

Telco
Company

Customer churn



Company

Telecom industry

Telephone & Internet services

Dataset

Customer demographics

Account information

Services subscribed

Customer churn

Reducing churn rate



Analysing

Analysing customers' profiles, accounts information, and services used.



Clustering

Identifying common behaviors and profiles to then group customers into segments with similar characteristics.



Predicting

Identifying factors impacting the churn rate, and coming up with recommendations to reduce it.



Exploratory Data Analysis (EDA)

Customers are more likely to churn if:

01 They have no dependent and no partner

02 They are a senior citizen (older than 65y)

03 They are recent customers (less than 1 year)

04 They have multiple lines

05 They have fiber optic Internet service

06 Their contract is month-to-month

07 They pay via electronic check

08 They subscribe to Internet but do not subscribe to Online security, Online backup, Device protection, or Tech support services



Hypothesis Testing

Customers who have been using Telco's services for over one year are less likely to churn.

Null Hypothesis (H_0): Customers who have been using Telco's services for over one year are equally likely to churn as those who have been using it for less than or equal to one year.

Alternative Hypothesis(H_1):
Customers who have been using Telco's services for over 1 year are less likely to churn.

Chi-Square Statistic: 708.78
P-Value: 0

We reject the null hypothesis.

Customers with month-to-month contracts are more likely to churn.

Null Hypothesis (H_0): Customers with month-to-month contracts are equally likely to churn as those with other types of contracts.

Alternative Hypothesis (H_1):
Customers with month-to-month contracts are more likely to churn.

Chi-Square Statistic: 1153.97
P-Value: 0

We reject the null hypothesis.

Senior citizens are more likely to churn than non-senior citizens.

Null Hypothesis (H_0): Senior citizens are equally likely to churn as non-senior citizens.

Alternative Hypothesis (H_1): Senior citizens are more likely to churn than non-senior citizen

Z-Statistic: 12.663
P-Value: 0

We reject the null hypothesis.

Clustering Algorithm

Step 1:

Transforming categorical features in numerical (dummification).

