

Insurance Market Data & Analytics

Healthcare Data Analytics and Data Mining

Group 3

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Introduction

This report holds a scenario that a consulting company needs to assist the US Congress using the Centers for Medicare & Medicaid Services database.

Main topics are discussed as follows:

- The best candidate insurance company in each state
- The dental benefit packages offered by the major insurance companies in each state
- Insurance companies are most mindful of opioid crisis and are doing their part to control it in each state

Through this report, you will get to know the best candidates for private single payer model, the coverage for dental services in different insurance companies, and the quality of care and performance of insurance companies in avoiding the addictive drugs.



“Private Single-payer” Proposal

As the US congress is going to move to a private single payer model in few specific states, the question is which company should it corporate with. To solve this problem, we need to find out the “lion share” companies in each state, which means the company who has the largest market share. Furthermore, among each “lion share” companies, we may figure out the major players in the market as the ideal cooperators.

A parent organization may owner different marketing names. What we need to do is summarizing all enrollments of Plan C healthcare service (that’s meant to filter out the contract number started with S) for different parent organizations and calculate their market share in each state. Then for each state, we can get its “lion share” company in Table 1-1.

Table 1-1 “Lion share” company by states

	State	Major Insurance Organization Name	Share
1	AR	UnitedHealthcare	0.346025
2	CO	UnitedHealthcare	0.373164
3	FL	UnitedHealthcare	0.285428
4	MA	Tufts Health Plan	0.31204
5	MT	Humana	0.639115
6	NC	UnitedHealthcare	0.467396
7	OR	UnitedHealthcare	0.227657
8	VT	UnitedHealthcare	0.793241
9	WV	Humana	0.64744

However, to avoid the fragment market disturb our result, we introduce the 0-1 Herfindahl-Hirschman Index (HHI)¹ variable to calculate the state’s market concentration, only aiming at the states which have a single major player. Increases in the HHI generally indicates a decrease in competition and an increase of market power of few single companies, whereas decreases indicate the opposite. Then we can get the Table 1-2. An HHI above 0.3 indicates a high concentration, so we can conclude that four states that satisfy our need are VT, MT, WV and NC.

Table 1-2 HHI of healthcare insurance industry by states

State	HHI
VT	0.6556009
MT	0.5083352
WV	0.4747766
NC	0.3099533
CO	0.2622107
AR	0.219993
MA	0.1936516
FL	0.1780241
OR	0.139379

The “lion share” companies in these four states is showed in Table 1-3. Thus, the UnitedHealthcare and Humana are candidates that the US regress should consider cooperating with when it selects its partners for a private single payer mode.

¹ https://en.wikipedia.org/wiki/Herfindahl-Hirschman_Index



Table 1-3 Insurance company candidates for private single payer mode

	State	Major Insurance Organization Name	Share
1	VT	UnitedHealthcare	0.793241
2	WV	Humana	0.64744
3	MT	Humana	0.639115
4	NC	UnitedHealthcare	0.467396

Insurance Benefit Package for Dental Services

In this section, the generosity of the insurance benefit package for dental services will be examined. We first clarify what certain kind of dental benefit offered by the plan. Not all the insurance plans offer dental care benefits. For those offering the dental care benefits, some only offer basic care and some other offer a more comprehensive plan that covers most of the dental services. Thus, we mainly analyze these two kinds of benefits to show the detailed information of insurance benefit packages for dental services in the companies of each state.

The condition of Preventive Dental Items

Firstly, the percentages of the enrollees enjoying the “Preventive Dental Items as a supplemental benefit under Part C” are to be calculated by states and by top-5 insurers, the formula used in this part is presented below:

$$\text{Percentage} = \frac{\text{Total number of Preventive Dental Items for } i \text{ insurers in } j \text{ state}}{\text{Total number of enrollees for } i \text{ insurers in } j \text{ state}} \times 100\%$$

Data processing here have some preconditions and highlights:

- WV and VT only have 4 insurers in total.
- The column used here to count “Preventive Dental Items as a supplemental benefit under Part C” is “pbp_b16a_bendesc_yn”.
- Lines with the same ‘Contract Number’ and ‘Plan ID’ but different “Segment ID” are only kept those with the smallest ‘Segment ID’ in the file “PBP_Benefits_2020_dictionary.xlsx”.
- Values:2 in “pbp_b16a_bendesc_yn”, which means no “Preventive Dental Items”, are replaced by 0.

The results are presented as follows:

Table 2-1 Percentage of enrollees enjoying the Preventive Dental Items

State	Major Insurance Organization Name	Preventive Dental Items Number	Enrollment	Percentage (%)
AR	Aetna Health Inc.	147	15943	0.207
AR	Allwell	28	15035	0.186
AR	Humana	386	43625	0.697
AR	UnitedHealthcare	538	57782	0.620
AR	WellCare	224	17177	1.304
CO	BlueCrossBlueShield	245	39752	0.033
CO	Humana	252	58808	0.235



CO	Kaiser	146	111885	0.041
CO	Rocky Mountain Health Plans	188	10868	0.000
CO	UnitedHealthcare	227	141763	0.037
FL	Aetna Health Inc.	341	145697	0.065
FL	BlueCrossBlueShield	714	160814	0.042
FL	CarePlus Health Plans, Inc.	66	143547	0.046
FL	Humana	799	561929	0.065
FL	UnitedHealthcare	699	589481	0.029
MA	BlueCrossBlueShield	160	59558	0.131
MA	Commonwealth Care Alliance, Inc.	31	33071	0.033
MA	Fallon Health	83	19371	0.160
MA	Tufts Health Plan	186	104980	0.027
MA	UnitedHealthcare	173	73954	0.045
MT	Aetna Health Inc.	30	392	0.000
MT	BlueCrossBlueShield	72	13467	0.134
MT	Humana	105	27372	0.332
MT	PacificSource Medicare	4	227	0.000
MT	UnitedHealthcare	72	1267	0.000
NC	Aetna Health Inc.	416	112172	0.094
NC	BlueCrossBlueShield	470	68705	0.285
NC	CARE N' CARE INSURANCE COMPANY OF NORTH CAROLINA	15	15096	0.099
NC	Humana	549	178330	0.236
NC	UnitedHealthcare	959	343513	0.090
OR	BlueCrossBlueShield	168	49780	0.121
OR	Health Net Health Plan of Oregon, Inc.	14	36458	0.038
OR	Health Net Life Insurance Company	34	26093	0.130
OR	Kaiser	79	67185	0.034
OR	UnitedHealthcare	198	76817	0.049
VT	Aetna Health Inc.	36	637	0.000
VT	BlueCrossBlueShield	18	210	0.000
VT	MVP HEALTH CARE	38	2720	0.882
VT	UnitedHealthcare	149	13685	0.285
WV	Aetna Health Inc.	449	27363	0.398
WV	Humana	465	82928	0.416
WV	The Health Plan	104	7304	1.314
WV	UnitedHealthcare	234	10491	0.953

The condition of Comprehensive Dental Items

Secondly, the percentages of the enrollees enjoying the “Comprehensive Dental Items as a supplemental benefit under Part C” are to be calculated by states and by top-5 insurers. The formula used in this part is presented below.



$$\text{Percentage} = \frac{\text{Total number of Comprehensive Dental Items for } i \text{ insurers in } j \text{ state}}{\text{Total number of enrollees for } i \text{ insurers in } j \text{ state} * 100} \times 100\%$$

Data processing here have some preconditions and highlights:

- WV and VT only have 4 insurers in total.
- The column used here to count “Comprehensive Dental Items as a supplemental benefit under Part C” is “pbp_b16b_bendesc_yn”.
- Values: 2 in “pbp_b16b_bendesc_yn”, which means no “Comprehensive Dental Items”, are replaced by 0.

The results are presented as follows:

Table 2-2 Percentage of enrollees enjoying the Comprehensive Dental Items

State	Major Insurance Organization Name	Comprehensive Dental Items	Enrollment	Percentage (%)
AR	Aetna Health Inc.	147	15943	0.207
AR	Allwell	37	15035	0.126
AR	Humana	436	43625	0.582
AR	UnitedHealthcare	613	57782	0.490
AR	WellCare	224	17177	1.304
CO	BlueCrossBlueShield	249	39752	0.023
CO	Humana	252	58808	0.235
CO	Kaiser	146	111885	0.041
CO	Rocky Mountain Health Plans	188	10868	0.000
CO	UnitedHealthcare	229	141763	0.036
FL	Aetna Health Inc.	341	145697	0.065
FL	BlueCrossBlueShield	716	160814	0.041
FL	CarePlus Health Plans, Inc.	66	143547	0.046
FL	Humana	799	561929	0.065
FL	UnitedHealthcare	764	589481	0.018
MA	BlueCrossBlueShield	237	59558	0.002
MA	Commonwealth Care Alliance, Inc.	31	33071	0.033
MA	Fallon Health	83	19371	0.160
MA	Tufts Health Plan	186	104980	0.027
MA	UnitedHealthcare	198	73954	0.011
MT	Aetna Health Inc.	30	392	0.000
MT	BlueCrossBlueShield	72	13467	0.134
MT	Humana	105	27372	0.332
MT	PacificSource Medicare	4	227	0.000
MT	UnitedHealthcare	72	1267	0.000
NC	Aetna Health Inc.	416	112172	0.094
NC	BlueCrossBlueShield	666	68705	0.000
NC	CARE N' CARE INSURANCE COMPANY OF NORTH CAROLINA	15	15096	0.099
NC	Humana	549	178330	0.236
NC	UnitedHealthcare	985	343513	0.082



OR	BlueCrossBlueShield	183	49780	0.090
OR	Health Net Health Plan of Oregon, Inc.	14	36458	0.038
OR	Health Net Life Insurance Company	34	26093	0.130
OR	Kaiser	79	67185	0.034
OR	UnitedHealthcare	213	76817	0.030
VT	Aetna Health Inc.	36	637	0.000
VT	BlueCrossBlueShield	18	210	0.000
VT	MVP HEALTH CARE	62	2720	0.000
VT	UnitedHealthcare	176	13685	0.088
WV	Aetna Health Inc.	449	27363	0.398
WV	Humana	465	82928	0.416
WV	The Health Plan	104	7304	1.314
WV	UnitedHealthcare	291	10491	0.410

Summary

Some conclusions can be drawn from the results.

First of all, healthcare insurance market in MT shows least interest in offering preventive dental benefits and insurance market in VT shows least interest in offering comprehensive dental benefits. Moreover, Humana is usually the top comprehensive dental benefits provider among the states. As for the preventive dental benefits, apart from Humana, many other major providers, such as WellCare and MVP health care, come into being. Finally, for the WV, the Health Plan is always the top provider that not only offers the most preventive dental benefits, but also the comprehensive ones.



Quality of care and performance of the plans

The national drug addiction crisis has aroused the awareness across the U.S., and research finds that prescription opioids play a significant role in addiction. It is really important to recognize the good insurance companies who proactively make sure their members are not on an unsafe dose of prescription opioids for a prolong period, and further reward and support them to develop a healthier and safer insurance market. To figure out these good performers, we analyze the data of using Opioids at High Dosage (UOD) from MA HEDIS Public Use Files 2018 and get the UOD rate for every contract offered by the top-10 biggest market share insurance companies in each state, showing as below.

