

The Association among Etiquette and Gender

AP Statistics-5

May 30, 2009

1) Introduction

For my AP Statistics final project I decided to observe whether or not etiquette and gender are associated. This question is of interest to me because my parents brought me up to always be polite, and over the years I have realized that many people do not value manners the way I do. But in particular, my parents taught me to always be very polite to sales associates, waiters, etc.; my father has always said that how someone treats these everyday employees is "the true measure of someone's etiquette and respect."

I decided the best way to test this would be at my place of employment, Abbey's Hallmark. I work one weekday per week from 3:00 PM to 8:00 PM and every Sunday from 11:00 AM to 6:00 PM; there is always one other co-worker working with me. The survey was taken during four days that I worked, which amounted to 24 hours of surveying. The population of my test was customers of Abbey's Hallmark, and the sample was all of the customers that I personally dealt with at the cash register. At the end of each transaction I wrote down the gender of my customer and whether or not they politely responded to my saying goodbye in a polite manner.

2) Data Collection

a) Data Collection Survey Form

Is There an Association Among Etiquette and Gender? (Data Collection Survey Form)	
Date: # Hours Worked:	
PASS (polite)	FAIL (not polite)
(list of customers by gender)	(list of customers by gender)

Figure 1

b) Simple Random Sample (SRS)

For my test, the quintessential SRS would have been at a store where 50% of the customers are male and the other half are female; additionally, to achieve a true SRS, I would need to ring up every customer myself at the cash register. Unfortunately, Hallmark has more females than males shopping there, and my co-workers and I take turns at the register. Granted, I randomly went to the cash register, and therefore had random customers become a part of my survey; however, I did not achieve a *strict* SRS.

c) Sampling Method

At the end of each transaction I would say to each one of my customers, verbatim,

"Thank you; have a great day!"

- The customer **passed** if he or she said:
 - *"Thanks."*
 - *"You too."*
 - *a form of either of those polite verbal exits*
- The customer **failed** if he or she said:
 - *"Bye."*
 - *"Okay."*
 - *"Right."*
 - *"Yeah."*
 - *no response at all*

3) Data Report

a) Data and Statistics Summary

Is There an Association Among Etiquette and Gender?				
(Data Day-by-Day Report)				
Date & # Hours Worked	Males Passed	Males Failed	Females Passed	Females Failed
05/06/09 (5 hrs.)	4	2	8	8
05/10/09 (7 hrs.)	8	7	3	21
05/17/09 (7 hrs.)	5	1	8	7
05/18/09 (5 hrs.)	3	2	5	8

Figure 2

Is There an Association Among Etiquette and Gender?			
(Data Report)			
	Male	Female	Total
Passed	20	24	44
Failed	12	44	56
Total	32	68	100

