

Cohort analysis. Retention

employees & relatives

Join year	Year 0	Year 1	Year 2	Year 3	Year 4
2018	100.00%	80.96%	63.80%	56.41%	43.67%
2019	100.00%	64.53%	55.48%	38.36%	
2020	100.00%	72.14%	48.65%		
2021	100.00%	50.77%			
2022	100.00%				

employee

Join_year	Year 0	Year 1	Year 2	Year 3	Year 4
2018	97.80%	79.01%	62.51%	55.09%	42.56%
2019	96.63%	63.27%	53.67%	37.13%	
2020	97.87%	70.96%	47.53%		
2021	97.57%	49.05%			
2022	97.10%				

relative

Join_year	Year 0	Year 1	Year 2	Year 3	Year 4
2018	9.52%	14.34%	12.57%	16.44%	12.39%
2019	12.44%	8.75%	12.32%	8.90%	
2020	9.30%	12.29%	10.41%		
2021	13.18%	9.48%			
2022	16.40%				

Join year	Year 0	Year 1	Year 2	Year 3	Year 4	Total
2018	11424	9249	7288	6444	4989	11424
2019	3978	2567	2207	1526		3978
2020	3141	2266	1528			3141
2021	2679	1360				2679
2022	1415					1415
Total	22637	15442	11023	7970	4989	22637

Join year	Year 0	Year 1	Year 2	Year 3	Year 4	Total
2018	11173	9026	7141	6293	4862	11344
2019	3844	2517	2135	1477		3907
2020	3074	2229	1493			3114
2021	2614	1314				2635
2022	1374					1374
Total	22079	15086	10769	7770	4862	22374

Join year	Year 0	Year 1	Year 2	Year 3	Year 4	Total
2018	1088	1638	1436	1878	1415	3334
2019	495	348	490	354		924
2020	292	386	327			601
2021	353	254				456
2022	232					232
Total	2460	2626	2253	2232	1415	5547

Cohort analysis of health insurance packages

The matrices represent the data from a long-term corporate health insurance contract. The employees co-financed their insurance policies, but they can choose to cover not only themselves but one of their relatives as well.

The cohorts are defined by the first year of insurance coverage.

Retention in this case is the number of policies divided by the number of employees in the first period. As not all the employees chose health insurance in the first period, the percentage is lower than 100%. The same is applied to the relative group.

The matrices show retention over five consecutive years for all insured persons, and employees and relatives separately. Absolute values are shown just to demonstrate the calculations.

Results

Overall, retention was steadily decreasing over the given period.

Apparently, this pattern could be caused by two factors: high turnover rate and anti-selection as a result of copayments.

As we can see in the second matrix, 97% of employees chose health coverage for themselves, while the percentage of policies for relatives is almost 10 times lower. However, retention wasn't dropping significantly in that group.