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**'Pull' motivation: An activity-based typology of international
visitors to New Zealand**

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Abstract

Using the push and pull framework, this study examines the relationship between tourist activities in New Zealand and behaviours such as tourist spending, travel style (group vs. independent travel), and length of stay. Data from the International Visitor Survey (IVS) were analysed for a 19-year period (1997-2015). The findings, based on 62,288 respondents, identified nine typologies of international visitors over this period. For example, type one visitors are primarily pulled by the nature based activities offered in New Zealand while type two is pulled by adventure activities. Some of the typologies have activities that overlap reflecting the needs of international visitors. Significant relationships were found between the nine typologies, tourist spending, travel style and length of stay. Implications for destination marketing purposes are highlighted.

Keywords: tourist activities, pull attributes, activity-based, destination image, typologies, pooled cross-sectional, New Zealand

Introduction

The push and pull framework has been used extensively for studying why tourists travel (Caber & Albayrak, 2016; Chen & Chen, 2015; Li et al., 2013; Prayag & Hosany, 2014; Wong, Musa & Taha, 2017). Push factors are assumed to be origin related factors that are likely to motivate the desire to travel and are internal to the individual (Jang & Cai, 2002; Wong et al., 2017). Pull factors are destination specific factors that influence destination choice (Kim, Lee & Klenosky, 2003; Klenosky, 2002; Wong et al., 2017). These factors are external to the individual and affect when, where, and how people travel given the initial desire to travel (Jang & Cai, 2002). Push and pull factors represent important aspects of travel demand and supply characteristics (Kim & Lee, 2002), play a critical role in predicting future travel patterns (Jang & Cai, 2002), and in marketing strategies for destination positioning. Pull factors are also considered as attributes that form destination image in the visitors' minds on the basis of their expectations and perceptions of the destination (Li et al., 2013; Prayag & Ryan, 2011). There is no consensus in the literature on how many push or pull factors should be evaluated to represent a destination. In some studies only on one push factor (e.g., nostalgia) and its influence on several pull attributes is evaluated (Leong et al., 2015). In others, the focus is either on one pull attribute (e.g. shopping) and its influence on tourist behaviours (Wong & Wang, 2013), or several push/pull factors are measured for one activity such as birding (Chen & Chen, 2015), mountaineering (Caber & Albayrak, 2016), rural tourism (Frochot, 2005), volunteering (Grimm & Needham, 2012), national parks (Kim, Lee & Klenosky, 2003) and skiing (Konu, Laukkanen & Komppula, 2011), among others.

While previous tourism studies applying the push-pull framework have contributed to improve our understanding of the underlying motivation of visitors and their destination choice, these studies are based on cross-sectional data that offer a limited perspective of how motivation to visit a destination evolves overtime. There is currently no pooled-cross-sectional study of either the push or pull factors of a destination. Accordingly, the purpose of

this study is to examine the influence of the pull factors of a destination, New Zealand, over a 19 year period (1997-2015). Specifically, tourist activities are chosen as the pull factors for several reasons: (i) they are important features of the pull attributes of a destination (Tkaczynski, Rundle-Thiele & Beaumont, 2010); (ii) Pearce (2005) argues that the desired set of activities reflect the desired experiences at the destination; (iii) tourist activities reflect partially destination image and preferences of visitors (Klenosky, 2002; Li et al., 2013; Prayag & Ryan, 2011); and (iv) pull factors can exert a stronger influence on destination choice than push factors (Lee et al., 2002).

The specific research questions examined are:

- What are the different types of activity-based profile of tourists that can be identified over this period?
- Are there differences between the identified profiles on tourist spending, length of stay, travel style (package versus independent) and demographic variables?

The data is sourced from the International Visitor Survey (IVS) by New Zealand's Ministry for Business, Innovation and Employment (MBIE), which is the primary source of data for international visitors' travel behaviour in New Zealand (Becken & Gnoth, 2004). The contribution of this study is three-fold. First, by identifying typologies of visitors based on their chosen activities, we are able to track whether some activities become more or less important over time. This perspective is lacking in existing studies (e.g., Chen & Chen, 2015; Li et al., 2013; Prayag & Hosany, 2015; Wong et al., 2017) but of importance given that it shows changing visitor preferences. Second, by profiling the identified typologies on the basis of tourist spending, travel style, and length of stay, as well as demographics, we identify the most profitable visitor segments for the New Zealand tourism industry. This approach is

useful for targeting and destination positioning purposes. Third, from a methodological perspective, the study illustrates the use of forced-choice full binary format (yes/no) in the evaluation of destination attributes. As such, the study responds to Dolnicar and Grun's (2013) call for measuring destination attributes using binary formats that perform better in terms of stability and concurrent validity in destination image studies. Next, the paper reviews the pertinent literature.

Pull Factors and Benefit Segmentation

The push-pull framework is not a socio-psychology theory of motivation per se (Li et al., 2013). Others have used intrinsic emotion and cognition to describe the push and pull dichotomy (Becken & Gnoth, 2004). Irrespective of the conceptualisation used, the fact remains that push precede pull factors (Caber & Albayrak, 2016; Kim, Lee & Klenosky, 2003; Klenosky, 2002; Frochot, 2005; Prayag & Ryan, 2011; Wong et al., 2017). Pull factors are specific to the destination and can be anything such as outdoor activities, weather, atmosphere, transportation, historical and archaeological sites, scenery, personal safety, good prices, suitable accommodations (Jang & Cai, 2002; Li et al., 2013; Wong et al., 2017). Given that pull factors represent the attractiveness and specific features of a destination (Rittichainuwat, 2008), existing studies have examined diverse tourist groups and destinations such as Chinese outbound tourism (Li et al., 2013), visitors to Latin America (Sarigollu & Huang, 2005), second-home owners in Malaysia (Wong et al., 2017), rural tourists to Scotland (Frochot, 2005), and visitors to Bornholm, Denmark (Johns & Gyimothy, 2002), among others. The latter study in particular uses the annual survey produced by the Bornholm's Research Centre to segment amenities, tourist activities and attractions of the destination. However, the results are based on cross-sectional data that identifies four main tourist types based on activities (outdoor activities with social content, outdoor activities focused on nature, relaxing activities and sightseeing). As noted in previous studies, the

choice of different activities may be based on the same or similar psychological and social benefits (Sarigollu & Huang, 2005) suggesting that different pull factors may be driven by the same or similar push factors. Klenosky (2002) argued that single pull factors can also satisfy multiple visitation motives as each destination attribute may derive its importance or meaning from very different sources.

Understanding visitors' motives and preferences for activities represents a promising direction in linking visitors' needs to the attributes of the destination (Pearce, 2005). The importance and influence of destination attributes on destination choice may differ considerably for different market segments (Albayrak & Caber, 2013). For example, the relative importance of pull attributes has been found to differ for visitors of different socio-economic characteristics (Kim, Lee & Klenosky, 2003; Prayag, 2010; Rittichainuwat, 2008). As such, several studies using the push-pull framework have conducted benefit segmentation to identify sub-groups of visitors with similar motivation. Existing studies have examined push (Lee et al., 2006) or pull (Prayag, 2010) or both factors (Konu et al., 2011; Li et al., 2013; Prayag & Hosany, 2014; Tkaczynski et al., 2010) as the basis for benefit segmentation. As noted by Wong and Wan (2013), the tourism literature is only beginning to understand how destination level attributes impact different segments and tourist behaviours.