Table 3-1 UOD rate of contract number under insurance companies by states

State	Parent_Organization	Contract_Number	UOD_rate
AR	Aetna Health Inc.	H0523	0.03483
AR	Aetna Health Inc.	H1109	0.04582
AR	Aetna Health Inc.	H1608	0.05542
AR	Aetna Health Inc.	H1609	0.06834
AR	Aetna Health Inc.	H1692	0.03756
AR	Aetna Health Inc.	H2663	0.04458
AR	Aetna Health Inc.	H3152	0.09994
AR	Aetna Health Inc.	H3312	0.08741
AR	Aetna Health Inc.	H3597	0.06319
AR	Aetna Health Inc.	H3928	0.04255
AR	Aetna Health Inc.	H3931	0.06212
AR	Aetna Health Inc.	H3959	0.04568
AR	Aetna Health Inc.	H4523	0.03143
AR	Aetna Health Inc.	H5521	0.05565
AR	Aetna Health Inc.	H5522	0.06115
AR	Aetna Health Inc.	H5793	0.06585
AR	Aetna Health Inc.	H7149	0.0454
AR	Aetna Health Inc.	H7301	0.04319
AR	Aetna Health Inc.	H8649	0.07364
AR	BlueCrossBlueShield	H0104	0.59731
AR	BlueCrossBlueShield	H0107	0.06914
AR	BlueCrossBlueShield	H0302	0.0671
AR	BlueCrossBlueShield	H0504	0.05704
AR	BlueCrossBlueShield	H0544	0.02643
AR	BlueCrossBlueShield	H1035	0.05133
AR	BlueCrossBlueShield	H1304	0.1037
AR	BlueCrossBlueShield	H1607	0.09319
AR	BlueCrossBlueShield	H1666	0.08278
AR	BlueCrossBlueShield	H2230	0.10672
AR	BlueCrossBlueShield	H3154	0.11144
AR	BlueCrossBlueShield	H3342	0.072
AR	BlueCrossBlueShield	H3404	0.10934
AR	BlueCrossBlueShield	H3655	0.02436



AR	BlueCrossBlueShield	H3817	0.04846
AR	BlueCrossBlueShield	H4036	0.03788
AR	BlueCrossBlueShield	H4213	0.08934
AR	BlueCrossBlueShield	H4605	0.07472
AR	BlueCrossBlueShield	H4909	0.08805
AR	BlueCrossBlueShield	H5009	0.08472
AR	BlueCrossBlueShield	H5434	0.10568
AR	BlueCrossBlueShield	H5526	0.04793
AR	BlueCrossBlueShield	H5883	0.0485
AR	BlueCrossBlueShield	H7728	0.05746
AR	BlueCrossBlueShield	H7917	0.05389
AR	BlueCrossBlueShield	H8552	0.07987
AR	BlueCrossBlueShield	H8634	0.06216
AR	BlueCrossBlueShield	H9525	0.05313
AR	BlueCrossBlueShield	H9572	0.04582
AR	Cigna	H0354	0.05491
AR	Cigna	H3949	0.08425
AR	Cigna	H4513	0.0188
AR	Health Advantage	H9699	0.07729
AR	Humana	H0028	0.06089
AR	Humana	H1036	0.05564
AR	Humana	H1468	0.02408
AR	Humana	H1951	0.04594
AR	Humana	H4007	0.00225
AR	Humana	H4141	0.04303
AR	Humana	H4461	0.05407
AR	Humana	H5216	0.05797
AR	Humana	H5525	0.04894
AR	Humana	H5619	0.04657
AR	Humana	H6622	0.04195
AR	Humana	H8145	0.06975
AR	Humana	H8908	0.04587
AR	UnitedHealthcare	H0251	0.05658
AR	UnitedHealthcare	H0321	0.11312
AR	UnitedHealthcare	H0543	0.12102
AR	UnitedHealthcare	H0609	0.1472
AR	UnitedHealthcare	H0624	0.0943
AR	UnitedHealthcare	H0710	0.05797
AR	UnitedHealthcare	H1537	0.04505
AR	UnitedHealthcare	H2001	0.0401
AR	UnitedHealthcare	H2228	0.09555
AR	UnitedHealthcare	H2406	0.0472
AR	UnitedHealthcare	H2802	0.05037
AR	UnitedHealthcare	H3749	0.1593
AR	UnitedHealthcare	H4514	0.03569



AR	UnitedHealthcare	H4527	0.03828
AR	UnitedHealthcare	H4590	0.1016
AR	UnitedHealthcare	H5008	0.09971
AR	UnitedHealthcare	H5253	0.06082
AR	UnitedHealthcare	H5322	0.06104
AR	UnitedHealthcare	H8748	0.05772
AR	UnitedHealthcare	R3444	0.06729
AR	UnitedHealthcare	R5342	0.07565
AR	UnitedHealthcare	R6801	0.0451
AR	UnitedHealthcare	R7444	0.07969
AR	WellCare	H0174	0.0122
AR	WellCare	H1112	0.04204
AR	WellCare	H1416	0.03255
AR	WellCare	H2775	0.04211
AR	WellCare	H2816	0.04897
AR	WellCare	H4506	0.01837
AR	WellCare	H5475	0.03072
AR	WellCare	H5779	0.04142
CO	Aetna Health Inc.	H0523	0.03483
CO	Aetna Health Inc.	H1109	0.04582
CO	Aetna Health Inc.	H1608	0.05542
CO	Aetna Health Inc.	H1609	0.06834
CO	Aetna Health Inc.	H1692	0.03756
CO	Aetna Health Inc.	H2663	0.04458
CO	Aetna Health Inc.	H3152	0.09994
CO	Aetna Health Inc.	H3312	0.08741
CO	Aetna Health Inc.	H3597	0.06319
CO	Aetna Health Inc.	H3928	0.04255
CO	Aetna Health Inc.	H3931	0.06212
CO	Aetna Health Inc.	H3959	0.04568
CO	Aetna Health Inc.	H4523	0.03143
CO	Aetna Health Inc.	H5521	0.05565
CO	Aetna Health Inc.	H5522	0.06115
CO	Aetna Health Inc.	H5793	0.06585
CO	Aetna Health Inc.	H7149	0.0454
CO	Aetna Health Inc.	H7301	0.04319
CO	Aetna Health Inc.	H8649	0.07364
CO	BlueCrossBlueShield	H0104	0.59731
CO	BlueCrossBlueShield	H0107	0.06914
CO	BlueCrossBlueShield	H0302	0.0671
CO	BlueCrossBlueShield	H0504	0.05704
CO	BlueCrossBlueShield	H0544	0.02643
CO	BlueCrossBlueShield	H1035	0.05133
CO	BlueCrossBlueShield	H1304	0.1037
CO	BlueCrossBlueShield	H1352	0.07209



CO	BlueCrossBlueShield	H1607	0.09319
CO	BlueCrossBlueShield	H1666	0.08278
CO	BlueCrossBlueShield	H2230	0.10672
CO	BlueCrossBlueShield	H2461	0.04037
CO	BlueCrossBlueShield	H3154	0.11144
CO	BlueCrossBlueShield	H3251	0.06621
CO	BlueCrossBlueShield	H3259	0.13156
CO	BlueCrossBlueShield	H3342	0.072
CO	BlueCrossBlueShield	H3404	0.10934
CO	BlueCrossBlueShield	H3655	0.02436
CO	BlueCrossBlueShield	H3817	0.04846
CO	BlueCrossBlueShield	H3822	0.05761
CO	BlueCrossBlueShield	H4036	0.03788
CO	BlueCrossBlueShield	H4346	0.02506
CO	BlueCrossBlueShield	H4605	0.07472
CO	BlueCrossBlueShield	H4909	0.08805
CO	BlueCrossBlueShield	H5009	0.08472
CO	BlueCrossBlueShield	H5422	0.04823
CO	BlueCrossBlueShield	H5434	0.10568
CO	BlueCrossBlueShield	H5526	0.04793
CO	BlueCrossBlueShield	H5883	0.0485
CO	BlueCrossBlueShield	H7728	0.05746
CO	BlueCrossBlueShield	H7917	0.05389
CO	BlueCrossBlueShield	H8432	0.05944
CO	BlueCrossBlueShield	H8552	0.07987
CO	BlueCrossBlueShield	H8634	0.06216
CO	BlueCrossBlueShield	H9302	0.04792
CO	BlueCrossBlueShield	H9572	0.04582
CO	BlueCrossBlueShield	R5941	0.05254
CO	Denver Health Medical Plan, Inc.	H5608	0.04757
CO	Humana	H0028	0.06089
CO	Humana	H1036	0.05564
CO	Humana	H1468	0.02408
CO	Humana	H1951	0.04594
CO	Humana	H2944	0.07235
CO	Humana	H4141	0.04303
CO	Humana	H4461	0.05407
CO	Humana	H5216	0.05797
CO	Humana	H5525	0.04894
CO	Humana	H5619	0.04657
CO	Humana	H6622	0.04195
CO	Humana	H8145	0.06975
CO	Humana	R5826	0.08951
CO	Kaiser	H0524	0.02925
CO	Kaiser	H0630	0.03117



CO	Kaiser	H1170	0.05617
CO	Kaiser	H1230	0.02727
CO	Kaiser	H2150	0.03018
CO	Kaiser	H5050	0.03811
CO	Kaiser	H9003	0.03339
CO	Rocky Mountain Health Plans	H0602	0.0637
CO	UnitedHealthcare	H0251	0.05658
CO	UnitedHealthcare	H0321	0.11312
CO	UnitedHealthcare	H0543	0.12102
CO	UnitedHealthcare	H0609	0.1472
CO	UnitedHealthcare	H0624	0.0943
CO	UnitedHealthcare	H0710	0.05797
CO	UnitedHealthcare	H0755	0.07591
CO	UnitedHealthcare	H1045	0.09692
CO	UnitedHealthcare	H1111	0.05174
CO	UnitedHealthcare	H1537	0.04505
CO	UnitedHealthcare	H1944	0.06017
CO	UnitedHealthcare	H2001	0.0401
CO	UnitedHealthcare	H2226	0.03357
CO	UnitedHealthcare	H2228	0.09555
CO	UnitedHealthcare	H2406	0.0472
CO	UnitedHealthcare	H2802	0.05037
CO	UnitedHealthcare	H3113	0.07043
CO	UnitedHealthcare	H3749	0.1593
CO	UnitedHealthcare	H3805	0.13849
CO	UnitedHealthcare	H4514	0.03569
CO	UnitedHealthcare	H4527	0.03828
CO	UnitedHealthcare	H4590	0.1016
CO	UnitedHealthcare	H4604	0.09501
CO	UnitedHealthcare	H5008	0.09971
CO	UnitedHealthcare	H5253	0.06082
CO	UnitedHealthcare	H5322	0.06104
CO	UnitedHealthcare	H5435	0.06903
CO	UnitedHealthcare	H5652	0.01402
CO	UnitedHealthcare	H8748	0.05772
CO	UnitedHealthcare	R3444	0.06729
CO	UnitedHealthcare	R5329	0.10778
CO	UnitedHealthcare	R5342	0.07565
CO	UnitedHealthcare	R6801	0.0451
CO	UnitedHealthcare	R7444	0.07969
FL	Aetna Health Inc.	H0523	0.03483
FL	Aetna Health Inc.	H1109	0.04582
FL	Aetna Health Inc.	H1608	0.05542
FL	Aetna Health Inc.	H1609	0.06834
FL	Aetna Health Inc.	H1692	0.03756



