Transforming the Coffee-Buying Experience

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Introduction

Fast facts & motivation

Fast Facts

America runs on...

Coffee!

An economic force

~75% of Americans drank coffee in 2022

18-29 domination

33% of this demographic visited a shop in 2020

Adapting with tech

Pre-shop ordering, QR codes, recipe costing

Our Motivation

How can a coffee shop improve its business?

- **Approach** a target market that will be loyal
- **Understand** who its customers are
- **Offer** great products and a welcoming atmosphere
- **Identify** problems that customers encounter when in store

02

Exploratory Data Analysis

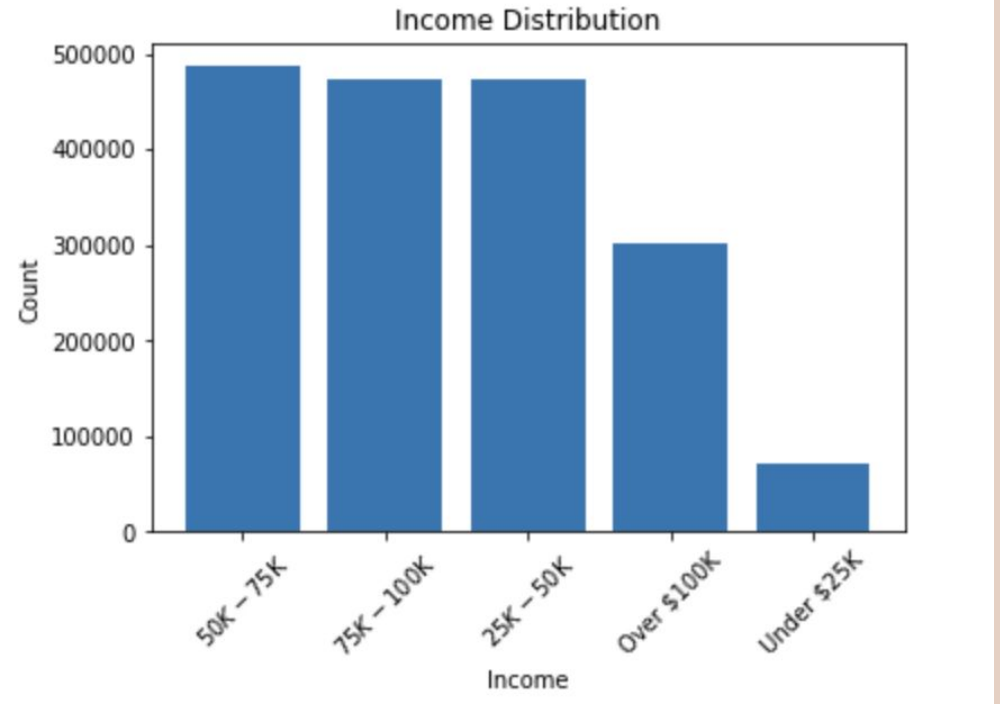
Graphs and plots

Data Columns

transaction_id: unique identifier for each transaction
age: age of the customer making the transaction
income: income of the customer making the transaction
sex: sex of the customer making the transaction
rewards_member: whether or not the customer is a rewards program member
occupation: the occupation of the customer making the transaction
num_items: number of items purchased in the transaction

