

Modelling the spending of tourists in coastal Denmark – emphasizing angling and comparing with cycling

Carl H. Marcussen

Centre for Regional and Tourism Research,

Nexø, Bornholm, Denmark, www.crt.dk.

Draft – June/July 2017.

ABSTRACT

This paper develops and presents a regression model for the spending of tourists visiting Denmark, including anglers. The model fits coastal areas and big city areas equally well ($R^2=0.39$), and the fit for Denmark overall is even better, due to the larger number of observations ($R^2=0.52$). In average, angling overnight tourists spend less per night than other (or all) tourists visiting coastal areas. However, their length of stay is longer than for coastal tourists overall. Correspondingly, the regression model shows that angling tourists spend significantly less per night than other tourists, other things being equal.

Key words: Spending; coastal tourism; Denmark; angling; cycling.

Introduction

In Denmark, recreational fishing is composed by two distinct parts: anglers, who fish with a rod and line, and leisure fishers, who use nets, fish traps, and hook lines. This paper focuses on angling, fishing with a rod and line. The paper develops and presents a regression model for the spending of tourists visiting Denmark, including anglers (and cyclists).

Research question:

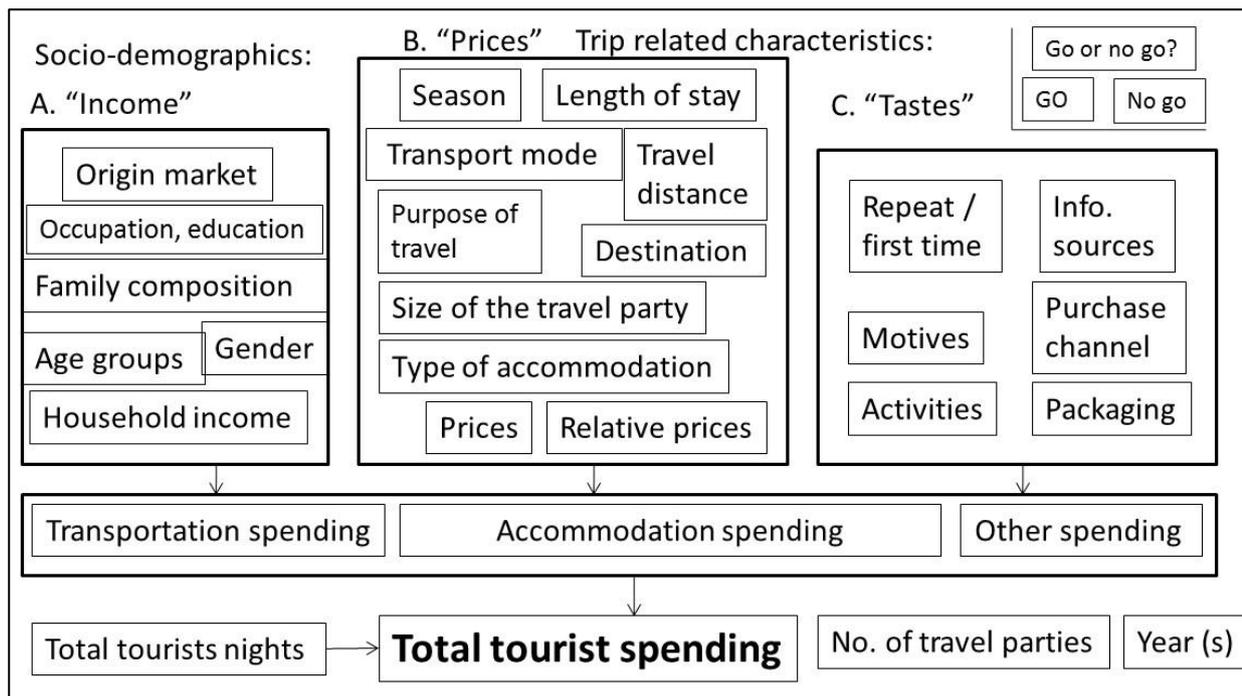
How can the spending of holiday tourists be explained or modelled, including angling (and cycling)?

