

# Robustness of Distance Decay for International Pleasure Travelers: A Longitudinal Approach

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## ABSTRACT

**Distance decay explains tourism demand in terms of destination distance from the origin. Although travelers tend to travel further over time, scant research studies have examined the relationship between temporal variant and distance decay. This study examines the relationship between distance and destination choice of Hong Kong international pleasure travelers' activity over a decade. A constant pattern of distance decay with two secondary peaks was identified for a decade. This study suggests a threshold of a three-hour flight for a five-day trip before demand declined exponentially. The findings imply that the no traveling zone would result from weak pulling power. Copyright © 2011 John Wiley & Sons, Ltd.**

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**Keywords:** distance decay; time-series approach; threshold; Hong Kong; international pleasure traveler.

## INTRODUCTION

Travelers choose a destination depending on their travel motivation. Tourism researchers have examined push and pull factors to explain travel motivation. Push factors are intrinsic motivators like values and personality (Uysal and Jurowski, 1994; Keating and Kritz,

2008). Pull factors are attributes that emerge as a result of attractiveness of a destination. Beerli and Martin (2004) identified nine areas of pull factors including natural attractions; general infrastructure; tourist infrastructure; leisure and recreation; art, history and culture; politics and economics; the environment; social issues; and atmospheres. Travelers' assessment of push and pull factors in destination choice is idiosyncratic and situational (Christopher, 1982; Ravald and Gronroos, 1996; Bowen and Shoemaker, 2003). You *et al.* (2000) found that Japanese travelers viewed relaxation as more important, whereas UK travelers view knowledge enhancement and visiting friends and relatives (VFR) as more important. Western travelers perceived uncertainty as a part of travel experience, whereas Asian societies are less tolerant to uncertainty (Hofstede, 1997; Reisinger *et al.*, 2009).

Distance influences travelers' destination choice. It does not mean that potential travelers choose destinations purely based on distance. Instead, it means that distance plays a role as cost in destination decision making. Consumer behavior researchers suggest that consumers weigh the components of perceived benefits and costs differently (Christopher, 1982; Zeithaml, 1988; Sweeney and Soutar, 2001), and travel behavior reflects trade-off between benefits (e.g. destination attractiveness and excitement) and costs (e.g. traveling time and money) (Keating and Kritz, 2008; McKercher *et al.*, 2008; Cai and Li, 2009). Compared with short-haul destinations, distant destinations are related to higher costs – whether they are perceived or absolute ones – and they should offer stronger benefits to balance out the increased costs.

Over the last decade, the air transport industry had experienced continuous growth. The International Civil Aviation Organization reported

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that the number of passengers carried worldwide on schedule service in 2000 was over 1.6 billion (ICAO, 2000) and forecasted that world passenger-kilometers growth until 2012 would be around 5% per annum (ICAO, 2010). The growth in passenger-kilometers, computed from the number of kilometers traveled by dividing all passengers carried, indicates that passengers travel further. Given the continuous growth in travel distance among air passengers, it is reasonable to assume that a distance decay curve might be transformed by temporal variant. However, scant research has investigated the effect of temporal variant on the distance decay.

Of limited research on distance decay, the study by McKercher and Lew (2003) examined distance decay with Hong Kong international air travelers. Although their study projected the existence of no travel zone with one-year data, the study of using cross-sectional data by McKercher and Lew did not provide enough insight about the movement over a significant period. This study takes a longitudinal approach by investigating the impact of distance on international pleasure travel behavior of Hong Kong residents with panel data for a period of 10 years. As traveling time to distant destination would be shortened over a decade owing to faster and cheaper transportation, which might encourage travelers to move further and gradually distort distance curve, a time-series approach helps to examine a pattern across time rather than a situation at a time (Glass *et al.*, 2008). With 10 years' data, the finding of this study would be more meaningful to test the theory of distance decay. This study excluded Mainland China and Macau Special Administrative Region (SAR) from analysis because these destinations do not fall into the definition of 'international travel'. Merriam-Webster's dictionary (International, 2009) defines international as 'of, relating to, or affecting two or more nations'. As an SAR is a provincial-level administrative division in China, the relationship between Mainland China and its two SARs, Macau and Hong Kong, is not strictly 'international'. Thus, exclusion of Mainland China and Macau SAR from the study provides more validity of distance decay for international traveling. The major contribution of this study is thus to further

enhance the existing knowledge of travelers' behavior in the context of traveling distance. In terms of practical implications, practitioners and policy-makers in different destinations can then use the findings of this study to set up appropriate plans to attract Hong Kong travelers, a group of affluent customers.

