E-commerce Data

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Customer Lifetime Value (CLTV) & Revenue

Topics

- ★ General E-commerce Insights
- ★ Data Description Plots
- ★ Is CLTV a Predictor for Revenue?
- ★ Prediction Model CLTV
- ★ Product Categories Unit Price

1. General E-commerce Insights

★ Avg order value per customer
  ○ total revenue / total orders
  ○ Avg order value = 21.49
★ Avg purchase frequency per customer:
  ○ mean orders
  ○ Avg purchase frequency = 91
★ Avg return rate
  ○ total orders > 1 / total orders
  ○ Return rate = 0.98 (98%)
★ Avg CLTV with avg gross profit margin of 0.40 (40%)
  ○ ((avg order value*avg purchase freq) / churn_rate) * gross profit margin
    ■ Gross profit margin = percentage of sales that has turned into profits
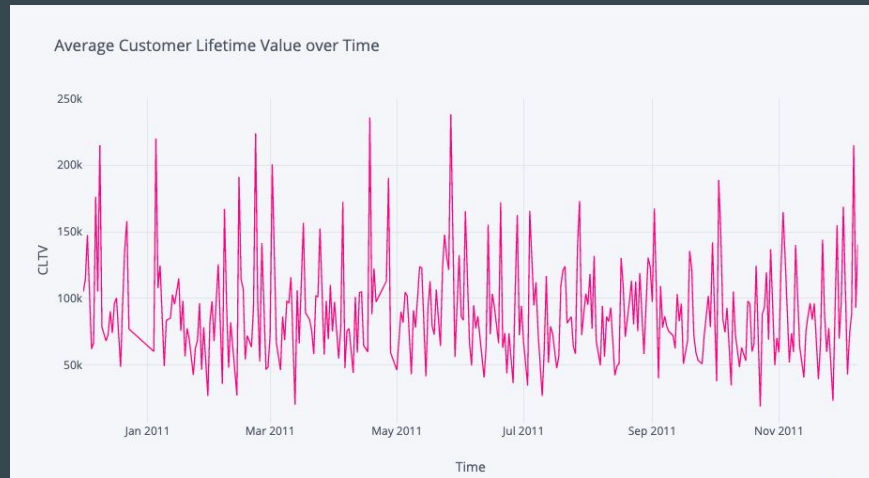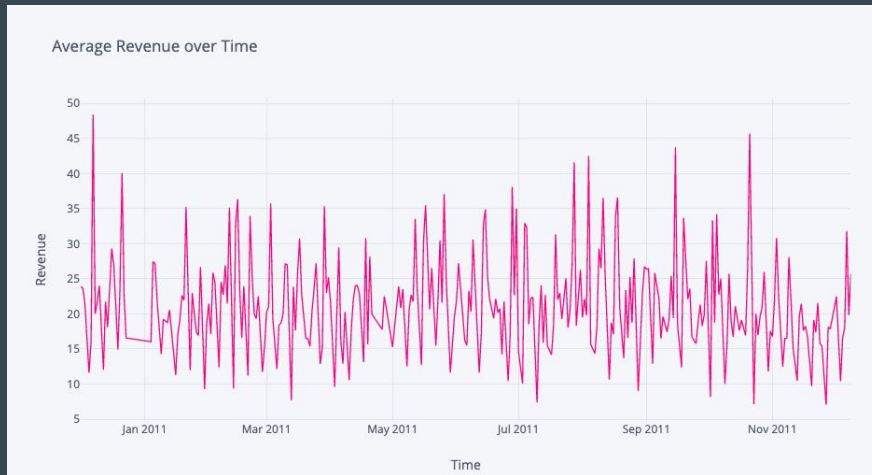   ■ Churn rate = 1 - repeat rate
  ○ CLTV = 47345.91

