Lesson 03: What story does the data tell?



Was there a relationship between the kind of ticket a passenger held and the passenger's chances of making it into a lifeboat?

Displaying Categorical data continued:

5. Contingency Tables or Two-way Tables:



- allow us to look at two categorical variables together
- useful to show how the distribution of one variable for just those cases that satisfy a condition on another variable

		Class				
		First	Second	Third	Crew	Total
/al	Alive	203	118	178	212	711
Survival	Dead	122	167	528	673	1490
	Total	325	285	706	885	2201

Cell, marginal distribution

Don't neglect how many cases are in each category. Look carefully at marginal distribution.

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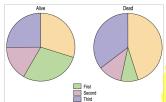
The following is the conditional distribution of ticket Class, conditional on having survived:

	Class				
	First	Second	Third	Crew	Total
Alive	203	118	178	212	711
	28.6%	16.6%	25.0%	29.8%	100%

So many ways to look at the data... Class Crew First Second Third Total Count 203 118 178 212 711 % of Row 28.6% 16.6% 25.0% 29.8% 100% % of Column 62.5% 41.4%25.2% 24.0% 32.3% % of Table 9.2% 5.4% 8.1% 9.6% 32.3% Count 122 1490 167 528 673 Survival % of Row 8.2% 11.2% 35.4% 45.2% 100% Dead % of Column 37.5% 67.7% 58.6% 74.8% 76.0% % of Table 5.6% 7.6% 24.0% 30.6% 67.7% Count 325 285 706 885 2201 14.8% 12.9% 40.2% 100% %of Row 32.1% Total % of Column 100% 100% 100% 100% 100% % of Table 14.8%12.9% 32.1% 40.2%100% primethinker.com

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Is there an association between Class and Survival?



We see that the distribution of Class for the survivors is different from that of the nonsurvivors.

Association implies

Class & Survival are not independent.

The variables would be considered independent when the distribution of one variable in a contingency table is the same for all categories of the other variable.

JUST CHECKING

A Statistics class reports the following data on Sex and Eye Color for students in the class:

		Eye Color				
		Blue	Brown	Green/Hazel/Other	Total	
Sex	Males	6	20	6	32	
	Females	4	16	12	32	
	Total	10	36	18	64	

- 1. What percent of females are brown-eyed?
- 2. What percent of brown-eyed students are female?
- **3.** What percent of students are brown-eyed females?
- 4. What's the distribution of Eye Color?
- **5.** What's the conditional distribution of Eye Color for the males?
 - Compare the percent who are female among the blue-eyed students to the percent of all students who are female.

7. Does it seem that Eye Color and Sex are independent? Explain.

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