Customer Churn Analytics & Revenue Risk Intelligence

An Integrated SQL and Tableau Business Intelligence Solution

By

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Introduction

Customer churn directly impacts recurring revenue, customer lifetime value, and growth sustainability.

This project delivers an **integrated SQL–Tableau churn analytics solution** that transforms raw customer data into **actionable business insights**, enabling stakeholders to understand churn drivers, quantify revenue risk, and support data-driven retention strategies.

Problem Statement

The business faces **elevated and unevenly distributed churn**, resulting in significant revenue leakage and inefficient retention efforts. A lack of structured analytics limits the ability to identify churn drivers, measure financial exposure, and prioritize high-impact interventions, keeping churn management largely reactive.

Objectives

- Analyze churn patterns across **contracts, tenure, payment behavior, and demographics**
- Quantify **revenue at risk** associated with customer churn
- Identify **high-risk customer segments** driving disproportionate impact
- Deliver **interactive, executive-ready dashboards** for exploration and decision-making
- Establish a strong analytical foundation for **predictive churn modeling**

Scope

- SQL-based data preparation, validation, and feature engineering
- Churn and revenue exposure analysis
- Development of interactive Tableau dashboards

- Insight generation and business recommendations

Methodology

- **Data Preparation (SQL):** Data ingestion, cleaning, and transformation; creation of churn indicators, tenure bands, payment categories, and revenue-at-risk metrics.
- **Analysis (SQL):** Churn rate and revenue exposure analysis across key customer dimensions.
- **Visualization (Tableau):** Interactive dashboards with global filters and cross-filtering to support executive insight and deep-dive analysis.
- **Insights & Recommendations:** Translation of analytical findings into quantified business impact and actionable retention strategies.

Project Outcome

The project delivers a **decision-ready churn analytics framework** that identifies churn drivers, quantifies revenue exposure, and prioritizes high-impact retention opportunities, serving as a foundation for future **predictive churn modeling**.

Analysis & Insights

1.Customer Churn Overview

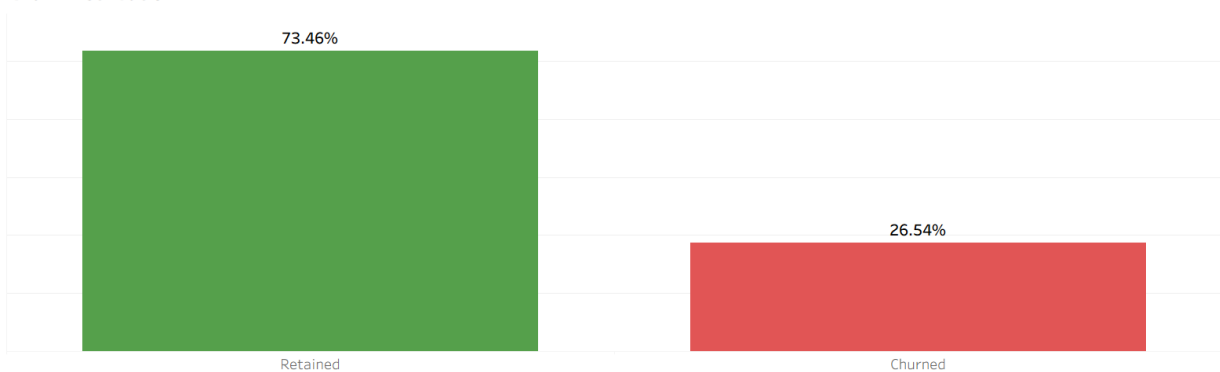Customer Distribution — Retained vs Churned

Total Customers:	Churn Rate:	Churned Customers:	Monthly Revenue at Risk:
7,043	26.54%	1,869	$139,130.85

Churn Distribution

73.46% Retained | 26.54% Churned

Analysis:

- **Total customers:** 7,043
- **Retained: 73.46%** (5,174 customers)
- **Churned: 26.54%** (1,869 customers)
- **Monthly revenue at risk: $139,130.85**

Executive Insights:

