Starbucks Presentation

-Managing Employee Attrition Rate-

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01. About Starbucks

"Starbucks Corporation is an American multinational chain of coffeehouses and roastery reserves headquartered in Seattle, Washington with nearly **350,000 employees (known as "Partners")** in over 31,000 locations and earned $27 billion in revenue in 2020."

Starbucks Achievements

- The overall culture score is **76/100 (A)**
  - Best Company Perks & Benefits 2020
  - Best Company Work-Life Balance 2020
  - Best Company for Women 2020

- comparably.com -

Key Resources

"Partners"

- Bridging the gap between the customer and the company
- Customer experience begins with partner interaction

Winning Strategy

Starbucks

Employee management

- Recruiting the right people
- Partner training
- High-quality benefits (i.e. Bean stock)

Price reflects high-end

- Feeling of elevated social status
- “Price anchor” principle

Branding

- Direct marketing
- Word of mouth
- Socially Conscious Marketing

Customer link

“One person, one cup, one neighborhood”

- Local responsiveness
- Community support (Foundation)

Location

- Business circle with dense flow of people
- Convenient for customers
- Put pressure on competitors

Emotional experience

- Gathering of relatives and friends → Third place
- Personal enjoyment

Customer

02. Million-Dollar Question

How can Starbucks predict
when high-value employees are at risk of leaving,
so that steps can be taken to minimize turnover?

02. Million-Dollar Question

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Why is reducing employee turnover rate important?

“Starbucks has a relatively high **turnover rate of 65 percent** for full-time partners”

Costing approximately $2 billion per year
(350,000 full-time employees, average pay of $15 per hour, 2,080 hours per-year)

Reduce this by just 0.1%, could mean **savings of $2 million** per year.

- Work Institute’s 2017 Retention Report -

03. Data Visualization

Definition of talented partners

[Original dataset]

15815 partners

[After cleansing]

12205 partners

Final Dataset

6100 talented partners

“who work more than **1.09 years** with Starbucks and stay with the one position for more than **0.83 years**”

03. Data Visualization

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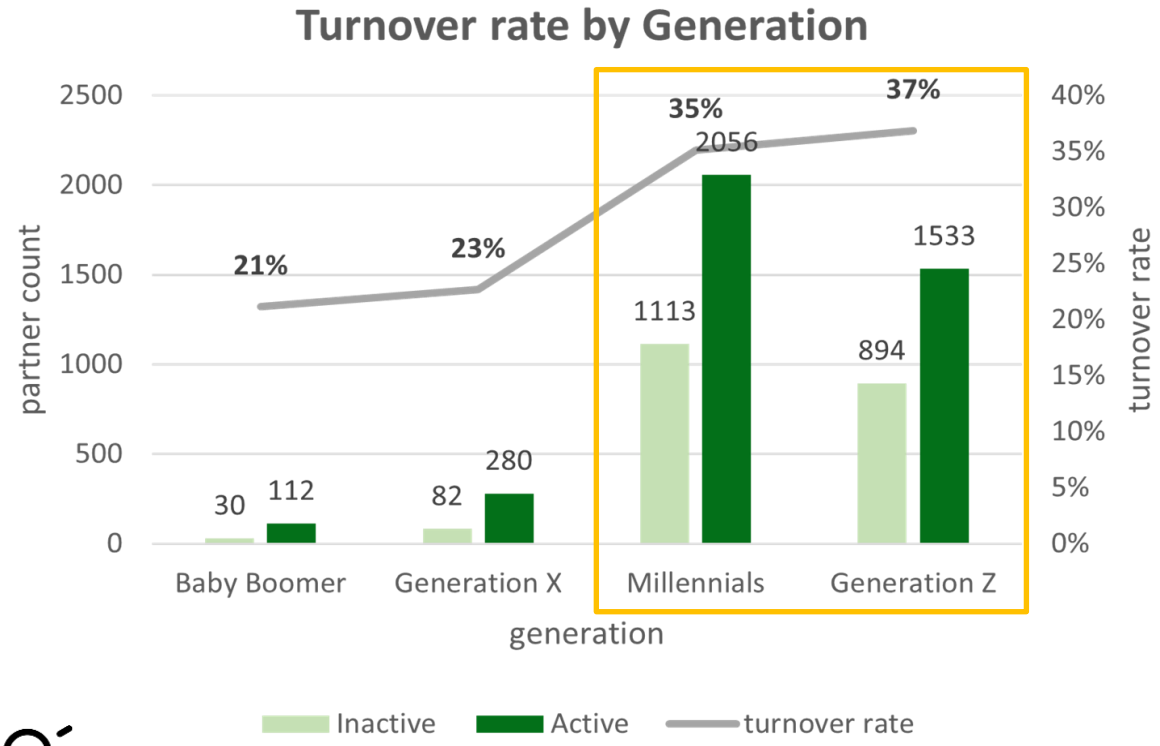
Which generation's turnover rate is the highest?



