Prescription Drug Abuse in Rural Appalachia: Ushering in the Next Decade of the Epidemic

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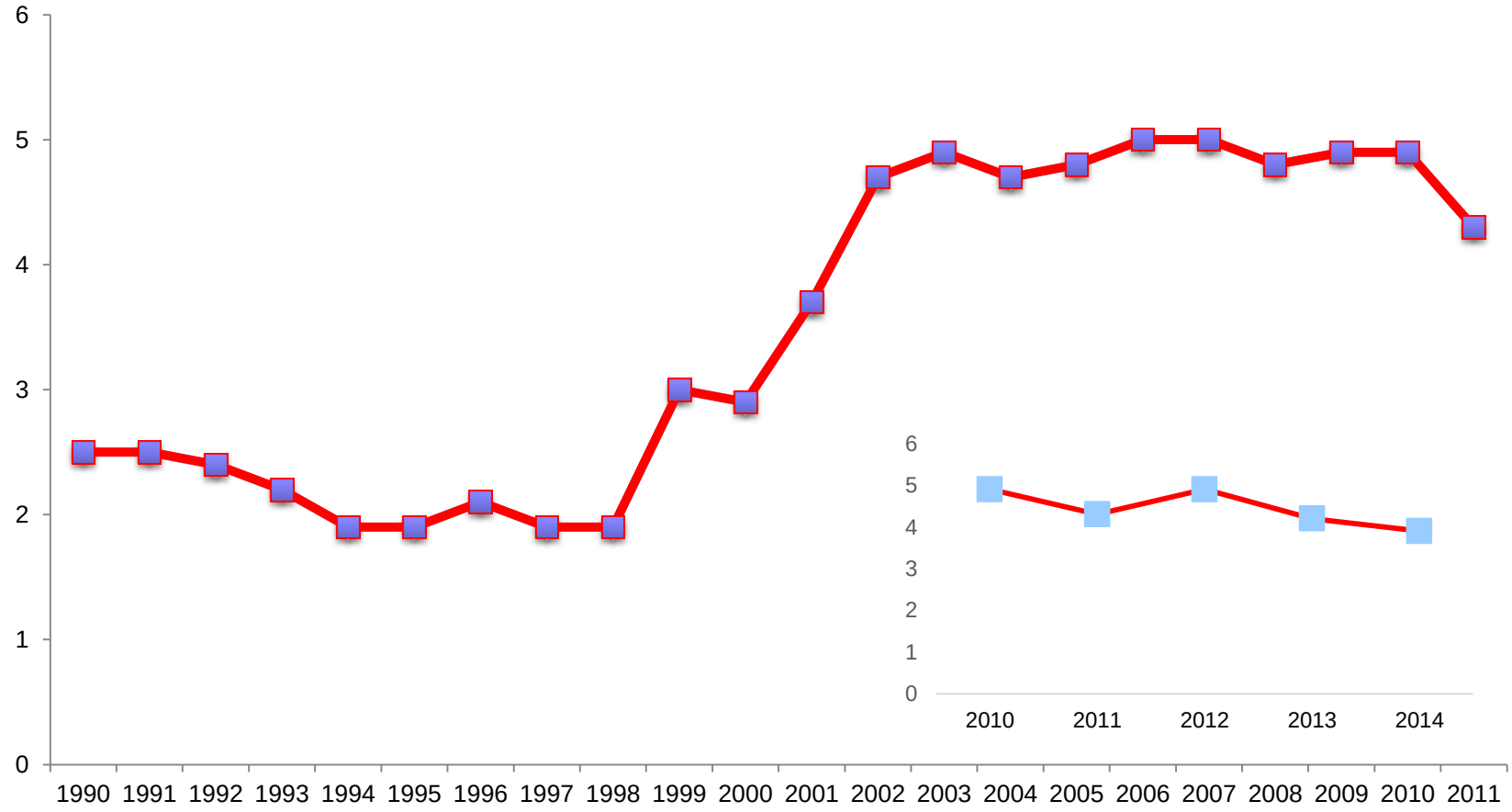
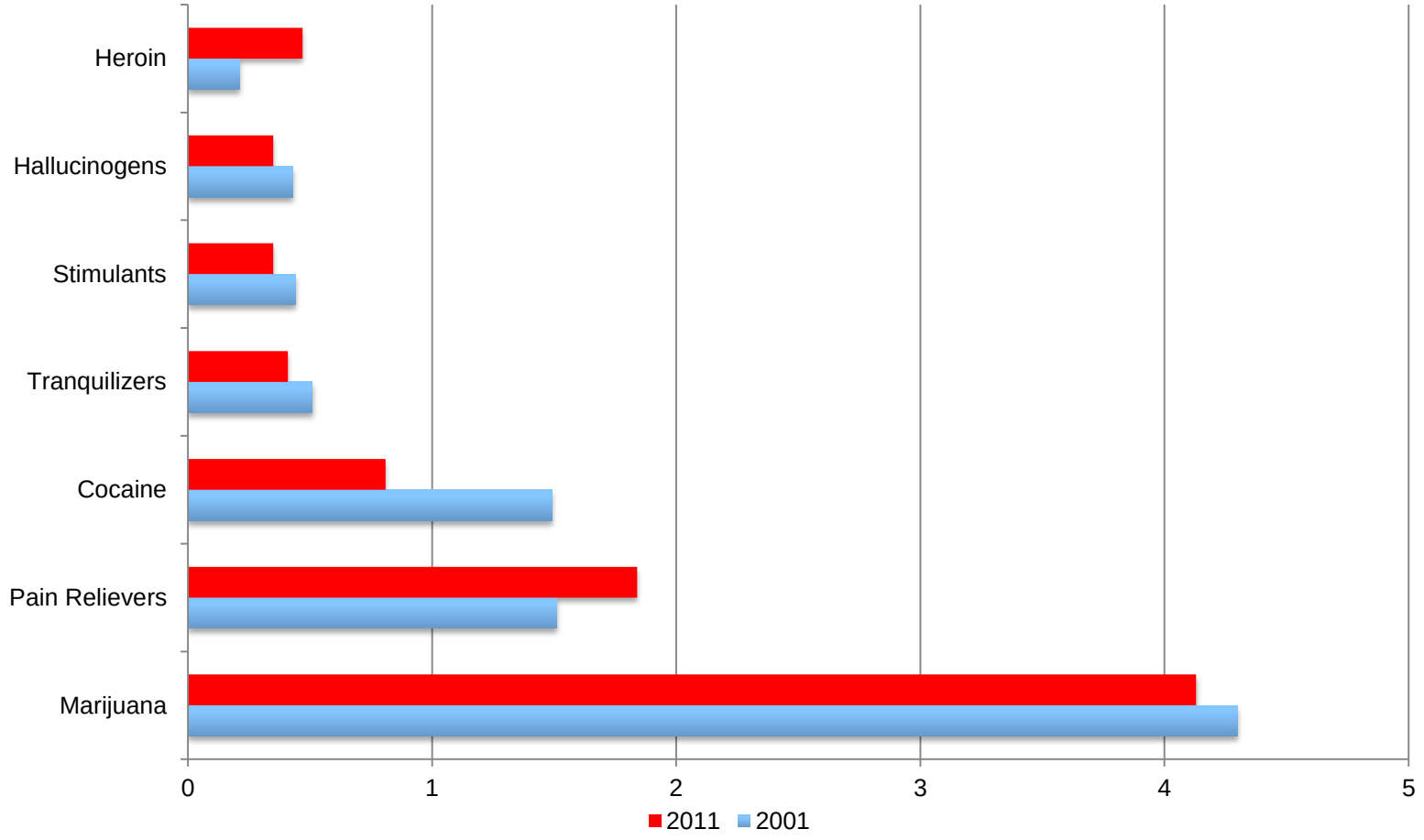
Percent of Respondents Using Pain Relievers Nonmedically: 2001 – 2014



