

Yelp Data Challenge

Restaurant Survival Strategy

Tai-Hua Chung

Question: What drives restaurant's survival?

The image shows a restaurant listing for "Primeburger" on a mobile application interface. The listing includes the following details:

- Overall Star Rating:** ★★★★☆ (4.5 stars)
- Price Range:** \$\$\$
- Food Type:** Burgers, Breakfast & Brunch, Steakhouses
- Total Number of Review:** 282 Reviews
- Open:** until 11:00 PM
- Popular Dishes:** Prime Burger, Big Scorcher, Pull

Below the listing are navigation icons: Search, Delivery, Me, Collections, and More (with a notification count of 1).

To the right of the listing is a detailed "About Primeburger" page:

- FEATURES:**
 - Reservations
 - No Delivery
 - Takeout
- PAYMENTS:**
 - Credit Cards, Apple Pay, Android Pay, Military Discount
 - Cryptocurrency
- AMENITIES:**
 - Vegan Options, Vegetarian Options
 - No Outdoor Seating
 - Casual Ambience, Trendy
 - Moderate Noise
 - Casual Attire
 - Good for Groups
 - Good For Kids

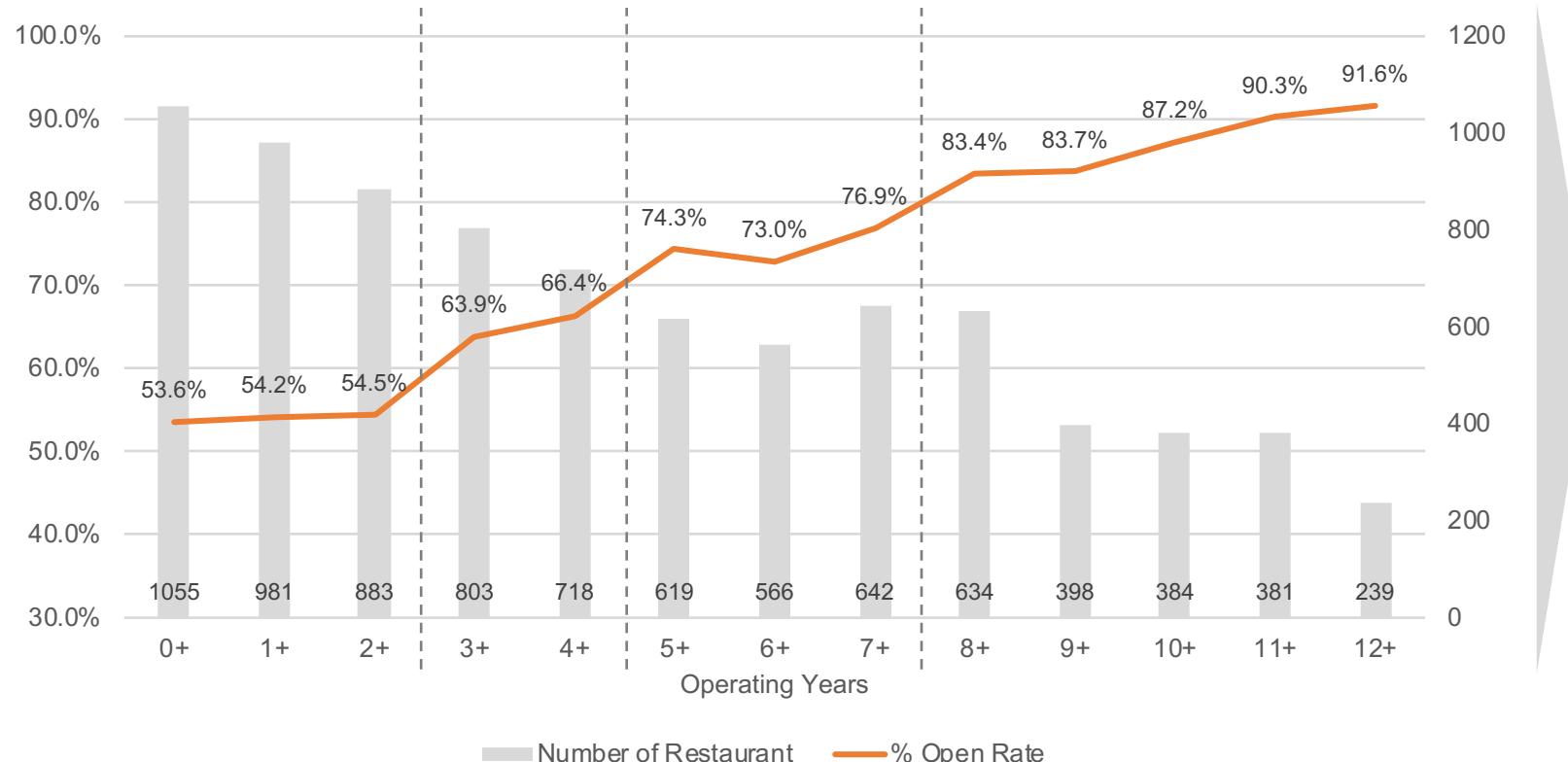
A line points from the "More Attributes" section of the amenities list back to the main listing area.