- **Baby Boomers**: Born 1946 – 1964
- **Generation X**: Born 1965 – 1976
- **Millennials**: Born 1977 – 1995
- **Gen Z**: Born 1996 – 2015

Interesting Observations

Millennials and Generation Z are the main partners in Starbucks, and have the highest turnover rate amongst all generations

03. Data Visualization

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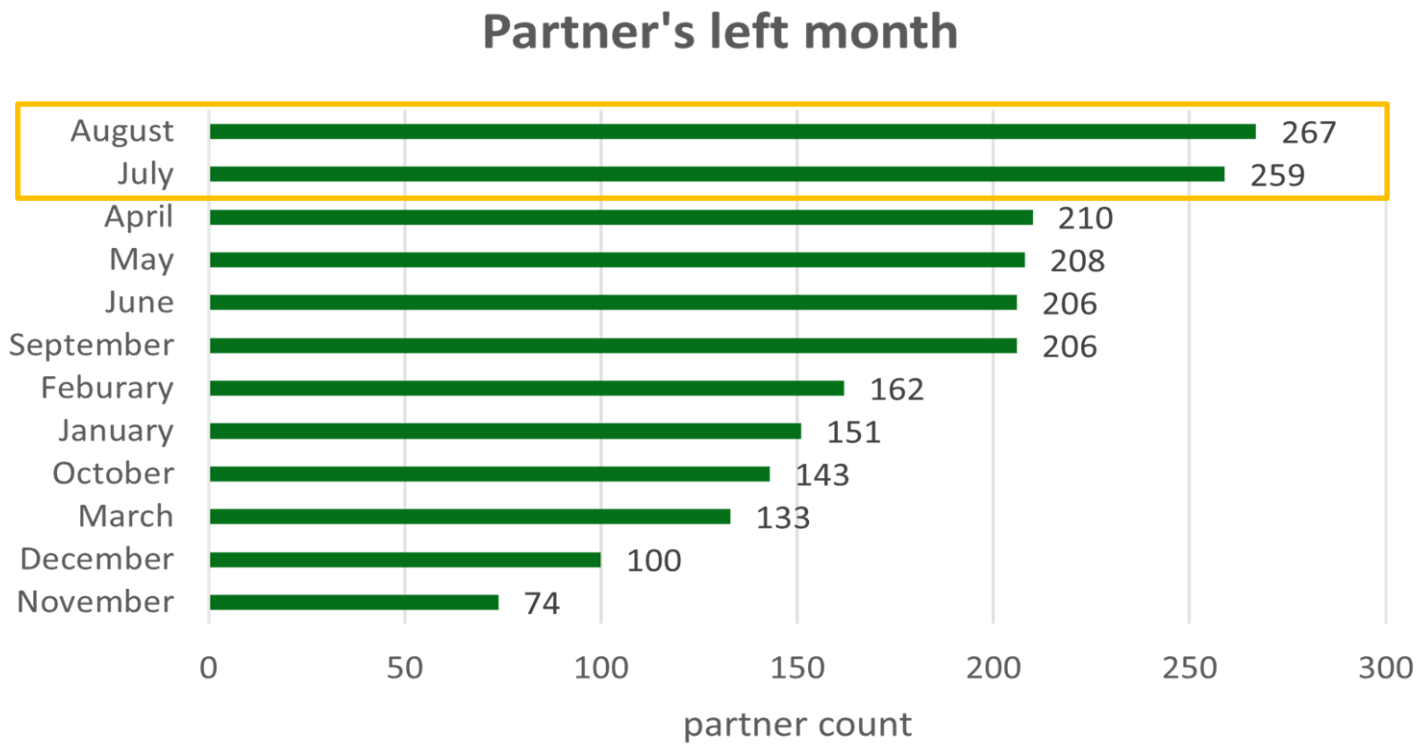
Which months have the highest turnover?

