Improving Koreana's Market Strategy

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Introduction:

The restaurant and hospitality industries, while volatile, have proven staple to worldwide cultures and capitalism. From “mom-and-pop” shops to global brands like McDonald’s, restaurants, cafes, and diners are painted across our world’s cities. As millennials begin to jump out of their nests and spread their wings, they are eating out at unprecedentedly high rates[1]. In 2016 the average household spent an average of $3,154 annually on dining out, or about 5% of all annual expenditures. This rate has increased from $2,678 spent annually on dining out in 2012[2]. It would be modest to expect this to increase steadily over the next decade as we have seen so far in the 21st century. There is evidently no shortage of funds being poured into the restaurant industry. This forces us to ponder why restaurants still have such a high relative turnover rate in comparison to other consumer industries. While many falsely claim that “90% of restaurants fail in the first year”, the figure is much closer to 26%, according to a study conducted at Cornell University[3]. It was reported, however, that 60% of restaurants fail within the first three full years of operation and 80% fail within the first five. Additionally, they segmented by cuisine and found that 50% of Asian restaurants fail within the first 3 years.

In University City, Philadelphia where the majority of residents are young millenials, the restaurant industry is massive. On Penn’s campus alone, between

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[1] Tulp, S. (2017)
[2] Consumer Expenditures in 2016 : BLS Reports. (2018)
[3] Parsa et al. (2005)

Chestnut and Spruce and 33rd and 40th, there are 24 eating establishments. That being said, young millenials are extremely price sensitive. Small changes in price and location can easily shift students' expenditures while dining-out. University City also presents a unique case study in its density of restaurants. On any given block there are numerous restaurants often side by side. On the southeast corner of the intersection of 38th and spruce there are four eating establishments directly adjacent. On the northeast corner of 40th and Walnut there are five. One of these properties has changed ownership four times over the past year and a half as a result of low revenue. This could in part be explained by the .99 correlation between restaurant failure and density found by the Cornell study introduced above[4]. Even University City's unique demographic composition of high spenders cannot save restaurants from turning over. In light of this we must ask how has Koreana, a small Korean restaurant located on a parking lot outlet on 38th and Chestnut, maintained its success for 12 years. Through a combination of consumer loyalty and word of mouth Koreana has remained a significant piece of University City's Asian dining scene.

Background:

Koreana's antiquated style, foreign location, and virtual lack of online presence adds new challenges to the restaurant moving forward. Its affordable yet delectable variety of food continues to draw students back to the restaurant. Despite making no efforts to advertise for the secluded restaurant, Koreana has thrived in spite of

[4] Parsa et al. (2005)

competition. U-Town, located on the northwest corner of 40th and Sansom, offers a similar variety of food at a higher quality. Each has managed to thrive for an extended period of time as independent establishments as a result of occupying different segments in the industry. U-Town is a sit-down restaurant with full waiter service, higher quality ingredients, where patrons can expect to pay $15 to $20 for a meal. At Koreana, one orders at the countertop where orders rarely tally over $13, then food is delivered to your table. After eating there is an expectation to partly clean up after yourself and bring the tray to a central location. Due to these innate differences in style, price points, and time spent dining, U-Town and Koreana represent different niches in the market. Consumers can dine at both without feeling fatigue from a similar dining style.

The nearby opening of Bonchon on 39th and Chestnut represents novel problems for Koreana. Bonchon is a South Korean fried-chicken restaurant franchise. With 282 stores worldwide and 88 locations nationally, Bonchon is a unique competitor in the University City Korean dining scene. While they focus their menus on their fried chicken servings, they offer many similar items as main servings as Koreana. In fact, from our in-depth interview with the married owners of Koreana, Emma and Mike, it was revealed that Bonchon and Koreana use the same sauce for their chicken. Bonchon offers take out as well as full sit down service. The restaurant interior, like the food presentation, is modern and sleek. Furthermore, Bonchon's status as a global brand and chain grants it greater flexibility in price and setting. For example, they have the ability to run bigger loyalty programs, fill larger orders, and stay open later[5]. In trying

[5] Olmsted, L. (2015)

times, Bonchon is also more likely to succeed due to its greater capital. Bonchon's international status and similarity and proximity to Koreana presents a unique threat to the beloved University City restaurant. This, however, was not a sentiment shared by the owners of Koreana.

They have experienced adversity and other competition and claim that there is often an initial downtick in customers, then everyone returns to the establishment they know and love. The question we must ask here, however, is whether the emergence of Bonchon is a challenge bigger than Koreana has faced before. Can Mike and Emma maintain a successful business without pumping additional money into advertising? Do Bonchon and Koreana operate in different enough segments to the point where competition will be practically irrelevant? In this project we seek to provide accurate recommendations to the owners of Koreana in order to thwart the competition brought about by the emergence of Bonchon in University City.

Goal:

How can Koreana adjust its strategy to remain competitive as Bonchon enters the market?

Methodology and Results:

We ultimately aimed to determine what attributes Koreana excelled in as well as the attributes its competitor U-Town and future competitor Bonchon excelled in and how

important these attributes were to their shared customer base. For this, we needed to understand who Koreana's customers were and what people thought of Koreana relative to its competing options on campus.

Throughout the course of this study, we have assumed that:

- Koreana, Bonchon, and U-Town all share the same target market (Korean-food-enjoying students).
- Our samples are representative of this demographic.
- Korean-food-enjoying students are familiar with all of Koreana, U-Town, and Bonchon.

Our approach was as follows.

I. Gather secondary data. We looked at online reviews of Koreana to identify potential pain points consumers may have experienced with the restaurant.

II. Speak with Koreana's management. We arranged an in-person interview with Koreana's owners Emma and Mike to discuss their current marketing strategy as well as to gain some insight into the quantity of customers Koreana receives.

III. Design and administer preliminary survey. We designed a survey to verify the pain points identified through our secondary data collection, get a general sense of where Koreana stood in the market relative to its competitors in the Korean restaurant space in University City, and assess overall perception of the restaurant.

IV. Conduct focus group. We held a focus group to determine what attributes of a restaurant actually mattered to restaurant customers.

V(a). Design and administer attribute survey. We designed another survey to figure out where Koreana was positioned relative to its competitors with respect to the attributes discerned from the focus group.

V(b). Run factor analysis. We ran factor analysis on the results of the attribute survey to figure out what factors are most important when choosing between Korean options on campus.

V(c). Run regression conjoint analysis. We ran a conjoint analysis on data collected from a survey sent to the participants of our focus group, seeking to understand the preferences of each individual through relative importance to drive our recommendations.

I. Gather secondary data (see Appendix Q)

Since Koreana can be considered a player in the restaurant space, the secondary data sources we considered were first and foremost related to restaurants. We analyzed a set of 20 Yelp reviews with Koreana as the target restaurant.

From this, we found that while consumer perception towards Koreana tended to be generally positive, some reviewers labeled it “hard to find”, stating that it “took [them] a while to find this place”, even though they then went on to praise the food quality. Additionally, some reviewers raised concerns regarding authenticity, one particular reviewer stating that he “[preferred] UTown over Koreana” and that “Koreana [was] less authentic”.

II. Speak with Koreana's management

Emma and Mike, Koreana's owners, made it very apparent in our in-depth interview that they do not view Bonchon as a threat. Beyond providing us with useful life advice, Emma elucidated her journey to manager of Koreana. Her and Mike met while working in the cardiology department in a hospital. They elected to both quit their then current positions and open a pizza shop. The pizza restaurant gained recognition and they ultimately sold it for a great profit about 6 years after purchasing it. With a taste for the food industry, Emma and Mike elected to re-enter the market with something that was culinarily a little closer to home. They purchased Koreana from a very old Korean woman who had been running the small storefront for several years. The owner was on her last legs and was desperate to get the underperforming restaurant out of her hands. At the time the rundown restaurant had a single counter and a single table. When the newly managed Koreana reopened it had 60 loyal customers. 12 years later, Emma and Mike now estimate that the branch on 38th and Chestnut receives around 200-300 customers a day. They also recently opened a branch in Center City with a slightly different menu and interior as a result of different customer base. The majority of the Center City customers are members of the working class while those in the University City location are **predominantly students.** It is evident that Mike and Emma are seasoned restaurant owners with more than a decade of experience under their belts, yet when asked about Bonchon they insisted they were not worried in the slightest.

