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# ANTITHESIS

## Last Haven: Public Views on Conservation-Development Trade-offs

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**NIHR** | Oxford Health Biomedical Research Centre



**NEUROSEC**  
Neuroscience, Ethics & Society



UNIVERSITY OF  
**OXFORD**



Mental health and wellbeing interventions in non-clinical settings

Green spaces



Climate change & flourishing

**ANTITHESSES**

Radical value disagreement (what do we owe future generations?)

## Last Haven

How people's values shape their commitments to preserving green spaces for endangered species versus fulfilling human needs



## Win-Win Solutions

Improving productivity with better technology



Shifting to plant-based diets



Integrating Conservation & Development (ICDPs)



## North Sumatra's Batang Toru rainforest

Tapanuli orangutan (fewer than 800 individuals  
remaining world-wide)



## Construction of a hydropower dam



## Nilgiris region

Land previously used for residential and agricultural purposes by over 35,000 families

Black flag hoisted outside a house in The Nilgiris



## Repurposed as an elephant corridor



Perspective | Published: 13 May 2021

## Biodiversity conservation as a promising frontier for behavioural science

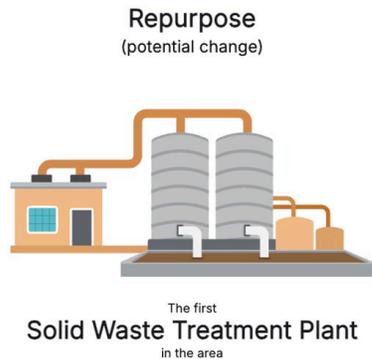
[Kristian Steensen Nielsen](#) , [Theresa M. Marteau](#), [Jan M. Bauer](#), [Richard B. Bradbury](#), [Steven Broad](#), [Gayle Burgess](#), [Mark Burgman](#), [Hilary Byerly](#), [Susan Clayton](#), [Dulce Espelosin](#), [Paul J. Ferraro](#), [Brendan Fisher](#), [Emma E. Garnett](#), [Julia P. G. Jones](#), [Mark Otieno](#), [Stephen Polasky](#), [Taylor H. Ricketts](#), [Rosie Trevelyan](#), [Sander van der Linden](#), [Diogo Veríssimo](#) & [Andrew Balmford](#)

*Nature Human Behaviour* **5**, 550–556 (2021) | [Cite this article](#)

**25k** Accesses | **67** Citations | **124** Altmetric | [Metrics](#)

# Study 1

- Default is habitat, could be repurposed for a building
- Species vs one unspecified building
  - 40 species
  - 5 levels for percentages: no, 1, 5, 50, 75
  - 1 LH question and 11 ratings
- Buildings vs. one unspecified endangered species
  - 40 buildings
  - 5 levels for no. humans (effectiveness): no, 100, 500, 10000, 50000
  - 1 LH question and 5 ratings



Preserve  
(current use)



Land Use 4 of 16

Task 1 of 2



**Police Station**

Imagine a green space that is one of the last sanctuaries for an endangered species.

Recently, you learned about a plan to re-purpose this area into the construction project above which is expected to benefit humans. **The new project is expected to benefit 100 persons.**

What should happen to this green space?

Green space should be <b>re-purposed</b> into the project above <input type="radio"/>	Green space should be <b>preserved</b> <input type="radio"/>
------------------------------------------------------------------------------------------	-----------------------------------------------------------------

Land Use 4 of 16

Task 2 of 2



**Police Station**

Rate this land use by the following features on a scale of 1-10 [Your rating should be based on the land use itself generally rather than on the picture above]

Most negative	-5	-4	-3	-2	-1	Neutral	0	1	2	3	4	5	Most positive
Environmental Impact													<input type="checkbox"/> Not Sure
<hr/>													
Economic Impact													<input type="checkbox"/> Not Sure
<hr/>													
Community and Social Impact													<input type="checkbox"/> Not Sure
<hr/>													
Historical and Cultural Impact													<input type="checkbox"/> Not Sure
<hr/>													
Visual and Aesthetics Impact													<input type="checkbox"/> Not Sure
<hr/>													

## Participants

- Out of 513 participants who attempted the survey, 484 completed (and got paid), and 441 participants met the inclusion criteria.

