

# How to be a Citizen Climate Scientist and Activist: Understanding the Community Need and Making an Action Plan

Julia H. Fiebig

Lisa Coyne

Anthony Biglan

Tiffany Dubuc

ACBS 2020

A satellite view of Earth at night, showing the illuminated landmasses of Europe and the Mediterranean region. The city lights are visible as bright yellow and white spots against the dark blue and black background of the night sky and the dark blue of the oceans.

# Agenda

- Overview on Climate Change
- The role of behavior science
- The state of the research
- Impact Areas and work
- Activism
- Activity # 1
  - Breakouts
- Activity #2
  - Breakouts
- Summary

# The Climate Change Problem

250,000

\$4 billion

60%

24 Million

114 Times  
Faster



\$106 Billion

150%

9 million  
miles sq



“This is an everyone-everywhere mission in which we all must individually & collectively assume responsibility”

Christina Figueres & Tom Rivett-Carnac  
from *The Future We Choose: Surviving The Climate Crisis*



# We Need Solutions

- Every community has opportunity to contribute to a solution
- What role can behavior science communities play?



# Coalition of Behavior Science Organizations Climate Change Task Force

## MEMBER ORGANIZATIONS

---



**The Association for Behavior Analysis  
International**



**The Association for Contextual Behavioral  
Science**



**The Association for Positive Behavior Support**



**The Evolution Institute**



**The National Prevention Science Coalition**



**The Society for Behavioral Medicine**

# Generate Research and Practice Models





# The Dismal State of Behavioral Science Research on Climate Change

# A Matter of Human Behavior

- **Human activities** are estimated to have caused approximately 1.0 degrees Celsius of global warming above pre-industrialized levels, with a likely range of 0.8-1.2 degrees Celsius; better than 95% probability that human-produced gasses are responsible (IPCC, 2018)
- All of this is a matter of human behavior. Yet very little research on how to influence relevant behaviors is being done.

