VALUING ON-SITE AND VIRTUAL BEAR VIEWING IN KATMAI NP&PRES

Leslie Richardson, NPS Social Science Program
John Loomis, CSU Department of Agricultural & Resource Economics
Chris Huber, USGS Fort Collins Science Center
More and more people are using National Park Service websites for:
- Trip planning
- Education
- Viewing landscapes and features through one of the 76 webcams

These off-site, virtual experiences may either complement or substitute trips to national parks

NPS is interested in knowing more about these ‘virtual visitors’
Background

- **Primary goals**
  - Explore methods that can be used to value people’s use of NPS websites and webcams
  - Case study of Katmai NP&PRES bear webcams

- **Secondary goal**
  - Value on-site bear viewing at Katmai NP&PRES
Located on the northern Alaska Peninsula
Established in 1918 to protect the volcanically devastated region surrounding Mount Katmai and the Valley of Ten Thousand Smokes
Katmai National Park & Preserve

- Over 4 million acres
- Accessed only by plane or boat
- Some visitors come for the fishing or remote backcountry hiking...
Katmai National Park & Preserve

- ...but the majority of visitors come for the world-renowned brown bear viewing at Brooks Camp!
- High concentrations of bears congregate to feed on sockeye salmon in the Brooks River late June–July and again in September
Katmai National Park & Preserve

- Viewing platforms are set up along the River
- Most visitors come on day trips or stay in the designated campground or lodge
Valuing On-site Bear Viewing

- Travel cost (TC) model – consumer surplus for access to a recreation site is estimated by relating the quantity of trips taken to the cost of reaching the site.
Valuing On-site Bear Viewing

- Primary source of data was a 2014 Katmai NP&PRES visitor survey (Strawn and Le, 2015)
  - Administered June 14 – September 30, 2014
  - Mail-back
  - More than half were distributed at Brooks Camp
  - 55% response rate for all sampling sites and 61% for Brooks Camp

- Questions relevant to TC model include number of trips taken to Katmai, home zip code, mode of travel, and demographics
Valuing On-site Bear Viewing

- TC models can be difficult for national parks because many visitors come only once a year.
- Other options:
  - Ask visitors to report # of trips taken over a multi-year timeframe and use this as the dependent variable. **✗**
  - On-site TCM – dependent variable is number of days and costs of interest are on-site costs (Bell & Leeworthy, 1990). **✗**
  - Redefine dependent variable as Persontrips, which is the # of trips taken in the last year multiplied by group size (Bowker et al., 1996). **✓**
Valuing On-site Bear Viewing

- Travel cost calculated as:
  - Roundtrip miles from respondent’s home zip code to Anchorage*$0.1587
  - Plus opportunity cost of time (1/3 of wage rate)
  - Adjusted based on the proportion of total trip days spent at the park compared to other sites in AK
  - Plus a fixed cost of $744 to account for travel from Anchorage to the park

- Demand equation:

\[
\text{PersonTrips} = \exp\left( B_0 + B_1\text{TravelCost} + B_2\text{Income} + B_3\text{Age} + B_4\text{Gender} + B_5\text{Education} + B_6\text{NonParkDays} + B_7\text{Guide} + B_8\text{Photo} + B_9\text{WildlifeView} + B_{10}\text{BearViewPark} \right)
\]
Valuing On-site Bear Viewing

- Results

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CS per group per trip</td>
<td>$1,300</td>
</tr>
<tr>
<td>CS per person per trip</td>
<td>$630</td>
</tr>
<tr>
<td>CS per person per day</td>
<td>$290</td>
</tr>
</tbody>
</table>

- Applying this value to 40% of ~31,000 visitors that came to the park from June-Sept., 2014 results in an aggregate value of $7.8 million.
Valuing Virtual Bear Viewing

- People don’t have to travel all the way to Katmai to see these bears!
- They can view the bears through webcams hosted by explore.org
- In 2015, people spent more than 2.4 million hours watching the cams
Valuing Virtual Bear Viewing

- Four approaches identified:
  1) *Benefit transfer approach* - adjust the on-site viewing value to get an hourly on-site value, and apply to hours of web viewing
  2) *Price ratio valuation adjustment approach* - adjust hourly on-site value using a ratio based on the price of virtual use to the price of the same live event
  3) *Time valuation approach* - value the web use based on the opportunity cost of time (Goolsbee and Klenow, 2006)
  4) *Stated preference survey* - value web use directly using a stated preference method such as CVM
Valuing Virtual Bear Viewing

- Results
  1) Benefit transfer approach
     
     $36.25/hr. * 2.4M hrs. = $87 million
  2) Price ratio valuation adjustment approach
     
     $36.25/hr. * 0.125 * 2.4M hrs. = $11 million
  3) Time valuation approach
     
     $6.6 to $10/hr. * 2.4M hrs. = $16 - $24 million
Conclusions & Next Steps

- Virtual visitor experiences can provide considerable economic value
- Various approaches exist to value people’s use of NPS websites & webcams
- Use survey data to refine estimates

- Opportunity to use existing visitor survey data to estimate TC models for various national parks
References