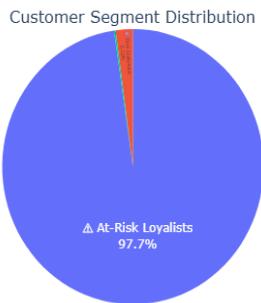
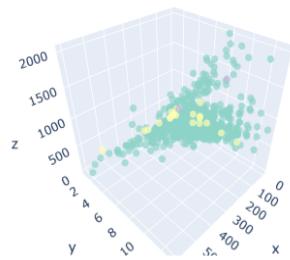


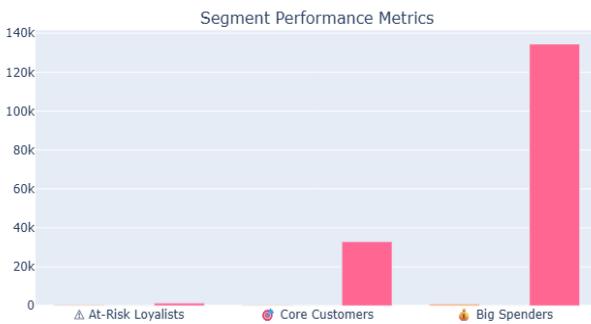
AI Retail Intelligence Dashboard



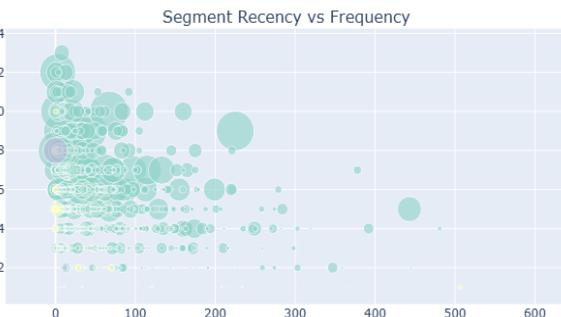
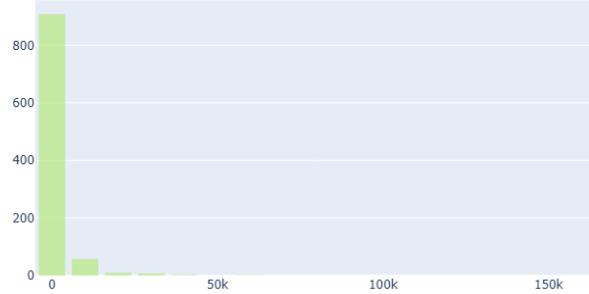
RFM 3D Scatter Plot



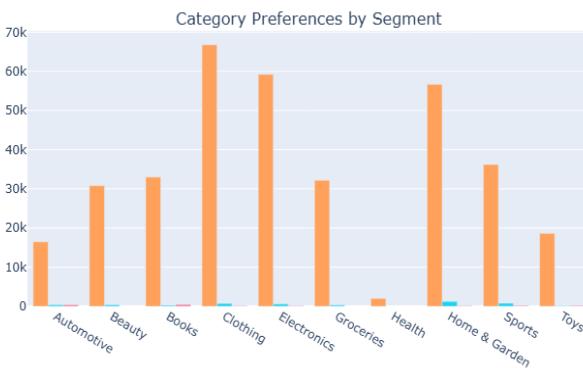
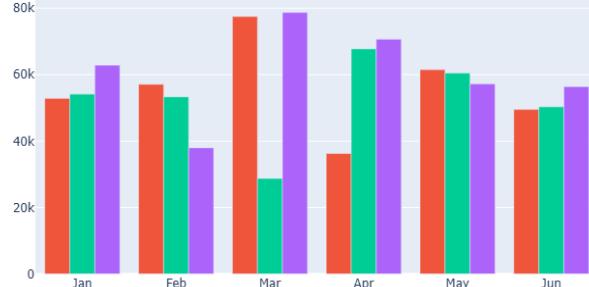
- △ At-Risk Loyalists
- 🔴 Core Customers
- 🟢 Big Spenders
- 🟠 Monetary Total
- 🟡 CLV Distribution



