

SALES PERFORMANCE & BUSINESS DEVELOPMENT KPI REPORT

A Comprehensive KPI Analysis of Business Development Performance

Analysis Period: January 2023 – June 2024

Prepared by: Ruwan pathiranage sanduni Nisansala (Data Science Intern)

GitHub Link: <https://github.com/nisansalasandu/sales-performance-analytics>

Tools: Python | Jupyter Notebook | Power BI

683 Leads Analyzed	272 Converted Leads	\$6.74M Total Revenue	18 Months Data Period
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1. Executive Summary

This report presents the findings of a comprehensive KPI-based analysis of business development performance conducted as part of a Data Science Internship task. The analysis covers 683 leads sourced between January 2023 and June 2024, spanning 5 lead sources, 5 regions, and 6 sales representatives. The primary objective was to evaluate key performance indicators, identify trends and bottlenecks, and provide actionable data-driven recommendations to improve lead conversion, revenue growth, and sales efficiency.

The dataset was sourced as a raw, uncleaned file containing 700 records. Following rigorous data cleaning — including removal of 17 duplicate records, standardization of categorical fields, date parsing across multiple formats, and imputation of missing values — a final cleaned dataset of 683 records was used for all KPI calculations and visual analysis.

Key Findings

KPI	Result	Benchmark	Status
Lead Conversion Rate	39.82%	45–55%	⚠️ Below
Customer Acquisition Cost	\$6,506.17	Minimize	⚠️ High
Revenue per Client	\$24,790.74	Maximize	✓ Good
Avg Monthly Lead Growth	3.63%	>5%	⚠️ Below
Avg Revenue Growth	8.83%	>10%	⚠️ Near
Avg Sales Cycle	67.7 days	<60 days	⚠️ Slow
Best Lead Source	Website	—	✓ Good
Best Region	North	—	✓ Good

The overall conversion rate of 39.82% sits below the industry benchmark of 45–55%, indicating significant room for improvement. However, the business maintains a healthy Return on Investment of 281%, meaning every dollar spent on marketing generates approximately \$3.80 in revenue. The Website lead source

emerged as the strongest performer across all KPIs while the North region consistently outperformed all other geographic areas.

2. Project Overview & Methodology

2.1 Project Scope

This analysis was structured as a 3-day internship task covering data cleaning and preprocessing (Day 1), KPI calculation and visualization (Day 2), and insight generation with final reporting (Day 3). All analysis was performed using Python within Jupyter Notebooks, with visualizations exported for integration into a Power BI dashboard.

2.2 Dataset Overview

Field	Description
Lead_ID	Unique identifier for each lead
Lead_Source	Origin channel: Social Media, Referral, Website, Email Campaign, Direct
Lead_Date	Date the lead was generated
Conversion_Status	Whether the lead converted: Converted / Not Converted
Conversion_Date	Date of conversion (where applicable)
Revenue_Value	Revenue generated from converted leads (\$)
Marketing_Cost	Marketing cost attributed to the lead (\$)
Sales_Representative	Name of the assigned sales representative
Region	Geographic region: North, South, East, West

2.3 Data Cleaning Summary

The raw dataset contained multiple data quality issues that were systematically addressed during Day 1. The table below summarizes the issues identified and the cleaning actions applied:

Issue	Scope	Action Taken
Duplicate rows	17 records	Removed all duplicates
Missing Lead_IDs	10 records	Auto-generated sequential IDs
Inconsistent Lead_Source casing	14 unique variants	Standardized to Title Case with mapping
Mixed date formats	5 different formats	Parsed all to standard YYYY-MM-DD
Ambiguous Conversion_Status	10 unique variants	Mapped to Converted / Not Converted
Invalid Conversion Dates	17 records	Set to NaT where date <= Lead_Date
Revenue with \$ symbols or zero	Multiple records	Stripped symbols; replaced invalid with median
Missing Marketing_Cost	18 records	Imputed with median (\$2,639.44)
Inconsistent Region/Rep casing	Multiple records	Standardized to Title Case
Missing Sales Representative	130 records	Filled as 'Unassigned'
Missing Region	82 records	Filled as 'Unknown'

After cleaning, the final dataset contained 683 records with 13 columns, including 4 derived helper columns: Sales_Cycle_Days, Lead_Month, Lead_Year, and Is_Converted.

3. KPI Analysis & Results

3.1 KPI 1 — Lead Conversion Rate

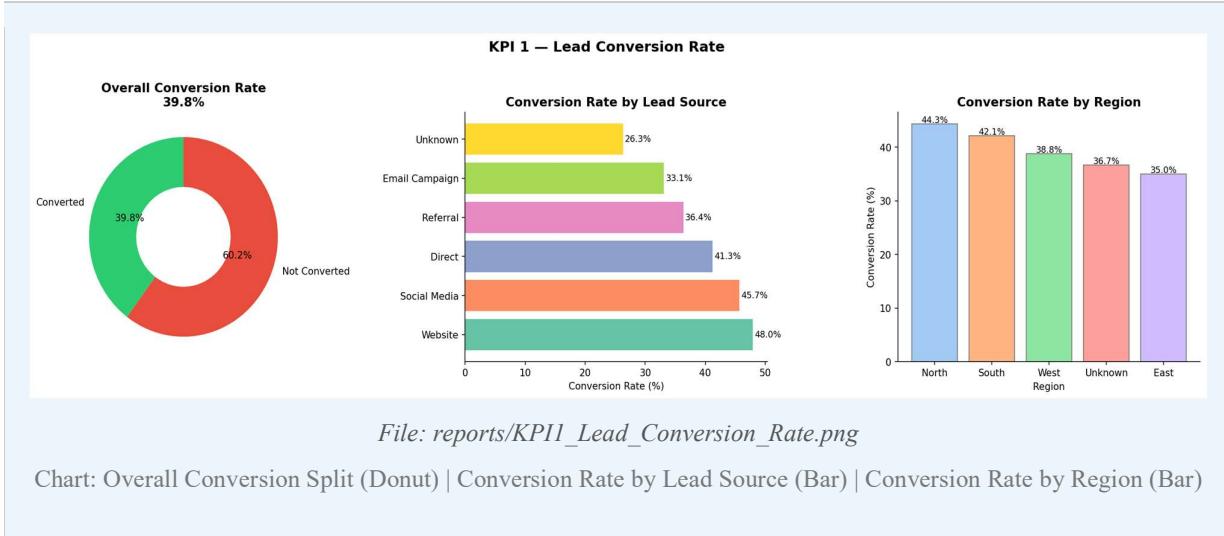
The Lead Conversion Rate measures the percentage of total leads that successfully converted into paying customers. It is the most fundamental indicator of sales pipeline effectiveness.

