

Sizzle Word Analysis from Multiple Internet Media

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Background1

There are many kinds of tasty words on the Internet

Creamy

This cake is so **creamy** cheese cake.



Juicy

I ate very **juicy** steak.



Seasonal

This is **seasonal** salad.



Background2

Tasty words

Creamy



Juicy



Seasonal



Sizzle Words

Background3

Ohashi clustered three types of Sizzle Word.

- **Taste-type:** Feeling in sense of taste and smell
e. g. Spicy, Sweet, Creamy...
- **Texture-type:** Feeling in sense of touch and hearing
e. g. Thick, Crispy, Moist...
- **Information-type:** Understanding as knowledge
e. g. In season, Premium, Healthy...

Ohashi analyzed 220 Sizzle Words using questionnaire research methods.

We use **90 Sizzle Words** from Ohashi's Sizzle Words in this research.

*1 M. Ohashi, A. Muto, M. Yamamoto, M. Tamekuni, A. Kumida, F. Sibusawa, and Y. Ogawa.
A sense and word of "Delicious" and a generation of food texture.
BMTF publisher, 2010.

Background4



-For example

● Twitter

“Wow, the steak is very **juicy!**”

Impression of eating
by ordinary people

● A Web Page

“The pumpkin pie is **Seasonally-Limited**”.

Advertisement by shop

● User Generated Recipe site

Spicy Curry with Many Vegetables”

Introduce of cooking
by ordinary cookers

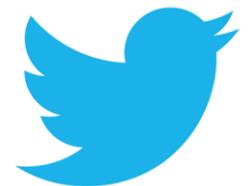
These tasty words apparently
differ among Internet media

Background5

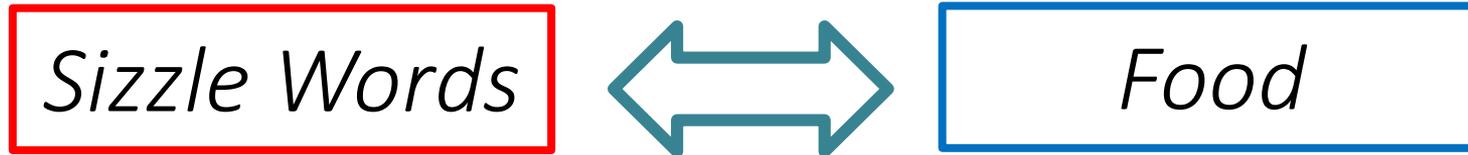
Twitter users tweet in real time.

->They tend to post about food that is in season.

Twitter users tweet about food
in real time



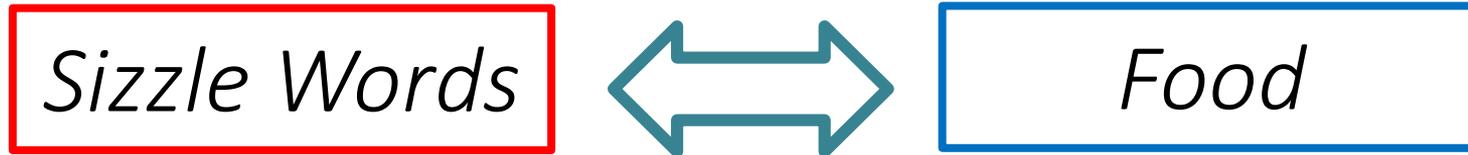
Purpose



We compare and analyze
feature of these three Internet media

We analyze seasonal and time
features of Tweets with foods

Purpose



1

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We analyze seasonal and time features of Tweets with foods

Analysis three media

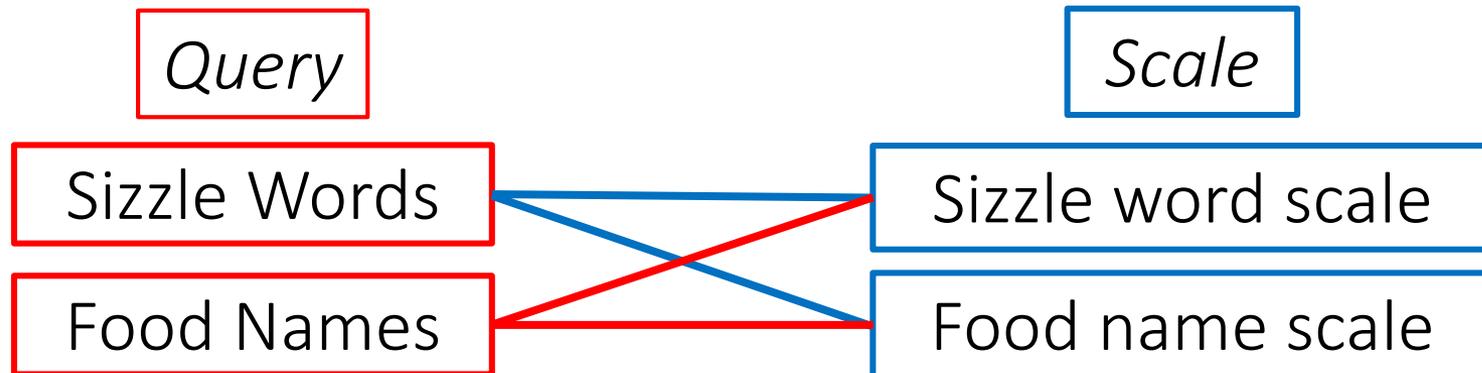
We extracted 90 words from Ohashi's proposed Sizzle Words and the 1,025 food names.

$$D = 2 \times \frac{|X \cap Y|}{|X| + |Y|}$$

- X stands for the number of Tweets/recipe/Web page included in food names.
- Y denotes the number of Tweets/recipe/Web page that include Sizzle Words.

How to analyze

We analyze Sizzle Words on three media by 4 viewpoints with consist of 2 queries and 2 scales.



- Sizzle word scale:
Ranking of Sizzle Words and food names that co-occur with the Sizzle Words.
- Food name scale:
Ranking of food names and Sizzle Words that co-occur with the food names.