FL	Aetna Health Inc.	H2663	0.04458
FL	Aetna Health Inc.	H3152	0.09994
FL	Aetna Health Inc.	H3312	0.08741
FL	Aetna Health Inc.	H3597	0.06319
FL	Aetna Health Inc.	H3928	0.04255
FL	Aetna Health Inc.	H3931	0.06212
FL	Aetna Health Inc.	H3959	0.04568
FL	Aetna Health Inc.	H4523	0.03143
FL	Aetna Health Inc.	H5521	0.05565
FL	Aetna Health Inc.	H5522	0.06115
FL	Aetna Health Inc.	H5793	0.06585
FL	Aetna Health Inc.	H7149	0.0454
FL	Aetna Health Inc.	H7301	0.04319
FL	Aetna Health Inc.	H8649	0.07364
FL	Aetna Health Inc.	R6694	0.09476
FL	BlueCrossBlueShield	H0104	0.59731
FL	BlueCrossBlueShield	H0107	0.06914
FL	BlueCrossBlueShield	H0302	0.0671
FL	BlueCrossBlueShield	H0504	0.05704
FL	BlueCrossBlueShield	H0544	0.02643
FL	BlueCrossBlueShield	H1035	0.05133
FL	BlueCrossBlueShield	H1304	0.1037
FL	BlueCrossBlueShield	H1350	0.15318
FL	BlueCrossBlueShield	H1352	0.07209
FL	BlueCrossBlueShield	H1607	0.09319
FL	BlueCrossBlueShield	H1666	0.08278
FL	BlueCrossBlueShield	H2230	0.10672
FL	BlueCrossBlueShield	H2261	0.09747
FL	BlueCrossBlueShield	H2425	0.05447
FL	BlueCrossBlueShield	H2461	0.04037
FL	BlueCrossBlueShield	H2758	0.48635
FL	BlueCrossBlueShield	H3154	0.11144
FL	BlueCrossBlueShield	H3259	0.13156
FL	BlueCrossBlueShield	H3342	0.072
FL	BlueCrossBlueShield	H3384	0.04969
FL	BlueCrossBlueShield	H3404	0.10934
FL	BlueCrossBlueShield	H3449	0.08027
FL	BlueCrossBlueShield	H3536	0.11268
FL	BlueCrossBlueShield	H3655	0.02436
FL	BlueCrossBlueShield	H3817	0.04846
FL	BlueCrossBlueShield	H3822	0.05761
FL	BlueCrossBlueShield	H4036	0.03788
FL	BlueCrossBlueShield	H4152	0.04895
FL	BlueCrossBlueShield	H4213	0.08934
FL	BlueCrossBlueShield	H4346	0.02506



FL	BlueCrossBlueShield	H4605	0.07472
FL	BlueCrossBlueShield	H4909	0.08805
FL	BlueCrossBlueShield	H5009	0.08472
FL	BlueCrossBlueShield	H5422	0.04823
FL	BlueCrossBlueShield	H5434	0.10568
FL	BlueCrossBlueShield	H5526	0.04793
FL	BlueCrossBlueShield	H5854	0.05482
FL	BlueCrossBlueShield	H5883	0.0485
FL	BlueCrossBlueShield	H7728	0.05746
FL	BlueCrossBlueShield	H7917	0.05389
FL	BlueCrossBlueShield	H8298	0.15897
FL	BlueCrossBlueShield	H8432	0.05944
FL	BlueCrossBlueShield	H8552	0.07987
FL	BlueCrossBlueShield	H8634	0.06216
FL	BlueCrossBlueShield	H9525	0.05313
FL	BlueCrossBlueShield	H9572	0.04582
FL	BlueCrossBlueShield	R3332	0.10695
FL	BlueCrossBlueShield	R5941	0.05254
FL	CarePlus Health Plans, Inc.	H1019	0.04839
FL	Freedom Health, Inc.	H5427	0.03948
FL	HealthSun Health Plans, Inc.	H5431	0.01275
FL	Humana	H0028	0.06089
FL	Humana	H1036	0.05564
FL	Humana	H1468	0.02408
FL	Humana	H1951	0.04594
FL	Humana	H2486	0.10519
FL	Humana	H2944	0.07235
FL	Humana	H3533	0.06647
FL	Humana	H4007	0.00225
FL	Humana	H4141	0.04303
FL	Humana	H4461	0.05407
FL	Humana	H5216	0.05797
FL	Humana	H5525	0.04894
FL	Humana	H5619	0.04657
FL	Humana	H5970	0.05788
FL	Humana	H6622	0.04195
FL	Humana	H8145	0.06975
FL	Humana	H8908	0.04587
FL	Humana	R5826	0.08951
FL	Optimum HealthCare, Inc.	H5594	0.04842
FL	Simply Healthcare Plans, Inc.	H5471	0.06119
FL	UnitedHealthcare	H0251	0.05658
FL	UnitedHealthcare	H0294	0.07726
FL	UnitedHealthcare	H0321	0.11312
FL	UnitedHealthcare	H0543	0.12102



FL	UnitedHealthcare	H0609	0.1472
FL	UnitedHealthcare	H0624	0.0943
FL	UnitedHealthcare	H0710	0.05797
FL	UnitedHealthcare	H0755	0.07591
FL	UnitedHealthcare	H1045	0.09692
FL	UnitedHealthcare	H1111	0.05174
FL	UnitedHealthcare	H1286	0.06166
FL	UnitedHealthcare	H1537	0.04505
FL	UnitedHealthcare	H1944	0.06017
FL	UnitedHealthcare	H2001	0.0401
FL	UnitedHealthcare	H2226	0.03357
FL	UnitedHealthcare	H2228	0.09555
FL	UnitedHealthcare	H2406	0.0472
FL	UnitedHealthcare	H2802	0.05037
FL	UnitedHealthcare	H3113	0.07043
FL	UnitedHealthcare	H3307	0.07491
FL	UnitedHealthcare	H3379	0.06607
FL	UnitedHealthcare	H3387	0.06635
FL	UnitedHealthcare	H3749	0.1593
FL	UnitedHealthcare	H3794	0.07496
FL	UnitedHealthcare	H3805	0.13849
FL	UnitedHealthcare	H4514	0.03569
FL	UnitedHealthcare	H4527	0.03828
FL	UnitedHealthcare	H4590	0.1016
FL	UnitedHealthcare	H4604	0.09501
FL	UnitedHealthcare	H5008	0.09971
FL	UnitedHealthcare	H5253	0.06082
FL	UnitedHealthcare	H5322	0.06104
FL	UnitedHealthcare	H5420	0.02367
FL	UnitedHealthcare	H8748	0.05772
FL	UnitedHealthcare	R3444	0.06729
FL	UnitedHealthcare	R5329	0.10778
FL	UnitedHealthcare	R5342	0.07565
FL	UnitedHealthcare	R6801	0.0451
FL	UnitedHealthcare	R7444	0.07969
FL	WellCare	H0174	0.0122
FL	WellCare	H0712	0.0515
FL	WellCare	H0913	0.06711
FL	WellCare	H1032	0.06437
FL	WellCare	H1112	0.04204
FL	WellCare	H1416	0.03255
FL	WellCare	H2491	0.05466
FL	WellCare	H2775	0.04211
FL	WellCare	H2816	0.04897
FL	WellCare	H4506	0.01837



FL	WellCare	H5087	0.02414
FL	WellCare	H5475	0.03072
FL	WellCare	H9730	0.04375
MA	Aetna Health Inc.	H0523	0.03483
MA	Aetna Health Inc.	H1109	0.04582
MA	Aetna Health Inc.	H1608	0.05542
MA	Aetna Health Inc.	H1609	0.06834
MA	Aetna Health Inc.	H1692	0.03756
MA	Aetna Health Inc.	H2663	0.04458
MA	Aetna Health Inc.	H3152	0.09994
MA	Aetna Health Inc.	H3312	0.08741
MA	Aetna Health Inc.	H3597	0.06319
MA	Aetna Health Inc.	H3928	0.04255
MA	Aetna Health Inc.	H3931	0.06212
MA	Aetna Health Inc.	H3959	0.04568
MA	Aetna Health Inc.	H4523	0.03143
MA	Aetna Health Inc.	H5521	0.05565
MA	Aetna Health Inc.	H5522	0.06115
MA	Aetna Health Inc.	H5793	0.06585
MA	Aetna Health Inc.	H7149	0.0454
MA	Aetna Health Inc.	H7301	0.04319
MA	Aetna Health Inc.	H8649	0.07364
MA	BlueCrossBlueShield	H0104	0.59731
MA	BlueCrossBlueShield	H0107	0.06914
MA	BlueCrossBlueShield	H0302	0.0671
MA	BlueCrossBlueShield	H0504	0.05704
MA	BlueCrossBlueShield	H0544	0.02643
MA	BlueCrossBlueShield	H1035	0.05133
MA	BlueCrossBlueShield	H1304	0.1037
MA	BlueCrossBlueShield	H1607	0.09319
MA	BlueCrossBlueShield	H1666	0.08278
MA	BlueCrossBlueShield	H2230	0.10672
MA	BlueCrossBlueShield	H2261	0.09747
MA	BlueCrossBlueShield	H3154	0.11144
MA	BlueCrossBlueShield	H3259	0.13156
MA	BlueCrossBlueShield	H3342	0.072
MA	BlueCrossBlueShield	H3384	0.04969
MA	BlueCrossBlueShield	H3404	0.10934
MA	BlueCrossBlueShield	H3449	0.08027
MA	BlueCrossBlueShield	H3536	0.11268
MA	BlueCrossBlueShield	H3655	0.02436
MA	BlueCrossBlueShield	H3817	0.04846
MA	BlueCrossBlueShield	H4036	0.03788
MA	BlueCrossBlueShield	H4152	0.04895
MA	BlueCrossBlueShield	H4605	0.07472



