

Figure. Return period of hurricanes passing within 50 nautical miles of various locations on the U.S. Coast from the National Weather Service. If the return period is 50 years, the frequency is 1/50y. [Source: <http://www.nhc.noaa.gov/climo/>]

Question

Determine your own personal risk from hurricanes, using the figure above to determine the frequency of hurricanes in your area. If your house and all your belongings in it together are worth \$300,000, what is the risk of being hit by a hurricane this year? Show your work.

Risk = Frequency X cost $\frac{1}{43} = .02$ hurricanes per year

$6,976.74 = \frac{1}{43} \times 300,000$

$\boxed{\$6,976.74}$ risk insurance cost.
 .0014%

What assumptions did you make?

The more frequent the return year, the higher the risk and the higher the insurance.
 Maine Hurricane insurance is lower than Florida because hurricanes are less frequent in Maine
 The risk of

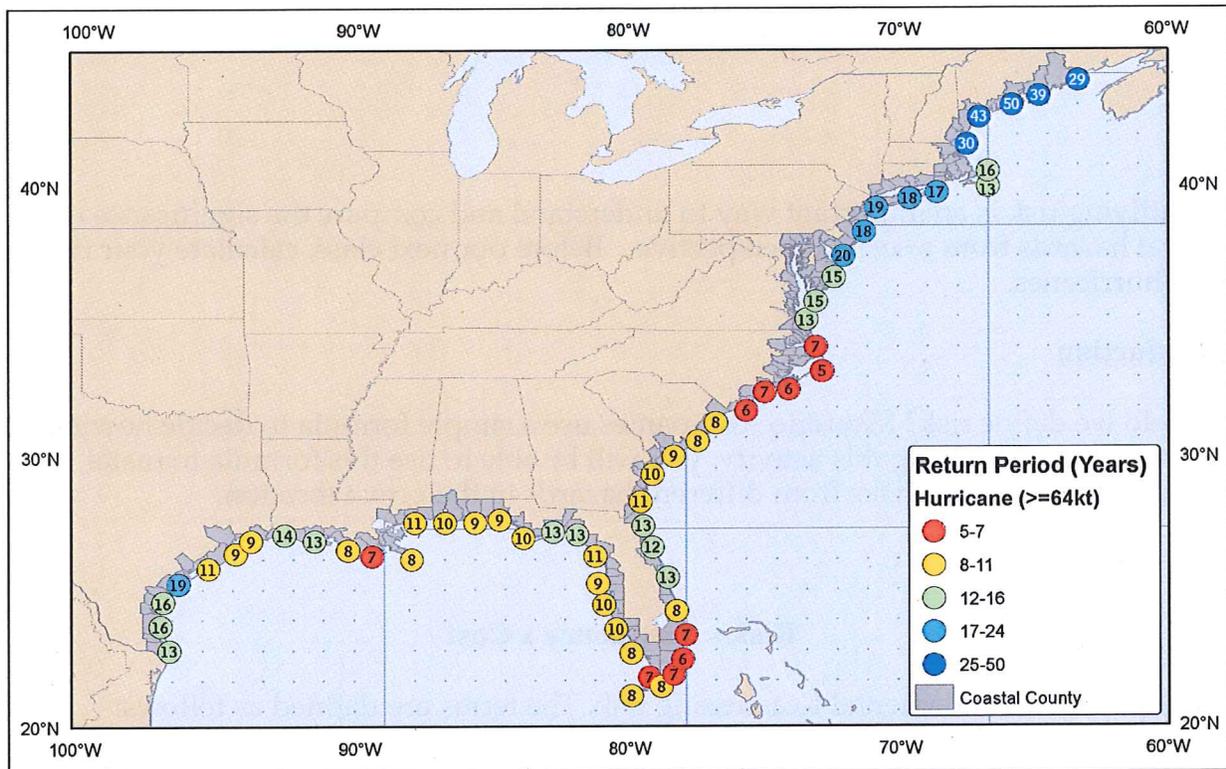


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$$F = \frac{1}{17} \times C = \$300,000 = R = 17,647.06$$

Risk: 1 in 17,647 aka 0.0056%^{chance} of losing everything in one season.

Mystic

What assumptions did you make?

I assumed that my belongings/house is worth \$300,000 and that the hurricane return period chart value for mystic is $\frac{1}{17}$, based on the map above.

