enginius
MARKETING ENGINEERING ONLINE

Enginius
Lifetime Value

Evan Duran, California State University Fullerton

Customer base evolution

Overview

This table reports the number of customers expected in each segment after each period. These simulations take into account:

- The number of customers at the start.
- Customer acquisitions, if any.
- Customer transitions from segments to segments at each period (i.e., transition matrix).

The 'infinity' period simulates where the database will converge to after 250 time periods.

	N	N + 1	N + 2	N + 3	N + 4	N + 5	N + 6	N + 7	N + 8	N + 9	N + 10	...	Infinity
Large accounts	500	275	151	83	46	25	14	8	4	2	1		0
Large accounts, rebate	2 000	1 550	1 190	908	689	521	394	297	223	168	126		0
Small accounts	5 000	2 900	1 682	976	566	328	190	110	64	37	22		0
Small accounts, rebate	7 500	5 350	3 803	2 696	1 907	1 346	949	668	470	330	232		0
Lost customers	0	4 925	8 174	10 338	11 793	12 779	13 454	13 918	14 239	14 463	14 619		15 000
Total	15 000	15 000	15 000	15 000	15 000	15 000	15 000	15 000	15 000	15 000	15 000		15 000

Customer base evolution.

Customer segment evolution
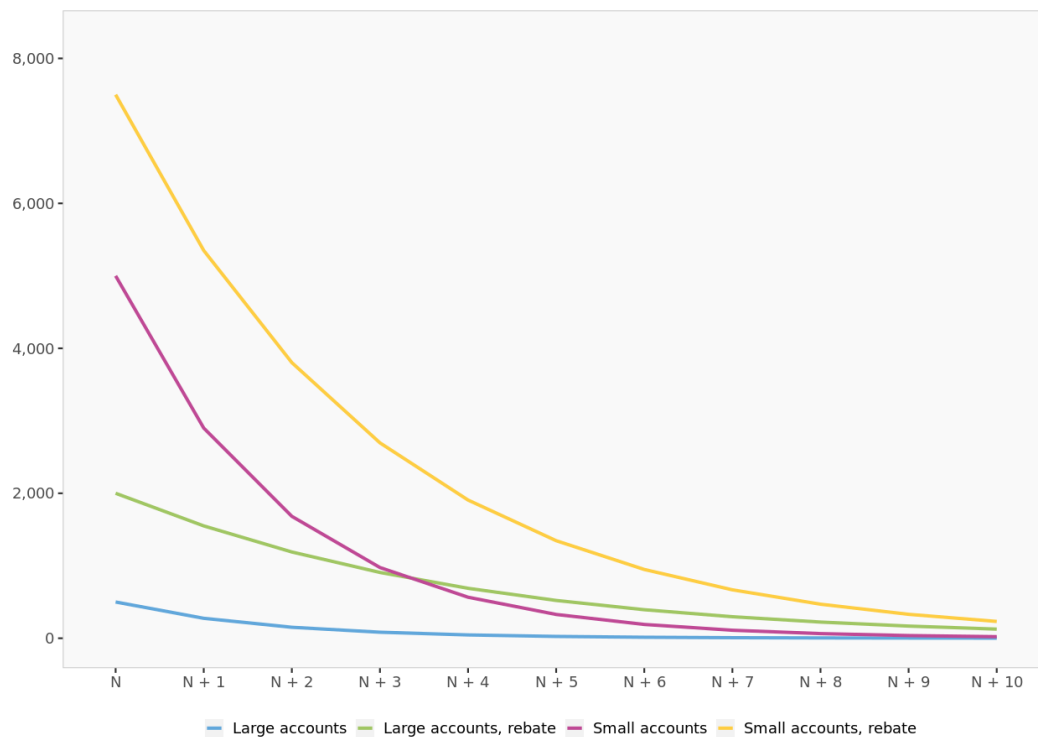
Customer segment evolution. Segments with an absorbing state, if any, are not displayed.

Transition matrix

	Large accounts	Large accounts, rebate	Small accounts	Small accounts, rebate	Lost customers
Large accounts	55.0%	10.0%	0.0%	0.0%	35.0%
Large accounts, rebate	0.0%	75.0%	0.0%	0.0%	25.0%
Small accounts	0.0%	0.0%	58.0%	2.0%	40.0%
Small accounts, rebate	0.0%	0.0%	0.0%	70.0%	30.0%
Lost customers	0.0%	0.0%	0.0%	0.0%	100.0%

Transition matrix. Segments on the left represent where customers come from. Segments on top represent where customers are likely to transition to. A segment with a transition probability to itself of 100% is said to be an 'absorbing state'.

