# Geographic Variation of High-Risk Prescription Opioid Use Measures in Disabled Medicare Beneficiaries, 2011-2018

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## Introduction

- Since 1999 opioid overdose deaths ↑ 6-fold
- Disabled Medicare beneficiaries have a high prevalence of musculoskeletal disorders and opioid use
- Centers for Medicare and Medicare Services (CMS) have endorsed high-risk opioid use quality measures
- Identifying regions with poor performance can inform CMS and policymakers to develop effective interventions while maintaining legitimate pain management
- **Objective:** To examine geographic patterns of CMS-endorsed high-risk opioid use quality measures among disabled Medicare beneficiaries from 2011-2018

## Methods

- **Study design:** Multi-year cross-sectional analyses of disabled, non-cancer beneficiaries with >2 opioid prescriptions
- **Data source:** Medicare 2011-2018
- **CMS high-risk opioid use quality measures:**
  - **high-dose use** (≥120 daily MME for ≥90 consecutive days)
  - **multiple providers** (receiving opioid prescriptions from ≥4 prescribers and ≥4 pharmacies)
  - **concurrent benzodiazepine (BZD) use** (≥30 cumulative days)
- **Statistical analysis:** Multivariable logistic regression (marginal effects) obtained adjusted, annual rates of high-risk opioid use across 306 Dartmouth Atlas of Health Care hospital referral regions (HRRs)
- Mann-Kendall test to examine trends over time
- Focused on 3 types of HRR hotspots using spatio-temporal analyses:
  - **persistent**
  - **Intensifying**
  - **consecutive**

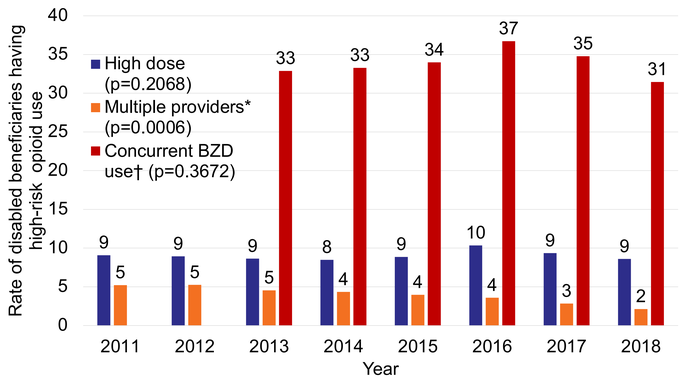
## Results

### Table 1. Characteristics of disabled beneficiaries, 2018

| Characteristics (%) | Overall (N=233,280) | High dose (N=20,057) | Multiple providers (N=4,983) | Concurrent BZD use (N=73,398) |
|---|---|---|---|---|
| **Age, mean** | 58.8 | 55.9 | 52.5 | 58.1 |
| **Age ≥ 65** | 30.9 | 18.2 | 14.4 | 27.4 |
| **Female** | 60.1 | 51.1 | 62.6 | 66.2 |
| **Race/ethnicity** | | | | |
| **White** | 75.7 | 81.1 | 67.0 | 83.3 |
| **Black** | 17.7 | 13.6 | 26.1 | 11.1 |
| **Hispanic** | 3.5 | 2.9 | 3.7 | 3.2 |
| **Other** | 3.1 | 2.5 | 3.3 | 2.3 |
| **Low-income subsidy & dual eligibility** | 65.8 | 63.9 | 81.0 | 67.0 |
| **Metropolitan area** | 74.7 | 82.1 | 83.8 | 76.3 |
| **Elixhauser index, mean** | 5.0 | 4.4 | 6.2 | 5.3 |
| **Musculoskeletal disorders** | 94.4 | 94.8 | 97.0 | 95.0 |
| **Depression** | 41.5 | 40.0 | 56.5 | 52.8 |
| **Serious mental illness** | 16.1 | 13.2 | 27.7 | 23.5 |
| **Any substance use disorder** | 19.8 | 31.8 | 42.5 | 24.3 |
| **AUD** | 4.6 | 3.8 | 10.9 | 5.0 |
| **OUD** | 13.2 | 26.6 | 30.8 | 16.8 |
| **Non-opioid drug use disorder** | 6.9 | 8.9 | 20.2 | 9.9 |

