**Group H**

MARCH 2023

# Hotel Case Study

Business Cases for Data Science

Customer Segmentation
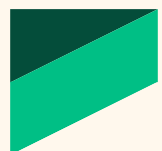
# Our Team

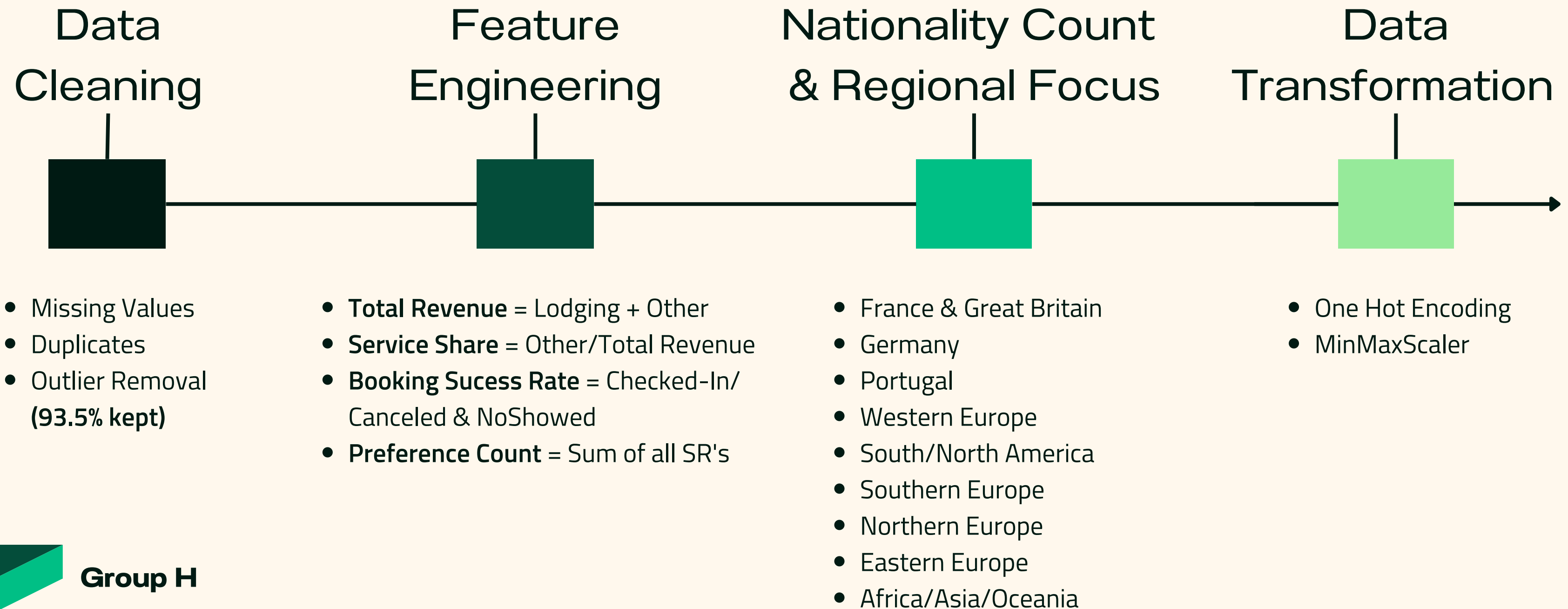| Lukas Gross | Beatriz Carmo | Tomás Vicente | Karim Miladi | LTomás Domingos |
|---|---|---|---|---|
| 20221363 | 20220685 | 20221355 | 20220720 | 20221370 |

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# Data Preparation

## Data Cleaning

- Missing Values
- Duplicates
- Outlier Removal

**(93.5% kept)**

## Feature Engineering

- **Total Revenue** = Lodging + Other
- **Service Share** = Other/Total Revenue
- **Booking Sucess Rate** = Checked-In/ Canceled & NoShowed
- **Preference Count** = Sum of all SR's

## Nationality Count & Regional Focus

- France & Great Britain
- Germany
- Portugal
- Western Europe
- South/North America
- Southern Europe
- Northern Europe
- Eastern Europe
- Africa/Asia/Oceania

