

### 5.2.3 RELIABILITY TESTING RESULTS

Table 5.2.3.A below shows the ICC with 95% confidence intervals for each of 10 repeated random split samples without replacement for the 47 Medicaid programs.

**Table 5.2.3.A. Program Level ICC Estimates for 10 Random Split Samples without Replacement (47 Medicaid Programs, 2022)**

	ICC	95% CI	p-value
Split Sample, Estimate 1	0.9995567	( 0.999208 , 0.9997525 )	p<0.0001
Split Sample, Estimate 2	0.9996353	( 0.999348 , 0.9997964 )	p<0.0001
Split Sample, Estimate 3	0.9993478	( 0.998834 , 0.9996359 )	p<0.0001
Split Sample, Estimate 4	0.9995334	( 0.999166 , 0.9997395 )	p<0.0001
Split Sample, Estimate 5	0.9995633	( 0.999219 , 0.9997562 )	p<0.0001
Split Sample, Estimate 6	0.9997328	( 0.999522 , 0.9998508 )	p<0.0001
Split Sample, Estimate 7	0.9996045	( 0.999293 , 0.9997792 )	p<0.0001
Split Sample, Estimate 8	0.9994988	( 0.999104 , 0.9997201 )	p<0.0001
Split Sample, Estimate 9	0.9996502	( 0.999375 , 0.9998047 )	p<0.0001
Split Sample, Estimate 10	0.9995554	( 0.999205 , 0.9997517 )	p<0.0001

**Mean ICC:** 0.9995678

**Minimum ICC:** 0.9993478

**Maximum ICC:** 0.9997328

Following the guidance in Koo and Li (2016), this indicates "excellent" reliability given that even the lower bound of each of the 95% CIs are greater than 0.90. Moreover, there is significant stability across the 10 estimates with all ICC values greater than 0.999.

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**Table 5.2.3.B. Program Level Spearman-Brown Corrected Reliability Estimates by Decile (47 Medicaid Programs, CY 2022)**

	Overall	Min	Decile 1	Decile 2	Decile 3	Decile 4	Decile 5	Decile 6	Decile 7	Decile 8	Decile 9	Decile 10	Max
Mean Reliability	0.9990	0.9953	0.9965	0.9979	0.9987	0.9993	0.9995	0.9996	0.9997	0.9997	0.9998	0.9999	0.9999
Mean Performance Score	41.6%	26.0%	42.0%	39.6%	41.3%	41.4%	45.4%	41.8%	44.2%	42.6%	38.6%	40.7%	56.8%
N of Entities	47	1	5	5	4	5	4	5	4	5	5	5	1
N of Persons / Encounters / Episodes	33,381,516	47,522	336,027	532,212	718,168	1,580,683	1,691,977	2,758,678	2,588,969	3,946,354	5,715,304	13,513,144	3,844,834

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The table below contains the performance score statistics for the overall population and one set of the split samples. The results were consistent between the split samples.

**Table 5.2.3.C Detailed Performance Scores for Overall Population and One Set of Split Samples with 95% CIs, Ordered from Lowest Score to Highest Score, Program Level (47 Medicaid programs, 2022)**

