

Project - Phase 3

Public Health

Awareness campaign Analysis

Team Name

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Phase 3: Development part 1

PUBLIC HEALTH AWARENESS CAMPAIGN ANALYSIS

Introduction

Public health awareness campaigns play a vital role in promoting health, preventing diseases, and improving the well-being of communities. This analysis provides an overview of the significance and effectiveness of such campaigns. It explores the various strategies used in designing and implementing public health awareness initiatives, including social media, traditional media, community engagement, and educational programs.

Phase 2: Development Part 1

In this technology project we will begin building our project by loading and preprocessing the dataset. Perform different analysis and visualization using IBM Cognos.

This introduction will guide through the initial steps of the process. We'll explore how to import essential libraries, load the campaign dataset, and perform critical preprocessing steps. Data preprocessing is crucial as it helps clean, format, and prepare the data for further analysis. This includes handling missing values, encoding categorical variables, and ensuring that the data is appropriately scaled.

Analysis

Analyzing a public health awareness campaign involves several steps, including loading and preprocessing the dataset, performing various analyses, and creating visualizations. IBM Cognos is a powerful tool for this purpose. Here's a general overview of the steps you can follow:

- Data Collection
- Data preprocessing
- Data Import into IBM cognos
- Analysis


- Visualization
- Dashboard creation
- Report Generation
- Interactivity & Collaboration

1.Data collection

1. Importing data into IBM Cognos is a fundamental step in the business intelligence and analytics process, as it allows you to work with and analyze your data within the Cognos environment. Here's an explanation of how data import into IBM Cognos typically works:

Given Data Set:

s.no	year	Self employee	Number of employee	Tech company	Mental health benefits	Mental health awareness
1	2014	no	100-500	yes	yes	yes
2	2014	no	26-100	yes	yes	yes
3	2014	no	More than 1000	no	Don't know	no
4	2014	no	26-100	yes	yes	Not sure
5	2014	no	More than 1000	no	Don't know	yes
6	2014	no	26-100	yes	yes	Not sure
-	-	-	-	-	-	-
3479	2019	no	26-100	yes	no	N/A
3480	2019	no	100-500	yes	yes	no
3481	2019	no	26-100	yes	yes	no
3482	2019	no	More than 1000	no	Don't know	no
3483	2019	no	More than 1000	yes	yes	no
3484	2019	no	More than 1000	yes	yes	yes


- 
- Loading and preprocessing the dataset is an important first step in building any machine learning model. However, it is especially important for public awareness campaign analysis models, as datasets are often complex and noisy.

2. Challenges involved in loading and preprocessing public Health awareness campaign analysis model

- **Handling missing value:** Public awareness campaign datasets often contain missing values, which can be due to a variety of factors, such as human error or incomplete data collection. Common methods for handling missing values include dropping the rows with missing values, imputing the missing values with the mean or median of the feature, or using a more sophisticated method such as multiple imputation.

Data collection in IBM Cognos for a public health awareness campaign analysis would involve gathering relevant data to assess the effectiveness and impact of the campaign. Here are some steps to consider:

1. **Define Objectives:** Clearly define the goals and objectives of your public health awareness campaign analysis. What are you trying to achieve or measure?
2. **Data Sources:** Identify the sources of data, which could include surveys, social media, website analytics, health records, and more. Ensure that the data is accurate, reliable, and relevant to your analysis.
3. **Data Collection Methods:** Choose appropriate data collection methods, such as online surveys, data from social media platforms, or data from healthcare institutions. Ensure that the data collection methods align with your campaign's objectives.
4. **Data Integration:** Use IBM Cognos to integrate data from various sources. This may involve data transformation, cleaning, and harmonization to create a unified dataset.
5. **Data Storage:** Store the collected data in a structured database or data warehouse within IBM Cognos for efficient retrieval and analysis.



6. **Data Analysis:** Utilize IBM Cognos tools to analyze the collected data. You can create reports, dashboards, and visualizations to gain insights into the campaign's performance.

