

Online Supplement

Original Research

Variation in Prevalence and Burden of Chronic Obstructive Pulmonary Disease by State and Insurance Type in the United States

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Table A1: COPD prevalence and count of insured individuals aged 40 and older

Nationwide or State	Non-Extrapolated Count of Insured Individuals (in Thousands)				Extrapolated Count of Insured Individuals with COPD (in Thousands)				COPD Prevalence per 1,000 Insured Individuals			
	Total	MC ^a	MD ^b	C ^c	Total	MC ^a	MD ^b	C ^c	Total	MC ^a	MD ^b	C ^c
Nationwide	150,868.0	61,875.0	15,330.0	73,663.0	11,674.0	9,272.0	1,080.0	1,322.0	77	150	71	18
Alabama	2,238.1	1,029.2	83.4	1,125.5	246.7	199.1	12.5	35.1	110	194	150	31
Alaska	282.9	93.2	48.8	140.8	15.5	11.6	2.5	1.4	55	125	51	10
Arizona	3,241.8	1,379.1	456.8	1,405.9	208.4	163.7	24.8	19.9	64	119	54	14
Arkansas	1,399.4	631.6	176.2	591.5	138.4	112.4	10.0	16.0	99	178	57	27
California	17,312.0	6,332.2	2,683.2	8,296.6	973.3	808.7	103.7	61.0	56	128	39	7
Colorado	2,485.2	935.4	300.0	1,249.8	142.1	115.0	15.8	11.4	57	123	53	9
Connecticut	1,724.7	679.6	226.0	819.1	123.1	98.9	13.9	10.2	71	146	62	13
Delaware	506.3	218.8	52.3	235.2	37.7	29.4	3.7	4.6	74	135	70	20
District of Columbia	296.8	89.7	62.9	144.2	18.9	10.2	6.0	2.8	64	113	95	20
Florida	10,030.2	4,700.1	464.2	4,865.9	972.6	821.2	45.7	105.7	97	175	98	22
Georgia	4,327.2	1,753.4	162.8	2,411.0	330.3	270.0	20.7	39.6	76	154	127	16
Hawaii	723.2	283.8	101.6	337.8	33.1	24.8	3.4	4.9	46	88	34	14
Idaho	802.6	349.8	64.4	388.3	50.5	42.8	2.7	5.1	63	122	41	13
Illinois	5,809.9	2,234.9	665.2	2,909.8	442.3	350.4	43.2	48.7	76	157	65	17
Indiana	3,129.3	1,262.8	330.9	1,535.6	303.4	230.3	27.7	45.4	97	182	84	30
Iowa	1,490.8	631.5	126.9	732.4	116.0	85.8	12.1	18.1	78	136	96	25
Kansas	1,241.4	542.4	33.0	666.0	98.3	83.5	5.1	9.6	79	154	155	15
Kentucky	2,190.6	918.7	392.4	879.5	273.5	199.0	45.1	29.5	125	217	115	34
Louisiana	2,111.8	859.2	339.7	912.8	190.5	142.4	28.7	19.4	90	166	84	21
Maine	735.2	338.2	66.6	330.3	72.1	60.4	5.8	5.9	98	179	87	18
Maryland	2,751.8	1,044.8	303.8	1,403.2	192.6	149.2	19.4	24.0	70	143	64	17
Massachusetts	3,475.4	1,330.3	477.7	1,667.4	231.3	183.6	22.3	25.4	67	138	47	15
Michigan	4,931.3	2,051.8	578.1	2,301.4	514.4	399.2	56.0	59.2	104	195	97	26
Minnesota	2,556.1	1,018.9	216.5	1,320.7	148.8	120.8	11.4	16.5	58	119	53	13
Mississippi	1,273.4	596.5	59.9	617.0	128.6	105.9	6.9	15.8	101	178	115	26
Missouri	2,714.6	1,220.4	129.7	1,364.6	267.1	220.3	20.3	26.4	98	181	157	19
Montana	523.6	237.5	56.6	229.5	37.7	30.7	3.8	3.2	72	129	67	14
Nebraska	848.8	350.6	44.1	454.1	60.4	47.9	3.5	9.0	71	137	78	20
Nevada	1,327.9	547.3	167.5	613.1	107.7	87.6	11.0	9.1	81	160	66	15
New Hampshire	718.9	305.0	43.8	370.1	51.4	41.3	3.0	7.1	72	135	69	19
New Jersey	4,328.0	1,625.4	408.0	2,294.5	288.4	230.0	21.1	37.3	67	142	52	16
New Mexico	971.9	424.7	176.6	370.6	59.7	50.3	5.8	3.5	61	119	33	9
New York	9,851.9	3,601.2	1,768.3	4,482.4	697.7	528.2	81.7	87.8	71	147	46	20
North Carolina	4,415.2	2,011.7	173.8	2,229.7	383.2	315.0	25.0	43.2	87	157	144	19
North Dakota	318.8	131.6	18.6	168.6	23.9	18.8	1.4	3.7	75	143	74	22
Ohio	5,756.3	2,332.8	635.5	2,788.0	559.6	389.0	86.5	84.1	97	167	136	30
Oklahoma	1,599.1	740.2	95.9	762.9	175.0	145.3	10.6	19.1	109	196	111	25
Oregon	2,063.2	872.1	290.0	901.1	138.3	112.4	16.8	9.0	67	129	58	10
Pennsylvania	6,522.8	2,728.6	635.7	3,158.6	491.7	369.4	52.2	70.1	75	135	82	22
Puerto Rico	1,842.2	1,062.8	393.8	385.7	129.9	85.0	37.5	7.5	71	80	95	20
Rhode Island	568.3	220.3	76.1	271.9	41.8	32.4	3.4	6.0	74	147	44	22
South Carolina	2,362.6	1,109.1	104.0	1,149.5	182.9	148.7	12.1	22.2	77	134	116	19
South Dakota	392.2	179.5	9.6	203.0	28.9	25.1	1.0	2.8	74	140	99	14
Tennessee	3,097.4	1,378.2	180.9	1,538.3	295.2	230.7	20.7	43.7	95	167	115	28
Texas	10,565.3	4,278.7	237.6	6,049.0	759.7	635.7	33.3	90.7	72	149	140	15
Utah	1,147.2	414.3	66.2	666.6	50.5	39.8	3.2	7.5	44	96	48	11
Vermont	348.6	149.8	36.1	162.8	23.8	19.8	1.9	2.1	68	132	52	13
Virginia	3,604.1	1,540.8	343.1	1,920.2	263.0	209.1	22.3	31.6	69	136	65	17
Washington	3,641.3	1,386.3	399.7	1,855.3	209.5	166.0	21.9	21.5	58	120	55	12
West Virginia	929.0	429.1	138.5	361.3	133.2	102.7	17.6	13.0	143	239	127	36
Wisconsin	2,895.6	1,176.4	221.4	1,497.9	191.5	154.6	13.3	23.6	66	131	60	16
Wyoming	246.2	115.0	5.4	125.7	20.0	17.3	0.7	2.0	81	151	121	16

