ECR CYPRUS
EFFICIENT CONSUMER RESPONSE

OOS and out of shelf estimation in Cyprus FMCG

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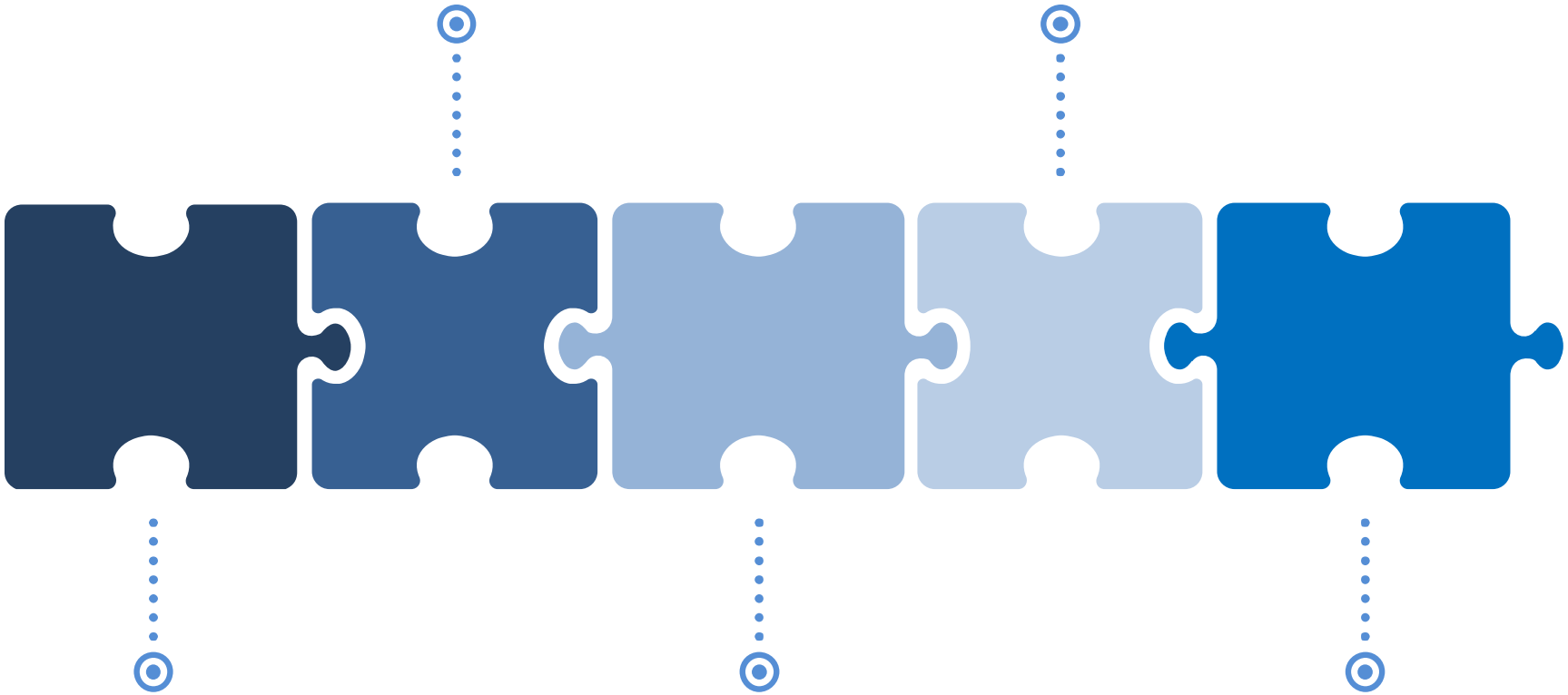
PROJECT STRUCTURE

EXPLORATORY DATA ANALYSIS

Patterns, Trends, Anomalies – Product Availability

RESULTS

Recommendations and actionable insights



DATA AND PARAMETER IDENTIFICATION PREPARATION

Project Team feedback and common understanding

MODELLING APPROACH

Statistical modelling techniques

CONCLUSION

Key findings – Data Science impact

DATA SCIENCE IN OOS

Leveraging POS data for Better inventory management

Definition: Out-of-stock (OOS) refers to unavailable products upon customer request, risking lost sales and brand reputation

