Personal climate actions in a popular smartphone app

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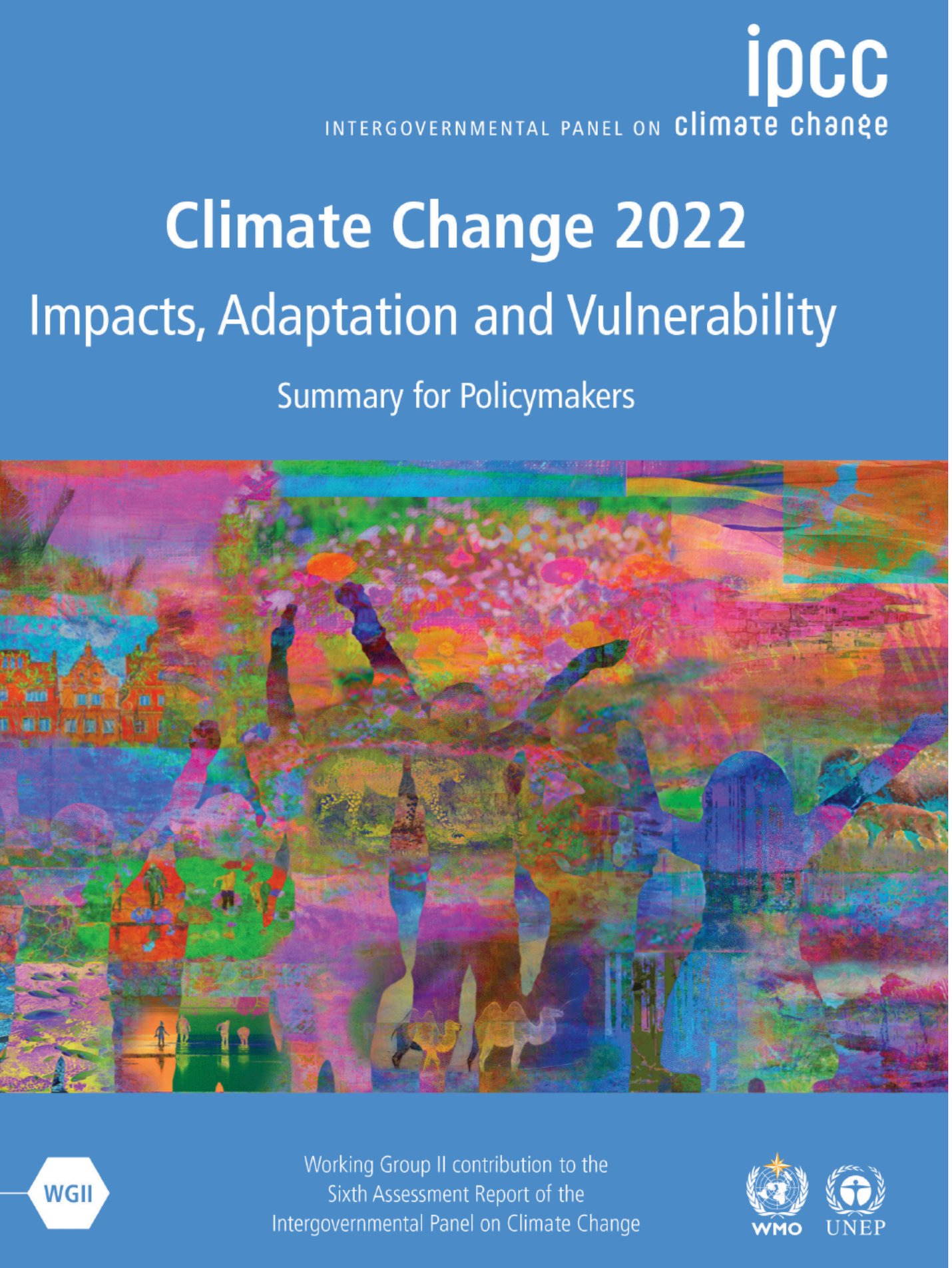
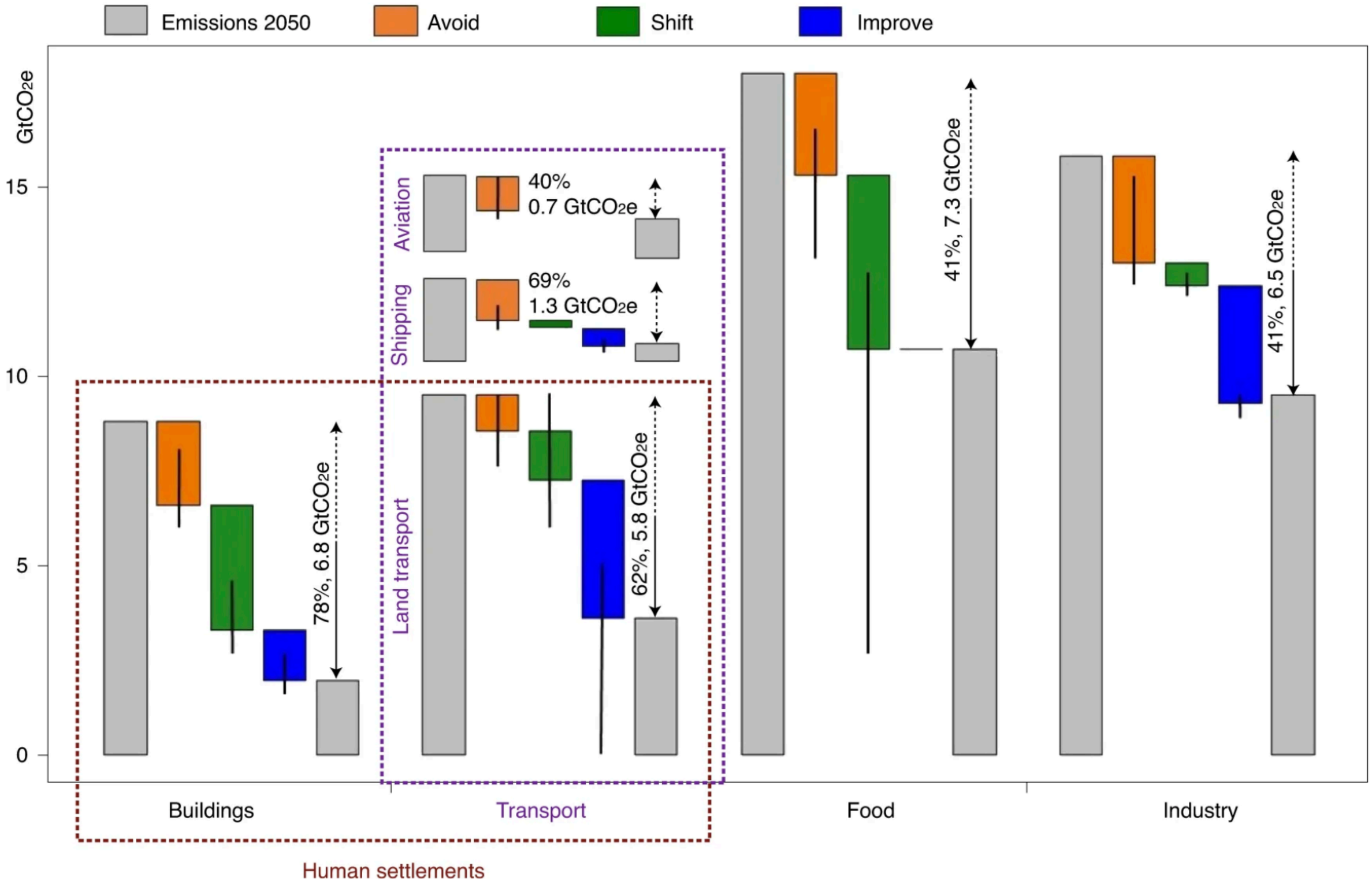
21th March, 2025

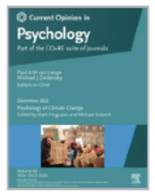


"Any further delay in [..] action on adaptation and mitigation will miss a brief and rapidly closing window of opportunity to secure a liveable and sustainable future for all."



