

Food Allergy Labelling and Accommodation on Non-Chain Restaurant Websites and Menus in Toronto, 2023-2024

*MSc Occupational & Public Health
Thesis Defence*

What are Food Allergies?

Reactions to food can be divided into¹

- Non-immune mediated (Food intolerances)
- Immune mediated (Food Allergies & Celiac Disease)

Food allergies occur when the immune system mistakenly identifies a harmless food as a threat¹

- Government of Canada identifies 11 priority allergens ²
- Around 7.5% of Canadians have at least one food allergy³
- Result in mild symptoms to life-threatening deadly reactions ⁴



Avoiding the allergen= primary strategy to prevent a reaction

What is Celiac Disease?

- Autoimmune response in the small intestine triggered by the ingestion of gluten⁵
- Causes a wide range of symptoms⁶
- Affects ~1% of individuals in North America⁵
- Prevalence in Canada and worldwide is increasing⁵
- Around 1.9% of Canadians follow a gluten-free diet, with women 2x more likely to do so⁷



Following a GFD= primary strategy to prevent a reaction

Why care?

Husband sues Disney for wife's death after eating 'allergy-safe' restaurant meal

NYC doctor Kanokporn Tangsuan had severe dairy and nut allergy, collapsed 45 mins after eating

The Associated Press · Posted: Feb 28, 2024 9:13 AM EST | Last Updated: February 28



HAMILTON REGION

Mall guards carry anti-allergy injectors after death of girl, 12

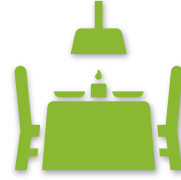
Test project at Jackson Square sparked by death last year of 12-year-old girl in Burlington

Sept. 9, 2014 | 1 min read



Jackson Square mall security guards have been trained to identify the symptoms and signs of an anaphylactic reaction and when and how to use an epinephrine auto-injector.

Literature Review Themes



1. Dining out Experiences of Customers with Food Allergy and Celiac Disease



2. Food Allergy Risk Communication in Restaurants



3. Food Allergy Knowledge & Training in Restaurants



4. Financial Capacity of Restaurants

1. Dining Out Experiences: Food Allergies

- Approximately 54% of Canadians eat out or purchase takeout food once a week or more⁸
- Customers with food allergies (69.8%) and parents of allergic children (47.5%) report experiencing reactions⁹
- Predominantly in cafes, fast food restaurants, Asian restaurants, ice cream parlours for children, bars for adults
- Tree nuts, peanuts, and milk are the most common allergens in both adults and children¹⁰



1. Dining Out Experiences: Celiac Disease

1. Invisibility of Condition¹¹:

2. Overpriced food¹²:

- In Canada, gluten-free foods are often priced around 150%-500% higher

3. Limited restaurant options¹²:

- Reported by over 80.2% participants in the “State of Celiac Survey” (n=7,500)
- Mitigation Strategies¹²:
 - Searching for online menus (78.4%)
 - Checking gluten content on menus (73.8%)
 - Calling ahead to inquire about GF menu items (48.0%)



2. Risk Communication

Verbal¹³:

- Necessary to facilitate customer safety and trust
- Food allergy management goes through communication chain
- Customers > Wait Staff > Cooks

Non-Verbal:

- Identifying food allergens on the menu¹⁴
- Restaurants have been increasingly adopting food allergen labeling
- Pre-packaged foods are required to have allergen labels²
(Health Canada regulations by the *Food and Drugs Act* and the *Safe Foods for Canadian Act*)



3. Food Allergy Knowledge & Training

- Food establishments are required to have at least one staff member with a food handler training certification present on-site¹⁵ (*The Ontario Food Premises regulation- O. Reg. 493/17*)
- No regulations mandating food allergen handling within the Canadian foodservice industry¹⁶
- Despite employee interest, only a few restaurants provide training¹⁴
- Training associated with better knowledge, practices, and views surrounding food allergens¹⁴
- Topics covered in trainings include allergen identification, risk communication, cross-contact prevention¹⁴



4. Financial Capacity

Production Costs¹⁷:

- Increased supply of kitchen appliances, a separate allergy-free zone, and increased cleaning