Methods

The dataset used is the national tourist survey for Denmark 2014 commissioned by VisitDenmark. This survey comprises responses from about 8000 leisure tourists. The survey included another 4000 responses from business travellers and tourists with mixed travel purpose, but this study focuses on the “pure” leisure tourists. The portion of the survey relating to holiday tourists comprises questions relating to demographic profile (age, gender, nationality, income level) and trip (journey or holiday) related characteristics (destination, type of accommodation, length of stay, number of persons in the travel group, spending, package tour or not, motives, activities, information sources, overall satisfaction, satisfaction with various service elements, number of previous visits to the destination, intention to return, and willingness to recommend the destination to others). –

The conceptual model of the factors affecting tourist spending developed and showed by Marcussen (2011) largely applies.

Figure 1 Determinants of tourist spending



Source: Marcussen (2011) p. 840.

Results

In Table 1 those – and only those – variables which are included in the subsequent regression model are included. The dependent variable is spending per person per night. In Denmark the currency is DKK, Danish Kroner (“Danish Crowns”). For ease of interpretation for international readers, amounts have been recalculated into Euros, €. – In the first numbers’ column of Table 1, averages for tourists in coastal areas (in Denmark) are mentioned. The second column contains the averages for those who have “angling” as one of their motives, and the third and last column – to the far right - in Table 1 contains averages for those who have cycling (but NOT angling) as one of their motives. – Anglers spend 21% less than the average tourist in coastal areas per person per night, whereas cyclists (excluding those who have angling as one of their motives) spend 10% less per person per night than the average coastal tourist (in Denmark). – A total of 5334 respondents with spending data are included in this study, of which 19% (or just under 1000

respondents) had angling as one of their motives and 18% had cycling as motive (but not angling). – About half of those with angling as one of their motives also had cycling as one of their motives, the details of which can be shown in a 2*2 table. – Angling is generally not a motive for those staying in big city areas (of course), i.e. for 1% only, whereas angling is one of the motives for 18% or 19% of those staying in coastal areas, and 14% overall.

Table 1 Anglers vs. cyclists – in coastal areas

	Coastal	Anglers	Cyclists
	Mean	Mean	Mean
N	5334	989	940
EUR_ppp_night	81,63	64,42	73,50
DKK_ppp_night	607	479	547
Nights	8,1	9,8	9,9
Persons	2,8	2,5	2,6
Income_level_0_1	58%	53%	59%
Hotel_0_1	10%	1%	6%
Camping	24%	27%	34%
Flying_0_1	2%	0%	1%
M28_Angling	19%	100%	0%

	Coastal	Anglers	Cyclists
Nights_only_1	3%	0%	1%
Nights_only_2	8%	2%	4%
Persons_only_1	9%	8%	6%
Persons_only_2	51%	63%	60%
A06_Relax_0_1	72%	76%	76%
A26_Restaurant_0_1	42%	39%	41%
M07_Nature	74%	91%	87%
M10_Good_eating_place	46%	59%	51%
M12_Gastronomical_exp	7%	10%	11%
M24_Bringing_the_dog	22%	48%	27%
M25_Walking	43%	66%	66%
Info_40_4_Internet	30%	28%	31%

Tourists staying in commercial accommodations (in coastal Denmark) have more than 10 (11) different motives, so angling counts for just under 2% in the mass of motives. A similar share of time – and hence total spending – can be attributed to angling. The fact that tourists have many motives and undertake many activities during their holiday should not be ignored when accessing the economic importance of the different special interests, such as angling and cycling. If all spending is spread on all motives or all activities, arguably the sum needs to add up to just 100%, not more.

Whereas anglers spend 21% less than the average coastal tourist per night they spend 20% more nights per holiday. Overall, angling tourist spend only 5% less per person per holiday than the average coastal tourist. The travel group for anglers is 10% smaller than for coastal tourists overall. Thus, total spending per holiday per travel party which state angling as one of their motives is 14% less than the corresponding average in coastal areas (of Denmark) overall. This can be seen from Table 2.

Likewise: Whereas cyclists spend 10% less than the average coastal tourist per night they spend 22% more nights per holiday. Overall, cycle tourists spend 10% more per person per holiday than the average coastal tourist. The travel group for cyclists is 9% smaller than for coastal tourists overall. Thus total spending per holiday per travel party which states cycling (but not angling) as one of their motives is about the same (or even marginally higher) than the corresponding average in coastal areas (of Denmark) overall. This can also be seen from Table 2.