Creutzig et al. (2022)

Current Opinion in Psychology
Volume 42, December 2021, Pages 76-81



Review

Behaviour change to address climate change

Lorraine Whitmarsh [1 3], Wouter Poortinga [2 3], Stuart Capstick [2 3]

Article | Published: 25 November 2021

Demand-side solutions to climate change mitigation consistent with high levels of well-being

Felix Creutzig, Leila Niamir, Xuemei Bai, Max Callaghan, Jonathan Cullen, Julio Díaz-José, Maria Figueroa, Arnulf Grubler, William F. Lamb, Adrian Leip, Eric Masanet, Érika Mata, Linus Mattauch, Jan C. Minx, Sebastian Mirasgedis, Yacob Mulugetta, Sudarmanto Budi Nugroho, Minal Pathak, Patricia Perkins, Joyashree Roy, Stephane de la Rue du Ca
Ürge-Vorsatz + Show authors

Nature Climate Change 12, 36–46 (2022) | Cite t

Editorial | Published: 16 November 2022

Behaviour as leverage

Nature Climate Change 12, 1069 (2022) | Cite this article

Perspective | Published: 04 June 2024

Demand-side strategies key for mitigating material impacts of energy transitions

Felix Creutzig, Sofia G. Simoes, Sina Leipold, Peter Berrill, Isabel Azevedo, Oreane Edelenbosch, Tomer Fishman, Helmut Haberl, Edgar Hertwich, Volker Krey, Ana Teresa Lima, Tamar Makov, Alessio Mastrucci, Nikola Milojevic-Dupont, Florian Nachtigall, Stefan Pauliuk, Mafalda Silva, Elena Verdolini,
igner, Dominik Wiedenhofer & Charlie Wilson

, 561–572 (2024) | Cite this article

Article | Open access | Published: 07 June 2024

Reducing sectoral hard-to-abate emissions to limit reliance on carbon dioxide removal

Oreane Y. Edelenbosch, Andries F. Hof, Maarten van den Berg, Harmen Sytze de Boer, Hsing-Hsuan Chen, Vassilis Daioglou, Mark M. Dekker, Jonathan C. Doelman, Michel G. J. den Elzen, Mathijs Harmsen, Stratos Mikropoulos, Mariësse A. E. van Sluisveld, Elke Stehfest, Isabela S. Tagomori, Willem-Jan van Zeist & Detlef P. van Vuuren

Nature Climate Change 14, 715–722 (2024) | Cite this article

Energy Research & Social Science
Volume 120, February 2025, 103907

Perspective

Embracing sufficiency to accelerate the energy transition

Fabian Dablander [a b 1], Colin Hickey [a 1], Maria Sandberg [c], Carina Zell-Ziegler [d e], John Grin [f]

Article | Open access | Published: 19 October 2024

The key role of sufficiency for low demand-based carbon neutrality and energy security across Europe

Frauke Wiese, Nicolas Taillard, Emile Balembois, Benjamin Best, Stephane Bourgeois, José Campos, Luisa Cordroch, Mathilde Djelali, Alexandre Gabert, Adrien Jacob, Elliott Johnson, Sébastien Meyer, Béla Munkácsy, Lorenzo Pagliano, Sylvain Quoilin, Andrea Roscetti, Johannes Thema, Paolo Thiran, Adrien Toledano, Bendix Vogel, Carina Zell-Ziegler & Yves Marignac

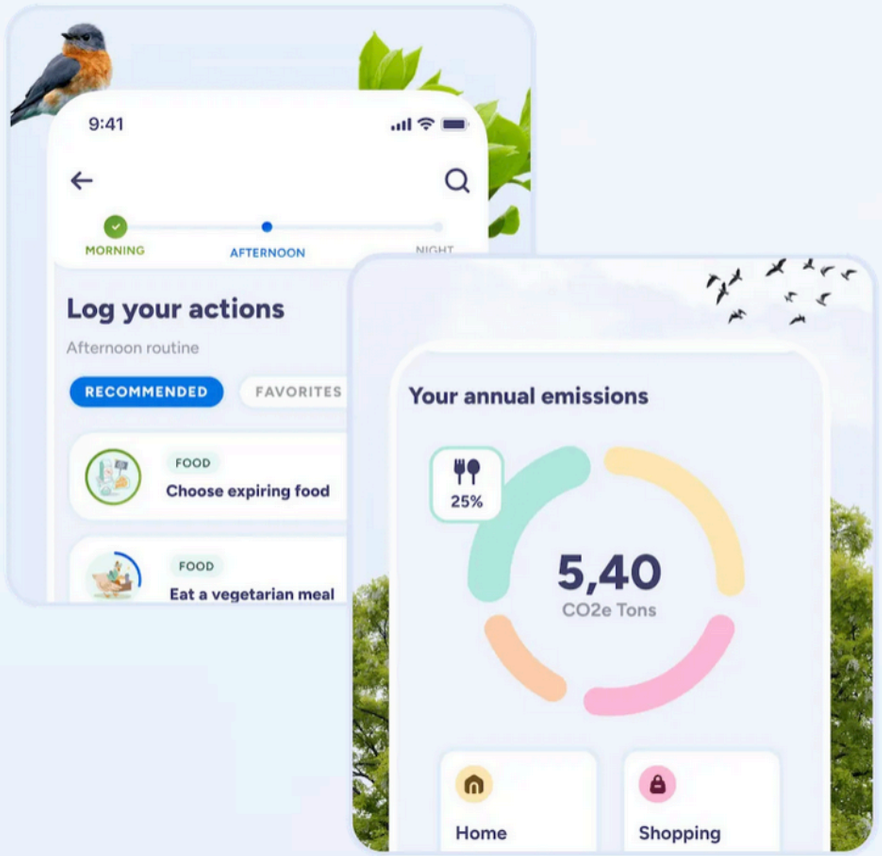
Nature Communications 15, Article number: 9043 (2024) | Cite this article

Personal climate actions in a popular smartphone app

Fabian Dablander[1,2]*, Kristian S. Nielsen[3], Jan M. Bauer[3], Laura Basconi[4], & Cameron Brick[5,6]

[1]Institute for Biodiversity and Ecosystem Dynamics, University of Amsterdam, the Netherlands
[2]Institute for Advanced Study, University of Amsterdam, the Netherlands.
[3]Department of Management, Society and Communication, Copenhagen Business School, Denmark
[4]AWorld SB (BCorp), Torino, Italy
[5]Department of Psychology, University of Amsterdam, the Netherlands
[6]Department of Psychology, University of Inland Norway, Norway

AWORLD IN SUPPORT OF ACTNOW



AWorld is the official platform in support of ACTNOW, the **United Nations'** campaign for individual action on climate change and sustainability. It has also been adopted by the European Commission to promote the Climate Pact.
In 2023, the app was recognized as Google's Best App for Good.

23.922.706

Climate action taken around the world

ACTNOW

Each and every one of us has to #ActNow to tackle the climate emergency. People from around the world have already logged more than 1 million of their #ClimateAction activities. Join the movement: http://actnow.aworld.org

António Guterres

UN Secretary-General

Create positive change and accelerate progress through #ACTNOW, the @UN campaign for individual action on climate change and sustainability. Learn more at: https://actnow.aworld.org #GlobalGoals #UNxExpo

