

# 美國客家餐廳的線上評價： 文字探勘的應用

陶辰瑋\* 黃宛玲\*\* 黃宣衛\*\*\*

## 摘要

北美的客家移民為數不少，近年來海外的客家意識逐漸抬頭，客家身分重新被北美移民擁抱並以身為客家人為榮。客家餐廳讓客家移民有個空間可以分享他們對於家鄉的記憶並且重新創造家的感覺。印度客家餐廳在加拿大的成功，甚至讓某些人以為客家是一種料理菜系。儘管北美有不少客家移民，且食用客家食物對客家認同相當重要，關於北美客家食物與客家餐廳的研究卻非常少，僅有的研究也以加拿大為主。為填補此研究領域的不足，本研究透過大數據分析進一步了解美國客家餐廳的現況，從 Google 地圖蒐集 19 間美國客家餐廳共 8,437 則顧客線上評價。透過結構主題模型與資料視覺化，本研究找出臺灣 / 中國客家餐廳（15 個）與印度客家餐廳（20 個）的主題及主題之間的關聯。

本研究發現，上述兩種類型客家餐廳的消費者對於客家餐廳有明顯不同的偏好。臺灣 / 中國客家餐廳的消費者對於餐廳提供的素食與植物性蛋白質選擇感到滿意，而印度客家餐廳的消費者則特別喜歡餐館使用的清真肉品與印度香料；這與傳統客家菜以豬肉和醃漬食品為主的料理方式有所不同，但卻彰顯出客家人因地制宜的傳統價值，針對美國的飲食習慣做出調整。在實務應用上，美國客家餐廳的管理者可以參考本研究的發現重新發想、創造客家菜餚以符合在地消費者的口味。本研究最後討論研究限制與未來研究的方向。

## 關鍵詞

客家餐廳、北美、美國、大數據、線上評價、文字探勘

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# Online Reviews of Hakka Restaurants in the U.S.: Application of Text Mining

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## Abstract

There is a significant number of Hakka immigrants in North America. With the rise of Hakka consciousness in the past few decades, Hakka people have started to take pride in being Hakka and reembrace their Hakka identity. Hakka restaurants allow Hakka immigrants a place to share their memories of their hometown, creating a sense of homeness. The success of Indian-Hakka restaurants in Canada has made Hakka a type of cuisine as opposed to an ethnic group for some people. Despite the presence of Hakka people in North America and the importance of eating Hakka food, the literature on Hakka food and restaurants is very limited and mostly conducted in Canada. To shorten this gap in research, the authors applied a big data approach to further understand the current state of Hakka restaurants in the U.S. A total of 8,437 customer reviews of 19 Hakka restaurants in the U.S. were collected from Google Maps. Through Structural Topic Modeling (STM) and data visualization, 15 and 20 topics alongside topical structures were identified for Taiwanese/Chinese-Hakka and Indian-Hakka restaurants respectively. This study contributes to the literature by discovering the distinct preferences of customers in the aforementioned two types of Hakka restaurants in the U.S. Furthermore, Taiwanese/Chinese-Hakka restaurants are welcomed by customers as being vegetarian-friendly by serving plant-based proteins while Indian-Hakka restaurants are popular because of serving Halal meat along with Indian condiments in contrast to the tradition of using pork and preserved foods as the major ingredients in Hakka cooking, affirming the traditional Hakka value of being adaptive and flexible to fit America's food scene. Practically, managers of Hakka restaurants in the U.S. can reference our study findings to reimagine and recreate Hakka dishes that accommodate the local clientele. Limitations and direction for future research are discussed.

## Keywords

Hakka restaurants, North America, U.S., big data, online reviews, text mining

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## 1. Introduction

Hakka immigration to North America started in the 1850s and has continued to the 20<sup>th</sup> century (Lee & Kuan, 2018; Lee & Kuan, 2020). To date, there is a significant number of Hakka immigrants in North America. It is evident that Hakka associations or organizations operate in more than 30 cities in the U.S. and Canada (Lee & Kuan, 2018). Moreover, the existence of Hakka organizations implies that Hakka immigrants are distinct from other Chinese ethnic groups.

With the rise of Hakka consciousness in the past few decades, especially in Toronto where *The Toronto Hakka Conference* is held, Hakka people have started to take pride in being Hakka and reembrace their Hakka identity (Blunt & Bonnerjee, 2013; Chiu, 2003; Ku, 2019). It was found that eating Hakka food and shopping at Chinese grocery stores to cook Hakka food at home is important to retaining ones' Hakka identity (Chiu, 2003). The success of Indian-Hakka restaurants in Canada has made Hakka a type of cuisine as opposed to an ethnic group for some people (Ku, 2019).

Despite the presence of Hakka people in North America and the importance of eating Hakka food, extant literature on Hakka food and Hakka restaurants in North America is very limited. Past literature has covered some Hakka foods eaten in the homes of immigrants (Anusasananan, 2012; Chiu, 2003; Liu, 2021). There has also been some research about Indian-Hakka restaurants, mostly in Canada (e.g., Liu, 2021; Xu, 2021). However, traditional Hakka restaurants have not been researched, and there is scarce literature on Hakka restaurants of either kind in the U.S. Methodology wise, most research on Hakka food and Hakka restaurants in North America applied qualitative methods, such as interviews and case studies (Liu, 2021; Xu, 2021). Ideally, such techniques may help researchers identify a wealth of information in depth, yet one of the challenges is to attain a holistic picture of Hakka restaurants. To shorten the research gap, this study aims to explore the current state of Hakka restaurants in the U.S. by applying big data analytics.

The study contributes to the literature by systematically investigating the current state of Hakka restaurants in the U.S. using user-generated content available on a review website. Salient topics that are important to Hakka food and restaurant operation are identified through structure topic modeling, a machine-learning technique that supports researchers to find the hidden topics and the topical structure. Furthermore, the study also found customers' changing perceptions of Hakka food and its ingredients as well as the stigma for price and food portion that Hakka restaurants offer in the U.S. The study findings also provide rich practical implications to industry professionals in terms of repositioning, reimagining, and promoting Hakka food in the U.S.

## 2. Literature Review

### 2.1. Hakka immigrants in North America

Hakka immigration to North America can be traced back to the 1850s during the California Gold Rush (Lee & Kuan, 2018; Lee & Kuan, 2020). At that time, many Chinese people arrived in San Francisco to seek gold and job opportunities. Chinese people started to arrive in San Francisco in 1849, with numbers growing vastly every year; by the late 1850s, about ten percent of California's population was made up of Chinese immigrants, while the percentage in mining towns was even higher (Luo, 2021). Many of these Chinese immigrants came from Meizhou and the Pearl River Delta area, including Huizhou, Taishan, Baoan and Chaozhou, all of which are known to be dense with Hakka people (Lee & Kuan, 2020; Luo, 2021).

The Chinese came to North America through “contract labor” or a “credit-ticket system” (Lee & Kuan, 2020). Through “contract labor”, many of the Chinese were treated like slaves with unnegotiable work contracts, poor work environment and extremely low pay (Lee & Kuan, 2020). Most of the Chinese were unable to save money and ended up working until death in a foreign country (Lee & Kuan, 2020). The “credit-ticket system” was a better choice. Agents at the harbor would pay for the immigrants' passage to the United States and the immigrants would pay off their debt with interest once they find a job in the United States; when the debt is paid off, which usually takes about six months, the contract ends (Lee & Kuan, 2020). Most immigrants who came to the U.S. through these two ways were originally farmers in China and most became laborers in mines, built railways or washed clothes, etc. (Lee & Kuan, 2020).

With the increase of Chinese immigrants, mutual-aid organizations (huiguan 會館) were formed to assist newcomers and form alliances (Lee & Kuan, 2020; Luo, 2021). As new immigrants, the Chinese were unfamiliar with the country, could not speak the language and did not understand the laws; it was hard for them to find jobs and housing, and at that time, the Chinese government did not have an embassy to protect immigrants (Lee & Kuan, 2020). Huiguans mostly represented the different regions Chinese immigrants came from, but in 1853, the first huiguan to represent a dialect group was formed in San Francisco- Xin An Huiguan (now called Ren He Huiguan 人和會館), consisting mostly of Hakka people (Lee & Kuan, 2018). From this, it can be speculated that the Hakka people were distinct from other Chinese immigrants and felt the need to unite and stick together (Lee & Kuan, 2018).