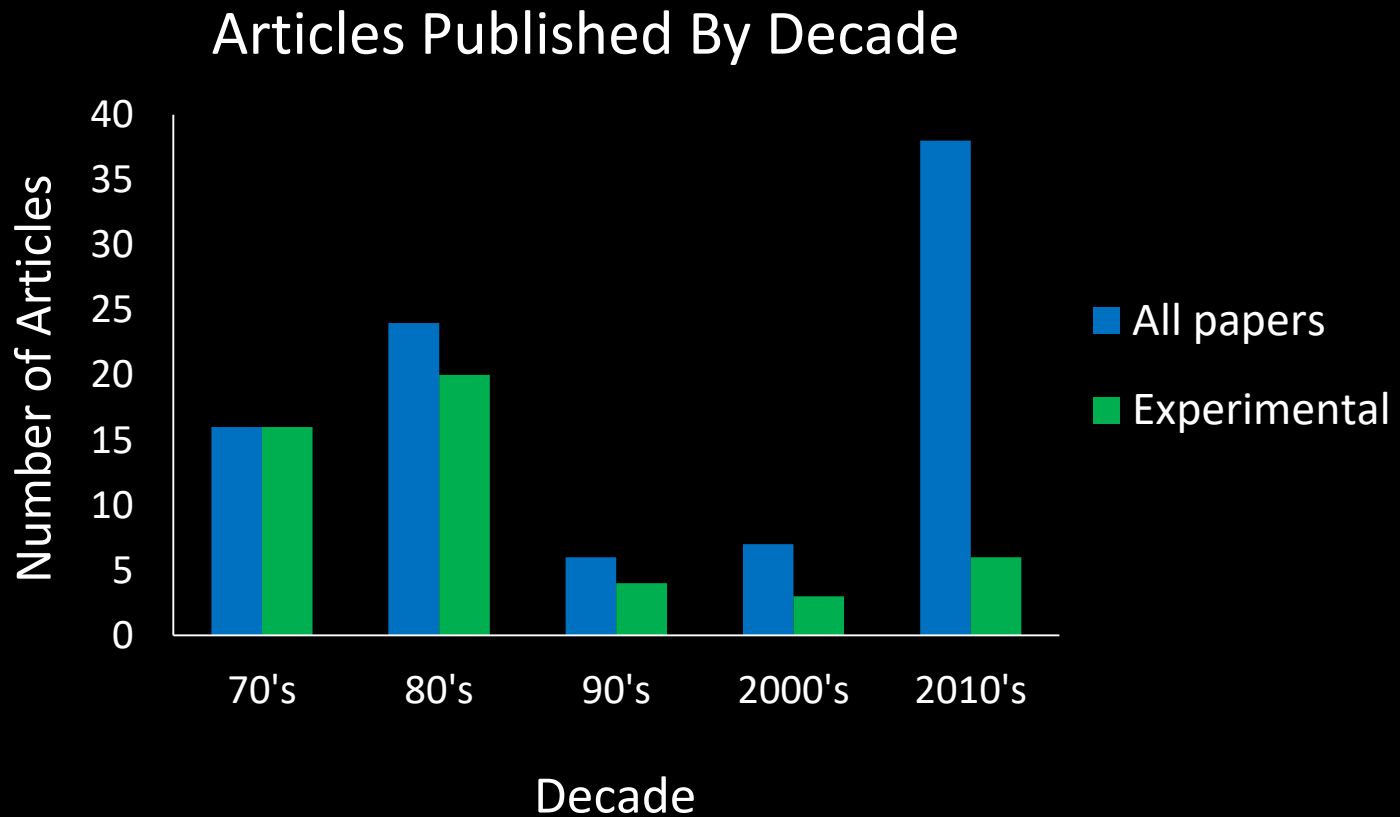
# The Power of Behavioral Science

- Demonstrated effects across all domains of the human life (Biglan, 2015) including:
  - Education
  - Health & Wellness
