Order does matter: Recency effects in tourist satisfaction after multi-destination trips

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Abstract:

Whereas the drivers of tourist satisfaction with a destination have been largely studied, we know little about whether the serial order of the destination in multi-destination trips plays a role in explaining satisfaction. Based on a large longitudinal data set and using ordered probit models, we show that tourists are systematically highly satisfied with those destinations visited later within a multi-destination trip. This finding is conditional on a large set of controls and individual random effects. Interestingly, length of stay at each destination, age and travel party size are found to be significant mediators of the relationship between the serial order of the trip and satisfaction, partially counterbalancing recall bias. The results provide evidence of recency effects in tourist satisfaction recall and have important implications for the interpretation of tourist satisfaction studies.

Keywords: multi-destination trips; tourist satisfaction; recency effects

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1. INTRODUCTION

There is wide consensus among academics and destination managers that tourist satisfaction is a key aspect for loyalty behaviors (Kim, 2017), the spread of positive word of mouth (Wang et al., 2017) and reputation building (Marinao-Artigas et al., 2015), among others. A vast body of literature has studied the factors that shape tourist satisfaction with a destination. However, far less is known yet about whether satisfaction is affected by the serial order of the destination, since retrospective evaluations of experienced utility are subject to cognitive biases (Kahneman et al., 1997). Tourists nowadays tend to engage in multi-destination trips in which they visit different destinations within the same trip (Tussyadiah et al., 2006; De Oliveira-Santos et al., 2011). A robust literature in psychology and economics documents that order matters for recall and judgement (Bruine de Bruin, 2005; 2006; Page & Page, 2010). Individuals have been shown to recall better events that take place at the beginning (primacy effect) or at the end (recency effect) of a series (Jahnke, 1965). Therefore, the serial position of the destination is likely to be non-neutral for tourists' post-trip evaluation.

The goal of this paper is to empirically examine the influence of the serial order of the visited destination in tourists' satisfaction using large-scale data. We study the relationship between destination satisfaction (defined at NUTS 3 regional aggregation level) on a 0-10 scale and destination order using a representative longitudinal dataset of multi-destination trips undertaken by Spanish residents covering the period 2015-2019. Spain is selected as the case study because, apart from being the second most visited country in the world behind France before the pandemic (UNWTO, 2018), this country presents one of the highest tourist participation rates in Europe (Eurostat, 2022).

In the first part of our analysis, we run cross-sectional and panel linear and ordered probit regressions to estimate the effect of the sequential order of the trip on satisfaction conditional on a large set of control variables. Potential sample selection into multi-destination trips is explicitly modelled. This is done both assuming linear and asymmetric effects. Next, we evaluate the mediating effect of some sociodemographic and trip-related characteristics like age, length of stay or the composition of the travel party. Using the KHB method (Karlsson et al., 2012; Kohler et al., 2011), we disentangle which part of the documented relationship between destination order and satisfaction is mediated by travel-related factors and personal characteristics.

To date, empirical evidence on order effects in tourist satisfaction is rather limited. The recent studies by Zare and Pearce (2018; 2021) and Peluso et al. (2022) are among the few that have evaluated whether different orders of visiting destinations exert an effect on the memorability of them. Zare and Pearce (2018; 2021) show that tourist recall the first destination in a sequence better and rate the last destination in the itinerary higher. Peluso et al. (2022) report that individuals provide better evaluative responses of the overall experience when the constituting episodes unfold in an increasing attractiveness order.

We expand these works in different directions. First, whereas these studies analyse order effects on which destination the respondent liked best (Zare and Pearce, 2021) or on the overall experience (Peluso et al., 2022), we study the role of the sequential order of the trip on the *intensity* of tourist satisfaction with each individual destination. Second, this work considers different sociodemographic profiles, travel motivations, types of destinations visited and periods together with individual random effects capturing unobserved heterogeneity. In this way, we can investigate whether order effects in tourists' post-trip evaluation are the result of contextual factors or hold under different settings. Third and more importantly, we evaluate the mediating effect of some tourist sociodemographic characteristics like gender, age and education, and trip-related factors like the length of the stay at each destination and the composition of the travel party. Some previous works in psychology and consumer behavior have shown that primary and recency effects in retrospective evaluations vary with the duration of the episode (Ariely & Loewenstein, 2000) or the presence of other people (Bhargave & Montgomery, 2015). In this way, the paper does not only study order effects but also deepens into the potential sources of recall bias in tourist satisfaction.

2. LITERATURE REVIEW

2.1.Recall and recency effects in evaluation

In a seminal paper, Kahneman et al. (1997) make a clear distinction between the standard decision utility used in economic analysis (inferred from observed choices from a set of options under utility maximization framework) and experienced utility in the spirit of Benham, which is a measure of the subjective quality of a hedonic and affective experience. According to these authors, the total utility of an episode (e.g., a vacation) can be understood as the sum of

experienced utility at each moment in time. The authors indicate that when making retrospective evaluation of the hedonic quality of a past episode (labelled as 'remembered utility'), individuals are susceptible to framing effects, memory limitations and recall errors. Mullainathan (2002) proposes an exponential decay model of recall probabilities according to which events at later positions are more likely to being remembered better (recency effect). As a result, global evaluations of temporally extended outcomes tend to overweight some parts of the experience and underweight others (Kahneman & Thaler, 2006).

A complementary explanation for recall bias in retrospective evaluations is provided by Montgomery and Unnava (2009). Their memory-based framework postulates that peak, end and trend intensities of the overall experience will determine how individuals will later recall it. The length of each of the different events that integrate the overall episode is another relevant aspect, since utility integration of sequences has been found to violate monotonicy (Ariely & Loewenstein, 2000; Varey & Kahneman, 1992).

