

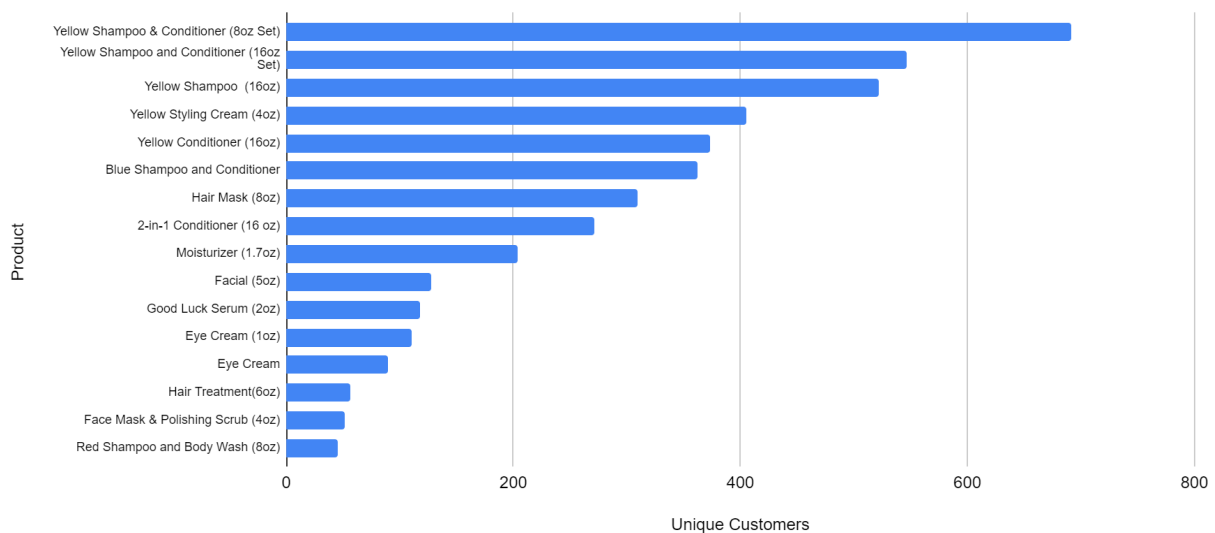
Beauty Subscriptions

Analysis done by James Wolsky

Which products drive the most repeat customers?

The below chart depicts how many unique customers purchased each individual product. This does not account for quantity or frequency, but how many customers have purchased each product at least once.