- Churn rate of 26.54% indicates that over one-quarter of customers exit, positioning churn as a core business risk.
- 1,869 churned customers represent attrition at meaningful scale, not isolated loss.
- $139K in monthly revenue at risk (~$1.7M annualized) underscores churn's direct and compounding financial impact.
- 73.46% retention masks underlying revenue exposure, as losses accumulate over time.
- Churn patterns appear systematic and predictable, enabling targeted intervention.
- Findings strongly justify proactive retention strategies and predictive churn modeling to mitigate revenue leakage.
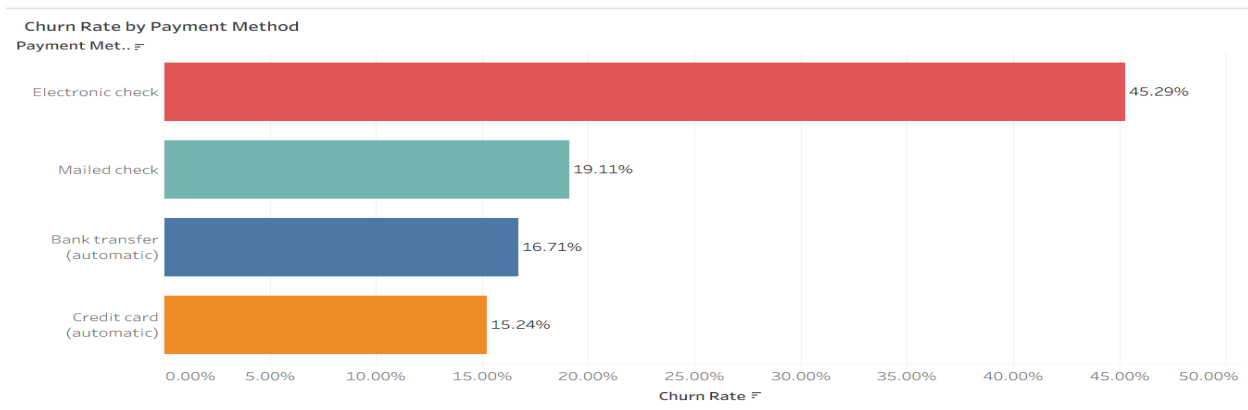
2. Churn by Contract Type
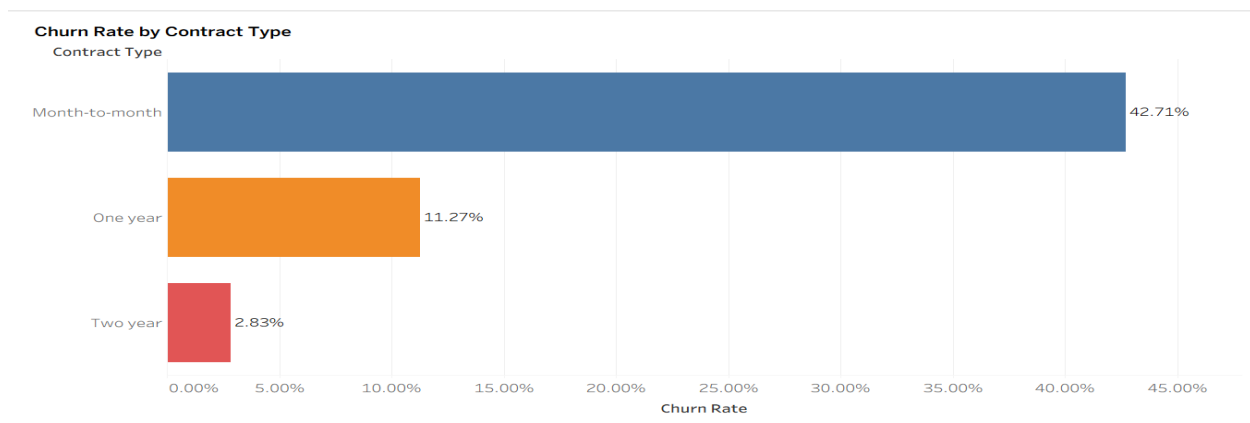
Executive Insights:

- Month-to-month contracts drive churn, with a 42.7% churn rate, nearly 4× higher than one-year contracts.
- One-year contracts reduce churn materially to 11.3%, indicating commitment length is a strong retention lever.