Formula	$(\text{Converted Leads} \div \text{Total Leads}) \times 100$
Result	$(272 \div 683) \times 100 = 39.82\%$

The overall conversion rate of 39.82% is below the B2B industry benchmark of 45–55%. This means 411 leads (60.18%) were lost without generating revenue. If the conversion rate were improved to 50%, the business would gain an estimated 69 additional conversions, translating to approximately \$1,710,511 in additional revenue at the current average revenue per client of \$24,790.74.

Conversion Rate by Lead Source:

Lead Source	Total Leads	Converted	Conversion Rate
Website	98	47	47.96% ★ Best
Social Media	151	69	45.70%
Direct	143	59	41.26%
Referral	99	36	36.36%
Email Campaign	154	51	33.12% X Lowest
Unknown	38	10	26.32%



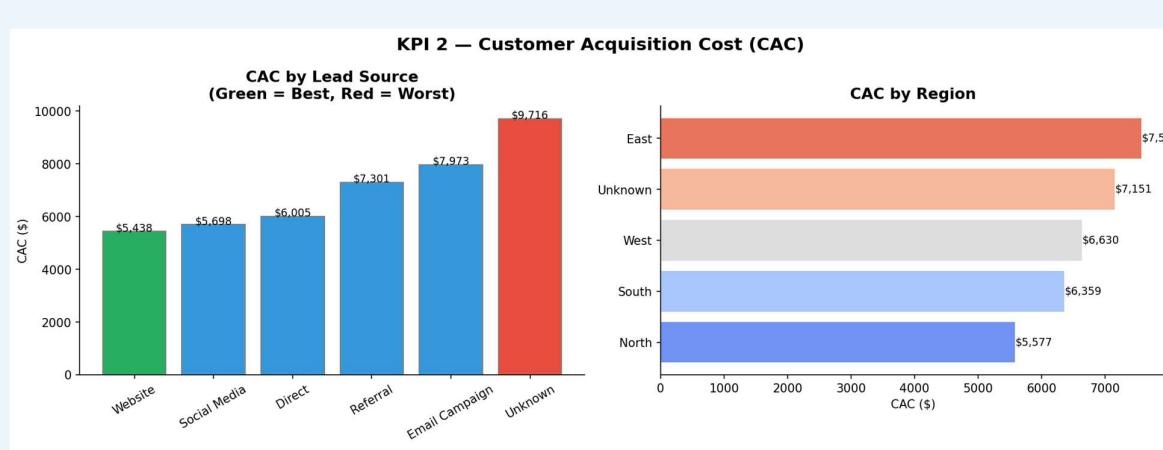
3.2 KPI 2 — Customer Acquisition Cost (CAC)

Customer Acquisition Cost measures the average marketing expenditure required to convert one lead into a paying customer. Lower CAC indicates more efficient use of marketing budget.

Formula	Total Marketing Cost ÷ Number of Converted Leads
Result	$\$1,769,679.24 \div 272 = \$6,506.17$ per customer

The overall CAC of \$6,506.17 means the business spends \$6,506 to acquire each customer. Against an average Revenue per Client of \$24,790.74, this yields a Revenue-to-CAC ratio of 3.8x — meaning every \$1 spent on acquisition returns \$3.80 in revenue. While positive, reducing CAC (especially in underperforming regions) would significantly improve profitability.

Website leads are the most cost-efficient at \$5,438.45 CAC, while Unknown sources cost \$9,716.20 — nearly double. At the regional level, the North region is most efficient (\$5,576.93) while East is least efficient (\$7,569.70), a gap of \$1,992.77 per acquisition.



File: reports/KPI2_CAC.png

Chart: CAC by Lead Source (Bar Chart) | CAC by Region (Horizontal Bar Chart)

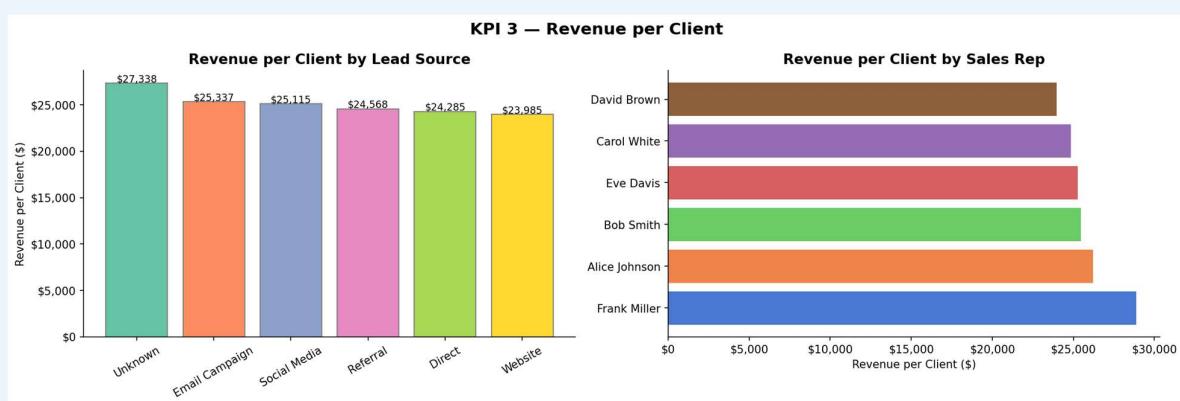
3.3 KPI 3 — Revenue per Client

Revenue per Client measures the average revenue generated from each successfully converted lead. It reflects deal quality and pricing effectiveness across different channels and representatives.

