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UNIVERSITY of PENNSYLVANIA

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Customer Analytics

Zodiac Story

Peter Fader, Professor of Marketing

Zodiac

- Created in 2014
- Worked with a variety of firms - retailers, pharmaceutical companies, travel and hospitality, telecommunications firms, gaming companies

Sample applications

- Acquisition
 - Which kinds of customers should we acquire?
 - How much should we be willing to pay in order to get them?
- Retention
 - Who are the customers that we should be willing to give a discount to in order to keep them around longer?
- Customer Development
 - What's the best offer we should make to certain types of customers to get them to buy more?

www.zodiacmetrics.com

001. LIFETIME VALUE ANALYTICS

ZODIAC

- BACK TO LIBRARY
- INSIGHTS
 - CLV
 - Retention
 - Transactions
- ANALYTICS
 - A/B Testing
- QUERY
 - New Query
 - Saved Query
 - Exports
 - Diagnostics
 - Accounts
- Contact Us

Zodiac tracks CLV insights including customer distribution by value and attribute over time and progress toward goal.

Customer Lifetime Value Insights

Financial Analysis: Sales Gross Profit

Value Metric: CLV RLV

Customer Base

Total Customer Equity	Average CLV	Median CLV	Number of Customers
\$6,054	\$212.14	\$55.97	126,825