Customer base valuation

Customer base valuation

In this section, we value the database in monetary terms.

Based on which segment customers belong to, they may generate revenues (gross margin) and costs. These figures will be cumulated, and increasingly discounted over time.

At one point, discounting of future revenues and costs will be so high that they will become irrelevant for today's valuation, hence ensuring that the customer base valuation will converge to a non-infinity value (even if the customer base keeps growing).

Based on predicted customer base evolution and selected discount rate, the customer base is currently valued at $179,136,457

|	N + 1	N + 2	N + 3	N + 4	N + 5	N + 6	N + 7	N + 8	N + 9	N + 10	...	Infin
Gross margin	$ 142 965 000	$ 97 915 950	$ 67 860 689	$ 47 525 715	$ 33 588 782	$ 23 925 311	$ 17 155 833	$ 12 371 131	$ 8 963 224	$ 6 520 024		$ 0
Next-period cost	$ 25 500 000	$ 17 275 000	$ 11 842 250	$ 8 205 518	$ 5 740 182	$ 4 049 389	$ 2 877 527	$ 2 057 676	$ 1 479 352	$ 1 068 468		$ 0
Net margin	$ 117 465 000	$ 80 640 950	$ 56 018 439	$ 39 320 197	$ 27 848 600	$ 19 875 922	$ 14 278 306	$ 10 313 455	$ 7 483 873	$ 5 451 556		$ 0
Discount Factor	74.1%	54.9%	40.6%	30.1%	22.3%	16.5%	12.2%	9.1%	6.7%	5.0%		0.0%
Discounted net margin	$ 87 011 111	$ 44 247 435	$ 22 768 252	$ 11 838 062	$ 6 210 614	$ 3 283 407	$ 1 747 191	$ 934 833	$ 502 484	$ 271 133		$ 0
Discounted net margin (cumulated)	$ 87 011 111	$ 131 258 546	$ 154 026 798	$ 165 864 860	$ 172 075 474	$ 175 358 881	$ 177 106 071	$ 178 040 904	$ 178 543 389	$ 178 814 522		$ 179 13

Customer base valuation.