Aside from memory limitations and recall errors, an alternative explanation for recency effects is consumers' preference for happy endings (Loewenstein & Prelec, 1993). According to this framework, if an experience consists of both positive and negative events, it is more satisfactorily evaluated if the positive ones occur at later stages (Ross & Simonson, 1991). That is, people prefer improving versus deteriorating sequence of outcomes (Baucells & Sarin, 2013).

At the empirical level, Wilson (1977) is one of the first studies that documented a significant negative correlation between the final ranks in synchronized swimming championships and the serial position occupied by the swimmers. Since then, several works have reported the existence of serial position effects in rating evaluations by which performers (events) that appear (take place) later received more favourable evaluations. Bruine de Bruin (2005, 2006) and Antipov and Pokryshevskaya (2017) show that rating evaluations in contests are affected by order of appearance. Ratings in both end-of-sequence and step-by-step valuation procedures are found to increase linearly with the serial position. Beyond memory errors, another potential explanation for this pattern could be the so-called direction-of-comparison effect: when making a sequential valuation, individuals compare each performance to ones before it but not ones after it. Such unidirectional comparisons result in the unique features of each new performance being overweighted, in line with Tversky's contrast theory (Tversky, 1977). That is, when

evaluating items sequentially, the characteristics of a given item are weighted more heavily than those already evaluated, thereby giving an advantage to items appearing at later positions in a sequence. Empirical evidence by Page and Page (2010) support this, showing that one's performance evaluation is influenced by the evaluation of the previous contestant.

2.2.Existing evidence of order effects in tourist satisfaction

Since tourist satisfaction with a service or destination is central for reputation building, word of mouth effects and loyalty behavior, a large body of research has sought to understand its determinants. There is some consensus that tourist satisfaction is affected by destination quality (Wang et al., 2017), perceived equity (Chang, 2008), travel-related aspects like the composition of the travel party (Su et al., 2021), and tourists' personal characteristics like gender (Wang et al., 2016) or pro-environmental attitudes (Rempel de Olivera et al., 2021), among others.

If we conceptualize satisfaction as an indicator of experienced utility from the consumption of goods that involves a comparison between expectations and actual outcomes (Oliver, 1980), satisfaction will be strongly determined by the 'memorability' of the tourist experience (Zhong et al., 2017). As characterized by Rodríguez-del-Bosque and San-Martín (2008), tourist satisfaction involves both cognitive and emotional factors. In this regard, an emerging body of literature has started to focus on the drivers of memorable tourist experiences. Existing studies show that factors like culture and personal idiosyncrasies (Zare, 2019), personality traits and retrieval cues (Kim & Jang, 2016), destination attributes (Kim, 2014), novelty, social interaction and destination enthusiasm (Kim & Chen, 2019) and unique and unexpected personal experiences (Park & Almeida-Santos, 2017) shape the way tourists assess emotional experiences.

A recent line of research suggests that post-trip recall of emotions are subject to cognitive and motivational biases. Individuals tend to provide a biased account of their emotions (recall bias) when assessing past emotional experiences like rating a tourist destination because of the reconstruction process in the memory. Lee and Kyle (2012) show that the structure of self-reported emotions felt on-site is not exactly the same as that provided in a post-visit survey. Smith et al. (2015) indicate that recall bias emerges because post-experience perceptions are shaped or distorted by events following the trip. In particular, events that take place at the end of a trip seem to exert a greater impact on the post-trip evaluation recall than those that occurred

during earlier parts. This could be taken as suggestive that the order effects in recall evaluations outlined before might also operate when assessing tourist satisfaction with a destination. In memory-based post-travel evaluations of a set of visited destinations, individuals are required to first recall each of the areas visited and then compare them to provide an overall rating. As such, the temporal position of events within a tourist experience are likely to be non-negligible for satisfaction scores.

Paradoxically, the literature investigating order effects in tourist satisfaction is scant to date. Teichert et al. (2021) analyse tourists records on TripAdvisor about different attractions visited sequentially. These authors document that travellers value sightseeing experiences less when a previous attraction offered the same type of experience, being this effect attributable to fatigue dimensions. Zare and Pearce (2018) provide evidence of recency effects in inbound tour guides' recall and evaluation of a set of visited cities. Similarly, Zare and Pearce (2021) examine order effects in tourist satisfaction using post-trip responses from tourists visiting four Iranian cities. They report the existence of primacy and recency effects for evaluative judgements that are linked to the order of visiting. In a recent work, Peluso et al. (2022) report that individuals exhibit like more multi-episode tour experiences when such experiences follow an increasing rather than decreasing attractiveness order. They also document that perceived time pressure reverses this tendency.

This paper aims to extend existing research by looking at whether order effects on tourist satisfaction with each visited destination hold when considering different types of destinations, sociodemographic profiles and periods. In addition, we investigate whether factors like the composition of the travel party, the length of the stay and some sociodemographic characteristics mediate the influence of the sequential order of the trip on satisfaction with each destination visited.

3. DATA

We use longitudinal microdata for Spain from the Domestic Travel Survey, conducted on a monthly basis by the Spanish National Statistics Institute. A representative sample of around 8,000 individuals are surveyed by telephone about their travel patterns. The survey has a rotating sampling design. Respondents are asked about their travel patterns that took place two

months before the survey. For the current analysis, we only work with those respondents that have travelled for leisure purposes (business-related trips and those visiting friends or relatives are excluded) and have visited more than one destination within the same trip. That is, we consider multi-destination trips only. Theoretical characterizations for why tourists engage into multi-destination trips are provided in Tussyadiah et al. (2006) and De Oliveira-Santos et al. (2011).

