

Churn Analysis Dashboard Report

Team member:

Name	ID
Ghada Ragab Mohamed	23011119
Mariam Medhat Omar	23011534
Manar Samir Ali Diab	23011162
Menna Mohamed Abdelbaky	23011165
Nermeen Noaman Abu_Essa	23011588

1-Churn Overview & Data Quality

1. Dashboard Overview:

Purpose: To analyze customer churn rate and check data quality to ensure decisions are based on accurate information.

Dashboard Layout:

- Filters (Slicers) to analyze data as needed
- KPI indicators for quick key metrics
- Analytical charts to identify patterns and trends
- Data quality checks to ensure clean and reliable data

General Comment: The structure allows understanding the story from the big picture to details, focusing on churn causes and data quality before making any decisions.

2. Filters (Slicers):

Contract Type: Analyze customers based on contract type (Month-to-Month, One Year, Two Year)

Churn Label: Focus on customers who churned or retained

Benefit: Filters make the dashboard interactive, allowing analysis of specific customer segments and tailored insights.

3. KPI Indicators (Cards):

<i>Indicator</i>	<i>Value</i>	<i>Question Answered</i>	<i>Insight</i>
<i>Total Customers</i>	<i>6687</i>	<i>How many customers are there?</i>	<i>Large sample size suitable for analysis</i>
<i>Churn Rate</i>	<i>26.86%</i>	<i>What percentage of customers churned?</i>	<i>About a quarter of customers left → indicates a problem that requires strategy improvement</i>

Reason for Using KPIs: Provides a quick and clear overview of the issue and its scale.

4. Pie Chart - Number of Customers by Churn Label:

Question: How many customers churned versus retained?

Insight:

- Churned = 26.86%
- Retained = 73.14%

Reason for Using Pie Chart: Ideal for showing proportions visually and clearly, making it easy to understand the ratio at a glance.

5. Bar Chart - %GT Number of Churned Customers by Churn Reason:

Question: What are the main reasons customers churned?

Insight:

1. Competitor offered a better deal
2. Competitor had better devices

Explanation: Strong competition and alternative offers significantly influence customer decisions.

Reason for Using Bar Chart: Allows easy comparison across multiple reasons with clear relative values.

6. Tree Map - %GT Number of Churned Customers by Churn Category:

Question: How can churn reasons be grouped into larger categories?

Insight: The largest category accounts for approximately 45.51% of churn → the company can focus on improving retention in this category.

Reason for Using Tree Map: Provides an overall picture of major categories without overwhelming detail, highlighting the most important areas.

7. Column Chart - Total vs Unique Customers:

Question: Are there duplicated or overlapping customer records?

Insight: Numbers are close → data is clean with no significant duplicates.

Reason for Using Column Chart: Direct numeric comparison between total and unique customers.

8. Storytelling Flow in the Dashboard:

Analysis Flow:

1. **Overall KPIs:** Quick snapshot of sample size and churn rate
2. **Customer Distribution (Pie Chart):** Understand the ratio of churned vs retained customers
3. **Churn Reasons (Bar & Tree Map):** Detailed analysis of causes and main categories
4. **Data Quality (Column Chart):** Verify data integrity and absence of major duplicates

Purpose of the Flow:

- Quickly highlight the problem (churn rate)
- Understand the reasons behind the problem
- Ensure data quality before decision-making

2-Geo Analysis Dashboard (States Analysis)

1. Dashboard Overview:

Purpose: This dashboard uncovers geographic patterns in customer churn, spotlighting high-risk states like California (63% churn) to guide targeted campaigns, reduce losses, and boost loyalty—turning insights into actionable wins for Databel Telecom .

Map - Geo Churn

Description:

Gradient map (green-low, red-high) with customer-sized bubbles; CA highlighted (>60%); Tooltip: Churn Rate, Customers, Churned.

Results:

CA: 63.24%

Insights:

Urban areas show larger red bubbles (high churn).

Recommendation:

Geo-fencing ads in CA for free GB.

Pie Chart - Customers by Contract Type

Description:

Pie showing distribution by contract (Month-to-Month, One Year, Two Year).

Results:

Two Year: 26.87; Month-to-Month: 51.01%% (largest); One Year: 22.12%.

Insights:

short-term contracts (monthly) stable.

Recommendation:

Promote upgrades to Month-to-Month 5% churn reduction.

Slicer - Gender Filter

Description:

Dropdown for gender (Female/Male/Prefer not to say), affecting all visuals.

Insights:

Females 2x higher churn in CA, linked to "service dissatisfaction."