Valuation per period
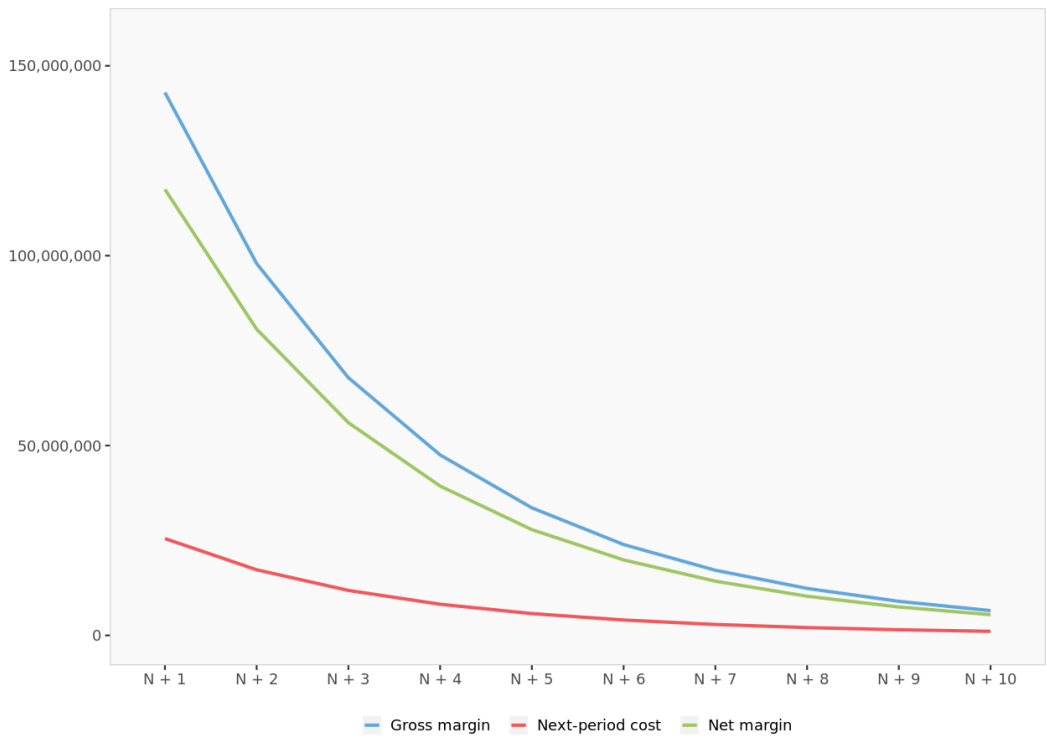
Valuation per period. Gross margin, costs and net margin, at each period (no discount factor applied)
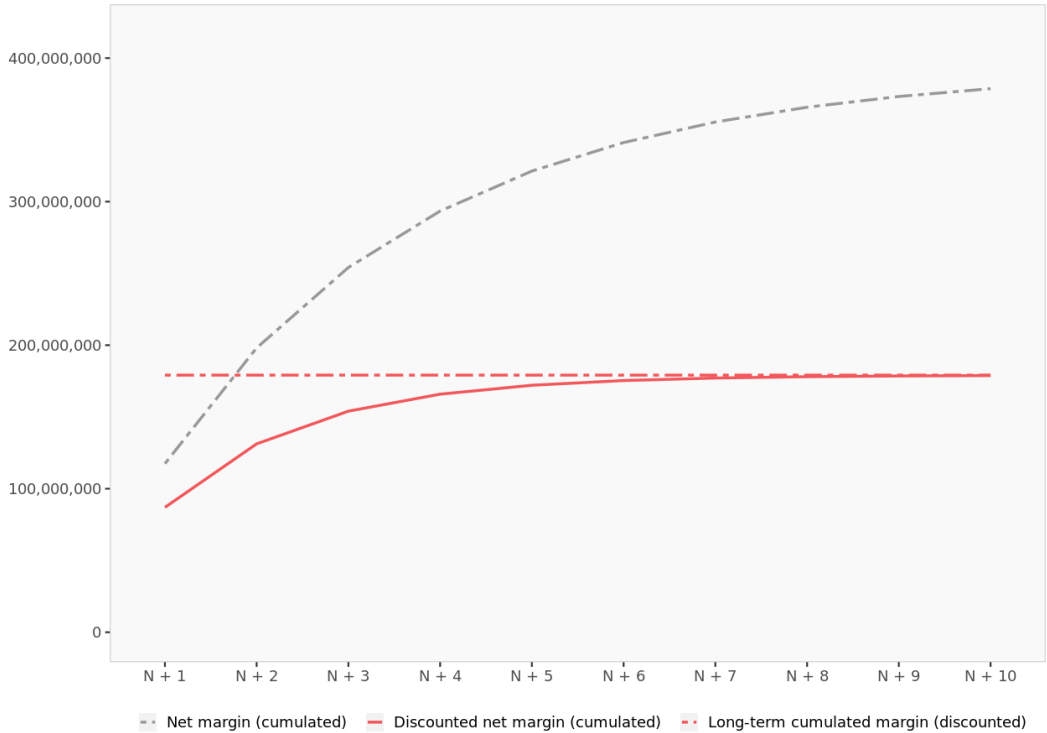
Cumulated valuation
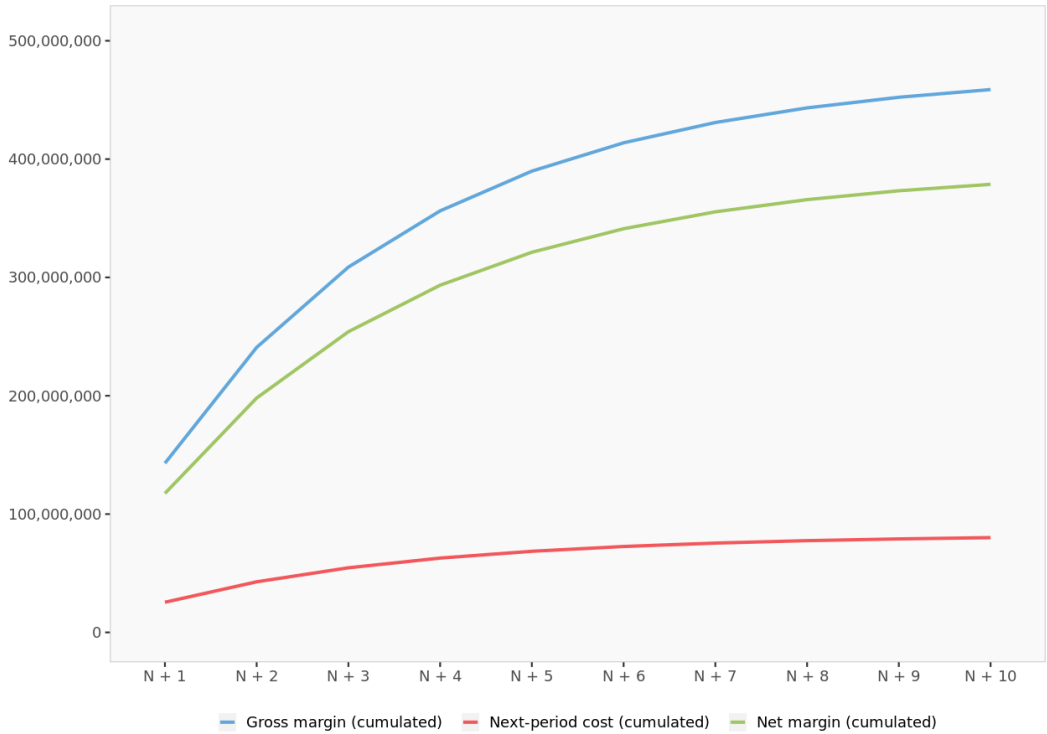
Cumulated valuation. Cumulated gross margin, costs and net margin, after N periods (no discount factor applied)