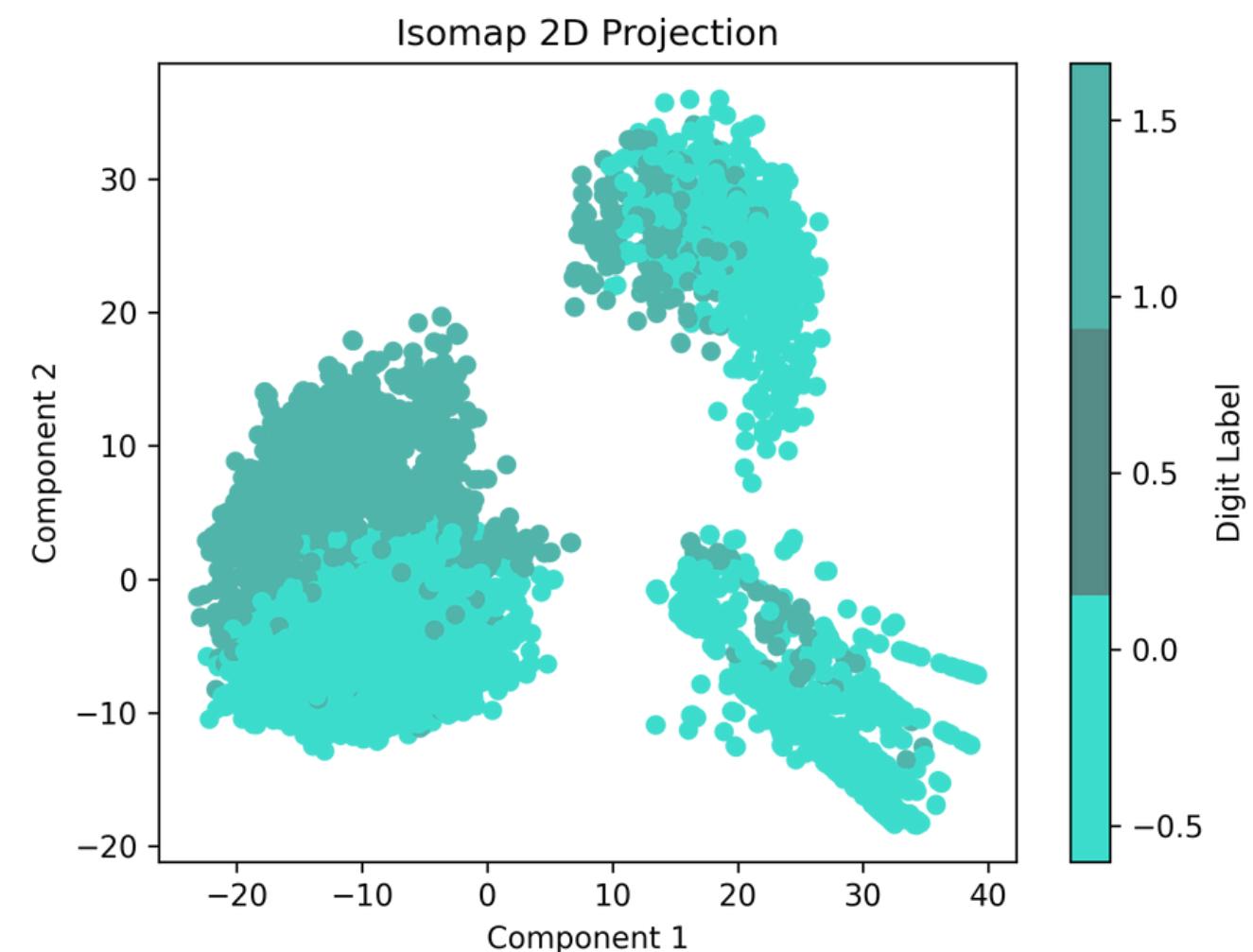
