# Loan Portfolio Analysis

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# Objectives

- Understand the growth of the loan portfolio
- Assess repayment reliability and risk exposure
- Uncover risk factors across customer segments

# Metrics Used

- **Initial Loan Amount**
- **Current Principal Outstanding:** remaining balance
- **Default Rate:** current principal outstanding / initial loan amount

How is our loan portfolio growing over time, and which customers are driving this growth?

Are the loans we give out being repaid reliably?

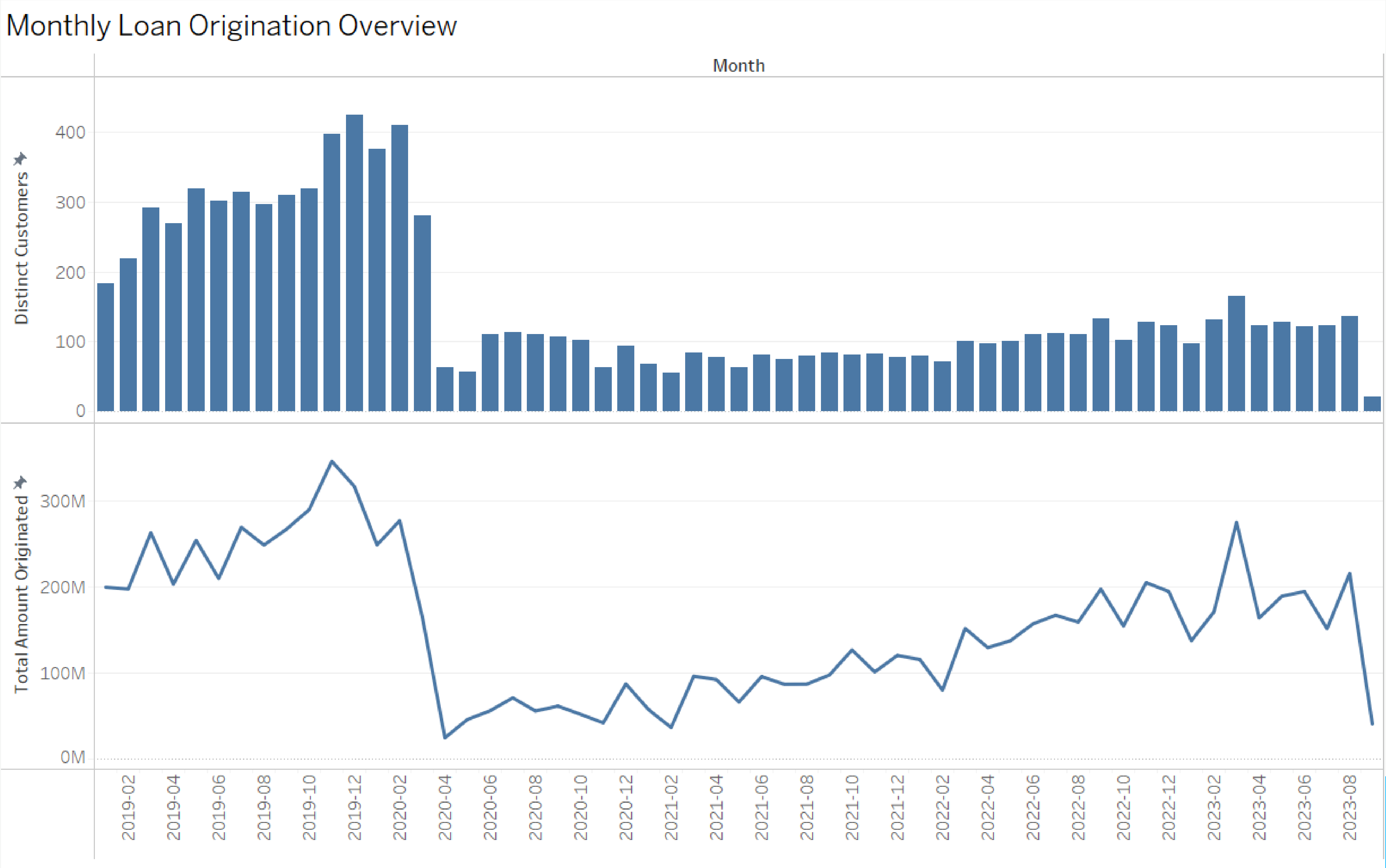
Which customers or loan types carry more risk, and how can we manage that risk without hurting growth?