Restaurant Survival Trend

3 years is the critical point for running restaurants; open rate increases significantly afterwards.

% Open Rate - Restaurants operating from 0 to 12+ years in Las Vegas (8.3k)

100% = Number of Restaurant in each operating period



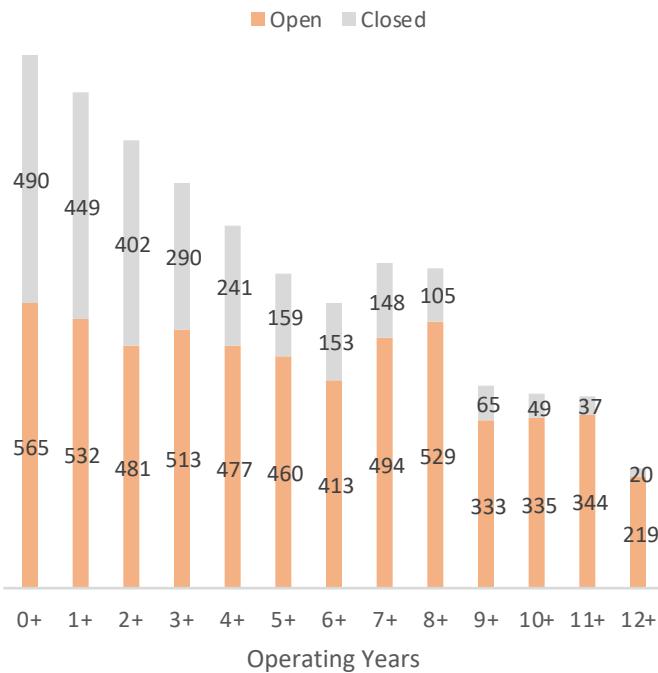
Divided into four segments and will focus on the first three to detect factors for survival:

- 0 ~ 2 years
- 3 ~ 4 years
- 5 ~ 7 years
- 8+ years

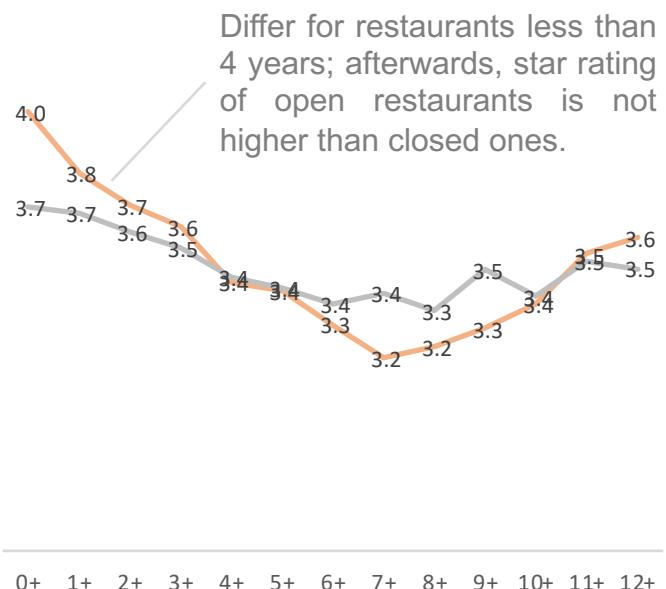
Open vs. Closed Restaurants

Overall star rating and total number of review only matter for certain operating periods.

