Developing Indicators of Coastal Tourism Resiliency

Restore America’s Estuaries 2014 Summit

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Background

- Funded by NOAA Coastal Services Center under the social science IDIQ contract
Problem
Objective

What factors make a tourism sector resilient to natural and/or economic disasters?
Project

- Develop a set of indicators that can be used to measure tourism sector resiliency

- Focus on two geographic regions

- Delphi Technique: Get input from experts to determine what’s important and how to measure it
What types of disasters?

Natural Disasters

Climate Change

Economic Downturns

NOAA GFDL CM2.1 Climate Model

Surface Air Temperature Change [°F]
(2050s average minus 1971-2000 average) SRES A1B scenario
What regions?

Focus on Sentinel Sites in North Carolina and California
Tourism in the two areas
Method: Delphi Technique

- Convene a panel of experts
- Provide them with a round 1 survey to answer
- Allow them to see their answers in relation to the group (aggregate) response
  - Can alter their response
- Develop a second survey that advances the subject based on the first round
- Allow for review/changes
- Hold a final focus group
Delphi Technique Process

Assemble Panel

Panel orientation

Round 1 Survey

Summarize Results

Round 1 Iteration

Analysis

Round 2 Survey

Summarize Results

Round 2 Iteration

Analysis

Final Focus Group
## Our panel – by the numbers

<table>
<thead>
<tr>
<th>Category</th>
<th>Central NC Coast</th>
<th></th>
<th>SF Bay Area</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Recruited</td>
<td>Actual</td>
<td>Recruited</td>
<td>Actual</td>
</tr>
<tr>
<td>Tourism Bureau</td>
<td>3 (all)</td>
<td>1</td>
<td>1 (all)</td>
<td>0</td>
</tr>
<tr>
<td>State officials</td>
<td>1 (all)</td>
<td>1 (all)</td>
<td>1 (all)</td>
<td>1 (all)</td>
</tr>
<tr>
<td>Federal</td>
<td>4 (2)</td>
<td>1 (0)</td>
<td>3 (1)</td>
<td>1 (0)</td>
</tr>
<tr>
<td>COC/Business groups</td>
<td>4 (3)</td>
<td>1</td>
<td>4 (3)</td>
<td>0</td>
</tr>
<tr>
<td>Business owners</td>
<td>3-4 (all)</td>
<td>2 (all)</td>
<td>2 (all)</td>
<td>1 (all)</td>
</tr>
<tr>
<td>Academic/Research</td>
<td>4 (3)</td>
<td>2 (all)</td>
<td>3 (1)</td>
<td>1 (0)</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td><strong>19-20</strong></td>
<td><strong>8</strong></td>
<td><strong>14</strong></td>
<td><strong>4</strong></td>
</tr>
</tbody>
</table>

Parenthetical values are the number who are based in the region.
Response

- Slow: 12 total responses of a potential 33-34
- OMB approval process
- Fell during their busy season
- No payment
- Willing to commit… less willing to do
Round 1 Survey

- Familiarity with different types of tourism businesses in the area
- Understanding of the disasters we’re interested in
- Vulnerability of tourism sector businesses to different disasters
  - By type of disaster and type of tourism business
- Factors (broadly defined) that can influence resiliency
  - Starting points
  - Allows for open-ended responses
Factors we asked about

- **Community engagement** (e.g., Membership in a CVB or COC)
- **Business located in a strong, cohesive community**
- **Business/Business owners have a strong connection to the natural resource(s) upon which it relies**
- **Locally owned and operated businesses**
- **Economically stable or successful years prior to the disaster**
- **Strong existing marketing effort by tourism bureau, CVB, or other group to attract tourists to the area**
- **Access to emergency capital or alternative sources of income**
- **Business provides unique tourism opportunities**