- Two-year contracts are highly sticky, with churn at just 2.8%, confirming long-term contracts as the lowest-risk segment.
- Churn risk decreases sharply as contract duration increases, highlighting contract structure—not customer behavior alone—as a key driver.
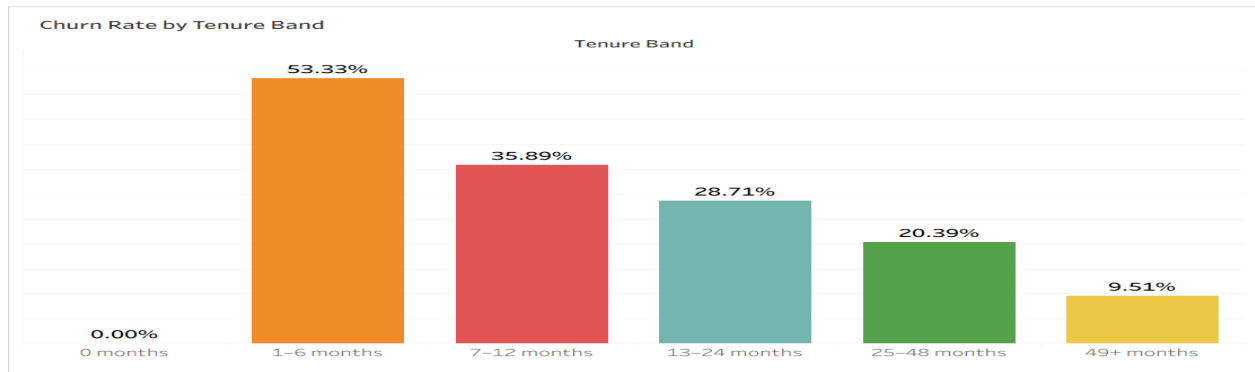
3. Churn by Payment Method

Churn Rate by Payment Method

Payment Method	Churn Rate
Electronic check	45.29%
Mailed check	19.11%
Bank transfer (automatic)	16.71%
Credit card (automatic)	15.24%

Executive Insights:

- Electronic check customers exhibit the highest churn at 45.3%, nearly 3× higher than any automated payment method.
- Manual payment methods correlate with higher churn, with mailed checks at 19.1%, indicating friction in the billing experience.
- Automated payments significantly reduce churn:

    o Credit card (auto): 15.2%

    o Bank transfer (auto): 16.7%

- Payment automation appears to be a strong behavioral lock-in mechanism, reducing disengagement risk.
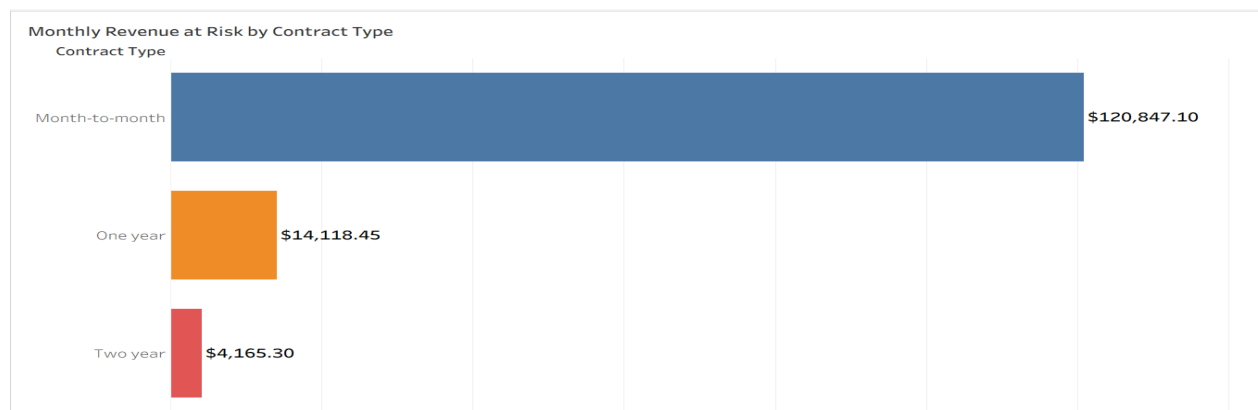
4. Churn by Tenure