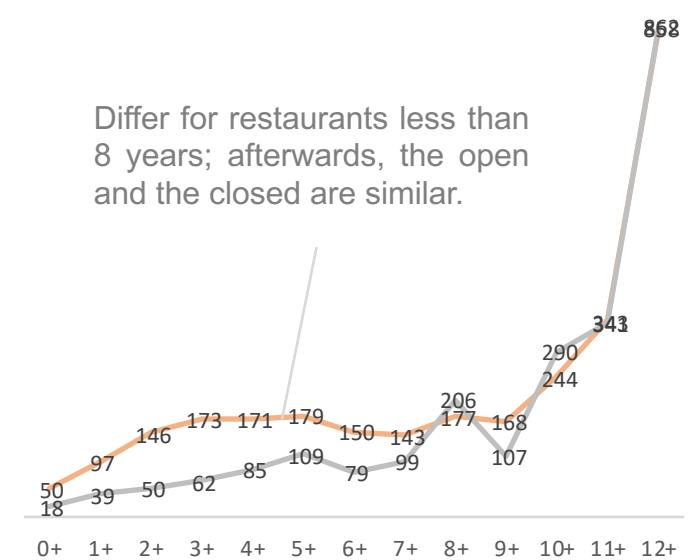
Number of Restaurant



Overall Star Rating



Total Number of Review



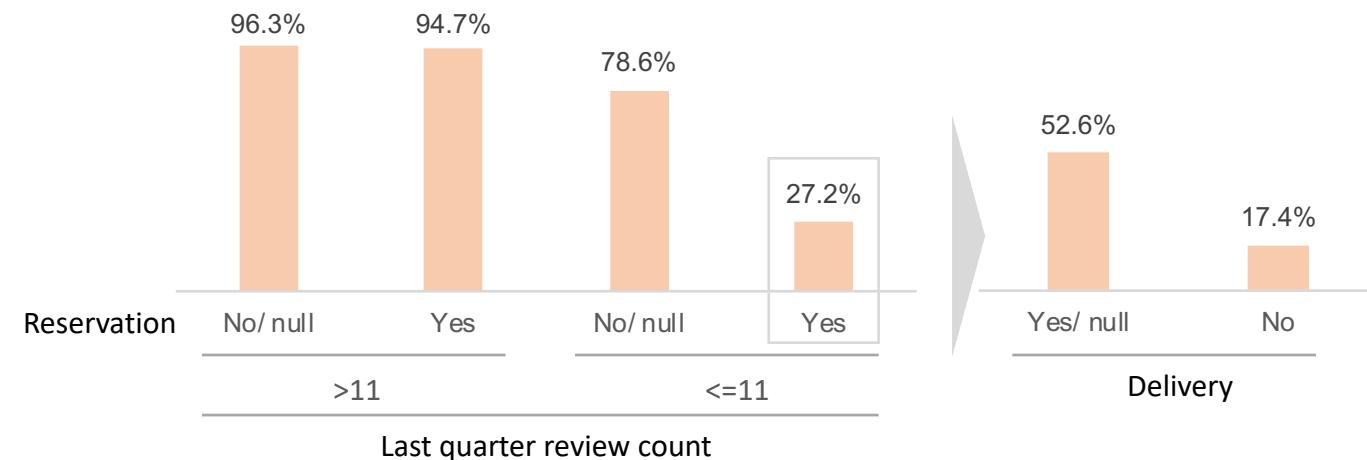
Survival Strategy: 5-7 years segment

If last quarter review count is under 11, restaurants should consider to drop reservation service.

Decision Tree Result: (1.8k restaurants; avg. open rate 74.8%)

Reservation	Last quarter review count	Delivery	Number of Restaurant	% Open Rate
No/ null	-	-	1,507	79.8%
Yes	>11	-	114	94.7%
	<=11	Yes/ null	57	52.6%
No			149	17.4%

- If **last quarter review count** is less than 11, the restaurant should start worried and consider adopting new strategy.
 - Moreover, if the restaurant provides **reservation**, its open rate would be down to 27.2%. (conjecture: they might risk customers making reservation and not showing up.)
- And if it does not offer food **delivery**, the open rate could be 17.4%.