MA	BlueCrossBlueShield	H4909	0.08805
MA	BlueCrossBlueShield	H5009	0.08472
MA	BlueCrossBlueShield	H5434	0.10568
MA	BlueCrossBlueShield	H5526	0.04793
MA	BlueCrossBlueShield	H5854	0.05482
MA	BlueCrossBlueShield	H7245	0.06477
MA	BlueCrossBlueShield	H7728	0.05746
MA	BlueCrossBlueShield	H7917	0.05389
MA	BlueCrossBlueShield	H8432	0.05944
MA	BlueCrossBlueShield	H8552	0.07987
MA	BlueCrossBlueShield	H8634	0.06216
MA	BlueCrossBlueShield	H9572	0.04582
MA	BlueCrossBlueShield	R3332	0.10695
MA	Commonwealth Care Alliance, Inc.	H2225	0.04916
MA	Fallon Health	H9001	0.05254
MA	Harvard Pilgrim Health Care, Inc.	H1660	0.04978
MA	Health New England Medicare Advantage Plans	H8578	0.03333
MA	Senior Whole Health	H2224	0.03037
MA	Tufts Health Plan	H2256	0.00018
MA	UnitedHealthcare	H0251	0.05658
MA	UnitedHealthcare	H0294	0.07726
MA	UnitedHealthcare	H0321	0.11312
MA	UnitedHealthcare	H0710	0.05797
MA	UnitedHealthcare	H0755	0.07591
MA	UnitedHealthcare	H1045	0.09692
MA	UnitedHealthcare	H1537	0.04505
MA	UnitedHealthcare	H1944	0.06017
MA	UnitedHealthcare	H2001	0.0401
MA	UnitedHealthcare	H2226	0.03357
MA	UnitedHealthcare	H2228	0.09555
MA	UnitedHealthcare	H2406	0.0472
MA	UnitedHealthcare	H2802	0.05037
MA	UnitedHealthcare	H3113	0.07043
MA	UnitedHealthcare	H3387	0.06635
MA	UnitedHealthcare	H3749	0.1593
MA	UnitedHealthcare	H4514	0.03569
MA	UnitedHealthcare	H4527	0.03828
MA	UnitedHealthcare	H5008	0.09971
MA	UnitedHealthcare	H5253	0.06082
MA	UnitedHealthcare	H5322	0.06104
MA	UnitedHealthcare	H5652	0.01402
MA	UnitedHealthcare	H8748	0.05772
MA	UnitedHealthcare	R5329	0.10778
MA	UnitedHealthcare	R5342	0.07565
MA	UnitedHealthcare	R7444	0.07969



MT	Aetna Health Inc.	H0523	0.03483
MT	Aetna Health Inc.	H1109	0.04582
MT	Aetna Health Inc.	H1608	0.05542
MT	Aetna Health Inc.	H1609	0.06834
MT	Aetna Health Inc.	H1692	0.03756
MT	Aetna Health Inc.	H2663	0.04458
MT	Aetna Health Inc.	H3152	0.09994
MT	Aetna Health Inc.	H3312	0.08741
MT	Aetna Health Inc.	H3597	0.06319
MT	Aetna Health Inc.	H3928	0.04255
MT	Aetna Health Inc.	H3931	0.06212
MT	Aetna Health Inc.	H3959	0.04568
MT	Aetna Health Inc.	H4523	0.03143
MT	Aetna Health Inc.	H5521	0.05565
MT	Aetna Health Inc.	H5522	0.06115
MT	Aetna Health Inc.	H5793	0.06585
MT	Aetna Health Inc.	H7149	0.0454
MT	Aetna Health Inc.	H7301	0.04319
MT	Aetna Health Inc.	H8649	0.07364
MT	BlueCrossBlueShield	H0104	0.59731
MT	BlueCrossBlueShield	H0107	0.06914
MT	BlueCrossBlueShield	H0302	0.0671
MT	BlueCrossBlueShield	H0504	0.05704
MT	BlueCrossBlueShield	H0544	0.02643
MT	BlueCrossBlueShield	H1304	0.1037
MT	BlueCrossBlueShield	H1350	0.15318
MT	BlueCrossBlueShield	H1607	0.09319
MT	BlueCrossBlueShield	H1666	0.08278
MT	BlueCrossBlueShield	H2230	0.10672
MT	BlueCrossBlueShield	H3154	0.11144
MT	BlueCrossBlueShield	H3342	0.072
MT	BlueCrossBlueShield	H3404	0.10934
MT	BlueCrossBlueShield	H3817	0.04846
MT	BlueCrossBlueShield	H3822	0.05761
MT	BlueCrossBlueShield	H4036	0.03788
MT	BlueCrossBlueShield	H4346	0.02506
MT	BlueCrossBlueShield	H4605	0.07472
MT	BlueCrossBlueShield	H4909	0.08805
MT	BlueCrossBlueShield	H5009	0.08472
MT	BlueCrossBlueShield	H5434	0.10568
MT	BlueCrossBlueShield	H5526	0.04793
MT	BlueCrossBlueShield	H7245	0.06477
MT	BlueCrossBlueShield	H7728	0.05746
MT	BlueCrossBlueShield	H7917	0.05389
MT	BlueCrossBlueShield	H8552	0.07987



MT	BlueCrossBlueShield	H8634	0.06216
MT	BlueCrossBlueShield	H9302	0.04792
MT	BlueCrossBlueShield	H9572	0.04582
MT	Humana	H0028	0.06089
MT	Humana	H1036	0.05564
MT	Humana	H3533	0.06647
MT	Humana	H4007	0.00225
MT	Humana	H5216	0.05797
MT	Humana	H5525	0.04894
MT	Humana	H5619	0.04657
MT	Humana	H6622	0.04195
MT	Humana	H8145	0.06975
MT	PacificSource Medicare	H3864	0.05699
MT	UnitedHealthcare	H0543	0.12102
MT	UnitedHealthcare	H0609	0.1472
MT	UnitedHealthcare	H0710	0.05797
MT	UnitedHealthcare	H1537	0.04505
MT	UnitedHealthcare	H1944	0.06017
MT	UnitedHealthcare	H2001	0.0401
MT	UnitedHealthcare	H2228	0.09555
MT	UnitedHealthcare	H2406	0.0472
MT	UnitedHealthcare	H3794	0.07496
MT	UnitedHealthcare	H3805	0.13849
MT	UnitedHealthcare	H5008	0.09971
MT	UnitedHealthcare	H5253	0.06082
MT	UnitedHealthcare	H5322	0.06104
MT	UnitedHealthcare	H5435	0.06903
MT	UnitedHealthcare	R3444	0.06729
NC	Aetna Health Inc.	H0523	0.03483
NC	Aetna Health Inc.	H1109	0.04582
NC	Aetna Health Inc.	H1608	0.05542
NC	Aetna Health Inc.	H1609	0.06834
NC	Aetna Health Inc.	H1692	0.03756
NC	Aetna Health Inc.	H2663	0.04458
NC	Aetna Health Inc.	H3152	0.09994
NC	Aetna Health Inc.	H3312	0.08741
NC	Aetna Health Inc.	H3597	0.06319
NC	Aetna Health Inc.	H3928	0.04255
NC	Aetna Health Inc.	H3931	0.06212
NC	Aetna Health Inc.	H3959	0.04568
NC	Aetna Health Inc.	H4523	0.03143
NC	Aetna Health Inc.	H5521	0.05565
NC	Aetna Health Inc.	H5522	0.06115
NC	Aetna Health Inc.	H5793	0.06585
NC	Aetna Health Inc.	H7149	0.0454



NC	Aetna Health Inc.	H7301	0.04319
NC	Aetna Health Inc.	H8649	0.07364
NC	BlueCrossBlueShield	H0104	0.59731
NC	BlueCrossBlueShield	H0107	0.06914
NC	BlueCrossBlueShield	H0302	0.0671
NC	BlueCrossBlueShield	H0504	0.05704
NC	BlueCrossBlueShield	H0544	0.02643
NC	BlueCrossBlueShield	H1035	0.05133
NC	BlueCrossBlueShield	H1304	0.1037
NC	BlueCrossBlueShield	H1607	0.09319
NC	BlueCrossBlueShield	H1666	0.08278
NC	BlueCrossBlueShield	H2230	0.10672
NC	BlueCrossBlueShield	H2261	0.09747
NC	BlueCrossBlueShield	H3154	0.11144
NC	BlueCrossBlueShield	H3259	0.13156
NC	BlueCrossBlueShield	H3342	0.072
NC	BlueCrossBlueShield	H3384	0.04969
NC	BlueCrossBlueShield	H3404	0.10934
NC	BlueCrossBlueShield	H3449	0.08027
NC	BlueCrossBlueShield	H3536	0.11268
NC	BlueCrossBlueShield	H3655	0.02436
NC	BlueCrossBlueShield	H3817	0.04846
NC	BlueCrossBlueShield	H3822	0.05761
NC	BlueCrossBlueShield	H4036	0.03788
NC	BlueCrossBlueShield	H4152	0.04895
NC	BlueCrossBlueShield	H4346	0.02506
NC	BlueCrossBlueShield	H4605	0.07472
NC	BlueCrossBlueShield	H4909	0.08805
NC	BlueCrossBlueShield	H5009	0.08472
NC	BlueCrossBlueShield	H5422	0.04823
NC	BlueCrossBlueShield	H5434	0.10568
NC	BlueCrossBlueShield	H5526	0.04793
NC	BlueCrossBlueShield	H5854	0.05482
NC	BlueCrossBlueShield	H5883	0.0485
NC	BlueCrossBlueShield	H7728	0.05746
NC	BlueCrossBlueShield	H7917	0.05389
NC	BlueCrossBlueShield	H8298	0.15897
NC	BlueCrossBlueShield	H8432	0.05944
NC	BlueCrossBlueShield	H8552	0.07987
NC	BlueCrossBlueShield	H8634	0.06216
NC	BlueCrossBlueShield	H9525	0.05313
NC	BlueCrossBlueShield	H9572	0.04582
NC	BlueCrossBlueShield	R3332	0.10695
NC	BlueCrossBlueShield	R5941	0.05254
NC	CARE N' CARE INSURANCE COMPANY OF NORTH CAROLINA	H9808	0.05567



NC	Cigna	H0354	0.05491
NC	Cigna	H0439	0.04733
NC	Cigna	H1415	0.01955
NC	Cigna	H2108	0.06765
NC	Cigna	H3949	0.08425
NC	Cigna	H4513	0.0188
NC	Cigna	H7020	0.04465
NC	Cigna	H9725	0.05846
NC	FirstMedicare Direct	H6306	0.04762
NC	FirstMedicare Direct	H8064	0.09756
NC	Gateway Health Medicare Assured	H5932	0.07888
NC	Gateway Health Medicare Assured	H9190	0.03757
NC	Humana	H0028	0.06089
NC	Humana	H1036	0.05564
NC	Humana	H1468	0.02408
NC	Humana	H1951	0.04594
NC	Humana	H3533	0.06647
NC	Humana	H4007	0.00225
NC	Humana	H4141	0.04303
NC	Humana	H4461	0.05407
NC	Humana	H5216	0.05797
NC	Humana	H5525	0.04894
NC	Humana	H5619	0.04657
NC	Humana	H5970	0.05788
NC	Humana	H6622	0.04195
NC	Humana	H8145	0.06975
NC	Humana	H8908	0.04587
NC	Humana	R5826	0.08951
NC	UnitedHealthcare	H0251	0.05658
NC	UnitedHealthcare	H0321	0.11312
NC	UnitedHealthcare	H0543	0.12102
NC	UnitedHealthcare	H0609	0.1472
NC	UnitedHealthcare	H0710	0.05797
NC	UnitedHealthcare	H0755	0.07591
NC	UnitedHealthcare	H1045	0.09692
NC	UnitedHealthcare	H1111	0.05174
NC	UnitedHealthcare	H1537	0.04505
NC	UnitedHealthcare	H1944	0.06017
NC	UnitedHealthcare	H2001	0.0401
NC	UnitedHealthcare	H2226	0.03357
NC	UnitedHealthcare	H2228	0.09555
NC	UnitedHealthcare	H2406	0.0472
NC	UnitedHealthcare	H2802	0.05037
NC	UnitedHealthcare	H3113	0.07043
NC	UnitedHealthcare	H3307	0.07491