In the mid-1870s, the United States went into an economic depression and the unemployment rate became high. Anti-Chinese sentiments spread and became violent. Both the Republicans and Democrats viewed Chinese immigration as a problem; as a result, in 1875, the Page Act was passed to strictly limit Chinese woman from entering the United States and later, in 1882, the Chinese Exclusion Act was signed to ban immigration of Chinese laborers and prohibit Chinese from naturalization (Lee & Kuan, 2020; Luo, 2021). These laws were not repealed until 1943 when the Magnuson Act was passed. Evidently, Chinese immigrants decreased during this period.

As only merchants, teachers, students, travelers, and diplomats were exempt to enter the U.S. after the Chinese Exclusion Act was signed, the Chinese found loopholes to gain entry to the United States; one of these loopholes was to open a restaurant (Lee, 2013; Lee, 2015). Furthermore, in 1915, a federal court decision was made stating that “restaurateur” was indeed included in the “merchant” category; subsequently, Chinese restaurants in the U.S. increased immensely (Godoy, 2016). It is deduced that a large number of Chinese immigrants who came to the U.S. while the Chinese Exclusion Act was in place came to work in restaurants.

After the Second World War, many Chinese refugees from China and Hong Kong came to the U.S., some of whom were Hakka (Lee & Kuan, 2018; Lee & Kuan, 2020). At around the same time, Canada became a major destination for Hakka immigrants, with Toronto and Vancouver as the main cities (Chiu, 2003; Xu, 2021). However, these Canadian Hakka immigrants did not come directly from China; instead, they were second- or third-time immigrants coming from Mauritius, Indonesia, South Africa, India, the Caribbean, Hong Kong, and Taiwan (Chiu, 2003). Starting from the 1950s, former British colonies and territories became independent, resulting in heightened Nationalism and new powers in governments (Anusasananan, 2012). Minorities were driven out of countries such as South Africa, Jamaica, Malaysia, Mauritius, Hong Kong, and India and many Chinese immigrants came to Canada, which was also once ruled by Britain (Anusasananan, 2012). The two largest groups of Hakkas in Toronto are from India and the Caribbean (Chiu, 2003). Most of the Hakka people from India came to Canada after the Sino-Indian war in 1962, which led to hardships for the Chinese in India, and many were forced to leave the country (Anusasananan, 2012). Hakkas from the Caribbean came from countries such as Jamaica and Trinidad, who left these countries after the political environment no longer welcomed them (Anusasananan, 2012).

At around the same period, during the mid-20<sup>th</sup> century, the U.S. expanded their immigration policy to attract professionals; many Chinese immigrants came for advanced degrees and stayed on as professionals, leading to higher educational levels among the American Chinese (Lee & Kuan, 2018). The same phenomenon is also seen in Canada, where most Hakka people in Toronto have become professionals or businessmen (Anusasananan, 2012). Like most immigrants, the Hakka people came to North America to seek a better life. In the beginning, most of them were laborers working at mines or railroads or in laundries; afterward, a great number of people came to work in restaurants (Lee, 2013; Lee, 2015; Lee & Kuan, 2020). In recent years, a vast majority of Hakka immigrants have become established as professionals or businessman (Anusasananan, 2012; Lee & Kuan, 2018).

There are currently more than 30 cities in the U.S. and Canada that have Hakka associations or organizations (Lee & Kuan, 2018). However, it is hard to estimate the exact number of Hakka people living in North America since most surveys and historic records use the collective term “Chinese” to refer to all people of Chinese descent (Chiu, 2003; Lee & Kuan, 2018). In addition to this, as the U.S. and Canada both have diverse ethnic groups, many Hakka immigrants felt the need to get rid of their countries of origin and ethnicity to become true “Americans” or “Canadians” (Ku, 2019). Hakka identity was thus further hidden from sight.

In the past few decades, however, Hakka identity has been reembraced in Toronto, largely due to *The Toronto Hakka Conference*, which held its first conference in 2000 (Blunt & Bonnerjee, 2013; Chiu, 2003; Ku, 2019). *The Toronto Hakka Conference* has strengthened a sense of community between Hakka people from different birthplaces and made “being Hakka” something to be proud of, with many positive attributes (Chiu, 2003). For Hakka immigrants, connection to their Hakka roots can be seen in daily life aspects, namely, eating Hakka food, shopping at Chinese grocery stores, speaking Hakka at home, attending Hakka functions, attending Hakka association meetings and ethnic friendships (Chiu, 2003). Out of these six categories, two pertain to food related aspects. In Chiu (2003)’s research, it was found that Hakka immigrants in Toronto from both India and the Caribbeans “often” or “sometimes” eat Hakka food during holidays and special events; they also felt that it was important for them to do so. In the same research by Chiu (2003), Indian and Caribbean Hakkas in Toronto would “often” or “sometimes” visit Chinese grocery stores to buy ingredients to prepare Hakka food. These trips to the Chinese grocery stores also facilitated interaction between Hakkas and other Chinese ethnic groups, especially the Cantonese, and led to increased consciousness of being Hakka (Chiu,2003). It is evident that food is an important way for Hakka immigrants to reengage in their own identity.

## 2.2. Hakka food and restaurants in North America

Despite the presence of Hakka people in North America and the importance of eating Hakka food to one's identity, there is limited literature on Hakka restaurants or Hakka food in the U.S. or Canada. Hakka food in North America is often viewed as "home-cooking" and is usually isolated in home kitchens, rarely seen in restaurants (Anusasananan, 2012; Chiu, 2003). It is known to be simple, comforting soul food that predominantly uses pork, soy sauce, and preserved foods as ingredients (Anusasananan, 2012; Chiu, 2003). Some examples of Hakka food mentioned by Hakka immigrants in North America include: pork and yam, pickled vegetables and meat, lily buds and meat, salted steamed or baked chicken, stuffed bean curd or tofu, chop suey and seafood (Anusasananan, 2012; Chiu, 2003; Liu, 2021).

When Hakka food is consumed outside the home, the most prominent type of Hakka restaurant in North America is the Indian-Hakka restaurant. This is especially the case in Canada, where Indian-Hakka restaurants started to appear in the late 1980s (Blunt & Bonnerjee, 2013). In fact, when searching for "Hakka restaurants" in the Toronto area on Google Maps, the majority of restaurants sold Indian-Hakka cuisine. Consequently, for non-Hakka people in Toronto, Hakka is known primarily as a type of cuisine as opposed to an ethnic group (Ku, 2019).

Indian-Hakka cuisine originated from Hakkas that migrated to India in the 19<sup>th</sup> century. Many Chinese immigrants moved to India to seek better work opportunities and established neighborhoods there; most of these Chinese people were Hakka (Liu, 2021). The Hakkas in India mainly worked in shoemaking or leather tanning, however, some Hakka people opened restaurants and started to make Hakka food with local condiments and spices, creating Indian-Hakka cuisine (Liu, 2021; Xu, 2021). Indian-Hakka cuisine combines Indian spices with Chinese cooking methods and ingredients, such as stir-fry and soy sauce, resulting in a new intercultural and hybrid cuisine that is neither traditionally Chinese nor Indian (Anusasananan, 2012; Liu, 2021; Sankar, 2017).

After the 1962 Sino-Indian war, India's Hakka community started to emigrate abroad and a lot of these Hakka people settled in North America, bringing Indian-Hakka cuisine with them (Anusasananan, 2012; Liu, 2021). Famous dishes served in Indian-Hakka restaurants include chili chicken, Manchurian chicken, and Hakka noodles, which integrate Indian spices, such as curry powder, garam masala, and dhana jeera, with common Chinese condiments, like soy sauce, vinegar, garlic, ginger, and chili (Liu, 2021; Sankar,



2017). The flavors are usually spicier and more pungent, using more spices and condiments than traditional Chinese cuisine (Sankar, 2017). Different restaurants also adapt their menus to cater to their clientele, serving halal and vegetarian options if needed or creating new items to satisfy customer appetites (Liu, 2021; Xu, 2021). Indian-Hakka restaurants are mostly expected to offer affordable food with large portions (Liu, 2021). The restaurants can usually accommodate a lot of customers, ranging from 30 to over 100 seats (Blunt & Bonnerjee, 2013).