^aMC – Medicare ^bMD – Medicaid ^cC – Commercial

Note: Due to data quality limitations, COPD-related ED/Observation encounters for Medicaid- and commercially-insured individuals in the District of Columbia and Puerto Rico were replaced with the South Atlantic census division values.

Table A2: COPD-related ED/observation encounters for insured individuals with COPD

Nationwide or State	COPD-Related ED/Observation Encounter Rate (per 1,000 insured individuals with COPD)				Number of COPD-Related ED/Observation Encounters (in Thousands)				% of COPD Population with COPD-Related ED/Observation Encounter			
	Total	MC ^a	MD ^b	C ^c	Total	MC ^a	MD ^b	C ^c	Total	MC ^a	MD ^b	C ^c
Nationwide	118	108	214	108	1,377.0	1,003.0	232.0	143.0	8.7	8.1	13.4	9.1
Alabama	102	101	102	109	25.2	20.1	1.3	3.8	8.1	7.9	7.1	9.3
Alaska	189	194	215	97	2.9	2.3	0.5	0.1	12.0	12.1	12.8	9.7
Arizona	104	89	196	104	21.6	14.6	4.9	2.1	8.0	7.2	12.4	9.1
Arkansas	119	119	168	92	16.5	13.4	1.7	1.5	9.3	9.2	11.8	8.3
California	93	86	159	70	90.5	69.7	16.5	4.3	6.7	6.3	10.4	5.7
Colorado	131	127	200	79	18.7	14.6	3.2	0.9	9.8	9.6	13.1	7.6
Connecticut	115	102	205	116	14.2	10.1	2.9	1.2	8.4	7.7	13.2	9.2
Delaware	98	86	187	107	3.7	2.5	0.7	0.5	7.5	6.8	11.0	9.2
District of Columbia	161	129	235	115	3.0	1.3	1.4	0.3	10.6	8.7	14.4	9.7
Florida	87	76	239	112	84.8	62.0	10.9	11.9	6.8	6.0	14.7	9.7
Georgia	122	109	272	132	40.2	29.3	5.6	5.2	9.1	8.3	16.0	10.8
Hawaii	97	91	205	51	3.2	2.3	0.7	0.2	6.7	6.4	12.2	4.5
Idaho	154	147	321	123	7.8	6.3	0.8	0.6	11.8	11.3	21.8	10.7
Illinois	122	114	215	94	53.9	40.0	9.3	4.6	9.0	8.5	13.7	8.0
Indiana	143	132	248	132	43.3	30.4	6.9	6.0	10.6	9.9	15.9	10.9
Iowa	159	159	255	93	18.4	13.6	3.1	1.7	11.6	11.7	16.2	8.0
Kansas	141	137	247	121	13.9	11.4	1.3	1.2	10.5	10.3	14.6	9.9
Kentucky	153	144	203	135	41.7	28.6	9.1	4.0	11.0	10.5	12.7	11.3
Louisiana	156	135	286	118	29.7	19.2	8.2	2.3	11.2	10.1	17.3	9.8
Maine	157	161	148	121	11.3	9.8	0.9	0.7	11.1	11.5	9.2	9.2
Maryland	125	120	201	90	24.0	17.9	3.9	2.2	8.8	8.6	12.2	7.6
Massachusetts	103	91	231	77	23.7	16.6	5.2	2.0	7.7	7.0	14.5	6.8
Michigan	115	109	183	88	58.9	43.5	10.2	5.2	8.2	7.9	11.0	7.6
Minnesota	169	171	191	136	25.1	20.6	2.2	2.2	12.0	12.1	12.3	11.5
Mississippi	145	131	318	164	18.6	13.8	2.2	2.6	10.6	9.8	19.2	12.1
Missouri	139	131	245	124	37.1	28.8	5.0	3.3	10.5	9.9	16.4	10.6
Montana	150	153	155	117	5.7	4.7	0.6	0.4	11.0	11.3	10.0	10.0
Nebraska	131	127	266	98	7.9	6.1	0.9	0.9	10.1	9.9	18.7	8.2
Nevada	125	115	221	104	13.4	10.0	2.4	1.0	8.8	8.3	13.1	8.4
New Hampshire	142	144	205	99	7.3	6.0	0.6	0.7	10.5	10.7	13.1	8.4
New Jersey	74	62	204	77	21.3	14.2	4.3	2.9	5.7	4.9	12.1	6.8
New Mexico	126	116	209	130	7.5	5.8	1.2	0.5	9.4	8.8	13.9	10.8
New York	83	73	154	77	57.8	38.5	12.6	6.8	6.1	5.5	9.4	6.6
North Carolina	124	117	220	119	47.5	36.9	5.5	5.1	9.2	8.8	13.6	10.0
North Dakota	166	170	231	124	4.0	3.2	0.3	0.5	11.9	12.0	16.2	10.2
Ohio	140	125	221	127	78.3	48.5	19.1	10.7	10.3	9.4	14.3	10.5
Oklahoma	143	139	255	113	25.0	20.2	2.7	2.2	10.7	10.4	16.4	9.6
Oregon	153	151	202	91	21.2	16.9	3.4	0.8	10.8	10.8	12.5	7.8
Pennsylvania	102	83	249	96	50.3	30.5	13.0	6.7	7.7	6.6	15.4	8.2
Puerto Rico	94	30	235	115	12.2	2.5	8.8	0.9	6.3	2.5	14.4	9.7
Rhode Island	81	77	116	84	3.4	2.5	0.4	0.5	6.1	5.9	7.0	7.1
South Carolina	116	103	254	130	21.2	15.3	3.1	2.9	8.8	8.0	15.2	10.6
South Dakota	135	135	244	96	3.9	3.4	0.2	0.3	10.2	10.2	16.0	8.3
Tennessee	113	101	263	106	33.4	23.3	5.5	4.6	8.6	7.8	17.2	8.7
Texas	122	111	283	134	92.4	70.8	9.4	12.2	9.1	8.5	16.5	11.0
Utah	121	118	205	102	6.1	4.7	0.6	0.8	9.5	9.3	13.1	8.6
Vermont	168	170	201	121	4.0	3.4	0.4	0.3	12.0	11.9	15.0	10.8
Virginia	130	117	273	111	34.1	24.5	6.1	3.5	9.5	8.7	16.7	9.6
Washington	150	143	243	105	31.3	23.7	5.3	2.3	10.7	10.3	14.9	9.2
West Virginia	148	146	189	107	19.7	15.0	3.3	1.4	10.4	10.3	12.0	9.0
Wisconsin	175	171	242	159	33.5	26.5	3.2	3.8	12.6	12.1	16.2	13.4
Wyoming	153	156	222	100	3.1	2.7	0.1	0.2	11.3	11.6	11.7	8.9