# Loan Portfolio Growth Overview

# Monthly Loan Origination Overview

**A strategic shift from volume-based growth to loan portfolio optimization**

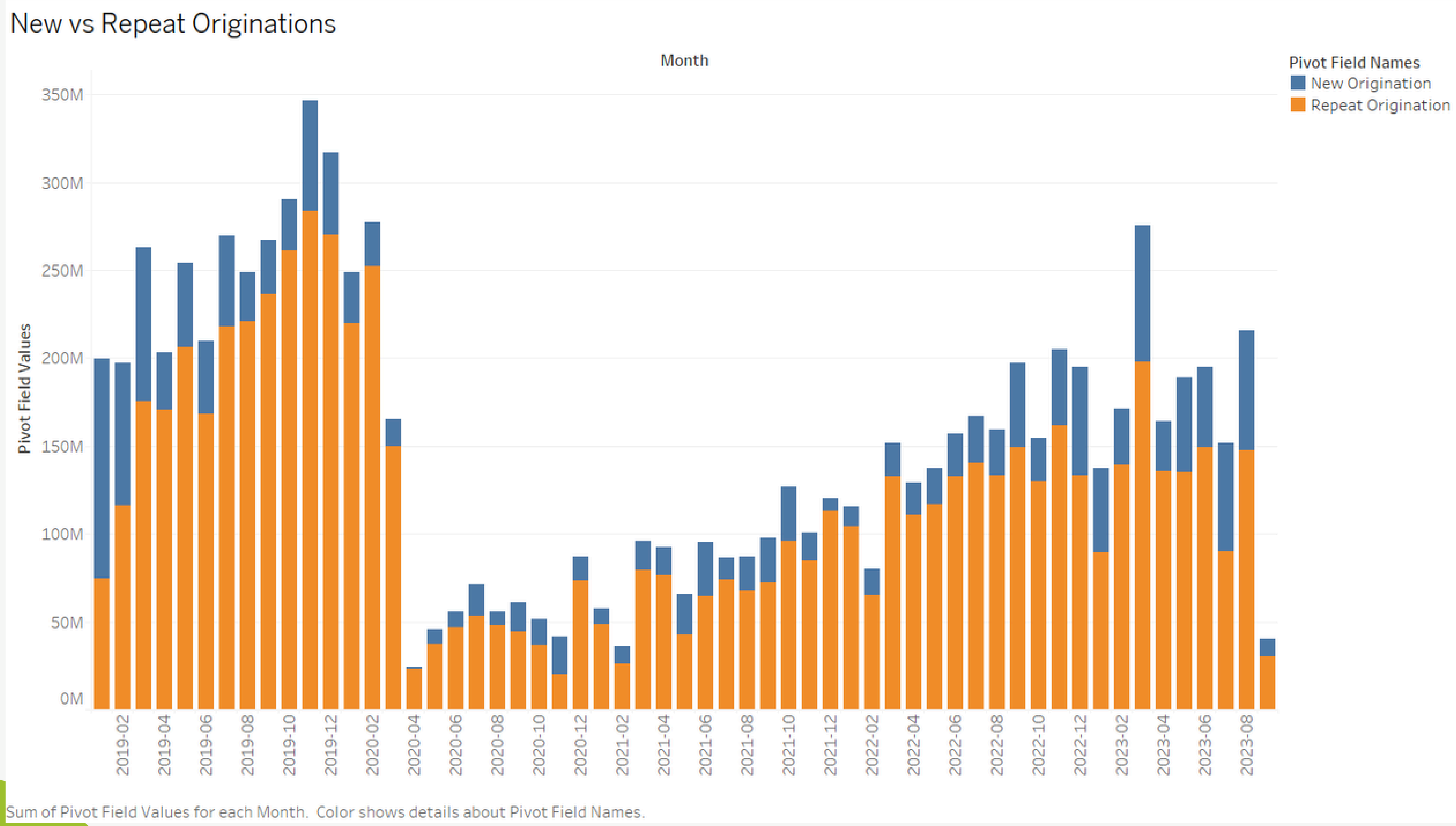
- Pre-2020: Growth in customers and loan amounts move in sync
- Post-2020: Loan amounts recover and grow, but borrower volume stays low.



The trends of sum of Distinct Customers and sum of Total Amount Originated for Month.