III(a). Preliminary survey design

In order to verify whether or not the sentiments stated in reviews represented a general consensus, the following survey was conducted (see also: Appendix A).

Have you ever eaten at Koreana?

- *Yes / No*

If yes, approximately how often do you eat there per month?

- *(Open-ended)*

How did you first find out about Koreana?

- *Stumbled upon the restaurant / Internet recommendation / Recommendation by a friend*

*Rate your agreement with the following statement: "I could have found Koreana on my own without any prior knowledge of its location."**

- *Strongly disagree / Disagree / Neutral / Agree / Strongly agree*

*Please select the option that most closely aligns with your opinion on Koreana overall.**

- *I really like / Like / Feel neutral towards / Dislike / Strongly dislike Koreana*

*Rate Koreana's food compared to other restaurants in University City.**

- *Worst in the area / worse than average / average / better than average / best in the area*

Have you experienced bad service of any kind (rude employees, long wait times, receiving the wrong order) at Koreana?

- *Yes / No*

*How do you perceive the value of a meal at Koreana?**

- *Great bargain / bargain / fairly priced / slightly overpriced / very overpriced*

Approximately how many meals do you get from restaurants on campus (versus dining halls, cooking, etc.) per week?

- *(Open-ended)*

What year are you?

- *Freshman / Sophomore / Junior / Senior*

** denotes perception questions*

In order to weed out respondents who were not engaged, we alternated the order of the perception questions between worst-best and best-worst. This allowed us to remove respondents who were submitting contradictory answers from consideration.

III(b). Preliminary survey results (see Appendix L for chart)

We gathered 57 total responses, and culled 10 of them due to data-quality issues: not following the ranking system properly or submitting contradictory responses. We coded the results of the perception questions from 1-5 where 1 represented the "most negative" option, 3 the "neutral" option, and 5 the "most positive" option (relative to the question being asked). From the 47 remaining responses, we computed the following metrics.*

	Both	Underclassmen	Upperclassmen
Ease of locating (1-5) [B]	2.67*	2.13*	3.10
Overall opinion (1-5) [C]	4.2*	4.25	4.20
Perception of food (1-5) [D]	3.83*	3.63	4.00
Perception of prices (1-5) [E]	3.06	2.88	3.20
*Percentage of external meals eaten at Koreana** [F]*	6.4%	5.1%	7.5%

[LETTER]: see Appendix LETTER for significance calculations

** : statistically significant at the .05 level*

*** : the percentage of restaurant meals eaten at Koreana, equivalent to Meals eaten at Koreana / Meals eaten out for each respondent. There are ~24 restaurants within the vicinity (Spruce St to Chestnut St, from 33rd to 40th) so the expected value of this for any given restaurant is 4.17%.*

We observed that Koreana is strong in food, but weak in ease of locating. It is also average with respect to percentage of external meals and price (see Appendix B-E for appropriate calculations).

IV. Focus group

While the data from our first survey had some interesting implications, we ultimately decided we needed a more-holistic view of the factors that affected consumer preference for Korean restaurants at Penn so as to run more detailed analyses. In order to attain this, we conducted a focus group consisting of 2 seniors, 3 juniors, 2 sophomores, and 2 freshmen. We asked the following questions.

Primer Questions:

- *How often do you eat out at restaurants per week?*
    - *Breakfast v. lunch v. dinner*
- *What characteristics do you look for in a restaurant when determining whether or not to eat there?*
    - *(Follow-ups based on responses)*
        - *When you eat out, what is the average price point you are looking to spend?*
            - *Weekday spending*
            - *Weekend spending*
        - *How far do you tend to travel when eating out?*
        - *To what extent is speed of attaining food an important factor in deciding where to eat?*

Non-Primer Questions:

- *Who has heard of U-Town or Bonchon? Who has eaten at either?*
- *Who here has heard of Koreana? Who has eaten at Koreana?*
- *What is your favorite aspect about Koreana?*
- *What do you wish Koreana did better?*
- *At a first glance, what are your thoughts about the restaurant?*
    - *Quality of ingredients*
    - *Price*

    - *Authenticity*
- *How did you first learn about Koreana?*

From this focus group, we were able to affirm that the main factors that affected preference of a restaurant at Penn were health, taste, price, service, authenticity, and ambience.

V(a). Attribute survey

Using the results gleaned from the focus group, we prepared the following survey that aimed to drill-down further into the consumer perception of the three Korean options on Penn's campus regarding these attributes.

Rate your perception of Koreana / U-Town / Bonchon on a scale of 1-5 (with 5 being the most satisfied, 1 being least satisfied) for the following attributes.

1. *Health*
2. *Taste*
3. *Price*
4. *Service*
5. *Authenticity*
6. *Ambience*

V(b). Attribute survey results (see Appendix L for chart)

Factor Analysis: We performed factor analysis on the previously mentioned survey data collected from 34 participants to determine what factors customers consider when choosing among the local Korean restaurants and also to create perceptual maps to visualize how customers perceive Koreana relative to other Korean restaurants. We also wanted to narrow down our survey questions into key factors so that we could provide a more focused and actionable summary of the data to our client. With this

information, we can determine how Koreana can better position itself along the discovered factors so that it can differentiate itself from the other Korean restaurants and potentially become more competitive (with respect to market share).

Factor Analysis Results: Upon creating a scatterplot from the survey data in JMP, we found that using three factors or more would encompass more than 78% of the inputted data, which meets the threshold of 65% (see Appendix H). Two factors did not meet the threshold of 65% as it encompassed 64.7% of the survey data. However, three factors covered 78.63% and so we started with this. This factorization had final communality estimates all well above 50%. Furthermore, the questions segmented into discernible factors. The factors we determined were price, quality, and experience. Experience includes the attributes/questions of authenticity, service, and ambience. Quality includes taste and health, and price included just the question on price. We also tried 4 factors; however, the authenticity question could not be distinguished between Factors 1 and 2 as its value in Factor 1 was .727 and .482 in Factor 2, which is a .245 difference which we do not believe to be disparate enough based on the benchmark difference of 0.3. Furthermore with four factors, it was not possible to label the factors in a cogent manner. Thus, we concluded on three factors on which customers choose among the local Korean restaurants: price, quality, and experience.

Perceptual Maps: From the results of the factor analysis, we developed 2D perceptual maps for each pair of the three factors. See Appendix H to view the perceptual maps. Looking at the Quality vs. Experience map, we see that Bonchon is considered higher quality than both U-Town and Koreana, although since the range of the Quality

dimension is 0.25, this difference is likely minimal. However, U-Town is perceived to have a much more satisfying experience than both Koreana and Bonchon. U-Town has a relative score of 0.45 on this dimension whereas Koreana and Bonchon have relative scores around -0.25. Turning to the Quality vs. Price map, we see the same results as mentioned previously for the Quality dimension. On the Price dimension, customers are very satisfied with Koreana's prices (relative score = 0.4) but not very satisfied with U-Town's prices (relative score = -0.4). Bonchon is in between with a score of 0. Overall, we see that Koreana is perceived as having a good price when compared to U-Town and Bonchon; however, it is outperformed in experience by U-Town and in quality by Bonchon.

