



stripe

SUBSCRIPTION PRODUCT ADOPTION: STRATEGIC MERCHANT TARGETING

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AGENDA

- Business Objective & Approach
- Data Quality & Assumptions
- Understanding Subscription Winners (Who succeeds with subscription today?)
- Identifying target Merchants (Who should adopt subscriptions?)
- Scoring & Prioritizing Framework
- Final Recommendations & Next Steps



THE CHALLENGE

- **Goal:** Increase subscription product adoption among existing Stripe merchants
- **Context:** Many merchants show recurring payment patterns but manually process them via Checkout/Payment Links
- **Opportunity:** Automate recurring revenue for merchants = better experience + increased Stripe revenue
- **Key Question:** Which existing merchants are most likely to benefit from and adopt subscriptions?



THREE-STAGE FRAMEWORK

Stage 1: Understand who CURRENTLY succeeds with subscriptions

- Analyze existing subscription users by industry, geography, business size
- Identify success patterns and merchant characteristics

Stage 2: Define "subscription-ready" criteria for non-subscribers

- Identify merchants with recurring transaction behavior
- Filter for meaningful scale and product familiarity

Stage 3: Build scoring system to prioritize targets

- Multi-dimensional scoring across 5 key factors
- Segment into actionable tiers (Perfect/Excellent/Good)



DATA CLEANING & VALIDATION

- Key Issues Identified:
- Merchant IDs: Removed 179 invalid IDs (0.76% of data)
 - 567 numeric-only IDs
 - 129 scientific notation IDs
- Dates: Removed 26 invalid dates (0.11% of data)
- Payment Records: Removed 11,327 records with invalid merchant IDs (0.72%)
- Final Clean Dataset:
 - 23,422 merchants
 - 1,566,560 payment records
 - Zero null values
 - Date range: May 2041 - June 2042 (13 months)

** Images at end



PRODUCT VOLUME OVERLAP-KEY ASSUMPTION!

Critical Discovery:

- 77.7% of payment records show $\text{total_volume} \neq \text{sum}(\text{subscription} + \text{checkout} + \text{payment_link})$

Root Cause:

- Products are NOT mutually exclusive (per documentation)

Implication:

- Merchants can use multiple products for a single transaction

Decision:

- Use `total_volume` as-is; product volumes represent overlapping usage, not components

```
Done!
(.venv) (base) kushrajbhatia@Kushrajs-MacBook-Pro stripe % python check_total_mismatch.py
Rows with total_volume mismatch: 1217143
Percentage: 77.6952686140333 %
```



WHO SUCCEEDS WITH SUBSCRIPTIONS TODAY?

Key Findings:

- Top Industry: US Software - 81 merchants, \$195K/month avg subscription revenue
- High Reliance: 84-90% of revenue from subscriptions once adopted
- Geographic Concentration: US, GB, Japan lead adoption
- Business Size: Small businesses dominate successful adoption

Results	Messages								Open in New Tab
industry	country	successf...	avg_monthly_su...	avg_sub_percentag...	avg_ten...	avg_monthly			
Others	US	22	439147.72	84.47	13.95	25.36			
Software	US	81	195226.32	89.57	13.68	24.58			
Medical services, drugs...	US	7	137583.76	87.87	13.14	22.71			
Religion, politics & ot...	US	7	54876.76	76.82	14.00	21.29			
Software	GB	9	52143.53	76.30	13.78	22.56			
Business services	US	48	51396.64	83.68	13.52	18.08			
Software	JP	6	43712.79	85.39	13.83	24.67			
Software	CA	9	38559.04	86.67	14.00	23.89			
Education	US	15	27002.40	79.76	13.47	21.00			
Personal services	US	14	18612.68	81.90	12.93	18.14			
Business services	GB	8	16524.16	81.30	13.13	15.25			
Education	GB	6	14416.67	82.49	13.17	23.17			
Digital goods	US	13	11478.49	79.45	13.85	17.77			
Business services	AU	5	8808.55	87.18	14.00	9.40			