Recommendation:

Gender-targeted support for females in CA.

Bubble Chart - Sum of Monthly Charges

Description:

Bubbles for monthly charges sum, sized by customers, Gender-filtered.

Key Results:

CA ~\$40,000 (large red).

Insights:

High churn states have higher charges .

Recommendation:

Reduce charges in high-risk areas.

Table - Churn Rate by State

Description:

Table listing states with churn rates (%), sorted descending, including Total row; conditional formatting (red for CA).

Insights:

CA leads at 60% (high risk from competitors); urban states (OK ,DK) >19%, while total 27% shows geographic disparity.

Recommendation:

The company should focus on high-churn states—especially California—by identifying the main reasons behind customer loss and improving service quality in these areas. Targeted retention offers and better customer support are recommended to reduce churn. Low-churn states should maintain current strategies, while churn levels across all states should be monitored regularly for early intervention.

Customer Distribution by Payment Method and State (Matrix Visual)

Description:

Heat map matrix with states in rows and payment methods in columns (Direct Debit green, Credit Card blue, Paper Check brown); cells filled by method dominance.

Results:

- Direct Debit (green): Dominant in 70% of states (e.g., AL, OR, UT, ND, VT, WY, WI, MN, FL, NC, MS, NV, AK, SD, NH, TX, NE, DE, WA).
- Credit Card (blue): Common in 25% (e.g., RI, NC, WA, NV, AK, SD, NH, TX, NE, DE).
- Paper Check (brown): Rare in 5% (e.g., ID, CT, KY, NJ, OR, KS, UT, HI).
- Total: Direct Debit 60%, Credit Card 35%, Paper Check 5%.

Insights:

Direct Debit favored in urban/rural states , showing auto-payment trust; Credit Card higher in coastal areas, tied to elevated churn (CA blue-dominan). Paper Check low, but linked to stable low-churn states (WV brown).

Recommendation:

Promote Direct Debit in high-churn states (CA) retention boost; phase out Paper Check incentives.

Conclusion

The Geo Churn Analysis Dashboard reveals critical geographic patterns, with California at 63.24% churn driven by competitors, enabling targeted campaigns to reduce overall losses .

By integrating interactive visuals and filters, it empowers Databel to boost retention and loyalty across high-risk states.

3-Demographics & Age Insights Dashboard

Dashboard Overview:

Purpose:

To analyze how **age** and **demographic** factors influence customer churn, identifying high-risk segments to guide targeted retention strategies and reduce overall churn rates.

Dashboard Layout:

- **Demographics Filter (Slider):** Interactive filtering by age groups (Under 30, Other Demographics, Senior)
- **KPI Indicators:** Quick metrics for critical age segments and revenue impact
- **Analytical Charts:** Visual patterns across age groups and demographic categories
- **Dual-Axis Analysis:** Combined customer volume and churn rate trends

General Comment:

The dashboard reveals that seniors face the highest churn rate (38.46%), despite being the smallest customer segment, while age groups 75-85 show critical vulnerability with declining customer bases—requiring immediate intervention before this segment shrinks further.

Filters (Slicers):

- **Demographics Slicer:** Analyze customers by age categories (Under 30, Other Demographics, Senior)
- **Benefit:** Enables focused analysis on specific demographic segments, allowing the team to identify which age groups require tailored retention strategies.

KPI Indicators (Cards):

Indicator	Value	Question Answered	Insight
Highest Churn Age Group	85	Which age group has the maximum churn rate?	Customers aged 85 face the highest churn risk, signaling urgent need for senior-focused retention programs
Largest Age Group	29	Which age is most represented in the customer base?	Age 29 represents the largest customer segment, indicating strong young adult market presence
Highest Revenue Age Group	82	Which age group generates the most revenue?	Age 82 customers contribute maximum revenue despite higher churn risk, making them critical for retention efforts

Reason for Using KPIs: Provides immediate visibility into the most vulnerable, largest, and most valuable customer segments by age.

Bar Chart – Churn Rate by Demographics:

Question:

How does churn rate vary across different demographic categories?

Insight:

1. Senior: 38.46% (highest churn rate)

2. Other Demographics: 24.24%
3. Under 30: 23.61%

Explanation:

Seniors experience significantly higher churn rates—approximately 60% higher than younger demographics—indicating potential issues with service complexity, customer support accessibility, or competitive targeting of this age group.

Reason for Using Bar Chart:

Enables immediate visual comparison across demographic categories, clearly highlighting seniors as the highest-risk segment requiring priority intervention.

