Policy Beliefs, Belief Uncertainty, and Policy Learning

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Conference on Policy Process Research, January 2023

Motivation

Policy-oriented learning:

> *Enduring alterations of thought or behavioral intentions that result from experience and which are concerned with the attainment or revision of the precepts of the belief systems of individuals or of collectives* (Sabatier and Jenkins-Smith 1993, 42)

- Learning outcomes include both *belief change* and *belief reinforcement* (Heikkila and Gerlak 2013; Pattison 2018; Weible, Olofsson, and Heikkila 2022)

- Need a way to conceptualize and measure policy-oriented learning that captures both outcomes

Policy Beliefs and Learning

- Belief systems in the Advocacy Coalition Framework (ACF)
  - Deep core → Policy core → Secondary aspects

- Direction of change?
  - 180 degree change
  - Information (Nowlin 2021)

- Learning as change and reinforcement
  - Beliefs and belief certainty

Beliefs and Belief Certainty

- Policy beliefs are distributions that contain two elements:
    - The beliefs
    - The certainty associated with the beliefs

- Learning occurs when:
    - Beliefs change
    - Uncertainty is reduced (belief reinforcement)
    - *In the direction of the information*

- Possible outcomes include: no learning, belief reinforcement, belief change, and belief change and reinforcement
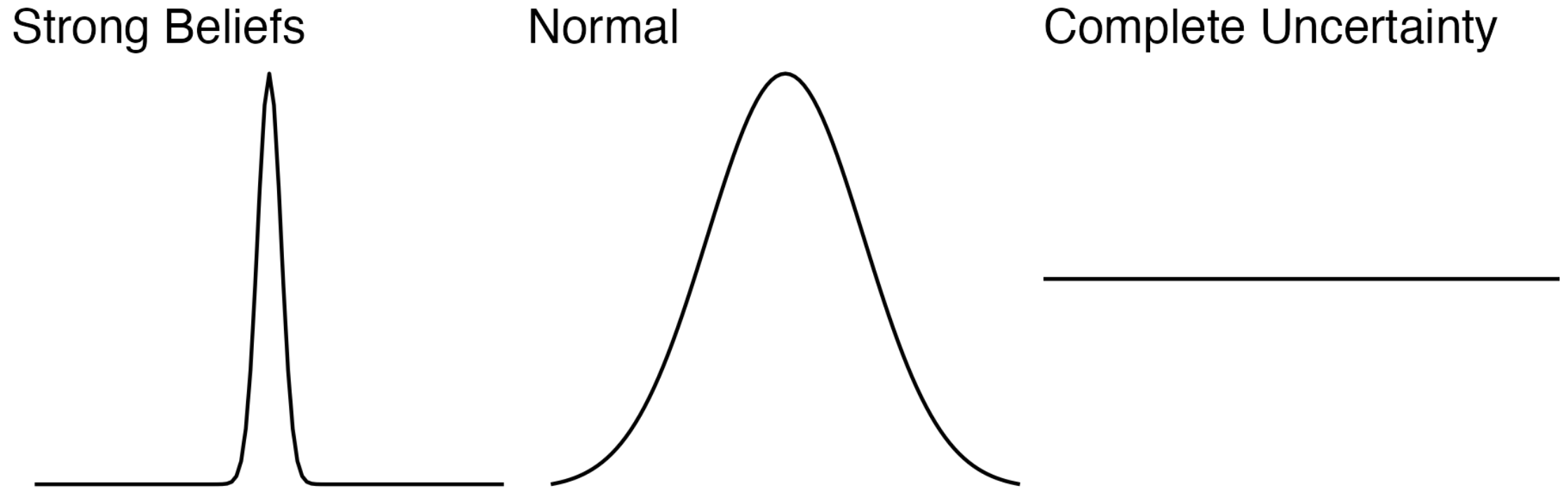
Policy Beliefs and Learning

Figure 1: Hypothetical Distributions of Policy Beliefs

Learning and Deliberation

- Type of forum impacts learning
    - Deliberative forum

- *Deliberative mini-public*
    - Recruit participants
    - Learning (briefing materials; experts)
    - Deliberation
    - Conclusion

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The *Our Coastal Future Forum*

- Large event, ~100 participants, 8 small groups
- Met in October 2017
- Discussed climate change, biodiversity, environmental health
- *Funded by the Gulf Research Program in partnership with SC Sea Grant Consortium*