This survey offers the advantage that we can construct a longitudinal dataset tracking the travel behaviour of the same individual across different destinations visited during the same trip. Specifically, each destination is defined as a NUTS 3 region in which the individual stays overnight at least once during the same trip. Therefore, destinations visited along the way without an overnight stay (i.e., same-day visits) are excluded. For example, if the respondent stays at least one night at the provinces of Seville, Granada and Cádiz along the same trip, this is treated as a multi-destination trip with three different destinations visited.

For the multi-destination subsample, we have valid information for 21,591 trip-destinations visited by 8,976 distinct individuals between February 2015-December 2019. Importantly, both domestic and international destinations are considered in the analysis. In the questionnaire, respondents are asked about several trip-related aspects for each destination visited. Therefore, the survey offers detailed information for each separate destination visited within a multi-destination trip for the same respondent. Several sociodemographic characteristics are also collected. Table 1 presents descriptive statistics of the dataset. Average age is 47 years and respondents live in households with around 2.7 people on average. About 63% have college education and the average length of the stay per destination is 4.4 nights. Around 80% travel by car and 65% in a couple. Additionally, more than half of the trips take place in the third quarter (51.6%).

Individuals rate their overall satisfaction with each visited destination on a 0-10 scale (*Satisfaction*), where 0 means ‘Completely dissatisfied’ and 10 means ‘Totally satisfied’. This 11-point Likert scale implies that a value of 5 represents ‘Neither satisfied nor dissatisfied’. As compared with other 1-5 and 1-7 Likert scales typically used, the 0-10 scale has greater variability, which offers the respondent the possibility to provide a more accurate valuation of satisfaction. Average satisfaction in the sample is 8.67, with a standard deviation equal to 1.10.

Table 1. Descriptive statistics of the dataset

Label	Description	Mean	SD	Min	Max
Continuous variables					
Satisfaction	Satisfaction with the destination (0-10 scale)	8.674	1.106	0	10
Destination Order	Order position of the destination within the multi-destination trip	1.939	0.963	1	9
Age	Age in years	46.99	14.43	16	85
Household size	Number of people living in the household	2.73	1.21	1	11
LOS	Length of stay at destination in days	4.46	5.42	1	107
Binary variables		%			
Female	=1 if female	50.35			
Primary education	=1 if primary studies	2.27			
Secondary education	=1 if secondary studies	33.84			
University education	=1 if university education	63.88			
Income: Level 1	=1 if household monthly income is less than 1,000 €	4.18			
Income: Level 2	=1 if household monthly income is between 1,000 and 1,500 €	12.86			
Income: Level 3	=1 if household monthly income is between 1,500 and 2,500 €	31.53			
Income: Level 4	=1 if household monthly income is between 2,500 and 3,500 €	25.60			
Income: Level 5	=1 if household monthly income is between 3,500 and 5,000 €	18.46			
Income: Level 6	=1 if household monthly income is above 5,000 €	7.33			
Foreign	=1 if not Spanish	3.27			
Unemployed	=1 if currently unemployed	6.12			
Self-employed	=1 if self-employed	5.94			
Temporary Employed	=1 if employed with a temporary contract	8.63			
Employed with indefinite contract	=1 if employed with an indefinite contract	49.42			
Businessperson	=1 if businessperson	4.93			
Retired	=1 if retired	14.93			
Inactive	=1 if inactive (student, disabled, housekeeper)	10.03			
Pop. density: Low	=1 if the municipality of residence is sparsely populated	13.87			
Pop. density: Medium	=1 if the municipality of residence is moderately populated	23.26			
Pop. density: High	=1 if the municipality of residence is highly populated	62.86			
Travel purpose: Sun & beach	=1 if the trip purpose is sun & beach	23.10			
Travel purpose: Cultural	=1 if the trip purpose is culture	18.07			
Travel purpose: Nature-based	=1 if the trip purpose is to recreate in the nature	12.07			
Travel purpose: other	=1 if the trip purpose is one of the following: sports, religious peregrination, well-being, gastronomy, or shopping	40.64			
Car	=1 if travels by car	79.25			
Bus	=1 if travels by bus	4.30			
Train	=1 if travels by train	3.33			
Plane	=1 if travels by plane	11.59			
Alone	=1 if travels alone	5.53			
*Couple**	=1 if travels in a couple	65.31			
*Children**	=1 if travels with children	30.77			
*Friends**	=1 if travels with friends	21.00			
*Other travel companions**	=1 if travels with relatives or with other people (e.g., club members)	13.96			

Label	Description	Mean	SD	Min	Max
Year 2015	=1 if travels in year 2015	14.30			
Year 2016	=1 if travels in year 2016	16.87			
Year 2017	=1 if travels in year 2017	20.34			
Year 2018	=1 if travels in year 2018	25.95			
Year 2019	=1 if travels in year 2019	22.57			
First Quarter	=1 if travels in the first quarter of the year	12.62			
Second Quarter	=1 if travels in the second quarter of the year	22.55			
Third Quarter	=1 if travels in the third quarter of the year	51.66			
Fourth Quarter	=1 if travels in the fourth quarter of the year	13.15			
Bank holidays	=1 if travels during bank holidays	7.94			
Weekend	=1 if travels in a weekend	40.75			
Observations		21,591			
Individuals		8,976			

Note: * indicate that these categories are not mutually exclusive.

We also know the serial order position each visited destination occupies within the overall trip (*Destination order*). Table 2 presents the mean value of satisfaction for each sequential order of the visited destination. Because of their reduced number of observations, destinations visited at serial order 5 or more are collapsed into a single indicator (Destination Order≥5). As it emerges from the table, there seems to be a positive association between destination order and satisfaction.