Combo Chart — Number of Customers and Churn Rate by Age Group 5years:

Question:

How do customer volumes and churn rates fluctuate across different age brackets?

Insight:

- Peak customer volume: Ages 25-50 (middle-aged professionals)
- Churn rate trend: Sharp increase after age 70, reaching 0.6 (60%) for ages 80+
- Critical finding: Ages 75-85 show both high churn and declining customer numbers—this segment is actively shrinking

Explanation:

While the company maintains a strong customer base in the 25-50 age range, the dramatic churn spike in senior categories (70+) indicates systemic issues serving older customers, potentially related to service complexity, lack of senior-friendly support, or inadequate plan options for fixed-income customers.

Reason for Using Combo Chart:

Dual-axis visualization reveals the relationship between volume and churn, exposing the dangerous combination of high churn and small customer base in senior segments—a pattern that could accelerate business losses.

Line Chart — Average of Monthly Charge and Churn Rate by Age Group 5years:

Question:

Is there a relationship between pricing and churn rates across age groups?

Insight:

- Monthly charges: Relatively stable (\$30-\$40) across most age groups, with slight increase for 85+ (\$45)
- Churn rate: Climbs steadily from 0.2 (20%) at age 20 to 0.5 (50%) at age 85+
- Key finding: **Higher charges correlate with higher churn in senior segments**, suggesting price sensitivity increases with age

Explanation:

Senior customers paying premium prices (\$40-\$45/month) show dramatically higher churn, indicating either perceived lack of value, budget constraints on fixed incomes, or competitive offers specifically targeting price-sensitive seniors.

Reason for Using Line Chart:

Tracks trends over age progression, revealing that the churn-pricing relationship intensifies with age—critical for designing age-appropriate pricing strategies.

Histogram — Sum of Age-by-Age Group 5years:

Question: How is the total customer age distributed across different age brackets?

Insight:

- Peak distribution: Ages 45-65 contribute the highest cumulative age totals (30K-35K)
- Declining tail: Ages 75+ show significantly lower totals, indicating smaller segment size
- Pattern: Typical customer base skews toward middle-aged customers

Explanation:

The distribution reveals a mature customer base concentrated in the 40-60 range, with natural decline in senior segments due to smaller population sizes—making retention in this shrinking but high-value segment even more critical.

Reason for Using Histogram:

Displays cumulative age distribution, helping visualize the company's customer age profile and segment sizes for capacity planning.

Storytelling Flow in the Dashboard:

Analysis Flow:

1. KPIs: Immediate attention to critical age segments (highest churn at 85, largest group at 29, highest revenue at 82)
2. Demographic Comparison (Bar Chart): Seniors identified as highest-risk category at 38.46% churn
3. Volume-Churn Relationship (Combo Chart): Reveals shrinking senior customer base with escalating churn after age 70
4. Pricing Impact (Line Chart): Exposes price sensitivity in older demographics despite stable service costs
5. Age Distribution (Histogram): Context on customer base composition and segment sizes

Purpose of the Flow:

- Quickly spotlight the vulnerable segment: Seniors at 38.46% churn rate
 - Understand the scale: Small but high-value customer base in 70+ categories
 - Identify root causes: Price sensitivity and service complexity for older customers
 - Enable action: Clear targets for retention programs and pricing adjustments
-

Recommendations & Solutions:

1. Senior-Focused Retention Program:

- Action: Launch dedicated support line with senior-trained agents, simplified billing statements, and tech assistance programs
- Expected Impact: Reduce senior churn by 8-10%, recovering approximately 150-200 high-value customers

2. Age-Based Pricing Strategy:

- Action: Introduce "Senior Saver" plans with 15-20% discounts for customers 65+, offsetting their price sensitivity while maintaining loyalty
- Expected Impact: Decrease churn in 70+ segment from 50% to 35%, increasing lifetime value by \$800-\$1,200 per retained senior customer

3. Simplified Service Tiers:

- Action: Create "Essentials" plan targeting seniors with straightforward features, no hidden fees, and predictable monthly costs
- Expected Impact: Improve senior retention by 12%, capturing competitors' senior customers who find other services too complex

4. Proactive Engagement for Ages 75+:

- Action: Implement quarterly check-in calls for customers 75+, addressing concerns before they churn and offering personalized plan optimization
- Expected Impact: Reduce churn in highest-risk age bracket (80+) by 15%, preventing loss of \$60K-\$80K annual revenue

5. Young Adult Loyalty Programs:

- Action: Strengthen retention in ages 25-35 (largest segment) through referral bonuses, app-based engagement, and career-growth discounts
- Expected Impact: Lock in 5% more young adults to long-term contracts, building future customer lifetime value as they age into higher-revenue brackets

Conclusion

The Demographics & Age Insights Dashboard reveals a critical vulnerability: seniors (especially ages 70+) experience churn rates 60% higher than younger demographics, with the 80-85 age group facing near-total attrition at 50-60% churn despite contributing maximum revenue.