NC	UnitedHealthcare	H3379	0.06607
NC	UnitedHealthcare	H3387	0.06635
NC	UnitedHealthcare	H3805	0.13849
NC	UnitedHealthcare	H4527	0.03828
NC	UnitedHealthcare	H4590	0.1016
NC	UnitedHealthcare	H5253	0.06082
NC	UnitedHealthcare	H5420	0.02367
NC	UnitedHealthcare	H5435	0.06903
NC	UnitedHealthcare	H5652	0.01402
NC	UnitedHealthcare	H8748	0.05772
NC	UnitedHealthcare	R3175	0.12985
NC	UnitedHealthcare	R3444	0.06729
NC	UnitedHealthcare	R5342	0.07565
NC	UnitedHealthcare	R6801	0.0451
NC	UnitedHealthcare	R7444	0.07969
NC	WellCare	H0174	0.0122
NC	WellCare	H0712	0.0515
NC	WellCare	H1032	0.06437
NC	WellCare	H1112	0.04204
NC	WellCare	H1416	0.03255
NC	WellCare	H2775	0.04211
NC	WellCare	H2816	0.04897
NC	WellCare	H4506	0.01837
NC	WellCare	H5087	0.02414
NC	WellCare	H5475	0.03072
NC	WellCare	H9730	0.04375
OR	ATRIO Health Plans	H3814	0.07143
OR	ATRIO Health Plans	H5995	0.04714
OR	ATRIO Health Plans	H6743	0.05816
OR	ATRIO Health Plans	H7006	0.03279
OR	BlueCrossBlueShield	H0104	0.59731
OR	BlueCrossBlueShield	H0107	0.06914
OR	BlueCrossBlueShield	H0302	0.0671
OR	BlueCrossBlueShield	H0504	0.05704
OR	BlueCrossBlueShield	H0544	0.02643
OR	BlueCrossBlueShield	H1035	0.05133
OR	BlueCrossBlueShield	H1304	0.1037
OR	BlueCrossBlueShield	H1350	0.15318
OR	BlueCrossBlueShield	H1352	0.07209
OR	BlueCrossBlueShield	H1607	0.09319
OR	BlueCrossBlueShield	H1666	0.08278
OR	BlueCrossBlueShield	H1997	0.05732
OR	BlueCrossBlueShield	H2230	0.10672
OR	BlueCrossBlueShield	H3154	0.11144
OR	BlueCrossBlueShield	H3342	0.072



OR	BlueCrossBlueShield	H3404	0.10934
OR	BlueCrossBlueShield	H3655	0.02436
OR	BlueCrossBlueShield	H3817	0.04846
OR	BlueCrossBlueShield	H4036	0.03788
OR	BlueCrossBlueShield	H4346	0.02506
OR	BlueCrossBlueShield	H4605	0.07472
OR	BlueCrossBlueShield	H4909	0.08805
OR	BlueCrossBlueShield	H5009	0.08472
OR	BlueCrossBlueShield	H5434	0.10568
OR	BlueCrossBlueShield	H5526	0.04793
OR	BlueCrossBlueShield	H6237	0.05524
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OR	BlueCrossBlueShield	H7728	0.05746
OR	BlueCrossBlueShield	H7917	0.05389
OR	BlueCrossBlueShield	H8552	0.07987
OR	BlueCrossBlueShield	H8634	0.06216
OR	BlueCrossBlueShield	H9302	0.04792
OR	BlueCrossBlueShield	H9572	0.04582
OR	BlueCrossBlueShield	R3332	0.10695
OR	CareOregon Advantage	H5859	0.05539
OR	Health Net Health Plan of Oregon, Inc.	H6815	0.05217
OR	Humana	H0028	0.06089
OR	Humana	H1036	0.05564
OR	Humana	H1951	0.04594
OR	Humana	H2944	0.07235
OR	Humana	H5216	0.05797
OR	Humana	H5525	0.04894
OR	Humana	H5619	0.04657
OR	Humana	H6622	0.04195
OR	Humana	H8145	0.06975
OR	Humana	H8908	0.04587
OR	Humana	R5826	0.08951
OR	Kaiser	H0524	0.02925
OR	Kaiser	H0630	0.03117
OR	Kaiser	H1170	0.05617
OR	Kaiser	H1230	0.02727
OR	Kaiser	H5050	0.03811
OR	Kaiser	H9003	0.03339
OR	Moda Health Plan, Inc.	H3813	0.06901
OR	Moda Health Plan, Inc.	H8506	0.04255
OR	PacificSource Medicare	H3864	0.05699
OR	PacificSource Medicare	H4754	0.05092
OR	UnitedHealthcare	H0251	0.05658
OR	UnitedHealthcare	H0321	0.11312
OR	UnitedHealthcare	H0543	0.12102



OR	UnitedHealthcare	H0609	0.1472
OR	UnitedHealthcare	H0624	0.0943
OR	UnitedHealthcare	H0710	0.05797
OR	UnitedHealthcare	H1045	0.09692
OR	UnitedHealthcare	H1286	0.06166
OR	UnitedHealthcare	H1537	0.04505
OR	UnitedHealthcare	H2001	0.0401
OR	UnitedHealthcare	H2226	0.03357
OR	UnitedHealthcare	H2228	0.09555
OR	UnitedHealthcare	H2406	0.0472
OR	UnitedHealthcare	H2802	0.05037
OR	UnitedHealthcare	H3113	0.07043
OR	UnitedHealthcare	H3307	0.07491
OR	UnitedHealthcare	H3749	0.1593
OR	UnitedHealthcare	H3805	0.13849
OR	UnitedHealthcare	H4590	0.1016
OR	UnitedHealthcare	H4604	0.09501
OR	UnitedHealthcare	H5008	0.09971
OR	UnitedHealthcare	H5253	0.06082
OR	UnitedHealthcare	H5420	0.02367
OR	UnitedHealthcare	R3175	0.12985
OR	UnitedHealthcare	R3444	0.06729
OR	UnitedHealthcare	R6801	0.0451
OR	UnitedHealthcare	R7444	0.07969
VT	Aetna Health Inc.	H0523	0.03483
VT	Aetna Health Inc.	H1109	0.04582
VT	Aetna Health Inc.	H1608	0.05542
VT	Aetna Health Inc.	H1609	0.06834
VT	Aetna Health Inc.	H1692	0.03756
VT	Aetna Health Inc.	H2663	0.04458
VT	Aetna Health Inc.	H3152	0.09994
VT	Aetna Health Inc.	H3312	0.08741
VT	Aetna Health Inc.	H3597	0.06319
VT	Aetna Health Inc.	H3928	0.04255
VT	Aetna Health Inc.	H3931	0.06212
VT	Aetna Health Inc.	H3959	0.04568
VT	Aetna Health Inc.	H4523	0.03143
VT	Aetna Health Inc.	H5521	0.05565
VT	Aetna Health Inc.	H5522	0.06115
VT	Aetna Health Inc.	H5793	0.06585
VT	Aetna Health Inc.	H7149	0.0454
VT	Aetna Health Inc.	H7301	0.04319
VT	Aetna Health Inc.	H8649	0.07364
VT	Aetna Health Inc.	R6694	0.09476
VT	BlueCrossBlueShield	H0104	0.59731



VT	BlueCrossBlueShield	H0107	0.06914
VT	BlueCrossBlueShield	H0302	0.0671
VT	BlueCrossBlueShield	H0504	0.05704
VT	BlueCrossBlueShield	H1304	0.1037
VT	BlueCrossBlueShield	H1607	0.09319
VT	BlueCrossBlueShield	H1666	0.08278
VT	BlueCrossBlueShield	H2230	0.10672
VT	BlueCrossBlueShield	H2261	0.09747
VT	BlueCrossBlueShield	H3154	0.11144
VT	BlueCrossBlueShield	H3342	0.072
VT	BlueCrossBlueShield	H3404	0.10934
VT	BlueCrossBlueShield	H3536	0.11268
VT	BlueCrossBlueShield	H3817	0.04846
VT	BlueCrossBlueShield	H4036	0.03788
VT	BlueCrossBlueShield	H4152	0.04895
VT	BlueCrossBlueShield	H4605	0.07472
VT	BlueCrossBlueShield	H4909	0.08805
VT	BlueCrossBlueShield	H5009	0.08472
VT	BlueCrossBlueShield	H5434	0.10568
VT	BlueCrossBlueShield	H5526	0.04793
VT	BlueCrossBlueShield	H7728	0.05746
VT	BlueCrossBlueShield	H7917	0.05389
VT	BlueCrossBlueShield	H8432	0.05944
VT	BlueCrossBlueShield	H8552	0.07987
VT	BlueCrossBlueShield	H8634	0.06216
VT	BlueCrossBlueShield	H9572	0.04582
VT	MVP HEALTH CARE	H3305	0.05071
VT	MVP HEALTH CARE	H9615	0.05239
VT	UnitedHealthcare	H0251	0.05658
VT	UnitedHealthcare	H0543	0.12102
VT	UnitedHealthcare	H0609	0.1472
VT	UnitedHealthcare	H0624	0.0943
VT	UnitedHealthcare	H0710	0.05797
VT	UnitedHealthcare	H0755	0.07591
VT	UnitedHealthcare	H1537	0.04505
VT	UnitedHealthcare	H1944	0.06017
VT	UnitedHealthcare	H2001	0.0401
VT	UnitedHealthcare	H2228	0.09555
VT	UnitedHealthcare	H2406	0.0472
VT	UnitedHealthcare	H2802	0.05037
VT	UnitedHealthcare	H5253	0.06082
VT	UnitedHealthcare	H5435	0.06903
VT	UnitedHealthcare	R5329	0.10778
VT	UnitedHealthcare	R7444	0.07969
WV	Aetna Health Inc.	H0523	0.03483



WV	Aetna Health Inc.	H1109	0.04582
WV	Aetna Health Inc.	H1608	0.05542
WV	Aetna Health Inc.	H1609	0.06834
WV	Aetna Health Inc.	H1692	0.03756
WV	Aetna Health Inc.	H2663	0.04458
WV	Aetna Health Inc.	H3152	0.09994
WV	Aetna Health Inc.	H3312	0.08741
WV	Aetna Health Inc.	H3597	0.06319
WV	Aetna Health Inc.	H3928	0.04255
WV	Aetna Health Inc.	H3931	0.06212
WV	Aetna Health Inc.	H3959	0.04568
WV	Aetna Health Inc.	H4523	0.03143
WV	Aetna Health Inc.	H5521	0.05565
WV	Aetna Health Inc.	H5522	0.06115
WV	Aetna Health Inc.	H5793	0.06585
WV	Aetna Health Inc.	H7149	0.0454
WV	Aetna Health Inc.	H7301	0.04319
WV	Aetna Health Inc.	H8649	0.07364
WV	Humana	H0028	0.06089
WV	Humana	H1036	0.05564
WV	Humana	H4461	0.05407
WV	Humana	H5216	0.05797
WV	Humana	H5525	0.04894
WV	Humana	H5619	0.04657
WV	Humana	H5970	0.05788
WV	Humana	H6622	0.04195
WV	Humana	H8145	0.06975
WV	Humana	R5826	0.08951
WV	The Health Plan	H3672	0.03491
WV	The Health Plan	H8604	0.05091
WV	UnitedHealthcare	H0321	0.11312
WV	UnitedHealthcare	H0710	0.05797
WV	UnitedHealthcare	H1045	0.09692
WV	UnitedHealthcare	H1537	0.04505
WV	UnitedHealthcare	H1944	0.06017
WV	UnitedHealthcare	H2001	0.0401
WV	UnitedHealthcare	H2228	0.09555
WV	UnitedHealthcare	H2406	0.0472
WV	UnitedHealthcare	H3113	0.07043
WV	UnitedHealthcare	H3307	0.07491
WV	UnitedHealthcare	H5008	0.09971
WV	UnitedHealthcare	H5253	0.06082
WV	UnitedHealthcare	H5435	0.06903
WV	UnitedHealthcare	R5329	0.10778
WV	UnitedHealthcare	R5342	0.07565



WV UnitedHealthcare R7444 0.07969

It should be noted that the states VT and WV only have 4 insurance companies and MT have 6 insurance companies.