Churn Rate by Tenure Band

Tenure Band

53.33%

35.89%

28.71%

20.39%

9.51%

0.00%

| 0 months | 1–6 months | 7–12 months | 13–24 months | 25–48 months | 49+ months |

Executive Insights:

- Churn is heavily front-loaded: customers in their first 6 months churn at 53.3%, the highest across all tenure bands.
- Early tenure (≤12 months) accounts for the majority of churn risk, with rates dropping steadily after the first year.
- Customer loyalty strengthens with tenure:
    - Churn falls to 28.7% at 13–24 months
    - Drops further to 20.4% at 25–48 months
    - Reaches a low of 9.5% after 49+ months
- Beyond the 12–24 Month mark, churn risk declines sharply, indicating a critical early engagement window.
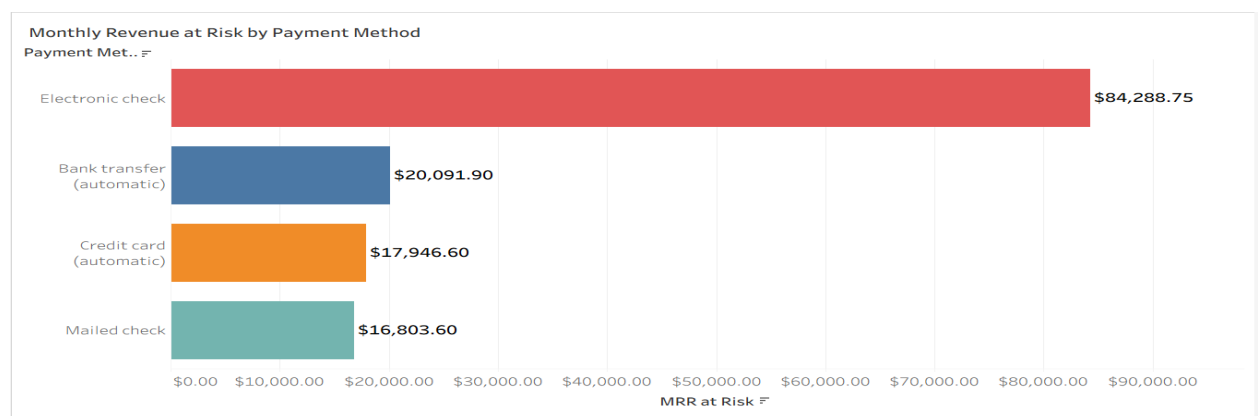
5. Revenue at Risk by Contract

Monthly Revenue at Risk by Contract Type

Contract Type

Month-to-month — $120,847.10

One year — $14,118.45

Two year — $4,165.30

Executive Insights:

- Revenue risk is overwhelmingly concentrated in Month-to-Month contracts, contributing ~$120.8K in monthly revenue at risk.
- Longer-term contracts dramatically reduce financial exposure:

  o One-year contracts: ~$14.1K

  o Two-year contracts: ~$4.2K

- Although longer contracts represent a meaningful portion of the customer base, they contribute disproportionately little revenue risk, indicating strong revenue stability.
- The business's primary financial vulnerability is contract flexibility, not customer volume.

6. Revenue at Risk by Payment Method

Monthly Revenue at Risk by Payment Method
Payment Met..

