HMA

Boulder County:

Inpatient Care Assessment

PRESENTED BY:

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EXECUTIVE SUMMARY

Research Question:

Is there a need for additional behavioral health inpatient beds for Boulder County residents?

Using hospital inpatient utilization data and Medicaid/CHIP+ claims data, the study examined three areas:

1. Emergency Department (ED) utilization rate per 1,000 residents

2. Behavioral Health (Mental health (MH) or Substance Use Disorder (SUD)) inpatient utilization and "boarding"
   - Behavioral health inpatient bed utilization rate per 1,000 residents
   - Average length of inpatient stay
   - Inpatient boarding (Estimated percent of inpatient stays that were for 8+ days)

3. MH or SUD treatment utilization *(among Boulder County Medicaid member residents with an inpatient stay for MH or SUD)*
   - Percent of inpatient utilizers with a Medicaid encounter under a capitated BH benefit 90 days, 60 days, and 30 days prior to their inpatient stay
   - Percent of inpatient utilizers with follow up care 3 days and 7 days post stay
   - Type of treatment being utilization pre and post BH inpatient stay

DATA SOURCES

Colorado Hospital Association (CHA)

- CHA data includes inpatient stays and ED visits for all payers, including commercial, Medicaid, Medicare, self-pay, and other
- Counts represent unique member utilizers in inpatient treatment
- CHA includes data from its hospital members only
- Data available for 2019, 2020, and 2021
- Data set is aggregated data for all MH or SUD related ED and inpatient stays by place of service, age group, payer and year
- Proxy data set representing "all" Boulder County residents

Transformed Medicaid Statistical Information System (T-MSIS)

- T-MSIS collects Medicaid and Children's Health Insurance Program (CHIP) data from U.S. states, territories, and the District of Columbia into the largest national resource of beneficiary information
- Between 2016 and 2020, the percent of Boulder Medicaid members using member CHA hospital ranged from 84% to 87%
- Counts represent unique member utilizers
- Data are available for 2016 to 2020

Behavioral Health Administration (BHA)

- DACODs (SUD) and CCAR (MH) (intake assessment data) in conjunction with 837 encounter data to understand MH and SUD service utilization county

DATA SOURCES: DEFINING BEHAVIORAL HEALTH DIAGNOSIS

MH and SUD treatment services are together referred to as behavioral health (BH)

An admitting diagnosis for mental health was defined by the ICD-10 codes:

- Anxiety, dissociative, stress-related, somatoform and other nonpsychotic mental disorders (F40-F48)
- Disorders of adult personality and behavior (F60-F69)
- Behavioral syndromes associated with physiological disturbances and physical factors (F50-F59)
- Pervasive and specific developmental disorders (F80-F89)
- Mood [affective] disorders (F30-F39)
- Schizophrenia, schizotypal, delusional, and other non-mood psychotic disorders (F20-F29)
- Behavioral and emotional disorders with onset usually occurring in childhood and adolescence (F90-F98)
- Mental and behavioral disorders due to psychoactive substance use (F10-F19)
- Mental disorders due to known physiological conditions (F01-F09)

An admitting diagnosis for SUD was defined by the ICD-10 codes:

- Alcohol related disorders (F10)
- Opioid related disorders (F11)
- Cannabis related disorders (F12)
- Sedative, hypnotic, or anxiolytic related disorders (F13)
- Cocaine related disorders (F14)
- Other stimulant related disorders (F15)
- Hallucinogen related disorders (F16)
- Nicotine dependence (F17)
- Inhalant related disorders (F18)
- Other psychoactive substance related disorders (F19)

EXECUTIVE SUMMARY: DATA FINDINGS

Emergency Department (ED) utilization

- ED utilization was increasing , and in particular, among older adults (65+ years). (CHA)

MH or SUD inpatient utilization

- Hospital inpatient care utilization for MH and SUD care for Boulder County residents has increased and the length of stay (LOS) in that care was getting longer. (CHA, T-MSIS)
- The prevalence of MH conditions among inpatient utilizers was higher than the prevalence of SUD conditions. (CHA, T-MSIS)
- Publicly insured inpatient stays for MH or SUD increased more than commercially paid inpatient stays. (CHA)
- Publicly insured and self pay inpatient stays had longer average LOS compared to commercially paid inpatient stays. (CHA)

Inpatient "Boarding"

- Inpatient boarding (8+ days LOS) trended higher for stays involving MH or SUD compared to all inpatient stays, including those for medical/physical issues, between 2016 and 2018. (T-MSIS)
  - The average estimate boarding time was decreasing between 2016 and 2020
  - However, the proportion of inpatient boarding with an admitting MH or SUD diagnosis was increasing between 2016 and 2020.

EXECUTIVE SUMMARY: DATA FINDINGS

MH or SUD treatment utilization *(among Boulder County Medicaid/CHIP member residents with an inpatient stay for MH or SUD)*

Treatment Utilization Prior to Inpatient Stay

- Increasingly more Boulder County Medicaid/CHIP members were accessing MH or SUD treatment prior to their inpatient stay. (T-MSIS)
- However, the ED and inpatient treatment has also increased. (T-MSIS, CHA)
- Among the Boulder County Medicaid/CHIP member residents who access MH or SUD care prior to their inpatient MH or SUD related stay, most of that care was Evaluation and Management (which may include treatment) and Outpatient Treatment. (T-MSIS)

Treatment Utilization Post Inpatient Stay – 3 days and 7 day follow-up

- MH and SUD care treatment decreased over the course of 90 days prior to a member's inpatient stay. (T-MSIS)
- MH and SUD engagement in care following an inpatient stay was low. (T-MSIS)

[1] https://www.ncqa.org/hedis/ HEDIS Healthcare Effectiveness Data and Information Set (this is the quality benchmark measure set that Health Plans use to evaluate outcomes)

EXECUTIVE SUMMARY: DATA FINDINGS

The Continuum of MH and SUD Services in Neighboring Counties

- ED utilization was decreasing among Arapahoe and Jefferson county residents for SUD and MH conditions. (CHA)
  - However, there was not a corresponding reduction in inpatient utilization or inpatient LOS among the residents living in Arapahoe and Jefferson counties. (CHA)
- Like Colorado, service utilization in Boulder County is largely outpatient. (BHA)
- In Arapahoe and Jefferson counties, for many services, there is a high rate per 1,000 residents of services delivered across the continuum.
  - Exceptions for Boulder County include ACT, transitional residential, and crisis respite. (BHA)

EXECUTIVE SUMMARY: PLANNING IMPLICATIONS

Increased lengths of stay have the impact of reducing bed capacity. Many have the perception that more beds are a solution. However, building more beds may not solve capacity issues that are rooted in longer lengths of stay. Increasing the crisis continuum of care can reduce average lengths of stay. The analysis of Boulder care patterns shows that:

Length of stay is increasing.

- This suggests that the number of beds is not the root cause of the problem, rather a result of the lack of resources to avoid an inpatient stay or to discharge into.
- The increasing average LOS are effectively limiting the number of beds available in Boulder County.

Missing levels of care.

- Utilization data shows a lack of billing in either crisis diversion or step-down options.
- More people in Boulder County were accessing MH and SUD outpatient care prior to inpatient hospitalization, which shows improved penetration with outpatient care. However, people were also accessing ED care at an increased rate.
- This suggests that they need a level of care between outpatient and inpatient.
- When these key levels of care are missing in a community, individuals must be significantly more clinically stable in order to be discharged to an outpatient only level of care.
- In communities that have a more robust crisis care continuum and post hospital support, inpatient stays are more likely to be shorter or avoided/ reduced.