Studies that employ benefit segmentation tend to profile visitors mainly on their socio-demographic characteristics such as age, gender, income and education level (Chen & Chen, 2015; Kim, Lee, Klenosky, 2003; Konu et al., 2011; Prayag & Hosany, 2014; Rittichainuwat, 2008). Beyond their socio-demographic characteristics, the current study enriches understanding by profiling visitors on the basis of their spending, travel style (package vs. independent travel) and length of stay. These three profiling variables are particularly important for the New Zealand context. Previous studies have shown that tourist expenditure on the ground in New Zealand is closely related to visitor characteristics (Becken

& Simmons, 2008) and that the holiday segment is more sensitive to the total price of tourism in New Zealand than other segments, based on IVS data (Schiff & Becken, 2011). Holiday visitors in particular are also the higher yielding visitor types compared with visiting friends and relatives (VFR) tourists (Becken & Simmons, 2008). As such, profiling visitors in this study on their expenditure levels could potentially identify diverse elasticities amongst heterogeneous market segments (Schiff & Becken, 2011). Undeniably, the Chinese outbound market is critical for growing tourism in New Zealand (Sun, Ryan & Pan, 2015). Asian market segments, in particular, appear more price sensitive than segments from other origins (Schiff & Becken, 2011). Within the Chinese outbound market, two travel styles can be distinguished, free independent travel (FIT) versus group travel (packaged). Independent travellers are different in their motivation, preferences and behaviours (King & Gardiner, 2015; Prayag, Cohen & Yan, 2015; Xiang, 2013). Chinese FIT segments are significantly more sensitive to changes in prices than other segments (Schiff & Becken, 2011). Profiling visitors **via repeated surveying** can, therefore, highlight the importance of these travel styles for tourism to New Zealand. Early studies have also shown that different markets have different length of stay and choose different types of attractions and activities (Becken & Gnoth, 2004). Length of stay at a destination is a significant predictor of activity engagement (Zoltan & Masiero, 2012). Thus, profiling visitors on their length of stay is valuable from both a theoretical and managerial perspective.

Activity-based Typologies of Visitors

Conceptually, there are two general categories of tourist typologies (also referred to as segmentation): interactive and cognitive-normative typologies. Interactional typologies are primarily focused on interactions between the tourists and the destination, while cognitive-normative typologies focus on the travel motivations of tourists (Hvenegaard, 2002). Due to the fact that many of the existing tourist typologies are of a theoretical nature and have a

static character (Hvenegaard, 2002), there is a need for more empirical research, specifically with regard to adopting an activity-based approach in the process and to profile segments according to various trip and sociodemographic characteristics (Mehmetoglu, 2007). Using the German Pleasure Market Survey, which is a database similar to the IVS, Lee et al. (2002) underline the fact that motivational push-pull constructs embrace activities as an important component.

An activity-based typology categorizes groups of tourists by their behaviour or visitation patterns. The underlying assumption when using an activity-based typology is that tourists who engage in particular types of activities are likely to differ from others who engage in other types of activities (Zoltan & McKercher, 2015). Hvenegaard (2002) provides a useful categorisation of typological approaches into four empirical categories: researcher-based (the researcher defines different types of tourists), respondent-based (respondents define what type of tourist they think they are), motivation-based (tourists indicate the main reason for their trip), and activity-based (places visited, frequency, length of stay, etc. are used to define the tourist by the researcher). From a practical viewpoint, “recognizing the importance of tourists’ activity consumption and movement patterns at the destination enables service providers to better cater for the needs of the tourists and develop more tailor-made products for them” (Zoltan & McKercher, 2015, p.22). Moreover, activity-based typologies are simple, relatively stable over time, and are accurately measurable (Nyaupane & Andereck, 2014).

The debate about the relative merits of activity-based typologies also broadens into the adoption of an *a priori* (using objective measures such as gender, age and group size) versus an *a posteriori* segmentation approach (a data-driven approach that typically involves the use of factor-cluster segmentation techniques to identify segments previously unknown or unarticulated) (Kim & Jogaratnam, 2003). Dolnicar (2004) concluded that *a priori*

segmentation does not provide much advantage over data-driven (*a posteriori*) segmentation. More importantly, she found that a so-called ‘commonsense’ segmentation approach was popular among segmentation studies published in the mainstream tourism research journals. The use of purely data-driven approaches, followed by a ‘commonsense’ approach to achieve the final segmentation was identified as having some benefits over a data-driven approach only (Dolnicar, 2004). One significant weakness in studies that segment pull attributes (e.g., Prayag, 2010; Sarigollu & Huang, 2005) is the use of the much criticized factor-cluster analysis for identifying the clusters, casting doubt on the stability and reproducibility of the findings (Dolnicar & Grun, 2008).

Much of the activity-based research to date used intended activities as a proxy for actual participation (i.e. Lau & McKercher, 2004) at the destination which is what differentiates the approach adopted by Finsterwalder and Laesser (2013) and executed on outbound Swiss tourists with the aim to identify potential experience consumption spheres. Therefore, given the increasing importance of the experiential aspects of the tourism consumption process, travel activities make common sense as a segmentation (typology) approach (Finsterwalder & Laesser, 2013) and thus an activity-based typology has been adopted in the current study.

Data and Method

In this study, we employ the International Visitors Survey (IVS) conducted by New Zealand’s Ministry of Business, Innovation and Employment (MBIE). The purpose of the IVS is to provide accurate, quarterly national information on the characteristics, behaviour and expenditure of international visitors. This survey has been annually conducted in its present form since January 1997. The main purpose of the survey is to measure the amount of

expenditure of international visitors, to determine the activities international visitors participate in, the transport and accommodation types used, and places visited, and to collect other demographic and auxiliary information about foreign visitors to New Zealand.

The survey samples international visitors aged 15 years or older to New Zealand per year, drawing its sample based on measures of the actual number of target population visitors who departed New Zealand from international airports over the survey time period in the previous year. Each respondent within the sample is weighted to represent their fraction of the total number of all international visitors departing New Zealand within the survey's target population. Survey response weights are adjusted to reflect the unequal probabilities of respondent selection from the composition of the target population, and known discrepancies between the sample and the population definitions (MBIE, 2017). The data from the survey has been used in several previous studies for the purpose of, for example, comparing first-time and repeat visitors' behaviours to New Zealand (Becken & Gnoth, 2004) and analysing the consumption patterns of tourist attractions and activities (Becken & Simmons, 2002), among others. In this present study, we employ a pooled cross-sectional design that uses data spanning the period from 1997 to 2015. In the context of our analysis, applying this methodology provides two major advantages: Firstly, the vastly increased sample size due to the pooled design increases the statistical power of our analysis and thus yields significantly more robust results than simple cross sectional analysis would produce. Secondly, the pooled design gives us insights into the changing characteristics of the international visitor population to New Zealand.

To ascertain the visitor typologies, we utilized the visitor activity information collected from each respondent by the IVS. In the survey, each visitor is presented with a list of 45 activities measured as a dichotomous response (Yes/No). There were some activity choices in the survey that weren't available in early waves of the IVS. We deleted these

choices in subsequent years, in order to have a uniform response matrix over the period from 1997 to 2015. International visitors whose main purpose of visit was holiday or vacation only were included in the study. This resulted in a sample size of 62,288 individuals. Tourist spending is defined as the total spend of each respondent in New Zealand dollars and does not include international airfares. Travel style is a dichotomous variable defined as 'package' if the respondent indicated to have travelled by either pre-purchased package tour, or as part of a tour or tour group. Visitors indicating their trip did not include an organised tour or part of their trip was self-organized were classified as Free Independent Travellers (FITs). Length of stay is measured in number of nights spent in New Zealand.