^aMC – Medicare ^bMD – Medicaid ^cC – Commercial

Note 1: California, Idaho, Missouri, Nebraska, New Hampshire, New Jersey, North Carolina, South Carolina, South Dakota, Texas, Vermont, and West Virginia had data quality issues impacting at least one of the standard characteristics used to identify outpatient facility claims in Medicaid; alternative approaches using other combinations of these characteristics were used. Utah, Illinois, and District of Columbia had data quality issues impacting all of the standard characteristics; COPD-related ED/Observation encounters were replaced with the respective census division values for these states. For the remaining 37 states (including Puerto Rico), identification of outpatient facility claims was based on CMS' recommended approach.

Note 2: Due to data quality limitations, COPD-related ED/Observation encounters for commercially-insured individuals in the District of Columbia and Puerto Rico were replaced with the South Atlantic census division values.

Table B1: Revenue and HCPCS Codes for Qualified Claims

Claim Type	HCPCS Code	Revenue Code
Acute inpatient	99221-99223, 99231-99233, 99238, 99239, 99251-99255, 99291, 99468, 99469, 99471, 99472, 99475-99480	010x, 0110-0115, 0117, 0119-0125, 0127, 0129-0135, 0137, 0139-0145, 0147, 0149-0155, 0157, 0159-0160, 0164, 0166-0175, 0179, 0200-0204, 0206-0214, 0219, 0720-0722
Emergency department	99281-99285, G0380-G0384	0450-0452, 0456, 0459, 0981
Non-acute inpatient	99304-99310, 99315, 99316, 99318, 99324-99328, 99334-99337	0118, 0128, 0138, 0148, 0158, 0190-0194, 0199, 0524, 0525, 0550-0552, 0559
Observation	99217-99220, 99224-99226, G0378, G0379	
Outpatient	98966-98972, 98975-98981, 99201-99205, 99211-99215, 99241-99245, 99324-99328, 99334-99337, 99341-99345, 99347-99350, 99381-99387, 99391-99397, 99401-99404, 99411, 99412, 99421-99423, 99424-99427, 99429, 99437, 99439, 99441-99444, 99446-99449, 99451-99452, 99455, 99456, 99484, 99487-99496, G0402, G0438, G0439, G0463, G0466-G0468, T1015	0510-0517, 0519-0523, 0526-0529, 0982, 0983
Urgent care	0516, 0526	S9083, S9088, 99050, 99051, 99053, 99056, 99058, 99060

Table B2: COPD Diagnosis Codes

ICD-10-CM Diagnosis Code	Description	Acute Exacerbation
J410	Simple chronic bronchitis	
J411	Mucopurulent chronic bronchitis	
J418	Mixed simple and mucopurulent chronic bronchitis	
J42	Unspecified chronic bronchitis	
J430	Unilateral pulmonary emphysema [MacLeod's syndrome]	
J431	Panlobular emphysema	
J432	Centrilobular emphysema	
J438	Other emphysema	
J439	Emphysema, unspecified	
J440	Chronic obstructive pulmonary disease with (acute) lower respiratory infection	X
J441	Chronic obstructive pulmonary disease with (acute) exacerbation	X
J449	Chronic obstructive pulmonary disease, unspecified	
J40	Bronchitis, not specified as acute or chronic	

Table B3: COPD-Related Diagnosis Codes

ICD-10-CM Diagnosis Code	Description	Code Category	Secondary Position COPD Diagnosis Required
A0103	Typhoid pneumonia	Acute pulmonary condition	Yes
A021	Salmonella sepsis	Sepsis	Yes
A0222	Salmonella pneumonia	Acute pulmonary condition	Yes
A202	Pneumonic plague	Acute pulmonary condition	Yes
A212	Pulmonary tularemia	Acute pulmonary condition	Yes
A221	Pulmonary anthrax	Acute pulmonary condition	Yes
A227	Anthrax sepsis	Sepsis	Yes
A267	Erysipelothrix sepsis	Sepsis	Yes
A310	Pulmonary mycobacterial infection	Acute pulmonary condition	Yes