We care about the UOD performance of top-10 biggest market share insurance companies in each state because these companies serve the majority of the population and will have a large great on drug addiction crisis. Thus, monitoring their performance in UOD is crucial.

To measure the UOD performance of in these companies, we calculate the weighted average of the UOD rate based on the enrollment number of the company. Especially, we get rid of the contracts with missing UOD. The ranking from the worst with the highest weighted average UOD rate to the best with the lowest weighted average UOD rate for all top-10 companies within each state is shown as below. The insurance companies with lowest UOD rates in each state are worthy to support and reward.

Table 3-2 Weight average of UOD under insurance companies by states

State	Parent_Organization	Weight_Average
AR	BlueCrossBlueShield	0.08891969
AR	Health Advantage	0.07729
AR	UnitedHealthcare	0.06392251
AR	Aetna Health Inc.	0.05404784
AR	Humana	0.04966389
AR	WellCare	0.03255
AR	Cigna	0.0188
CO	UnitedHealthcare	0.13468915
CO	BlueCrossBlueShield	0.08174139
CO	Rocky Mountain Health Plans	0.0637
CO	Humana	0.05990859
CO	Aetna Health Inc.	0.05636806
CO	Denver Health Medical Plan, Inc.	0.04757
CO	Kaiser	0.03117
FL	BlueCrossBlueShield	0.08934362
FL	UnitedHealthcare	0.07069985
FL	WellCare	0.06437
FL	Simply Healthcare Plans, Inc.	0.06119
FL	Aetna Health Inc.	0.06012634
FL	Humana	0.05808385
FL	Optimum HealthCare, Inc.	0.04842
FL	CarePlus Health Plans, Inc.	0.04839
FL	Freedom Health, Inc.	0.03948
FL	HealthSun Health Plans, Inc.	0.01275
MA	BlueCrossBlueShield	0.10390211
MA	Aetna Health Inc.	0.05605315
MA	Fallon Health	0.05254
MA	UnitedHealthcare	0.05022741
MA	Harvard Pilgrim Health Care, Inc.	0.04978
MA	Commonwealth Care Alliance, Inc.	0.04916



MA	Health New England Medicare Advantage Plans	0.03333
MA	Senior Whole Health	0.03037
MA	Tufts Health Plan	0.00018
MT	BlueCrossBlueShield	0.06920938
MT	PacificSource Medicare	0.05699
MT	Aetna Health Inc.	0.05565
MT	Humana	0.04641579
MT	UnitedHealthcare	0.0461052
NC	BlueCrossBlueShield	0.08930357
NC	Cigna	0.05846
NC	Aetna Health Inc.	0.05593742
NC	CARE N' CARE INSURANCE COMPANY OF NORTH CAROLINA	0.05567
NC	Humana	0.05407878
NC	FirstMedicare Direct	0.05328525
NC	WellCare	0.0515
NC	UnitedHealthcare	0.05104259
NC	Gateway Health Medicare Assured	0.03757
OR	UnitedHealthcare	0.11433653
OR	Moda Health Plan, Inc.	0.0677288
OR	PacificSource Medicare	0.05656133
OR	Humana	0.05648385
OR	CareOregon Advantage	0.05539
OR	ATRIO Health Plans	0.05425353
OR	Health Net Health Plan of Oregon, Inc.	0.05217
OR	BlueCrossBlueShield	0.04964421
OR	Kaiser	0.03339
VT	BlueCrossBlueShield	0.08003833
VT	UnitedHealthcare	0.06648746
VT	Aetna Health Inc.	0.05565
VT	MVP HEALTH CARE	0.05214356
WV	Humana	0.05755124
WV	Aetna Health Inc.	0.05146509
WV	UnitedHealthcare	0.0401
WV	The Health Plan	0.0366077

Interestingly, we find that although many contracts of top-10 insurance companies in each state suffered from UOD risk, some of them don't have enrollment, indicating that the real negative influence can be smaller than we have expected. The relationship among contracts suffered from UOD risk but without enrollment, contracts suffered from UOD risk and with enrollment, and total contracts suffered from UOD risk is demonstrated in the below graph.

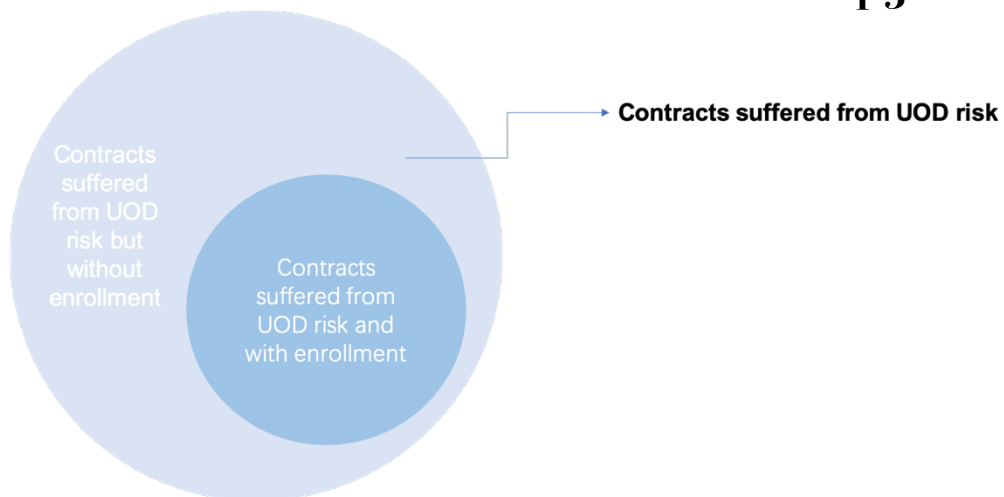


Figure 1 Relationship among contracts, UOD risk and enrollment

Furthermore, some companies of top 10 disappears when analyzing the UOD rate because they don't provide any contract with UOD risk, showing excellent performance in avoiding addictive opioids drugs. These companies should be highly praised because of their mindfulness of opioid crisis and perfect performance in controlling it. They are listed as below.

Table 3-3 Best performers in avoiding addictive opioids drugs

State	Parent Organization
AR	Allwell
	Superior Select Health Plans
	Total Life Healthcare
CO	InnovAge Colorado PACE
	Bright Health
	Friday Health Plans of Colorado
MA	Summit ElderCare or Fallon Health
MT	Lasso Healthcare
NC	Piedmont Health SeniorCare
OR	Health Net Life Insurance Company

However, we find that the giant players, such as BlueCrossBlueShield and UnitedHealthcare, are usually the top companies with high UOD rates. These companies with large market sizes, in other words, huge influences, have not been able to ensure the enough safety usage of addictive drugs, causing significantly bad impacts on the whole healthcare insurance industry. This situation should be taken into serious consideration.



Conclusion

For the best candidate insurance company in each state, we think that UnitedHealthcare and Humana can be the top choices for VT, WV, MT and NC which have highly concentrated healthcare insurance markets.

For the coverage of dental services in the insurance benefit packages, we find that market in MT shows least interest in offering preventive dental benefits and insurance market in VT shows least interest in offering comprehensive dental benefits. Moreover, Humana is usually the top comprehensive dental benefits provider among the states. As for the preventive dental benefits, apart from Humana, many other major providers, such as WellCare and MVP health care, come into being. Finally, for the WV, the Health Plan is always the top provider that not only offers the most preventive dental benefits, but also the comprehensive ones.

For the quality of care and performance of the plans, we find that although many contracts of top-10 insurance companies in each state suffered from UOD risk, some of them don't have enrollment, indicating that the real negative influence can be smaller than we have expected. Some of the top-10 insurance companies even don't offer any contracts with risk of UOD and these companies should be highly praised. Unfortunately, these companies are not the largest insurance companies in each state, instead, they are comparatively smaller than the giant ones. The giant players, such as BlueCrossBlueShield and UnitedHealthcare, are usually the top companies with high UOD rates. These companies have huge influences on the whole healthcare insurance market but did not shoulder the responsibility they should have taken to ensure the enough safety usage of addictive drugs, causing particularly bad impacts. This situation should be taken into serious consideration.



Appendix

Question 1

```
rm(list=ls())
library(data.table)
library(sandwich)
library(tidyverse)
library(lmtest)
library(ggplot2)
library(knitr)
library(psych)
library(tidyr)
library(dplyr)
library(sqldf)

enrollment=fread(file='C:/Users/Administrator/Downloads/CPSC_Enrollment_2019_10/CPSC_Enrollment_Info_2019_10.csv')
enrollment_enroll=enrollment[Enrollment!='*']
enrollment_state=enrollment_enroll[State=='FL'|State=='NC'|State=='MA'|State=='CO'|State=='OR'|State=='AR'|State=='WV'|State=='MT'|State=='VT']
enrollment_contract=enrollment_state[!`Contract Number` %like% '^S']
enrollment_unite=unite(enrollment_contract, "CN_P",
                      c('Contract Number', 'Plan ID'), remove=FALSE)

market=fread(file='C:/Users/Administrator/Downloads/Monthly-Report-By-Plan-2019-10/Monthly_Report_By_Plan_2019_10.csv')
market_contract=market[!`Contract Number`=='90091']
market_unite=unite(market_contract, "CN_P",
                  c('Contract Number', 'Plan ID'), remove=FALSE)
unite=inner_join(enrollment_unite, market_unite, by='CN_P')

orgs=fread(file='C:/Users/Administrator/Downloads/MajorInsuranceOrgs.csv')
unite_all=inner_join(unite,orgs,by='Organization Marketing Name')
market_share=unite_all[c(2,3,6,8,15,20)]
colnames(market_share)=c('Contract Number','Plan ID','State','Enrollment',
                        'Organization Marketing Name','MajorInsuranceOrgName')

write.csv(market_share,file='C:/Users/Administrator/Downloads/market.csv')
market_share=fread(file='C:/Users/Administrator/Downloads/market.csv',
                  colClasses = c(Enrollment='numeric'))
sum=market_share[,orgsum:=sum(Enrollment),by=.(State,MajorInsuranceOrgName)]
sum=sum[,sum:=sum(Enrollment),by=.(State)]
share=sum[,share:=orgsum/sum]
share=unique(share[,share,by=.(State,MajorInsuranceOrgName)])
write.csv(share,file='C:/Users/Administrator/Downloads/share.csv')

sqldf('select State,sum(share*share) as HHI
      from share group by State order by HHI desc')
sqldf('select * from share order by share desc limit 4')
```