Formula	Total Revenue ÷ Number of Converted Leads
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Result	$\$6,743,080.52 \div 272 = \$24,790.74$ per client
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The average revenue per client of \$24,790.74 is consistent across lead sources, ranging from \$23,984.87 (Website) to \$27,337.80 (Unknown). At the sales representative level, Frank Miller generates the highest revenue per client at \$28,896.16, which is \$8,214.83 more than Unassigned leads (\$20,681.33). The 50 unassigned leads represent a significant revenue recovery opportunity worth \$410,741.50 if reassigned to top performers.



File: reports/KPI3_Revenue_Per_Client.png

Chart: Revenue per Client by Lead Source (Bar) | Revenue per Client by Sales Representative (Horizontal Bar)

3.4 KPI 4 — Monthly Growth Rate

Monthly Growth Rate tracks the percentage change in lead volume and revenue on a month-over-month basis. It reveals the trajectory of business development activity and identifies periods of strong growth or concerning decline.

Formula

$((\text{Current Month} - \text{Previous Month}) \div \text{Previous Month}) \times 100$

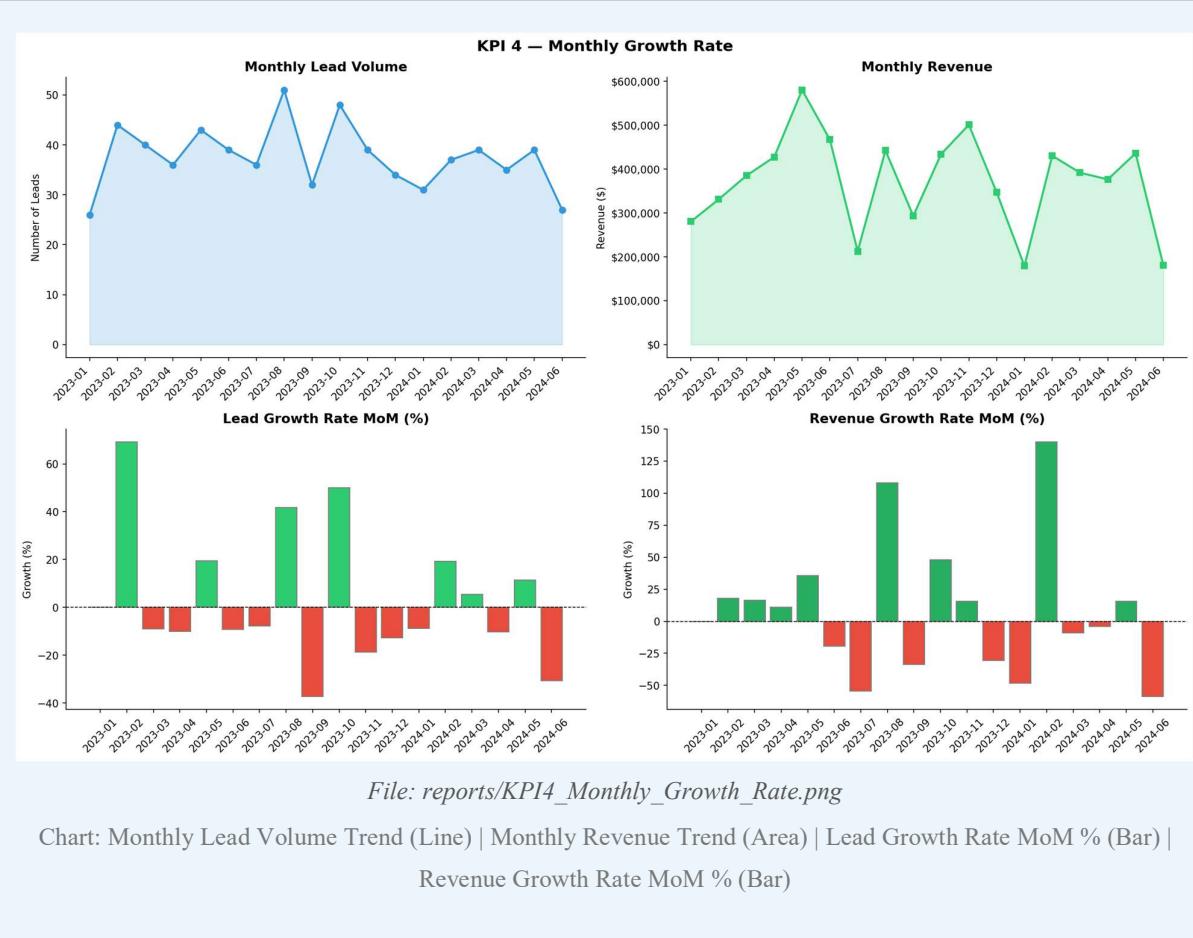
Result

Avg Lead Growth: 3.63% | Avg Revenue Growth: 8.83% per month

The average monthly lead growth rate of 3.63% and revenue growth rate of 8.83% are positive but volatile. Analysis covers 18 complete months from January 2023 to June 2024 (3 incomplete months with fewer than 15 leads were excluded). The most notable fluctuations include a +140.08% revenue spike in February 2024 and a -58.65% drop in June 2024. These extreme swings highlight an inconsistent sales pipeline that makes forecasting and resource planning very difficult.

Most Volatile Months Identified:

- February 2024: +140.08% revenue spike (single largest monthly jump)
- August 2023: +107.85% revenue spike (outlier performance)
- July 2023: -54.45% revenue decline (sharpest single drop)
- June 2024: -58.65% revenue decline (concerning end-of-period signal)



3.5 KPI 5 — Sales Cycle Duration

Sales Cycle Duration measures the average number of days between a lead being generated and the lead being converted into a customer. Shorter cycles generally indicate a more efficient sales process, though cycle length must be considered alongside conversion quality.