Traditional methods: Shelf inspections, manual inventory checks, customer feedback

Data Science approach: Analyzing POS data to understand product availability patterns, offering insights into:

- Customer loyalty enhancement
- Optimal inventory levels
- Improved supply chain operations

Report Highlights:

- Data preparation and collection
- In-depth POS data analysis
- Statistical modelling of OOS and Out of shelf rates
- Actionable recommendations for businesses

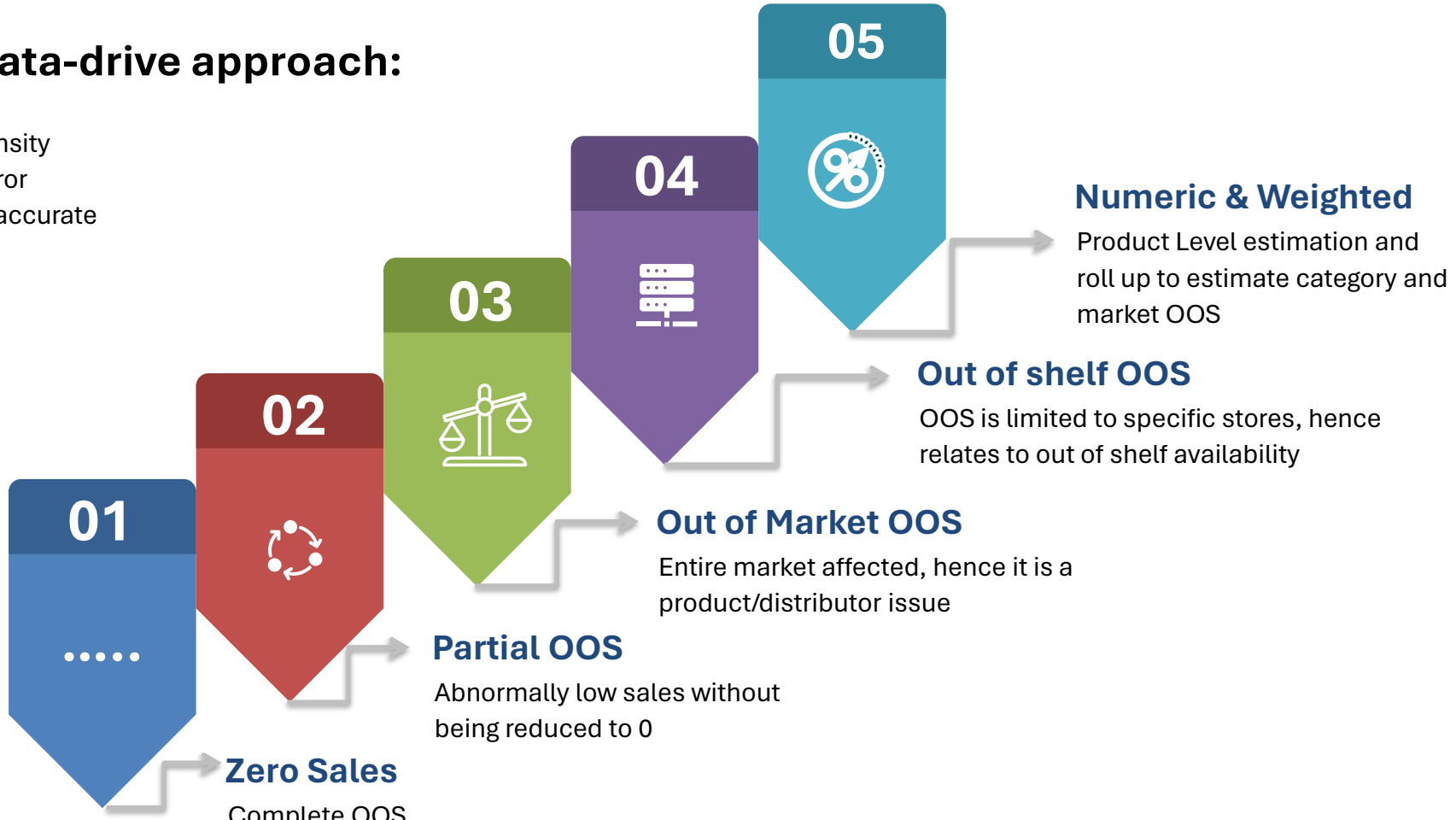
Enhancing OOS Detection with data-drive approaches