Sizzle Word scale

*(F):query/food,(S):query/sizzle word

SizzleWord	Twitter	Web(F)	Web(S)	UG Recipe(F)	UG Recipe(S)
Freshly Deep Fried (揚げたて)	Potato/ポテト	Tempura/天ぷら	Tempura/天ぷら	Donut/ドーナツ	Spring-Rolls/春巻
	Chicken/チキン	Kushi-Katsu/串カツ	Potato/ポテト	Spring-Rolls/春巻	Croquette /コロケ
	Bacon/ベーコン	Sata-Andagi /サターアンドギー	Potato-Crisps /ポテトチップ	Menthyl/メンチ	Donut/ドーナツ
	Lamb/ラム	Ganmodoki/ガンモドキ	Beef-Ribs/カルビ	Fried-Potatoes /フライドポテト	Tempura/天ぷら
	Katsu/カツ	Fry-onion-rings /オニオンリングフライ	Donut/ドーナツ	Ton-Katsu/トンカツ	Katsu/カツ
Melty (とろける)	Gratin/グラタン	Yudofu/湯豆腐	Cheese/チーズ	Fresh-Caramel /生キャラメル	Cheese/チーズ
	Cheese/チーズ	Onion-gratin-soup /オニオングラタンスープ	Cream/クリーム	Marshmallow/メンチ	Chocolate /チョコレート
	Tomato/トマト	Nectar/ネクター	Fresh-Cream /生クリーム	Truffle/トリュフ	Toast/トースト
	Chocolate /チョコレート	Custard/カスタード	Cake/ケーキ	Cheese/チーズ	Truffle/トリュフ
	Ham/ハム	Gouda-Cheese/ゴーダチーズ	Milk/ミルク	Panna-Cotta /パナコッタ	Caramel/キャラメル

Twitter

▪ General food name

Web

▪ A case of food query: many specific food name.

▪ A case of Sizzle word query: many general food name.

Recipe

▪ General food and easy cooking food name.

Food name scale

*(F):query/food,(S):query/sizzle word

Food	Twitter	Web(F)	Web(S)	UG Recipe(F)	UG Recipe(S)
Hamburg (ハンバーグ)	Superb/絶品	Juicy /ジューシー	Juicy/ジューシー	Juicy/ジューシー	Juicy/ジューシー
	Homemade/自家製	Hukkura/ふっくら	Hukkura/ふっくら	Hukkura/ふっくら	Hukkura/ふっくら
	Healthy/ヘルシー	Handmade /手作り	Plain-aftertaste /爽やか	Healthy/ヘルシー	Juwa/じゅわー
	Melty/とろける	Cleaving /こだわりの	Shakishaki/シャキシャキ	Huwahuwa/ふわふわ	Huwahuwa/ふわふわ
	Hukkura/ふっくら	Homemade /自家製	Juwa/じゅわー	Fluffy/ふんわり	Healthy/ヘルシー
Donut (ドーナツ)	Freshly-Deep-Fried /揚げたて	Handmade /手作り	Freshly-Deep-Fried /揚げたて	Freshly-Deep-Fried /揚げたて	Freshly-Deep-Fried /揚げたて
	Sakusaku/サクサク	Cleaving /こだわりの	Freshly-Cooked /出来たて	Mochimochi/もちもち	Mochimochi/もちもち
	Healthy/ヘルシー	Mystic/秘伝の	Creamy/クリーミー	Huwahuwa/ふわふわ	Glutinous/もちっと
	Addicting-taste /やみつき	Moist /しっとり	Body-friendly /体に優しい	Sakusaku/サクサク	Mocchiri/もっちり
	Seasonally-Limited /季節限定	Healthy /ヘルシー	Mochimochi/もちもち	Mocchiri/もっちり	Sakkuri/さっくり

- Twitter
 - Users' experiment impression.
- Web
 - Many Information-type Sizzle words for advertisement.
- Recipe
 - There are many Taste and Texture type Sizzle words and few Information-type Sizzle words.

Comparison of Three Media

We discuss characteristics of Sizzle words in each medium based on 6 aspects.

1. Comparing three Sizzle word types
2. Number of Sizzle words in each medium
3. Eating experience Sizzle words
4. Appealing Sizzle words
5. Pairs of food names and Sizzle words
6. Advertisement Sizzle words

1. Comparing three Sizzle word types

- Twitter:

Taste-type and texture-type Sizzle words are used more in the user's experiment impression.

Users tend to use taste-type or texture-type Sizzle words in their experiment impression on Twitter.

- Web:

Information-type Sizzle words are used more in the advertisement.

Information-type Sizzle words are tended to be used advertisement sentences on the Web.

- User generated recipe site:

Many Sizzle words are used in the title.

Users use taste-type or texture-type Sizzle words on their title

2. Number of Sizzle words in each medium

The Tweets that include Sizzle words are fewer than 1% of Tweets.

User-generated recipe sites have the most sentences that include Sizzle words in the three media.



3. Eating experience Sizzle words

- Twitter users tweet their eating experiences.
- On the Web, there are few reviews of eating experiences.
- User-generated recipes are not eating experiences.

Twitter has the most eating-experience related Sizzle words of the three media.



4. Appealing Sizzle words

We consider multiple sizzle words are appealing sizzle words.

- On a User-generated Recipe site, there are multiple Sizzle words with a food name.
- On Twitter and Web page, there are almost one Sizzle word with a food name.

-Ex: User-generated Recipe site

“Soft and melty cheese Hamburg steak”

“Light and fluffy homemade pancakes”



User-generated recipe sites have the most appealing Sizzle words.

5. Pairs of food names and Sizzle words

User-generated recipe sites have more pairs of a food name and a Sizzle word from which we can imagine the food easily than the other two media.

->The users want their recipe pages to present delicious food.

User-generated recipe sites have the best pairs of food names and Sizzle words.



6. Advertisement Sizzle words

An ordinary web page has more information-type Sizzle words than the other two media.

-For Example

“Today’s special is seasonal salad”

“Handmade Hamburg steak”.

They are clearly advertisement sentences.

Twitter and user-generated recipe sites have few advertisements, but many advertisements are used on ordinary web pages.



Result of Comparison of Three Media

We consider that the delicious image of a food between the food donor and eater differ.

- *Almost eater: Twitter*

Twitter users tweet their eating experiment with Sizzle words and food name.



- *Almost professional food donor: Web*

Ordinary web pages include the most information-type Sizzle words and advertisement sentences among these three media.