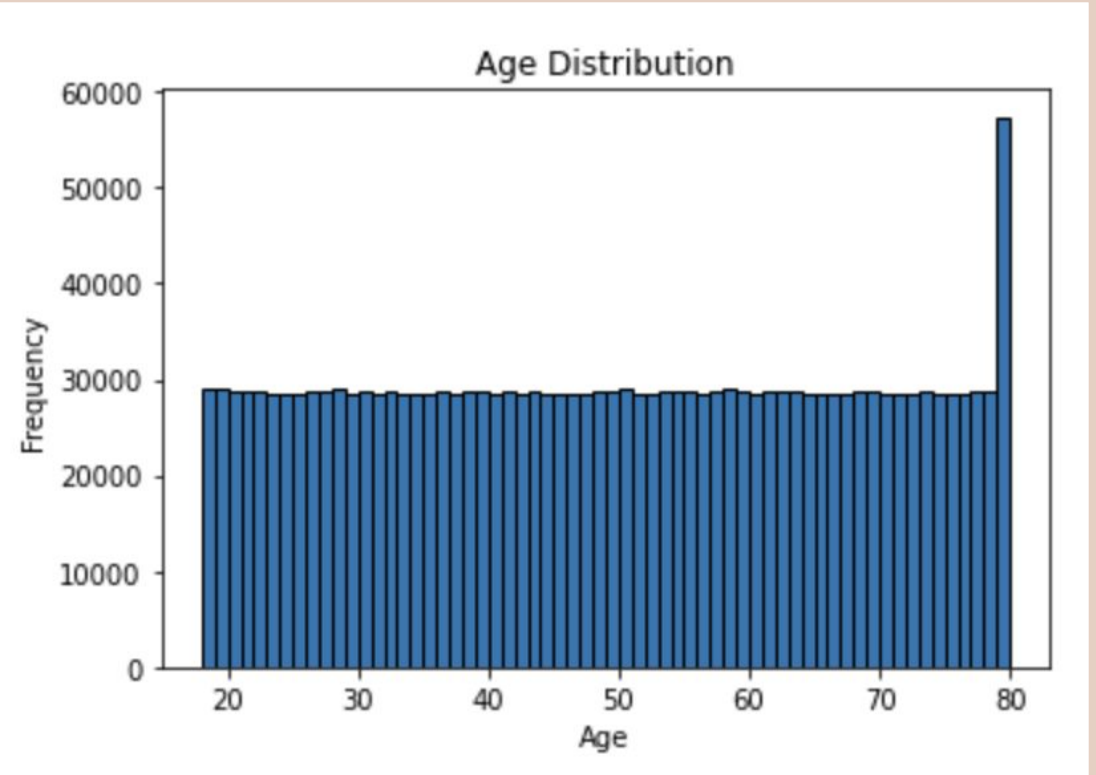
purchase_method: method of purchase (e.g., cash, credit card)
wait_time: time spent waiting in line before making the transaction in minutes
purchase_amount: total purchase amount of the transaction in USD
store_location: location of the store where the transaction took place
transaction_time: hour when the transaction took place
day_of_week: day of the week when the transaction took place

Income Distribution



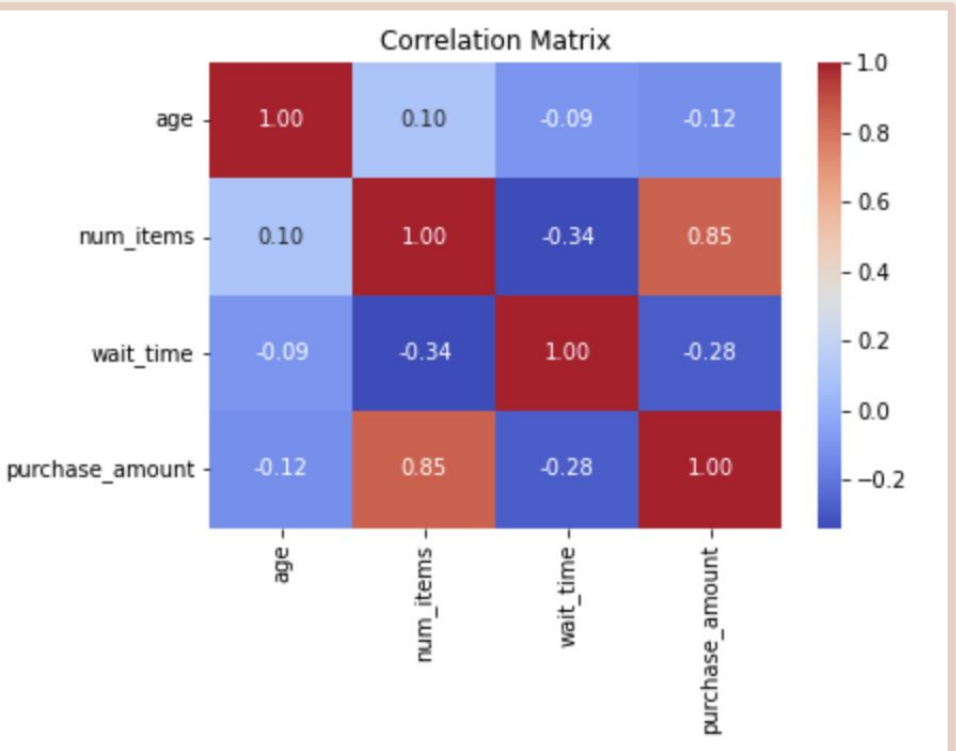
- Most customers are middle-class earners
- Location of shops a factor?
- How does work/job role contribute?

