Extending the methods for measuring impact and welfare effects of tourism

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Tobias Heldt

* Department of Regional studies – Economics and Tourism, Dalarna University
My perspective and previous research on the topic

Main interest is economic impact of event and tourism

- At focus: the wider economic costs and benefits of an event

and especially

- Use of happiness/subjective well-being for measuring welfare effects of tourism and event
Why study impact and welfare of events?

Individual values, welfare to society and conflict in resource use are starting point for my interest:

- When is it motivated to use tax payers money and other common resources in society for tourism and event?
- If positive net benefits of investments in tourism and events, can you say that this brings more welfare to society compared to another event or compared to other activities?
The standard methods for measuring welfare and impact of tourism in the economy

- Increase in welfare = increase in Economic growth
- Growth is measured as change in GDP, (regional level: Gross Regional Product)
- Economic Impact Analysis of tourism, TSA, I-O or CGE models captures this change

Problems with the standard methods:

1. Income is only a proxy for human welfare – incomplete!
   Doesn’t include: distribution of wealth, environmental effects and resource use etc.
2. Functions well for aggregate level of the economy
3. Costly to create an I-O or CGE system for regional levels
4. Doesn’t include wider costs and benefits of tourism and events
Extensions of the methods for measuring impact and welfare in general and for tourism and event

• Measure welfare effects using the happiness approach

• Use of non-market valuation methods in combination with actual data on visitor spending

• “Beyond current methods - beyond skiing”
Happiness or Subjective well-being

• Human welfare is about individual happiness – wellbeing!
• Measures of subjective well-being (SWB) is a measure of individual welfare
• Measurement scales for sub categories of wellbeing – level fluctuates during the day depending on activities but stable individual level

• Global overall reports on subjective satisfaction with life!

World values survey uses the following question:

(on a scale from 0, dissatisfied – 10 satisfied)

“All things considered, how satisfied are you with your life as a whole these days?”
Non-market valuation methods

• Valuation methods can be used to estimate welfare effects as well as to explore visitor preferences

• *Stated choice experiment*
  • Produces estimates of consumer surplus
  +

Visitor preferences: attributes of importance for the choice to visit (a tourist destination or an event)

• Disadvantage: hypothetical choice
A recent example from my research:

*Exploring the Value of an event: comparing consumer surplus, willingness to pay and SWB*

- 2011 Peace & Love music festival in Sweden
- Data from 716 respondents
  - Self complete questionnaire
- Sampling
  - Within festival area + camping
- High response rate – 90 %
- Mixed stratified sampling to avoid selection bias
Result 1

Stated choice experiment provides two types of result:

a) an estimate of consumer surplus

+ 

b) estimates of the visitors’ preferences for attributes of importance for their choice to attend the festival
Choice experiment scenario

"Assume that you are confronted with the choice of buying tickets for the Peace & Love festival. There are two types of Peace & Love festivals and you have to choose one of these. The only thing that differs between the two alternatives is the price, number of visitors and number of days. i.e the festivals have the same bands as this year’s festival, the same location and the time of year is the same. Which festival would you choose? You also have the option to refrain from visiting the festival"
<table>
<thead>
<tr>
<th>Attribute</th>
<th>Description</th>
<th>Level</th>
</tr>
</thead>
</table>
| **Price**        | Ticket price for the complete festival. It includes entrance fee for all days but not access to the camping area. | 1. 1345 SEK  
|                  |                                                                              | 2. 1645 SEK  
|                  |                                                                              | 3. 1745 SEK  
|                  |                                                                              | 4. 1945 SEK  
| **Number of visitors** | States the number of tickets that have been sold and is an estimate of the total number of visitors to the festival. | 1. 20 000 visitors  
|                  |                                                                              | 2. 40 000 visitors  
|                  |                                                                              | 3. 60 000 visitors  
| **Number of days** | States the number of days for the festival. It includes the Peace & Love forum that starts up the festival. | 1. 4 days  
|                  |                                                                              | 2. 5 days  
|                  |                                                                              | 3. 6 days  |
**Figure 1.** Example of choice set for the Peace & Love choice experiment

<table>
<thead>
<tr>
<th></th>
<th>Peace &amp; Love A</th>
<th>Peace &amp; Love B</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ticket price</strong></td>
<td>1345 SEK</td>
<td>1945 SEK</td>
</tr>
<tr>
<td><strong>Number of visitors</strong></td>
<td>40,000 visitors</td>
<td>60,000 visitors</td>
</tr>
<tr>
<td><strong>Number of days</strong></td>
<td>4 days</td>
<td>5 days</td>
</tr>
</tbody>
</table>

I would choose: Peace & Love A □  Peace & Love B □

I would refrain from visiting Peace & Love □
Applying stated choice experiment based on Random utility maximization