By implementing senior-focused retention programs, age-appropriate pricing strategies, and simplified service options, Databel can reduce senior churn by 10-15%, protecting \$150K-\$200K in annual revenue while building loyalty across the full customer age spectrum. The insights enable targeted interventions that address the unique needs of each demographic, transforming age from a churn risk factor into a competitive advantage through personalized customer experiences.

4-Service Usage & Plans Analysis

Dashboard Overview:

Purpose:

To analyze how service plans (Unlimited Data, International Plans, and Group Contracts) influence customer churn. The goal is to identify friction points—specifically comparing customers who "waste money" on unused plans versus those facing "bill shock" due to lack of coverage—to recommend retention strategies.

Dashboard Layout:

- **KPI Indicators (Cards):** High-level metrics highlighting churn rates for Single Users, Unlimited Plan holders, and specific "Risk Segments" (Unused Plans vs. High Bill).
- **Matrix Analysis:** A cross-analysis of "Plan Subscription" vs. "Active Usage" to detect behavior mismatches.

- **Geo-Spatial Analysis (Map):** Visualizing the location of customers utilizing international services without a plan.
- **Group Dynamics (Combo Chart):** Visualizing the impact of group size on monthly charges and churn reduction.

General Comment:

The analysis reveals a surprising insight: Customers who pay for an **International Plan but do not use it** have the highest churn rate (**71.19%**), significantly higher than those facing high bills due to lack of a plan (**40.34%**). This suggests that "perceived waste of money" is a stronger churn driver than "high costs."

KPI Indicators (Cards):

Insight	Question Answered	Value	Indicator
Critical Finding: This is the highest churn segment. Customers paying for a plan they don't use feel they are wasting money and leave.	Do subscribers who don't use the service stay?	71.19%	Unused Intl Plan Churn
Customers making international calls without a plan face "Bill Shock" (Pay-as-you-go rates), leading to high churn.	Do users without a plan churn due to cost?	40.34%	High Bill Risk Churn
Single users lack group discounts, bearing the full cost burden, which drives churn up to ~33%.	How does being a "Single User" affect churn?	32.85%	Single Users Churn

A third of unlimited users still churn, indicating potential pricing or quality issues.	Is the Unlimited Plan retaining users?	32.11%	Unlimited Plan Churn
---	--	--------	----------------------

Reason for Using KPIs: To provide an immediate comparison between the two major risk types (Wasted Money vs. High Bill) which are visualized as headline figures above the detailed charts.

Table – Unlimited Data Plan Analysis:

Question:

Do customers on "Unlimited Data Plans" have lower churn rates?

Insight:

- **Unlimited Plan Users (Yes):** Show a significantly higher churn rate of ~32%.
- **Limited Plan Users (No):** Show a much lower churn rate of ~16%.

Explanation:

- This contradicts the assumption that "better service equals loyalty." The high churn among Unlimited users suggests a **Price vs. Value** issue. Customers might be finding the plan too expensive for their actual usage, or they may be experiencing data throttling (slow speeds) despite paying a premium, leading to dissatisfaction.
 - **Reason for Using Table:** To provide a direct, side-by-side numerical comparison between the two plan types to prove the correlation.
-

Matrix Chart — International Plan vs. Intl Active:

Question: Is there a mismatch between subscription and usage?

Insight:

- **Row (Yes) / Column (No):** Customers with a Plan but No Usage = **71.19% Churn** (Wasted Money).
- **Row (No) / Column (Yes):** Customers with No Plan but Active Usage = **40.34% Churn** (Bill Shock).

Reason for Using Matrix: To mathematically validate the correlation between plan status and usage behavior.

Map Chart — High-Risk Geo Distribution:

Question:

Where are the "High Bill" risk customers located?

Insight:

- **California (CA)** appears as a major hotspot (Large Red Bubble) when analyzing customers who make international calls without a plan.
 - **Note:** While the map visualizes the *location* of these risk users, I used the "**High Bill Risk**" Card (40.34%) above it to explicitly display the *magnitude* of their churn rate for clarity.
 - **Reason for Using Map:** To guide marketing teams on where to launch localized "International Add-on" campaigns.
-

Combo Chart — Churn & Charge by Group Size:

Question: Do Group Plans reduce churn and monthly costs?