The large number of Indian-Hakka restaurants in Greater Toronto serve as an “urban way of recreating and reliving a sense of home” for the Hakka people that immigrated from India, bringing together Hakka people in the area (Blunt & Bonnerjee, 2013, p.236). The success and visibility of these restaurants also became a source of pride for Hakka people and showed that Hakkas could both privately enjoy and share their culture without being owned by it (Ku, 2019). The appearance of Indian-Hakka restaurants in Toronto brings positive reinforcement to the Hakka people, enhancing their “Hakkaness.” As the aforementioned literature mostly investigated Hakka restaurants in Canada, the authors focused on Hakka restaurants in the U.S., which is somewhat understudied, to shorten the research gap.

### 3. Methodology

#### 3.1. Sample selection

To achieve the aim of the study, the authors took a big data approach in research design. The sample for this study is Hakka restaurants in the U. S. in metropolitan areas with a Chinese-American population of 20,000 or more. From the 2011-2015 American Community Survey (<https://www.census.gov/programs-surveys/acs/>), 24 metropolitan areas that fit the abovementioned sampling frame were identified, including New York, Los Angeles, San Francisco, San Jose, Boston, Chicago, Washington, Seattle, Houston, Philadelphia, Sacramento, Dallas, San Diego, Honolulu, Riverside, Atlanta, Miami, Portland, Las Vegas, Phoenix, Minneapolis, Detroit, Baltimore, and Austin (listed in the order of Chinese American population). The authors then used “Hakka restaurants” as the key words on Google Maps in these 24 metropolitan areas to identify study samples. Google Maps’ search results contain information from users and the public web. Results of the search included not only restaurants with “Hakka” in the restaurant name but also restaurants that mentioned “Hakka” in the reviews or menus. After manually scouring through websites and menus of all restaurants that appeared in the search, 19 restaurants that emphasized selling either Taiwanese/Chinese-Hakka or Indian-Hakka food were selected. Of those, only 11 restaurants used “Hakka” in their restaurants’ names, while some restaurants used their place of origin as their restaurant name, such as Ton Kiang (東江).



### 3.2. Data collection

The authors applied a web-based Google Maps scraper that utilized customized Google Maps Application Programming Interface (API) to collect publicly available information on a restaurant's business profile, such as business name, contact information, hours, location, customer reviews, star ratings, user profiles of the reviewers etc. A total of 19 Hakka restaurants located in regions with higher Chinese population were identified, and their business information and customer reviews alongside the star ratings on Google Maps were collected. Data collection was completed in August 2022, and the raw datasets were consolidated for further analysis.

### 3.3. Data analysis

Two major approaches were used to achieve the study purpose, namely structural topic modeling (STM) and content analysis along with data visualization to present the findings. STM is a powerful library available in R that is capable of identifying the hidden structural topics and the correlations between the topics within a corpus using unsupervised models by artificial intelligence (Roberts et al., 2016). It can serve as a reader to explore large datasets that cannot be processed and understood within a reasonable time-frame by using traditional methods. STM is widely considered as an appropriate and reliable approach for social science researchers to conduct text mining. Through data screening and informed by the literature, the authors acknowledged that there were two major types of Hakka restaurants in the U.S, including Taiwanese/Chinese-Hakka restaurants and Indian-Hakka restaurants. Indian-Hakka restaurants mainly served dishes that integrated Indian spices with Chinese condiments, with famous dishes such as chili chicken, Manchurian chicken, and Hakka noodles. Taiwanese/Chinese Hakka restaurants, on the other hand, served more traditional Hakka food that were not influenced by Indian cuisine. To further investigate the nuances between the abovementioned two types of restaurants, it was determined to split the consolidated dataset into two sub-datasets accordingly.

Data cleaning was performed to minimize noise in the raw datasets collected from Google Maps. Both two sub-datasets went through the identical text pre-processing using the *textProcessor* feature in the STM library, including: (1) building corpus, (2) converting to lower case, (3) removing punctuation, (4) removing stopwords, (5) stemming, and (6) creating output (Roberts et al., 2016). After the preliminary text pre-processing, infrequent terms with a lower threshold of 100 times were then removed to purify the datasets prior to further data analysis (Roberts, Brandon and Tingley 2019). On one hand, 4,065 terms and 6,107 tokens were excluded from the Taiwanese/Chinese-Hakka restaurants

sub-dataset, resulting in 2,344 documents, 964 terms and 32,674 tokens. On the other hand, 2,831 terms and 4,555 tokens were removed from the Indian-Hakka restaurants sub-dataset, resulting in 2,516 documents, 834 terms and 30,766 tokens.

One of the advantages of using STM for topic modeling is its ability of computing diagnostic values by the number of topics to determine the suitable number of topics ( $k$ ). Figure 1 illustrates the outputs of diagnostic values when conditioning the number of topics ranging from 5 to 50 with 5 as interval. The general rule of thumb is to select models with a relatively high held-out likelihood and relatively low residuals. Another critical consideration is the parsimoniousness of the topic models. Based on a comprehensive evaluation, it was determined to use  $k = 15$  for Taiwanese/Chinese-Hakka restaurants and  $k = 20$  for Indian-Hakka restaurants. Consequently, the STM models were developed along with several analytical techniques, such as topic distribution and topic correlation to better understand the salient topics and their relationships. Content analysis was also conducted where the authors carefully read, analyzed, and interpreted the most representable reviews through the *findThoughts* feature in the STM library, then validating the results by using artificial intelligence.

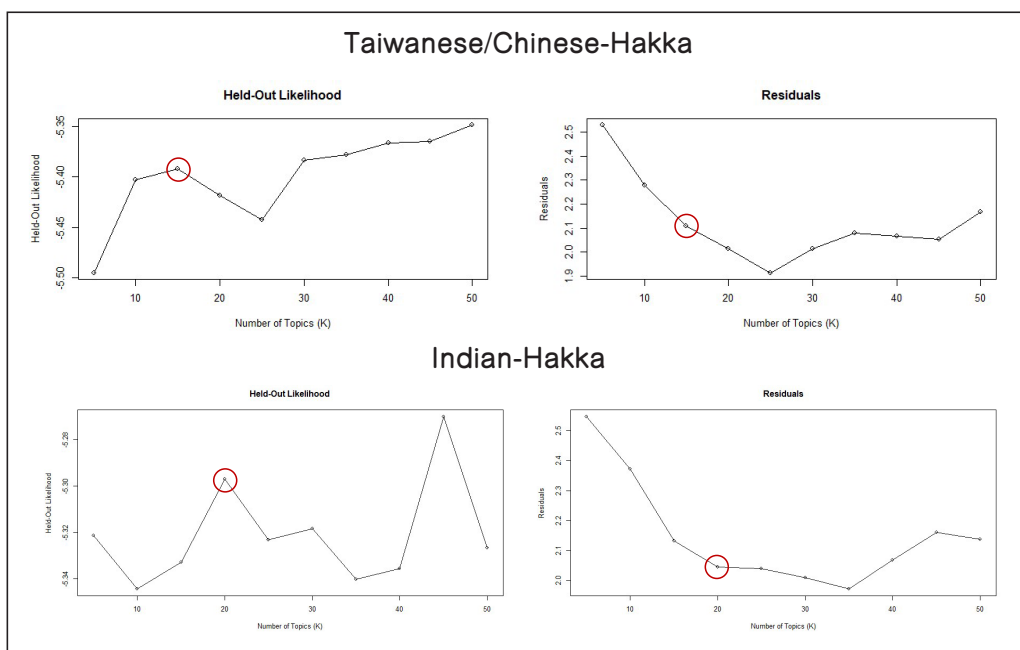


Figure 1 Diagnostic values by number of topics.

## 4. Results

### 4.1. Sample profile

A total of 8,437 customer reviews of 19 Hakka restaurants in the U.S. were collected from Google Maps. Most of the Hakka restaurants were located in coastal areas, such as California and New York where Chinese immigrants first landed historically. According to the restaurant category that were self-labelled by restaurants owners, the entire dataset was split into two sub-datasets. Specifically, 13 (68.4%) were Taiwanese/Chinese-Hakka restaurants with 4,038 (47.9%) customer reviews; moreover, 6 (31.6%) were Indian-Hakka restaurants with 4,399 (52.1%) customer reviews. In terms of customers' review ratings for the Hakka restaurants, almost half (49.4%) of the ratings were 5 stars while 13.3% of them were merely 1 star on a five-point star system.