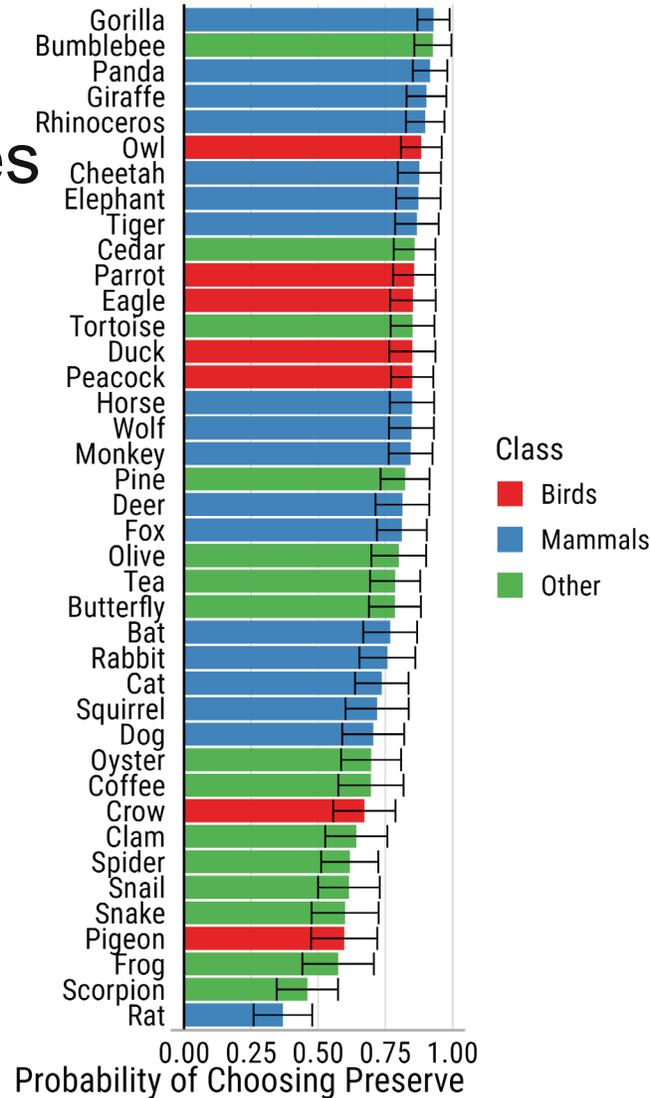
Characteristic	N = 441 <sup>1</sup>
Age	
18-24 years old	23 (5.2%)
25-34 years old	115 (26%)
35-44 years old	112 (25%)
45-54 years old	102 (23%)
55-64 years old	65 (15%)
65+ years old	24 (5.4%)
Gender	
Female	202 (46%)
Male	233 (53%)
Non-binary / third gender	5 (1.1%)
Prefer not to say	1 (0.2%)
Children	
0	275 (62%)
1	72 (16%)
2	65 (15%)
3	23 (5.2%)
4	5 (1.1%)
6	1 (0.2%)

Employment	
Working full-time	275 (62%)
Working part-time	62 (14%)
Unemployed and looking for work	30 (6.8%)
A homemaker or stay-at-home parent	29 (6.6%)
Student	5 (1.1%)
Retired	27 (6.1%)
Other	13 (2.9%)
Income	
Less than \$25,000	46 (10%)
\$25,000-\$49,999	88 (20%)
\$50,000-\$74,999	96 (22%)
\$75,000-\$99,999	82 (19%)
\$100,000-\$149,999	71 (16%)
\$150,000 or more	53 (12%)
Prefer not to say	5 (1.1%)
Education	
Some Primary	0 (0%)
Completed Primary School	5 (1.1%)
Some Secondary	7 (1.6%)
Completed Secondary School	45 (10%)
Vocational or Similar	33 (7.5%)
Some University but no degree	72 (16%)
University Bachelors Degree	165 (37%)
Graduate or professional degree (MA, MS, MBA, PhD, JD, MD, DDS)	107 (24%)
Prefer not to say	7 (1.6%)