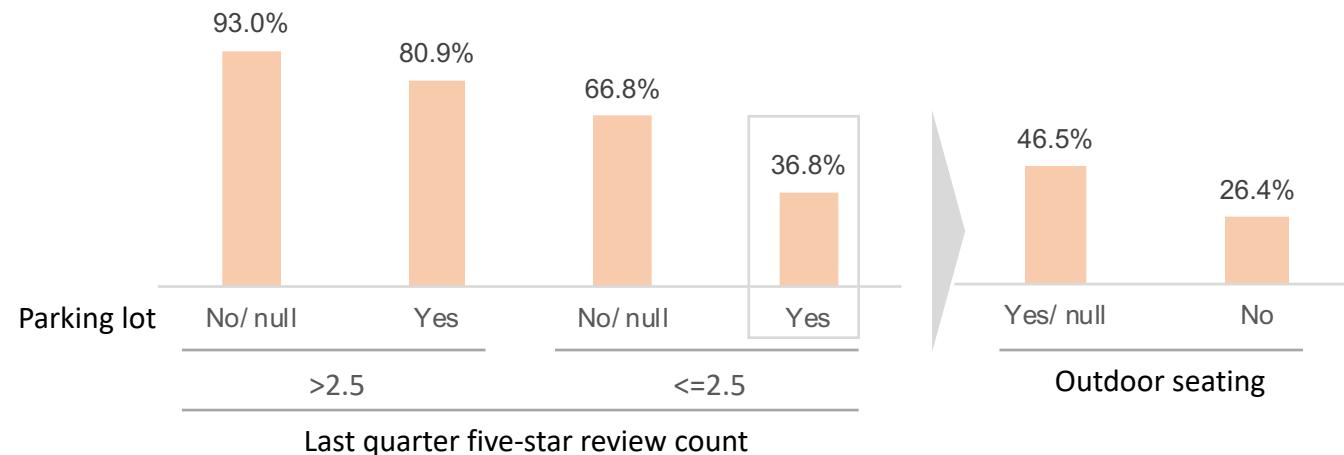
Survival Strategy: 3~4 years segment

If last quarter five-star review is under 2.5, restaurants should consider adjusting parking lot space.

Decision Tree Result: (1.5k restaurants; avg. open rate 65.1%)

Last quarter five-stars review	Parking lot	Outdoor seating	Number of Restaurant	% Open Rate
>2.5	-	-	421	86.2%
<=2.5	No/ null	-	739	66.8%
	Yes	Yes/ null	187	46.5%
		No	174	26.4%

- If **last quarter five-star review** is less than 2.5, the restaurant should start consider adopting new strategy.
 - Moreover, if the restaurant has **parking lot**, its open rate would be down to 36.8%. (conjecture: they might not utilize its space to provide more seating, which would bring in more business.)
 - And if it does not **offer outdoor seating**, the open rate could be 26.4%.