Cumulated valuation (after discount factor)

- The dashed, grey line corresponds to the 'Net margin (cumulated)' already reported in the previous chart.
- The plain, red line corresponds to the same figure after applying the discount factor.
- The dashed, red line corresponds to the value at which the previous line will converge to after an infinite number of periods. This value corresponds to the customer base valuation in current monetary terms.
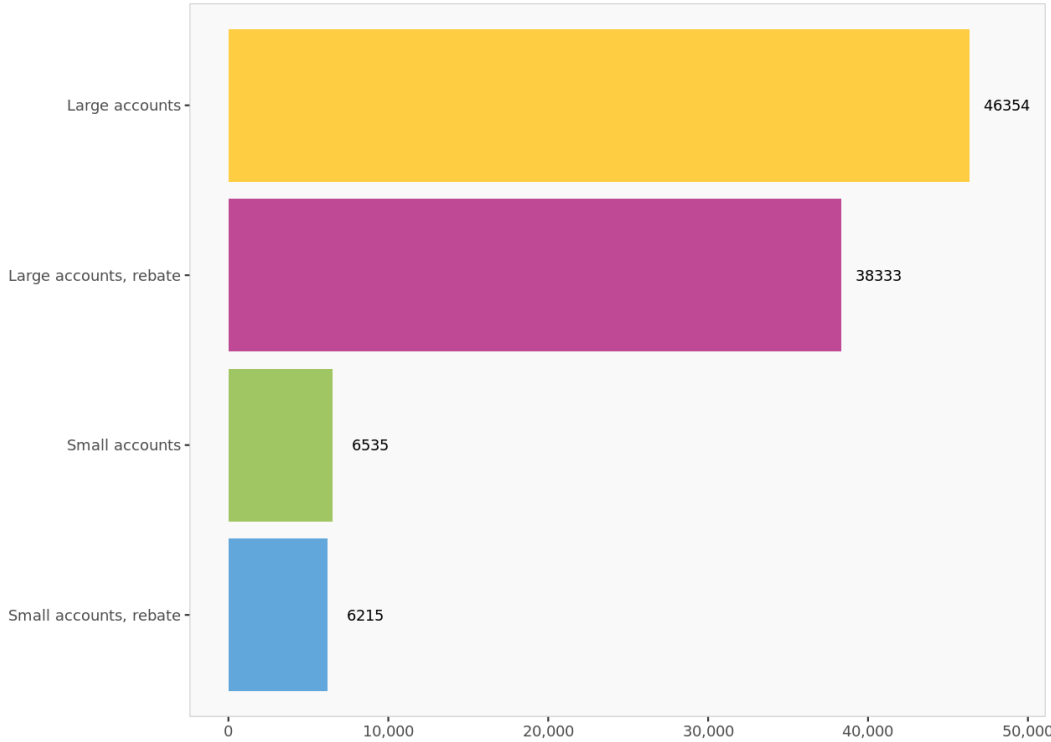

Cumulated valuation (after discount factor).

Customer lifetime value per segment

Customer lifetime value per segment

	Customer lifetime value ($)
Large accounts	$ 46 354.17
Large accounts, rebate	$ 38 333.33
Small accounts	$ 6 535.46
Small accounts, rebate	$ 6 215.38

Customer lifetime value per segment.

