




Reduced Street Price and Quantity Discounts for Diverted OxyContin and Opana Following Crush Resistant Reformulation

Jacob A Lebin, MS4
Western Regional SAEM
March 27, 2015

The background image shows several orange plastic pill bottles. One bottle in the foreground is tipped over, spilling a large number of white, oval-shaped tablets onto a light-colored surface. The tablets are scattered in the foreground, while the bottles are in the background. The text is overlaid on the right side of the image.

No financial conflicts of
interest to disclose.

America's Pain Killer

PHARMA & HEALTHCARE

2/06/2015 @ 7:00AM | 3,772 views

P
D

How Obama Plans To Combat

Home

News

Alexa
Feb.

Police and legislators respond to
ris

Home

Editorial: Doctors must join fight

Large cities seek to combat

Opioid drug abuse on the rise locally

Steph Crosier, The Sault Star

Friday, August 29, 2014 4:00:55 EDT PM

Background



10x

Background



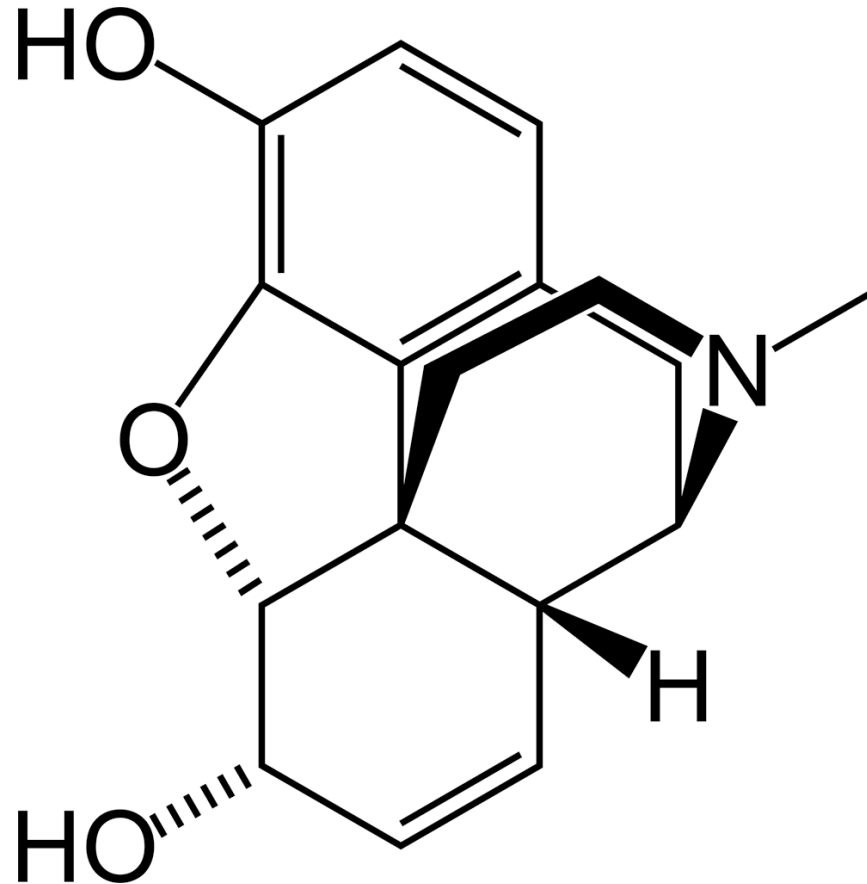
1450651

Background



1,259%

Background



17% → 37%



Silk Road





anonymous marketplace

Background

Shop by Category

- Drugs 7,079
 - Opioids 512
 - Prescription 241
 - IV/IM 14
 - Heroin 121
 - Opium 21
 - Cannabis 1,678
 - Dissociatives 128
 - Ecstasy 579
 - Other 422
 - Precursors 44
 - Prescription 1,768
 - Psychedelics 698
 - Stimulants 881
 - Apparel 191
 - Art 133
 - Books 1,283
 - Collectibles 5
 - Computer equipment 52
 - Custom Orders 74
 - Digital goods 458
 - Drug paraphernalia 172
 - Electronics 93
 - Erotica 496
 - Fireworks 11
 - Food 6
 - Forgeries 145

