



Why (not) Questionnaires for impact evaluation?

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My Background

- **Degrees in sociology, communication and psychology (PhD from University of Cambridge).**
- **Research** specialism in developing methods of evaluating informal learning and public engagement impacts.
- **I am a sociology professor at the University of Warwick, where I teach research methods (quantitative and qualitative)**

Professional Background

- ▶ **External evaluation experience across a wide range of settings:**
 - e.g. for National Gallery, Cheltenham Literature Festival, Cambridge Science Festival, Durrell Wildlife Conservation Trust, London Zoo, Natural History Museum, University of Cambridge, National Marine Aquarium, World Association of Zoos and Aquaria, etc.
- ▶ **Forthcoming books:**
 - **‘Doing Real Research’** (SAGE)
 - **‘From Conservation Education to Public Engagement: Research, Principles and Practice’** (Cambridge University Press)
 - **‘Making the Most of Public Engagement Events and Festivals’** (Cambridge University Press)

Why Evaluate?

- ▶ *To build* a better understanding of your visiting publics, (e.g. needs, interests, motivations, language).
- ▶ *To inform* your plans and *to predict* which engagement or learning methods and content will be most effective.
- ▶ *To know* whether you have achieved your objectives (and why or why not).
- ▶ *To re-design* your approach to be even more effective in future.



Are there limits to what evaluation can tell us about impacts?

- With right methods and approach, I think it is possible to measure most outcomes that would be of interest.
- Limits therefore are in terms of:
 - Capabilities / methods knowledge and skill
 - Time horizon and available resources



Surveys: Impact Evaluation

- *Repeated measures design* (gather data from same individuals pre- and post-visit)
- *Experimental design* (requires random assignment to treatment and control groups)

With either option: Carefully avoid sources of bias and account for alternative explanations



Using Questionnaires for Evaluation



What is a questionnaire?

- ▶ Standardized method of data collection.
- ▶ Can be used for both qualitative and quantitative data.
- ▶ Used to collect data from individuals, not groups or on behalf of someone else.
- ▶ Surveys are often used for gathering information about recent actions and experiences, or current thoughts and opinions.

What are surveys good for?

- ▶ Can be used for describing patterns in a large population.
- ▶ Can determine individuals' characteristics.
- ▶ Can be used to assess general population patterns from individuals' perspectives.
- ▶ Can compare the perspectives and effects of an intervention on different sets of individuals within a population.

Using surveys for impact evaluation



Defining Impact

- ▶ I define impact in terms questions like:
 - What difference have you made in people's lives?
 - What ideas, relationships, interests, motivations have been transformed as a result of your intervention? (and in what ways?)



Defining Impact

- ▶ That is, the overall net effects or results of an activity or intervention (intended or unintended).
- ▶ Note that changes or ‘impacts’ can be in negative or dysfunctional directions!



Defining Impact

- ▶ Impacts could include:
 - development in learning
 - attitude and behaviour change
 - a greater sense of self-efficacy
 - enhanced curiosity or interest in a subject
 - improved skills
 - greater connectedness with others
 - improved understanding of self and the broader world / universe
 - improved confidence or skills, etc.



Defining Impact Evaluation

- ▶ The systematic collection and/or analysis of information to provide **useful** and **focused** feedback on the effects of an activity or intervention.



Indicators of good quantitative evaluation

- ▶ **Look at the assumptions built into research design**
- ▶ **Sampling**
- ▶ **Questionnaire Design**
 - Self-report vs. direct measures
 - Relationships between different factors: for example, was the impact pattern different across different groups?



Indicators of Good Evaluation

- ▶ **Allows for Possibility of Negative Outcomes**
- ▶ **Qualitative: Audio Recording and Transcription**
 - Not just scratching down part of what people said (avoid bias creeping into your data from the start)
- ▶ **Qualitative: Systematic Data Analysis**
 - Must be **systematic** to avoid tendency to select quotes based on personal bias, preferences.



A specific example of impact evaluation using questionnaires





Measuring Biodiversity Literacy in World Zoo and Aquarium Visitors



World Association of
Zoos and Aquariums
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UN Decade on Biodiversity

WAZA official partner of United Nations Convention on Biological Diversity (CBD) during Decade on Biodiversity 2011–2020.



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CBD



Aichi Biodiversity Target 1

Target 1: “By 2020, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.”