Employee Training¹⁸:

- Training employees on cross-contact prevention requires money and time

Restaurant Type (Chain vs. Independent)¹⁹:

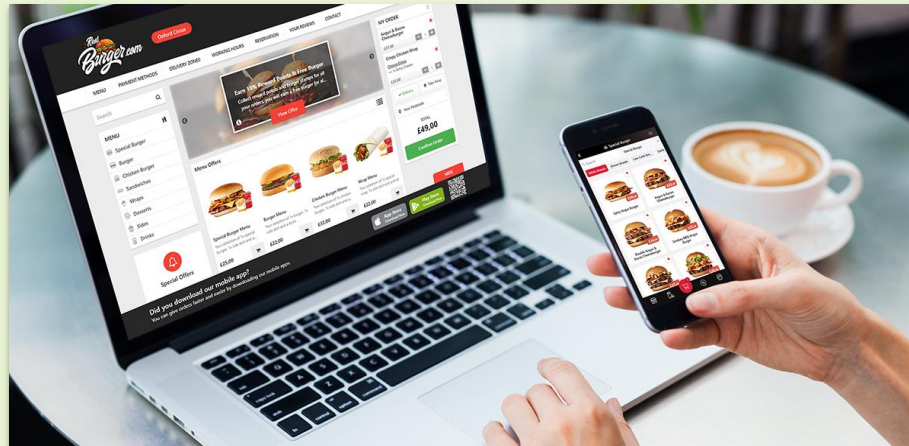
- Chain restaurants more likely to provide training, educational resources to employees

Restaurants that cater to allergen concerns can see an estimated profit increase of up to 24% ¹⁷



Research Question

How prevalent is food allergen labelling on the online menus of non-chain restaurants in Toronto?



Methods

1. Food Allergy Accommodation Assessment

- Random sample of non-chain restaurants from DineSafe (n=1000)

2. Online Presence Assessment

- Checklist to assess restaurant & menu characteristics

3. Multi-level logistic models and predicted probabilities:

- Relationship between restaurant characteristics and allergen symbols/ statement provision on menus
- Clustered by cuisine type