Table 1 Sample profile.

<i>Location of restaurants (state)</i>	<i>N</i>	<i>%</i>
California	7	36.8%
New York	6	31.6%
Washington	2	10.5%
Texas	2	10.5%
Illinois	1	5.3%
Florida	1	5.3%
	19	100.0%
<i>Type of restaurants</i>		
Taiwanese/Chinese-Hakka	13	68.4%
Indian-Hakka	6	31.6%
	19	100.0%
<i>Number of reviews</i>		
Taiwanese/Chinese-Hakka	4,038	47.9%
Indian-Hakka	4,399	52.1%
	8,437	100.0%
<i>Review ratings</i>		
5 stars	4,166	49.4%
4 stars	1,842	21.8%
3 stars	902	10.7%
2 stars	408	4.8%
1 star	1,119	13.3%
	8,437	100.0%

## 4.2. Topic distribution

Salient topics were identified and sorted based on topic proportions (i.e., prevalence of occurrence in the dataset). Figure 2 shows the topic distribution for both types of Hakka restaurants in the U.S. For Taiwanese/Chinese-Hakka restaurants (upper half of Figure 2), Topic 4 (T4) has the highest topic proportion which is over 10% in the sub-dataset. By conducting content analysis, the authors discussed and determined the label for salient topics collectively. Specifically, T4 is about “delicious vegetarian food.” A representative quote reads like the following:

*I love this place...the food here is really delicious. I'm vegetarian so if I'm liking the food that much, I'm sure the non-veg is gonna be more delicious. Went with my all friends and all of them love it. Do try Paneer chilli and manchaow soup. All the other food is also very delicious.*

T2 has the second highest topic proportion, and it was labelled as “long wait” in which one customer left the following review:

*Went here for the first time and had a terrible experience. It was 11:05 and they were open but the young woman working there was walking around the store doing tasks and didn't even acknowledge me. I gave her a few minutes to finish her tasks and then she walked in the back and never even said hello. I was left standing there.*

Subsequently, T9 has the third highest topic proportion, and it was labelled as “great service.” “*Great n fast service, food quality was awesome*” is a representative review. T11 labelled as “pricy good food” is the fourth highest topic. One reviewer wrote: “*Food was good, price was a bit much. Not outlandish, just slightly higher than expected. Either way, it was good*”, which pretty much sums up the customers’ perspective of price and value. The topic with the fifth highest proportion is T12 which was labelled as “best of its kind in town”. A representative review stated: “*I love this place. Chili paneer is my favorite. This is the best restaurant in the whole XYZ\* area for me*”.

Among the top five topics (T4, T2, T9, T11, and T12), it is noteworthy that they are mostly related to general restaurant attributes, such as food, service, speed of service, price, and billing, and they are not specific to Hakka. However, some topics that are salient but account for less topic proportion are, in fact, more specific to Hakka. For instance, T1 (authenticity of noodle soup) is about authenticity of the food, and T5 (delicious chicken dishes) is related to the major ingredients (e.g., protein) in the dishes. Furthermore, both T4 (delicious vegetarian food) and T3 (vegan and organic food) are about vegetarian and organic food. Taiwanese/Chinese-Hakka food is not known for being plant-

based but cooks with more animal proteins, like pork. However, for customers of these Hakka restaurants in the U.S., they indeed commend Hakka food being vegetarian-friendly, accommodating their dietary needs. Most interestingly, T14 (reviews in Chinese about authenticity) contained all the reviews that were written in Chinese, commenting on the restaurants' overall authenticity, e.g., “*authentic old Meizhou Hakka dishes, great.*” In other words, it is likely that those who left reviews in Chinese could be Hakka immigrants or the more culturally aware customers who have Taiwanese/Chinese heritage. This finding implies that customers who chose to leave online reviews for Hakka restaurants may share common characteristics, such as the language they speak and their country of origin. Table 2 summarized all the 15 topics along with the most representative quotes for Taiwanese/Chinese-Hakka restaurants.

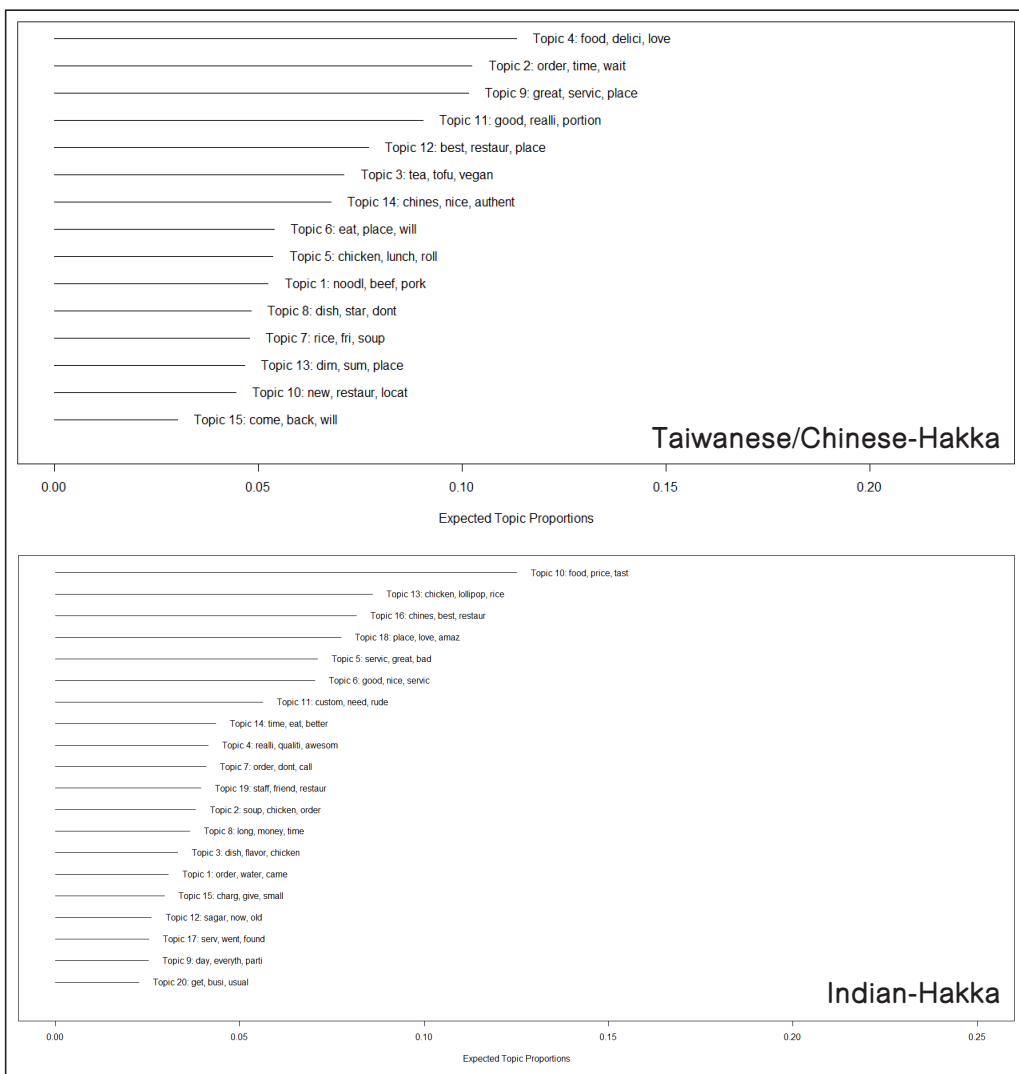


Figure 2 Topic distribution.