**Insight 1:** The company is issuing larger loans to fewer, potentially more trusted customers

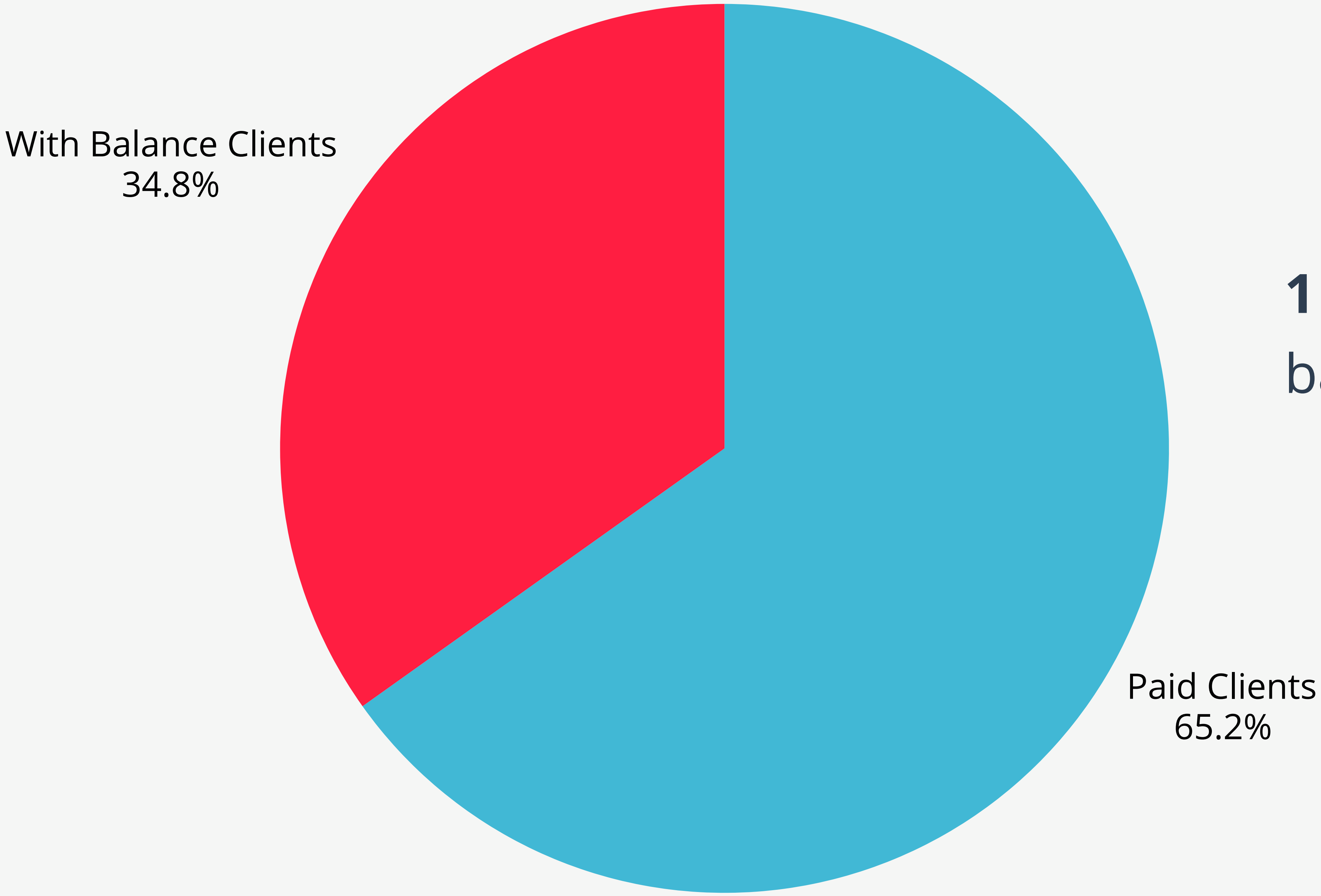
# New vs Repeat Originations




**Building Loyalty Over Time**

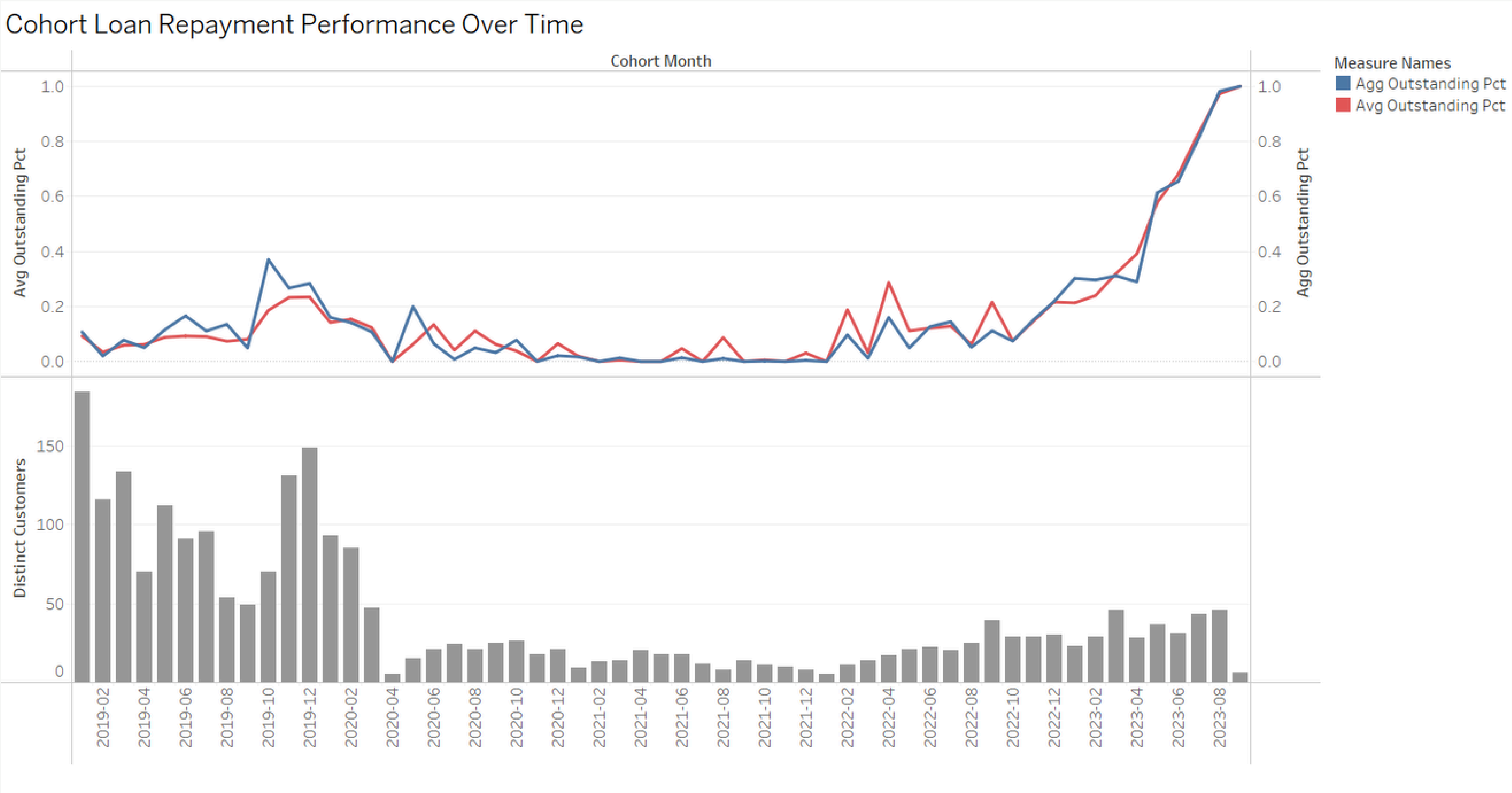
**Insight 2:** Repeat borrowers are driving loan volume growth, signaling trust, maturity, and deeper customer relationships.

