

Protecting Coastal Communities from the Effects of Sea-level rise: A Complex Investment Decision

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Martha's Vineyard Coastal Conference

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Climate and shoreline change is happening

- Worldwide, coastal communities face threats of shoreline change
- A warming climate, rising sea levels have resulted in the permanent inundation of residences and businesses



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Creative adaptation measures are necessary

Coastal communities must consider whether to:

- Stabilize the shoreline or
- Leave as is and retreat from the coast.



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Examples of mitigation infrastructure



Creative adaptation measures are necessary

Coastal communities must consider whether to:

- Stabilize the shoreline or
- Leave as is and retreat from the coast.

Insurance is an important option.



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Investments: why and what

- Spend money to make (or protect) money



Investments: why and what

- Capital – real estate, equipment, fixtures



Investments: why and what

- Financial – stocks, bonds, insurance

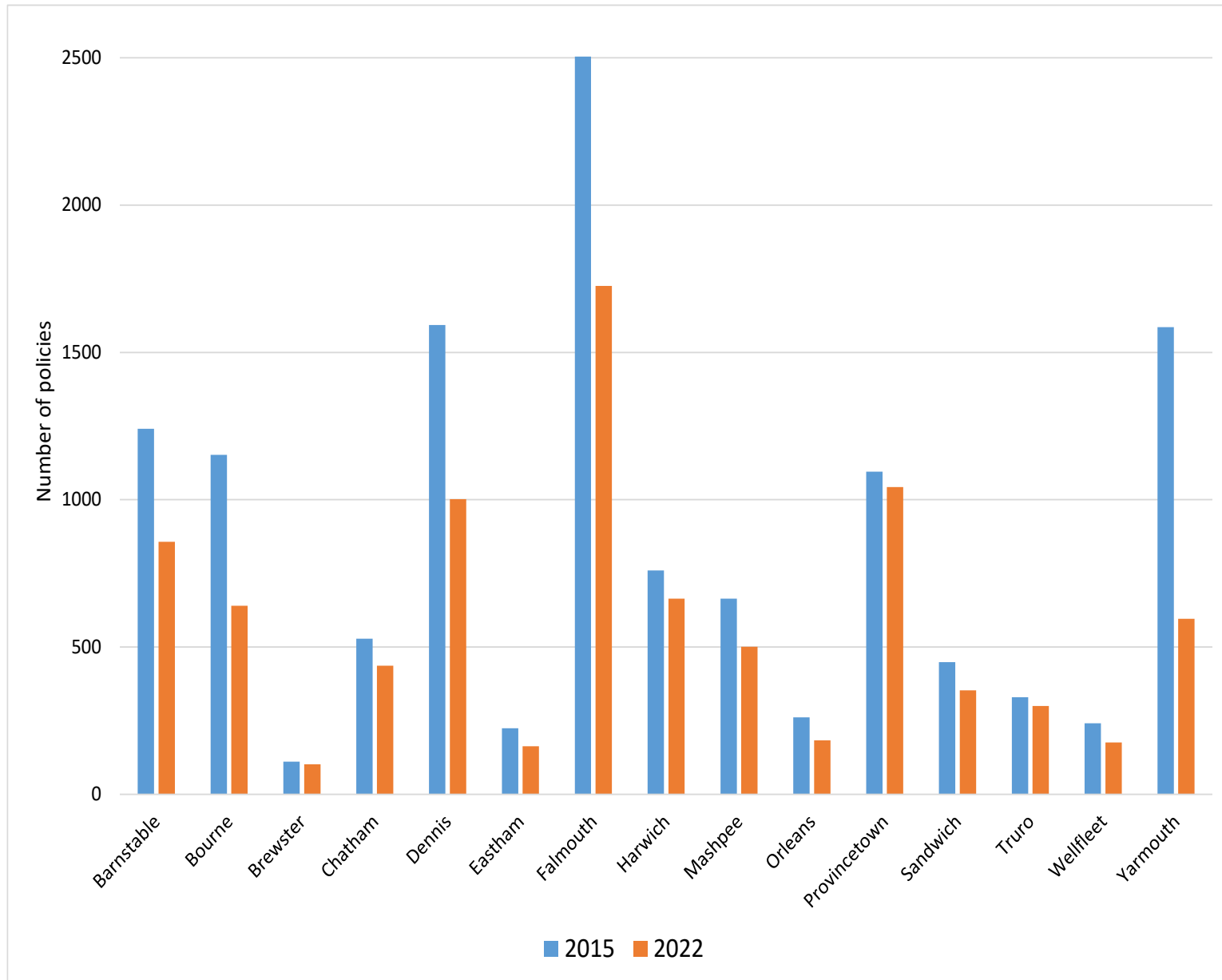


Investments: when to say “yes”