Leonardo DiCaprio

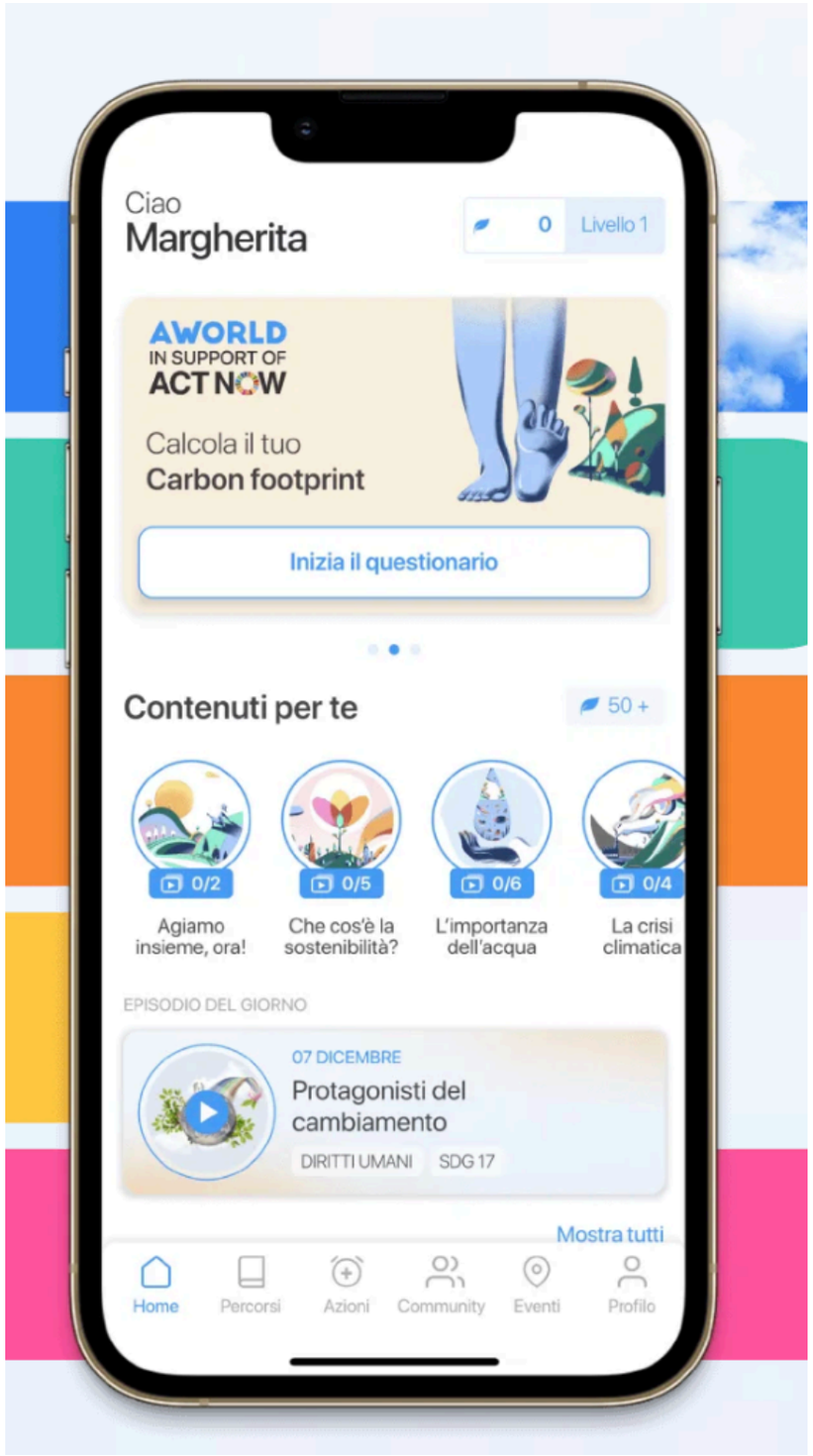
Actor

Outline

Data overview & cleaning

1) Actions over time
2) Most frequent actions
3) Carbon footprint
4) Psychological variables