V(c). Conjoint Analysis

Conjoint Analysis: We also performed a regression conjoint analysis, collected through a survey given to the participants of our focus group (See Appendix I). The goal of this analysis was to determine what characteristics of restaurants are most important to consumers, and to compare this information with other consumers' perceptions of Koreana from the factor analysis. The conjoint included three factors - those determined from the factor analysis - with varying levels, displayed in tabular form below.

Quality of Ingredients	**Price**	**Experience**
L1: High	L1: Overpriced	L1: Contemporary
L2: Med	L2: Fairly priced	L2: Authentic
L3: Low	L3: Underpriced	

From these three factors, we have a total of 18 profiles for evaluation. After conducting a JMP DOE analysis, we concluded that all 18 profiles were indeed necessary (See Appendix J). This prompted us to evaluate the practical significance of each profile. In this evaluation, we, after questioning and confirmation from our focus group, concluded that certain profiles do not exist in the area of Penn's campus, and therefore should not be included as potential profiles for selection in the survey. We quickly realized, given the interpretive nature of our attributes, that we could not truthfully vet any profiles in order to allow for interpretation (See appendix K).

To run our regression conjoint, we asked individuals to rate each profile on a scale from 1 to 10, with one being 'horrible' and ten being 'outstanding,' in order to determine their relative importance (See Appendix M). All nine of the participants from the focus group responded to the survey, but we had to vet some of their responses. One respondent gave six consecutive responses with the same number, indicating a quick response, so the response was removed from our analysis. Also, one participant's responses were patterned, again indicating inconsistency in belief and quickness bias, so this response was vetted as well. We now have only seven valid responses.

In the analysis, we created a regression for each of the seven respondents. These models included an intercept and five dummies: Quality_high, Quality_med, Price_low, Price_med, and Experience_full. The resulting regressions were all significant (See Appendix N). From these regressions, we determined the relative

importance of each attribute to each respondent and averaged them to get a sense of general trends in opinion. (See Appendix O)

Conjoint Results: We determined each individual's relative importance of attributes statistics. To get a sense of this small hypothetical market, we averaged each attribute's relative importance across respondents. From this analysis, we determined that Price was the most important attribute at 40.1%, with Quality of Ingredients second at 39.3% and Experience a distant third at 20.6% It is evident from this analysis that food and money are the primary concerns of Penn students. According to our factor analysis, Koreana was seen as the best value in terms of price (See Appendix P). Additionally, while its quality was lower than that of Bonchon, Koreana was seen as similar quality to U-Town, while being seen as more underpriced. From this we can infer an increase in perceived quality of Koreana would distinguish it as a price leader in the University City Korean food space.

Recommendations:

In conclusion, there are a number of strategies Koreana should consider adopting in order to avoid losing market share to Bonchon when it enters the market.

1. Improve awareness of Koreana's location, especially for underclassmen. From our preliminary survey, it was found that Koreana's ease-of-location is perceived negatively, especially for underclassmen. For our entire sample, only 6.4% of the students learned of Koreana through stumbling upon it, whereas everyone else surveyed learned of Koreana through recommendation by a friend. This could be

accomplished by small-scale marketing campaigns conducted at the beginning of the school-year: for example, offering a small discount for upperclassmen if they bring an underclassman to Koreana or posting flyers around campus.

2. Improve Koreana's customer experience. Based on the perceptual maps created from our factor analysis, we saw that Koreana's customer experience was poor, especially when compared to U-Town. The customer experience factor was comprised of ambience, authenticity, and service. Based on Koreana and U-Town's menus and physical spaces, we found that the two restaurants have similar ambience and levels of authenticity (as they both serve similar dishes). This leads us to believe that Koreana's service must be suboptimal when compared to U-Town. This proposition is confirmed by some of our focus group interviewees and online Yelp reviewers, who acknowledged issues with Koreana's service including long order wait times, slow waiters, and frequent incorrect order fulfillments (See Appendix Q). To fix these issues, Koreana will need to place higher emphasis on service quality. This may require hiring more or better staff and undertaking more intensive staff training. If Koreana is able to improve their service, they could stand to steal market share from U-Town in an attempt to reduce the dilution of their market share once Bonchon arrives.

3. Portray Koreana as a bargain. Factor Analysis detailed Koreana as above average in price satsifaction and slightly below average in quality and experience. Koreana should take measures to appeal to consumers through the lens of a bargain, which would further differentiate it from the other two local Korean options in University City. By simply pairing a drink -- bubble tea, juice -- with a meal, and offering a deal on

price, students seeking low-cost meals would become intrigued by Koreana and its offerings. Additionally, promotions could be put up around the store and on their website to promote such campaigns. A risk associated with this, however, is that doing so could directly cut into their profit margins. Furthermore, increasing price in order to maintain margins, even if the end result is still discounted from the original, could also drive customers away.

Limitations:

Despite the use of various statistical and marketing tactics to determine the future profitability of Koreana, we recognize that our study has limitations. One of our main limitations came from the lack of data points for our Conjoint Analysis. We chose not to include questions related to a conjoint analysis in our Consumer Preferences survey because we felt that respondents would not be as likely to fill out a survey which would have included over 15 distinct comparisons. Instead, we drew on the findings of our focus group to determine the profiles for the conjoint analysis. While this is not as statistically sound, we felt confident that we could develop jointly exhaustive profiles which capture the various restaurant qualities. In addition, we conducted a multiple regression conjoint analysis which coded the various attributes and levels as dummy variables to determine the part-worth importances of different aspects of restaurants.

We also had some issues with data collection, which required vetting to solve. We recognized that there were some speeders and pattern-makers. For example, the same respondent answered “I really like Koreana” when asked about her opinion on

Koreana, and then immediately answered “Worst in the area” when asked about Koreana compared to other restaurants in the area. We eliminated this respondent, along with others who demonstrated a contradictory opinion. This vetting lead to our group relying on a smaller sample size than initially anticipated, which certainly limited the statistical validity of our results.

In addition, we had to vet out additional responses due to a lack of clarity in the ranking system that we presented to the respondents. We asked respondents to rank five restaurants in order of preference, but we found multiple responses which had two or more restaurants ranked the same. We assume that the respondents misunderstood the wording of the survey, and simply ranked each restaurant on a scale of 1-5 independent of one another. Again, these erroneous responses had to be eliminated reducing our sample size.