7. **Key Metrics:** Define key performance indicators (KPIs) that are relevant to public health, such as awareness levels, website traffic, social media engagement, and health outcomes.

8. **Reporting:** Generate reports and visualizations using IBM Cognos to present the findings and insights in a clear and understandable format.

Data Set Link:

<https://www.kaggle.com/code/manuntag/the-state-of-mental-health-support-in-tech>

2.Data preprocessing

1. Importance of loading and preprocessing dataset:

- Loading and preprocessing the dataset is an important first step in building any machine learning model. However, it is especially important for public awareness campaign analysis models, as datasets are often complex and noisy.

2. Challenges involved in loading and preprocessing public Health awareness campaign analysis model:

- **Handling missing value:** Public awareness campaign datasets often contain missing values, which can be due to a variety of factors, such as human error or incomplete data collection. Common methods for handling missing values include dropping the rows with missing values, imputing the missing values with the mean or median of the feature, or using a more sophisticated method such as multiple imputation.

3. How to overcome the challenges of loading and preprocessing a Public Awareness dataset:

- There are a number of things that can be done to overcome the challenges of loading and preprocessing a Public awareness campaign dataset, including:
- **Use a data preprocessing library:** There are a number of libraries available that can help with data preprocessing tasks, such as handling missing values, encoding categorical variables, and scaling the features.
- **Validate the preprocessed data:** It is important to validate the preprocessed data to ensure that it is in a format that can be used by the model and that it is of high quality. This can be done by inspecting the data visually or by using statistical methods.

3. Data import into IBM cognos:

- Use the data import and integration capabilities of IBM Cognos to load your preprocessed dataset.
- Importing into IBM cognos is a fundamental step in the business intelligence ad analytical process, as it allows you to work and it involves various factors there are following steps:
- **Data Server:** The Data Server in IBM Cognos is responsible for managing data connections and data modules. It acts as an intermediary between Cognos and your data sources.
- **Connection:** You need to establish a connection to your data source. This involves specifying connection details like server addresses, login credentials, and other connection parameters.
- **Data Querying and Importing:** Once a connection is established, you can create queries to retrieve data from your data source. These queries can be simple or complex, depending on your data requirements.
- **Data Integration:** Data from multiple sources can be integrated within data modules to create a single coherent view of the data. This integration can involve joining tables, creating relationships, and aggregating data.
- **Data Exploration and Analysis:** Once the data is imported and prepared, you can use it for data exploration, analysis, and visualization within IBM Cognos to derive insights and create reports and dashboards.

Source code:

```
import numpy as np
```

```
import pandas as pd
```

```
import matplotlib.pyplot as plt
```

```
file = pd.read_csv('../input/mentalhealthintech20142019/Mental health in tech survey 2014-2019.csv')
```

4. Analysis

- Begin with basic descriptive statistics to understand the dataset. Use IBM Cognos to calculate mean, median, mode, standard deviation, and other relevant statistics.
- Use predictive analytics in IBM Cognos to build models that predict future health outcomes or campaign effectiveness based on historical data.
- Segment the data based on demographics, locations, or other factors to identify target groups that the campaign should focus on.

In this part we have to various analysis method based on the model.and we have public health awareness campaign dataset and using like.

- Public Mental health benefits
- Public Mental health benefit awareness.
- Public Mental health discussion.
- Mental health learning resources

1. Source code:

#IMPORT LIBRARIES

```
import numpy as np
```

```
import pandas as pd
```

```
import matplotlib.pyplot as plt
```

```
file = pd.read_csv('../input/mentalhealthintech20142019/Mental health in tech survey 2014-2019.csv')
```