Table 2 Topics and Representative Quotes for Taiwanese/Chinese-Hakka Restaurant

Label	Representative Quote
T1 Authenticity of noodle soup	<i>A warm bowl of Taiwanese flavors with a Sichuan peppercorn kick. Prime cut of beef shank and tendon, well seasoned and braised to perfect texture. Handmade noodles are Pappardelle-like, broad and flat, although I think the thinner noodles go with the broth better. It would have been even better if the broth were a bit more beefy, but overall a high-quality, authentic bowl Taiwanese beef noodle soup.</i>
T2 Long wait	<i>Went here for the first time and had a terrible experience. It was 11:05 and they were open but the young woman working there was walking around the store doing tasks and didn't even acknowledge me. I gave her a few minutes to finish her tasks and then she walked in the back and never even said hello. I was left standing there.</i>
T3 Vegan and organic food	<i>This all-organic, mostly vegan restaurant is a gem of XYZ City*! Me and my wife had the Bahn Mai and the Lettuce Hand Wrap (a special) and they were incredibly good. Light, yet filling. And the lovely woman behind the counter gave me a sample of the banana espresso which was sweet and delicious!</i>
T4 Delicious vegetarian food	<i>I love this place...the food here is really delicious. I'm vegetarian so if I'm liking the food that much, I'm sure the non-veg is gonna be more delicious. Went with my all friends and all of them love it. Do try Paneer chilli and manchaow soup. All the other food is also very delicious.</i>
T5 Delicious chicken dishes	<i>I enjoyed the Crispy and spicy Popcorn chicken and flavorful Chicken Roll.</i>
T6 Healthfulness	<i>Cannot recommend them enough!! Wish I could give them 10 stars!! I was visiting the area for my birthday and they made me feel like a Queen!! I have many food allergies and restrictions and they were so VERY accommodating!! Probably the best meal I will eat in my lifetime!! And I'm a foodie from XYZ City*!!! It's extremely difficult for me to go out to eat, so I make all of my meals. When I travel, I try to find vegan organic restaurants - and was SOOOOO thrilled when I found Jane* and Chef John*!!! Wish I lived closer so I can eat there more often! They were super accommodating, very pleasant and they felt like being with family! I will visit again!!!!</i>
T7 Bad food	<i>This place was suggested by a friend. It was HIGHLY recommended by a friend. I had ordered Veg Manchurian, Fried rice and hot n sour soup to go. Hot and sour soup is actually the gravy of Manchurian at this place, never in my life did ever have a hot n sour soup this bad. Food was extremely spicy to a point where u can bite into green chillies. Place is expensive to begin with and looks fancy. I had to literally discard the Manchurian and the soup. All I ate was rice. Thankfully that was edible. That was my first and my last visit to this place. Never again.</i>

Label	Representative Quote
T8 Deteriorating food quality	<i>My review used to be 5 stars but now is 2 stars because they do not sell literally half the stuff on the menu anymore. It is a restaurant's responsibility to update their menu when they add or remove dishes, and I doubt this restaurant will do anything to fix it. The food I had to get wasn't bad, but the menu issue is dire.</i>
T9 Great service	<i>Great n fast service, food quality was awesome.</i>
T10 Billing issues	<i>I had dinner at your restaurant on Saturday. Food was OK. I noticed that gratuity was included in the bill. When server brought credit card receipt, it again said "Tip Amount" and it was not mentioned that Gratuity was already charged. Final (Credit Card) receipt should clearly mention "Additional Tip" so that people know that gratuity was already included in your first bill and charged. Otherwise people who do not pay attention to your first bill, may never realize that they have been charged Gratuity already.</i>
T11 Pricy good food	<i>Food was good, price was a bit much. Not outlandish, just slightly higher than expected. Either way, it was good.</i>
T12 Best of its kind in town	<i>I love this place. Chili paneer is my favorite. This is the best restaurant in the whole XYZ* area for me.</i>
T13 Dim sum	<i>Great Dim Sum. Reasonably priced. Over the years, the wait has been reduced quite a bit. Still in top 5 for dim sum in a 10 mile radius for me.</i>
T14 Reviews in Chinese about authenticity	<i>(Translated by Google) Great authentic Taiwanese food and lively ambience! (Original) 很棒的正宗台灣美食和熱鬧的氛圍!</i>
T15 Revisit intention	<i>Drove to meet my friends from ABC City* to XYZ City* and we decided to go to a Hakka restaurant* as my friends told that it was a very good restaurant. The restaurant was very very busy but I did not regret waiting as the food that was served was of top quality. The wait of more than an hour was worth it and it made my day. Great Job. We will visit you again when we come to XYZ City*. Keep up the quality of food!</i>

\* Name is pseudonymized for anonymity.

As shown in the lower half of Figure 2, T10 labelled “pricy good food “ about food and price has the highest topic proportion for Indian-Hakka restaurants as one customer noted “*Good food. Prices are a bit high.*” T13 has the second highest topic proportion and is mainly about the evaluation of dishes. One representable review goes:

*Lolipop chicken and sesame chicken are decent. The Manchurian chicken has ZERO taste though. No flavoring, not spicy, absolutely nothing. It was like chewing on balls of nothing.*



T16 has the third highest topic proportion in the analysis of Indian-Hakka restaurants. It is about customers' praise as the best restaurant of its kind in town, for example, "One of the best Bengali Chinese food in the New York City." The fourth highest topic is T18 which is labelled as "positive experience". A representative review describes their experience as follows:

*My family and I absolutely love this place! Ever since we heard about it a few months ago we have dinner here at least 1-2 times a month. The food is always super fresh and very tasty. And the staff that runs the Hakka restaurant\* is extremely friendly and kind. Could not recommend this place more.*

T5 labelled as "evaluation of service" has the fifth highest topic proportion. Customers provide their evaluation of the service they received at the restaurant, such as: "One of the bad places... Also bad service."

Among the top five topics (T10, T13, T16, T18, and T5), restaurant attributes, such as food, service, price, and positive word of mouth stood out among the hidden topics. Compared to Taiwanese/Chinese-Hakka restaurants, it is found that Indian-Hakka restaurants were criticized for more aspects of service such as service delivery, communication, servers' attitude, food safety and sanitation issues in addition to billing and wait, which were also found in its counterpart. In terms of proteins in the dish, both T2 (chicken and soup dishes) and T3 (chicken dish flavor) indicate that chicken is one of the bestsellers in Indian-Hakka restaurants as one representative review shows:

*Great food and most things are very reasonably priced for the portions and quality. The chicken lollipop used to be a go-to item with every visit but ever since they raised the prices from \$9 to around \$13 or \$14 for just 6 small pieces it becomes not worth it anymore. Apart from that, the Manchurian Chicken Chow Mein, Fried Rice, and General Tso's chicken are all very good. The sizzling chicken definitely looks very eye catchy with steam coming out of it when they serve it, but it's lacking in flavor and is relatively bland in my opinion.*

This finding is due to the fact that many Indian-Hakka restaurants sell Halal foods because of their customers' religious beliefs. Halal is one of the most frequent words under T16 when customers appraise the Indian-Hakka restaurants as the best. While Taiwanese/Chinese-Hakka restaurants are deemed vegetarian friendly, Indian-Hakka restaurants do a great job offering Halal foods. In both cases, pork as a traditional source of protein is not the sole focal point on the plate anymore. Another common topic worth mentioning that appeared in the analyses of both types of Hakka restaurants is T11/T10 pricy good food. One of the most representable reviews under this topic goes:

*Food is good but expensive for the price of the portion they offer. Only reason I go to this place because they have halal meat & food to offer. They really need to think about making the portion larger.*

Furthermore, T4 value for money identified at Indian-Hakka restaurants also supports this viewpoint. It seems that customers' evaluations of Hakka food are generally positive, and yet there is a stigma that the portion of Hakka food should be large rather than delicate. In conjunction with the value consideration, Hakka restaurants are deemed overpriced. Table 3 presented all the 20 topics along with the most representative quotes for Indian-Hakka restaurants.