## LITERATURE REVIEW

A trip to any destination requires time and money. As distance from the origin increases, the composite cost of time and money increases. Since potential travelers do not have unlimited resources, their demand to travel further decreases as distance from the origin increases. Greer and Wall (1979) empirically examined the relationships between distance and demand among four different activities (i.e. day use, cottages, camping and resorts) and found that demand increases with distance up to a certain distance. After that level, demand decreases as distance increases. With the findings from Greer and Wall (1979) as basis, Bull (1991) proposed a lognormal curve for distance decay functions for tourist travel, which represents a peak demand before demand decreases exponentially. Original distance decay curve shows exponential demand decrease after a peak, but McKercher (1998) identified plateauing distance decay curve with Australian automobile travelers. The high demand was maintained for a longer distance before declining rapidly. He explained that the plateauing demand was caused by a finite number of destination choices along with a linear traveling route, and the impact of market access was found to be minimal on travel demand in his study.

McKercher and Lew (2003) identified another distance decay curve with a secondary peak among Hong Kong international air travelers. In their study, a demand peak was identified before exponential declining similar to the original distance decay, but no demand existed for a certain distance before another demand peak appeared. No travel demand zone was classified as the effective tourism exclusion zone (ETEZ), the area where no tourism activity effectively occurs. Travelers have no interests in visiting the destinations in the ETEZ because the areas are inaccessible geographically such as

oceans, deserts, unpopulated areas (spatial voids) or unattractive in market-wise (product voids) (McKercher and Lew, 2003; McKercher *et al.*, 2008). McKercher and Lew (2003) suggested that the proximity to the source market and the width of the ETEZ have an impact on distortion of the original distance decay curve. If the ETEZ is close to the source market but narrow, its impact on distance curve is minimal. Similarly, if the ETEZ is far away from the source market, it has no impact on travelers' demand. However, the wide but distant ETEZ occurring after the peak would shift the curve to the right. In such a case, a peak appears in the further distance from the source market before declining exponentially. The ETEZ that is a bit wide, closer to the source market and occurs after a peak produces a secondary peak passing the ETEZ.

In addition to spatial and product voids to explain the ETEZ, researchers have focused on barriers such as physical, socio-cultural and psychological barriers. Government restrictions, such as limit on travelers' foreign exchange daily spending and visa requirement (Edgell, 1988; Nyaupane and Andereck, 2008), language barriers (Mancini-Cross *et al.*, 2009) and travel agents' negative attitude (Takeda and Card, 2002), are examples of barriers to traveling. Risk concerns like safety about destinations are other factors for travelers to amend tourism plan (Slevitch and Sharma, 2008).

In addition to topics on what prevents travelers from traveling, research on why people travel is another main research area in tourism. Demand for traveling has been examined with pull and push motivations. Motivation theory suggests that intrinsic and extrinsic motivations influence human behavior and value evaluation (Davis *et al.*, 1992; Mattila, 1999). Intrinsic motivations, such as pleasure, novelty and altruism, associate with performing a behavior per se, whereas extrinsic motivation, such as monetary/time saving, self-enhancement, and social adjustment, is tied with external rewards for the purpose of accomplishing a goal. In tourism research, motivation has been discussed with push and pull factors (Crompton, 1979; Cha *et al.*, 1995; Yoon and Uysal, 2005; Kim, 2008). Push motivation is related to travelers' desire, and pull motivation is related to attributes of destination choices (Yoon and

Uysal, 2005). Rest and relaxation, getaway from routine, adventure, excitement and family unity/bond are examples of push motivation. Destination attractiveness, such as beaches, cultural attractions, shopping and natural scenery, is associated with pull motivation. Based on push and pull motivations, Crompton (1979) developed seven socio-psychological motives to travel including escape from a perceived mundane environment, exploration and evaluation of self, relaxation, prestige, regression, enhancement of kinship relationships and facilitation of social interaction.