EXECUTIVE SUMMARY: PLANNING IMPLICATIONS

National Crisis Continuum Recommendations

The National Council for Mental Wellbeing published a Roadmap to the Ideal Crisis System in March 2021. The Roadmap outlines the importance of a full crisis care continuum, including support at the outset of a potential behavioral health crisis and in the period following an acute crisis:

> "…many crisis systems focus attention only on the acute event (e.g., the 911 call). This can result in ill-considered barriers, such as requiring that a person be imminently suicidal or dangerous in order to quality for services. Thus, the system inadvertently incentivizes allowing people to decompensate before they can receive help, which escalates the overall level of crisis in the system. Conversely, some crisis systems aren't able to provide services for the most highly acute crises and, as a result, the default disposition for these individuals is often emergency departments or jails.
>
> Furthermore, the crisis experience does not abruptly end after the individual has been assessed and had referrals made for disposition. Rather, a crisis is an episode of care requiring a time-limited set of services to ensure smooth transition back into more routine community-based care. After a crisis encounter or admission, individuals may need assistance navigating the system, problem-solving for system barriers (such as problems filling prescriptions) and ongoing support as they recover from their crisis, as well as support to ensure successful engagement with ongoing community services, particularly when such services have not been established prior to the crisis. An ideal crisis system should be able to respond to the full continuum of the crisis experience with services that are easy to access, tightly coordinated and have a timeframe that supports the goal of staying engaged with resolving the crisis until the person can be successful in the most community- based setting possible."[2]

[2] https://www.thenationalcouncil.org/wp-content/uploads/2022/02/042721_GAP_CrisisReport.pdf

EXECUTIVE SUMMARY: PLANNING IMPLICATIONS

Follow up outreach and engagement is low

- According to the National Committee on Quality Assurance (NCQA) guidance on follow up after hospitalization, "Providing follow-up care to patients after psychiatric hospitalization can improve patient outcomes, decrease the likelihood of re-hospitalization and the overall cost of outpatient care."[1]
- The rates of follow up after inpatient hospitalization are low compared to national benchmarks. National Benchmarks for the comparison years show that Boulder is either at or below the average for the Medicaid population and falls significantly below the benchmarks for a commercial population.

	2016		2017		2018		2019		2020	
	Medicaid	Commercial	Medicaid	Commercial	Medicaid	Commercial	Medicaid	Commercial	Medicaid	Commercial
National HEDIS	45.5%	52.9%	37%	48.2%	35.8%	45.6%	36.2%	46.2%	39.4%	50.1%
Boulder County (TMSIS)	34%		42%		33%		40%		37%	
Difference	(11.5%)	(18.9%)	5%	(6.2%)	(2.8%)	(12.6%)	3.8%	(6.2%)	(2.4%)	(13.1%)

1 https://www.ncqa.org/hedis/measures/follow-up-after-hospitalization-for-mental-illness/

BOULDER COUNTY: EMERGENCY DEPARTMENT (ED) UTILIZATION

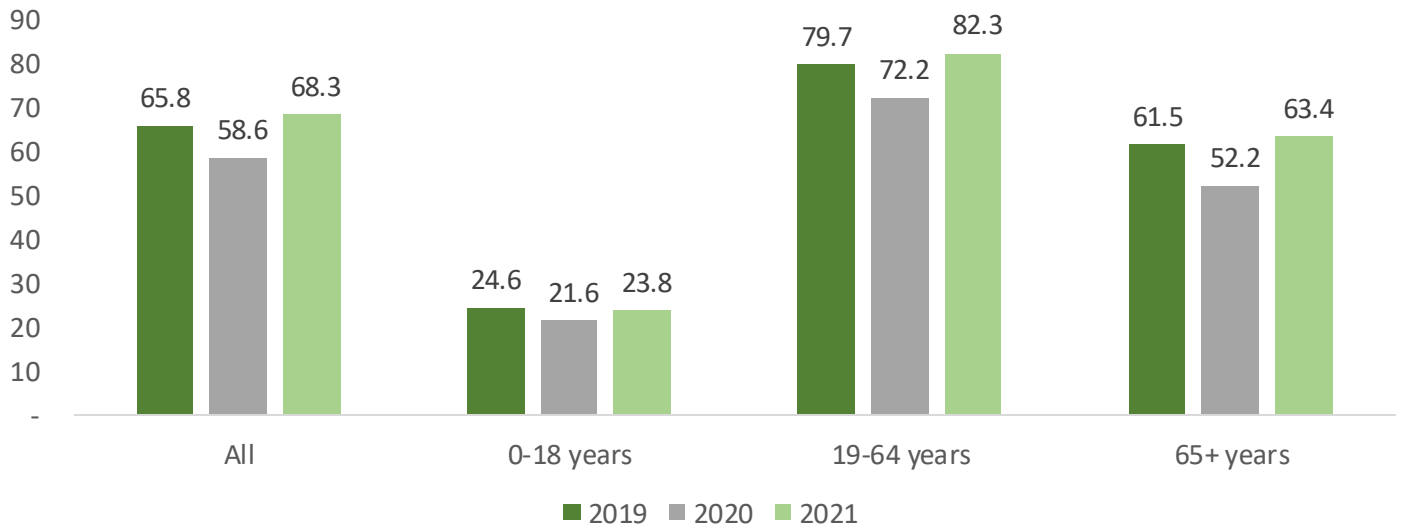
BH ED visits increased, and in particular, increasing more so among older adults (65+ years) and adults (19-64 years). (CHA, Figure 1)

- Change in population does not account for the increase in ED admission for behavioral health
- ED admission rate per 1,000 people was decreasing among children and youth (0-18 year) while increasing among adults (19-64 years) and older adults (65+)

ED and Inpatient Utilization Source: CHA, 2023. Variable OP-Emergnc.

Population Source: ACS Table B01001; Decennial Census: Table P012. 5-Year estimates, 2012-2016 and 2017-2021. 5-year estimates by age group are only available through 2021.

Figure 1: ED Admission Rate per 1,000 People



BOULDER COUNTY: BEHAVIORAL HEALTH (MH OR SUD) INPATIENT UTILIZATION

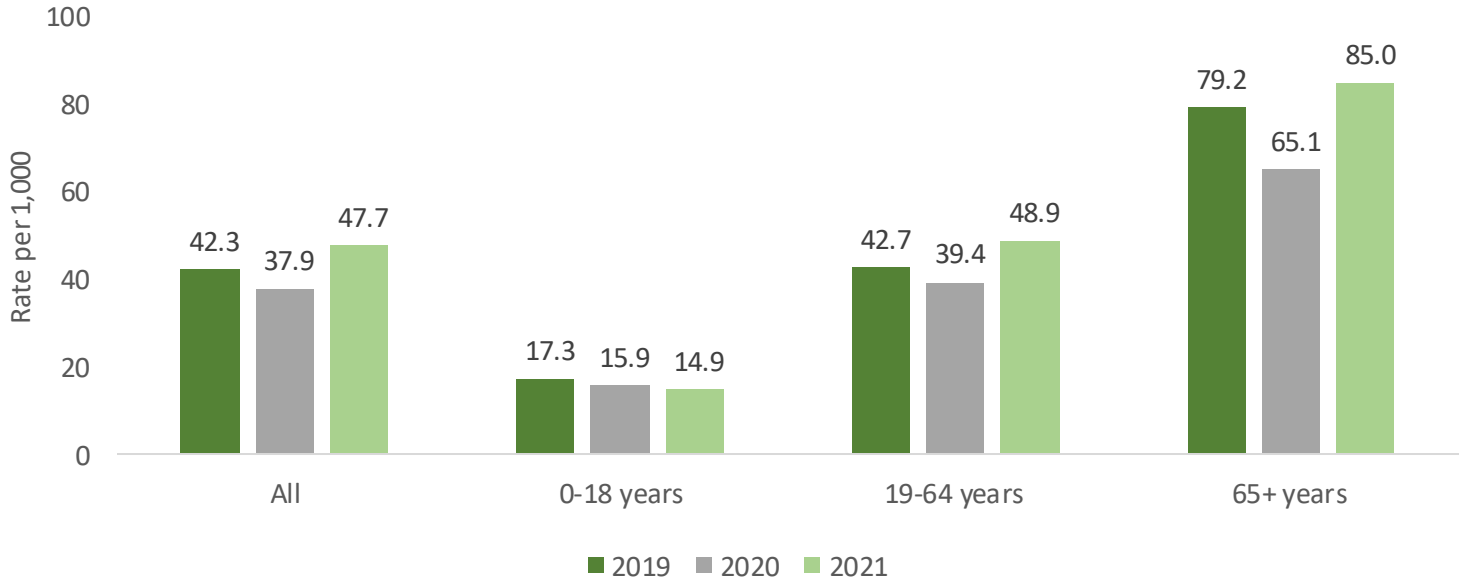
BH inpatient visits increased and was increasing more so among older adults (65+ years) and adults (19-64 years). (CHA, Figure 2)