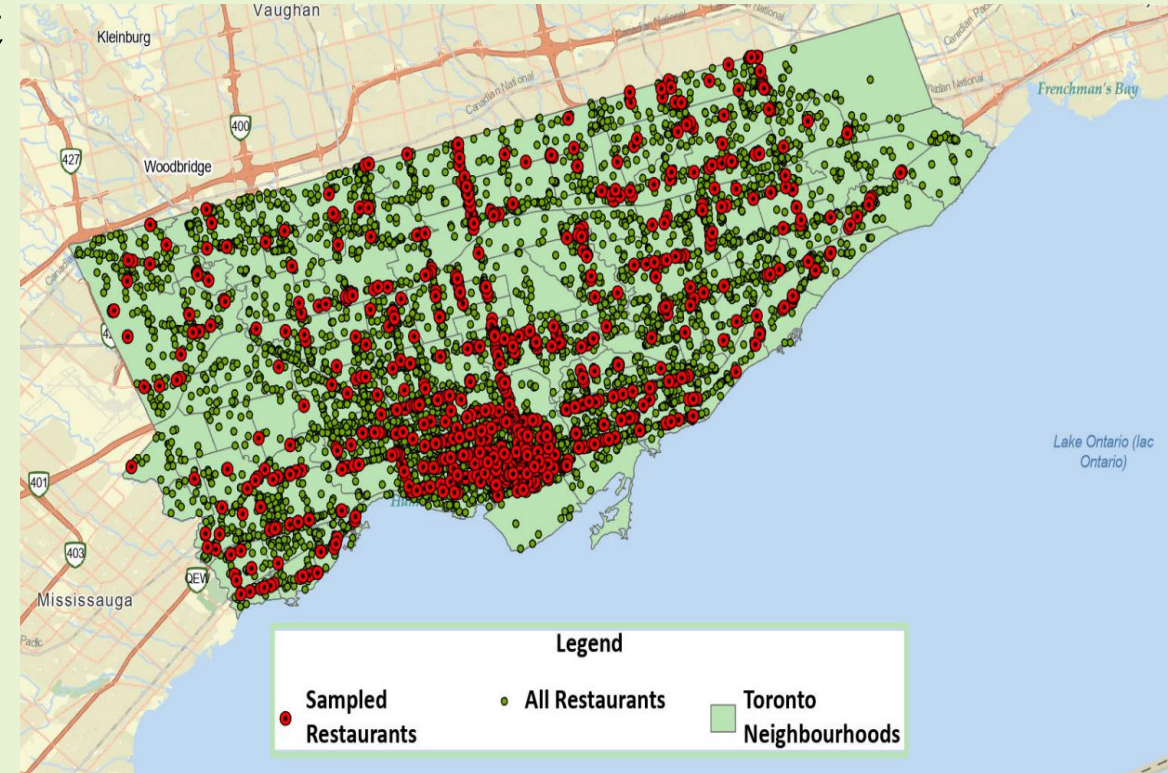


Figure 1. The 1,000 randomly sampled restaurants in Toronto, 2023, as retrieved from DineSafe data

Food Allergy Accommodation Checklist

Assessment questions	
Type of cuisine of the restaurant?	Chinese
Cost indicator (\$- \$\$\$\$)?	(\$\$)
Google review scoring (1-5 stars)?	4 stars
Are specific food allergens identified on the menu with symbols (GF, DF...)?	GF, DF
Is there a general allergy related statement on the website/menu? Is there a specific allergen statement? If yes, what allergens does it specify?	Yes, specifies gluten and peanuts
Is there a detailed ingredient allergen chart provided?	No
Is there a separate menu for food allergies provided?	No

Table 1. Food Allergy Accommodation Checklist

Descriptive Statistics

Most Common Cuisine Type:

- East Asian (n=244)

Google rating:

- 2.7-4.9, (median 4.3)

Cost indicator (1-4):

\$: 31% (n=314)

\$\$: 63% (n=631)

\$\$\$: 0.5% (n=45)

\$\$\$\$: 0.1 (n=10)