To create the visitor typologies, a factor analysis was performed on the correlation matrix of the 45 activity variables available in the IVS. The dichotomous nature of the activity data makes the application of conventional correlation analysis (e.g. Pearson product-moment correlation) somewhat problematic. While many analytical techniques involving correlation analysis appear to be sufficiently robust against the deviation from distributional assumptions of normality, there are cases where neglecting the presence of non-normality can potentially lead to erroneous results. For instance, Olsson (1979) has shown that, resulting from biased estimates from the correlation of dichotomous data, the application of factor analysis may lead to the extraction of the incorrect number of factors. This problem was overcome by applying a tetrachoric correlation method (Edwards & Edwards, 1984). In order to determine the number of factors to be retained we performed parallel analysis, a method advanced by Horn (1965), to determine the number of factors to retain. This method uses a Monte Carlo-based simulation to compare the observed Eigenvalues with those obtained from uncorrelated normally-distributed variables (Figure 1). This method is generally considered as preferable when considering which number of factors to retain in exploratory factor analysis (Ledesma & Valero-Mora, 2007; Zwick & Velicer, 1986). It compares the

observed eigenvalues with those obtained from randomly generated data (using a Monte Carlo-based simulation). The number of factors is determined where actual data is greater than simulated data. The result of the parallel analysis suggested that 9 factors should be retained. The rotated oblique factor solution, sorted in ascending order from the first factor ('Type1'), can be found in Appendix 1.

[Figure 1 about here]

Findings

Sample Demographics and Travelling Characteristics

Of the 62,288 individuals whose responses were used in this study, 50.7% were males, 29.8% were packaged, with 28.7% staying between 1 to 6 days, followed by 7 to 13 days (30.8%), 14 to 29 days (27.6%), 30 to 89 days 9.6%, and 90 days and above (3.3%). Age groups were distributed as follows: under 20 years old (3.5%), 20 to 29 years old (28.7%), 30 to 39 years old (20.1%), 40 to 49 years old (13.8%), 50 to 59 years old (16.2%) and 60 to 69 years old (15.6%) among others. The main countries of origin were Australia (17.5%), UK (12.9%), US (12.6%), Japan (10.1%) and China (5.5%). The average weighted spending per visitor was NZ \$3621.12.

Activity-based Typologies of Visitors to New Zealand

The individual extracted factors can be seen as measures with which groups of similar activities correlate highly. Conceptually, these factors represent a certain typology of visitors to New Zealand. The underlying activity pattern can often be easily identified. For instance, when considering Type 1, it is apparent that nature related activities involving seals, wildlife, penguins, bird watching, nature attractions etc. are highly correlated with this factor. On the

other hand, activities like experiencing life performances, museum visits etc. are negatively correlated with this factor, indicating that these activities are unlikely to be undertaken by a tourist scoring high on this factor. Given these relationships it would seem reasonable to label the first Type as 'nature based activities'. We inspected all subsequent factors in respect to activity patterns and labelled them and emphasize prominent correlations with activities as shown in Table 1.

[Table 1 about here]

These typologies are not mutually exclusive. It is possible that individual tourists score highly on more than one typology (or on none). Table 2 shows the population weighted correlations between the individual factor scores. All correlations were significant at the $p < 0.001$ level. The highlighted correlations exceed an absolute value of 0.2. It is thus apparent that, for instance, individuals favouring nature based activities (Type 1) often also have a propensity for adventure (Type 2), cultural (Type 3), and walking based activities (Type 6). Other notable combinations include adventure (Type 2)/nightlife based (Type 8) activities, cultural (Type 3)/high value rides (Type 4)/museum (Type 5) activities, high value rides (Type 4) /museum and zoo (Type 5) activities, and a negative relationship between golfing and fishing (Type 7) /nightlife (Type 8) activities.

[Table 2 about here]

Given that the activity data spans a period from 1997 to 2015 it is of interest how the visitor typologies have changed over this time frame (Table 3)

[Table 3 about here]

The **time dependent changes** in rotated factor correlations of most identified typologies reveal remarkable pattern fluctuations over time. For instance, factor loadings for visitor activity pattern Type 1 have seen a rapid increase in recent times after languishing for the preceding 16 years, indicating that this activity type is suddenly becoming more prominent. Other activity patterns, such as Type 2, 3, 6, or 8 have seen a more steady growth or decline over a long period. Yet other types such as Types 4 or 7 appear to undergo periodic reversals, indicating changing importance in intervals of several years.

Relationship between Typologies and Travel Behaviour

The nine typologies identified earlier were profiled on three travel behaviour characteristics (travel style, tourist spending, and length of stay).

Travel Style - Package versus Independent Travellers

A logistic regression of the nine typologies on the dichotomous outcome of package or independent traveller category from the IVS data was undertaken to identify the relationship between the typologies and travel style. In this model, we estimate the coefficients for the variables containing factor scores for the 9 typologies and also include age group, an aggregated indicator for the year, gender, country of origin and logarithm of the length of stay as confounders. The Wald χ^2 score for this model **was 6150.4** ($p < .001$) and pseudo- r^2 **0.30**, representing a reasonable predictive capacity of the explanatory variables. The full solution for this model is presented in Table 4.

[Table 4 about here]

Except for visitor type 8, all visitor typologies are significantly associated with the travel style of the visitor. Visitor types 1, 3, 4, and 9 are more inclined to be package tourists, whereas visitor types 2, 5, 6, and 7 are strongly related with the independent traveller type.

While Becken and Gnoth (2004) did not use touristic activities as the basis of their typology, their findings highlighted that independent travellers to New Zealand are more likely to stay longer and spend less. Our findings confirm the same by showing that increasing length of stay is associated with a lower probability of packaged tours (see Table 4).

Mood (2010) has shown that regression coefficients and odd-ratios in logistic regression should not be simply interpreted as effect measures and for this reason we estimated predictive margins for all categorical variables in addition to regression coefficients. Our estimates show that generally older travellers have a higher propensity to be package tourists than younger tourists, reaching a 43 percent probability for over 65 year olds versus 27 percent of 18-24 year olds. There are no significant differences between males and females in respect to the traveller style. Model estimates indicate an overall declining trend of package tourism between the early 2000s and 2013 from 37 percent to 21 percent. This figure has rapidly increased for the final two years of our analysis, undoubtedly driven by the surge in Chinese visitors over this period. There is a wide spectrum of probabilities of package tourism between source countries, with some nations scoring exceptionally low (Israel, 13%; Ireland 14%) while others, specifically several countries in North-Eastern Asia exhibit a significantly higher probability of an inclination to package tourism than independent travel (e.g. Taiwan 45%; Japan, 49%; China, 51%).

Tourist Spending

Similar to previous studies using the IVS data (Becken & Gnoth, 2004), identifying spending patterns that are associated with the activity typologies are of interest. It is expected that visitor types that correlate highly with costly activities to spend significantly greater amounts of money than those who engage predominantly in free activities. Given the activity patterns identified in this study we would hypothesize that visitors' activity Type 4 (high value rides) or Type 3 (cultural activities) would be associated with larger spending, whereas

higher proclivity for activity Types 5 (museums, zoos etc) and 7 (fishing, golfing etc.) should not be related to higher spending.

To test these assumptions, we estimated a simple OLS regression model and regressed the nine activity patterns against the natural logarithm of weighted visitor spend and added the year, age group and logged length of stay as control variables. The full solution of this regression model ($F = 201.62$; $p > F < 0.001$; $R^2 = 0.27$) is shown in Table 5.