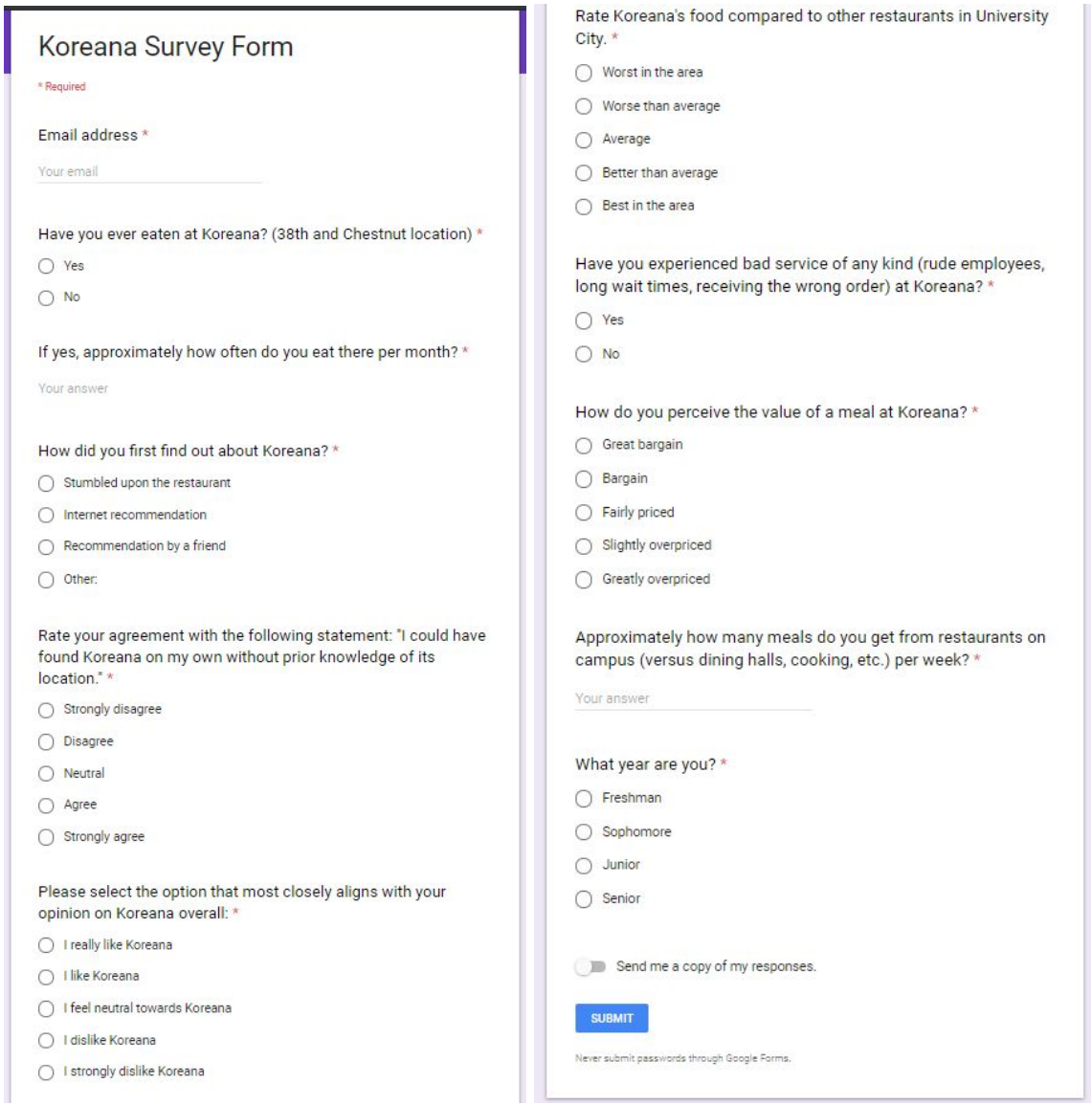
Another limitation we faced initially was a substantial age bias. Our group is comprised of four juniors and one senior, meaning that the respondents largely comprised the same class years. The sample was critically lacking in freshman respondents, which is problematic because one of the main questions we are investigating is how Koreana can market itself better to the general Penn population, as opposed to relying on word-of-mouth. Freshmen are the least likely to have heard of Koreana since they have only been on Penn’s campus for four months, which is why their input would have been very valuable. Our focus group aimed to resolve this issue by ensuring that we had an equal representation of class years, including freshmen.

A non-methodological limitation we faced was that even though we have assumed that our target demographic for data collection (Korean-food-enjoying students) were familiar with Koreana, U-Town, and Bonchon (and vetted this assumption with survey questions), it may very well be the case that students would be more familiar with Koreana and U-Town than Bonchon, as Bonchon has yet to enter campus. Thus, consensus could have been skewed in favor of these more well-known options.

A further non-methodological limitation we faced was that we were unable to run studies relating to Koreana's existing marketing material. After speaking to Emma, one of the owners, we came to the conclusion that nearly all of Koreana's customer stream comes from word-of-mouth rather than marketing materials. So, we were unable to run A/B tests, amongst other data collection techniques to make conclusions about where Koreana's marketing strategy was lacking (because there was no marketing strategy to begin with).

Appendix

A(i). Preliminary Survey



Koreana Survey Form

* Required

Email address *

Your email

Have you ever eaten at Koreana? (38th and Chestnut location) *

- Yes
- No

If yes, approximately how often do you eat there per month? *

Your answer

How did you first find out about Koreana? *

- Stumbled upon the restaurant
- Internet recommendation
- Recommendation by a friend
- Other:

Rate your agreement with the following statement: "I could have found Koreana on my own without prior knowledge of its location." *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

Please select the option that most closely aligns with your opinion on Koreana overall: *

- I really like Koreana
- I like Koreana
- I feel neutral towards Koreana
- I dislike Koreana
- I strongly dislike Koreana

Rate Koreana's food compared to other restaurants in University City. *

- Worst in the area
- Worse than average
- Average
- Better than average
- Best in the area

Have you experienced bad service of any kind (rude employees, long wait times, receiving the wrong order) at Koreana? *

- Yes
- No

How do you perceive the value of a meal at Koreana? *

- Great bargain
- Bargain
- Fairly priced
- Slightly overpriced
- Greatly overpriced

Approximately how many meals do you get from restaurants on campus (versus dining halls, cooking, etc.) per week? *

Your answer

What year are you? *

- Freshman
- Sophomore
- Junior
- Senior

Send me a copy of my responses.

SUBMIT

Never submit passwords through Google Forms.

A(ii). Processed Preliminary Survey Pivot Table (post-coding)

Row Labels	Ease of Locating (K)	Perception (K)	Perception (K food)	Perception (K prices)	% of external meals at (K)
Underclassmen	**2.13**	**4.25**	**3.63**	**2.88**	**0.0508**
Freshman	1.00	5.00	4.00	5.00	0.0000
Sophomore	2.29	4.14	3.57	2.57	0.0580
Upperclassmen	**3.10**	**4.20**	**4.00**	**3.20**	**0.0750**
Junior	3.00	4.50	4.33	3.67	0.0938
Senior	3.25	3.75	3.50	2.50	0.0469
Grand Total	**2.67**	**4.22**	**3.83**	**3.06**	**0.0642**

B(i). Ease of Locating - Statistically significant at σ = .05

H_0: $\mu_0 = \mu$
H_1: $\mu_0 \neq \mu$, where μ_0 is the expected value mean and μ is the sample mean.

The critical value for a 2-tailed T test with σ = .05 is **2.013.** So, if the test statistic is greater than 2.013, we can reject the null hypothesis.

The test statistic can be calculated by $t = (\mu_0 - \mu)/(s/\sqrt{n})$. So, $t = (2.67 - 3)/(1.05/\sqrt{47})$, which means that **t = 2.155. Since the T statistic is greater than the critical value, we can reject the null hypothesis at a significance level of .05.**

B(ii). Ease of Locating (Underclassmen) - Statistically significant at σ = .05

H_0: $\mu_0 = \mu$
H_1: $\mu_0 \neq \mu$, where μ_0 is the expected value mean and μ is the sample mean.

The critical value for a 2-tailed T test with σ = .05 is **2.013.** So, if the test statistic is greater than 2.013, we can reject the null hypothesis.

The test statistic can be calculated by $t = (\mu_0 - \mu)/(s/\sqrt{n})$. So, $t = (2.13 - 3)/(0.99/\sqrt{12})$, which means that **t = 3.044. Since the T statistic is greater than**

the critical value, we can reject the null hypothesis at a significance level of .05.

C. General Perception - Statistically significant at σ = .05

H_0: $\mu_0 = \mu$
H_1: $\mu_0 \neq \mu$, where μ_0 is the expected value mean and μ is the sample mean.

The critical value for a 2-tailed T test with σ = .05 is **2.013.** So, if the test statistic is greater than 2.013, we can reject the null hypothesis.

The test statistic can be calculated by $t = (\mu_0 - \mu)/(s/\sqrt{n})$. So, $t = (4.2 - 3)/(.79/\sqrt{47})$, which means that **t = 10.414. Since the T statistic is greater than the critical value, we can reject the null hypothesis at a significance level of .05.**

D. Perception of Food - Statistically significant at σ = .05

H_0: $\mu_0 = \mu$
H_1: $\mu_0 \neq \mu$, where μ_0 is the expected value mean and μ is the sample mean.