Push and pull motivation research have been widely conducted on cross-culture contexts (You *et al.*, 2000; Zhang *et al.*, 2004; Kao *et al.*, 2008; Rittichainuwat, 2008; Sangpikul, 2008). You *et al.* (2000) found that UK travelers had different push and pull motivations from Japanese travelers. For example, UK travelers viewed knowledge enhancement, VFR, being together as a family, finding excitement and experiencing a new and different lifestyle as being more important; whereas Japanese travelers viewed relaxation as being more important. Sangpikul (2008) identified push motivation of Japanese senior travelers to Thailand as novelty and knowledge seeking, rest and relaxation and ego-enhancement, whereas pull motivation as cultural and historical attractions, travel arrangements and facilities, shopping and leisure activities, and safety and cleanliness. Kao *et al.* (2008) found that Taiwanese travelers took trips to Australia to meet new people, get away from demands from home and experience prestigious feeling. Australia 'pulls' Taiwanese travelers with sunshine and scenery, a place to go for good value, famous attractions and a good environment for family traveling. Among these pulling factors, safety was found to be the most important. Zhang *et al.* (2004) found that destination choices of Hong Kong residents are dependent on accommodation, safety, beaches, hot springs, cost of the trip, entertainment and cultural activities. Rittichainuwat (2008) compared trip motivations with Phuket between Thai and Scandinavian travelers and identified that curiosity about outcome of the tsunami and desire to help local people were more important push motivations to Scandinavian travelers than Thai travelers.

These cross-cultural studies provide support for the notion that culture where tourists originate has a significant influence on tourism behavior. Hofstede's (1997) cultural dimension can be utilized to understand such cultural differences in destination choices. Of five dimensions including power distance, individualism/collectivism, masculinity/femininity, uncertainty avoidance and long-term/short-term orientation, Asian societies are characterized with collectivism, acceptance of unequal power distribution and a long-term orientation. On the contrary, Western societies are identified to be more tolerant to uncertainty and less tolerant to unequal power distribution, individualism and a short-term orientation. Hong Kong shows a mixture picture of Asian and Western cultures: high tolerance in uncertainty, higher individualism compared with other Asian countries, fair acceptance of unequal power distribution, and a long-term orientation. Thus, it would be more appropriate to examine travelers' behavior with localization perspective rather than globalization/generalization perspective. However, research on the impact of distance on travel behavior of Asian residents is somewhat limited.

## METHOD

Data used in this study were collected from the annual domestic tourism surveys on pleasure travel of Hong Kong residents in the period 2001–2010. In each survey, data were collected through telephone interviews, which used a modified random digit dialing sampling approach to produce a list of telephone numbers using the last version of the residential phone book. In other words, each study comprised those who could be approached by residential telephones. The qualifying questions further excluded the non-Hong Kong residents and those who were less than 18 years old. A 10- to 15-minute telephone survey was then conducted to the qualified respondents. They were asked if they took any international pleasure trip over the past 12 months. International pleasure trip refers to a trip outside Hong Kong, Macau, and mainland China for nonbusiness and nonconference purposes. The reason why those destinations were excluded from

this study is that, as mentioned previously, a trip to Macau or mainland China is not considered as 'international' because those destinations are under Chinese sovereignty.

Respondents who had taken an international pleasure trip in the past 12 months were asked to identify the destination city along with how the trip was arranged, how long they were away from home, how many nights they stayed at destinations, how many people traveled with them and how much they spent.

Direct distances from Hong Kong to the destinations were computed in statute miles. An online tool was used to calculate the distances from Hong Kong to the main destination cities (Free Map Tools, 2010). Following the study by McKercher and Lew (2003), 500-mile intervals were set between destination groups. The 3108 respondents took international trips to a total of 169 destination cities and 48 countries. The majority age group was between 36 and 45 years old (28%), followed by 26–35 years old (25%).

## RESULTS

Based on responses about international pleasure trips reported during the study period from 2001 to 2010, an aggregated distance decay curve with two secondary peaks was generated (see Figure 1). The first and strongest peak was observed in the destinations at 1000 to 1500 miles from Hong Kong. Then, demand dropped sharply until the next peak at 4500 to 5000 miles, followed by the third peak at 5501 to 6000 miles from Hong Kong, appeared. Around 70% of total trips occurred in the destinations within the 2000-mile radius of Hong Kong. Table 1 summarizes the distance intervals of each peak and bottom. The distance decay patterns in 2001, 2005 and 2010 are identical as the aggregate one, whereas 2004 showed a prolonged second peak unlike others.

Table 2 shows the frequency in each distance category with main destination cities and countries.