Source: National Survey on Drug Use and Health 1990 – 2014

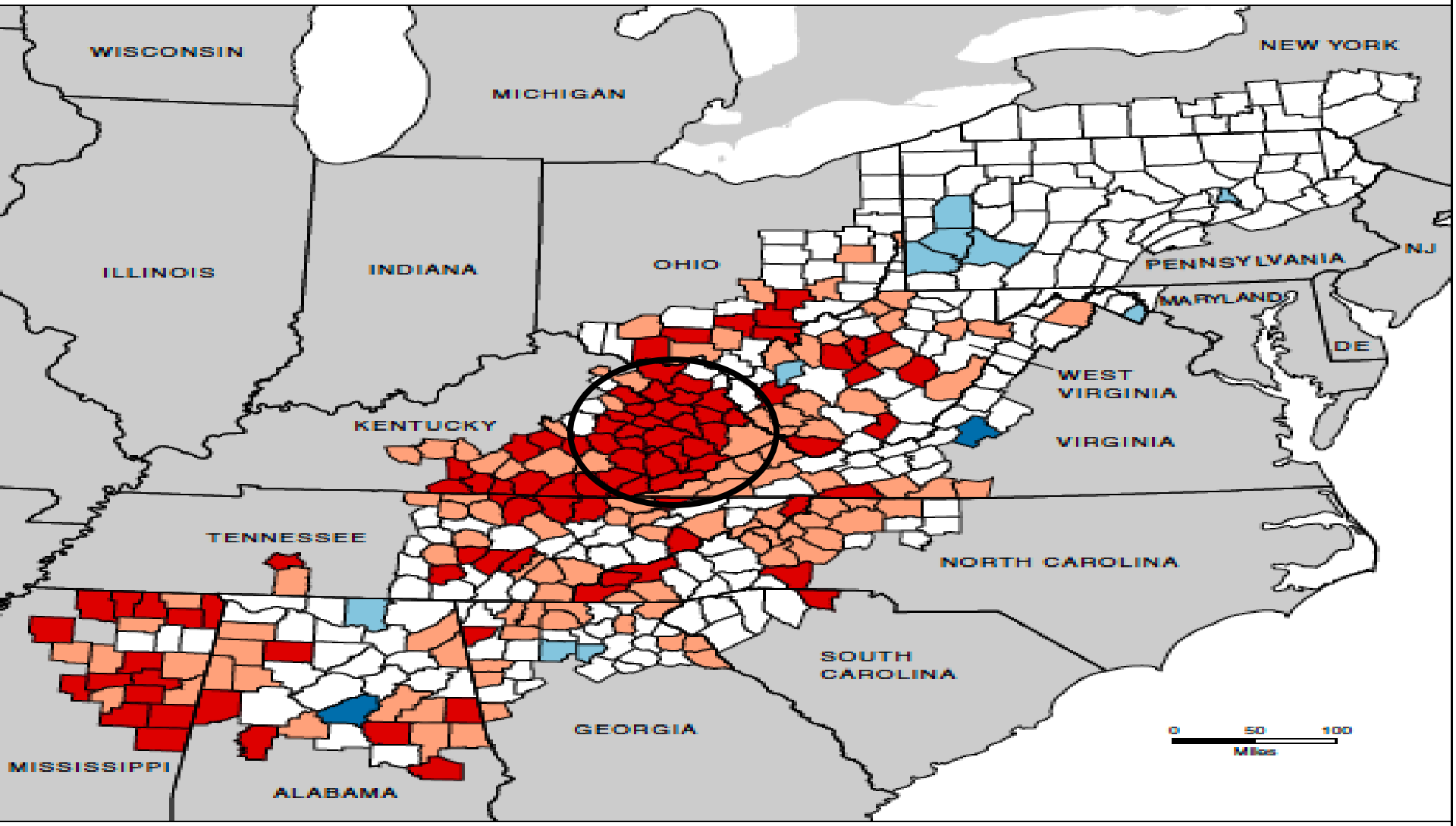
Past Year Illicit Drug Abuse/Dependence in Millions



Source: National Survey on Drug Use and Health 2002, 2011

County Economic Status in Appalachia, Fiscal Year 2015

(Effective October 1, 2014 through September 30, 2015)



The Appalachian Regional Commission uses an index-based county economic classification system to identify and monitor the economic status of Appalachian counties. See the reverse side for a description of each economic level.

County Economic Levels

- Distressed (90)
- At-Risk (108)
- Transitional (210)
- Competitive (10)
- Attainment (2)

ARC APPALACHIAN REGIONAL COMMISSION

Map Created: March 2014

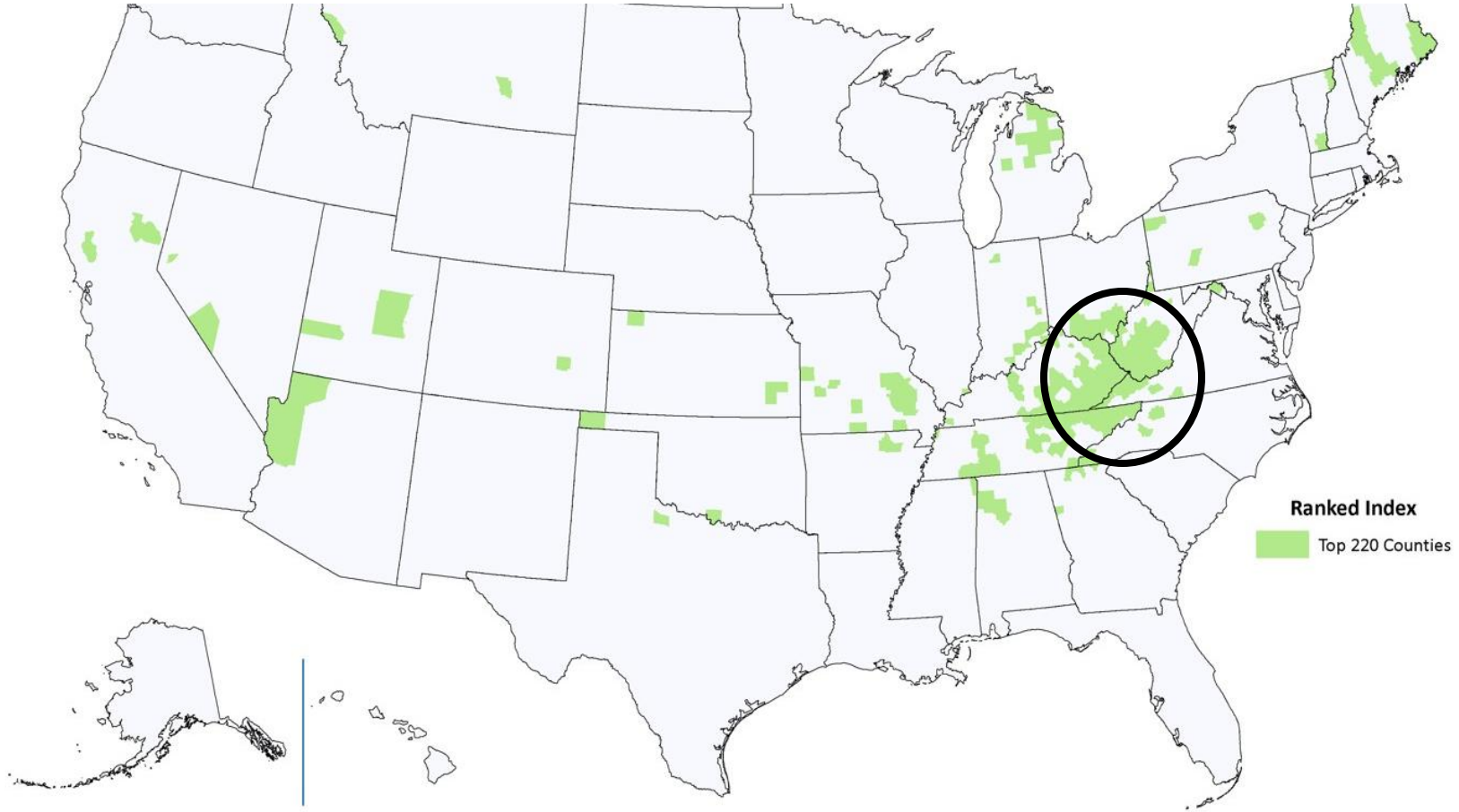
Data Sources:

Unemployment data: U.S. Bureau of Labor Statistics, LAUS, 2010–2012

Income data: U.S. Bureau of Economic Analysis, REIS, 2012

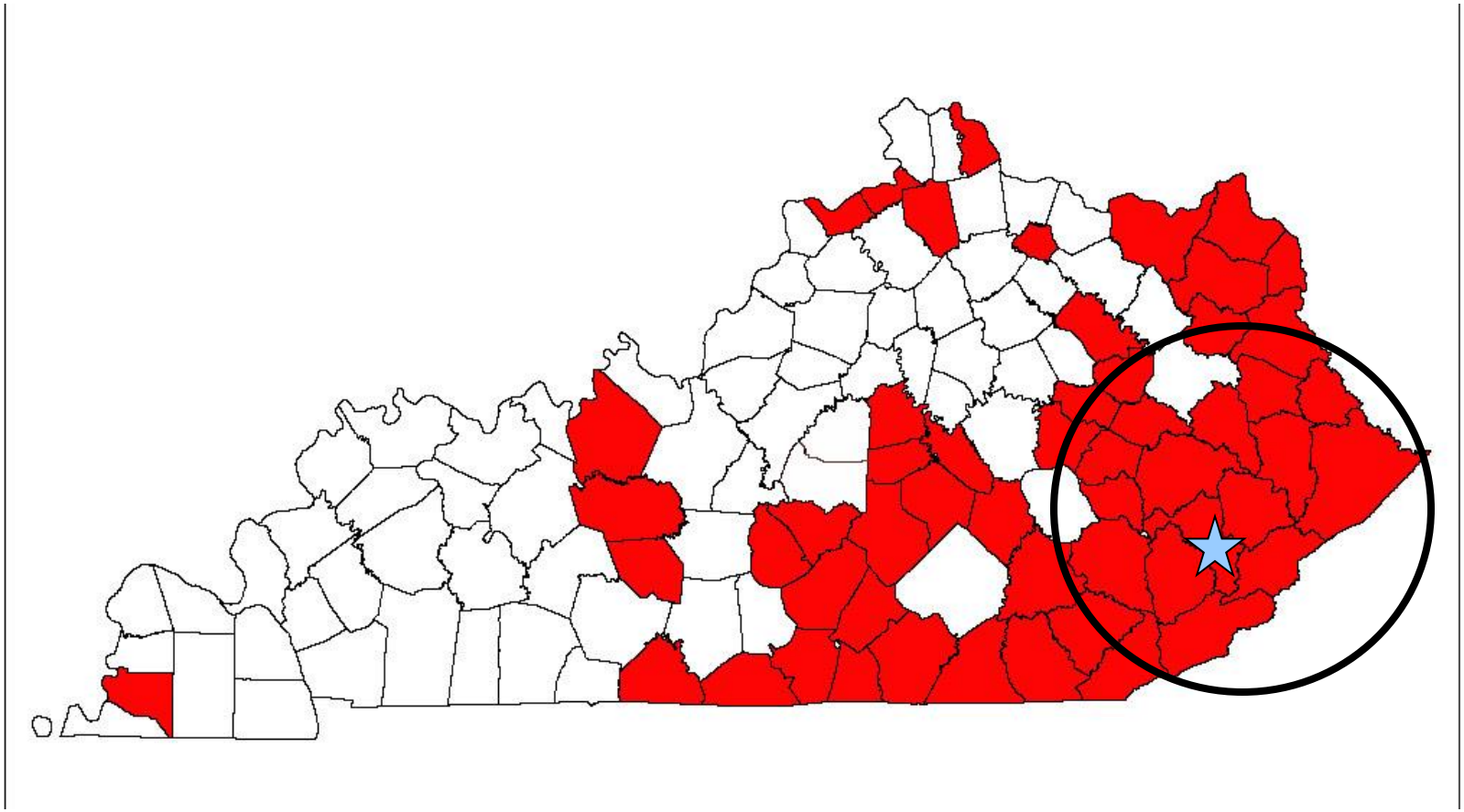
Poverty data: U.S. Census Bureau, American Community Survey, 2008–2012

Vulnerable Areas for HIV/HCV



CDC, 2016

Vulnerable Areas for HIV/HCV



CDC, 2016

Appalachian “Pain Culture”

- Laborious industries
  - Mining
  - Lumber
- Culture established that pain=opioids long before the recent epidemic
- How does this culture contribute to the current epidemic
  - View of safety and legality of sharing

- Social Networks among Appalachian People (SNAP) study
- Purpose: determine prevalence and incidence of HCV, HIV and HSV-2 and other risk behaviors in relation to social network characteristics among rural prescription drug users
- 500 rural out-of-treatment PWID/non-PWID recruited and followed at 6-, 12-, 18-, 24-, 30-, and 36-months post-baseline

Participants

- Recruitment began in November 2008
- Storefront location in rural town
- Participants recruited via Respondent Driven Sampling (RDS)

Eligibility Criteria

- Age 18+
- English-speaking
- PWID (initial seeds)
- Use of at least 1 of the following drugs to get high in prior 6 mo:
  - Rx Opiates (illicit use)
  - Cocaine
  - Heroin
  - Methamphetamine

Outcomes

- Prescription drug use trajectories
- HIV, HCV, HSV-2 prevalence and incidence (i.e., seroconversion)
- HIV risk behaviors
- Overdose

Data Collection Procedures

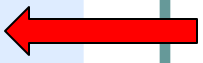
- Interviewer-administered questionnaire
  - Computer-assisted personal interview (CAPI) via tablet PC
- Serologic testing (with pre- and post-test counseling – all rapid tests)
  - HIV
  - HCV
  - HSV-2

Participant Characteristics N=503

	n	%
Male	286	56.7
Age, median (IQR)	31 (26 ,38)	
Caucasian	474	94.2
Employed Full-Time	173	34.4
Lifetime Injection Drug Use	394	78.3

Drug Use – 2008, 2014, 2016

	Past 30 Days (2008)	Past 30 Days (2014)	Past 30 Days (2016)
Buprenorphine (illicit)	Not queried	26.5	19.2
Methadone (illicit)	60.8	11.0	7.9
Heroin	4.4	0.1	1.4
OxyContin	69.8	0.1	1.1
Roxicodone	72.4	18.6	17.3
Hydrocodone	81.3	28.1	23.3
Benzodiazepines	85.3	27.1	28.8
Methamphetamine	3.4	4.0	4.6
Cocaine	22.5	7.2	9.8
Gabapentin	0	14.7	47.7