Program	Sample	Score	SD	95% CI
ME	Overall	26.0%	( 0.0013 , 0.2575 , 0.2625 )	
	Split Sample 1	26.1%	( 0.0018 , 0.2575 , 0.2646 )	
	Split Sample 2	26.0%	( 0.0018 , 0.2563 , 0.2635 )	
WI	Overall	28.7%	( 0.0006 , 0.2858 , 0.2882 )	
	Split Sample 1	28.8%	( 0.0009 , 0.2862 , 0.2896 )	
	Split Sample 2	28.6%	( 0.0009 , 0.2846 , 0.2880 )	
ND	Overall	29.6%	( 0.0020 , 0.2922 , 0.2998 )	
	Split Sample 1	29.4%	( 0.0028 , 0.2884 , 0.2992 )	
	Split Sample 2	29.7%	( 0.0006 , 0.2961 , 0.2985 )	
OH	Overall	29.6%	( 0.0004 , 0.2952 , 0.2968 )	
	Split Sample 1	29.5%	( 0.0006 , 0.2941 , 0.2965 )	
	Split Sample 2	29.7%	( 0.0006 , 0.2961 , 0.2985 )	
FL	Overall	30.0%	( 0.0003 , 0.2994 , 0.3006 )	
	Split Sample 1	30.0%	( 0.0004 , 0.2994 , 0.3010 )	
	Split Sample 2	30.1%	( 0.0004 , 0.3000 , 0.3016 )	
MO	Overall	33.8%	( 0.0006 , 0.3369 , 0.3391 )	
	Split Sample 1	33.7%	( 0.0008 , 0.3359 , 0.3390 )	
	Split Sample 2	33.9%	( 0.0008 , 0.3376 , 0.3407 )	
NY	Overall	34.9%	( 0.0003 , 0.3484 , 0.3496 )	
	Split Sample 1	34.8%	( 0.0005 , 0.3474 , 0.3493 )	
	Split Sample 2	34.9%	( 0.0005 , 0.3478 , 0.3497 )	
OR	Overall	35.3%	( 0.0008 , 0.3514 , 0.3546 )	
	Split Sample 1	35.2%	( 0.0012 , 0.3501 , 0.3547 )	
	Split Sample 2	35.3%	( 0.0012 , 0.3511 , 0.3557 )	
AK	Overall	35.5%	( 0.0015 , 0.3520 , 0.3580 )	
	Split Sample 1	35.6%	( 0.0022 , 0.3519 , 0.3603 )	
	Split Sample 2	35.5%	( 0.0022 , 0.3504 , 0.3588 )	
IL	Overall	36.2%	( 0.0004 , 0.3612 , 0.3628 )	
	Split Sample 1	36.2%	( 0.0006 , 0.3608 , 0.3632 )	
	Split Sample 2	36.2%	( 0.0006 , 0.3610 , 0.3634 )	
NE	Overall	36.5%	( 0.0012 , 0.3627 , 0.3673 )	
	Split Sample 1	36.3%	( 0.0017 , 0.3594 , 0.3660 )	
	Split Sample 2	36.7%	( 0.0017 , 0.3639 , 0.3705 )	
NV	Overall	37.9%	( 0.0008 , 0.3774 , 0.3806 )	
	Split Sample 1	37.9%	( 0.0012 , 0.3769 , 0.3815 )	