#MENTAL HEALTH BENEFITS

```
data_mental_health_benefits = file.groupby('year')
print("2014 vs 2019 benefit access: {}% increase
".format(calc_difference_mental_health_benefit_coverage_2019_2014))
print("Annual change to employees that have coverage: {}%
average".format(calc_average_annual_change))
print("Employees that don't know their coverage: {}%
average".format(calc_mean_mental_health_benefits_dont_know))

#data chart
#print(data_mental_health_benefits)
```

#MENTAL HEALTH BENEFITS AWARENESS

```
data_mental_health_benefits_awareness =
file.groupby('year')['mental_health_benefits_awareness'].value_c
ounts(normalize=True).unstack()[['Yes','No']]
calc_difference_mental_health_benefits_2019_2014 =
round((data_mental_health_benefits_awareness.iloc[-1]['No'] -
data_mental_health_benefits_awareness.iloc[0]['No']) * 100)
calc_mental_health_benefits_awareness_2019_no =
round(data_mental_health_benefits_awareness.iloc[-1]['No'] *
100)

data_mental_health_benefits_awareness.plot(marker='o')
plt.style.use('ggplot')
plt.legend(loc='upper right',bbox_to_anchor = (1.2, 1.0))
plt.title("Awareness of options available in mental health
coverage")
plt.show()

print("Employees unaware of benefits or options in their
coverage:
{}%".format(calc_mental_health_benefits_awareness_2019_no))
```



```
print("2014 vs 2019 employees not aware: {}%
increase".format(calc_difference_mental_health_benefits_2019_201
4))
```

```
#data chart
#print(data_mental_health_benefits_awareness)
```

#MENTAL HEALTH DISCUSSION

```
BHdata_mental_health_discussion =
file.groupby('year')['employer_mental_health_discussion'].value_
counts(normalize=True).unstack()[['Yes', 'No']]
calc_average_annual_improvement_employer_mental_health_discussio
n = round(((data_mental_health_discussion.iloc[-1]['Yes'] -
data_mental_health_discussion.iloc[0]['Yes']) * 100)/5)
calc_employer_mental_health_discussion_2019_no =
round(data_mental_health_discussion.iloc[-1]['No'] * 100)
```

```
data_mental_health_discussion.plot(kind='barh').invert_yaxis()
plt.legend(loc='upper right',bbox_to_anchor = (1.2, 1.0))
plt.title("Employer mental health discussion")
plt.ylabel("")
plt.style.use('ggplot')
plt.show()
```

```
print("Employers that do not formally discuss mental health in
2019:
{}%".format(calc_employer_mental_health_discussion_2019_no))
print("Average change in employer driven discussion: {}%
increase each
year.".format(calc_average_annual_improvement_employer_mental_he
alth_discussion))
```

```
# data chart
print(data_mental_health_discussion)
```

#DATA EMPLOYER MENTAL HEALTH LEARNING RESOURCES

```
data_employer_mental_health_learning_resources =
file.groupby('year')['employer_mental_health_learning_resources'
].value_counts(normalize=True).unstack()
data_employer_mental_health_learning_resources_filtered_yes =
data_employer_mental_health_learning_resources[['Yes']]
calc_difference_employer_mental_health_learning_resources_2019_2
014 =
int(round(((data_employer_mental_health_learning_resources_filde
red_yes.iloc[-1] -
data_employer_mental_health_learning_resources_filtered_yes.iloc
[0]) * 100)/5))
calc_employer_mental_health_learning_resources_2019_yes =
int(round(data_employer_mental_health_learning_resources_filtere
d_yes.iloc[-1]*100))

data_employer_mental_health_learning_resources_filtered_yes.plot
(marker='o', legend= None)
plt.style.use('ggplot')
plt.ylim(0.2,1.0)
plt.xlabel("")
plt.title('Employers that provide learning resources to help
address mental health')
plt.show()

print("Employers that provide educational resources in 2019:
{}%".format(calc_employer_mental_health_learning_resources_2019_
yes))
print("Average change in employers providing resources: {}%
average increase per
year".format(calc_difference_employer_mental_health_learning_res
ources_2019_2014))
```

```

#data chart
#print(data_employer_mental_health_learning_resources)

#DATA ANONYMITY

data_treatment_anonymity =
file.groupby('year')['mental_health_treatment_anonymity'].value_
counts(normalize=True).unstack()
data_treatment_anonymity_filtered_dont_know =
data_treatment_anonymity["Don't know"]
calc_mean_data_treatment_anonymity_filtered_dont_know =
round(data_treatment_anonymity_filtered_dont_know.mean() * 100)

data_treatment_anonymity_filtered_dont_know.plot(kind='bar',lege
nd = None)
plt.style.use('ggplot')
plt.title("Employees uncertain if use of programs will be
anonymous")
plt.ylabel("")
plt.xlabel("")
plt.xticks(rotation = 0)
plt.ylim(0,1)
plt.show()

print("Employees that don't know if treatment will remain
anonymous: {}%
average".format(calc_mean_data_treatment_anonymity_filtered_dont
_know))

#data chart
#print(data_treatment_anonymity)