• Binary logit, to estimate indirect utility function

\[ V_i = \beta_0 + \beta_1 x_{1i} + \beta_2 x_{2i} + \beta_3 x_{3i} \]

• Consumer surplus
  • log-sum (Small and Rosen (1981))

\[ \Delta E(CS) = \frac{1}{\beta} \left[ \ln(\exp(V_i^1 + V_j^1)) - \ln(\exp(V_i^0 + V_j^0)) \right]. \]
**Table 5** Point and 95 % confidence interval estimate of consumer surplus based on the discrete choice experiment

<table>
<thead>
<tr>
<th>Consumer surplus (SEK)</th>
<th>95% Confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 200 000</td>
<td>17 000 000 – 31 400 000</td>
</tr>
</tbody>
</table>
Result 2

There is a correlation between SWB and willingness to pay for avoiding more attendants at the festival.
Conditional logit model with interactions

- captures some observed individual heterogeneity by interacting attributes with age
- The indirect utility function $V_i$ associated to option $i$ is assumed to be:

$$V_i = \beta_0 + \beta_1 x_1i + \beta_2 x_2i + \beta_3 x_3i + \beta_4 x_2i \times A + \beta_5 x_3i \times A$$

where $x_1 = \text{Entrance price}$, $x_2 = \text{Number of attendants}$, $x_3 = \text{Number of days the festival lasts}$, $x_2i \times A$ is the interaction between attendants and age and $x_3i \times A$ is the interaction between number of days and age.
Table 2 Results from the conditional logit based on the choice experiment data

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Coefficient</th>
<th>Standard error</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant*</td>
<td>-.2171754</td>
<td>.112941</td>
<td>0.054</td>
</tr>
<tr>
<td>Entrance price***</td>
<td>-.0021691</td>
<td>.0003155</td>
<td>0.000</td>
</tr>
<tr>
<td>Attendants</td>
<td>.008692</td>
<td>.0096506</td>
<td>0.368</td>
</tr>
<tr>
<td>Attendents×Age***</td>
<td>-.0009172</td>
<td>.0003808</td>
<td>0.016</td>
</tr>
<tr>
<td>Days***</td>
<td>.8600977</td>
<td>.229815</td>
<td>0.000</td>
</tr>
<tr>
<td>Days×Age***</td>
<td>-.0301603</td>
<td>.0090907</td>
<td>0.001</td>
</tr>
<tr>
<td>Number of observations</td>
<td></td>
<td>601</td>
<td></td>
</tr>
<tr>
<td>LR chi2(6) (P-value)</td>
<td></td>
<td>102.96 (0.0000)</td>
<td></td>
</tr>
<tr>
<td>Pseudo R²</td>
<td>0.1236</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Log likelihood</td>
<td></td>
<td>-365.01</td>
<td></td>
</tr>
</tbody>
</table>
Some intermediate results – WTP for the attributes

- Average willingness to pay for having the festival lasting one day longer is 60 SEK.

- The average willingness to pay to avoid additional 1000 visitors attending the festival is 6.2 SEK.
Table 3 Regression on willingness to pay to avoid more attendants on subjective wellbeing

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficient</th>
<th>Standard error</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant***</td>
<td>1.553036</td>
<td>.5503993</td>
<td>0.005</td>
</tr>
<tr>
<td>Happiness***</td>
<td>.1772371</td>
<td>.0550328</td>
<td>0.001</td>
</tr>
<tr>
<td>Ticket price***</td>
<td>- .0003172</td>
<td>.0001253</td>
<td>0.012</td>
</tr>
<tr>
<td>Education***</td>
<td>2.20013</td>
<td>.1106174</td>
<td>0.000</td>
</tr>
<tr>
<td>Travel cost***</td>
<td>- .0005581</td>
<td>.0002135</td>
<td>0.009</td>
</tr>
<tr>
<td>Female***</td>
<td>- .6862846</td>
<td>.2033001</td>
<td>0.001</td>
</tr>
</tbody>
</table>

Number of observations 526

F( 5,  520) 44.34
(P-value) (0.0000)

R² 0.2989

Adjusted R² 0.2922
Interpretation: individual WTP for one aspect of the festival is correlated with happiness

- Those more satisfied with their lives have on average higher willingness to pay to avoid a too crowded festival
- The same applies to visitors with a higher formal level of education
- On average the WTP decreases with paid festival ticket price and travel cost
Future research

- Future research
  - Further explore the correlations between individual consumption patterns and happiness
  - Decompose the welfare effects so that it is possible to assess and compare welfare for single events within regional and national event portfolios
  - Is it possible to forecast the welfare effects of an event “pre-event assessment”? Is it relevant with public funding?
Thank you!