	Mean satisfaction	Observations
Destination order=1	8.63	7,755
Destination order=2	8.69	9,341
Destination order=3	8.68	3,188
Destination order=4	8.74	912
Destination order≥5	8.79	395

Table 2. Mean satisfaction for each order of the visited destination

Since this positive association might be the result of many confounding factors associated to the different characteristics of each trip and respondents' personal characteristics, Figure 1 plots a covariate-adjusted (residualized) binned scatter plot (Cattaneo et al., 2021). That is, we present the relationship between the serial order of the trip and average tourist's satisfaction in the sample once having conditioned out by a wide set of sociodemographic and trip-related characteristics. Satisfaction appears to be still higher at the latest destinations visited with the same trip.

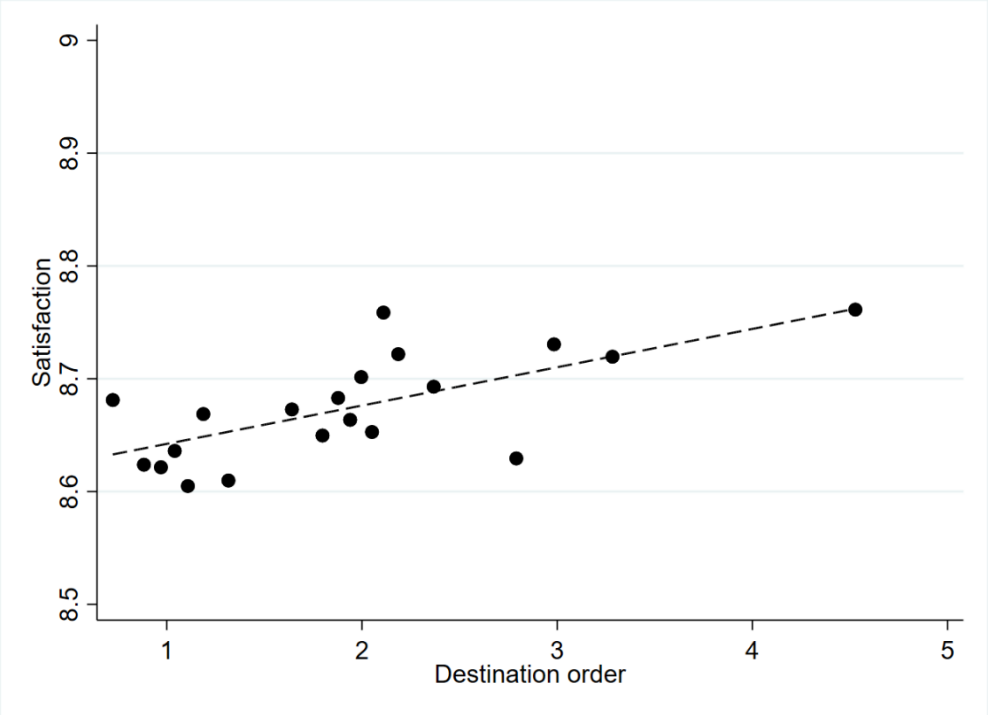

Figure 1. Conditional binned scatter plot of Satisfaction on Destination order

4. ECONOMETRIC MODELLING

To properly examine the role of trip order on tourist's satisfaction net of other confounding factors, we first propose the following panel regression model:

$$Satisfaction_{ijt} = \alpha + \beta Destination\ Order_{ijt} + \gamma X_{ijt} + T_t + R_m + \omega_i + \epsilon_{ijt} \quad (1)$$

where X_{ijt} is a set of control variables varying across individuals (i), destination-trips for the same individual (j) and periods (t), T_t are year and quarter fixed effects capturing temporal and seasonal differences, R_m is a set of province of destination fixed effects, ϵ_{ijt} is a random error term and ω_i are individual-specific effects capturing unobserved heterogeneity that is common across destination-trips for the same individual. The parameter β would measure how satisfaction changes depending on the destination order, everything else being equal.

One potential limitation of the model in (1) is that it assumes the influence of trip order on satisfaction is linear. To relax this, we allow for non-linearities by specifying a model with dummy variables for each order value as follows:

$$Satisfaction_{ijt} = \alpha + \sum_{m=1}^{M} \beta_k d\_Destination\ Order\_m_{ijt} + \gamma X_{ijt} + T_t + R_m + \omega_i + \epsilon_{ijt} \quad (2)$$

The analysis is performed using a sample of tourists visiting more than one destination in the same trip. Since tourists likely self-select into multi-destination trips, a natural concern is potential selectivity bias (Heckman, 1979). To examine this, we first estimate an Ordered Probit model with sample selection as follows:

$$\begin{cases} {d_{ijt}}^* = \mu + \pi Z_{ijt} + \tau X_{ijt} + T_t + \varepsilon_{ijt} \\ Satisfaction_{ijt} = \alpha + \beta Destination\ Order_{ijt} + \gamma X_{ijt} + T_t + R_m + \epsilon_{ijt} \end{cases} \quad (3)$$

where d_{ijt} is a binary indicator for whether the tourist performs a multi-destination trip and the error terms have zero mean and covariance matrix Σ given by:

$$\Sigma = \begin{pmatrix} 1 & \rho \\ \rho & 1 \end{pmatrix} \quad (4)$$

with $\rho = Corr(\varepsilon_{ijt}, \epsilon_{ijt})$. Technical details about ordinal models with sample selection can be found in Miranda and Rabe-Hesketh (2006) and De Luca and Perotti (2011).