Research Team

Andrew Moss (Chester Zoo), Eric Jensen (University of Warwick) and Markus Gusset (WAZA Executive Office)

Plus international peer reviewers

30 WAZA member organisations from across the globe



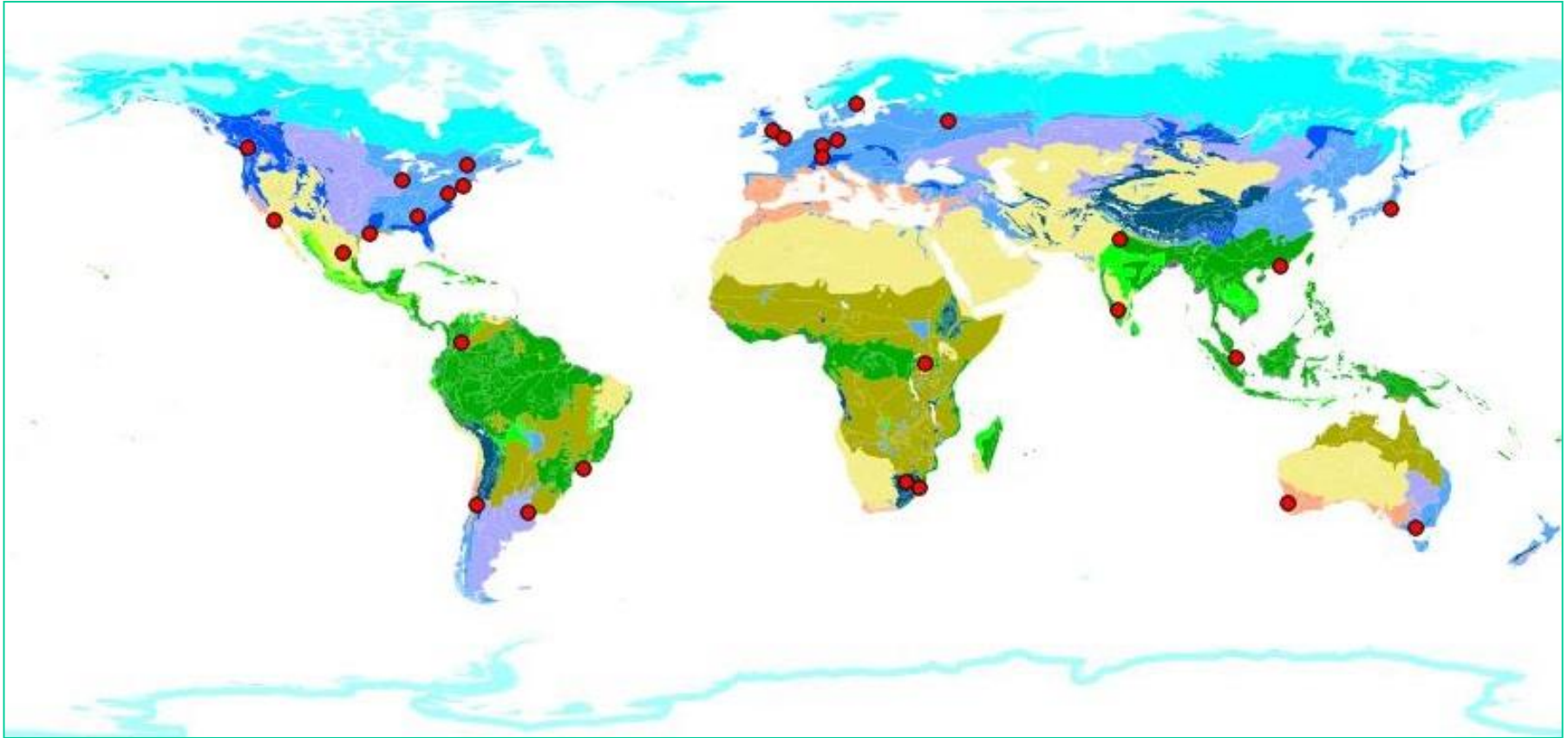
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United for Conservation





World Association of
Zoos and Aquariums
WAZA | *United for
Conservation*

Participating institutions





Research Questions

1. How well do world zoo and aquarium visitors understand the term 'Biodiversity'?
2. Do world zoo and aquarium visitors understand the actions they can take to help protect biodiversity (i.e. pro-conservation actions)?
3. Are zoos and aquariums making a difference with regard to Target 1?