Age Factor



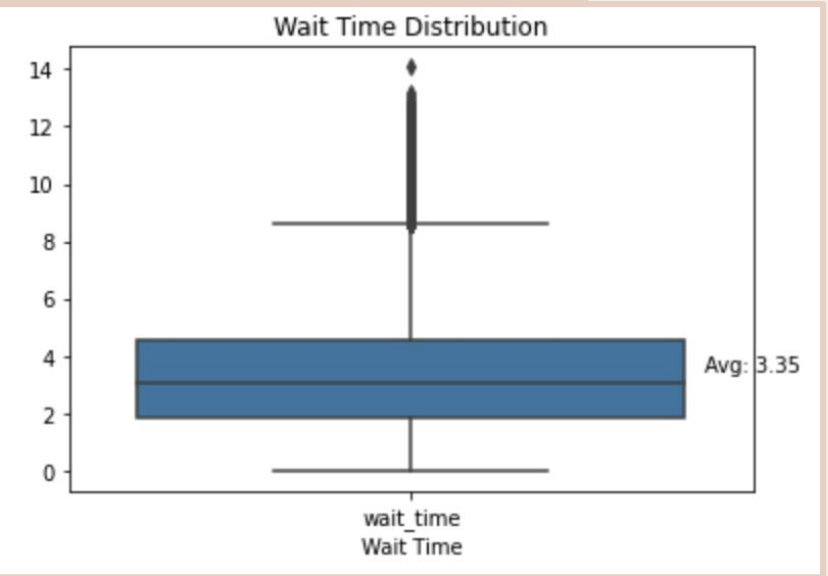
- **Heavily left-skewed**
- **Gen Z domination?**
- **Buying vs. Hanging Out ?**