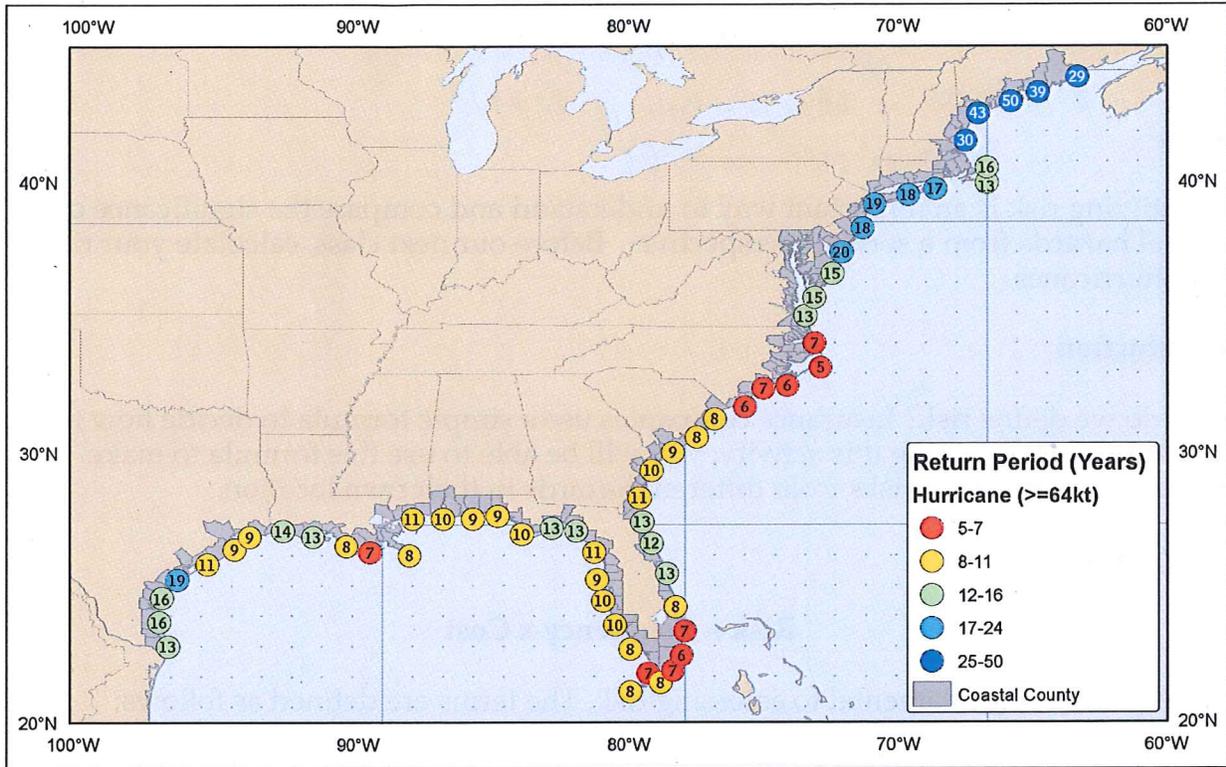


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↑
hurricanes per yr.

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~~myshic, CT: (\$300,000) / 17 = \$17,647.0588~~ ~~54~~

myshic, CT: $(\frac{1}{17 \text{ yr}}) (\$300,000) = \$17,647.0588/\text{yr}$ charges

$\frac{1}{17647} = 0.00005667 = 0.005667\%$ chance of losing everything in one hurricane season.

What assumptions did you make?

- cost does not include damages in terms of time, productivity, injuries, death.
- assume everytime a hurricane comes you lose everything.