# IS THIS GROWTH COMING BACK WITH HIDDEN RISKS?




**1 in 3** clients still carries unpaid loan balances. **Growth** is real, but so is **risk**

# Risk Profile Analysis



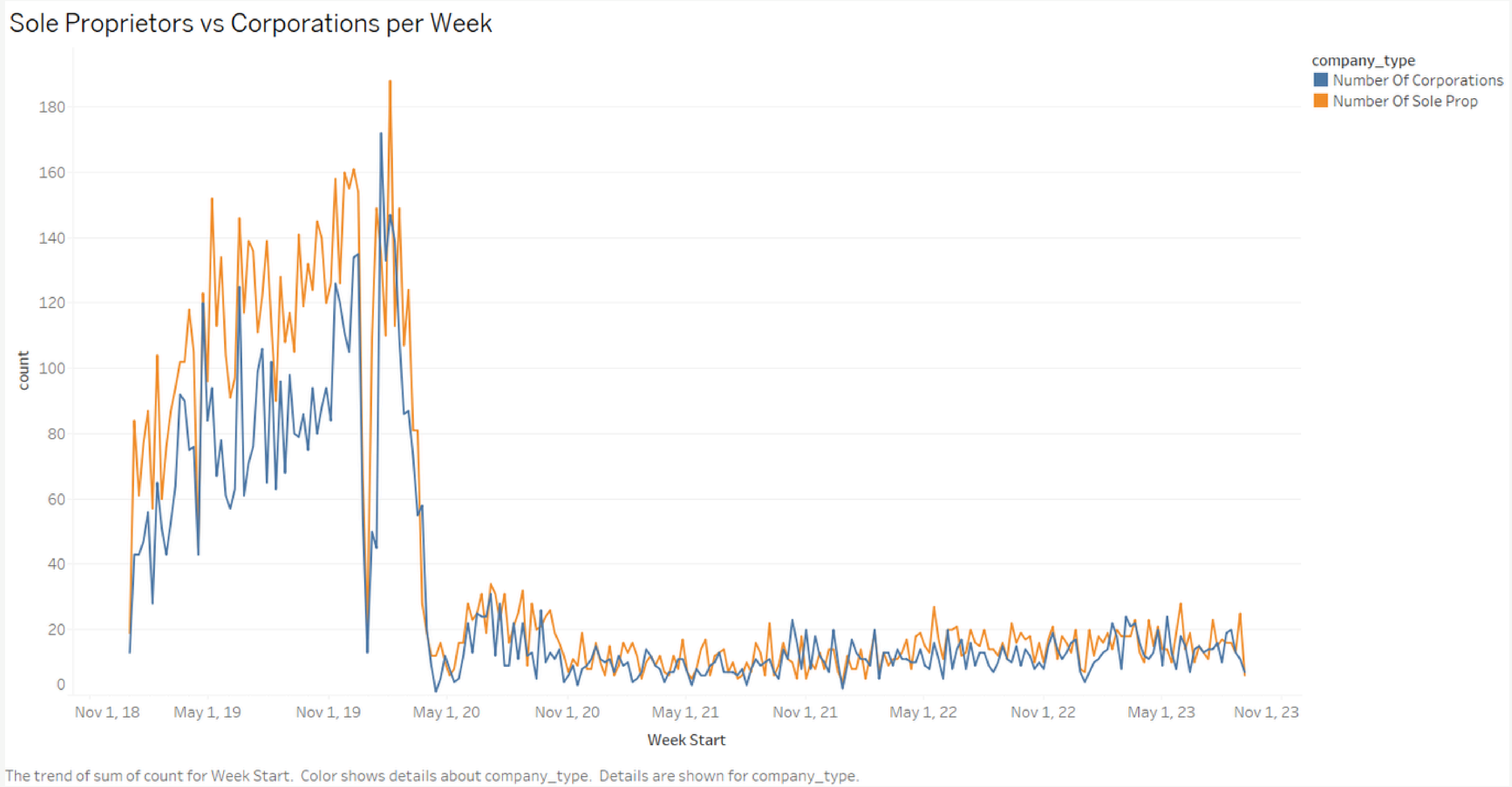

The trends of Avg Outstanding Pct, Agg Outstanding Pct and sum of Distinct Customers for Cohort Month. For pane Sum of Avg Outstanding Pct: Color shows details about Avg Outstanding Pct and Agg Outstanding Pct. For pane Sum of Agg Outstanding Pct: Color shows details about Avg Outstanding Pct and Agg Outstanding Pct.

- Older cohorts show strong repayment, most balances cleared.
- Newer cohorts hold most of today's unpaid debt.

**Insight 3:** Newer cohorts now represent our largest repayment risk. Not because they defaulted, but because their repayment is still uncertain.