Breakdown of CLV

Number of Customers

Customer Lifetime Value

Cumulative Total Customer Equity

Total Customer Equity over Time

Total Customer Equity

Date

Percentage of Customers



002. CUSTOMER SEGMENTATION BY VALUE.

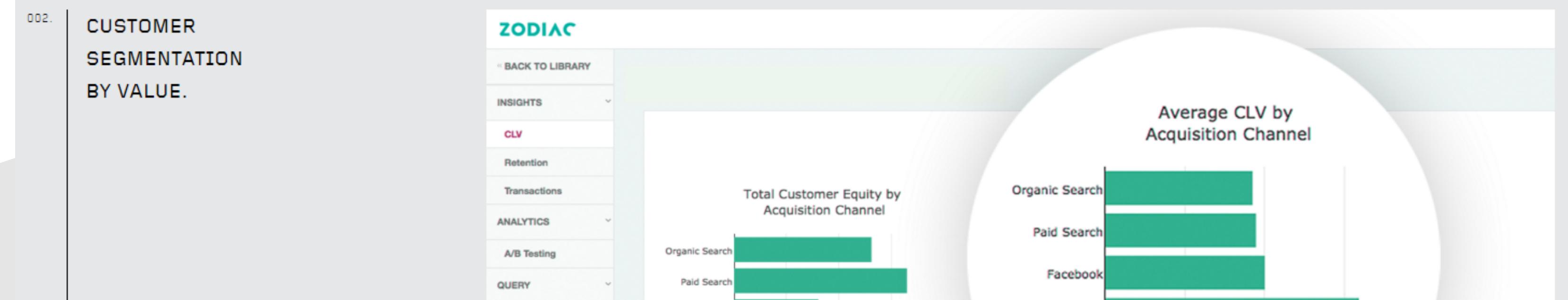
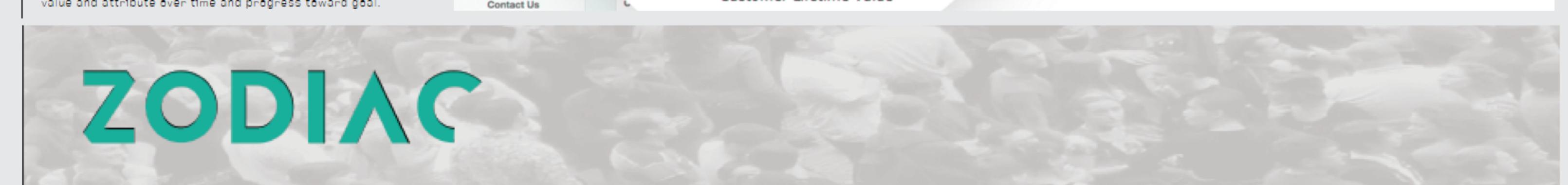
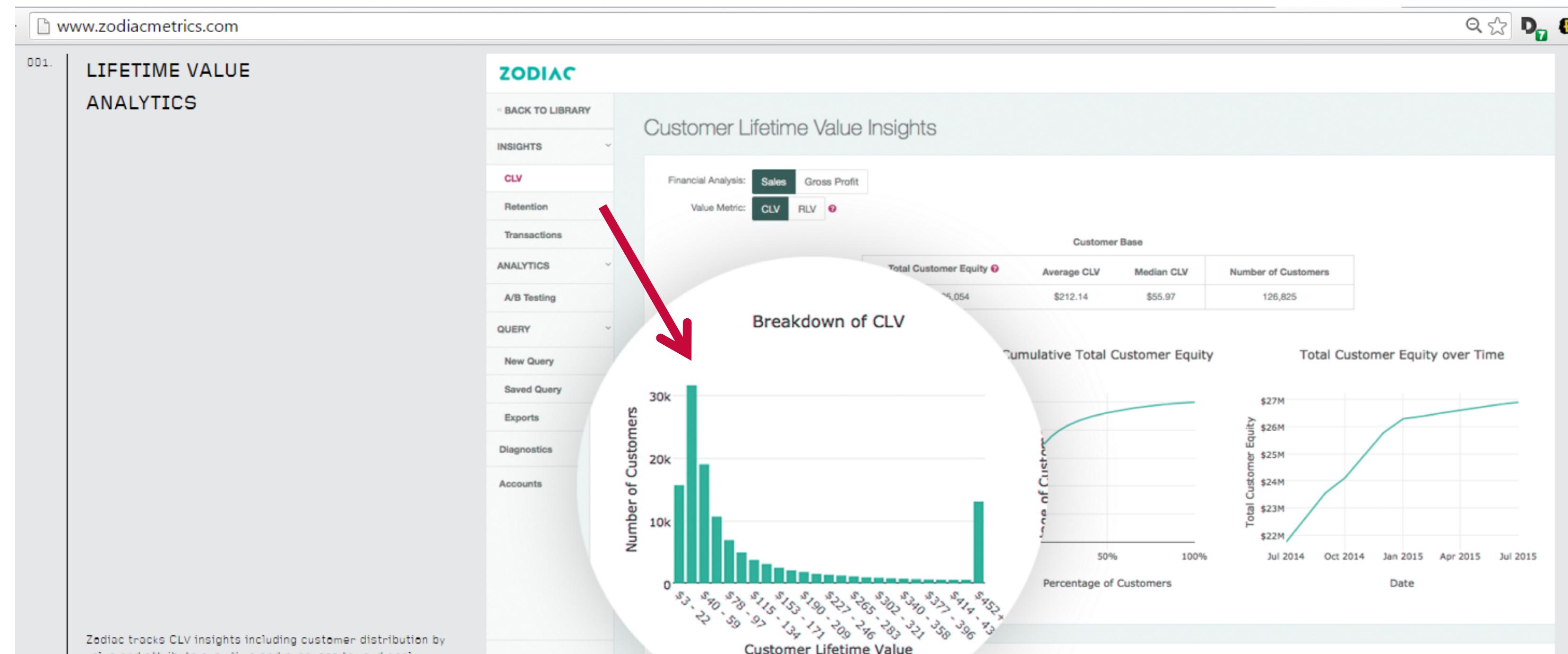
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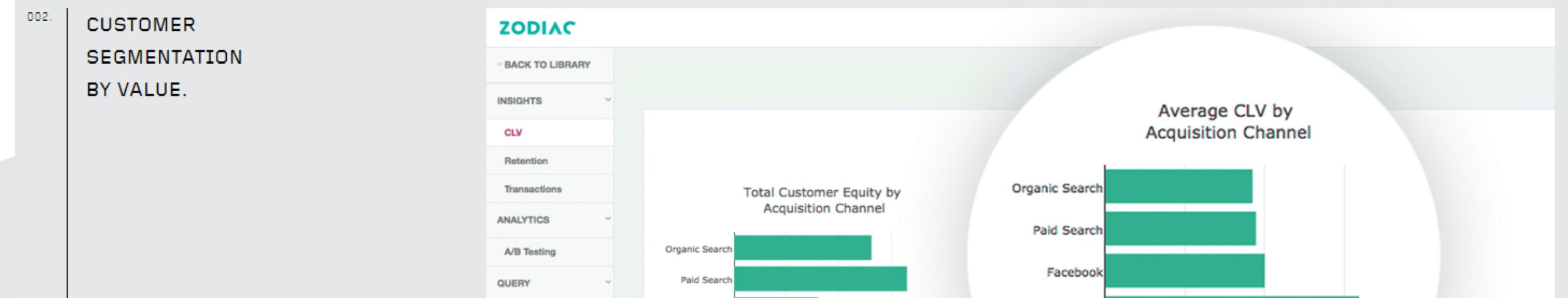
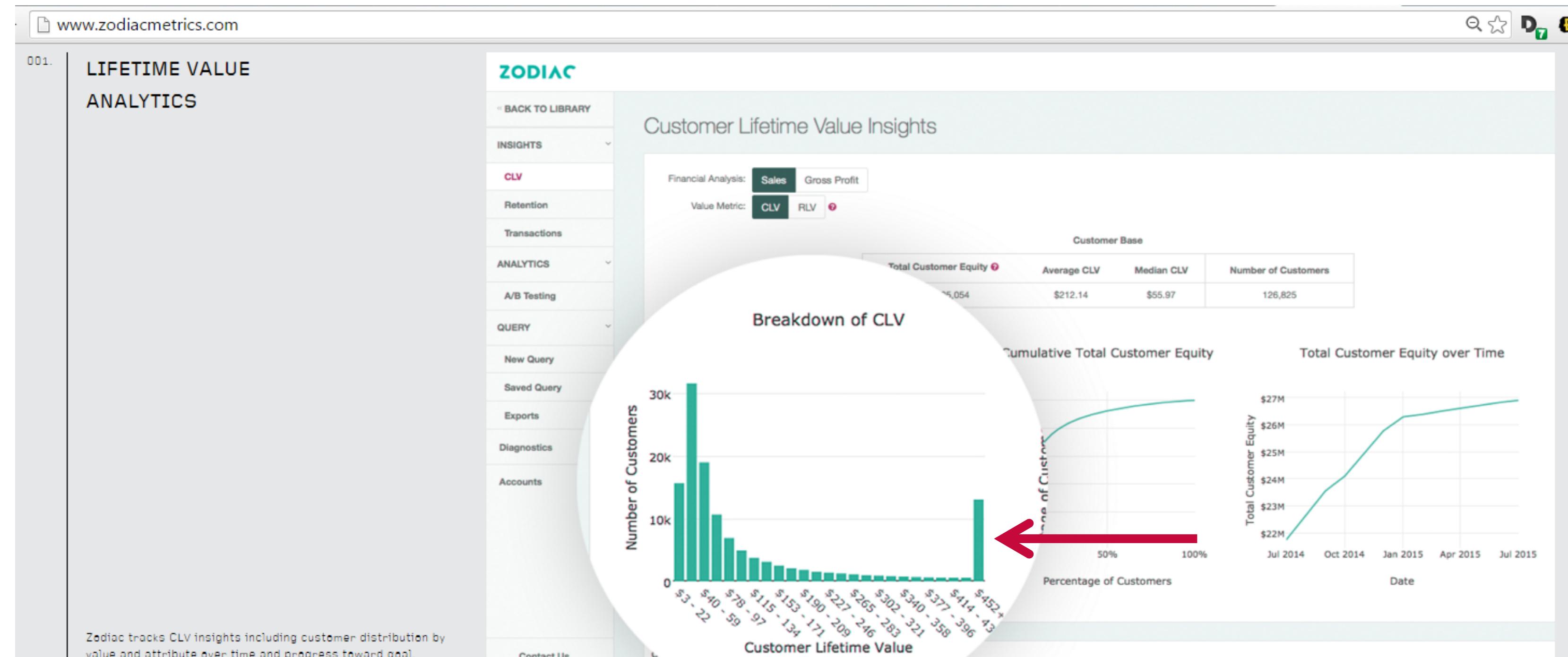
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Average CLV by Acquisition Channel

Total Customer Equity by Acquisition Channel

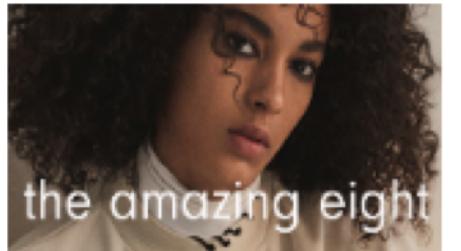
Acquisition Channel	Average CLV
Organic Search	\$210
Paid Search	\$180
Facebook	\$150