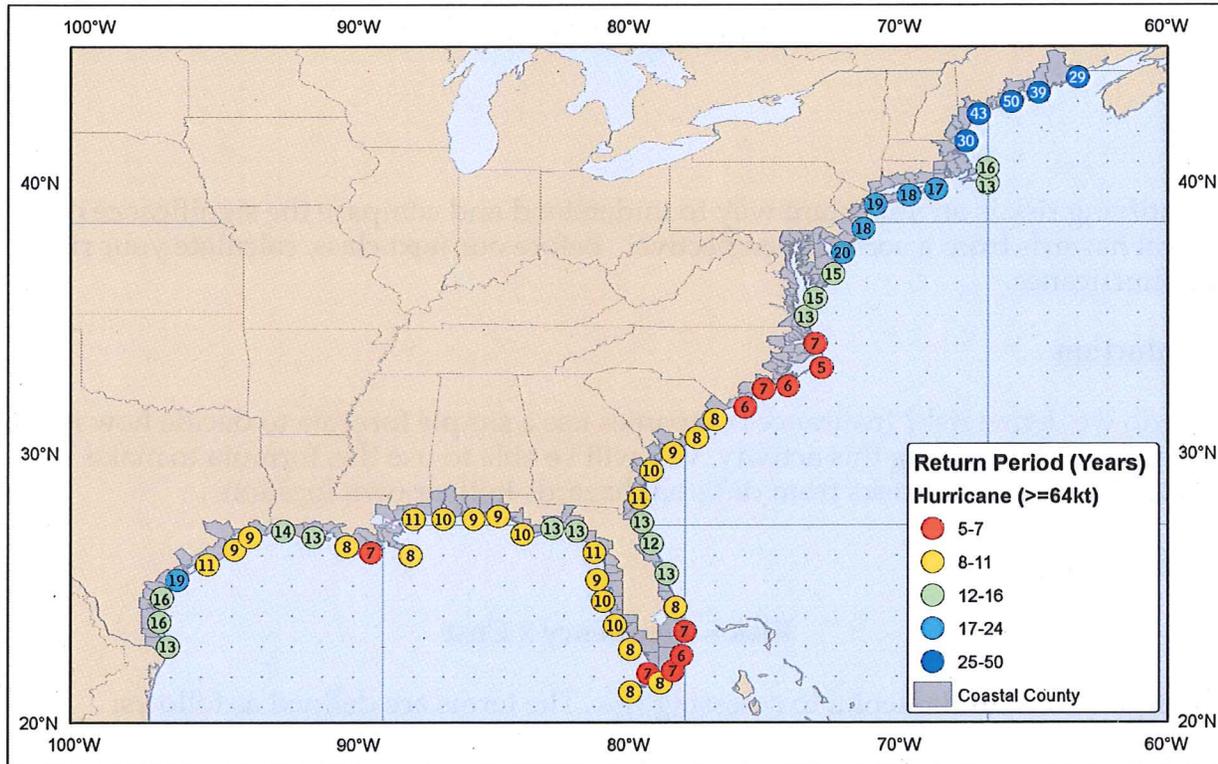


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Mystic: 17 : 1/17

$$1/17 \cdot \$300,000 \approx 17,647$$

.0056% of losing everything in one hurricane season.

What assumptions did you make?

That I live in Mystic

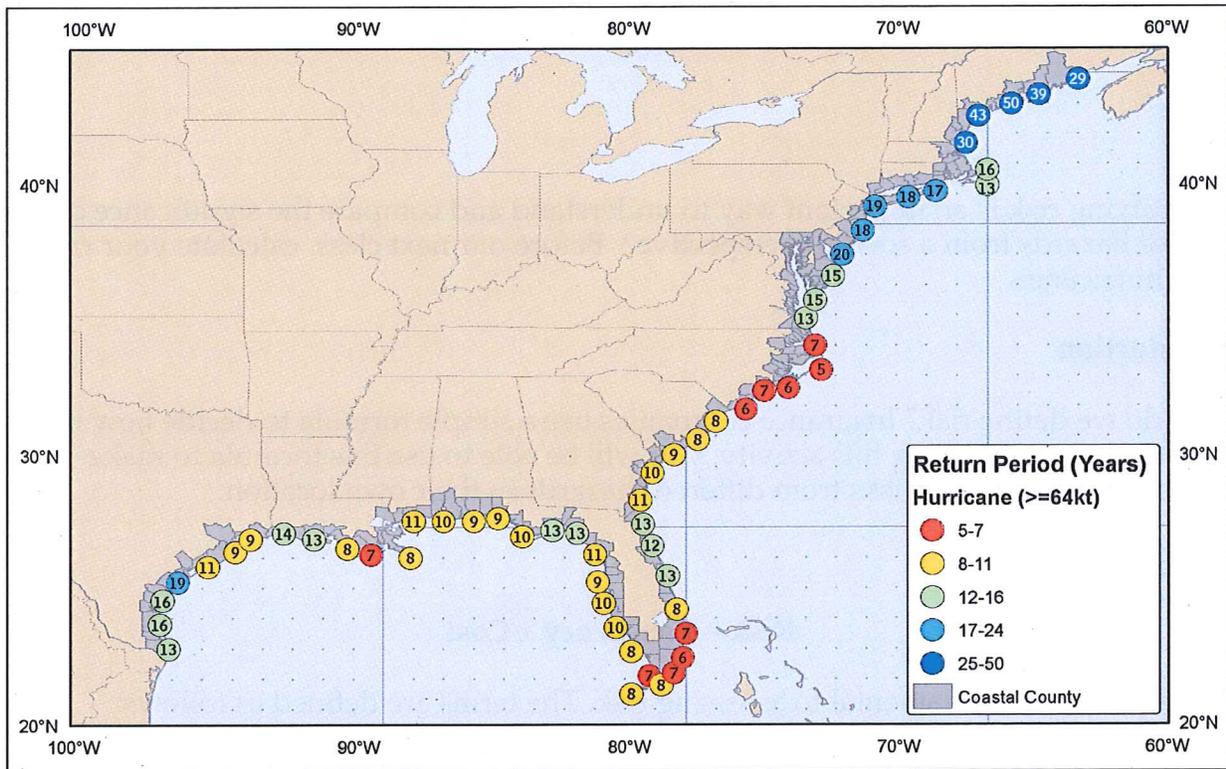


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MADISON, CT $\text{risk} = \text{frequency} \times \text{cost}$

$\text{risk} = \frac{1}{18} \times 300,000$

$= \$16,666.67$

What assumptions did you make?