ICD-10-CM Diagnosis Code	Description	Code Category	Secondary Position COPD Diagnosis Required
A327	Listerial sepsis	Sepsis	Yes
A3700	Whooping cough due to Bordetella pertussis without pneumonia	Acute pulmonary condition	Yes
A3701	Whooping cough due to Bordetella pertussis with pneumonia	Acute pulmonary condition	Yes
A3710	Whooping cough due to Bordetella parapertussis w/o pneumonia	Acute pulmonary condition	Yes
A3711	Whooping cough due to Bordetella parapertussis w pneumonia	Acute pulmonary condition	Yes
A3780	Whooping cough due to other Bordetella species without pneumonia	Acute pulmonary condition	Yes
A3781	Whooping cough due to other Bordetella species with pneumonia	Acute pulmonary condition	Yes
A3790	Whooping cough, unspecified species without pneumonia	Acute pulmonary condition	Yes
A3791	Whooping cough, unspecified species with pneumonia	Acute pulmonary condition	Yes
A400	Sepsis due to streptococcus, group A	Sepsis	Yes
A401	Sepsis due to streptococcus, group B	Sepsis	Yes
A403	Sepsis due to Streptococcus pneumoniae	Sepsis	Yes
A408	Other streptococcal sepsis	Sepsis	Yes
A409	Streptococcal sepsis, unspecified	Sepsis	Yes
A4101	Sepsis due to Methicillin susceptible Staphylococcus aureus	Sepsis	Yes
A4102	Sepsis due to Methicillin resistant Staphylococcus aureus	Sepsis	Yes
A411	Sepsis due to other specified staphylococcus	Sepsis	Yes
A412	Sepsis due to unspecified staphylococcus	Sepsis	Yes
A413	Sepsis due to Hemophilus influenzae	Sepsis	Yes
A414	Sepsis due to anaerobes	Sepsis	Yes
A4150	Gram-negative sepsis, unspecified	Sepsis	Yes
A4151	Sepsis due to Escherichia coli [E. coli]	Sepsis	Yes
A4152	Sepsis due to Pseudomonas	Sepsis	Yes
A4153	Sepsis due to Serratia	Sepsis	Yes
A4159	Other Gram-negative sepsis	Sepsis	Yes
A4181	Sepsis due to Enterococcus	Sepsis	Yes
A4189	Other specified sepsis	Sepsis	Yes
A419	Sepsis, unspecified organism	Sepsis	Yes
A420	Pulmonary actinomycosis	Acute pulmonary condition	Yes
A427	Actinomycotic sepsis	Sepsis	Yes
A430	Pulmonary nocardiosis	Acute pulmonary condition	Yes
A481	Legionnaires' disease	Acute pulmonary condition	Yes
A5484	Gonococcal pneumonia	Acute pulmonary condition	Yes
A5486	Gonococcal sepsis	Sepsis	Yes

B012	Varicella pneumonia	Acute pulmonary condition	Yes
B052	Measles complicated by pneumonia	Acute pulmonary condition	Yes
B0681	Rubella pneumonia	Acute pulmonary condition	Yes
B250	Cytomegaloviral pneumonitis	Acute pulmonary condition	Yes
B371	Pulmonary candidiasis	Acute pulmonary condition	Yes
B377	Candidal sepsis	Sepsis	Yes
B380	Acute pulmonary coccidioidomycosis	Acute pulmonary condition	Yes
B381	Chronic pulmonary coccidioidomycosis	Acute pulmonary condition	Yes
B382	Pulmonary coccidioidomycosis, unspecified	Acute pulmonary condition	Yes
B390	Acute pulmonary histoplasmosis capsulati	Acute pulmonary condition	Yes
B391	Chronic pulmonary histoplasmosis capsulati	Acute pulmonary condition	Yes
B392	Pulmonary histoplasmosis capsulati, unspecified	Acute pulmonary condition	Yes
B400	Acute pulmonary blastomycosis	Acute pulmonary condition	Yes
B583	Pulmonary toxoplasmosis	Acute pulmonary condition	Yes

ICD-10-CM Diagnosis Code	Description	Code Category	Secondary Position COPD Diagnosis Required
B59	Pneumocystosis	Acute pulmonary condition	Yes
B7781	Ascariasis pneumonia	Acute pulmonary condition	Yes
J060	Acute laryngopharyngitis	Acute pulmonary condition	No
J069	Acute upper respiratory infection, unspecified	Acute pulmonary condition	No
J09X1	Influenza due to identified novel influenza A virus with pneumonia	Acute pulmonary condition	Yes
J09X2	Influenza due to identified novel influenza A virus with other respiratory manifestations	Acute pulmonary condition	No
J09X3	Influenza due to identified novel influenza A virus with gastrointestinal manifestations	Acute pulmonary condition	Yes
J09X9	Influenza due to identified novel influenza A virus with other manifestations	Acute pulmonary condition	Yes
J1000	Influenza due to other identified influenza virus with unspecified type of pneumonia	Acute pulmonary condition	Yes
J1001	Influenza due to other identified influenza virus with the same other identified influenza virus pneumonia	Acute pulmonary condition	Yes
J1008	Influenza due to other identified influenza virus with other specified pneumonia	Acute pulmonary condition	Yes
J101	Influenza due to other identified influenza virus with other respiratory manifestations	Acute pulmonary condition	No
J102	Influenza due to other identified influenza virus with gastrointestinal manifestations	Acute pulmonary condition	Yes
J1081	Influenza due to other identified influenza virus with encephalopathy	Acute pulmonary condition	Yes
J1082	Influenza due to other identified influenza virus with myocarditis	Acute pulmonary condition	Yes
J1083	Influenza due to other identified influenza virus with otitis media	Acute pulmonary condition	Yes
J1089	Influenza due to other identified influenza virus with other manifestations	Acute pulmonary condition	Yes
J1100	Influenza due to unidentified influenza virus with unspecified type of pneumonia	Acute pulmonary condition	Yes
J1108	Influenza due to unidentified influenza virus with specified pneumonia	Acute pulmonary condition	Yes
J111	Influenza due to unidentified influenza virus with other respiratory manifestations	Acute pulmonary condition	No
J112	Influenza due to unidentified influenza virus with gastrointestinal manifestations	Acute pulmonary condition	Yes
J1181	Influenza due to unidentified influenza virus with encephalopathy	Acute pulmonary condition	Yes
J1182	Influenza due to unidentified influenza virus with myocarditis	Acute pulmonary condition	Yes
J1183	Influenza due to unidentified influenza virus with otitis media	Acute pulmonary condition	Yes
J1189	Influenza due to unidentified influenza virus with other manifestations	Acute pulmonary condition	Yes
J120	Adenoviral pneumonia	Acute pulmonary condition	Yes

