Business Intelligence Challenge

Japanese Restaurants

JAPANESE RESTAURAUNTS DATA

3 csv files

13,507 records

49,138 restaurant visitors

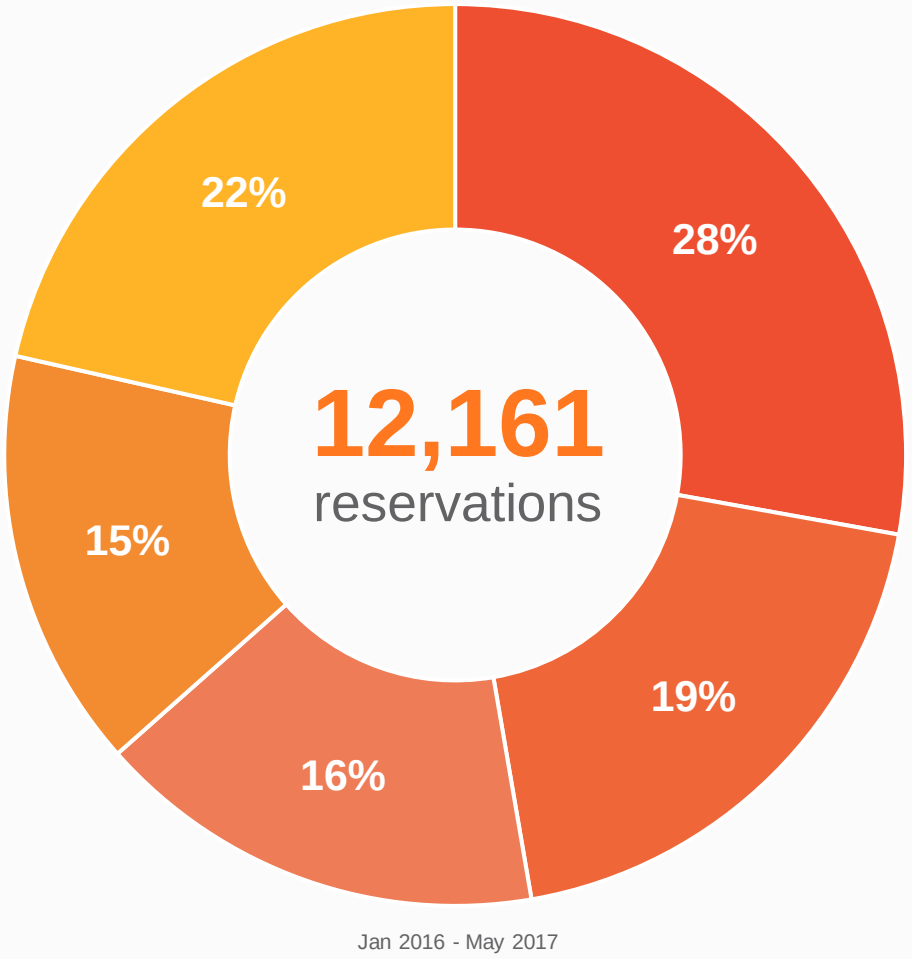
39 restaurants

17 months

14 genres

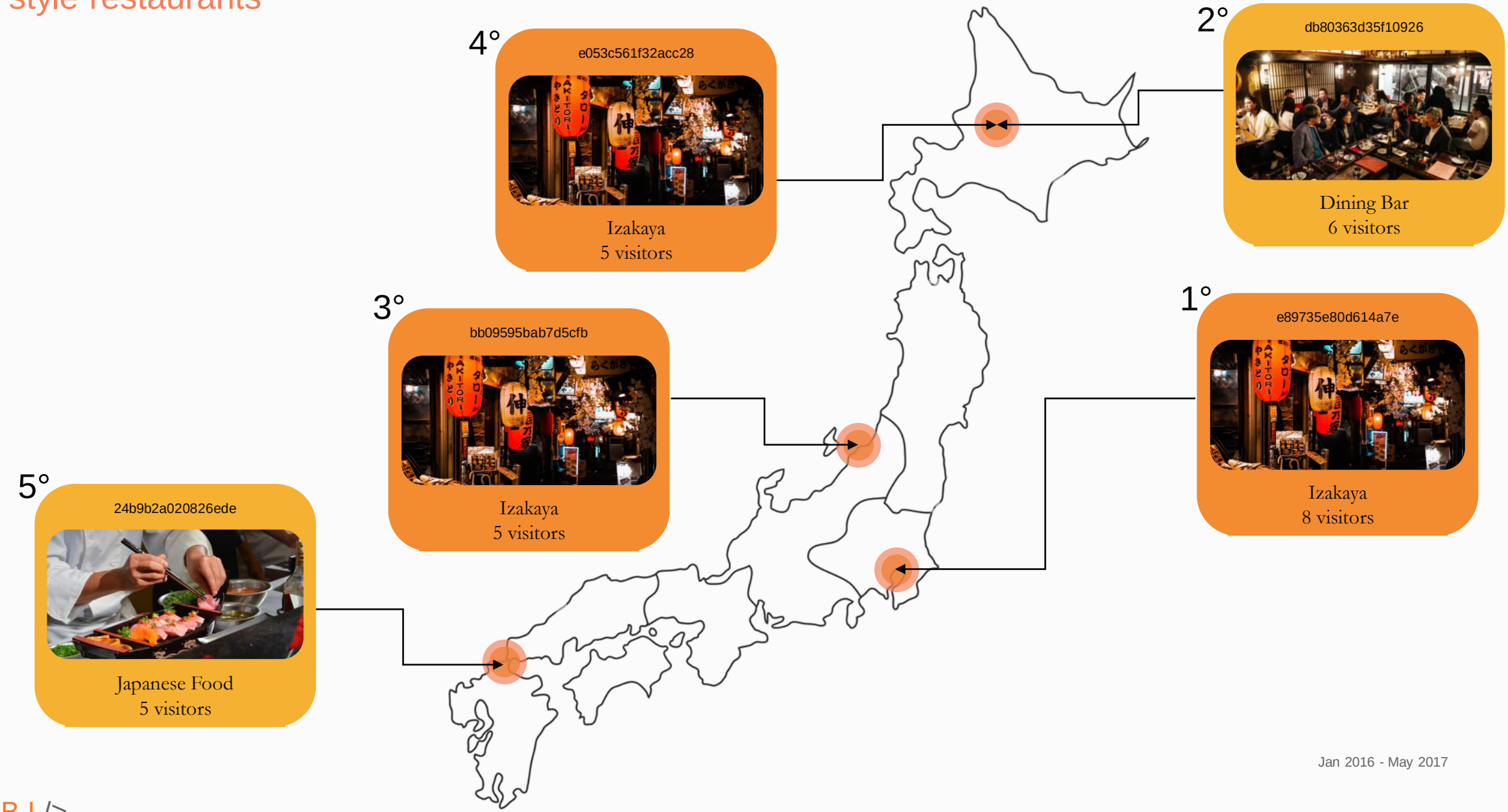
9 prefectures

“Izakaya” is the genre of restaurant with the most reservations. The genre with fewer reservations is “Bar/Cocktail”