- that the frequency estimate would be accurate

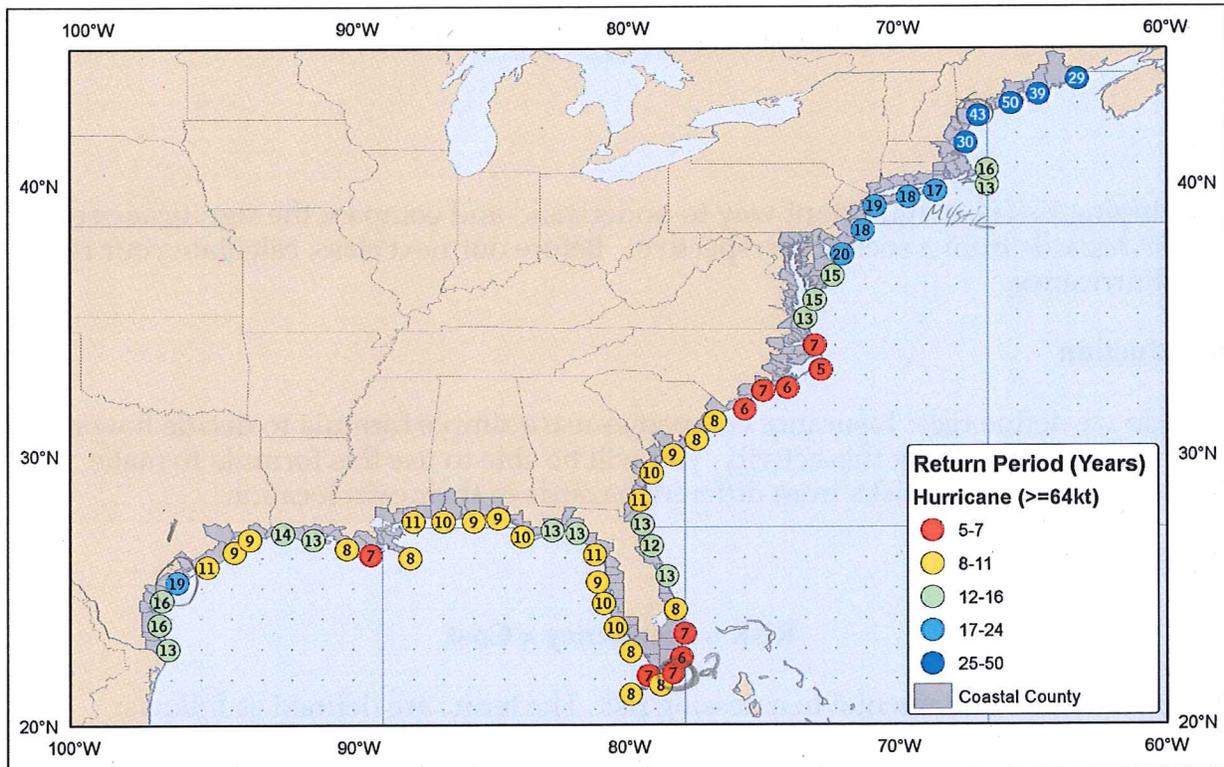


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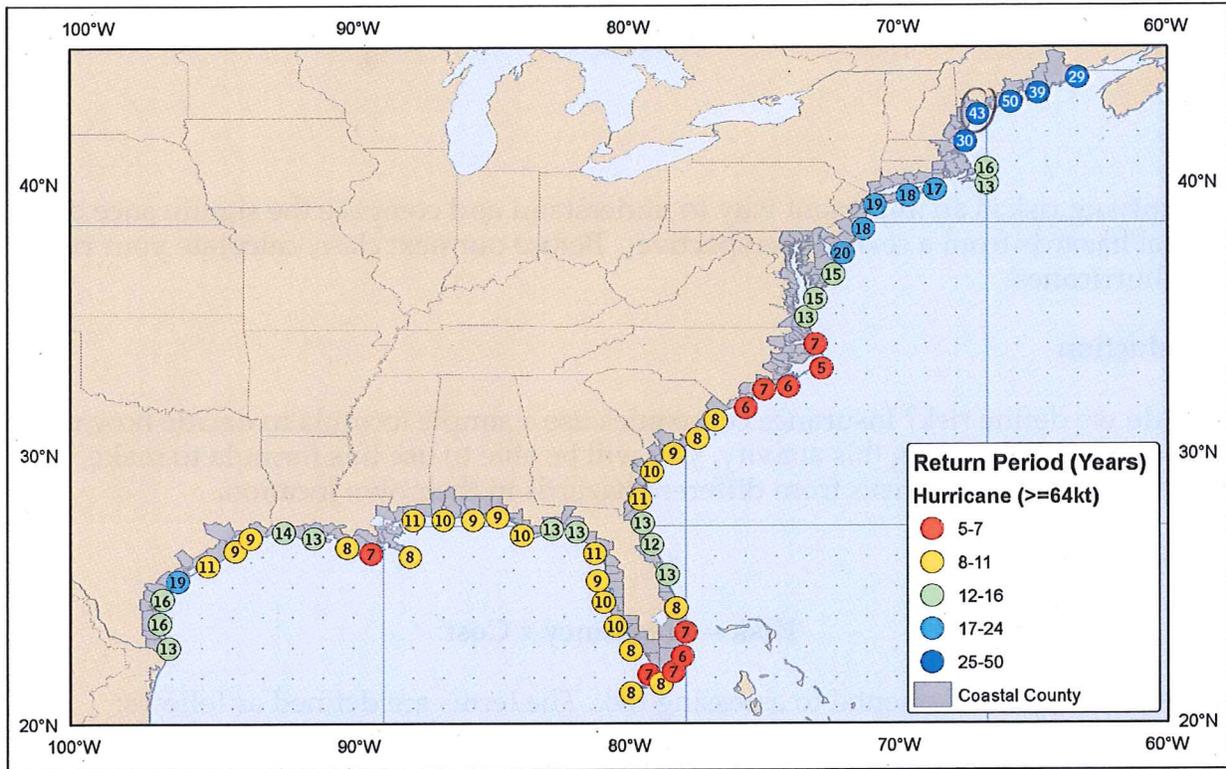
$$R = f \times C \quad \frac{1}{19} \times 300,000$$