sort by: ☐ Domestic only

	<p>XMAS OXYCONTIN SALE 10 x 40mg - \$235</p> <p>seller: TheDutchGuy(100) ships from: Netherlands</p>	<p>\$17.36 add to cart</p>
	<p>European Codeine 20mg/20 pills</p> <p>seller: FollowMe(100) ships from: Spain</p>	<p>\$1.30 add to cart</p>
	<p>OXYCONTIN 80MG - OP 80 Purdue plus EXTRA GIFTS</p> <p>seller: jaysonwoods ships from: United States of America</p>	<p>\$3.25 add to cart</p>
	<p>5x 8mg Subutex (buprenorphine)</p>	

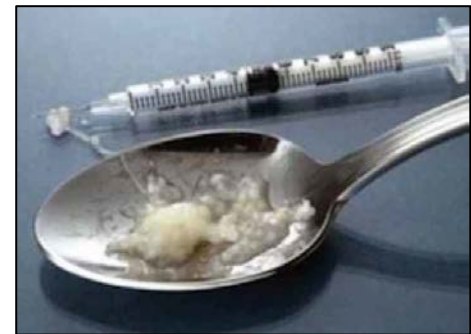
Background

- Crush resistant formulations have emerged as one public health approach to reducing opioid associated morbidity and mortality