# Study 1

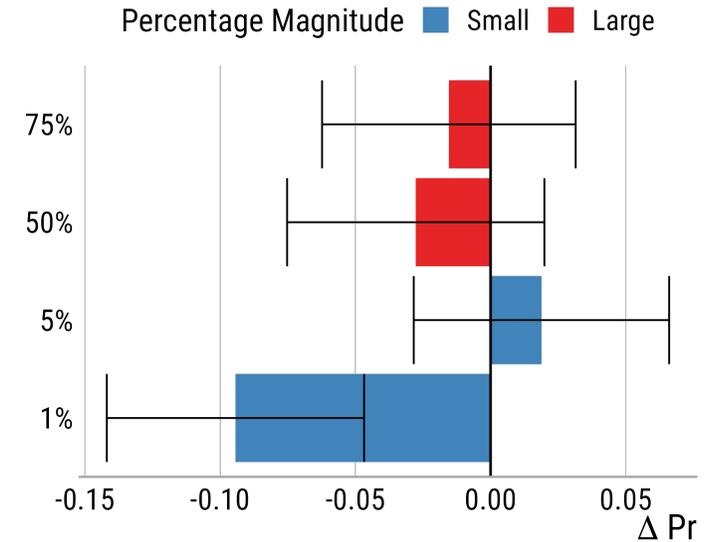
## Species

### Choice of Preservation per species



### Showing Percentages

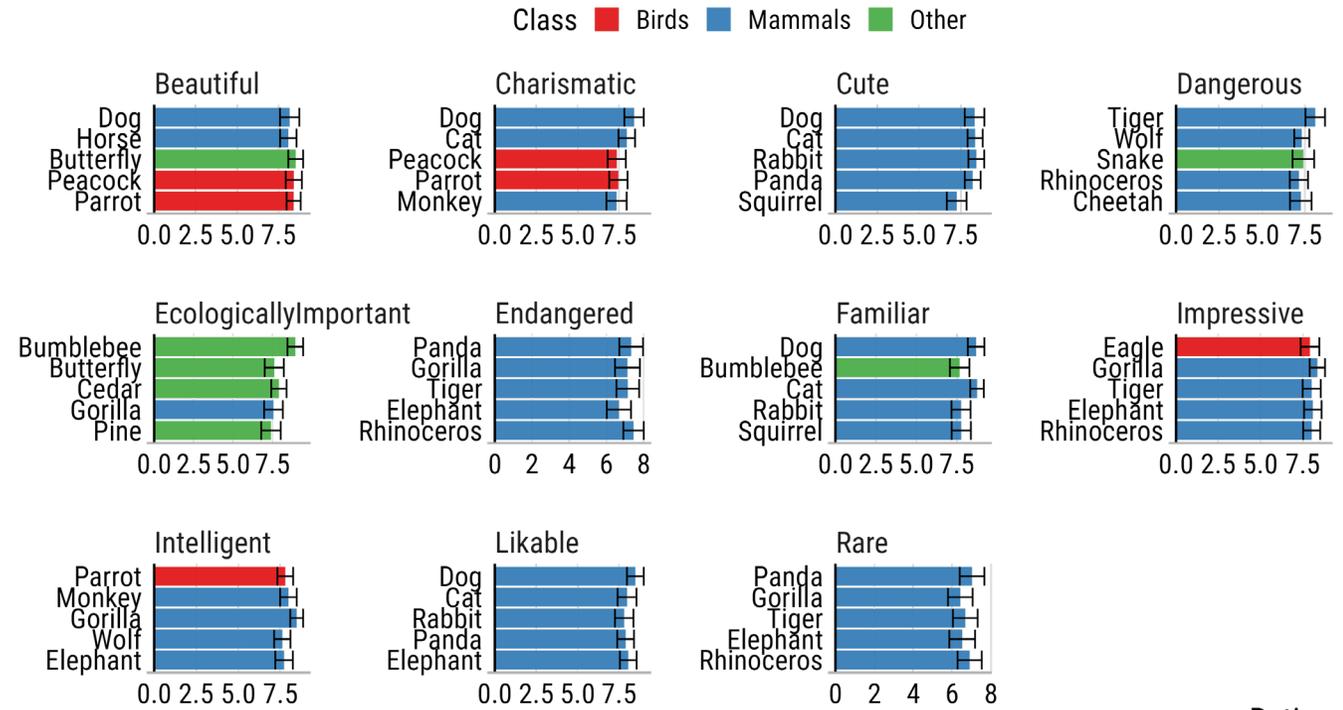
Effect of percentage information, compared to not showing.