THE MIGRATION PATH: CHECKOUT → SUBSCRIPTION

Key Insight:

- 25 US Software merchants use BOTH Checkout (73%) AND Subscriptions (84%)
- Product overlap validates gradual migration strategy
- Merchants don't abandon Checkout when adopting Subscriptions
- Implication: Existing Checkout users are ideal conversion candidates

	Results	Messages							Open in New Tab		
	industry	country	hybri...	avg_sub_pct	avg_checkout_pct	avg_monthly...	avg_monthly_ch				
1	Software	US	25	83.85	72.83	34948.42	13543.53				
2	Education	US	12	63.22	65.17	7439.35	8202.22				
3	Others	US	8	81.23	73.06	25054.28	36453.12				
4	Digital goods	US	8	75.07	56.80	4738.42	4351.01				
5	Personal services	US	7	82.50	85.71	1876.57	1937.71				
6	Business services	US	6	66.23	32.52	17906.36	5101.21				
7	Software	GB	5	90.07	70.75	51450.98	42126.05				
8	Software	IN	5	95.99	95.91	2411.22	2455.28				
9	Digital goods	GB	4	78.09	91.84	17440.77	14721.01				
10	Merchandise	US	3	88.44	99.96	34951.99	35340.58				
11	Business services	GB	3	68.82	66.84	13251.46	13252.41				
12	Religion, politics & oth...	GB	3	81.77	99.73	3742.71	4010.50				
13	Others	JP	3	72.56	91.53	3717.07	10079.17				
14	Religion, politics & oth...	US	3	66.57	74.88	3218.08	3374.15				
15	Business services	JP	3	40.21	78.43	2297.23	5254.82				



SUBSCRIPTION BECOMES ESSENTIAL

Key Insight:

- Small businesses show 86-92% subscription reliance once adopted
 - Software: 92% reliance, \$49,556/month avg revenue
 - Medical Services: 92% reliance, \$8,600/month avg revenue
 - **Takeaway:** Once merchants adopt subscriptions, it becomes core to their business model

Results	Messages							Open in New Tab			
industry	↑↓	business_size	↑↓	mercha...	↑↓	avg_subscription_re...	↑↓	avg_monthly_sub...	↑↓	avg_total_moi	↑↓
Medical services, drugs, testing & lab services	small	12		92.16		8599.98		10513.04			↑ { } ↗
Software	small	140		91.98		49556.33		52384.04			↑ { } ↗
Grocery & food stores	small	8		90.78		32314.05		33093.59			↑ { } ↗
Education	small	32		89.75		29025.23		30661.91			
Business services	small	97		89.09		31164.76		34915.49			
Others	small	35		88.22		82933.43		91739.16			
Digital goods	small	35		86.55		32229.36		34142.49			
Personal services	small	45		86.55		9887.04		11141.25			
Religion, politics & other members organizations	small	21		86.30		10670.10		12289.01			
Leisure	small	10		85.98		131795.73		136041.10			
Software	medium	17		82.24		640208.83		998501.78			
Healthcare	small	5		79.09		36206.97		44368.53			

TIMING THE OUTREACH

Critical Insight:

- Mature merchants (12+ months): \$63,937/month subscription revenue
- New merchants (≤ 6 months): \$11,784/month subscription revenue
- 5.4X difference in subscription revenue by tenure
- Implication: Target established merchants (6+ months), not brand new signups

Results		Messages					Open in New Tab					
	merchant_maturity	↑↓	merchants	↑↓	avg_monthly_s...	↑↓	avg_sub_percentage	↑↓	avg_total_revenue	↑↓	avg_monthly_trx	↑↓
1	New (≤ 6 months)		45		11784.24		85.64		13674.91		12.82	
2	Growing (7–12 months)		96		11463.72		79.13		18246.25		13.22	
3	Mature (12+ months)		648		63936.76		75.91		205565.36		19.67	