```

2.Source Code

This coding based on inherit data set from public health awareness campaign and visualize to the users

```
# Import necessary libraries

import pandas as pd

import matplotlib.pyplot as plt

import seaborn as sns

# Load campaign data into a DataFrame (assuming data is in a CSV file)

campaign_data = pd.read_csv('campaign_data.csv')

# 1. Campaign Objective

# Analyze the primary goal of the campaign

campaign_objective = campaign_data['campaign_objective'].value_counts()

# 2. Target Audience

# Analyze demographics and characteristics of the target audience

target_demographics = campaign_data.groupby('target_demographics').size()

# 3. Messaging and Content

# Analyze the effectiveness of messaging and content

# You can use sentiment analysis or text analytics here

# 4. Channels and Mediums

# Analyze which channels were most effective

channel_engagement = campaign_data['channel'].value_counts()

# 5. Timing and Duration

# Analyze campaign timing and duration

# 6. Budget and Resources

# Analyze campaign budget and resource allocation

# 7. Measurable Goals

# Analyze campaign KPIs and outcomes

# 8. Effectiveness
```

```
# Analyze the overall effectiveness of the campaign

# Plot relevant data (e.g., engagement over time)

# 9. Community Engagement

# Analyze community involvement in the campaign

# 10. Feedback and Adaptation

# Analyze feedback collection and campaign adaptation

# 11. Long-Term Impact

# Analyze any lasting effects of the campaign

# 12. Ethical Considerations

# Analyze ethical aspects of the campaign

# 13. Lessons Learned

# Summarize lessons learned from the campaign

# Visualizations

# You can create plots and visualizations to represent your analysis findings

# For example, you can use matplotlib and seaborn to create bar plots, line
plots, or heatmaps.

# Create a bar plot for campaign objectives

plt.figure(figsize=(8, 6))

sns.barplot(x=campaign_objective.index, y=campaign_objective.values)

plt.xlabel('Campaign Objective')

plt.ylabel('Count')

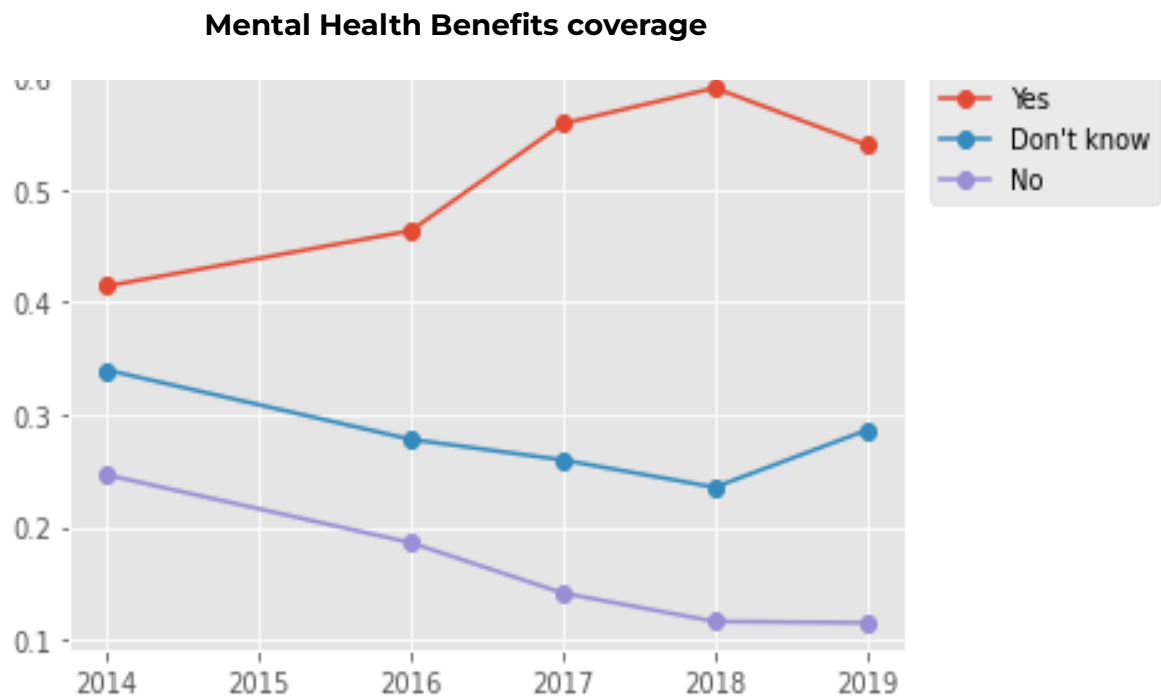
plt.title('Distribution of Campaign Objectives')

plt.xticks(rotation=45)

plt.show()
```