- **Diverse set of tourism options in the area**
- **Previous shocks have prepared the sector**
- **Disaster communication planning**
- **Strong disaster/recovery planning by tourism businesses**
- **Strong disaster/recovery planning by local municipalities**
- **Critical facilities (e.g., local government buildings, fire department, evacuation shelter)**
- **Portable technology in place**
- **Critical infrastructure (e.g., power grid, evacuation routes)**
- **Transportation (e.g., accessibility and operability following the disaster/shock)**
Factors Resiliency Scores

- To what extent do you agree that the following factors make an important contribution to the resiliency of the tourism industry as a whole in the San Francisco Bay Area to ________?
  - Natural disasters (Q8)
  - Climate change (Q10)
  - Economic downturns (Q12)

- Scale: strongly agree (5), agree (4), neither agree nor disagree (3), disagree (2), strongly disagree (1)
Two other important questions

Usefulness of information

- Q14. On a scale of 1 (not at all) to 5 (extremely), how helpful would it be for tourism industry professionals such as yourself to have information on the factors we’ve asked about above?
  - Listed each factor

Knowledge

- Q2. Please rate how knowledgeable you consider yourself to be in each of the following subject categories.
  - Natural disasters
  - Climate change
  - Economic downturns
Two indexes

Index 1
- Add three factor resiliency scores together for each factor
- Multiply by usefulness

Index 2
- Add three factor resiliency scores together for each factor
- Multiply by usefulness score minus one
- Zeros out any factor the respondent does not see value in having the data for
Two more indexes – knowledge adjusted

Index 3
- Multiply each factor resiliency score by knowledge of the disaster type
- Add three knowledge-weighted factor resiliency scores together for each factor
- Multiply by usefulness

Index 4
- Multiply each factor resiliency score by knowledge of the disaster type
- Add three knowledge-weighted factor resiliency scores together for each factor
- Multiply by usefulness score minus one
Highest ranked factors across indices

- Community engagement (e.g., Membership in a CVB or COC)
- Business/Business owners have a strong connection to the natural resource(s) upon which it relies
- Strong existing marketing effort by tourism bureau, CVB, or other group to attract tourists to the area
- Access to emergency capital or alternative sources of income
- Disaster communication planning
- Strong disaster/recovery planning by tourism businesses
- Strong disaster/recovery planning by local municipalities
- Critical facilities (e.g., local government buildings, fire department, evacuation shelter)
- Transportation (e.g., accessibility and operability following the disaster/shock)
Ranks of index values for most important factors

<table>
<thead>
<tr>
<th>Factor</th>
<th>Index 1</th>
<th>Index 2</th>
<th>Index 3</th>
<th>Index 4</th>
<th>Score</th>
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<tbody>
<tr>
<td>Community engagement</td>
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<td>8</td>
<td>5</td>
<td>5</td>
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<td>2</td>
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<td>7</td>
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<td>3</td>
<td>2</td>
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<td>4</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>17</td>
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<tr>
<td>Govt planning</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Critical facilities</td>
<td>9</td>
<td>7</td>
<td>9</td>
<td>9</td>
<td>34</td>
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<tr>
<td>Transportation</td>
<td>6</td>
<td>3</td>
<td>6</td>
<td>6</td>
<td>21</td>
</tr>
</tbody>
</table>
The top 4

- Strong existing marketing effort by tourism bureau, CVB, or other group to attract tourists to the area
  - Usefulness score: 4.3

- Strong disaster/recovery planning by tourism businesses
  - Usefulness score: 4.6

- Disaster communication planning
  - Usefulness score: 4.4

- Strong disaster/recovery planning by local municipalities
  - Usefulness score: 4.5
Round 2 Survey

- Focus on the top few factors that were rated highly

- Present some potential indicators
  - How good?
  - Useful?

- Open ended
  - Other indicators they see as important
Next steps after round 2 survey

- Do the relevant factors differ between the 2 regions?
  - Parse the data any way we can

- How could NOAA collect data on the indicators?

- What have we learned about using a Delphi?
Questions or Comments…

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