Concluding remarks

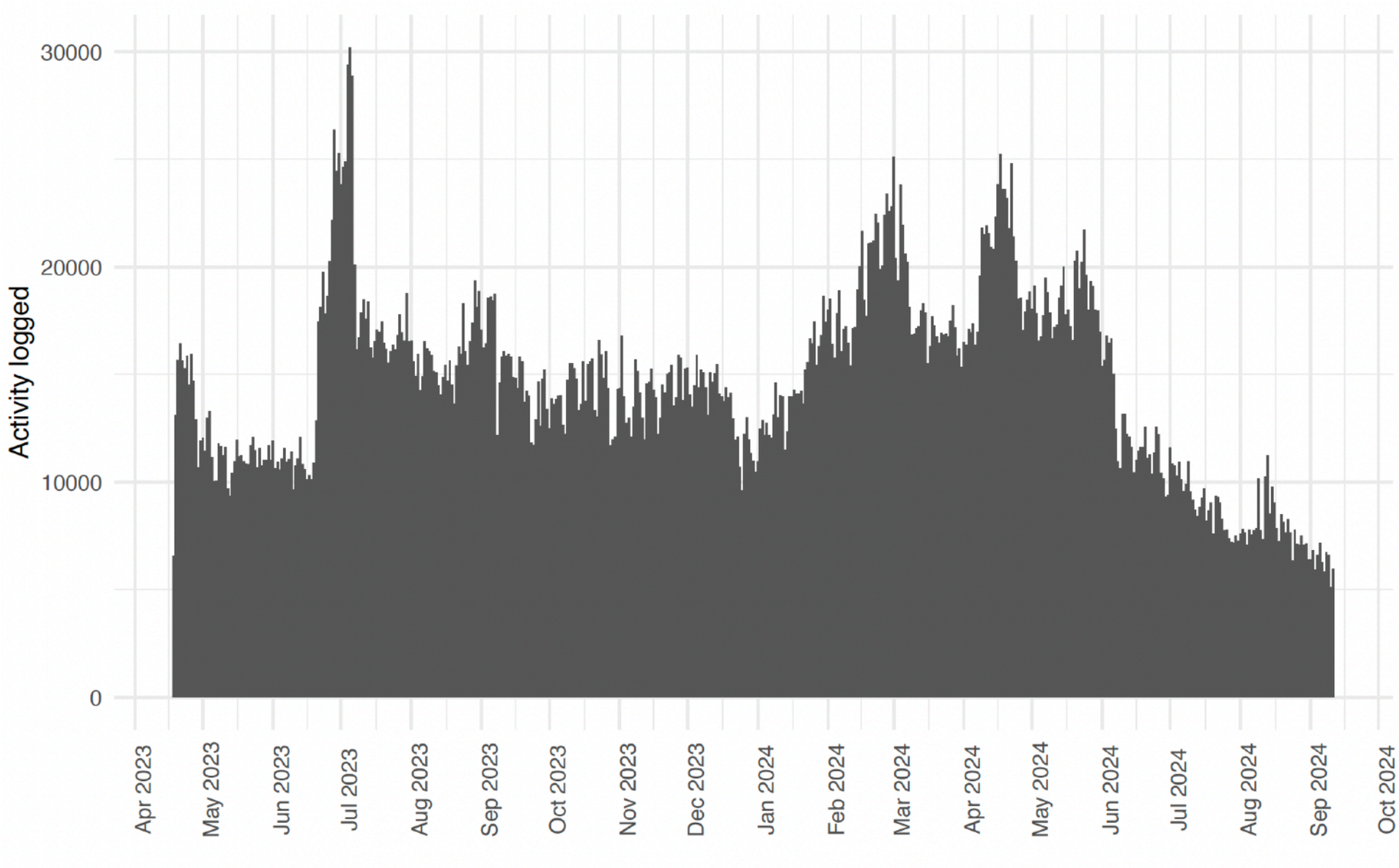


Data overview & cleaning

Data: April 2023 - September 2024

$N = 27{,}167$

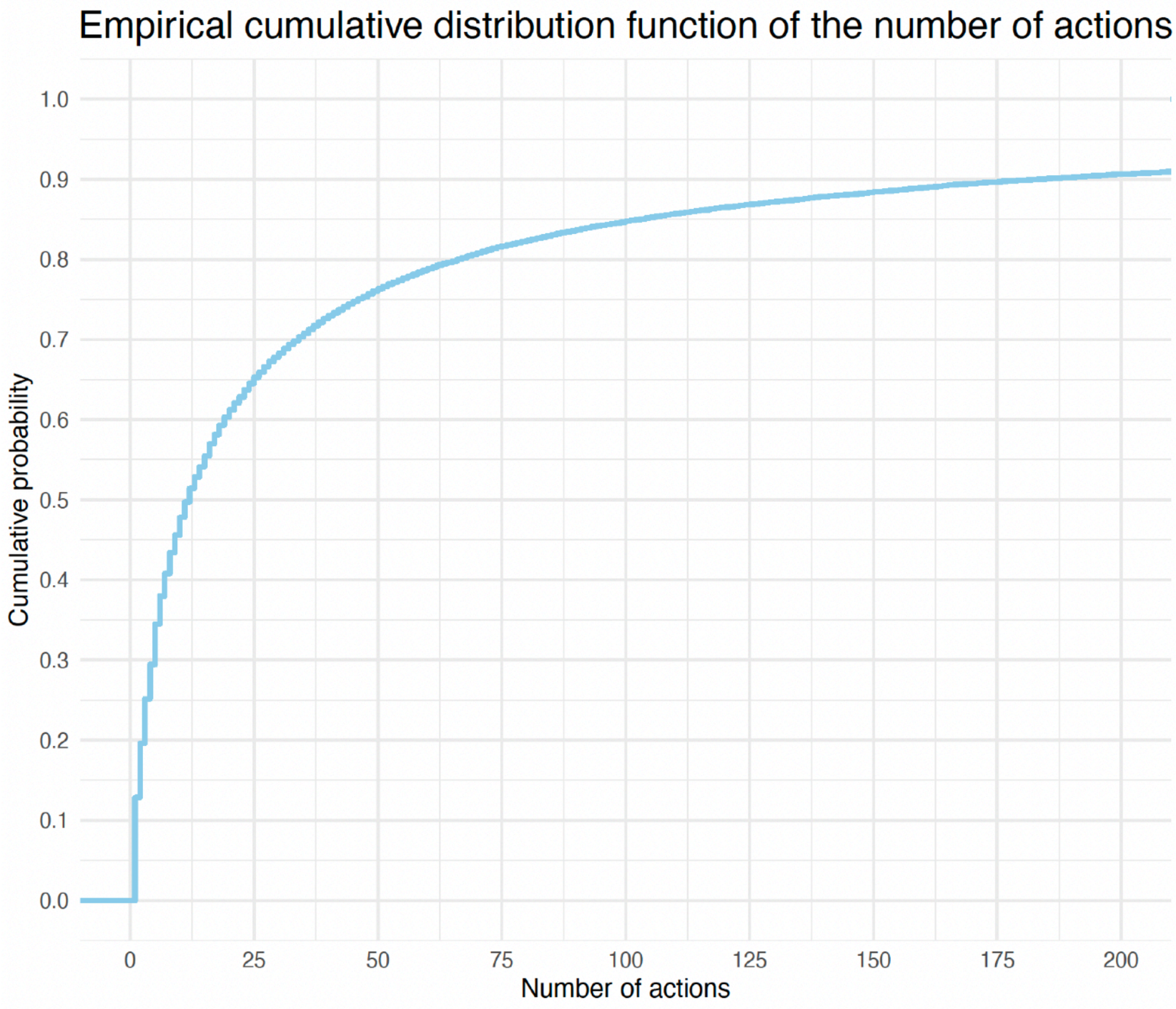
$A = 7{,}477{,}466$



Data: April 2023 - September 2024

$N = 27{,}167$

$A = 7{,}477{,}466$



Data: April 2023 - September 2024

N = 27,167

A = 7,477,466

```
# A tibble: 27,167 × 6
  sub      country nr_act nr_act_daily last_action join_date
  <chr>    <chr>    <int>        <dbl> <date>      <date>
1 384bde39 US       84292          165 2024-09-11  2022-04-22
2 4cd295a5 IT       83298          163 2024-09-11  2021-04-23
3 9e3eedbe IT       82829          162 2024-09-10  2021-05-21
4 7655d750 IT       81371          159 2024-09-11  2022-02-18
5 fda294cd NO       81078          159 2024-09-09  2021-08-30
6 c48fcd61 PH       80916          158 2024-09-11  2021-08-10
7 d69943f7 US       80085          157 2024-09-10  2021-10-15
```

Data: April 2023 - September 2024

N = 27,167

A = 7,477,466

```
# A tibble: 27,167 × 6
  sub      country nr_act nr_act_daily last_action join_date
  <chr>    <chr>    <int>         <dbl> <date>      <date>
1 384bde39 US       84292           165 2024-09-11  2022-04-22
2 4cd295a5 IT       83298           163 2024-09-11  2021-04-23
3 9e3eedbe IT       82829           162 2024-09-10  2021-05-21
4 7655d750 IT       81371           159 2024-09-11  2022-02-18
5 fda294cd NO       81078           159 2024-09-09  2021-08-30
6 c48fcd61 PH       80916           158 2024-09-11  2021-08-10
7 d69943f7 US       80085           157 2024-09-10  2021-10-15
```