# Client Behavior

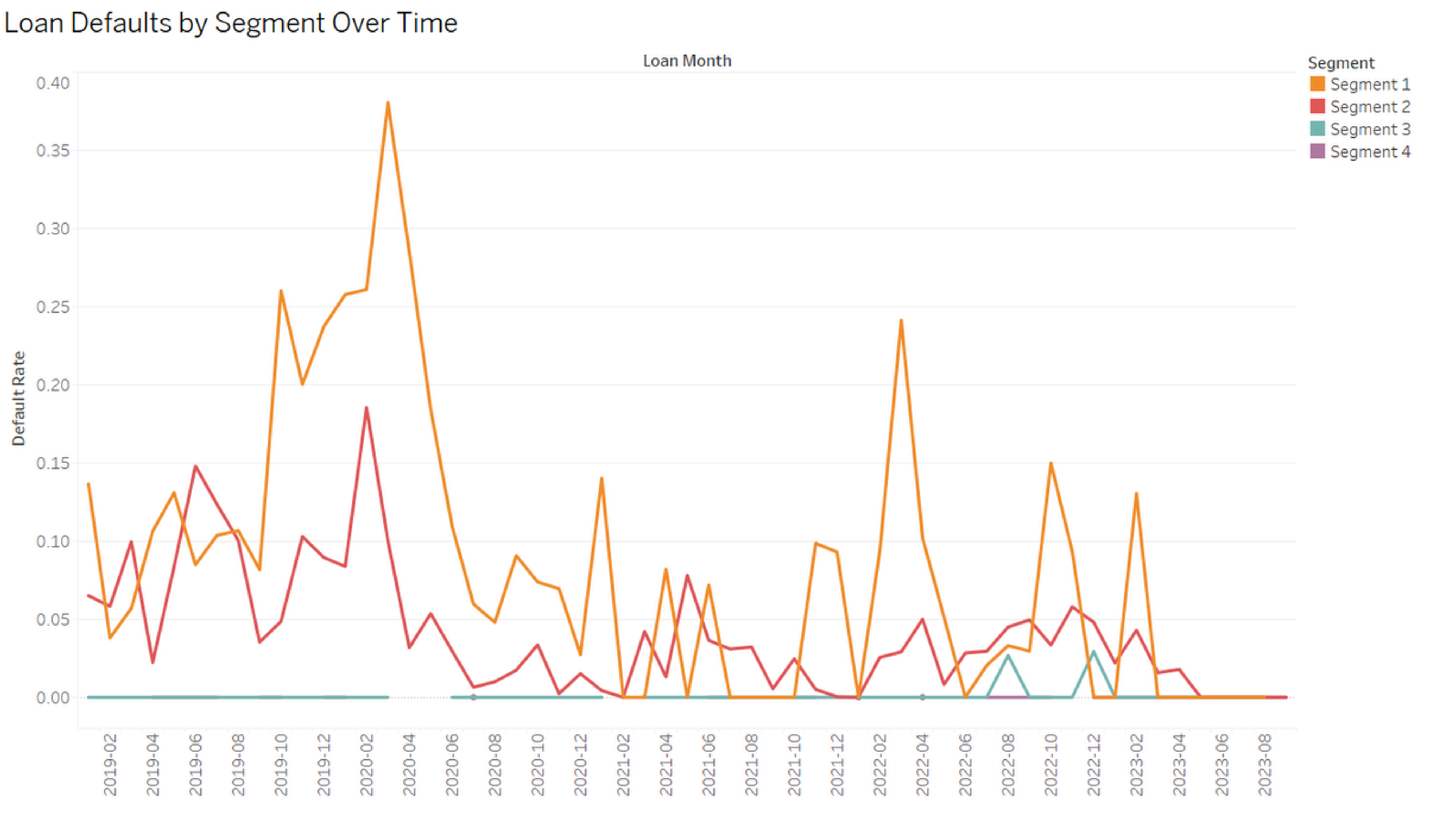
# Sole vs Corporation




- Pre-2020: Sole props were more active, possibly due to easier access or greater short-term capital needs.
- Post-2020: Both types borrow far less, suggesting similar shifts in confidence, capacity, or credit access.
- The behavioral gap has closed, not because one improved, but because both declined.

**Insight 4:** Sole proprietors once drove loan demand but post-2020, their behavior converged with corporations, both showing weaker and more cautious borrowing

# Loan Defaults by Segments over time



The trend of sum of Default Rate for Loan Month. Color shows details about Segment. The view is filtered on Segment, which keeps Segment 1, Segment 2, Segment 3 and Segment 4.

- Segment 1 has the highest and most volatile default rates, often spiking above 20%. It poses the greatest risk.
- Segment 2 shows moderate but more stable defaults, making it somewhat more manageable.
- Segments 3 and 4 consistently have near-zero defaults, indicating they are low-risk and more reliable.

**Insight 5:** Default risk is not evenly distributed across the portfolio, it's concentrated in specific segments. This insight enables targeted risk mitigation: we don't need to tighten everywhere — just focus on the riskiest segments

# Recommendations

- **Prioritize and grow with repeat borrowers**

Focus acquisition and upselling on proven customers to drive volume with lower risk.

- **Target risk controls on high-risk segments and industries**

Avoid blanket tightening. Instead, apply stricter assessment to specific risky segments (example: Segment 1, retail-related sectors)

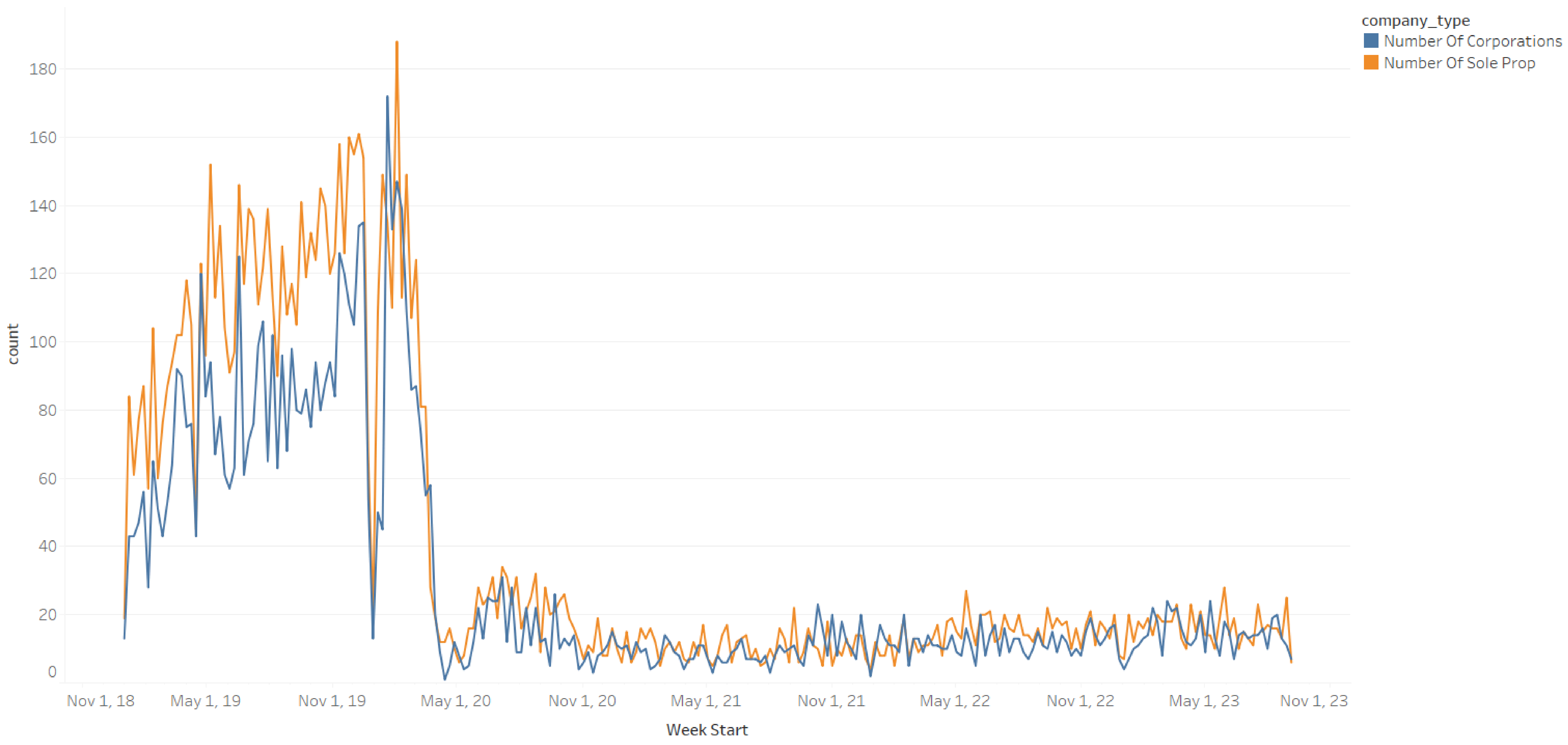
- **Monitor repayment behavior of newer cohorts closely**