TRANSACTION FREQUENCY PREDICTS SUCCESS

Key Validation:

- Very Frequent (≤ 3 days): 573 merchants, \$71,998/month avg
- Frequent (4-7 days): 136 merchants, \$8,140/month avg
- Moderate (8-10 days): 48 merchants, \$6,769/month avg
- **Validates our targeting:** Merchants with ≤ 10 days between transactions show subscription success

Results Messages Open in New Tab 

	transaction_frequency	↑↓	merchants	↑↓	avg_monthly_sub_revenue	↑↓	avg_sub_percentage	↑↓	avg_monthly_trx	↑↓
1	Very Frequent (≤ 3 days)		573		71997.52		78.20		23.08	
2	Frequent (4-7 days)		136		8140.41		71.20		5.96	
3	Moderate (8-10 days)		48		6769.17		69.78		2.94	



TARGET CRITERIA FOR NON-SUBSCRIBERS

We created a **VIEW (recurring_merchants)** filtering for:

- **No Current Subscription Usage** (`subscription_volume = 0`)
- **Recurring Transaction Behavior** (≤ 10 days average between transactions)
- **Established Pattern** (>10 total transactions in dataset)
- **Sufficient Scale** (Meaningful transaction volume)

Rationale:

- Subscriptions solve a problem for recurring revenue businesses
 - If they're manually processing recurring payments, they're ideal candidates
 - Filters ensure we target merchants with proven, sustainable patterns
-
- **Result:** 7,819 qualifying merchants

DATA-DRIVEN THRESHOLD SELECTION

Scoring Philosophy:

- Use percentile analysis on qualifying merchants, not arbitrary numbers
- 3 points = P90+ (top 10% performers)
- 2 points = P75+ (top 25% performers)
- 1 point = Everyone else

Thresholds:

- Volume: P75 = \$8,746/mo, P90 = \$29,561/mo
- Checkout: P75 = \$6,012/mo, P90 = \$20,018/mo
- Transactions: P75 = 18/mo, P90 = 26/mo

Results		Messages				
	metric	↑↓	p75_threshold	↑↓	p90_threshold	↑↓
1	avg_monthly_volume_dollars	↑	8746.39	↑	29561.36	↑
2	avg_monthly_checkout_dollars	↑	6012.38	↑	20017.59	↑
3	avg_trx_per_month	↑	18.00	↑	26.00	↑



FIVE-DIMENSIONAL SCORING FRAMEWORK

Scoring Philosophy:

Dimension	3 Points	2 Points	1 Point	Segmentation	Score
Volume Score	>= \$30K/mo	>= \$30K/mo	< \$8.75K/mo	Perfect Target	Score 12-15 (immediate focus)
Checkout Score	>= \$20K/mo	>= \$6K/mo	< \$6K/mo	Excellent Targets	Score 9-11 (secondary wave)
Engagement Score	>= 12 months	>= 6 months	< 6 months	Good Targets	Score <9 (long tail opportunity)
Frequency Score	<=5 days	<=7 days	<=10 days		
Transaction Score	>=25/mo	>=15/mo	<15/mo		

TARGET UNIVERSE BREAKDOWN

Results:

- Total Qualifying: 7,819 merchants
- Perfect Targets (12-15): 860 merchants (11%)
- Excellent Targets (9-11): 3,439 merchants (44%)
- Good Targets (<9): 3,520 merchants (45%)

Results		Messages	
	priority_score	merchant_count	percentage
1	15	31	0.40
2	14	25	0.32
3	13	337	4.31
4	12	467	5.97
5	11	657	8.40
6	10	1036	13.25
7	9	1746	22.33
8	8	1302	16.65
9	7	1507	19.27

