

# BILAN DU HACKATHON

PREDICTION D'AVIS ET RECOMMANDATION

**MON AMI GABI®**

A CLASSIC FRENCH BISTRO

**LAS VEGAS**

# DÉMARCHE



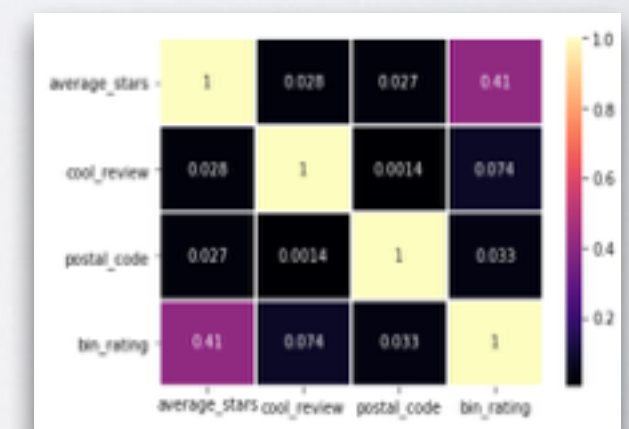
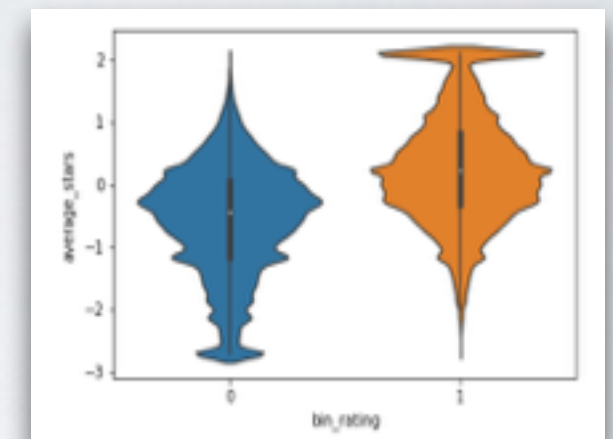
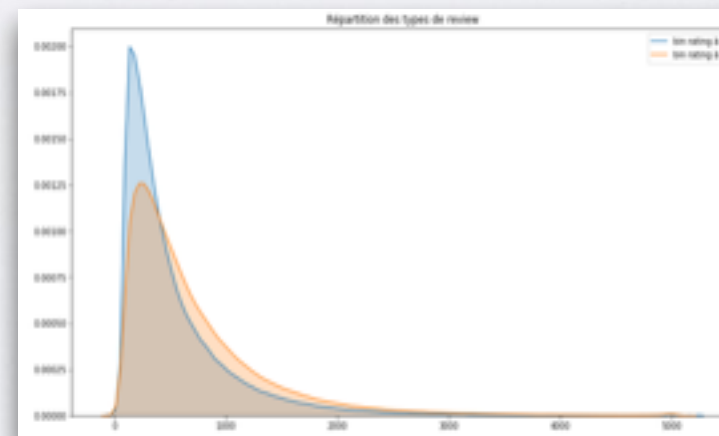
## I. Exploration statistiques de données Yelp

Tracé d'histogrammes, matrices de corrélations, etc. sur les valeurs numériques

### A retenir :

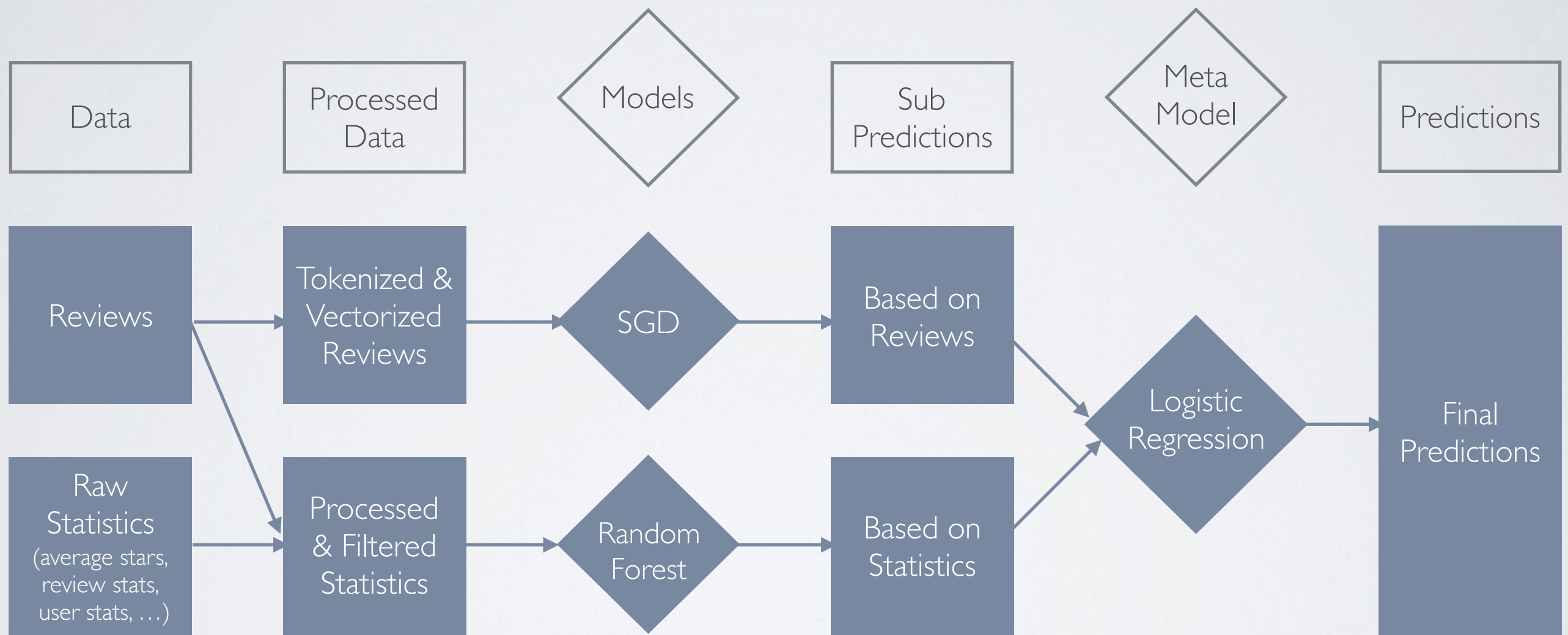
- Bonne corrélation  
average\_stars / rating
- Faible lien entre le reste