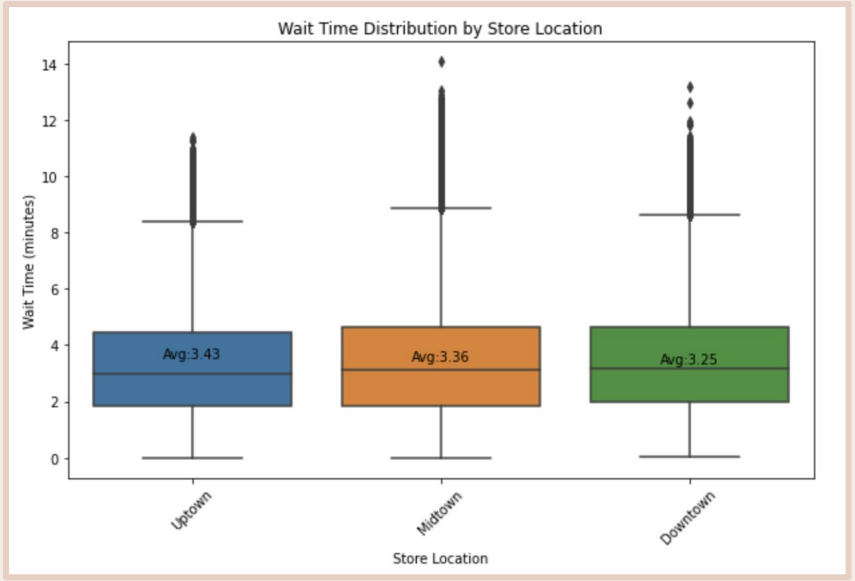
Correlations



- **Buy less, wait less**
- **Buy more, spend more**

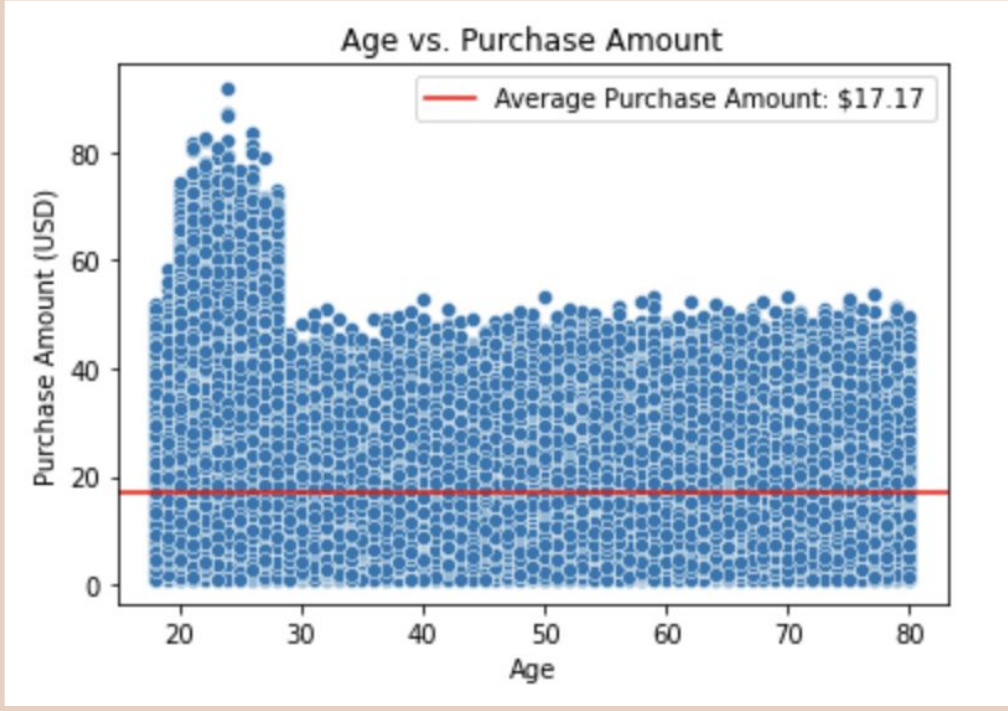
Wait Time





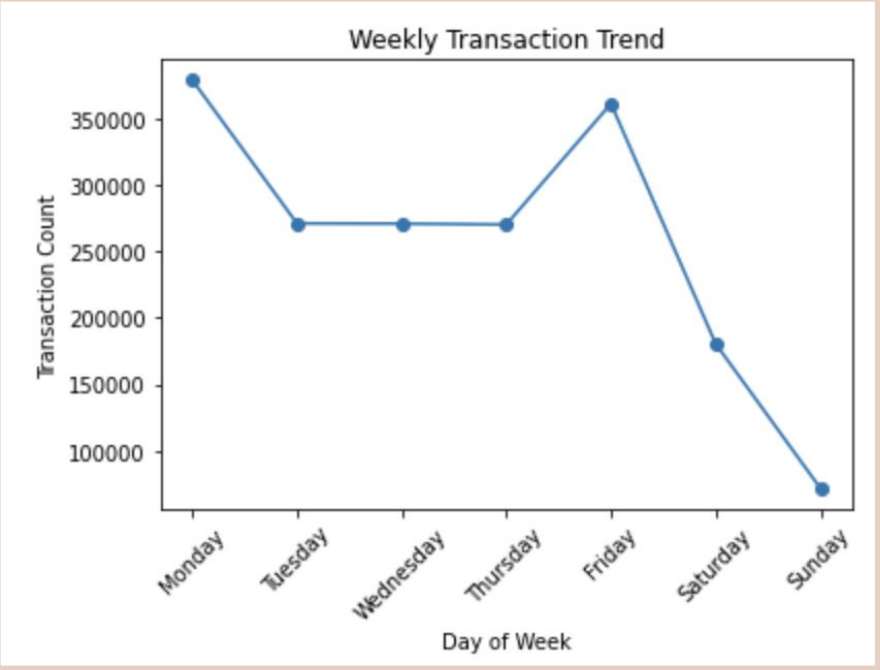
Wait times are consistent throughout different store locations