  - Parenting & Childhood development
  - Geriatric Care
  - Performance management
  - Organizational performance

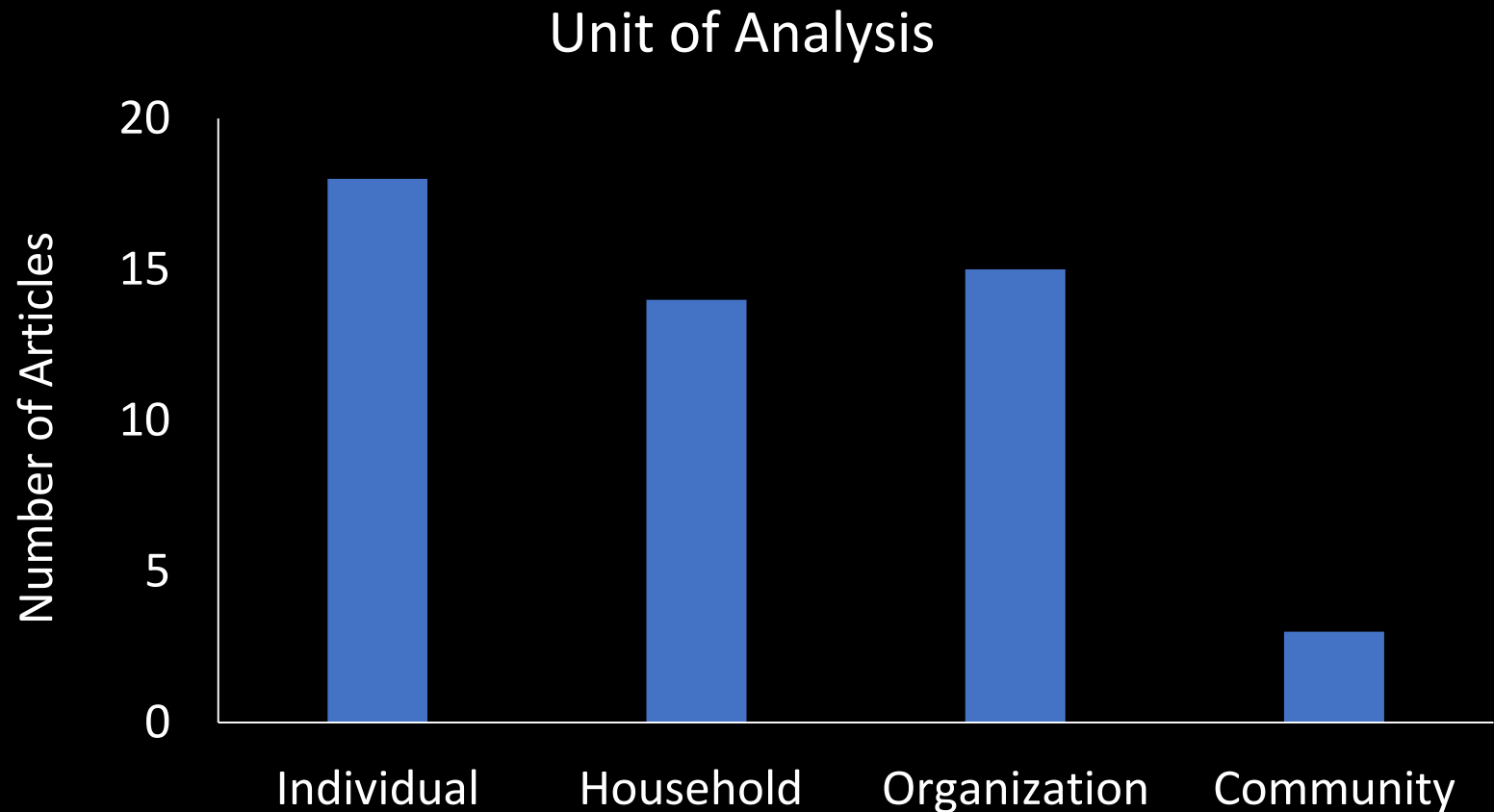
# The Unfortunate Focus on Beliefs and Attitudes