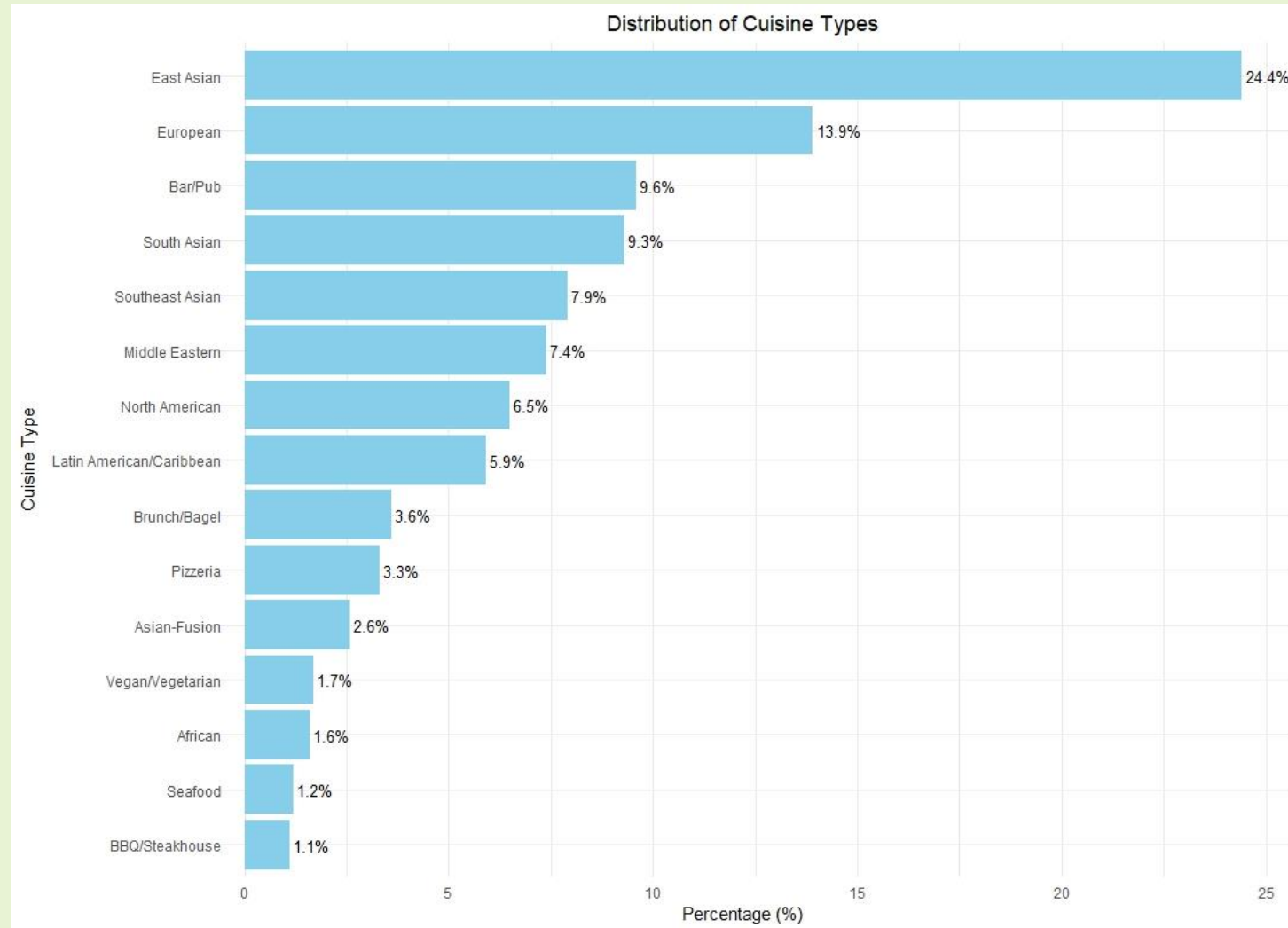


Figure 2. Percentage Distribution of Restaurants by Cuisine Type

Descriptive Statistics

Menu Characteristics:

1. Menu Symbols:



- Only 10% of restaurants (n=100) featured one or more allergen symbol
- 8% had no menu symbols but offered gluten-free food

2. Allergen Disclaimer:

- 16% of restaurants featured an allergen disclaimer on their menu (n=159)-focusing on gluten and peanuts



3. Separate Allergen Menu/Chart:

- 6 restaurants had a separate allergen menu, 4 had a separate allergen chart
- Data consistent with previous studies ^{17 19 20 21}

Discussion

Menu Symbols:

Gluten: Most common (7.5%)

- Gluten-free label is the top claim on U.S. menus and grew 127% from 2012-2015 ²²
- The Canadian gluten-free market exceeded \$450 million in 2012, with a CAGR of 26.6% from 2008 to 2012 ²³
- GFD often followed for perceived health benefits²⁴

Nuts: Second most common (3.8%)

- Low rate, given tree nuts and peanuts are considered the top allergens affecting Canadians²⁵



Results: Multi-level Logistic Regression

Table 3 *Multi-level Logistic Regression Fixed Effects for the Model Examining Predictors of the Provision of at least one Allergen Symbol on the Menu*

Variable	OR ^a	95% CI ^a	p-value
✓ Cost Indicator	1.94	1.35,2.81	<0.001
✗ Google Rating	1.16	0.58,2.32	0.7
✓ Number of Locations	1.08	1.01,1.16	0.020
^a OR= Odds Ratio, CI= Confidence Interval			

Table 4 *Multi-level Logistic Regression Fixed Effects for the Model Examining Predictors of the Provision of Allergen Statements on the Menu*

Characteristic	OR ^a	95% CI ^a	p-value
✓ Cost Indicator	1.36	1.00,1.84	0.049
✗ Google Rating	1.15	0.66,1.99	0.6
✗ Number of Locations	1.03	0.96,1.10	0.4
^a OR= Odds Ratio, CI= Confidence Interval			