# Study 1

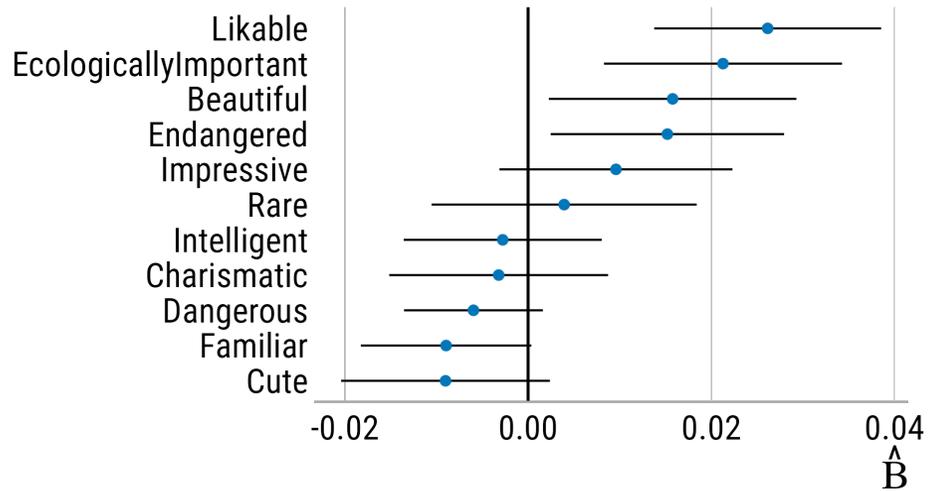
## Species

### Top Species Ratings by Question



### Ratings and Conservation Decisions

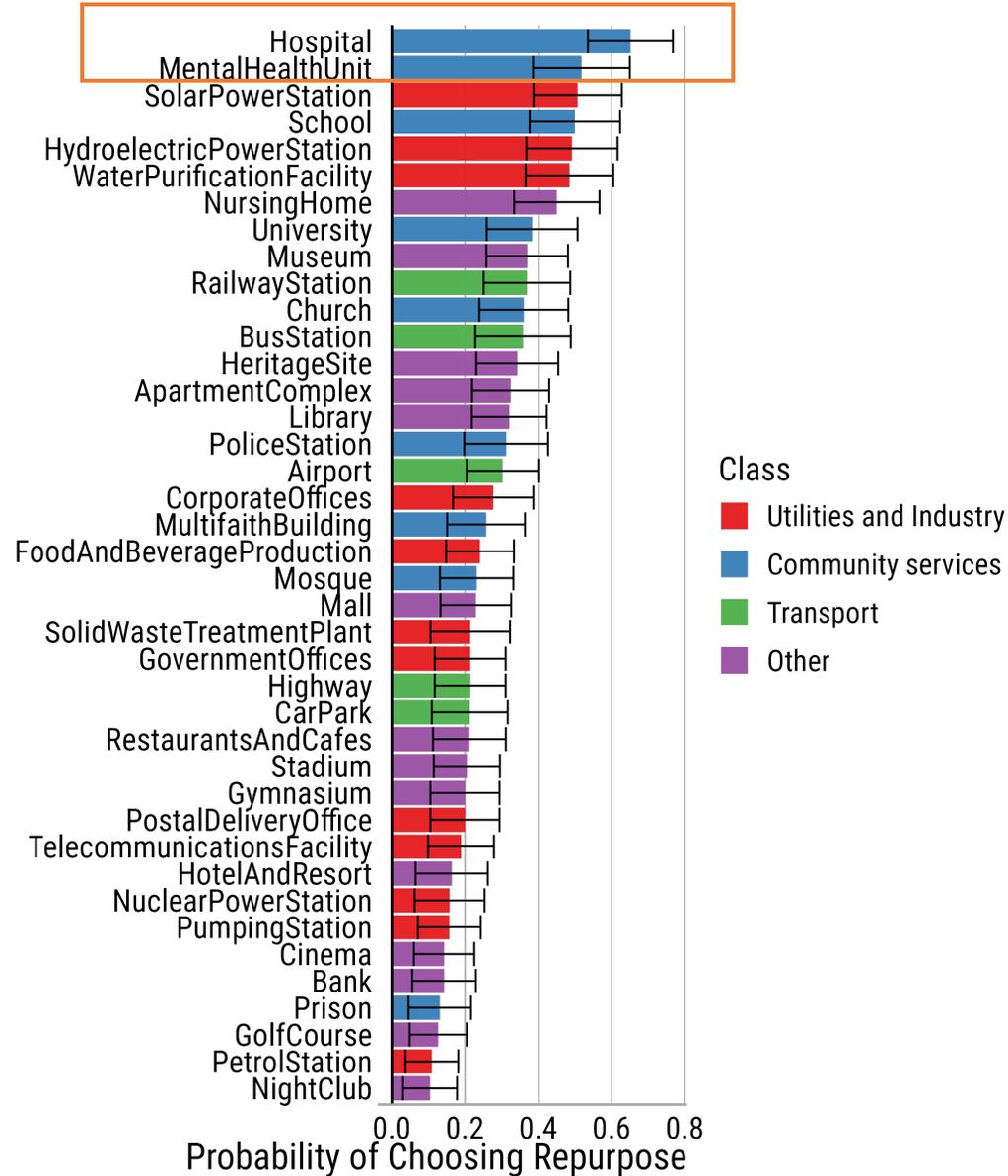
Association between species ratings and conservation decision.



# Study 1

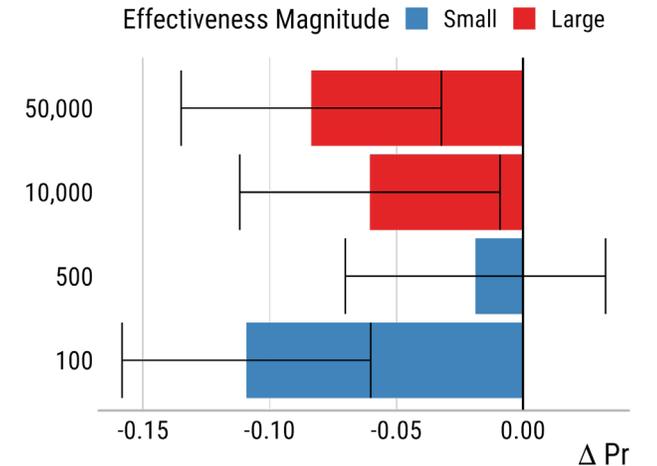
## Buildings

### Choice of Repurposing per land use



### Showing Building Effectiveness

Effect of number of humans information, compared to not showing.

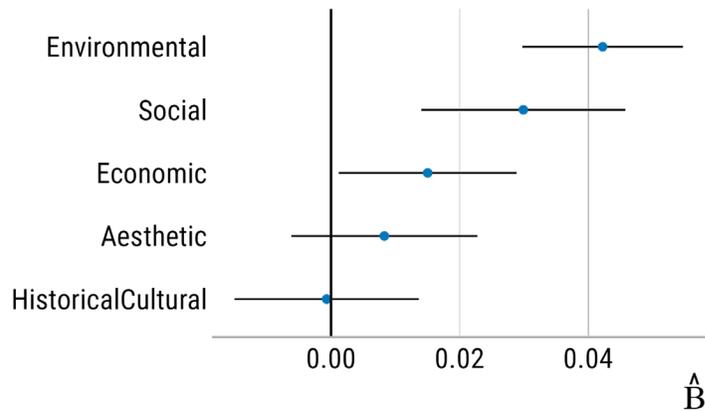


# Study 1

## Buildings

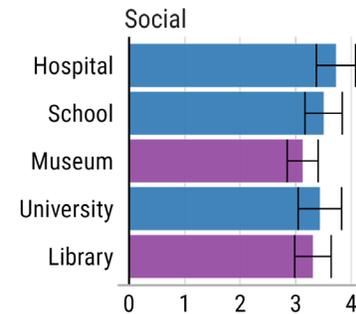
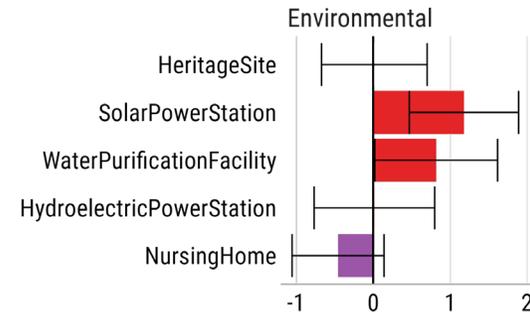
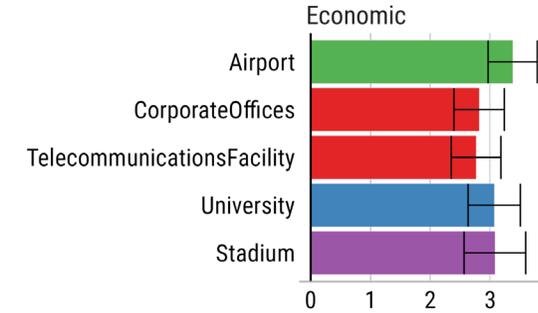
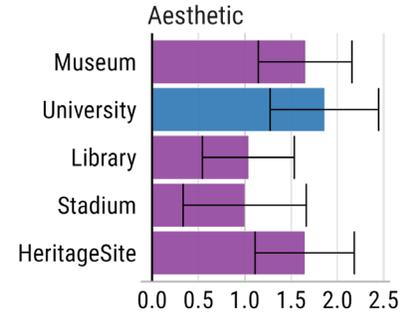
### Ratings and Conservation Decisions

Association between building ratings and repurposing decision.