Customer lifetime value per segment.

Introduction

Customer lifetime value per segment is obtained by simulating how likely a customer will transition to segments over time if he or she were to start from one specific segment, and how much revenue he or she is likely to generate over time in doing so. These revenues are then discounted and cumulated to obtain a single financial figure, corresponding to the customer lifetime value of a single individual in the initial segment.

Note that customer acquisition costs are NOT incorporated in these simulations, but are represented graphically later on. If acquisition costs (if any) are below the customer lifetime value (i.e., long-term, cumulated, discounted margin), then acquiring a customer at that cost is profitable.

CLV of one customer in Large accounts

	N	N + 1	N + 2	N + 3	N + 4	N + 5	N + 6	N + 7	N + 8	N + 9	N + 10	...	Infinity
Large accounts	100.0%	55.0%	30.3%	16.6%	9.2%	5.0%	2.8%	1.5%	0.8%	0.5%	0.3%		0.0%
Large accounts, rebate	0.0%	10.0%	13.0%	12.8%	11.2%	9.3%	7.5%	5.9%	4.6%	3.5%	2.7%		0.0%
Small accounts	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%		0.0%
Small accounts, rebate	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%		0.0%
Lost customers	0.0%	35.0%	56.8%	70.6%	79.6%	85.6%	89.7%	92.6%	94.6%	96.0%	97.1%		100.0%
Net margin		$ 33 250.00	$ 20 587.50	$ 13 048.13	$ 8 470.22	$ 5 628.93	$ 3 823.65	$ 2 648.81	$ 1 866.19	$ 1 333.42	$ 963.64		$ 0.00
Discount factor		0.741	0.549	0.406	0.301	0.223	0.165	0.122	0.091	0.067	0.050		0.000

|										
Net margin (discounted)	$ 24 629.63	$ 11 296.30	$ 5 303.31	$ 2 550.11	$ 1 255.33	$ 631.65	$ 324.13	$ 169.16	$ 89.53	$ 47.93	$ 0.00
Cumulated net margin (discounted)	$ 24 629.63	$ 35 925.93	$ 41 229.23	$ 43 779.35	$ 45 034.68	$ 45 666.32	$ 45 990.45	$ 46 159.61	$ 46 249.13	$ 46 297.06	$ 46 354.17

CLV of one customer in Large accounts.

- · Cumulated net margin — Cumulated net margin (discounted) - · Long-term cumulated margin (discounted)
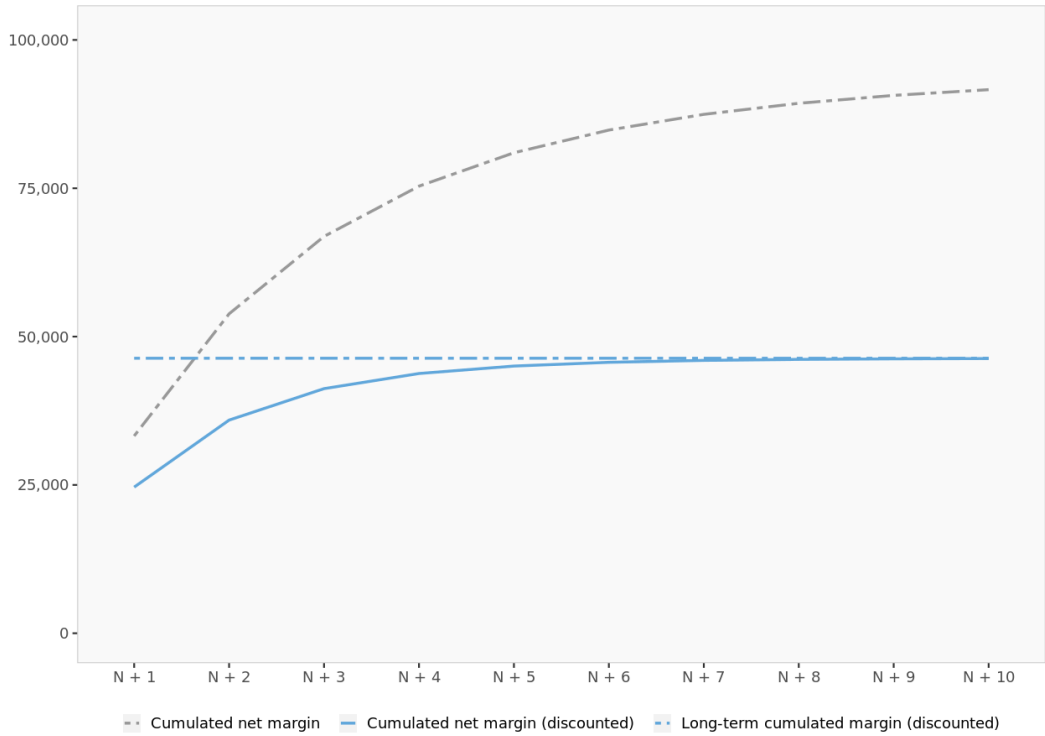
CLV of one customer in Large accounts.