The critical value for a 2-tailed T test with σ = .05 is **2.013.** So, if the test statistic is greater than 2.013, we can reject the null hypothesis.

The test statistic can be calculated by $t = (\mu_0 - \mu)/(s/\sqrt{n})$. So, $t = (3.83 - 3)/(.64/\sqrt{47})$, which means that **t = 8.891. Since the T statistic is greater than the critical value, we can reject the null hypothesis at a significance level of .05.**

E. Perception of Prices - not statistically significant at σ = .05

H_0: $\mu_0 = \mu$
H_1: $\mu_0 \neq \mu$, where μ_0 is the expected value mean and μ is the sample mean.

The critical value for a 2-tailed T test with σ = .05 is **2.013.** So, if the test statistic is greater than 2.013, we can reject the null hypothesis.

The test statistic can be calculated by $t = (\mu_0 - \mu)/(s/\sqrt{n})$. So, $t = (3.06 - 3)/(.79/\sqrt{47})$, which means that **$t = 0.521$. Since the T statistic is less than the critical value, we cannot reject the null hypothesis at a significance level of .05.**

F. Percentage of External Meals at Koreana - not statistically significant at σ = .05

H_0: $\mu_0 = \mu$
H_1: $\mu_0 \leq \mu$, where μ_0 is the expected value mean and μ is the sample mean.

The critical value for a right 1-tailed T test with σ = .05 is **1.679.** So, if the test statistic is greater than 1.679, we can reject the null hypothesis.

The test statistic can be calculated by $t = (\mu_0 - \mu)/(s/\sqrt{n})$. So, $t = (.064 - .0416)/(.146/\sqrt{47})$, which means that **$t = 1.052$. Since the T statistic is less than the critical value, we cannot reject the null hypothesis at a significance level of .05.**

G. Attribute Survey

Korean Restaurant Preferences

Please complete this survey about your perceptions on the following local Korean restaurants.

* Required

Email address *

Your email

Are you familiar with Koreana, Bonchon, and UTown? *

- Yes
- No

NEXT

Korean Restaurant Preferences

* Required

Korean Restaurant Perceptions

Rate your perception of Bonchon on a scale of 1-5 (with 5 being the most satisfied, 1 being least satisfied) for the following attributes: *

	1	2	3	4	5
Health	○	○	○	○	○
Taste	○	○	○	○	○
Price	○	○	○	○	○
Service	○	○	○	○	○
Authenticity	○	○	○	○	○
Ambience	○	○	○	○	○

Rate your perception of Koreana on a scale of 1-5 (with 5 being the most satisfied, 1 being least satisfied) for the following attributes: *

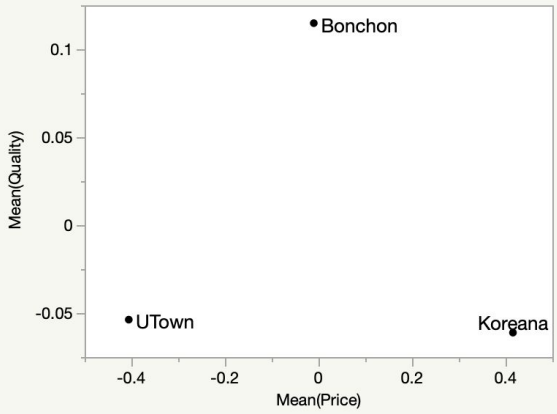
	1	2	3	4	5
Health	○	○	○	○	○
Taste	○	○	○	○	○
Price	○	○	○	○	○
Service	○	○	○	○	○
Authenticity	○	○	○	○	○
Ambience	○	○	○	○	○

Rate your perception of UTown on a scale of 1-5 (with 5 being the most satisfied, 1 being least satisfied) for the following attributes: *

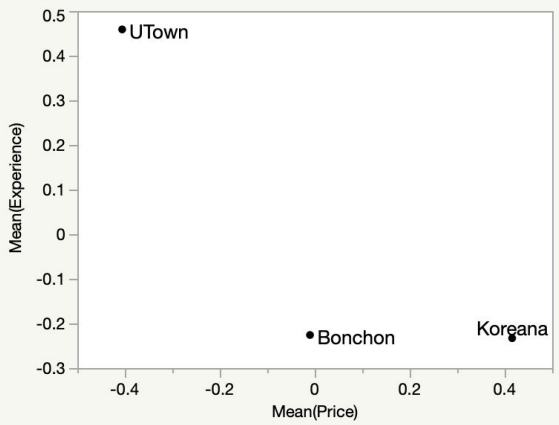
	1	2	3	4	5
Health	○	○	○	○	○
Taste	○	○	○	○	○
Price	○	○	○	○	○
Service	○	○	○	○	○
Authenticity	○	○	○	○	○
Ambience	○	○	○	○	○

H. Factor Analysis Results + Perceptual Maps

Overlay Plot



Overlay Plot



Principal Components

Number	Eigenvalue	Percent	20 40 60 80	Cum Percent
1	2.5847	43.078		43.078
2	1.2951	21.584		64.662
3	0.8461	14.101		78.763
4	0.6185	10.309		89.072
5	0.3397	5.662		94.734
6	0.3160	5.266		100.000

Factor Analysis: Principal Component / Varimax

Unrotated Factor Loading

Rotation Matrix

Final Communality Estimates

V1:	0.74949
V2:	0.77974
V3:	0.94303
V4:	0.77782
V5:	0.71332
V6:	0.76241

Std Score Coefs

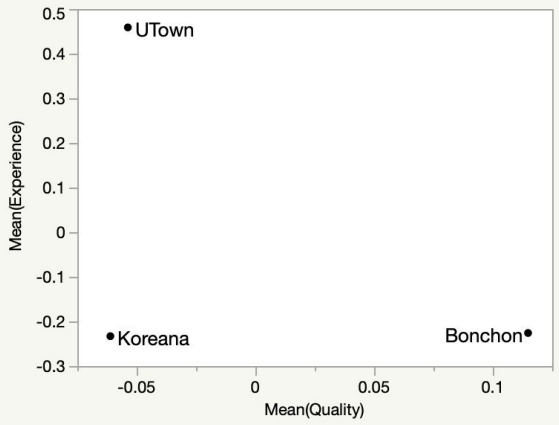
Variance Explained by Each Factor

Rotated Factor Loading

	Factor 1	Factor 2	Factor 3
V1:	0.186676	0.790265	-0.300207
V2:	0.126827	0.856718	0.172295
V3:	0.146150	-0.039411	0.959226
V4:	0.867723	0.086666	0.131794
V5:	0.798947	0.245312	0.121763
V6:	0.867263	0.100736	-0.010713

Factor Loading Plot

Overlay Plot



I. Conjoint Analysis Survey

Restaurant Preferences Survey

Please rate each of the following profiles on a scale from 1 (undesirable, would not eat there) to 10 (desirable, would eat there often). To quickly describe each attribute, see below:

Quality: Your perception of the restaurant's quality of ingredients.
Price: Your perception of the price at the restaurant.
Experience: Your perception of the restaurant's ambience, service, and amenities.