Electronic check	$84,288.75
Bank transfer (automatic)	$20,091.90
Credit card (automatic)	$17,946.60
Mailed check	$16,803.60

$0.00 $10,000.00 $20,000.00 $30,000.00 $40,000.00 $50,000.00 $60,000.00 $70,000.00 $80,000.00 $90,000.00
MRR at Risk

Executive Insights:

- Electronic check dominates revenue risk, accounting for ~$84.3K in monthly revenue at risk, far exceeding all other payment methods combined.
- Automatic payment methods materially reduce revenue exposure:

  o Bank transfer (auto): ~$20.1K

  o Credit card (auto): ~$17.9K

- Manual payment methods (electronic & mailed checks) are structurally higher risk due to:

  o Higher churn rates

  o Greater payment friction

o   Lower customer stickiness

- Revenue risk is driven more by payment behavior than by customer count alone.

7. Revenue at Risk by Payment Category

Monthly Revenue at Risk by Payment Category

Auto-Pay:
$38,038.50

Manual Pay:
$101,092.35
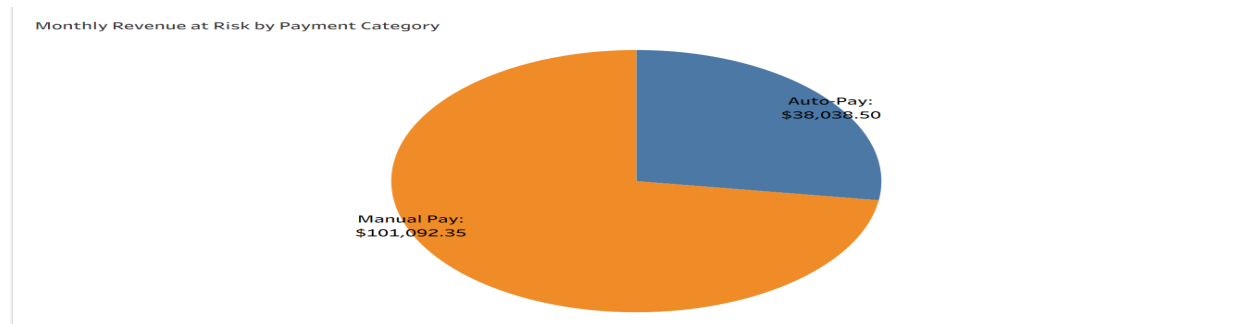
Executive Insights:

- Manual Pay accounts for the majority of revenue risk at ~$101.1K (≈73%), despite representing a smaller share of total customers.
- Auto-Pay significantly reduces exposure, with only ~$38.0K (≈27%) of revenue at risk.
- Revenue risk is highly concentrated in payment behavior, not product or tenure alone.
- Customers who require active monthly payment actions are materially more likely to churn, amplifying financial downside.