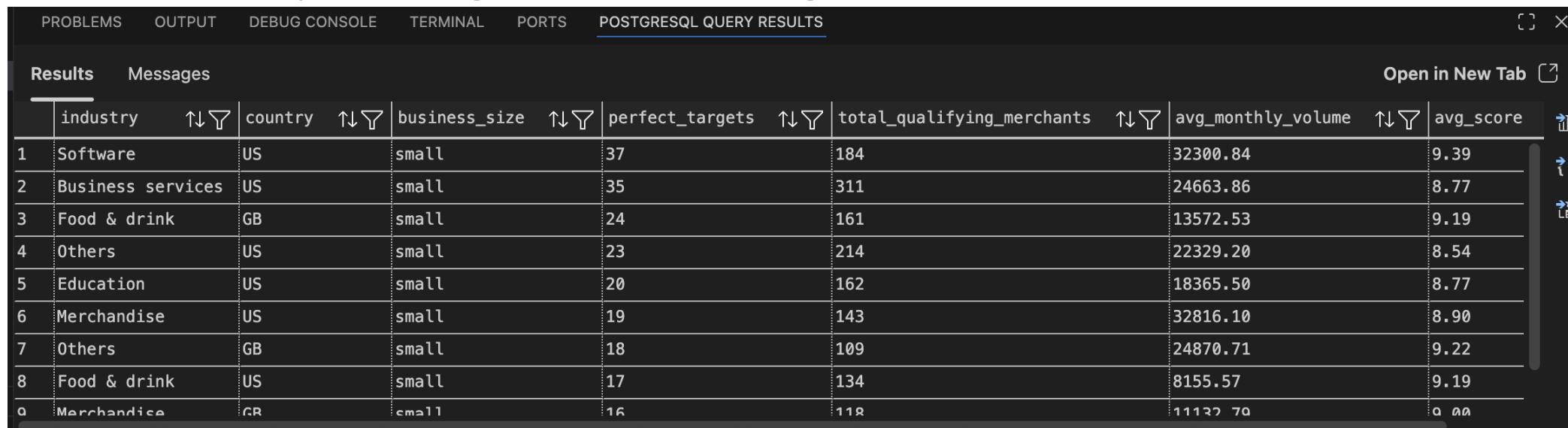
Key Insight:

- Scoring system is selective - only 11% reach "perfect" tier
- Pyramid shape validates tiered prioritization approach
- Ensures sales resources focus on highest-probability conversions

WHERE TO FOCUS: INDUSTRY × COUNTRY × SIZE

Top 5 Segments:

- **US Software, Small:** 37 perfect targets, \$32,301/mo avg
- **US Business Services, Small:** 35 perfect targets, \$24,664/mo avg
- **GB Food & Drink, Small:** 24 perfect targets, \$13,573/mo avg
- **US Others, Small:** 23 perfect targets, \$22,329/mo avg
- **US Education, Small:** 20 perfect targets, \$18,366/mo avg



The screenshot shows a PostgreSQL query results interface with the following table:

	industry	country	business_size	perfect_targets	total_qualifying_merchants	avg_monthly_volume	avg_score
1	Software	US	small	37	184	32300.84	9.39
2	Business services	US	small	35	311	24663.86	8.77
3	Food & drink	GB	small	24	161	13572.53	9.19
4	Others	US	small	23	214	22329.20	8.54
5	Education	US	small	20	162	18365.50	8.77
6	Merchandise	US	small	19	143	32816.10	8.90
7	Others	GB	small	18	109	24870.71	9.22
8	Food & drink	US	small	17	134	8155.57	9.19
9	Merchandise	GB	small	16	112	11132.70	9.00

Pattern: US small businesses dominate top segments!



DO OUR TARGETS LOOK LIKE SUBSCRIPTION WINNERS?

