.00031	-.00262	.00030	-.00268	.00029

APPENDIX 6

PARAMETER ESTIMATES FOR SELECTED MARKET SEGMENTS (GV-MODEL)

VARIABLE (LEVEL)	BEACH				ATMOSPHERE				NIGHTLIFE			
	Yes		No		Yes		No		Yes		No	
	Est.	S.E.	Est.	S.E.	Est.	S.E.	Est.	S.E.	Est.	S.E.	Est.	S.E.
1 size 250 r	-.1259	.0846	.0349	.0685	-.0093	.0764	-.1081	.0704	-.0458	.1160	-.0657	.0581
2 size 60 r	-.1036	.0846	.0025	.0713	.0133	.0766	-.1184	.0729	-.0387	.1136	-.0546	.0601
3 rest only	-.3777	.0899	-.5660	.0729	-.5345	.0799	-.3427	.0752	-.2961	.1198	-.4586	.0618
4 rest & se	-.1620	.0839	-.3281	.0676	-.3459	.0752	-.1020	.0696	-.1559	.1118	-.2195	.0572
5 loc rural	.0050	.0875	.0722	.0701	.1046	.0769	.1175	.0737	.1156	.1192	.1066	.0596
6 loc town cl	.0216	.0850	.0464	.0697	.0572	.0767	.0722	.0740	.0315	.1215	.0824	.0593
7 beach 30min	-1.1235	.1047	-1.2313	.0866	-1.2586	.0976	-.9947	.0813	-.8816	.1233	-1.1752	.0729
8 beach 10min	-.6394	.0796	-.8432	.0678	-.7830	.0729	-.7202	.0699	-.5696	.1095	-.7939	.0569
9 airpt 25min	.1712	.0881	.1617	.0694	.0636	.0761	.2700	.0724	.2173	.1134	.1846	.0590
10 airpt 1 h	.0300	.0883	.0280	.0707	-.0035	.0763	.0596	.0757	-.0846	.1218	.0553	.0601
11 o.acco-many	.0871	.0846	.1338	.0688	.1031	.0745	.0973	.0726	-.0259	.1144	.1223	.0585
12 o.acco-few	.1611	.0885	.1682	.0709	.1227	.0788	.1559	.0723	.1275	.1205	.1310	.0597
13 o.rst 10min	.3871	.0879	.2335	.0701	.3274	.0792	.1550	.0724	.2776	.1164	.2318	.0602
14 o.rst 30min	.1834	.0915	.0680	.0716	.1846	.0795	.0769	.0743	.1570	.1205	.1273	.0609
15 o.s&e n.a.	-.1968	.0877	-.1949	.0701	-.1493	.0771	-.1620	.0729	-.1972	.1175	-.1491	.0596
16 o.s&e 30min	.0114	.0828	-.0280	.0667	.0036	.0741	-.0379	.0698	-.0050	.1143	-.0231	.0569
17 o.sp 10min	.1661	.0875	.1762	.0697	.1129	.0761	.2023	.0726	.1701	.1141	.1704	.0596
18 o.sp 30min	.0891	.0931	-.0095	.0763	-.0252	.0829	.0028	.0791	-.0267	.1221	.0020	.0650
19 barbados	.7648	.3639	.6101	.2848	.5250	.3118	.8774	.2947	1.4136	.4743	.5599	.2419
20 cuba	.2992	.3543	-.0402	.2784	.1274	.3002	-.0330	.2955	.1885	.4889	-.0374	.2360
21 jamaica	.5543	.3682	.1423	.2926	.3768	.3135	.1497	.3062	1.2511	.4697	-.0137	.2502
22 martinique	1.1809	.3632	.6919	.2863	.8870	.3091	.7680	.2983	1.6648	.4699	.6035	.2431
23 st.vincent	.8974	.3585	.6074	.2795	.6278	.3070	.6244	.2930	1.5281	.4774	.4121	.2384
24 price	-.0027	.0002	-.0029	.0002	-.0029	.0002	-.0026	.0002	-.0030	.0003	-.0027	.0001