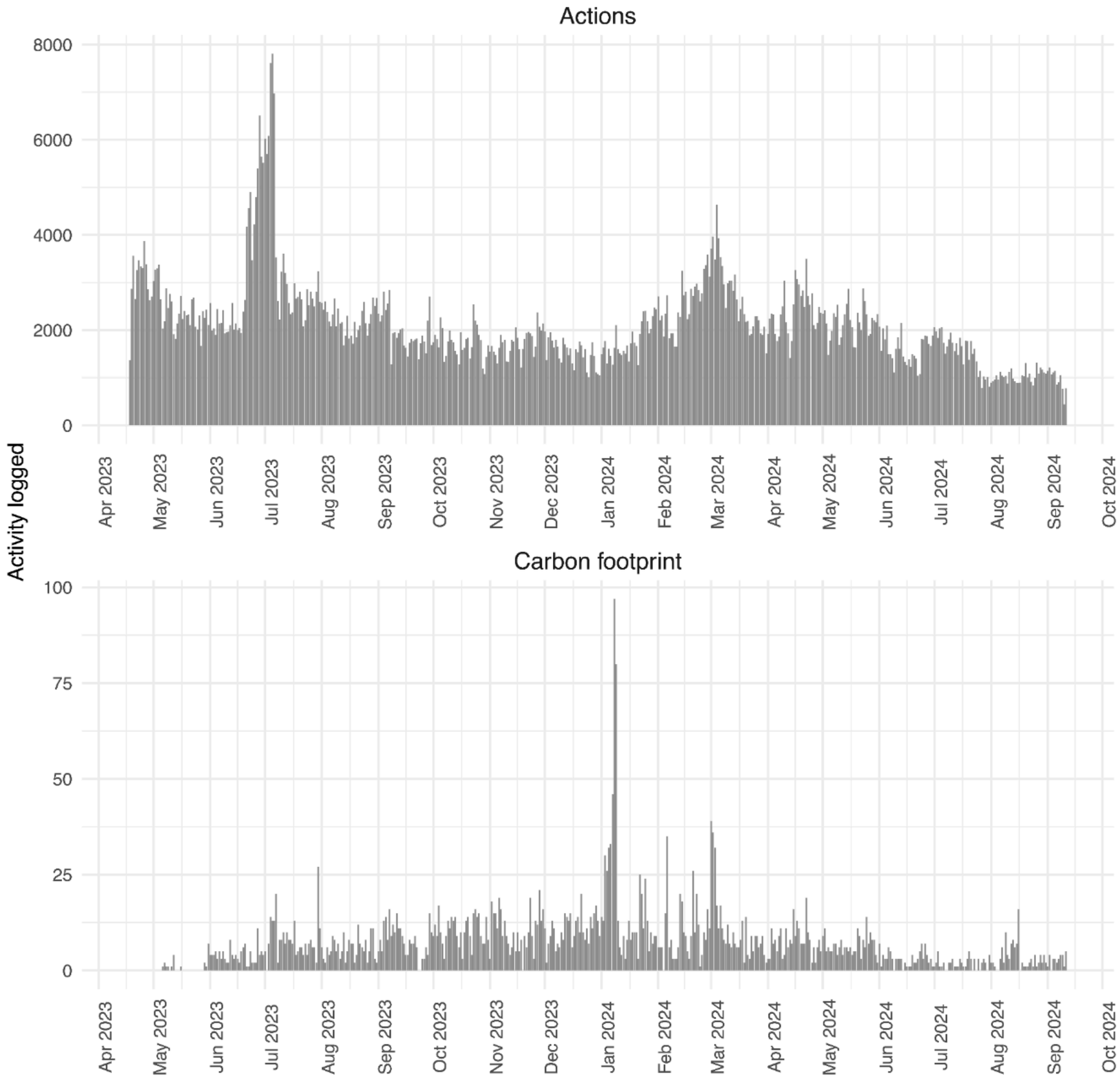
#1 logged

“donating your clothes” : 510

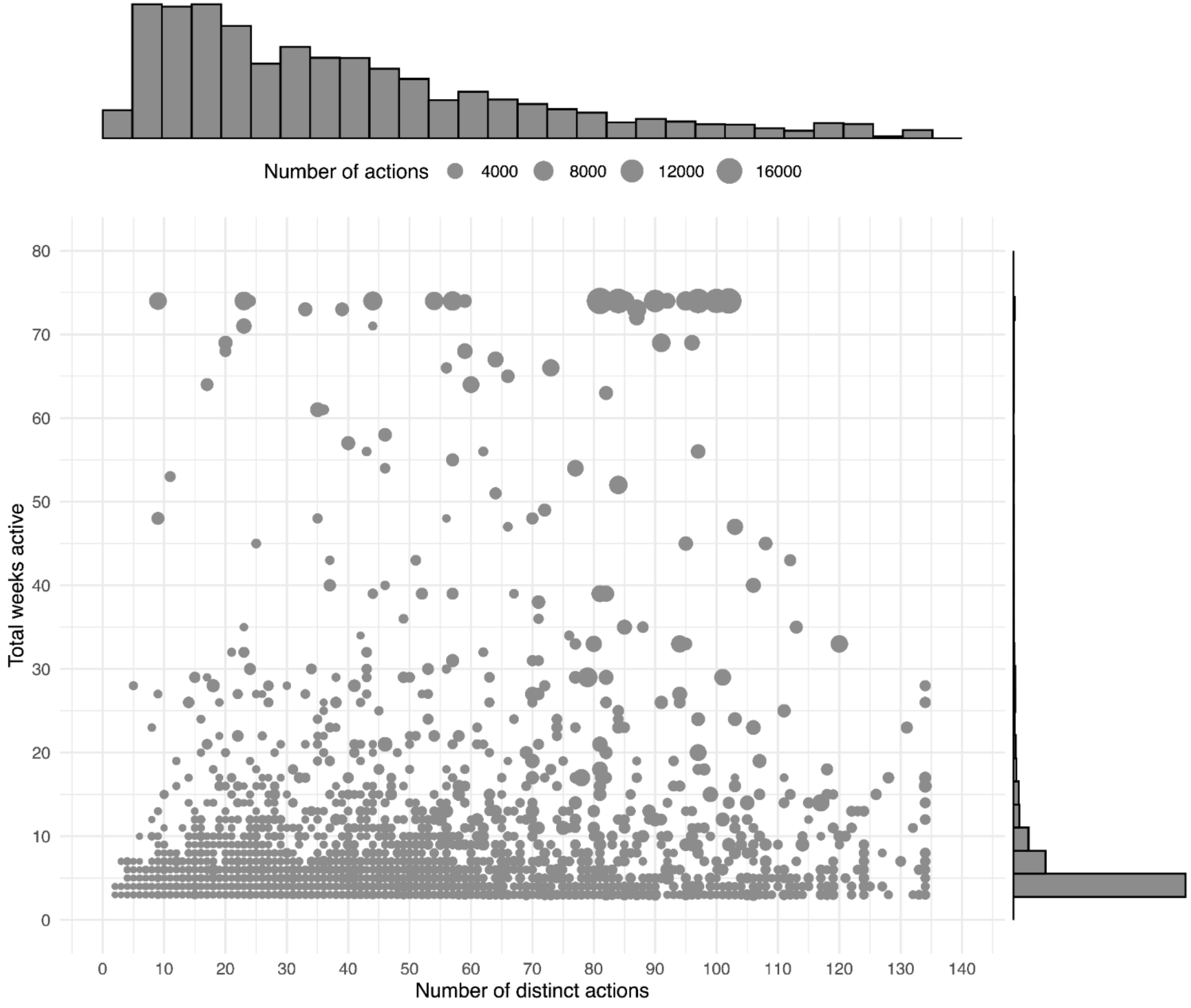
“taking the train instead of the plane”: 1,019