Taiwan (Taipei) was the most popular destination country (city) within the 1000-mile radius of Hong Kong. Thailand (Bangkok) was the most popular destination country (city), followed by South Korea (Seoul), at

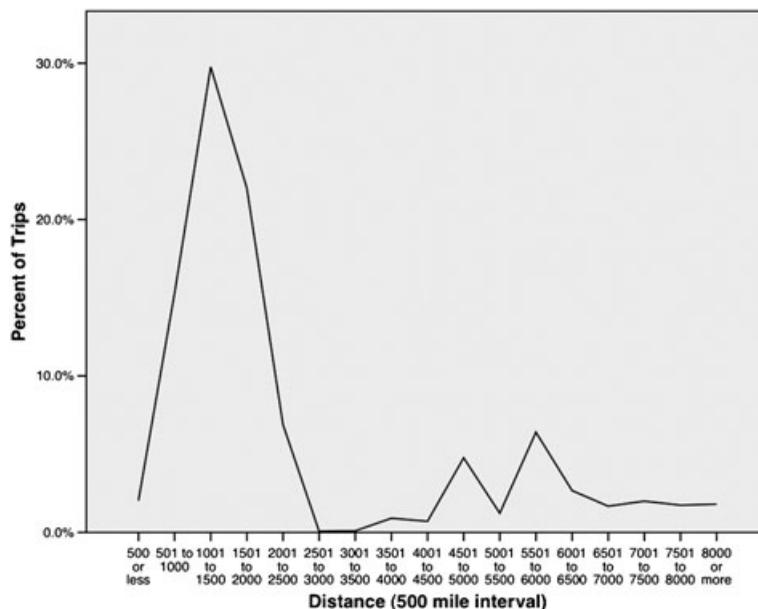


Figure 1. Aggregated distance decay from Hong Kong for international pleasure trips between 2001 and 2010.

Table 1. Peaks and bottoms in the distance decay pattern from 2001 to 2010

Aggregate	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	
500 or less	2.0	0.0	2.2	2.4	1.9	0.5	1.8	1.9	3.0	0.4	4.3
501-1000	15.3	16.2	14.6	15.3	14.2	15.3	12	13.6	16.5	15.2	18.4
1001-1500 <i>1st peak</i>	29.8	33.6	29.2	29.4	36.3	33.2	32.6	28.2	24.7	28.9	28.1
1501-2000	22.0	18.6	16.9	16.5	15.6	22.4	23.1	24.6	25.7	24.2	20.2
2001-2500	6.9	0.4	6.7	8.2	5.7	9.2	4.3	9.8	4.5	9.2	8.6
2501-3000 <i>1st bottom</i>	0.1	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.2	0.0
3001-3500	0.1	0.0	1.1	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0
3501-4000	0.9	1.6	0.0	0.0	1.4	1.5	0.3	0.6	0.7	1.1	1.1
4001-4500	0.7	1.6	1.1	1.2	0.5	1.0	0.8	0.6	1.0	0.4	0.2
4501-5000 <i>2nd peak</i>	4.8	5.1	4.5	5.9	1.4	7.1	5.8	4.7	4.7	4.9	4.1
5001-5500 <i>2nd bottom</i>	1.2	1.2	1.1	0.0	0.0	0.5	1.3	1.1	2.5	0.7	1.8
5501-6000 <i>3rd peak</i>	6.4	9.5	4.5	4.7	6.6	5.1	6.0	5.7	8.0	5.8	6.1
6001-6500	2.7	2.8	4.5	4.7	1.4	1.5	5.0	2.8	2.7	1.6	2.0
6501-7000 <i>3rd bottom</i>	1.7	1.6	2.2	2.4	10.8	0.0	1.5	0.8	1.2	0.7	0.5
7001-7500	2.0	3.6	4.5	2.4	0.5	0.5	2.3	1.7	2.5	2.2	1.4
7501-8000	1.7	2.4	2.2	2.4	1.9	0.0	1.5	1.7	1.2	2.0	2.2
8000 or more	1.8	2.0	4.5	4.7	1.9	2.0	1.8	1.7	1.0	2.5	0.9

Note: Numbers in column percentage.

1001 to 1500 miles. Japan (Tokyo) was the most popular destination country (city) at 1501 to 2000 miles from Hong Kong. Demand largely dropped at 2001 to 2500 miles where India and Indonesia were major destination countries. Virtually, no demand was observed at 2501 to 3500 miles from Hong Kong.