$$\textcircled{2} R = \frac{1}{7} \times 300,000 \quad \textcircled{1} R = \frac{1}{19} \times 300,000$$

$$R = \$42,857.14 \quad R = \$15,789.47$$

What assumptions did you make?

Southern Maine 43 = $\frac{1}{43} = \underbrace{0.023 \text{ hurricanes / year}}_{\text{Frequency}} \times \text{Cost } 300,000 = \$6,976.74$



$\frac{1}{43} = 0.023\%$

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$$\begin{aligned} \text{Risk} &= \text{frequency} \times \text{cost} \\ \text{Risk} &= \frac{1}{30} \times 300000 \\ \text{Risk} &= 10000 \end{aligned}$$

$$\begin{aligned} \text{Cost} &= 300000 \\ \text{Frequency} &= 30 = 1/30 \end{aligned}$$

What assumptions did you make?

that my home is within 50 nautical miles of Boston, and that my house is worth that much money.

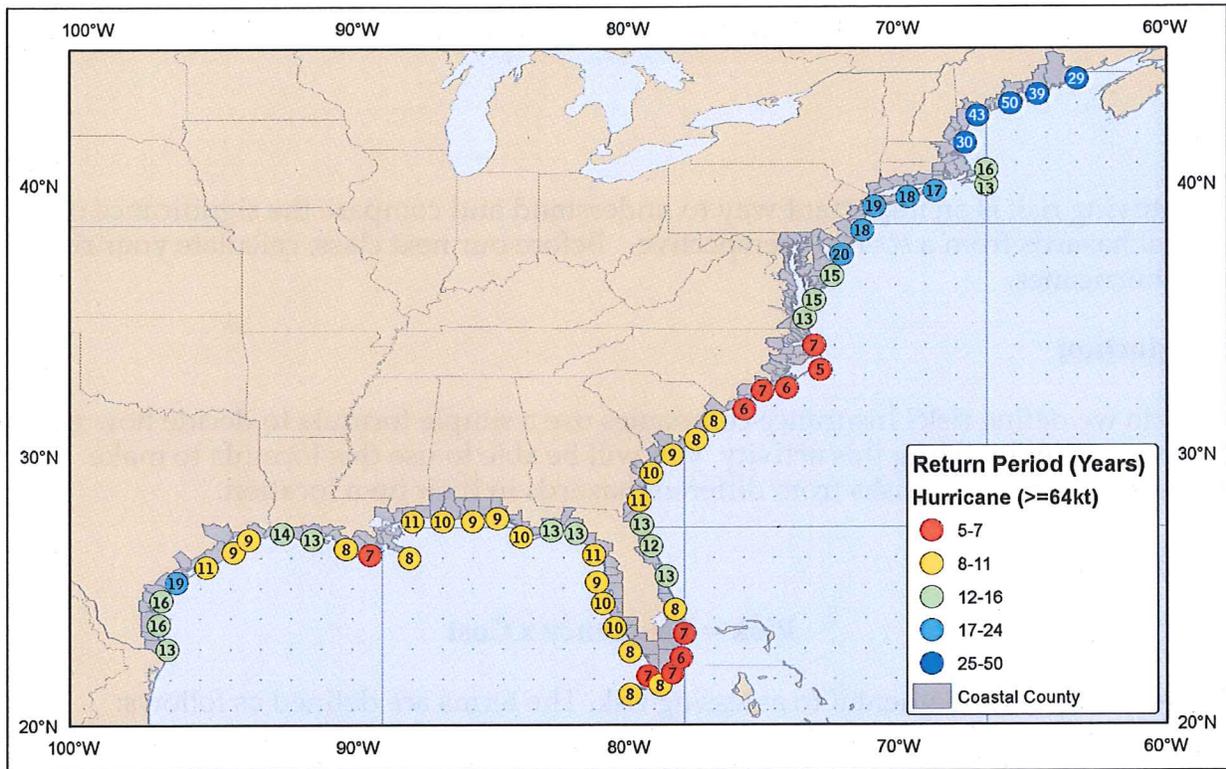


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$$\frac{1}{18} \frac{1}{y}$$