### Top Building Ratings by Question

Class ■ Utilities and Industry ■ Community services ■ Transport ■ Other



## Study 2

- Default is either
  - **One of the Last Habitats** (for an endangered species) that could be repurposed for a **first building** (in the area)
  - **Last Land use** (in the area) that could be repurposed for a **first habitat** (for an endangered species)
- Species vs one unspecified building
  - 10 species,
  - 1 LH question
  - 3 levels for percentages: no, 1, 75
- Buildings vs. one unspecified endangered species
  - 10 buildings
  - 1 LH question
  - 3 levels for no. humans (effectiveness): no, 500, 50000

Land Use 1 of 10



**Bank**

Imagine a space currently utilised by the land use project mentioned above, which is the last of its type in the region.

Recently, you learned about a plan to redevelop this area into a habitat, which will be the first and only haven for an endangered species.

What should happen to this space?

Space should be **preserved**



Space should be **re-purposed** into a habitat



## Participants

- Out of 671 participants who attempted the survey, 600 completed (and got paid) and met the inclusion criteria. They were nationally representative of the US population in terms of age levels, gender (male and female), and ethnicity (simplified).

Characteristic	N = 600 <sup>†</sup>
Age	
18-24 years old	68 (11%)
25-34 years old	107 (18%)
35-44 years old	105 (18%)
45-54 years old	94 (16%)
55-64 years old	151 (25%)
65+ years old	75 (13%)
Gender	
Female	304 (51%)
Male	290 (48%)
Non-binary / third gender	5 (0.8%)
Prefer to self-describe	1 (0.2%)
Children	
0	419 (70%)
1	72 (12%)
2	65 (11%)
3	33 (5.5%)
4	9 (1.5%)
5	1 (0.2%)
8	1 (0.2%)

## Employment

Working full-time	294 (49%)
Working part-time	110 (18%)
Unemployed and looking for work	53 (8.8%)
A homemaker or stay-at-home parent	31 (5.2%)
Student	29 (4.8%)
Retired	67 (11%)
Other	16 (2.7%)

## Income

Less than \$25,000	94 (16%)
\$25,000-\$49,999	130 (22%)
\$50,000-\$74,999	112 (19%)
\$75,000-\$99,999	93 (16%)
\$100,000-\$149,999	110 (18%)
\$150,000 or more	51 (8.5%)
Prefer not to say	10 (1.7%)

## Education

Some Primary	1 (0.2%)
Completed Primary School	15 (2.5%)
Some Secondary	14 (2.3%)
Completed Secondary School	71 (12%)
Vocational or Similar	66 (11%)
Some University but no degree	110 (18%)
University Bachelors Degree	218 (36%)
Graduate or professional degree (MA, MS, MBA, PhD, JD, MD, DDS)	104 (17%)
Prefer not to say	1 (0.2%)

<sup>†</sup> n (%)