Izakaya（居酒屋）are casual drinking establishments. They are one of the most common types of restaurants in Japan and can be easily found around train stations and entertainment districts.

Among the top 5 restaurants with the highest average number of visitors on holidays, 3 are Izakaya-style restaurants



Jan 2016 - May 2017

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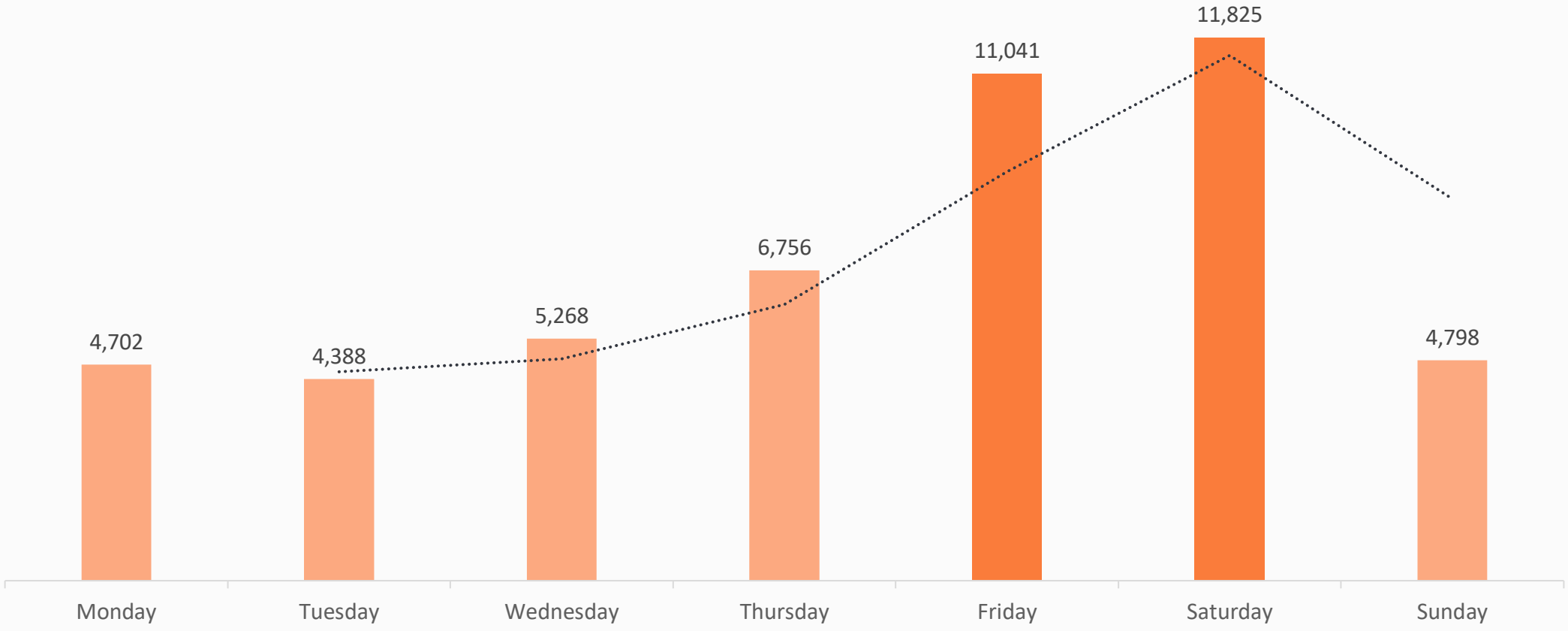
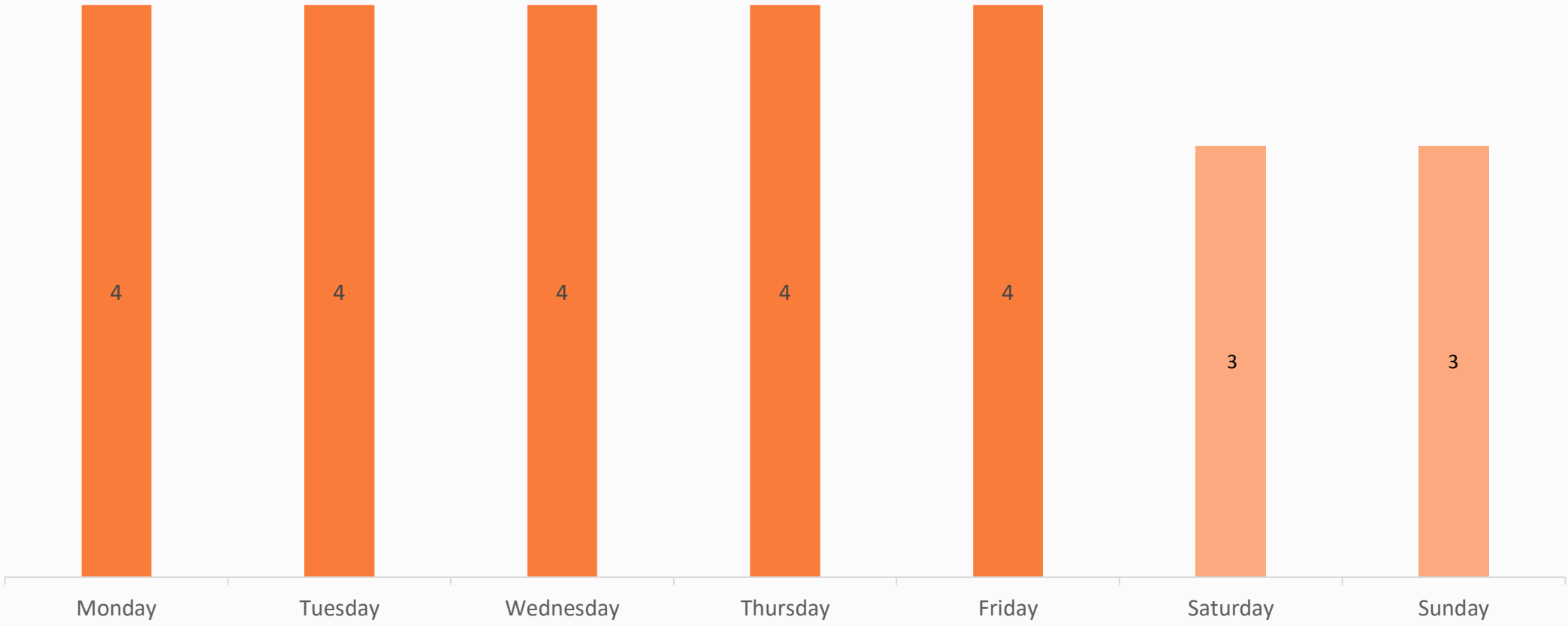
DiDi