- What research is being done is founded on the traditional assumption that changing beliefs & attitudes will result in behavior change
- Meta-analysis of 171 studies across 56 nations to determine predictive determinants of 'belief in climate change' (Hornsey, Harris, Bain & Fielding, 2016)
- Pragmatism: practical realities supersede philosophical or theoretical concerns

# Published Behavior Analytic Papers on Climate Issues



# Limited Behavior Analytic Research on Community Interventions



We Need Large Scale  
Behavior Change

# What is the State of Research on Strategies for Getting Policies Adopted?

- Systematic review of the literature conducted using Scopus
- Search terms focused on the **three areas of highest impact** on GHG emissions – Energy, Food, Refrigerants (Hawken, 2017)
- **Experimental designs and policy adoption/implementation**



# Metric Summary of Findings

Energy	Food	Refrigerants	
11 897 without experimental terms	4 144 without experimental terms	508 without experimental terms	
<b>499</b> with exp. terms	<b>324</b> with exp. terms	<b>31</b> with exp. terms	
			<b>Sum</b>
3 code 1 55 code 2 43 code 3	3 code 1 34 code 2 4 code 3	1 code 1 1 code 2 8 code 3	<b>7 (0.8%)</b> <b>90 (10.5%)</b> <b>55 (6.4%)</b>

1. Papers on Experimental Evaluation of a Strategy for Getting a Policy Adopted
2. Case studies or quasi experimental studies of how to get policies adopted.
3. Experimental studies of the impact of policies on GHG emissions.

# Reading Selected Papers & Summarizing

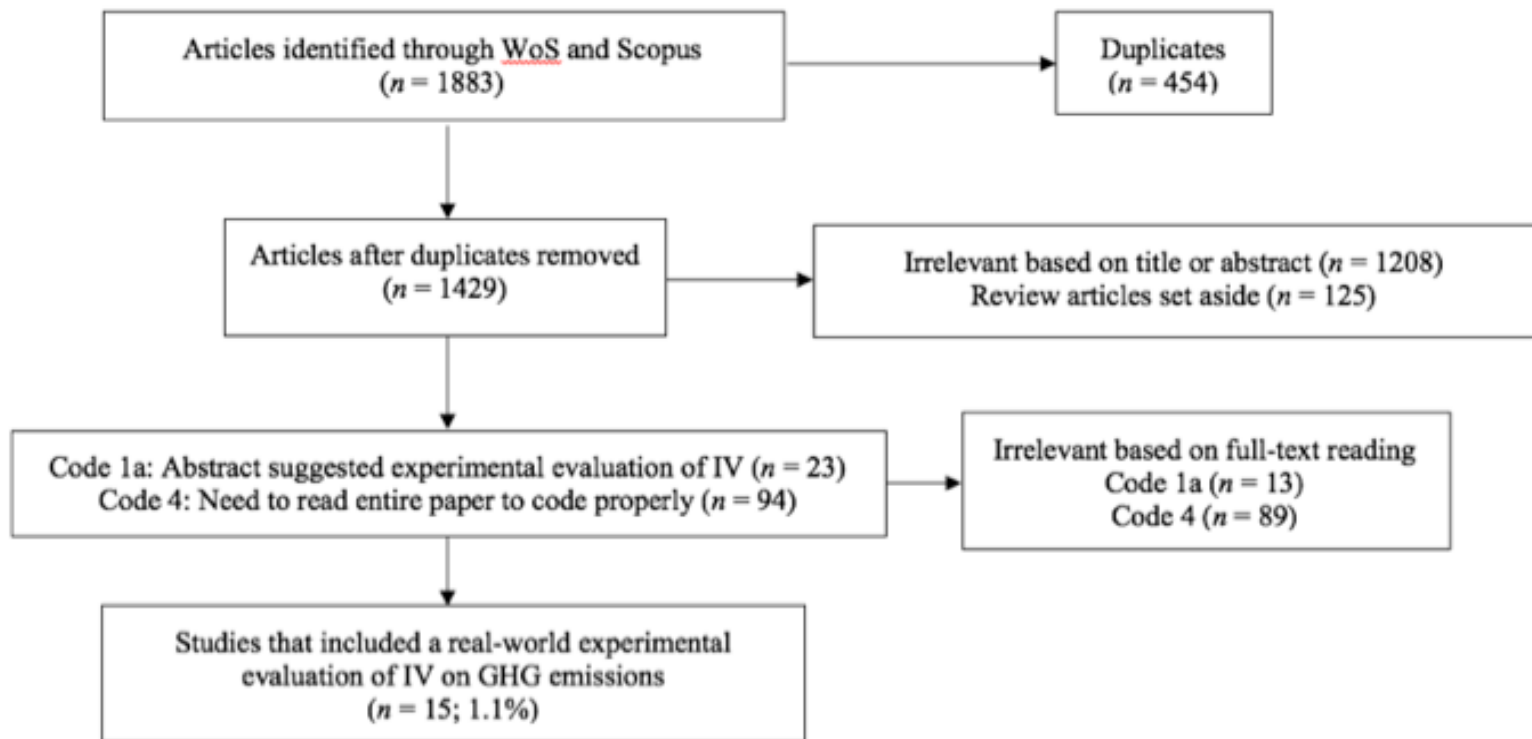
1. Which experimental methodology was used?
2. How large sample (N, groups and individuals) and how many samples?
3. What kind of outcome measures were used?
4. Was behavior measured objectively (non-self-report) at any point?
5. Was behavior connected to the outcome?

