

The storm of the Century!

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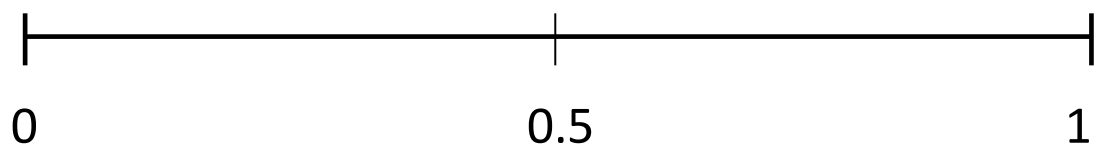


Write down some key facts about Hurricane Katrina:

We can work out some exceedance probabilities for the sea-surge using **relative frequency**:

$$\begin{aligned}P(\text{exceeds 8.75 feet}) &= \frac{33}{50} & P(\text{exceeds 11.25 feet}) &= & P(\text{exceeds 14 feet}) &= \\&= \frac{66}{100} \\&= \mathbf{0.66}\end{aligned}$$

Think about the **probability scale**:



Interpretation:

What's wrong with your exceedance probability associated with 14 feet?

Now consider exceedance probabilities for a range of values – complete the table below:

Sea-surge	No. of exceedances	Exceedance probability
6.5	50	$\frac{50}{50} = 1.00$
7.0	48	$\frac{48}{50} = 0.98$
7.5	44	$\frac{44}{50} = 0.88$
8.0	41	$\frac{41}{50} = 0.82$
8.5	36	$\frac{36}{50} = 0.72$
9.0		
9.5		
10.0		
10.5		
11.0	7	$\frac{7}{50} = 0.14$
11.5	5	$\frac{5}{50} = 0.10$
12.0	4	$\frac{4}{50} = 0.08$
12.5	3	$\frac{3}{50} = 0.06$

Let's go back to the three exceedance probabilities we worked out earlier by **relative frequency**:

Probabilities	Exceeds		
	8.75 feet	11.25 feet	14 feet
Relative frequency	0.66	0.12	0
Gumbel model	0.575		

Why do you think Katrina was billed as the “storm of the century”?

ORDERED DATA

6.7 6.8 7.3 7.3 7.3 7.4 7.6 7.7 7.8 8.1

8.2 8.3 8.4 8.5 8.6 8.7 8.7 8.8 8.8 8.9

8.9 8.9 8.9 9.0 9.1 9.1 9.3 9.3 9.4 9.5

9.6 9.6 9.7 9.7 9.8 10.0 10.0 10.2 10.3 10.4

10.5 10.5 10.8 11.1 11.5 11.8 12.2 12.6 12.7 13.0