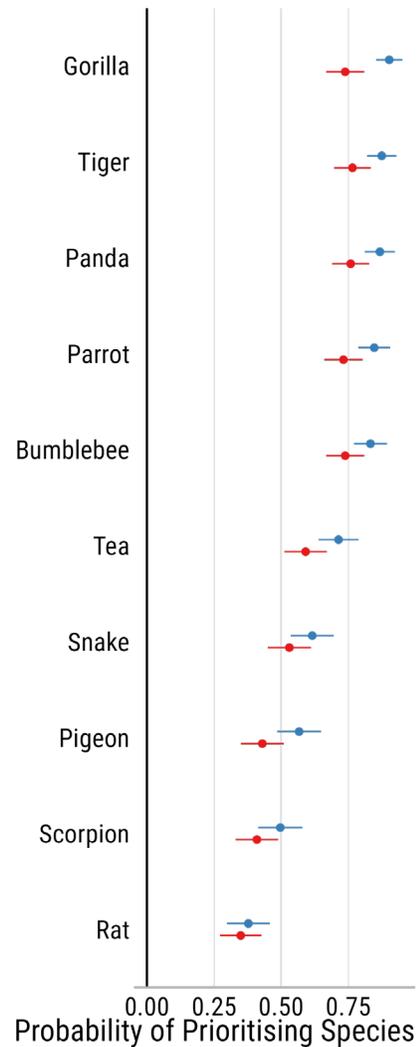
# Study 2

## Species

### Choice in favour of species

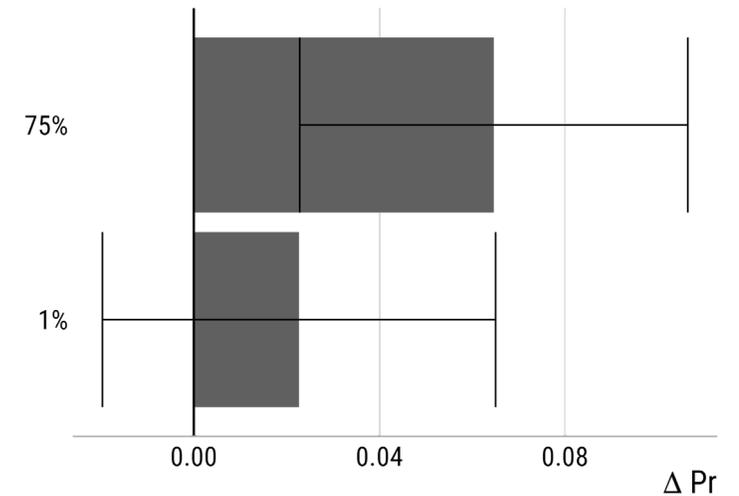
Comparison for when default land is a green space (species) vs. a land use (building)

Default land: ◆ Species ◆ Building



### Showing Percentages

Effect of percentage information, compared to not showing.



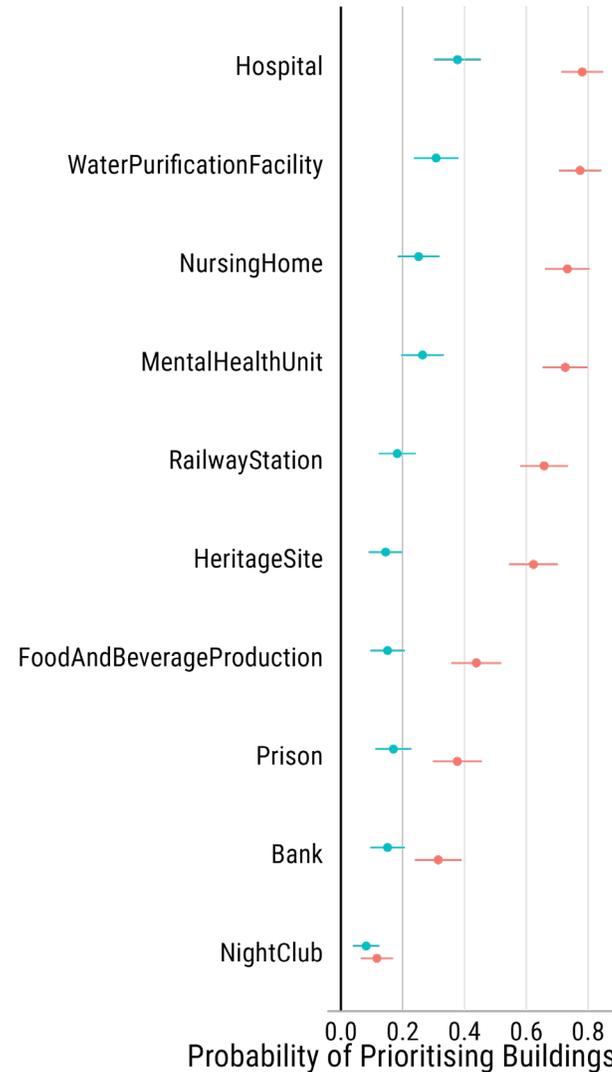
# Study 2

## Buildings

### Choice in favour of buildings

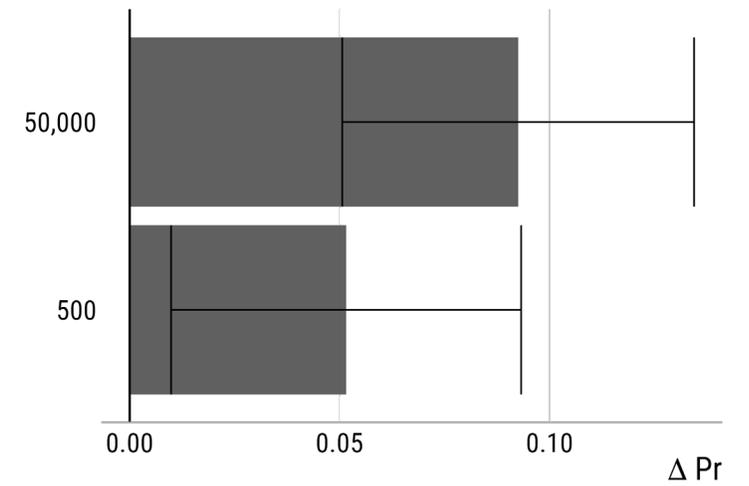
Comparison for when default land is a green space (species) vs. a land use (building)