## Data Transformation

- One Hot Encoding
- MinMaxScaler

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# Clustering Perspectives



Corporate Channel

Travel Agent/Operator Channel

Global Distribution Systems

Direct Channel

Age

Total Revenue

France & Great Britain

Germany

Portugal

Western Europe

South/North America

Southern Europe

Northern Europe

Eastern Europe

Africa/Asia/Oceania

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## FUNNEL    GEO

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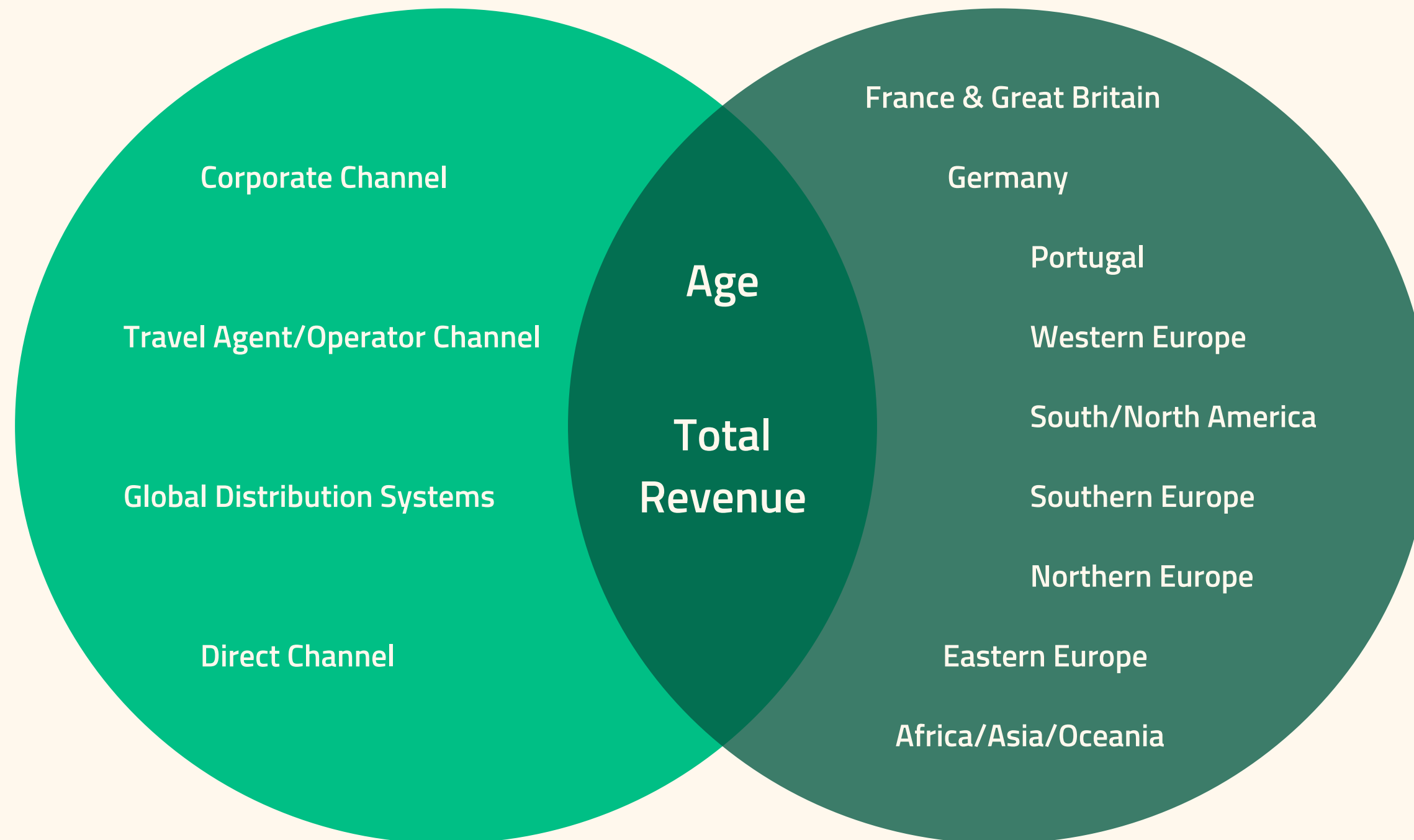
# Merged Clusters

Count:

**5 Clusters**

Method:

**Hierarchical Clustering**

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Hierarchical Clustering Dendrogram