# What is the State of Research on Community Interventions to Reduce GHG Emissions?

1. Searched titles, abstract, and keywords for “community” OR “communities.”
2. Relevant articles filtered for terms related to climate change such as climate change, global warming, greenhouse gas, carbon emission, or co2 emission.
3. Relevant articles further filtered for terms related to experimental research design, such as random, interrupted time-series, multiple baseline, experiment, single-case, or intervention.
4. Relevant articles filtered for terms related to energy generation, food production or consumption, refrigeration, air conditioning, or heat reduction.
5. Excluded papers that focused on the physical science basis of climate change.

# Review of Community Interventions

Figure 1. Flow chart of article inclusion and exclusion by stage.



# Results

- 15 studies (less than 1% of 1429 studies) contained an experimental evaluation of a community intervention aimed at reducing GHG emissions
  - 22 antecedent interventions
  - 2 consequent interventions
  - 5 antecedent + consequence interventions

Within these 15 studies we identified  
29 further relevant evaluations

# Types of Evaluations

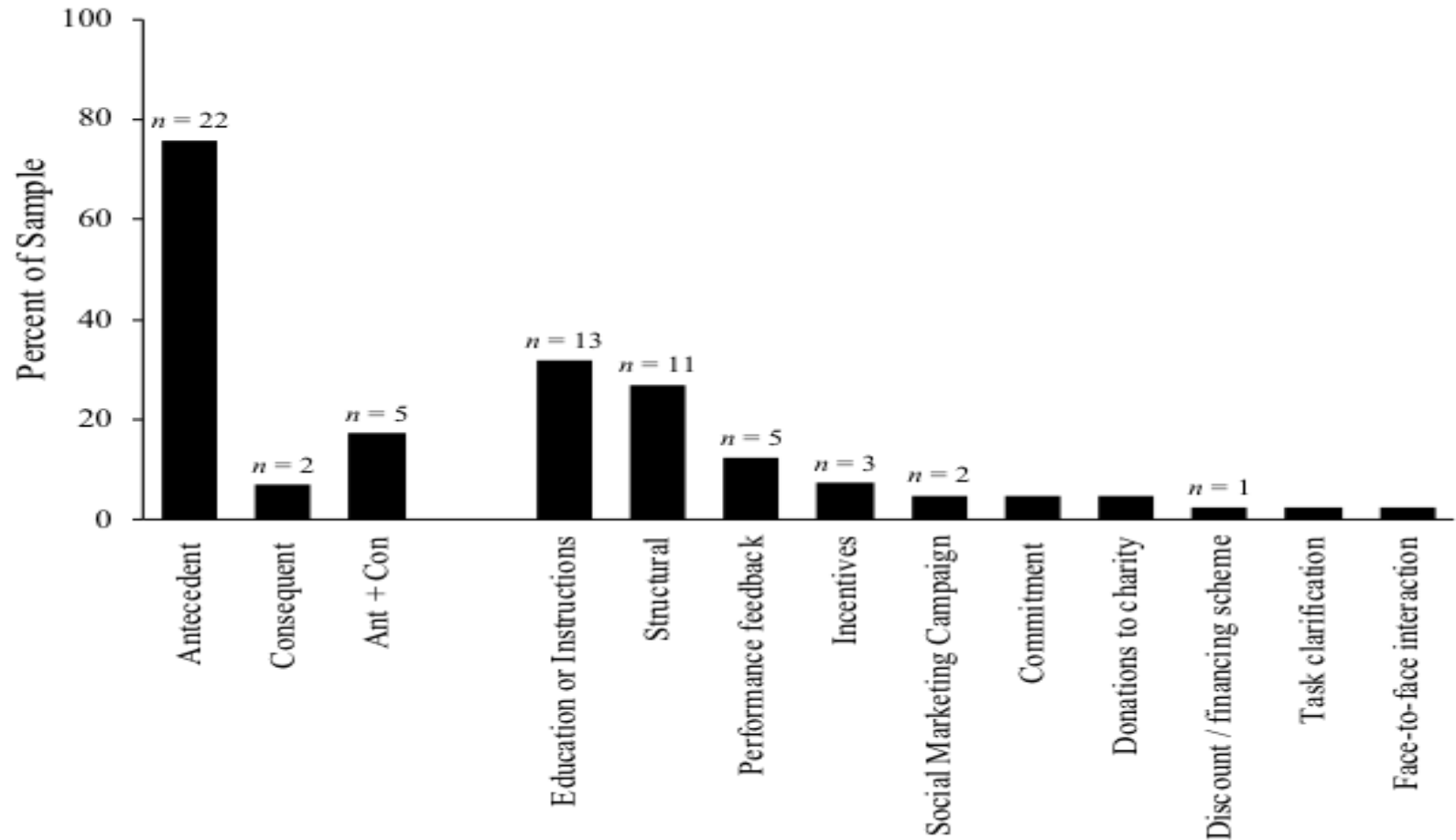
- Majority of evaluations utilized group designs to evaluate independent variables ( $n=24$ ; 82.7%)
- Five evaluations (17.2%) utilized single-subject designs.
- Strength of designs varied
  - Only 13 evaluations using a strong design (44.8%)
  - For group designs, the most common missing element was random assignment to the experimental conditions ( $n=8$ ; 33.3%).
  - For single-subject designs, the most common missing elements were at least one opportunity to verify baseline predictions ( $n=5$ ; 100%) and at least one opportunity to replicate treatment effects across conditions ( $n=5$ ; 100%).
  - The sample sizes across studies varied significantly, ranging from 10 to 13,123. However, the majority of studies included between 100 and 600 subjects ( $n=9$ ; 60%).

# Analysis of Intervention Components

- 10 components applied 41 times across 26 evaluations
  - Education ( $n=13$ ; 31.7%) which included general knowledge, prompts, or instructions regarding target behaviors.
  - Structural interventions ( $n=10$ ; 24.4%) which included changes to buildings, roadways, or walkways to decrease consumption of electricity, natural gas, or automobile fuel .



