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**Healthcare Usage Report:
A Collaboration Between Colorado Hospital Association
and Arapahoe County Criminal Justice Planning Office**

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Summary: Out of 100 frequently incarcerated individuals selected from 2015, 55 visited Colorado hospitals that year. Those 55 individuals accounted for 419 ED visits, 55 inpatient days, 21 other outpatient visits, and an estimated \$ 1.4 million in total health care costs. The average individual from this group was responsible for over \$20,000 in ED costs and 8 visits that year. In comparison, the same age group in the general population that visited the hospital averaged fewer than 2 ED visits per person, with an average total cost of \$2,900. Although the prison study population was selected from only Arapahoe County justice system, these individuals visited hospitals from Thorton to Pueblo.

We used a list of the top 100 frequently incarcerated people from the Arapahoe County Justice system to identify these individuals in the full Discharge Dataset maintained by the Colorado Hospital Association. The Discharge Dataset is comprised of billing claims from all Colorado acute care hospitals. While subject to normal administrative errors and restricted to care received at a hospital (not at an outpatient center or free-standing ED), this dataset allows a reasonable consideration of hospital care.

Table 1 shows utilization metrics for the general population as well as the frequently incarcerated population selected from Arapahoe county. To improve comparability, the general population has been restricted to ages 21 to 60 (same age range as the Arapahoe county prison selection) and claims with a delivery-associated primary diagnosis have been excluded.

Table 1. Summary metrics for health care utilization in the study population and general population (limited to the same age range as the study population). Pregnancy and delivery visits have also been excluded from the general population.

Summary of Utilization

Population	Patient Type	Place of Service	Total Cost	Avg. Total Cost per Encounter	Average cost per Individual	Number of Encounters	Count of Individuals	Inpatient Days
Prison Population	Inpatients	Acute IP	305,934	17,996	25,495	17	12	52
		Psych Unit	8,512	8,512	8,512	1	1	3
	Outpatients	Total	314,446	17,469	26,204	18	12	55
		ASC	26,503	8,834	13,252	3	2	
		ED	1,031,280	2,461	20,221	419	51	
		Obs	35,045	2,920	5,841	12	6	
		Other OP	2,264	377	566	6	4	
		Total	1,095,092	2,489	19,911	440	55	
		Total	1,409,538	3,078	24,729	458	57	55
		General Population	Inpatients	Acute IP	3,331,953,030	25,332	34,914	131,529
Drug Rehab	7,634,485			8,698	10,275	858	743	19,045
Outpatients	Other/Unknown		3,556,468	22,653	22,653	157	157	616
	Psych Unit		58,281,353	7,060	8,448	8,255	6,899	55,762
	Rehab Unit		57,297,980	24,912	26,976	2,300	2,124	30,328
	Swing Bed/SNF		3,058,179	8,243	9,929	371	308	2,553
	Total		3,461,781,495	24,129	33,967	143,470	101,917	705,174
	ASC		1,043,630,113	7,432	8,851	140,423	117,912	
	ED		1,708,948,293	1,610	2,871	1,061,297	595,320	
	Obs		253,119,580	3,107	5,731	81,466	44,165	
	Other OP		881,057,194	578	1,609	1,523,054	547,703	
	Other/Unknown		1,009,486	2,692	3,580	375	282	
	Total		3,887,764,667	1,385	3,693	2,806,615	1,052,653	
	Total		7,349,546,162	2,491	6,817	2,950,085	1,078,063	705,174

As seen in Fig. 1, the payer mix for the frequently incarcerated population also differs dramatically from the general population. About 20% of the total Colorado population is covered by Medicaid.