The destinations at these miles interval include the western India (Mumbai) and the northeastern Australia (Cairns). Australia becomes the major destination at 3501 to 5000 miles from Hong Kong, and Sydney was the most popular destination city at the second peak at 4501 to 5000 miles. Then, demand dropped again at

Table 2. Main destination cities and countries of international pleasure trip between 2001 and 2010

Miles	Sample destination cities	Sample destination countries	Frequency %
500 or less	Laoag city, Tainan, Haiphong	Philippines, Taiwan, Vietnam	2.0
501–1000	Siem reap, Okinawa, Manila, Taipei, Phetchabun, Halong bay	Cambodia, Japan, Philippines, Taiwan, Thailand, Vietnam	15.3
1001–1500	Seria, Fukuoka, Seoul, Penang, Bangkok	Brunei, Japan, Korea, Malaysia, Thailand	29.8
1501–2000	Calcutta, Bintan Utara, Tokyo, Katmandu, Singapore	India, Indonesia, Japan, Nepal, Singapore	22.0
2001–2500	New Delhi, Bali, Hokkaido	India, Indonesia, Japan	6.9
2501–3000	Mumbai	India	0.1
3001–3500	Cairns	Australia	0.1
3501–4000	Perth, Dubai	Australia, UAE	0.9
4001–4500	Adelaide, Moscow	Australia, Russia	0.7
4501–5000	Melbourne, Helsinki, Jerusalem, Amman, Istanbul	Australia, Finland, Israel, Jordan, Turkey	4.8
5001–5500	Vienna, Copenhagen, Cairo, Athens, Nairobi, Stockholm	Austria, Denmark, Egypt, Greece, Kenya, Sweden	1.2
5501–6000	Paris, Rome, Auckland, Berne, London	France, Italy, New Zealand, Switzerland, UK	6.4
6001–6500	Vancouver, Barcelona, Birmingham, Seattle	Canada, Spain, UK, USA	2.7
6501–7000	Calgary, Madrid, San Francisco	Canada, Spain, USA	1.7
7001–7500	Cape Town, Minneapolis	South Africa, USA	2.0
7501–8000	Toronto, Boston	Canada, USA	1.7
8001 or more	Buenos Aires, Nassau, Havana, Lima, Johannesburg, Miami	Argentina, Bahamas, Cuba, Peru, South Africa, USA	1.8

Note. Total  $N = 3108$ . Destination cities and countries listed in this table are examples instead of a full list. Frequency % indicates the percentage of tourists who travel in each distance category.

5001 to 5500 miles when Australia was out of the radius. The third peak was noted at 5501 to 6000 miles, where major destinations including European cities like London and Paris are located. Demand decreased when the radius extended to Canada and the USA, but the demand for these destinations was constant regardless of distance from Hong Kong. Los Angeles was the most popular destination city at 7001 to 7500 miles from Hong Kong. International travelers from Hong Kong took a trip to Buenos Aires, Argentina, around 11 480 miles from Hong Kong.

Overall, more travelers organized their trips independently (53%) rather than with package tours (47%). In particular, trips to the destinations at 1001 to 1500 miles from Hong Kong were mainly package tour (62%), whereas around 34% of the total trips to the destinations at the second peak and 25% at the third peak were package tour.

It implies that Hong Kong travelers tend to organize travel independently, especially for distant destinations.

The international pleasure travelers who took trips to the destinations within the 2500-mile radius of Hong Kong rated 'rest and relax' the most important, followed by 'spend time with family, friends or relatives', 'get away from daily routine, role, obligation, stress and/or troubles', 'broaden my horizon', 'discover new place', and 'meet different people'. Interestingly, respondents who traveled more than 4000 miles from Hong Kong commonly showed that 'broaden my horizon' is more important than 'get away from daily routine'. Overall, 'rest and relax' was the most important reason to take international pleasure trips, whereas 'meet different people' was the least important reason.

Figure 2 shows the number of days which respondents took international trips (trip duration) and how long they stayed at main