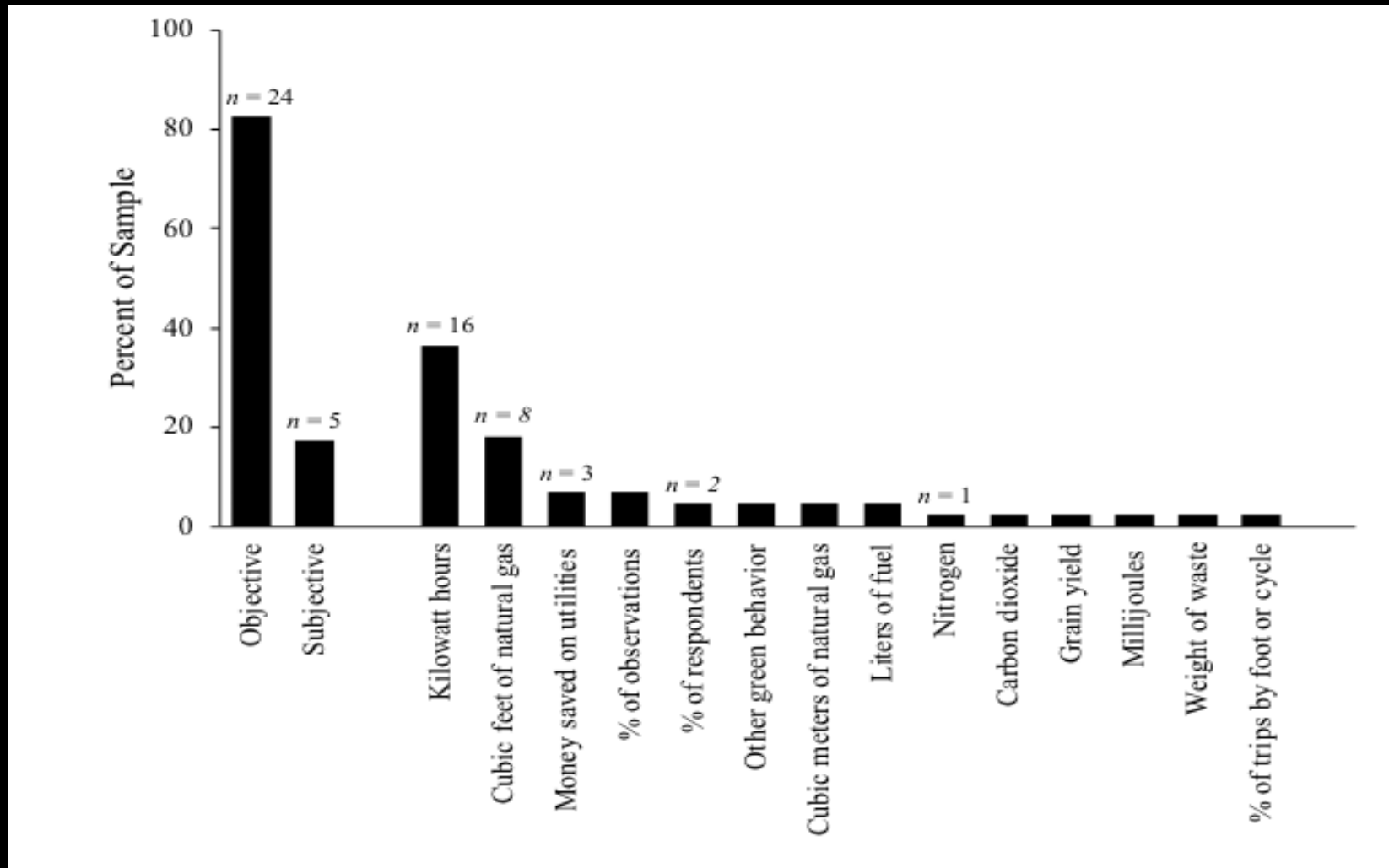
# Intervention Type and Independent Variables for 29 recent interventions



# Dependent Variables across Interventions

- Most evaluations used some form of objective measurement ( $n=24$ ; 82.7%)
- Five evaluations (17.2%) relied on self-report.
- 14 dependent variables measured 44 times across 26 evaluations.
  - Most common measures were:
    - Kilowatt hours ( $n=16$ ; 36.4%)
    - Cubic feet of natural gas was measured eight times (18.2%)
    - Other dependent measures were evaluated three or fewer times each.

# Measurement Type and Dependent Variables for 29 recent evaluations



What is Needed?

# Understanding the Need

1. What areas will have the highest impact?
2. How can we best take actions for highest impact?



# High Impact Areas







# Reduced Food Waste

- 33% of food produced globally is never eaten
- About 8% of global green house emissions comes from producing the food we waste
  - In regions where income is low waste occurs earlier in the supply chain
  - Higher income regions food waste occurs farther along the supply chain





# Health & Education



- **Educating Girls and Universal Education**
  - make school affordable;
  - help girls overcome health barriers;
  - reduce the time and distance to get to school; and
  - make schools more girl-friendly.
- **Family Planning**
  - Focus as healthcare provision & meeting women's expressed needs
  - Empowerment, equality, and well-being a direct impact

# Plant Rich Diets

- Meat-centric diets make up 20% of global emissions
- Emissions could be reduced by as much as 70 % (vegan diet) and 63 % (vegetarian diet)
- \$1 trillion in annual health-care costs and lost productivity would be saved.