5. Visualization

- IBM Cognos offers a wide range of visualization options, such as bar charts, line charts, heat maps, and more.
- Visualize trends in campaign engagement, health outcomes, and other relevant metrics.
- Use geospatial maps to show regional variations in health awareness or outcomes.



2014 vs 2019 benefit access: 13% increase

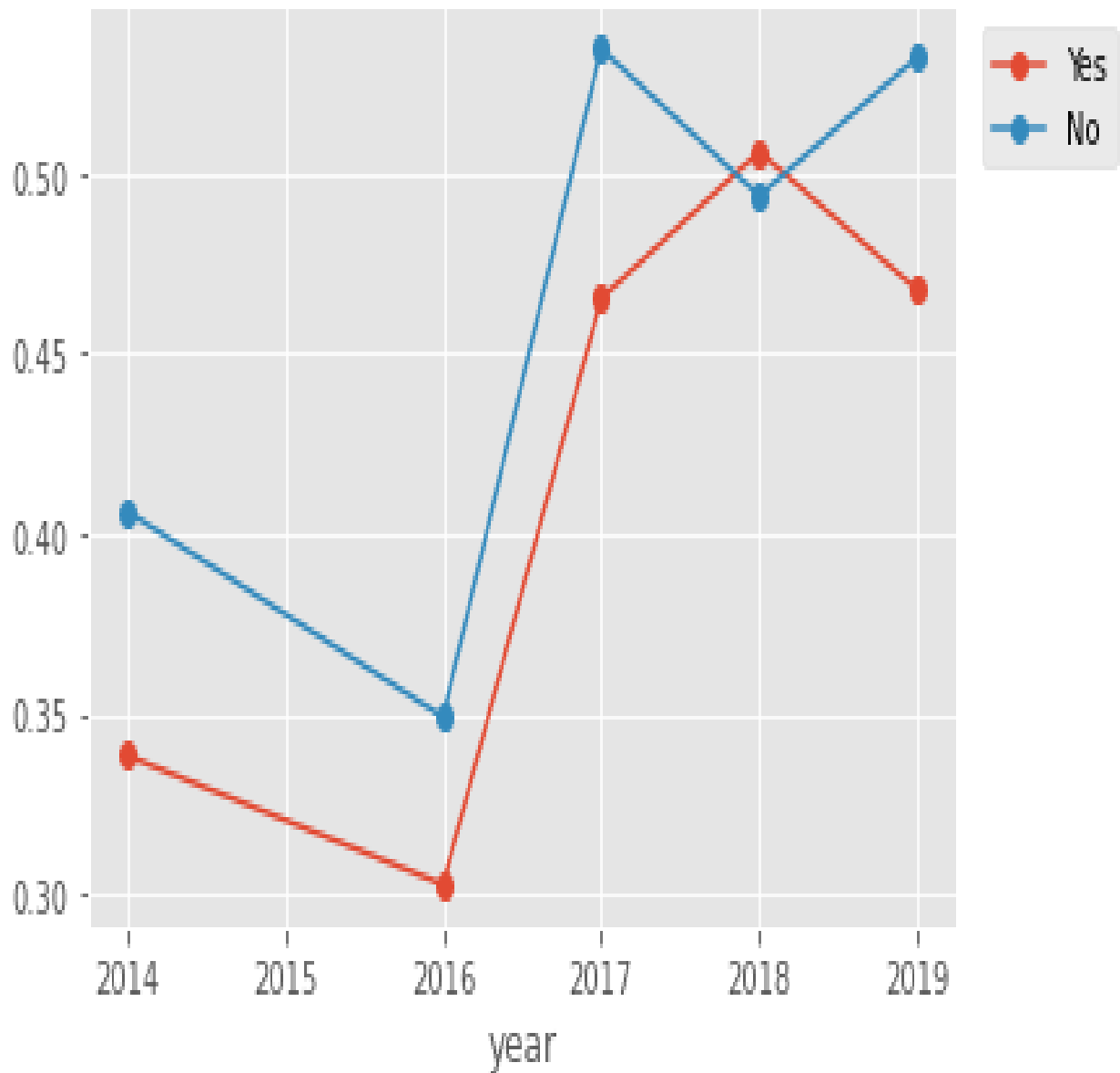
Annual change to employees that have coverage: 2.6% average

Employees that don't know their coverage: 28% average

Over 5 years there was a 13% increase in access to mental health benefit coverage (up from 41% in 2014). However, an average of 28% of tech employees don't know if they have any mental health benefit coverage.

If a large portion of employees remain unaware about their coverage, any progress that is made in employers providing additional support will not be fully utilized.