Default land: ◆ Species ◆ Building

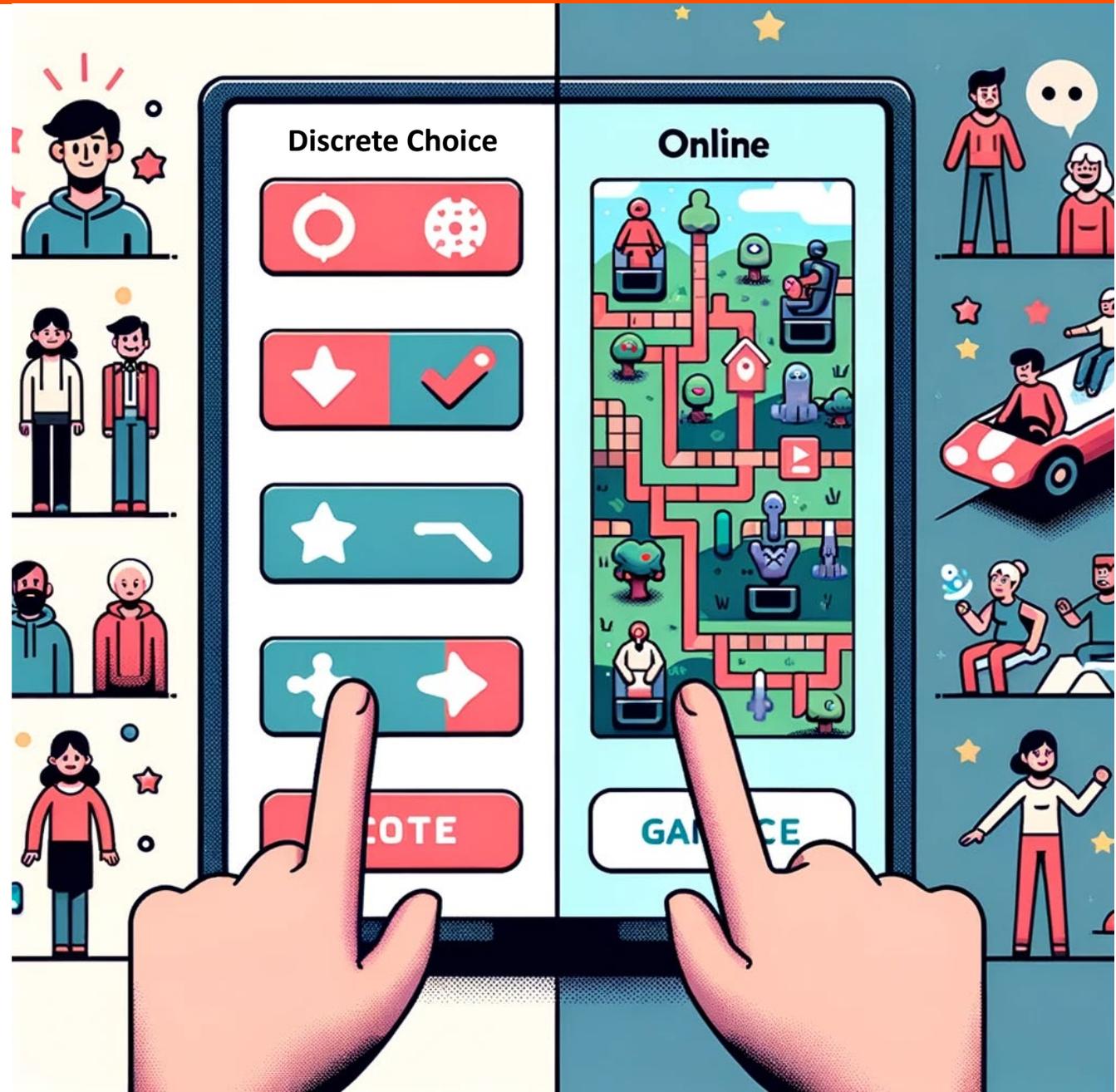


### Showing Building Effectiveness

Effect of number of humans information, compared to not showing.