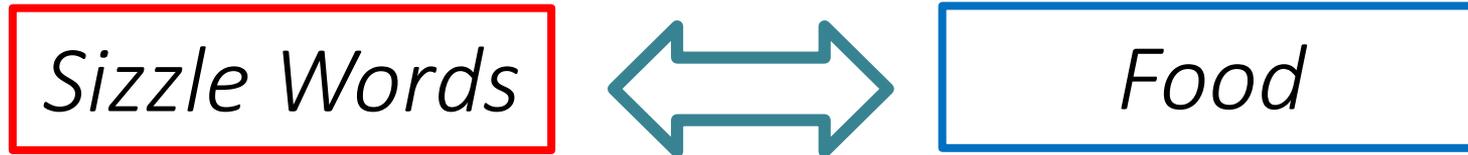


- *Almost general food donor: Recipe site*

Users of recipe sites most use Sizzle words for other browsing users browse their recipes more.



Purpose



We compare and analyze
feature of these three Internet media

2

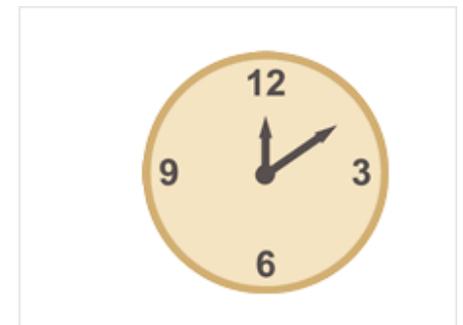
We analyze seasonal and time
features of Tweets with foods

Comparison of Twitter Food Names Based on The Month and Time

Food names on Twitter differ among seasons during a year and by the time of a day because users post tweets in real time.

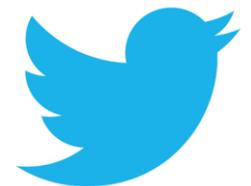
We consider that when the food name differ among seasons, the Sizzle word which is co-occurrence with the food name also differ among seasons.

We compare the number of Tweets with Sizzle words and food name by month during a season and time of a day.

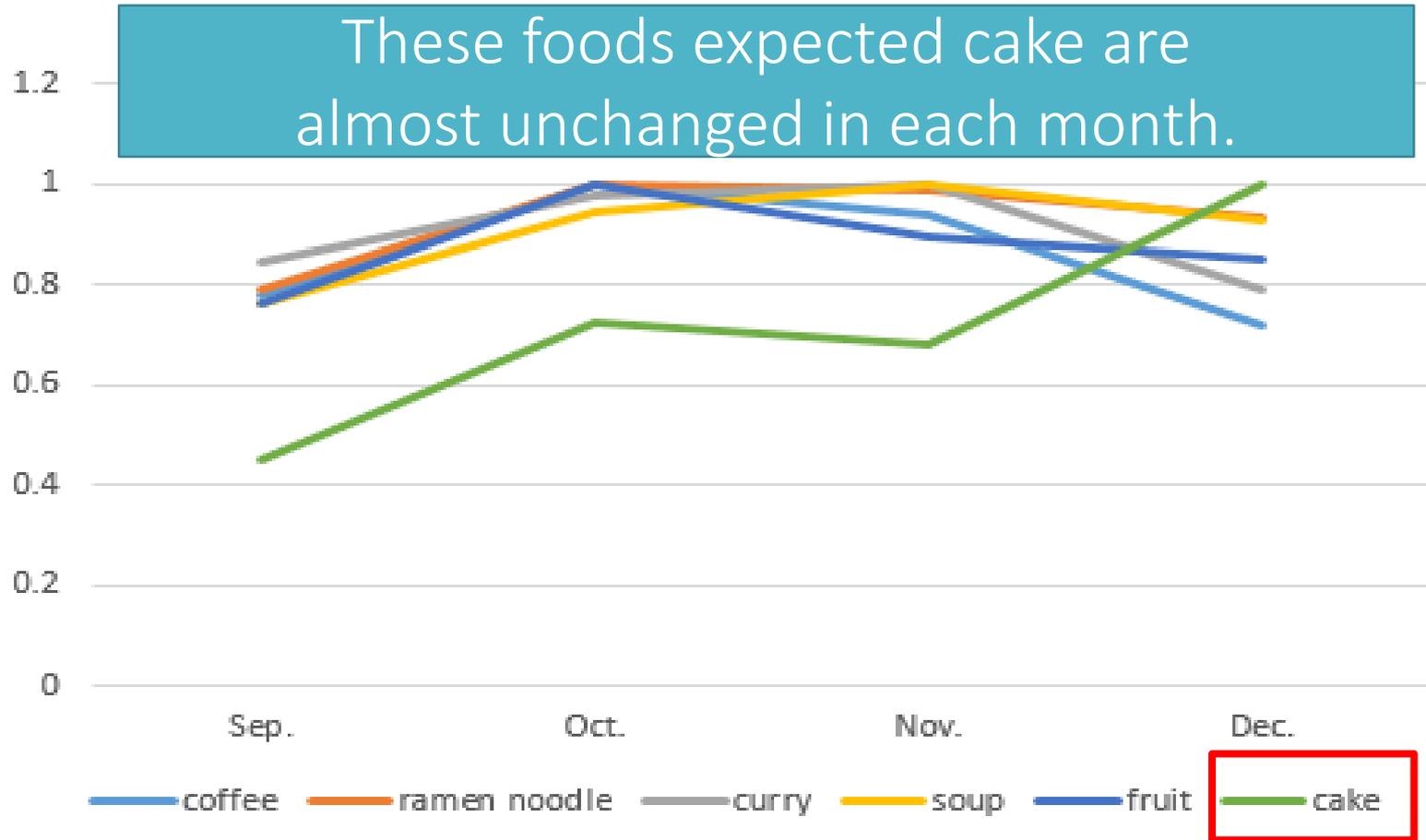


How to Analyze

- The number of analyzed Tweets is 138,158, all Tweets include both Sizzle words and food name without re-tweets.
- They are Tweeted from 1st September 2014 to 31 December 2014.
-(This paper is a first step of there research ,
then ,we calculate only Autumn and beginning of Winter.)
- We count the Tweets and normalize the results for which the maximum number of Tweets in a month or period of time as 1.0.