Data Collection

Pre- and post-visit repeated-measures survey design: same respondents sampled before and after visit (more than 6,000 in total)



Data Analysis

- Both biodiversity literacy variables measured using matching open-ended questions in both pre- and post-visit surveys
- Yielded paired qualitative data for each respondent
- Data processed using robust content analysis framework
- Both biodiversity literacy variables converted to continuous quantitative data for statistical analysis
- Scores subjected to inter-rater reliability testing to ensure conversion was accurate





Survey Design

Single-page design with three main components:

1. Basic demographic information.

2. Two main outcome variables, each measured by open-ended questions:

- Biodiversity Understanding
- Knowledge of actions to protect Biodiversity

3. A number of potential independent variables also measured.





Pre-visit Survey

Visitor Survey

Institution

Date:

Visitor number:

<p>1. Time: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> AM / PM (circle)</p> <p>2. Is today your first visit to this zoo or aquarium? <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> NOT SURE</p> <p>3. If this is your first visit, is this your first visit to any zoo or aquarium? <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> NOT SURE</p> <p>4. How many times do you think you have visited any zoo or aquarium in the last 12 months? _____ visits</p> <p>5. Are you a season ticket holder or member? <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> NOT SURE</p> <p>6. What is your gender? <input type="checkbox"/> MALE <input type="checkbox"/> FEMALE</p> <p>7. What is your age? _____ years</p> <p>8. How many years of formal education (in school, college and university) have you had? _____ years</p> <p>9. Do you live locally or are you visiting? <input type="checkbox"/> LOCAL <input type="checkbox"/> VISITOR / TOURIST</p>	<p>10. Please list anything that comes to mind when you think of 'biodiversity':</p> <ol style="list-style-type: none"> 						
<p>11. If you can think of an action that you could take to help save animal species, please list below: (Or if you cannot think of any actions, tick here <input type="checkbox"/>)</p> <ol style="list-style-type: none"> <p>If you listed an action above, have you done it in the last month? <input type="checkbox"/> NO <input type="checkbox"/> YES <input type="checkbox"/> NOT SURE</p>	<p>12. What prompted your zoo or aquarium visit today (tick all that apply)?</p> <table border="0"> <tr> <td><input type="checkbox"/> Fun day out</td> <td><input type="checkbox"/> Learn about animals</td> </tr> <tr> <td><input type="checkbox"/> See animals</td> <td><input type="checkbox"/> Entertainment</td> </tr> <tr> <td><input type="checkbox"/> Family time</td> <td><input type="checkbox"/> Other</td> </tr> </table> <p>If other, please specify:</p>	<input type="checkbox"/> Fun day out	<input type="checkbox"/> Learn about animals	<input type="checkbox"/> See animals	<input type="checkbox"/> Entertainment	<input type="checkbox"/> Family time	<input type="checkbox"/> Other
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<input type="checkbox"/> See animals	<input type="checkbox"/> Entertainment						
<input type="checkbox"/> Family time	<input type="checkbox"/> Other						
	<p><i>This survey is done under the auspices of the World Association of Zoos and Aquariums (WAZA). For more information, please click on 'Visitor Survey' on www.waza.org.</i></p> <p><i>Thank you very much for completing this survey!</i></p>						





Post-visit Survey

Visitor Survey

Institution

Date:

Visitor number:

1. Time: AM / PM (circle)

2. How many people are in your group today (including you):
_____ people

3. During your visit today, did you see or hear any information about 'biodiversity'?
 YES NO NOT SURE

4. During your visit today, did you attend any informational animal talk or show?
 YES NO NOT SURE

5. During your visit today, did you talk to any zoo or aquarium staff or volunteers?
 YES NO NOT SURE

6. During your visit today, did you watch any videos or films?
 YES NO NOT SURE

7. During your visit today, did you use a smartphone application to enhance your visiting experience?
 YES NO NOT SURE

If YES, please specify the 'app':

8. Have you watched any nature shows on television in the last 12 months?
 YES NO NOT SURE

9. Please list anything that comes to mind when you think of 'biodiversity':

- 1.
- 2.
- 3.
- 4.
- 5.

10. If you can think of an action that you could take to help save animal species, please list below: (Or if you cannot think of any actions, tick here)

- 1.
- 2.

If you listed an action above, have you done it in the last month?

NO YES NOT SURE

11. Which of these describe your experience at the zoo or aquarium today (tick all that apply)?

- Had fun day out Learned about animals
 Saw many animals Was entertained
 Had good family time Other

If other, please specify:

12. Are you part of a conservation, nature or environmental group of any kind?

YES NO NOT SURE

13. 'I would be willing to participate in further research on this topic':

YES NO

If YES, please provide e-mail address:

Measuring the outcome variables

- ▶ *To measure biodiversity understanding:* ‘Please list anything that comes to mind when you think of ‘biodiversity’ (space for up to five responses)’.
- ▶ *To measure knowledge of actions to help protect biodiversity:* ‘If you can think of an action that you could take to help save animal species, please list below (space for up to two responses)’.