- Change in population does not account for the increase in inpatient admission for behavioral health
- Behavioral health inpatient admission rate per 1,000 people was decreasing among children and youth (0-18 year) while increasing among adults (19-64 years) and older adults (65+ years)

ED and Inpatient Utilization Source: CHA, 2023. Variable OP-Emergnc.

Population Source: ACS Table B01001; Decennial Census: Table P012. 5-Year estimates, 2012-2016 and 2017-2021. 5-year estimates by age group are only available through 2021.

Figure 2: Behavioral Health Inpatient Admission Rate per 1,000 People



BEHAVIORAL HEALTH (MH OR SUD) INPATIENT UTILIZATION: BY AGE

Boulder County adults ages 25 to 64 years represented the largest proportion of inpatient stays for MH or SUD between 2019 and 2021. (CHA)

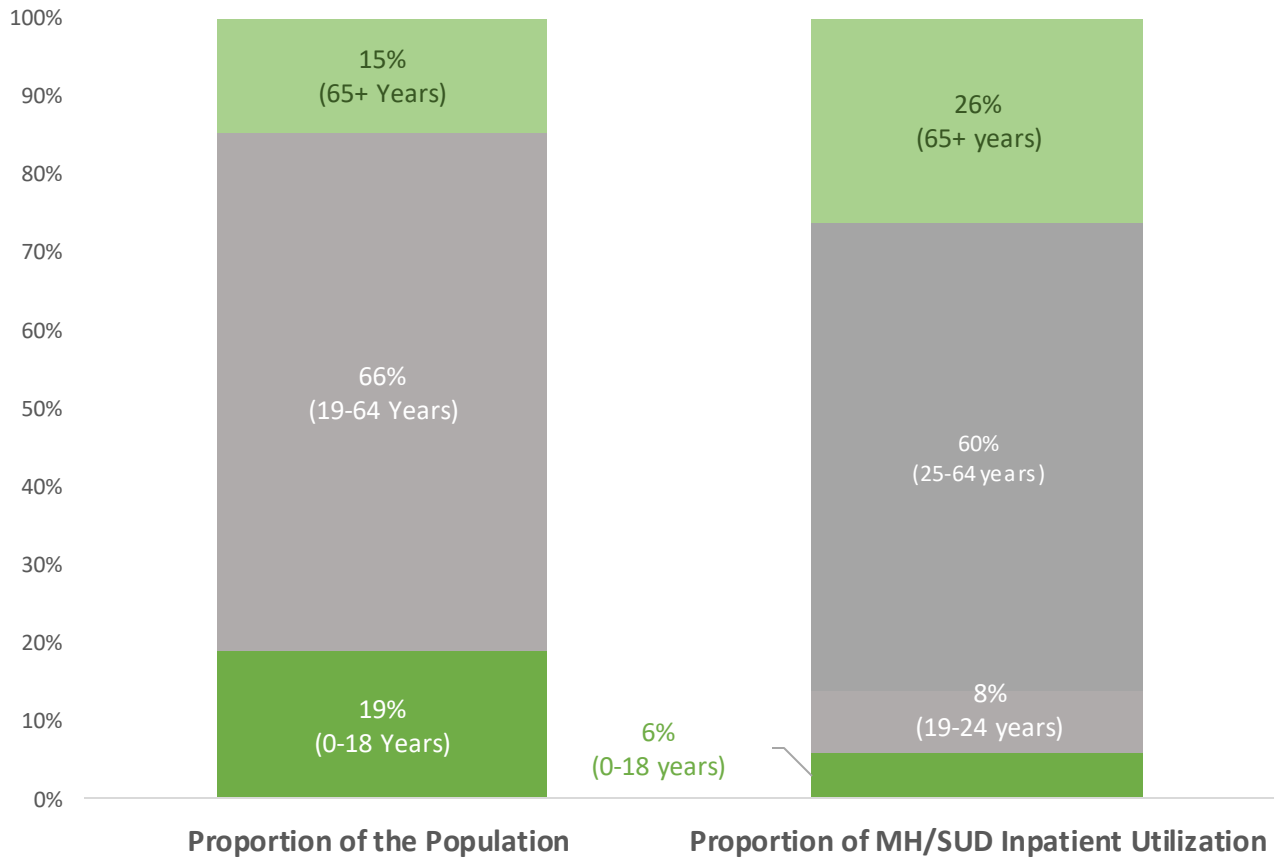
- The proportion of inpatient stays by age group did not change significantly between 2019 and 2021. (CHA. *Data not shown*)

Older adults (65+ years) have disproportionate inpatient bed utilization for MH or SUD relative to their population (CHA, Figure 3)

- 26% of inpatient stays were among older adults compared to being 15% of the Boulder County population

Figure 3: Proportion of MH or SUD Inpatient Stays Among Boulder County Residents and Population Estimates, by Age Group

Source: CHA, 2023. Year 2021 utilization data only.
Population Source: ACS, Table B01001; Decennial Census: Table P012. 5-year estimates, 2017-2021.



BOULDER COUNTY: INPATIENT BED UTILIZATION AND "BOARDING"