2. Data Description Plots (1/2)
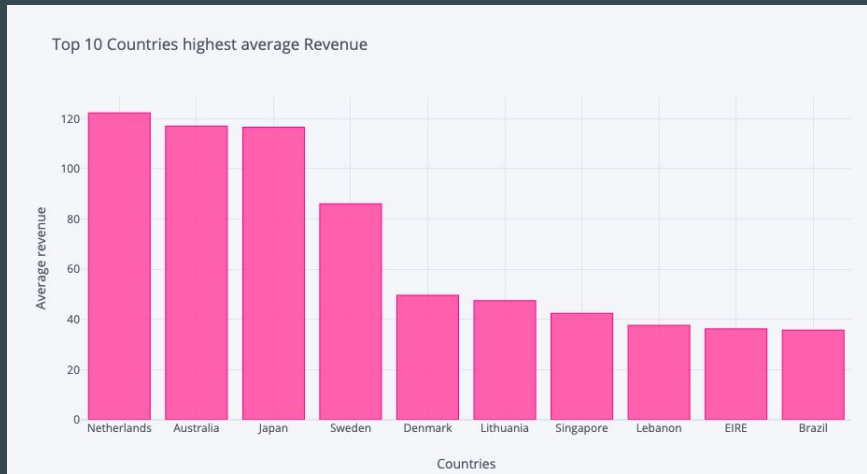
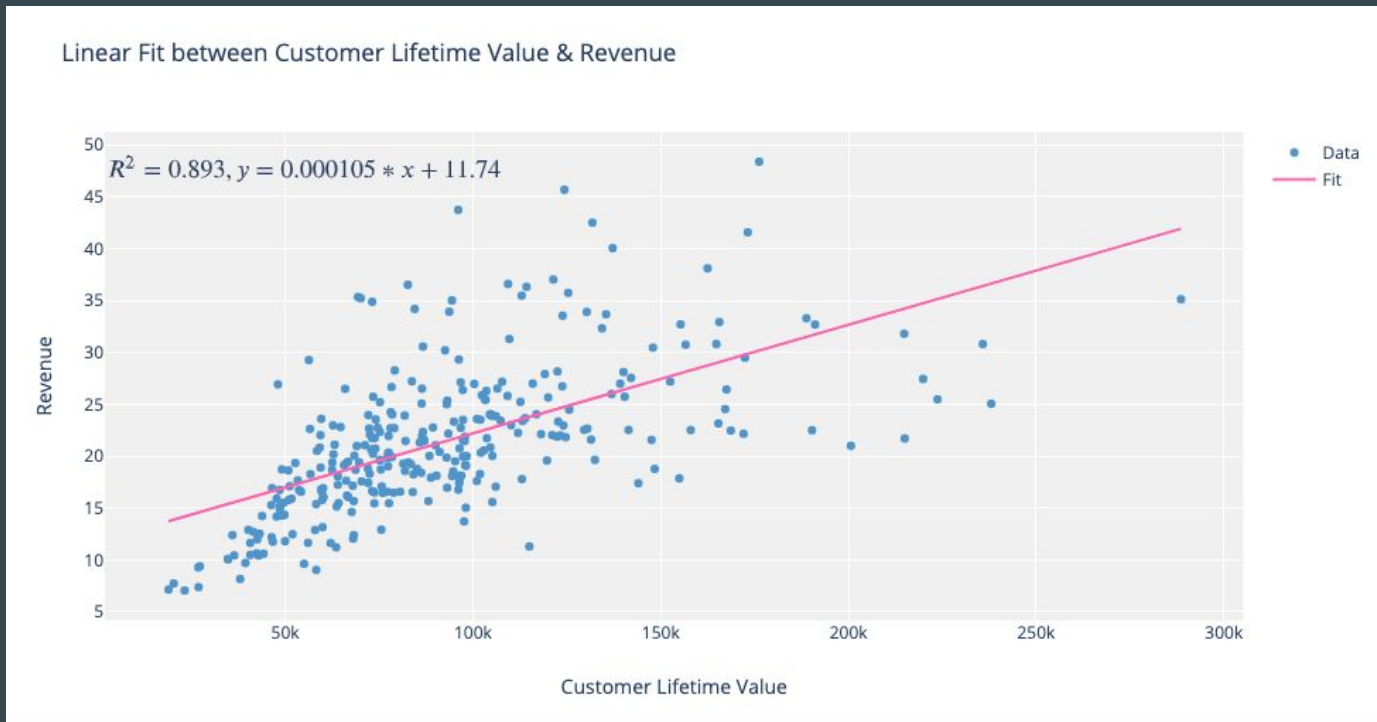The countries that order the most, are not the most profitable countries