Crushable
oxycodone



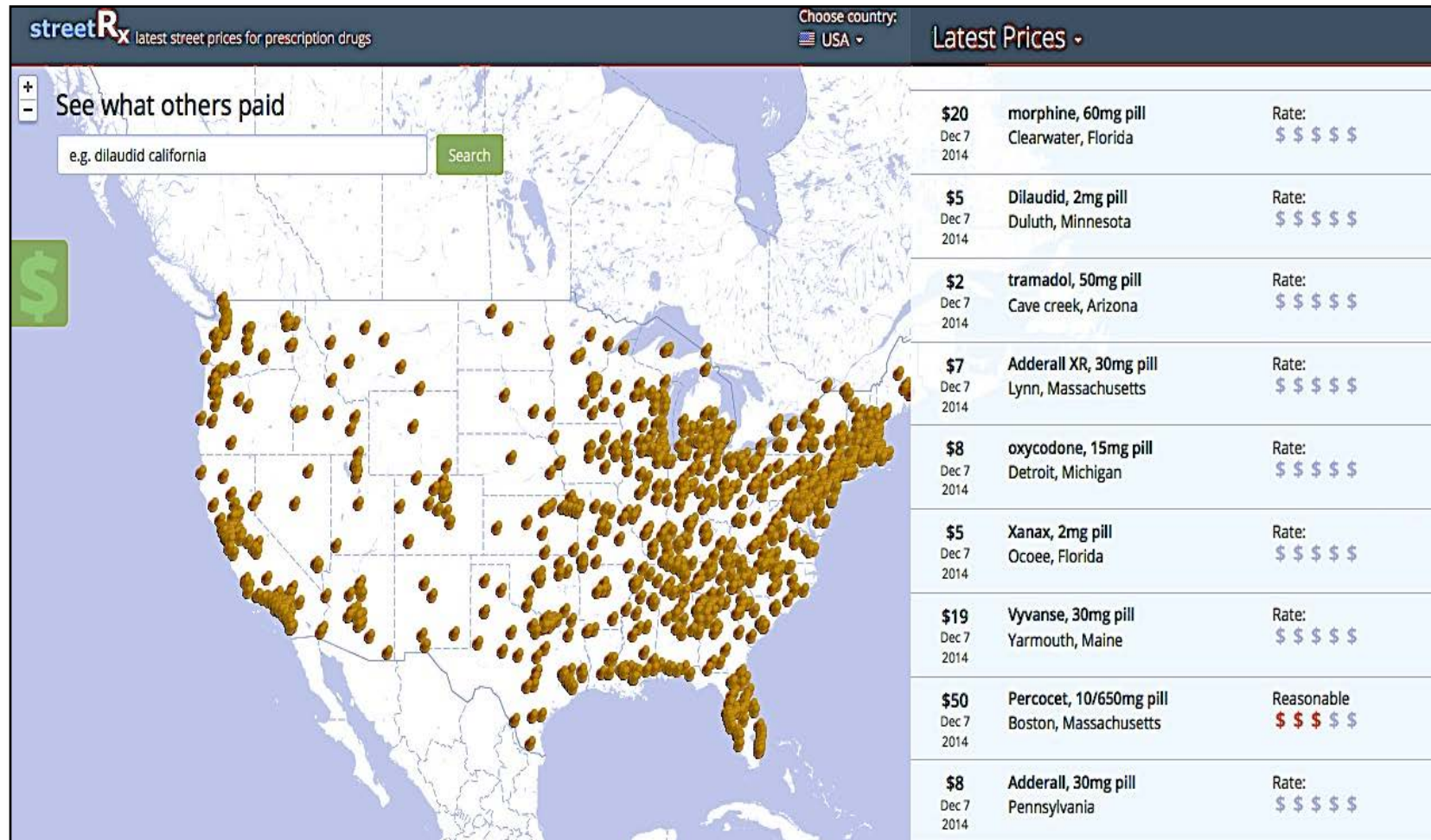
Crush resistant
oxycodone



The Question - Do they work?

StreetRx

Supply \longleftrightarrow ^{Price} Demand





