

The Opioid Epidemic in Canada: Trends in Diversion of Commonly Abused Prescription Drugs in Ontario

Maria A. Levi-Minzi¹, Genevieve Martin¹, Steven P. Kurtz¹, Olivier Dziadkowiec², Marie-Claire Le Lait², Zachary Margolin², Travis Rosen², Jody L. Green^{2,3}, Richard C. Dart^{2,3}

¹Center for Applied Research on Substance Use and Health Disparities, Nova Southeastern University, Miami, FL, US

²Canadian Consumer Product and Pharmaceutical Safety Inc., Toronto, Ontario

³Rocky Mountain Poison and Drug Center, Denver Health and Hospital Authority, Denver, CO, US

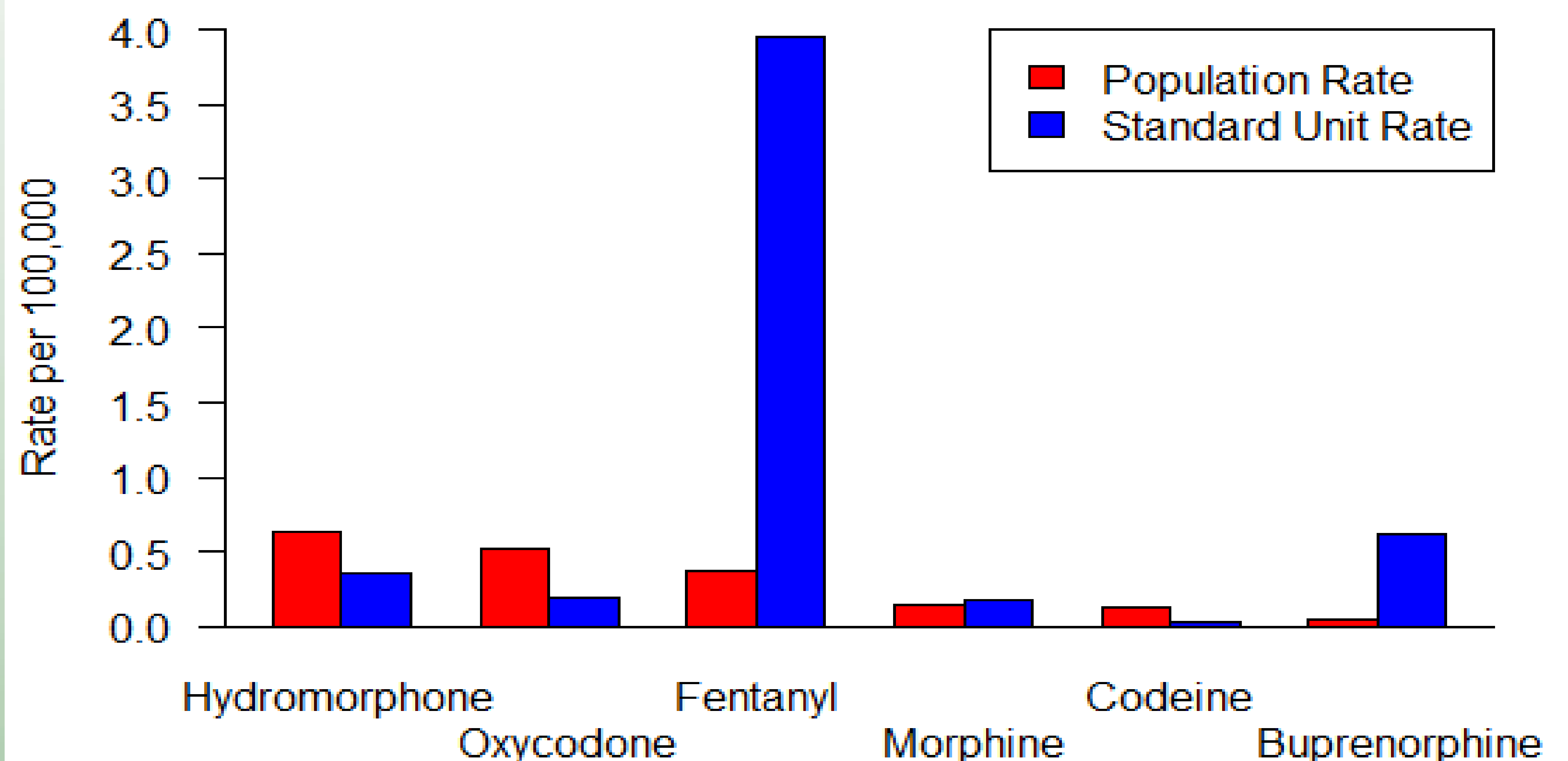
Introduction

- Canada ranks second in the world in consumption of prescription opioids per capita.
- This warrants a closer examination of diversion of these drugs, especially in its most populated province, Ontario.

Methods

- The Drug Diversion Program surveys law enforcement agencies in Ontario who report on new cases of prescription drug diversion quarterly.
- Data were collected between October 2014 and September 2016.
- Cumulative population and standard unit rates were calculated for buprenorphine, codeine, fentanyl, hydromorphone, oxycodone, and morphine.
- Cumulative population and standard unit rates were calculated by dividing total quarterly diversion cases for each drug substance by total covered quarterly populations and standard units sold, respectively and then multiplying by 100,000.
- Quarterly population estimates were obtained by extrapolating from the 2006 and 2011 Canadian censuses at census division level, intermediate geographic areas between the levels of province, and municipality
- Cumulative standard unit rates were calculated using the estimated total standard units sold in the covered area for each drug.

Opioid Diversion Rates in Canada



Cumulative Rates per 100,000 Population and Standard Units October 2014 to September 2016

Drug (Rate per 100,000 Population)	Drug (Rate per 100,000 Standard Units)
Hydromorphone (0.636)	Fentanyl (3.961)
Oxycodone (0.524)	Buprenorphine (0.620)
Fentanyl (0.362)	Hydromorphone (0.350)
Morphine (0.138)	Oxycodone (0.190)
Codeine (0.130)	Morphine (0.176)
Buprenorphine (0.046)	Codeine (0.018)

Results

- When analyzing the cumulative population rates, hydromorphone (n=318) was the most frequently diverted opioid, followed by oxycodone (n=262) and fentanyl (n=181). However, when comparing the standard unit rates, fentanyl (n=181) was the most frequently diverted opioid, followed by buprenorphine (n = 230) and hydromorphone (n=318). It should be noted that fentanyl is sold in patches, which contain more than one unit sold, thus it's standard unit rate is much higher than the standard unit rate of opioids with solid dosage forms. Comparisons between fentanyl and other opioids based on standard units sold should be made with caution.

Discussion

Of the drugs examined, hydromorphone had the highest population based diversion rate and fentanyl had the highest rate per units sold.

Conclusions

The results show the importance of including both population and standard units sold rates in the examination of drug diversion rates in Ontario.