Flag newer customers for early-warning systems, as they carry the most unproven exposure in the portfolio.

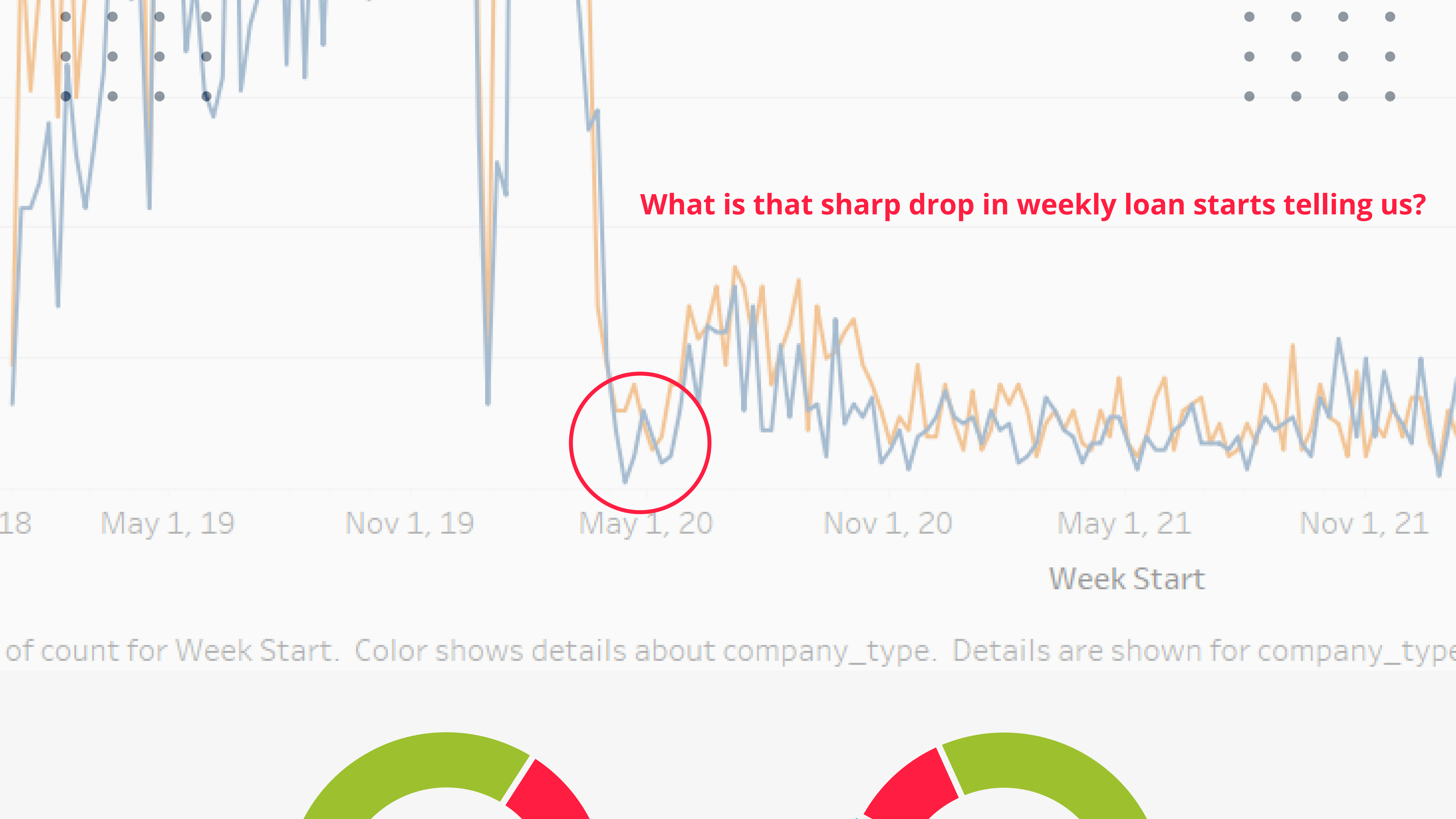
# Additional Analysis

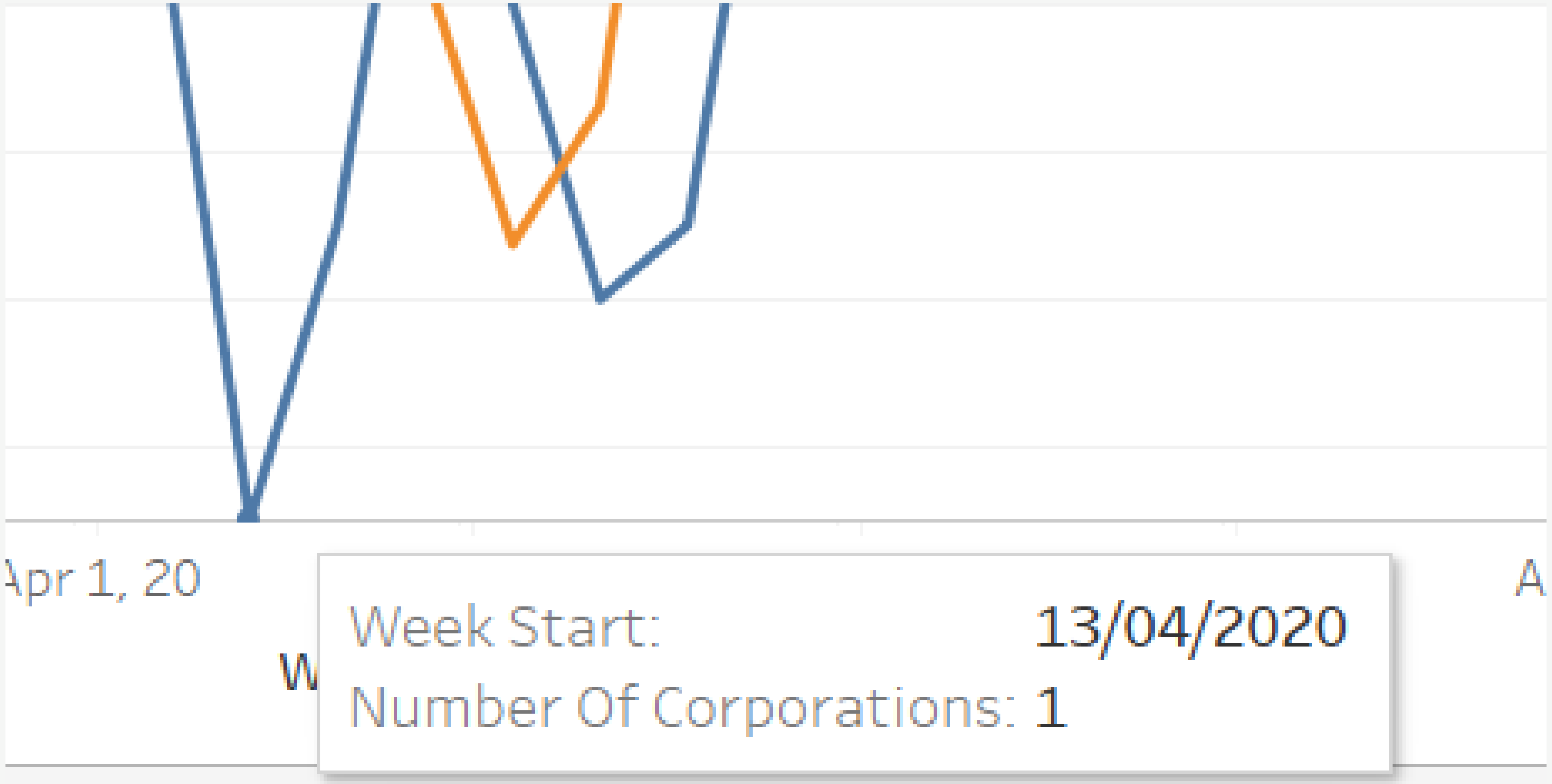
# Looking back to this..

Sole Proprietors vs Corporations per Week




The trend of sum of count for Week Start. Color shows details about company_type. Details are shown for company_type.

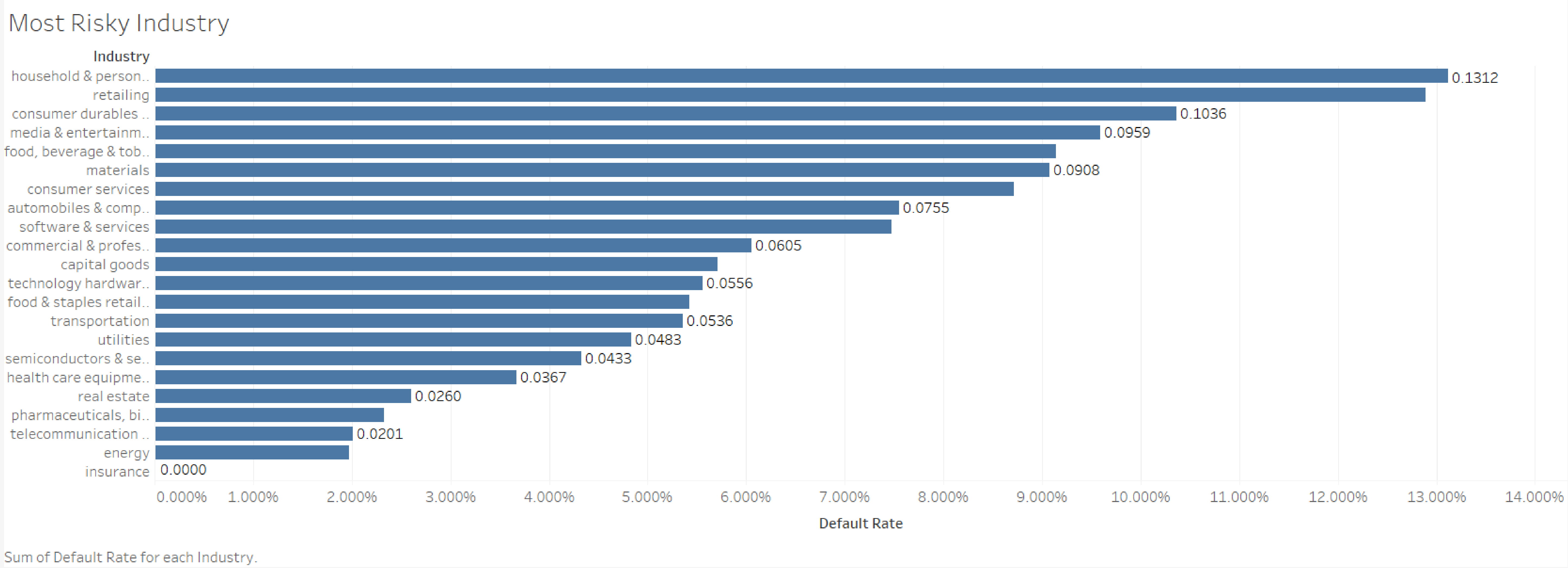

What is that sharp drop in weekly loan starts telling us?
18
May 1, 19
Nov 1, 19
May 1, 20
Nov 1, 20
May 1, 21
Nov 1, 21
Week Start
of count for Week Start. Color shows details about company_type. Details are shown for company_type




That week marked the sharpest decline in loan starts across both sole proprietors and corporations. As **COVID-19 restrictions** took hold, business operations stalled, and demand for credit plummeted.

