

Practical Exam – Restaurant Success

From:	Head of Data Science
Received:	Today
Subject:	New project from the Strategy Team
<p>Hey!</p> <p>I have a new project for you from the strategy team. Should be an interesting challenge. You can see the background and request in the email below.</p> <p>I would like you to perform the analysis and write a short report for me. I want to be able to review your code as well as read your thought process for each step. I also want you to prepare and deliver the presentation for the strategy team – you are ready for the challenge!</p> <p>We are trying to find out what makes a restaurant location successful. Of course, we cannot know with complete accuracy whether a future location will be profitable, but do your best and present whatever you find.</p> <p>You can find more details about what I expect you to do here. And information on the data here.</p> <p>I will be on vacation for the next couple of weeks, but I know you can do this without my support. If you need to make any decisions, include them in your work and I will review them when I am back.</p> <p>Good Luck!</p>	

From:	Head of Strategy
To:	Head of Data Science
Received:	Yesterday
Subject:	Will a location be successful?

Hi,

As you know, a large number of our new restaurants struggle to become profitable and have to be closed down. We are hoping you can help us to utilize the data we have to improve our success rate with new locations.

We use a target of three years from restaurant opening to see whether a location is profitable. We have collected a dataset of information relating to our existing restaurants' locations. If we can use this information to determine in advance whether a possible new location will be successful, we will be able to save a lot of wasted resources.

Can your team help us to:

- Identify which factors are most important in determining the profitability of a new location?
- Given this data, predict whether the third year profits are positive with 75% accuracy?

We need to make a decision on this soon, so I need you to present your results to me by the end of the month. Whatever your results, what do you recommend we do next?

Look forward to seeing your presentation.

About Family Grill House

Family Grill House is a major franchise restaurant chain with over a thousand locations. The company allows franchise operators to suggest new locations and helps them get the restaurants open and running.

Restaurant Location Information

We have spent considerable effort obtaining accurate information about our current restaurant locations, including data such as the number of nearby competitors and the travel time to the nearest highway.

We aim for all of our locations to be open 24 hours and to have drive-through service, but this is often not possible due to local conditions or regulations.

When franchise operators suggest new locations they are asked to submit the form shown below.

Location (street address):	
Is there another family grill house within 5 miles?	Yes/No
What is the estimated distance to the nearest competitor restaurant?	
Is the location directly on a highway?	Yes/No
Is the location in a residential or business district?	Residential/Business
Can the store remain open 24hrs?	Yes/No
Would takeaway and/or delivery services be offered?	Yes/No
Would drivethru be possible?	Yes/No
Would you be prepared to manage the location once open?	Yes/No
What would be a unique feature of this location/restaurant that would attract customers?	

Data Information

Our research team has collected the dataset about our existing restaurant locations.

You can find the data [here](#), as well as inside the Workspace template for this task.

I will let you decide how to process it, just make sure you include all your decisions in your report.

Don't forget to double check the data really does match what they say - it might not.

Column Name	Details
location	Discrete. Unique identifier for the restaurant.
year_3_profit	Nominal. 1 if profitable after 3 years, 0 otherwise.
local_pop	Discrete. Population within 30 minutes of travel to the restaurant. Any positive integer.
competitors	Discrete. Number of competitor restaurants within 2 kilometers. Any positive integer.
nearest_fgh	Continuous. Distance in kilometers to the nearest other Family Grill House location. Any positive value.
hours	Ordinal. One of "Regular", "Extended", or "24 hours".
highway	Discrete. Travel time in minutes to the nearest highway. Should be at least 1 minute.
drivethru	Ordinal. Whether the location has a drive-through order and collection service ("Yes" or "No").

Guide to Data Science Projects

1. I would like you to create a written report to summarize the analysis you have performed and your findings. The report will be read by me (Head of Data Science). The list below describes what I expect to see in your written report.
2. You will need to use DataCamp Workspace to complete your analysis, write up your findings and share visualizations.
3. You must use the data provided for the analysis.
4. You will also need to prepare and deliver a presentation. You should prepare around 6-10 slides to present. The list below describes what they expect to see in your presentation.
5. Your presentation should be no longer than 10 minutes.

Written Report

Your written report should include written text summaries and graphics of the following:

- Data validation:
 - Describe validation and cleaning steps for every column in the data
- Exploratory Analysis to answer the customer questions ensuring you include:
 - Two different types of graphic showing single variables only
 - At least one graphic showing two or more variables
 - Description of your findings
- Model Development including:
 - What type of problem this is
 - Fitting a baseline model
 - Fitting a comparison model
- Model evaluation
 - Show how the two models compare
- Definition of a metric for the business to monitor
 - How should the business monitor what they want to achieve?
 - Estimate the initial value(s) for the metric based on the current data?
- Final summary including recommendations that the business should undertake

Presentation

You will give an overview presentation to the individual who requested the work. The presentation should include:

- An overview of the project and business goals
- A summary of the work you undertook and how this addresses the problem
- Your key findings including the metric to monitor and current estimation
- Your recommendations to the business

Grading

Before submitting your written report or delivering your presentation, remember to check your work against the grading criteria.

You can find the full grading rubric [here](#).

You must pass all criteria to pass this part of the certification.