**Conclusion : Besoin  
d'étudier la sémantique**



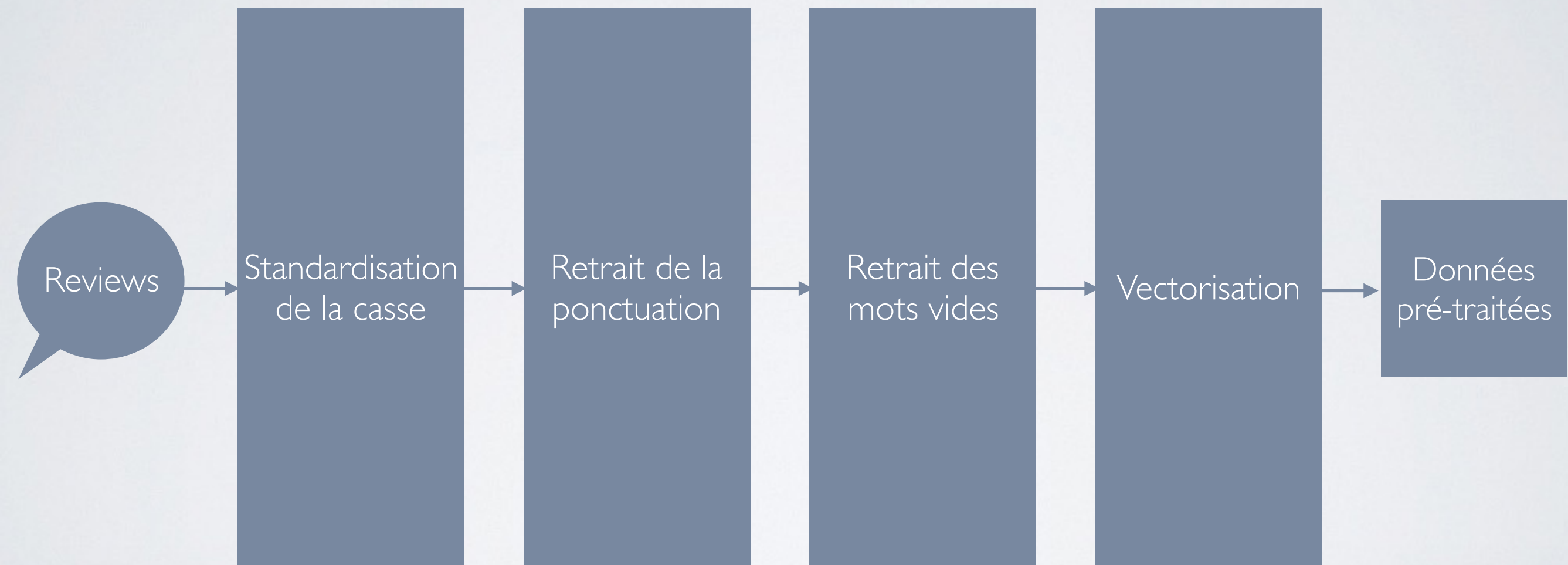
# DÉMARCHE

## II. Apprentissage automatique



# DÉMARCHE

## A. Pré-traitement sémantique



# DÉMARCHE

## A. Pré-traitement sémantique

Exemple :

Definitely make a reservation if you want to eat here (you'll still have to wait in line still but it goes quickly). My friend and I went for breakfast. We shared the corned beef hash, banana fosters waffles, and caramelized apple skinny crepe pancake. Overall lovely spot.



# DÉMARCHE

## A. Pré-traitement sémantique

Standardisation de la casse :

definitely make a reservation if you want to eat here (you'll still have to wait in line still but it goes quickly). my friend and i went for breakfast. we shared the corned beef hash, banana fosters waffles, and caramelized apple skinny crepe pancake. overall lovely spot.