CLV of one customer in Large accounts, rebate

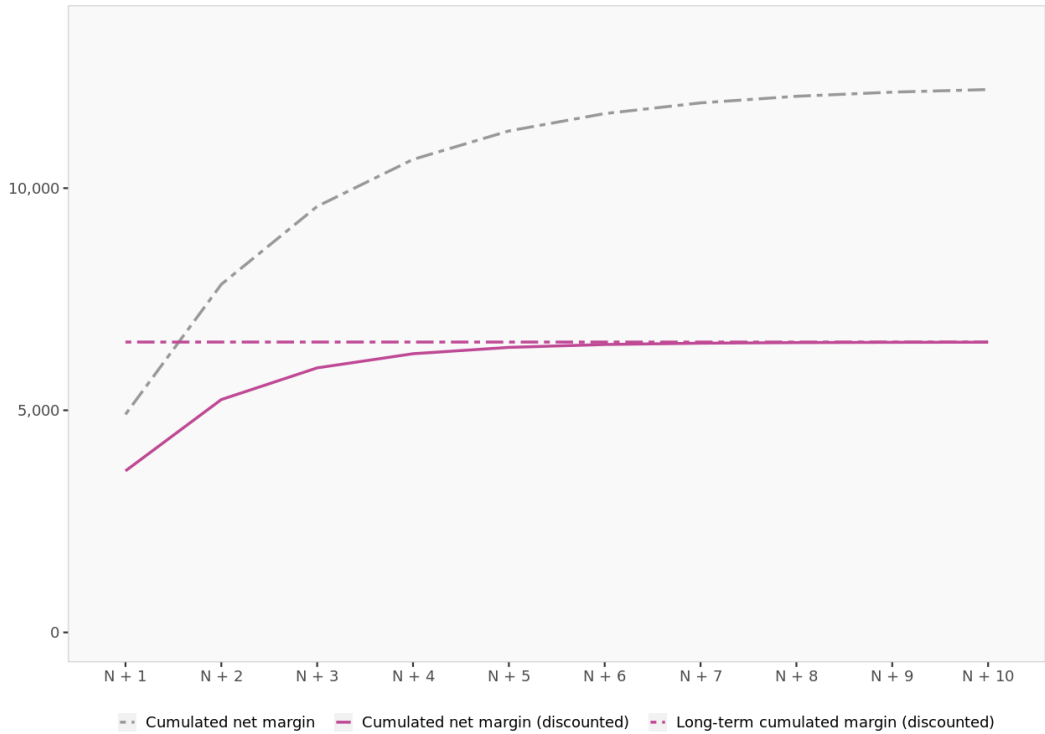|	N	N + 1	N + 2	N + 3	N + 4	N + 5	N + 6	N + 7	N + 8	N + 9	N + 10	...	Infinity
Large accounts	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%		0.0%
Large accounts, rebate	100.0%	75.0%	56.3%	42.2%	31.6%	23.7%	17.8%	13.3%	10.0%	7.5%	5.6%		0.0%
Small accounts	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%		0.0%
Small accounts, rebate	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%		0.0%
Lost customers	0.0%	25.0%	43.8%	57.8%	68.4%	76.3%	82.2%	86.7%	90.0%	92.5%	94.4%		100.0%
Net margin		$ 23 000.00	$ 17 250.00	$ 12 937.50	$ 9 703.13	$ 7 277.34	$ 5 458.01	$ 4 093.51	$ 3 070.13	$ 2 302.60	$ 1 726.95		$ 0.00
Discount factor		0.741	0.549	0.406	0.301	0.223	0.165	0.122	0.091	0.067	0.050		0.000
Net margin (discounted)		$ 17 037.04	$ 9 465.02	$ 5 258.34	$ 2 921.30	$ 1 622.95	$ 901.64	$ 500.91	$ 278.28	$ 154.60	$ 85.89		$ 0.00
Cumulated net margin (discounted)		$ 17 037.04	$ 26 502.06	$ 31 760.40	$ 34 681.71	$ 36 304.65	$ 37 206.29	$ 37 707.20	$ 37 985.48	$ 38 140.08	$ 38 225.97		$ 38 333.33