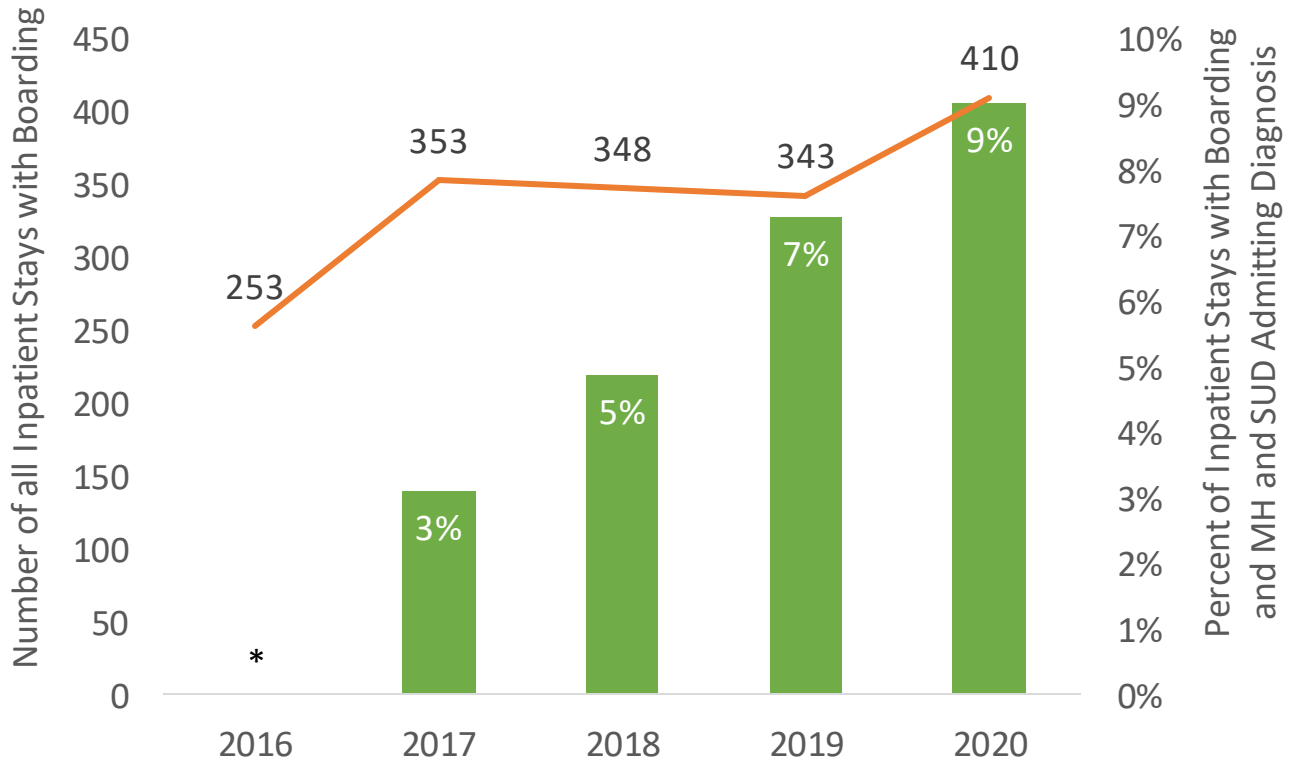
The number of inpatient stays that lasted 8 or more days ("boarding") was increasing between 2016 and 2020, from 253 stays to 410 stays. (T-MSIS, Figure 4)

The proportion of these stays due to MH and SUD increased from 3% to 9% of all inpatient stays that indicated "boarding". (T-MSIS, Figure 4)

Note: An inpatient boarding proxy was calculated using the national average length of stay for all mental health issues at 7.2 days. Source: Length of U.S. hospitalizations for mental health in 2016, by diagnosis
Published by Frédéric Michas , Apr 5, 2019.

Figure 4: Estimated Inpatient Care Boarding: The Percent of all Boulder Medicaid Members Inpatient Stays that were 8+ Days with a MH or SUD Admitting Diagnosis

Source: T-MSIS, 2023.



**Note: 1 to 10 inpatient stays*

BOULDER COUNTY: INPATIENT BED UTILIZATION AND "BOARDING"

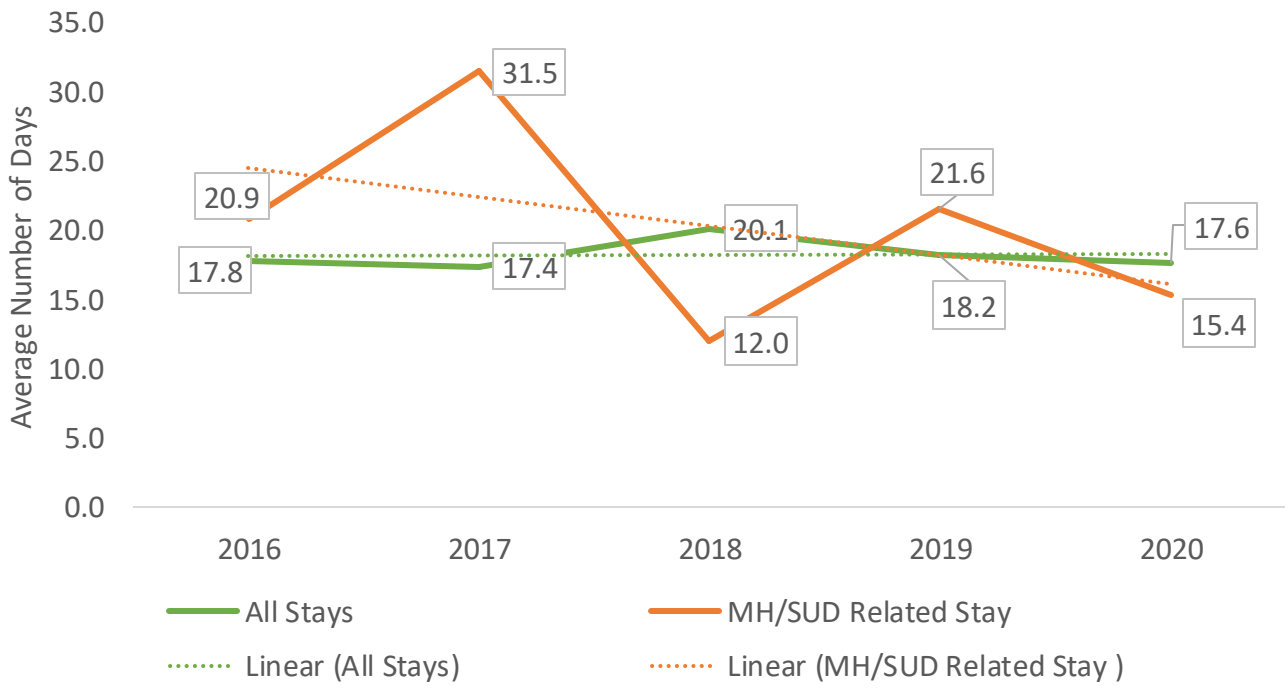
The percent of unique members with an inpatient visit who experienced boarding trended higher for stays involving MH or SUD compared to all inpatient stays, including those for medical/physical issues, between 2016 and 2018. (T-MSIS, Figure 5)

The average length of stay among Boulder County Medicaid members who had an inpatient stay for 8+ days was generally decreasing between 2016 and 2020.

Note: Inpatient Boarding "Proxy" was calculated using the national average length of stay for all mental health issues at 7.2 days. Source: Length of U.S. hospitalizations for mental health in 2016, by diagnosis
Published by Frédéric Michas , Apr 5, 2019.

Figure 5: Estimated Inpatient Care Boarding: Average Length of Stay Among Boulder County Medicaid Members Who Had an Inpatient Stay for 8+ days

Source: T-MSIS, 2023.