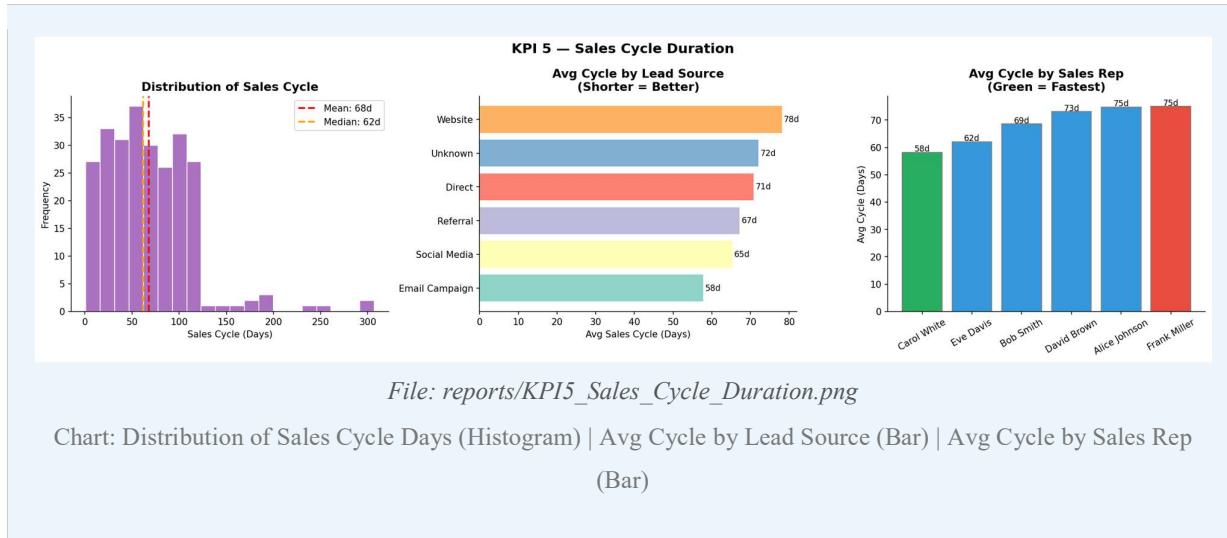
Formula	Average(Conversion_Date - Lead_Date) in days, for converted leads only
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Result	Average: 67.7 days Median: 62.0 days Range: 1 to 307 days
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The average sales cycle of 67.7 days indicates that deals typically take slightly over two months to close. The wide range from 1 to 307 days suggests high variability in deal complexity. A critical finding is that the fastest-closing source (Email Campaign at 57.8 days) has the lowest conversion rate (33.12%), while

the slowest source (Website at 78.1 days) has the highest conversion rate (47.96%). This paradox reveals that speed does not equal quality — longer nurture periods for Website leads clearly pay off.

Among sales representatives, Carol White closes deals fastest at an average of 58.2 days while Frank Miller takes the longest at 75.0 days. However, Frank Miller generates the highest revenue per client (\$28,896.16), suggesting a deliberate strategy of prioritizing deal quality over speed.