Analyze anomalies in POS data to detect deviations in expected sales levels

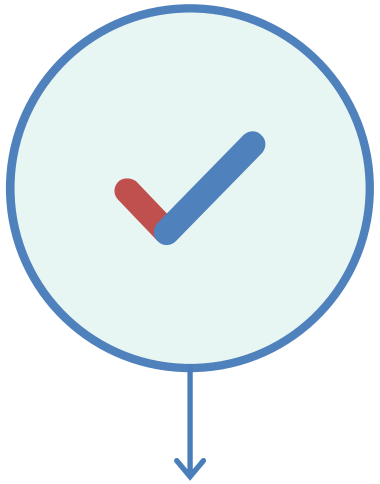
OOS TYPES

Benefits of data-drive approach:

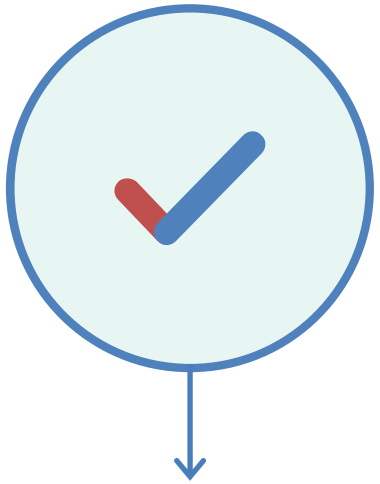
- Scalable
- Reduced labor intensity
- Minimize human error
- Cost-effective and accurate



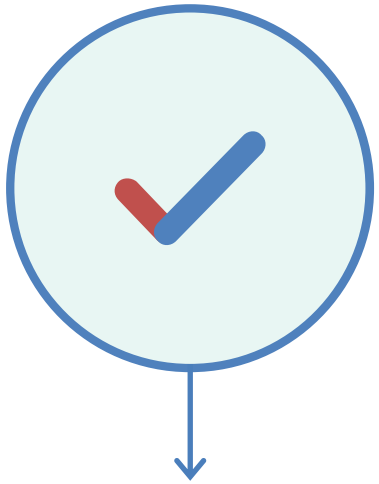
PARAMETERS



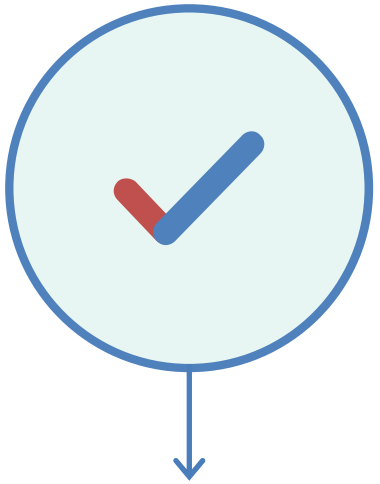
Data gathering
- 2 year span for seasonality
- 6 months for OOS



Statistical analysis
- Historical stock
- Sales patterns
- Seasonal effects
- Mean, median, StDev, IQR ranges
- Sold Items consideration
- New items & short-term product challenge