Predicted Probabilities by Cuisine Type

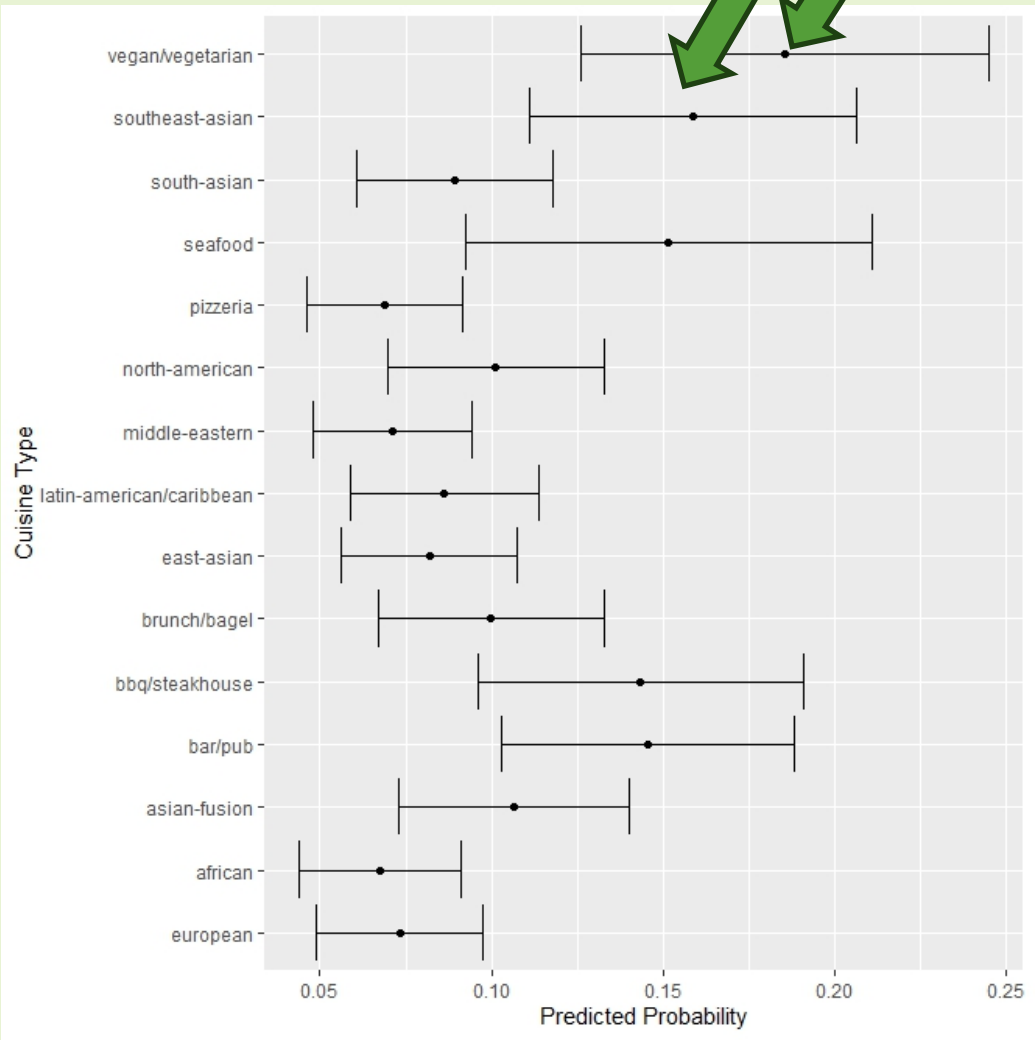


Figure 3. Predicted Probability of the Provision of Allergen Symbols on the Menu by Cuisine Type, Accounting for Other Restaurant Characteristics