APPENDIX 6

PARAMETER ESTIMATES FOR SELECTED MARKET SEGMENTS (GV-MODEL)

VARIABLE (LEVEL)	PRICE				SAFE ENVIRONMENT				WATERSPORTS			
	Yes		No		Yes		No		Yes		No	
	Est.	S.E.	Est.	S.E.	Est.	S.E.	Est.	S.E.	Est.	S.E.	Est.	S.E.
1 size 250 r	-.0887	.0635	.0057	.0918	.0326	.0751	-.1503	.0721	-.0320	.1041	-.0678	.0601
2 size 60 r	-.0957	.0647	.0065	.0939	-.0281	.0759	-.0685	.0741	-.0192	.1020	-.0672	.0623
3 rest only	-.2995	.0674	-.6868	.0970	-.3459	.0797	-.5150	.0765	-.4832	.1092	-.4094	.0635
4 rest & se	-.0694	.0625	-.5242	.0933	-.1532	.0757	-.2554	.0691	-.2426	.1015	-.2026	.0592
5 loc rural	.1172	.0664	.1285	.0897	.1771	.0777	.0776	.0736	.2660	.1072	.0731	.0616
6 loc town cl	.0680	.0652	.0701	.0937	.0611	.0788	.0985	.0728	.1947	.1087	.0375	.0616
7 beach 30min	-1.1865	.0778	-.9802	.1064	-.9094	.0855	-1.2833	.0917	-1.0475	.1174	-1.1257	.0734
8 beach 10min	-.8187	.0628	-.6246	.0876	-.5996	.0716	-.8708	.0714	-.7493	.0987	-.7409	.0588
9 airpt 25min	.1589	.0640	.2034	.0928	.1802	.0773	.1960	.0717	.1849	.1045	.1851	.0606
10 airpt 1 h	.0372	.0659	-.0003	.0951	.0201	.0789	.0310	.0737	.0955	.1041	.0004	.0631
11 o.acco-many	.0560	.0635	.2027	.0942	.1206	.0759	.0837	.0718	.0595	.0990	.1210	.0610
12 o.acco-few	.0962	.0653	.2150	.0938	.1291	.0775	.1434	.0737	.1234	.1058	.1548	.0619
13 o.rst 10min	.2950	.0652	.1060	.0944	.1687	.0771	.3105	.0749	.2226	.1042	.2431	.0624
14 o.rst 30min	.1556	.0665	.0777	.0951	.1061	.0794	.1842	.0756	.0607	.1069	.1580	.0634
15 o.s&e n.a.	-.1713	.0655	-.1873	.0937	-.1887	.0788	-.1326	.0723	-.1363	.1038	-.1503	.0616
16 o.s&e 30min	.0274	.0628	-.0863	.0886	-.0017	.0738	-.0382	.0705	-.0113	.1020	-.0086	.0588
17 o.sp 10min	.1337	.0644	.2616	.0936	.0954	.0765	.2174	.0731	.0944	.1030	.1899	.0614
18 o.sp 30min	-.0097	.0697	.0169	.1024	-.0397	.0822	.0427	.0804	-.0062	.1086	-.0104	.0674
19 barbados	1.2112	.2671	-.1307	.3738	.6745	.3112	.8413	.2988	.9470	.4183	.6470	.2508
20 cuba	.5795	.2558	-1.0908	.3873	-.0357	.3148	.1260	.2855	-.0538	.4225	.0298	.2447
21 jamaica	.6952	.2703	-.6036	.3888	.4176	.3181	.1327	.3062	.7980	.4129	.0259	.2599
22 martinique	1.3789	.2648	-.2654	.3810	.7980	.3131	.9094	.2982	1.3064	.4080	.6150	.2539
23 st.vincent	1.1573	.2617	-.3685	.3772	.5035	.3145	.7719	.2887	.9110	.4201	.5125	.2466
24 price	-.0034	.0002	-.0016	.0002	-.0023	.0002	-.0031	.0002	-.0031	.0003	-.0026	.0002