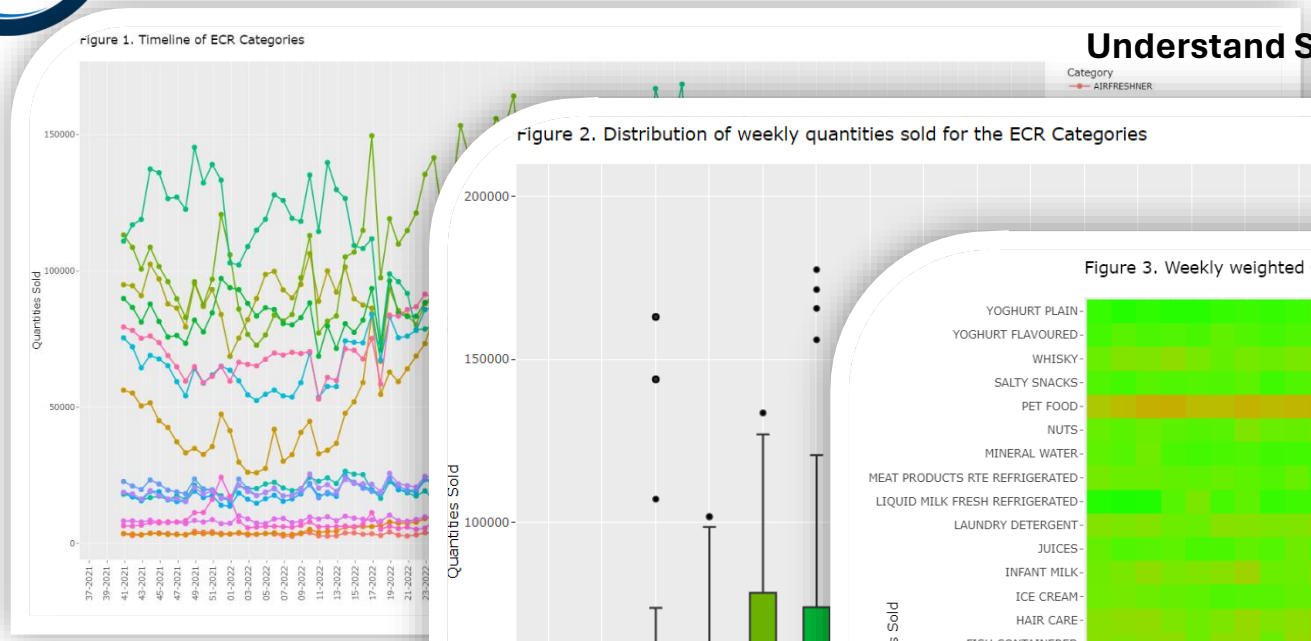
OOS identification
- OOS Flags
- PL handling
- Partial | Complete