The Proof:

Business Services:

- **Subscribed Winners:** \$79,873/mo, 13.56 months tenure
- **Our Targets:** \$200,700/mo, 13.70 months tenure 

Software:

- **Subscribed Winners:** \$408,196/mo, 13.20 months tenure
- **Our Targets:** \$139,464/mo, 13.81 months tenure 

PostgreSQL Query Results							
Results		Messages					Open in New Tab 
	Segment	Industry	Country	MERCHANTS	AVG_MONTHLY_VOLUME	AVG_MONTHLY_CHECKOUT	AVG_TENURE_MONTHS
1	Subscribed Winners	Business services	US	36	79872.77	694.21	13.56
2	Non-Subscribed Targets	Business services	US	44	200700.39	7119.93	13.70
3	Subscribed Winners	Software	US	71	408195.73	4434.82	13.20
4	Non-Subscribed Targets	Software	US	42	139464.31	1432.40	13.81

Validation: Our non-subscribed targets have the SAME maturity and checkout usage as merchants who already succeed with subscriptions. This proves our targeting methodology is sound.



PHASED ROLLOUT STRATEGY

Phase 1: Pilot (Top 72 Merchants)

- **Target:** US Software (37) + US Business Services (35)
- **Filter:** Small business, Score 12-15
- **Expected Conversion:** 20% (industry standard for targeted B2B)
- **Expected Outcomes:** 14-15 new subscription adopters
- **New MRR:** \$210K-225K/month
- **Annual Run Rate:** \$2.52M-2.7M

Phase 2: Scale (Next 128 Merchants)

- **Target:** Expand to top 200 perfect targets across all industries/geographies
- **Expected Outcomes:** Additional 25-30 conversions
- **Cumulative New MRR:** \$450K-600K/month
- **Annual Run Rate:** \$5.4M-7.2M



MEASURING IMPACT

Metric 1: Subscription Adoption Rate

- Definition: % of targeted merchants who activate subscriptions within 90 days
- Target: 18-20% adoption
- Red Flag: <10% (re-evaluate targeting)

Metric 2: Average Subscription Revenue per Adopter

- 30-day: $\geq \$3,000$ avg (ramp-up phase)
- 60-day: $\geq \$7,000$ avg (pattern establishment)
- 90-day: $\geq \$10,000$ avg (sustainable revenue)

Metric 3: Subscription Penetration Rate by Segment

- Track quarterly growth in subscription adoption within each industry/country/size segment
- Identify which segments convert fastest for future targeting refinement



FUTURE ENHANCEMENTS

Short-Term (1-4 weeks):

1. Industry-specific messaging & value propositions
2. A/B test outreach methods (email vs sales call vs webinar)

Medium-Term (1-3 months):

3. Cohort analysis by merchant signup date
4. Churn risk modeling for existing subscription users
5. Product usage pattern deep dive (optimal Checkout→Subscription migration timeline)

Long-Term (3-6 months):

6. Economic value analysis (CLV comparison: subscription vs non-subscription merchants)
7. Attribution modeling post-launch



WHAT WE'RE WORKING WITH

Data Assumptions:

- Products are NOT mutually exclusive (per documentation)
- Future dates (2041-2042) represent synthetic data
- 13-month observation window may not capture full annual patterns

Methodology Assumptions:

- Recurring behavior (≤ 10 days) indicates subscription need
- 20% conversion rate based on B2B SaaS industry benchmarks
- Subscription winners' profiles remain stable over time

Limitations:

- Cannot measure "natural" adoption (merchants who would convert without outreach)
- No historical churn data to refine targeting
- No qualitative merchant feedback on subscription barriers



STRATEGIC TARGETING DRIVES ADOPTION

What we Did:

- Cleaned and validated data (23,422 merchants, 1.57M payment records)
- Analyzed subscription winners to understand success patterns
- Identified 7,819 subscription-ready merchants with recurring behavior
- Built data-driven 5-dimensional scoring system
- Prioritized 860 perfect targets, focused on US small businesses
- Validated targets mirror existing subscription winners

The Opportunity:

- 72 perfect targets in Phase 1 (US Software + Business Services)
- \$2.5M+ annual run rate potential from pilot alone
- Clear segmentation and metrics for scale



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QUESTIONS?