Purchase Amount by Age



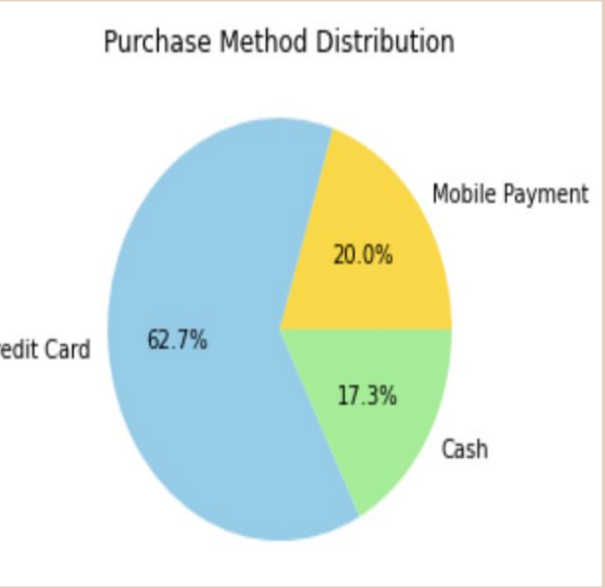
- **Average transaction is $17.17**
- **Younger customers tend to have more expensive orders than older customers**

Daily Transaction Trend



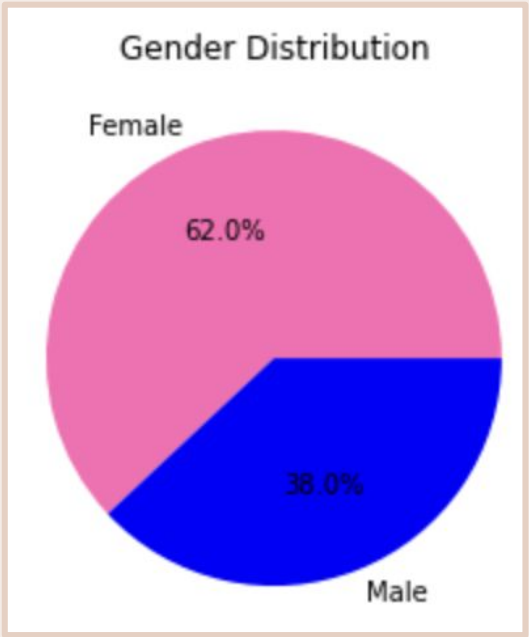
- **Monday and Friday are most popular days**
- **Mid-week is busy as well**
- **Weekends are significantly less busy**

Customer Info



Majority of customers pay using non-cash methods (82.7%)