Awareness of options available in mental health coverage

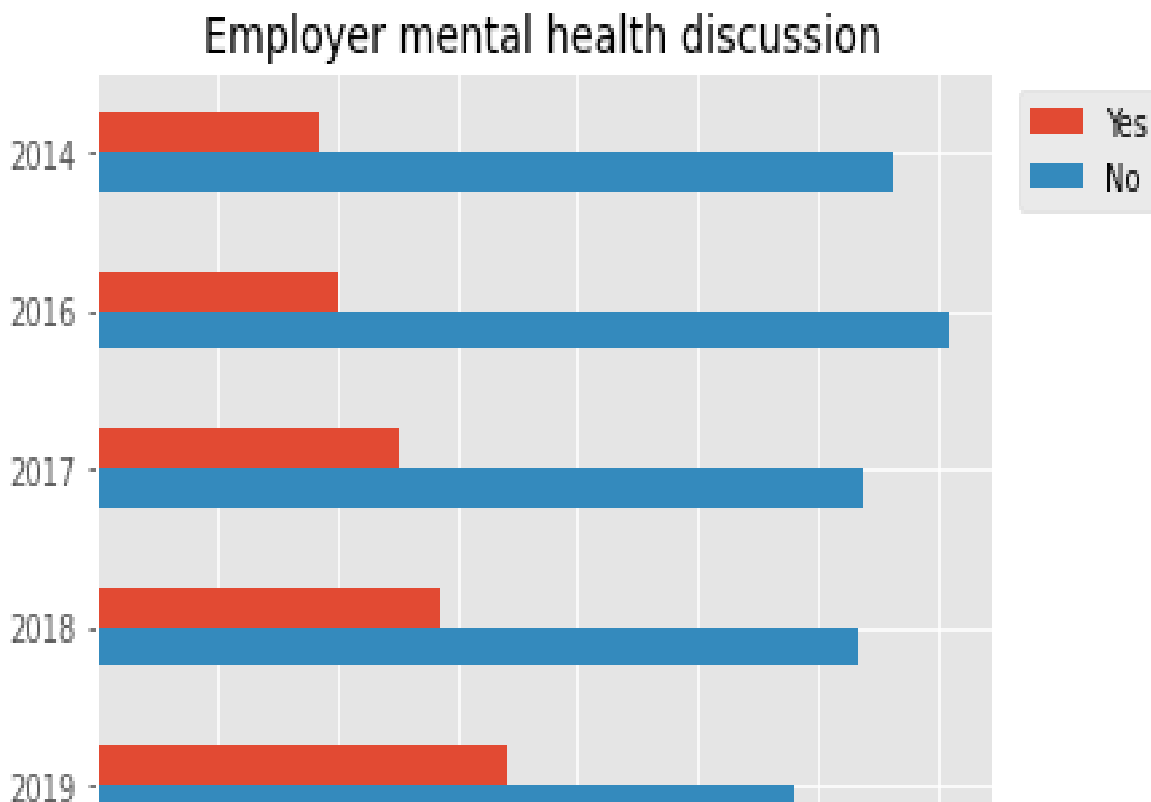


Employees unaware of benefits or options in their coverage: 53%

2014 vs 2019 employees not aware: 13% increase

In 2019, 53% of employees were unaware of the details or options of their mental health benefits coverage, which is a 13% increase from 2014.