[Table 5 about here]

Except for typologies 9 and 5 (Theme parks and Museums/Zoos) all activity patterns exhibit a positive relationship with spending, including a very strong association between Type 4 (High value rides) and spending. This is not surprising given that the activities underlying Type 4 are premium priced offers popular with tourists in areas that offer adventure tourism such as Queenstown and Rotorua (Cloke & Perkins, 2002). Increasing length of stay is related to higher spending, in contrast to the finding by travel style. All successive age groups spend more than the younger ones, with 65+ year olds (\$2,983) outspending 18-24 year olds (\$2,009) by 49%. Males spend significantly more than females (\$2,610 vs. \$2,517). There was no consistent trend in spending patterns over time, although the decade immediately following the millennium was marked by significantly higher spending then before or after that period. As could be expected there are significant differences in spending based on visitors' country of origin. In the contemporary New Zealand context, of note are the very strong individual spending estimates for the rapidly growing Chinese visitors sector (NZ\$3,657 per person) and visitors from Australia (NZ\$ 2,157 per person), New Zealand's largest source market for tourists.

Length of stay

The relationship between visitor activity types and the length of stay in New Zealand was also explored. We logged the dependent variable in the OLS regression as there is significant variability especially among stays of longer duration. All independent variables are the same as in previous analyses, e.g. the visitor activity types and a group of confounders. The full solution for this model ($F=652.0$; $p > F < 0.001$; $R^2 = 0.47$) is presented in Table 6.

[Table 6 about here]

With the exception of visitor activity Type 9, all typologies are associated with length of stay, albeit this association is negative for visitor Types 3 and 8 (Cultural activities; Nightlife based activities). For the remaining visitor activity typologies this means that a stronger affinity with the typologies translates into a longer duration of stay. An earlier study by Oppermann (1994) showed that length of stay was closely related to number of places visited in New Zealand. By extension, it can be argued that longer length of stay is associated with more activities as depicted by Types 4, 6 and 7. Types 3 and 8 are less likely to stay longer due to the nature of the activities undertaken (cultural activities and nightlife). Corroborating the relationship from the spending model, increasing length of stay is associated with higher spending.

Younger age was significantly associated with longer stays in New Zealand as found in previous studies (Becken & Gnoth, 2004). Adjusted for all confounders, 18 to 24 year olds had a predictive margin of two or three days greater than other travellers. There were no notable differences in duration of stay between males and females. Our model revealed a general tendency of shorter stays over time. While during the period from 1997-1999 the overall confounder adjusted predictive margin of stay was 12-13 days, by 2013-2015 this had reduced to 7-8 days, representing a 50% reduction.

Our model estimates revealed significant variability in visitor's length of stay at the country level. At the low end, tourists originating from China had an estimated predictive margin of stay of only five days, followed by Korea (6days) and Japan (7 days). At the upper end of duration of stay, residents of Israel had a significantly higher predictive margin of duration of stay than any other country (19 days) followed by Germany and the Netherlands (15 days). The reason(s) for these longer or shorter periods of stay could be explored in future research.

Discussion and Implications

The current study uses a pooled cross-sectional approach to evaluate the pull attributes of a destination. Based on tourist activities, nine typologies of international visitors to New Zealand are identified over a 19 year period. Several of these typologies can be differentiated on the basis of tourists' travel style, spending and length of stay. The findings have several theoretical and managerial implications. From a theoretical perspective, previous studies applying the push-pull framework have typically used what tourists plan to do during their holidays as the basis for their inferential analyses (Sarigollu & Huang, 2005). The touristic activities in this study are based on what tourists actually did during their holidays. Existing typologies of visitors to New Zealand (e.g., Becken & Gnoth, 2004) identify that package tourists are different from independent travellers, for example, but fail to link these travel styles to different touristic activities. The findings highlight that the 25 to 34 years old are more likely to be independent travellers than other age groups (e.g., 50-64 years old). Tourists in later years (2007 to 2009, 2010 to 2012, and 2013 to 2015) are more likely to be independent travellers than package tourists when compared to earlier years (e.g., 1997 to 2006). These findings are not necessarily surprising given that previous studies (Prayag et al., 2015) show a rise in independent travellers from China. However, the findings also suggest that tourists from emerging Asian markets such as China and Taiwan exhibit both travel

styles, thus highlighting the blurring of the borders between independent and group travel (Uriely, 2005).

The evolution of the activity typologies over the 19 year period (Table 3) confirms that, for example, nature based, adventure and walking based activities are becoming more dominant in the last few years. This contrasts the findings from a recent study that uses cross-sectional data to evaluate visitors' perceptions of a competitive set of five destinations in New Zealand at two points in time over a 14 year period, which showed no change in perceptions of destination attributes (Pike, 2017). Given that nature and adventure with its associated touristic activities have been given more prominent emphasis in promotional activities of the destination as a whole over the years (Cloke & Perkins, 2002), tourists' choice of these activities are not surprising. However, the findings highlight the change in destination image from an emphasis on cultural activities in early years (Ateljevic & Doorne, 2002) to an emphasis on nature related activities. This changed focus in destination marketing is confirmed by the study of Pan et al. (2011) on tourism TV commercials for New Zealand, which revealed that the destination image being projected is mostly comprised of landscape (nature) and actions (adventure).

In addition, the pooled cross-sectional perspective taken in this study uncovers nine segments that are not necessarily independent of each other. In this way, the results concur with Li et al. (2013) findings that an overlapped segmentation approach is far more useful when segmenting markets. Based on China's long-haul outbound travel market, Li et al. (2013) suggest that adventure seekers may also seek entertainment activities as well as some cultural activities. Corroborating with these findings, this study identifies significant correlations between the typologies (Table 2). Also, the activities underlying each typology (Table 1) overlap with others. To this end, despite the criticisms (McKercher & Chan, 2005) of activity based typologies in the literature, the simplicity of this approach and the

relationships it uncovers, provide credence to this segmentation method in identifying the changing preferences of visitors over time. These preferences to some extent mirror studies based on cross-sectional data, which for example, showed that the image of New Zealand in Chinese blogs is one of a protected ecological environment with a variety of tourism activities. These activities could be categorised into leisure activities (gondola, spa pool, cruise trips, golf, penguin and whale watching, and glow worm caves etc.), adventure activities (bungee, hiking, glacier walking, gliding, jet boating, sky diving and hot air ballooning etc.) and shopping (Sun, Ryan & Pan, 2015).

From a managerial perspective, by identifying tourist activities that influence destination choice, the findings have implications for the tourism competitiveness and marketing of New Zealand as a tourist destination. Destination development and marketing activities should be planned around those activities and amenities that uniquely influence destination choice (Jang & Cai, 2002; Prayag & Ryan, 2011). Specifically for New Zealand, it is critical for Tourism New Zealand to create a strong fit between destination attributes and the motivations of the various target markets in marketing and promotional campaigns. From the findings, the choice of nature based and adventure activities by international visitors based on destination image of New Zealand is obvious but an emphasis on high value rides (e.g., jetboating, gondola, and scenic flights) in marketing campaigns would make sense if the destination wants to increase tourism spending. Similarly, marketing efforts could focus on the progressively declining duration of holiday trips to New Zealand. In this context, a stronger attention to highly correlated activity profiles as detected in this study could be beneficial to advertising campaigns by presenting the whole breadth of potential visitor activities possible in New Zealand.

For destination positioning purposes, the activities identified for each typology seem also to relate to very specific destinations within New Zealand. For example, Queenstown is

associated with adventure, skiing, and high value rides and therefore, location-based promotional activities by TNZ seems also to be driving destination choice within New Zealand. Similarly, Rotorua is seen as a focal point for Maori related cultural activities as well as geothermal activities. In this case it appears paramount to direct promotional activities to the predominant demographics that underpin visitor Types 3 or 6. Individual destinations within New Zealand could take the various typologies into account when marketing specifically to package and independent travellers. For example, Types 1, 3, 4, and 9 are strongly associated with package tourists. For such tourists, tours that incorporate culture, nature-based activities, high-value rides, theme/parks and orchards are drivers of destination choice and must imbue advertising strategies for the destination. These activities must also be emphasised by both traditional and online TAs in their communication strategies.