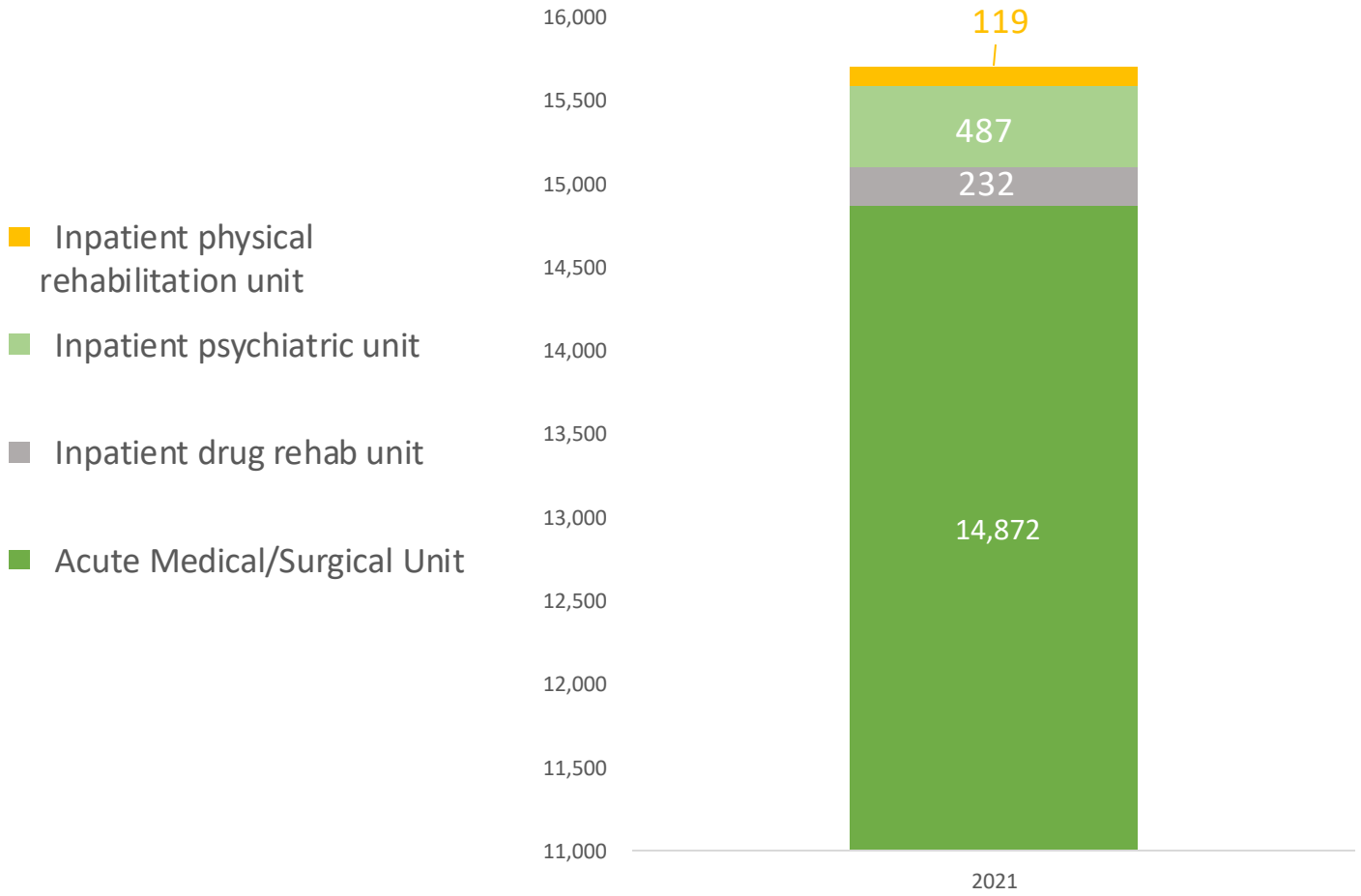


BEHAVIORAL HEALTH (MH OR SUD) INPATIENT UTILIZATION: BY BED TYPE

Acute medical/surgical beds represent the largest proportion of inpatient bed type used for MH or SUD. (CHA, Figure 6)

Figure 6: Number of Proportion of MH or SUD Inpatient Stays Among Boulder County Residents, by Bed Type

Source: CHA, 2023.



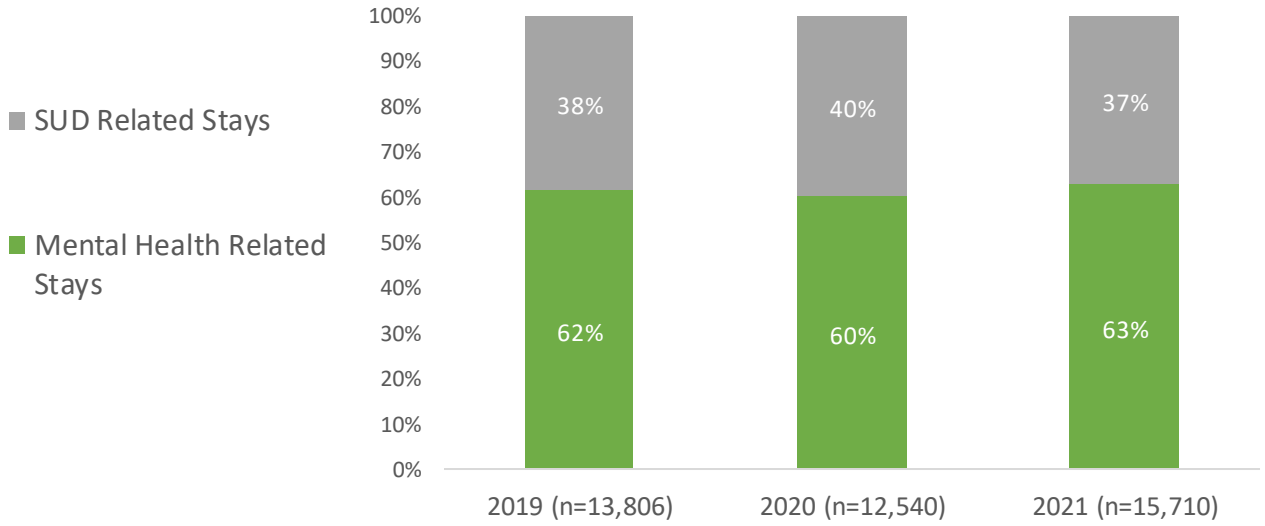
BEHAVIORAL HEALTH (MH OR SUD) INPATIENT UTILIZATION: BY ADMITTING DIAGNOSIS

MH was a larger reason for inpatient utilization compared to SUD. (CHA, Figure 7)

- Approximately two thirds of inpatient stays for MH or SUD among Boulder County residents had an admitting reason of MH for the stay compared to one third for SUD.

Figure 7: Percent of Inpatient Stays Among Boulder County Residents by Admitting Diagnosis

Source: CHA, 2023.



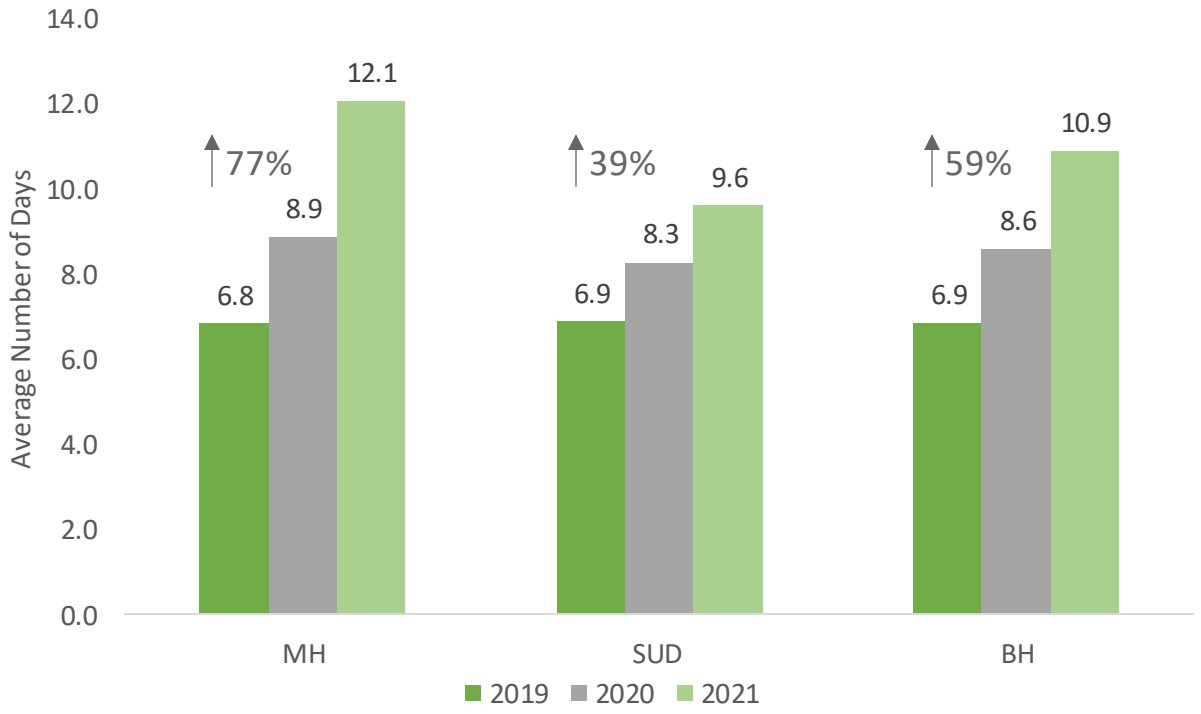
BEHAVIORAL HEALTH (MH OR SUD) INPATIENT UTILIZATION: AVERAGE LENGTH OF STAY (LOS)

The average length of stay in inpatient care was getting longer between 2019 and 2021. (CHA, Figure 8)

- MH as a reason for an inpatient stay increased 77% from 6.8 days in 2019 to 12.1 days in 2021.
- This was compared to a 39% increase in average LOS for SUD, from 6.9 days in 2019 to 9.6 days in 2021.