Table 2 Length of stay, persons per travel party and four different spending measures for all tourists, for anglers and for cyclists in coastal areas (in Denmark) in absolute numbers and indexed

Measurement	Coastal	Anglers	Cyclists *	Coastal	Anglers	Cyclists *
Nights per holiday	8,1	9,8	9,9	100	120	122
Persons per travel party	2,8	2,5	2,6	100	90	91
Per person per night, €	81,63	64,42	73,50	100	79	90
Per person per holiday, €	663	629	727	100	95	110
Per travel party per night, €	229	163	189	100	71	82
Per travel party per holiday, €	1861	1593	1866	100	86	100

* Cyclists here excludes those who are also motivated by angling. – Index 100=coastal tourists overall.

The regression model shown in Table 3 contains three sections of variables, which are entered as steps 1, 2, and 3. Section 1 or step 1 consists of the basic variables. Section 2 or step 2 contains amendment variables for improving the explanatory power of the model. . Section 3 or step 3 mostly additional motives and activities.

Table 3 Modelling tourism spending – coastal only

Model		B	t	Sig.	VIF	
3	(Constant)	43,45	10,6	0,000		
	Nights	-0,70	-6,7	0,000	1,2	1
	Persons	-1,34	-3,4	0,001	1,5	1
	Income_level_0_1	38,16	11,2	0,000	1,1	1
	Hotel_0_1	37,11	13,6	0,000	1,5	1
	Camping	-14,72	-9,1	0,000	1,1	1
	Flying_0_1	20,81	4,3	0,000	1,1	1
	M28_Angling	-7,85	-4,3	0,000	1,2	1
	Nights_only_1	33,57	8,0	0,000	1,3	2
	Nights_only_2	16,31	6,0	0,000	1,3	2
	Persons_only_1	73,91	25,7	0,000	1,5	2
	Persons_only_2	21,68	12,6	0,000	1,7	2
	A06_Relax_0_1	-10,76	-3,6	0,000	1,2	3
	A26_Restaurant_0_1	31,16	10,5	0,000	1,2	3
	M07_Nature	-5,69	-3,3	0,001	1,3	3
	M10_Good_eating_places	13,44	8,3	0,000	1,5	3
	M12_Gastronomical_expe	15,41	5,7	0,000	1,1	3
	M24_Bringing_the_dog	-8,26	-4,6	0,000	1,3	3
	M25_Walking	-7,10	-4,3	0,000	1,5	3
	Info_40_4_Internet	9,80	6,6	0,000	1,1	3

Dependent variable: Spending in EUR per person per night (1 EUR~7.44 DKK, Danish Kroner)

The regression model shown in Table 3 contains three sections of variables, which are entered as steps 1, 2, and 3. Section 1 or step 1 consists of the basic variables. Section 2 or step 2 contains amendment variables for improving the explanatory power of the model. Section 3 or step 3 mostly additional motives and activities. The explanatory variables in section 1 are number of nights, number of persons in the travel party, income level recoded from a 1 to 5 scale to a 0 to 1 scale, whether the type of accommodation is hotel or camping or not, whether transportation was by airplane or not, and whether or not angling was one of the

motives for choosing the given destination. – Since spending per night is very high if the stay is only one (or two) nights, or if the travel party only consists of one (or two) persons, a set of four variables takes this into account in section 2. – In section 3 or step 3 firstly the activities “relaxation” and “visiting restaurants”, recoded from a 1-5 scale to a 0-1 scale are included. Secondly, the motives “nature”, “good eating places”, “gastronomical experiences”, “the possibility of bringing the dog”, and “walking” are included. Thirdly, whether or not Internet was used as an information source is indicated by a final explanatory variable.