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Utah = \$0 → Landlocked + in Midwest

Mystic ⇒ $\$ Risk = Frequency \times cost$

$\$ 16,666.667 = \left(\frac{1}{18} \times 300,000\right)$

(or half damaged \$8,333,334)

What assumptions did you make?

That the entire house would be damaged as well as the belongings with a hurricane over 64kt.

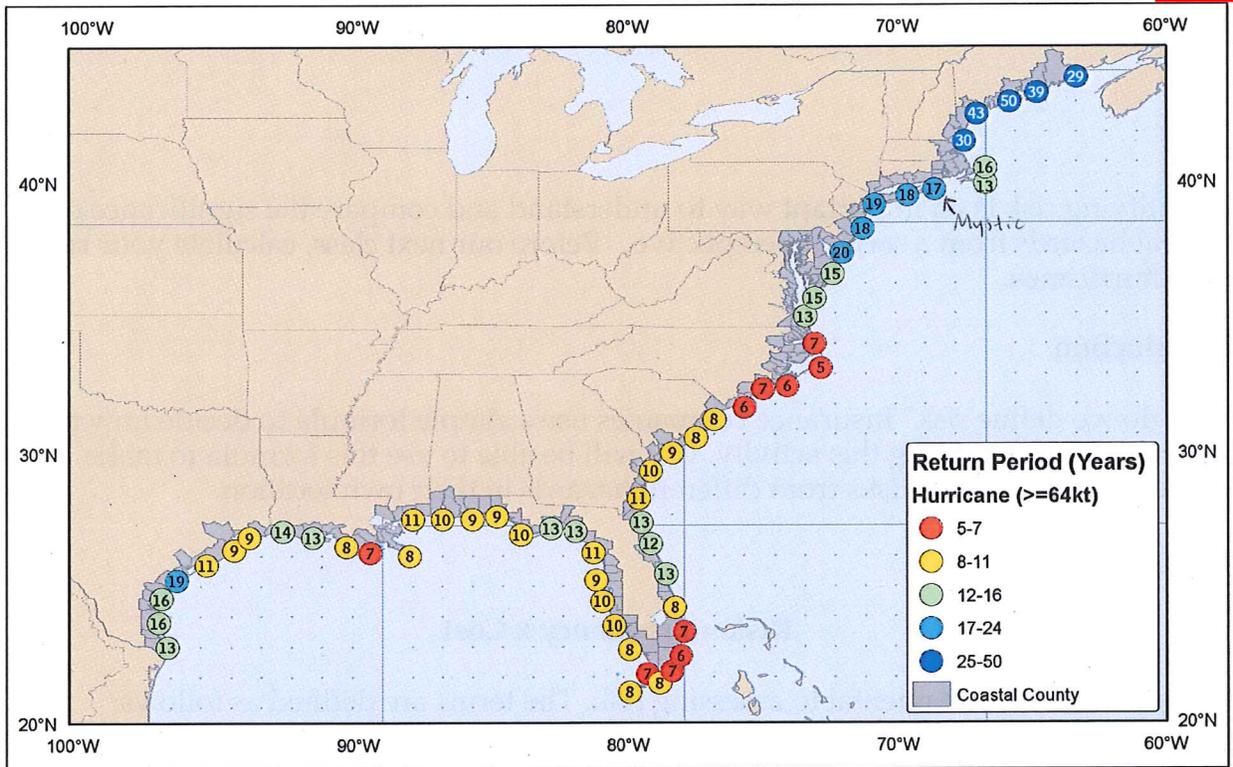


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$$R = F \times C$$

$$F = \frac{1}{17} \text{ yrs}$$

$$= \frac{1}{17} \times 300,000 \quad C = \$300,000$$

$\$17,647$ ~~annual risk~~
 0.0052% risk of everything
 in your house (300,000)

What assumptions did you make?