In a more holistic way, as per the three regression models developed in this paper, marketing could be targeted at high spenders in a way that accounts for the different created activity profiles, e.g. older Chinese and Japanese. As many of the internet marketing strategies enable very focused marketing, the whole suite of predictors can be used to specifically associate locations with activity profiles, and then make the extension to the demographic group(s) associated with these profiles. Generally, from the perspective of the destination location, it appears prudent to aim for a maximisation of tourism spending. Given the activity patterns identified in this study, the strongest positive association with spending is related to Type 4, e.g. visitors who engage in high cost adventure activities. Type 4 can be considered as the niche segment to target from a revenue perspective.

Conclusion, Limitations and Areas of Further Research

Whereas previous studies have provided some useful insights into the segmentation of travel markets (Li et al., 2013; Prayag, 2010; Sarigollu & Huang, 2005) using the push-pull

framework and the relationship between these two set of factors (Jang & Cai, 2002; Chen & Chen, 2015), their findings have largely been based on the analysis of cross-sectional data. Ours is the first study that examines the pull attributes **of a destination using a pooled cross-sectional design**. The nine typologies identified and their relationships with travel style, tourist spending and length of stay offer deeper insights into the nature of international tourists' activity preferences.

However, the study is not without limitations. First, due to their nature and purpose, large-**scale annual cross-sectional data based** on secondary data such as the IVS used in the current study, offer a limited range of motivational factors (push and pull) for the destination. As such, the destination attributes that are commonly used in existing studies and the inter-relationships that might be identified from these (Klenosky, 2002) cannot be replicated in this study. This limitation has been at least partly overcome by examining pull attributes from an activity-based perspective. Second, an activity-based typology assumes that tourist behaviour will follow a pattern collectively. However, some tourists will not follow a discernible path and not all tourists can be grouped in specific segments (McKercher et al., 2002). As such, the nine typologies of tourists identified are not mutually exhaustive and there are some overlaps between the segments, which often reflect reality (Li et al., 2013). Third, while the IVS contains several other socio-demographic characteristics of visitors to New Zealand, only the three that are most valuable to practitioners were selected in this study for brevity sake.

Despite these limitations, the study opens avenues for further research **using cross-sectional datasets** such as the IVS for the benefit of both theory and practice. The segments and typologies **identified from pooled cross-sectional datasets** can be used to evaluate and better understand tourism flows within a country, for example, by linking individual locations with the type of activities chosen by international visitors. The competitiveness of domestic

destinations can also be evaluated by comparing the prominence of certain touristic activities in a specific region with those of other domestic destinations. Also, there is currently no study that evaluates over extended periods of time the blurring (Uriely, 2005; Prayag et al., 2015) of the distinction between group and independent travel for any destination. While it is assumed that destinations attract these different travel styles, the evolving nature of this distinction as well as the associated behaviours remains unknown from a temporal perspective. Another fruitful area of future studies would be to link segments and typologies based on visitor activity preferences with environmental preferences.

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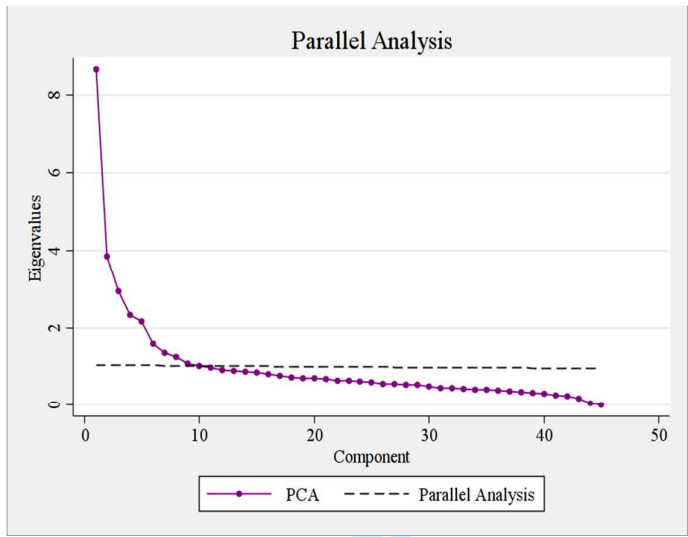
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Figure 1: Parallel Analysis



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Table 1: Major activity associations with the typologies

Type	Description	Gender		Age range			
		Low	High	Low	High	High	
Type 1	Positively correlated typical activities -seals, wildlife, penguins, bird watching, nature attractions, Nature park Negatively correlated typical activities - other water activities, Maori experiences, Museums, life performances	Femal	49.6	51.11	18-24	15.2	13.8
		e Male	50.4	48.89	25-34	24.7	25.4
					35-49	23.6	22.3
					50-64	26.6	27.8
					65-99	9.9	10.6
Type 2	Positively correlated experiences: -Rafting, Air activity, Bungy, Bars, Mountain climb, Extreme ride, Cycling Negatively correlated typical activities - Scenic tours, Farms/orchards, Garden shows, Casino, vinyards	Femal	51.56	47.71	18-24	8.6	24.49
		e Male	48.44	52.29	25-34	18.98	34.29
					35-49	24.46	21.24
					50-64	34.1	15.75
					65-99	13.86	4.22
Type 3	Positively correlated experiences: -Maori experience, life performance, geothermal activity, Marae, Glow worms Negatively correlated typical activities - Skiing/scow activities, bird watching, wateractivity, seals, cycling	Femal	47.79	53.44	18-24	16.83	11.72
		e Male	52.21	46.56	25-34	26.96	21.91
					35-49	22.85	23.76
					50-64	24.77	30.24
					65-99	8.59	12.38
Type 4	Positively correlated experiences: - Jetboat, gondola, scenic flight, boat trip, extreme ride, quad bike Negatively correlated typical activities - Cycling, mountain climb, Marae, swim/surf, beach	Femal	47.65	53.06	18-24	16.14	13.08
		e Male	52.35	46.94	25-34	25.26	24.52
					35-49	24.1	22.12
					50-64	25.68	28.57
					65-99	8.82	11.72
Type 5	Positively correlated experiences: - Museum, Gallery, zoo./wildlife, garden show Negatively correlated typical activities - Farm/orchard, Nature attraction, scenin flight, jetboat	Femal	48.85	52.24	18-24	15.29	13.08
		e Male	51.15	47.76	25-34	25.72	24.52
					35-49	24.19	22.12
					50-64	25.97	28.57
					65-99	8.83	11.72
Type 6	Positively correlated experiences: -Walks/hikes, other important site, nature attraction, beach, garden show Negatively correlated typical activities - Mountain climb, skiing/snow activity, scenic tour	Femal	47.71	52.27	18-24	14.93	14.63
		e Male	52.29	47.73	25-34	25.27	24.61
					35-49	23.62	22.83
					50-64	26.23	27.67
					65-99	9.96	10.26
Type 7	Positively correlated experiences: - Golf, fishing, hunting, sports, swim, surf Negatively correlated typical activities - Skiing/snow activity, Nature park walks/hikes, nature attraction	Femal	51.23	48.49	18-24	15.41	13.92
		e Male	48.77	51.51	25-34	25	24.82
					35-49	22.38	24.34
					50-64	26.87	27.1
					65-99	10.34	9.82
Type 8	Positively correlated experiences: - Bars, casino, golf, extreme rides, skiing/snow activity Negatively correlated typical activities - water activity, horse ride, walks/hikes, rafting, garden show	Femal	52.88	47.06	18-24	11.49	18.27
		e Male	47.12	52.94	25-34	23.38	26.57
					35-49	22.57	23.9
					50-64	30.09	23.64
					65-99	12.46	7.62
Type 9	Positively correlated experiences: - Farms/orchards, theme park, other water activity, nature attractions, other wilde life Negatively correlated typical activities - Whales, dolphins, penguins, rafting, museum	Femal	49.9	50.24	18-24	14.99	14.54
		e Male	50.1	49.76	25-34	26.07	23.69
					35-49	22.16	24.36
					50-64	27.07	26.86
					65-99	9.71	10.56