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THANK YOU!

KUSHRAJ BHATIA



APPENDIX

Data Cleaning: Merchants

```
(.venv) (base) kushrajbhatia@Kushrajs-MacBook-Pro stripe % python merchants_cleaning_and_analysis.py  
STEP 1: LOADING DATA
```

```
Initial rows: 23627  
Columns: ['merchant', 'industry', 'first_charge_date', 'country', 'business_size']
```

```
STEP 2: DATA TYPES AND STRUCTURE
```

```
merchant      object  
industry      object  
first_charge_date  object  
country       object  
business_size   object  
dtype: object
```

```
STEP 3: NULL VALUES CHECK
```

```
No null values found
```

```
STEP 4: TEXT FIELD MAX LENGTHS
```

```
merchant: 9  
industry: 56  
country: 2  
business_size: 6
```

```
STEP 5: MERCHANT ID PATTERN ANALYSIS
```

```
Merchant ID length distribution:
```

```
merchant_str  
6      4  
7      79  
8     23533  
9      11  
Name: count, dtype: int64
```

```
Pattern breakdown:
```

```
Valid alphanumeric (8-char hex): 23448
```

```
Numeric only: 567
```

```
Scientific notation: 129
```



APPENDIX

Data Cleaning: Merchants

STEP 6: DUPLICATE CHECK (BEFORE CLEANING)

Duplicates found: 8

STEP 7: DATA CLEANING – MERCHANT IDs

Keeping only valid alphanumeric merchant IDs...

Rows after merchant ID cleaning: 23448

STEP 8: DATA CLEANING – DATES

Validating date field...

Valid dates: 23422

Invalid dates: 26

Removing rows with invalid dates...

Rows after date cleaning: 23422

STEP 9: VERIFY CLEANING

Duplicates after cleaning: 0

STEP 10: FINAL CLEANED DATA SUMMARY

Original rows: 23627

Final rows: 23422

Total removed: 205

Final column max lengths:

merchant: 8

industry: 56

country: 2

business_size: 6

Sample of cleaned data:

	merchant	industry	first_charge_date	country	business_size
0	5d03e714	Education	2032-02-13 00:00:00+00:00	US	medium
1	da22f154	Others	2031-10-16 00:00:00+00:00	US	small
2	687eebc8	Software	2032-07-23 00:00:00+00:00	US	small
3	de478470	Software	2033-03-15 00:00:00+00:00	US	small
4	1e719b8a	Business services	2035-02-12 00:00:00+00:00	IT	small



APPENDIX

Data Cleaning: Payments

```
=====
(.venv) (base) kushrajbhatia@Kushrajs-MacBook-Pro stripe % python payments_cleaning_and_analysis.py
STEP 1: LOADING PAYMENTS DATA

Initial rows: 1577887
Columns: ['date', 'merchant', 'subscription_volume', 'checkout_volume', 'payment_link_volume', 'total_volume']

STEP 2: DATA TYPES

date          object
merchant      object
subscription_volume  int64
checkout_volume   int64
payment_link_volume  int64
total_volume    int64
dtype: object

STEP 3: NULL VALUES

No null values

STEP 4: MERCHANT ID VALIDATION

Valid merchant IDs: 1566560
Invalid merchant IDs: 11327
Sample invalid merchant IDs:
['27229999999999989187253234288067576336259253506900134966184238986046081608321742371191884540280832',
 '691099999999999870594406756389217016713121289079981002807439479639551730911376245260288',
 '42970000000000033578379137003204432445948705618287647496378513935813390702862012338887831189552776106267723687023171068402680869322143401328
27276337478039606687546398669005752219082326621908104880554298720578434112369694081024',
 '887030000000000077024428306674398232244977079595296703184060675571095832958481727488',
 '68360000000000046994903678486765104621412808309134623660802424942544730273214759960576',
 '17801800000' '1140870' '795300000000' '454477000000',
 '45700000000000025991279361060390107440214287411477832493226012618852357378793126190607994331382334285998334559698008766455546417794499288778
1130484926702574108394025034167842313126113759115101103993840290418330580794341436613083319500800']

STEP 5: DATE VALIDATION

Valid dates: 1577887
Invalid dates: 0
Date range: 2041-05-01 00:00:00+00:00 to 2042-06-22 00:00:00+00:00
```