Figure 8: Average Length of Inpatient Stay, by Admitting Diagnosis

Source: CHA, 2023.

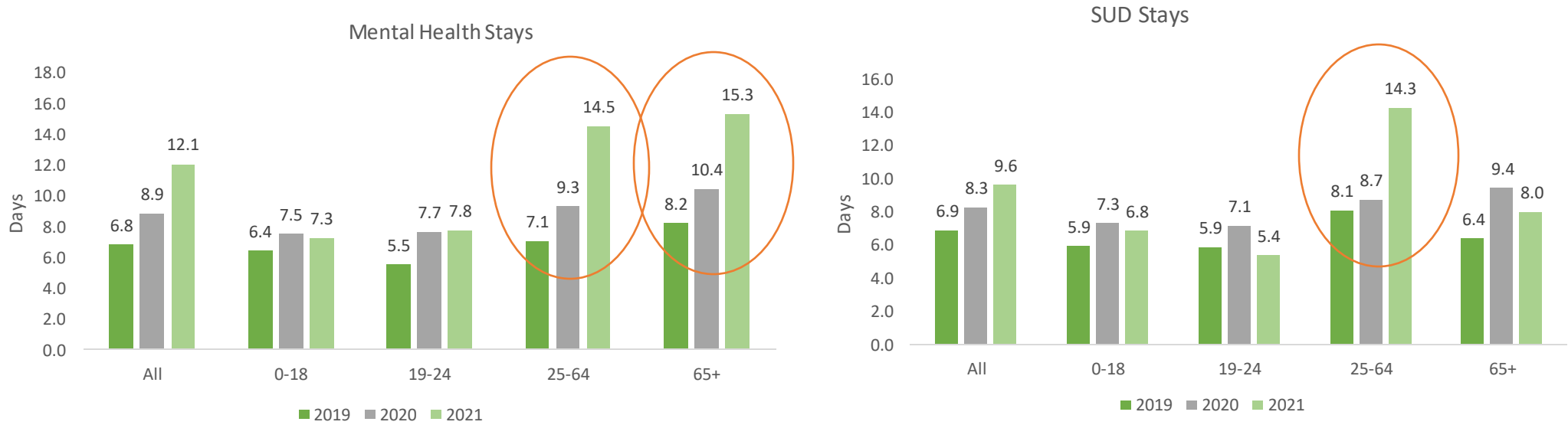


BEHAVIORAL HEALTH (MH OR SUD) INPATIENT UTILIZATION: AVERAGE LOS

- **Boulder County adults (ages 25-64 years) and older adults (65+years) drove the increase in average LOS for MH. (CHA, Figure 9)**
- **Boulder County adults (ages 25-64 years) drove the increase in average LOS for SUD. (CHA, Figure 9)**

Figure 9: Length of Inpatient Stay, by Primary Reason and Age Group

Source: CHA, 2023.



BEHAVIORAL HEALTH (MH OR SUD) INPATIENT UTILIZATION: BY PAYER TYPE

- **Publicly insured inpatient stays for MH or SUD increased more than commercially paid inpatient stays. (CHA, Figure 10)**

- **Publicly insured and self pay inpatient stays had a longer average LOS compared to commercially paid inpatient stays. (CHA, Figure 11)**

Figure 10: Number of Behavioral Health Inpatient Stays, by Payer Type

Source: CHA, 2023.

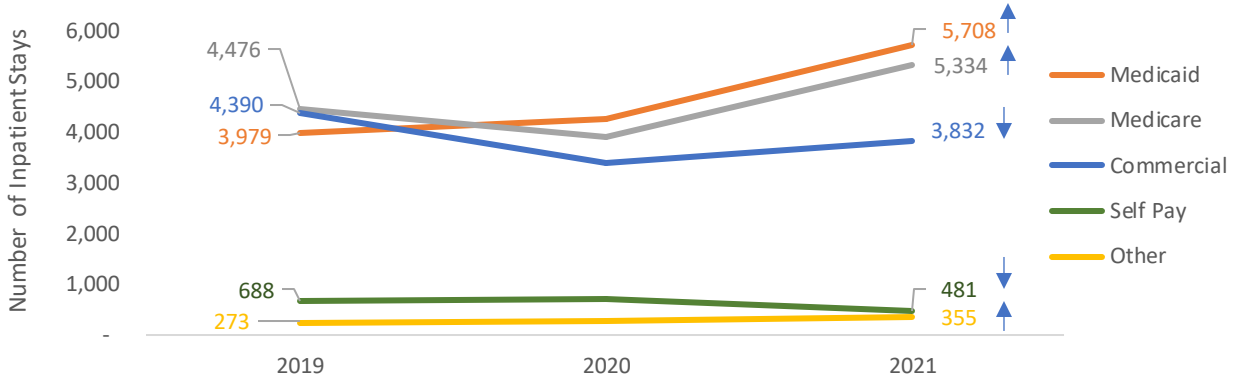
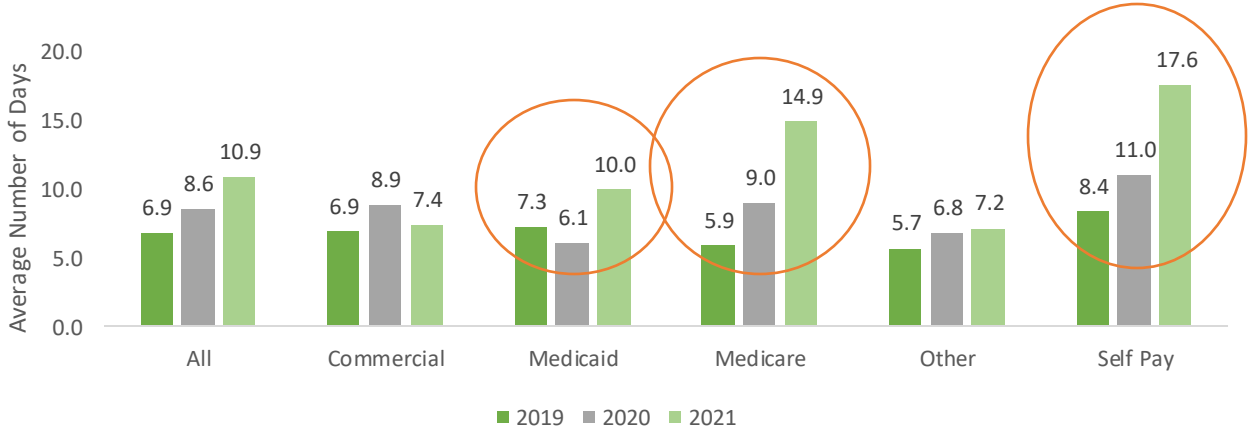


Figure 11: Behavioral Health Average LOS, by Payer Type

Source: CHA, 2023.