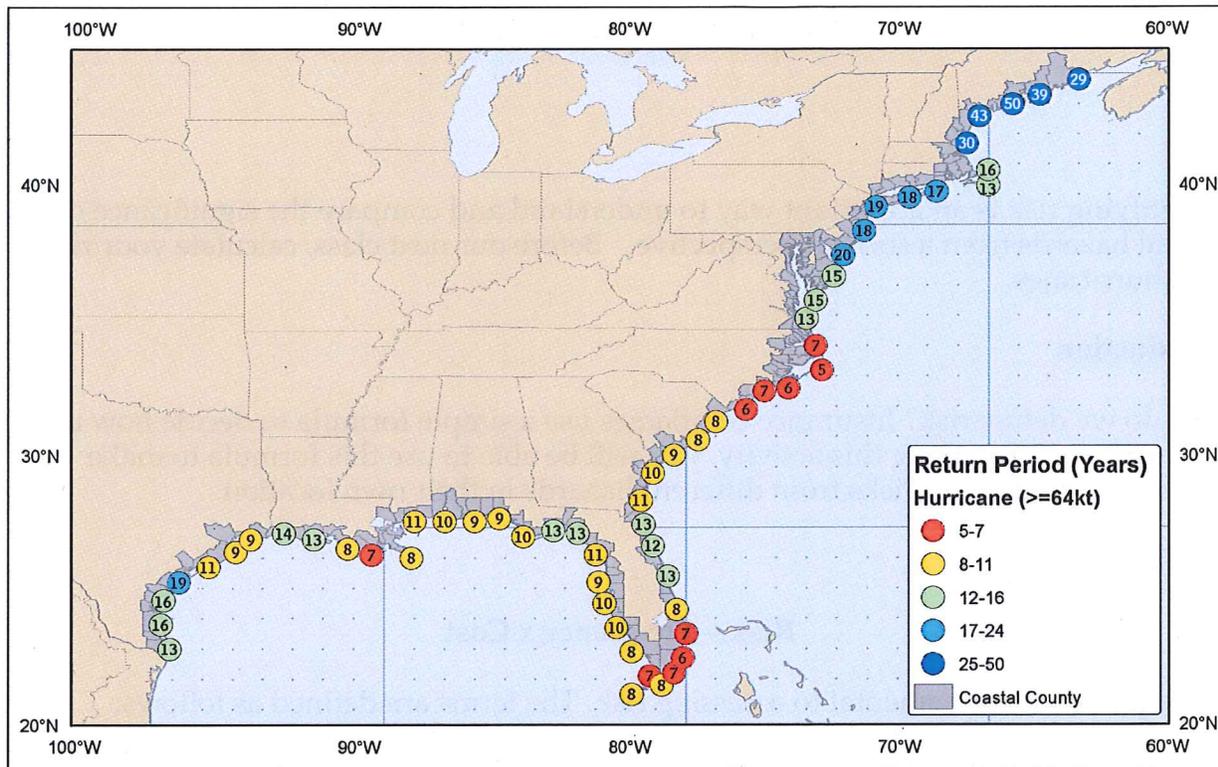


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$$R = \frac{1}{17} \times 300,000 = 17,647$$

$$F = \frac{1}{17} \quad C = 300,000$$

What assumptions did you make?

[Handwritten notes and scribbles on the right side of the page, including the number 10 and some illegible text.]