The identification of the model in (3) requires the selection equation to contain an exclusion restriction (Z_{ijt}): we need a variable that determines the selection mechanism but is uncorrelated with the outcome variable. [1] We select the share of people engaging into multi-destination trips per Autonomous Community of residence (NUTS 2) and period combination ($Share\_multidest_{it}$), which is computed as follows:[2]

$$Share\_multidest_{it} = \frac{\sum_{i=1}^{m} D\_Multi_{it}}{m-1} \forall i' \neq i \in m \quad (5)$$

[1] There is a discussion in the econometrics literature about the need for exclusion restriction. While authors like Wilde (2000) indicate the model can be identified due to its non-linearity, others like Puhani (2000) advocate for the need of at least an exclusion restriction.

[2] We use the Autonomous Community of origin rather than the province because the Domestic Travel Survey only provides information about the Autonomous Community of origin.

where $D\_Multi_{i,t}$ is a binary indicator for whether respondent *i* observed in period *t* is a multi-destination traveller or not, m is the number of respondents in the sample in each Autonomous Community-period combination including the respondent (e.g., Andalusia-February2015). To avoid a reflection problem, note the respondent himself/herself is excluded in the computation of this share since we sum the number of multi-destination travellers per group (region and period combination) excluding individual *i*.

The rationale for using this exclusion restriction is the following. Aside from the large set of variables that we control for, the decision to engage into multi-destination trips might be affected by cultural traits, transport connectivity, the supply of combined travel packages, marketing campaigns or any other omitted factor at the origin level. These factors that are omitted from the regression are the potential sources of selectivity bias. Figure A1 in Supplementary Material maps the values of $Share\_multidest_{it}$ per Autonomous Community of residence in two selected periods (January 2019 and August 2019). Similar maps can be constructed for any other period. As can be seen, there is heterogeneity in the share of tourists that engage into multi-destination trips per region, and these shares also vary over time and between seasons. Since this share likely captures any omitted factor that varies over time and across regions, this variable is therefore a suitable predictor of the selection into multi-destination trips (relevance condition). To be a valid exclusion restriction, this variable must be uncorrelated with the outcome variable. The correlation between Satisfaction and $Share\_multidest_{it}$ is equal to 0.0067. Since this correlation is almost zero, this variable seems to satisfy the exogeneity requirement. Indeed, cross-sectional OLS and panel Ordered Probit regressions as the ones in model (1) augmented with $Share\_multidest_{it}$ produce insignificant coefficient estimates for this variable (t=-0.11, p-value=0.912 and t=-0.59, p-value=0, respectively). This check shows that $Share\_multidest_{it}$ is a valid exclusion restriction.[3]

[3] Alternatively, Autonomous Community of origin fixed effects could be used as exclusion restrictions. Apart from their potential overlapping with the province of destination fixed effects for those who travel within the borders of the region of residence, their lack of temporal variation makes them less suitable as predictors of the heterogeneity in the probability of engaging into a multi-destination trip over time and across seasons.

5. RESULTS

5.1.Main findings

Table 3 presents the estimation results assuming a linear effect. Columns 1 and 2 report the coefficient estimates from pooled OLS and Ordered Probit regressions that do not consider individual unobserved heterogeneity. Columns 3 shows the estimates from a panel random effects Ordered Probit regression. Finally, Column 4 reports the estimates from the Sample Selection Ordered Probit regression. In all cases, standard errors are clustered at the Autonomous Community of residence level to capture common unobserved shocks related to transport connectivity, travel push motivations or cultural differences that make residuals to be correlated (Boto-García, 2022). Moreover, this clustering adjustment is also required due to the two-stage stratified sampling scheme of the dataset.

To save space, Table 3 only shows the estimates for the key variable of interest. The coefficient estimates for all the control variables are presented in Supplementary Material, Table A1. The estimation results from the Sample Selection Ordered Probit regression are shown in Table A2 in Supplementary Material. We see that $Share\_multidest_{it}$ is highly significant for explaining the probability of engaging into a multi-destination trip. More importantly, the error terms are not significantly correlated.[4] This implies that there are no common unobservables between the decision to perform a multi-destination trip (d_{ijt}) and tourist satisfaction ($Satisfaction_{ijt}$). Put another way, our large set of destination fixed effects, temporal fixed effects, sociodemographic and trip-related controls do a good job in capturing all observable sources of heterogeneity. This implies that a regression model on the multi-destination tourists subsample offers consistent estimates of the parameters, since there is no evidence of selectivity bias. Indeed, note the coefficient estimate in Column 4 in Table 3 is roughly the same as that in column 2. All in all, we can state that the regression using the subsample of multi-destination travellers do not suffer from selectivity bias conditional on the wide set of controls we use.

[4] Heckman two-step regressions assuming *Satisfaction* is continuous rather than ordinal produce similar results, since the inverse Mills ratio is not found to be significant (Supplementary Material, Table A3). As discussed in Greene (2000, p.843), selection bias can be understood as a problem of omitted variables. If the coefficient associated with the inverse Mills ratio in the second stage is not statistically different from zero, this implies a regression on the subsample of interest produces unbiased and consistent estimates of the parameters.

We document a positive and significant relationship between the trip order and destination satisfaction. Therefore, there is evidence of recency effects in satisfaction, with destinations visited later in the sequence order being on average better rated. Importantly, this result is conditional on a large set of sociodemographic characteristics (age, nationality, education, income, labour status, household size, population density at the place of residence), trip-related factors (length of stay, trip purpose, travel companions and mode of transport), time effects (quarter and year fixed effects) and regions of destination (NUTS 3) fixed effects. As such, the positive effect reported is not likely to stem from neglected trip- or individual-specific heterogeneity. Interestingly, the magnitude of the effect seems to slightly increase when we consider individual-specific unobserved heterogeneity in the form of random effects.

Table 3. Estimation results of Satisfaction on Destination Order assuming a linear relationship conditional on a set of controls.