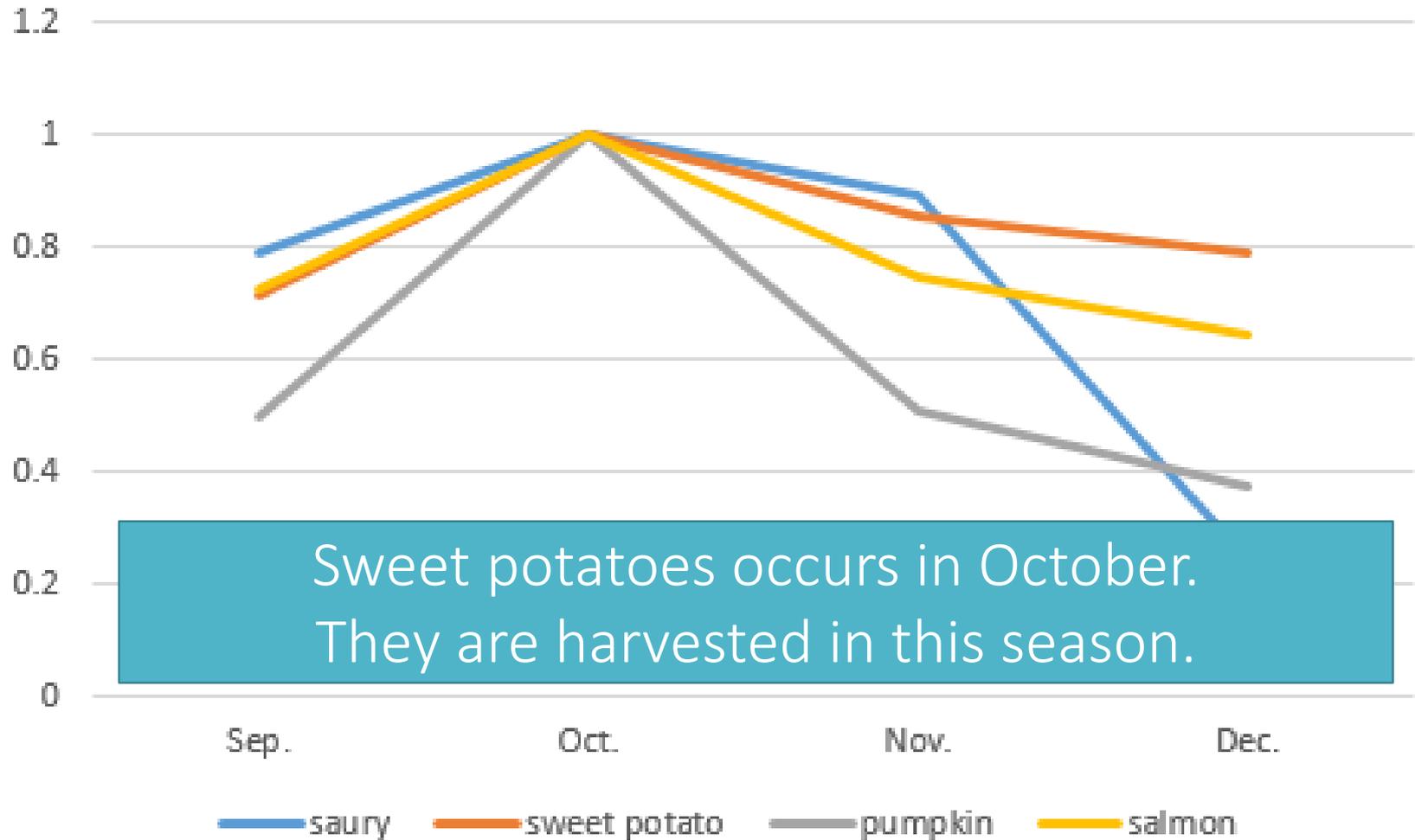


A Result of Food Names that Are Not Seasonal Foods



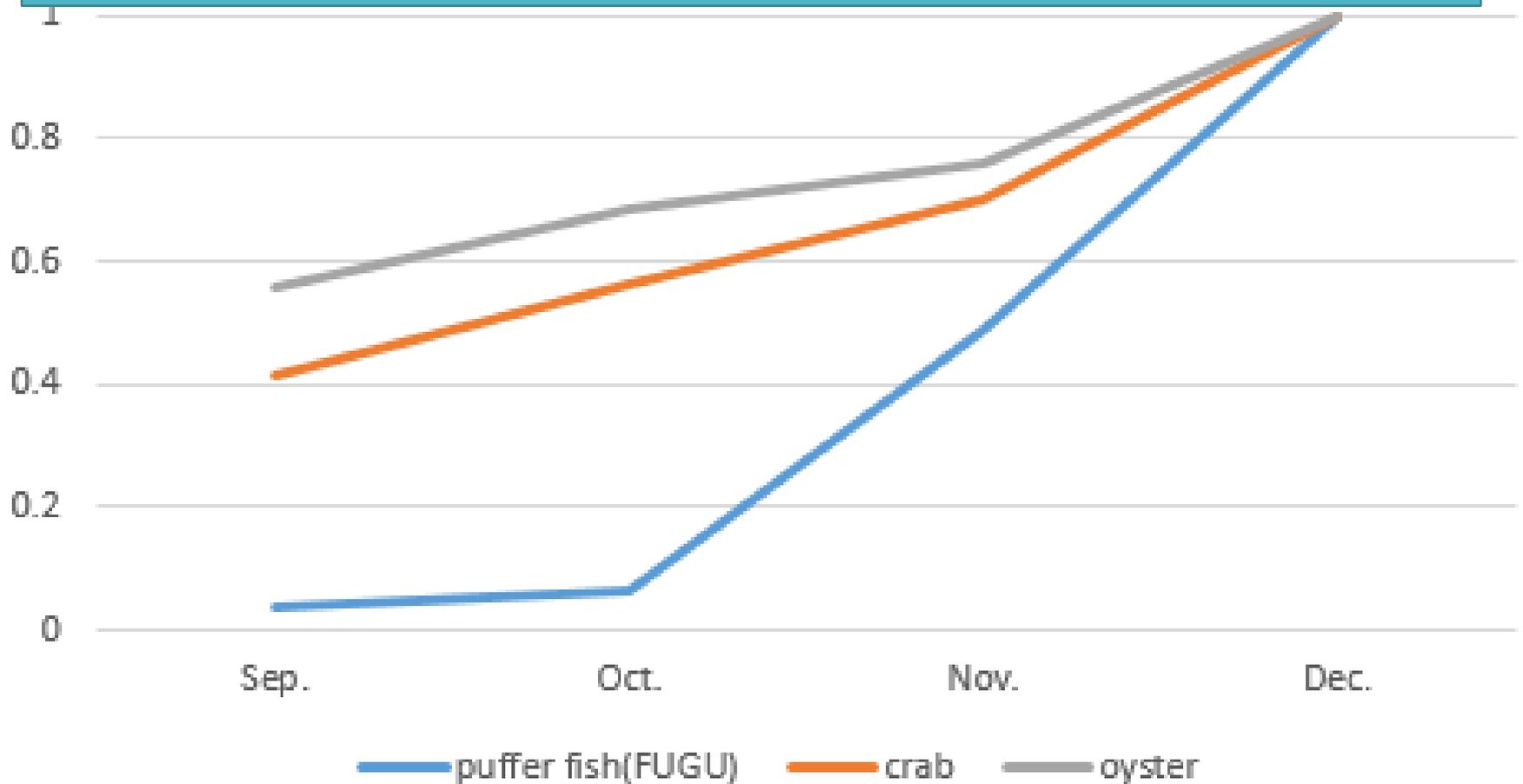
The number of cakes is highest in December, which means that the number of cakes is affected by Christmas.