As a starting point the model in Table 3 indicates that the spending per person per night (for the given destination area, here coastal Denmark) is €43.45. Per night of stay, €0.70 should be subtracted, i.e. the longer the stay, the lower the spending per night. Per person in the travel party €1.34 should be subtracted, i.e. the more people in the travel party, the lower the spending per person per night. Those with income level at maximum (step 5 or 5) spend €38.16 more per person per night than those with the lowest income level. In this model it is assumed that those at steps 2, 3, and 4 on the income level scale spend 25%, 50% and 75% of the €38.16 more than those at the minimum income level. It can be tested to what extent the explanatory model of the model can be improved by adding yet another income variable to indicate if, for example, income level is at the maximum level. – Those who stay at hotels spend about €37 more, and those who stay at camping sites spend about €15 less per person per night, than those who stay at other types of accommodation, i.e. in holiday cottages, holiday centres or youth hostels. Those who “fly” to the destinations spend about €21 more per person per night than those who travel by surface transport, typically by private car. Those who have “angling” as one of their motives spend about €8 less per person than others, other things being equal. Angling was in focus in the study, originally, but the regression model is applicable to the spending per person per night for all tourists at the given destination, here coastal Denmark. Those who stay one or two nights only spend about €34 or €16 less than others. Those who travel alone spend as much as €74 more per person per night, and those who travel as a couple spend about €22 more, than those travelling in groups of three or more persons.

The high costs per night for those travelling alone is one of the reasons why relatively few persons (9% according to Table 1) take holidays alone. For comparison, households of one person account for as much as

38% of all household in the domestic Danish market and 41% of the largest market, Germany (all numbers are from 2014). There are other reasons than economic reasons why people try to avoid taking holidays alone, it is simply nice to travel with someone, for example, for different reasons, which can be related to different steps in Maslow's hierarchy of needs, and this (the fact that even singles, especially women, rarely travel alone) would be worth addressing in a separate paper. Although angling might be considered a lonesome activity, anglers travel alone more rarely than those who don't have angling (fishing) as one of their motives. For safety reasons, among others, anglers often fish in groups of two.

Those who spend a lot of time "relaxing" spend €11 less per person per night than those who are very active and thus spend only little time "relaxing". Those who very often go to restaurant during their holiday spend about €31 more than those never go to restaurant during their holiday. Those who are particularly interested in "nature" (those who have "nature" as a motive) spend about €6 less than others, other things being equal. – Those who have "good eating places" and even "gastronomical experiences" spend about €13 and €15 more than others per night. Those who have "the possibility of bringing the dog" or "walking" as motive spend about €8 and €7 less, since these activities are not associated with spending, on the contrary. Finally, those who among other sources rely on "information from the Internet" ahead of their decision to take a holiday at the given destination spend about €10 more per night (per person) than others. For the 5334 respondents (n1) with spending per person per night in the range €20 to €500 per person per night the explanatory power of the model shown in Table 3 was 38%, $R^2=0.38$. Perhaps slightly surprising the same model had an equally or even marginally higher explanatory power when applied to responses from the big city destinations, namely 39% or $R^2=0.39$ (n2=1488).

For the big city destinations (in Denmark) package tours, typically consisting of the two main elements transport and accommodation, are sold in xx % of the cases, whereas holidays in coastal Denmark are rarely sold as packages, since they are generally self drive. Those buying packages (from a physical or from an only travel agency) spend significantly more than those who buy individual products only. There are no charter flights to any destinations in Denmark, so if packages are sold, the flight (if included in the package) would be by scheduled flights. Nobody works for free, so if a travel agent is involved, this may explain why

those to buy packages for holidays in Denmark spend more per person per night (in big cities) than those who buy the services separately. For coastal areas, package (or not package) is not a significant variable for explaining spending, and is therefore not included in the model shown for coastal areas in Table 3.

Furthermore, if included the model becomes less satisfactory because the mentioned variables interacts with other explanatory variables, especially “flying” and “hotels”, since packages (when sold) typically comprise flight and hotel.

When pooling responses from the coastal destinations with those from big city destinations the explanatory increases to 52%, i.e. $R^2=0.52$. This is solely due to the larger number of respondents ($n_1+n_2=6752$).

Conclusion / Discussion

The focus in this paper was to model – i.e. to identify - the factors determining the spending of holiday tourists in coastal areas of a specific country, Denmark. Many of the same factors may also be important for determinants of spending in coastal areas of other countries. Also, slightly surprising, it turned out that that same factors, which were identified as significant determinants for spending (per person per night) in coastal areas (of Denmark) equally well explain the spending of holiday tourists in big city areas (of Denmark). A total of 38% of the variation in the spending per person per night could be explained by three sets of variables. 1. Basic variables. 2. Amendment variables. 3. Additional variables, here mostly motives and activities. Basic variables were demographic variables and trip (or rather: holiday) related variables. The model explaining spending per person per night was linear. Since spending per person per night is very high for one person or for stays of just one night, and to a smaller extent for two nights or two persons, this was taken into account in the model by four (2+2) amendment variables. In this study angling (fishing with a rod and line) was in focus from the outset, and therefore angling (as a motive) was one of the basic variables. Holiday motives and holiday activities are closely related and can be used more or less interchangeably, also when it comes to explaining tourist spending. Angling was compared to cycling, and holiday anglers and holiday cyclists are somewhat similar, since they both take longer holidays than coastal tourists in general

