

Table S1. ICD-9 and ICD-10 diagnosis codes used to identify M/SUDs

	ICD-9 Codes	ICD-10 Codes
	(2012 to Q3 2015)	(Q4 2015 to 2017)
Mental disorders		
Attention-deficit/hyperactivity disorder (ADHD)	314.xx	F90.xxx
Anxiety	300.xx (except 300.4x)	F40.xxx – F42.xxx, F44.xxx, F45.xxx
Bipolar disorder	296.0x, 296.1x, 296.4x, 296.5x, 296.6x, 296.7x, 296.8x, 300.4x	F30.xxx, F31.xxx
Depression	296.2x, 296.3x, 311.xx	F32.xxx, F33.xxx, F34.1xx
Post-traumatic stress disorder (PTSD)	309.81	F43.1xx
Schizophrenia and other psychotic disorders	295.xx, 297.xx, 298.xx	F20.xxx – F29.xxx
Other mental disorders	296.9x, 299.xx, 301.xx, 302.xx, 307.xx, 308.xx, 309.xx (except 309.81), 312.xx, 313.xx	F34.xxx (except F34.1xx), F39.xxx, F43.xxx, F48.xxx, F50.xxx – F69.xxx, F80xxx – F89.xxx, F91.xxx – F98.xxx, F99.xxx
Substance use disorders (SUD)		
Alcohol use disorder (AUD)	303.xx, 305.0x	F10.xxx
Opioid use disorder (OUD)	304.0x, 305.5x	F11.xxx
Other SUDs	304.1x – 304.9x, 305.1x – 305.4x, 305.6x – 305.9x	F12.xxx – F19.xxx

1	Reference				Reference			
2	1.47	1.45	1.49	<0.001	0.13	0.12	0.15	<0.001
3	1.81	1.78	1.84	<0.001	0.19	0.18	0.21	<0.001
4	2.12	2.08	2.16	<0.001	0.27	0.25	0.29	<0.001
5	2.38	2.33	2.43	<0.001	0.31	0.29	0.33	<0.001
6	2.77	2.69	2.84	<0.001	0.32	0.29	0.35	<0.001
Study year								
2012	Reference				Reference			
2013	1.09	1.07	1.10	<0.001	0.22	0.20	0.24	<0.001
2014	1.08	1.06	1.10	<0.001	0.20	0.19	0.22	<0.001
2015	0.99	0.97	1.00	0.112	0.12	0.10	0.14	<0.001
2016	1.06	1.04	1.08	<0.001	0.08	0.06	0.10	<0.001
2017	0.99	0.97	1.01	0.449	0.04	0.02	0.06	<0.001
Constant	0.12	0.11	0.12	<0.001	1.41	1.37	1.44	<0.001
N (beneficiary-years)	2,654,339				262,430			

Notes. Authors' analysis of claims data for 2012–17 from the IBM MarketScan Multi-State Medicaid Database. MH telemedicine visits had a primary diagnosis of mental disorder. Model 1 is a logistic regression model. Model 2 is a generalized linear model with gamma distribution and log link. Both models include clustered standard errors to account for multiple beneficiary-years per unique beneficiary. State fixed effects not shown to protect data contributor confidentiality.

Table S3. Regression models used to produce results for Exhibit 3 panel 1B

	Model 3. No. of outpatient MH visits if any received			
	Coef.	95% Confidence Interval		P value
Received any MH telemedicine				
No	Reference			
Yes	0.73	0.73	0.74	<0.001
Rurality				
Nonrural	Reference			
Rural	-0.07	-0.08	-0.07	<0.001
MH Telemedicine * rurality interaction				
Received MH telemedicine & rural	0.07	0.06	0.09	<0.001
Age group (years)				
35–49	Reference			
18–24	0.02	0.02	0.03	<0.001
25–34	-0.05	-0.06	-0.05	<0.001
50–64	0.04	0.04	0.05	<0.001
Sex				
Female	Reference			
Male	0.16	0.16	0.17	<0.001
Race/ethnicity				
White	Reference			
Black	0.15	0.15	0.16	<0.001
Hispanic	0.01	0.00	0.03	0.118
Other	0.09	0.07	0.10	<0.001
Health plan type				
Managed care	Reference			
Fee for service	0.42	0.42	0.43	<0.001
Mental disorder diagnoses				
Depression	Reference			
ADHD	-0.41	-0.43	-0.40	<0.001
Anxiety	-0.46	-0.46	-0.45	<0.001
Bipolar	0.22	0.21	0.23	<0.001
PTSD	0.29	0.28	0.31	<0.001