# DÉMARCHE

## A. Pré-traitement sémantique

Retrait de la ponctuation :

definitely make a reservation if you want to eat here  
youll still have to wait in line still but it goes quickly  
my friend and i went for breakfast we shared the  
corned beef hash banana fosters waffles and  
caramelized apple skinny crepe pancake overall  
lovely spot

# DÉMARCHE

## A. Pré-traitement sémantique

Retrait des mots vides :

definitely make reservation want eat youll still wait  
line still goes quickly friend went breakfast shared  
corned beef hash banana fosters waffles caramelized  
apple skinny crepe pancake overall lovely spot



# DÉMARCHE

## A. Pré-traitement sémantique

Vectorisation TF-IDF :

definitely	make	reservation	...	overall	lovely	spot
0.15	0.10	0.17	...	0.09	0.12	0.22

Principe :

- TF : fréquence du terme
- IDF : fréquence inverse du document

$$\text{TF-IDF} = \text{TF} \times \text{IDF}$$

# DÉMARCHE

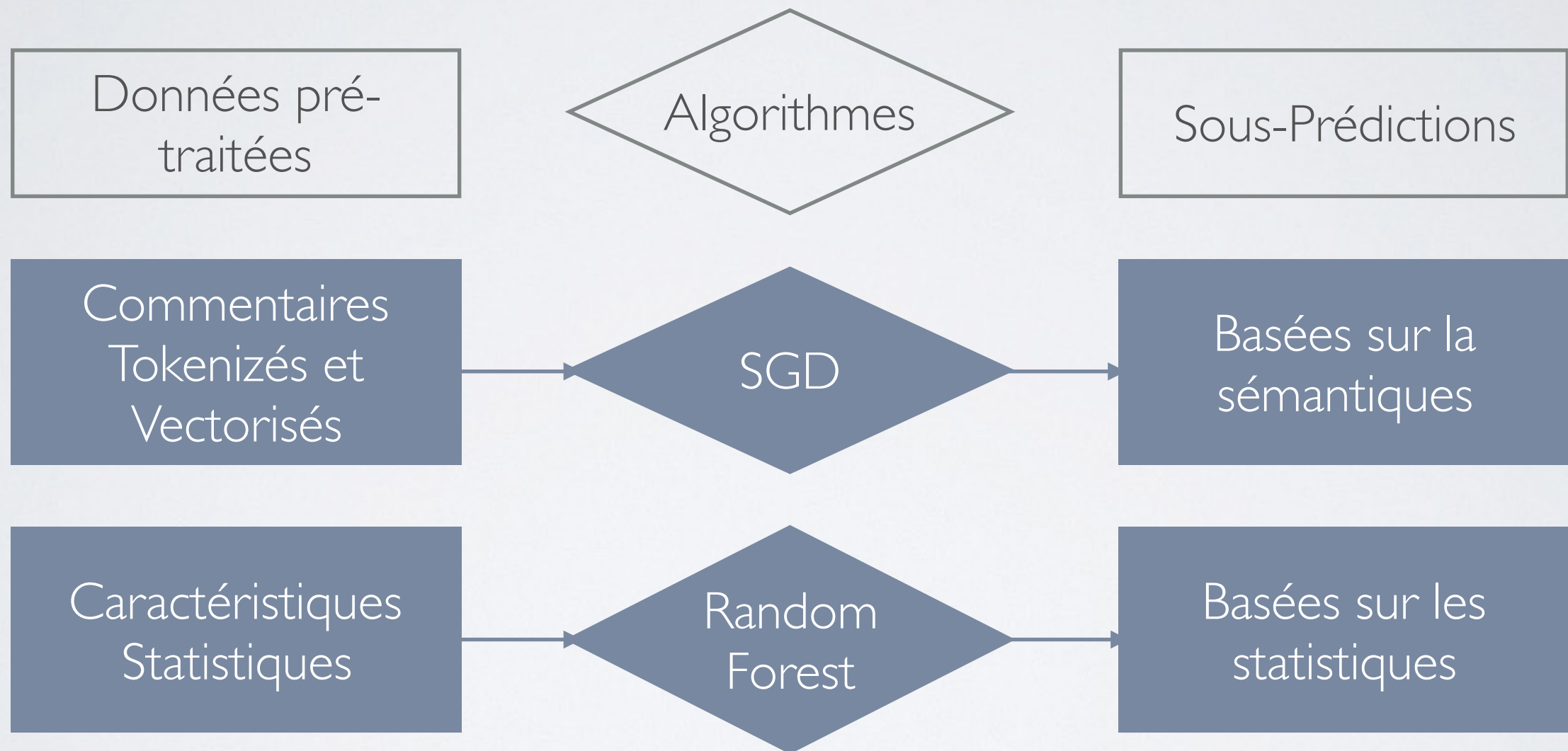
## B. Pré-traitement numérique

Calcul de caractéristiques issues de l'exploration statistique :

- Nombre de mots
- Proportion de ponctuation
- Proportion de lettres capitales
- Caractéristiques de l'utilisateur
- ...