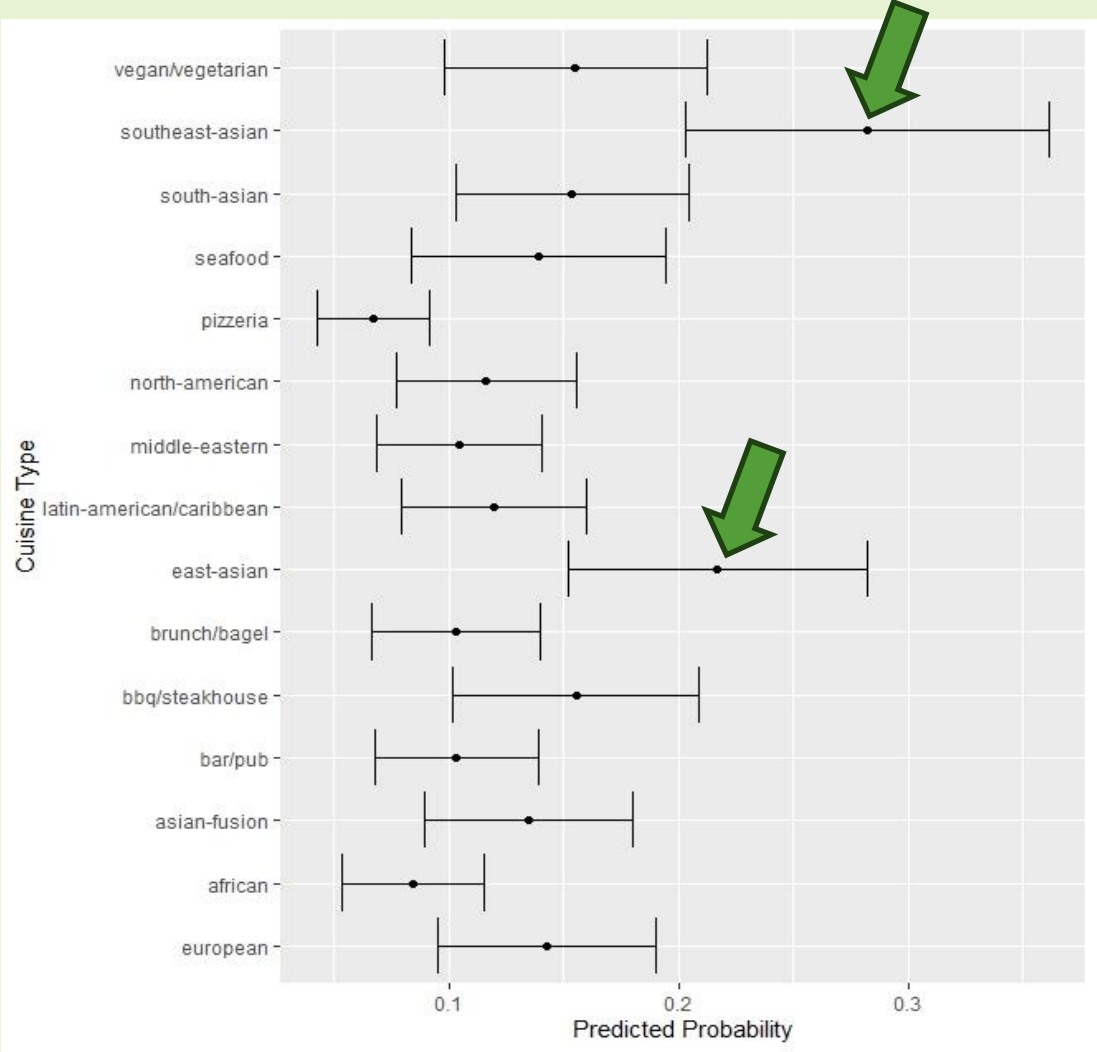


Figure 4. Predicted Probability of the Provision of Allergen Statements on Menus by Cuisine Type, Accounting for Other Restaurant Characteristics

Vegan/Vegetarian Restaurants

- Most likely to provide allergen symbols and statements
- Focus on excluding animal products like meat, fish, eggs, and dairy
- Allergic consumers prefer natural food products as they perceive them healthier and less likely to encounter accidental allergens ²⁶

Asian Restaurants

- Southeast Asian: Most likely to provide allergen symbols and statements
- East Asian: Most likely to provide allergen statements
- Proactive approach considering history of allergic reactions in Asian restaurants and use of hidden ingredients such as peanut butter as a flavour enhancer in chili or nuts ²⁷