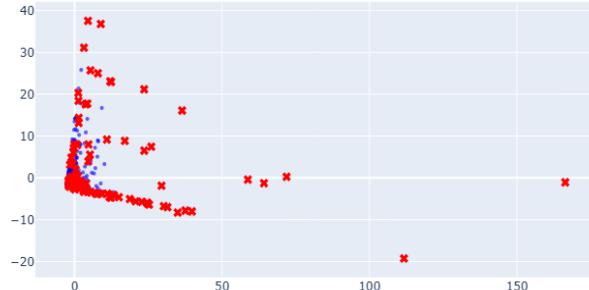
Customer Lifetime Value Distribution



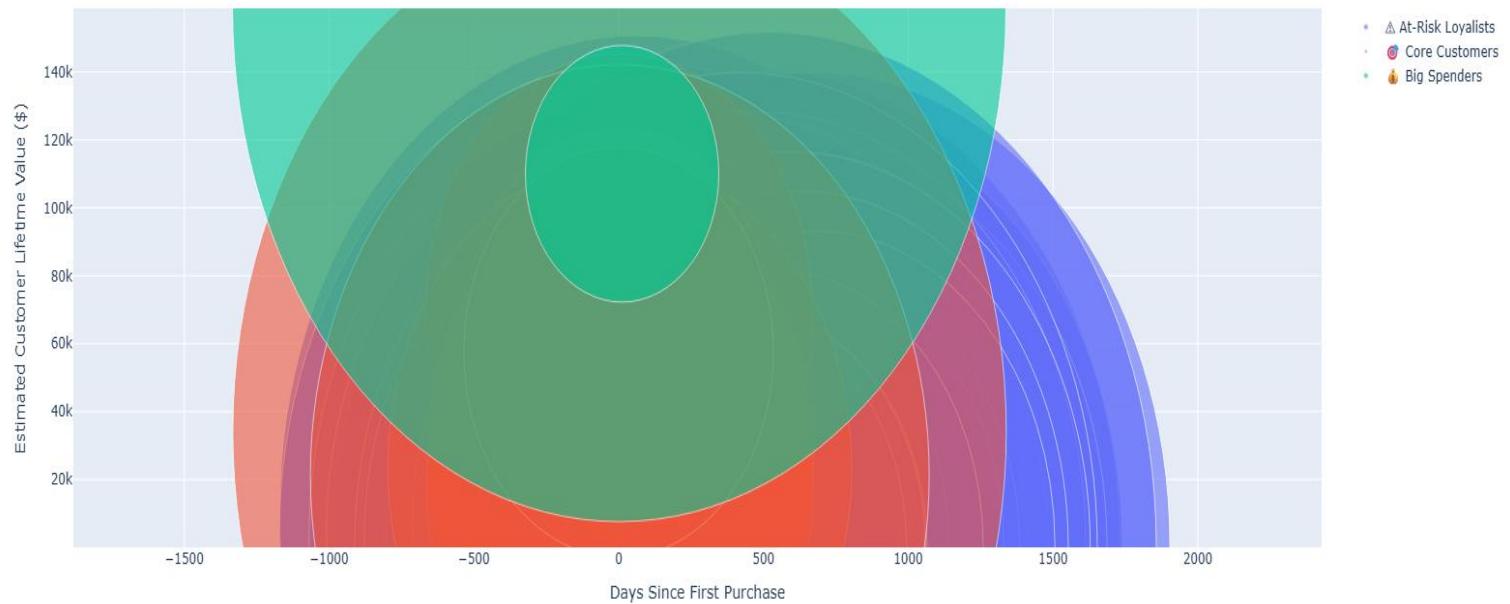
Monthly Revenue by Segment



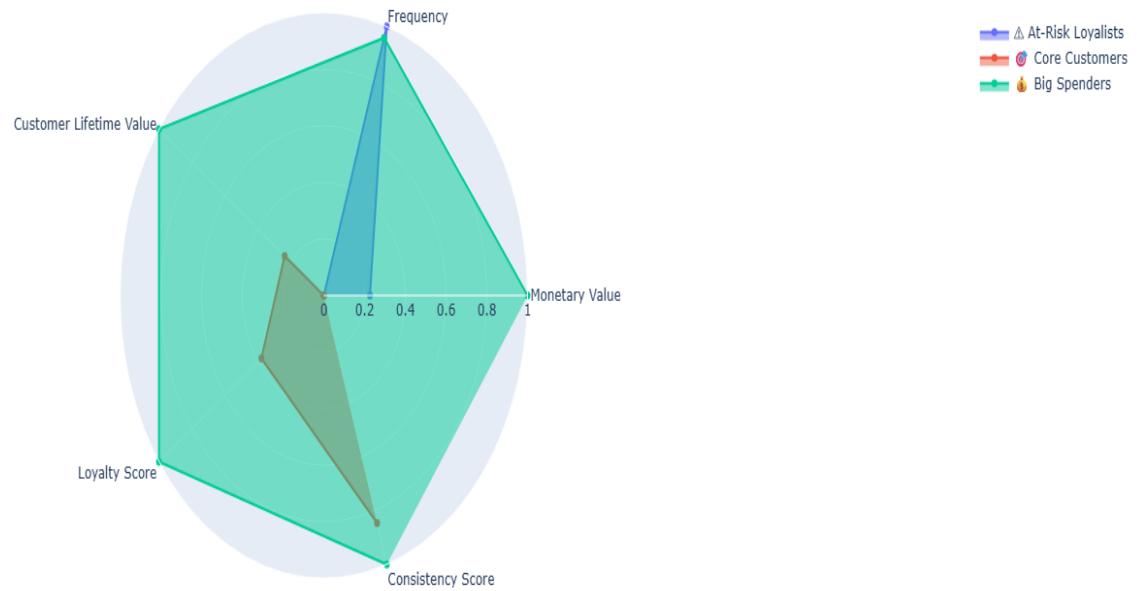
Anomaly Detection Visualization



Customer Journey: Tenure vs Customer Lifetime Value



Segment Comparison - Radar Chart



AI RETAIL INTELLIGENCE PLATFORM - COMPREHENSIVE REPORT

BUSINESS OVERVIEW:

- Total Customers: 1,000
- Total Revenue: \$358,553.32
- Average Order Value: \$71.71
- Total Customer Lifetime Value: \$2,208,254.40
- Average CLV per Customer: \$2208.25

CUSTOMER SEGMENTATION:

-  At-Risk Loyalists: 969 customers (96.9%)
-  Core Customers: 21 customers (2.1%)
-  Big Spenders: 2 customers (0.2%)

TOP PERFORMING SEGMENTS:

- Highest Value Segment:  At-Risk Loyalists
- Most Loyal Segment:  Big Spenders

AT-RISK AND HIGH-VALUE CUSTOMERS:

- At-Risk Customers (inactive > 180 days): 82
- High-Value Customers (top 20% CLV): 199

CATEGORY PERFORMANCE:

- Clothing: \$67,696.06
- Electronics: \$59,959.58
- Home & Garden: \$58,075.62
- Sports: \$37,159.25
- Books: \$33,726.95
- Groceries: \$32,504.83
- Beauty: \$31,202.24
- Toys: \$18,968.53
- Automotive: \$17,233.37
- Health: \$2,026.89

💻 CHANNEL PERFORMANCE:

- Online: \$172,225.12
- In-Store: \$120,260.13
- Mobile App: \$66,068.07

🔥 STRATEGIC RECOMMENDATIONS:

Segment: ⚠️ At-Risk Loyalists

Description: Previously frequent buyers showing decline

Strategy: Win-back campaigns, special offers, satisfaction surveys

Key Metrics:

- Average Recency: 65.3 days
- Average Frequency: 5.1 purchases
- Average Monetary Value: \$363.31
- Average CLV: \$1,288.52

