

Part 8.1: Risk and Relative Risk Exercise

1. Complete and use the table below to answer the following questions:

	A	A'	Total
B	1	3	
B'			
Total	8		12

Calculate the

- Risk of A
 - Risk of B
 - Risk of A given B
 - Risk of A given B'
 - Relative risk of A when B is compared to B'
2. This table shows data from the 2012 New Zealand General Social Survey (NZGSS), and the percentage of people who voted in the most recent general election, and the most recent local body election.

Voted in Local Body Election	Voted in General Election		
	Yes	No	Total
Yes	1,980,000	79,000	2,059,000
No	572,000	612,000	1,184,000
Total	2,552,000	691,000	3,243,000

[data extracted on 05 Aug 2018 from NZ.Stat](#)

- How likely is someone to vote in the general elections?
 - How likely is someone to vote in the local body elections?
 - How many times more likely are you to vote in the local body elections if you vote in the general election to if you do not vote in the general election?
3. The table below shows data from 2014, and the number of fatal and serious non-fatal injuries by sex, and severity of injury.

Severity of injury	Number of Injuries		
	Male	Female	Total
Fatal	1,125	672	1,797
Serious non-fatal	4,875	4,623	9,498
Total	6,000	5,295	11,295

[data extracted on 05 Aug 2018 from NZ.Stat](#)

- What is the risk an injury is fatal?
- What is the risk an injury is on a female?
- What is the relative risk of an injury being fatal if it is a male vs a female?

4. This table shows data from the 2012 New Zealand General Social Survey (NZGSS), and the number of people who have high and low life satisfaction based on their family type.

Overall life satisfaction	Number of People				
	Couple without child(ren)	Couple with child(ren)	One parent with child(ren)	Not in a family nucleus	Total
Low	133,000	210,000	107,000	165,000	615,000
High	922,000	1,205,000	245,000	541,000	2,913,000
Total	1,055,000	1,415,000	352,000	706,000	3,528,000

[data extracted on 05 Aug 2018 from NZ.Stat](#)

- What is the relative risk of not being in a family nucleus if you have low life satisfaction compared to high life satisfaction?
 - Which of these statements is more likely: "A person has high life satisfaction given they are in a couple without children" or "A person has high life satisfaction given they are in a couple with child(ren)"?
5. The table below shows the risk of developing lung disease based on if you are a smoker or a non-smoker

	Smoker	Non-Smoker
Lung Disease	0.12	0.03
No Lung Disease	0.19	0.66

What is the relative risk of developing lung disease when smokers are compared to non-smokers?

Exercise 8.1 Answers

- 1a. 0.667 (3sf)
- 1b. 0.333 (3sf)
- 1c. 0.25
- 1d. 0.875
- 1e. 0.286 (3sf) (A is 0.286 times as likely to happen if B occurs compared to B not occurring)
- 2a. 0.789 (3sf)
- 2b. 0.635 (3sf)
- 2c. 6.79 (3sf) (someone votes in the general election is 6.79 times as likely to vote in the local body elections compared to someone who didn't vote in the general election)
- 3a. 0.159 (3sf)
- 3b. 0.469 (3sf)
- 3c. 1.47 (3sf) (It is 1.47 times more likely an injury is fatal if it is a male involved compared to a female)
- 4a. 1.44 (3sf) (New Zealanders are 1.44 times as likely to not be in a family nucleus if they have low life satisfaction compared to if you have high life satisfaction)
- 4b. "A person has high life satisfaction given they are in a couple without children" is more likely (New Zealanders are 1.03 times as likely to have high life satisfaction if they are in a couple without children compared to if you are in a couple with child(ren))
5. 8.52 (3sf) (A person are 8.52 times as likely to develop lung disease if they smoke compared to if they do not smoke)