

An Analysis of Behavioral Health from CY 2020 Emergency Department Discharge Data in Oregon

INTRODUCTION

Oregon is experiencing a statewide behavioral health crisis. Many Oregonians struggle with mental health challenges and substance use disorders every day. Hospitals are frontline providers of behavioral health services and often the forgotten link in the continuum of care. In Oregon’s 60 acute care hospital emergency departments, there were 334,569 behavioral health-related visits, or about 31 percent of the 1,084,554 emergency department visits in 2020. Demands for behavioral health services have been growing at an alarming rate. State and local governments, hospitals, coordinated care organizations, community leaders and advocates are working together to improve the current system, but progress is slow, and outcomes are inconsistent at best.

ANALYSIS

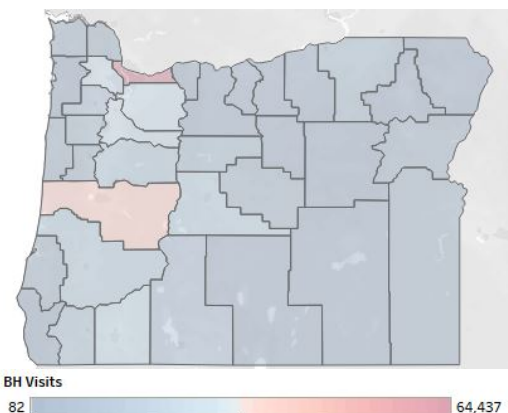
This analysis performed an in-depth review of behavioral health claims based on Uniform Bill data, with the goals of determining the geographic magnitude of the crisis in Oregon and identifying areas where the strategic placement of services may lead to improved care coordination. Staff from Apprise Health Insights, a subsidiary of the Oregon Association of Hospitals and Health Systems (OAHHS), analyzed hospital emergency department mental health claims data for the state’s 60 acute care hospitals, including a sub-focus on mental health and substance abuse disorder. Data were analyzed where a mental health or substance abuse diagnosis was present in any of the 25 diagnosis codes captured on the patient’s record. The source of the data for analysis is emergency department discharge billing data collected by Apprise since October 2014.

The data were evaluated via three different perspectives:

- 1) Volume of activity
- 2) Use rate per 1,000 population
- 3) Growth rate over a three-year period, 2018-2020

FINDINGS

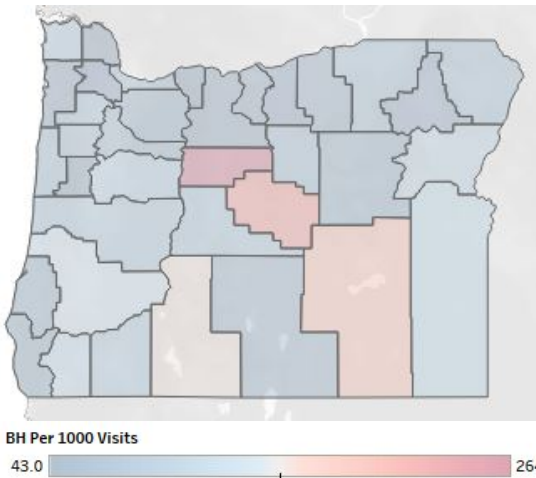
Map1: Total Emergency Department Behavioral Health Visits, CY 2020



County	Population	Total BH ED Visits	Total ED Visits	BH % of Total ED
Multnomah	804,606	64,437	191,326	33.7%
Lane	373,340	36,812	103,447	35.6%
Washington	589,481	25,322	114,456	22.1%
Clackamas	410,463	25,211	87,338	28.9%
Marion	339,641	24,192	92,140	26.3%
<i>Total in 5 counties</i>	<i>2,490,691</i>	<i>175,974</i>	<i>588,707</i>	<i>29.9%</i>
Total in Oregon	4,129,803	334,569	1,084,554	30.8%

The data in Table 1 clearly show that the largest volume of behavioral health emergency department visits is located in urban areas, as expected. Out of the 334,569 behavioral health visits to the emergency department in CY 2020, more than 52% of these visits were from Oregon’s five counties, Multnomah, Lane, Washington, Clackamas and Marion.

