In [10]:
```
# Import necessary libraries
import pandas as pd
from scipy.stats import ttest_ind
```

In [11]:
```
# Load data into a Pandas DataFrame
df = pd.read_excel(r"C:\Users\djbro\OneDrive\Desktop\AB Testing\grocery_database-results
```

In [12]:
```
df
```

Out[12]:

| | customer_id | campaign_name | campaign_date | mailer_type | signup_flag |
|---|---|---|---|---|---|
| **0** | 74 | delivery_club | 2020-07-01 | Mailer1 | 1 |
| **1** | 524 | delivery_club | 2020-07-01 | Mailer1 | 1 |
| **2** | 607 | delivery_club | 2020-07-01 | Mailer2 | 1 |
| **3** | 343 | delivery_club | 2020-07-01 | Mailer1 | 0 |
| **4** | 322 | delivery_club | 2020-07-01 | Mailer2 | 1 |
| **...** | ... | ... | ... | ... | ... |
| **865** | 372 | delivery_club | 2020-07-01 | Mailer2 | 1 |
| **866** | 104 | delivery_club | 2020-07-01 | Mailer1 | 1 |
| **867** | 393 | delivery_club | 2020-07-01 | Mailer2 | 1 |
| **868** | 373 | delivery_club | 2020-07-01 | Control | 0 |
| **869** | 712 | delivery_club | 2020-07-01 | Control | 0 |

870 rows × 5 columns

In [13]:
```
# Select the relevant columns for A/B testing
A = df[df['mailer_type'] == 'Mailer1']['signup_flag']
B = df[df['mailer_type'] == 'Mailer2']['signup_flag']
```

In [14]:
```
A.head()
```

Out[14]:
```
0    1
1    1
3    0
7    1
8    1
Name: signup_flag, dtype: int64
```

In [15]:
```
# Perform the A/B test using the ttest_ind function
t, p = ttest_ind(A, B)
```

In [16]:
```
# Print the t-value and p-value
print(f't-value: {t:.3f}, p-value: {p:.3f}')
```

```
t-value: -1.393, p-value: 0.164
```

In [17]:
```
# Interpret the results
if p < 0.05:
    print('There is a significant difference between the two groups.')
else:
    print('There is no significant difference between the two groups.')
```

```
There is no significant difference between the two groups.
```