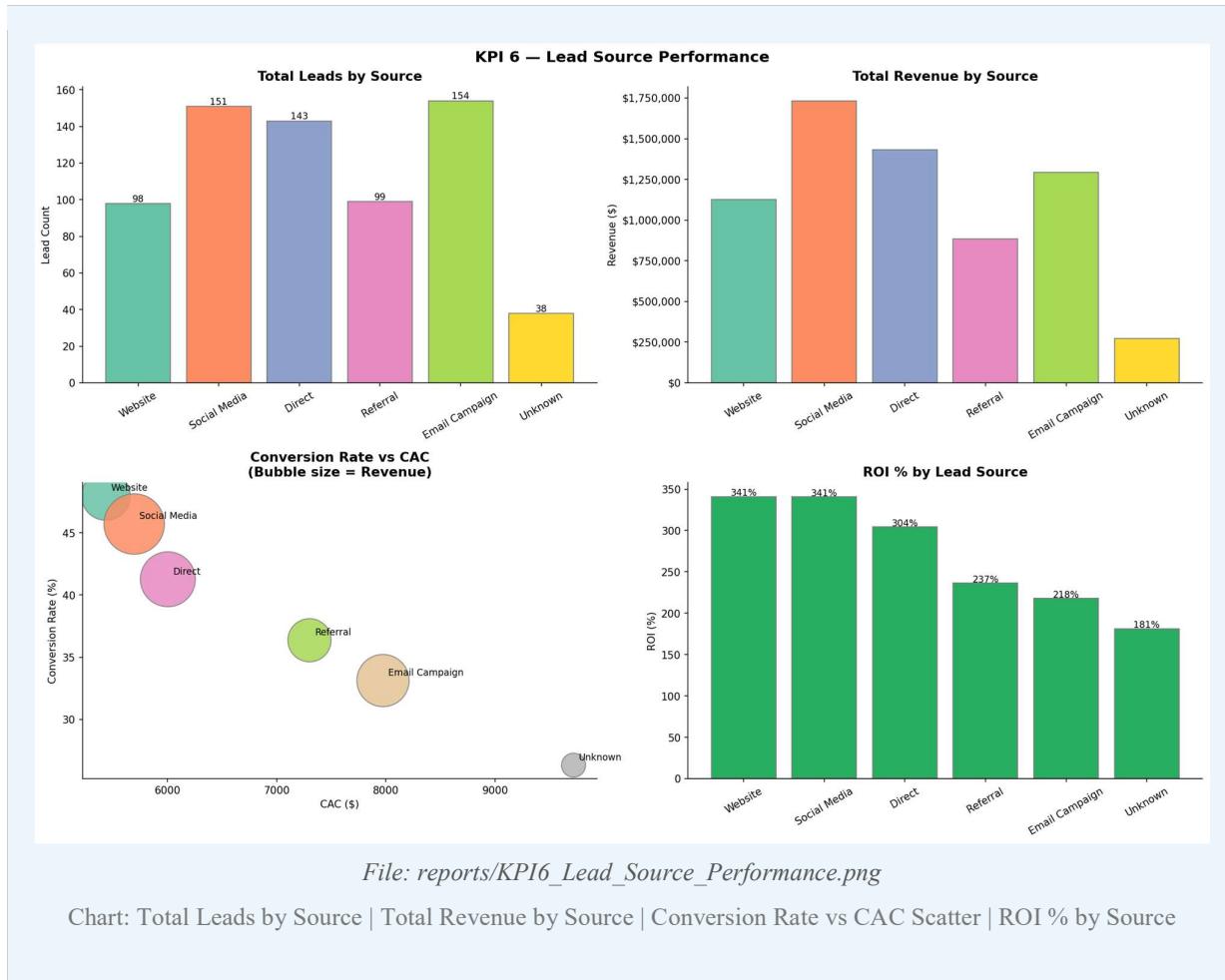


3.6 KPI 6 — Lead Source Performance

Lead Source Performance provides a holistic comparison of all lead channels across multiple dimensions including volume, conversion rate, revenue, CAC, and ROI. It identifies which channels provide the greatest business value and where marketing investment should be directed.

Lead Source	Total Leads	Converted	Conv. Rate	CAC	ROI %
Website	98	47	47.96%	\$5,438	341.02%
Social Media	151	69	45.70%	\$5,698	340.81%
Direct	143	59	41.26%	\$6,005	304.40%
Referral	99	36	36.36%	\$7,301	236.51%
Email Campaign	154	51	33.12%	\$7,973	217.77%
Unknown	38	10	26.32%	\$9,716	181.36%

Website leads clearly emerge as the best overall channel with the highest conversion rate (47.96%), lowest CAC (\$5,438.45), and highest ROI (341.02%) — despite generating the fewest leads (98). Email Campaign is the most volume-heavy source with 154 leads but delivers the second-lowest conversion rate (33.12%) and a relatively poor ROI of 217.77%. This imbalance suggests marketing budget is being over-allocated to a lower-performing channel.



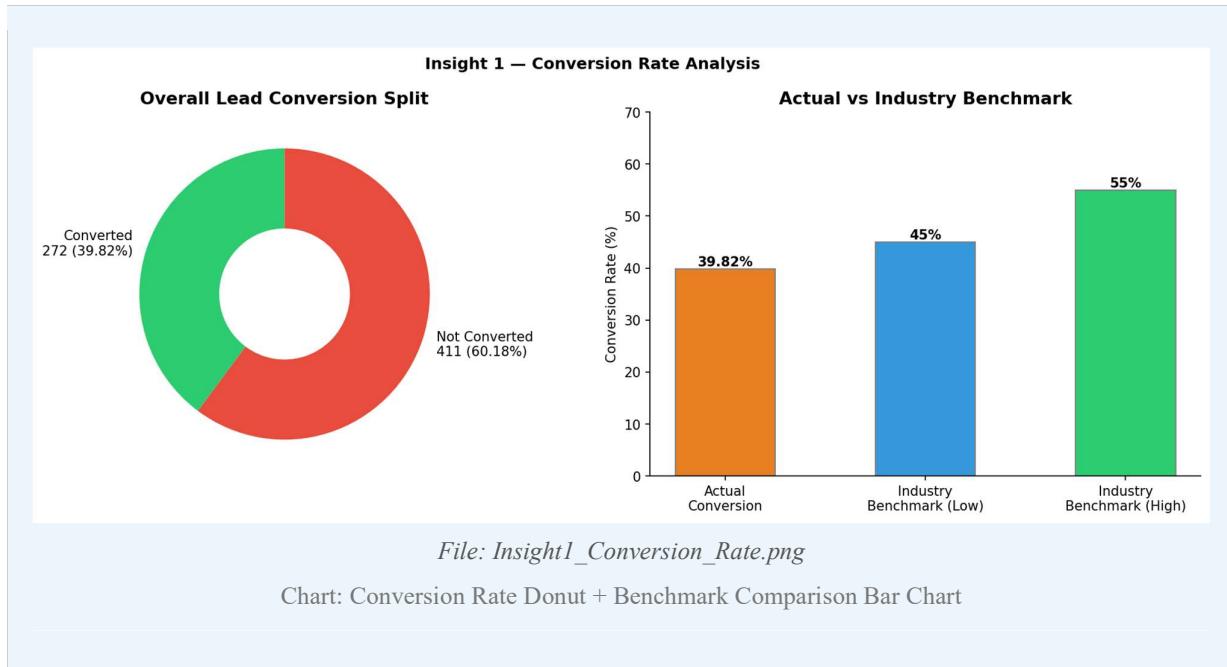
4. Key Business Insights

Based on the KPI analysis, seven key insights were identified. Each insight is supported by quantitative evidence from the dataset and is accompanied by a strategic recommendation.

INSIGHT 1

Conversion Rate Is Below Industry Benchmark

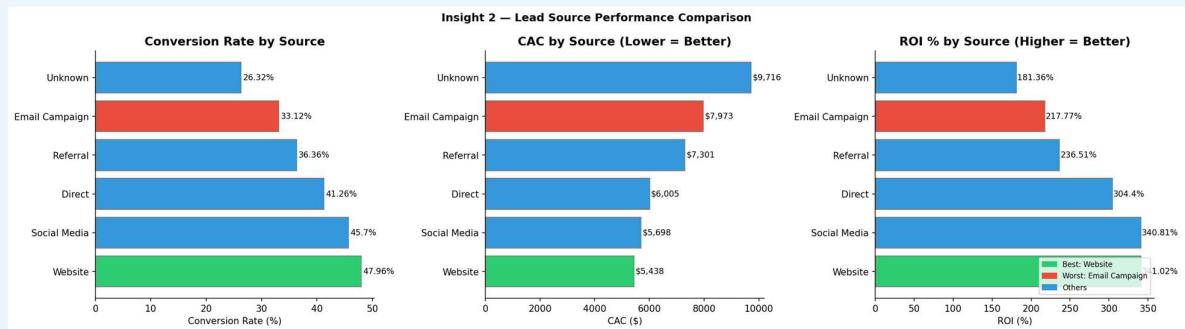
At 39.82%, the overall conversion rate falls 15.18 percentage points short of the upper industry benchmark of 55%. Of 683 leads analyzed, 411 (60.18%) were lost. If conversion improved to just 50%, the business would generate an additional 69 customers and approximately \$1.71M in revenue.