Map 2: Use Rate per 1,000 Population Emergency Department Behavioral Health Visits, CY 2020

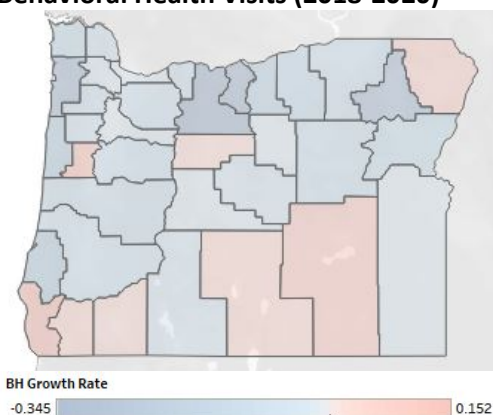


County	Visits	Population	Use Rate
Jefferson	6,239	23,607	264.3
Crook	4,989	23,011	216.8
Harney	1,329	7,267	182.9
Klamath	10,430	66,921	155.9
Douglas	15,408	109,114	141.2
<i>Total in 5 counties</i>	<i>38,395</i>	<i>229,920</i>	<i>167.0</i>
Rate in Oregon	334,569	4,129,803	81

However, the raw volume only partially identifies hot spots of concern in Oregon. Use rates (the number of behavioral health emergency department visits per 1,000 population) and the growth rate in raw volume over the 2018-2020 period identify other geographic areas of the state that are also in need of attention as policymakers and healthcare providers combat this crisis.

When measured by visits per 1,000, the top five counties for emergency department visits for the purpose of behavioral health condition, are completely different, as indicated in Table 2. They are Jefferson, Crook, Harney, Klamath, and Douglas counties. When using this metric, rural counties such as Jefferson and Crook had the most behavioral health visits per 1,000 population. Each of the five counties listed in Table 2 had a use rate of 1.7 to 3.3 times higher than Oregon’s overall behavioral health visits rate of 81 per 1000. In contrast, Multnomah county had only 80.1 per 1,000, Lane had 98.6 per 1,000 and Washington had 43.0 per 1,000. This shows that while the number of overall visits is higher in large urban counties, the use rate visits per 1,000 populations in behavioral health patients is highest in small and rural communities.

Map 3: Growth Rate, Emergency Department Behavioral Health Visits (2018-2020)



County	Population	Growth Rate
Curry	22,650	14.8%
Benton	91,107	12%
Harney	7,267	9.5%
Wallowa	7,004	5.7%
Lake	7,837	3.8%
<i>Total in 5 counties</i>	<i>135,865</i>	<i>11%</i>
Rate in Oregon	4,129,803	-4.9%

Finally, the annual growth in raw volume between 2018 and 2020 shows a decrease of 4.9%. However, this does not mean at all that the behavioral health problem in Oregon is improving. Instead, it is simply a reflection that during the COVID-19 pandemic, overall total ED visits dropped by more than 17 percent between CY 2019 and CY 2020. The drop was much higher for non-behavioral health visits, at nearly 20% compared to behavioral health visits, at 11%. The top five counties, Curry, Benton, Harney, Wallowa, and Lake all still have positive growth rates, as shown in Table 3.

Similar to the use rate findings, ED behavioral health visits growth rate in rural counties are higher than that of urban counties. With counties like Curry, where the number of visits jumped from 1,083 visits in 2018 to 1,427 in 2020, Benton county from 3,231 in 2018 to 4,055 in 2020, Harney county from 1,108 visits in 2018 to 1,329 in 2020, and Wallowa county from 522 in 2018 to 583 in 2020, it is clear that these rural areas are showing an alarming increase in ED behavioral health visits over the 2018-2020 time frame.

When ED visits are de-duplicated to unique patient visits, the same trend holds for all three analyses above. The bulk of behavioral health patients in the ED are from urban counties, the use rate per 1,000 population is higher in rural areas than urban areas, and the growth rate is similar as it is by visits.

SUB-FOCUS: SUBSTANCE ABUSE DISORDER AND MENTAL HEALTH

When the subcomponents of behavioral health data are examined more closely, substance abuse diagnosis makes up 230,552 visits and mental health has 153,434 visits. There are 49,417 visits in which the visit was flagged both as substance abuse and mental health. Interestingly, while there is a higher volume of substance abuse visits, its growth rate in Oregon between 2018 and 2020 is -7.13%, compared to that of mental health visits’ s growth rate, 1.24%. Again, the use rate for both substance abuse and mental health are much higher in rural areas compared to that of urban areas.

AVERAGE CHARGES

Oregon’s average charge for a behavioral health emergency department visit is about \$4,310 in CY 2020. This is an 11% increase from the average charge of \$3,883 in CY 2019. Note, however, that the range of the charges varies from \$0 to \$1.2 million, reflecting very wide variations. Apprise does not have cost data in the discharge data set and does not have information on how much insurance or another payor paid for the visit.