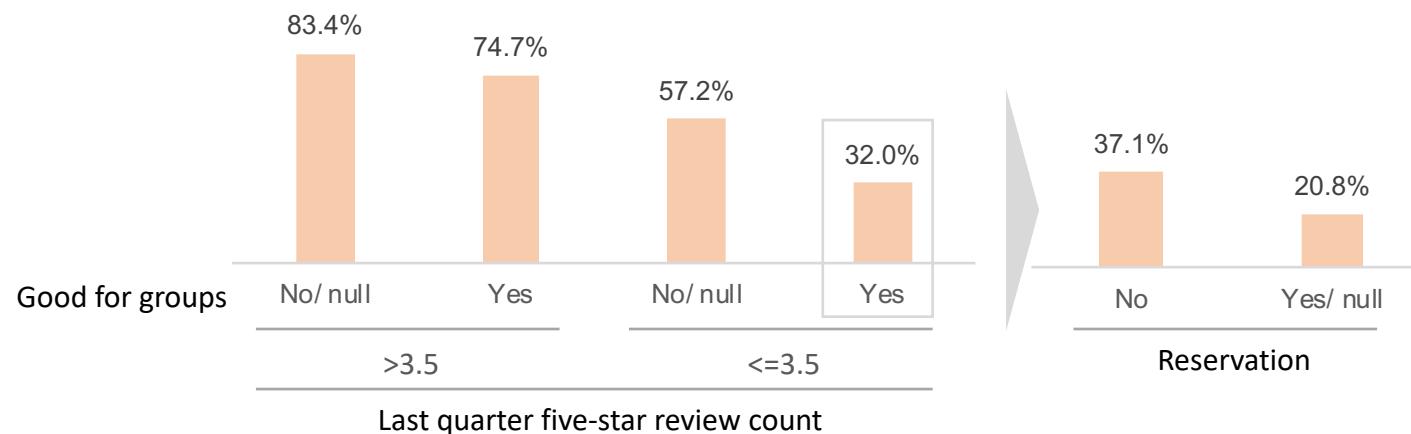
Survival Strategy: 0~2 years segment

If last quarter 5-star review is under 3.5, restaurants shall further investigate disadvantage of groups.

Decision Tree Result: (2.9k restaurants; avg. open rate 54.1%)

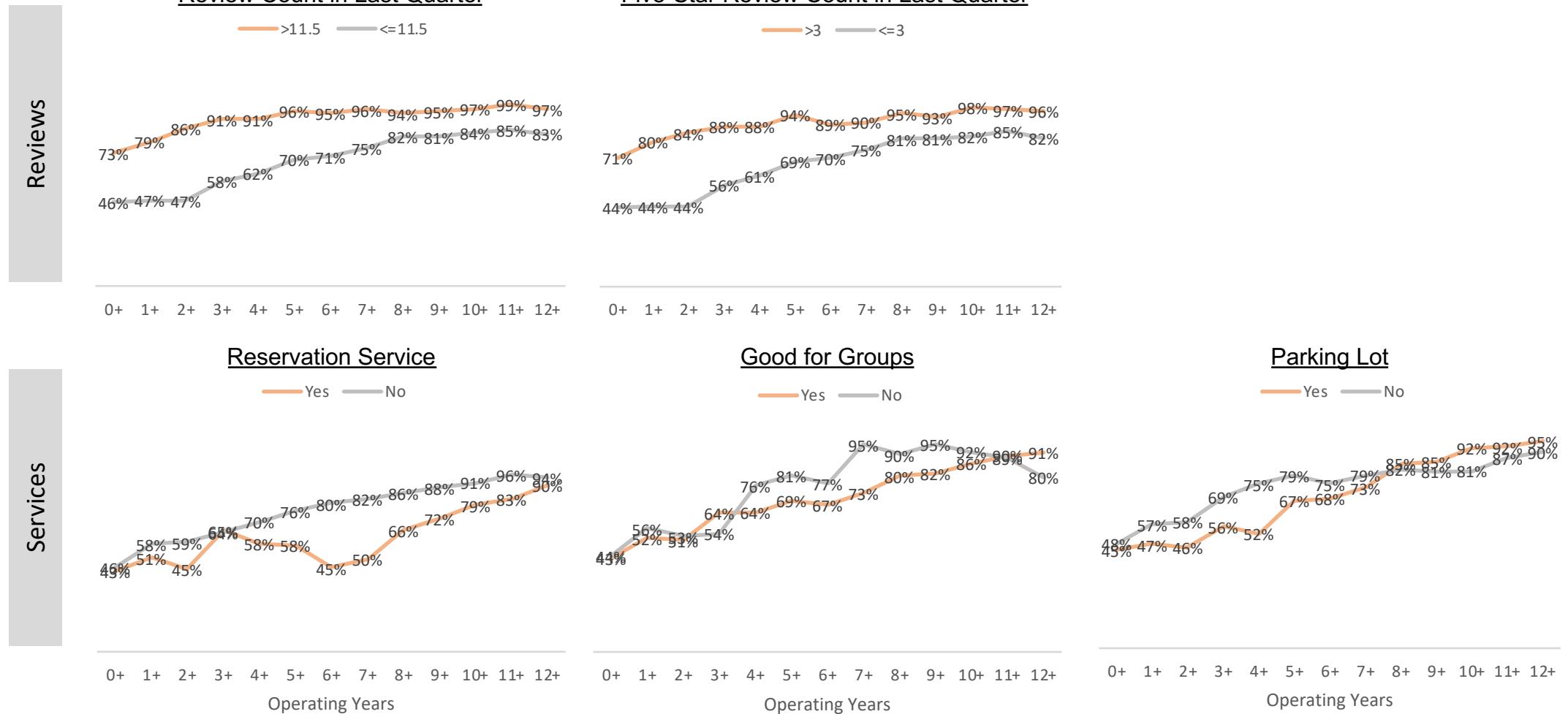
Last quarter five-stars review	Good for groups	Reservation	Number of Restaurant	% Open Rate
>3.5	-	-	904	76.9%
<=3.5	No/ null	-	944	57.2%
	Yes	No/ null	739	37.1%
		Yes	332	20.8%