INSIGHT 2

Website & Social Media Are Top Performing Channels

Website leads achieve 47.96% conversion, the lowest CAC at \$5,438.45, and the highest ROI of 341.02%. Social Media closely follows with 45.70% conversion and 340.81% ROI. Meanwhile, Email Campaign — the highest-volume channel with 154 leads — delivers only 33.12% conversion and 217.77% ROI. The business is over-investing in its least efficient channel.



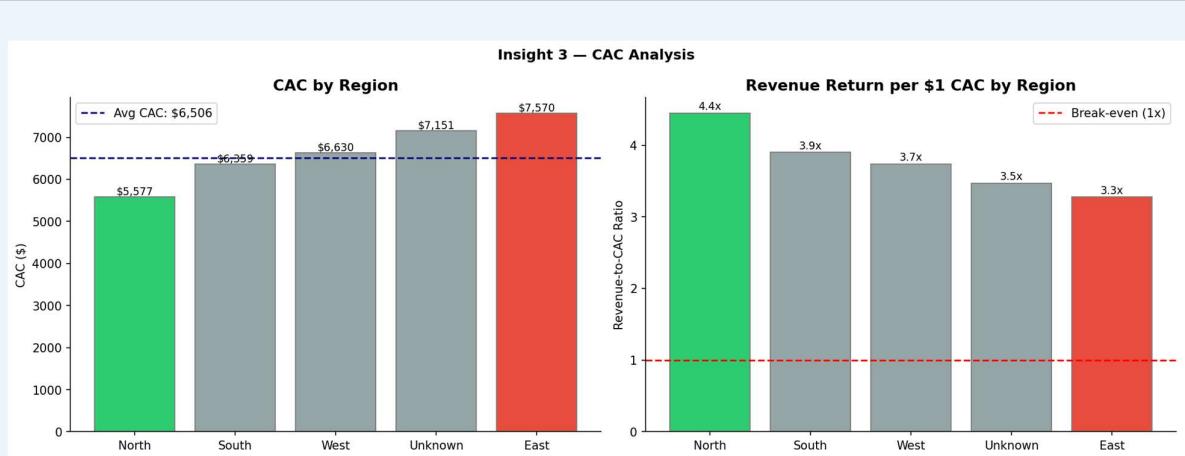
File: Insight2_Lead_Source_Performance.png

Chart: Conversion Rate by Source | CAC by Source | ROI % by Source

INSIGHT 3

CAC Is High But Overall ROI Remains Positive

The overall CAC of \$6,506.17 yields a revenue-to-CAC ratio of 3.8x and an ROI of 281%, which is healthy. However, significant regional disparity exists: North (\$5,576.93) vs East (\$7,569.70) — a gap of \$1,992.77 per acquisition. If East matched North's efficiency, the saving on 57 conversions would be \$113,587.89.

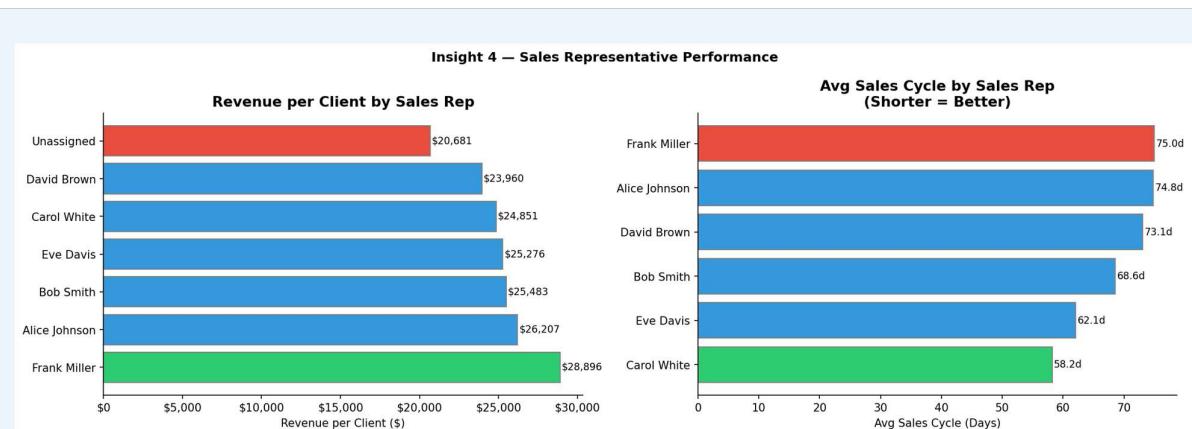


File: Insight3_CAC_Analysis.png

Chart: CAC by Region (Bar) | Revenue-to-CAC Ratio by Region (Bar)

INSIGHT 4**Sales Rep Performance Reveals a Speed-vs-Value Tradeoff**

Frank Miller generates the highest revenue per client (\$28,896.16) but takes the longest to close deals (75.0 days avg). Carol White closes fastest (58.2 days) but generates lower deal values (\$24,851.20). Additionally, 50 unassigned leads generate the lowest revenue per client at \$20,681.33 — representing a recoverable \$410,741.50 if reassigned to Frank Miller.