PAYER MIX

Oregon’s payer mix by visits and by charges for behavioral health emergency department visit in CY 2020 remains similar to that of previous years, CY 2017-2019, and is as follows:

Table 4: Payer Mix ED Behavioral Health Visits, CY 2020		
	By Visits	By Charges
Commercial	16%	15%
Medicaid	47%	41%
Medicare	26%	34%
Other	5%	5%
Self-Pay	6%	5%
Total	100%	100%

CONCLUSION

In conclusion, while large urban areas continue to have the most behavioral health emergency department (ED) visits in Oregon, it is rural areas of the state that are showing the largest use rate as well as a rate increase in behavioral health visits to the ED. Harney, for instance, has both a high use rate per 1000 population at 182.9 (more than twice of Oregon overall), as well as an annual growth rate of 9.5% between 2018-2020. Furthermore, while substance abuse has much more visits, it is mental health that is on the rise, about seven times more than substance abuse in the same period.

APPENDIX: CY 2020 BEHAVIORAL HEALTH DATA

County	Population	BH Visit Count	SA Visit Count	MH Visit Count	BH Per 1000	SA Per 1000	MH Per 1000
Baker	16,019	1,897	727	1,489	118.4	45.4	93
Benton	91,107	4,055	2,729	1,864	44.5	30.0	20.5
Clackamas	410,463	25,211	16,399	11,882	61.4	40.0	28.9
Clatsop	39,102	4,316	3,354	1,403	110.4	85.8	35.9
Columbia	51,375	2,475	1,406	1,450	48.2	27.4	28.2
Coos	63,686	4,181	2,481	2,193	65.7	39.0	34.4
Crook	23,011	4,989	3,120	3,073	216.8	135.6	133.5
Curry	22,650	1,427	784	757	63	34.6	33.4
Deschutes	186,251	17,219	9,364	11,913	92.5	50.3	64
Douglas	109,114	15,408	10,678	7,484	141.2	97.9	68.6
Gilliam	1,878	89	76	24	47.4	40.5	12.8
Grant	7,189	449	242	252	62.5	33.7	35.1
Harney	7,267	1,329	905	710	182.9	124.5	97.7
Hood River	23,209	1,006	738	369	43.3	31.8	15.9
Jackson	216,574	22,250	16,247	9,335	102.7	75.0	43.1
Jefferson	23,607	6,239	3,899	3,649	264.3	165.2	154.6
Josephine	86,251	11,114	8,065	4,920	128.9	93.5	57
Klamath	66,921	10,430	6,465	6,529	155.9	96.6	97.6
Lake	7,837	496	310	260	63.3	39.6	33.2
Lane	373,340	36,812	29,513	11,684	98.6	79.1	31.3
Lincoln	48,547	4,355	3,377	1,310	89.7	69.6	27
Linn	125,048	13,003	11,142	2,617	104	89.1	20.9
Malheur	30,412	3,646	1,799	2,567	119.9	59.2	84.4
Marion	339,641	24,192	17,513	9,362	71.2	51.6	27.6
Morrow	11,303	664	464	255	58.7	41.1	22.6
Multnomah	804,606	64,437	44,731	31,028	80.1	55.6	38.6
Polk	83,037	7,095	5,298	2,433	85.4	63.8	29.3
Sherman	1,642	82	62	31	49.9	37.8	18.9
Tillamook	26,389	1,532	1,006	667	58.1	38.1	25.3
Umatilla	77,129	5,995	4,347	2,406	77.7	56.4	31.2
Union	26,337	1,478	973	633	56.1	36.9	24
Wallowa	7,004	583	308	381	83.2	44.0	54.4
Wasco	26,130	1,279	860	564	48.9	32.9	21.6
Washington	589,481	25,322	13,872	14,789	43	23.5	25.1
Wheeler	1,415	113	70	63	79.9	49.5	44.5
Yamhill	104,831	9,401	7,228	3,088	89.7	68.9	29.5
Statewide	4,129,803	334,569	230,552	153,434	81.0	55.8	37.1

Statewide Median BH Visits
4,249

Statewide Median SA Visits
2,925

Statewide Median MH Visits
2,029

Above Statewide value

Notes Regarding Methodology and Calculations

To determine if a patient had a diagnosis related to behavioral health, the record of the hospital ED visit needs to have one of the 433 diagnoses that falls into the substance abuse category or one of the 319 diagnoses that is in the mental health category. The substance abuse and mental health codes are from the Vermont Medicaid ICD-10 Project HP Enterprise Services using their list of ICD-10 diagnosis codes. In some cases, the patient would have both a substance abuse and a mental health diagnosis. When this occurred, this would be counted only once when determining the number of behavioral health visits. As a result, if you add all the substance abuse and mental health visits, they will always be more than the total of behavioral health visits.