Product Unique Customers

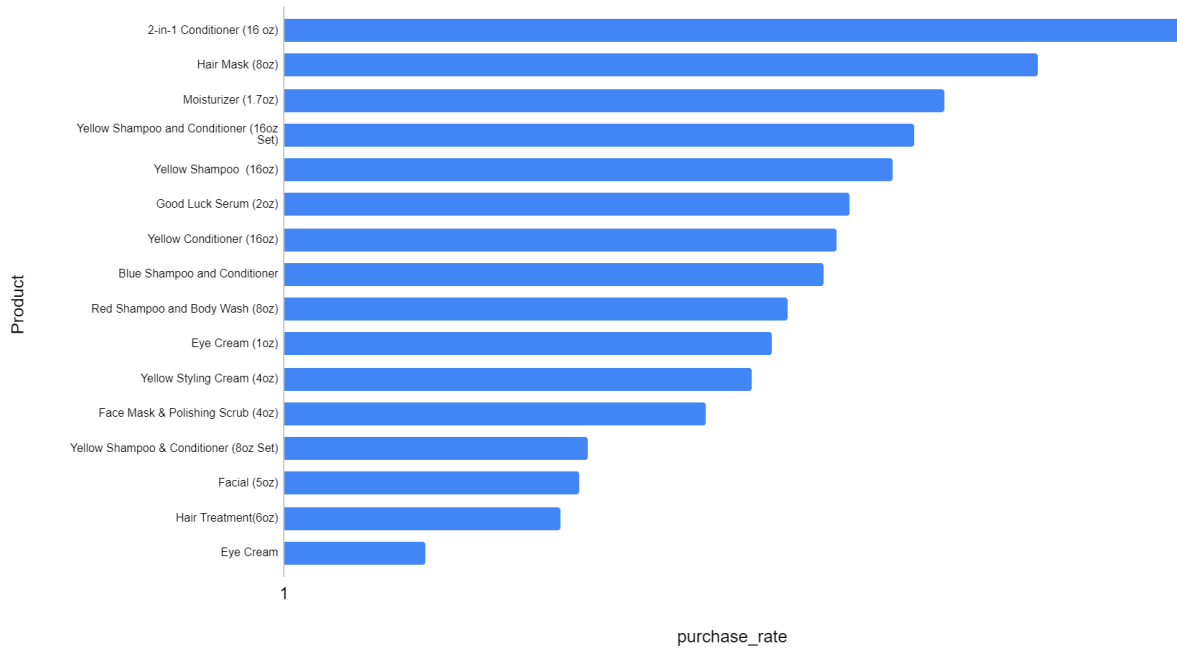


We can see that 'Yellow Shampoo & Conditioner (8oz Set)', 'Yellow Shampoo & Conditioner (16oz Set)', and 'Yellow Shampoo (16oz)' are the products with the highest number of unique customers. However, this does not tell us if they drive repeat purchases.

In order to do that, we must look at the customer purchase rate of each individual product. A product's customer purchase rate is the average amount of times that an individual customer will purchase the same product more than once. To find this metric, we need to calculate the ratio of the number of times a product has been purchased (regardless of quantity) and the number of unique customers that purchased that product.

The graph below shows the result of this calculation. The three gift cards have been excluded from the rest of the analysis.

Product Purchase Rate



Generally, products with higher purchase rates drive more repeat customers, because more people are satisfied with the product and come back to buy it again. Based on calculation results, here are the top products that drive return customers, regardless of the total sales numbers.

1. 2-in-1 Conditioner (16 oz)
2. Hair Mask (8oz)
3. Moisturizer (1.7oz)
4. Yellow Shampoo and Conditioner (16oz Set)
5. Yellow Shampoo (16oz)

Below is the full result from this calculation for your reference. A product with a high purchase rate doesn't necessarily fit the subscription model. Below we will discuss how to determine the latter.

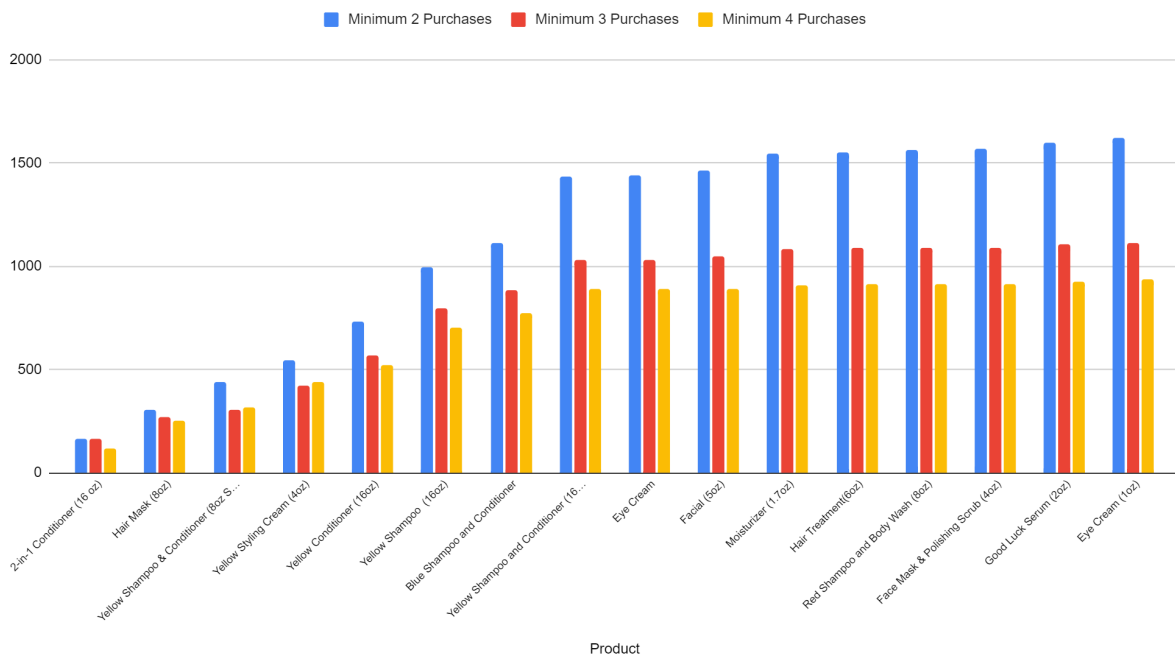
Product	Unique Purchasers	Purchase Count	purchase_rate
2-in-1 Conditioner (16 oz)	271	439	1.619926199
Hair Mask (8oz)	310	465	1.5
Moisturizer (1.7oz)	204	291	1.426470588
Yellow Shampoo and Conditioner (16oz Set)	547	768	1.404021938
Yellow Shampoo (16oz)	522	724	1.38697318