A Result of Food Names that Are Seasonal Foods (Autumn)



A Result of Food Names that Are Seasonal Foods (Winter)

Puffer fish (FUGU) occurs in December that is in season.



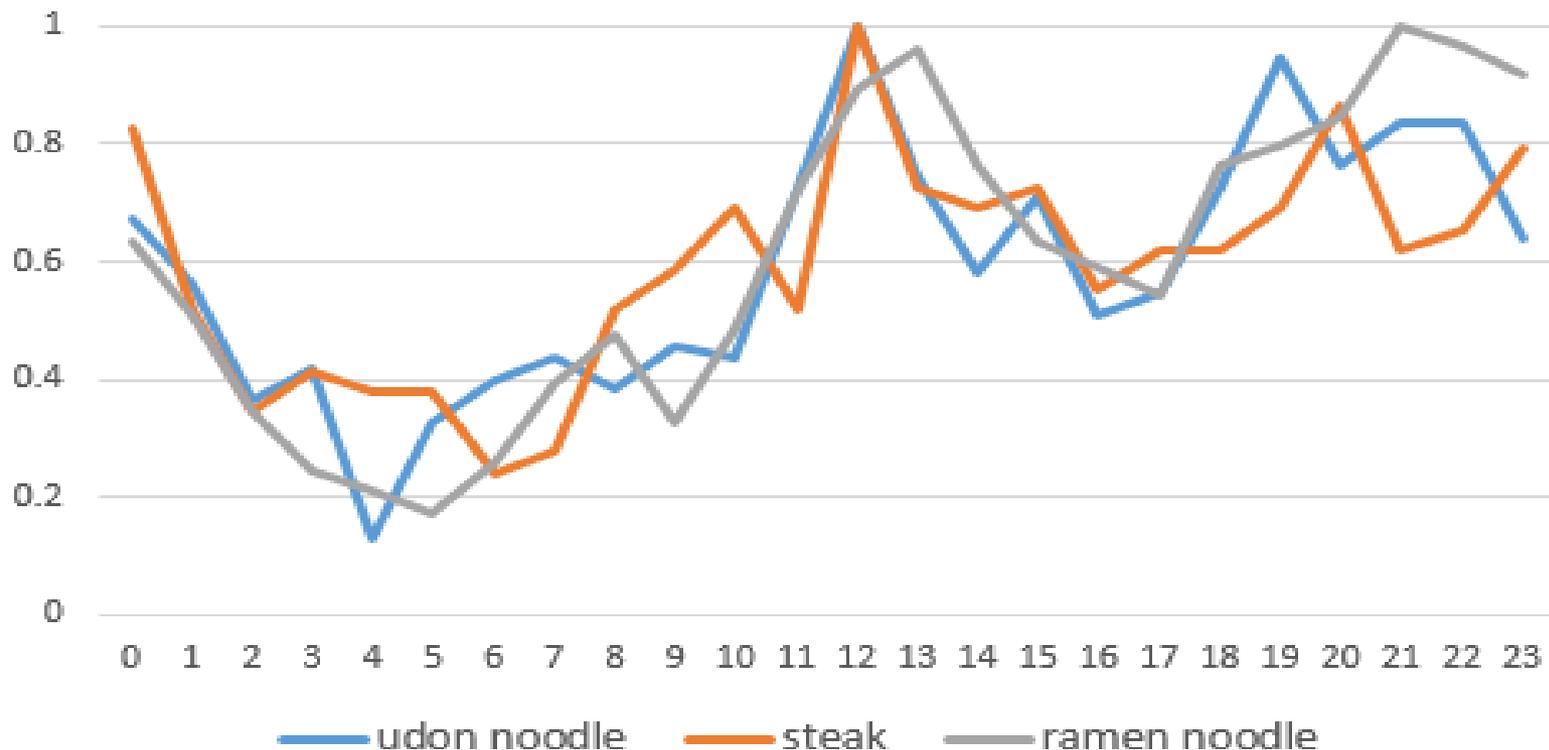
Results of Food Names

- The numbers of all foods are highest in each season when people Tweet about seasonal foods in their season.
- The foods that are not seasonal foods are Tweeted every time

The foods are effected by their related event such as Christmas, and seasonal foods are increased their season in the Twitter.