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Program	Sample	Score	SD	95% CI
	Split Sample 2	38.0%	( 0.0012 , 0.3774 , 0.3820 )	
HI	Overall	38.1%	( 0.0013 , 0.3785 , 0.3835 )	
	Split Sample 1	38.2%	( 0.0018 , 0.3788 , 0.3858 )	
	Split Sample 2	37.9%	( 0.0018 , 0.3759 , 0.3829 )	
CA	Overall	38.3%	( 0.0002 , 0.3825 , 0.3835 )	
	Split Sample 1	38.3%	( 0.0004 , 0.3819 , 0.3832 )	
	Split Sample 2	38.3%	( 0.0004 , 0.3823 , 0.3837 )	
MI	Overall	38.3%	( 0.0005 , 0.3821 , 0.3839 )	
	Split Sample 1	38.3%	( 0.0007 , 0.3821 , 0.3848 )	
	Split Sample 2	38.4%	( 0.0007 , 0.3822 , 0.3848 )	
RI	Overall	38.6%	( 0.0016 , 0.3829 , 0.3891 )	
	Split Sample 1	38.5%	( 0.0022 , 0.3807 , 0.3895 )	
	Split Sample 2	38.7%	( 0.0022 , 0.3821 , 0.3910 )	
KY	Overall	39.8%	( 0.0007 , 0.3967 , 0.3993 )	
	Split Sample 1	39.7%	( 0.0009 , 0.3950 , 0.3986 )	
	Split Sample 2	39.8%	( 0.0009 , 0.3966 , 0.4002 )	
IA	Overall	40.1%	( 0.0009 , 0.3993 , 0.4027 )	
	Split Sample 1	40.0%	( 0.0012 , 0.3975 , 0.4023 )	
	Split Sample 2	40.2%	( 0.0012 , 0.4000 , 0.4048 )	
PA	Overall	40.9%	( 0.0004 , 0.4081 , 0.4099 )	
	Split Sample 1	40.9%	( 0.0006 , 0.4082 , 0.4106 )	
	Split Sample 2	40.8%	( 0.0006 , 0.4070 , 0.4095 )	
OK	Overall	41.2%	( 0.0007 , 0.4107 , 0.4133 )	
	Split Sample 1	41.1%	( 0.0010 , 0.4087 , 0.4125 )	
	Split Sample 2	41.3%	( 0.0010 , 0.4109 , 0.4147 )	
MS	Overall	41.3%	( 0.0008 , 0.4115 , 0.4145 )	
	Split Sample 1	41.3%	( 0.0011 , 0.4104 , 0.4147 )	
	Split Sample 2	41.3%	( 0.0011 , 0.4111 , 0.4155 )	
AL	Overall	41.6%	( 0.0006 , 0.4148 , 0.4172 )	
	Split Sample 1	41.5%	( 0.0009 , 0.4137 , 0.4171 )	
	Split Sample 2	41.7%	( 0.0009 , 0.4152 , 0.4187 )	
AZ	Overall	42.2%	( 0.0005 , 0.4209 , 0.4231 )	
	Split Sample 1	42.2%	( 0.0008 , 0.4205 , 0.4235 )	
	Split Sample 2	42.2%	( 0.0008 , 0.4204 , 0.4234 )	
TN	Overall	42.3%	( 0.0005 , 0.4220 , 0.4240 )	
	Split Sample 1	42.3%	( 0.0008 , 0.4214 , 0.4244 )	
	Split Sample 2	42.3%	( 0.0008 , 0.4215 , 0.4245 )	
DC	Overall	42.9%	( 0.0018 , 0.4256 , 0.4324 )	
	Split Sample 1	42.7%	( 0.0025 , 0.4223 , 0.4320 )	

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Program	Sample	Score	SD	95% CI
VT	Split Sample 2	43.2%	( 0.0025 , 0.4267 , 0.4364 )	
	Overall	42.9%	( 0.0019 , 0.4253 , 0.4327 )	
	Split Sample 1	43.1%	( 0.0027 , 0.4255 , 0.4359 )	
	Split Sample 2	42.7%	( 0.0027 , 0.4222 , 0.4326 )	
KS	Overall	43.2%	( 0.0010 , 0.4301 , 0.4339 )	
	Split Sample 1	43.1%	( 0.0014 , 0.4282 , 0.4335 )	
	Split Sample 2	43.2%	( 0.0014 , 0.4297 , 0.4351 )	
	Overall	43.6%	( 0.0004 , 0.4352 , 0.4368 )	
GA	Split Sample 1	43.6%	( 0.0006 , 0.4352 , 0.4376 )	
	Split Sample 2	43.6%	( 0.0006 , 0.4345 , 0.4369 )	
	Overall	43.7%	( 0.0010 , 0.4350 , 0.4390 )	
UT	Split Sample 1	43.6%	( 0.0015 , 0.4330 , 0.4388 )	
	Split Sample 2	43.8%	( 0.0015 , 0.4347 , 0.4405 )	
	Overall	44.1%	( 0.0006 , 0.4398 , 0.4422 )	
LA	Split Sample 1	44.0%	( 0.0009 , 0.4387 , 0.4421 )	
	Split Sample 2	44.2%	( 0.0009 , 0.4398 , 0.4432 )	
	Overall	44.1%	( 0.0007 , 0.4396 , 0.4424 )	
MA	Split Sample 1	44.1%	( 0.0010 , 0.4386 , 0.4425 )	
	Split Sample 2	44.1%	( 0.0010 , 0.4389 , 0.4427 )	
	Overall	44.5%	( 0.0006 , 0.4438 , 0.4462 )	
NJ	Split Sample 1	44.5%	( 0.0009 , 0.4429 , 0.4463 )	
	Split Sample 2	44.6%	( 0.0009 , 0.4440 , 0.4474 )	
	Overall	44.6%	( 0.0006 , 0.4448 , 0.4472 )	
VA	Split Sample 1	44.5%	( 0.0008 , 0.4433 , 0.4466 )	
	Split Sample 2	44.7%	( 0.0008 , 0.4455 , 0.4488 )	
	Overall	45.9%	( 0.0023 , 0.4545 , 0.4635 )	
WY	Split Sample 1	45.7%	( 0.0032 , 0.4509 , 0.4636 )	
	Split Sample 2	46.2%	( 0.0032 , 0.4554 , 0.4681 )	
	Overall	46.6%	( 0.0006 , 0.4648 , 0.4672 )	
SC	Split Sample 1	46.6%	( 0.0009 , 0.4648 , 0.4682 )	
	Split Sample 2	46.6%	( 0.0009 , 0.4648 , 0.4682 )	
	Overall	46.8%	( 0.0008 , 0.4665 , 0.4695 )	
AR	Split Sample 1	46.8%	( 0.0011 , 0.4659 , 0.4701 )	
	Split Sample 2	46.7%	( 0.0011 , 0.4650 , 0.4693 )	
	Overall	46.8%	( 0.0012 , 0.4657 , 0.4703 )	
ID	Split Sample 1	46.7%	( 0.0017 , 0.4642 , 0.4707 )	
	Split Sample 2	46.9%	( 0.0017 , 0.4657 , 0.4722 )	
	Overall	47.6%	( 0.0015 , 0.4731 , 0.4789 )	
DE	Split Sample 1	47.8%	( 0.0021 , 0.4742 , 0.4824 )	
	Split Sample 2	47.4%	( 0.0021 , 0.4697 , 0.4779 )	