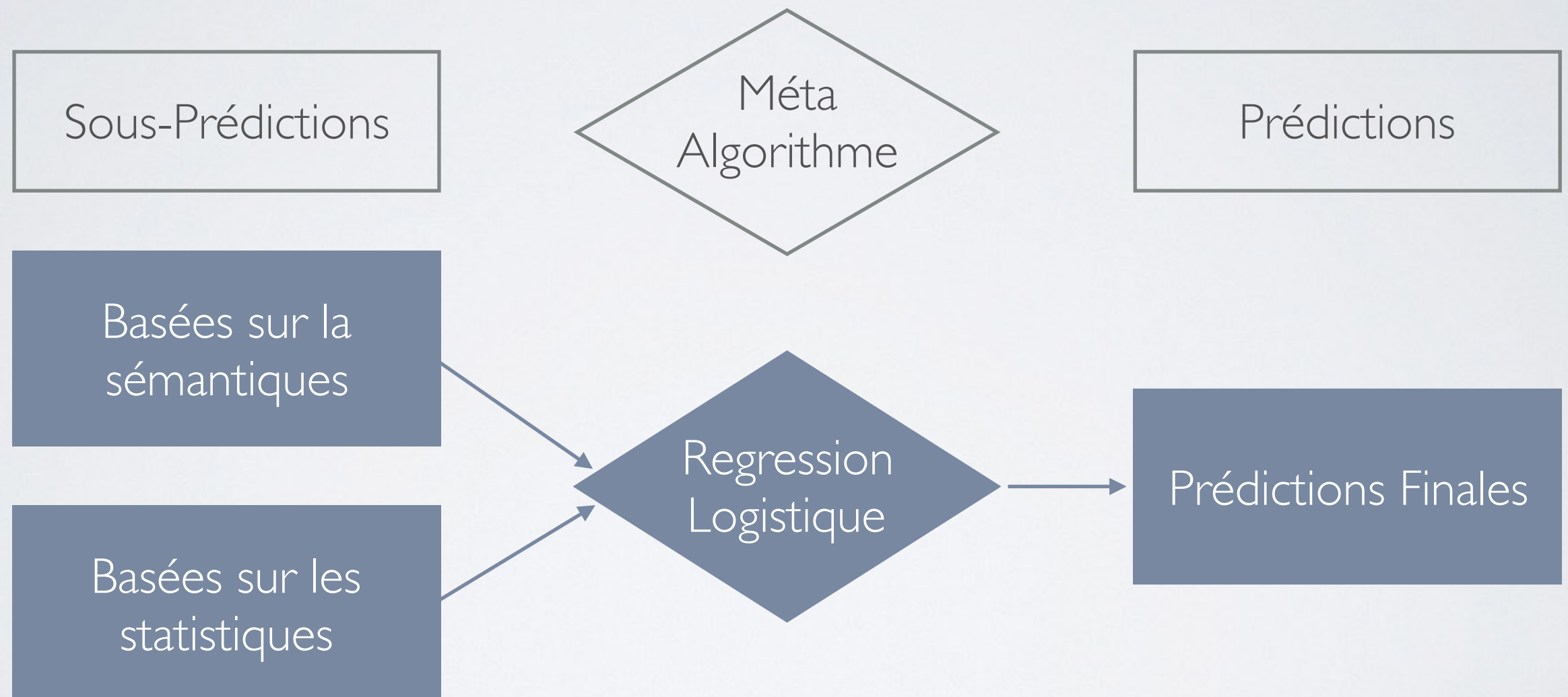
# DÉMARCHE

## C. Algorithmes d'apprentissage



# DÉMARCHE

## D. « Stacking »



# DÉMARCHE

## D. Optimisation des hyper-paramètres

Hyper-paramètres les plus importants :

- Vectoriseur :
  - Max\_DF : 0.5
  - Max\_Features : 5 000
- Modèle SGD :
  - alpha :  $2 \times 10^{-5}$
  - max\_iter : 50



# DÉMARCHE

## III. Résultats - Score F1

SGD on Reviews

94,98 %

Random Forest  
on Statistics

81,35 %

# DÉMARCHE

## III. Résultats - Score F1

SGD on Reviews

94,98 %

Random Forest  
on Statistics

81,35 %

Stacked Model

95,16 %

# EXPLORATION DES RÉSULTATS

I. Bonnes / Mauvaises reviews



Catégorie	Nombre
Bonnes reviews	6996
Mauvaises reviews	1574

6996

1574

# EXPLORATION DES RÉSULTATS

## II. Expressions déterminant la classe

# Mauvaises



Bonnes



Neutres

# Bad, Time, Service, Waiter, Server

# Restaurant, Las Vegas, Vega, Really, ...

Good, Mon Ami Gabi,  
Delicious, Nice,  
Amazing, ...