APPENDIX

Data Cleaning: Payments

STEP 6: VOLUME FIELD VALIDATION

```
subscription_volume:  
  Min: 0  
  Max: 108387903  
  Negative values: 0  
checkout_volume:  
  Min: 0  
  Max: 34259069  
  Negative values: 0  
payment_link_volume:  
  Min: 0  
  Max: 11829000  
  Negative values: 0  
total_volume:  
  Min: 1  
  Max: 2243810482  
  Negative values: 0
```

STEP 7: CLEANING DATA

```
After merchant ID filter: 1566560  
After date filter: 1566560  
Total rows removed: 11327
```

STEP 8: FINAL CLEANED DATA

```
Original rows: 1577887  
Final rows: 1566560
```

Sample cleaned data:

	date	merchant	subscription_volume	checkout_volume	payment_link_volume	total_volume
0	2041-05-01T00:00:00Z	5d03e714	0	0	0	425340
1	2041-05-01T00:00:00Z	da22f154	0	0	0	17326
2	2041-05-01T00:00:00Z	687eebc8	79400	0	0	79400
3	2041-05-01T00:00:00Z	de478470	268400	0	0	268400
4	2041-05-01T00:00:00Z	1e719b8a	0	19895	0	19895

STEP 9: SAVING CLEANED DATA

```
Saved to: dstakehome_payments_clean.csv
```



METRICS PROPOSAL

Metric 1: Subscription Adoption Rate:

Subscription Adoption Rate = (# of targeted merchants who activate subscriptions within 90 days) / (# of merchants targeted) (Primary success metric)

- Directly measures campaign effectiveness
- Aligns with business objective: "get more existing Stripe users to START using Subscriptions"
- Time-bound (90 days) ensures accountability

- Tracking:

- Cohort-based: Tag each merchant when targeted (email sent, sales call made)
- Monitor `subscription_volume > 0` for first time within 90-day window
- Segment by: industry, country, target tier, outreach method



METRICS PROPOSAL

Metric 2: Average Subscription Per Adopter:

Avg Subscription Revenue= (Total subscription_volume from new adopter) / (# of new adopters)/100
(convert to dollars) (Quality Metric)

- Ensures we are not getting “tire-kickers”
- Validates targeting criteria (are high-score merchants actually high-value?)
- Early indicator of long-term subscription health

Tracking:

- For each new adopter, sum `subscription_volume` for:
 - Days 1-30 post-first subscription transaction
 - Days 1-60 post-first subscription transaction
 - Days 1-90 post-first subscription transaction
- Compare to subscription winner benchmarks (\$10K-24K/month)



METRICS PROPOSAL

Metric 3: Subscription Penetration Rate:

Subscription Penetration Rate = (# of merchants using subscriptions in segment) / (Total # of merchants in segment) (Market Share Metric)

- Tracks progress toward saturating addressable market
- Aligns Identifies which segments are approaching saturation vs. have headroom
- Informs future campaign prioritization (double down on low-penetration, high-value segments)

Tracking:

- Quarterly Snapshot: Calculate for each segment
- Monitor Is penetration increasing over time?
- Compare to benchmark
 - Software: Currently 43% (mature) → Target 55%
 - Education: Currently 21% (low) → Target 35%
 - Business Services: Currently(28%) → Target 40%