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Learning Hypotheses

Belief change hypothesis:

- H1: *Concern about each issue will increase following the deliberative forum*
  - $\mu_1 < \mu_2$

Belief certainty hypothesis:

- H2: *Uncertainty about concern will decrease following the deliberative forum*
  - $\sigma^2_1 > \sigma^2_2$

Learning Hypotheses

Belief direction hypothesis:

- H3: *As concern about issues increases post-forum, participants will be more likely to report that they learned*
  - Beliefs move in the direction of the information

OCCF Process

- OCFF participants were recruited through a survey administred in August-September 2017

- Participants were sent briefing materials about the issues, and experts gave plenary presentations

- Deliberation occurred across 8 groups of 8-12 participants

- The goal was to educate participants on the issues and decision-making processes

- Pre and post forum survey asked how concerned participants were about several issues

- Post forum survey included learning questions

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Concern Questions

On a scale of 0 to 10 … how concerned are you about …

- Loss of biodiversity
- Shoreline changes
- Contamination of coastal waters
- Sea-level rise
- Flooding

- Drought
- Ocean acidification
- Antibiotic resistant infections
- Increases in hurricane intensity
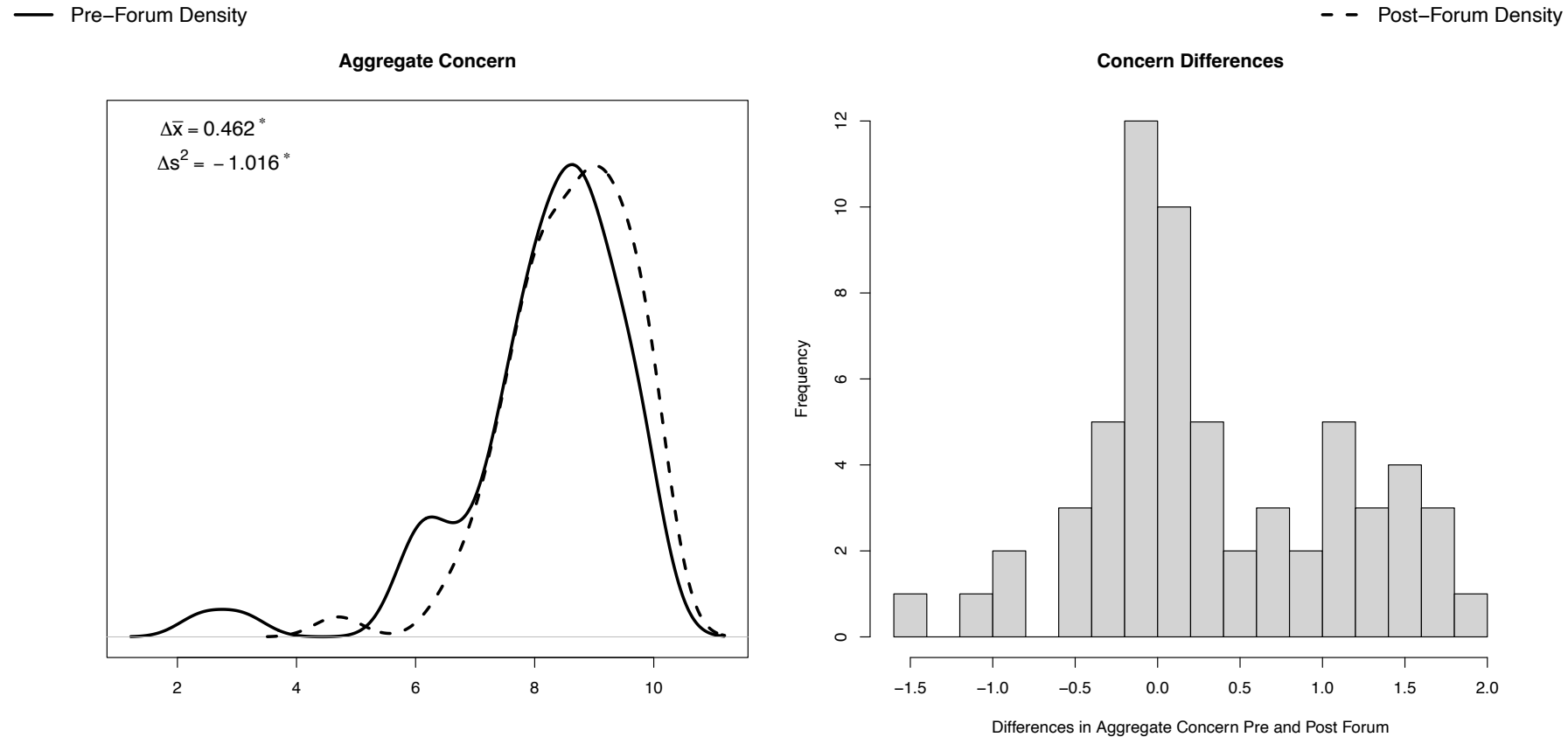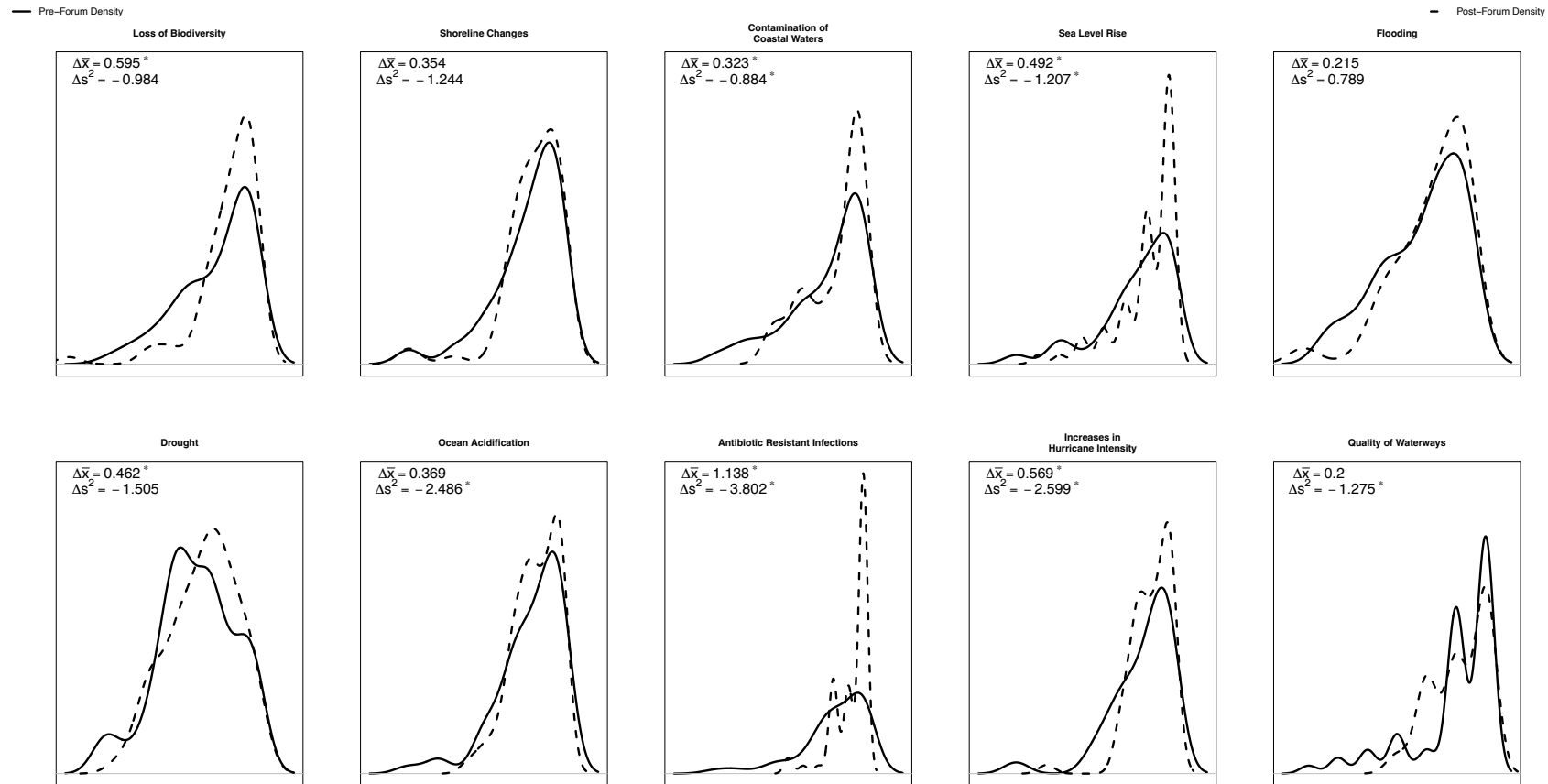- Quality of waterways