# EXPLORATION DES RÉSULTATS

## II. Expressions associées à la classe



- **Qualité du service** : Service, Waiter, Server, Time
- **Placement** : Table

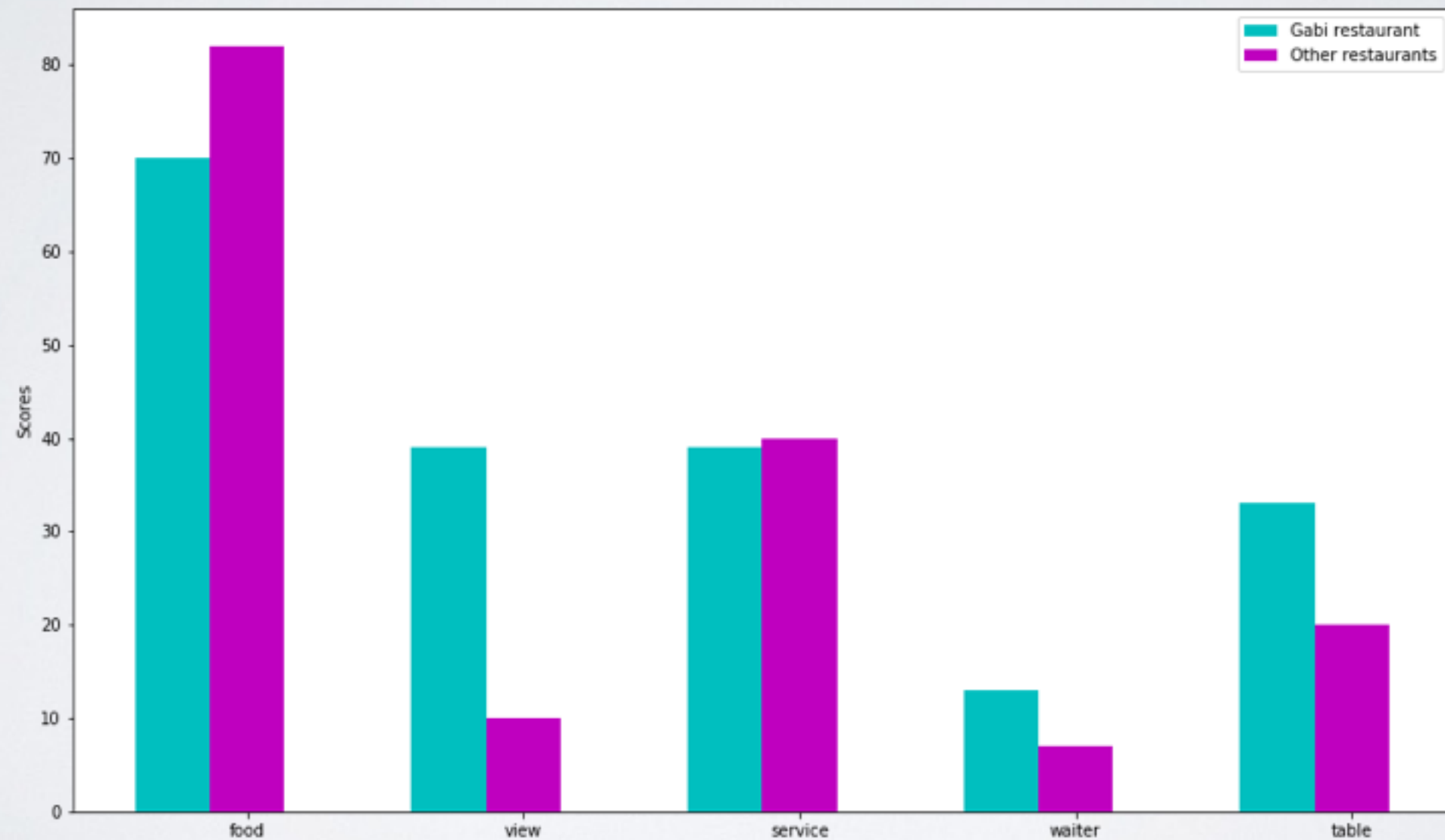


- **Vue** : Bellagio Fountain, Strip
- **Qualité des plats** : Steak, French Onion Soup, Meal,



# EXPLORATION DES RÉSULTATS

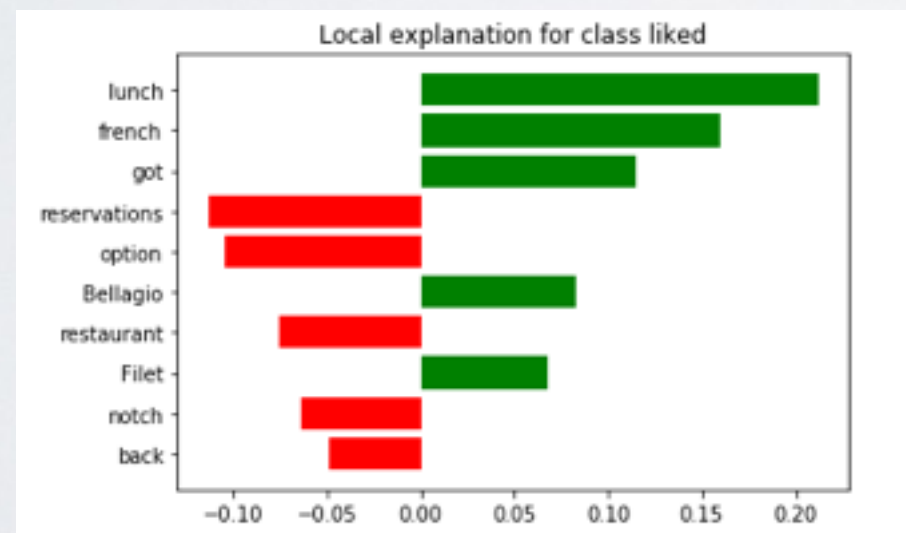
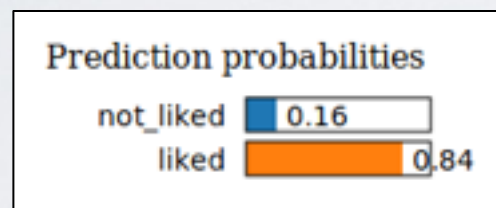
## II. Expressions associées à la classe



# EXPLORATION DES RÉSULTATS

## III. Utilisation de lime

Exemple sur un message positif :



