```
> library(dslabs)
> data("research_funding_rates")
> research_funding_rates
          discipline applications_total applications_men applications_women
1   Chemical sciences                122               83                 39
2   Physical sciences                174              135                 39
3             Physics                 76               67                  9
4          Humanities                396              230                166
5  Technical sciences                251              189                 62
6   Interdisciplinary                183              105                 78
7 Earth/life sciences                282              156                126
8     Social sciences                834              425                409
9    Medical sciences                505              245                260
  awards_total awards_men awards_women success_rates_total success_rates_men
1           32         22           10                26.2              26.5
2           35         26            9                20.1              19.3
3           20         18            2                26.3              26.9
4           65         33           32                16.4              14.3
5           43         30           13                17.1              15.9
6           29         12           17                15.8              11.4
7           56         38           18                19.9              24.4
8          112         65           47                13.4              15.3
9           75         46           29                14.9              18.8
  success_rates_women
1                25.6
2                23.1
3                22.2
4                19.3
5                21.0
6                21.8
7                14.3
8                11.5
9                11.2
>
>
>
> two_by_two <- research_funding_rates %>%
+     select(-discipline) %>%
+     summarize_all(funs(sum)) %>%
+     summarize(yes_men = awards_men,
+               no_men = applications_men - awards_men,
+               yes_women = awards_women,
+               no_women = applications_women - awards_women) %>%
+     gather %>%
+     separate(key, c("awarded", "gender")) %>%
+     spread(gender, value)
> two_by_two
  awarded   men women
1      no 1345  1011
2     yes  290   177
>
>
>
> two_by_two %>% mutate(men = men/sum(men) * 100, women = women/sum(women) * 100) %>% filter(awarded == 'y
es') %>% pull(men)
[1] 17.737
> two_by_two %>% mutate(men = men/sum(men) * 100, women = women/sum(women) * 100) %>% filter(awarded == 'y
es') %>% pull(women)
[1] 14.89899
>
>
>
> two_by_two %>% select(-awarded) %>% chisq.test(.) %>% tidy()
# A tibble: 1 x 4
  statistic p.value parameter method
```

	<dbl>	*<dbl>*	*<int>*	*<chr>*
1	3.81	0.050<u>9</u>	1	Pearson's Chi-squared test with Yates' continuity…

>