

Practice Problem 1:Part a:

##			
##		Died	Survived
##	1st	122	203
##	2nd	167	118
##	3rd	528	178
##	Crew	673	212

	Survived
1 <sup>st</sup>	$\frac{203}{122+203}$
2 <sup>nd</sup>	$\frac{118}{167+118}$
3 <sup>rd</sup>	$\frac{178}{528+178}$
Crew	$\frac{212}{673+212}$

	Survived	
1 <sup>st</sup>	$\frac{203}{122+203}$	= $\boxed{0.6246}$
2 <sup>nd</sup>	$\frac{118}{167+118}$	= $\boxed{0.4140}$
3 <sup>rd</sup>	$\frac{178}{528+178}$	= $\boxed{0.2521}$
Crew	$\frac{212}{673+212}$	= $\boxed{0.2395}$

Part b:

, , Sex = Female

	Survived	
Class	Survived	Total
1st	141	145
2nd	93	106
3rd	90	196
Crew	20	23

	F	M
1 <sup>st</sup>	$\frac{141}{145}$	$\frac{62}{180}$
2 <sup>nd</sup>	$\frac{93}{106}$	$\frac{25}{174}$
3 <sup>rd</sup>	$\frac{90}{196}$	$\frac{88}{510}$
Crew	$\frac{20}{23}$	$\frac{192}{862}$

	F	M
1 <sup>st</sup>	0.972	0.344
2 <sup>nd</sup>	0.877	0.139
3 <sup>rd</sup>	0.459	0.172
Crew	0.869	0.222

, , Sex = Male

	Survived	
Class	Survived	Total
1st	62	180
2nd	25	179
3rd	88	510
Crew	192	862

Part c:Total Female passengers:  $145 + 106 + 196 + 23 = 470$ Total male passengers:  $180 + 174 + 510 + 862 = 1731$ Total proportion of female passengers:  $\frac{470}{470+1731} = \boxed{0.2135}$ Total proportion of male passengers:  $\frac{1731}{470+1731} = \boxed{0.7864}$

### Part d:

% of passengers who survived (F) × total proportion of passengers (F)  
+ % of passengers who survived (M) × total proportion of passengers (M)

compare to → Survived

1st Class:	$(0.972)(0.2135) + (0.344)(0.7864) = \boxed{0.479}$	1st	$\boxed{0.6246}$	} original from part (a)
2nd Class:	$(0.877)(0.2135) + (0.139)(0.7864) = \boxed{0.297}$	2nd	$\boxed{0.4140}$	
3rd Class:	$(0.459)(0.2135) + (0.172)(0.7864) = \boxed{0.234}$	3rd	$\boxed{0.2521}$	
Crew:	$(0.869)(0.2135) + (0.222)(0.7864) = \boxed{0.361}$	Crew	$\boxed{0.2395}$	

### Practice Problem 2:

① Proportion of ppl who survived by Sex:

$$F: \frac{141 + 93 + 90 + 20}{145 + 106 + 196 + 23} = \frac{344}{470} = \boxed{0.7319}$$

$$M: \frac{62 + 25 + 88 + 192}{180 + 179 + 510 + 862} = \frac{367}{1731} = \boxed{0.2120}$$

② % of passengers of each sex broken down by class:

	1st	2nd	3rd	Crew
F:	$\frac{141}{145}$	$\frac{93}{106}$	$\frac{90}{196}$	$\frac{20}{23}$
M:	$\frac{62}{180}$	$\frac{25}{179}$	$\frac{88}{510}$	$\frac{192}{862}$

=

	1st	2nd	3rd	Crew
F:	0.972	0.877	0.459	0.869
M:	0.344	0.139	0.172	0.222

③ Finding total % of passengers for each class:

$$\text{1st : } \frac{145 + 180}{2201} = \boxed{0.1476}$$

$$\text{2nd : } \frac{106 + 179}{2201} = \boxed{0.1294}$$

$$\text{3rd : } \frac{196 + 510}{2201} = \boxed{0.3207}$$

$$\text{Crew : } \frac{23 + 862}{2201} = \boxed{0.4026}$$

(overall proportion at each level of confounder)  $\times$  (% for group at each level of confounder)

$$\text{④ Female : } (0.1476)(0.972) + (0.1294)(0.877) + (0.3207)(0.459) + (0.4026)(0.867) = \boxed{0.754}$$

$$\text{Male : } (0.1476)(0.344) + (0.1294)(0.139) + (0.3207)(0.172) + (0.4026)(0.222) = \boxed{0.214}$$