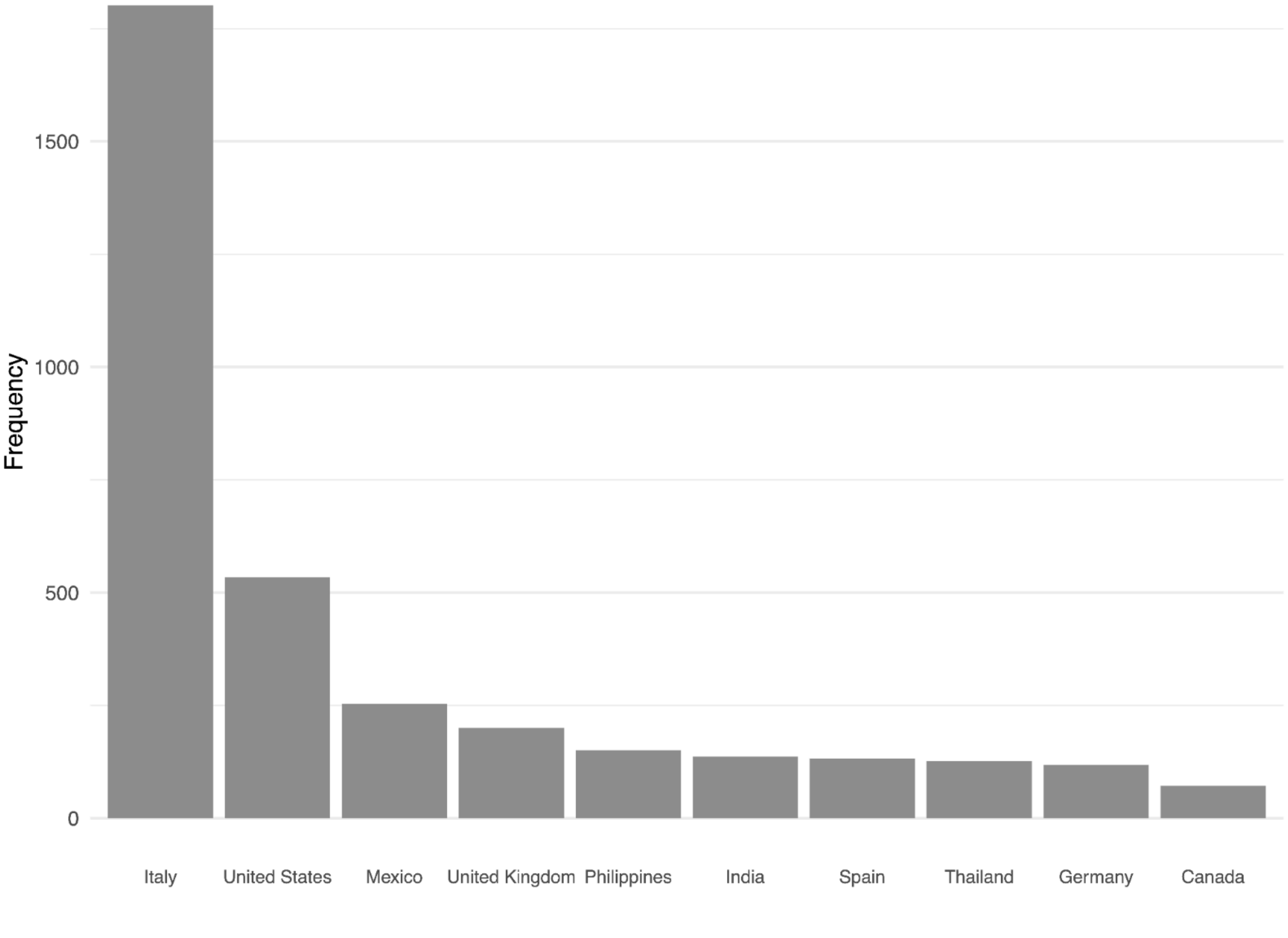
$N = 4{,}369$

$A = 1{,}088{,}25$

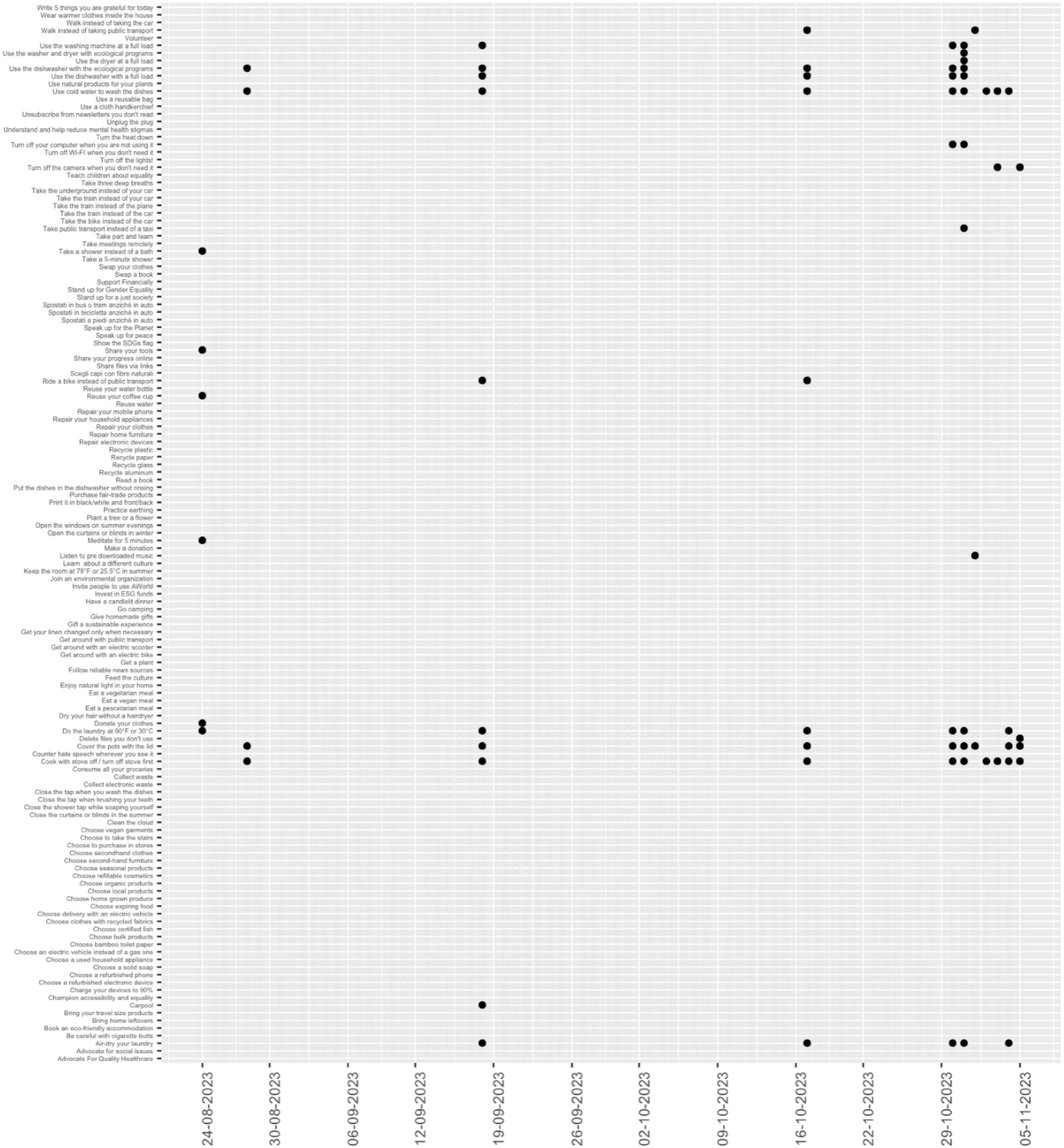


At least three weeks of activity and less than 3 distinct actions violated


Number of actions
4000
8000
12000
16000
Total weeks active
Number of distinct actions
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140

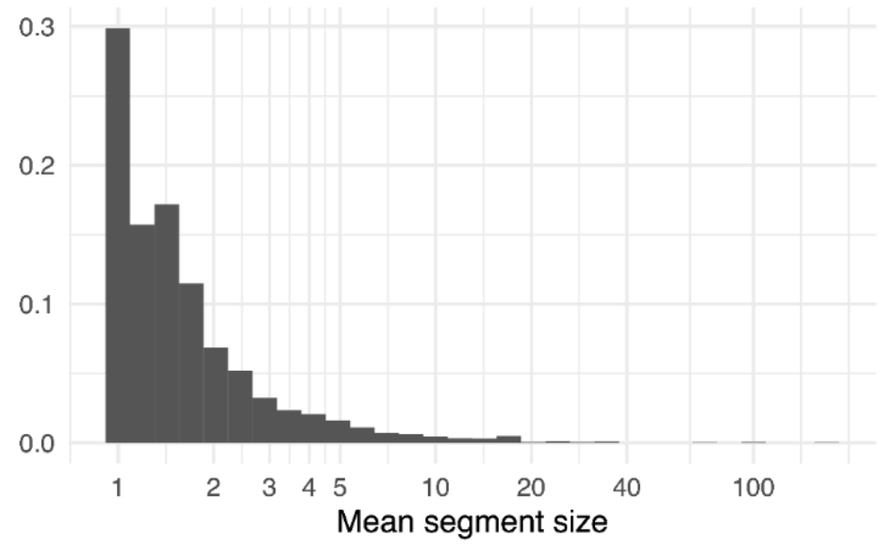

Frequency
1500
1000
500
0
Italy
United States
Mexico
United Kingdom
Philippines
India
Spain
Thailand
Germany
Canada

1) Actions over time

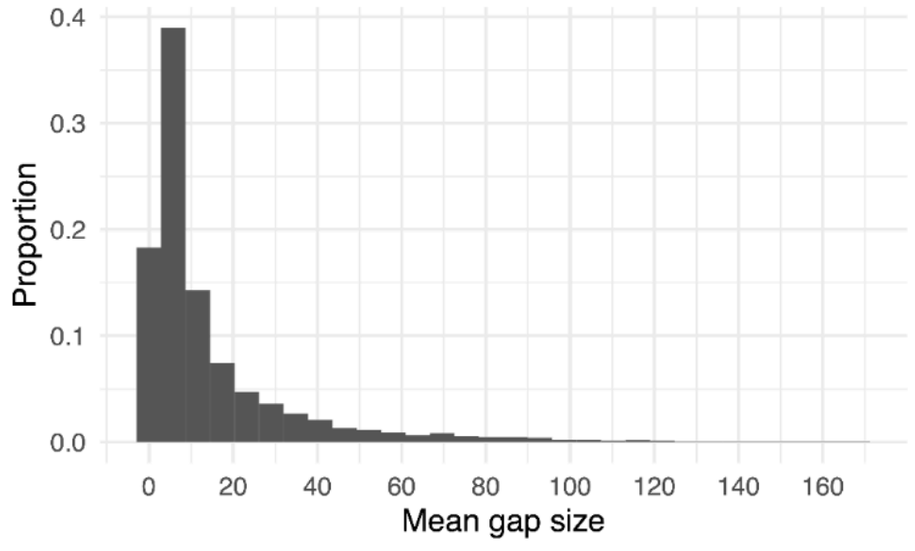

Write 5 things you are grateful for today
Wear warmer clothes inside the house
Walk instead of taking the car
Walk instead of taking public transport
Volunteer
Use the washing machine at a full load
Use the washer and dryer with ecological programs
Use the dryer at a full load
Use the dishwasher with the ecological programs
Use the dishwasher with a full load
Use natural products for your plants
Use cold water to wash the dishes
Use a reusable bag
Use a cloth handkerchief
Unsubscribe from newsletters you don't read
Unplug the plug
Understand and help reduce mental health stigmas
Turn the heat down
Turn off your computer when you are not using it
Turn off WI-FI when you don't need it
Turn off the lights!
Turn off the camera when you don't need it
Teach children about equality
Take three deep breaths
Take the underground instead of your car
Take the train instead of your car
Take the train instead of the plane
Take the train instead of the car
Take the bike instead of the car
Take public transport instead of a taxi
Take part and learn
Take meetings remotely
Take a shower instead of a bath
Take a 5-minute shower
Swap your clothes
Swap a book
Support Financially
Stand up for Gender Equality
Stand up for a just society
Spostati in bus o tram anziché in auto
Spostati in bicicletta anziché in auto
Spostati a piedi anziché in auto
Speak up for the Planet
Speak up for peace
Show the SDGs flag
Share your tools
Share your progress online
Share files via links
Scegli capi con fibre naturali
Ride a bike instead of public transport
Reuse your water bottle
Reuse your coffee cup
Reuse water
Repair your mobile phone
Repair your household appliances
Repair your clothes
Repair home furniture
Repair electronic devices
Recycle plastic
Recycle paper
Recycle glass
Recycle aluminum
Read a book
Put the dishes in the dishwasher without rinsing
Purchase fair-trade products
Print it in black/white and front/back
Practice earthing
Plant a tree or a flower
Open the windows on summer evenings
Open the curtains or blinds in winter
Meditate for 5 minutes
Make a donation
Listen to pre downloaded music
Learn about a different culture
Keep the room at 78°F or 25.5°C in summer
Join an environmental organization
Invite people to use AiWorld
Invest in ESG funds
Have a candlelit dinner
Go camping
Give homemade gifts
Gift a sustainable experience
Get your linen changed only when necessary
Get around with public transport
Get around with an electric scooter
Get around with an electric bike
Get a plant
Follow reliable news sources
Feed the culture
Enjoy natural light in your home
Eat a vegetarian meal
Eat a vegan meal
Eat a pescatarian meal
Dry your hair without a hairdryer
Donate your clothes
Do the laundry at 90°F or 30°C
Delete files you don't use
Cover the pots with the lid
Counter hate speech wherever you see it
Cook with stove off / turn off stove first
Consume all your groceries
Collect waste
Collect electronic waste
Close the tap when you wash the dishes
Close the tap when brushing your teeth
Close the shower tap while soaping yourself
Close the curtains or blinds in the summer
Clean the cloud
Choose vegan garments
Choose to take the stairs
Choose to purchase in stores
Choose secondhand clothes
Choose second-hand furniture
Choose seasonal products
Choose refillable cosmetics
Choose organic products
Choose local products
Choose home grown produce
Choose expiring food
Choose delivery with an electric vehicle
Choose clothes with recycled fabrics
Choose certified fish
Choose bulk products
Choose bamboo toilet paper
Choose an electric vehicle instead of a gas one
Choose a used household appliance
Choose a solid soap
Choose a refurbished phone
Choose a refurbished electronic device
Charge your devices to 90%
Champion accessibility and equality
Carpool
Bring your travel size products
Bring home leftovers
Book an eco-friendly accommodation
Be careful with cigarette butts
Air-dry your laundry
Advocate for social issues
Advocate For Quality Healthcare
24-08-2023
30-08-2023
06-09-2023
12-09-2023
19-09-2023
26-09-2023
02-10-2023
09-10-2023
16-10-2023
22-10-2023
29-10-2023
05-11-2023