CLV of one customer in Large accounts, rebate.
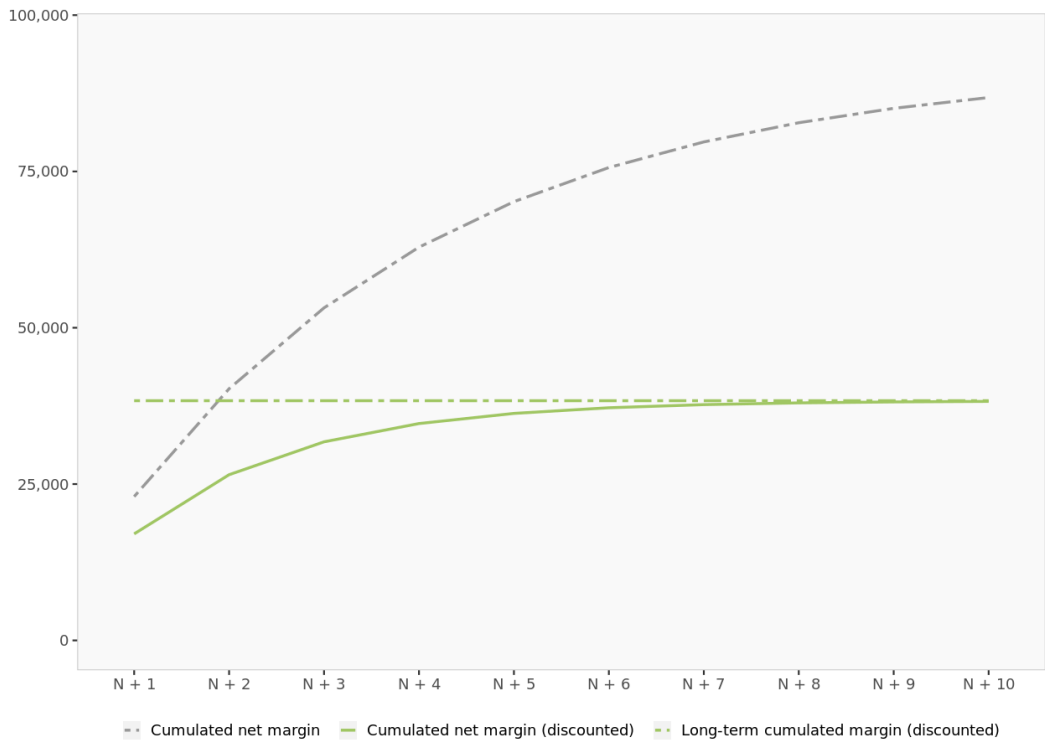
CLV of one customer in Large accounts, rebate.

CLV of one customer in Small accounts

	N	N + 1	N + 2	N + 3	N + 4	N + 5	N + 6	N + 7	N + 8	N + 9	N + 10	...	Infinity
Large accounts	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%		0.0%
Large accounts, rebate	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%		0.0%
Small accounts	100.0%	58.0%	33.6%	19.5%	11.3%	6.6%	3.8%	2.2%	1.3%	0.7%	0.4%		0.0%
Small accounts, rebate	0.0%	2.0%	2.6%	2.5%	2.1%	1.7%	1.3%	1.0%	0.7%	0.5%	0.4%		0.0%
Lost customers	0.0%	40.0%	63.8%	78.0%	86.6%	91.7%	94.9%	96.8%	98.0%	98.7%	99.2%		100.0%
Net margin		$ 4 908.00	$ 2 927.44	$ 1 754.48	$ 1 057.19	$ 640.88	$ 391.11	$ 240.43	$ 148.95	$ 93.05	$ 58.63		$ 0.00
Discount factor		0.741	0.549	0.406	0.301	0.223	0.165	0.122	0.091	0.067	0.050		0.000
Net margin (discounted)		$ 3 635.56	$ 1 606.28	$ 713.09	$ 318.29	$ 142.93	$ 64.61	$ 29.42	$ 13.50	$ 6.25	$ 2.92		$ 0.00
Cumulated net margin (discounted)		$ 3 635.56	$ 5 241.83	$ 5 954.93	$ 6 273.21	$ 6 416.14	$ 6 480.75	$ 6 510.17	$ 6 523.67	$ 6 529.92	$ 6 532.83		$ 6 535.46