Fridays and Saturdays have the highest total number of visitors…



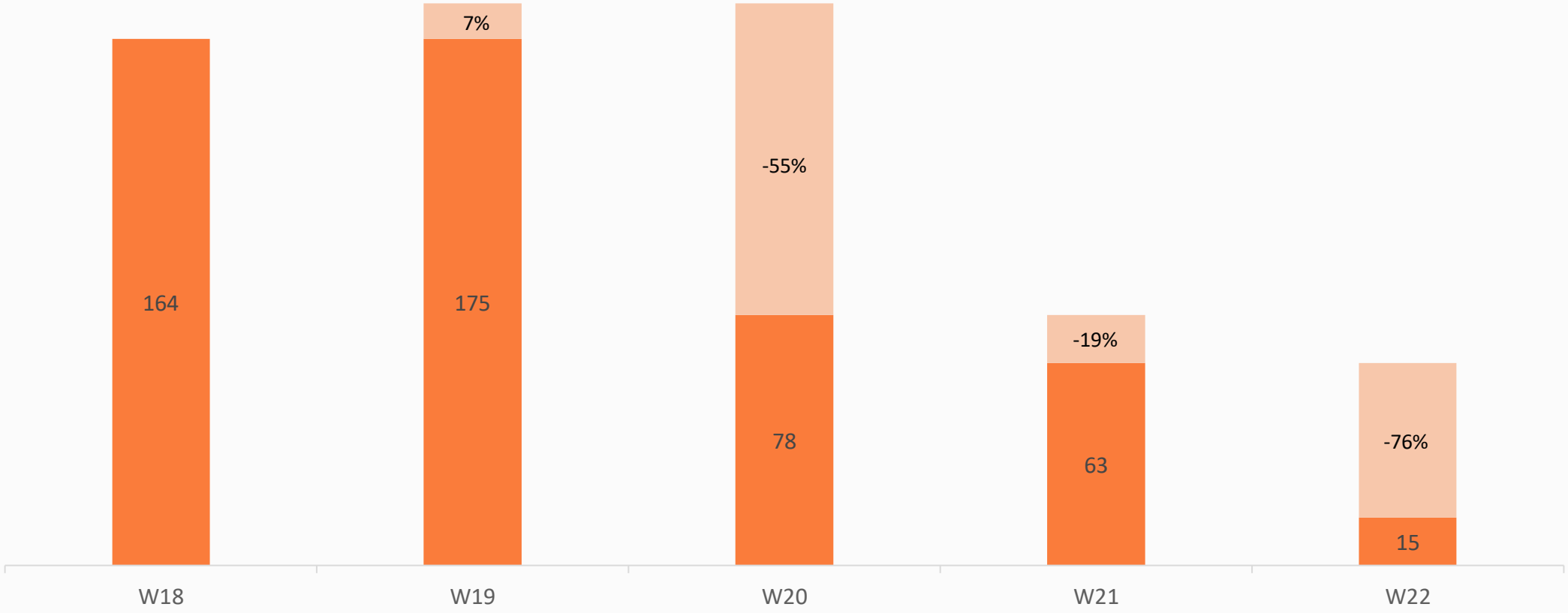
Jan 2016 - May 2017

However, Weekdays have Higher Average Visitors than Weekends



Jan 2016 - May 2017

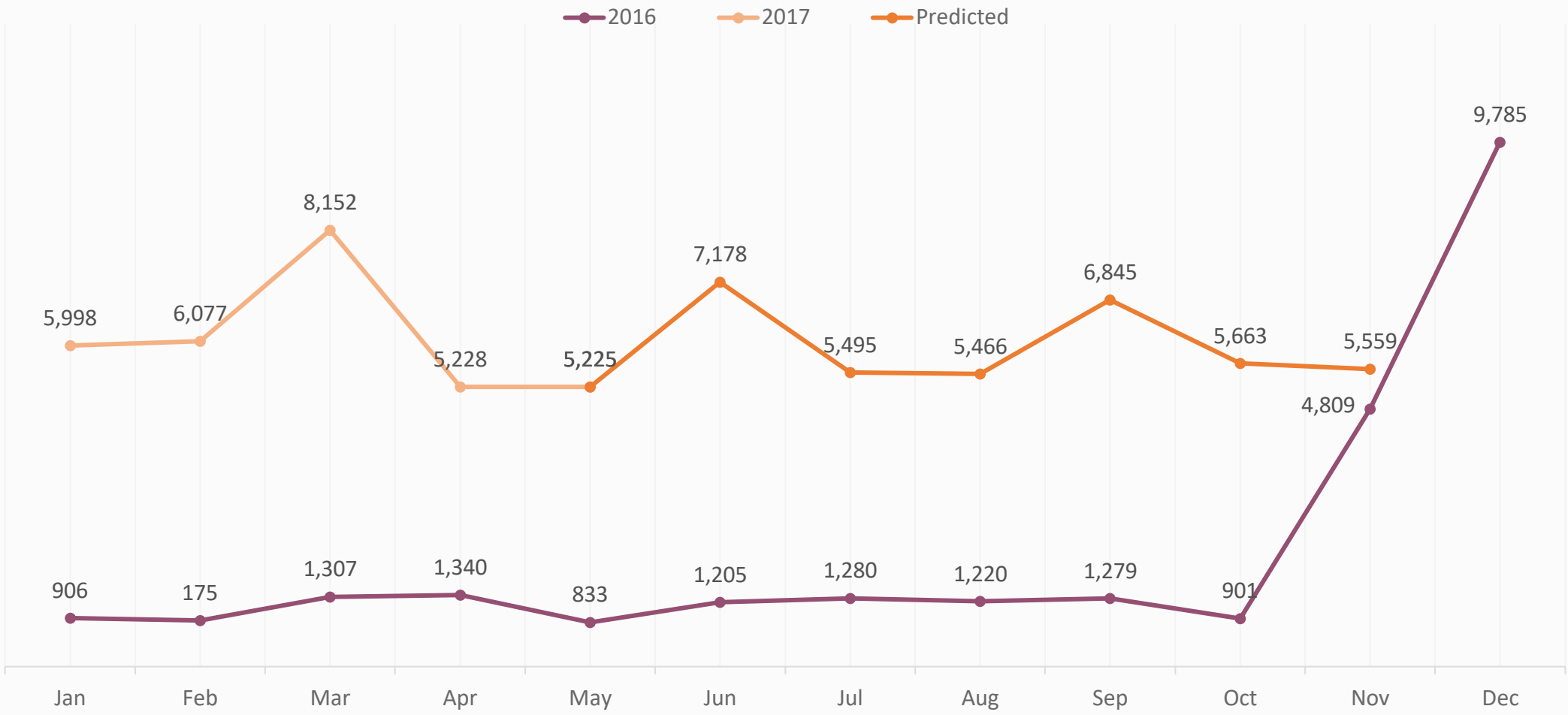