Predicted Probabilities by Cuisine Type

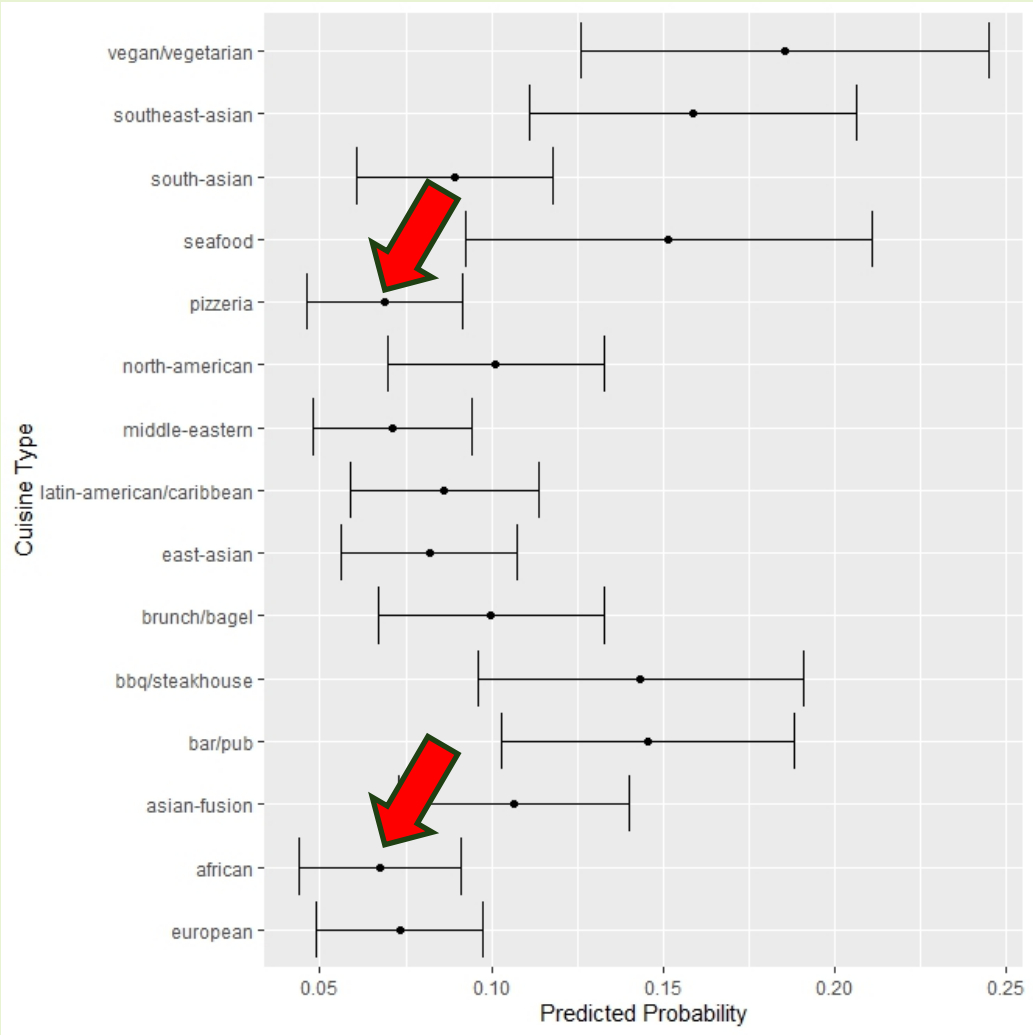


Figure 5. Predicted Probability of the Provision of Allergen Symbols on the Menu by Cuisine Type, Accounting for Other Restaurant Characteristics