AUD = Alcohol use disorder; OUD = Opioid use disorder

### Figure 1. High-Risk Opioid Use of Disabled Beneficiaries

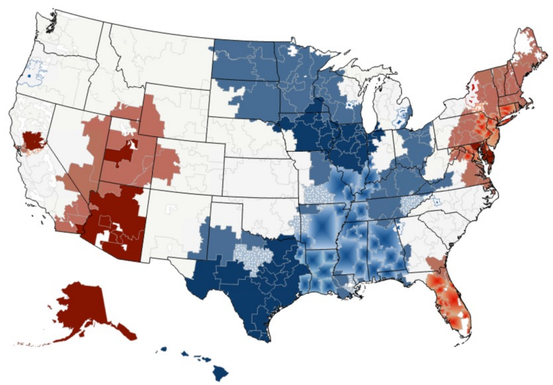



*Statistically significant trend

† Centers for Medicare & Medicaid Services (CMS) began coverage for BZDs in 2013

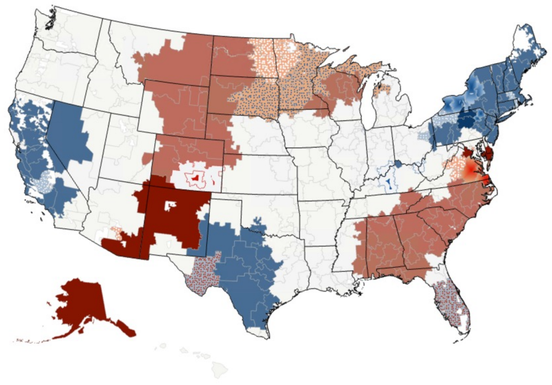
| Symbol | Hotspot Type | Description |
|---|---|---|
| | Persistent | Hotspot for ≥ 90% of study period without any apparent trend |
| | Intensifying | Hotspot for ≥ 90% of study period with increasing trends |
| | Consecutive | Newly identified hotspot in the most recent 3 years |

### Figure 2. Hotspots of high-dose use, 2011-2018



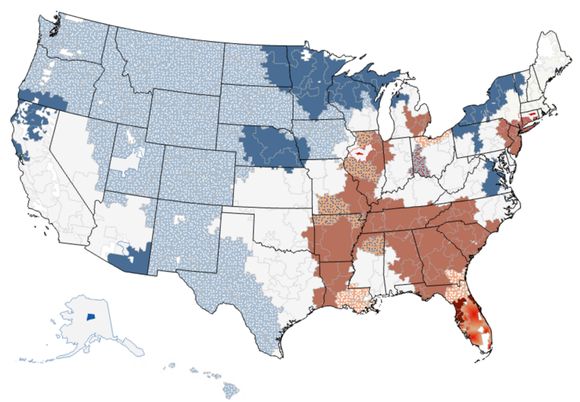
**Among 306 HRRs: Persistent 9 (2.9%); Intensifying 37 (12.1%); Consecutive 30 (9.8%)**

### Figure 3. Hotspots of multiple providers, 2011-2018



**Persistent 5 (1.6%); Intensifying 3 (1.0%); Consecutive 50 (16.3%)**

### Figure 4. Hotspots of concurrent BZD use, 2011-2018



**Persistent 5 (1.6%); Intensifying 8 (2.6%); Consecutive 78 (25.5%)**

## Discussion

- Among disabled Medicare beneficiaries:
  - 20%-30% of HRRs were persistent, consecutive, and intensifying hotspots of high-risk opioid use
  - Hotspots were concentrated in four regions: (1) Rocky Mountain states and Alaska, (2) northeast, (3) southeast, and (4) the Florida peninsula
  - Hotspots of the multiple providers measure were often neighboring regions of high-dose use

## Conclusions

- Analyzing different types hotspots may help develop targeted regional opioid interventions
- Disabled Medicare beneficiaries with complex pain conditions require special attention to ensure proper pain management

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