Tweets at Hour in a Day

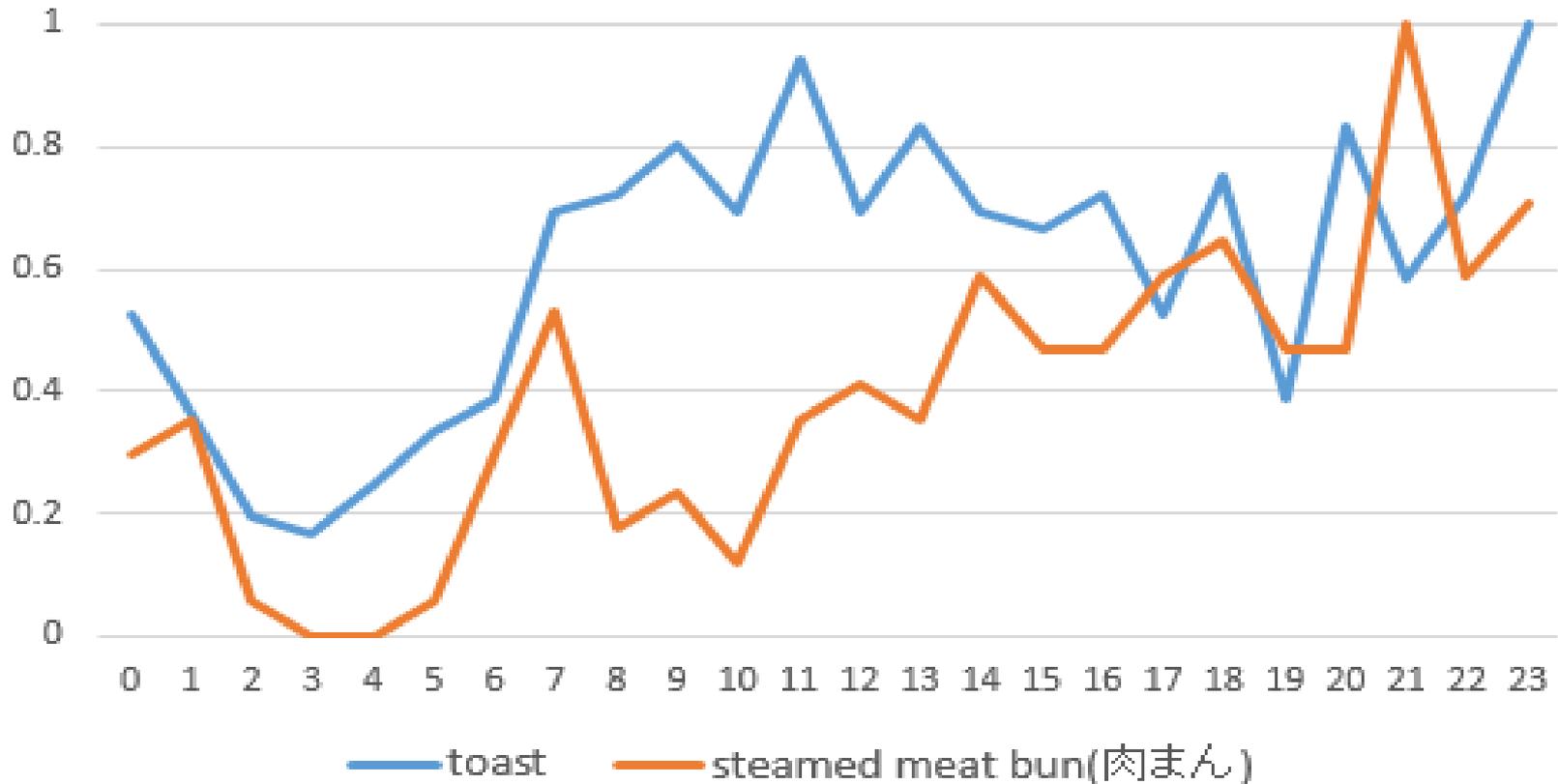
These foods reach a maximum level at lunch time and at dinner time



The peak of “Ramen Noodle” is later than that of other foods. Many people eat “Ramen Noodle” after drink or night-eating.

Light Meals Tweets at Hour in a Day

Before we analyzed the data, we considered that the light meal has maximum Tweets in the morning.



These light meals show no clear maximum Tweet times.

People eat these light meals at all hours.

Results of Sizzle Words on each Month

Before we analyzed the data , we considered that these Sizzle words such as “piping hot(Atsu-Atsu)” increase in winter.



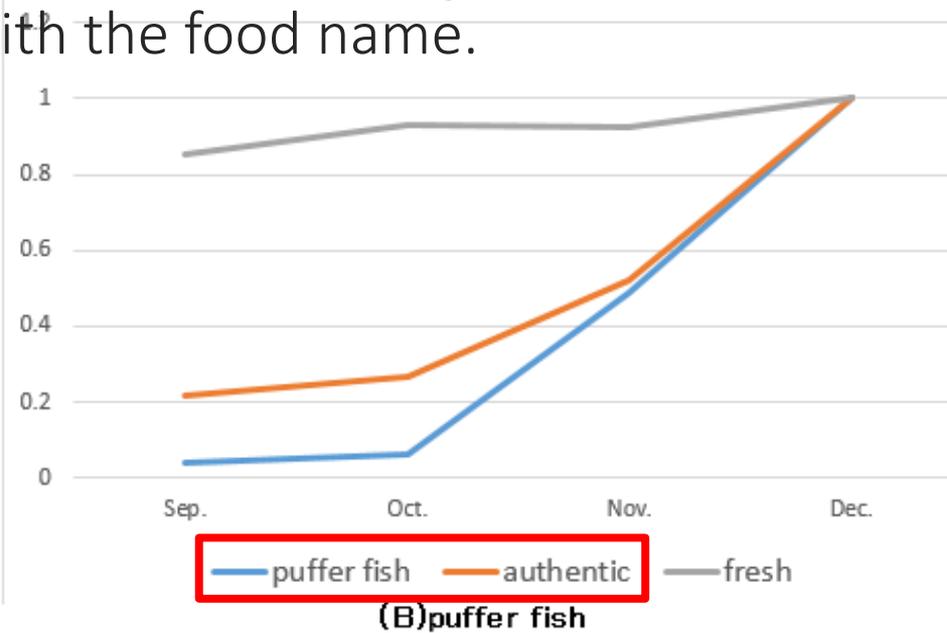
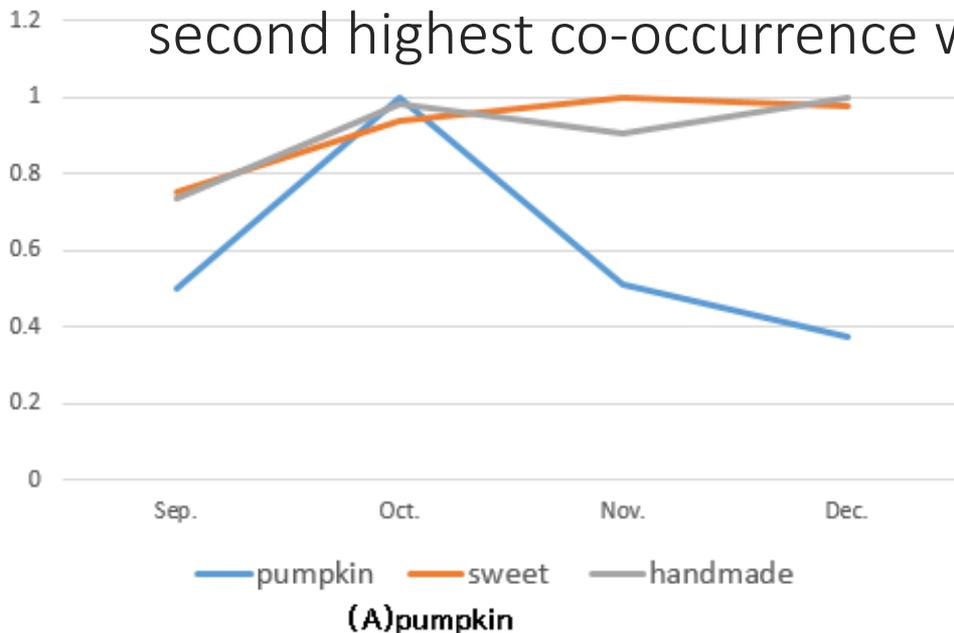
No Sizzle word which are often used many kinds of foods changed according to the month.