Segment: 🎯 Core Customers

Description: Balanced customers - steady, reliable base

Strategy: Retention focus, upselling, consistent engagement

Key Metrics:

- Average Recency: 61.5 days
- Average Frequency: 3.2 purchases
- Average Monetary Value: \$232.99
- Average CLV: \$32,901.94

Segment: 💰 Big Spenders

Description: High-value but infrequent buyers

Strategy: Luxury products, premium experiences, re-engagement campaigns

Key Metrics:

- Average Recency: 6.0 days
 - Average Frequency: 5.0 purchases
 - Average Monetary Value: \$807.94
 - Average CLV: \$134,367.01
-

END OF REPORT

Sample Customer Data:

```
customer_id age_group gender     city      acquisition_date \
0      1   26-35  Male  San Antonio 2024-01-28 13:42:54.079540
1      2   65+ Female  Chicago 2024-09-20 13:42:54.079540
2      3   46-55 Female  San Antonio 2024-05-13 13:42:54.079540
3      4   36-45 Female  San Diego 2025-05-08 13:42:54.079540
4      5   26-35 Female  Austin 2025-03-20 13:42:54.079540
```

preferred_channel

```
0   Mobile App
1   Mobile App
2   Online
3   Online
4   Online
```

Sample Transaction Data:

	transaction_id	customer_id	transaction_date	amount	quantity
0	TXN_000001	712	2024-10-30 13:42:54.079540	10.00	1
1	TXN_000002	279	2025-07-10 13:42:54.079540	78.01	3
2	TXN_000003	513	2025-08-11 13:42:54.079540	66.90	2
3	TXN_000004	865	2025-08-24 13:42:54.079540	32.84	2
4	TXN_000005	676	2025-04-07 13:42:54.079540	48.69	2

	category	channel	discount_applied	
0	Electronics	Mobile	App	5
1	Automotive		In-Store	0
2	Home & Garden		Online	10
3	Home & Garden	Mobile	App	0
4	Health		Online	15

Sample RFM Metrics:

```
customer_id recency frequency monetary_total monetary_avg \
0      1      40       7    1620.32  231.474286
1      2      83       2    463.67   231.835000
```

2 3 347 2 545.54 272.770000
3 4 0 7 1166.01 166.572857
4 5 26 9 1475.65 163.961111

monetary_std quantity_total quantity_avg avg_discount \

0 70.320297 37 5.285714 1.428571
1 18.985817 11 5.500000 5.000000
2 88.897465 8 4.000000 2.500000
3 24.129908 40 5.714286 9.285714
4 36.562231 43 4.777778 2.222222

category_diversity ... purchase_frequency_rate estimated_clv \

0 5 ... 0.016746 1275.132211
1 2 ... 0.035714 2462.230379
2 2 ... 0.200000 10207.804284
3 6 ... 0.095890 5830.050000
4 4 ... 0.078947 4410.496506

consistency_score loyalty_score segment pca_1 pca_2 \

0 0.767762 0.853659 0 -1.100234 -0.683787
1 0.924606 0.047619 0 0.076594 -2.085318
2 0.754879 0.011494 0 8.072412 -3.678698
3 0.874129 42.000000 0 7.918029 25.002921
4 0.818571 1.333333 0 2.182044 -0.784757

segment_name is_anomaly anomaly_score

0 △ At-Risk Loyalists True -0.040689
1 △ At-Risk Loyalists True -0.016580
2 △ At-Risk Loyalists True -0.104743
3 △ At-Risk Loyalists True -0.099539
4 △ At-Risk Loyalists True -0.050631

[5 rows x 22 columns]

Segment Analysis Summary:

```
segment_name customer_id_count monetary_total_mean \
```

```
0 ⚠️ At-Risk Loyalists      969      363.31
```

```
1 🎯 Core Customers        21       232.99
```

```
2 💰 Big Spenders          2        807.94
```

```
frequency_mean estimated_clv_mean
```

```
0      5.08      1288.52
```

```
1      3.19      32901.94
```

```
2      5.00      134367.01
```

Number of Anomalies Detected: 100