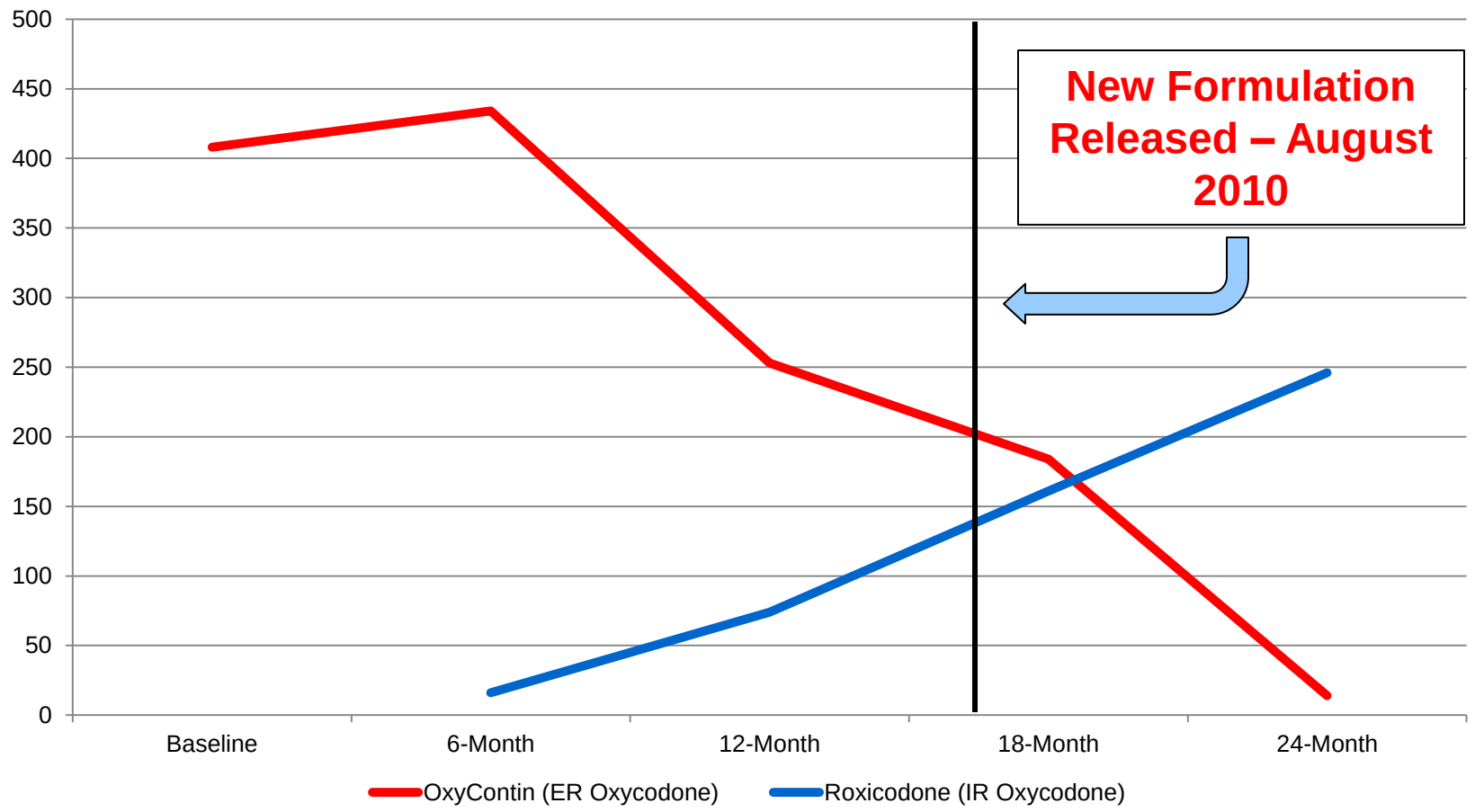


Emerging Trends in Prescription Drug Abuse

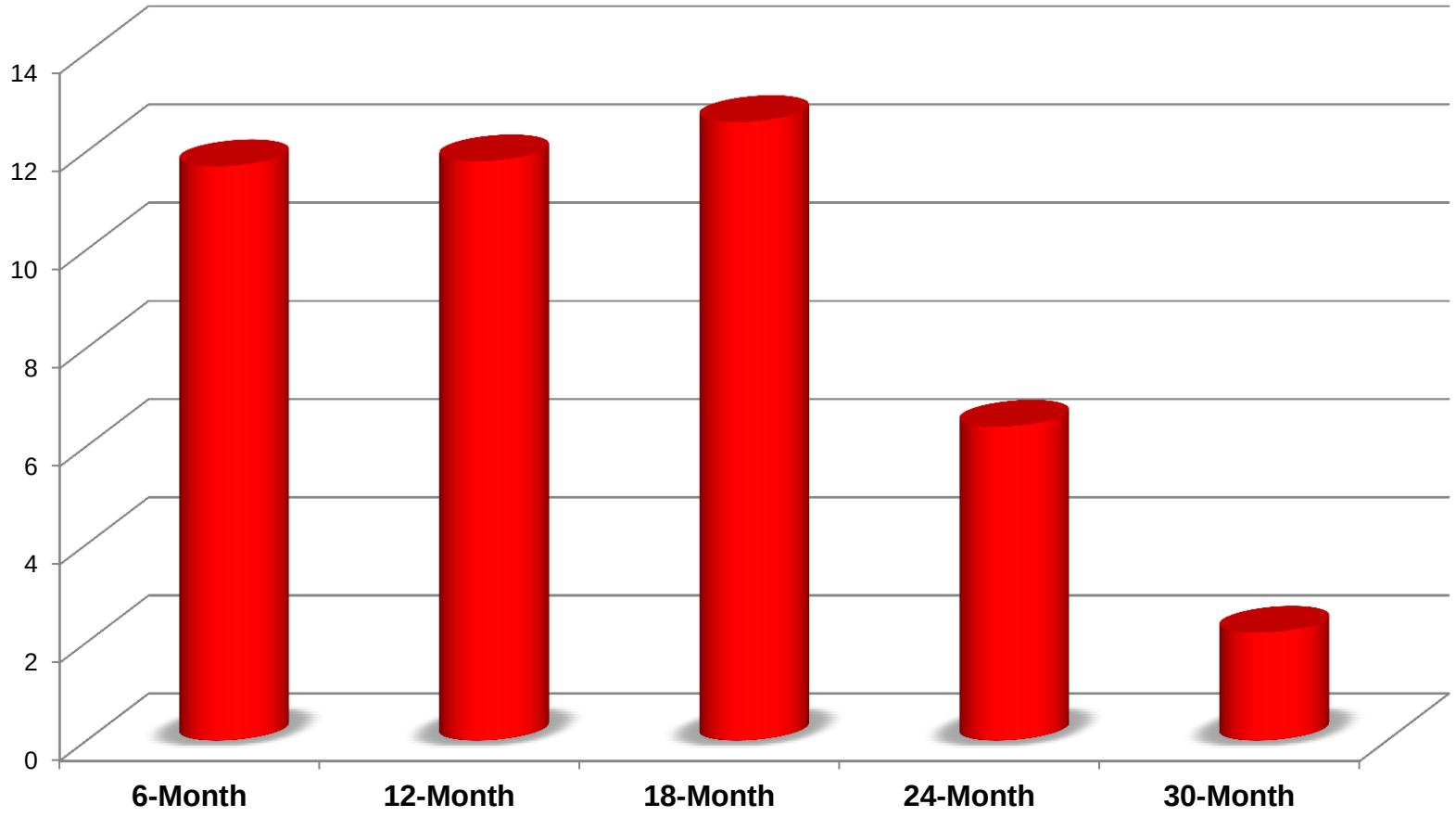
- Neurontin (gabapentin)
  - 165% increase in abuse between 2013 and 2014
  - *2950%* increase in abuse between 2008 and 2014
  - Participants reporting a mean of 25 days of use in past 30
  - More likely ($p<0.05$) to also be abusing IR oxycodone, buprenorphine and benzodiazepines

Smith, Lofwall and Havens, *Am J Psychiatry*, 2015

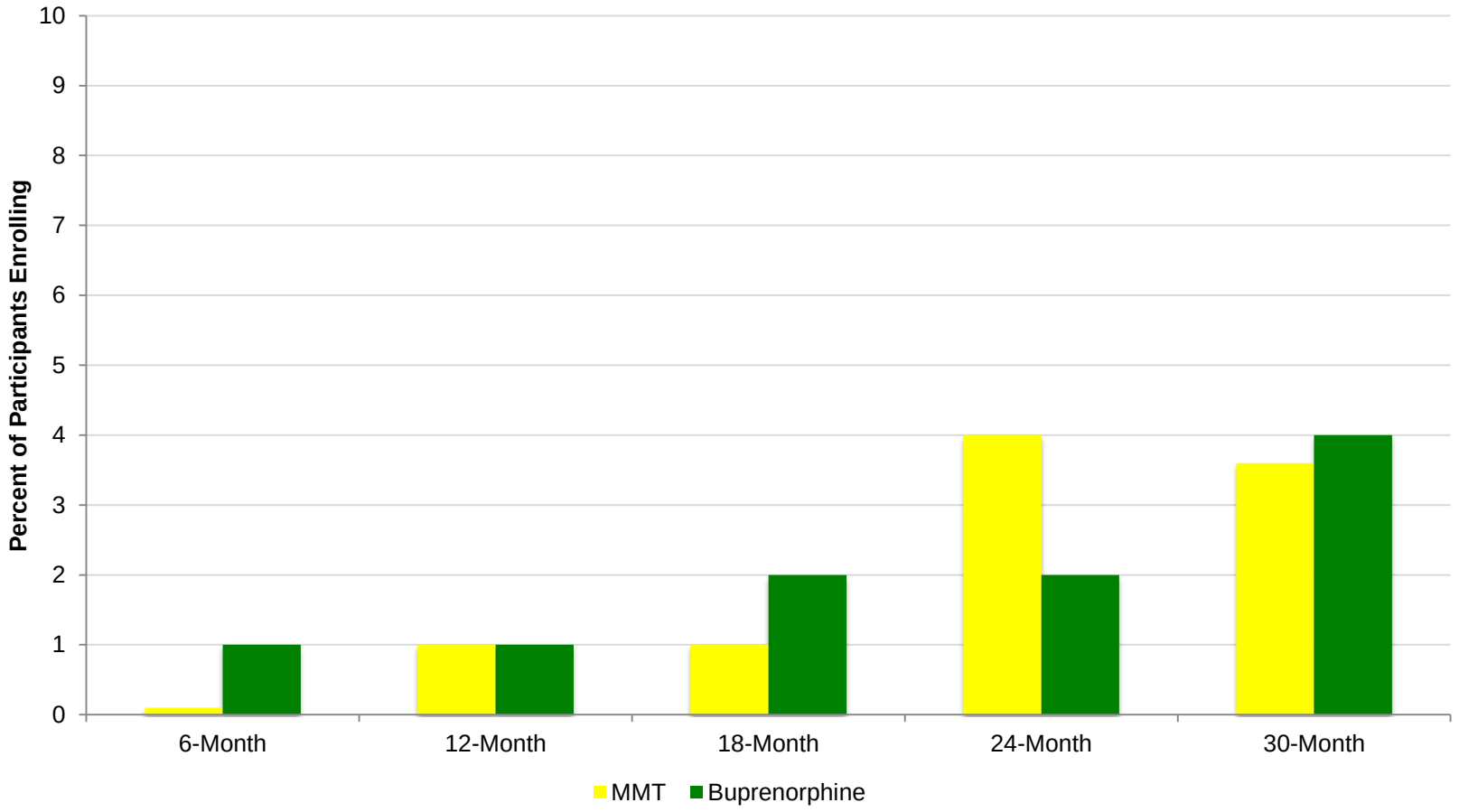
Effect of Change in OxyContin Formulation on Abuse