Example action sequences

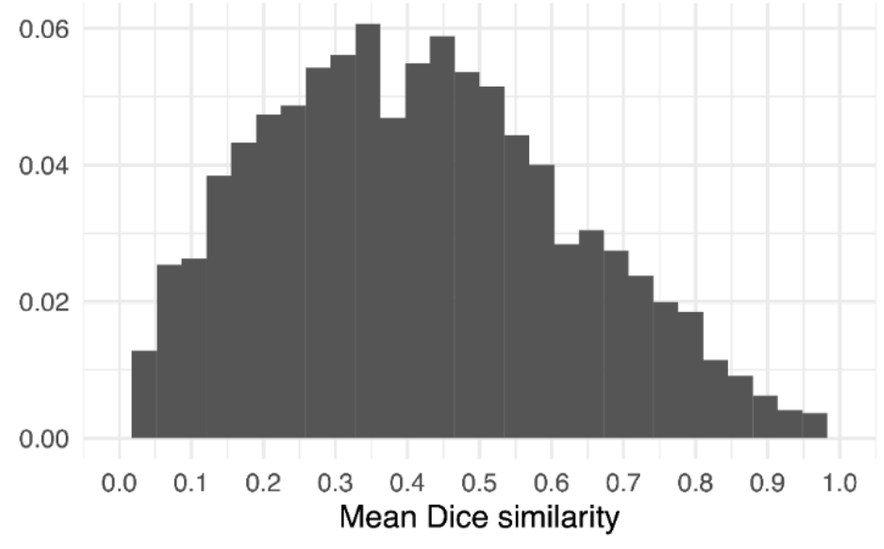
Mean size of continuous segment



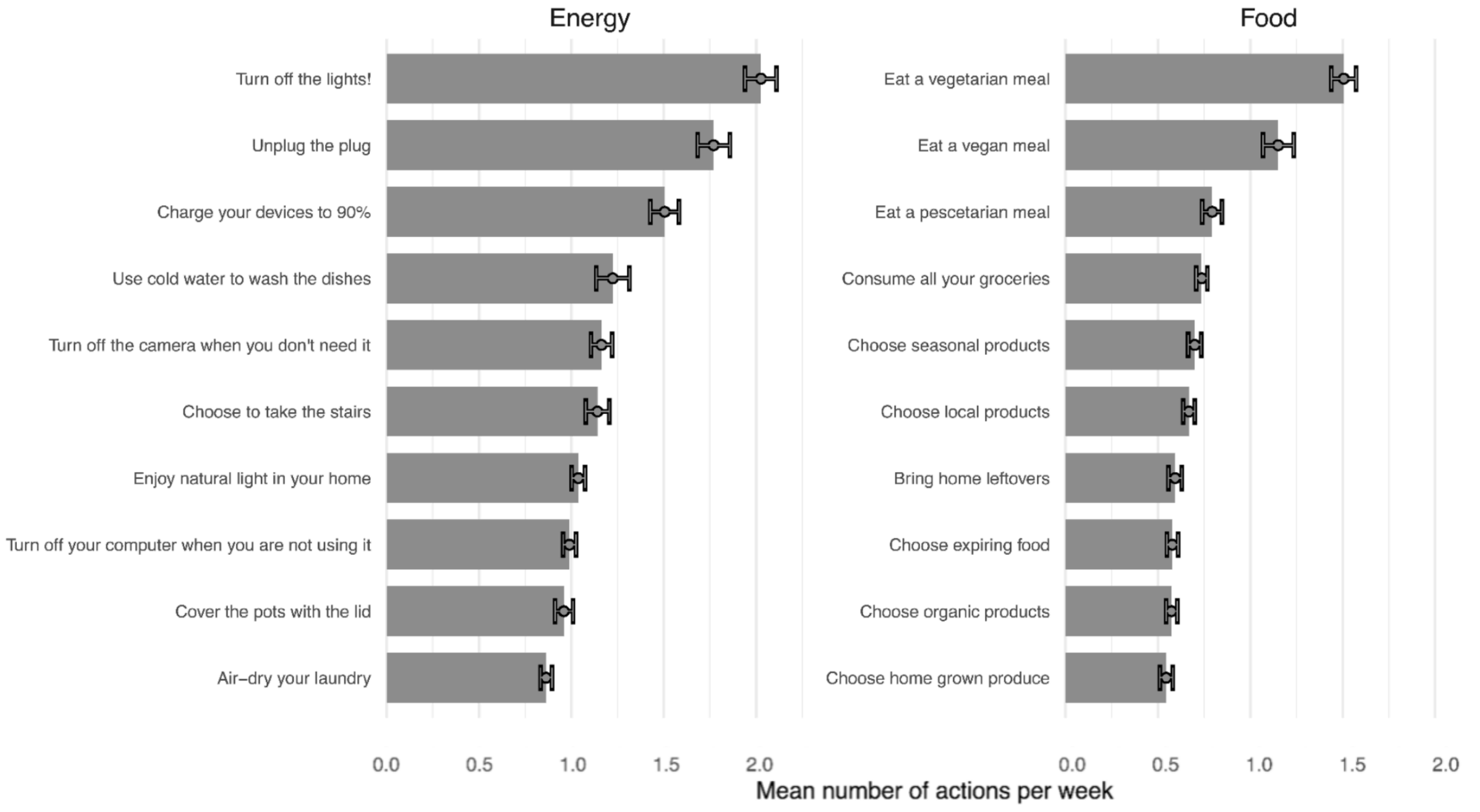
Mean size of gap between segments

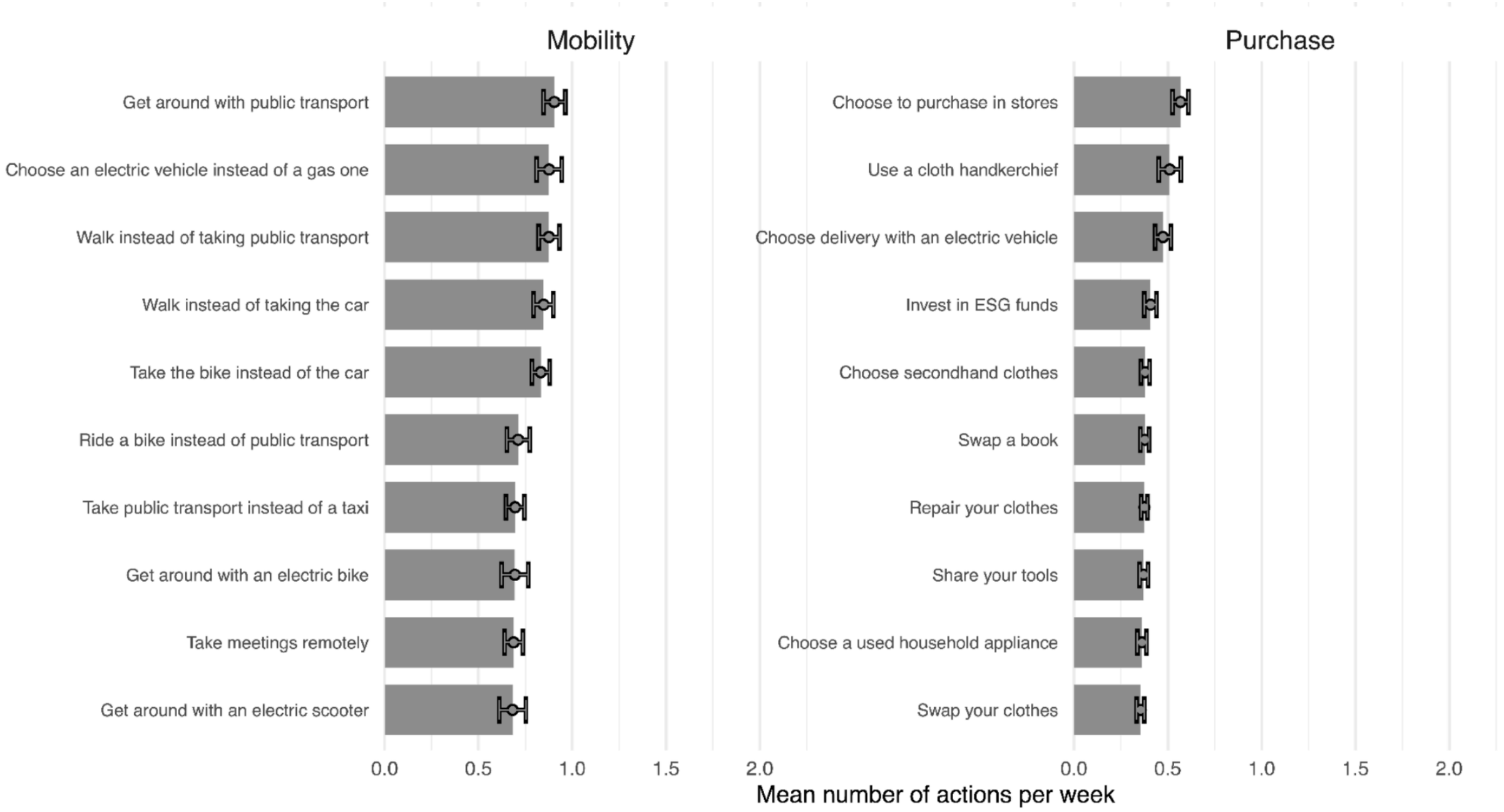


Mean similarity of action reports

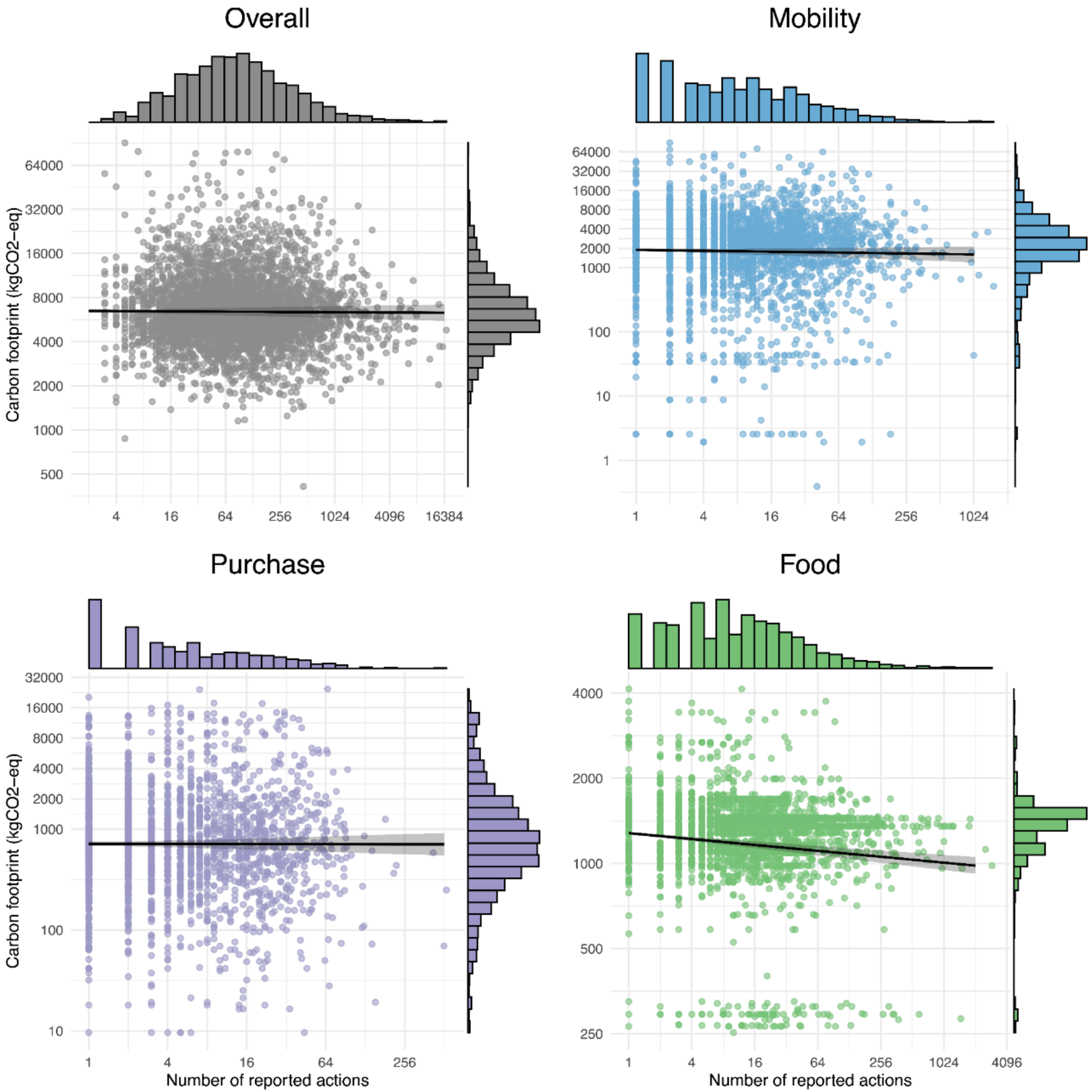


2) Most frequent actions


Energy
Turn off the lights!
Unplug the plug
Charge your devices to 90%
Use cold water to wash the dishes
Turn off the camera when you don't need it
Choose to take the stairs
Enjoy natural light in your home
Turn off your computer when you are not using it
Cover the pots with the lid
Air−dry your laundry
Food
Eat a vegetarian meal
Eat a vegan meal
Eat a pescetarian meal
Consume all your groceries
Choose seasonal products
Choose local products
Bring home leftovers
Choose expiring food
Choose organic products
Choose home grown produce
0.0
0.5
1.0
1.5
2.0
Mean number of actions per week


Mobility
Get around with public transport
Choose an electric vehicle instead of a gas one
Walk instead of taking public transport
Walk instead of taking the car
Take the bike instead of the car
Ride a bike instead of public transport
Take public transport instead of a taxi
Get around with an electric bike
Take meetings remotely