Table 3 Topics and Representative Quotes for Indian-Hakka Restaurant

<b>Label</b>	<b>Representative Quote</b>
T1 Negative service	<i>Drove 2 hours to this Hakka restaurant* with my family to celebrate my one-year-old nephews' birthday. Restaurant seems to be full. We were told to wait outdoor in the cold (35 degree F). There are spaces for the mother to stand inside of the restaurant with the baby, but the waiter kept telling us to stand out in the cold. We got the manager involved and he pretty much took the waiters side and later he mentions there are more space the basement if we like to wait there. Why not mention that before??? Hakka restaurant* lover, they are making money because of people like me and you. We are expecting to be treated equally. Please stay away from the restaurant. I hope the higher management will take some disciplinary actions against their employees.</i>
T2 Chicken and soup dishes	<i>Ordered appetizer (chicken pakora), chicken corn soup, sweet &amp; sour soup and lo mein. Everything was delicious! A must try!!!</i>
T3 Chicken dish flavor	<i>Great food and most things are very reasonably priced for the portions and quality. The chicken lollipop used to be a go-to item with every visit but ever since they raised the prices from \$9 to around \$13 or \$14 for just 6 small pieces it becomes not worth it anymore. Apart from that, the Manchurian Chicken Chow Mein, Fried Rice, and General Tso's chicken are all very good. The sizzling chicken definitely looks very eye catchy with steam coming out of it when they serve it, but it's lacking in flavor and is relatively bland in my opinion.</i>
T4 Value for money	<i>Expensive for their average tasting offerings.</i>
T5 Evaluation of service	<i>One of the bad places... Also bad service.</i>
T6 Good ambience	<i>Nice quite atmosphere, well laid out, very clean.</i>

Label	Representative Quote
T7 Poor communication	<i>The staff was very rude and nasty to guests. I called this restaurant 20 times from 2:45 until 2:55 and the line was consistently busy. You would think that was a good thing because maybe they are busy; however they deliberately turn the phone off so no one can place an order for the lunch special. I got there at 2:55 and waited to the front. The guy working there deliberately waited until 3:02 then came to take my order. When I asked for the lunch special he aside no more orders. I said I was here 5 minutes ago he was so rude and nasty and kept repeating after 3pm after 3pm. I said to him I called fifteen minutes ago for ten minutes straight, and the phone was busy. I called the number in front of him while pointing out 3 phones on the counter was busy and maybe 3 tables with customers. I asked for a manager and he said only Friday. Hakka restaurant* you will not get my business anymore because of this bad experience and if I could give you a half star that is what you deserve. No customer should ever be treated like this.</i>
T8 Negative word of mouth	<i>I would give it 0 stars if I could. One of the worst places I've ever been to, and I usually don't take my time out to review but I believe everyone should know. The food was undercooked, took a long time to come, and the customer service is horrible. Complete waste of time and money I won't be coming back here ever again!</i>
T9 Overall authenticity	<i>My go to Hakka restaurant in XYZ City*. Originally being from Toronto, I know what good Hakka tastes like. I've been in XYZ City* since 2015 and wasn't able to find any Hakka restaurant close to those in Toronto but this Hakka restaurant* is as close as you can get. The other Hakka competition isn't even close to the consistency and quality of food this Hakka restaurant* has provided over the past several visits. Highly recommend!</i>
T10 Pricy good food	<i>Good food. Prices are a bit high.</i>
T11 Rude customer service	<i>Extremely rude customer service. Even if you are masked, they demand vaccination card to dine in. If you can't show it, they will treat you like an insect.</i>
T12 Poor experience at a specific restaurant	<i>I tried to contact the owner of this Hakka restaurant*. I could not anyhow. And the guy who did this to me is still working and no steps are taken against him. So, this time, I will take it in my hand. I will go to, 'ABC Ethic* Association' in XYZ City*. Then, Let's see what happens.</i>
T13 Evaluation of dishes	<i>Lolipop chicken and sesame chicken are decent. The Manchurian chicken has ZERO taste though. No flavoring, not spicy, absolutely nothing. It was like chewing on balls of nothing.</i>
T14 Food safety issues	<i>Since I love myself and I like being healthy, so I made a promise that I will never ever eat at that place ever again. I'd rather starve for a day even that was the last place to eat at. Their food gave me instant diarrhea. Poisoning people with their food that they paid for is a sin.</i>

Label	Representative Quote
T15 Billing issues	<i>Food was ok, service not so much, charged us gratuity with 3 people while it says they charge with 5. It also said tip not included which seems to happen to a few others and same excuse it was an accident.</i>
T16 Best of its kind in town	<i>One of the best Bengali Chinese food in the XYZ City*.</i>
T17 Food contamination	<i>Yesterday we went to the Hakka restaurant*. We ordered Sagar special fried rice. When I was eating rice in the restaurant, I found eggshell 2 times. I wanted to ignore this incident. But when I took my leftovers with me, I found a big eggshell again which made me very disappointed as the Hakka restaurant* is one of my favorite restaurants and I didn't expect this kind of service from them. Hopefully they won't repeat this incident again.</i>
T18 Positive experience	<i>My family and I absolutely love this place! Ever since we heard about it a few months ago we have dinner here at least 1-2 times a month. The food is always super fresh and very tasty. And the staff that runs the Hakka restaurant* is extremely friendly and kind. Could not recommend this place more.</i>
T19 Family business	<i>This is a Bengali restaurant and most of the staff members are hired because they're friends or family of the owners. You need to be very patient and understanding of Bengali. They (Their) service isn't well trained up to most people's standards however, if you can get past that barrier by being patient or understanding, the food is quite good.</i>
T20 Busy place	<i>Busy place during weekend and specially evening. We had to wait in order to get seat. You can get Chinese Food. Food quality 4/5. Service 3/5. Cleanliness 4/5.</i>

\* Name is pseudonymized for anonymity.

### 4.3. Topic correlation

To better understand the topics that share latent features within the same sub-dataset, the analyses of topic correlation were conducted at the significance level of .50. The authors tabulated the correlated topics in the same group and determined the labels for groups and topics based on the representative reviews along with the top words that appeared the most frequently under a specific topic and best described the topic. Table 4 and Figure 3 show the topics that correlated with each other for the Taiwanese/Chinese-Hakka restaurants. The largest community is Group 1 reviews of food which contains four topics (T1 authenticity of noodle soup, T5 delicious chicken dishes, T7 bad food, and T8 deteriorating food quality). Group 2 (T2 long wait and T10 billing issues), Group 3 (T4 delicious vegetarian food, T9 great service, and T12 best of its kind in town), and Group 4 (T11 pricy good food, T14 reviews in Chinese about authenticity, and T15 revisit intention)

represent negative, positive, and mixed reviews respectively. In addition, Group 5 healthy eating consisting of T3 vegan and organic food and T6 healthfulness is a unique identification that only appeared at Taiwanese/Chinese Hakka restaurants.

In contrast, Table 5 and Figure 4 illustrate the topical structure of Indian-Hakka restaurants. Interestingly, the topical structure is similar with Taiwanese/Chinese-Hakka restaurants, except for the inexistence of the healthy eating group. Specifically, the largest community is Group 2 negative reviews that contains 8 topics (T1 negative service, T7 poor communication, T8 negative word of mouth, T11 rude customer service, T12 poor experience at a specific restaurant, T14 food safety issues, T15 billing issues, and T17 food contamination). Group 1 reviews of food (T2 chicken and soup dishes, T3 chicken dish flavor, and T13 evaluation of dishes), Group 3 positive reviews (T6 good ambience, T16 best of its kind in town, and T18 positive experience) and Group 4 mixed reviews (T4 value for money, T5 evaluation of service, T10 pricy good food, and T20 busy place) are similar in terms of the community size.

In the negative reviews group, it is interesting to note that the criticism from customers covers a wide array of complaints for Indian-Hakka restaurants compared to Taiwanese-Hakka restaurants although billing issues and the wait for service are the common challenges in both types of Hakka restaurants. In the positive review groups, one common theme is that customers leave extremely favorable reviews and endorse both types of Hakka restaurants as best of its kind in town, showing a promising outlook for well-managed Hakka restaurants.

Table 4 Topic labels and top words for Taiwanese/Chinese-Hakka restaurants.