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Program	Sample	Score	SD	95% CI
NC	Overall	48.1%	( 0.0005 ,	0.4801 , 0.4819 )
	Split Sample 1	48.1%	( 0.0007 ,	0.4793 , 0.4820 )
	Split Sample 2	48.1%	( 0.0007 ,	0.4794 , 0.4820 )
MD	Overall	48.7%	( 0.0007 ,	0.4857 , 0.4883 )
	Split Sample 1	48.7%	( 0.0009 ,	0.4855 , 0.4892 )
	Split Sample 2	48.7%	( 0.0009 ,	0.4854 , 0.4891 )
NH	Overall	48.7%	( 0.0017 ,	0.4836 , 0.4904 )
	Split Sample 1	48.6%	( 0.0024 ,	0.4810 , 0.4904 )
	Split Sample 2	48.8%	( 0.0024 ,	0.4833 , 0.4927 )
CT	Overall	49.2%	( 0.0008 ,	0.4904 , 0.4936 )
	Split Sample 1	49.2%	( 0.0012 ,	0.4901 , 0.4946 )
	Split Sample 2	49.2%	( 0.0012 ,	0.4893 , 0.4938 )
WA	Overall	50.1%	( 0.0005 ,	0.4999 , 0.5021 )
	Split Sample 1	50.0%	( 0.0008 ,	0.4989 , 0.5018 )
	Split Sample 2	50.2%	( 0.0008 ,	0.5010 , 0.5040 )
CO	Overall	50.5%	( 0.0007 ,	0.5037 , 0.5063 )
	Split Sample 1	50.4%	( 0.0009 ,	0.5020 , 0.5057 )
	Split Sample 2	50.5%	( 0.0009 ,	0.5033 , 0.5070 )
MT	Overall	50.5%	( 0.0015 ,	0.5020 , 0.5080 )
	Split Sample 1	50.5%	( 0.0021 ,	0.5010 , 0.5094 )
	Split Sample 2	50.5%	( 0.0022 ,	0.5011 , 0.5095 )
NM	Overall	50.6%	( 0.0009 ,	0.5043 , 0.5077 )
	Split Sample 1	50.7%	( 0.0012 ,	0.5041 , 0.5090 )
	Split Sample 2	50.6%	( 0.0012 ,	0.5034 , 0.5083 )
TX	Overall	56.8%	( 0.0003 ,	0.5675 , 0.5685 )
	Split Sample 1	56.8%	( 0.0004 ,	0.5668 , 0.5682 )
	Split Sample 2	56.8%	( 0.0004 ,	0.5670 , 0.5684 )

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The table below contains the performance score statistics for the overall population and one set of the split samples. The results were consistent between the split samples. Moreover, the same states remained in the same deciles. States did not move between deciles when comparing the overall population, sample 1, and sample 2.