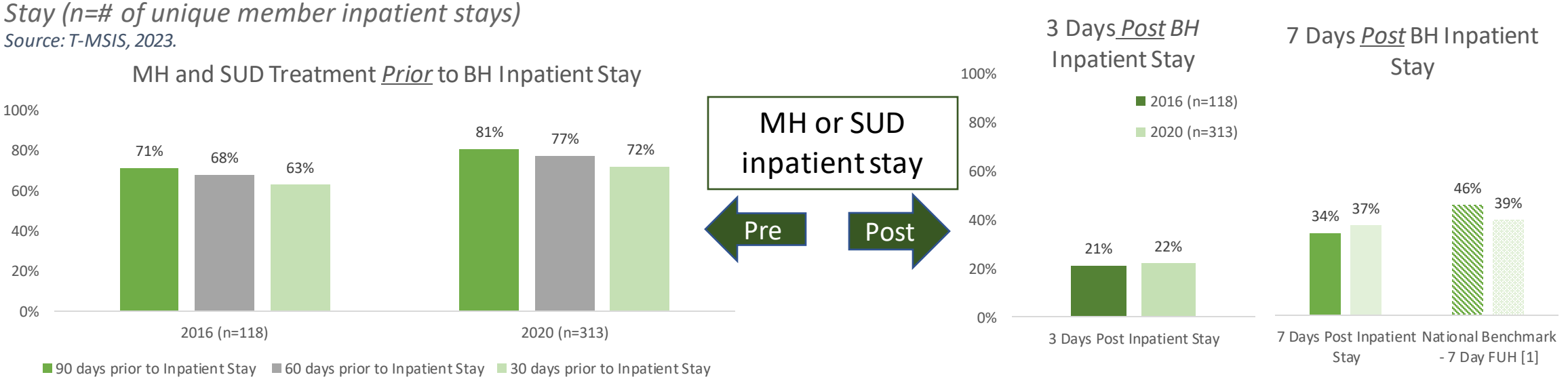
MH OR SUD TREATMENT UTILIZATION BEFORE/AFTER INPATIENT STAY (AMONG MEDICAID/CHIP BOULDER COUNTY MEMBERS)

The percent of Medicaid/CHIP member utilization of SUD or MH care prior to their inpatient stay increased between 2016 and 2018. (T-MSIS, Figure 12)

- However, MH and SUD care utilization decreased over the course of 90 days prior to a member's inpatient stay.
- MH and SUD engagement in care following an inpatient stay was low.
  - Less than 1 in 4 Boulder County Medicaid/CHIP members received SUD or MH care within 3 days post stay.
  - Approximately 1 in 3 received SUD or MH care within 7 days post stay (34 to 37% of inpatient stays). This is comparable, although slightly lower, than national 7 day follow up Medicaid HMO average in 2020 at 39%.[1]

Figure 12: Percent of Unique Medicaid/CHIP Members with an MH/SUD Inpatient Stay Who Received MH/SUD Treatment Pre and Post Stay (n=# of unique member inpatient stays)

Source: T-MSIS, 2023.



[1] NCQA. Follow-Up After Hospitalization for Mental Illness (FUH). Retrieved from https://www.ncqa.org/hedis/measures/follow-up-after-hospitalization-for-mental-illness/

MH OR SUD TREATMENT UTILIZATION BEFORE/AFTER INPATIENT STAY (AMONG MEDICAID/CHIP BOULDER COUNTY MEMBERS)

The vast majority of MH/SUD care utilized among Medicaid members who had an MH/SUD related inpatient stay was Evaluation and Management (E/M). (T-MSIS, Table 2)

E/M, Treatment (e.g. psychotherapy, group, etc.) and some residential were the predominant types of treatment received 3 or 7 days post inpatient stay

Table 2: Number of Medicaid-Funded Treatment Services Covered Under the Medicaid Capitated BH Benefit Among Members with a BH Inpatient Stay, by Service Category

Source: T-MSIS, 2023.

Service Category	Total Counts Across 2016-2020 (n=990 BH Inpatient Stays)				
	90 days prior	60 days prior	30 days prior	3 days post	7 days post
Evaluation/Management (EM) *(May include Treatment when performed with an E/M service)*	6,048	4,575	2,934	396	882
Outpatient Treatment	1,168	841	485	51	126
Assessment	176	149	119	-	-
Residential	48	36	*	0	12
Crisis	17	12	*	*	*
Peer Support/Recovery	*	*	*	*	*
Respite Care	*	*	*	*	*
Screening	*	*	*	*	*
*Total	**7,457**	**5,613**	**3,538**	**449**	**1,020**

*1-10 CPT codes.

NOTE: Treatment service type is aligned with the Uniform Service Cording Standards Manual released by CO Behavioral Health Administration (BHA) and Department of Healthcare Financing and Policy (HCPF) in October 2022. CPT codes were grouped, as defined by this manual, into one of ten primary categories of service, or "Service categories".

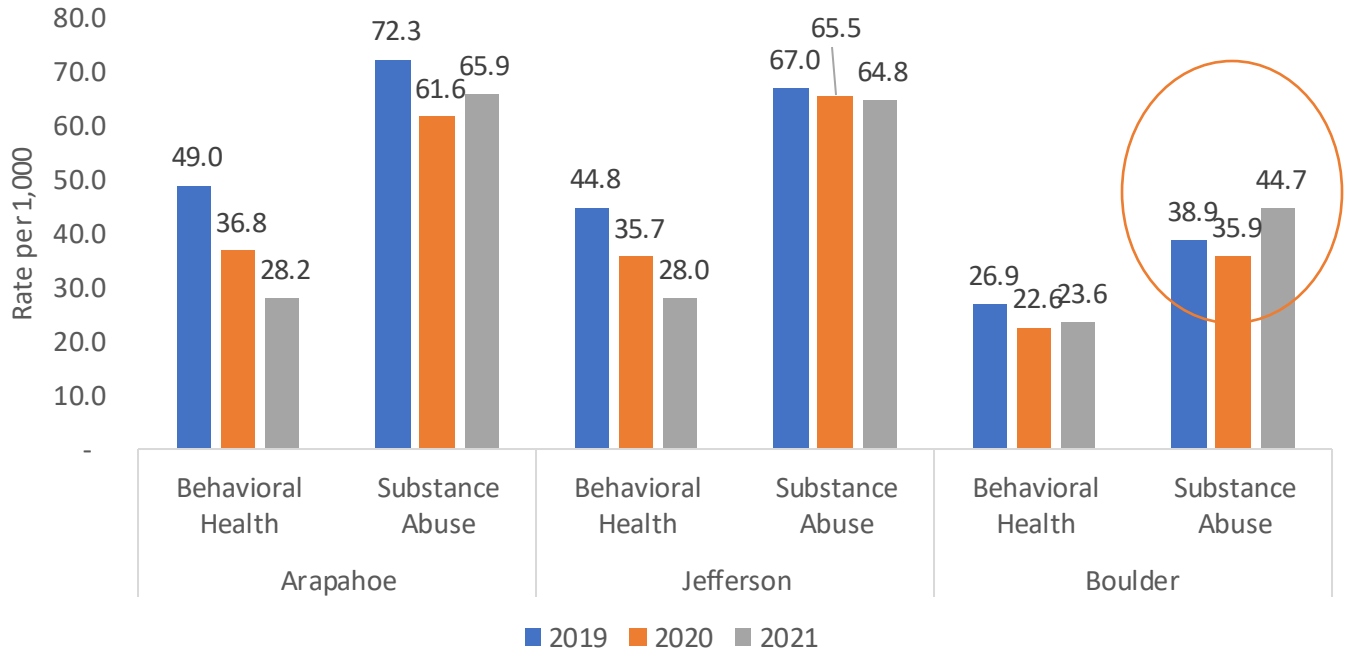
Definition for each service category are provided in the notes.