Objective

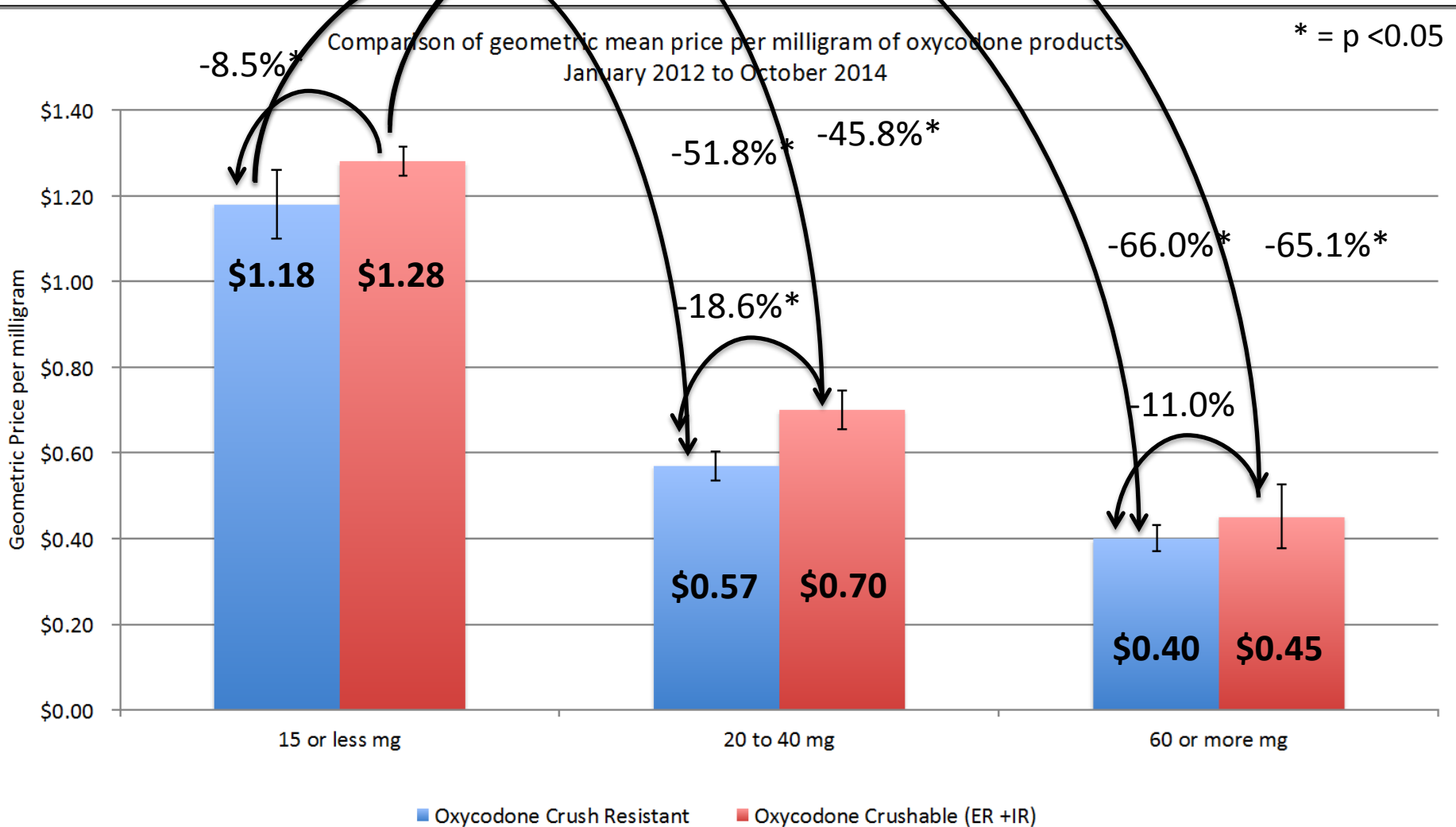
To determine if street **prices** for **crush resistant** oxycodone and oxymorphone are **lower than** their **crushable** equivalents