Question 2

```
import pandas as pd
import numpy as np
# import data
dental1= pd.read_csv("~/Desktop/PBP-Benefits-2020-Q1/pbp_16_dental1.csv",sep=',')
```



```
enrollment=pd.read_csv("~/Desktop/Q1_cleandata1.csv",sep=',')
ranking_group=pd.read_csv("~/Desktop/share.csv",sep=',')
ranking_group.head()
```

change columns name

```
dental1=dental1.rename(columns={'pbp_a_hnumber':'Contract Number','pbp_a_plan_identifier':'Plan ID'})
dental1['Plan ID']=dental1['Plan ID'].astype(str)
```

In[] select top 5 by state and insurer

```
ranking=ranking_group.sort_values(['State','share'],ascending=False)
grouped = ranking.groupby(['State']).head(5)
grouped.columns
grouped=grouped.drop(columns=['Unnamed: 0'])
```

In[] drop na as there are 420 na due to database loss

```
enrollment_drop=enrollment.dropna(how='any')
enrollment_drop['Plan ID']=enrollment_drop['Plan ID'].astype(str)
```

In[] drop duplicated lines due to different segment id

```
dental_drop_s=dental1.drop_duplicates(['Plan ID','Contract Number'])
```

In[] merge with enrollment first

```
merge_enroll=pd.merge(grouped,enrollment_drop,how='right',on=['State','MajorInsuranceOrgName'])
for col in merge_enroll.columns:
    print( col + ', Number of Missing Values:', len(merge_enroll[col][merge_enroll[col].isnull()]))
```

find there is na in share

```
merge_enroll1=merge_enroll.dropna(how='any')
```

In[] merge enrollment and dental

```
merge_ed=pd.merge(dental1,merge_enroll1,how='right',on=['Contract Number','Plan ID'])
merge_enroll_try=pd.merge(dental_drop_s,merge_enroll1,how='right',on=['Plan ID','Contract Number'])
for col in merge_ed.columns:
    print( col + ', Number of Missing Values:', len(merge_ed[col][merge_ed[col].isnull()]))
```

In[] try to do the work

```
# pbp_b16a_bendesc_yn means Preventive Dental Items as a supplemental benefit under Part C" ?
#pbp_b16b_bendesc_yn means Does the plan provide Comprehensive Dental Items as a supplemental benefit under Part C?
```

a) What percentages of the enrollees enjoy the "Preventive Dental Items as a supplemental benefit under Part C" ?

change 2 to 0

```
merge_enroll_try['pbp_b16a_bendesc_yn']=merge_enroll_try['pbp_b16a_bendesc_yn'].astype(str)
merge_enroll_try['pbp_b16a_bendesc_yn']=merge_enroll_try['pbp_b16a_bendesc_yn'].str.replace('2','0')
merge_enroll_try['pbp_b16a_bendesc_yn']=merge_enroll_try['pbp_b16a_bendesc_yn'].astype(float)
```




```
sum1=merge_enroll_try.groupby(['State','MajorInsuranceOrgName'])['pbp_b16a_bendesc_yn'].sum()
sum1=sum1.reset_index()
sum2=merge_enroll_try.groupby(['State','MajorInsuranceOrgName'])['Enrollment'].sum()
sum2=sum2.reset_index()
merge_sum=pd.merge(sum1,sum2,how='inner',on=['State','MajorInsuranceOrgName'])
merge_sum=merge_sum.rename(columns={'pbp_b16a_bendesc_yn':'Preventive Dental Items Number'})
merge_sum['Percentage']=merge_sum['Preventive Dental Items Number']/merge_sum['Enrollment']*100
merge_sum.to_excel("~/Desktop/merge_sum.xlsx")
merge_sum['Percentage'].sum()
```

#b) What percentages of the enrollees enjoy the “Comprehensive Dental Items as a supplemental benefit under Part C” ?

```
merge_enroll_try['pbp_b16b_bendesc_yn']=merge_enroll_try['pbp_b16b_bendesc_yn'].astype(str)
merge_enroll_try['pbp_b16b_bendesc_yn']=merge_enroll_try['pbp_b16b_bendesc_yn'].str.replace('2','0')
merge_enroll_try['pbp_b16b_bendesc_yn']=merge_enroll_try['pbp_b16b_bendesc_yn'].astype(float)
sum3=merge_enroll_try.groupby(['State','MajorInsuranceOrgName'])['pbp_b16b_bendesc_yn'].sum()
sum3=sum3.reset_index()
sum4=merge_enroll_try.groupby(['State','MajorInsuranceOrgName'])['Enrollment'].sum()
sum4=sum4.reset_index()
merge_sum1=pd.merge(sum3,sum4,how='inner',on=['State','MajorInsuranceOrgName'])
merge_sum1=merge_sum1.rename(columns={'pbp_b16b_bendesc_yn':'Comprehensive Dental Items'})
merge_sum1['Percentage']=merge_sum1['Comprehensive Dental Items']/merge_sum1['Enrollment']*100
merge_sum1.to_excel("~/Desktop/merge_sum1.xlsx")
merge_sum1['Percentage'].sum()
```

Question 3

```
rm(list=ls())
library(data.table)
library(sandwich)
library(tidyverse)
library(lmtest)
library(ggplot2)
library(knitr)
library(psych)
library(dplyr)
```

Question 3

```
EOC170=fread(file=~Downloads/EOC170.csv",
             col.names=c('Contract_Number','Plan_Name','UOD'),
             select = c('Contract Number','Plan Name','EOC170-0010'))
EOC170=EOC170[UOD!="0.00"&!is.na(UOD)&UOD!="NB"&UOD!="BR"&UOD!="NQ"]
EOC170$UOD_rate=as.numeric(EOC170$UOD)/1000
enrollment=fread(file=~Downloads/CPSC_Enrollment_2019_10/CPSC_Enrollment_Info_2019_10.csv",
                 col.names=c('Contract_Number','Plan_ID','State','Enrollment'),
                 select = c('Contract Number','Plan ID','State','Enrollment'))
enrollment=enrollment[Enrollment!="*"&!is.na(Enrollment)]
```



```

enrollment=enrollment[str_sub(enrollment$Contract_Number,1,1)!="S"]
enrollment=enrollment[State=="FL" | State=="NC" | State=="MA" | State=="CO" | State=="OR" | State=="AR" | State=="WV" | State=="MT" | State=="VT"]
enrollment=enrollment[,.(enrollment=sum(as.numeric(Enrollment))),keyby =.(Contract_Number,Plan_ID,State)]
contract_sub_org=fread(file=~Downloads/Monthly_Report_By_Plan_2019_10/Monthly_Report_By_Plan_2019_10.csv",
                        col.names=c('Contract_Number','Plan_ID','Organization Marketing Name'),
                        select = c('Contract Number','Plan ID','Organization Marketing Name'))
MajorInsuranceOrgs=fread(file=~Downloads/MajorInsuranceOrgs.csv",
                          col.names=c('Organization Marketing Name','Parent_Organization'),
                          select = c('Organization Marketing Name','MajorInsuranceOrgName'))
contract_parent_org=merge(contract_sub_org,MajorInsuranceOrgs,by=c("Organization Marketing Name"),all.x=TRUE)
enrollment_contract=merge(enrollment,contract_parent_org,by=c("Contract_Number","Plan_ID"),all=FALSE)
enrollment_contract=enrollment_contract[Parent_Organization!=is.na(Parent_Organization),]
enrollment_contract=enrollment_contract[,.(State,Parent_Organization,Contract_Number,Plan_ID,enrollment)]
enrollment_contract=enrollment_contract[,.(enrollment=sum(enrollment)),keyby
=.(Contract_Number,Parent_Organization,State)]
enrollment_contract=enrollment_contract[order(State,Contract_Number)]
plan_UOD=merge(enrollment_contract,EOC170,by=c("Contract_Number"),all=FALSE)
select_cols=c('State','Parent_Organization','Contract_Number','enrollment','UOD_rate')
plan_UOD=plan_UOD[,..select_cols]
plan_UOD=plan_UOD[order(State,Contract_Number)]
enrollment_new=fread(file=~Downloads/CPSC_Enrollment_2019_10/CPSC_Enrollment_Info_2019_10.csv",
                      col.names=c('Contract_Number','Plan_ID','State'),
                      select = c('Contract Number','Plan ID','State'))
enrollment_new=enrollment_new[str_sub(enrollment_new$Contract_Number,1,1)!="S"]
enrollment_new=enrollment_new[State=="FL" | State=="NC" | State=="MA" | State=="CO" | State=="OR" | State=="AR" | State=="WV" | State=="MT" | State=="VT"]
contract_parent=merge(enrollment_new,contract_parent_org,by=c("Contract_Number","Plan_ID"),all=FALSE)
contract_parent_UOD=merge(contract_parent,EOC170,by=c("Contract_Number"),all=FALSE)
share=fread(file=~Downloads/share.csv",
             col.names=c('State','Parent_Organization','share'),
             select = c('State','MajorInsuranceOrgName','share'))
share=share[order(State)]

```

TOP 10 companies' UOD condition in AR

```

AR_TOP10=share[State=="AR"]
AR_TOP10=AR_TOP10[order(-share)]
AR_TOP10=AR_TOP10[1:10]
AR_UOD=merge(AR_TOP10,plan_UOD,by=c("State","Parent_Organization"),all=FALSE)
AR_UOD_1=merge(AR_TOP10,contract_parent_UOD,by=c("State","Parent_Organization"),all=FALSE)
AR_UOD_1=AR_UOD_1[,.(UOD_rate=unique(UOD_rate)),keyby =.(Contract_Number,Parent_Organization,State)]

```

TOP 10 companies' UOD condition in CO

```

CO_TOP10=share[State=="CO"]
CO_TOP10=CO_TOP10[order(-share)]
CO_TOP10=CO_TOP10[1:10]

```



```
CO_UD=merge(CO_TOP10,plan_UD,by=c("State","Parent_Organization"),all=FALSE)
CO_UD_1=merge(CO_TOP10,contract_parent_UD,by=c("State","Parent_Organization"),all=FALSE)
CO_UD_1=CO_UD_1[,.(UOD_rate=unique(UOD_rate)),keyby =(Contract_Number,Parent_Organization,State)]
```

TOP 10 companies' UOD condition in FL

```
FL_TOP10=share[State=='FL']
FL_TOP10=FL_TOP10[order(-share)]
FL_TOP10=FL_TOP10[1:10]
FL_UD=merge(FL_TOP10,plan_UD,by=c("State","Parent_Organization"),all=FALSE)
FL_UD_1=merge(FL_TOP10,contract_parent_UD,by=c("State","Parent_Organization"),all=FALSE)
FL_UD_1=FL_UD_1[,.(UOD_rate=unique(UOD_rate)),keyby =(Contract_Number,Parent_Organization,State)]
```

TOP 10 companies' UOD condition in MA

```
MA_TOP10=share[State=='MA']
MA_TOP10=MA_TOP10[order(-share)]
MA_TOP10=MA_TOP10[1:10]
MA_UD=merge(MA_TOP10,plan_UD,by=c("State","Parent_Organization"),all=FALSE)
MA_UD_1=merge(MA_TOP10,contract_parent_UD,by=c("State","Parent_Organization"),all=FALSE)
MA_UD_1=MA_UD_1[,.(UOD_rate=unique(UOD_rate)),keyby =(Contract_Number,Parent_Organization,State)]
```