8. Churn by Senior Citizen Status

Churn Rate by Citizens

41.68%

23.61%

Churn Rate

Non-Senior Citizen
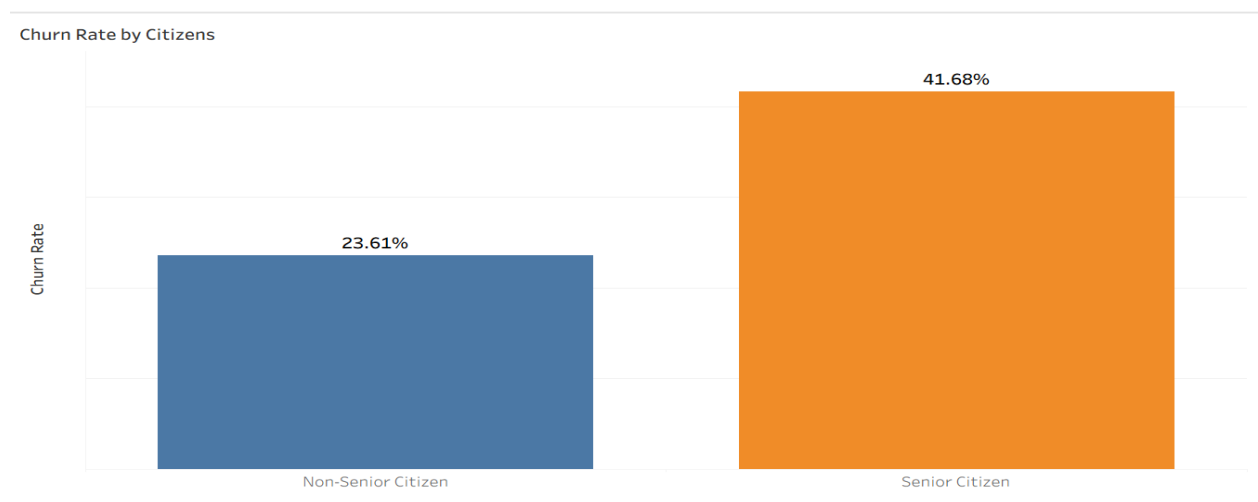
Senior Citizen

Executive Insights:

- Senior citizens exhibit significantly higher churn risk (41.7%) compared to non-seniors (23.6%), indicating elevated behavioral volatility within this segment.

- Despite lower churn rates, non-senior customers account for greater total revenue loss due to their larger population and higher aggregate spending.

- Churn intensity and revenue exposure are concentrated in different segments, requiring differentiated retention strategies rather than a one-size-fits-all approach.

- Revenue risk is driven more by customer volume and spend concentration than by churn rate alone.

Board-Level Business Impact

- **Material Revenue Exposure:** Over **$139K in monthly recurring revenue** (~**$1.7M annualized**) is at risk due to churn, with ~**70% of exposure concentrated** in month-to-month contracts and manual payment customers.

- **Structural Churn Drivers:** Short-term contracts, early-tenure customers, and manual payment methods drive **2–4× higher churn rates**, inflating acquisition replacement costs by **$250K–$400K annually** and materially reducing customer lifetime value.

- **Growth and Efficiency Constraint:** Current churn levels require replacing ~**25–30% of the customer base each year** to sustain revenue, limiting net growth and increasing dependence on acquisition spend without targeted retention intervention.

Strategic Recommendations (12-Month Plan)

- Reduce Overall Churn Proactively
  Implement targeted retention programs across high-risk segments to drive a 4–6 percentage point reduction in churn, retaining approximately 300–420 customers annually.

- Protect and Stabilize Recurring Revenue
  Prioritize churn mitigation in high-value customer segments to safeguard

$55K–$85K in monthly recurring revenue, preserving up to $1.0M in annualized revenue.

- Optimize Contract Strategy
Incentivize migration of 10–15% of month-to-month customers to longer-term contracts through pricing and loyalty benefits, reducing churn in this segment by 25–35%.

- Strengthen Early-Tenure Engagement
Deploy structured onboarding and early-life retention interventions within the first six months to improve retention by 8–10 percentage points, lowering acquisition replacement costs by $250K–$400K annually.

- Accelerate Auto-Pay Adoption
Promote auto-pay enrollment among 20–30% of electronic check users to reduce churn in this group by 15–20%, protecting $150K–$250K in annual revenue.

- Implement Senior Citizen Retention Programs
Launch tailored support, billing simplicity, and loyalty initiatives for senior customers to achieve a 10–15% churn reduction, retaining $100K+ in annual revenue while improving trust and satisfaction.

- Increase Customer Lifetime Value (CLV)
Execute a coordinated retention strategy across contract type, payment method, and tenure to increase average CLV by 12–18%, driving sustainable growth without additional acquisition spend.

- Adopt Revenue-Weighted Retention: Shift from churn-rate-only metrics to a dual lens of churn probability and revenue contribution to maximize intervention ROI.

- Operationalize a Dual-Risk Model:

  - High Probability (Seniors) → Behavioral stabilization

  - High Revenue (Non-Seniors) → Financial protection

Conclusion

This project delivered an integrated SQL–Tableau churn analytics framework that identified contract type, payment behavior, tenure, and senior status as the primary drivers of customer attrition.

By quantifying **$139K in monthly revenue at risk**, the analysis enabled targeted, high-impact retention prioritization, supporting **4–6 pp churn**

reduction, **$660K–$1.0M annual revenue protection**, and **12–18% CLV uplift**.

The solution establishes a scalable foundation for **predictive churn modeling and proactive revenue protection**.