Dependent variable: Satisfaction Explanatory variables	(1) OLS	(2) Ordered Probit	(3) Panel Ordered Probit	(4) Ordered Probit with sample selection
Destination Order	0.034**	0.035***	0.060***	0.035***
	(0.012)	(0.012)	(0.014)	(0.012)
Socioeconomic controls	YES	YES	YES	YES
Trip-specific controls	YES	YES	YES	YES
Time controls	YES	YES	YES	YES
Province of destination fixed effects	YES	YES	YES	YES
Individual random effects	NO	NO	YES	NO
Observations	21,591	21,591	21,591	21,591
Individuals	8,976	8,976	8,976	8,976

Note: Clustered standard errors at the Autonomous Community (NUTS 2) of residence in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Socioeconomic controls include gender, age (in years), foreign nationality, educational level (secondary or college education, with primary studies as the reference category), income (in intervals), household size (number of people), labour status (retired, businessperson, self-employed, unemployed, temporarily employed and employed with an indefinite contract, with inactive people being the omitted category) and population density at the place of residence (high and medium density, with low density being the omitted category). Trip-specific controls include the length of the stay (in days), trip purpose (Sun and beach, cultural or nature-based, with the rest collapsed in the reference category), travel companions (solo trip, couple, children and friends, with the rest of options gathered in the omitted category) and the mode of transport (Bus, Train and Plane, Car being the omitted category). Time controls are quarter and year dummies and whether the trip takes place during a weekend or bank holidays period.

Table 4 shows the results for the model in (2) that allows for potential non-linear effects in the role of destination order. The first destination visited is left as the reference category. The full coefficient estimates are shown in Supplementary Material, Table A4. We document that the linear assumption seems plausible: relative to the first destination visited, satisfaction increases sequentially with the order position. Importantly, there is no evidence of primacy effects since satisfaction is significantly lower at the first destination visited.

Table 4. Estimation results of Satisfaction on Destination Order using dummy variables conditional on a set of controls.

Dependent variable: Satisfaction Explanatory variables	(1) OLS	(2) Ordered Probit	(3) Panel Ordered Probit	(4) Ordered Probit with sample selection
Destination Order=2	0.063***	0.063***	0.093***	0.063***
	(0.014)	(0.014)	(0.019)	(0.014)
Destination Order=3	0.061**	0.065***	0.123***	0.065***
	(0.021)	(0.019)	(0.021)	(0.019)
Destination Order=4	0.103*	0.104*	0.159***	0.104*
	(0.053)	(0.054)	(0.056)	(0.054)
Destination Order≥5	0.169**	0.169**	0.211*	0.169**
	(0.077)	(0.078)	(0.109)	(0.078)
Socioeconomic controls	YES	YES	YES	YES
Trip-specific controls	YES	YES	YES	YES
Time controls	YES	YES	YES	YES
Province of destination fixed effects	YES	YES	YES	YES
Individual random effects	NO	NO	YES	YES
Observations	21,591	21,591	21,591	21,591
Individuals	8,976	8,976	8,976	8,976

Note: Clustered standard errors at the Autonomous Community (NUTS 2) of residence in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Socioeconomic controls include gender, age (in years), foreign nationality, educational level (secondary or college education, with primary studies as the reference category), income (in intervals), household size (number of people), labour status (retired, businessperson, self-employed, unemployed, temporarily employed and employed with an indefinite contract, with inactive people being the omitted category) and population density at the place of residence (high and medium density, with low density being the omitted category). Trip-specific controls include the length of the stay (in days), trip purpose (Sun and beach, cultural or nature-based, with the rest collapsed in the reference category), travel companions (solo trip, couple, children and friends, with the rest of options gathered in the omitted category) and the mode of transport (Bus, Train and Plane, Car being the omitted category). Time controls are quarter and year dummies and whether the trip takes place during a weekend or bank holidays period.

Figure 2 presents the average marginal effects (AMEs) of *Destination Order* (vertical axis) for each potential value of *Satisfaction* (horizontal axis) based on the estimates from column 3 in Table 3. These AME indicate the percentage point increase in the probability of rating satisfaction with each possible value when the position of the destination increases by one unit. The values are shown in Supplementary Material, Table A5. We find that the probability of rating the trip with less than 5 does not change with the trip position. However, there is a significant shift from 6-8 scores to 9-10. That is, tourists are more likely to switch their destination valuation from 'Moderately satisfied' to 'Totally satisfied' as the destination order increases. This suggests that individuals have a significant predisposition to better rate destinations visited at latter steps in multi-destination trips. In any case, the effect size on satisfaction is reduced.