Schizophrenia	0.61	0.60	0.62	<0.001
Other	0.74	0.74	0.75	<0.001
Multiple	0.70	0.69	0.70	<0.001
Substance use disorder diagnoses				
AUD	Reference			
None	0.01	0.00	0.02	0.162
ODD	-0.11	-0.12	-0.09	<0.001
Other	0.01	0.00	0.02	0.105
Multiple	0.05	0.03	0.06	<0.001
Beneficiary-year				
1	Reference			
2	0.33	0.32	0.33	<0.001
3	0.45	0.45	0.46	<0.001
4	0.59	0.58	0.59	<0.001
5	0.51	0.50	0.51	<0.001
6	0.59	0.58	0.60	<0.001
Study year				
2012	Reference			
2013	-0.28	-0.29	-0.27	<0.001
2014	-0.32	-0.33	-0.31	<0.001
2015	-0.43	-0.44	-0.42	<0.001
2016	-0.36	-0.37	-0.36	<0.001
2017	-0.40	-0.41	-0.40	<0.001
Constant	1.76	1.75	1.77	<0.001
N (beneficiary-years)	2,654,339			

Notes. Authors' analysis of claims data for 2012–17 from the IBM MarketScan Multi-State Medicaid Database. Outpatient MH visits had a primary diagnosis of mental disorder. Model 3 is a generalized linear model with gamma distribution and log link. It includes clustered standard errors to account for multiple beneficiary-years per unique beneficiary. State fixed effects not shown to protect data contributor confidentiality.

Table S4. Regression models used to produce results for Exhibit 3 panel 2A

	Model 4. Receipt of any SUD telemedicine treatment				Model 5. No. of SUD telemedicine visits if any received			
	Odds Ratio	95% Confidence Interval		P value	Coef.	95% Confidence Interval		P value
Rurality								
Nonrural	Reference				Reference			
Rural	1.49	1.42	1.57	<0.001	0.20	0.14	0.26	<0.001
Age group (years)								
35–49	Reference				Reference			
18–24	0.99	0.92	1.08	0.899	0.00	-0.09	0.08	0.932
25–34	1.01	0.95	1.07	0.75	0.02	-0.05	0.08	0.58
50–64	1.00	0.93	1.08	0.997	0.09	0.02	0.17	0.017
Sex								
Female	Reference				Reference			
Male	0.96	0.91	1.01	0.102	-0.08	-0.13	-0.02	0.008
Race/ethnicity								
White	Reference				Reference			
Black	1.00	0.94	1.06	0.954	-0.12	-0.19	-0.06	<0.001
Hispanic	0.86	0.67	1.09	0.199	-0.16	-0.38	0.06	0.159
Other	0.87	0.72	1.04	0.127	0.35	0.13	0.56	0.002
Health plan type								
Managed care	Reference				Reference			
Fee for service	0.90	0.83	0.98	0.011	0.08	0.02	0.14	0.012
Mental disorder diagnoses								
Depression	Reference				Reference			
None	0.47	0.43	0.50	<0.001	0.03	-0.05	0.12	0.458
ADHD	0.64	0.48	0.85	0.002	0.26	-0.03	0.54	0.075
Anxiety	0.58	0.52	0.65	<0.001	-0.08	-0.20	0.04	0.197
Bipolar	1.35	1.22	1.50	<0.001	0.07	-0.04	0.18	0.214
PTSD	1.07	0.88	1.29	0.515	-0.02	-0.23	0.20	0.862
Schizophrenia	1.94	1.72	2.19	<0.001	0.00	-0.12	0.12	0.995
Other	0.63	0.50	0.79	<0.001	-0.09	-0.32	0.15	0.457
Multiple	1.45	1.35	1.56	<0.001	-0.10	-0.18	-0.01	0.023
Substance use disorder diagnoses								
AUD	Reference				Reference			
ODD	0.82	0.76	0.88	<0.001	0.33	0.24	0.42	<0.001
Other	1.20	1.12	1.29	<0.001	0.11	0.04	0.18	0.004
Multiple	1.74	1.62	1.87	<0.001	0.12	0.05	0.20	0.001