Even if an employee has coverage, they are unlikely to get the support they need if they don't know what options or programs are available.

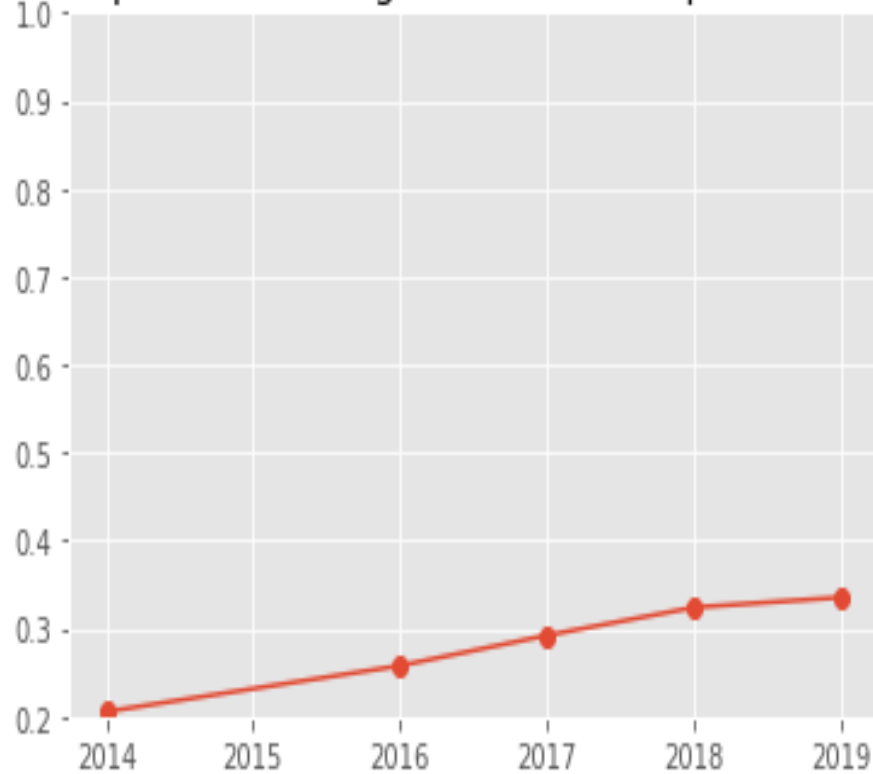


Employers that do not formally discuss mental health in 2019: 58%

Average change in employer driven discussion: 3% increase each year.