Targeting Segments	Reach	Link Clicks	Total Order	Total Revenue	CVR	AOV	CPA	ROAS
[REDACTED]	683,797	13,624	77	\$ 25,207.99	0.6%	\$ 327.38	\$ 116.01	\$ 2.82
[REDACTED]	168,834	4,483	82	\$ 20,188.57	1.8%	\$ 246.20	\$ 42.24	\$ 5.83
[REDACTED]	153,583	8,608	24	\$ 5,737.71	0.3%	\$ 239.07	\$ 104.86	\$ 2.28
[REDACTED]	203,354	9,302	9	\$ 1,611.80	0.1%	\$ 179.09	\$ 255.53	\$ 0.70
[REDACTED]	97,733	1,478	6	\$ 1,168.94	0.4%	\$ 194.82	\$ 181.41	\$ 1.07
Zodiac_Best-Cust_Segment	86,221	2,592	49	\$ 10,267.80	1.9%	\$ 209.55	\$ 19.37	\$ 10.82
[REDACTED]	1,406	36	1	\$ 64.98	2.8%	\$ 64.98	\$ 95.98	\$ 0.68
Grand Total	1,394,928	40,123	248	\$ 64,247.79	0.6%	\$ 259.06	\$ 78.01	\$ 3.32

Sample Applications

Customer Acquisition 	<ul style="list-style-type: none">• Use CLV forecasts to more efficiently allocate multichannel marketing dollars (e.g., CLV-based ad optimization)• Increase ROI by running lookalike campaigns based on Zodiac customer lifetime value metrics• Lead score new prospects and recently acquired customers and alter strategies (e.g., ad spend) accordingly• Plan and optimize marketing budgets by acquisition channels and key consumer-facing channels
Customer Retention 	<ul style="list-style-type: none">• Reactivate customers whose value has fallen in recent months• Predict future churn and proactively take action to mitigate risk. Operationalize customer service• Create winback campaigns for customers with high churn risk. Optimize clienteling strategies• Determine customers' true brand loyalty and segment the customer base accordingly
Loyalty and Insights 	<ul style="list-style-type: none">• Segment customers by expected number of future transactions to more accurately assess loyalty• Utilize different marketing levers (e.g., incentives, branding, customer service) based on loyalty tiers• Build stronger brand loyalty through customer-centric strategies. Focus on priority KPIs• Within low value product categories, find customers with a high “probability active” to cross-sell
Strategic Development 	<ul style="list-style-type: none">• Aggregate customer-level forecasts to the firm level for more accurate financial forecasts• Leverage customer lifetime value to make business decisions that yield sustainable, longer-term profitable growth• Calculate existing customer equity and track any changes over time• Perform corporate valuation using a “bottoms-up,” customer-based approach



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Customer Analytics Model Extensions

Peter Fader, Professor of Marketing

Model Extensions

- Time-varying covariates
- Regularity
- Clumpiness
- Cohort effects
- Data inputs



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Customer Analytics Surprising Applications

Peter Fader, Professor of Marketing

Surprising Applications

- Doctors Without Borders
- Animal tracking
- Library books
- Pediatric asthma
- Crime recidivism
- Customer-based corporate valuation



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Machine Learning

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Machine Learning

Machine learning is good at two things

- Classification - putting things in “buckets”
- Description/profiling - providing an explanation of which variables are going to be most associated with which bucket

Machine Learning

Where machine learning falls short

- When?
 - Not will this person churn in the current period or not, but *when* will this person churn?
- How long?
 - Not just will this person make a purchase with me in the next period, but how many purchases over the next 15 years?



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Customer Analytics Customer-Based Corporate Valuation (CBCV)

Peter Fader, Professor of Marketing

Sample Applications

Customer Acquisition



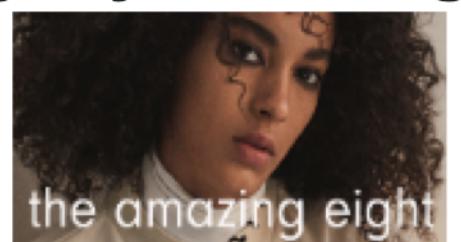
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Customer Retention



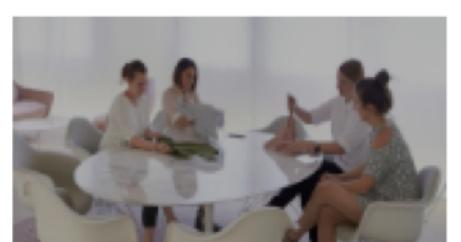
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Loyalty and Insights



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Strategic Development



- Aggregate customer-level forecasts to the firm level for more accurate financial forecasts
- Leverage customer lifetime value to make business decisions that yield sustainable, longer-term profitable growth
- Calculate existing customer equity and track any changes over time
- Perform corporate valuation using a “bottoms-up,” customer-based approach

Revolutionizing finance through customer-based corporate valuation

[Get Started](#)

We help you better estimate company value by predicting future customer behavior – acquisition, churn, spending

Traditional corporate valuation methods often miss key customer-driven leading indicators of company value, which limits their accuracy

These methods are often:

- Not focused on modeling the customer-related activity which generates companies' revenue
- Backward-looking, extrapolating off of historical financials
- Less diagnostic for growing companies with negative cash flows

We incorporate predictions of customer behavior directly into the company valuation, leading to better accuracy and deeper insights

Customer-based corporate valuation (CBCV) is:

- **Focused on the underlying customer behaviors** and their impact on company value
- **Forward-looking** – we predict future customer value and its impact on future financials
- **Well-suited for growing companies** with negative cash flows

Our work includes...



Private Equity Venture Capital

Quickly screen out deals with unsustainable customer dynamics

Get competitive edge in bidding with:

- More accurate estimates of potential investments' value
- Better understanding of stability of existing revenue streams and levers to improve value of new revenue streams



Hedge Funds

Better estimate investments' value using publicly available data (SEC filings, investor presentations, 3rd party disclosures, etc.)

Gain deeper insights into customer behavior and unit economics of your investments

Always have an up-to-date forward-looking view of your investments



Corporations

Better understand health of your customer base and customers' relationship to overall company valuation

Link your marketing activities to overall company value creation

Strategically disclose key customer metrics to external shareholders to showcase company value



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[VIA EMAIL](#)

Dear Messrs. Kroeker and Buesser:

We would like to endorse and elaborate on a proposal related to customer data disclosure that was submitted to the Board by Rob Markey of Bain & Company on December 10, 2019.

We believe that corporate valuation techniques have long relied on inadequate data because they are based on accounting practices and standards developed for a different era. Projecting a firm's future cash flows purely on the basis of traditional financial data (e.g., income statement, balance sheet, and statement of cash flow line items) does not arm investors with the insights they need to value companies adequately. What is missing are disclosures related to the quality and quantity of relationships the firm has with its customers. With the advent of the "loyalty economy," better customer-level information tracking, and improvements in predictive modeling, it is now possible to observe, project, and understand the value of customer relationships in a way that executives and investors can seamlessly embed them into their valuation practices.