Good Luck Serum (2oz)	118	160	1.355932203
Yellow Conditioner (16oz)	373	502	1.345844504
Blue Shampoo and Conditioner	362	484	1.337016575
Red Shampoo and Body Wash (8oz)	45	59	1.311111111
Eye Cream (1oz)	110	143	1.3
Yellow Styling Cream (4oz)	405	521	1.286419753
Face Mask & Polishing Scrub (4oz)	51	64	1.254901961
Yellow Shampoo & Conditioner (8oz Set)	692	815	1.177745665
Facial (5oz)	128	150	1.171875
Hair Treatment(6oz)	56	65	1.160714286
Eye Cream	89	96	1.078651685

Which products are most suitable for a subscription service?

In order to answer this question, we must look not only at the product purchase rate previously discussed, but also how often customers are purchasing specific products. If customers really like a product, but only need to buy it once every 2 years, there isn't as big of a need for a subscription service. To do this, we can calculate the average time between purchases.

Average Number of Days Between Product Purchases

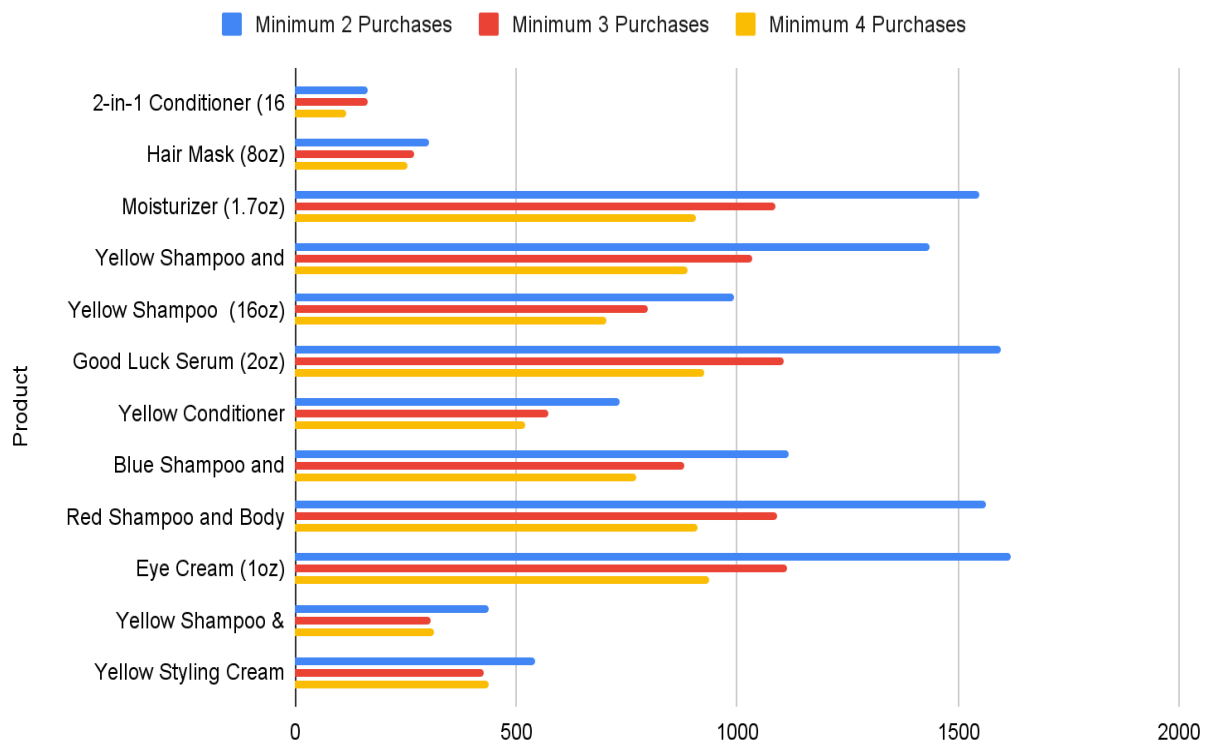


Product	Minimum 2 Purchases	Minimum 3 Purchases	Minimum 4 Purchases
2-in-1 Conditioner (16 oz)	164.1444099	162.4239418	116.6630952
Hair Mask (8oz)	303.7472912	268.170172	253.7563095
Yellow Shampoo & Conditioner (8oz Set)	437.118668	306.9548942	316.0688095
Yellow Styling Cream (4oz)	543.3361754	425.0479317	438.1112771
Yellow Conditioner (16oz)	733.3173693	571.0406566	521.2231818
Yellow Shampoo (16oz)	993.8849677	798.2720058	704.2646104
Blue Shampoo and Conditioner	1114.637504	882.0826539	772.8987771
Yellow Shampoo and Conditioner (16oz Set)	1434.042605	1033.857762	888.6939719
Eye Cream	1440.6513	1033.857762	888.6939719
Facial (5oz)	1464.997919	1047.204984	888.6939719
Moisturizer (1.7oz)	1548.618692	1084.945725	907.2273052
Hair Treatment(6oz)	1551.368174	1087.318741	911.4987338
Red Shampoo and Body Wash (8oz)	1563.234116	1088.693741	911.4987338
Face Mask & Polishing Scrub (4oz)	1571.09257	1091.215963	916.0387338