The percentage growth of the past 4 weeks has been decreasing…



May 2017

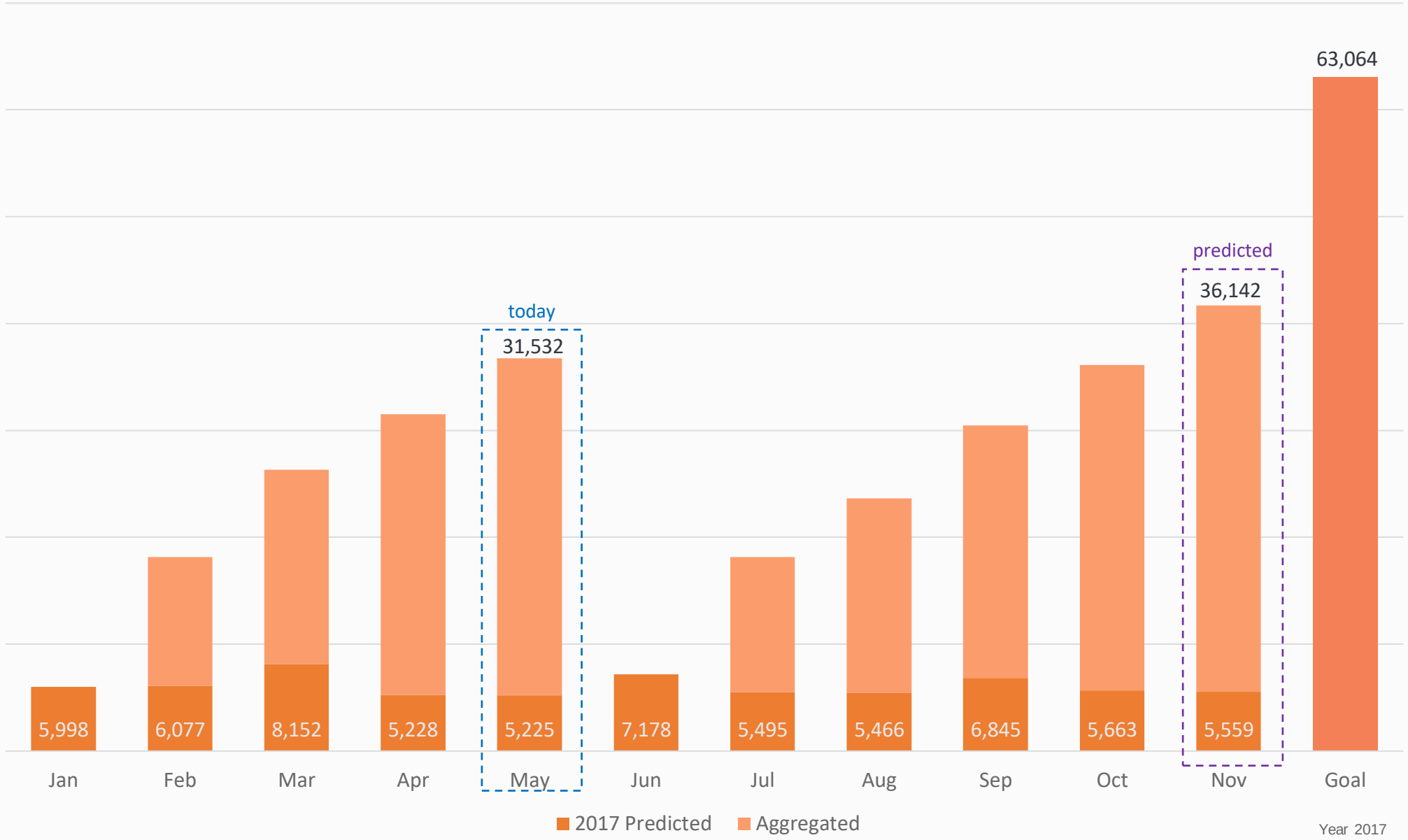
However, the sum of visitors is expected to grow for next month (June) and to average around 5,900 visitors for the remainder of the year.