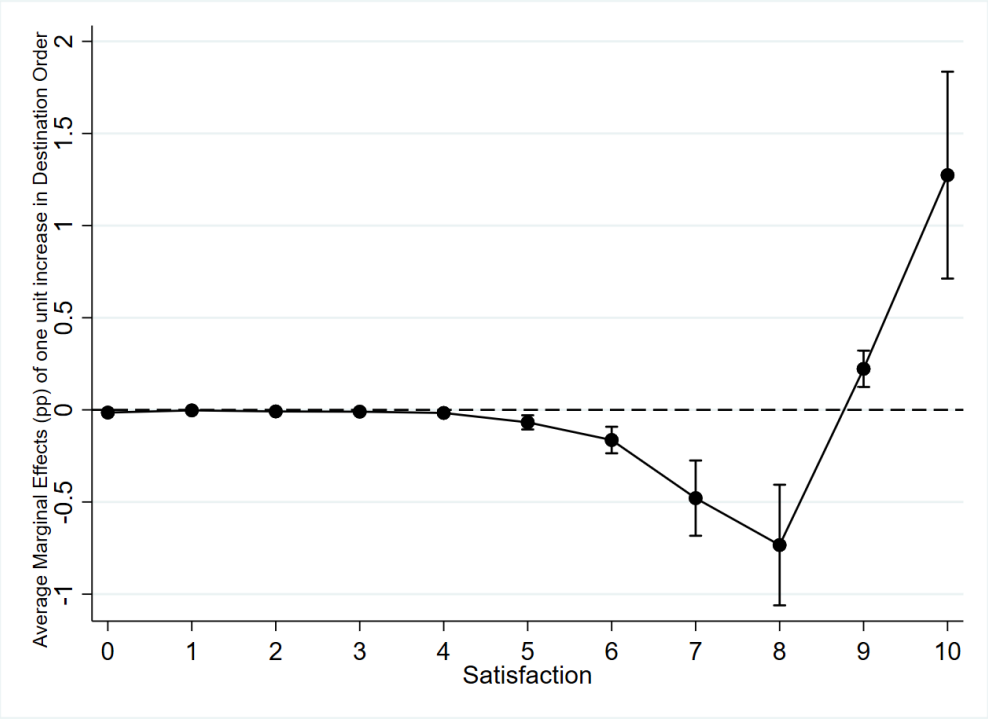

Figure 2. Average Marginal Effects (in percentage points) of a unit increase in Destination order on Prob(*Satisfaction*)=*k*, for k=0,…, 10.

5.2.Mediating factors

The order effects we document are likely to be mediated by contextual trip factors and tourist sociodemographic characteristics. For instance, previous works have shown satisfaction varies by gender (Wang et al., 2016), length of stay (Wang et al., 2018) and the composition of the travel party (Su et al., 2021), among others. Even though these factors are controlled for in the regressions, the effect of *Destination Order* on post-trip satisfaction might be heterogeneous depending on tourist profile. To deepen into this, we use the KHB method (Karlsson et al., 2012; Kohler et al., 2011) that decomposes the total effect of a variable on an outcome into its direct and indirect components for the case of non-linear probability models like the ordered probit.[5] That is, we investigate the degree to which a control variable x_i mediates or explains the relationship between *Destination Order* and latent tourist satisfaction with the trip ($Satisfaction$).

[5] In linear regression models, the indirect effect of a covariate x_i can be easily obtained as the difference in the coefficients of *Destination Order* from regressions without (full effect) and with (direct effect) the control x_i. However, in non-linear regression models like ordered probit this becomes more cumbersome because of the differences in the residual variances across models (Kohler et al., 2011). The KHB method distinguishing between mediation and scale effects. See Kohler et al. (2011) and Karlsson et al. (2012) for further details.

We select the following variables as mediators: gender (dummy for being a female), age, education level (dummies for secondary and university studies), length of stay and travel party composition (dummies for travelling alone, in a couple, with children or with friends). Previous works have shown that retrospective evaluations vary with the duration of the episode (Ariely & Loewenstein, 2000) and social interactions (Bhargave & Montgomery, 2015) so length of stay and the composition of the travel party emerge as relevant mediation factors. In addition, memory errors might be associated with age and education levels (MacKay & Smith, 2006). Finally, males and females have been shown to provide distinct subjective evaluations across different settings (Dulebohn et al., 2016; Lee et al., 2013).

Table 5 reports the estimates of Destination Order from ordered probit regressions without controlling for the mediators (*Reduced*) and including them as controls (*Full*) using the KHB method. Note that the coefficient estimate for the Full regression equals the one in column 2 in Table 3. The third row reports the estimated difference between the two, which captures the indirect effect measured in the same scale. We document that the indirect effect is negative, implying that the effect of the sequential order of the trip on satisfaction is mediated by gender, age, education level, length of stay and travel party composition. The confounding ratio is 0.85, which means that the total effect of destination order on satisfaction in 0.85 times larger than the direct effect. In other words, these variables mediate the magnitude of the order effects documented before. To inspect this in more detail, Table 6 shows the contribution of each mediator separately. The first column expresses the contribution of each mediator to the overall indirect effect in percentage terms and the second one presents how much of the total effect is due to confounding of the corresponding mediator. We find that trip satisfaction is less affected by the sequential order of the trip for older travellers, those with secondary studies, who travel alone, with children or with friends through the indirect effect. The latter result falls in line with experimental evidence presented in Bhargave and Montgomery (2015) showing that social connection and interactions reduce the magnitude of recency effects by reinforcing the relative importance attached to early events. On the contrary, the positive effect of trip order on satisfaction is larger among females, those with university studies, those who travel in couples and those who stay for longer at the destination.

Table 5. Estimation results from KHB method

Dependent variable: Satisfaction	Coef. (SE)
Reduced	0.029**
	(0.012)
Full	0.035***
	(0.012)
Difference	-0.005***
	(0.001)
Confounding ratio	0.858
Observations	21,591
Individuals	8,976

Note: Clustered standard errors at the Autonomous Community (NUTS 2) of residence in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 6. Components of the difference from KHB method

Dependent variable: Satisfaction Components of difference	(1) Percentage contribution to indirect effect	(2) Percentage contribution to total effect
Female	12.21	-2.01
Age	-6.04	0.99
Secondary education	22.18	3.65
University education	46.97	-7.73
Length of stay	81.67	-13.44
Alone	-4.91	0.81
Couple	8.96	-1.47
Children	-8.17	1.35
Friends	-8.49	1.40

Quantitatively, length of stay emerges as the most relevant mediator. Around 81% of the indirect effect is explained by how long the tourist stays at the destination. Interestingly, the contribution to the total effect is negative. This result suggests that recency effects mainly emerge through errors in recall: the longer the stay, the smaller the influence of trip order on satisfaction. When the tourist stays for longer, the satisfaction gap between early and latter visited destination becomes smaller in magnitude. This implies that length of stay counterbalances recency effects.