— piping hot/アツアツ — light and fluffy/ホクホク
— piquant/ピリ辛 — fresh made/焼きたて

Sizzle words are not affected by seasons.

Results of Foods and Sizzle Words on each Month

These are foods and Sizzle words that have the highest and second highest co-occurrence with the food name.



Food names and Sizzle words do not reveal a correlation.

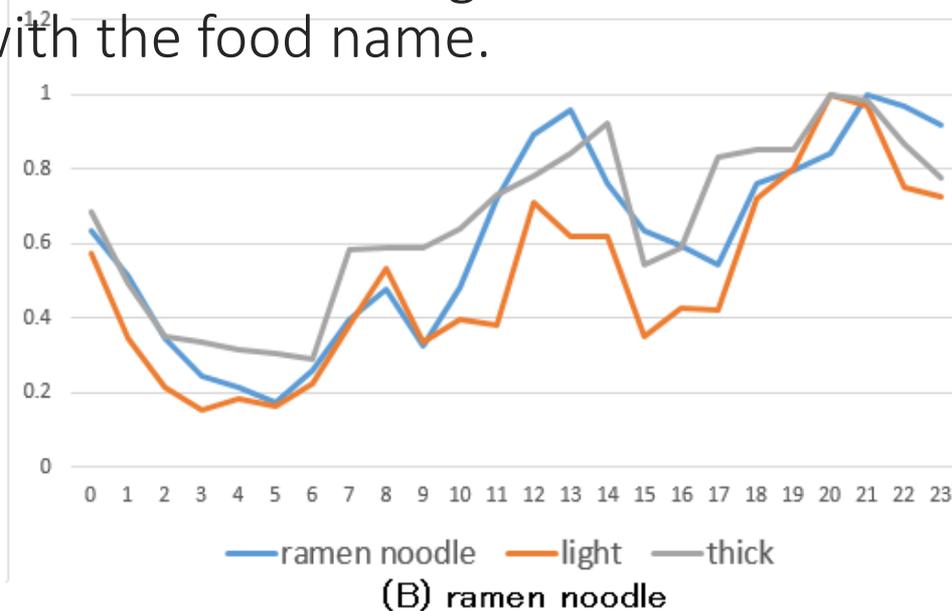
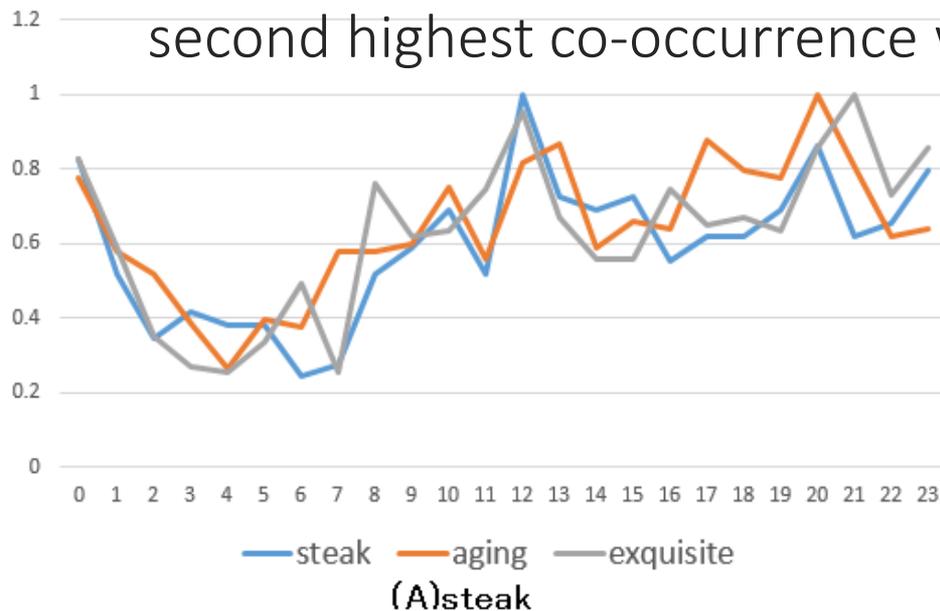
Almost all Sizzle words are also used with another food.

“Authentic” shows correlation with the food

“Puffer Fish(fugu)” because “authentic” is not usually used with another food.

Results of Foods and Sizzle Words at each Time

These are foods and Sizzle words that have the highest and second highest co-occurrence with the food name.



Foods and Sizzle words is better than based on monthly data.