Majority of customers are female

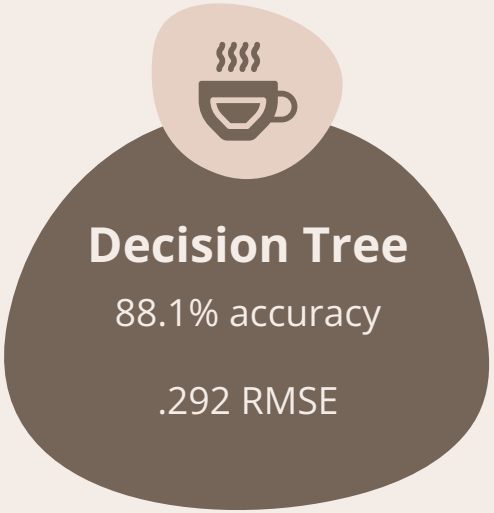


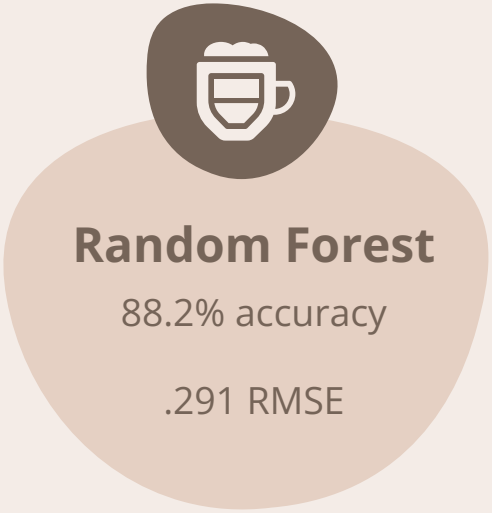
03

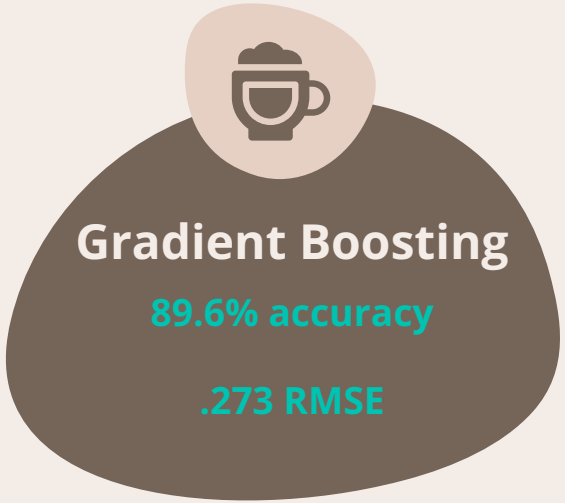
Model Building

Trees, Linear, Logistic

Tree Methods Comparison

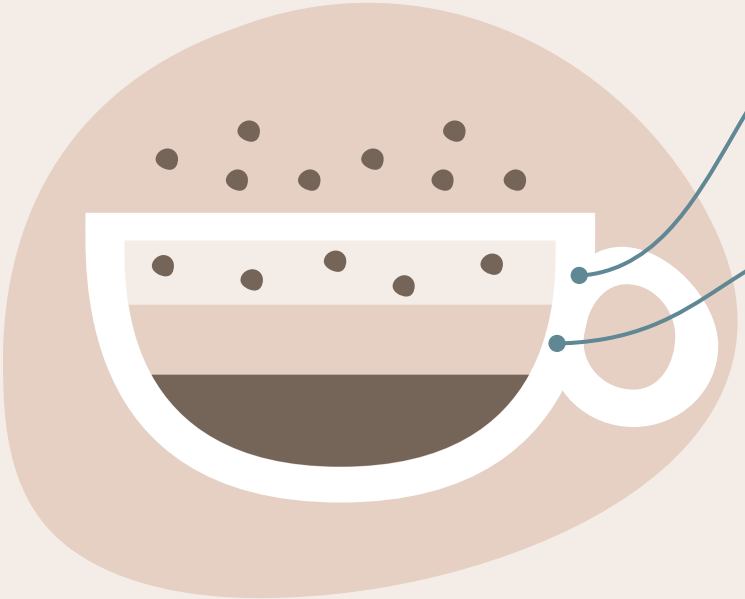






Used Features: ['transaction_id', 'age', 'num_items', 'wait_time', 'purchase_amount', 'transaction_time'] to predict if the customer is a rewards member and did a 80,20 train, test split.

Linear Regression



Test RMSE

.327

R2

.521

Logistic Regression

Step 1

Used indexer and coder to transform variables into numerical

Step 2

Used assembler to create one vector

Step 3

Created log model to predict rewards member

Step 4

Used pipeline function to expedite pre-processing

Step 5

Reported .867 area under the curve, which is very high

04

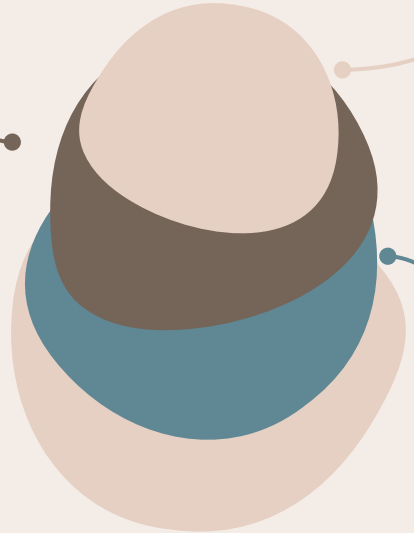
Final Model Interpretation

Model interpretation & performance

Why is Gradient Boosting most Successful?

Captures non-linear relationships

Lots of interactions in the data



Large dataset

Sort through intricate factors effectively

Consistent accuracy

Data is reliable and reflective of shop trends

05 Debrief

Key findings

Most Influential Features for Rewards Program Members

Age

Target customers in the 18-49 demographic

Purchase amount

Visit more, spend more, engage more

Number of items

Loyalty incentives come from buying more items (point accumulation)

Wait time

Shorter wait times = improved satisfaction = potential loyalty

Transaction time

Morning hours during the week are busiest

Thank you for listening

Feel free to ask any questions

References

1. Boyarsky, K. Toast Tab. (n.d.). Coffee Shop Industry Trends and Statistics. Retrieved from https://pos.toasttab.com/blog/on-the-line/coffee-shop-industry-trends