APPENDIX 6

PARAMETER ESTIMATES FOR SELECTED MARKET SEGMENTS (GV-MODEL)

VARIABLE (LEVEL)	OTHER SPORTS				CULTURE				LOCAL PEOPLE			
	Yes		No		Yes		No		Yes		No	
	Est.	S.E.	Est.	S.E.	Est.	S.E.	Est.	S.E.	Est.	S.E.	Est.	S.E.
1 size 250 r	-.0275	.1053	-.0739	.0599	-.0838	.0941	-.0544	.0621	-.0183	.0831	-.0959	.0665
2 size 60 r	.0849	.1057	-.1001	.0614	-.1665	.0974	-.0203	.0633	-.0661	.0828	-.0592	.0694
3 rest only	-.4185	.1090	-.4423	.0635	-.2566	.1029	-.4905	.0649	-.4065	.0895	-.4422	.0696
4 rest & se	-.2934	.1041	-.1911	.0587	-.0322	.0956	-.2792	.0606	-.2012	.0840	-.2050	.0645
5 loc rural	.1330	.1097	.1111	.0613	.0642	.1003	.1320	.0630	.0617	.0855	.1494	.0683
6 loc town cl	.1470	.1076	.0575	.0615	.1247	.0979	.0488	.0634	-.0142	.0864	.1255	.0679
7 beach 30min	-.6489	.1105	-1.2699	.0773	-.9328	.1083	-1.1810	.0766	-.9013	.0937	-1.2421	.0840
8 beach 10min	-.3509	.0974	-.8668	.0594	-.5529	.0912	-.8343	.0613	-.5586	.0798	-.8687	.0655
9 airpt 25min	.1481	.1017	.1897	.0610	.2085	.0989	.1946	.0620	.1271	.0849	.2339	.0667
10 airpt 1 h	-.0489	.1115	.0439	.0616	-.0035	.1016	.0519	.0637	.0280	.0863	.0297	.0688
11 o.acco-many	-.0441	.1069	.1365	.0599	.0651	.0961	.1117	.0623	.0674	.0836	.1146	.0665
12 o.acco-few	.0583	.1051	.1586	.0619	.1247	.1008	.1438	.0630	.1170	.0871	.1249	.0677
13 o.rst 10min	.1939	.1071	.2482	.0616	.3668	.1010	.1979	.0631	.4178	.0887	.1353	.0681
14 o.rst 30min	.0696	.1086	.1511	.0627	.2863	.1044	.0727	.0639	.2948	.0915	.0358	.0683
15 o.s&e n.a.	-.1410	.1041	-.1690	.0619	-.3456	.1023	-.0872	.0624	-.2786	.0852	-.0667	.0682
16 o.s&e 30min	-.0943	.1051	.0100	.0583	-.0681	.0934	.0071	.0606	-.1268	.0820	.0577	.0654
17 o.sp 10min	.1903	.1056	.1540	.0609	.1205	.0973	.1865	.0629	.1536	.0853	.1746	.0677
18 o.sp 30min	.0506	.1138	-.0296	.0667	-.0689	.1052	.0245	.0684	.0601	.0911	-.0454	.0742
19 barbados	.9369	.4249	.6486	.2506	1.6731	.4138	.4116	.2525	.7285	.3430	.7618	.2766
20 cuba	-.0400	.4349	.0040	.2440	.7738	.4074	-.2083	.2474	-.0163	.3503	.0819	.2662
21 jamaica	1.0509	.4253	-.0510	.2587	1.3880	.4121	-.1619	.2622	.5990	.3494	.0598	.2835
22 martinique	1.2348	.4229	.6652	.2517	1.6552	.4136	.5340	.2531	1.1176	.3455	.6563	.2763
23 st.vincent	.7755	.4258	.5549	.2464	1.4449	.4125	.3751	.2484	.6836	.3445	.6332	.2705
24 price	-.0027	.0003	-.0028	.0002	-.0029	.0003	-.0027	.0002	-.0026	.0002	-.0029	.0002