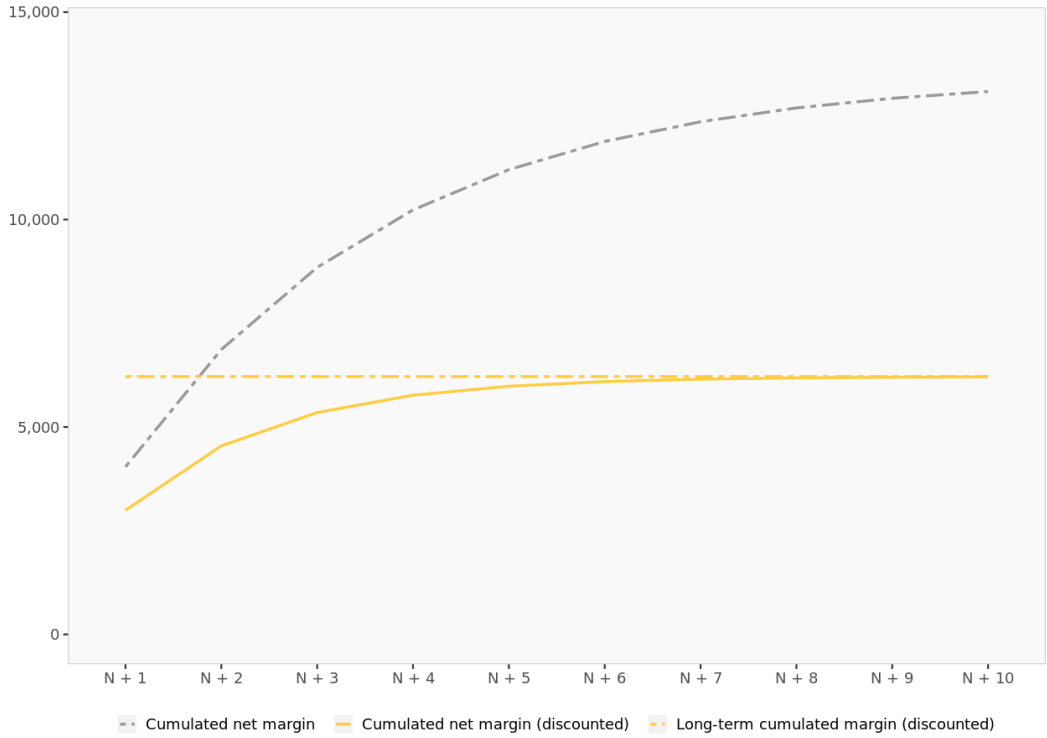**CLV of one customer in Small accounts.**

CLV of one customer in Small accounts.

CLV of one customer in Small accounts, rebate

	N	N + 1	N + 2	N + 3	N + 4	N + 5	N + 6	N + 7	N + 8	N + 9	N + 10	...	Infinity
Large accounts	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%		0.0%
Large accounts, rebate	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%		0.0%
Small accounts	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%		0.0%
Small accounts, rebate	100.0%	70.0%	49.0%	34.3%	24.0%	16.8%	11.8%	8.2%	5.8%	4.0%	2.8%		0.0%
Lost customers	0.0%	30.0%	51.0%	65.7%	76.0%	83.2%	88.2%	91.8%	94.2%	96.0%	97.2%		100.0%
Net margin		$ 4 040.00	$ 2 828.00	$ 1 979.60	$ 1 385.72	$ 970.00	$ 679.00	$ 475.30	$ 332.71	$ 232.90	$ 163.03		$ 0.00
Discount factor		0.741	0.549	0.406	0.301	0.223	0.165	0.122	0.091	0.067	0.050		0.000
Net margin (discounted)		$ 2 992.59	$ 1 551.71	$ 804.59	$ 417.20	$ 216.32	$ 112.17	$ 58.16	$ 30.16	$ 15.64	$ 8.11		$ 0.00
Cumulated net margin (discounted)		$ 2 992.59	$ 4 544.31	$ 5 348.90	$ 5 766.10	$ 5 982.42	$ 6 094.59	$ 6 152.75	$ 6 182.91	$ 6 198.54	$ 6 206.65		$ 6 215.38

CLV of one customer in Small accounts, rebate.

CLV of one customer in Small accounts, rebate.