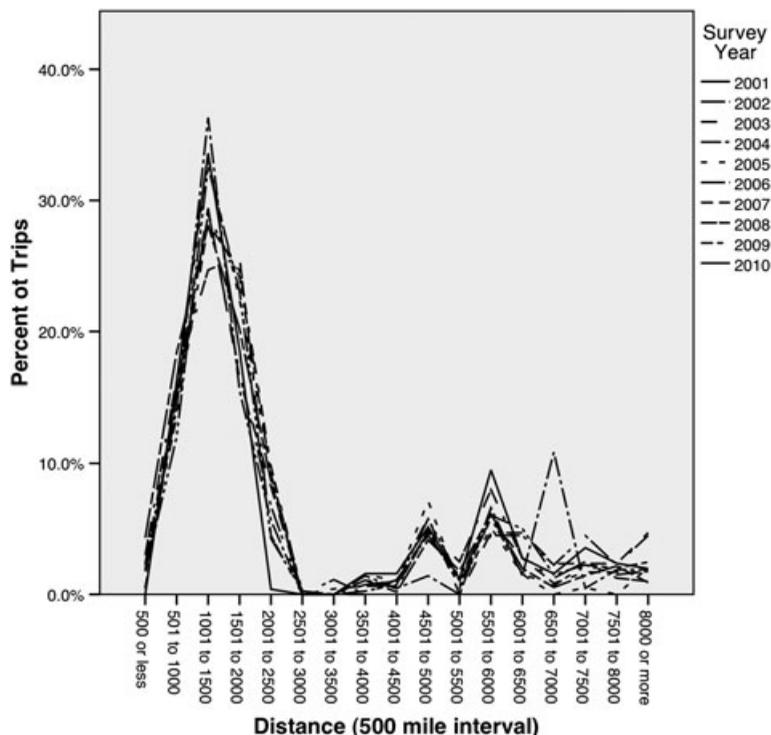


Figure 2. Trip duration and length of stay at main destination. *Note:* The solid line indicates trip duration. Bars indicate length of stay at the main destination.

destination cities (length of stay). In general, trip duration increased as distance from Hong Kong increased. Likewise, length of stay at main destination also increased. An interesting finding is that, average trip duration and length of stay at the destination at 501 to 1500 miles (5.1 days of trip duration, 4.3 days of length of stay) were shorter than the destination at 500 or less miles (6.5 days of trip duration, 5.7 days of length of stay). Respondents stayed an average of 4.2 days at the first peak destinations, 1000 to 1500 miles from Hong Kong. Respondents stayed an average of 11.7 days at the second peak destinations and 14.8 days at the third peak. The shortest length of stay was an average of 4.15 days at 5001 to 5500 miles, whereas the longest was at average of 27.6 days at 8000 or more miles. This hints people traveling to this area visited multiple countries in one single trip and only spent a few days in one country. A gap between the line and the bar in Figure 2 indicates the difference in the duration between short trips to nearby destinations and staying at the original destination; the wider the gap is, the less likely

the traveler is to stay at the main destination. In general, the gap increases as distance from Hong Kong increases. Although 'rest and relax' was the main reason to take international pleasure trips, respondents were more willing to explore other places around the destination as they traveled further.

## DISCUSSION

The results with aggregated data identify a stable distance decay pattern with secondary peaks among Hong Kong international pleasure travelers for a decade. The first and highest peak (30% of total demand) was observed at 1001 to 1500 miles from Hong Kong. After that, demand dropped exponentially until the next peak (5%) appeared at 4500 to 5000 miles from Hong Kong (e.g. Australia), followed by the third peak (6%) at 5501 to 6000 miles (e.g. Western Europe). The pattern has not significantly changed over a decade, which provides support for robustness of the distance decay (see Table 1).

Although it is beyond the scope of this study to examine the causes of all variations in peaks and bottoms in the 10-year distance decay patterns, abnormal patterns in 2004 and 2008 have plausible explanations. Severe acute respiratory syndrome (SARS) outbreak in 2003 might compel Hong Kong residents to travel to further destinations in Western Europe. Another plausible explanation can be related to the Thai political unrest in 2008, which is located at 1001 to 1500 miles from Hong Kong. In spite of the epidemic in 2003, the distance decay patterns for a decade are generally stable and robust.

The results of this study suggest that Hong Kong international pleasure travelers prefer a three-hour flight for a five-day trip. Flying time to the destinations at the first peak normally takes three hours, and travelers spend on average of a five-day trip at the destinations. The findings imply a threshold of a three-hour flight for a five-day trip among Hong Kong international pleasure travelers. Due to the exploratory nature of this study, this study did not aim to explain why Hong Kong international pleasure travelers have such a threshold. However, socio-cultural aspects of Hong Kong international travelers can account for the particular threshold. That is, the income level allows Hong Kong international travelers to afford to a five-day international trip, and the geographical location of Hong Kong makes a three-hour short-haul travel reasonable for international pleasure travel.

Within the threshold, a distance decay curve would be analogue to traditional supply and demand curve; a peak starts from the origin, and demand decreases exponentially as distance increases. However, in this study, the first peak appeared at 1001 to 1500 miles from Hong Kong, not at closer destinations. Given that 'rest and relax' was the most important motivation, psychological distance would be accountable to explain appearance of the first peak at 1001 to 1500 miles. A destination that is too close to the origin might not generate a sense of getaway to enjoy rest and relaxation, and Taiwan would be the case in this study. Taiwan was the most popular destination within the 1000-mile radius of Hong Kong. Taiwan is culturally similar to Hong Kong,

and it is not cheap to travel as compared with Bangkok. Thus, a trip to Taiwan might not provide enough sense of relaxation to Hong Kong travelers since Taiwan is somewhat in resemblance to Hong Kong. Thus, a further destination would provide more interests to Hong Kong international pleasure travelers for 'rest and relax'.