Proportion of Participants Accessing Substance Abuse Treatment



OST Uptake


Percent of Participants Enrolling
10
9
8
7
6
5
4
3
2
1
0
6-Month
12-Month
18-Month
24-Month
30-Month
MMT
Buprenorphine

Drugs Initiated Injection With (n=394 Lifetime PWIDs)

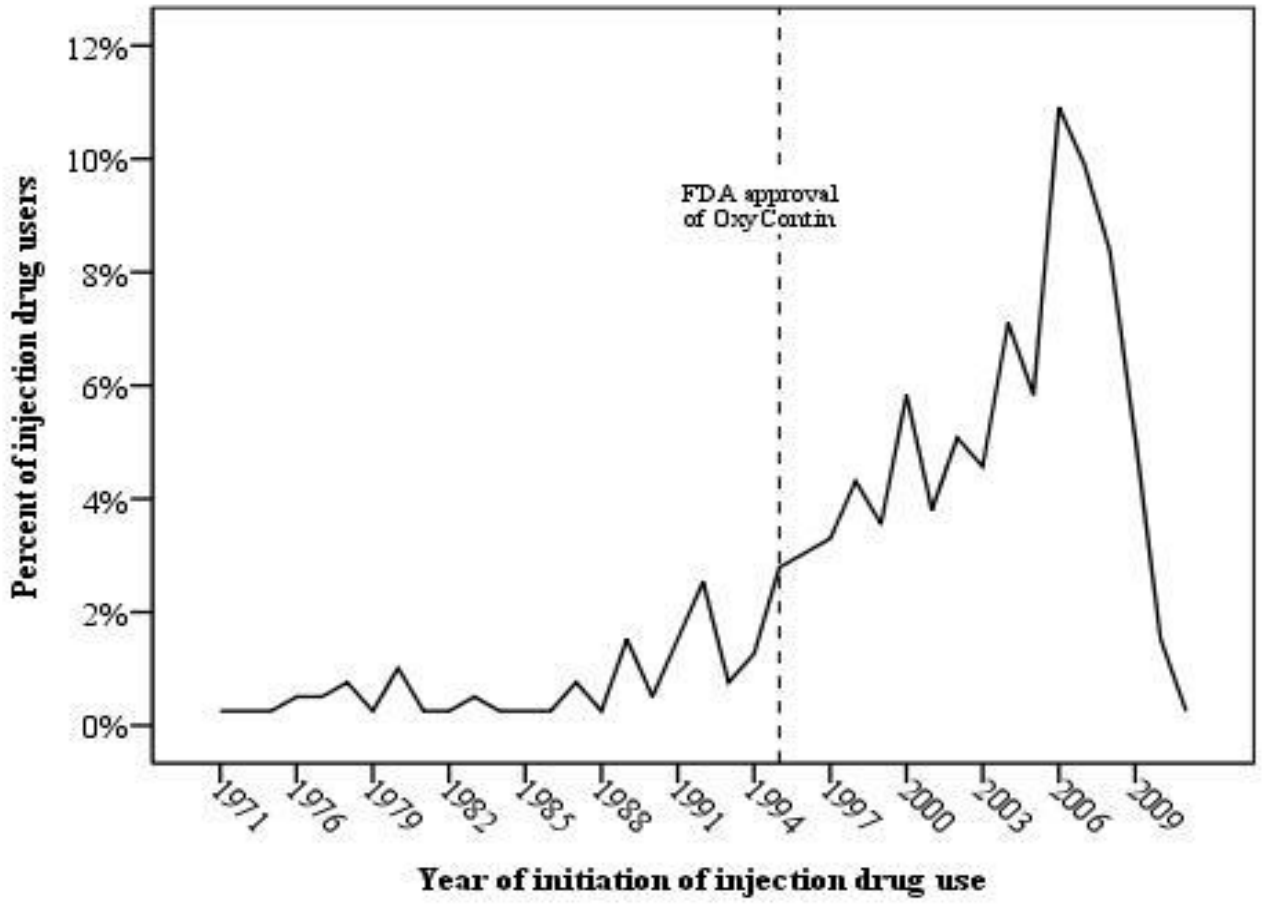
	<=25 n	%	>25 n	%
OxyContin	58	66.3	133	43.2
Other Rx opiates	13	15.1	41	13.3
TOTAL ALL Rx opiates	**71**	**82.5**	**174**	**56.5***
Methamphetamine	0	0	4	1.3
Cocaine	13	15.2	104	33.7*
Heroin	2	2.33	18	5.8

**P*<0.001

Drug Risk Behaviors

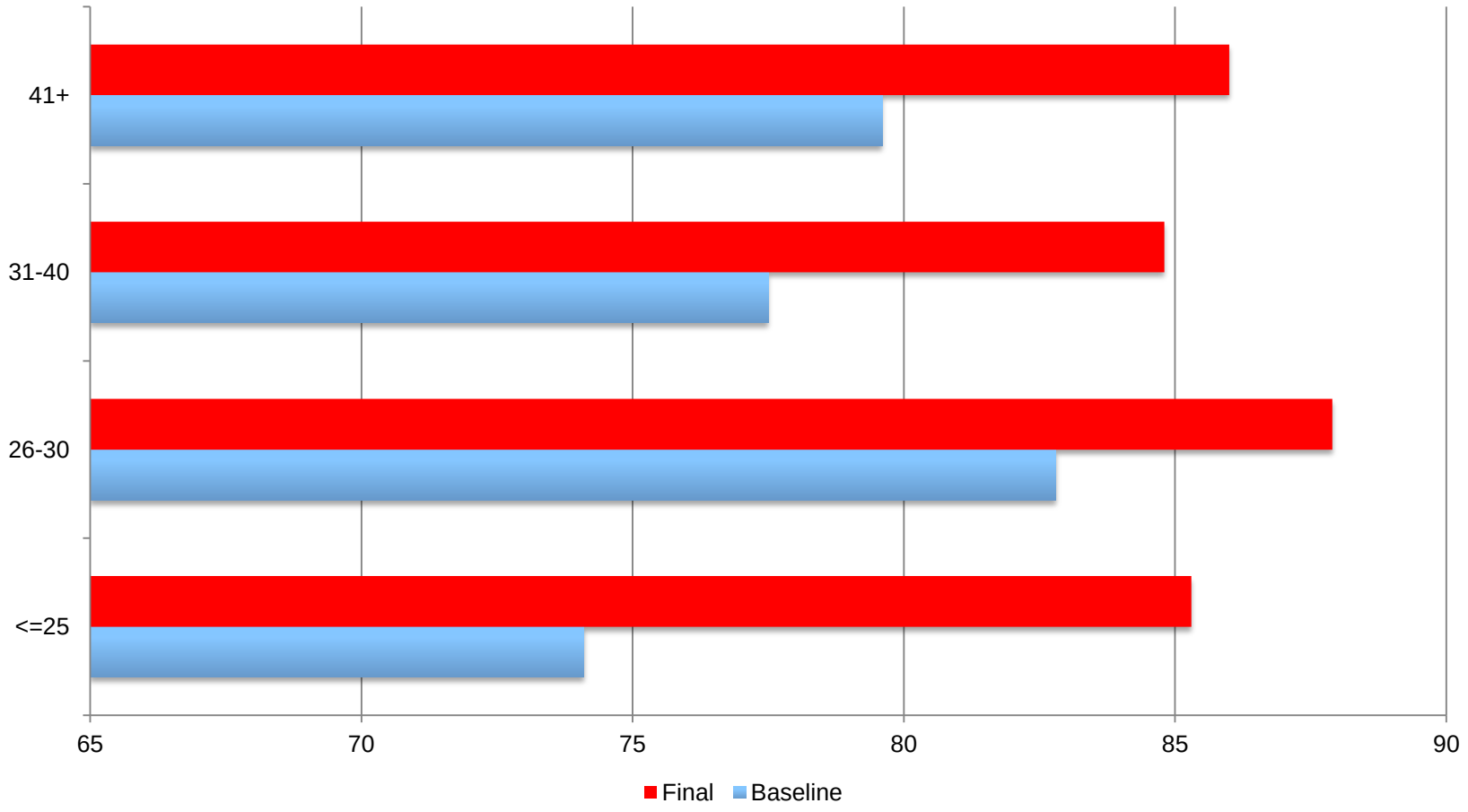
	n	%
Sharing Syringes (past 6 mo) N=288	92	31.9
Sharing Cottons, Cookers, Water (6 mo) N=288	137	47.6
Daily Injection N=288	102	35.4
Sharing Straws (6 mo) N=503	407	88.9
Overdose (Lifetime) N=503	146	29.0