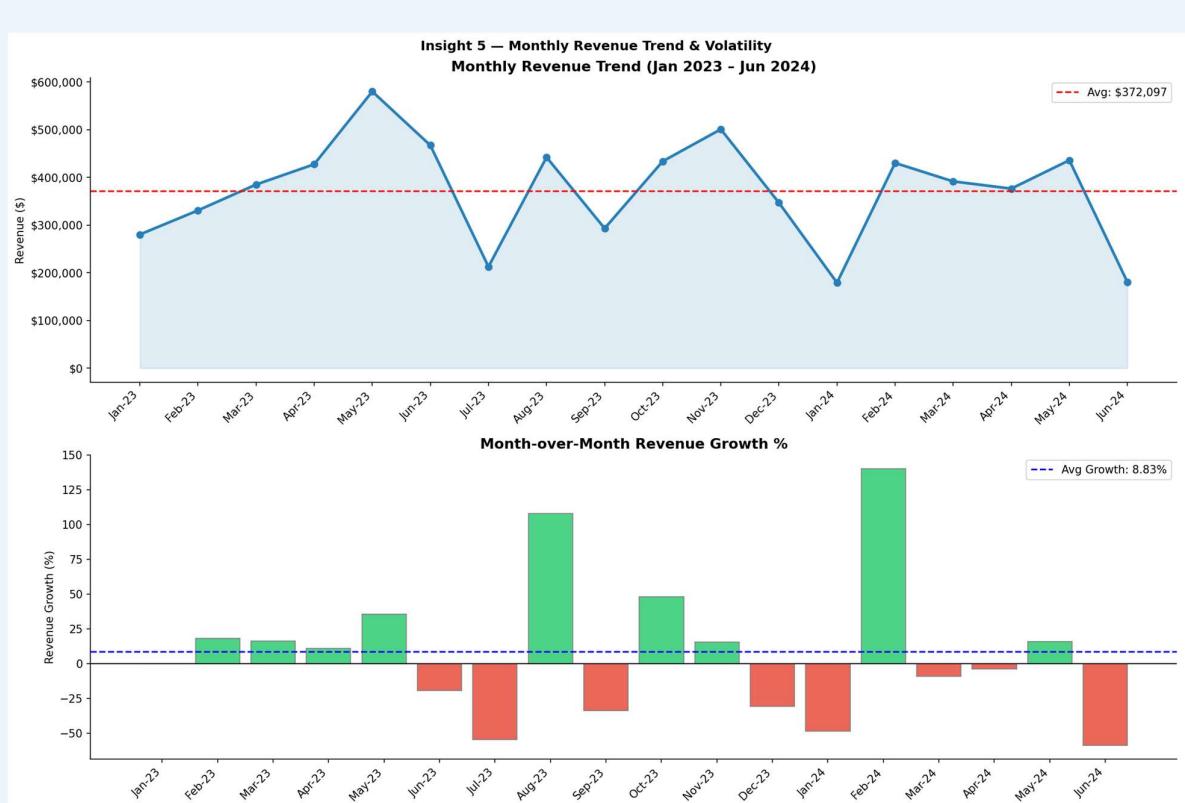


File: Insight4_Sales_Rep_Performance.png

Chart: Revenue per Client by Rep | Avg Sales Cycle by Rep

INSIGHT 5**Monthly Revenue Is Highly Volatile — A Significant Business Risk**

Revenue swings of 50–140% between consecutive months indicate an unpredictable pipeline. The best month (May 2023: \$580,354.73) was 223.7% higher than the worst month (January 2024: \$179,299.85). Without stabilization, accurate forecasting and resource planning are impossible.



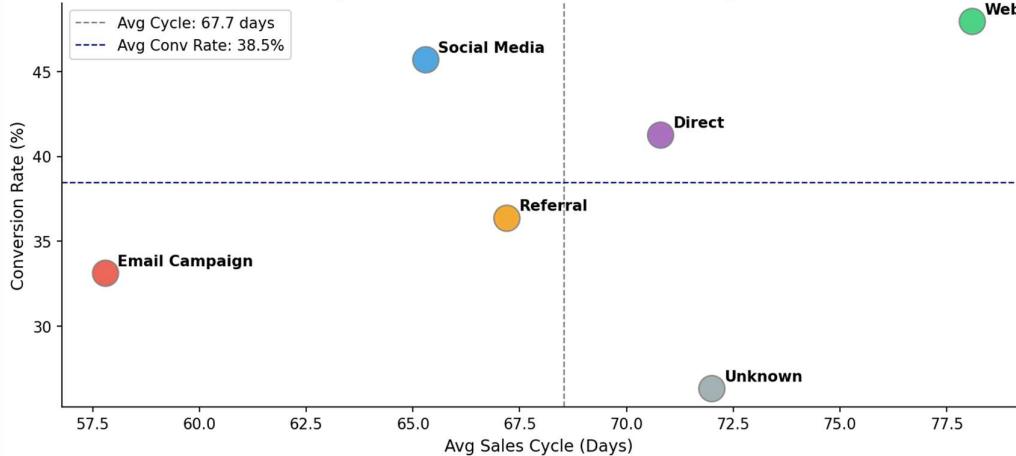
File: Insight5_Revenue_Trend.png

Chart: Monthly Revenue Trend (Line + Area) | MoM Revenue Growth % (Bar)

INSIGHT 6

Fastest Sales Cycle Does Not Mean Best Conversion

Email Campaign closes in 57.8 days (fastest) but converts at only 33.12% (second lowest). Website takes 78.1 days (slowest) but achieves the highest conversion rate (47.96%) and ROI (341%). This paradox shows that lead quality — not speed — drives sustainable revenue.

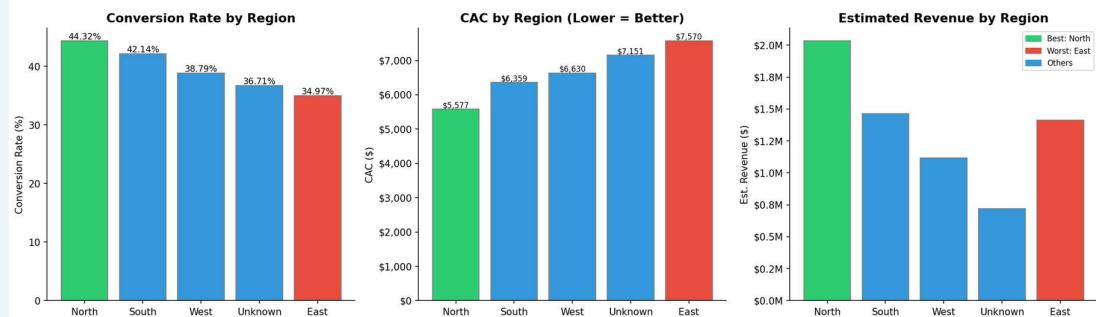
Insight 6 — Sales Cycle vs Conversion Rate Tradeoff**Sales Cycle Duration vs Conversion Rate by Source**

File: Insight6_Cycle_vs_Conversion.png

Chart: Sales Cycle Duration vs Conversion Rate Scatter Plot by Lead Source

INSIGHT 7**North Region Outperforms East Across All Metrics**

North leads in conversion rate (44.32%), has the lowest CAC (\$5,576.93), and delivers the highest estimated revenue (\$2.03M). East has the lowest conversion rate (34.97%) and highest CAC (\$7,569.70). The performance gap represents \$619,768.50 in revenue difference. If East matched North, an estimated 15 additional conversions worth \$371,861.10 could be recovered.