**Table 5.2.3.D Overall and One Set of Split Sample Performance Scores by Decile, Program Level, 2022**

	Overall	Min	Decile 1	Decile 2	Decile 3	Decile 4	Decile 5	Decile 6	Decile 7	Decile 8	Decile 9	Decile 10	Max
<b>Overall Population</b>													
Mean Performance Score	41.6%	26.0%	28.8%	34.9%	37.4%	39.5%	41.7%	43.3%	44.3%	46.7%	48.7%	51.7%	56.8%
N of Entities	47	1	5	4	5	5	5	5	4	5	4	5	1
N of Persons	33,381,516	116,719	4,347,043	3,223,300	5,744,725	3,254,334	3,210,395	1,988,564	2,518,937	1,414,415	2,117,726	5,562,077	3,691,533
<b>Sample 1</b>													
Mean Performance Score	41.6%	26.1%	28.8%	34.9%	37.4%	39.5%	41.7%	43.2%	44.3%	46.7%	48.7%	51.7%	56.8%
N of Entities	47	1	5	4	5	5	5	5	4	5	4	5	1
N of Persons	16,692,548	58,453	2,174,125	1,611,761	2,872,770	1,627,362	1,605,453	994,482	1,258,882	707,331	1,058,928	2,781,454	1,845,522
<b>Sample 2</b>													
Mean Performance Score	41.6%	26.0%	28.9%	34.9%	37.4%	39.6%	41.8%	43.3%	44.4%	46.8%	48.7%	51.7%	56.8%
N of Entities	47	1	5	4	5	5	5	5	4	5	4	5	1
N of Persons	16,688,975	58,264	2,172,893	1,611,530	2,871,945	1,626,981	1,604,961	994,092	1,260,053	707,099	1,058,804	2,780,617	1,846,014

**Table 5.2.3.E Plan Level: Relative Ranking Correlations for Pairs of Years, 2018-2023**

<b>Year-to-Year Comparisons</b>	<b>Spearman's rank correlation coefficient</b>	<b>p-value</b>
2018 & 2019 (n=13)	0.9615	<0.0001
2019 & 2020 (n=13)*	0.7912	0.0013
2020 & 2021 (n=15)*	0.9393	<0.0001
2021 & 2022 (n=16)	0.9235	<0.0001
2022 & 2023 (n=16)	0.9353	0.0001

\*Comparisons involving year 2020 may be impacted by the following:

- (1) The number of CCOs between the two years were different (both for comparisons to 2019 and 2021) and relative rankings were based only on those plans participating present in both of the two years being compared. There were 13 CCOs in 2019, 15 in 2020, and 16 in 2021.
- (2) Plans may have experienced relatively different magnitudes of reduced service use from COVID-19 impacts.