Discrete choice experiments  
Developed as online serious game

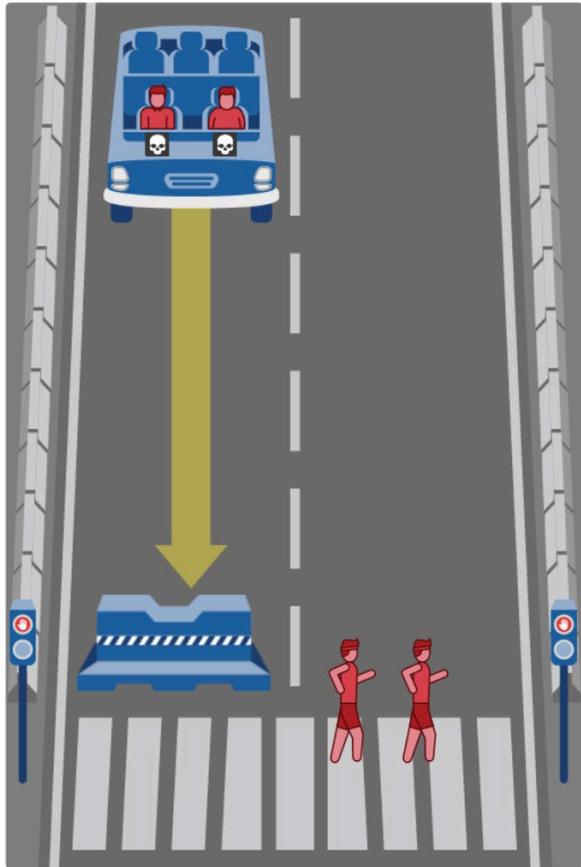




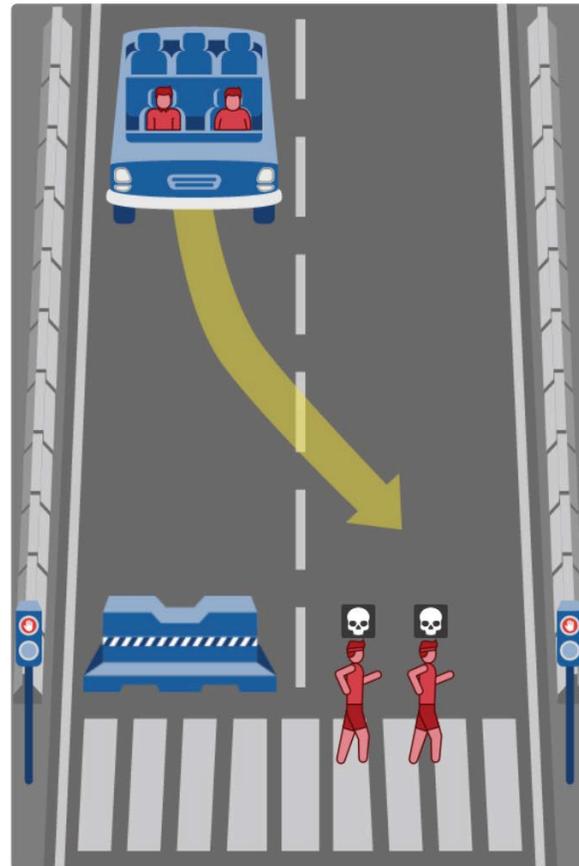
MORAL  
MACHINE

<https://moralmachine.net>

What should the self-driving car do?



Show Description



Show Description



mygoodness

<https://my-goodness.net>

Which lives should your \$100 save?

Charity A

\$100 saves...

Who?

20 Adult Women



× 20

Where?

Northern Africa



What?

Nutritious meals



My Choice

Charity B

\$100 saves...

Who?

4 Adult Women



× 4

Where?

North America



What?

Clean water



My Choice

## Opportunities

- Potential to Scale
- Large number of hypotheses
- Better representation
- Ability to study heterogeneity
- Pedagogical Benefits

## Challenges

- Representation issues
- Measurement issues
- Practical issues
- Ethical issues

<https://last-haven.roaringdeep.com>

## Last Haven

Welcome to Last Haven! Imagine you could decide how land is used. Would you choose to build a hospital for 300 local people, or create a habitat for endangered beautiful butterflies? Our platform helps you understand the complex choices involved when deciding whether to preserve habitats for endangered species versus pursuing human benefits.

Start Playing



Imagine a green space that is the last habitat for an endangered species, like tigers. What if the government plans to repurpose this space for farmland that brings in a lot of money? How would you feel if the space were instead used to build a hospital or a mental health unit? What if the endangered species were less iconic than tigers, like snakes or plants? Or imagine reversing the situation: converting a hospital into a habitat for endangered species.

This 'game' guides you through making these difficult choices. Join us and explore what you prioritise when it comes to humans versus non-human species!

**Preserve**



[www.antitheses.net](http://www.antitheses.net)

**Re-purpose**

**ANTITH<sub>3</sub>SES**

WELLCOME DISCOVERY RESEARCH PLATFORM FOR TRANSFORMATIVE  
INCLUSIVITY IN ETHICS AND HUMANITIES RESEARCH

# Factors

## Default case

Preservation  
of a habitat

Vs.

Repurpose  
for a land use

Preservation  
of a land use

Vs.

Repurpose  
for a habitat

# Factors

Species



**20 Essential**  
**20 nice to have**

## Underlying factors

Charismatic

Beautiful

Cute

Rare

Endangered

Dangerous

Impressive

Intelligent

Ecological contribution

Keystone species

Benefit to humans

Percentage of remaining species: 1%, ...10%, 25%, 50%, 75%, 90% **100%**

# Factors

## Land Use



**20 Essential**  
**20 nice to have**

## Underlying factors

Environmental Impact

Economic Benefit

Community and Social Impact

Historical and Cultural Impact

Visual Appeal and Aesthetics

**Number of humans serviced per year or at a time by the building:**

100, 200, ..., 500, ..., 900,

1,000, 2000, ..., 5,000, 9,000,

10,000, 20,000, ..., 50,000

# Factors

**Location:** Same region as participant vs. different region

**Regions:**

- North America, Central/South America
- Western Europe, Eastern Europe
- North Africa, Sub-Saharan Africa
- West/Central Asia, East Asia, South/Southeast Asia
- Oceania



### What should happen to this Space?



Eastern Europe

#### Preserve (current use)

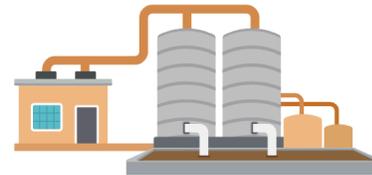


Habitat for endangered  
**Pandas**



Protect 80% of the remaining Pandas

#### Repurpose (potential change)



The first  
**Solid Waste Treatment Plant**  
in the area

2000x  Offer access to 2000 people

[Show Description](#)



## What should happen to this Space?



Eastern Europe

### Preserve (current use)



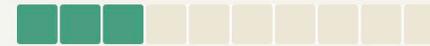
The only  
**Apartment Complex**  
in the area

4000x  Offer access to 4000 people

### Repurpose (potential change)



Habitat for endangered  
**Bumblebees**



Protect 30% of the remaining Bumblebees

Show Description

## Your Results

Thank you for participating, here are some insights into your choices.



### Humans vs. Species

Overall



### Effectiveness of your decisions

Number of humans



### Species choices

You prioritized saving...



You prioritized saving...



### Land use choices

You prioritized land uses with...



You prioritized land uses with...



Thank you

# ANTITHESES

Please use this QR Code  
to check the website and  
give us feedback on it

Questions?

Last Haven website is currently at:  
<https://last-haven.roaringdeep.com>