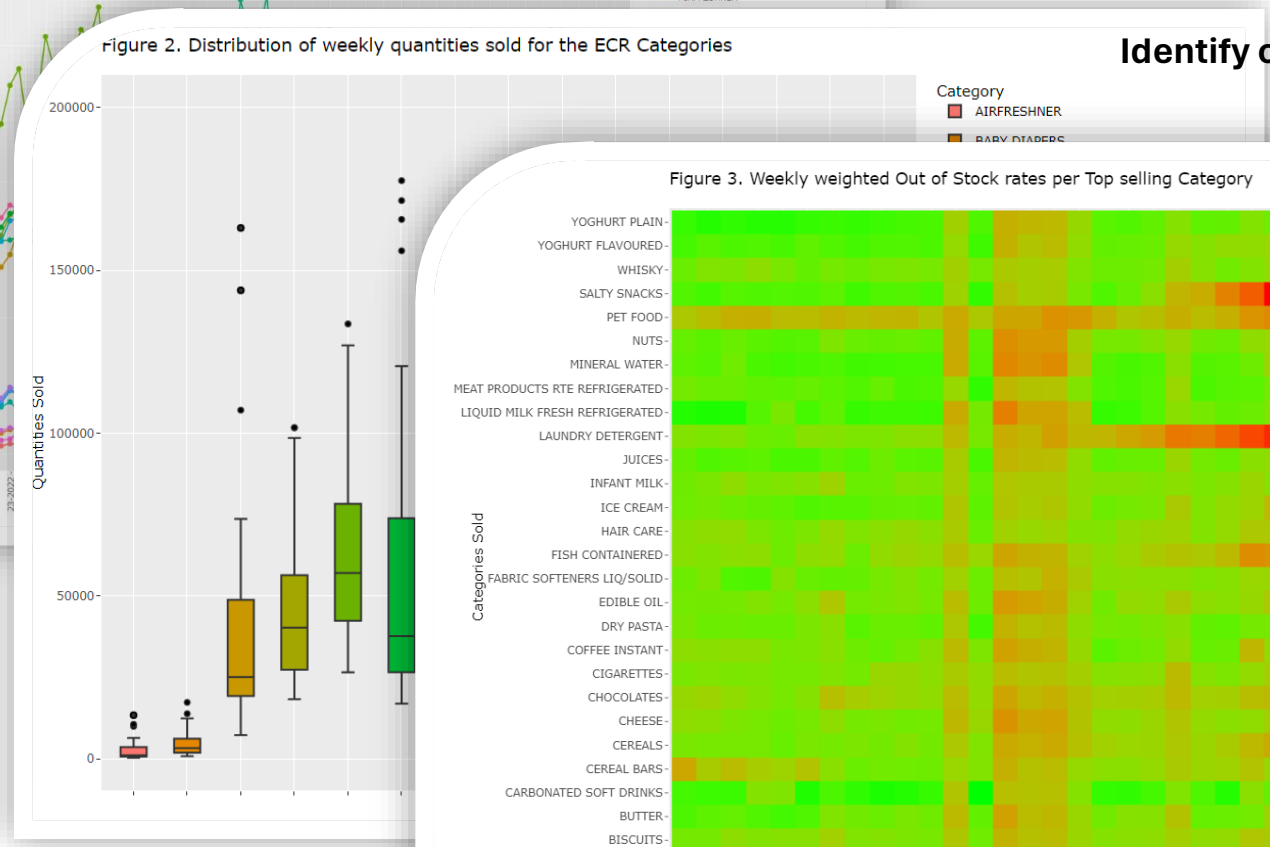
OOS rate estimation
- Numeric OOS
- Weighted OOS
- Out of shelf

GRAPHICAL ANALYSIS

Understand Seasonality



Identify outliers



Reveal patterns

OUTPUT

Categories ● Total ○

70% of the market

of Categories

Most important categories accumulating to more than 90% of the consumption

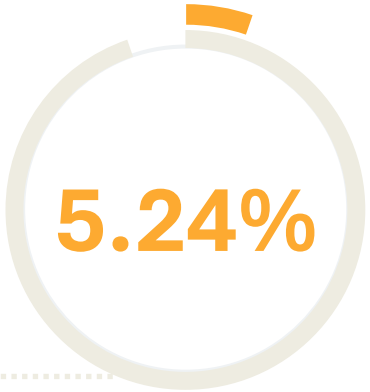
Numeric OOS ● Completeness ○

70+ stores

Numeric

Numeric OOS Rate = (Number of time the SKU was out of stock / Total number of stocking instances) * 100

Weighted OOS ● Completeness ○



Lower than Europe

Weighted

Weighted OOS Rate = (Σ (OOS Instances of SKU * Importance of SKU) / (Total number of stocking instances))* 100

Conclusions – Next steps

Achieve Operational Excellence through combination of data science and real-time examples

Validation & Testing

Validate the algorithm using historical data to check its accuracy and reliability in detecting OOS situations. Conduct real-time tests in a controlled environment

Feedback Loop

Establish a feedback loop to continuously improve the algorithm based on real-world performance data and user feedback.

AI-Driven Efficiency

Explore advanced analytics, machine learning, or AI to further enhance the OOS algorithm's predictive capabilities and to automate more aspects of the inventory management process.

Monitoring and Optimisation

Continuously monitor the algorithm's performance, identifying false positives/negatives, and making necessary adjustments to improve accuracy.

Stores vs Products vs Weeks

Find source of OOS and enhance operations to tackle that

Knowledge sharing

Share the knowledge and lessons learned from the project to create a culture of continuous improvement and innovation