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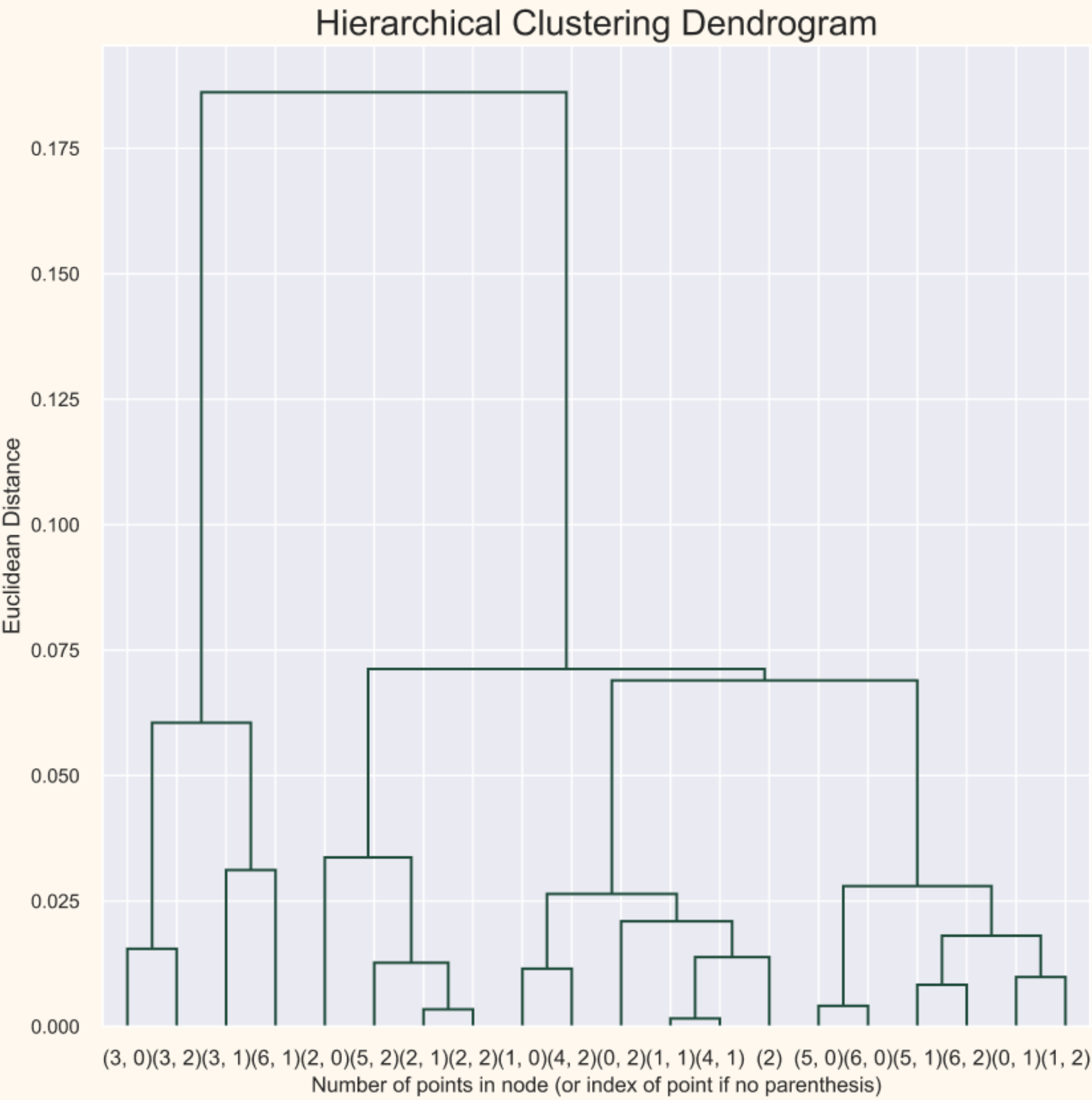
# Portuguese

## -28%

### Total Revenue

- Lowest Revenue Segment.

- Oldest customers from all segments.

- Considerable spending on Hotel Services.

- The Corporate Funnel is the most appropriate funnel for targeting.

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# French & British

## +4 %

## Total Revenue

- Average revenue generated.

- Considerable spending on Hotel Services.

- Travel agencies and other operators are the most appropriate funnel for targeting.

- Direct funneling, could be explored.

- Suggestion: discount for booking on arrival, keeping higher margins, compared to referring 3rd parties..

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# Old Germans

## -10 %
## Total Revenue

- Low revenue generated.

- Considerable spending on Hotel Services.

- Travel agencies and other operators are the most appropriate funnel for targeting.

- Direct funneling, could be explored.

- Suggestion: discount for booking on arrival, keeping higher margins, compared to referring 3rd parties.

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# High Value Americans

# +21%

## Total Revenue

- 68.67% higher revenue compared to the Portuguese segment.

- Due to an absolute majority of booking directly, no other channels should be considered.

- Marketing campaigns should be prioritized towards this cluster.

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# Event-based Groups

# +11%

## Total Revenue

- Significantly high Revenue, Persons, and Rooms Booked per Night.

- The segment with low regional differentiation, englobing Asian, African, Oceanic, and European clients.

- Due to the highest count of Direct channel usage, and high Lead Time, these users should be targeted directly much earlier seasonally then their previous stay.