Table 2: Weighted Factor score correlations

	Type1	Type2	Type3	Type4	Type5	Type6	Type7	Type8	Type9
Type1	1.000								
Type2	0.229	1.000							
Type3	0.218	-0.067	1.000						
Type4	0.167	-0.184	0.317	1.000					
Type5	0.135	-0.042	0.246	0.255	1.000				
Type6	0.298	0.188	0.167	0.119	0.182	1.000			
Type7	0.169	0.097	0.031	-0.220	0.009	0.055	1.000		
Type8	-0.105	0.211	-0.175	-0.185	-0.101	-0.013	-0.209	1.000	
Type9	0.042	0.006	0.112	-0.032	0.078	-0.064	-0.012	0.134	1.000

Table 3: Rotated factor loading means by year

Country	Visitor Type 1	Visitor Type 2	Visitor Type 3	Visitor Type 4	Visitor Type 5	Visitor Type 6	Visitor Type 7	Visitor Type 8	Visitor Type 9
1997	-0.574	-0.447	0.200	0.067	0.011	-1.138	0.071	-0.362	0.034
1998	-0.471	-0.191	0.117	-0.008	0.100	-0.609	0.138	-0.109	0.004
1999	-0.497	-0.197	0.049	-0.094	0.013	-0.559	0.019	-0.037	-0.021
2000	-0.504	-0.169	0.046	-0.061	0.036	-0.512	0.010	-0.006	-0.139
2001	-0.539	-0.127	-0.064	-0.146	-0.063	-0.557	0.009	0.051	-0.079
2002	-0.487	-0.122	-0.038	-0.157	-0.088	-0.525	-0.036	0.058	-0.143
2003	-0.387	0.039	-0.014	-0.032	0.136	-0.166	-0.076	0.061	-0.192
2004	-0.395	-0.145	0.063	0.124	0.186	-0.121	-0.042	-0.109	-0.127
2005	-0.411	-0.051	0.090	0.119	0.166	0.117	-0.109	-0.020	-0.099
2006	-0.393	-0.111	-0.023	0.118	0.170	0.171	-0.143	-0.010	-0.112
2007	-0.362	-0.143	-0.038	0.095	0.103	0.290	-0.154	-0.064	-0.077
2008	-0.305	-0.092	-0.058	0.074	0.182	0.510	-0.183	0.009	-0.049
2009	-0.369	-0.038	-0.171	0.035	0.007	0.508	-0.172	0.069	-0.147
2010	-0.361	-0.035	-0.183	0.040	0.048	0.641	-0.121	0.103	-0.053
2011	-0.373	-0.037	-0.175	-0.061	-0.035	0.612	-0.017	0.148	-0.010
2012	-0.409	-0.139	-0.133	-0.006	-0.033	0.587	-0.122	0.043	0.109
2013	0.219	0.001	-0.162	-0.070	-0.210	0.337	0.057	0.040	0.227
2014	1.044	0.238	-0.098	-0.120	-0.346	-0.015	-0.003	0.277	0.431
2015	1.131	0.143	0.001	0.015	-0.357	0.048	0.012	0.152	0.480

Table 4: Logistic regression model 'Traveller type' (Package tourist)

Variables	Coefficients	z		Predicted margin
Visitor Type 1	0.158	5.42	**	
Visitor Type 2	-0.126	-5.23	**	
Visitor Type 3	0.584	34.56	**	
Visitor Type 4	0.497	26.24	**	
Visitor Type 5	-0.123	-7.02	**	
Visitor Type 6	-0.162	-7.47	**	
Visitor Type 7	-0.224	-10.42	**	
Visitor Type 8	-0.011	-0.59		
Visitor Type 9	0.224	10.2	**	
Length of stay (ln)	-0.662	-25.89	**	
Age group				
18 – 24				0.27
25 – 34	-0.204	-3.61	**	0.24
35 – 49	0.018	0.31		0.27
50 – 64	0.435	7.47	**	0.33
65 – 99	1.090	16.19	**	0.43
Gender				
Female				0.30
Male	-0.055	-1.68		0.29
year				
1997				0.29
1998	0.274	4.03	**	0.33
1999	0.393	6.01	**	0.35
2000	0.539	8.19	**	0.37
2001	0.364	5.42	**	0.34
2002	0.364	5.42	**	0.34
2003	-0.162	-1.68		0.27
2004	0.043	0.51		0.29
2005	0.137	1.54		0.31
2006	0.345	3.72	**	0.34
2007	0.071	0.76		0.30
2008	0.270	2.83	**	0.33
2009	-0.291	-3.26	**	0.25
2010	-0.415	-4.37	**	0.24
2011	-0.391	-4.07	**	0.24
2012	-0.645	-7.21	**	0.21
2013	-0.655	-6.82	**	0.21
2014	-0.312	-3.24	**	0.25
2015	0.646	5.68	**	0.38
Country				
Australia				0.23
Canada	-0.283	-3.39	**	0.19
China	1.686	17.43	**	0.51
Denmark	0.298	1.78		0.27
France	0.227	1.55		0.26
Germany	0.341	4.11	**	0.28

India	0.996	6.99	**	0.38
Ireland	-0.776	-3.99	**	0.14
Israel	-0.918	-4.23	**	0.12
Japan	1.582	28.97	**	0.49
Korea	1.509	16.86	**	0.48
Malaysia	0.535	4.66	**	0.31
Netherlands	0.165	1.36		0.25
Other	0.081	1.33	**	0.24
Singapore	0.420	4.93	**	0.29
South Africa	-0.634	-2.98	*	0.15
Sweden	-0.403	-2.5		0.18
Switzerland	-0.095	-0.61		0.22
Taiwan	1.369	16.67	**	0.45
Thailand	0.731	5.64	**	0.34
United Kingdom	-0.190	-3.08	**	0.20
United States	0.228	4.58	**	0.26
Const	-0.248	-2.48	*	
Pseudo R2	0.3			

*significant at 5% confidence level

**significant at 1% confidence level

Table 5: OLS regression model 'Weighted tourist spending (ln)'