Good Luck Serum (2oz)	1596.540879	1105.58263	926.1237338
Eye Cream (1oz)	1619.532943	1112.209614	938.0523052

The graph above shows the average number of days between the purchase of the same product. The three different values for each product represent the averages when a customer purchased a product a minimum of 2, 3 and 4 times. To calculate this, for each product and customer, you find the difference in time between two consecutive purchases. You then add all the differences for the same customer and then divide by the number of times that customer purchased that product. This gives you the average time in between purchases for a specific customer. You then add all the customer averages together, and then divide by the number of unique customers of that product, to get your final average.

Now we can look specifically at the average duration between purchases for products with the highest return purchase rates. Below are the results for the top ten products with highest purchase rates. I have also included 'Yellow Shampoo & Conditioner (8oz Set)' and 'Yellow Styling Cream (4oz)'. Overall, they had the third and fourth lowest durations between purchases which is very suitable for subscription services, even if their purchase rate was not as high.

High Return Rate Product's Average Purchase Duration



As previously mentioned, if the duration is too long, then there isn't as much of a need to provide a subscription service. Based on these findings, below are my recommendations for the most suitable products for this service.

1. 2-in-1 Conditioner (16oz)
2. Hair Mask (8oz)
3. Yellow Conditioner (16oz)
4. Yellow Shampoo & Conditioner (8oz Set)
5. Yellow Styling Cream

Contrarily, the items that might be the least successful in a subscription service are as follows. They either have relatively high average duration between purchases, low repeat purchase rates, or both.