APPENDIX 6

PARAMETER ESTIMATES FOR SELECTED MARKET SEGMENTS (GV-MODEL)

VARIABLE (LEVEL)	AMERICAN FOOD				LOCAL FOOD				AIR LINKAGE			
	Yes		No		Yes		No		Yes		No	
	Est.	S.E.	Est.	S.E.	Est.	S.E.	Est.	S.E.	Est.	S.E.	Est.	S.E.
1 size 250 r	.0584	.1254	-.1024	.0572	-.0756	.1095	-.0658	.0586	-.1914	.0795	.0349	.0685
2 size 60 r	.0049	.1265	-.0805	.0589	-.1171	.1118	-.0480	.0599	-.1202	.0784	.0025	.0713
3 rest only	-.2139	.1321	-.4731	.0607	-.2815	.1191	-.4621	.0615	-.2235	.0835	-.5660	.0729
4 rest & se	-.1034	.1277	-.2252	.0558	-.0247	.1120	-.2556	.0573	-.0317	.0784	-.3281	.0676
5 loc rural	.1887	.1293	.0945	.0587	.1324	.1150	.1127	.0600	.1953	.0822	.0722	.0701
6 loc town cl	.0839	.1335	.0851	.0584	.1051	.1145	.0680	.0600	.1305	.0828	.0464	.0697
7 beach 30min	-.6905	.1346	-1.1990	.0713	-.8224	.1212	-1.1883	.0731	-.9286	.0898	-1.2313	.0866
8 beach 10min	-.3505	.1179	-.8303	.0566	-.5582	.1055	-.7907	.0573	-.5990	.0751	-.8432	.0678
9 airpt 25min	-.0047	.1266	.2312	.0579	.1077	.1122	.2068	.0590	.2003	.0791	.1617	.0694
10 airpt 1 h	-.0657	.1278	.0555	.0595	-.0576	.1160	.0532	.0606	.0052	.0833	.0280	.0707
11 o.acco-many	.0843	.1239	.0928	.0576	.0354	.1104	.1141	.0589	.0434	.0799	.1338	.0688
12 o.acco-few	.1090	.1331	.1373	.0585	.0774	.1137	.1508	.0602	.0902	.0805	.1682	.0709
13 o.rst 10min	.3543	.1310	.2204	.0588	.3546	.1175	.2134	.0600	.2593	.0831	.2335	.0701
14 o.rst 30min	.2593	.1367	.1192	.0595	.2549	.1210	.1013	.0608	.2310	.0839	.0680	.0716
15 o.s&e n.a.	-.2763	.1318	-.1162	.0581	-.2743	.1134	-.1210	.0598	-.1126	.0810	-.1949	.0701
16 o.s&e 30min	.0083	.1218	-.0171	.0563	-.1342	.1096	.0176	.0573	-.0037	.0788	-.0280	.0667
17 o.sp 10min	.0974	.1293	.1790	.0582	.1225	.1150	.1734	.0593	.1367	.0803	.1762	.0697
18 o.sp 30min	.0389	.1345	-.0095	.0637	.0609	.1207	-.0205	.0648	-.0064	.0864	-.0095	.0763
19 barbados	1.3857	.5275	.6102	.2367	1.0333	.4613	.6531	.2424	.8890	.3279	.6101	.2848
20 cuba	.6550	.5160	-.0937	.2321	.2004	.4700	-.0145	.2364	.1192	.3239	-.0402	.2784
21 jamaica	1.3774	.5200	.0112	.2440	.8871	.4665	.0914	.2486	.4024	.3331	.1423	.2926
22 martinique	1.4424	.5226	.6883	.2378	1.4524	.4559	.6521	.2439	.9875	.3263	.6919	.2863
23 st.vincent	1.3571	.5333	.4802	.2324	1.2088	.4576	.4879	.2388	.6645	.3260	.6074	.2795
24 price	-.0029	.0004	-.0027	.0001	-.0030	.0003	-.0027	.0001	-.0025	.0002	-.0029	.0002