Theta Equity Partners, the company we founded and run together, has a growing business supplying enhanced corporate valuation estimates to investors. We use a technique we call Customer-Based Corporate Valuation (CBCV) to make more accurate cash flow predictions from the "bottom up" instead of the conventional "top down" approaches. We conceived this framework through award-winning academic work we have done as professors of marketing at, respectively, Emory University's Goizueta School of Business and the Wharton School of the University of Pennsylvania

CBCV exploits a very simple accounting identity: all revenue must come from customers who place orders with an associated spend amount. Acknowledging this, we use best-in-class models from the marketing science literature to predict four critical (but intuitively sensible) quantities: (1) how many customers a firm will acquire in the future (and at what cost), (2) how long current and future customers will stay before churning, (3) how many orders they will place, and (4) how much they will spend on those orders. Bringing these models together, we arrive at more accurate projections of revenue and a more informed view of the company's underlying unit economic health. We make these predictions using a variety of different customer-related disclosures, typically obtained through SEC filings and investor presentations. We regard this as an alternative way to project future cash flows that enhances (but does not fully replace) the predominant valuation modeling practice today.



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CBCV Case Study: Farfetch

Peter Fader, Professor of Marketing



Women Men Kids

FARFETCH



Search



Please select a gender to shop

Hey! Want 10% off? Sign up to our newsletter [here](#)