	Label	Top Words
<b>Group 1</b> Reviews of food	T1 Authenticity of noodle soup	noodle, beef, pork, taiwanes, soup,
	T5 Delicious chicken dishes	tast, like chicken, lunch, roll,
	T7 Bad food	noodle, order, shrimp, like rice, fri,
	T8 Deteriorating food quality	soup, alway, hot, like, order dish, star, dont, menu, restaur, tri, tast
<b>Group 2</b> Negative reviews	T2 Long wait	order, time, wait, custom, one,
	T10 Billing issues	ask, bad new, restaur, locat, went, tip, famili, disappoint
<b>Group 3</b> Positive reviews	T4 Delicious vegetarian food	food, delici, love, staff, tasti,
	T9 Great service	clean, expens great, servic, place,
	T12 Best of its kind in town	excel, food, qualiti, amaz best, restaur, place, chines, one, indo, indo-chines
<b>Group 4</b> Mixed reviews	T11 Pricy good food	good, realli, portion, get, price,
	T14 Reviews in Chinese about authenticity	time, pretti chines, nice, authent, origin, googl, translat, tast come, back, will, friend, worth, definit,
	T15 Revisit intention	next
<b>Group 5</b> Healthy eating	T3 Vegan and organic food	tea, tofu, vegan, organ, dumpl,
	T6 Healthfulness	love, amaz eat, place, will, like, visit, everyth, cook
<b>Unassigned</b>	T13 Dim sum	dim, sum, place, super, tasti, fa- vorit, price

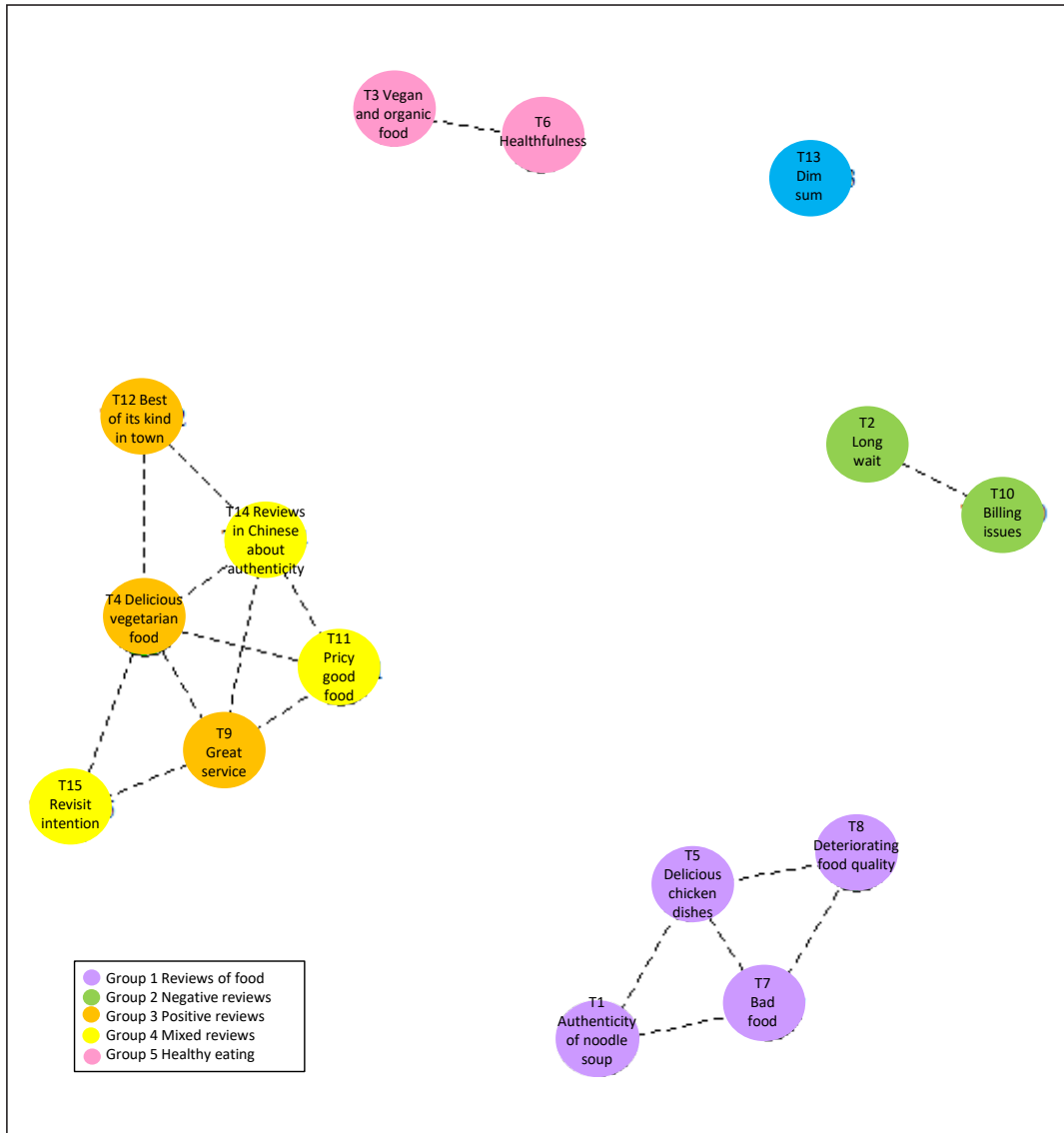


Figure 3 Topic correlation for Taiwanese/Chinese-Hakka restaurants.



Table 5 Topic labels and top words for Indian-Hakka restaurants.

	Label	Top Words
<b>Group 1</b> Reviews of food	T2 Chicken and soup dishes	soup, chicken, order, manchurian,
	T3 Chicken dish flavor	noodle, shrimp, item dish, flavor,
	T13 Evaluation of dishes	chicken, tast, perfect, super, just chicken, lollipop, rice, fri, soup, thai, like
<b>Group 2</b> Negative reviews	T1 Negative service	order, water, came, ask, minut, got,
	T7 Poor communication	one order, dont, call, said, wait,
	T8 Negative word of mouth	close, told long, money, time,
	T11 Rude customer service	locat, wast, jackson, height
	T12 Poor experience at a specific restaurant	custom, need, rude, worst, waiter, servic, tabl sagar, now, old,
	T14 Food safety issues	restaur, will, year, disgust time, eat, better, disappoint, it, get,
	T15 Billing issues	never charg, give, small, just,
<b>Group 3</b> Positive reviews	T17 Food contamination	order, sauc, extra serv, went, found, rush, time, didnt, enough
	T6 Good ambience	good, nice, servic, clean,
	T16 Best of its kind in town	atmosph, use, improv chines,
<b>Group 4</b> Mixed reviews	T18 Positive experience	best, restaur, halal, indian, bangladeshi, one place, love, amaz, famili, friend, recommend, delici
	T4 Value for money	realli, qualiti, awesom, okay, tri,
	T5 Evaluation of service	much, expens servic, great, bad,
	T10 Pricy good food	excel, tasti, poor, slow food, price,
<b>Unassigned</b>	T20 Busy place	tast, delici, littl, high, reason get, busi, usual, around, seat, time, park
	T9 Overall authenticity	day, everyth, parti, star, peopl,
	T19 Family business	origin, even staff, friend, restaur, experi, enjoy, peopl, environ