Variables	Coefficients	z		Predicted margin
Visitor Type 1	0.072	7.72	**	
Visitor Type 2	0.044	6.7	**	
Visitor Type 3	0.069	15.01	**	
Visitor Type 4	0.197	39.63	**	
Visitor Type 5	0.003	0.68		
Visitor Type 6	0.014	2.54	*	
Visitor Type 7	0.019	3.8	**	
Visitor Type 8	0.034	6.93	**	
Visitor Type 9	0.000	0.07		
Length of stay (ln)	0.370	44.16	**	
Age group				
18 – 24				2,009
25 – 34	0.164	11.55	**	2,366
35 – 49	0.297	18.6	**	2,702
50 – 64	0.351	20.68	**	2,853
65 – 99	0.396	19.46	**	2,983
Gender				
Female				2,517
Male	0.036	3.79	**	2,610
Year				
1997				2,315
1998	0.042	1.84		2,414
1999	0.165	7.9	**	2,730
2000	0.252	12.33	**	2,978
2001	0.269	12.21	**	3,029
2002	0.293	13.67	**	3,103
2003	0.156	5.91	**	2,706
2004	0.081	3.32	**	2,511
2005	0.090	3.59	**	2,532
2006	0.180	7.14	**	2,771
2007	0.145	5.53	**	2,676
2008	0.191	7.51	**	2,803
2009	0.192	7.71	**	2,804
2010	0.078	3.04	**	2,504
2011	0.111	4.36	**	2,587
2012	0.090	3.46	**	2,533
2013	-0.058	-2	*	2,185
2014	-0.125	-3.11	**	2,042
2015	-0.083	-2.32	*	2,130
Country				
Australia				2,157
Canada	0.096	4.65	**	2,375
China	0.528	17.29	**	3,657
Denmark	0.184	3.01	**	2,593
France	0.196	4.75	**	2,625
Germany	0.249	12.4	**	2,767
India	0.067	1.25		2,306
Ireland	0.143	4.54	**	2,488
Israel	0.022	0.46		2,204

Japan	0.539	27.89	**	3,700
Korea	0.068	2.2	*	2,310
Malaysia	0.085	2.37	*	2,349
Netherlands	0.178	6.1	**	2,578
Other	0.139	6.4	**	2,479
Singapore	0.195	8.41	**	2,621
South Africa	-0.026	-0.47		2,101
Sweden	0.112	2.89	**	2,412
Switzerland	0.223	7.38	**	2,697
Taiwan	0.163	6.22	**	2,538
Thailand	0.116	3.16	**	2,423
United Kingdom	0.161	11.55	**	2,534
United States	0.268	18.83	**	2,819
Const	6.480	200.9	**	
Pseudo R2	0.27			

*significant at 5% confidence level

**significant at 1% confidence level

Table 6: OLS regression model 'Length of stay (ln)'

Variables	Coefficients	z		Predicted margin in days
Visitor Type 1	0.219	33.87	**	
Visitor Type 2	0.172	39.13	**	
Visitor Type 3	-0.054	-15.13	**	
Visitor Type 4	0.024	5.67	**	
Visitor Type 5	0.083	22.15	**	
Visitor Type 6	0.128	28.51	**	
Visitor Type 7	0.111	24.69	**	
Visitor Type 8	-0.010	-2.3	*	
Visitor Type 9	0.004	1.01		
Weighted Spend (ln)	0.253	38.16	**	
Age group				
18 – 24	-0.168	-13.67	**	12
25 – 34	-0.260	-19.67	**	10
35 – 49	-0.208	-13.9	**	9
50 – 64	-0.120	-7.15	**	10
65 – 99				10
Gender				
Female				10
Male	-0.025	-3.17	**	10
Year				
1997				13
1998	-0.111	-6.04	**	12
1999	-0.126	-7.01	**	12
2000	-0.146	-8.17	**	12
2001	-0.137	-7.32	**	12
2002	-0.161	-8.5	**	11
2003	-0.166	-7.46	**	11
2004	-0.196	-9.56	**	11
2005	-0.238	-11.13	**	11
2006	-0.279	-12.52	**	10
2007	-0.261	-11.21	**	10
2008	-0.338	-14.83	**	10
2009	-0.330	-15.57	**	10
2010	-0.332	-15.15	**	10
2011	-0.379	-17.1	**	9
2012	-0.363	-15.75	**	9
2013	-0.496	-20.12	**	8
2014	-0.595	-18.01	**	7
2015	-0.636	-24.02	**	7
Country				
Australia				10
Canada	0.177	8.63	**	12
China	-0.693	-30.23	**	5
Denmark	0.269	6.79	**	14
France	0.315	9.38	**	14
Germany	0.341	17.91		15
India	0.008	0.21	**	10
Ireland	0.253	8.33	**	13
Israel	0.583	15.45	**	19

Japan	-0.373	-27.42	**	7
Korea	-0.478	-25.12	*	6
Malaysia	0.087	2.26	**	11
Netherlands	0.368	15.67	**	15
Other	0.100	4.7	*	11
Singapore	-0.033	-1.77	**	10
South Africa	0.263	5.54	**	13
Sweden	0.098	2.66	**	11
Switzerland	0.318	9.5	**	14
Taiwan	-0.121	-5.95	**	9
Thailand	-0.139	-4.24	**	9
United Kingdom	0.255	19.18	**	13
United States	-0.144	-12.34	**	9
Const	0.891	16.85	**	
Pseudo R2	0.47			