Beneficiary-year								
1	Reference				Reference			
2	1.18	1.12	1.25	<0.001	0.16	0.10	0.22	<0.001
3	1.17	1.09	1.25	<0.001	0.14	0.06	0.21	<0.001
4	1.10	1.01	1.21	0.027	0.23	0.13	0.33	<0.001
5	1.13	1.02	1.25	0.021	0.12	0.01	0.24	0.038
6	1.08	0.94	1.24	0.294	0.30	0.13	0.48	0.001
Study year								
2012	Reference				Reference			
2013	0.93	0.85	1.01	0.069	-0.17	-0.27	-0.08	<0.001
2014	0.56	0.51	0.62	<0.001	-0.12	-0.24	-0.01	0.033
2015	0.86	0.78	0.94	0.001	-0.40	-0.50	-0.30	<0.001
2016	1.58	1.45	1.71	<0.001	-0.29	-0.39	-0.20	<0.001
2017	1.69	1.55	1.83	<0.001	-0.48	-0.58	-0.39	<0.001
Constant	0.01	0.01	0.01	<0.001	1.19	1.07	1.31	<0.001
N (beneficiary-years)	663,068				8,943			

Notes. Authors' analysis of claims data for 2012–17 from the IBM MarketScan Multi-State Medicaid Database. SUD telemedicine visits had a primary diagnosis of SUD. Model 4 is a logistic regression model. Model 5 is a generalized linear model with gamma distribution and log link. Both models include clustered standard errors to account for multiple beneficiary-years per unique beneficiary. State fixed effects not shown to protect data contributor confidentiality.

Table S5. Regression models used to produce results for Table 2 panel 2B

	Model 6. No. of outpatient MH visits if any received			
	Coef.	95% Confidence Interval		P value
Received any SUD telemedicine				
No	Reference			
Yes	0.45	0.41	0.49	<0.001
Rurality				
Nonrural	Reference			
Rural	-0.03	-0.04	-0.02	<0.001
SUD Telemedicine * rurality interaction				
Received SUD telemedicine & rural	0.04	-0.02	0.10	0.163
Age group (years)				
35–49	Reference			
18–24	0.01	0.00	0.02	0.214
25–34	0.09	0.09	0.10	<0.001
50–64	-0.12	-0.13	-0.11	<0.001
Sex				
Female	Reference			
Male	-0.04	-0.05	-0.03	<0.001
Race/ethnicity				
White	Reference			
Black	0.06	0.05	0.08	<0.001
Hispanic	0.04	0.00	0.07	0.037
Other	0.02	-0.01	0.05	0.178
Health plan type				
Managed care	Reference			
Fee for service	-0.06	-0.07	-0.04	<0.001
Mental disorder diagnoses				
Depression	Reference			
None	-0.12	-0.14	-0.11	<0.001
ADHD	-0.19	-0.23	-0.15	<0.001
Anxiety	-0.16	-0.18	-0.14	<0.001
Bipolar	0.02	0.00	0.04	0.056
PTSD	0.09	0.06	0.12	<0.001
Schizophrenia	-0.12	-0.15	-0.09	<0.001
Other	-0.13	-0.16	-0.09	<0.001