J121	Respiratory syncytial virus pneumonia	Acute pulmonary condition	Yes
J122	Parainfluenza virus pneumonia	Acute pulmonary condition	Yes
J123	Human metapneumovirus pneumonia	Acute pulmonary condition	Yes
J1281	Pneumonia due to SARS-associated coronavirus	Acute pulmonary condition	Yes
J1282	Pneumonia due to coronavirus disease 2019	Acute pulmonary condition	Yes
J1289	Other viral pneumonia	Acute pulmonary condition	No
J129	Viral pneumonia, unspecified	Acute pulmonary condition	No
J13	Pneumonia due to Streptococcus pneumoniae	Acute pulmonary condition	Yes
J14	Pneumonia due to Hemophilus influenzae	Acute pulmonary condition	Yes
J150	Pneumonia due to Klebsiella pneumoniae	Acute pulmonary condition	Yes
J151	Pneumonia due to Pseudomonas	Acute pulmonary condition	Yes
J1520	Pneumonia due to staphylococcus, unspecified	Acute pulmonary condition	Yes
J15211	Pneumonia due to Methicillin susceptible Staphylococcus aureus	Acute pulmonary condition	Yes
J15212	Pneumonia due to Methicillin resistant Staphylococcus aureus	Acute pulmonary condition	Yes
J1529	Pneumonia due to other staphylococcus	Acute pulmonary condition	Yes
J153	Pneumonia due to streptococcus, group B	Acute pulmonary condition	Yes
J154	Pneumonia due to other streptococci	Acute pulmonary condition	Yes
J155	Pneumonia due to Escherichia coli	Acute pulmonary condition	Yes
J156	Pneumonia due to other Gram-negative bacteria	Acute pulmonary condition	Yes
J157	Pneumonia due to Mycoplasma pneumoniae	Acute pulmonary condition	Yes
J158	Pneumonia due to other specified bacteria	Acute pulmonary condition	Yes
J159	Unspecified bacterial pneumonia	Acute pulmonary condition	No
J160	Chlamydial pneumonia	Acute pulmonary condition	Yes
J168	Pneumonia due to other specified infectious organisms	Acute pulmonary condition	Yes

ICD-10-CM Diagnosis Code	Description	Code Category	Secondary Position COPD Diagnosis Required
J17	Pneumonia in diseases classified elsewhere	Acute pulmonary condition	No
J180	Bronchopneumonia, unspecified organism	Acute pulmonary condition	No
J181	Lobar pneumonia, unspecified organism	Acute pulmonary condition	No
J182	Hypostatic pneumonia, unspecified organism	Acute pulmonary condition	No
J188	Other pneumonia, unspecified organism	Acute pulmonary condition	No
J189	Pneumonia, unspecified organism	Acute pulmonary condition	No
J200	Acute bronchitis due to Mycoplasma pneumoniae	Acute pulmonary condition	No
J201	Acute bronchitis due to Hemophilus influenzae	Acute pulmonary condition	No
J202	Acute bronchitis due to streptococcus	Acute pulmonary condition	No
J203	Acute bronchitis due to coxsackievirus	Acute pulmonary condition	No
J204	Acute bronchitis due to parainfluenza virus	Acute pulmonary condition	No
J205	Acute bronchitis due to respiratory syncytial virus	Acute pulmonary condition	No
J206	Acute bronchitis due to rhinovirus	Acute pulmonary condition	No
J207	Acute bronchitis due to echovirus	Acute pulmonary condition	No
J208	Acute bronchitis due to other specified organisms	Acute pulmonary condition	No
J209	Acute bronchitis, unspecified	Acute pulmonary condition	No
J210	Acute bronchiolitis due to respiratory syncytial virus	Acute pulmonary condition	No
J211	Acute bronchiolitis due to human metapneumovirus	Acute pulmonary condition	No
J218	Acute bronchiolitis due to other specified organisms	Acute pulmonary condition	No
J219	Acute bronchiolitis, unspecified	Acute pulmonary condition	No
J22	Unspecified acute lower respiratory infection	Acute pulmonary condition	No
J40	Bronchitis, not specified as acute or chronic	Acute pulmonary condition	No
J4521	Mild intermittent asthma with (acute) exacerbation	Acute pulmonary condition	No
J4522	Mild intermittent asthma with status asthmaticus	Acute pulmonary condition	No
J4531	Mild persistent asthma with (acute) exacerbation	Acute pulmonary condition	No
J4532	Mild persistent asthma with status asthmaticus	Acute pulmonary condition	No
J4541	Moderate persistent asthma with (acute) exacerbation	Acute pulmonary condition	No
J4542	Moderate persistent asthma with status asthmaticus	Acute pulmonary condition	No
J4551	Severe persistent asthma with (acute) exacerbation	Acute pulmonary condition	No
J4552	Severe persistent asthma with status asthmaticus	Acute pulmonary condition	No
J45901	Unspecified asthma with (acute) exacerbation	Acute pulmonary condition	No
J45902	Unspecified asthma with status asthmaticus	Acute pulmonary condition	No
J470	Bronchiectasis with acute lower respiratory infection	Acute exacerbation	No
J471	Bronchiectasis with (acute) exacerbation	Acute exacerbation	No

J678	Hypersensitivity pneumonitis due to other organic dusts	Acute pulmonary condition	Yes
J679	Hypersensitivity pneumonitis due to unspecified organic dust	Acute pulmonary condition	Yes
J680	Bronchitis and pneumonitis due to chemicals, gases, fumes and vapors	Acute pulmonary condition	Yes
J681	Pulmonary edema due to chemicals, gases, fumes and vapors	Acute pulmonary condition	Yes
J682	Upper respiratory inflammation due to chemicals, gases, fumes and vapors, not elsewhere classified	Acute pulmonary condition	Yes
J683	Other acute and subacute respiratory conditions due to chemicals, gases, fumes and vapors	Acute pulmonary condition	Yes
J690	Pneumonitis due to inhalation of food and vomit	Acute pulmonary condition	Yes
J691	Pneumonitis due to inhalation of oils and essences	Acute pulmonary condition	Yes
J698	Pneumonitis due to inhalation of other solids and liquids	Acute pulmonary condition	Yes
J700	Acute pulmonary manifestations due to radiation	Acute pulmonary condition	Yes
J702	Acute drug-induced interstitial lung disorders	Acute pulmonary condition	Yes
J705	Respiratory conditions due to smoke inhalation	Acute pulmonary condition	Yes
J80	Acute respiratory distress syndrome	Acute pulmonary condition	No
J810	Acute pulmonary edema	Acute pulmonary condition	Yes
J8282	Acute eosinophilic pneumonia	Acute pulmonary condition	Yes
J8401	Alveolar proteinosis	Acute pulmonary condition	No