Jan 2016 - May 2017**



* The prediction was made using an ARIMA model.
** This data has been transformed using Feature Engineering

Increasing Visitors: Aiming To Double Total Within The Next 6 Months



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DiDi

DiDi

Strategy to Double Total Visitors

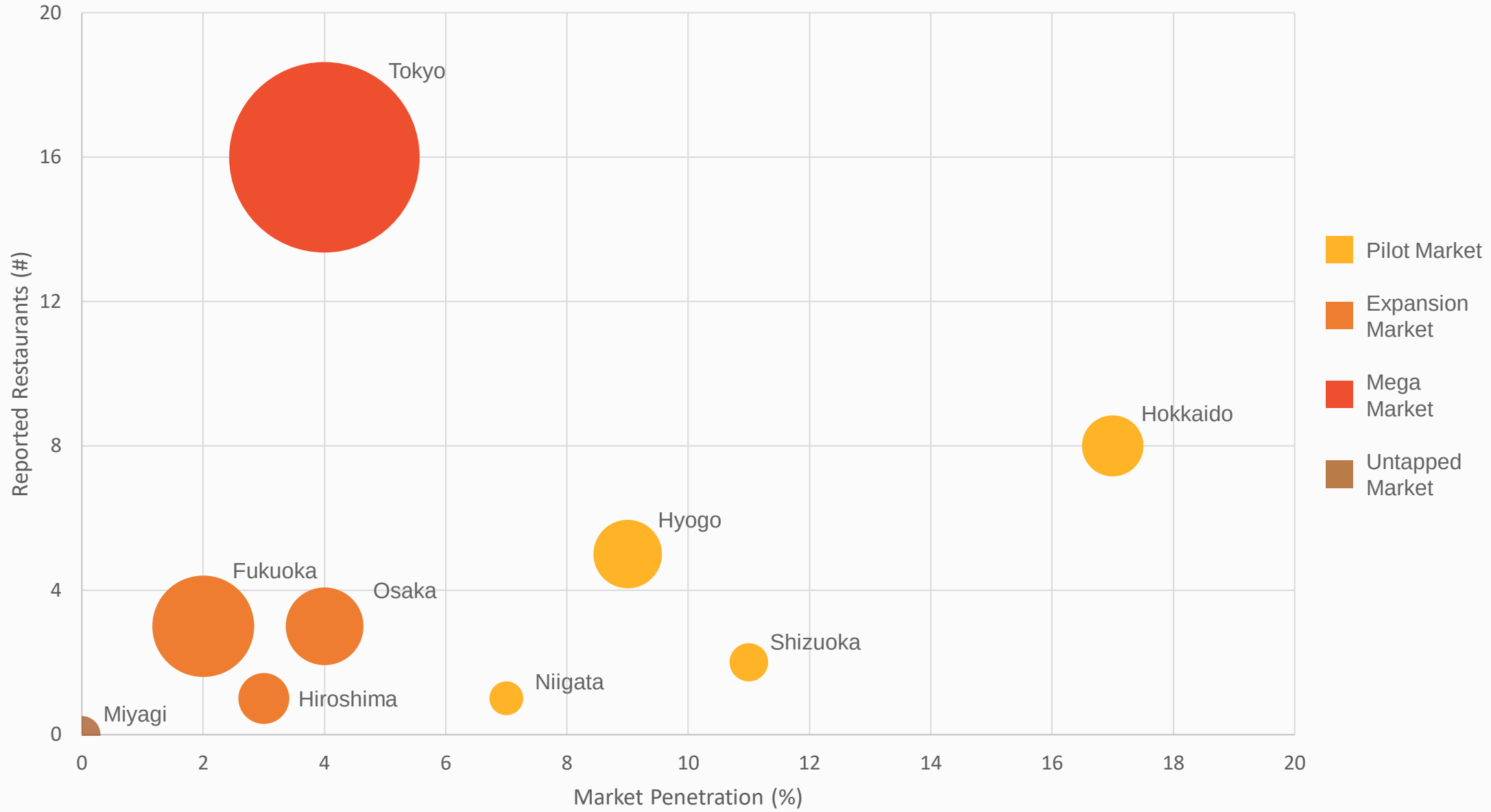