Once the threshold is passed, travelers would seek for destinations that can compensate the psychological and physical costs associated with traveling further distance. Thus, the destinations outside the threshold should be more attractive than those within the threshold to pull travelers from the source market. Thus, a threshold of a three-hour flight exists to hinder Hong Kong international travelers from traveling further and will exist before no tourism activity zone occurs.

Previous research studies proposed that the characteristics of the ETEZ are composed of spatial voids (e.g. oceans, unpopulated areas) or no appeal to the source market (McKercher and Lew, 2003; McKercher *et al.*, 2008). In this study, the ETEZ was identified at the 2501 to 3500 miles from Hong Kong, and no market appeal, rather than spatial voids, would be accountable for the ETEZ for Hong Kong international pleasure travelers. The zone includes western India (i.e. Mumbai), northern Australia (i.e. Cairns), eastern Kazakhstan and southern Russian border to China. A United Nation 2009 census report estimated that Mumbai has a population of around 20 million, which is close to Thailand's population of 23 million (UN, 2009). Thus, the ETEZ in this study is neither unpopulated areas nor oceans but offers little interests to the source market. Trips to the ETEZ take around six hours of flying times and consequently require longer trip duration than the threshold of a three-hour flight for a five-day trip. Therefore, their market appeal should be strong enough to compensate the threshold than their competitors in other mile zones (i.e. Bangkok at 1001 to 1501 miles). However, the destinations failed to offer stronger pulling power.

The concept of the original distance decay may be weak in explaining higher demand at the third peak than the second peak. Distance decay explains trip demand based on proximity and associated costs. That is, transportation

costs and traveling time increase as a traveler takes further trips. However, the basis is not necessarily applicable to today's international trips. Costs associated with trips do not correlate highly with distance especially when flight is the major travel transportation, which is the case for Hong Kong international travelers. Although air ticket price is positively associated with travel distance and flight hours, air ticket price is not highly associated with statute mile. For example, statute mile from Hong Kong to Melbourne, Australia, is around 4600 miles and statute mile to Cairns, Australia, is around 3500 miles. However, the flight to Melbourne takes around one-hour shorter than that to Cairns, and a cheaper air ticket to Melbourne is easily found. Therefore, demand is not necessarily correlated with distance. Thus, pulling power would be more accountable to explain demand at the destinations after the outer boundary of the ETEZ or the threshold of a three-hour flight for a five-day trip.

Consequently, appearance of secondary peaks (i.e. second and third peaks) results from stronger pulling power of destinations. In this study, pulling power of a destination is found to relate to its proximity to another attraction. Destinations at the second peak, the 4501- to 5000-mile radius of Hong Kong, have less neighboring destinations than destinations at the third peak, the 5501- to 6000-mile radius of Hong Kong. Main destination cities at the second peak include Sydney and Melbourne in Australia and some European cities like Istanbul in Turkey and Helsinki in Finland, whereas major European cities such as London, Paris, Munich, Zurich and Rome are within the 5501- to 6000-mile radius of Hong Kong. Trips to the destinations at the third peak would be more appealing to Hong Kong international travelers since there are more cities to travel around. Such travel behaviors are evident with a larger gap between trip duration and length of stay at 5501 to 6000 miles than 4501 to 5000 miles (see Figure 2). The findings show that Hong Kong international pleasure travelers prefer larger destinations in developed countries (e.g. Melbourne over Cairns, Paris over Amsterdam) and closely related UK federation (e.g. Canada over Spain).

Compared with aggregated distance decay curve, a yearly distance decay curve shows a

similar pattern: distance decay with two secondary peaks. Different travel behaviors of Hong Kong international travelers were observed in 2004 (Table 1). In the 2004 survey, the second and third peaks shifted to right (or further from Hong Kong) from 4501 to 5000 miles to 5501 to 6000 miles and the third peak from 5501 to 6000 miles to 6501 to 7000 miles. Although the reason why travelers took trips to further destinations was unknown, this finding implies that such destination choices may be made because traveling further (i.e. San Francisco in the USA) would offer a sense of 'catching up missing travel' or 'rest and relax' to Hong Kong travelers. In 2003, the SARS epidemic had a significant influence on Hong Kong international travel. For example, outbound Easter holiday bookings in 2003 reduced more than 80% compared with those in 2002 (Pine and McKercher, 2004). Thus, this finding implies that international travelers might be more willing to travel to further destinations, which were relatively new and had a different environment away from home to fulfill the push motivations.