Primary Payer

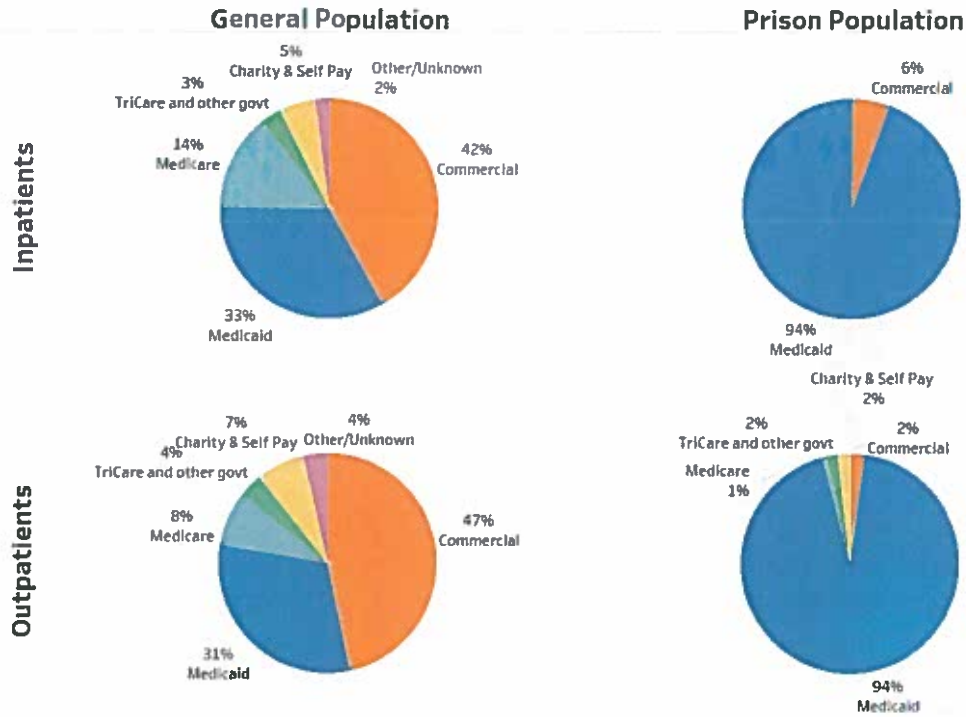


Figure 1. Payer mix for the general population and the frequently incarcerated study population.

The primary access point for hospital care for the Arapahoe county frequently incarcerated population is the emergency department, accounting for 96% of all encounters. A small proportion of individuals are responsible for the majority of these ED visits: 17% of individuals account for 75% of the cost in the ED (fig. 2). Among those in the general population who have ED visits, the top 20% of the population account for 67% of total ED costs. Considering only the general population age 21 to 60, the top 19% account for exactly their share of total costs. Seventeen of the 55 individuals in the study had total ED costs above the 95th percentile of per person total ED costs in the general population.

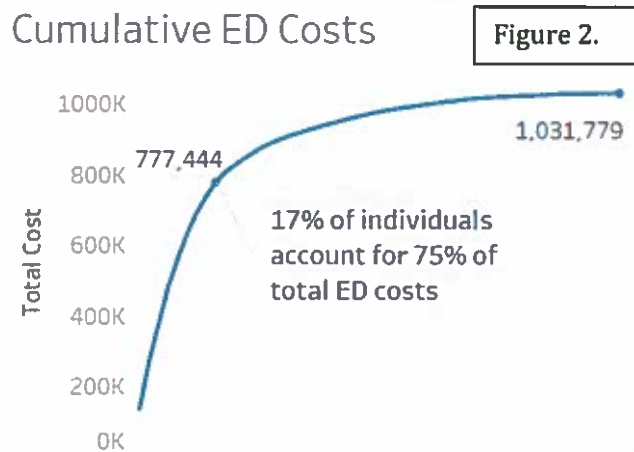


Figure 2.