Japanese Restaurants

Average Visitors per Hour

Jan 2016 - May 2017

DiDi

Market Segmentation across Japanese Prefectures



Jan 2016 - May 2017

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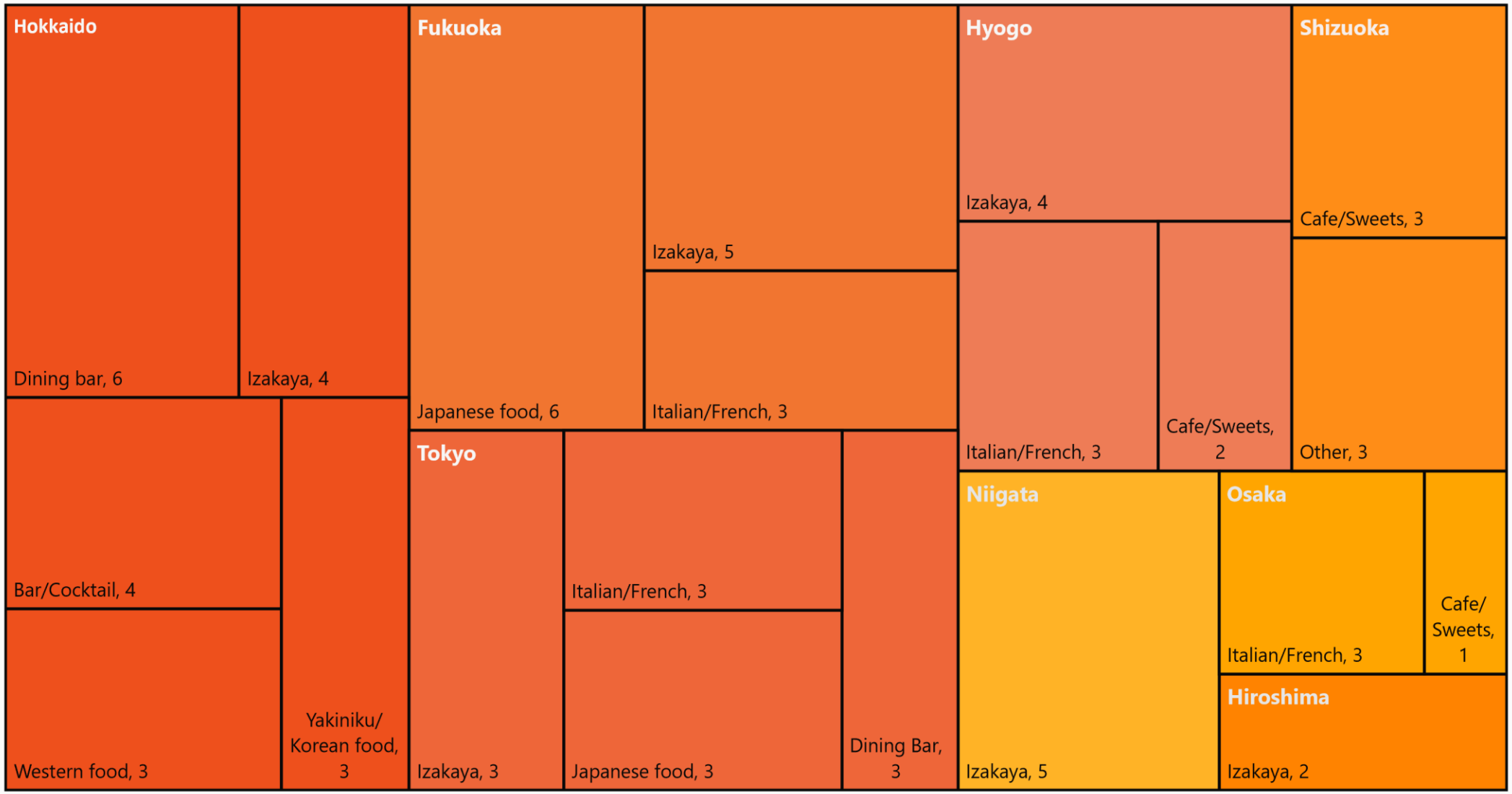
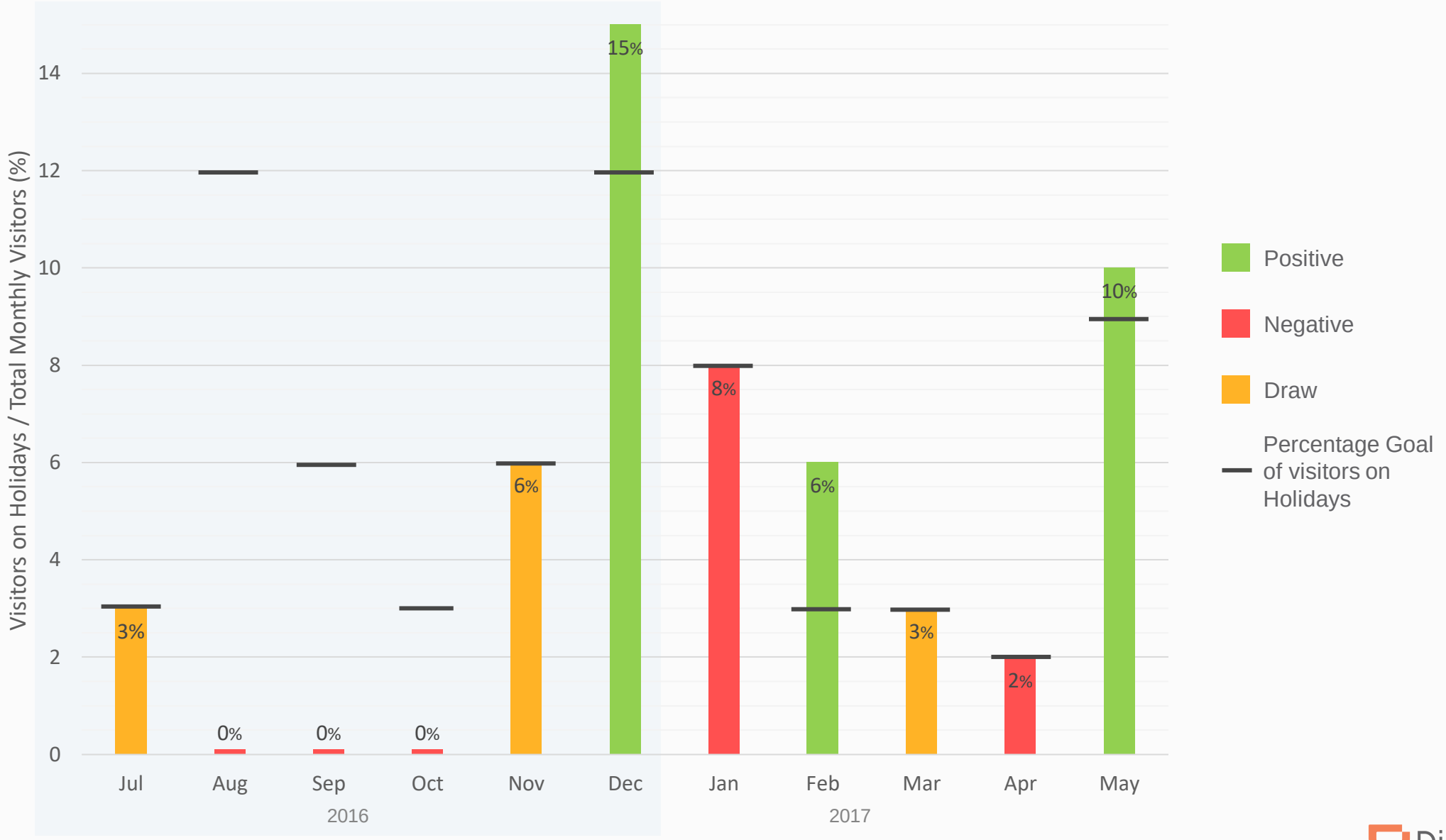
Average Visitors per Genre across Japanese Prefectures