- If **last quarter five-star review** is less than 3.5, the restaurant should start consider adopting new strategy.
 - Moreover, if the restaurant is **good for groups**, its open rate would be down to 32.0%. (conjecture: groups might stay longer which would lower the turn over rate.)
 - And if it offer **reservation**, the open rate could be 20.8%.



Open rate: 1st and 2nd factors

Last quarter review is the critical indicator across all segments; certain services might harm business.



Summary & Recommendation

Insights Summary

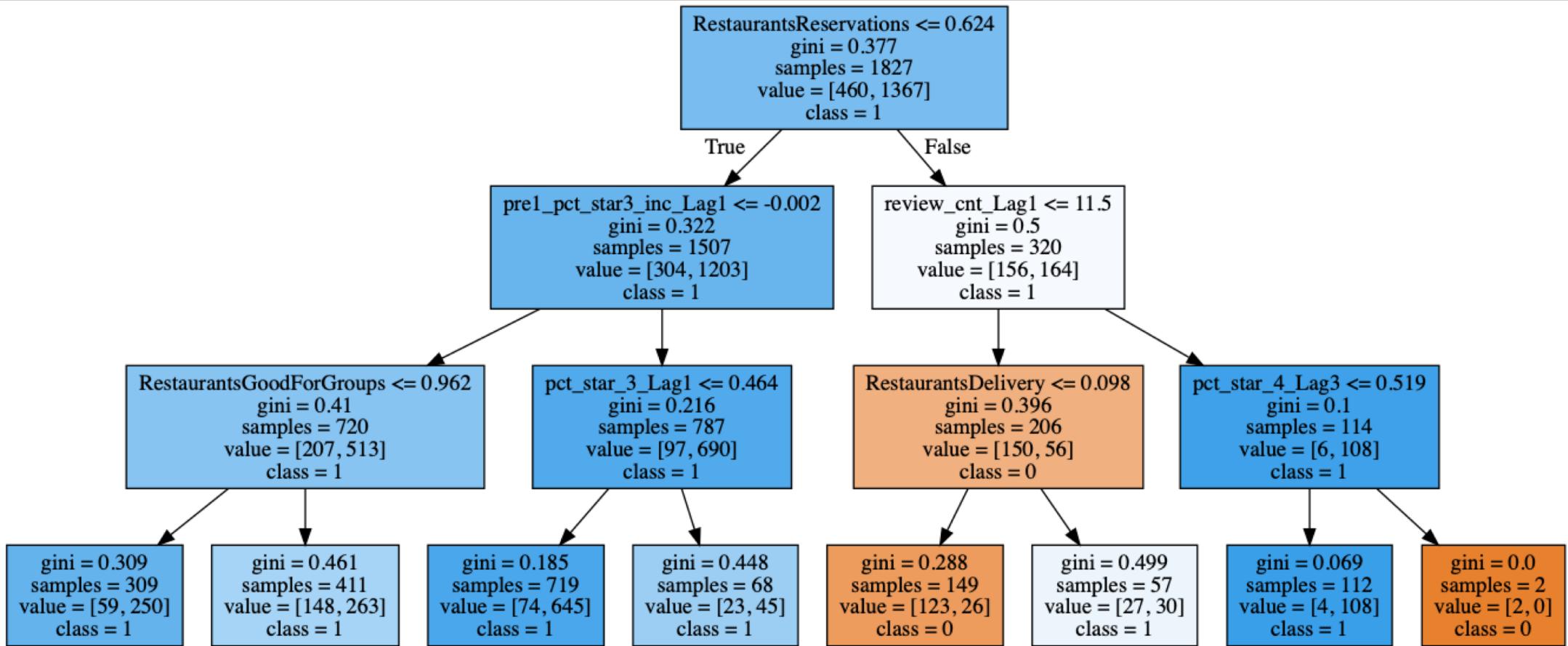
- **3 years is the critical point for running a restaurant; survival rate increases significantly afterwards.**
0-2 years: 54%, 3-4 years: 65%, 5-7 years: 75%, 8+ years: 86%
- **Review count and Star rating still matter.**
Not the overall aggregation but the most recent time period.
- **Providing certain convenient services could harm restaurants' business, depending on the segments.**
i.e. Reservation service, Good for groups, Parking lot.