Although 'rest and relax' was the major reason to travel internationally both for short-haul (e.g. the first peak) and long-haul (e.g. the second and the third peaks) travelers, it was interesting to find a motivational difference in 'broaden my horizon', or knowledge seeking, between short-haul and long-haul travelers. As novelty-seeking counters the desire of familiarity (Jang and Feng, 2007), the 'broaden my horizon' motivation would have a similar influence on distant traveling. In general, a traveler tends to be less familiar with a distant destination than a nearby one, especially due to cultural differences (Ng *et al.*, 2007). Thus, travelers' knowledge-seeking motivation would be more satisfied when they travel distant or less familiar destinations than when they travel nearby destinations (Lepp and Gibson, 2008).

## CONCLUSIONS AND LIMITATIONS

This study examines the robustness of distance decay over a decade. Excluding China and Macau SAR from international destinations, this study focused on recent international pleasure trips of Hong Kong residents and destination choice. The findings of this study provide

support for validity of distance decay in overall. There was a major peak near the source market and demand decays as the distance from source market increases. However, the original distance decay has limitations in explaining secondary peaks in the findings, and thus, the study on distance decay with a secondary peak by McKercher and Lew (2003) is more appropriate. In addition, this study identifies a third peak at 5501–6000 miles from Hong Kong. This study found that Thailand, Malaysia, Japan, Korea, Southeastern Australia and Western Europe are popular destinations for Hong Kong international pleasure travelers. The ETEZ was found in the 2501- and 3500-mile radius of Hong Kong, and its width was fairly narrow. Its proximity to the source market had a significant impact on the secondary peaks.

This study suggests a threshold of Hong Kong international pleasure travelers: a three-hour flight for a five-day trip. Within variation of the threshold (e.g. a two-hour flight for a five-day trip or a six-hour flight for a five-day trip), demand changes based on distance decay, but it decreases dramatically once a destination is off from the variation. This study identified the ETEZ outer of the threshold. Also, the findings of this study suggest that demand passing the ETEZ is more influenced by pulling power rather than proximity of destinations.

Pulling power increases when a destination neighbors another attractive destination. Destinations at the third peak are more likely to be other neighbor destinations, whereas destinations at the second peak are less likely. This study identified different motivations for different distance. Although Hong Kong travelers took international travel mainly for rest and relaxation, those who traveled further consider 'broaden my horizon' important. Also, they traveled even further after SARS epidemic.

This study shed light on distance study in tourism research. The findings of this study confirm that distance plays an important role in travelers' destination choice. This study suggests a threshold of Hong Kong travelers who took international pleasure trip, which has not been identified in previous studies. Also, this study examined Hong Kong travelers' trip behaviors based on panel data over ten years. The combination of time series and cross-sectional approach

provides more validity to examine the 2003 study on distance decay with a secondary peak by McKercher and Lew (2003). Developed from their proposition with one secondary peak in distance decay, this study identified that distance decay with two secondary peaks is more robust to explain Hong Kong international pleasure travelers' behavior. Likewise, distance decay with multiple peaks in other context possibly exists because pulling power is suggested to have a significant impact on choice of destinations outside a threshold of a source market.

Marketers at destinations near the source market should understand their current position clearly. Since a majority of Hong Kong travelers organized trips to the destination within the 2500-mile radius of Hong Kong with package tour, marketers at destinations within the threshold but not in the peak should develop tour packages appealing to the source market. If their markets are further than the threshold or the ETEZ, they should focus on how their destinations can enhance travelers' horizon. The threshold suggested in this study can be shifted but gradually since no shift was identified over a decade. A revolutionary transportation, which reduces flying time dramatically, would cause threshold shift.

By using the annual domestic tourism surveys on pleasure travel of Hong Kong residents, the present results are limited to Hong Kong residents. It would be challenging to determine whether robustness of distance decay is a city-specific or a worldwide phenomenon. Empirical replications in other cultural contexts can provide more insight into the discussion of distance decay for international pleasure travelers. For instance, it would be interesting to examine if the findings of this study would be supported using a sample of North American or European travelers. This article is further limited by nonresponse bias as some Hong Kong residents who received the call for the survey might have declined to participate. Further research can explore if there are any differences in distance decay depending on the frequency of annual pleasure trips, income, and travel experience. Overall, it is believed that this study provides a valuable benchmark for further research in the area of distance decay for international pleasure travelers.

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