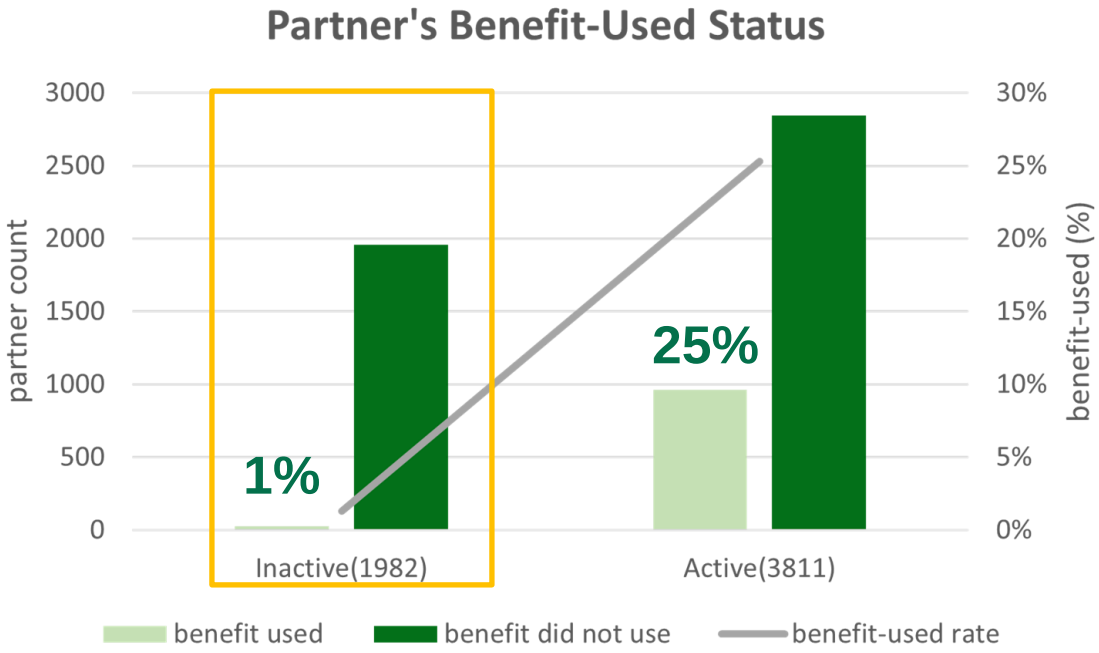


Interesting Observations

Turnover rate is highest **in July and August**

03. Data Visualization

How many partners used benefits before they leave?



99 % of partners who became inactive
did not use the benefits
even though they were eligible

Key Findings

'Benefit-used' status is an important factor to predict partner's turnover

"Has Starbucks promoted their benefits enough to partners?"

04. Model Development

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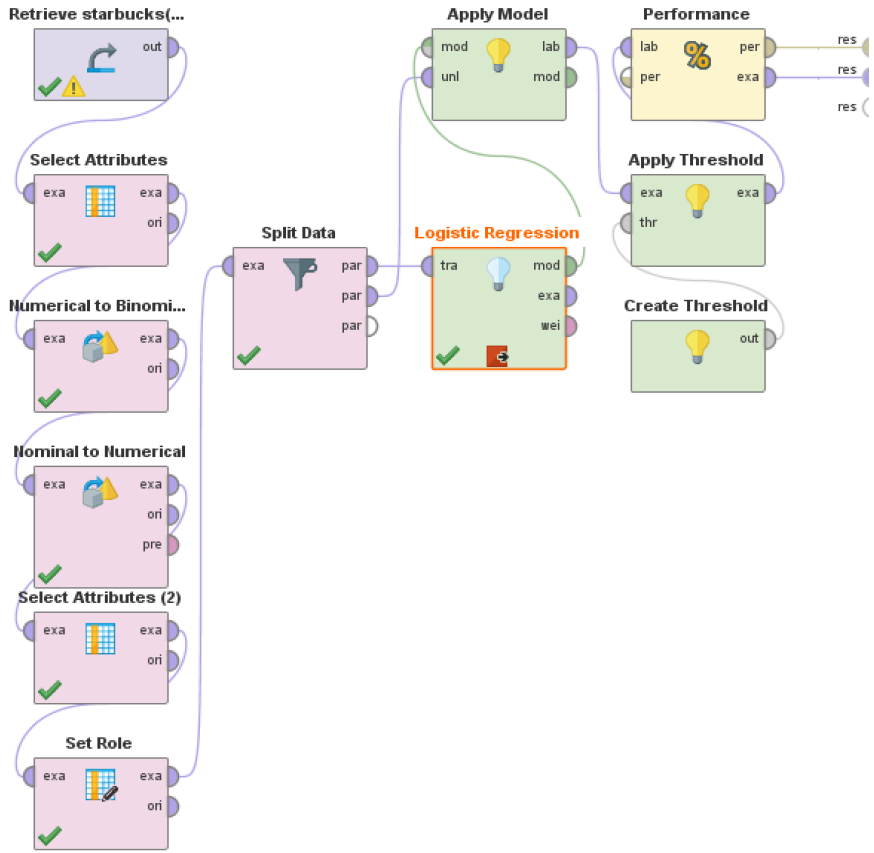
Supervised Learning - Logistic Regression