For the love of fashion

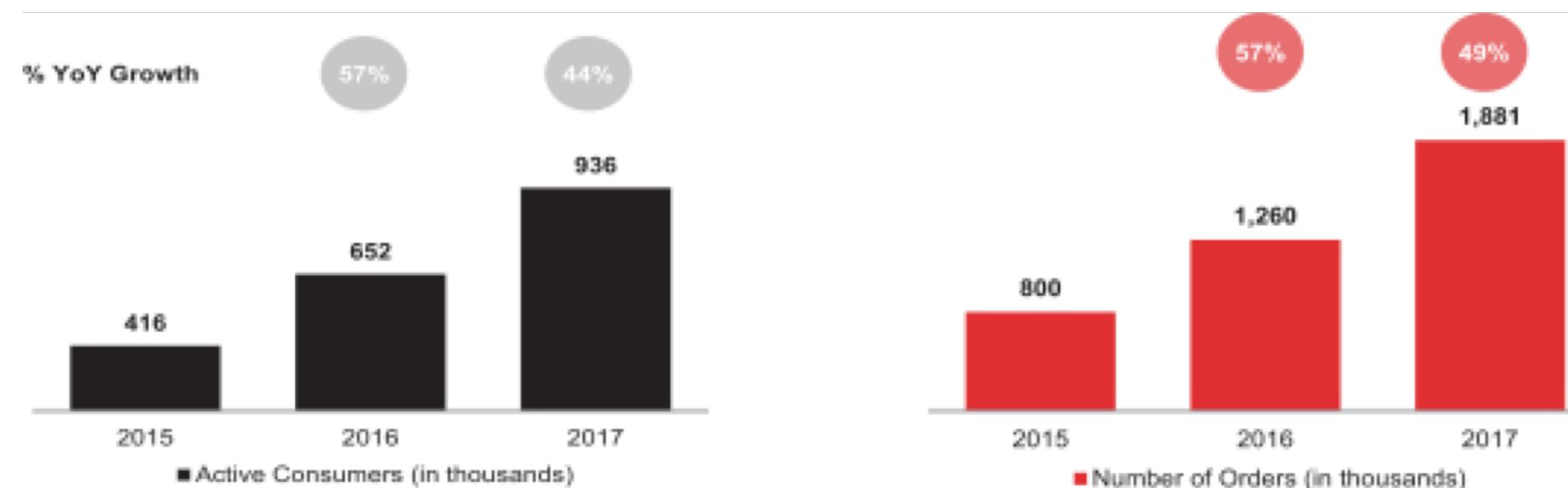
Shop Women

Shop Men

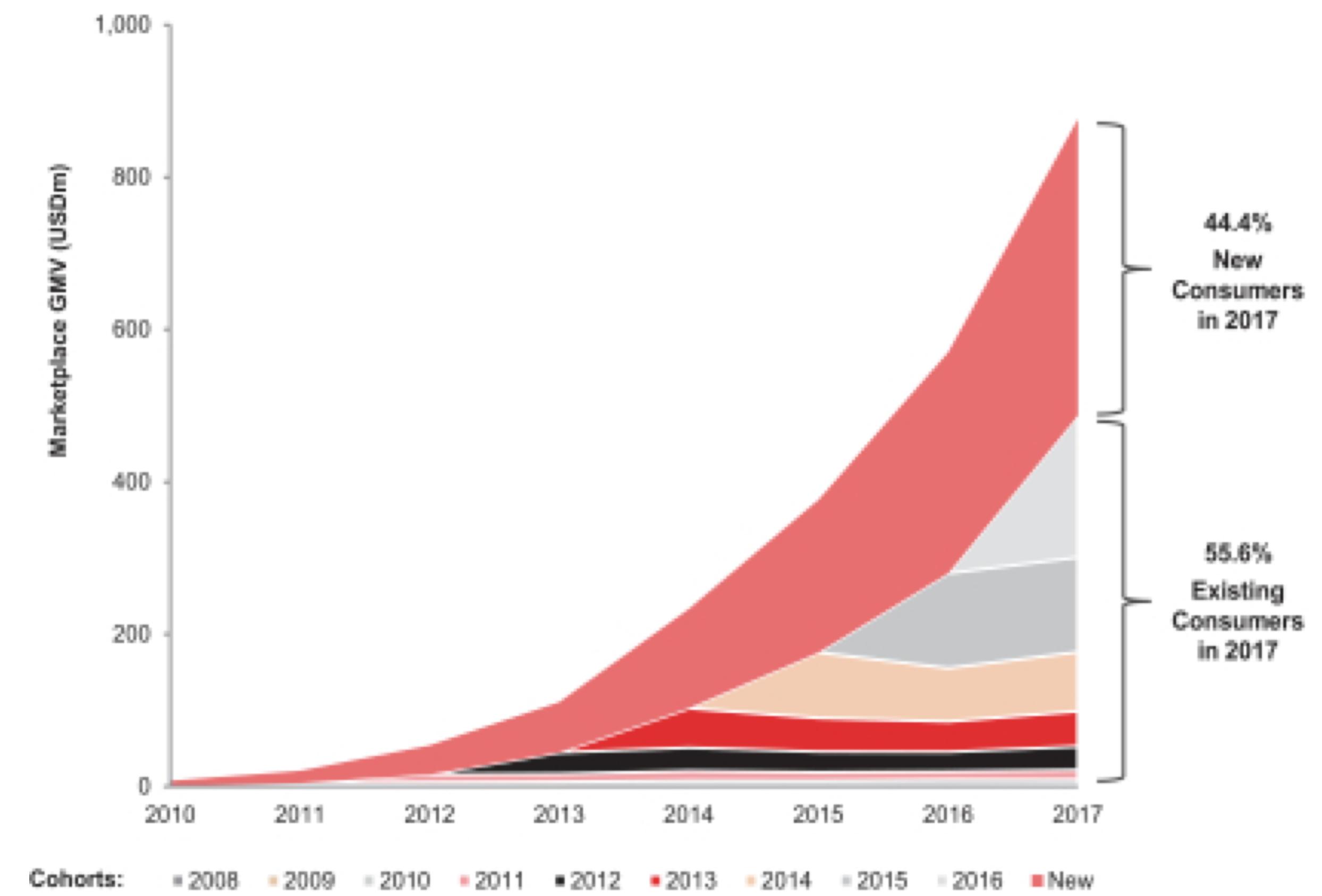
Shop Kids

Farfetch: Disclosures from their pre-IPO F-1 Filing

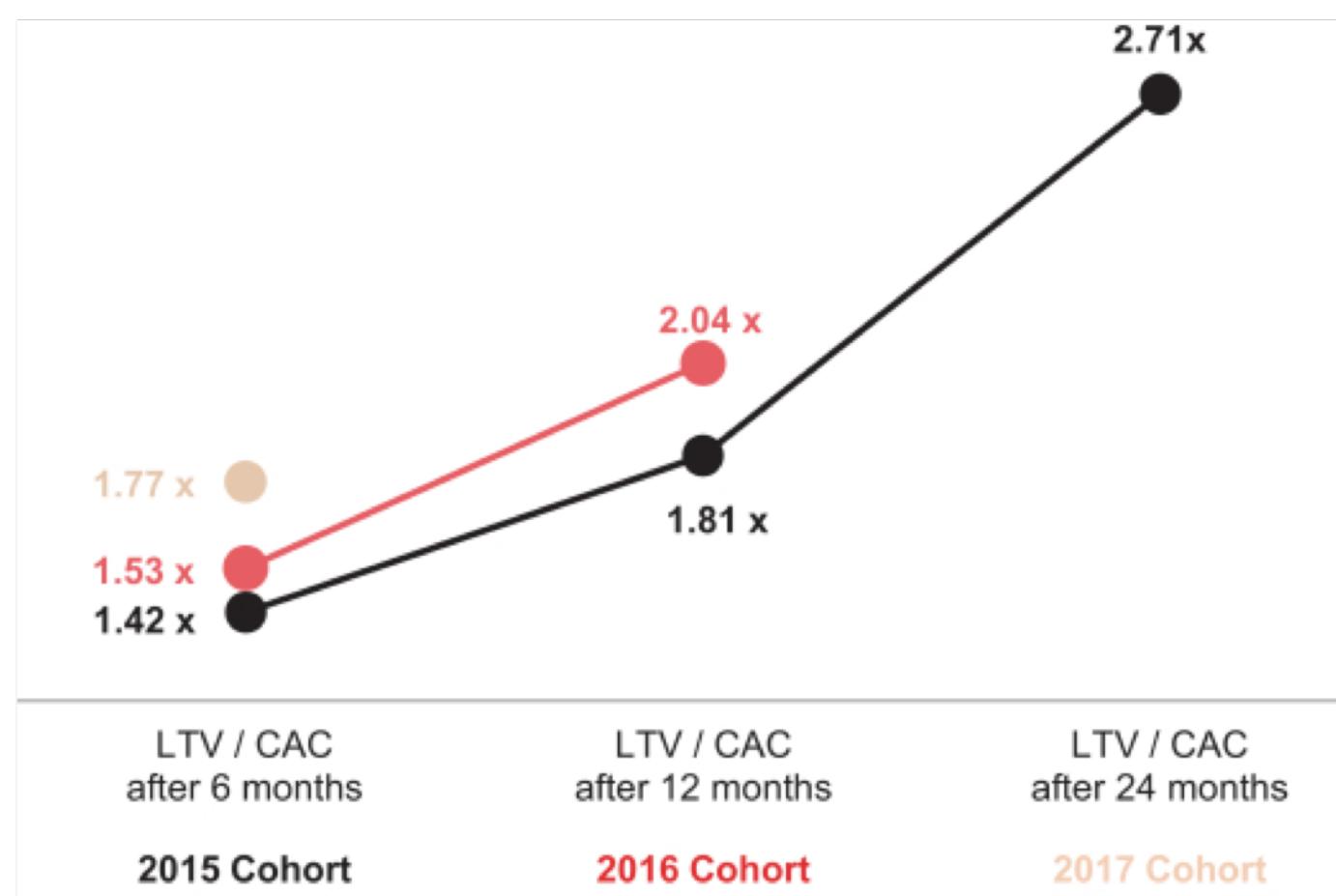
Active customers and total orders



GMV by customer cohort (what we call the C3)



