Contingency tables

```
>   print(table(Predicted = knn_pred_1, Actual = test_labels))
          Actual
Predicted young adult old
   young   134   166 105
   adult   208   281 116
   old      91    89  63
>   print(table(Predicted = knn_pred_2, Actual = test_labels))
          Actual
Predicted young adult old
   young   150   167  99
   adult   222   282 114
   old      61    87  71
```

Both Accuracies:

```
>   print(paste("Model 1 Accuracy:", round(first_accuracy, 4)))
[1] "Model 1 Accuracy: 0.3815"
>   print(paste("Model 2 Accuracy:", round(second_accuracy, 4)))
[1] "Model 2 Accuracy: 0.4014"
```

Optimal k:

"Optimal k: 26 with accuracy: 0.4158"

Optimal k for k-kmeans:

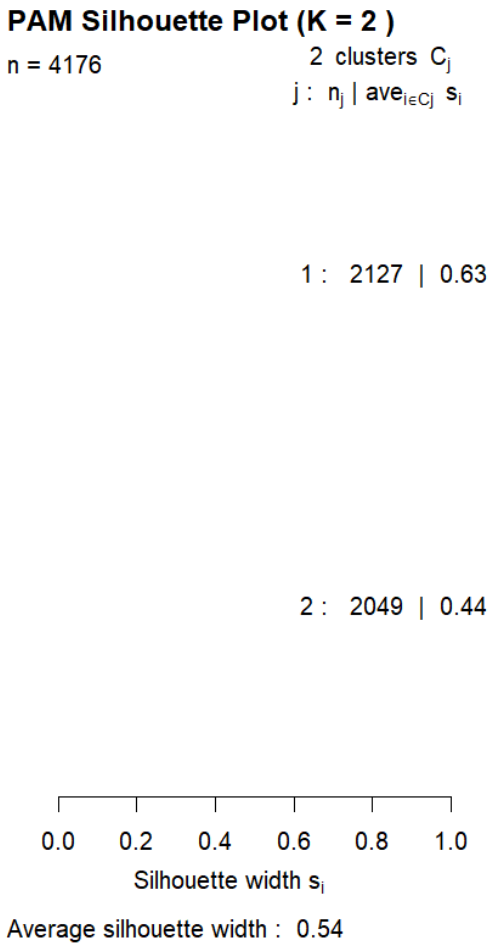
```
> print(paste("Optimal K for K-Means:", optimal_k_kmeans))
[1] "Optimal K for K-Means: 4
```

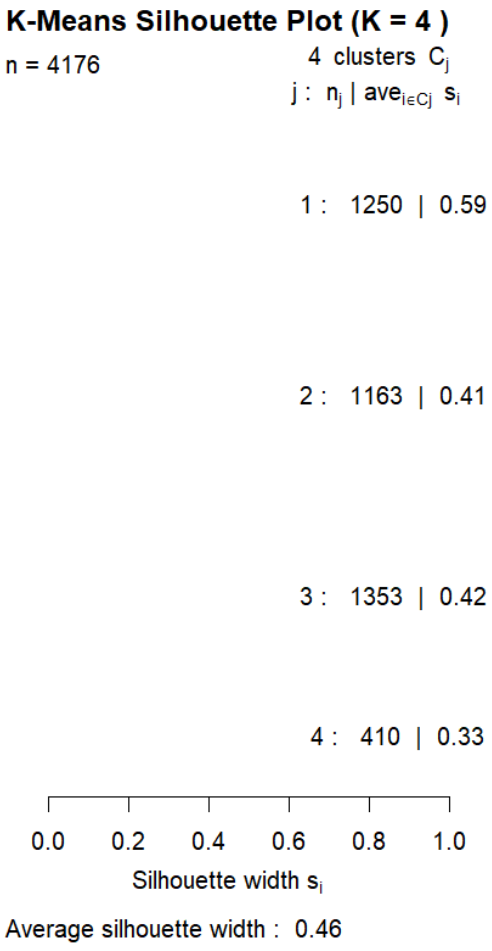
Optimal k for pam:

```
> print(paste("Optimal K for PAM:", optimal_k_pam))
[1] "Optimal K for PAM: 2"
```

Plot second page

Plot:


PAM Silhouette Plot (K = 2)
n = 4176
2 clusters C_j
j : n_j | $ave_{i \in Cj}$ s_i
1 : 2127 | 0.63
2 : 2049 | 0.44
0.0 0.2 0.4 0.6 0.8 1.0
Silhouette width s_i
Average silhouette width : 0.54


K-Means Silhouette Plot (K = 4)
n = 4176
4 clusters C_j
j : n_j | $ave_{i \in Cj}$ s_i
1 : 1250 | 0.59
2 : 1163 | 0.41
3 : 1353 | 0.42
4 : 410 | 0.33
0.0 0.2 0.4 0.6 0.8 1.0
Silhouette width s_i
Average silhouette width : 0.46