ICD-10-CM Code	Description	Code Category	Secondary Position COPD Diagnosis Required
J84111	Idiopathic interstitial pneumonia, not otherwise specified	Acute pulmonary condition	No
J84112	Idiopathic pulmonary fibrosis	Acute pulmonary condition	No
J84113	Idiopathic non-specific interstitial pneumonitis	Acute pulmonary condition	No
J84114	Acute interstitial pneumonitis	Acute pulmonary condition	No
J84115	Respiratory bronchiolitis interstitial lung disease	Acute pulmonary condition	No
J84116	Cryptogenic organizing pneumonia	Acute pulmonary condition	No
J84117	Desquamative interstitial pneumonia	Acute pulmonary condition	No
J8417	Other interstitial pulmonary disease with fibrosis in disease classified elsewhere	Acute pulmonary condition	No
J84170	Interstitial lung disease with progressive fibrotic phenotype disease classified elsewhere	Acute pulmonary condition	No
J84178	Other interstitial pulmonary disease with fibrosis in disease classified elsewhere	Acute pulmonary condition	No
J842	Lymphoid interstitial pneumonia	Acute pulmonary condition	No
J8481	Lymphangioleiomyomatosis	Acute pulmonary condition	No
J8482	Adult pulmonary Langerhans cell histiocytosis	Acute pulmonary condition	No
J8483	Surfactant mutations of the lung	Acute pulmonary condition	No
J84841	Neuroendocrine cell hyperplasia of infancy	Acute pulmonary condition	No
J84842	Pulmonary interstitial glycogenosis	Acute pulmonary condition	No
J84843	Alveolar capillary dysplasia with vein misalignment	Acute pulmonary condition	No
J84848	Other interstitial lung diseases of childhood	Acute pulmonary condition	No
J8489	Other specified interstitial pulmonary diseases	Acute pulmonary condition	No
J849	Interstitial pulmonary disease, unspecified	Acute pulmonary condition	No
J850	Gangrene and necrosis of lung	Acute pulmonary condition	Yes
J851	Abscess of lung with pneumonia	Acute pulmonary condition	Yes
J852	Abscess of lung without pneumonia	Acute pulmonary condition	Yes
J853	Abscess of mediastinum	Acute pulmonary condition	Yes
J860	Pyothorax with fistula	Acute pulmonary condition	Yes
J869	Pyothorax without fistula	Acute pulmonary condition	Yes
J930	Spontaneous tension pneumothorax	Acute pulmonary condition	Yes
J9311	Primary spontaneous pneumothorax	Acute pulmonary condition	Yes
J9312	Secondary spontaneous pneumothorax	Acute pulmonary condition	Yes
J9382	Other air leak	Acute pulmonary condition	Yes
J9383	Other pneumothorax	Acute pulmonary condition	Yes

J939	Pneumothorax, unspecified	Acute pulmonary condition	Yes
J95821	Acute postprocedural respiratory failure	Respiratory failure	No
J95822	Acute and chronic postprocedural respiratory failure	Respiratory failure	No
J9600	Acute respiratory failure, unspecified whether with hypoxia or hypercapnia	Respiratory failure	No
J9601	Acute respiratory failure with hypoxia	Respiratory failure	No
J9602	Acute respiratory failure with hypercapnia	Respiratory failure	No
J9610	Chronic respiratory failure, unspecified whether with hypoxia or hypercapnia	Respiratory failure	No
J9611	Chronic respiratory failure with hypoxia	Respiratory failure	No
J9612	Chronic respiratory failure with hypercapnia	Respiratory failure	No
J9620	Acute and chronic respiratory failure, unspecified whether with hypoxia or hypercapnia	Respiratory failure	No
J9621	Acute and chronic respiratory failure with hypoxia	Respiratory failure	No
J9622	Acute and chronic respiratory failure with hypercapnia	Respiratory failure	No
J9690	Respiratory failure, unspecified, unspecified whether with hypoxia or hypercapnia	Respiratory failure	No
J9691	Respiratory failure, unspecified with hypoxia	Respiratory failure	No
J9692	Respiratory failure, unspecified with hypercapnia	Respiratory failure	No
J9801	Acute bronchospasm	Acute pulmonary condition	No
J9809	Other diseases of bronchus, not elsewhere classified	Acute pulmonary condition	No
J9811	Atelectasis	Acute pulmonary condition	No
J9819	Other pulmonary collapse	Acute pulmonary condition	No
J982	Interstitial emphysema	Acute pulmonary condition	No
J983	Compensatory emphysema	Acute pulmonary condition	No
J984	Other disorders of lung	Acute pulmonary condition	No
J985	Diseases of mediastinum, not elsewhere classified	Acute pulmonary condition	No

ICD-10-CM Diagnosis Code	Description	Code Category	Secondary Position COPD Diagnosis Required
J9851	Mediastinitis	Acute pulmonary condition	No
J9859	Other diseases of mediastinum, not elsewhere classified	Acute pulmonary condition	No
J986	Disorders of diaphragm	Acute pulmonary condition	No
J988	Other specified respiratory disorders	Acute pulmonary condition	No
J989	Respiratory disorder, unspecified	Acute pulmonary condition	No
R05	Cough	Acute pulmonary condition	No
R0600	Dyspnea, unspecified	Acute pulmonary condition	No
R0601	Orthopnea	Acute pulmonary condition	No
R0602	Shortness of breath	Acute pulmonary condition	No
R0603	Acute respiratory distress	Acute pulmonary condition	No
R0609	Other forms of dyspnea	Acute pulmonary condition	No
R061	Stridor	Acute pulmonary condition	No
R062	Wheezing	Acute pulmonary condition	No
R063	Periodic breathing	Acute pulmonary condition	No
R064	Hyperventilation	Acute pulmonary condition	No
R065	Mouth breathing	Acute pulmonary condition	No
R066	Hiccough	Acute pulmonary condition	No
R067	Sneezing	Acute pulmonary condition	No
R0681	Apnea, not elsewhere classified	Acute pulmonary condition	No
R0682	Tachypnea, not elsewhere classified	Acute pulmonary condition	No
R0683	Snoring	Acute pulmonary condition	No
R0689	Other abnormalities of breathing	Acute pulmonary condition	No
R069	Unspecified abnormalities of breathing	Acute pulmonary condition	No
R070	Pain in throat	Acute pulmonary condition	No
R071	Chest pain on breathing	Acute pulmonary condition	No
R072	Precordial pain	Acute pulmonary condition	No
R0781	Pleurodynia	Acute pulmonary condition	No
R0782	Intercostal pain	Acute pulmonary condition	No
R0789	Other chest pain	Acute pulmonary condition	No
R079	Chest pain, unspecified	Acute pulmonary condition	No
R0901	Asphyxia	Acute pulmonary condition	No
R0902	Hypoxemia	Acute pulmonary condition	No