Key Features

- Training set (70%) : Test set (30%)
- Dependent Variable :“Last_Active_Flg”
- Independent variables with high p-values have been removed
- Cut-off values = 0.95

04. Model Development

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Supervised Learning - Logistic Regression

accuracy: 50.22%

	true false	true true	class precision
pred. false	644	907	41.52%
pred. true	4	275	98.57%
class recall	99.38%	23.27%	

Confusion Matrix from most accurate model

- **TRUE**: Active Partners
- **FALSE** : Inactive Partners

05. Solution

Cost Analysis

	true Active	true InActive
pred.Active	$0 No cost will occur	- $9,400 / partner : cost of turnover
pred.InActive	- $ 500 / partner :cost of management	+ $8,460 / partner * 0.5 ($9,400 - $ 940)

> “It costs as much as 33% of a worker’s annual salary to replace. When the formula is applied to the average partner salary $28,470, the average cost of turnover per Partner comes out to **$9,400**”

- Work Institute’s 2017 Retention Report -

05. Solution

Financial Consequences

Accuracy: 50.22%

	true Active	true InActive	class precision
pred. Active	275 * $0	4 * $9,400 = ($37,600)	98.57%
pred.InActive	907 * ($500) = ($852,580)	644 * $8,460 * 0.5 = $5,448,240	41.52%
class recalled	99.38%	23.27%	

- $9,400 :cost to replace a partner
- $500: cost attempting to save the identified partner from quitting.

(644*$8,460*0.5) – (4*$9,400) – (907*$500)
= $2,233,020

Total amount in cost saving per partner:
$2,233,020/1830
= **$1,220**

05. Solution

The strategic value of the proposed solution

Ability to identify talented partners

Ability to save the turnover cost of talented partner

Improve customer experience at stores

05. Solution

1) Management Strategy

1. Recruit and Hire Job Candidates that are less likely to Quit

2. Provide store managers with a monthly report that identifies partners that are predicted to leave

3. Create Strong Promotional Campaign for Benefits

05. Solution

2) Technical Strategy

Keep updating the proposed model after new business processes have been in place

→ Establish a goal for reduction of turnover

→ Periodically re-run predictive model to evaluate performance

06. Conclusion

1. Identify talented partners

"who work more than **1.09 years** with Starbucks and stay with the one position for more than **0.83 years**"

2. Saving the cost of turnover

+ $1,220 /partner

"saving **$1,220**/ potential turnover partner and improve customer's experience by staying longer at Starbucks

06. Conclusion

Further Improvement

Acquire more Information

: Payment, position history, Knowledge of benefits etc.

Validation in real-world

: Testing in a few stores

State by State Analysis

: Gather partners

Modeling by positions

: higher accuracy model

Thank You

Special thanks to..

Babette and Gustavo from Starbucks

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Q&A?

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Preprocessing Process

Preprocessing Process

***Average count_of_prtnrs by Quarter and Branch to calculate labor density**

In [362]:
```
# Collect the cols 'PRTNR_ID','FiscalWeekBeginDate','PRTNR_ACTIVE_FLG','count_of_prtnrs' from the original dataset
count_of_prtnrs = state

#convert y-m-d to y-m
count_of_prtnrs['Month_Year']= pd.to_datetime(count_of_prtnrs['FiscalWeekBeginDate']).dt.to_period('M')
count_of_prtnrs['Qtr']= pd.to_datetime(count_of_prtnrs['FiscalWeekBeginDate']).dt.to_period('Q')

#Calculate Average Qtr by branch
Qtr_avg= round( pd.DataFrame(count_of_prtnrs.groupby(['Qtr','hashedstorenumber'])['count_of_prtnrs'].mean()).reset_index(),0)
Qtr_avg = Qtr_avg.rename(columns={'count_of_prtnrs' : 'Qtr_avg_count_of_prtnrs'})
```