# Multi-level Committed Action

Committed Actions	
Personal	Family and Home
Professional	Workplace
Community	Local government, city or county associations, local advocacy groups or community groups, neighborhood groups



# Where to start?



Coalition of Behavior Sciences Climate Change Task Force

# Collaboration within CBSO

- Advancing Behavior Science
- Developing and Mentoring a New Generation of Behavioral Scientists
- Advocating for Behavioral Science
- Delivering Best Practices to Groups
- Creating a “Science-to-Narrative Chain” Communication Strategy
- Establishing Measures of Our Impact



# Where to start?



# RESEARCH

- Establish programs of experimental research to test drive strategies for changing climate-relevant behavior
- Community-based interventions testing strategies for changing climate relevant behavior at the community level to understand context



# RESEARCH

	Potential Actions
Personal	<ul style="list-style-type: none"><li>• Identify and monitor personal use behaviors (e.g. diet, reducing air/heat use, eliminating plastic use) <b>and</b> actions you take to facilitate professional/community research</li></ul>
Professional	<ul style="list-style-type: none"><li>• Seek funding to fund community or workplace interventions targeting high impact areas to reduce carbon emissions</li><li>• Design interventions in the workplace/collaboration with colleagues</li></ul>
Community	<ul style="list-style-type: none"><li>• Link to community organizations (e.g. neighborhood, city, regional) working on initiatives that matter to you to better understand contextual issues; design interventions that address those issues</li></ul>





# Education

- Expanding the scope and nature of training/opportunities in behavioral science
- Graduate-level scientist-practitioner training in interdisciplinary programs
- Continuing education opportunities for current scientist-practitioners to support expanding scope of research & practice
- This will inform and support better research questions and design, communities of practice, dissemination, advocacy



# Education

	Potential Actions
Personal	<ul style="list-style-type: none"><li>• Get informed about high impact areas/behaviors</li><li>• Re-examine your syllabi: What might be missing?</li></ul>
Professional	<ul style="list-style-type: none"><li>• University - Propose/Design/Teach a new course(s) at your university; contribute to relevant work committees</li><li>• Primary/Secondary Education – Collaboration with school admin/teachers/personnel</li></ul>
Community	<ul style="list-style-type: none"><li>• Identify and get involved with groups in your immediate community that educate on action against climate change. What can you learn from them? How can you introduce behavior analysis into that teaching?</li></ul>



# Implementation

- Translate research to practice
- Conduct research specific to community interventions
- Measure community (and organizational) efforts
- Select a personal, professional, community based action that you can commit to and follow through on individually



# IMPLEMENTATION

	Potential Actions
Personal	Make an implementation plan for the actions you are taking in areas of Research, Education, Collaboration, Dissemination, and Advocacy. The best ideas need best laid implementation plans!
Professional	Make an implementation plan for the actions you are taking in areas of Research, Education, Collaboration, Dissemination, and Advocacy. The best ideas need best laid implementation plans!
Community	Make an implementation plan for the actions you are taking in areas of Research, Education, Collaboration, Dissemination, and Advocacy. The best ideas need best laid implementation plans!



# Collaboration

- Collaborate within CBSO
- Collaborate with external entities



# Collaboration

	Potential Actions
Personal	<ul style="list-style-type: none"><li>• Communicate with colleagues</li><li>• Consider and select another organization to get involved with (meet other potential collaborators)</li></ul>
Professional	<ul style="list-style-type: none"><li>• Get involved in professional groups outside of behavior analysis</li></ul>
Community	<ul style="list-style-type: none"><li>• Select a community group working on an issue that you are also committed to</li></ul>



# DISSEMINATION

- Disseminating at other coalition conferences
- Disseminating in other disciplines and communities



# Dissemination

	Potential Actions
Personal	<ul style="list-style-type: none"><li>• Attend/Submit to conferences/events in other organizations</li><li>• Publish in mainstream outlets</li><li>• Talk (and listen) with friends or neighbors; to those who are motivated offer information about how one can amplify one's impact</li></ul>
Professional	<ul style="list-style-type: none"><li>• Attend/Submit to conferences/events in other organizations</li><li>• Design workshops/webinars within your organization</li></ul>
Community	<ul style="list-style-type: none"><li>• Design workshops/webinars and offer them to specific communities you get involved with</li></ul>





# ADVOCACY

- Enacting policy that addresses these issues
- Multitude of contexts (e.g geo-political) influence major contributors to GHG emissions by community



# Advocacy

	Potential Actions
Personal	<ul style="list-style-type: none"><li>• Written and vocal public support of issues of importance</li></ul>
Professional	<ul style="list-style-type: none"><li>• Consider how your organization can advocate in the surrounding community</li></ul>
Community	<ul style="list-style-type: none"><li>• Get involved with an organization/entity in your community; advocate within or with</li></ul>