Results

Figure 2: Aggregate Concern and Difference in Aggregate Concern Pre-and-Post Forum

Results

On a scale from 0 to 10, with 0 being not at all concerned and 10 being extremely concerned, how concerned are you about...

Figure 3: Concern about each Issue Pre-and-Post Forum

Results

Table 1: Pre-and-Post Forum Mean and Variance for Concern about Issues

	Pre-Forum Mean (Variance)	Post-Forum Mean (Variance)	Learning Outcome
Aggregate Concern	8.159(2.048)	8.622***(1.032***)	Change & Reinforcement
Individual Issues			
Loss of biodiversity	8.328(3.452)	8.923*(2.478)	Change
Shoreline changes	7.923(5.385)	8.277(4.141)	No Learning
Contamination of water	8.923(1.978)	9.246*(1.094*)	Change & Reinforcement
Sea-level rise	8.492(3.129)	8.985*(1.922*)	Change & Reinforcement
Flooding	8.446(2.345)	8.662(3.135)	No Learning
Drought	6.108(6.691)	6.569*(5.186)	Change
Ocean acidification	8.046(4.701)	8.415(2.215***)	Reinforcement
Infections	8.062(5.246)	9.20***(1.444***)	Change & Reinforcement
Hurricane intensity	8.246(4.438)	8.815*(1.840***)	Change & Reinforcement
Quality of waterways	8.923(2.135)	9.123(0.897***)	Reinforcement
Observations	61	61	

Note: One-tailed test

$^*p<0.05$; $^{**}p<0.01$; $^{***}p<0.001$

Results

Table 2: OLS Analysis of Learning and if Views Changed Pre-and-Post Forum

	Dependent variable:	
	Learning	Views Changed
Aggregate Concern Pre-Forum	−0.058	−0.125
	(0.090)	(0.109)
Aggregate Concern Post-Forum	0.309**	0.280*
	(0.110)	(0.133)
Constant	2.111***	−0.161
	(0.593)	(0.716)
Observations	61	61
Adjusted R^2	0.170	0.049
Note:		$^*p<0.05$; $^{**}p<0.01$; $^{***}p<0.001$

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Results

Open-ended responses

- Comments associated with *change*
  - *I feel more educated of some of the issues, and I feel like I have a better sense of the interconnectivity of the issues*
  - *More informed on the issues facing us*
  - *I want to become more involved locally with town halls and planning*
- Comments associated with *did not change*
  - *I knew the information presented by the experts and was already aware of the complexities of the issues*
  - *Affirmed and strengthened my concerns but didn't change my views*

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Discussion

- Each of the four expected outcomes was observed

- General support for H1 and H2
  - Belief change and/or reinforcement observed in the aggregate and on 8 of 10 issues

- Support for H3
  - Concern associated with self-reported learning
  - Open-ended responses

- *Process* of policy-oriented learning
  - Increase in uncertainty without subsequent belief change

References

Heikkila, Tanya, and Andrea K. Gerlak. 2013. "Building a Conceptual Approach to Collective Learning: Lessons for Public Policy Scholars." *Policy Studies Journal* 41(3): 484–512

Nowlin, Matthew C. 2021. "Policy Learning and Information Processing." *Policy Studies Journal* 49(4): 1019–39

Pattison, Andrew. 2018. "Factors Shaping Policy Learning: A Study of Policy Actors in Subnational Climate and Energy Issues." *Review of Policy Research* 35(4): 535–63

Sabatier, Paul A., and Hank C. Jenkins-Smith. 1993. *Policy Change and Learning: An Advocacy Coalition Approach*. Boulder, CO: Westview Press

Weible, Christopher M., Kristin L. Olofsson, and Tanya Heikkila. 2022. "Advocacy Coalitions, Beliefs, and Learning: An Analysis of Stability, Change, and Reinforcement." *Policy Studies Journal* Forthcoming

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