As of 2019, 58% of employers do not have any formal discussions regarding mental health benefits or support. Over the course of 5 years, employers discussing mental health wellness or support has increased by an average of 3% each year.

Employers that provide learning resources to help address mental health

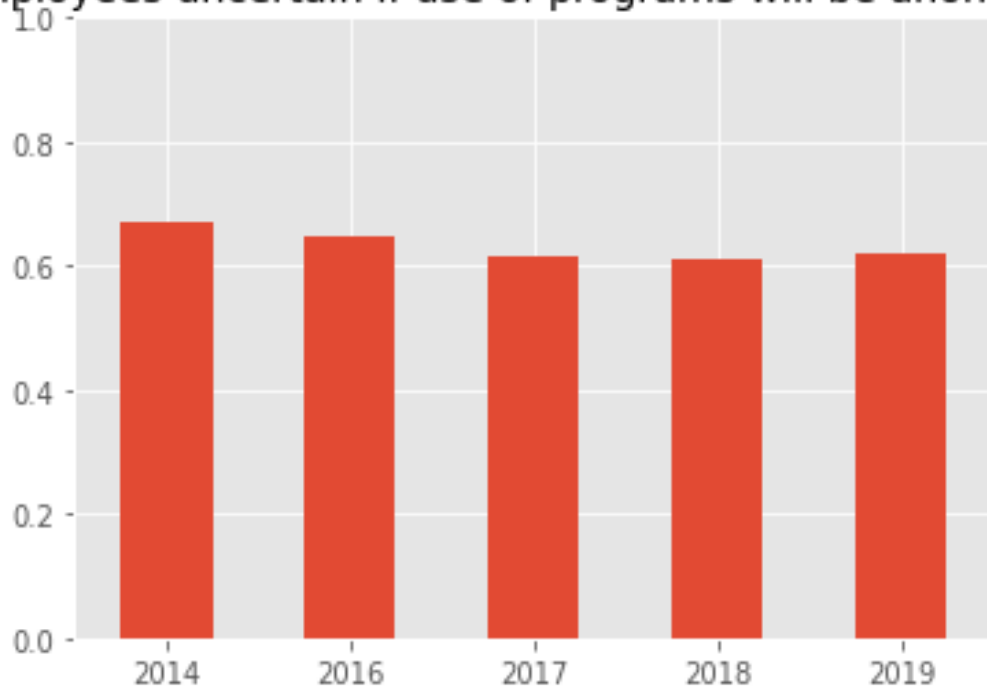


Employers that provide educational resources in 2019: 34%


Average change in employers providing resources: 3% average increase per year

In 2019, 34% of employers provided educational resources to help employees gain a better understanding of the available opportunities to address or support their mental health through company benefits. Employers that provide educational resources have increased by an average of 3% each year.

Employees uncertain if use of programs will be anonymous



Employees that don't know if treatment will remain anonymous: 63% average



From 2014 to 2019 an average of 63% of employees don't know if their anonymity will be protected if they were to use mental health or substance abuse treatment programs provided by their employer.

Conclusion

In conclusion, the thorough analysis of our public health awareness campaign reveals valuable insights and developed a model using public awareness campaign dataset. User engagement data highlights successful strategies and areas for improvement, guiding future initiatives. The impact on diverse demographics underscores the campaign's effectiveness in reaching a broad audience.