Insight 7 — Regional Performance Comparison

File: Insight7_Regional_Performance.png

Chart: Conversion Rate by Region | CAC by Region | Revenue by Region

5. Recommendations

The following seven recommendations are derived directly from the KPI analysis and insights. They are prioritized by expected business impact and ease of implementation.

#	Recommendation	Action	Priority	Expected Impact
1	Boost Conversion Rate	Implement lead scoring to prioritize high-quality leads; set target of 45% within 2 quarters	High	69 additional conversions = +\$1.71M revenue
2	Reallocate Marketing Budget	Shift 20–30% of Email Campaign budget to Website and Social Media channels	High	Higher ROI on reallocated spend (341% vs 218%)
3	Reduce CAC in East Region	Apply North region sales strategies and lead qualification methods to East region	Medium	Reduce East CAC from \$7,569 to ~\$5,577
4	Assign All Unassigned Leads	Immediately assign 50 unassigned leads to top performing sales reps	High	Recover up to \$410,741 in additional revenue
5	Stabilize Revenue Pipeline	Set monthly lead quotas per rep; implement bi-weekly pipeline review meetings	Medium	Reduce MoM revenue volatility from 140% to <30%
6	Blended Sales Rep Training	Combine Carol White's speed (58.2 days) with Frank Miller's value (\$28,896/client)	Medium	Improve team-wide sales cycle and deal value
7	Scale Website Lead Generation	Increase investment in website SEO and landing pages to generate more high-quality leads	High	Best source: 47.96% conversion, \$5,438 CAC, 341% ROI

5.1 Implementation Roadmap

The recommendations are organized across a 3-month implementation timeline:

Timeline	Month 1 (Immediate)	Month 2 (Short-term)	Month 3 (Strategic)
Actions	Assign all 50 unassigned leads Reallocate 20% Email Campaign budget to Website	Launch lead scoring system Set monthly sales quotas East region CAC review	Blended rep training program Website lead gen scaling Monthly pipeline reviews

6. Dashboard Overview

An interactive Power BI dashboard was developed to complement this report. The dashboard enables real-time exploration of all KPIs with interactive slicers for Date Range, Region, and Lead Source filters, allowing stakeholders to drill into specific time periods, regions, or channels without modifying the underlying data.

Page 1 — KPI Overview

- **Six KPI cards:** Total Leads, Converted Leads, Conversion Rate %, Total Revenue, CAC, Revenue per Client
- **Donut chart:** Converted vs Not Converted split
- **Clustered bar chart:** Conversion Rate by Lead Source
- **Clustered column chart:** Total Revenue by Lead Source
- **Horizontal bar chart:** CAC by Lead Source
- **Horizontal bar chart:** Revenue per Client by Sales Representative

Page 2 — Trends & Analysis

- **Line chart:** Monthly Lead Volume Trend (Jan 2023 – Jun 2024)
- **Area chart:** Monthly Revenue Trend
- **Column chart:** Month-over-Month Revenue Growth % with conditional red/green coloring
- **Horizontal bar chart:** Avg Sales Cycle Duration by Lead Source
- **Column chart:** Revenue by Region
- **Stacked bar:** Lead Distribution by Region and Source
- **Performance summary table:** All KPIs by Lead Source with conditional formatting



File: dashboard/Sales_Performance_Dashboard.png

Screenshot: Power BI Dashboard — Page 1 (KPI Overview) and Page 2 (Trends & Analysis)

7. Conclusion

This analysis successfully demonstrated how KPI-driven data analysis can surface meaningful business intelligence from raw, uncleaned sales data. Starting with 700 messy records across 9 fields, the project delivered a fully cleaned dataset, six calculated KPIs, seven actionable insights, a comprehensive visual dashboard, and a structured set of prioritized recommendations.

The most critical finding is that the business has a solid revenue foundation — \$6.74M total revenue with a 281% ROI — but is losing significant value through an below-benchmark conversion rate, inefficient budget allocation toward Email Campaign, unassigned leads, and extreme monthly revenue volatility. The good news is that all seven issues identified are addressable through targeted, low-cost interventions.

The Website lead source and North region represent the business's strongest assets and should serve as benchmarks for improving underperforming channels and regions. By implementing the recommended changes — particularly reassigning unassigned leads, reallocating marketing budget, and stabilizing the pipeline — the business could realistically recover over \$2M in previously untapped revenue within two to three quarters.

Project Deliverables Summary

Deliverable	File	Status
Raw Dataset (700 records)	BD_KPI_Raw_Dataset.csv	✓ Complete
Cleaned Dataset (683 records)	BD_KPI_Cleaned_Dataset.csv	✓ Complete
Day 1 Notebook — Data Cleaning	Day1_Data_Cleaning.ipynb	✓ Complete
Day 2 Notebook — KPI Calculation	Day2_KPI_Calculation.ipynb	✓ Complete
Day 3 Notebook — Insights	Day3_Insights_Report.ipynb	✓ Complete
KPI Visualizations (7 charts)	reports/ folder (PNG files)	✓ Complete
Power BI Dashboard (2 pages)	Sales_Performance_Dashboard.pbix	✓ Complete
Final Summary Report	Final_Report.docx	✓ Complete