Substance Abuse: The following 433 diagnosis codes were used to determine if a patient had a form of substance abuse when visiting a hospital:
 F1010, F1011, F10120, F10121, F10129, F1014, F10150, F10151, F10159, F10180, F10181, F10182, F10188, F1019, F1020, F1021, F10220, F10221, F10229, F10230, F10231, F10232, F10239, F1024, F10250, F10251, F10259, F1026, F1027, F10280, F10281, F10282, F10288, F1029, F10920, F10921, F10929, F1094, F10950, F10951, F10959, F1096, F1097, F10980, F10981, F10982, F10988, F1099, F1110, F1111, F11120, F11121, F11122, F11129, F1114, F11150, F11151, F11159, F11181, F11182, F11188, F1119, F1120, F1121, F11220, F11221, F11222, F11229, F1123, F1124, F11250, F11251, F11259, F11281, F11282, F11288, F1129, F1190, F11920, F11921, F11922, F11929, F1193, F1194, F11950, F11951, F11959, F11981, F11982, F11988, F1199, F1210, F1211, F12120, F12121, F12122, F12129, F12150, F12151, F12159, F12180, F12188, F1219, F1220, F1221, F12220, F12221, F12222, F12229, F1223, F12250, F12251, F12259, F12280, F12288, F1229, F1290, F12920, F12921, F12922, F12929, F1293, F12950, F12951, F12959, F12980, F12988, F1299, F1310, F1311, F13120, F13121, F13129, F1314, F13150, F13151, F13159, F13180, F13181, F13182, F13188, F1319, F1320, F1321, F13220, F13221, F13229, F13230, F13231, F13232, F13239, F1324, F13250, F13251, F13259, F1326, F1327, F13280, F13281, F13282, F13288, F1329, F1390, F13920, F13921, F13929, F13930, F13931, F13932, F13939, F1394, F13950, F13951, F13959, F1396, F1397, F13980, F13981, F13982, F13988, F1399, F1410, F1411, F14120, F14121, F14122, F14129, F1414, F14150, F14151, F14159, F14180, F14181, F14182, F14188, F1419, F1420, F1421, F14220, F14221, F14222, F14229, F1423, F1424, F14250, F14251, F14259, F14280, F14281, F14282, F14288, F1429, F1490, F14920, F14921, F14922, F14929, F1494, F14950, F14951, F14959, F14980, F14981, F14982, F14988, F1499, F1510, F1511, F15120, F15121, F15122, F15129, F1514, F15150, F15151, F15159, F15180, F15181, F15182, F15188, F1519, F1520, F1521, F15220, F15221, F15222, F15229, F1523, F1524, F15250, F15251, F15259, F15280, F15281, F15282, F15288, F1529, F1590, F15920, F15921, F15922, F15929, F1593, F1594, F15950, F15951, F15959, F15980, F15981, F15982, F15988, F1599, F1610, F1611, F16120, F16121, F16122, F16129, F1614, F16150, F16151, F16159, F16180, F16183, F16188, F1619, F1620, F1621, F16220, F16221, F16229, F1624, F16250, F16251, F16259, F16280, F16283, F16288, F1629, F1690, F16920, F16921, F16929, F1694, F16950, F16951, F16959, F16980, F16983, F16988, F1699, F17200, F17201, F17203, F17208, F17209, F17210, F17211, F17213, F17218, F17219, F17220, F17221, F17223, F17228, F17229, F17290, F17291, F17293, F17298, F17299, F1810, F1811, F18120, F18121, F18129, F1814, F18150, F18151, F18159, F1817, F18180, F18188, F1819, F1820, F1821, F18220, F18221, F18229, F1824, F18250, F18251, F18259, F1827, F18280, F18288, F1829, F1890, F18920, F18921, F18929, F1894, F18950, F18951, F18959, F1897, F18980, F18988, F1899, F1910, F1911, F19120, F19121, F19122, F19129, F19129, F1914, F19150, F19151, F19159, F1916, F1917, F19180, F19181, F19182, F19188, F1919, F1920, F1921, F19220, F19221, F19222, F19229, F19230, F19231, F19232, F19239, F1924, F19250, F19251, F19259, F1926, F1927, F19280, F19281, F19282, F19288, F1929, F1990, F19920, F19921, F19922, F19929, F19930, F19931, F19932, F19939, F1994, F19950, F19951, F19959, F1996, F1997, F19980, F19981, F19982, F19988, F1999, F550, F551, F552, F553, F554, F558