**Table 5.2.3.F Plan Level: Performance Scores with 95% CIs**

TEXAS MEDICAID												
DentaQuest					MCNA Dental				UnitedHealthCare Dental			
Year	Sample	Score	SD	95% CI	Sample	Score	SD	95% CI	Sample	Score	SD	95% CI
2013	1,302,651	70.09%	( 0.0004 , 0.7001 , 0.7017 )		1,037,737	65.80%	( 0.0005 , 0.6571 , 0.6589 )					
2014	1,518,202	69.23%	( 0.0004 , 0.6916 , 0.6930 )		1,219,685	65.39%	( 0.0004 , 0.6531 , 0.6547 )					
2015	1,611,825	71.21%	( 0.0004 , 0.7114 , 0.7128 )		1,298,527	66.49%	( 0.0004 , 0.6641 , 0.6657 )					
2016	1,637,350	71.37%	( 0.0004 , 0.7130 , 0.7144 )		1,287,675	68.57%	( 0.0004 , 0.6849 , 0.6865 )					
2017	1,662,251	72.60%	( 0.0003 , 0.7253 , 0.7267 )		1,261,414	68.92%	( 0.0004 , 0.6884 , 0.6900 )					
2018	1,647,342	72.47%	( 0.0003 , 0.7240 , 0.7254 )		1,227,609	69.01%	( 0.0004 , 0.6893 , 0.6909 )					
2019	1,597,762	71.96%	( 0.0004 , 0.7189 , 0.7203 )		1,183,117	69.00%	( 0.0004 , 0.6892 , 0.6908 )					
2020	1,801,172	61.70%	( 0.0004 , 0.6163 , 0.6177 )		1,322,902	57.74%	( 0.0004 , 0.5766 , 0.5782 )					
2021	2,048,274	65.98%	( 0.0003 , 0.6592 , 0.6604 )		1,397,439	62.64%	( 0.0004 , 0.6256 , 0.6272 )		219,749	40.67%	( 0.0010 , 0.4046 , 0.4088 )	
2022	2,153,439	66.18%	( 0.0003 , 0.6612 , 0.6624 )		1,424,127	62.13%	( 0.0004 , 0.6205 , 0.6221 )		399,375	45.58%	( 0.0008 , 0.4543 , 0.4573 )	
TEXAS CHIP												
DentaQuest					MCNA Dental				UnitedHealthCare Dental			
Year	Sample	Score	SD	95% CI	Sample	Score	SD	95% CI	Sample	Score	SD	95% CI
2013	334,799	63.80%	( 0.0008 , 0.6364 , 0.6396 )		280,477	58.47%	( 0.0009 , 0.5829 , 0.5865 )					
2014	225,649	62.90%	( 0.0010 , 0.6270 , 0.6310 )		187,351	58.23%	( 0.0011 , 0.5801 , 0.5845 )					
2015	204,845	68.79%	( 0.0010 , 0.6859 , 0.6899 )		156,120	63.62%	( 0.0012 , 0.6338 , 0.6386 )					
2016	248,498	70.12%	( 0.0009 , 0.6994 , 0.7030 )		167,092	67.28%	( 0.0011 , 0.6706 , 0.6750 )					
2017	280,395	72.08%	( 0.0008 , 0.7191 , 0.7225 )		167,325	68.75%	( 0.0011 , 0.6853 , 0.6897 )					
2018	276,636	72.09%	( 0.0009 , 0.7192 , 0.7226 )		162,362	68.23%	( 0.0012 , 0.6800 , 0.6846 )					
2019	250,159	72.36%	( 0.0009 , 0.7218 , 0.7254 )		145,772	69.05%	( 0.0012 , 0.6881 , 0.6929 )					
2020	183,911	61.02%	( 0.0011 , 0.6080 , 0.6124 )		104,427	57.76%	( 0.0015 , 0.5746 , 0.5806 )					
2021	109,534	62.68%	( 0.0015 , 0.6239 , 0.6297 )		58,936	59.09%	( 0.0020 , 0.5869 , 0.5949 )		9,249	38.71%	( 0.0051 , 0.3772 , 0.3970 )	
2022	39,645	68.47%	( 0.0023 , 0.6801 , 0.6893 )		19,378	65.26%	( 0.0034 , 0.6459 , 0.6593 )		8,860	43.54%	( 0.0053 , 0.4251 , 0.4457 )	

**Table 5.2.3.G Plan Level: Sample (Denominator) Sizes**

	Texas Medicaid			Texas CHIP			Oregon Health Plan
Year	DentaQuest	MCNA Dental	UnitedHealthCare Dental	DentaQuest	MCNA Dental	UnitedHealthCare Dental	Average across CCOs
2013	1,302,651	1,037,737		334,799	280,477		
2014	1,518,202	1,219,685		225,649	187,351		
2015	1,611,825	1,298,527		204,845	156,120		
2016	1,637,350	1,287,675		248,498	167,092		
2017	1,662,251	1,261,414		280,395	167,325		
2018	1,647,342	1,227,609		276,636	162,362		30,241
2019	1,597,762	1,183,117		250,159	145,772		30,415
2020	1,801,172	1,322,902		183,911	104,427		27,779
2021	2,048,274	1,397,439	219,749	109,534	58,936	9,249	28,097
2022	2,153,439	1,424,127	399,375	39,645	19,378	8,860	29,180
2023							31,841