6. DISCUSSION AND CONCLUSIONS

6.1.Discussion

This research expands existing literature on tourists' destination satisfaction by studying the influence of the serial position of the visited destination in multi-destination trips. Some previous works have shown that the visit order in multi-episode tourist experiences is non-

neutral to tourist satisfaction, documenting patterns of primacy in recall and recency in judgement (Zare & Pearce, 2018; 2021). We have revisited this research question by exploiting large-scale representative data for multi-trips conducted by Spanish residents between 2015 and 2019. Using a panel and cross-sectional Ordered Probit regressions that control for sociodemographic, trip-related and temporal characteristics together with province of destination fixed effects, we find consistent evidence that destinations visited later are systematically better rated. Our findings thus corroborate recency effects in judgement as documented in Zare and Pearce (2021). However, there is no evidence of primacy effects, since we find a positive linear effect of the sequence order on satisfaction. Indeed, destinations visited earlier in multi-destination trips are found to be worser rated.

Our results fall in line with Bruine de Bruin (2005, 2006) and Antipov and Pokryshevskaya (2017) showing that rating evaluations increase linearly with the serial position. We interpret this finding in terms of Tversky's contrast theory (Tversky, 1977) and memory recall errors in the spirit of Mullainathan (2002). When asked to rate each visited destination after a multi-destination trip, tourists rate better those visited at latter stages because first-visited destination might act as a comparison benchmark and because the positive aspects of later-visited destinations are likely to be better recalled. Additionally, another potential explanation could be that tourists decide which destination to visit under crescendo (less-to-more) strategies through a demand for happy endings, as formulated in Baucells and Sarin (2013). That is, since the order of the destination visited is not purely random, individuals might leave the most enjoyable destinations for later stages in the trip sequence. In this vein, Hwang et al. (2019) show that travellers' allocation of material and experiential travel activities follows a preference order.

6.2.Contribution, theoretical and practical implications

This paper makes two contributions to the tourism literature. First, our study is among the first that documents the existence of order effects previously reported in the psychology and economics literatures in the subjective evaluation of tourist satisfaction in multi-destination trips. We add to a relatively small body of research showing that order effects in sequential valuations also apply to the case of tourist satisfaction assessment (Zare & Pearce, 2018; 2021). Whereas Peluso et al. (2022) have investigated order effects in the overall satisfaction of multi-

episode tour experiences, we instead examine order effects on satisfaction with each individual visited destination in multi-destination trips. Second, we have shown the mediating role of some sociodemographic and trip-related characteristics, which offer a more insightful understanding of the sources of primary and recency effects in post-trip evaluations. We provide evidence that length of stay reduces the satisfaction premium of latter-visited destinations. This constitutes a novel theoretical contribution and suggests that the recency effects documented mainly emerge in multi-destination trips with short stays in each stopover.

Our findings have relevant managerial implications. Long-term remembered positive experiences strongly determine revisit intentions (Barnes et al., 2016). Therefore, creating memorable and engaging experiences for visitors is a key objective for destination managers. Since destinations visited later within the same trip are found to be systematically better rated due to recency and memorability effects (favourability evaluation), these destinations enjoy a satisfaction premium that conveys a competitive advantage, *ceteris paribus*, over earlier-visited areas. Therefore, tour itinerary designers must acknowledge the potential effects that placing a destination earlier or later in the trip sequence might have on tourist satisfaction. In this regard, travel agencies in charge of the design of multi-destination trips could place less known destinations at later stages (descending hedonic trend) to facilitate consumers' positive recall about them through the order effect premium. This calls for the need of paying more attention to the temporal structure and arrangements of multi-destination trips and the appropriate design of tour packages and transport combinations.

The finding that the order effects detected vary by tourist profile and the length of the stay suggest that there is room for designing segmented tour itineraries in multi-destination trips. Since the (total) order effect is smaller for females, highly educated, long-stayers and those travelling in a couple, tour operators could offer distinct visit sequences depending on the type of tourist. Because in many settings tourists organize themselves the trip, social marketing, visual cues and nudge strategies (e.g., Souza-Nieto et al., 2022) could be a promising complementary strategy to influence tourists' choice of sequence orders. By offering combined multi-destination packages with special discounts that follow descending hedonic trends (Peluso et al., 2022), tourists can be succinctly *nudged* to engage into visiting orderings that counterbalance recall bias by placing less a priori stimulating destinations at later stages.

From the viewpoint of research practice, our results highlight the role of heuristics and cognitive biases in consumer service evaluation. In line with Kahneman et al. (1997), consumers exhibit a positive bias towards recent events in retrospective evaluations of experienced utility. As such, the design of post-trip valuation surveys must recognize the non-negligible role paid by the position occupied by the destination in the sequence order. Incoming empirical studies about tourist satisfaction that use data from multi-destination trips should therefore control for order effects.

6.3.Limitations and future research

Our analysis has some limitations that we consider as valuable avenues for future research. First, despite we observe tourist's satisfaction with different areas visited in a multi-destination trip episode, the rotated sampling design of our survey precludes a longitudinal tracking of the individual in different trips considering longer periods. Second, even though we control for a wide set of variables, there could be still omitted confounding factors like the service quality or atmospheric conditions experienced at the destinations. Third, our findings cannot be given a causal interpretation since they are based on survey data. Future studies could complement our findings by developing experimental procedures to test the existence of order effects in satisfaction scores under controlled conditions. Finally, we have paid attention to order effects in satisfaction with tourist destinations. Future research could expand our analysis by studying order effects in satisfaction with hotel or Airbnb services in situations where the tourist stays at different accommodations during the same trip.

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