* Required

Quality: High, Price: Overpriced, Experience: Contemporary *

1 2 3 4 5 6 7 8 9 10

Quality: High, Price: Overpriced, Experience: Authentic *

1 2 3 4 5 6 7 8 9 10

Quality: High, Price: Fairly priced, Experience: Authentic *

1 2 3 4 5 6 7 8 9 10

Quality: Low, Price: Underpriced, Experience: Contemporary *

1 2 3 4 5 6 7 8 9 10

Quality: Med, Price: Fairly priced, Experience: Contemporary *

1 2 3 4 5 6 7 8 9 10

Quality: Low, Price: Fairly priced, Experience: Contemporary *

1 2 3 4 5 6 7 8 9 10

Quality: Med, Price: Underpriced, Experience: Contemporary *

1 2 3 4 5 6 7 8 9 10

Quality: Low, Price: Fairly priced, Experience: Authentic *

1 2 3 4 5 6 7 8 9 10

Quality: Low, Price: Overpriced, Experience: Authentic *

1 2 3 4 5 6 7 8 9 10

Quality: Low, Price: Underpriced, Experience: Authentic *

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

Quality: Med, Price: Underpriced, Experience: Authentic *

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

Quality: Low, Price: Overpriced, Experience: Contemporary *

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

Quality: High, Price: Underpriced, Experience: Authentic *

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

Quality: Med, Price: Overpriced, Experience: Authentic *

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

Quality: Med, Price: Overpriced, Experience: Contemporary *

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

Quality: High, Price: Fairly priced, Experience: Contemporary *

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

Quality: Med, Price: Fairly priced, Experience: Authentic *

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

Quality: High, Price: Underpriced, Experience: Contemporary *

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

J. JMP DOE Custom Design

Custom Design

Define Factor Constraints

Model

Alias Terms

Design

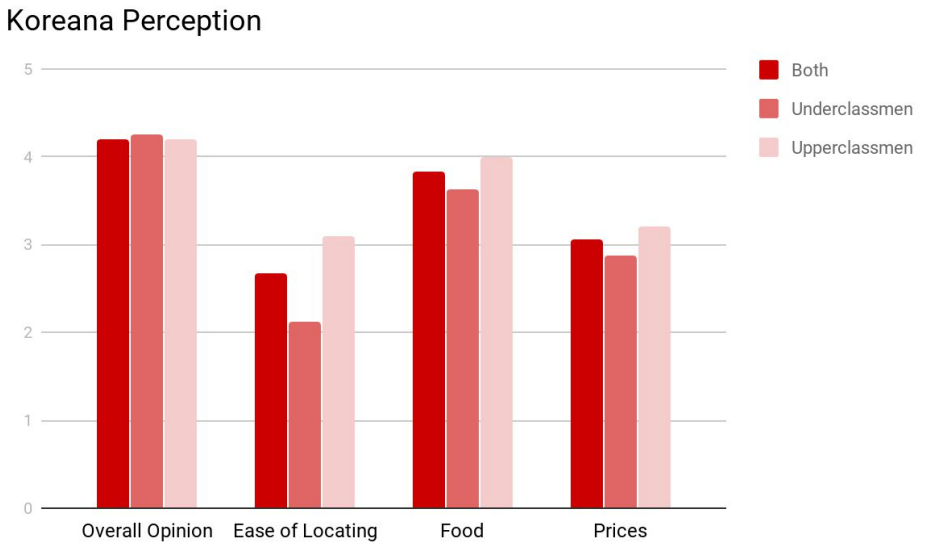
Run	Quality	Price	Experience
1	High	Overpriced	Contemporary
2	High	Overpriced	Authentic
3	High	Fairly priced	Authentic
4	Low	Underpriced	Contemporary
5	Med	Fairly priced	Contemporary
6	Low	Fairly priced	Contemporary
7	Med	Underpriced	Contemporary
8	Low	Fairly priced	Authentic
9	Low	Overpriced	Authentic
10	Low	Underpriced	Authentic
11	Med	Underpriced	Authentic
12	Low	Overpriced	Contemporary
13	High	Underpriced	Authentic
14	Med	Overpriced	Authentic
15	Med	Overpriced	Contemporary
16	High	Fairly priced	Contemporary
17	Med	Fairly priced	Authentic
18	High	Underpriced	Contemporary

K. All profiles for Conjoint Analysis

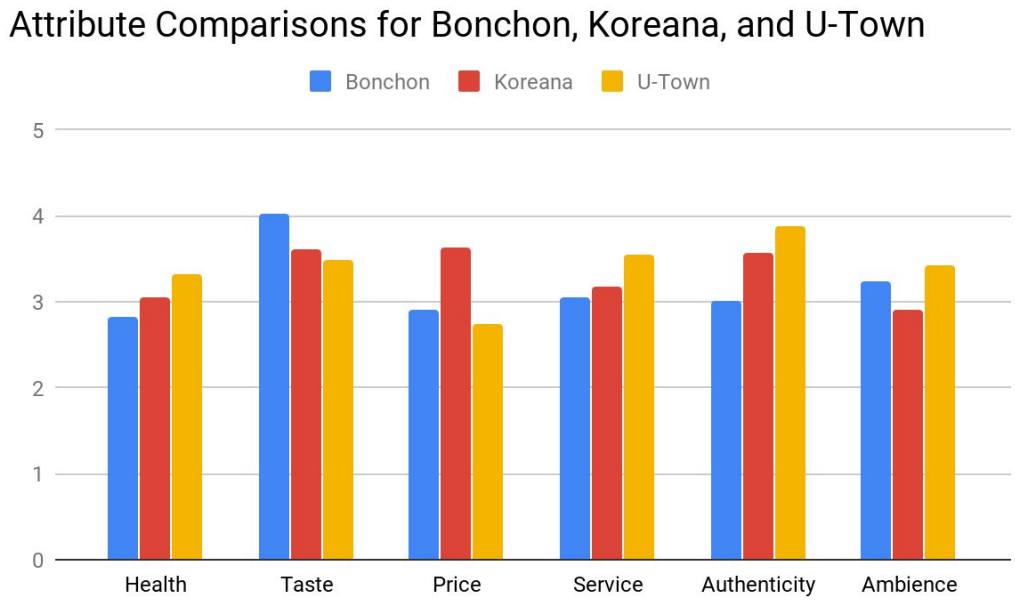
Run	Quality of Ingredients	Price	Experience
1	High	Overpriced	Contemporary
2	High	Overpriced	Authentic
3	High	Fairly priced	Authentic
4	Low	Underpriced	Contemporary
5	Med	Fairly priced	Contemporary
6	Low	Fairly priced	Contemporary
7	Med	Underpriced	Contemporary
8	Low	Fairly priced	Authentic
9	Low	Overpriced	Authentic
10	Low	Underpriced	Authentic
11	Med	Underpriced	Authentic
12	Low	Overpriced	Contemporary
13	High	Underpriced	Authentic
14	Med	Overpriced	Authentic
15	Med	Overpriced	Contemporary
16	High	Fairly priced	Contemporary
17	Med	Fairly priced	Authentic
18	High	Underpriced	Contemporary

L. Survey Result Charts

Preliminary Survey



Attribute Survey



M. Respondent 1's Responses to Conjoint Survey

Respondent	Profile #	Quality	Price	Experience	Rating
1	1	High	Overpriced	Contemporary	8
1	2	High	Overpriced	Authentic	6
1	3	High	Fairly priced	Authentic	6
1	4	Low	Underpriced	Contemporary	3
1	5	Med	Fairly priced	Contemporary	2
1	6	Low	Fairly priced	Contemporary	4
1	7	Med	Underpriced	Contemporary	5
1	8	Low	Fairly priced	Authentic	1
1	9	Low	Overpriced	Authentic	5
1	10	Low	Underpriced	Authentic	7
1	11	Med	Underpriced	Authentic	2
1	12	Low	Overpriced	Contemporary	1
1	13	High	Underpriced	Authentic	10
1	14	Med	Overpriced	Authentic	4
1	15	Med	Overpriced	Contemporary	5
1	16	High	Fairly priced	Contemporary	9
1	17	Med	Fairly priced	Authentic	6
1	18	High	Underpriced	Contemporary	7