1. Facial (5oz)
2. Hair Treatment(6oz)
3. Eye Cream & Eye Cream (1oz)
4. Moisturizer (1.7oz)
5. Hair Treatment(6oz)
6. Face Mask & Polishing Scrub (4oz)

What should be the subscription period? Is it different between products?

The optimal duration for a subscription service is not necessarily the average. A big motivation of the service is to increase purchase rate and frequency of purchases.

I found the minimum duration between purchases for customers whose purchases exceeded 4 or more, then found the average between the average and the minimum. This is shown in 'Recommend Duration 1'.

To further encourage more frequent purchases, you can shorten the subscription period as well. Duration 2 & 3 are the original average duration, times .75 and .5, and then average between the product and the minimum. You can also offer multiple durations for the same product. The recommendations are in days, but should be converted to months or weeks to best suit your customer base.

The highlighted products represent those I previously recommended for the program.

Product	Avg Duration Between Purchases	Minimum Duration	Recommended Duration 1	Recommended Duration 2	Recommended Duration 3
2-in-1 Conditioner (16 oz)	162	30	96	76	56
Hair Mask (8oz)	268	29	149	115	82
Yellow Shampoo & Conditioner (8oz Set)	307	35	171	133	94
Yellow Styling Cream (4oz)	425	30	228	174	121
Yellow Conditioner (16oz)	571	44	308	236	165
Yellow Shampoo (16oz)	798	36	417	317	218
Blue Shampoo and Conditioner	882	29	456	345	235
Yellow Shampoo and Conditioner (16oz Set)	1034	41	537	408	279
Eye Cream	1034	10000	5517	5388	5258
Facial (5oz)	1047	31	539	408	277
Moisturizer (1.7oz)	1085	31	558	422	287
Hair Treatment(6oz)	1087	36	562	426	290
Red Shampoo and Body Wash (8oz)	1089	31	560	424	288
Face Mask & Polishing Scrub (4oz)	1091	38	565	428	292
Good Luck Serum (2oz)	1106	38	572	434	295
Eye Cream (1oz)	1112	31	572	433	294

Most Loyal Customers

If you wish to progressively roll out these subscription services, you could potentially offer them to a select group of loyal customers. Below is a list of customers that have placed at least 10 orders, and have shown loyalty to your brand.

id	first_name	last_name	email	number of orders
3401516993	Lance	Bonar	lbonarba@godaddy.com	43
3449248641	Lenore	Beedie	lbeedie4b@ask.com	23
580107239478	Thacher	Huckle	thucklebz@last.fm	17
2944275329	Cordelie	Faulo	cfaulof2@hp.com	16
252393619482	Marlee	Feary	mfeary56@hhs.gov	14
4318566977	Dixie	Syversen	dsyversen4t@clickbank.net	14
2838374081	Erich	Jozsef	ejozsefam@linkedin.com	13
1401898631222	Faulkner	MacLaren	fmaclarencj@utexas.edu	13
3437410177	Nap	Marham	nmarham4i@smh.com.au	12
2769834868790	Magdaia	Gantlett	mgantletta0@admin.ch	12
2326841589814	Hillel	Yeude	hyeudef9@prlog.org	12
551330021430	Cristine	Benyon	cbenyon8o@a8.net	11
1096777662518	Arlina	Titheridge	atitheridgeb@feedburner.com	11
1029666930742	Martin	Loisi	mloisi59@bluehost.com	10
547138568246	Stormi	Cadle	scadle7r@arstechnica.com	10
1229277757494	Cesya	Duncan	cduncana9@xrea.com	10
4261325633	Roley	Crann	rcrann8y@blinklist.com	10
3122667649	Celestine	Burdus	cburduscb@nyu.edu	10
1141605793846	Hetti	Easdon	heasdonkw@java.com	10
2891994113	Merell	Wedmore	mwedmorecs@google.com.hk	10
6702922125	Rorke	Pinkstone	rpinkstone5o@surveymonkey.com	10
545775386678	Pippa	Carlyon	pcarlyon5k@weather.com	10
3993695873	Bealle	Lansberry	blansberry8d@nba.com	10