COUNTY COMPARISON: ED UTILIZATION RATE PER 1,000 RESIDENTS

Arapahoe and Jefferson County had downtrend in ED utilization rate per 1,000 residents between 2019 and 2021. (CHA, Figure 13)

- Meanwhile, in Boulder, SUD related ED visits increased.

Figure 13: ED Utilization Rate per 1,000 by Reasons and Comparison County



ED and Inpatient Utilization Source: CHA, 2023.

Population Source: ACS Table B01001; 1 Year estimates

COMPARISON: INPATIENT LENGTH OF STAY

Figure 14: Inpatient Bed Utilization Rate per 1,000 Residents

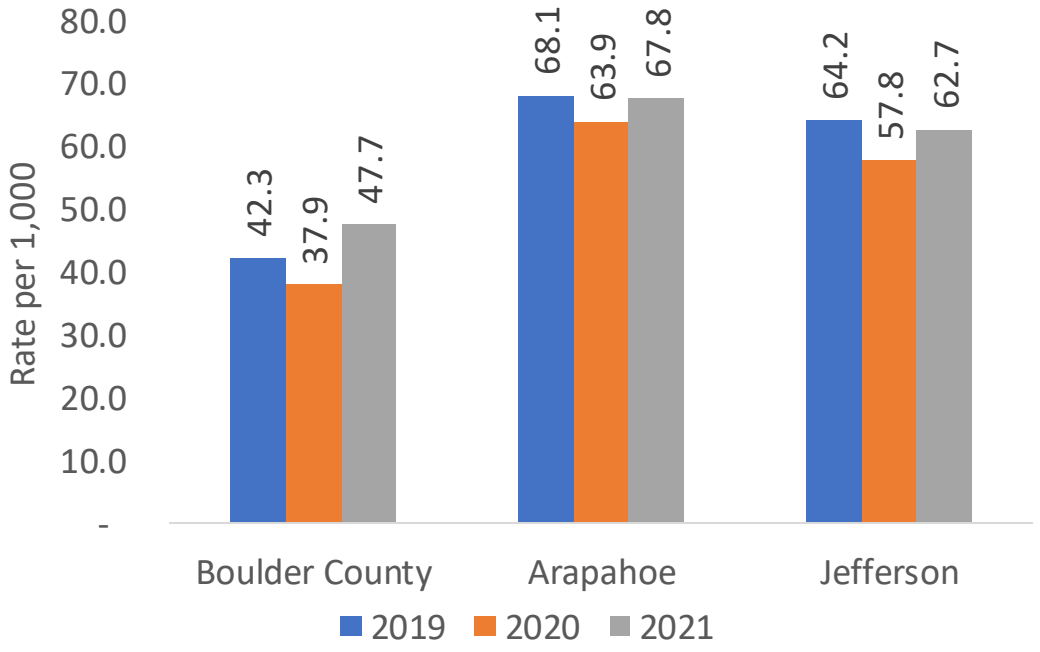
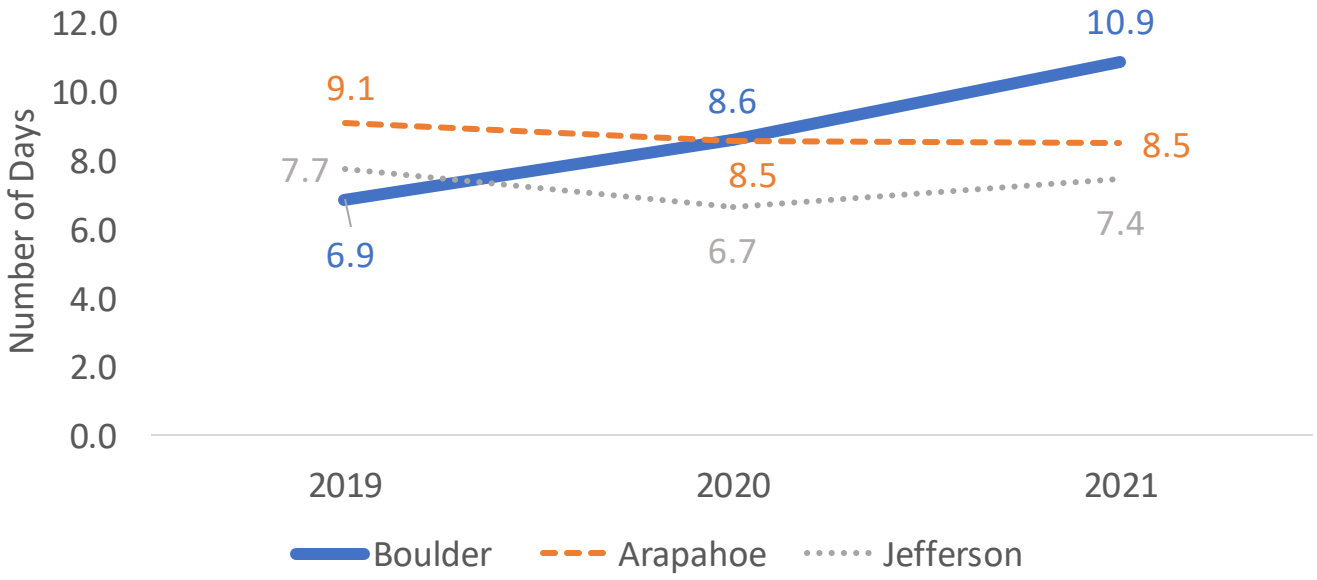


Figure 15: Inpatient Length of Stay, by County Average Number of Days



While inpatient bed utilization was higher in Arapahoe and Jefferson counties compared to Boulder County (CHA, Figure 14), their length of stay was lower (CHA, Figure 15).

ED and Inpatient Utilization Source: CHA, 2023.

COMPARISON: BOULDER COUNTY'S CONTINUUM OF CARE

Like Colorado and two comparison counties, service utilization in Boulder County is largely outpatient. (Table 3)

- Exceptions include ACT and Transitional residential and crisis respite

Table 3: Number of BHA-Funded Treatment Services Delivered in Boulder County per 1,000 People Living below 300% FPL, by Service Type

Treatment Service Type	Boulder	Arapahoe	Jefferson	Colorado
Ambulatory medical detox	0.0	0.1	0.2	0.1
Medically managed inpatient other than detox	0.0	0.0	0.0	0.0
MIP (Minors in Possession)	0.0	0.0	0.0	0.0
STIRRT	0.0	0.0	0.2	0.1
Therapeutic community (TC)	0.0	0.0	0.0	0.1
Day treatment (DAY)	0.7	0.5	0.7	0.5
Medically managed inpatient detox	0.8	0.5	0.9	0.5
Residential	0.8	1.1	4.6	1.0
ACT	**0.8**	0.3	0.4	0.5
Transitional residential (TRT)	**0.8**	0.4	0.6	0.5
Differential Assessment	0.9	1.1	0.5	0.7
Crisis Stabilization	1.3	2.6	3.5	2.5
Opioid replacement therapy (ORT)	1.6	2.3	2.6	2.2
Intensive residential (IRT)	2.3	1.5	3.1	2.0
Crisis Respite	**2.5**			0.4
Intensive outpatient (IOP)	2.9	2.5	3.4	1.8
DUI	5.0	6.0	6.3	6.9
Traditional Outpatient (OP)	5.6	5.4	7.8	6.8
Residential (non-hospital) detox (RDX)	6.5	5.7	8.5	6.1
Medication Only	13.0	14.6	41.8	14.2
Outpatient	114.4	89.7	125.6	91.4

Source: BHA, DACODs (SUD) and CCAR (MH) (intake assessment data) in conjunction with 837 encounter data to understand MH and SUD service utilization by county
Population Source (per capita): ACS, 2019. Population living below 300% FPL

Note: Green indicates the counties where there is higher utilization of BH services compared to Boulder.