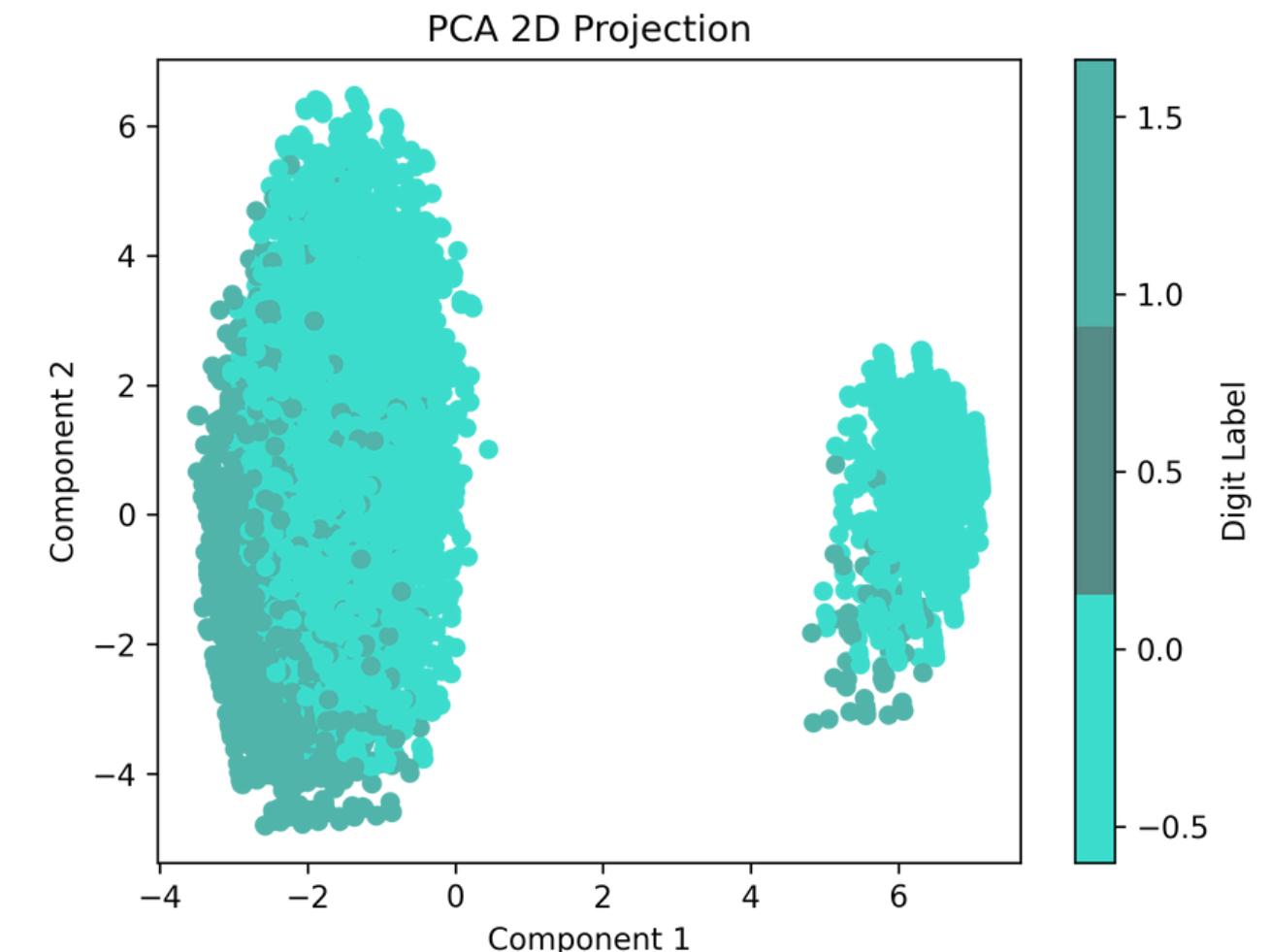
Step 2:

Standardising the numerical data.

Step 3:

Performing a dimensionality reduction method:

- PCA may not be optimal as the first two components explain only 0.38 of the variance, which is less than 80%.
- Isomap method seems to be more relevant than PCA for the 2D projection as we discovered a 3rd cluster.

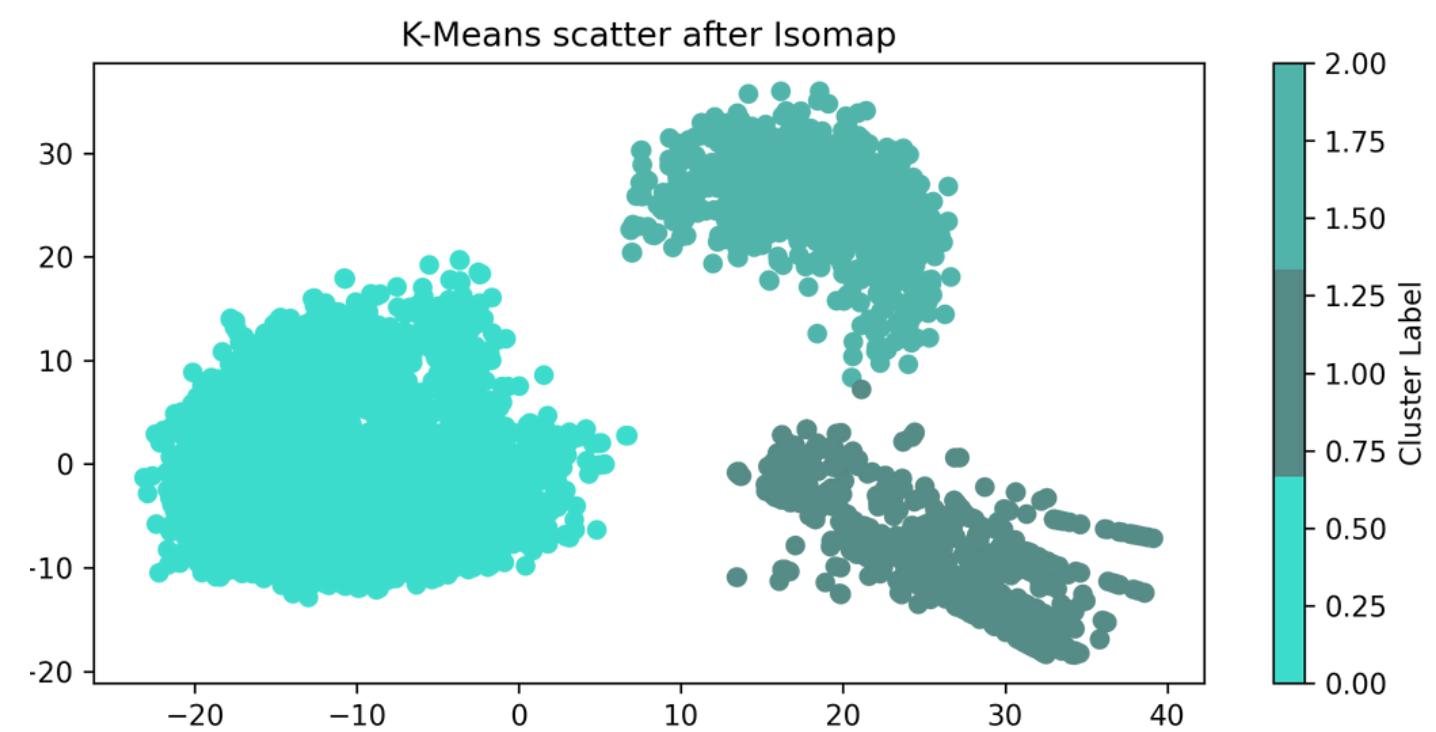
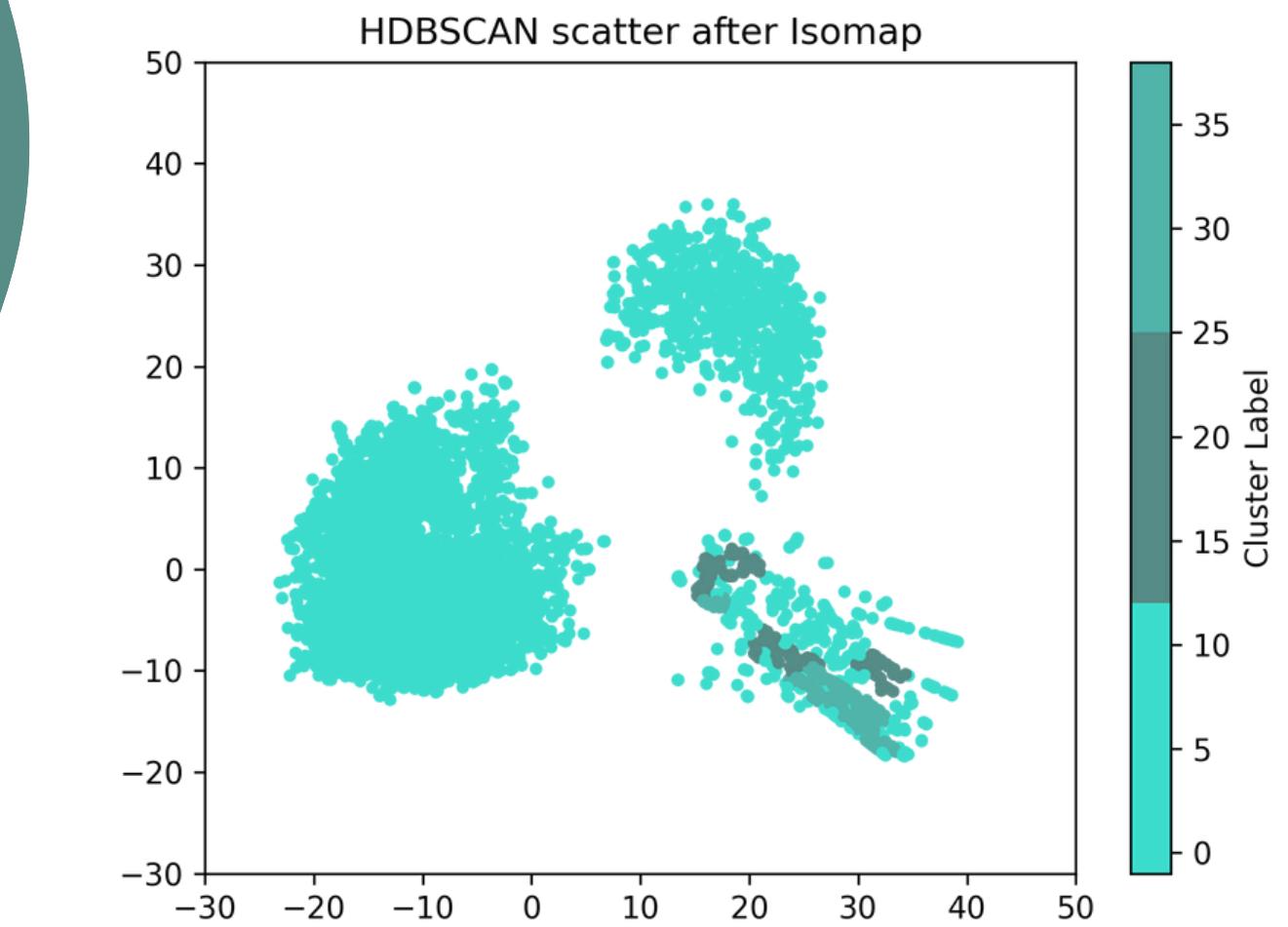
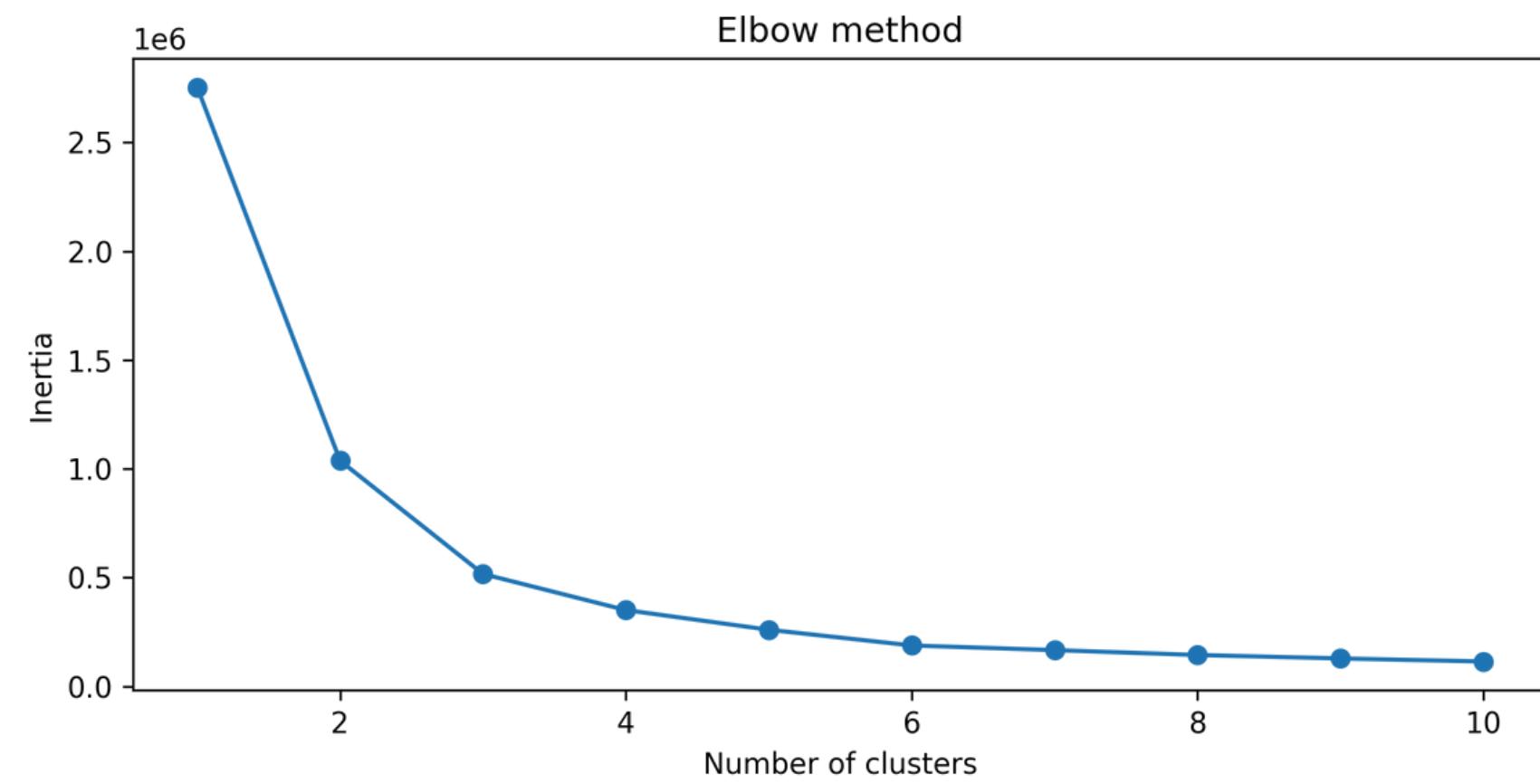