Out[363]:

	Qtr	hashedstorenumber	Qtr_avg_count_of_prtnrs
0	2017Q4	1	25.0
1	2017Q4	2	31.0
2	2017Q4	4	22.0
3	2017Q4	6	28.0
4	2017Q4	9	25.0
...	...	...	...
1814	2019Q3	443	15.0
1815	2019Q3	445	32.0
1816	2019Q3	446	27.0
1817	2019Q3	447	22.0
1818	2019Q3	448	23.0

1819 rows × 3 columns

*the average number of partners by a quarter on each branch (store number) to calculate labor density

Preprocessing Process

Preprocessing Process

If 'Count of partners on employee's active week' < 'Qtr_avg_count_of_prtnrs', 'Labor Density = 1'

In [365]:
```
#Merge to count_of_prtnrs data-frame
count_of_prtnrs = pd.merge(count_of_prtnrs, Qtr_avg, how = 'left', left_on = ['Qtr','hashedstorenumber'],
                           right_on = ['Qtr','hashedstorenumber'])

count_of_prtnrs["labor density"] = [ 1 if x < y and z == 1 else 0 for x, y, z in zip(count_of_prtnrs["count_of_prtnrs"],
                                                                                    count_of_prtnrs["Qtr_avg_count_of_prtnrs"],
                                                                                    count_of_prtnrs["PRTNR_ACTIVE_FLG"]) ]

count_of_prtnrs
```

PRTNR_ID	count_of_prtnrs	Month_Year	Qtr	Qtr_avg_count_of_prtnrs	labor density
000FF458D677F2E37B0EC7B3FB093968	19	2019-01	2019Q1	20	1
002676E04029D7B5E17FC6E41279E023	25	2018-11	2018Q4	24	0
0042858E0DE6CA16AF813FD48BDD784D	27	2018-12	2018Q4	26	0
0042858E0DE6CA16AF813FD48BDD784D	24	2019-07	2019Q3	24	0
00B65989385F6FF1B3F917CD11C8251D	25	2018-12	2018Q4	24	0

#of partners < quarter average : 1

#of partners < quarter average :0

Cost of turnover Calculation

Position	# of partners	Yearly wage	weighting factor	# * weighting factor	Weighted Average Salary
barista	4280	$ 25,044.00	0.70163934	$ 17,571.86	
assistant store manager	34	$ 45,446.00	0.00557377	$ 253.31	
cafe attendant	4	$ 27,485.79	0.00065574	$ 18.02	
shift manager	10	$ 31,305.00	0.00163934	$ 51.32	
shift supervisor	1436	$ 31,305.00	0.23540984	$ 7,369.50	$ 28,470.71
siren retail barista	2	$ 29,280.61	0.00032787	$ 9.60	
siren retail operations lead	1	$ 43,131.00	0.00016393	$ 7.07	
store manager	333	$ 58,436.00	0.05459016	$ 3,190.03	

05. Solution

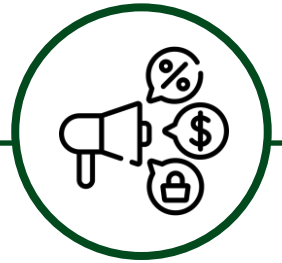
New business process proposal

Explain and promote the value of Starbucks benefits to job candidates

- a) Hire candidates that are more likely to take benefits
- b) Create recruitment programs targeting demographics that have lowest turnover

Provide store managers with a monthly report that identifies partners that are predicted to leave

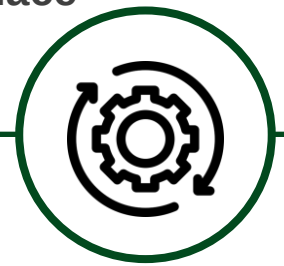
- a) check-in meeting with partners and promote the value of the benefits
- b) Regional manager's special care for talented employees.



Create a promotional campaign for all partners around the value of Starbucks benefits

- a) Consider auto-enrollment
- b) Talk about the value of benefits in all employee communications

Keep updating the predictive model after new business processes have been in place



- a) Establish a goal for reduction of turnover
- b) Periodically re-run predictive model to evaluate performance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COFFEE