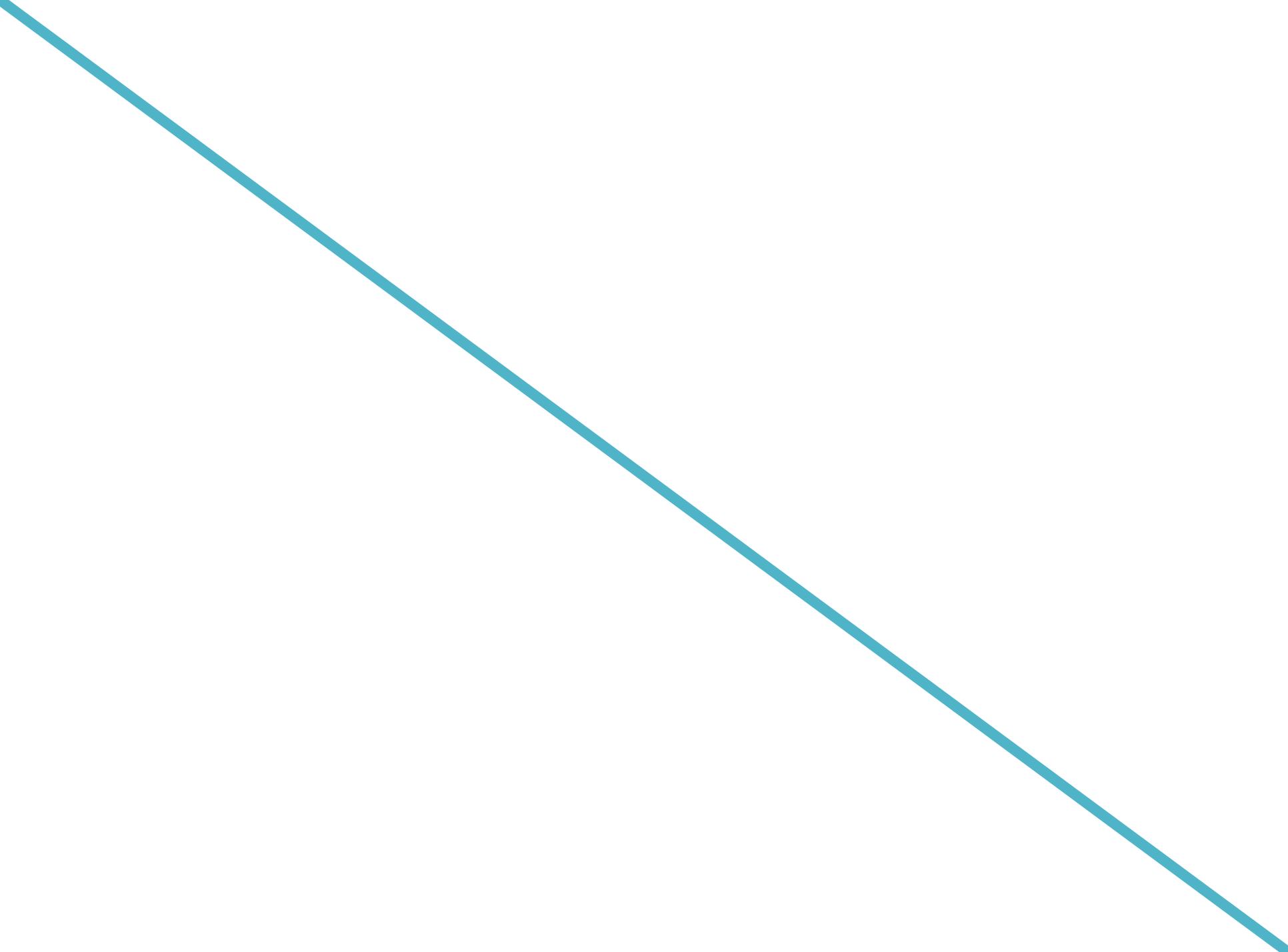
If people often eat the food, then the image of the food is popular and they use same Sizzle words with popular foods.

Conclusion

- We analyzed and compared Sizzle words, which represent tasty words, and food name use among Twitter, ordinary web pages, and user-generated recipe sites.
- We analyzed food names and Sizzle words on Tweet based on the month in autumn and time of day.

Future Work

- ◆ We expect to analyze Twitter more based on the time and season.
- ◆ We will administer a questionnaire survey to support objective analyses of people.
- ◆ We will develop a food personalization system or food search system that can search for foods using Sizzle words.



Analysis three media

We compare Jaccard, Simpson and Dice coefficient.

Jaccard coefficient is worse than the other two coefficients

Anal	Food	Sizzle	Value	Food	Sizzle	Value
Jaccard	Freshly Deep-Fried	Potato	0.044	Melty	Cheese	0.020
		Chicken	0.036		Gratin	0.010
		Lamb	0.032		Chocolate	0.008
		Bacon	0.032		Tomato	0.007
		Croquette	0.005		Cake	0.006
Simpson	Freshly Deep-Fried	Fried chicken	0.833	Melty	Gratin	4.250
		Soda	0.550		Tomato	0.597
		Cheese	0.500		Cheese	0.452
Dice	Freshly Deep-Fried	Potato	0.307	Melty	Gratin	0.175
		Chicken	0.272		Cheese	0.117
		Bacon	0.267		Tomato	0.086
		Lamb	0.266		Chocolate	0.061

Many bad pair of food and Sizzle word in Simpson coefficient

Anal	Food	Sizzle	Value	Food	Sizzle	Value
Dice	Freshly Deep-Fried	Potato	0.307	Melty	Gratin	0.175
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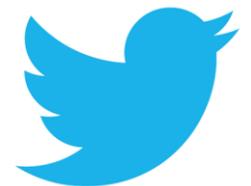
The almost pair of food and Sizzle word are good in Dice coefficient

We analyze by using the Dice coefficient

How to Analyze of Sizzle Words in Tweets

We analyze Tweets because users can post their food impressions in Tweets easily in real time.

1. We extract 90 (Sizzle Words) \times 1,000 (Tweets) = 90,000 (Tweets) by searching Tweets using 90 Sizzle Words.
2. We also randomly extract 90,000 Tweets that do not include Sizzle Words.
3. We calculate relation of sizzle words and food name by using Dice coefficient by using 'Sizzle word scale' and 'Food name scale'.



How to Analyze of Sizzle Words in Ordinary Web Pages

The relations of Sizzle Words and food names differ between Twitter and ordinary web pages.

Because a user's real impressions of foods are posted on Twitter. Then we analyze Sizzle Words in ordinary web pages.

1. We used the same Sizzle Words (90 words) and food name (1,025).
2. We use the top 100 results of Google to analyze them by using the following two types of query: food name and Sizzle Words.
3. We divide each query according to viewpoints such as Sizzle word scale, Food name scale.



How to Analyze of Sizzle Words in a Recipe site



Users of a user-generated recipe site are extremely interested in food.

And they might use many Sizzle Words.

We analyze 'CookPad'*2.

1. We used the same Sizzle Words (90 words) and food name (1,025).
2. We use each top 100 search results for recipe pages from CookPad using Sizzle Words or food names.
3. We extract the title and a snippet from each.
4. We analyze title and snippet by dividing each query according to viewpoints such as Sizzle word scale, Food name scale.

*2 CookPad is the most popular user-generated recipe site in Japan.