Recommendations

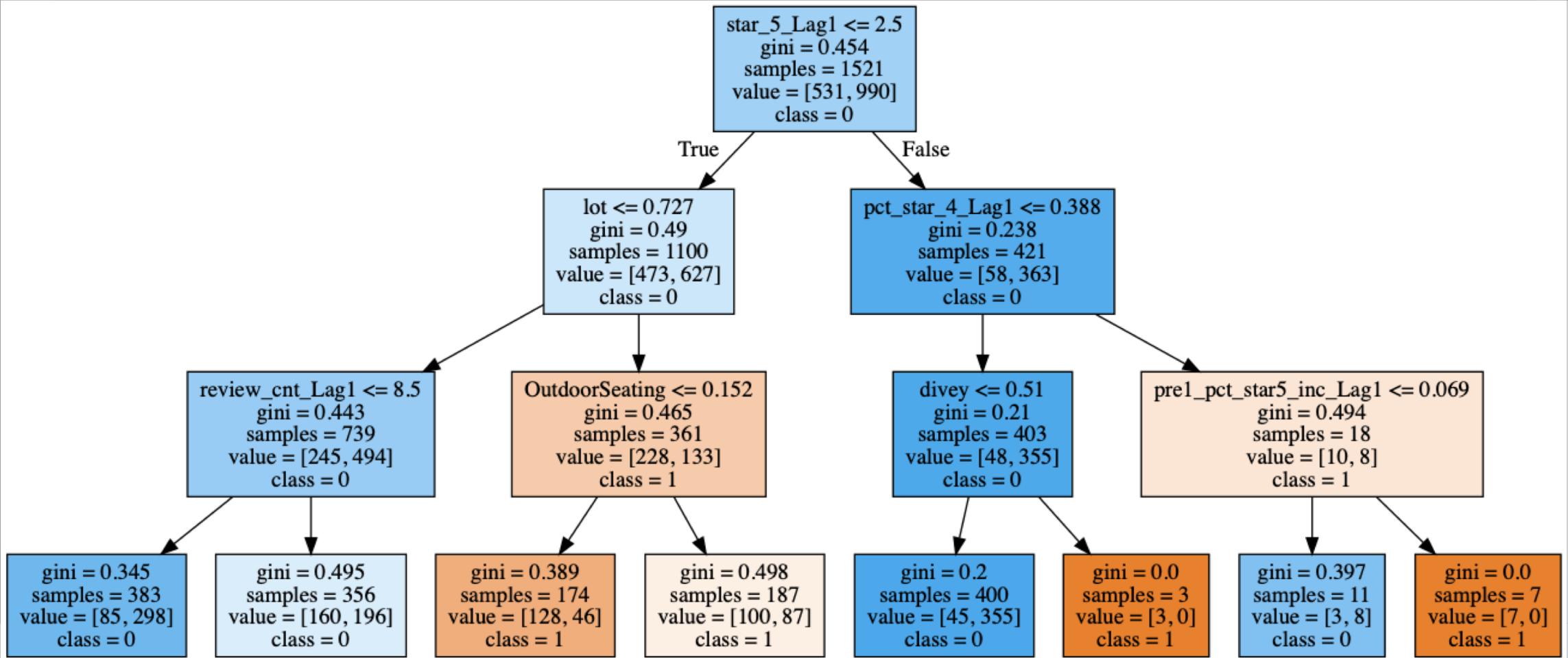
- Yelp slowly enters transaction business recently by providing delivery and reservation service functions, etc.
To extend new business model, Yelp could develop:
 - **Performance management platform**
e.g. providing quarterly reviews tracking.
 - **Success factors analysis**
e.g. sharing insights with restaurants, developing new service based on the factors which would help restaurant succeed to survive.