Figure 3

b) Graphical Displays

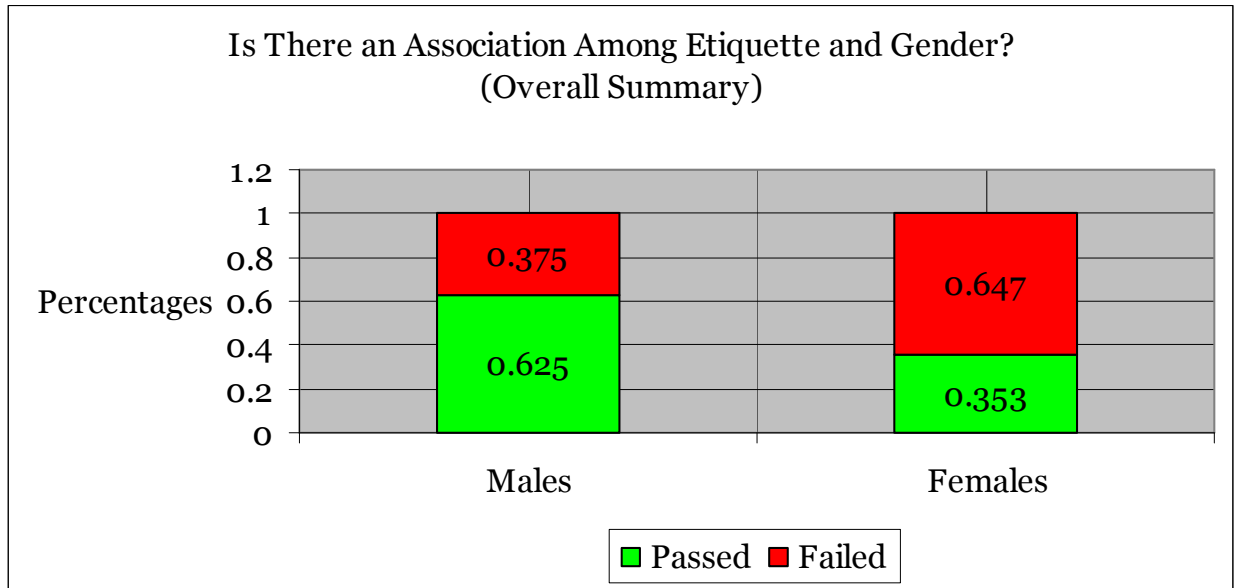


Figure 4

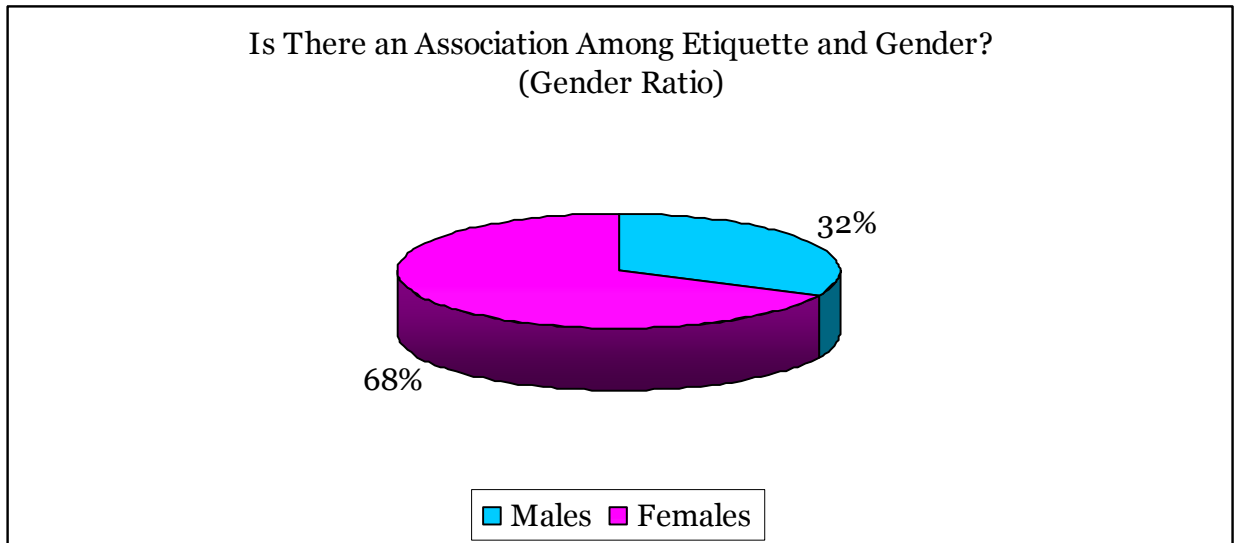


Figure 5

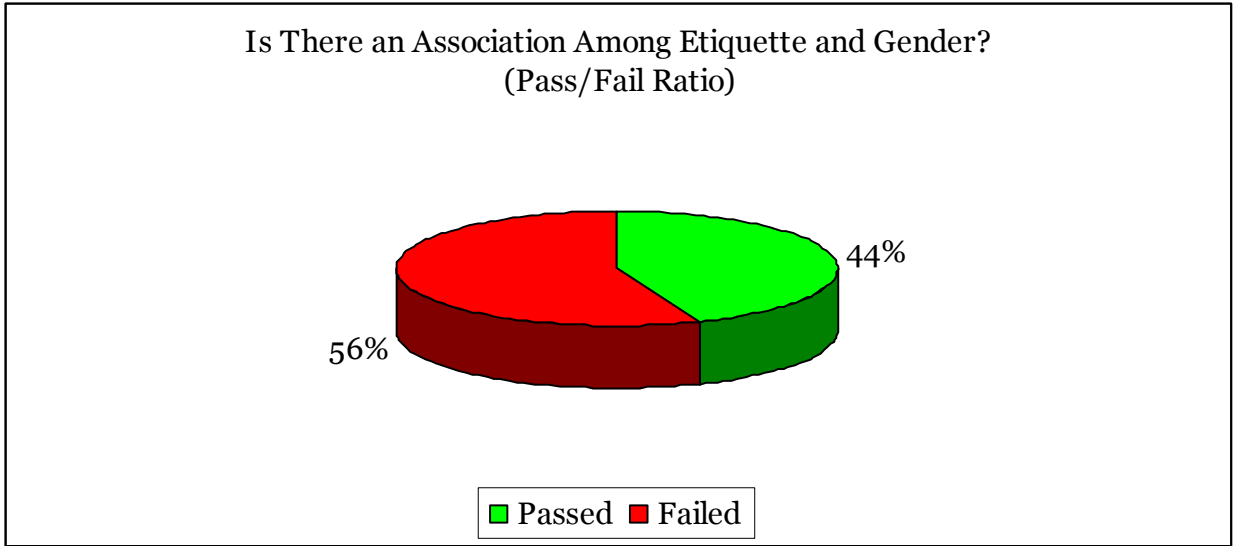


Figure 6

c) Graph Interpretations

Figure 4, the overall summary bar graph, shows that about 63% of the males passed, while only about 35% of the females passed. It could be concluded that my test displays males as more polite; however, Figure 5, the gender ratio pie chart, explicitly shows that there was an overwhelming majority of female customers, thus not allowing the ability to see which gender had more etiquette (there would need to be an equal amount of each gender surveyed to do this). Figure 6, the final pie chart, shows the ratio of passing and failing customers, revealing that over the four days only 44% passed. It's a shame that there weren't at least 50% passing; this survey displays that the majority of the population do not have manners when saying goodbye to a sales associate!

4) Tested Results

a) Chi-Squared (χ^2) Test (Independence)

	Male		Female	
	Observed	Expected	Observed	Expected
Passed	20	14.08	24	29.92
Failed	12	17.92	44	38.08

Figure 7

b) χ^2 -Test Hypotheses

- **H_o**: There is no association among etiquette and gender.
- **H_a**: There is an association among etiquette and gender.

c) χ^2 -Test Assumptions

- SRS X
- all expected counts ≥ 1 ✓
- no more than 20% of expected counts ≤ 5 ✓

PROCEED WITH CAUTION!

d) χ^2 -Test Test Statistic, Degrees of Freedom, P-Value, and Significance Level

[A] =	20	24
	12	44
[B] =	14.08	29.92
	17.92	38.08

Calculator (TI-84 Plus Silver Edition)

χ^2 -Test

- Observed: [A]
- Expected: [B]
- Draw

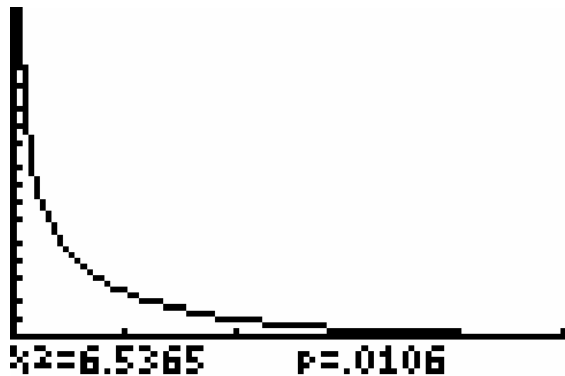


Figure 8

$$X^2 \left[\frac{\sum (O - E)^2}{E} \right] = 6.5365$$

$$\text{degrees of freedom } [(r-1)(c-1)] = 1$$

$$\text{P-Value} = 0.0106$$

$$\alpha = 0.05$$

e) χ^2 -Test Interpretations

- P-Value $< \alpha$
- Reject H_0