Diagnoses for ED Visits by Individual, 2015

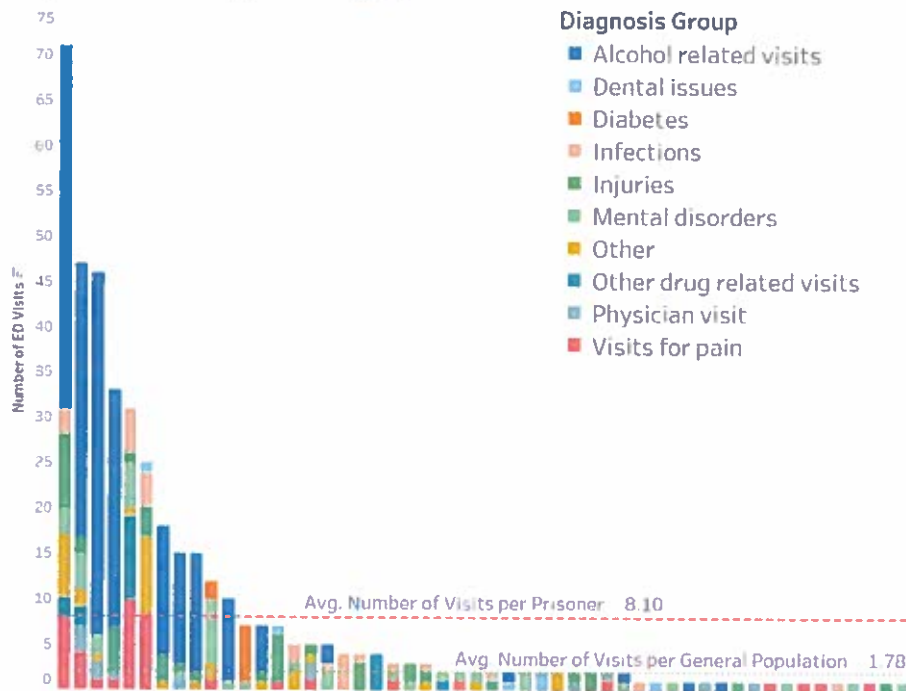


Figure 3. Total number of ED visits by individual in the study group in 2015 (each bar represents a single individual), colored by primary diagnosis for each visit.

A high number of visits by a handful of individuals skews the distribution of ED visits (Fig. 3). These ED visits were for a variety of reasons, but the most common primary diagnosis was alcohol-related, accounting for nearly 200 of 419 total ED visits by the study group. The study population presented with a different range of primary diagnoses than the same-age general population in the ED and acute inpatient settings (Table 2).

Distribution of Primary Diagnoses by Patient and Population

Chapter (group)	Acute IP		ED	
	General Population	Prison Population	General Population	Prison Population
Congenital abnormalities	0.5%		0.0%	
Contact with health services	1.4%		3.4%	4.1%
Diseases of blood, blood forming organs, immune mechanism	0.9%		0.2%	
Diseases of skin and subcutaneous tissue	2.3%		3.4%	1.4%
Diseases of the circulatory system	11.0%		1.7%	0.2%
Diseases of the digestive system	15.4%	29.4%	6.3%	4.3%
Diseases of the genitourinary system	4.2%	5.9%	6.4%	2.4%
Diseases of the musculoskeletal system and connective tissue	11.2%		9.2%	4.1%
Diseases of the nervous system	3.5%	5.9%	3.7%	1.7%
Diseases of the respiratory system	6.5%		7.9%	2.4%
Diseases of the sense organs	0.2%		2.1%	0.5%
Endocrine, nutritional, and metabolic disease	7.6%	5.9%	1.4%	1.7%
External causes of injury, poisoning, morbidity, and mortality	14.3%	5.9%	21.8%	10.3%
Infectious and parasitic diseases	8.8%	17.6%	1.7%	0.2%
Mental and behavioral disorders	3.8%	23.0%	7.6%	53.9%
Neoplasms	5.2%		0.3%	
Symptoms and signs not elsewhere classified	3.2%	5.9%	23.1%	12.9%
TOTAL ENCOUNTERS	131,483	17	1,060,084	419

While only 4% of hospital encounters were inpatient discharges in the study population, they accounted for 22% of total costs. Only 12 of the 55 individuals had an inpatient stay, with an average length of stay of 3.1 days (Fig. 4).

