

## Product Sales Analysis Report

### 1. Data Validation and Cleaning

#### Dataset Overview

The initial dataset contained 15,000 entries across 8 columns, with 1,074 missing revenue values. Our validation and cleaning process ensured data integrity while preserving analytical value.

#### Data Cleaning Process

We identified and resolved several key data quality issues:

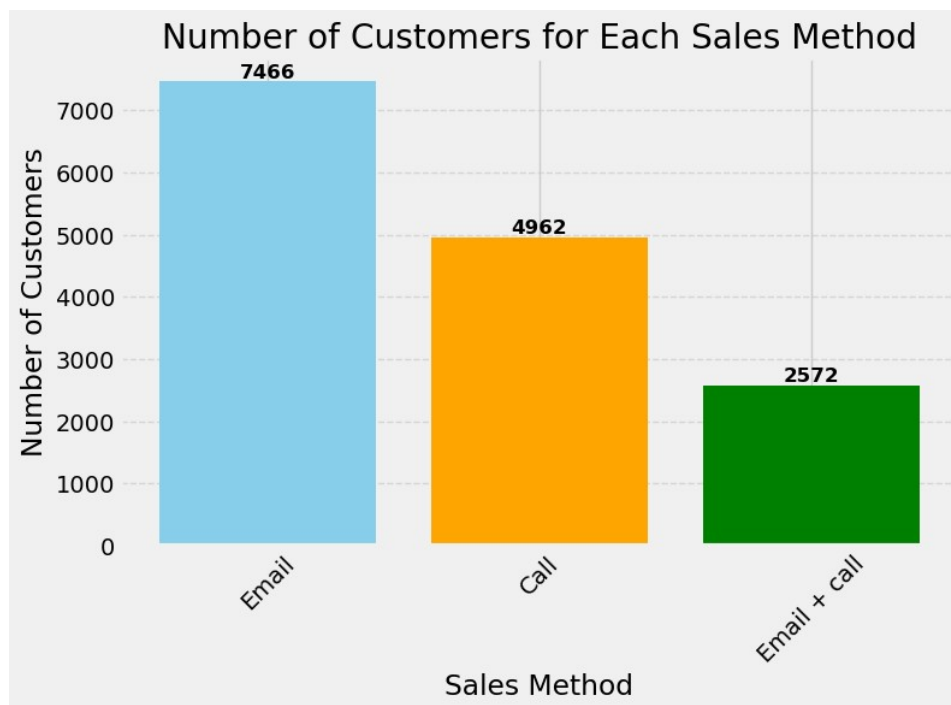
- The **sales\_method** column contained inconsistent naming conventions, which we standardized to three categories: **Email, Call, and Email + Call**.
- **Years\_as\_customer** values were adjusted to reflect the company's founding date (1984), with a maximum possible value of 41 years. Values exceeding this threshold were appropriately capped.
- Missing revenue values (1,074 entries) were imputed using the mean revenue for each sales method, maintaining data distribution patterns while eliminating gaps in our analysis.

### 2. Key Findings

#### • Sales Method Distribution

Email emerged as the dominant sales channel with approximately 7,466 customers, followed by Call (4,962 customers) and Email + Call (2,572 customers). This distribution suggests a strong preference for digital communication among our customer base.

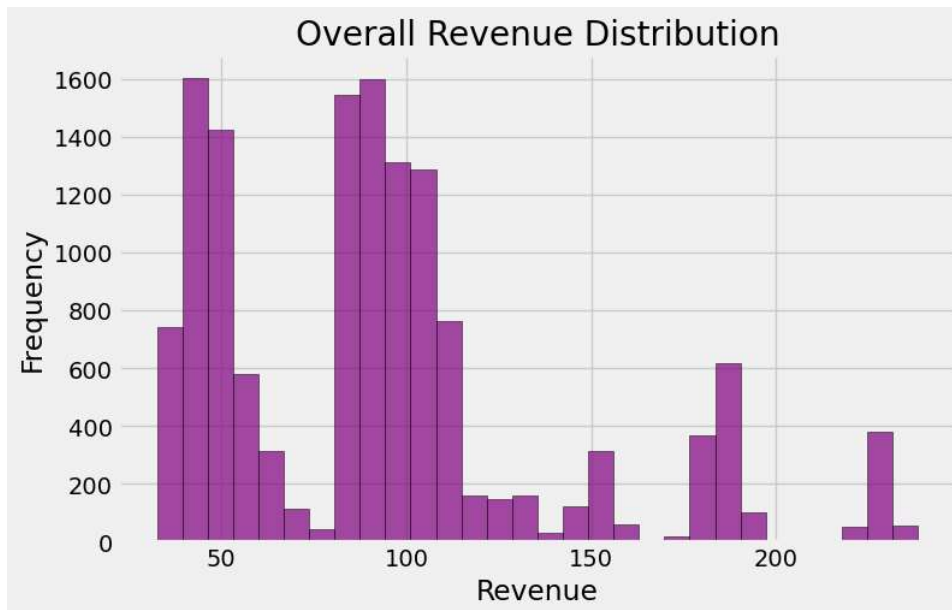
#### Bar Plot: Customers per Sales Method



- **Revenue Analysis**

The average revenue per transaction stands at \$95.58, with most transactions falling between \$50-\$200. Higher-value outliers exist above \$200, representing premium purchase patterns.