It can be concluded that there is an association among etiquette and gender because the P-Value (0.0106) is less than the significance level (0.05).

5) Overall Conclusion

a) Analysis of Results

The χ^2 -Test of my survey shows that there is an association among etiquette and gender. This means that the customers I came across at Abbey's Hallmark proved that their gender made a difference in whether or not they were going to exit politely or rudely. However, it must be remembered that not all of the assumptions were met (I did not achieve a strict SRS), so I needed to "proceed with caution." It is certainly unfortunate that 56% of my customers were impolite; however, it could have been a lot worse. I guess not everyone was brought up to have etiquette with people like I was.

b) Biases and Errors

There were several biases that could have affected this survey and test. As previously mentioned, Hallmark predominantly attracts female customers, so unfortunately there was a 68 to 32 ratio in favor of female customers. If it had been a 1 to 1 ratio, it would allow us to see which gender was more polite overall. Additionally, I worked on May 10, 2009, which was Mother's Day. We had many more customers on this day, because people were buying last-minute gifts for their mother. This led to

ruder customers because they were under stress, which easily could have affected the results of the survey and the test.

As for any problems encountered, I really did not have any. It would have been a personal problem for me if the customers had noticed I was writing something down about them, but no one witnessed me doing the survey because I waited until they left the cash register. My manager did happen to see my survey sheet and inquired what it was about to make sure it wasn't disrupting the work atmosphere or my focus; when I told her about my AP Statistics project she was intrigued and had no problem with it. 😊