Clustering Algorithm

Step 4:

Clustering our data:

- K-means
- HDBSCAN



Clusters

0

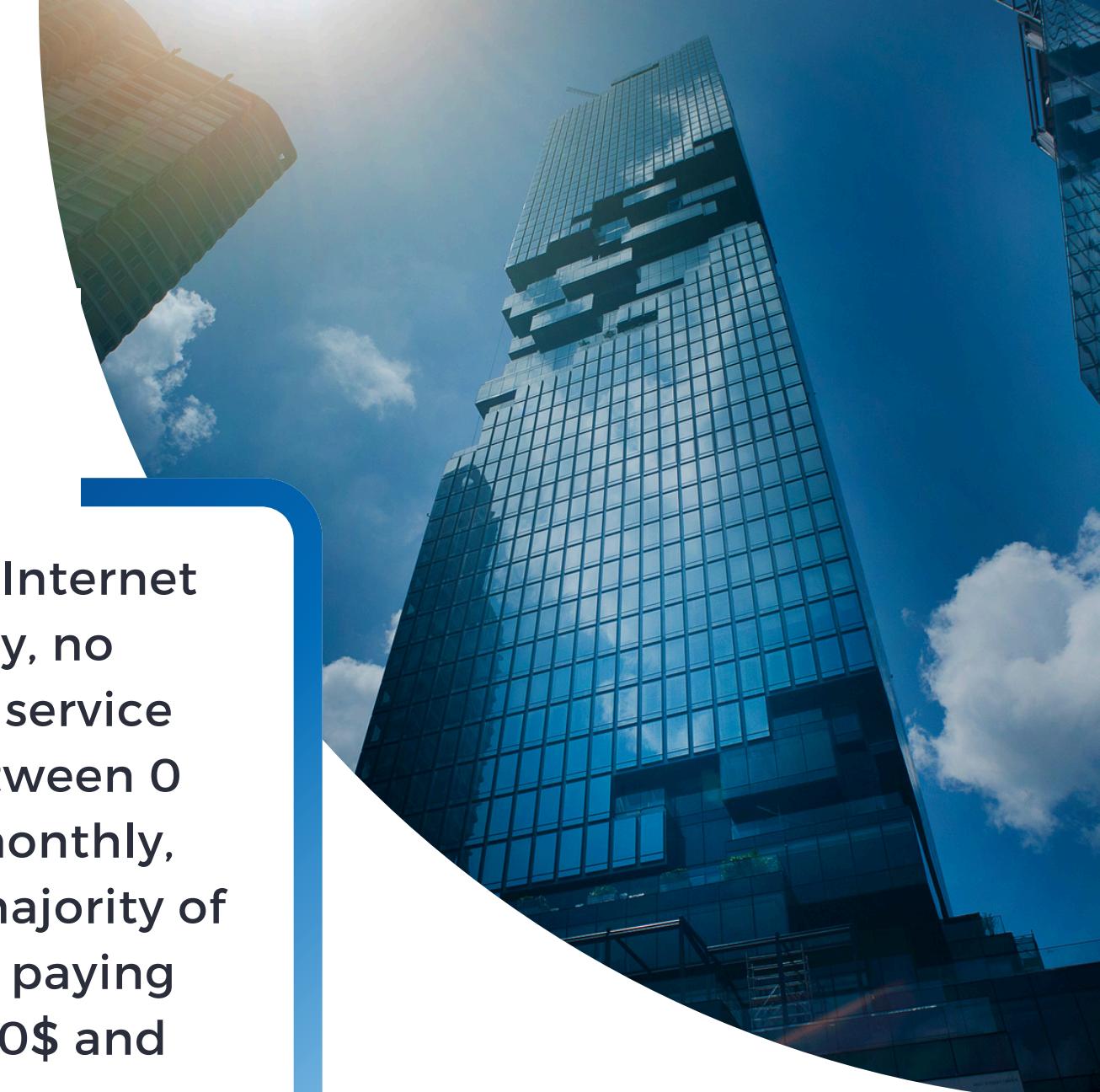
- Using both telephone and Internet services
- Mostly have no dependent
- Mostly have month-to-month contract, paperless billing and paying with electronic check
- Median monthly charge is 80\$
- 33% chance of churn

1

- Using telephone but no Internet service
- Mostly have 1 line
- Mostly under 65 years old
- Paying less than 30\$ monthly, mostly via mailed check
- Less than 10% chance of churn

2

- Using DSL Internet service only, no telephone service
- Paying between 0 and 80\$ monthly, with the majority of customers paying between 30\$ and 50\$.
- About 25% chance of churn