N. Conjoint Regression Summary Table from R

```
> stargazer::stargazer(respondent1, respondent2, respondent3, respondent4, respondent6,
+                      respondent7, respondent9, type = 'text')

================================================================================================
                                        Dependent variable:
                    ------------------------------------------------------------------------
                                                  Rating
                       (1)        (2)        (3)        (4)        (5)        (6)        (7)
------------------------------------------------------------------------------------------------
Quality_high        6.250***   2.813***   0.905*     -0.124     3.903***   2.056***   5.929***
                    (0.866)    (0.277)    (0.410)    (0.167)    (0.358)    (0.484)    (0.783)

Quality_med         3.719***   1.180***    0.650      0.080     1.769***   1.258**    3.457***
                    (0.943)    (0.284)    (0.421)    (0.171)    (0.367)    (0.497)    (0.804)

Price_under          0.604     5.766***   5.752***   3.599***    0.489     4.044***    2.380*
                    (1.520)    (0.379)    (0.562)    (0.229)    (0.490)    (0.663)    (1.073)

Price_fair          -0.250     2.236***   2.730***   2.416***   -1.046*     0.852      1.491
                    (1.731)    (0.371)    (0.551)    (0.224)    (0.481)    (0.650)    (1.052)

Experience_contemporary -0.729  -0.251    -2.620***  -1.504***  -1.611***  -3.224***   1.282
                    (1.520)    (0.318)    (0.472)    (0.192)    (0.412)    (0.556)    (0.900)

Constant            2.406      1.253**    3.102***   3.518***   3.054***   4.119***    0.589
                    (1.662)    (0.375)    (0.557)    (0.227)    (0.486)    (0.657)    (1.064)

------------------------------------------------------------------------------------------------
Observations          12         12         12         12         12         12         12
R2                   0.901      0.989      0.984      0.993      0.961      0.972      0.927
Adjusted R2          0.819      0.980      0.970      0.987      0.928      0.949      0.866
Residual Std. Error (df = 6)  1.224   0.375   0.556   0.226   0.485   0.656   1.061
F Statistic (df = 5; 6)  10.936*** 110.934*** 73.179*** 174.617*** 29.412*** 42.033*** 15.264***
================================================================================================
Note:                                                          *p<0.1; **p<0.05; ***p<0.01
```

O. Averaged Conjoint Regression Model

```
> print(avg)
          intercept       quality_high        quality_med        Price_under        Price_fair Experience_contemporary
          2.4062500          6.2500000          3.7187500          0.6041667         -0.2500000         -0.7291667
```

P. Relative Importance Values

```
> print(ri)
   Attribute Percent_Importance
1    Quality              0.393
2      Price              0.401
3 Experience              0.206
```

Q. Yelp Reviews (excerpt)

8/16/2018

Koreana is a decent addition to the burgeoning Asian dining scene in University City. It just might be the hardest to find though. Go to the address, look all around and don't see it, then go to the parking lot, walk into it and halfway back, there lo and behold is Koreana. I like having a Korean fast food option (and there's a branch in Center City as well). One orders at the counter and then your food is delivered to you at the table. Everyone is friendly. I wasn't wild about what I ordered. The ganpoongki was okay without being special but I wanted veggies with it to mix with the sticky rice (like in the picture they have) and that didn't happen. Condiments were barebone - one almost empty sriracha bottle and a pepper mill for the entire restaurant. Still, I would def give this place another try, next time ordering something different.

9/2/2018

In all honesty, there's only two Korean places on campus and I would prefer UTown over Koreana and I heard it's less authentic from my Korean friends. Otherwise, the food is still decent. The wings are nice; I usually get the bibimbap or chicken bokkeumbap and am usually satisfied with it. I would come here for a cheap, fast meal.

4/21/2018

Koreana is a staple of my college campus diet. I like that it's more casual: you pay upfront, serve yourself water or tea, and save having to tip. Overall you'll pay slightly less than a trip to Utown (proximity makes it impossible to talk about one and not the other).

5 stars 3/3/2018

1 check-in

It took me a while to find this place, it's tucked inside of a plaza and doesn't really show up well on Google maps.

The stone pot dishes here are fantastic, and are served hot enough to get a real nice char on your rice. The desserts are what I really like about here and their bubble tea is superb. Must be something special about their tapioca. There's a huge array of Korean, Japanese, and Chinese snack too, which I really appreciated.

There's no service, and all dishes are pick up at the counter. However, I'd still say that this is a good date spot.

5 stars 8/16/2018

1 check-in

Stumbled upon this little Korean place while walking around downtown philly. I ordered the dinner special for $10 which came with a hot pot of bulgogi rice veggies and an egg and also some miso soup. The hot pot keeps the food very hot while you eat it. Everything was very good, and reasonably priced. Staff very friendly as prompt as well. Didn't have room for it but the kimchee fries sound and look good too