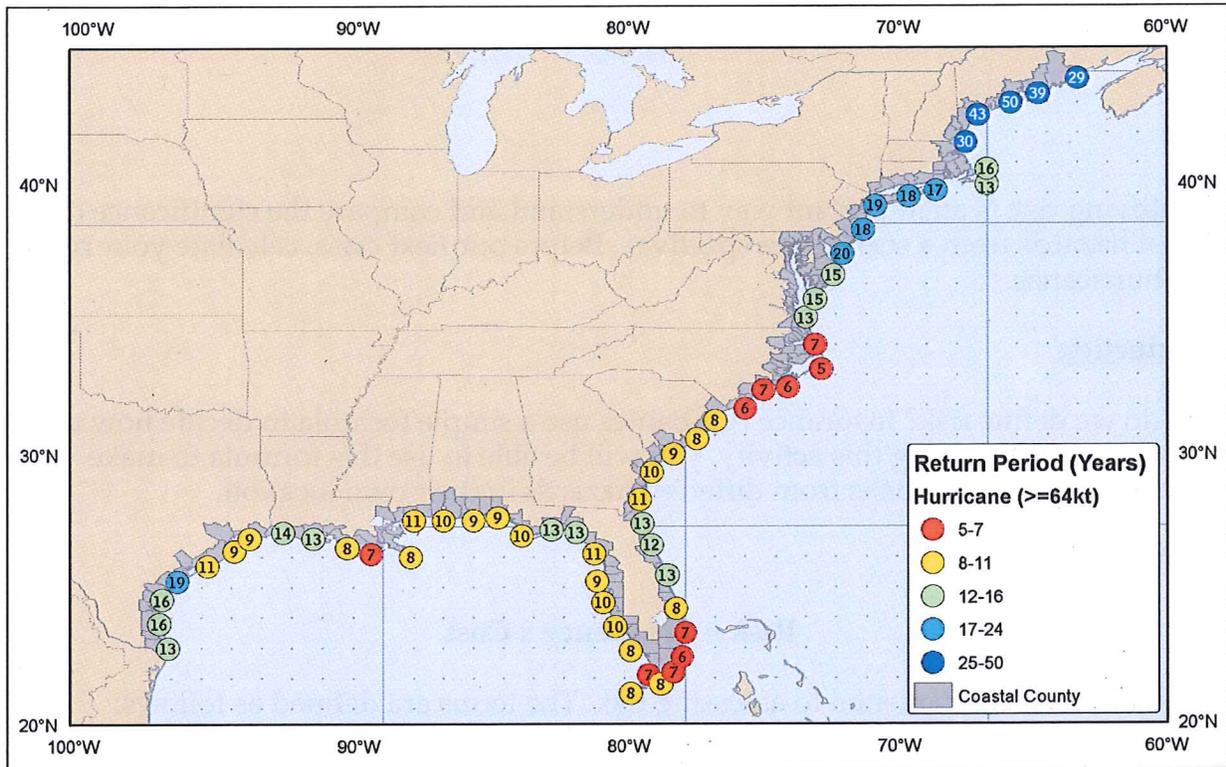


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$$\text{Risk} = \text{frequency} \times \text{cost} = \left(\frac{1}{19}\right)(300,000) = \$15,789$$

~~0.063% chance of losing everything this year~~

5.26 chance of losing everything this year

What assumptions did you make?

I assumed that the ~~frequency of hurricanes~~ return period of hurricanes will continue to be 19 in NY. I am also assuming that a hurricane ≥ 64 kt would destroy all my property, ~~but~~ ^{and} no one would be hurt.

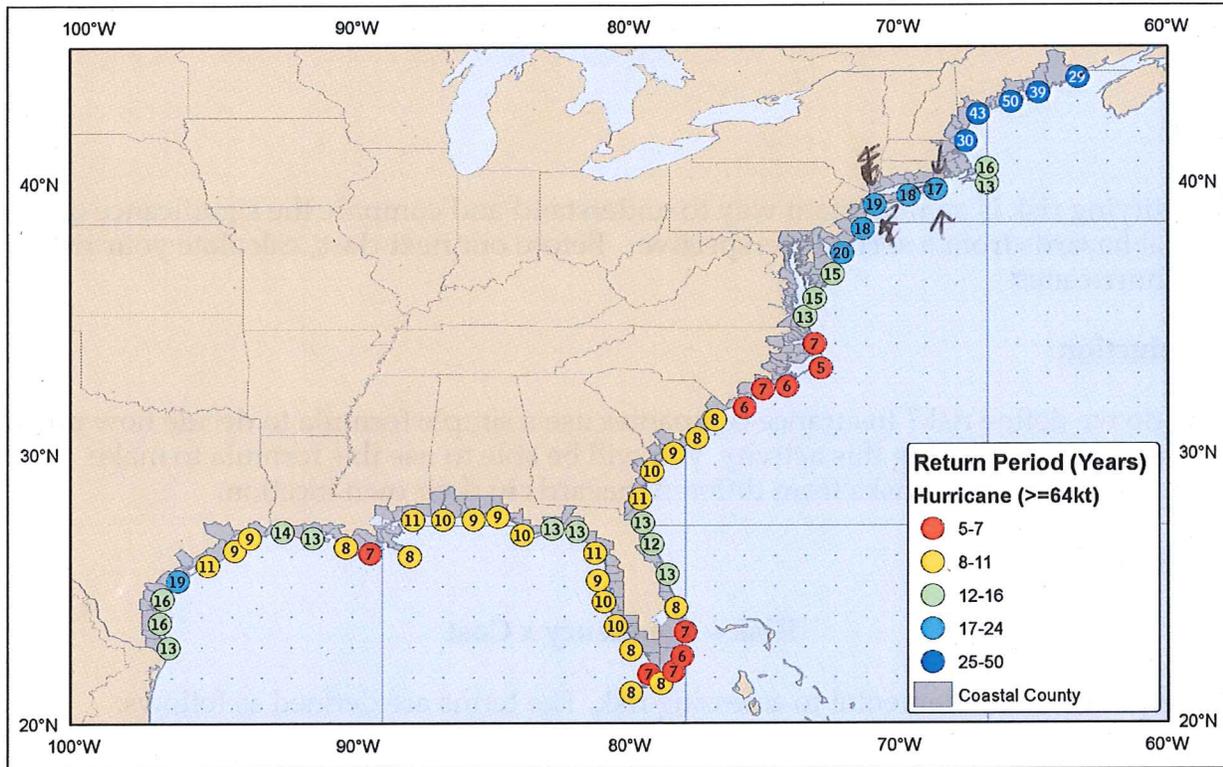


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$$R = F \times C$$

$$F = 1/17$$

$$C = 300,000$$

$$R = 1/17 \times 300,000$$

$$\text{risk} = \$17,647.06$$

~~100,000~~

~~100,000~~

What assumptions did you make?

- I assumed all of my stuff would have been destroyed
- I ~~also~~ assumed the hurricanes were same force
- I assumed the frequency was correct