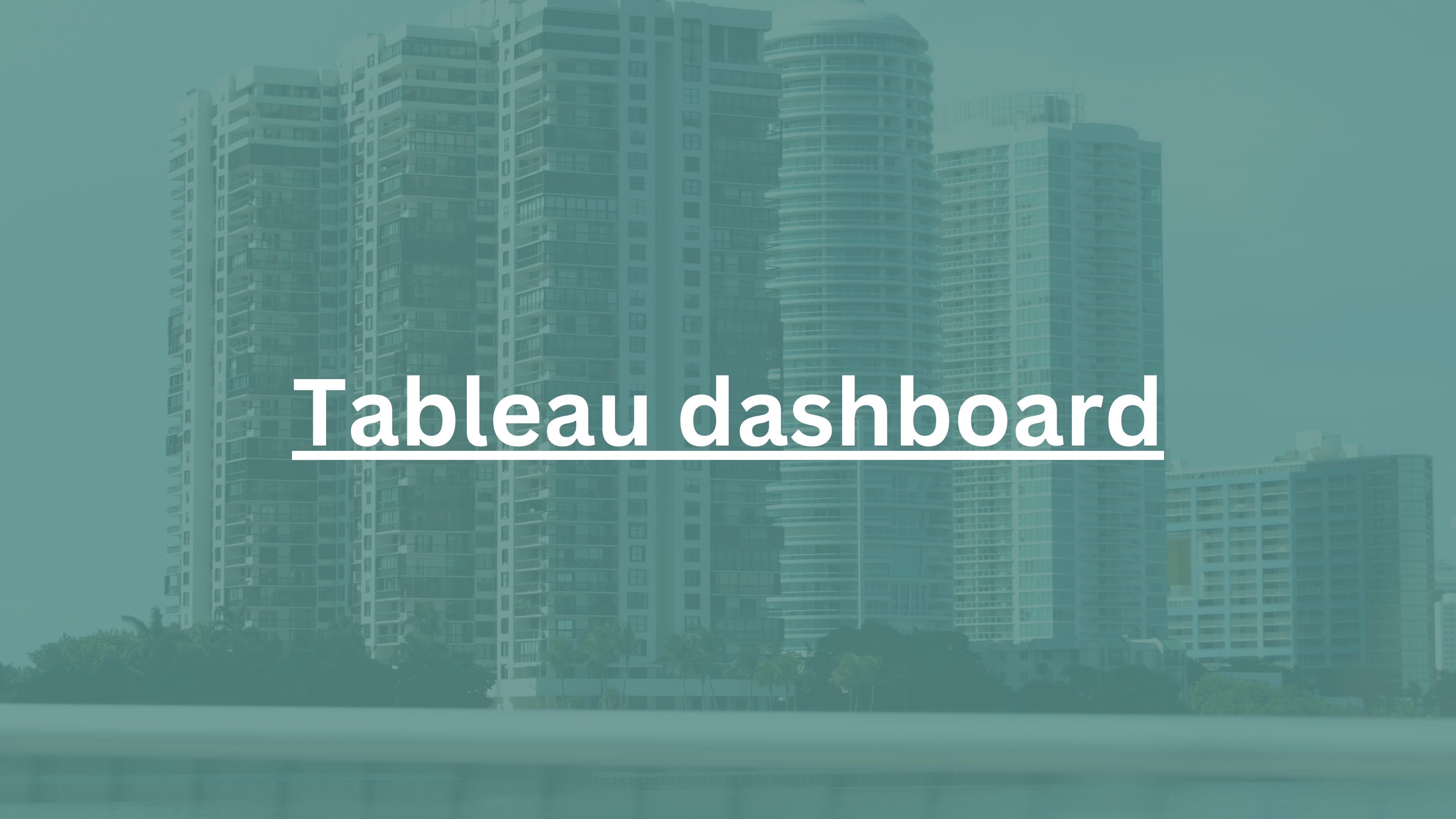


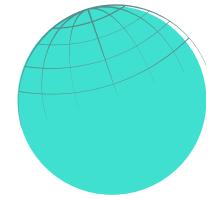
Tableau dashboard

Recommendations

- Churn prevention:
 - All clusters: Retain senior citizens with personalised offers.
 - Cluster 0: Retain customers with specific offers on additional internet service when using Fiber Optic, especially Online Backup and Device Protection. Intensify these offers in the first year of subscription.
 - Cluster 2: Run special offer on Tech Support.
- Loyalty program
 - Cluster 1: Reward customers to maintain engagement.
- Upselling
 - All clusters: Run incentive to subscribe to multiple telephone lines.
 - Cluster 1: Offer service upgrades, such as internet services.

Improvements

- Additional measures like satisfaction score, customer lifetime value, or subscriptions' prices
- Information on competitors
- Machine learning



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Thank You!

Lucie Stenger
Ironhack Bootcamp
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