This was a clear behavioral shift. Not just a dip, but a turning point. Since then, loan activity has stabilized, but never fully recovered to its pre-pandemic levels

# Riskiest Industries (default rate)




Top 3 risky industries: **Household & Personal (13.1%), Retail (12.9%), Consumer Durables (10.4%)** as these sectors are **consumer-dependent** and **vulnerable** to market shocks

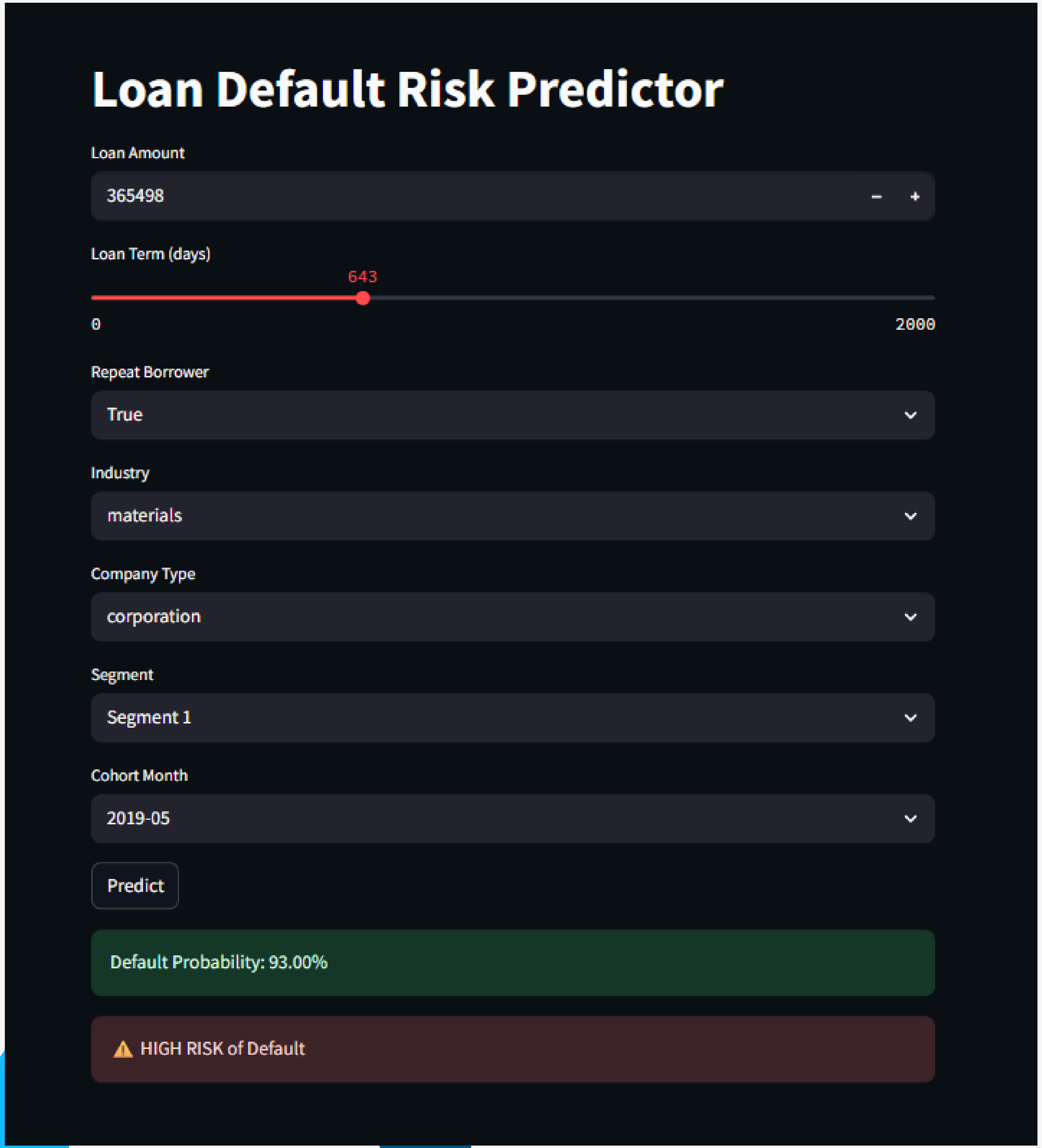
Insurance, energy, and telecom show the lowest risk likely due to stable cash flows, regulated environments, and longer business cycles that make them more resilient to short-term shocks.

Now that we know that there are risks…

# Can We Predict Who Are Risky?

## Yes — Here’s a Real Example

# Presenting Loan Risk Predictor




A machine learning model that uses client and loan data to predict the chance a borrower won’t fully repay their loan, before the loan is even approved.

It flags high-risk borrowers early, helping us make smarter, safer lending decisions.

```
       INITIAL_LOAN_AMOUNT  LOAN_TERM_LENGTH  REPEAT_BORROWER   INDUSTRY  \
17880            365498.96             643.0             True  materials

      COMPANY_TYPE    SEGMENT COHORT_MONTH  TRUE_LABEL  PREDICTED_CLASS  \
17880  corporation  Segment 1      2019-05           1                1

       PREDICTED_PROBABILITY  CORRECT
17880                   0.93     True
```

# Thank you!