and they tend to travel in smaller groups (typically as couples) compared to coastal tourists overall, but they spend less per person per night. This is particularly the case for angling tourists, and to a less extent for cycling tourist. Whereas angling tourists spend significantly less per person per night than the general tourist, this is not the case for cycling tourists, when taking other factors of importance for spending into account.

There are four different measures of total spending of tourists at the individual or travel group level:

Spending per person per night, spending per person per stay (holiday), spending per travel party per night, and spending per travel party per stay (holiday). The dependent variable in a model of total tourist spending can be on either of these four measurements, even with largely the same set of explanatory variables. Here the focus was explaining spending per person per night, which is the most commonly used measurement.

However, averages for length of stay and persons per travel group, and for each of the mentioned four measurements, were provided and compared for coastal tourists overall, for angling tourists and for cycling tourists.

Since the survey focused on tourists staying at commercial accommodations, observations with zero spending or no information about spending for the travel group for the entire holiday would not be relevant, and furthermore hard or impossible to explain. The same goes for extremely high values. Outlayers, i.e. observations below 20€ and above 500€ per person per night were excluded. Overall, the average spending per person per night was largely the same before and after removal of outlayers. In Marcussen (2011) and probably many other tourism spending studies the outlayers are left in. So, why were they removed in this case, in this study. Well, this is also debatable, of course. The explanatory power, R^2 , becomes higher to a certain point as the ranges at the lower and upper end of the outlayers are excluded. But after a certain point the R^2 starts deteriorating again as the number of observations which are excluded increases. If common sense cannot guide dictate where the boundaries of the outlayers should be, then one option is to define the outlayers in such a way that the average spending per person per night (or other spending measurement) is roughly unchanged; or in such a way that R^2 is maximized. In this study it turned out that R^2 was better for the range 20€ to 500€ than for the ranges 10€*1 to 1000€/1 and 10€*3 to 1000€/3, or for a different upper limit or a different lower limit independently. So, R^2 was largely maximized, and at the same time the

average spending measurement in focus (spending per person per night) was largely left unchanged. These two considerations, a high R^2 and a largely unaffected average spending measure could be guidinglines for definitions of outliers in further studies, unless the outliers are retained when running the regression analyses and some of the associated descriptive statistics. – If a certain variable is of special interest, such as cycling in this study, the associated variable can be kept among the set of explanatory variables even though it is not significant. In this study only significant variables were retained in the regression analyses, though, but even so, some key spending averaged were calculated for both angling and cycling plus for coastal tourism overall.

References

Marcussen, Carl H. "Determinants of tourist spending in cross-sectional studies and at Danish destinations."

Tourism Economics 17.4 (2011): 833-855. <http://journals.sagepub.com/doi/abs/10.5367/te.2011.0068>.

Supplementary references:

Curtis, J., Hynes, S., O'Reilly, P., & Breen, B. (2017). Recreational angling tournaments: participants' expenditures. *Journal of Sport & Tourism*, 1-21. <http://dx.doi.org/10.1080/14775085.2017.1322998>.

Dalrymple, C. Jane, et al. "Understanding angler and hunter annual spending in North Carolina."

Proceedings of the annual conference of the Southeastern Association of Fish and Wildlife Agencies. Vol. 64. 2010. <https://faculty.cnr.ncsu.edu/nilspeterson/wp-content/uploads/sites/17/2016/10/Dalrympleetal2010.pdf>.

Hynes, Stephen; Gaeven, Rainey & O'Reilly, Paul (2017). Estimating a Total Demand Function for Sea Angling Pursuits. *Ecological Economics*, Volume 134, April 2017, Pages 73-81.

Roberts, Annette et. al. (2017). Assessing the contribution of recreational sea angling to the English economy. *Marine Policy*, Volume 83, September 2017, Pages 146-152.