TOP 10 companies' UOD condition in MT

```
MT_TOP10=share[State=='MT']
MT_TOP10=MT_TOP10[order(-share)]
MT_TOP10=MT_TOP10[1:10]
MT_UD=merge(MT_TOP10,plan_UD,by=c("State","Parent_Organization"),all=FALSE)
MT_UD_1=merge(MT_TOP10,contract_parent_UD,by=c("State","Parent_Organization"),all=FALSE)
MT_UD_1=MT_UD_1[,.(UOD_rate=unique(UOD_rate)),keyby =(Contract_Number,Parent_Organization,State)]
```

TOP 10 companies' UOD condition in NC

```
NC_TOP10=share[State=='NC']
NC_TOP10=NC_TOP10[order(-share)]
NC_TOP10=NC_TOP10[1:10]
NC_UD=merge(NC_TOP10,plan_UD,by=c("State","Parent_Organization"),all=FALSE)
NC_UD_1=merge(NC_TOP10,contract_parent_UD,by=c("State","Parent_Organization"),all=FALSE)
NC_UD_1=NC_UD_1[,.(UOD_rate=unique(UOD_rate)),keyby =(Contract_Number,Parent_Organization,State)]
```

TOP 10 companies' UOD condition in OR

```
OR_TOP10=share[State=='OR']
OR_TOP10=OR_TOP10[order(-share)]
OR_TOP10=OR_TOP10[1:10]
OR_UD=merge(OR_TOP10,plan_UD,by=c("State","Parent_Organization"),all=FALSE)
OR_UD_1=merge(OR_TOP10,contract_parent_UD,by=c("State","Parent_Organization"),all=FALSE)
OR_UD_1=OR_UD_1[,.(UOD_rate=unique(UOD_rate)),keyby =(Contract_Number,Parent_Organization,State)]
```

TOP 10 companies' UOD condition in VT

```
VT_TOP10=share[State=='VT']
VT_TOP10=VT_TOP10[order(-share)]
```



```
VT_TOP10=VT_TOP10[1:10]
VT_UOD=merge(VT_TOP10,plan_UOD,by=c("State","Parent_Organization"),all=FALSE)
VT_UOD_1=merge(VT_TOP10,contract_parent_UOD,by=c("State","Parent_Organization"),all=FALSE)
VT_UOD_1=VT_UOD_1[,.(UOD_rate=unique(UOD_rate)),keyby=.(Contract_Number,Parent_Organization,State)]
```

TOP 10 companies' UOD condition in WV

```
WV_TOP10=share[State=='WV']
WV_TOP10=WV_TOP10[order(-share)]
WV_TOP10=WV_TOP10[1:10]
WV_UOD=merge(WV_TOP10,plan_UOD,by=c("State","Parent_Organization"),all=FALSE)
WV_UOD_1=merge(WV_TOP10,contract_parent_UOD,by=c("State","Parent_Organization"),all=FALSE)
WV_UOD_1=WV_UOD_1[,.(UOD_rate=unique(UOD_rate)),keyby=.(Contract_Number,Parent_Organization,State)]
```

Summary of UOD condition of top 10 companies in all 9 states:

```
UOD_top10_state=rbind(AR_UOD_1,CO_UOD_1,FL_UOD_1,MA_UOD_1,MT_UOD_1,NC_UOD_1,OR_UOD_1,VT_UOD_1,WV_UOD_1)
UOD_top10_state=UOD_top10_state[order(State,Parent_Organization,Contract_Number)]
```

weight average for each state's top 10 companies:

TOP 10 companies' UOD weight average in AR

```
AR_UOD_org=AR_UOD[,.(UOD_population=enrollment*UOD_rate),keyby=.(Contract_Number,Parent_Organization,State)]
AR_UOD_org=AR_UOD_org[,.(total_UOD_population=sum(UOD_population)),keyby=.(Parent_Organization,State)]
AR_enrollment_org=AR_UOD[,.(total_enrollment=sum(enrollment)),keyby=.(Parent_Organization,State)]
AR_weight_average=merge(AR_UOD_org,AR_enrollment_org,by='Parent_Organization',all.x=FALSE)
AR_weight_average=AR_weight_average[,.(weight_average=total_UOD_population/total_enrollment),keyby=.(Parent_Organization,State.x)]
AR_weight_average=AR_weight_average[ORDER(-weight_average)]
```

TOP 10 companies' UOD weight average in CO

```
CO_UOD_org=CO_UOD[,.(UOD_population=enrollment*UOD_rate),keyby=.(Contract_Number,Parent_Organization,State)]
CO_UOD_org=CO_UOD_org[,.(total_UOD_population=sum(UOD_population)),keyby=.(Parent_Organization,State)]
CO_enrollment_org=CO_UOD[,.(total_enrollment=sum(enrollment)),keyby=.(Parent_Organization,State)]
CO_weight_average=merge(CO_UOD_org,CO_enrollment_org,by='Parent_Organization',all.x=FALSE)
CO_weight_average=CO_weight_average[,.(weight_average=total_UOD_population/total_enrollment),keyby=.(Parent_Organization,State.x)]
CO_weight_average=CO_weight_average[ORDER(-weight_average)]
```

TOP 10 companies' UOD weight average in FL

```
FL_UOD_org=FL_UOD[,.(UOD_population=enrollment*UOD_rate),keyby=.(Contract_Number,Parent_Organization,State)]
FL_UOD_org=FL_UOD_org[,.(total_UOD_population=sum(UOD_population)),keyby=.(Parent_Organization,State)]
FL_enrollment_org=FL_UOD[,.(total_enrollment=sum(enrollment)),keyby=.(Parent_Organization,State)]
FL_weight_average=merge(FL_UOD_org,FL_enrollment_org,by='Parent_Organization',all.x=FALSE)
FL_weight_average=FL_weight_average[,.(weight_average=total_UOD_population/total_enrollment),keyby=.(Parent_Organization,State.x)]
FL_weight_average=FL_weight_average[ORDER(-weight_average)]
```

TOP 10 companies' UOD weight average in MA



```
MA_UD_org=MA_UD[,.(UOD_population=enrollment*UOD_rate),keyby=.(Contract_Number,Parent_Organization,State)]
MA_UD_org=MA_UD_org[,.(total_UOD_population=sum(UOD_population)),keyby=.(Parent_Organization,State)]
MA_enrollment_org=MA_UD[,.(total_enrollment=sum(enrollment)),keyby=.(Parent_Organization,State)]
MA_weight_average=merge(MA_UD_org,MA_enrollment_org,by='Parent_Organization',all.x=FALSE)
MA_weight_average=MA_weight_average[,.(weight_average=total_UOD_population/total_enrollment),keyby=.(Parent_Organization,State.x)]
MA_weight_average=MA_weight_average[ORDER(-weight_average)]
```

TOP 10 companies' UOD weight average in MT

```
MT_UD_org=MT_UD[,.(UOD_population=enrollment*UOD_rate),keyby=.(Contract_Number,Parent_Organization,State)]
MT_UD_org=MT_UD_org[,.(total_UOD_population=sum(UOD_population)),keyby=.(Parent_Organization,State)]
MT_enrollment_org=MT_UD[,.(total_enrollment=sum(enrollment)),keyby=.(Parent_Organization,State)]
MT_weight_average=merge(MT_UD_org,MT_enrollment_org,by='Parent_Organization',all.x=FALSE)
MT_weight_average=MT_weight_average[,.(weight_average=total_UOD_population/total_enrollment),keyby=.(Parent_Organization,State.x)]
MT_weight_average=MT_weight_average[ORDER(-weight_average)]
```

TOP 10 companies' UOD weight average in NC

```
NC_UD_org=NC_UD[,.(UOD_population=enrollment*UOD_rate),keyby=.(Contract_Number,Parent_Organization,State)]
NC_UD_org=NC_UD_org[,.(total_UOD_population=sum(UOD_population)),keyby=.(Parent_Organization,State)]
NC_enrollment_org=NC_UD[,.(total_enrollment=sum(enrollment)),keyby=.(Parent_Organization,State)]
NC_weight_average=merge(NC_UD_org,NC_enrollment_org,by='Parent_Organization',all.x=FALSE)
NC_weight_average=NC_weight_average[,.(weight_average=total_UOD_population/total_enrollment),keyby=.(Parent_Organization,State.x)]
NC_weight_average=NC_weight_average[ORDER(-weight_average)]
```

TOP 10 companies' UOD weight average in OR

```
OR_UD_org=OR_UD[,.(UOD_population=enrollment*UOD_rate),keyby=.(Contract_Number,Parent_Organization,State)]
OR_UD_org=OR_UD_org[,.(total_UOD_population=sum(UOD_population)),keyby=.(Parent_Organization,State)]
OR_enrollment_org=OR_UD[,.(total_enrollment=sum(enrollment)),keyby=.(Parent_Organization,State)]
OR_weight_average=merge(OR_UD_org,OR_enrollment_org,by='Parent_Organization',all.x=FALSE)
OR_weight_average=OR_weight_average[,.(weight_average=total_UOD_population/total_enrollment),keyby=.(Parent_Organization,State.x)]
OR_weight_average=OR_weight_average[ORDER(-weight_average)]
```

TOP 10 companies' UOD weight average in VT

```
VT_UD_org=VT_UD[,.(UOD_population=enrollment*UOD_rate),keyby=.(Contract_Number,Parent_Organization,State)]
VT_UD_org=VT_UD_org[,.(total_UOD_population=sum(UOD_population)),keyby=.(Parent_Organization,State)]
VT_enrollment_org=VT_UD[,.(total_enrollment=sum(enrollment)),keyby=.(Parent_Organization,State)]
VT_weight_average=merge(VT_UD_org,VT_enrollment_org,by='Parent_Organization',all.x=FALSE)
VT_weight_average=VT_weight_average[,.(weight_average=total_UOD_population/total_enrollment),keyby=.(Parent_Organization,State.x)]
VT_weight_average=VT_weight_average[ORDER(-weight_average)]
```

TOP 10 companies' UOD weight average in WV



```
WV_UOD_org=WV_UOD[,.(UOD_population=enrollment*UOD_rate),keyby=.(Contract_Number,Parent_Organization,State)]
WV_UOD_org=WV_UOD_org[,.(total_UOD_population=sum(UOD_population)),keyby=.(Parent_Organization,State)]
WV_enrollment_org=WV_UOD[,.(total_enrollment=sum(enrollment)),keyby=.(Parent_Organization,State)]
WV_weight_average=merge(WV_UOD_org,WV_enrollment_org,by='Parent_Organization',all.x=FALSE)
WV_weight_average=WV_weight_average[,.(weight_average=total_UOD_population/total_enrollment),keyby=.(Parent_Organization,State.x)]
WV_weight_average=WV_weight_average[ORDER(-weight_average)]
```

Summary of UOD weight average of top 10 companies in all 9 states:

```
weight_average_top10_state=rbind(AR_weight_average,CO_weight_average,FL_weight_average,MA_weight_average,MT_weight_average,NC_weight_average,OR_weight_average,VT_weight_average,WV_weight_average)
```

save the results

```
write.csv(UOD_top10_state, file=~ /Downloads/UOD_top10_state.csv")
write.csv(weight_average_top10_state, file=~ /Downloads/weight_average_top10_state.csv")
```