Initiation to Injection

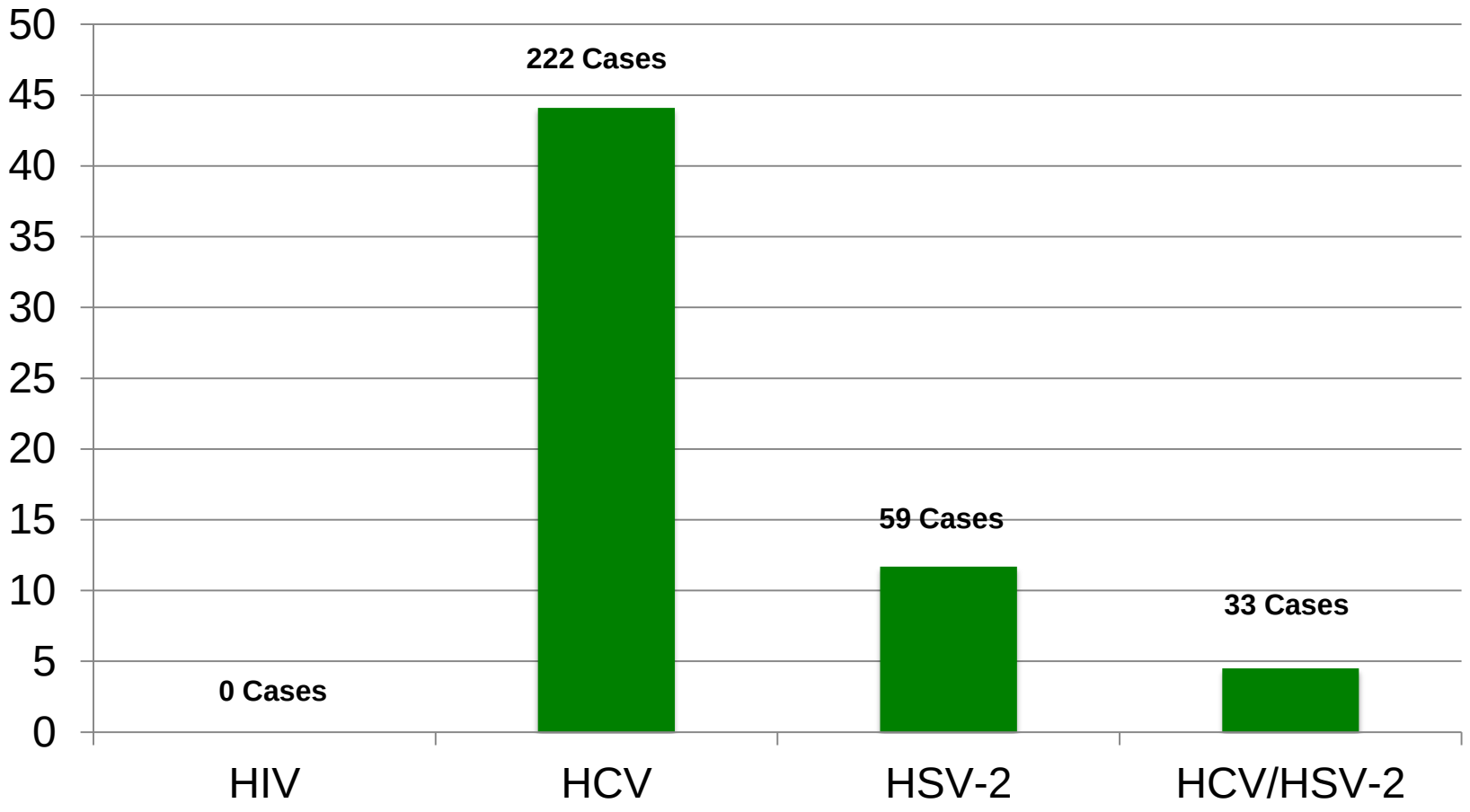


Young and Havens, *Addiction*, 2012

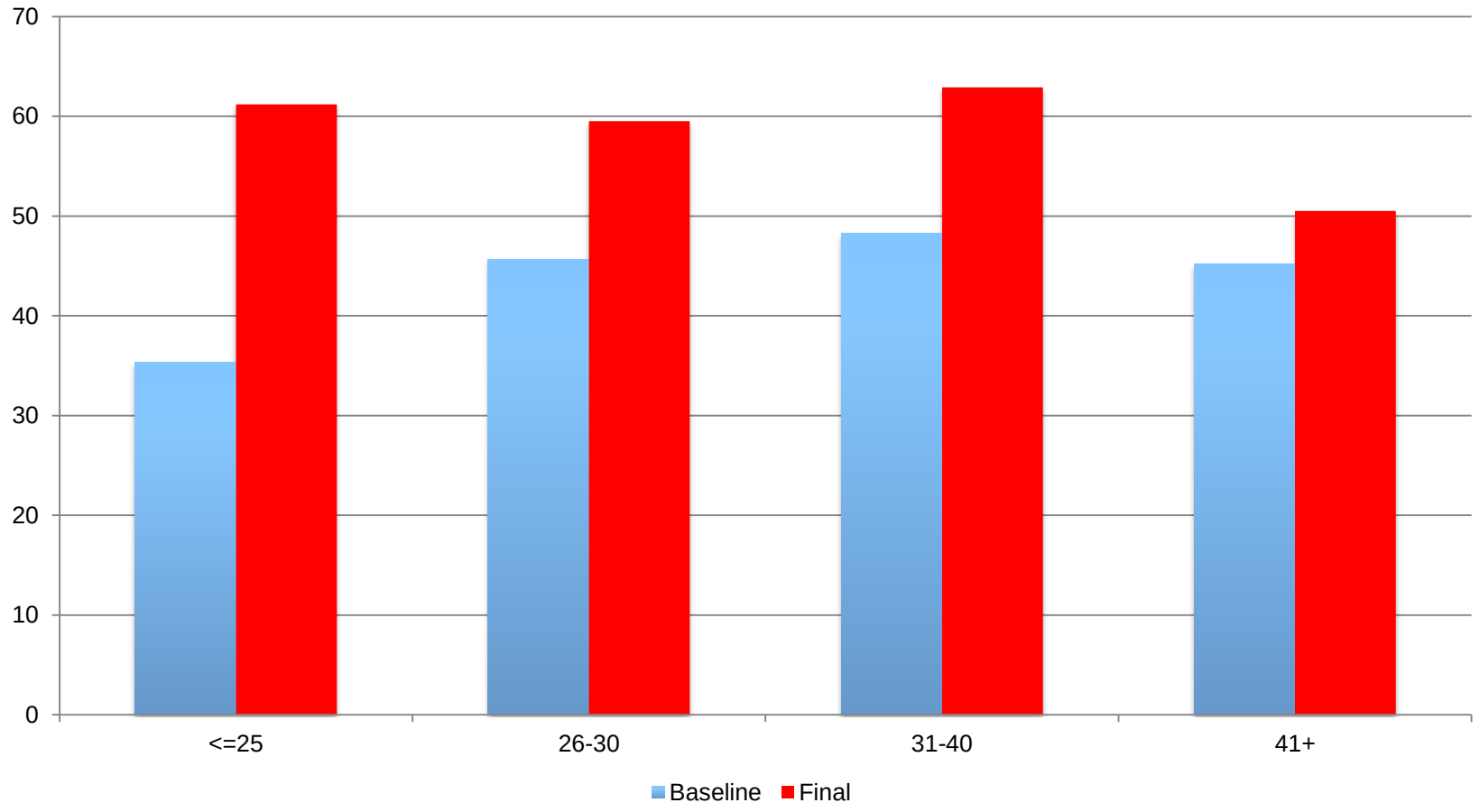
Initiation to Injection by Age



Baseline Prevalence – HIV, HCV, HSV-2



HCV Prevalence by Age

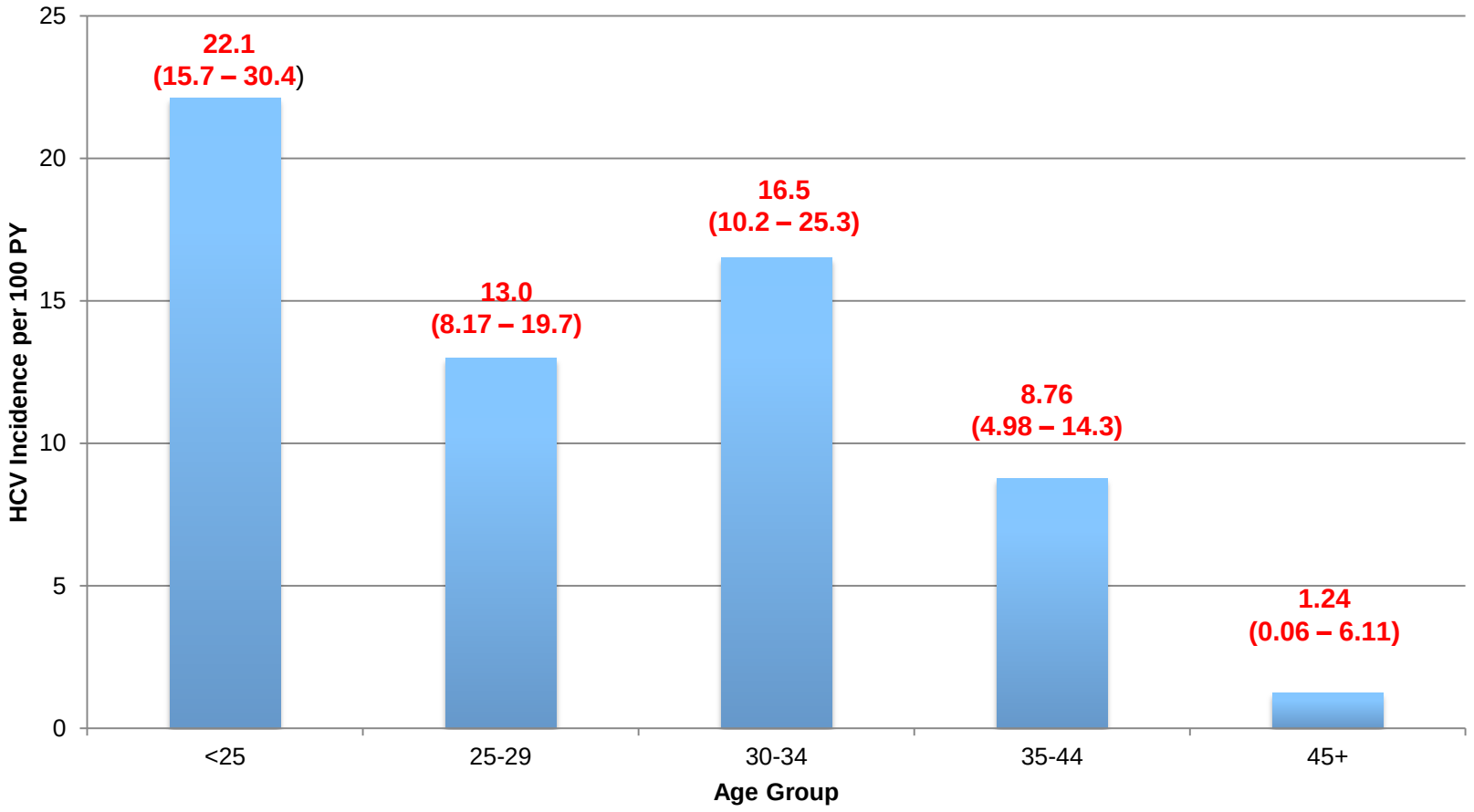


Hepatitis C Correlates