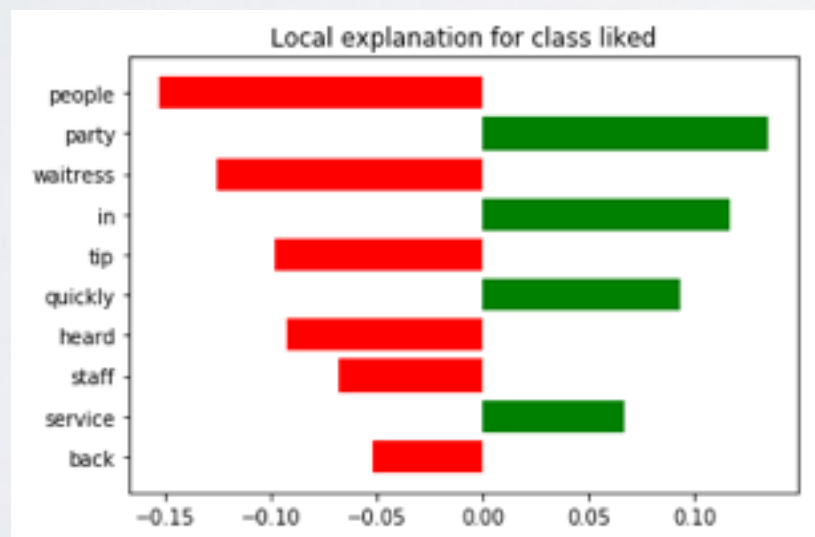
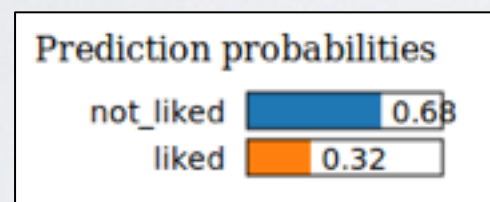
### Text with highlighted words

Similar to other reviewers, we got a good view of the Bellagio fountain from our table. The Hangar Steak and Filet Mignon were great, loved the brie and french onion soup. Obviously, it's a nice french restaurant and the service and food are top notch. It's a great option for something along the strip. We made reservations via opentable and it was easy and convenient. Would definitely come back for dinner, as well as lunch, brunch, anything.

# EXPLORATION DES RÉSULTATS

## III. Utilisation de lime

Exemple sur un message négatif :



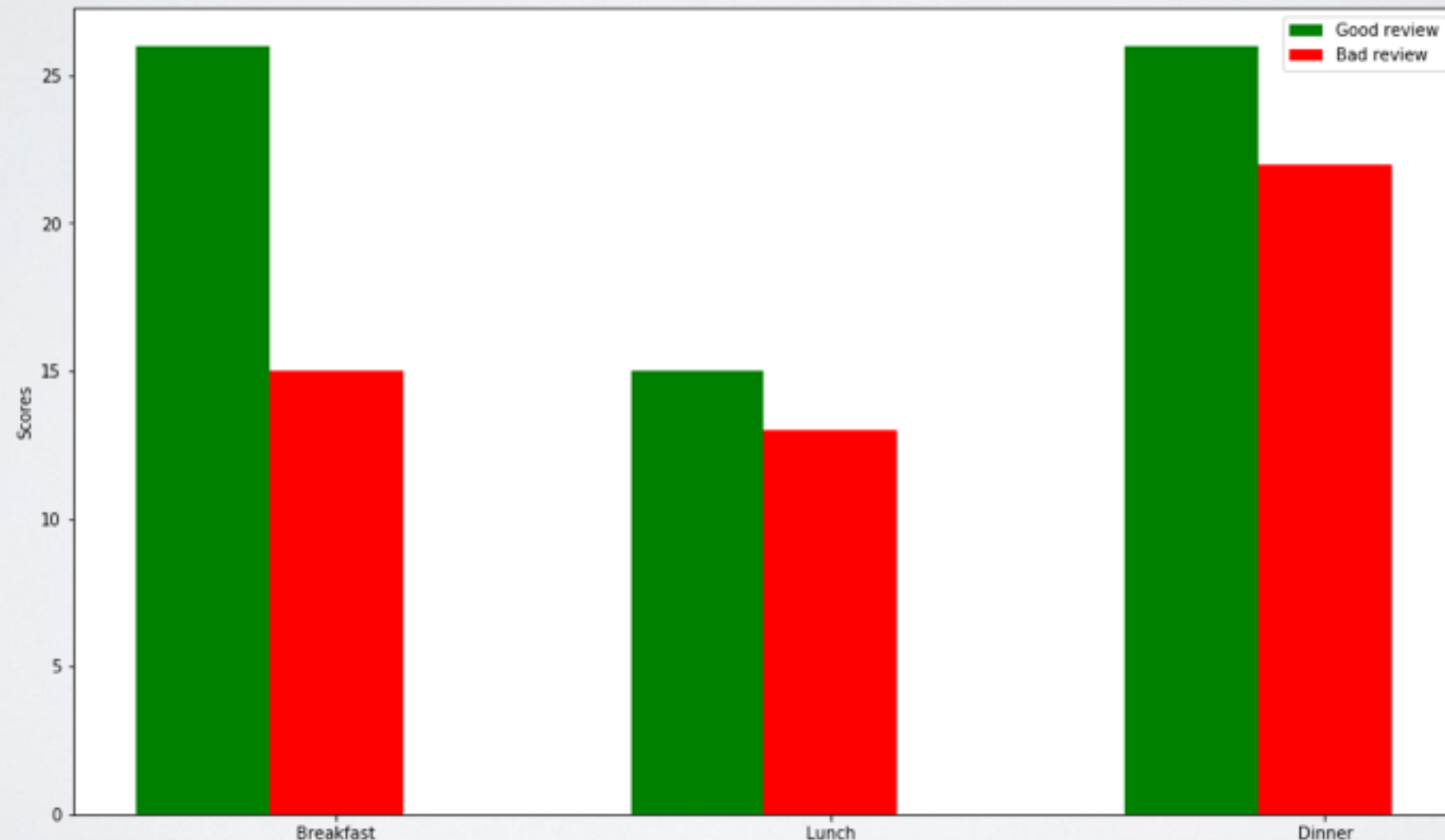
### Text with highlighted words

The food was good, but **service** was pretty checked out and **uninterested in** doing their jobs. \n\n(1) Our **waitress** pushed alcohol on a member of the group ... even though this person had clearly expressed a desire to have something "non-alcoholic" the **waitress** asked two more times whether he would prefer a beer or some wine. Get the hint! Sometimes **people** don't drink and don't want to be pressured into drinking a knife. \n\n(4) The **waitress** picked up our credit slip after we'd signed it and checked the **tip** while standing at our table. Good wait **staff** leave the credit slip on the table and do not touch it until the diners have departed. \n\nThere were a couple of good **people** on the team. We did get good **service** from one individual **in** particular, and I wish I could remember his name. But the overall experience was not great.