Multiple	-0.07	-0.08	-0.05	<0.001
Substance use disorder diagnoses				
AUD	Reference			
ODD	0.87	0.86	0.88	<0.001
Other	0.07	0.06	0.09	<0.001
Multiple	1.11	1.10	1.13	<0.001
Beneficiary-year				
1	Reference			
2	0.15	0.14	0.16	<0.001
3	0.15	0.14	0.16	<0.001
4	0.17	0.15	0.18	<0.001
5	0.10	0.08	0.12	<0.001
6	0.14	0.11	0.17	<0.001
Study year				
2012	Reference			
2013	-0.12	-0.13	-0.10	<0.001
2014	-0.10	-0.12	-0.09	<0.001
2015	-0.12	-0.13	-0.10	<0.001
2016	0.10	0.08	0.11	<0.001
2017	0.10	0.09	0.12	<0.001
Constant	2.07	2.05	2.09	<0.001
N (beneficiary-years)	663,068			

Notes. Authors' analysis of claims data for 2012–17 from the IBM MarketScan Multi-State Medicaid Database. Outpatient SUD visits had a primary diagnosis of SUD. Model 6 is a generalized linear model with gamma distribution and log link. It includes clustered standard errors to account for multiple beneficiary-years per unique beneficiary. State fixed effects not shown to protect data contributor confidentiality.

Table S6. Regression models used to produce results for Exhibit 4 panels 1A and 2A

	Model 7. Received any telemedicine for mental disorders				Model 8. No. of telemedicine visits for mental disorders if any received			
	Odds Ratio	95% Confidence Interval		P value	Coef.	95% Confidence Interval		P value
Rurality (ref. = nonrural)								
Rural	0.23	0.20	0.26	<0.001	0.10	0.07	0.14	<0.001
Mental disorder diagnoses (ref. = depression)								
ADHD	-1.07	-1.14	-1.01	<0.001	-0.05	-0.13	0.03	0.21
Anxiety	-1.15	-1.18	-1.12	<0.001	-0.13	-0.17	-0.09	<0.001
Bipolar	0.66	0.63	0.68	<0.001	0.10	0.08	0.13	<0.001
PTSD	0.37	0.33	0.41	<0.001	0.03	-0.03	0.08	0.333
Schizophrenia	0.97	0.94	0.99	<0.001	0.20	0.17	0.23	<0.001
Other	-1.70	-1.75	-1.64	<0.001	-0.07	-0.15	0.00	0.041
Multiple	0.74	0.73	0.76	<0.001	0.17	0.15	0.19	<0.001
Race/ethnicity (ref. = white)								
Black	0.49	0.48	0.51	<0.001	0.15	0.13	0.16	<0.001
Hispanic	0.22	0.17	0.27	<0.001	-0.18	-0.23	-0.13	<0.001
Other	0.17	0.12	0.22	<0.001	0.02	-0.03	0.07	0.479
MH Diagnosis * rurality interaction (ref. = depression & nonrural)								
ADHD & rural	0.31	0.19	0.43	<0.001	0.11	-0.06	0.28	0.218
Anxiety & rural	0.33	0.27	0.38	<0.001	0.07	0.01	0.14	0.028
Bipolar & rural	-0.03	-0.08	0.02	0.291	-0.09	-0.13	-0.04	0.001
PTSD & rural	0.32	0.24	0.40	<0.001	0.02	-0.07	0.10	0.667
Schizophrenia & rural	0.04	-0.02	0.10	0.157	-0.12	-0.18	-0.07	<0.001
Other & rural	0.32	0.21	0.43	<0.001	0.07	-0.08	0.21	0.356
Multiple & rural	0.05	0.02	0.09	0.002	-0.08	-0.11	-0.04	<0.001
Race/ethnicity & rurality interaction (ref. = white & nonrural)								
Black & rural	-0.12	-0.16	-0.08	<0.001	-0.16	-0.19	-0.12	<0.001
Hispanic & rural	-0.16	-0.29	-0.02	0.021	0.15	0.03	0.28	0.018
Other & rural	-0.03	-0.13	0.07	0.546	-0.03	-0.14	0.07	0.506
Age group (years; ref. = 35-49)								
18-24	-0.06	-0.07	-0.04	<0.001	-0.03	-0.05	-0.01	0.001
25-34	-0.21	-0.22	-0.19	<0.001	-0.10	-0.11	-0.08	<0.001
50-64	0.11	0.09	0.12	<0.001	0.08	0.06	0.10	<0.001
Sex (ref. = female)								
Male	0.16	0.14	0.17	<0.001	-0.03	-0.04	-0.01	<0.001
Health plan type (ref. = managed care)								
Fee for service	-0.17	-0.19	-0.15	<0.001	-0.02	-0.04	0.00	0.036
SUD diagnoses (ref. = AUD)								
None	-0.25	-0.28	-0.23	<0.001	-0.08	-0.11	-0.05	<0.001
ODD	-0.29	-0.32	-0.25	<0.001	-0.15	-0.19	-0.11	<0.001

