CLV Analysis insights:

Cohorts :

To solve the problem i started by identifying the registration cohorts Identify the week when each user first registered or interacted with the platform.
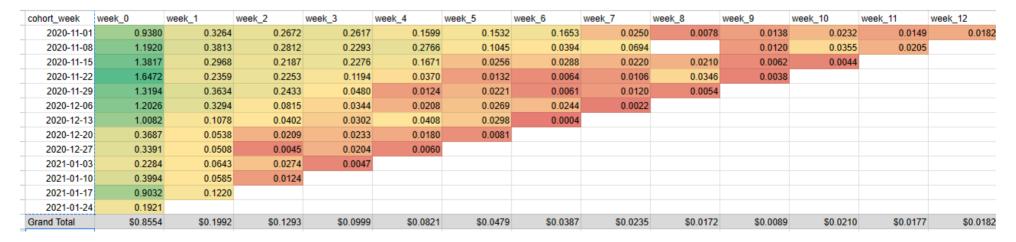
2020-11-01
2020-11-08
2020-11-15
2020-11-22
2020-11-29
2020-12-06
2020-12-13
2020-12-20
2020-12-27
2021-01-03
2021-01-10
2021-01-17
2021-01-24

After identifying the cohorts the next step was to was to determine how much revenue each user generated weekly and after how many weeks they started to generate revenue after the registration.

This includes even all the user in the each cohorts who did not had any purchase throughout the period.

After that the final step was the getting the weekly revenue and divide it with the number of users to get the average revenue generate by user following 0 to 12 weeks.

After that the final output was :

cohort_week	week_0	week_1	week_2	week_3	week_4	week_5	week_6	week_7	week_8	week_9	week_10	week_11	week_12
2020-11-01	0.9380	0.3264	0.2672	0.2617	0.1599	0.1532	0.1653	0.0250	0.0078	0.0138	0.0232	0.0149	0.0182
2020-11-08	1.1920	0.3813	0.2812	0.2293	0.2766	0.1045	0.0394	0.0694		0.0120	0.0355	0.0205	
2020-11-15	1.3817	0.2968	0.2187	0.2276	0.1671	0.0256	0.0288	0.0220	0.0210	0.0062	0.0044		
2020-11-22	1.6472	0.2359	0.2253	0.1194	0.0370	0.0132	0.0064	0.0106	0.0346	0.0038			
2020-11-29	1.3194	0.3634	0.2433	0.0480	0.0124	0.0221	0.0061	0.0120	0.0054				
2020-12-06	1.2026	0.3294	0.0815	0.0344	0.0208	0.0269	0.0244	0.0022					
2020-12-13	1.0082	0.1078	0.0402	0.0302	0.0408	0.0298	0.0004						
2020-12-20	0.3687	0.0538	0.0209	0.0233	0.0180	0.0081							
2020-12-27	0.3391	0.0508	0.0045	0.0204	0.0060								
2021-01-03	0.2284	0.0643	0.0274	0.0047									
2021-01-10	0.3994	0.0585	0.0124										
2021-01-17	0.9032	0.1220											
2021-01-24	0.1921												
Grand Total	$0.8554	$0.1992	$0.1293	$0.0999	$0.0821	$0.0479	$0.0387	$0.0235	$0.0172	$0.0089	$0.0210	$0.0177	$0.0182

The cumulative sum of the each cohort , average of cumulative sum and cumulative growth for each week:

cohort_week	week_0	week_1	week_2	week_3	week_4	week_5	week_6	week_7	week_8	week_9	week_10	week_11	week_12
2020-11-01	0.9380	1.2644	1.5316	1.7933	1.9532	2.1064	2.2717	2.2967	2.3045	2.3183	2.3415	2.3564	2.3746
2020-11-08	1.1920	1.5733	1.8545	2.0838	2.3603	2.4648	2.5042	2.5736	2.5736	2.5856	2.6211	2.6416	
2020-11-15	1.3817	1.6785	1.8972	2.1248	2.2919	2.3175	2.3463	2.3683	2.3893	2.3955	2.3999		
2020-11-22	1.6472	1.8831	2.1085	2.2278	2.2649	2.2781	2.2845	2.2951	2.3297	2.3335			
2020-11-29	1.3194	1.6828	1.9261	1.9741	1.9865	2.0087	2.0148	2.0267	2.0321				
2020-12-06	1.2026	1.5320	1.6135	1.6479	1.6687	1.6957	1.7201	1.7223					
2020-12-13	1.0082	1.1160	1.1563	1.1865	1.2273	1.2571	1.2575						
2020-12-20	0.3687	0.4225	0.4435	0.4667	0.4847	0.4928							
2020-12-27	0.3391	0.3899	0.3945	0.4148	0.4208								
2021-01-03	0.2284	0.2927	0.3201	0.3248									
2021-01-10	0.3994	0.4579	0.4704										
2021-01-17	0.9032	1.0252											
2021-01-24	0.1921												
AVG	$0.8554	$1.0546	$1.1839	$1.2838	$1.3659	$1.4138	$1.4525	$1.4761	$1.4933	$1.5022	$1.5232	$1.5410	$1.5591
Cumulative Growth		23.29%	12.26%	8.44%	6.39%	3.51%	2.74%	1.62%	1.16%	0.60%	1.40%	1.16%	1.18%

Lastly to to predict the future (missing) data for the each cohorts i have done some prediction based on the cumulative growth % from the past data.

cohort_week	week_0	week_1	week_2	week_3	week_4	week_5	week_6	week_7	week_8	week_9	week_10	week_11	week_12
2020-11-01													
2020-11-08													2.6727
2020-11-15												2.4279	2.4565
2020-11-22											2.3661	2.3936	2.4219
2020-11-29										2.0443	2.0729	2.0971	2.1218
2020-12-06									1.7424	1.7528	1.7773	1.7980	1.8192
2020-12-13								1.2779	1.2928	1.3005	1.3187	1.3341	1.3498
2020-12-20							0.5063	0.5145	0.5205	0.5236	0.5309	0.5371	0.5435
2020-12-27						0.4356	0.4475	0.4548	0.4601	0.4628	0.4693	0.4748	0.4804
2021-01-03					0.3456	0.3577	0.3675	0.3734	0.3778	0.3800	0.3854	0.3898	0.3944
2021-01-10				0.5100	0.5426	0.5617	0.5771	0.5864	0.5932	0.5968	0.6051	0.6122	0.6194
2021-01-17			1.1510	1.2481	1.3279	1.3745	1.4121	1.4349	1.4516	1.4603	1.4808	1.4980	1.5157
2021-01-24	0.1921	0.2369	0.2659	0.2884	0.3068	0.3176	0.3263	0.3315	0.3354	0.3374	0.3421	0.3461	0.3502
AVG	$0.1921	$0.2369	$0.7084	$0.6822	$0.6307	$0.6094	$0.6061	$0.7105	$0.8467	$0.9843	$1.1349	$1.2644	$1.3955

From the 3 charts few things are noticeable

Sharp Initial Decline: After week 0 there is sharp decline in week 2 which is noticeable in cumulative growth and also the total revenue even though the week 2 growth rate is not bad for a organization but for following weeks its not that good.

Gradual Decrease: After the initial drop, there is a more gradual decrease in retention over subsequent weeks.

Stabilization: Around week_7 onwards, the decline starts to stabilize, indicating that by this time, the remaining customers are more likely to continue their engagement.