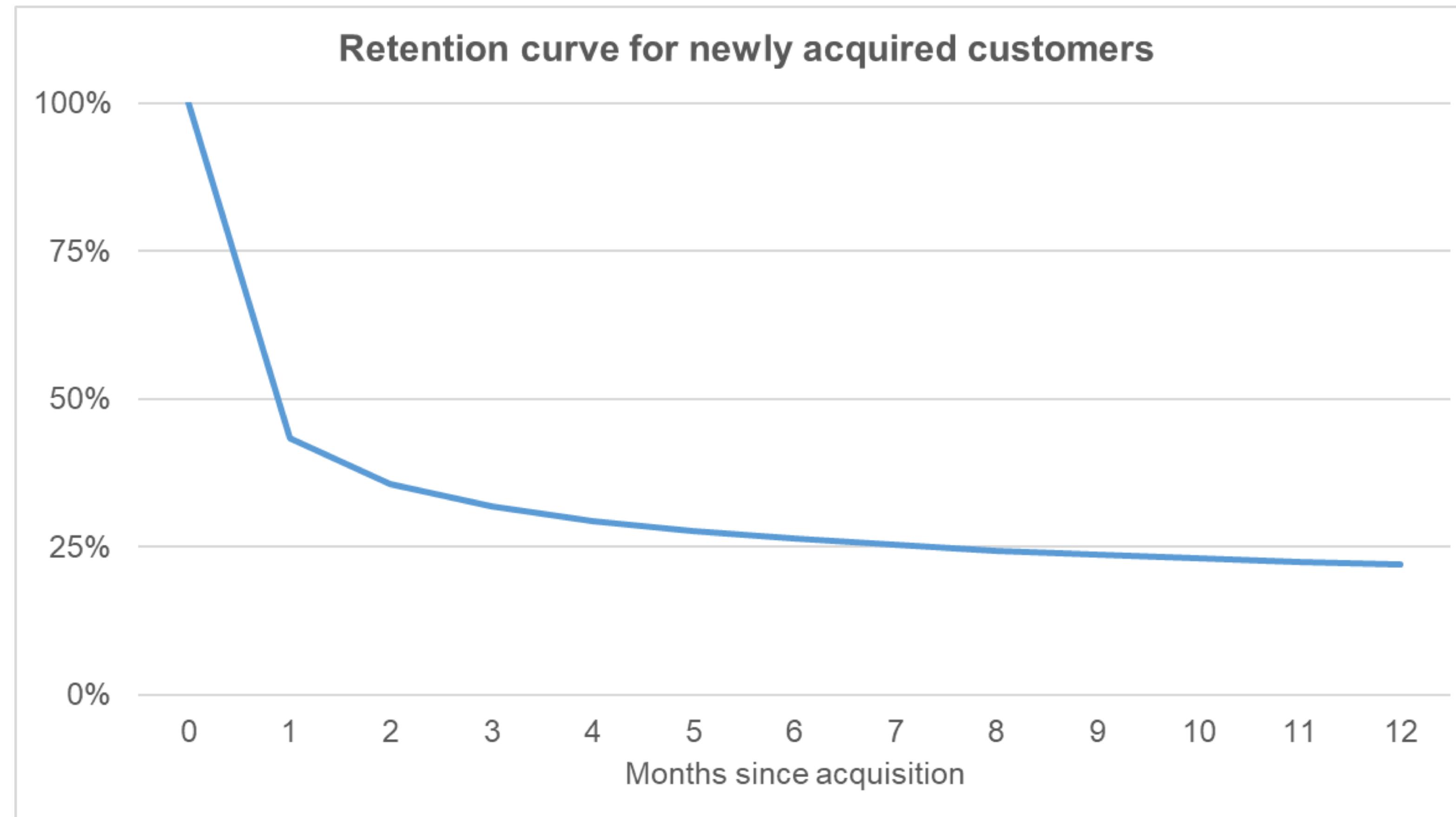
Cumulative LTV to CAC ratio



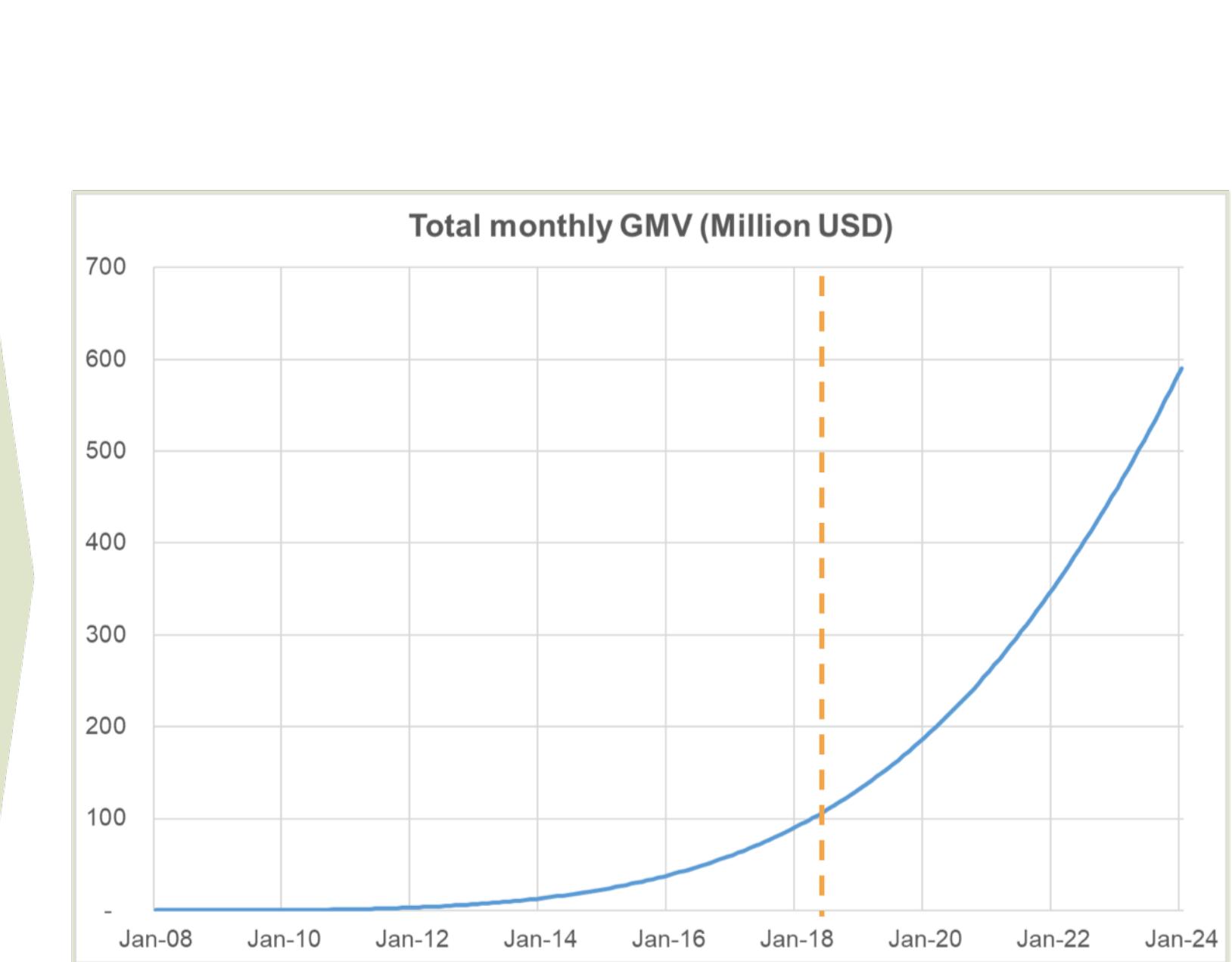
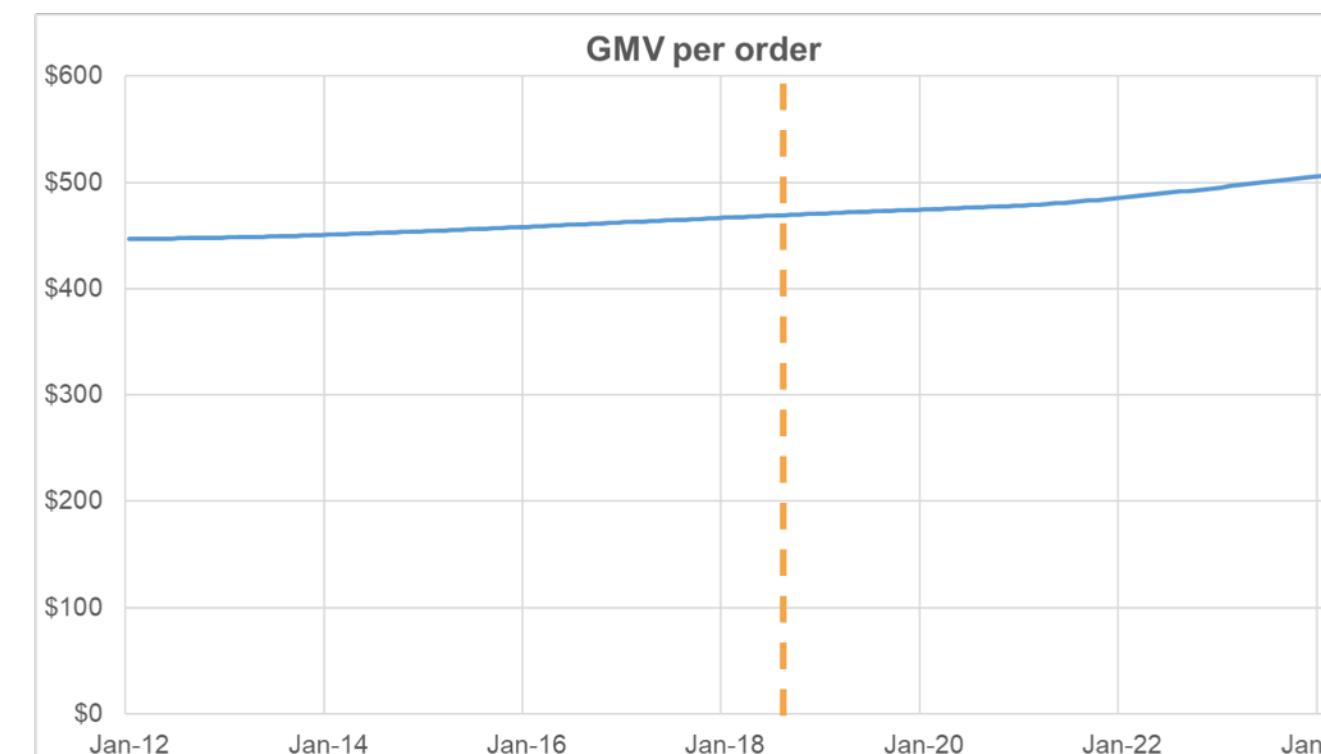