Insight:

- **Group Size 0 (Single):** Highest Monthly Charge + High Churn (~33%).
- **Group Size 2-6:** As group size increases, the average monthly charge drops, and Churn Rate decreases significantly.

Reason for Using Combo Chart:

To prove that promoting group contracts is a viable solution to lower individual costs and improve retention.

Recommendations & Solutions:

1. Targeting the "Unused Plan" Segment (71% Churn):

- **Action:** Proactively contact these customers and offer to downgrade them to a cheaper local plan before they cancel entirely.
- **Goal:** "Save the customer, even if we lower the plan value."

2. Targeting the "High Bill" Segment (40% Churn - CA Focus):

- **Action:** Send targeted offers to California users engaging in international calls, offering a discounted "International Add-on" to prevent bill shock.

3. Promote Group Plans:

- **Action:** Convert high-churn "Single Users" into "Group Users" by offering referral discounts for adding family members.
-

Conclusion

The **Service Usage & Plans Analysis** dashboard has fundamentally shifted our understanding of customer churn. The data confirms that churn is not just about service quality, but largely about "**Plan Misalignment**".

We discovered that the feeling of "**Wasting Money**" (paying for unused International Plans) is the single biggest driver of churn at **71.19%**, even more dangerous than the "**Bill Shock**" experienced by customers without plans (40.34%). Additionally, the high churn rate among **Single Users** and **Unlimited Plan** holders signals a critical need for pricing restructuring.

The Path Forward: Databel must shift from a "Passive Sales" approach to a "**Proactive Advisory**" role. By actively moving Single Users into **Group Plans**, alerting California users to buy International Add-ons, and downgrading unused plans to save customers money, we can turn high-risk friction points into long-term loyalty opportunities.

Task 5: Contract Types, Payment Behavior & Customer Loyalty Analysis

This report provides a comprehensive analysis of how contract duration, payment methods, and customer account length influence overall customer loyalty and churn behavior. Insights are derived from the visualizations displayed in the dashboard.

1. Customer Distribution by Contract Type and Gender

The analysis shows a strong preference for **Month-to-Month contracts**, which attract the highest number of customers across all genders.

One-Year and Two-Year contracts have significantly fewer customers, indicating that most users

prefer flexibility over long-term commitment.

This reliance on short-term contracts increases churn risk, as these customers can leave at any time.

2. Churn Rate by Account Length

The churn rate shows a **clear downward trend** as account length increases.

- Customers who have been with the company for **short periods** show the highest churn rate.
- After around **40 months**, churn becomes noticeably lower.

This indicates that improving the customer experience early in the lifecycle is essential for reducing churn.

3. Customer Distribution by Payment Method

Payment behavior reveals important patterns:

- **Direct Debit** is the most widely used method, with the largest number of customers.
- **Credit Card** follows as the second most popular option.
- **Paper Check** is the least preferred method.

Customers who use Direct Debit tend to be more consistent and are less likely to churn, as their payments are automated.

4. Churned Customers by State

The states with the highest churn counts include **WV, OH, AL, and OR**.

These states may need targeted retention strategies or further investigation to understand the underlying causes of high churn—such as competition, service issues, or demographic factors.

5. Key Insights

- **Short-term contracts = high churn risk.**
- **Longer account length = stronger loyalty.**
- **Direct Debit users are more stable**, indicating that automated payment methods support retention.
- **Geographical churn differences** highlight areas where customer loyalty is weaker.
- The first few months of a customer's lifecycle are the most critical for retention.

6. Recommendations

1. Improve Early Customer Experience

Enhance onboarding, provide clear support channels, and target new customers with offers to increase satisfaction during the first months.

2. Promote Long-Term Contracts

Offer discounts or bundles that motivate customers to shift from Month-to-Month to One-Year or Two-Year plans.

3. Encourage Automated Payments

Incentivize customers to switch to Direct Debit to reduce missed payments and improve retention.

4. Focus on High-Churn States

Deploy region-specific campaigns and investigate the challenges customers face in those states.

5. Monitor High-Risk Groups

Pay attention to:

- Month-to-Month customers
- Users with low account length
- Paper Check users
- Customers in high-churn states

Conclusion

The dashboard demonstrates that **contract duration, payment method, and account length are key drivers of customer loyalty**. By addressing weaknesses in these areas and improving customer experience, the business can significantly reduce churn and improve long-term retention.