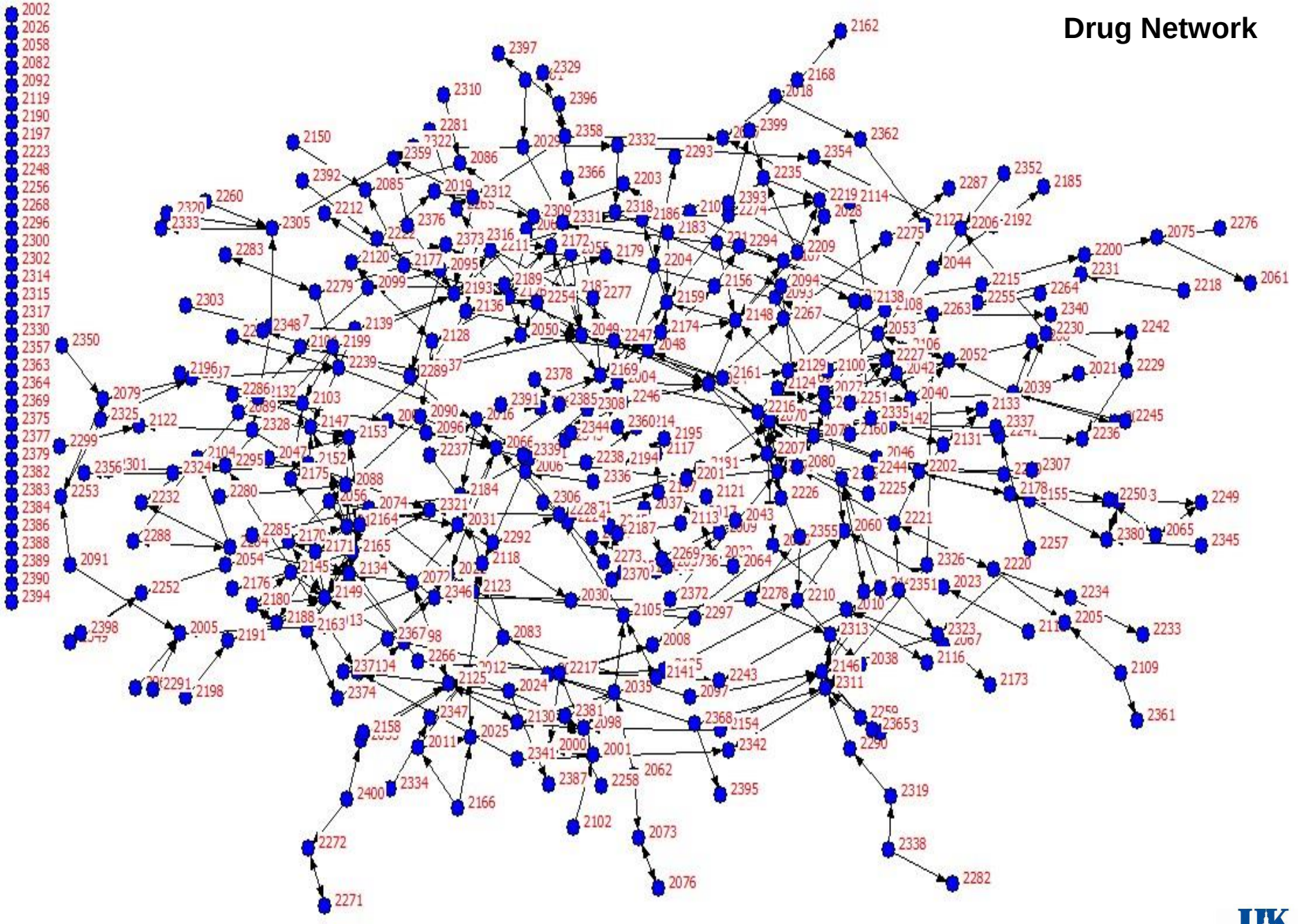
- Independent associations with HCV:
  - Syringe sharing (aOR: 2.04, 95% CI: 1.20, 3.45)
  - Years IDU (aOR: 1.04, 95% CI: 1.01, 1.07)
  - Injecting Rx opiates (aOR: 2.37, 95% CI: 1.21, 4.63)
  - Injecting Cocaine (aOR: 2.24, 95% CI: 1.41, 3.54)

