

**Investigating EMS Treatment Disparities
by Patient Race/Ethnicity for Traumatic and Painful Emergencies -
Urban / Rural / Frontier Addendum**

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An updated statewide zip code categorization into Frontier, Rural, and Urban classifications was developed near the completion of the original analysis of racial disparities in EMS treatment. While the analytical sample of patient charts for the racial disparities study contained insufficient numbers of racial minority patients from non-urban areas in Oregon for a meaningful analysis, additional descriptive analysis revealed a number of noteworthy general demographic and treatment differences (table A1).

A. Demographic differences

- The average age of patients in Frontier (59 years of age) and Rural (59 years of age) locations was 2 years older compared to patients in Urban (57 years of age) locations.
- Each geographical location had approximately the same proportion of female patients (53%).
- Patients in Frontier locations had a significantly larger proportion of patients on Medicaid (11.4%) compared to patients in Rural (2.6%) and Urban (8.4%) locations.
- Patients in Frontier locations also had a significantly larger proportion of patients on Medicare (24.9%) compared to patients in Rural (20.6%) and Urban (16.1%) locations.
- Patients in Urban locations had a much larger proportion without insurance (16.2%) compared to Frontier (10.6%) and Rural (10.3%) locations.

B. Treatment differences

- Patients in Frontier locations had a significantly smaller proportion charts with documented pain scores (14.3%) compared to Rural (39.9%) and Urban (37.7%) locations.
- Patients in Frontier locations had on average a significantly higher average pain score (5.4) compared to Rural (4.2) and Urban (5.1) locations.
- Patients in Frontier locations had a significantly smaller proportion of patients that received any form of pain medication (15.5%) compared to Rural (21.5%) and Urban (17.1%) locations.
- Patients in Frontier locations had a significantly larger proportion of patients that received non-opioid pain medications (4.7%) compared to Rural (1.7%) and Urban (0.2%) locations.

In summary, patients receiving EMS care in Frontier settings received significantly different treatment for traumatic and painful emergencies compared to patients in Rural and Urban settings in this sample. Patients in Frontier locations are twice as likely to not have their pain measured by EMS providers and are less likely to receive pain medications despite having higher average pain scores when compared to patients in Rural or Urban settings.

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Table A1: Patient Descriptives by Zip Code Classification

	Total		Frontier		Rural		Urban		Unclassified		X ²
			n	%	n	%	n	%	n	%	
Total PCRs	104,210		2,611	3%	23,588	23%	69,539	67%	8,472	8%	
Unique EMS Agencies	63		13	21%	55	87%	28	44%	25	40%	
Patient Age in Years - mean (SD)	57 (22)		59 (22)		59 (22)		57 (22)		50 (21)		<.000
Female Gender	54,451	52.3	1,401	53.7	12,423	52.7	35,753	52.9	3,874	45.7	<.000
Private Insurance	14,261	13.7	361	13.8	10,603	18.1	8,839	12.7	796	9.4	
Medicaid Insurance	7,500	7.2	297	11.4	608	2.6	5,815	8.4	779	9.2	
Medicare Insurance	17,557	16.8	649	24.9	4,864	20.6	11,199	16.1	845	10.0	<.000
Other Government Insurance	1,302	1.2	66	2.5	325	1.4	801	1.2	110	1.3	
No Insurance	16,146	15.5	276	10.6	2,432	10.3	11,258	16.2	2,180	25.7	
Unknown or Other insurance	47,444	45.6	962	36.8	11,094	47.1	31,626	45.4	3,762	44.4	
PCRs with Charted Pain Measurement*	40,061	38.4	373	14.3	9,411	39.9	26,187	37.7	4,090	48.3	<.000
mean pain score (SD)**	4.9 (3.2)		5.4 (3.5)		4.2 (3.2)		5.1 (3.2)		5.1 (3.1)		<.000 [#]
No pain (0)	5,782	14.4	59	15.8	1,810	19.2	3,416	13.0	497	12.2	
Mild Pain (1-3)	8,604	21.5	55	14.7	2,438	25.9	5,297	20.2	814	19.9	<.000
Moderate Pain (4-6)	11,797	29.4	89	23.9	2,531	26.9	7,899	30.2	1,278	31.2	
Severe Pain (7-10)	13,878	34.6	170	45.6	2,632	28.0	9,575	36.6	1,501	36.7	
Received Pain Medications	18,490	17.7	404	15.5	5,069	21.5	11,871	17.1	1,146	13.5	
Received Non-Opioids	127	0.7	19	4.7	84	1.7	20	0.2	4	0.4	<.000
Received Opioids ^{###}	18,363	99.3	385	95.3	4,985	98.3	11,851	99.8	1,142	99.7	

Source: OR State NEMSIS data set

* at least one charted pain score

** 1st recorded pain score

Independent samples t-test significance result did not include Unclassified value to test significance between combinations of Frontier, Rural, and Urban values

while Ketamine is not an opioid it is included in this analysis in the Opioid category