Get around with an electric scooter
Purchase
Choose to purchase in stores
Use a cloth handkerchief
Choose delivery with an electric vehicle
Invest in ESG funds
Choose secondhand clothes
Swap a book
Repair your clothes
Share your tools
Choose a used household appliance
Swap your clothes
0.0
0.5
1.0
1.5
2.0
Mean number of actions per week

3) Carbon footprint


Overall
Mobility
Purchase
Food
Carbon footprint (kgCO2−eq)
Number of reported actions
64000
32000
16000
8000
4000
2000
1000
500
100
10
1
250
4
16
64
256
1024
4096
16384

4) Psychological variables


Mobility
Purchase
Food
Environmentalist identity
Perceived effectiveness of individual action
Climate concern in inner circle
Number of actions
1,000
100
10
1
1
2
3
4
5
6
7

n = 132

Discussion

Discussion I

- Most people do not use the app regularly
- Large heterogeneity in usage across people
- Most frequent actions were of low impact (e.g., switching off lights)
- Actions were not related to carbon footprint (except for food!) nor psychological variables

Discussion II

- Representativity — who uses AWorld?
- Missing data — performed the action or not?
- Lack of baseline — difficult to assess behaviour change
- Only positive actions — difficult to assess impact
- Self-report — automatic logging!

Thank you!