Other	0.18	0.15	0.21	<0.001	0.01	-0.02	0.05	0.477
Multiple	0.06	0.03	0.10	<0.001	0.01	-0.03	0.04	0.668
Beneficiary-year (ref. = 1)								
2	0.38	0.37	0.40	<0.001	0.14	0.12	0.15	<0.001
3	0.59	0.58	0.61	<0.001	0.19	0.18	0.21	<0.001
4	0.75	0.73	0.77	<0.001	0.27	0.25	0.29	<0.001
5	0.87	0.84	0.89	<0.001	0.31	0.29	0.33	<0.001
6	1.02	0.99	1.04	<0.001	0.32	0.29	0.35	<0.001
Study year (ref. = 2012)								
2013	0.08	0.07	0.10	<0.001	0.22	0.20	0.24	<0.001
2014	0.08	0.06	0.09	<0.001	0.20	0.18	0.22	<0.001
2015	-0.01	-0.03	0.00	0.123	0.12	0.10	0.14	<0.001
2016	0.06	0.04	0.08	<0.001	0.08	0.06	0.10	<0.001
2017	-0.01	-0.03	0.01	0.495	0.04	0.02	0.06	0.001
Constant	-2.14	-2.18	-2.11	<0.001	1.38	1.35	1.42	<0.001
N (beneficiary-years)	2,654,339				262,430			

Notes. Authors' analysis of claims data for 2012–17 from the IBM MarketScan Multi-State Medicaid Database. MH telemedicine visits had a primary diagnosis of mental disorder. Model 7 is a logistic regression model. Model 8 is a generalized linear model with gamma distribution and log link. Both models include clustered standard errors to account for multiple beneficiary-years per unique beneficiary. State fixed effects not shown to protect data contributor confidentiality.

Table S7. Regression models used to produce results for Exhibit 4 panels 1B and 2B