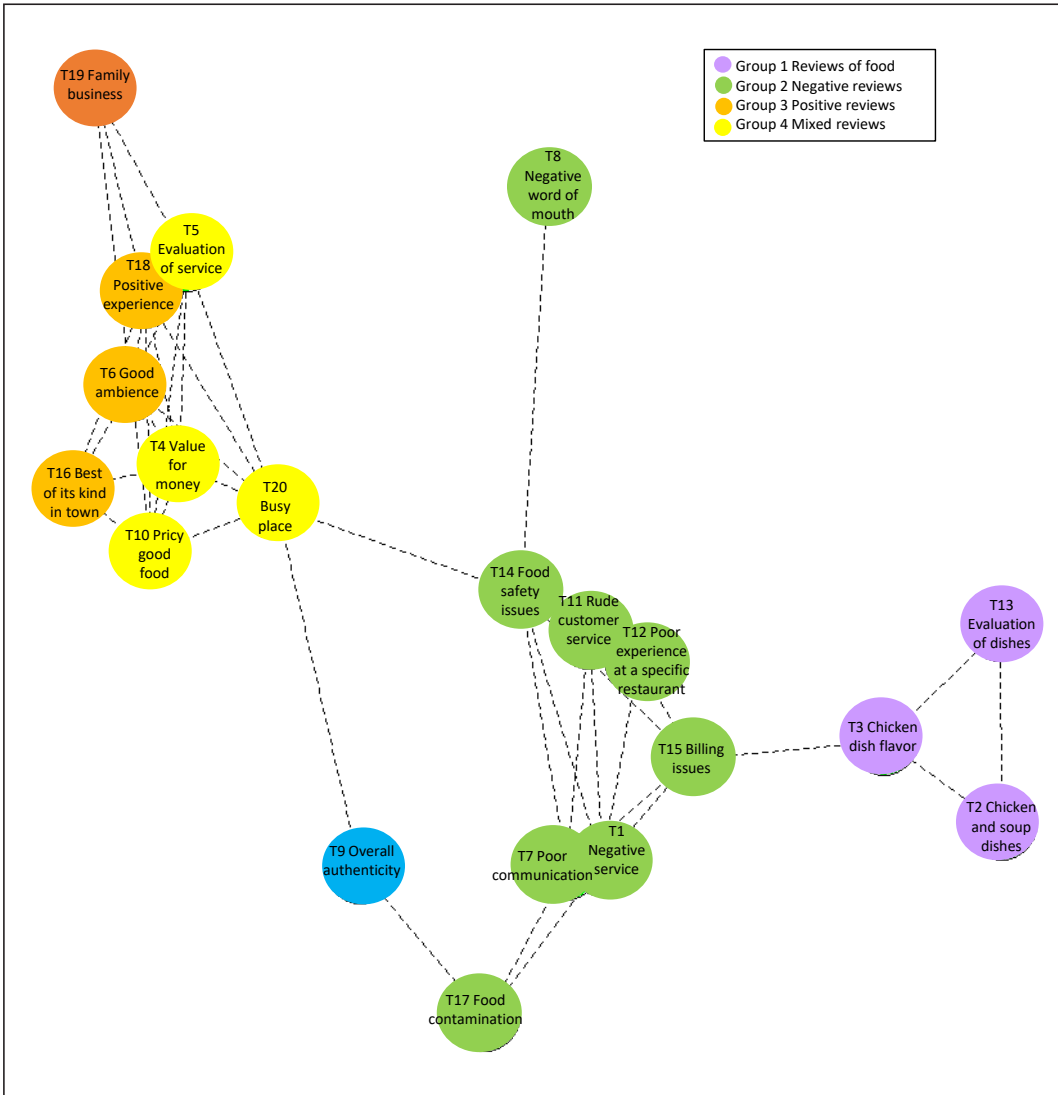


Figure 4 Topic correlation for Indian-Hakka restaurants.

## 5. Discussion

### 5.1. Theoretical implications

This is one of the first research that systematically investigates the current state of Hakka restaurants in the U.S. using user-generated content available on a prevalent review website. Hakka food in North America is traditionally considered as home cooking and is less prevalent in restaurants (Anusasananan, 2012; Chiu, 2003). Although some studies were conducted in North America (e.g., Liu, 2021; Xu, 2021), Hakka restaurants in Canada received much more attention than the ones in the U.S. This study successfully

shortens this gap by identifying the 15 and 20 salient topics alongside the topical structures for Taiwanese/Chinese-Hakka and Indian-Hakka restaurants in the U.S. respectively. By conducting parallel analyses on these two major types of Hakka restaurants in the U.S., we identified hidden topics that were specific to Hakka in addition to general restaurant attributes. For instance, customers in Taiwanese/Chinese-Hakka restaurants stress more on authenticity of Hakka, the change of Hakka ingredients such as protein and vegetables and even carry common characteristics like leaving comments in Chinese. In contrast, customers in Indian-Hakka restaurants care more about value for money and a few selective Hakka dishes, including Manchurian chicken and Hakka noodles. In other words, the customers' focus is distinct in these two types of restaurants even though they are both under the Hakka umbrella.

Traditionally, Hakka food is deemed as simple and comforting, with pork and preserved foods as the major ingredients (Anusasananan, 2012; Chiu, 2003). Contrary to the extent literature, our research findings indicate that Taiwanese/Chinese-Hakka restaurants are, in fact, welcomed by customers as being vegetarian-friendly by serving plant-based proteins like tofu and fresh vegetables. Similarly, some customers compliment Indian-Hakka restaurants because they can have Halal meat, such as chicken with special condiments and spices when dining there. Although pork seems to move away from customers' plates, this unexpected finding actually conforms to the traditional Hakka value of being adaptive and flexible to the new environments to cater food offerings to the local clientele (Liu, 2021; Xu, 2021). By switching the perspective, the evolvement of major ingredients in the contemporary Hakka restaurants makes much sense and goes well with the recent trend of healthy eating in the U.S. Nevertheless, due to the changing expression of Hakka cuisine in the U.S., such as replacing pork with plant-based proteins, we would like to point out the paradox of losing Hakka's traditional identity while pursuing growth and prosperity in the competitive restaurant industry. Both researchers and practitioners should be mindful of this challenge and aim to find the balance between preserving tradition and promoting Hakka restaurants in the U.S.

Finally, customers generally expect Indian-Hakka restaurants to offer affordable food with large portions (Liu, 2021). Our finding of pricy good food is salient at not only Indian-Hakka restaurants but also Taiwanese/Chinese-Hakka restaurants. Customers criticized that the portion is not large enough given the price they pay which is, in fact, normal compared to the menu price at other ethnic restaurants in the U.S. This finding is consistent with the prior research that portion and price matter although most customers commend the good food quality at Hakka restaurants.

## 5.2. Practical implications

Managers of Hakka restaurants in the U.S. can reference our study findings to refine their operation and strategize business competencies. Specifically, the identified salient topics reveal customers' likes and dislikes that are critical enough to motivate them to leave online reviews for a restaurant. The common topical groups of review of foods as well as positive, negative, and mixed reviews alongside the topics within the groups point out a clear pathway for Hakka restaurant managers to pay close attention to improve the deficiencies and keep up the good work with areas that customers appreciate.

Hakka food evolves with time and the environments. Customer's appreciation of being vegetarian-friendly, cooking with fresh vegetables, and offering Halal meat supply ideas and new directions for culinary professionals in Hakka restaurants to reimagine and recreate Hakka dishes with new trends like healthy eating, vegan diet, and plant-based proteins. Hakka people are known for being adaptive, and this value with some creativity may help introduce Hakka food to the mainstream culinary market in the U.S.

Given that the value for money is estimated based on the differences between expectations and the actual perceptions, the stigma of Hakka food being cost-efficient and large in portions are creating challenges for Hakka restaurants in the U.S., such as *pricy good food* in this study. Marketers of Hakka restaurants may develop a new campaign to turn the stigma around. By doing so, Hakka food can be promoted as tasty, reasonably priced, and good portion that fits contemporary lifestyles of Americans. In other words, this initiative may help reposition the image of Hakka food and elevate the profitability of Hakka restaurants in the U.S.

## 5.3. Limitations and future research

Despite the insightful research findings, the authors would like to acknowledge the limitations in the study. Hakka restaurants only account for a small percentage of ethnic restaurants in the U.S. Although the authors strategically searched Hakka restaurants in areas with more condensed Chinese-speaking populations on Google Maps, the number of Hakka restaurants included in this study was limited, hindering the study's generalizability. Future studies are encouraged to increase the sample size, such as adding Hakka restaurants in Canada using the big data approach. Furthermore, the data collected in this study were customer reviews for Hakka restaurants, reflecting one side of the story from consumers' viewpoint. Future studies may interview or survey managers and employees at Hakka restaurants in the U.S. to explore the other side of the story and validate the research findings in this study. Specifically, it would be valuable to learn restaurant practitioners' viewpoints on how emerging trends such as vegetarian-friendly, plant-based protein, Halal, and casual fine-dining would

affect their positioning and marketing of different types of Hakka restaurants in the U.S. Future studies are encouraged to utilize content analysis for in-depth interviews to identify the future of Hakka restaurants in an ever-changing U.S. market. Finally, some Google Maps users chose not to share their personal information due to privacy concerns, disabling the likelihood of analyzing whether they carry certain common traits systematically. Although we were able to identify T14 (reviews in Chinese about authenticity) when analyzing Taiwanese/Chinese-Hakka restaurants that suggest those commentors may speak the same native tongue and may come from the same region, it is unclear if such a finding may be applicable to Indian-Hakka restaurants. Future research can replicate this study using a different online platform that requires registration with real identity or that shares more demographic information of its users to reveal if and to what extent the online reviewers share common traits.

#### **5.4. Conclusion**

While Hakka identity has been gradually reembraced by Hakka immigrants and descendants in North America, there is a gap in research investigating the current state of Hakka restaurants in the U.S. This study applied big data analytics to analyze business information and customer reviews collected from Google Maps. Through advanced text-mining approach, i.e., structural topic modeling, the salient topics along with the hidden topical structures for Taiwanese/Chinese-Hakka and Indian-Hakka restaurants were identified and visualized respectively. The study findings not only reflect the new spheres of Hakka foods being vegetarian-friendly and serving Halal meat in different types of Hakka restaurants but also shed light on how Hakka food can be repositioned in the marketplace in the contemporary society. We hope our study helps pave the foundation for many more future research on Hakka restaurants and Hakka culture in the U.S.

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