*significant at 5% confidence level

**significant at 1% confidence level

For Peer Review

Appendix 1: Rotated Factor loadings

Variable	Type1	Type2	Type3	Type4	Type5	Type6	Type7	Type8	Type9	Uniqueness
Expl Variance	19.26%	8.59%	6.53%	5.20%	4.81%	3.52%	3.05%	2.80%	2.43%	
Other import site	-0.251	-0.097	0.211	0.184	0.147	0.707	-0.008	0.084	0.080	0.344
Other water activity	-0.248	0.191	-0.138	0.223	0.041	0.177	0.276	-0.258	0.287	0.590
Maori exper.	-0.232	0.110	0.955	0.047	0.028	0.034	-0.045	0.047	-0.047	0.148
Museum NI	-0.190	0.071	0.009	-0.067	0.959	0.129	-0.012	0.025	-0.138	0.080
live performance	-0.165	0.035	0.926	0.059	-0.011	0.041	-0.009	0.050	0.046	0.179
Fishing/Hunt	-0.117	0.066	-0.072	-0.039	-0.040	-0.115	0.691	0.007	0.050	0.529
Golf	-0.113	-0.073	-0.027	0.185	-0.020	-0.066	0.780	0.440	-0.132	0.478
Bungy	-0.099	0.703	0.100	0.242	0.004	-0.105	-0.056	0.190	-0.098	0.473
Horse ride	-0.091	0.427	0.053	0.158	-0.030	-0.122	0.176	-0.220	0.065	0.650
Garden show	-0.075	-0.170	0.002	0.048	0.362	0.470	-0.105	-0.175	0.257	0.464
Jet boat	-0.057	0.256	0.036	0.758	-0.103	-0.124	0.075	0.120	0.001	0.391
Extreme ride	-0.056	0.462	0.072	0.500	-0.090	0.222	0.021	0.376	0.156	0.355
Sports	-0.052	0.208	-0.106	-0.076	0.042	0.126	0.396	0.276	0.036	0.699
Air Activity	-0.042	0.716	0.122	0.160	-0.002	0.076	-0.099	-0.006	-0.119	0.461
Rafting	-0.014	0.729	0.107	0.057	0.013	0.014	0.040	-0.203	-0.145	0.355
Casino	0.002	-0.139	0.176	0.189	0.071	-0.040	0.320	0.719	-0.036	0.564
Quad bike	0.018	0.208	-0.098	0.426	-0.035	-0.081	0.184	-0.131	0.196	0.616
Skiing/snow act	0.035	0.410	-0.300	0.240	-0.030	-0.284	-0.263	0.300	0.025	0.415
Geothermal	0.069	0.149	0.820	-0.071	-0.006	0.163	-0.044	0.042	0.022	0.271
Scenic tour	0.077	-0.310	0.186	0.250	0.162	-0.249	0.006	-0.171	0.197	0.580
Walks/hikes	0.118	0.194	-0.075	0.078	0.112	0.520	-0.152	-0.211	-0.104	0.454
Mount climb	0.131	0.482	0.156	-0.137	0.217	-0.302	0.004	-0.099	0.067	0.585
Gondola	0.147	0.078	0.000	0.659	0.069	0.256	-0.091	0.276	0.123	0.332
Theme park	0.153	0.088	-0.108	0.266	0.058	0.225	-0.129	0.028	0.480	0.565
Swim/surf	0.161	0.323	0.057	-0.272	-0.054	0.233	0.344	-0.081	0.018	0.456
Cycling	0.183	0.460	-0.112	-0.131	0.051	0.012	0.073	-0.146	0.106	0.600
Glow worms	0.189	0.155	0.486	0.181	-0.024	0.002	-0.069	-0.020	0.019	0.580
Zoo/wildlife	0.190	-0.126	0.122	0.111	0.401	-0.080	0.133	0.189	0.133	0.653
Scenic flight	0.192	-0.086	-0.020	0.634	-0.116	0.031	0.130	-0.069	-0.103	0.494
Bar	0.194	0.505	-0.106	-0.074	0.101	0.016	0.148	0.407	-0.038	0.473
Museum/Gall	0.200	0.038	-0.037	-0.103	0.924	0.042	-0.038	0.074	-0.063	0.103
Whales	0.265	0.200	0.038	0.173	0.111	-0.002	0.068	-0.161	-0.439	0.489
Boat trip	0.305	-0.097	0.057	0.520	0.048	0.129	-0.052	-0.129	-0.136	0.403
Beach	0.321	0.103	0.075	-0.287	0.011	0.471	0.192	-0.019	0.019	0.401
Vineyards	0.371	-0.132	-0.096	0.131	0.033	0.194	0.308	0.186	-0.070	0.662
Farm/orchard	0.382	-0.237	0.203	0.016	-0.197	0.077	0.049	-0.122	0.579	0.385
Marae	0.432	0.015	0.587	-0.146	-0.090	-0.005	-0.041	0.132	0.101	0.437
Dolphins	0.484	0.208	0.074	0.097	0.016	0.024	0.104	-0.121	-0.276	0.418
Nature attract	0.515	0.046	-0.006	0.101	-0.121	0.488	-0.132	-0.002	0.264	0.349
Other boating	0.597	-0.044	-0.008	0.056	-0.052	-0.078	0.246	0.055	0.079	0.538
Penguins	0.671	-0.023	-0.107	0.148	0.086	0.072	-0.052	-0.103	-0.186	0.394
Other wildlife	0.741	-0.014	-0.043	-0.074	0.044	-0.144	0.008	0.099	0.264	0.423
Seals	0.745	0.042	-0.129	0.166	-0.008	0.141	-0.073	-0.046	-0.107	0.312
Nature park	0.830	0.076	0.013	0.028	-0.010	-0.148	-0.164	0.028	0.047	0.371
Bird Watch	0.975	-0.087	-0.138	-0.001	-0.018	-0.049	-0.073	0.041	0.123	0.192

Authors' Responses to Reviewer Comments

We thank Reviewer 1 for reviewing our paper and providing constructive feedback on the manuscript. We have taken on board all of the comments and suggestions offered by the reviewer and changed the manuscript accordingly. The changes are highlighted in yellow in the manuscript and outlined in the table below.

Reviewer Comments	Authors' Response
Title: The title is long and cumbersome and seems to be two separate titles combined.	We have modified the title and the new version is as follows: 'Pull' motivation: An activity-based typology of international visitors to New Zealand
Introduction: This section could be improved by presenting clearly defined research questions, and to clarify how this study aims to contribute to the gaps in the existing literature. Please note that making a case that previous studies have relied on cross-sectional data, therefore this research makes a new contribution as it uses longitudinal data, is not sufficient.	We have now included clearly defined research questions and reworded the contributions of the study to make them clearer and added additional contributions beyond the use of pooled data. Please see the manuscript.
The review of literature on pull factors and benefit segmentation is well constructed, however, there is an excessive use of references which affects the flow. Many of the references are over 10 years old so I wonder if the section could be improved if it focussed on the recent advancements in this field.	We thank the Reviewer for pointing this out. We managed to delete a total of 12 references, all published more than 10 years ago, without negatively affecting the integrity of our paper. Unfortunately not all references >10 years old could be deleted as some of the seminal studies pertain to an earlier time period. Also, we needed to illustrate evolution of the body of knowledge in this field. The literature review part is now less cluttered. We have also added a few more recent references (2016/2017) to support our arguments.
Data and Method. This section of the paper is one the weakest. There is a long-winded discussion of the IVS and a textbook explanation of factor analysis. These can be streamlined - i.e. brief overview of the IVS and succinct overview of the chosen method (parallel analysis). What is needed in this section is a discussion of longitudinal data analysis. Both the Intro and lit review sections have highlighted gaps in previous studies that were limited to cross-sectional data. The authors now need to make sound case as to how analysing IVS data over a 19 year period can present new insights to	As far the main criticism of reviewer 1 goes, we agree that the labelling of our study as 'longitudinal' is somewhat incorrect. Our study is not based on the recurring surveying of the same individuals but on an annually repeated survey of different individuals on the same subject. As such, our study represents a pooled cross-sectional study. We have amended our paper accordingly and changed the labelling where necessary. In respect to necessary changes in our modelling we think that we had originally addressed the

<p>theory. A problem I have with the current design is that the authors make a general assumption that the data analysis is longitudinal. However, a longitudinal research design collects data from the same participants across X time periods (i.e. repeated observations from the same participants). This is not the case for IVS as data is collected from different participants. However, longitudinal studies can be retrospective as is the case here and based on a cohort study. The authors may be able to justify the case for a longitudinal cohort study, i.e. members of the cohort (visitors to NZ) share common characteristics. In such case, the method of analysis needs to be framed to this particular type of research design. In its current form, the analysis appears to be cross-sectional analysis of historical secondary data. This needs attention.</p>	<p>pooled cross sectional data character of our study by including a categorical year group indicator in our modelling to absorb time specific variation. As we can assume independence between the individuals in different years of data collection, we can discount the issue of serial correlation in the residuals in regression analysis and it is thus unnecessary to employ a multilevel model where the year of data collection constitutes a random effect. However, in order to better account for the pooled cross-sectional design we have disaggregated the year groups from our original models into individual years, and also made some changes to the categorical country variables (countries with smaller visitor numbers are combined in 'other' category).</p> <p>By making these changes, we have now clearly positioned the paper to be based on pooled cross-sectional rather than longitudinal. However, by disaggregating the regression model by years we are able to show significant changes, if any, for each year.</p> <p>Changes are highlighted in yellow in the manuscript</p>
<p>The Findings section also needs to reflect my comments above regarding the factor analysis of longitudinal data .This is briefly presented on page 12 last paragraph and Page 13 first paragraph - this is an important section that requires depth of discussion.</p>	<p>We streamlined discussion of the survey and discussion of factor analysis.</p> <p>We added more context in respect to the method of analysis used. Please see highlighted sections in the manuscript.</p> <p>We have fixed a minor error in Table 1 (a significant correlation wasn't highlighted)</p>
<p>The discussion of the typologies also needs improvements. Figure 2 presents limited information - why not present a table that identifies the cluster groups and their corresponding demographic and behaviour characteristics?.</p>	<p>We have made some minor modifications to the three models and replaced the original ones to highlight yearly changes. We have added the main demographics for each typology in 'new' Table 1.</p>
<p>Finally, what is the purpose of Appendix 2 and how are readers expected to interpret these findings?</p>	<p>We have deleted Appendix 2 (which was essentially a graphical representation of Table 2 in the previous version of the manuscript).</p>