Data Processing and Analysis

- Dependent variables were content analysed to produce quantitative data:
 - Biodiversity understanding/literacy - scored along a continuous scale of understanding*
 - Knowledge of actions to protect biodiversity – were scored along a continuous scale of personal action^

Inter-coder reliability (Cohen's Kappa): *= 0.82; ^=0.84

Analysis of biodiversity understanding

- ▶ 1 - *Inaccurate*: completely inaccurate descriptions (no accurate elements) – e.g. ‘open air’, ‘everything in general’ – and/or too vague to indicate accurate knowledge of any kind – e.g. ‘many things’.
- ▶ 2 - *Ambivalent*: some evidence of accurate descriptions, some of inaccurate descriptions.
- ▶ 3 - *Some positive evidence*: mention of something biological (e.g. ‘species’) but no other accurate elements or detail.
- ▶ 4 - *Positive evidence*: some evidence of accurate descriptions, but (1) only mentioning animals or plants, not both (minimal inaccurate elements) and/or (2) using a vague but accurate description – e.g. ‘lots of life’, ‘many species’, ‘variety of species’.
- ▶ 5 - *Strongly positive evidence*: strong evidence of accurate descriptions, specifically mentioning both plants and animals (no inaccurate elements) – e.g. ‘variety of animals, fish and insects’, ‘loss of habitat’, ‘shared environment’, ‘wildlife and plant life in balance’.
- ▶ -99 - *Missing*: no thought-listing data provided; excluded and marked as missing data.

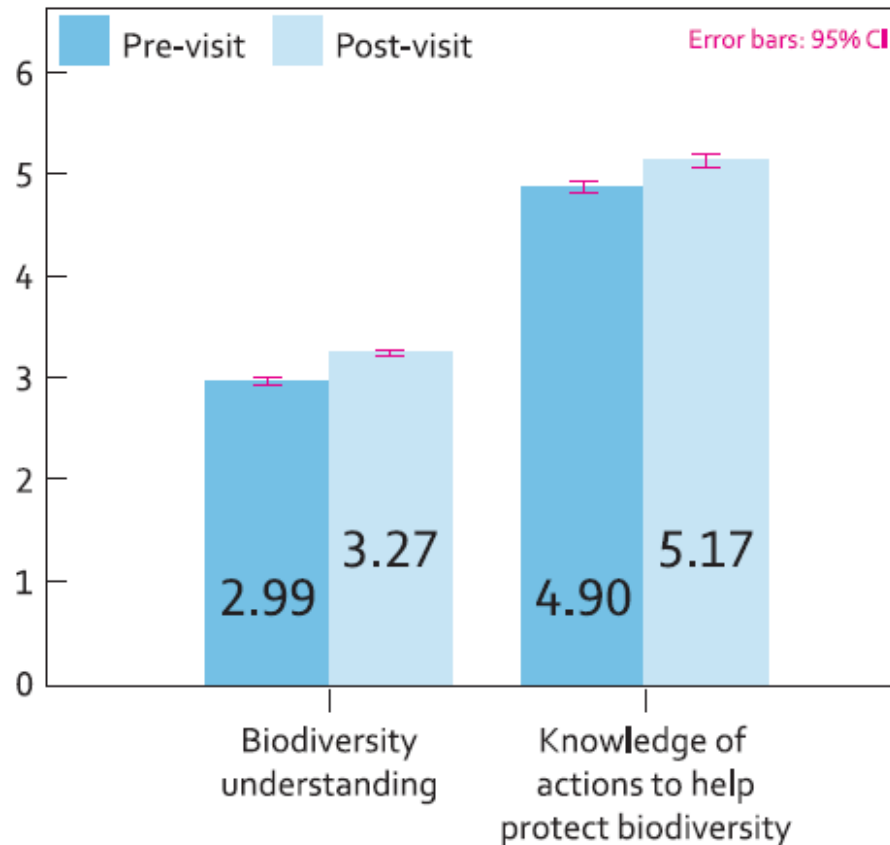
Analysis of conservation 'actions'

- ▶ (0) Action or behavior identified not relevant to conservation.
- ▶ (1) Vague platitudes about need for change (no specific action or behavior mentioned) – e.g., “save ecosystems”.
- ▶ (2) Specific identification of pro-biodiversity action or behavior, but is at a general level (not feasible to address as an individual) – e.g., “stop hunting”, “stop Chinese medicine”.
- ▶ (3) Very specific identification of pro-biodiversity action or behavior that can be done at an individual level – e.g., “drive less to reduce effects of climate change”.
- ▶ (4) Respondent clearly states a personal action or behavior – e.g., “I recycle my mobile phone for gorillas”.



Headline Results

Significant aggregate increases between pre- and post-visit in biodiversity understanding and knowledge of actions to help protect biodiversity



Headline Results

- Number of respondents demonstrating at least some positive evidence of biodiversity understanding: increase from pre-visit (69.8%) to post-visit (75.1%)
- Number of respondents that could identify a pro-biodiversity action that could be achieved at an individual level: increase from pre-visit (50.5%) to post-visit (58.8%)