Methods

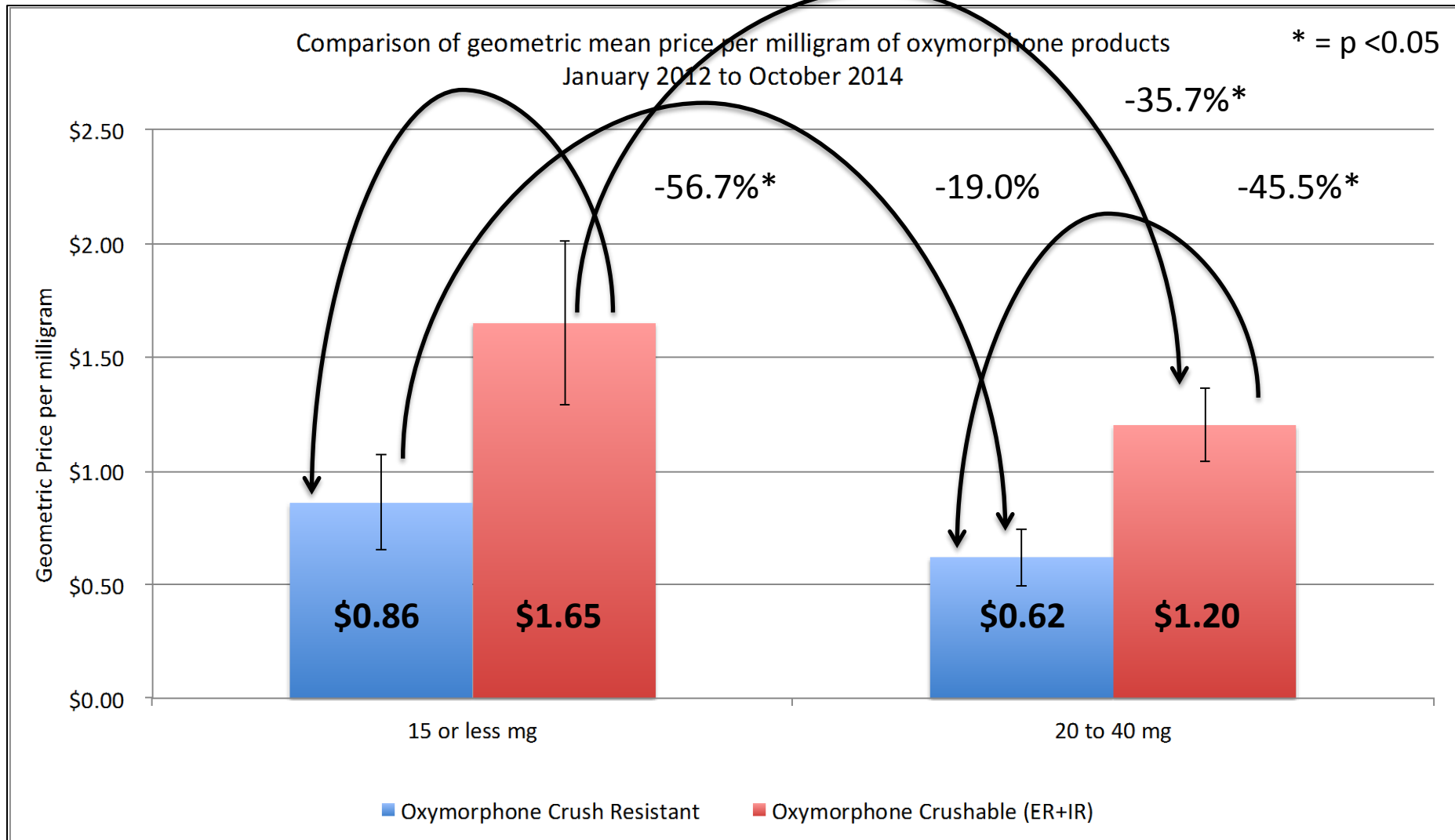
- Submission for all formulations of **oxycodone** and **oxymorphone** were recorded from January 1, 2012 to October 31, 2014
- **Two tablet categories** were used:
 - Crushable
 - Crush resistant
- **Three tablet strength** categories were used:
 - 15 mg or less
 - 20 to 40 mg
 - 60 or more mg
- The **price per mg was calculated** by dividing the price paid for the tablet by the mg of opioid within the tablet



Oxycodone Results



Oxymorphone Results



Discussion

- The street prices of crush resistant formulations of oxycodone and oxymorphone are **significantly lower** than their crushable equivalents across multiple tablet strengths

Crushable
oxycodone
oxymorphone



\$\$\$

Crush resistant
oxycodone
oxymorphone



\$

Discussion

- The observation that price per mg decreased as tablet strength increased may represent a **quantity discount phenomenon (wholesale)**, by which buyers receive a lower price per mg for larger purchases as sellers minimize distribution risks.



Limitations

- **No link to outcomes.** It is unknown if street price decreases represent users shifting to other prescription opioids or illicit drugs, such as heroin.



References

1. Substance Abuse and Mental Health Services Administrations (2003) Emergency Department Trends from the Drug Abuse Warning Network, Final Estimates 1995-2002, 2000-2010, 2009, 2011. Rockville, MD.
2. Warner M, Chen LH, Makuc DM, Anderson RN, Minino AM (2011) Drug poisoning deaths in the United States, 1999-2008. MMWR Morb Mortal Wkly Rep 60.
3. Drug Enforcement Administration 1999-2006, 2008-2011 Automation of Reports and Consolidation Orders System (ARCOS) Retail Drug Summary, Office of Diversion Control.
4. Frenk SM, Porter KS, Paulozzi LJ. Prescription opioid analgesic use among adults: United States, 1999–2012. NCHS data brief, no 189. Hyattsville, MD: National Center for Health Statistics. 2015.

Acknowledgements

Thanks to Dr. Richard Dart, MD, PhD for his mentorship, Dr. Geoff Severtson, PhD for his contributions to statistical analysis, and David Murphy for his continued collaboration.