R091	Pleurisy	Acute pulmonary condition	No
R092	Respiratory arrest	Acute pulmonary condition	No
R093	Abnormal sputum	Acute pulmonary condition	No
R0981	Nasal congestion	Acute pulmonary condition	No
R0982	Postnasal drip	Acute pulmonary condition	No
R0989	Other symptoms and signs involving the circulatory and respiratory systems	Acute pulmonary condition	No
R6520	Severe sepsis without septic shock	Sepsis	Yes
R6521	Severe sepsis with septic shock	Sepsis	Yes
R911	Solitary pulmonary nodule	Acute pulmonary condition	No
R918	Other nonspecific abnormal finding of lung field	Acute pulmonary condition	No
U070	Vaping-related disorder	Acute pulmonary condition	No
U071	COVID-19 infection	Acute pulmonary condition	No
U072	COVID-19, suspected	Acute pulmonary condition	No
Z2001	Contact with and exposure to intestinal infectious diseases due to E coli (E. coli)	Acute pulmonary condition	No
Z2009	Contact with and exposure to other intestinal infectious diseases	Acute pulmonary condition	No
Z201	Contact with and (suspected) exposure to tuberculosis	Acute pulmonary condition	No
Z202	Contact with and exposure to infection with a sexual mode of transmission	Acute pulmonary condition	No
Z203	Contact with and (suspected) exposure to rabies	Acute pulmonary condition	No
Z204	Contact with and (suspected) exposure to rubella	Acute pulmonary condition	No
Z205	Contact with and (suspected) exposure to viral hepatitis	Acute pulmonary condition	No
Z206	Contact with and (suspected) exposure to human immunodeficiency virus	Acute pulmonary condition	No
Z207	Contact with and exposure to pediculosis, acariasis and other infestations	Acute pulmonary condition	No
Z20810	Contact with and (suspected) exposure to anthrax	Acute pulmonary condition	No

**Secondary
Position COPD
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Required**

ICD-10-CM Diagnosis Code	Description	Code Category	Secondary Position COPD Diagnosis Required
Z20811	Contact with and (suspected) exposure to meningococcus	Acute pulmonary condition	No
Z20818	Contact with and exposure to other bacterial communicable diseases	Acute pulmonary condition	No
Z20820	Contact with and (suspected) exposure to varicella	Acute pulmonary condition	No
Z20821	Contact with and (suspected) exposure to Zika virus	Acute pulmonary condition	No
Z20822	Contact with and (suspected) exposure to COVID-19	Acute pulmonary condition	No
Z20828	Contact with and exposure to other viral communicable diseases	Acute pulmonary condition	No
Z2089	Contact with and exposure to other communicable diseases	Acute pulmonary condition	No
Z209	Contact with and exposure to unspecified communicable disease	Acute pulmonary condition	No

Figure A1: Development of the insured and COPD sample populations (non-extrapolated)