Appendix

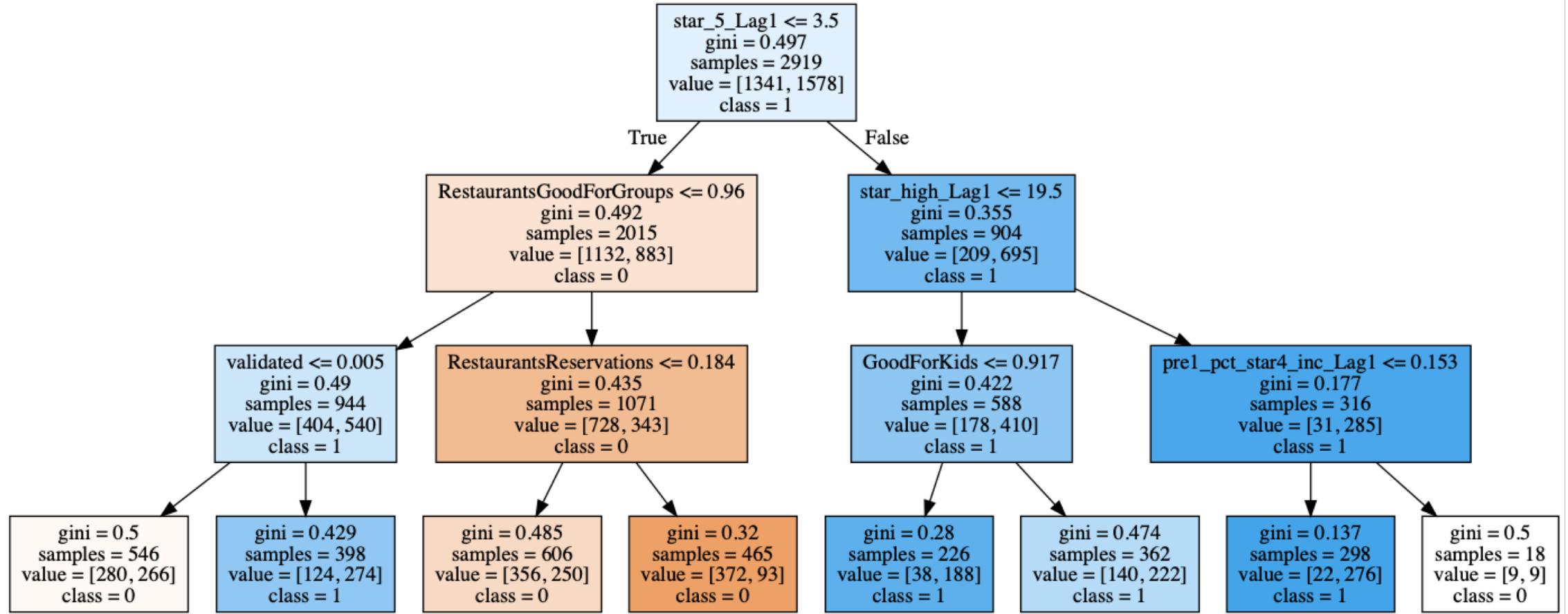
Decision Tree Output: 5~7 Years



Decision Tree Output: 3~4 Years



Decision Tree Output: 0~2 Years



Open rate: 3rd factors

These attributes only matter under certain conditions.