Total Inpatient Days by Individual

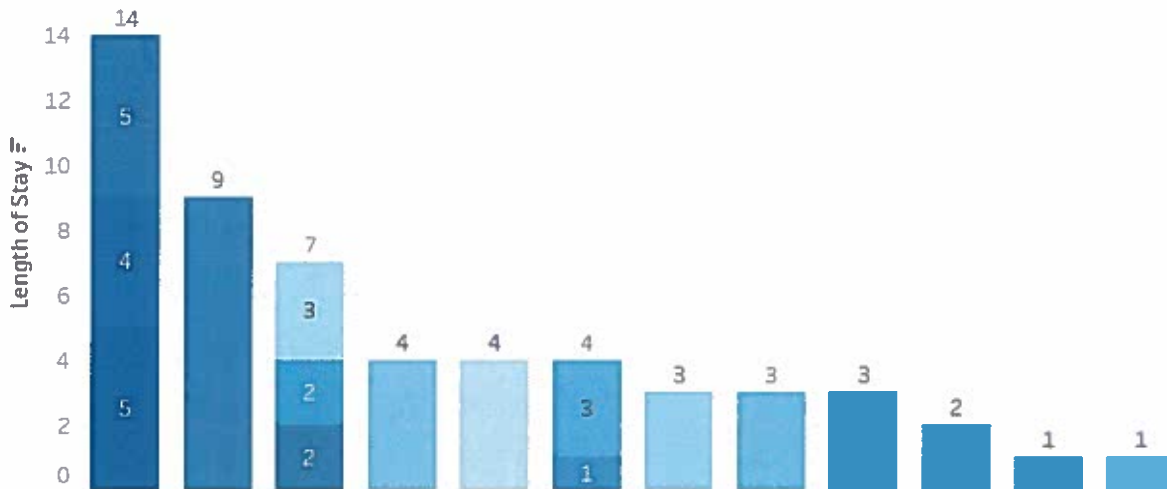


Figure 4. Total Inpatient days by individual in the study population, 2015. Each block of color represents a single stay, while each column is an individual.

Although individuals in the study population were processed through the Arapahoe County Justice System, they visited hospitals all across the Front Range. Denver Health had the highest number of encounters from the study population of any Colorado hospitals (Fig. 5).

Total Encounters for Top Hospitals

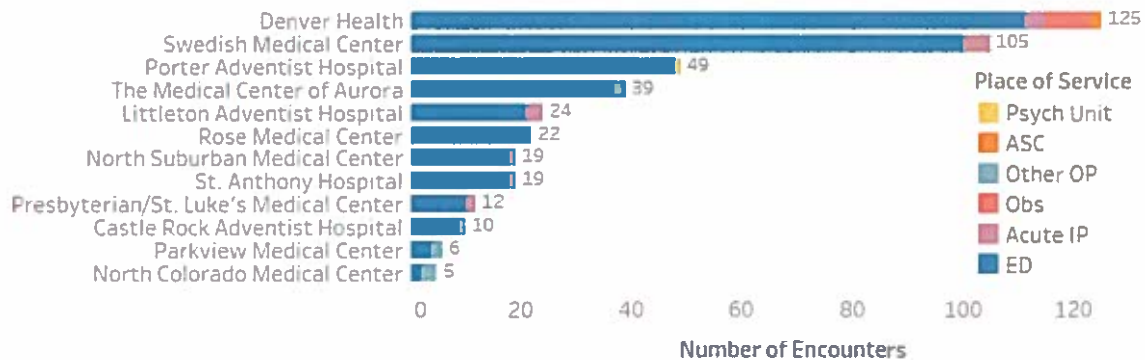


Figure 5. Number of encounters for the most frequently visited hospitals by the study population in 2015. Bars are colored by place of service.

While only 3% of outpatients were discharged into police custody, this was 10 times the rate for the general population of the same age range (Table 3). Additionally, a much higher proportion of the study population left against medical advice than the general population. Unlike almost 8% of inpatients, no individual in the study population was discharged to home health.

Disposition of Encounters

Patient Type	Disposition (group)	General Population		Prison Population	
		Percent	Number of Encounters	Percent	Number of Encounters
Inpatients	Home	82.4%	169,345	81.8%	18
	Discharged to Law Enforcement	0.5%	934	9.1%	2
	Left Against Medical Advice	1.3%	2,648	9.1%	2
	Transferred to other healthcare institution	0.2%	510		
	Transferred for IP care	1.0%	2,101		
	Transferred to custodial/supportive care	0.2%	387		
	Transferred to psych facility	0.9%	1,791		
	Home Health	7.6%	15,682		
Outpatients	Other	5.9%	12,129		
	Home	95.8%	2,796,873	89.4%	406
	Discharged to Law Enforcement	0.3%	9,273	3.1%	14
	Left Against Medical Advice	0.6%	17,358	2.2%	10
	Transferred to other healthcare institution	0.2%	5,065	3.5%	16
	Transferred for IP care	0.3%	9,131	0.7%	3
	Transferred to custodial/supportive care	0.0%	1,174	0.4%	2
	Transferred to psych facility	0.3%	8,151	0.7%	3
Home Health	0.1%	1,904			
Other	2.4%	70,133			

Table 3. Disposition (discharge location) of individuals in the general population and in the study group, 2015. Includes all types of inpatient and outpatient visits.