The mount not important, but probably the product types

2. Data Description Plots (2/2)

Removed outliers by defining z-scores: z-score > 3 or < -3 = outlier

3. Is CLTV a predictor for Revenue?

Linear Fit between Customer Lifetime Value & Revenue

$R^2 = 0.893, y = 0.000105 * x + 11.74$

4. Prediction Model CLTV

★ Decompose time series & Evaluate patterns
  ○ Seasonal pattern: probably per week (B2B)
  ○ Residual: much noise

★ Checked for Autocorrelation
  ○ No autocorrelation
  ○ Probably not a good prediction model, but let's try

★ Checked for Stationarity
  ○ $P < 0.05$
  ○ Stationary

★ RMSE score: 34045.18
  ○ 12% of maximum value CLTV
  ○ Not a very good prediction model (as expected)
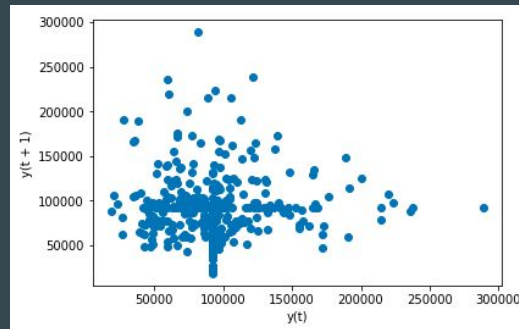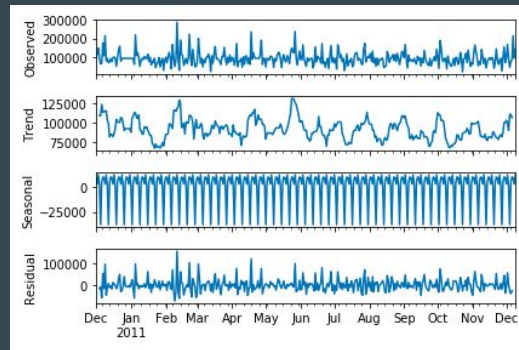
5. Product Categories Unit Price

★ Which Product Type Performs the best?
  ○ Total Revenue
  ○ Total Revenue over Time
    ■ Significantly different?
      ● ANOVA: p-value < 0.05

Total Revenue by Product Category

Total Revenue by Product Category by Time
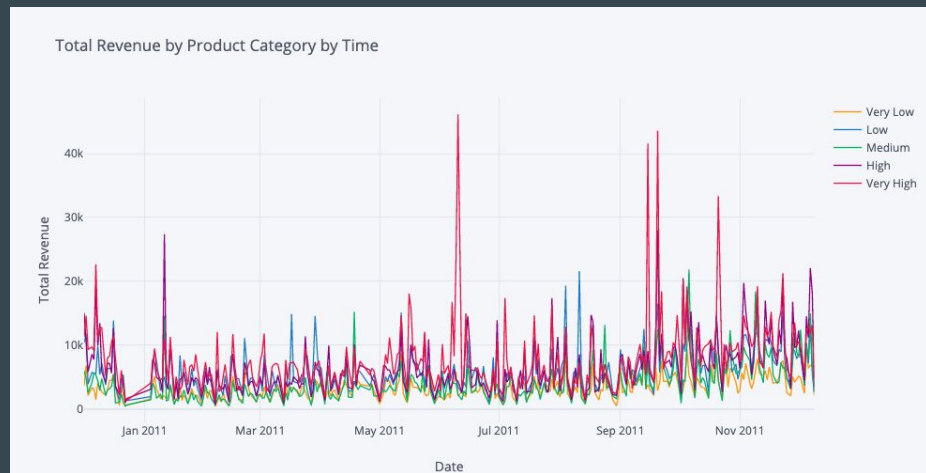
Future Research

★ **Product Categories**
  ○ Which product type performs the best?
    ■ CLTV
    ■ Retention rate

★ Combine **E-commerce Data** with **Customers Data**
  ○ Is there a difference between customer type?
    ■ Large, Medium, Small B2B Companies?

The end

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