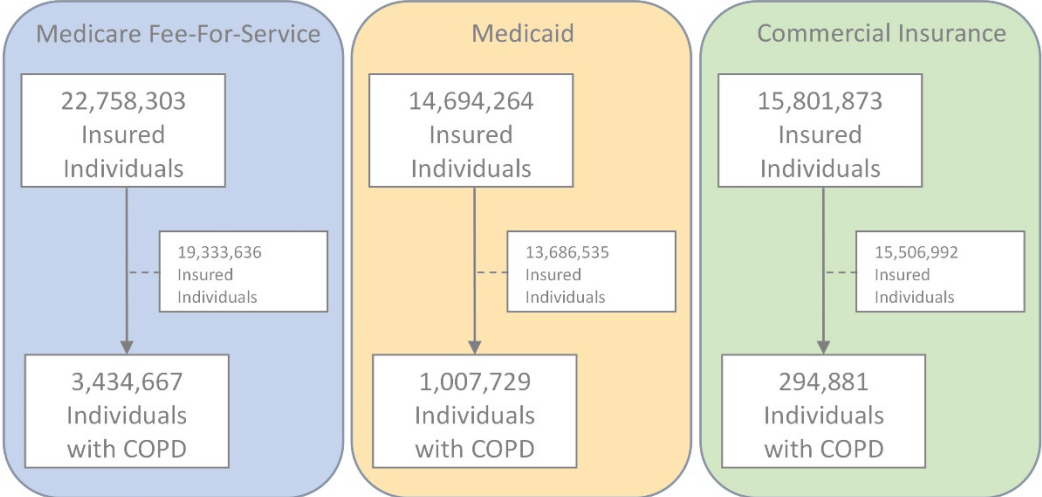
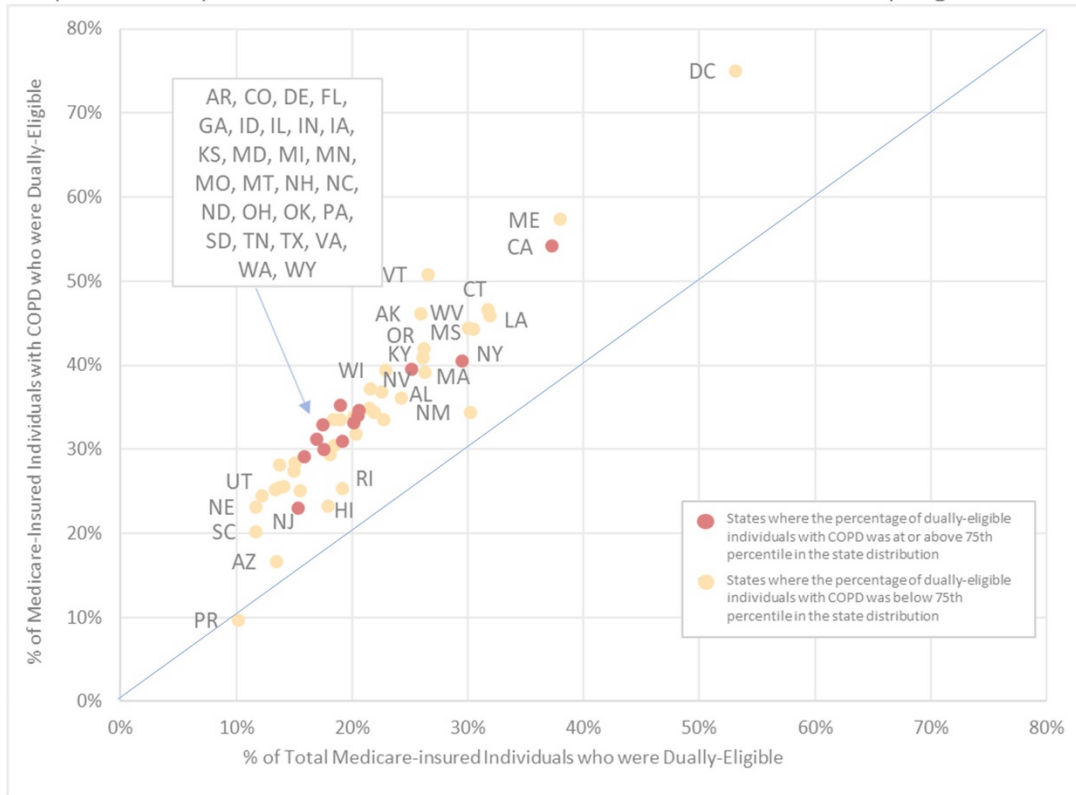
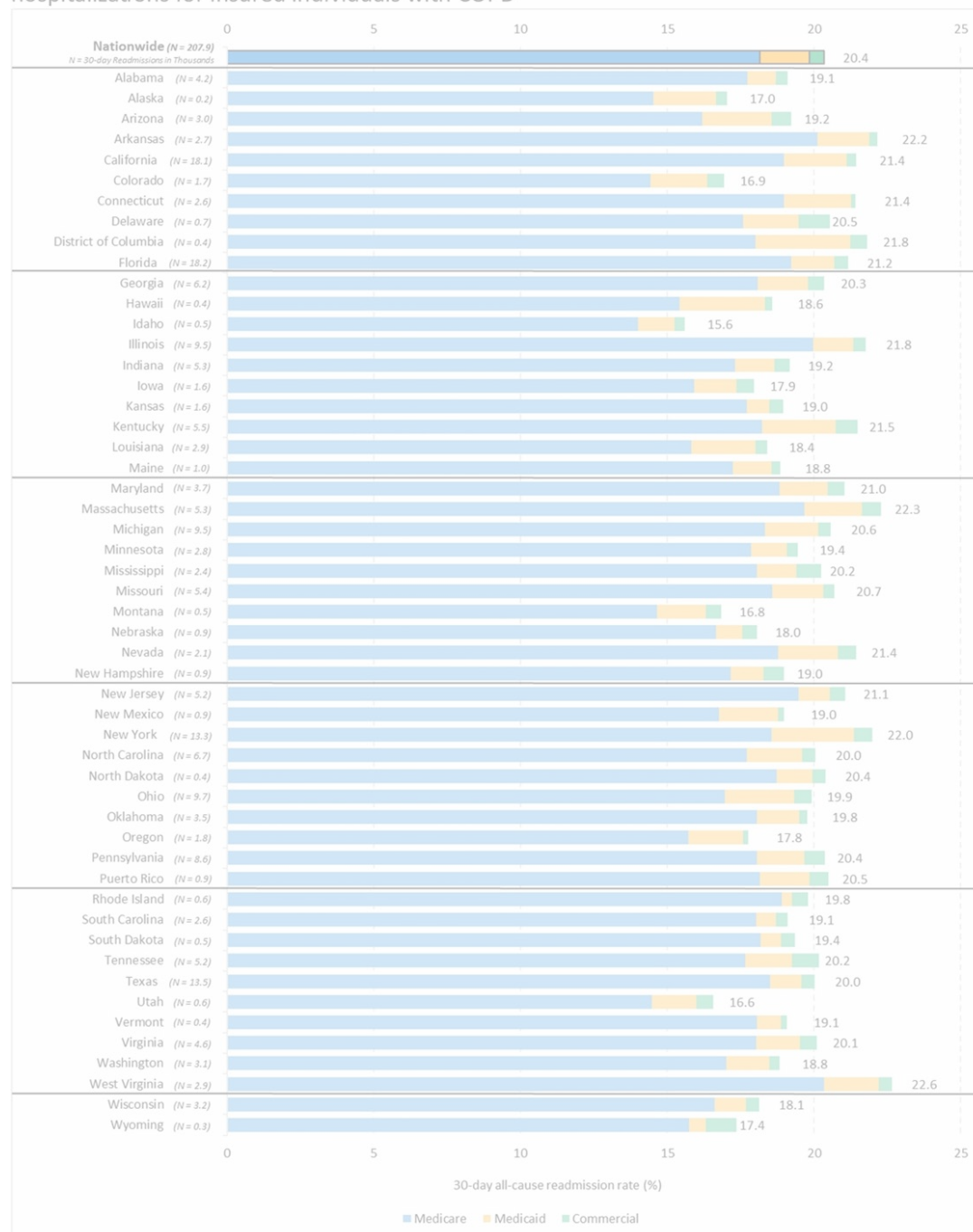


Figure A2: 2021 percent of Medicare-insured individuals with COPD who were dually-eligible compared to the percent of total Medicare-insured individuals who were dually-eligible



Note: The diagonal line in the chart represents an equal percentage of covered individuals who were dually-eligible in the population of Medicare covered individuals with COPD and the total Medicare covered population. States above the line have a disproportionate share of dually-eligible individuals with COPD compared to the rate of dual-eligibility in Medicare

Figure A3: 2021 30-day all-cause readmission rates following COPD-related acute inpatient hospitalizations for insured individuals with COPD



Note: Due to data quality limitations, 30-day all-cause readmission rates following COPD-related acute inpatient hospitalizations for Medicaid- and commercially-insured individuals in the District of Columbia and Puerto Rico were replaced with the South Atlantic census division values. The 30-day readmission rate for Montana was replaced with the Mountain census division value for commercially-insured individuals.