	Model 9. Received any telemedicine for substance use disorder				Model 10. No. of telemedicine visits for substance use disorder if any received			
	Odds Ratio	95% Confidence Interval		P value	Coef.	95% Confidence Interval		P value
Rurality (ref. = nonrural)								
Rural	0.47	0.34	0.59	<0.001	0.10	-0.03	0.22	0.128
SUD diagnoses (ref. = AUD)								
ODD	-0.24	-0.33	-0.15	<0.001	0.20	0.10	0.30	<0.001
Other	0.21	0.13	0.30	<0.001	0.14	0.05	0.23	0.003
Multiple	0.57	0.48	0.65	<0.001	0.07	-0.02	0.16	0.105
Race/ethnicity (ref. = white)								
Black	0.06	-0.01	0.12	0.103	-0.12	-0.19	-0.05	0.001
Hispanic	-0.30	-0.59	0.00	0.049	-0.17	-0.44	0.11	0.237
Other	0.11	-0.13	0.35	0.374	-0.11	-0.35	0.14	0.4
SUD Diagnosis * rurality interaction (ref. = AUD & nonrural)								
ODD & rural	0.11	-0.05	0.27	0.185	0.35	0.18	0.52	<0.001
Other & rural	-0.09	-0.24	0.06	0.221	-0.09	-0.23	0.05	0.209
Multiple & rural	-0.03	-0.18	0.11	0.671	0.13	-0.02	0.28	0.096
Race/ethnicity & rurality interaction (ref. = white & nonrural)								
Black & rural	-0.31	-0.46	-0.16	<0.001	-0.11	-0.26	0.03	0.119
Hispanic & rural	0.52	0.02	1.02	0.04	0.01	-0.43	0.46	0.95
Other & rural	-0.52	-0.89	-0.14	0.007	0.78	0.42	1.15	<0.001
Age group (years; ref. = 35-49)								
18-24	0.00	-0.08	0.07	0.908	-0.01	-0.09	0.08	0.875
25-34	0.01	-0.05	0.07	0.738	0.01	-0.05	0.08	0.683
50-64	0.00	-0.07	0.07	0.997	0.09	0.02	0.17	0.017
Sex (ref. = female)								
Male	-0.05	-0.10	0.01	0.093	-0.07	-0.13	-0.02	0.011
Health plan type (ref. = managed care)								
Fee for service	-0.10	-0.18	-0.02	0.012	0.09	0.02	0.15	0.006
Mental disorder diagnoses (ref. = depression)								
None	-0.77	-0.84	-0.69	<0.001	0.02	-0.07	0.11	0.639
ADHD	-0.44	-0.73	-0.16	0.002	0.26	-0.03	0.56	0.082
Anxiety	-0.55	-0.66	-0.44	<0.001	-0.09	-0.21	0.04	0.165
Bipolar	0.30	0.20	0.41	<0.001	0.07	-0.04	0.18	0.22
PTSD	0.06	-0.13	0.25	0.535	-0.02	-0.23	0.19	0.835
Schizophrenia	0.66	0.54	0.78	<0.001	-0.01	-0.13	0.11	0.9
Other	-0.46	-0.69	-0.23	<0.001	-0.10	-0.32	0.12	0.366
Multiple	0.37	0.29	0.44	<0.001	-0.09	-0.18	-0.01	0.024

Beneficiary-year (ref. = 1)								
2	0.17	0.11	0.22	<0.001	0.14	0.08	0.20	<0.001
3	0.16	0.08	0.23	<0.001	0.13	0.06	0.20	0.001
4	0.10	0.01	0.19	0.027	0.22	0.12	0.31	<0.001
5	0.12	0.02	0.23	0.021	0.11	-0.01	0.22	0.065
6	0.07	-0.07	0.21	0.3	0.29	0.12	0.47	0.001
Study year (ref. = 2012)								
2013	-0.08	-0.16	0.01	0.067	-0.16	-0.25	-0.07	0.001
2014	-0.58	-0.68	-0.48	<0.001	-0.10	-0.21	0.01	0.081
2015	-0.15	-0.24	-0.06	0.001	-0.38	-0.48	-0.28	<0.001
2016	0.46	0.38	0.54	<0.001	-0.27	-0.36	-0.18	<0.001
2017	0.52	0.44	0.61	<0.001	-0.46	-0.56	-0.37	<0.001
Constant	-4.90	-5.02	-4.77	<0.001	1.20	1.08	1.33	<0.001
N (beneficiary-years)	663,068				8,943			

Notes. Authors' analysis of claims data for 2012–17 from the IBM MarketScan Multi-State Medicaid Database. SUD telemedicine visits had a primary diagnosis of SUD. Model 9 is a logistic regression model. Model 10 is a generalized linear model with gamma distribution and log link. Both models include clustered standard errors to account for multiple beneficiary-years per unique beneficiary. State fixed effects not shown to protect data contributor confidentiality.