# Evaluation

Research

Education

Implementation

Collaboration

Dissemination

Advocacy



# What is Activism?



**Activism** is action on behalf of a cause, action that goes beyond what is conventional or routine.

# To be the Hummingbird



- <https://docs.google.com/document/d/1Rxm1UxFziuy-XOY3P52S5G2so4JAyfOi/edit#>

# Climate Action Plan Part 1

- **What matters to me about taking action for people and planet?**
- **What worries, fears, barriers to taking action are present for me?**
- **Skills and help I can offer**
- **What I need help with?**
- **I would like to collaborate with...**



# Breakouts



# Climate Action Plan Part 2

- Individual/Personal
- Professional
- Community
  - What impact area most interests you?
  - What action area to start with?
  - What is your first step?
  - Collaborator or Accountability Partner?

# Breakouts



“Our future is unwritten. It will be shaped by who we choose to be now...if you do not control the complex landscape of a challenge (and you rarely do), the most powerful thing you can do is change how you behave in that landscape, yourself a catalyst for overall change. All too often in the face of a task, we quickly move to “doing” without first reflecting on being, what we personally bring to the task, as well as what others might.”

**Christina Figueres & Tom Rivett-Carnac**

from **The Future We Choose: Surviving The Climate Crisis**



# The Future We Choose

1. Let go of the old world
2. Face your grief but hold a vision of the future
3. Defend the truth
4. See yourself as a citizen, not as a consumer
5. Move beyond fossil fuels
6. Reforest the earth
7. Invest in a clean economy
8. Use technology responsibly
9. Build gender equality
10. Engage in politics

Figueres & Rivett-Carnac (2020)





# Survey

<https://acbs.surveyanalytics.com/>



# Websites and Readings

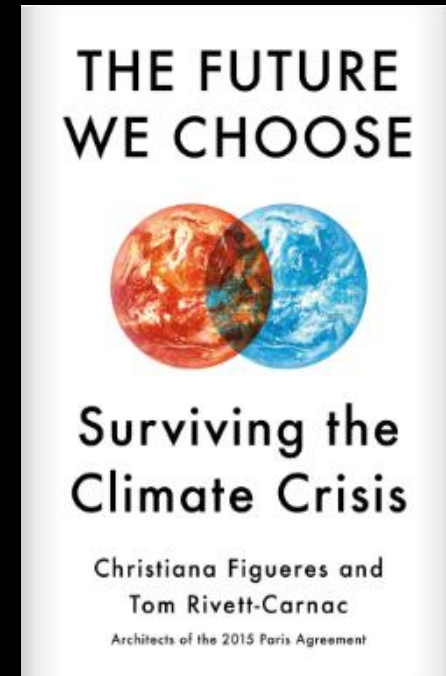
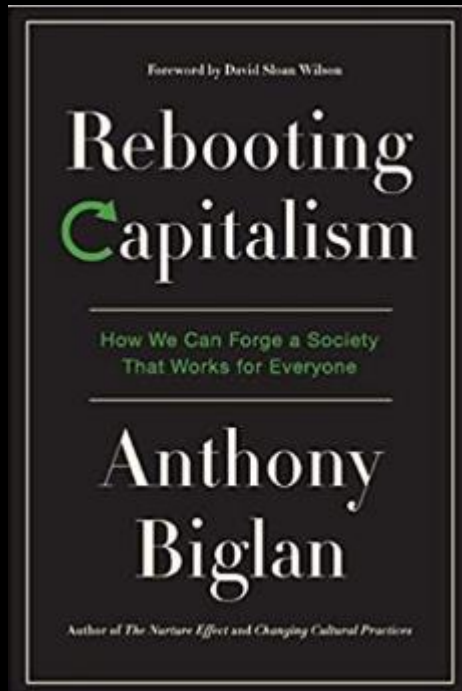
<http://bsciclimate.org/>

<https://drawdown.org/solutions/table-of-solutions>

<https://munkschool.utoronto.ca/egl/files/2015/01/Overcoming-the-trade-gy-of-super-wicked-problems.pdf>

<https://www.preprints.org/manuscript/202006.0244/v1>

# Books



<https://valuestoaction.com/reboot/>

- <https://bookshop.org/books/the-future-we-choose-surviving-the-climate-crisis/9780525658351>



Thank you!

[jhfiebig@gmail.com](mailto:jhfiebig@gmail.com)