Mental Health: The following 319 diagnosis codes were used to determine if a patient had a mental health issue when visiting a hospital:
 F0150, F0151, F0280, F0281, F0390, F0391, F04, F05, F060, F061, F062, F0630, F0631, F0632, F0633, F0634, F064, F068, F070, F0781, F0789, F079, F09, F200, F201, F202, F203, F205, F2081, F2089, F209, F21, F22, F23, F24, F250, F251, F258, F259, F28, F29, F3010, F3011, F3012, F3013, F302, F303, F304, F308, F309, F310, F3110, F3111, F3112, F3113, F312, F3130, F3131, F3132, F314, F315, F3160, F3161, F3162, F3163, F3164, F3170, F3171, F3172, F3173, F3174, F3175, F3176, F3177, F3178, F3181, F3189, F319, F320, F321, F322, F323, F324, F325, F328, F3281, F3289, F329, F330, F331, F332, F333, F3340, F3341, F3342, F338, F339, F340, F341, F348, F3481, F3489, F349, F39, F4000, F4001, F4002, F4010, F4011, F40210, F40218, F40220, F40228, F40230, F40231, F40232, F40233, F40240, F40241, F40242, F40243, F40248, F40290, F40291, F40298, F408, F409, F410, F411, F413, F418, F419, F42, F422, F423, F424, F428, F429, F430, F4310, F4311, F4312, F4320, F4321, F4322, F4323, F4324, F4325, F4329, F438, F439, F440, F441, F442, F444, F445, F446, F447, F4481, F4489, F449, F450, F451, F4520, F4521, F4522, F4529, F4541, F4542, F458, F459, F481, F482, F488, F489, F5000, F5001, F5002, F502, F508, F5081, F5082, F5089, F509, F5101, F5102, F5103, F5104, F5105, F5109, F5111, F5112, F5113, F5119, F513, F514, F515, F518, F519, F520, F521, F5221, F5222, F5231, F5232, F524, F525, F526, F528, F529, F53, F530, F531, F54, F59, F600, F601, F602, F603, F604, F605, F606, F607, F6081, F6089, F609, F630, F631, F632, F633, F6381, F6389, F639, F640, F641, F642, F648, F649, F650, F651, F652, F653, F654, F6550, F6551, F6552, F6581, F6589, F659, F66, F6810, F6811, F6812, F6813, F688, F68A, F69, F70, F71, F72, F73, F78, F79, F800, F801, F802, F804, F8081, F8082, F8089, F809, F810, F812, F8181, F8189, F819, F82, F840, F842, F843, F845, F848, F849, F88, F89, F900, F901, F902, F908, F909, F910, F911, F912, F913, F918, F919, F930, F938, F939, F940, F941, F942, F948, F949, F950, F951, F952, F958, F959, F980, F981, F9821, F9829, F983, F984, F985, F988, F989, F99

Datasets used: Apprise Health Insights collects discharge data which includes hospital patient claim information provided in the Uniform Bill for inpatient and outpatient settings. Data is collected from 60 Oregon hospitals, 3 Ambulatory Surgery Centers, 3 Washington hospitals, and Legacy Unity. Only data for Oregon acute care hospitals (60 hospitals) are used in this analysis.

Demographic data for the Use Rate per 1,000 is from the American Community Survey. For this analysis, the 5-year ACS 2015-2019 survey was used.

By Hospital Visit: This report is comprised of the discharge dataset for CY 2020. These are unique visit counts of how many times a behavioral health patient went to an emergency room in Oregon.

Rate Per 1000: This report blends the discharge dataset for CY 2020 with the American Community Survey dataset. To determine the rate per 1000, the number of Behavioral Health visits for CY 2020 is divided by the 2019 population for the specific county and then this result is multiplied by 1,000.

Annual Growth Rate over 3-year period (or two-year growth rate) formula:

$$\left[\frac{CY\ 2020\ counts}{CY\ 2018\ counts} \right]^{\frac{1}{2}} - 1 \quad * \quad 100$$