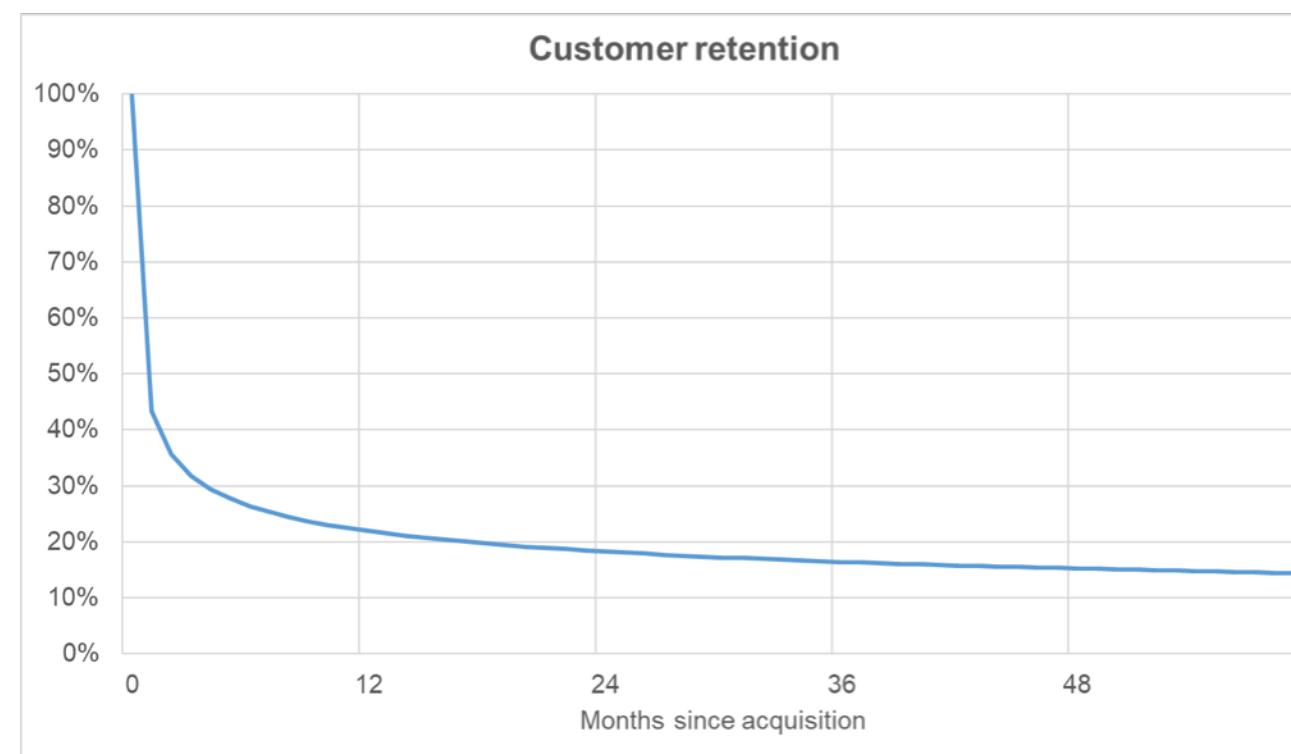
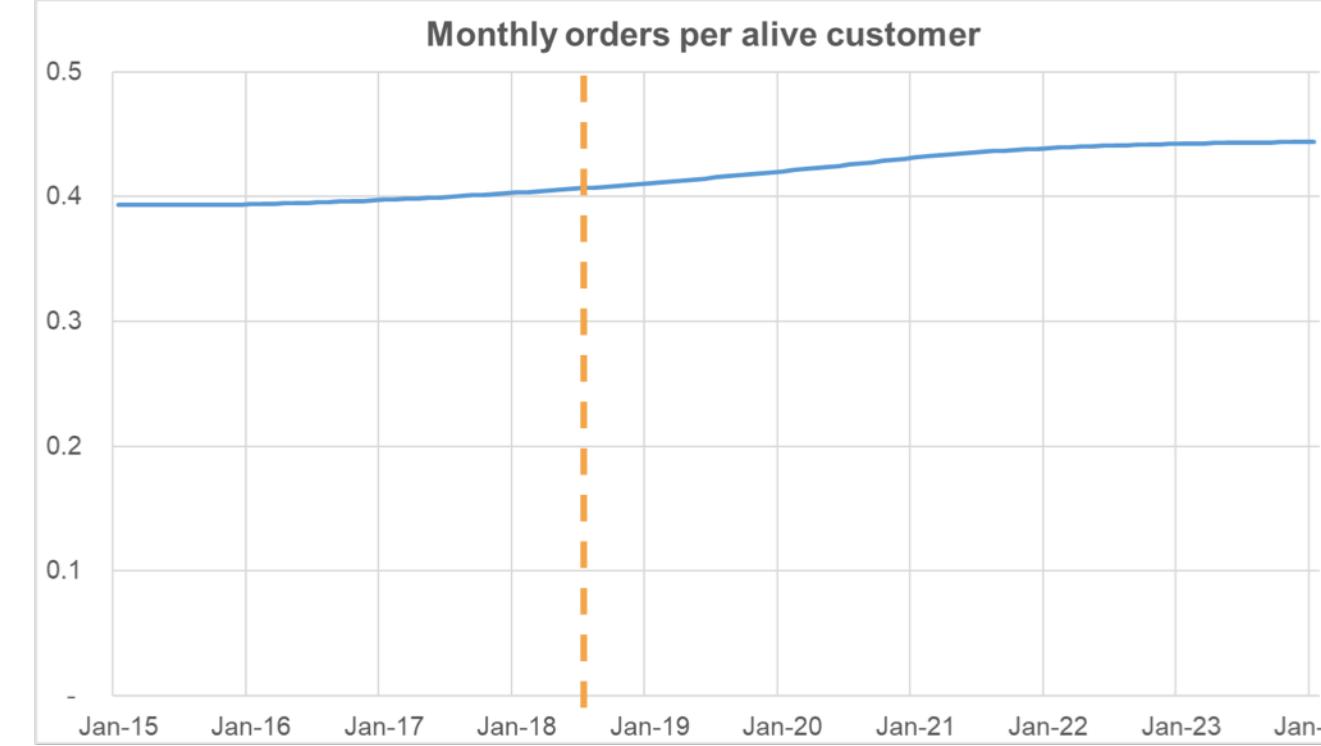
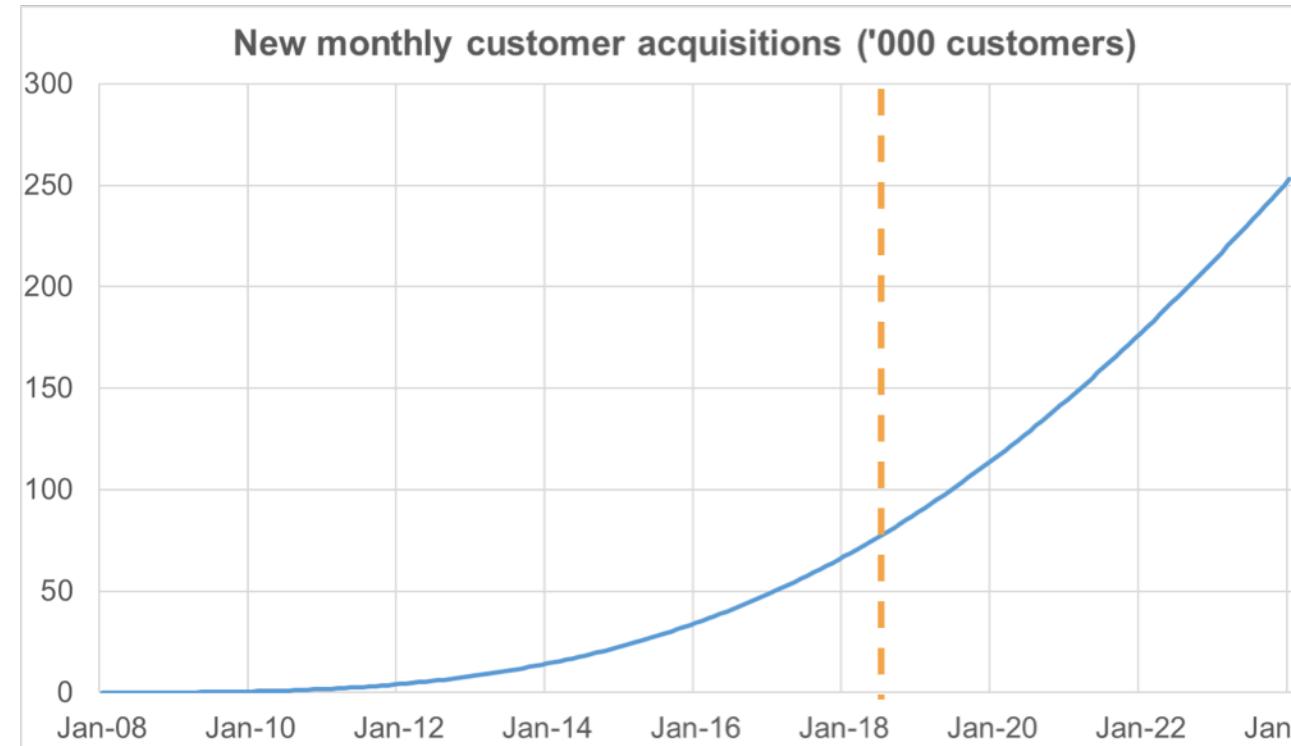
Farfetch: Model Fits

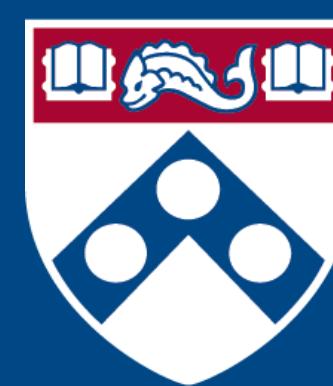


Farfetch: Retention Curve



Farfetch: Model Forecasts





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