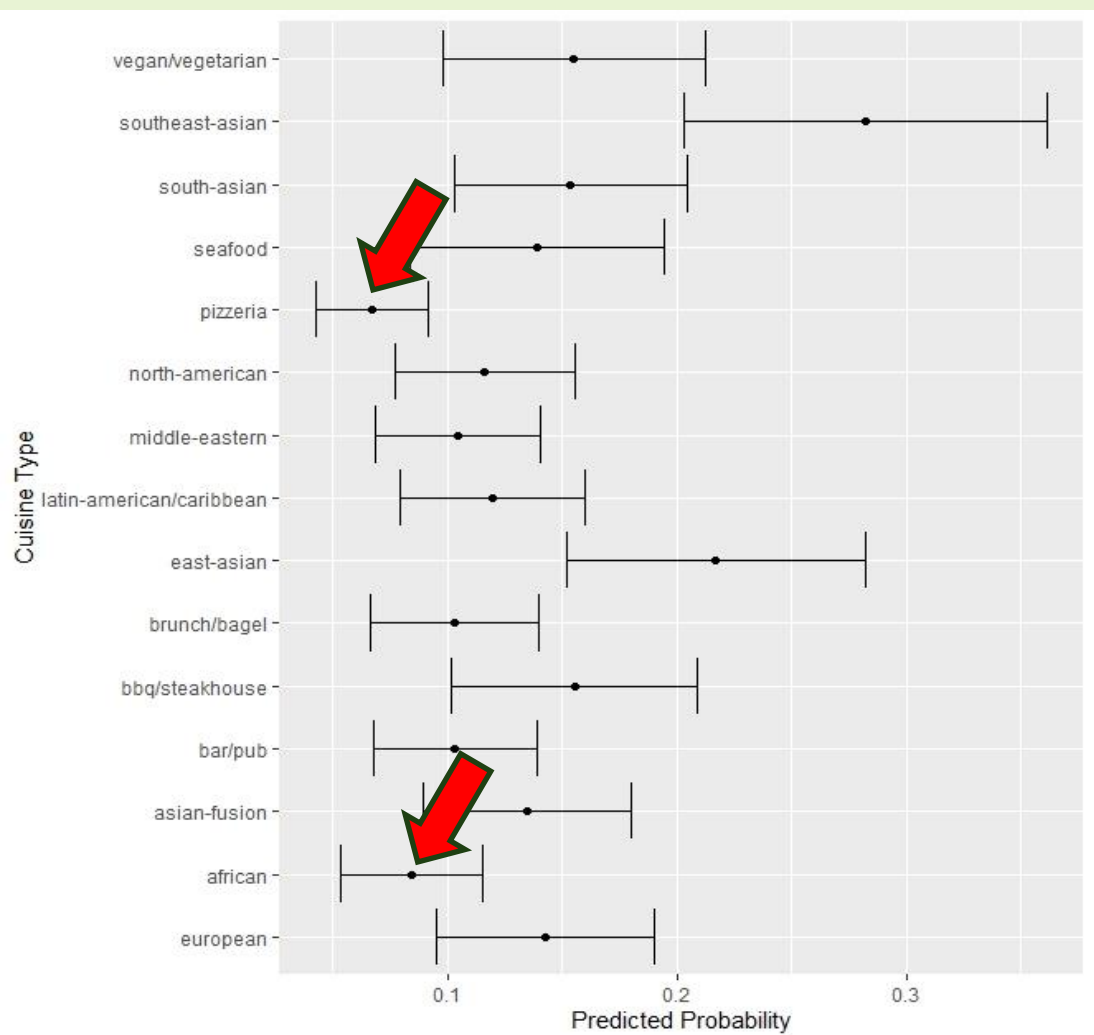


Figure 6. Predicted Probability of the Provision of Allergen Statements on Menus by Cuisine Type, Accounting for Other Restaurant Characteristics

Pizzerias

- Least likely to include allergen statements and symbols
- High gluten-contact risk due to limited space²⁸
- Challenges with substituting gluten-free flour²⁹
- Direct involvement of owners in pizza production³⁰



African Restaurants

- Least likely to include symbols and statements
- Highest proportion of single-location establishments among various cuisines, with 94% being independently operated (15 out of 16)
- Family-run, simple menus, catered to the African community³¹



Conclusions

- Non-chain restaurants across Toronto frequently lack sufficient allergen information
- Certain restaurant characteristics like cuisine type and cost indicators have an impact on catering for food allergens
- Restaurants should adopt clear and prominent allergen labelling practices that are more than generic advisory statements



Recommendations

More stringent Canadian government legislation surrounding food allergens:

- Mandatory disclosure of allergen symbols or statements on restaurant menus
- Enforcement of allergen training
- Inclusion of food allergen safety as a part of Ontario's food safety inspection system
- Introduction of economic incentive policies such as providing subsidized training courses to restaurants



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