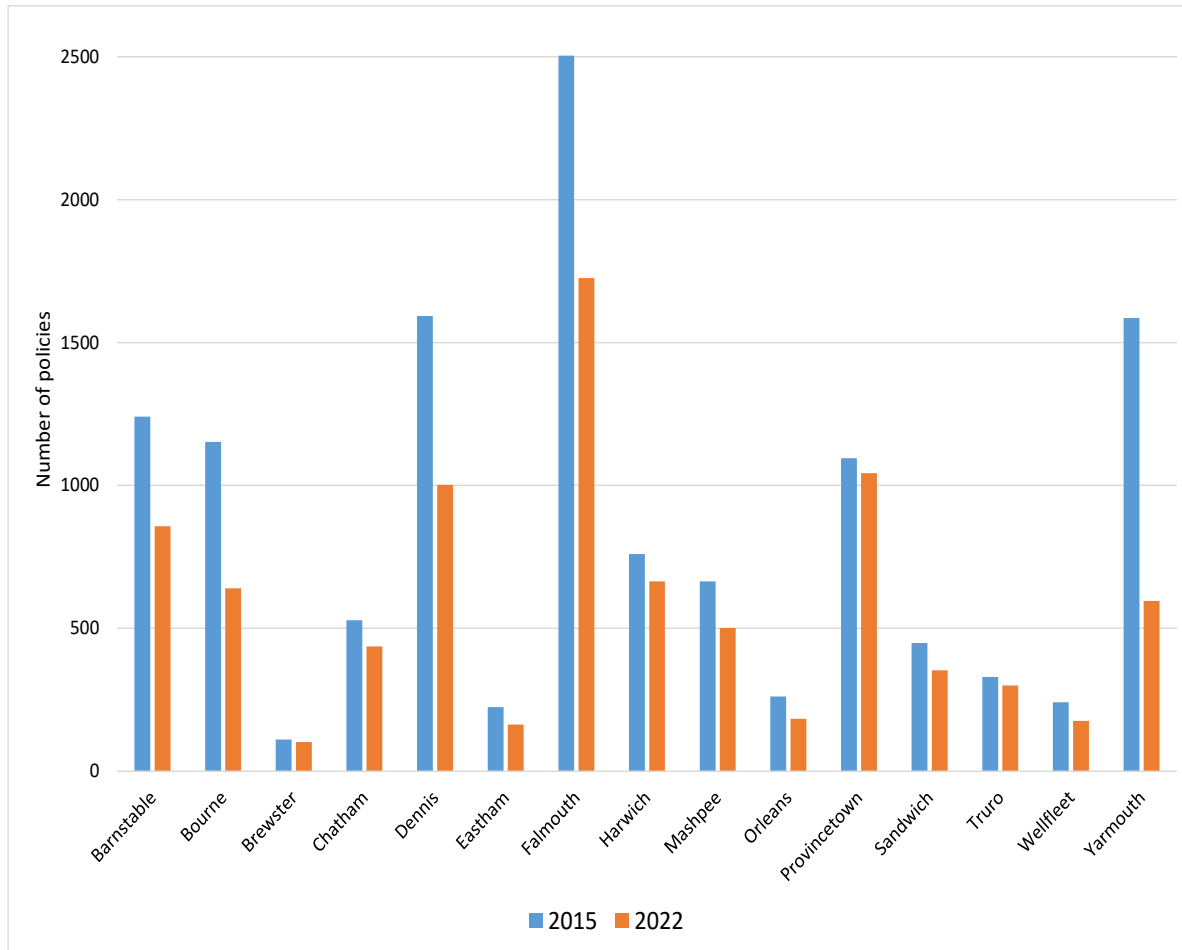
Decision rule:

$$[\text{Expected return}] > [\text{Cost}]$$

Decline in flood insurance policies on Cape Cod



Decline in flood insurance uptake on Cape Cod



Marine Policy Center research study :

- 1) Why are coastal homeowners not insuring?
- 2) What other measures are being taken?
- 3) What are homeowners willing to invest in capital and financial protection?

Individuals are willing to pay for protection

- Cape Cod homeowners are willing to pay \$575 flood insurance premium (ref. 1)
 - \$ 613 in Portland, Oregon (ref. 2)
- WTP for physical protections: \$1,400 to \$9,600 (ref. 3)
- WTP to raise homes prior to flood event: \$20,000 (ref.4)
 - Assuming a 40% subsidy on retrofit

Pop quiz!

What is the risk of a major flood event during a 30-year mortgage if annual flood risk is 1%?

- a. 1%
- b. 26%
- c. 30%

Pop quiz!

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c. 30%

Cumulative flood risk perception (ref. 5)

People use “short cuts” to estimate risk level and often we are wrong:

- ~70% of participants perceived flood risk to be about 1%
- ~25% of participants perceived flood risk to be about 30%

Understanding demand for flood insurance: Survey of Cape Cod residents

	Status Quo No change	Scenario A	Scenario B
 Flood Plain	1 in 100 year	1 in 500 year	1 in 100 year
 Insurance Provider	-	Private	Government
 Coverage level	-	Building: \$350k Contents: \$100k	Building: \$250k Contents: \$100k
 Insurance Premium Increase	0%	30%	10%

Methods:

- Measure demand for varying insurance attributes
- May provide evidence about recent NFIP purchase trend

Next steps (and how you can help!)

- Survey workshops - Fall 2024
 - Input about flood risks, insurance, alternative protection measures
- Distribute Survey – Spring 2025
 - Communities across Cape Cod



Thank you!

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References

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WHOI Land Acknowledgement

We collectively acknowledge that Woods Hole Oceanographic Institution is located on the unceded ancestral and contemporary land of the Wôpanâak (Wampanoag people). We acknowledge the Mashpee, Aquinnah, Herring Pond, and Assonet Wampanoag Tribes as the original stewards and protectors of this land and surrounding waters. We recognize the perpetuated detrimental effects that systemic governmental oppressions have had on indigenous communities as a result of colonization. By offering this land acknowledgement we accept our responsibility to understand this history, invest in reconciliation, and build accountable partnerships with these communities.