# EXPLORATION DES RÉSULTATS

## IV. Exploration par catégorie

### A. Repas

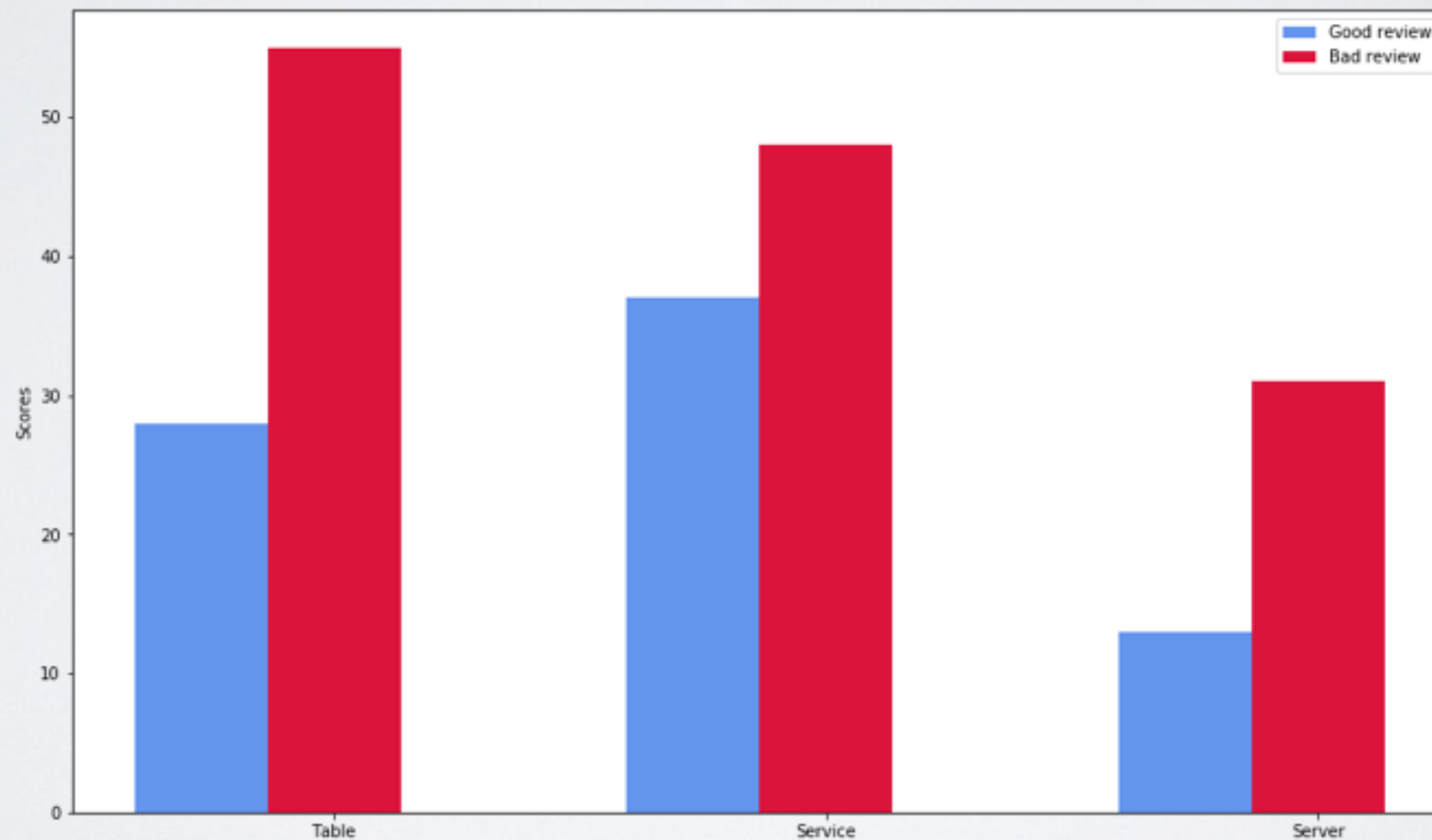




# EXPLORATION DES RÉSULTATS

## IV. Exploration par catégorie

### B. Qualité du service

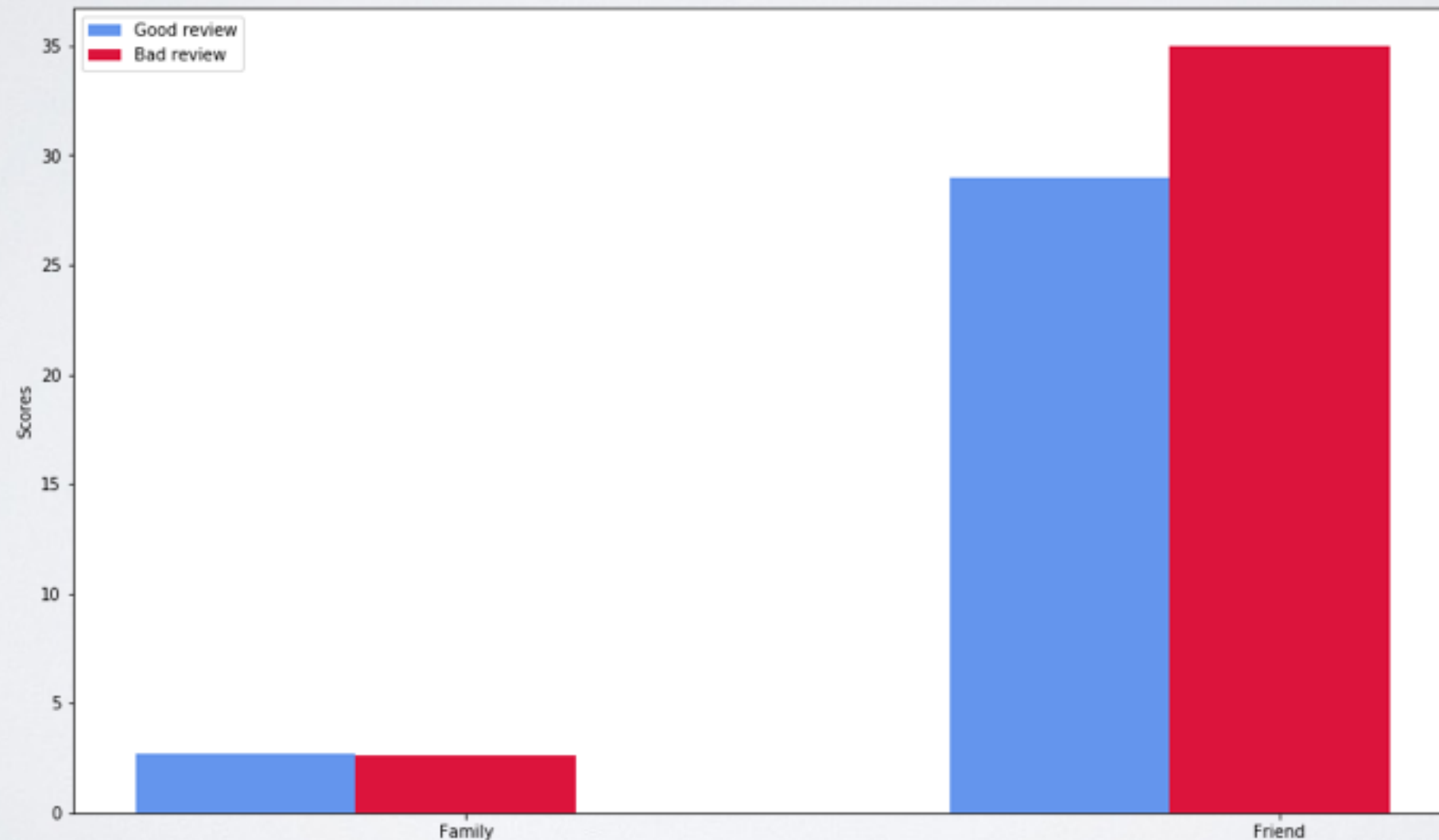





# EXPLORATION DES RÉSULTATS

## IV. Exploration par catégorie

### C. Accompagnants



# EXAMPLES



**J G.**  
Las Vegas, NV  
2 friends  
30 reviews  
31 photos

- [Share review](#)
- [Embed review](#)
- [Compliment](#)
- [Send message](#)
- [Follow J G.](#)

3/4/2019

Cold, Greasy Diner Food at Exorbitant LV Strip Prices

I used to love this place. No more.

1. Tables are horrifically crammed together to maximize profit. I could literally walk across the dining room on table tops if I had to, say, if playing a game of lava floor with a child. When seated and upon exiting I needed ask other seated guests to move. Several of the staffers wouldn't move out of the way when leaving either. Where is your situational awareness?



**Valigirl V.**  
Acworth, GA  
3 friends  
125 reviews  
1 photo

- [Share review](#)
- [Embed review](#)
- [Compliment](#)
- [Send message](#)
- [Follow Valigirl V.](#)

3/5/2019

Nice restaurant at the Paris that truly makes one feel as they are dining in a Parisian bistro. Went for a 7pm dinner with friends, and sat outside while enjoying a fab view of the Bellagio fountains.

Food was very good and for Vegas, moderately priced. I enjoyed the trout almandine, which was exceptional. My fellow diners ordered French onion soup, baked chicken, and a root salad with salmon. All delicious. For dessert, we shared a vanilla orange cheese cake. Not made like a conventional American cheese cake, albeit very French with marscapone cheese and Creme Fraiche, again incredible.

I did have an issue concerning a food allergy, which caused my fish to have to be made twice. Sean, the restaurant manager, was extremely attentive and made it right. I cannot say enough about the food quality, top Flight service (by all staff), and atmosphere. A mid priced "gem" on the Vegas Strip. I'll absolutely be back for the escargot!

# CONCLUSION

- **Bons points**

- Vue et emplacement
- Qualité et authenticité des plats
- Hygiène

- **Points à améliorer**

- Qualité du service (amabilité du personnel, temps d'attente)
- Placement (système de réservation)