R. Code Appendix (for Conjoint Analysis)

```r
library(readxl)
library(dplyr)
library(ggplot2)

# Load the data from Excel responses
conjoint <- read_excel('~/Downloads/Conjoint Analysis (1).xlsx', sheet = 2)

# Filter out bad responses
conjoint <- conjoint %>% filter(Respondent != 5 & Respondent != 8) %>% select(-c(X__1, X__2))
## Filtered out first for time related issues, second because preferences are not linear/seem off

# Create dummies for the regression conjoint
conjoint <- conjoint %>%
  mutate('Quality_high' = ifelse(Quality == 'High', 1, 0),
         'Quality_med' = ifelse(Quality == 'Med', 1, 0),
         'Price_under' = ifelse(Price == 'Underpriced', 1, 0),
         'Price_fair' = ifelse(Price == 'Fairly priced', 1, 0),
         'Experience_contemporary' = ifelse(Experience == 'Contemporary', 1, 0)) %>%
  select(-c(Quality, Price, Experience))

# Create the individual regressions for each respondent
conjoint1 <- conjoint %>% filter(Respondent == 1)
respondent1 <- lm(Rating ~ Quality_high + Quality_med + Price_under + Price_fair + Experience_contemporary, conjoint1)
conjoint2 <- conjoint %>% filter(Respondent == 2)
respondent2 <- lm(Rating ~ Quality_high + Quality_med + Price_under + Price_fair + Experience_contemporary, conjoint2)
conjoint3 <- conjoint %>% filter(Respondent == 3)
respondent3 <- lm(Rating ~ Quality_high + Quality_med + Price_under + Price_fair + Experience_contemporary, conjoint3)
conjoint4 <- conjoint %>% filter(Respondent == 4)
respondent4 <- lm(Rating ~ Quality_high + Quality_med + Price_under + Price_fair + Experience_contemporary, conjoint4)
conjoint6 <- conjoint %>% filter(Respondent == 6)
respondent6 <- lm(Rating ~ Quality_high + Quality_med + Price_under + Price_fair + Experience_contemporary, conjoint6)
conjoint7 <- conjoint %>% filter(Respondent == 7)
respondent7 <- lm(Rating ~ Quality_high + Quality_med + Price_under + Price_fair + Experience_contemporary, conjoint7)
conjoint9 <- conjoint %>% filter(Respondent == 9)
respondent9 <- lm(Rating ~ Quality_high + Quality_med + Price_under + Price_fair + Experience_contemporary, conjoint9)
stargazer::stargazer(respondent1, respondent2, respondent3, respondent4, respondent6,
                     respondent7, respondent9, type = 'text')

# Computing relative importances for each person
ri_1_quality <- abs(respondent1$coefficients[2])/(abs(respondent1$coefficients[2]) + abs(respondent1$coefficients[4]) + abs(respondent1$coefficients[6]))
ri_1_price <- abs(respondent1$coefficients[4])/(abs(respondent1$coefficients[2]) + abs(respondent1$coefficients[4]) + abs(respondent1$coefficients[6]))
ri_1_experience <- abs(respondent1$coefficients[6])/(abs(respondent1$coefficients[2]) + abs(respondent1$coefficients[4]) + abs(respondent1$coefficients[6]))
ri_2_quality <- abs(respondent2$coefficients[2])/(abs(respondent2$coefficients[2]) + abs(respondent2$coefficients[4]) + abs(respondent2$coefficients[6]))
ri_2_price <- abs(respondent2$coefficients[4])/(abs(respondent2$coefficients[2]) + abs(respondent2$coefficients[4]) + abs(respondent2$coefficients[6]))
ri_2_experience <- abs(respondent2$coefficients[6])/(abs(respondent2$coefficients[2]) + abs(respondent2$coefficients[4]) + abs(respondent2$coefficients[6]))
ri_3_quality <- abs(respondent3$coefficients[2])/(abs(respondent3$coefficients[2]) + abs(respondent3$coefficients[4]) + abs(respondent3$coefficients[6]))
ri_3_price <- abs(respondent3$coefficients[4])/(abs(respondent3$coefficients[2]) + abs(respondent3$coefficients[4]) + abs(respondent3$coefficients[6]))
ri_3_experience <- abs(respondent3$coefficients[6])/(abs(respondent3$coefficients[2]) + abs(respondent3$coefficients[4]) + abs(respondent3$coefficients[6]))
ri_4_quality <- abs(respondent4$coefficients[2])/(abs(respondent4$coefficients[2]) + abs(respondent4$coefficients[4]) + abs(respondent4$coefficients[6]))
ri_4_price <- abs(respondent4$coefficients[4])/(abs(respondent4$coefficients[2]) + abs(respondent4$coefficients[4]) + abs(respondent4$coefficients[6]))
ri_4_experience <- abs(respondent4$coefficients[6])/(abs(respondent4$coefficients[2]) + abs(respondent4$coefficients[4]) + abs(respondent4$coefficients[6]))
ri_6_quality <- abs(respondent6$coefficients[2])/(abs(respondent6$coefficients[2]) + abs(respondent6$coefficients[4]) + abs(respondent6$coefficients[6]))
ri_6_price <- abs(respondent6$coefficients[4])/(abs(respondent6$coefficients[2]) + abs(respondent6$coefficients[4]) + abs(respondent6$coefficients[6]))
ri_6_experience <- abs(respondent6$coefficients[6])/(abs(respondent6$coefficients[2]) + abs(respondent6$coefficients[4]) + abs(respondent6$coefficients[6]))
ri_7_quality <- abs(respondent7$coefficients[2])/(abs(respondent7$coefficients[2]) + abs(respondent7$coefficients[4]) + abs(respondent7$coefficients[6]))
ri_7_price <- abs(respondent7$coefficients[4])/(abs(respondent7$coefficients[2]) + abs(respondent7$coefficients[4]) + abs(respondent7$coefficients[6]))
ri_7_experience <- abs(respondent7$coefficients[6])/(abs(respondent7$coefficients[2]) + abs(respondent7$coefficients[4]) + abs(respondent7$coefficients[6]))
ri_9_quality <- abs(respondent9$coefficients[2])/(abs(respondent9$coefficients[2]) + abs(respondent9$coefficients[4]) + abs(respondent9$coefficients[6]))
ri_9_price <- abs(respondent9$coefficients[4])/(abs(respondent9$coefficients[2]) + abs(respondent9$coefficients[4]) + abs(respondent9$coefficients[6]))
ri_9_experience <- abs(respondent9$coefficients[6])/(abs(respondent9$coefficients[2]) + abs(respondent9$coefficients[4]) + abs(respondent9$coefficients[6]))

results <- data.frame('Respondent' = c(1, 2, 3, 4, 6, 7, 9),
                      'Quality' = c(ri_1_quality, ri_2_quality, ri_3_quality, ri_4_quality, ri_6_quality, ri_7_quality, ri_9_quality),
                      'Price' = c(ri_1_price, ri_2_price, ri_3_price, ri_4_price, ri_6_price, ri_7_price, ri_9_price),
                      'Experience' = c(ri_1_experience, ri_2_experience, ri_3_experience, ri_4_experience, ri_6_experience, ri_7_experience, ri_9_experience))
results$Quality <- round(results$Quality, 3)
results$Price <- round(results$Price, 3)
results$Experience <- round(results$Experience, 3)
ri <- results %>% select(-Respondent) %>% summarize_all(funs(mean))
ri <- round(ri, 3)
ri <- as.data.frame(t(ri))
ri <- cbind(rownames(ri), ri)
rownames(ri) <- NULL
colnames(ri)[1] <- 'Attribute'
colnames(ri)[2] <- 'Percent_Importance'
print(ri)
```

```r
# Visualization
ggplot(ri) + geom_col(mapping = aes(x = Attribute, y = Percent_Importance), fill = 'red', width = .7) +
  theme_classic() +
  theme(text = element_text(size = 26)) +
  labs(y = 'Percent Importance', title = 'Relative Importance') +
  scale_y_continuous(labels = scales::percent)

# Comparison to Survey 1
survey1 <- read_excel('~/Downloads/Koreana Survey Form (Responses).xlsx')

bargain <- survey1 %>% group_by(`How do you perceive the value of a meal at Koreana?`) %>% summarize(Total = n())
bargain <- bargain[c(3, 1, 2, 4), ]
print(bargain)

quality <- survey1 %>% group_by(survey1$`Rate Koreana's food compared to other restaurants in University City.`) %>% summarize(Total = n())
quality <- quality[c(2, 3, 1, 4), ]
print(quality)

# Compute average coefficients
intercept <- mean(respondent1$coefficients[1], respondent2$coefficients[1], respondent3$coefficients[1], respondent4$coefficients[1],
                  respondent6$coefficients[1], respondent7$coefficients[1], respondent9$coefficients[1])
quality_high <- mean(respondent1$coefficients[2], respondent2$coefficients[2], respondent3$coefficients[2], respondent4$coefficients[2],
                     respondent6$coefficients[2], respondent7$coefficients[2], respondent9$coefficients[2])
quality_med <- mean(respondent1$coefficients[3], respondent2$coefficients[3], respondent3$coefficients[3], respondent4$coefficients[3],
                    respondent6$coefficients[3], respondent7$coefficients[3], respondent9$coefficients[3])
Price_under <- mean(respondent1$coefficients[4], respondent2$coefficients[4], respondent3$coefficients[4], respondent4$coefficients[4],
                    respondent6$coefficients[4], respondent7$coefficients[4], respondent9$coefficients[4])
Price_fair <- mean(respondent1$coefficients[5], respondent2$coefficients[5], respondent3$coefficients[5], respondent4$coefficients[5],
                   respondent6$coefficients[5], respondent7$coefficients[5], respondent9$coefficients[5])
Experience_contemporary <- mean(respondent1$coefficients[6], respondent2$coefficients[6], respondent3$coefficients[6], respondent4$coefficients[6],
                                respondent6$coefficients[6], respondent7$coefficients[6], respondent9$coefficients[6])
avg <- c(intercept, quality_high, quality_med, Price_under, Price_fair, Experience_contemporary)
names(avg) <- c('intercept', 'quality_high', 'quality_med', 'Price_under', 'Price_fair', 'Experience_contemporary')
print(avg)

# Market Share Analysis

market <- conjoint %>%
  filter(`Profile #` == 18 | `Profile #` == 13 | `Profile #` == 17) %>%
  group_by(Respondent) %>%
  summarize_all(funs(max))
print(market)
```

Citations:

Parsa, H. G., Self, J. T., Njite, D., & King, T. (2005). Why Restaurants Fail. *Cornell Hotel and Restaurant Administration Quarterly,46*(3), 304-322. doi:10.1177/0010880405275598

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Tulp, S. (2017, June 28). Millennials eat up savings by dining out a lot, study shows. Retrieved from https://www.usatoday.com/story/money/business/2017/06/26/study-millennials-spending-eats-up-their-savings/103206984/

Olmsted, L. (2015, July 16). The new KFC: Korean fried chicken takes America by storm. Retrieved from https://www.usatoday.com/story/travel/columnist/greatamericanbites/2015/07/16/bonchon-fried-chicken/30197077/