Havens et al., *American Journal of Public Health*, 2013

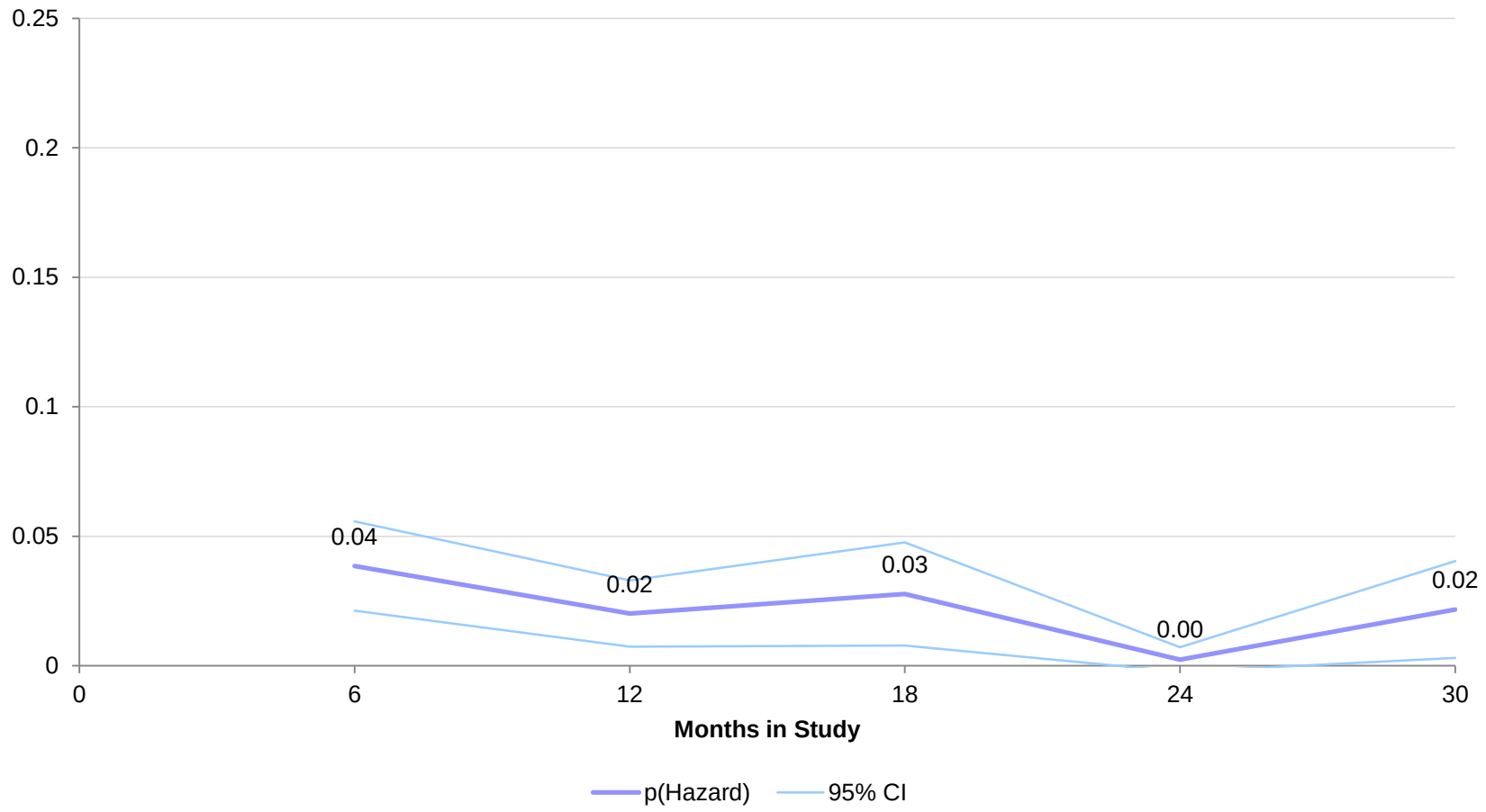
HCV Incidence for PWID



Drug Network



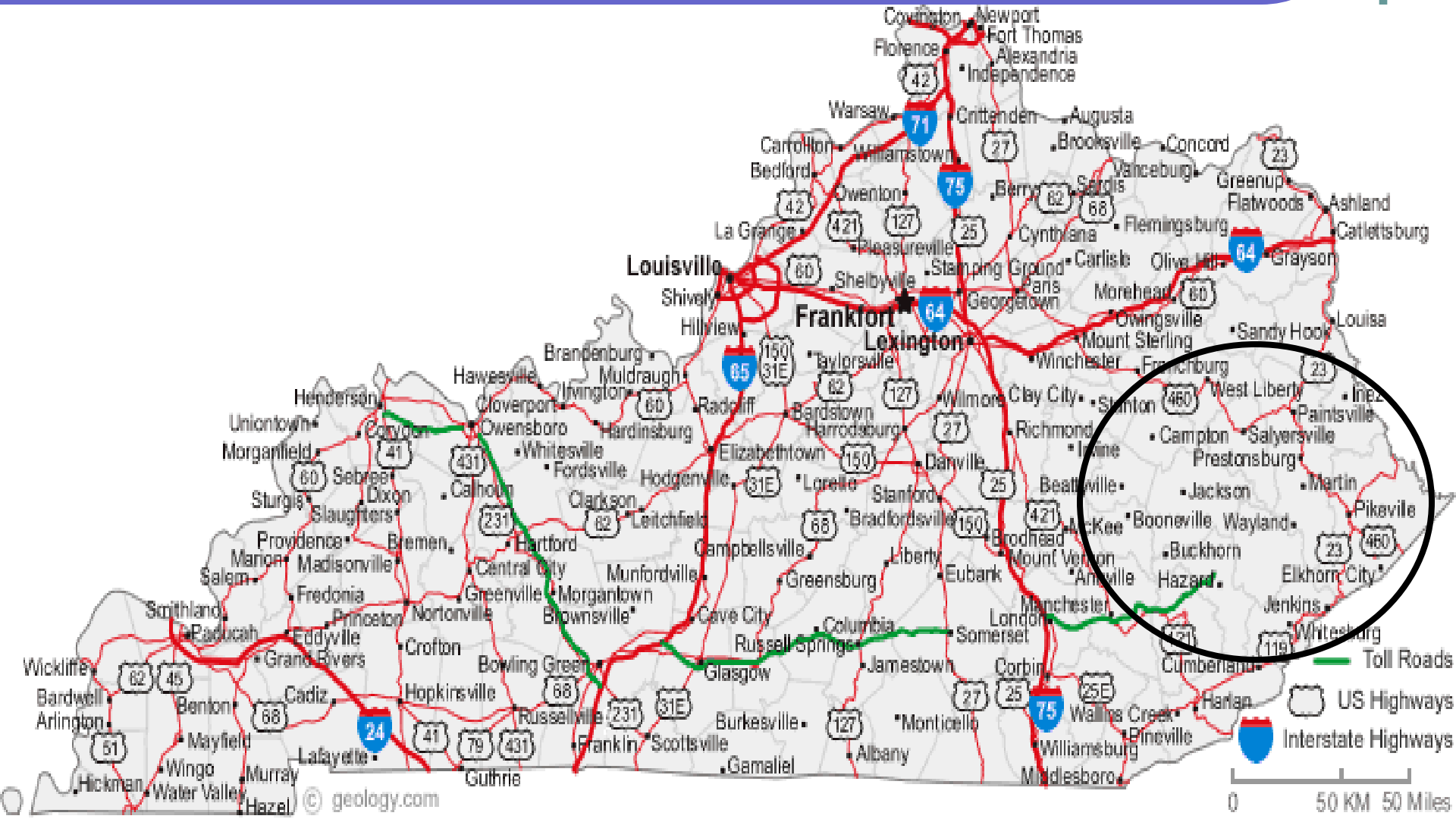
Probability of Heroin Initiation



Heroin Availability and Potential for Abuse

- One in ten participants noted an increase in the availability of heroin since 2013
- However, when asked if they would abuse it if regularly available, less than 1% indicated they would

Protective? Factors



Study Findings to Date

- HCV highly prevalent
- Young PWID particularly at risk for seroconversion
- Transition to gabapentin as primary drug of abuse
- Heroin use not prevalent
- Lack of access and uptake of treatment, especially evidence-based therapies

What is Next for Rural Appalachia?

- Treatment for HCV
  - DAA's promising; access is lacking
  - Medicaid formulary is a barrier
- Gabapentin – abuse liability?
  - Clearly being abused; behavioral pharmacology data suggest has low abuse liability…revist?
  - Scheduling of drug *nationwide*

Acknowledgements

- NIH/NIDA (R01-DA024598 and R01-DA033862)
- Drs. April Young, Hannah Knudsen, Michelle Lofwall, Sharon Walsh (Co-Investigators)
- Study Staff – Hazard and Lexington
- Study Participants