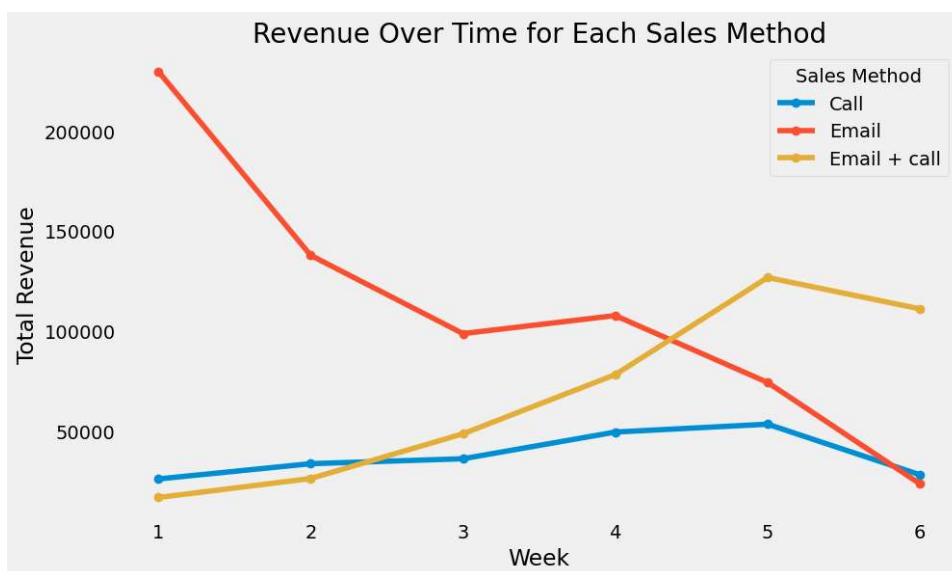
**Histogram: Revenue Distribution**



- **Temporal Revenue Patterns**

Email-based sales showed strong initial performance but experienced declining effectiveness after Week 3. Call-based sales maintained consistent but lower revenue levels, while the Email + Call combination showed promising results despite higher resource requirements.

**Line Plot: Revenue Over Time by Sales Method**

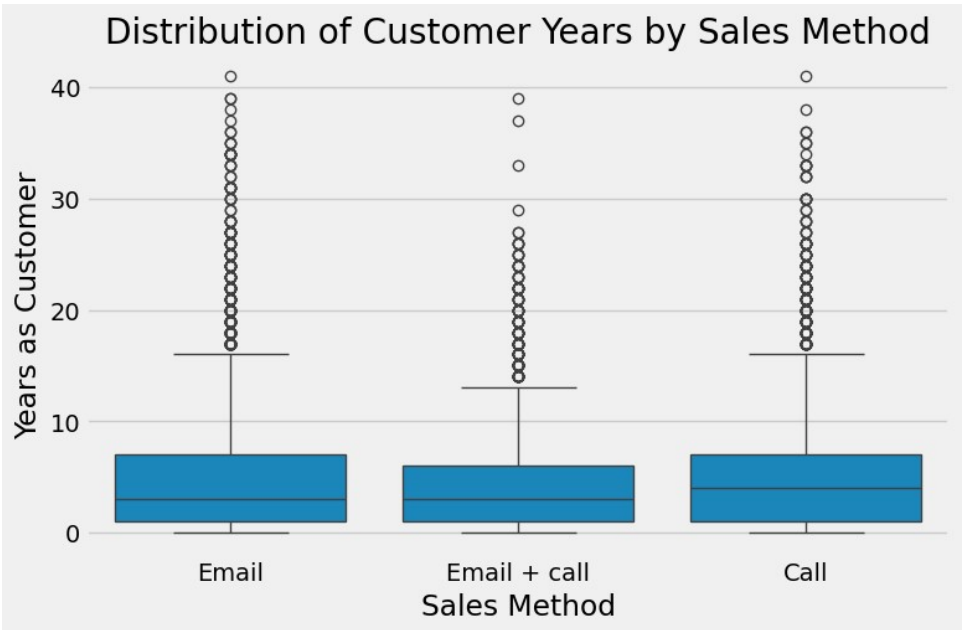


- **Customer Loyalty Analysis**

Customer tenure analysis revealed similar patterns across all sales methods, with some customers

maintaining relationships exceeding 40 years. This consistency suggests that sales method choice does not significantly correlate with customer loyalty.

**Box Plot: Years as Customer by Sales Method**



### 3. Performance Metrics

We developed a Revenue Per Effort (RPE) metric to evaluate sales method efficiency:

$$\text{Revenue Per Effort} = \text{Total Revenue} / \text{Effort Score}$$

#### Sales Method    Revenue Per Effort

Email            \$194.25

Email + Call    \$183.65

Call              \$15.86

This metric accounts for resource investment:

- Email: 0.5 (automated process)
- Call: 3.0 (30-minute customer interaction)
- Email + Call: 1.0 (10-minute call component)

### 4. Strategic Recommendations

#### Primary Recommendations

1. Prioritize email-based sales approaches due to superior efficiency and revenue generation
2. Reserve Email + Call combination for high-value customer segments
3. Reduce reliance on Call-only strategies given their lower efficiency

#### Implementation Plan

1. Develop new email campaign strategies to address diminishing returns

2. Create targeted Email + Call protocols for premium customer segments
3. Gradually transition resources from Call-only approaches to more efficient methods

#### **5. Next Steps**

1. Design and implement A/B testing for new email strategies
2. Develop customer segmentation criteria for Email + Call deployment
3. Create transition plan for reallocating resources from Call-only operations
4. Establish monitoring metrics for measuring implementation success

This analysis provides a foundation for strategic decision-making while identifying clear paths for operational improvement and revenue optimization.