Jan 2016 - May 2017

Only 3 out of the last 11 months have capitalized on the holidays



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DiDi

PROJECT DOUBLE DINERS

initiatives

Happy Hour Promo on Weekdays (17:00-18:00)

- Sustaining momentum beyond Peak Hours (16:00)
- Capitalizing on Weekdays footfall by optimizing table turnover
- Transforming After-Office visits into routine habit

Themed Nights in Smaller Markets

- Attraction of new customer base
- Distinguishing identity amidst competitors
- Strategic testing ground for wider expansion
- Cultivation of exclusivity and anticipation

Holiday Footfall Boost in Off-Peak Months

- Elevated customer engagement and excitement
- Strategic utilization of the holiday spirit for growth
- Generation of positive word-of-mouth referrals through holiday appeal

Beta (Jun-Jul)

Objective

Gather performance data of initiatives in Pilot Markets

Key Activities

- Test different promotions and themes.
- Monitor visitors' response and engagement.
- Analyze data and identify key success factors and areas of opportunity.

Goal

8,500 visitors / month

EVALUATION

Growth (Aug-Sep)

Objective

Accelerate visitors acquisition in Expansion Markets

Key Activities

- Tailor initiatives to adapt to the market's characteristics and preferences.
- Track customer engagements and acquisition rates.
- Compare customer's behavior in bigger markets.

Goal

10,500 visitors / month

EVALUATION

Refinment (Oct-Nov)

Objective

Optimize initiatives for continuous growth in Mega Market

Key Activities

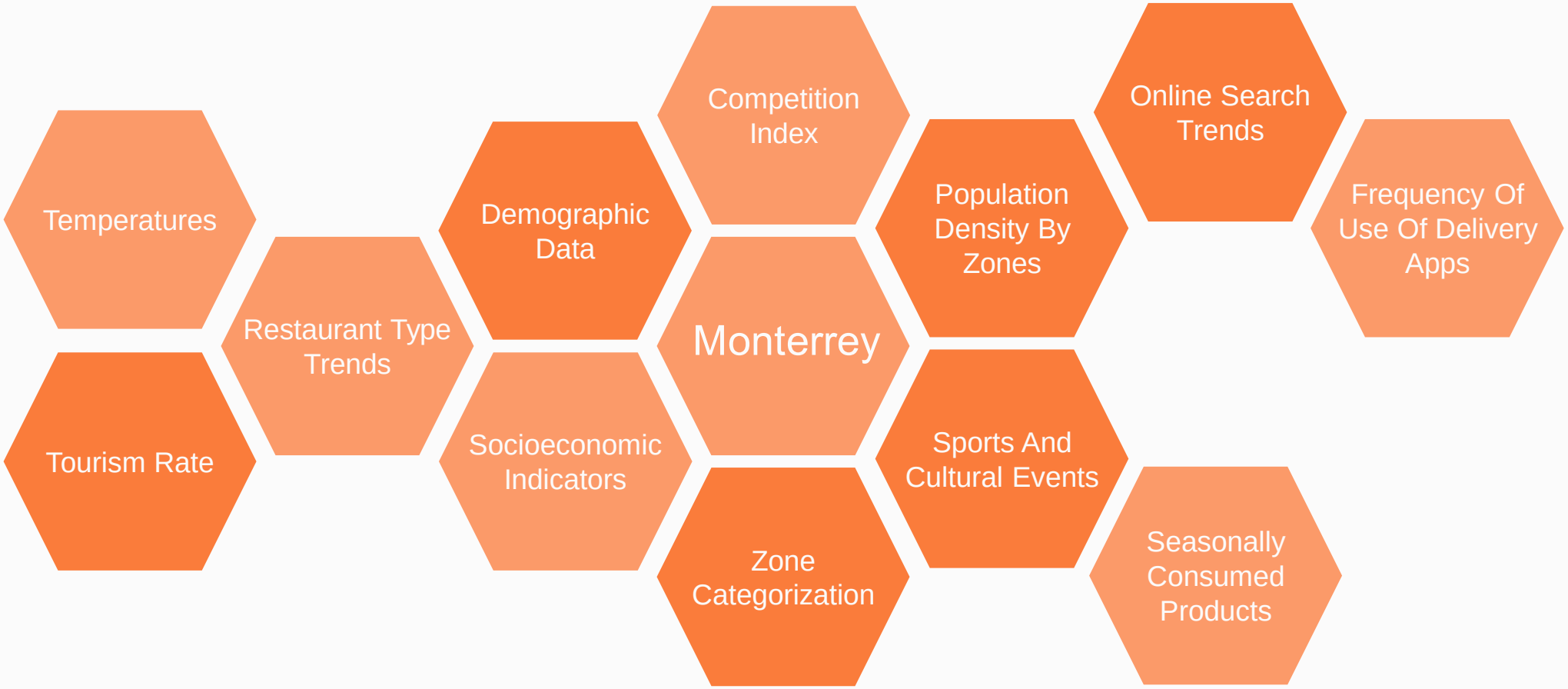
- Enhance initiatives based on previous stages' feedback.
- Evaluate customer feedback and make micro-adjustments.
- Analyze overall impact of the strategy.

Goal

12,500 visitors / month

EVALUATION

Additional data that should be considered to replicate this strategy in Monterrey...



Business Intelligence Challenge

Didi Questions

How many channels can you think of downloading a DiDi Rides APP and how will you estimate the quality and cost of each channel?

channel	costs	efficiency metric
App Stores	App Store Paid Promotions	App Ranking App Impressions Conversion Rates
Social Media Ads	Cost per Click	Click-Through Rate
Billboards	Placement Cost	Traffic Volume
Email	Email Marketing Platform Subscription	Open Rate Click-Through Rate
SMS	SMS Marketing Platform Subscription Cost per SMS	Open Rate Click-Through Rate
Users Referral Codes	Incentives Costs	Conversion Rate
Influencer Marketing	Influencer Fees	Conversion Rate Engagement Metrics
QR Codes	QR Marketing Platform Subscription	Conversion Rate Scan Rates
Internet Search	Search Engine Optimization (SEO)	Conversion Rate Search Ranking
Physical Events	Rent Fees Operational Spend	Attendance Interaction Rate

We want to build up a model to predict “Possible Churn Users” for DiDi Rides APP (e.g.: no trips in the past 4 weeks). Please list all features that you can think about and the data mining or machine learning model or other methods you may use for this case.

Features	Description
account_age	Days since the user's registration.
last_trip	Days since the user's most recent trip.
total_trips	Total number of trips taken.
monthly_trips	Average number of trips taken monthly.
weekly_trips	Average number of trips taken weekly.
trip_duration	Average duration of the trips in minutes.
trip_distance	Average distance of the trips in kilometers.
fare	Average fare price of the trips.
ratings	User's average rating score.
location	User's location.
payment	User's preferred method of payment.
promos	Total number of promotional codes redeemed.
support_interactions	Total number of interactions with customer support.

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Classification Models

Support Vector Machine

Can identify linear and non-linear patterns.

Random Forest

Can handle different data types such as numerical and categorical data

Logistic Regression

Can analyze the direct impact of individual features.

Business Intelligence Challenge

SQL QUERIES

1. Write the SQL queries necessary to generate a list of the five restaurants that have the highest average number of visitors on holidays. The result table should also contain that average per restaurant.

SQL Query

```
SELECT TOP 5 id, genre_name, area_name, AVG(reserve_visitors) AS 'avg_visitors_holidays'
FROM restaurants_visitors
JOIN date_info ON calendar_date = visit_date
JOIN store_info ON store_id = id
WHERE holiday_flg = 1
GROUP BY id, genre_name, area_name
ORDER BY 'avg_visitors_holidays' DESC
```

Results

id	genre_name	area_name	avg_visitors_holidays
e89735e80d614a7e	Izakaya	Tōkyō-to Chiyoda-ku Kudanminami	8
db80363d35f10926	Dining bar	Hokkaidō Asahikawa-shi 6 Jōdōri	6
bb09595bab7d5cfb	Izakaya	Niigata-ken Niigata-shi Teraohigashi	5
e053c561f32acc28	Izakaya	Hokkaidō Asahikawa-shi 6 Jōdōri	5
24b9b2a020826ede	Japanese food	Fukuoka-ken Kitakyūshū-shi Ōtemachi	5

2. Use SQL to discover which day of the week there are usually more visitors on average inrestaurants

SQL Query

```
SELECT day_of_week, AVG(reserve_visitors) AS 'avg_visitors'
FROM date_info
JOIN restaurants_visitors ON visit_date = calendar_date
GROUP BY day_of_week
ORDER BY 'avg_visitors' DESC
```

Results

day_of_week	avg_visitors
Friday	4
Monday	4
Thursday	4
Tuesday	4
Wednesday	4
Saturday	3
Sunday	3

3. How was the percentage of growth of the amount of visitors, week over week, for the last four weeks of the data? Use SQL too

SQL Query

```sql
WITH CTE AS (
    SELECT TOP 5 DATEPART(wk, visit_date) AS week_num,
    SUM(reserve_visitors) AS total_visitors,
    ROW_NUMBER() OVER (ORDER BY DATEPART(wk, visit_date) DESC) AS rn1
    FROM restaurants_visitors
    WHERE YEAR(visit_date) = 2017
    GROUP BY DATEPART(wk, visit_date))

SELECT T1.week_num, T1.total_visitors, ((T1.total_visitors - T2.total_visitors) * 1.0 / T2.total_visitors) * 100 AS 'percentage_change'
FROM CTE T1
LEFT JOIN CTE T2 ON T1.rn1 = T2.rn1 - 1;
```

Results

day_of_week	avg_visitors	percentage_change
22	15	-76.19
21	63	-19.23
20	78	-55.42
19	175	6.70
18	164	NULL

Business Intelligence Challenge

repository: bit.ly/BI_Challenge