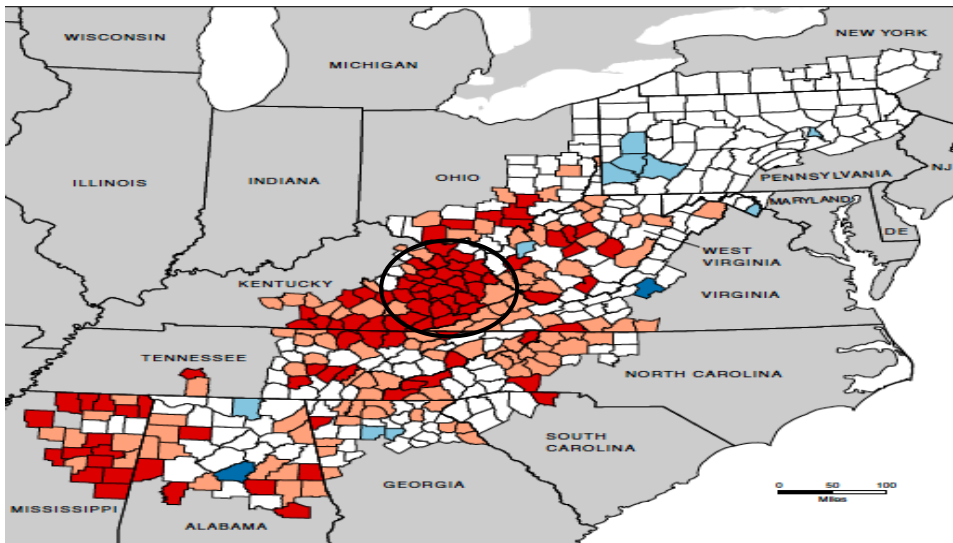


# Prescription Opioid Use, Injecting Drug Use and HCV in Rural and Suburban Settings

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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)



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

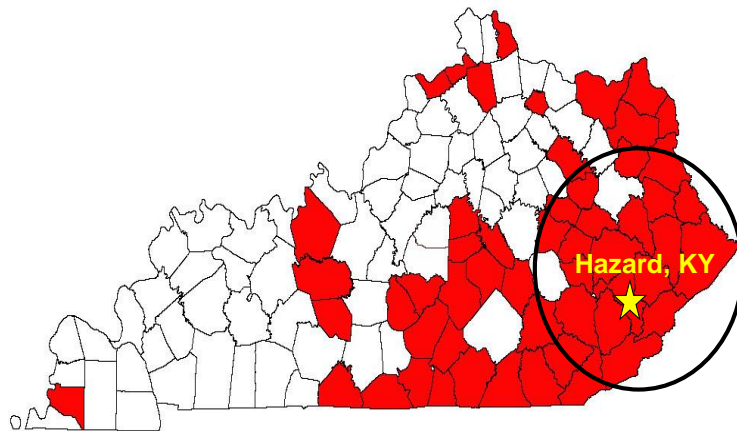


Figure 2. Counties for which estimated vulnerability scores or their upper 90% confidence interval exceeded the 95th percentile.



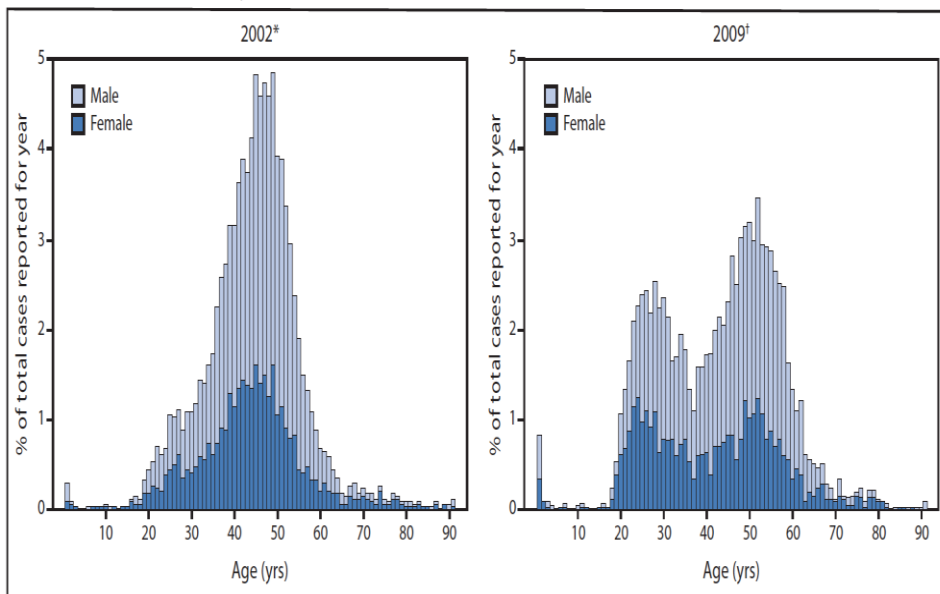
Van Handel et al. *JAIDS*, 2016

## Vulnerable Areas for HIV/HCV



Van Handel et al. *JAIDS*, 2016

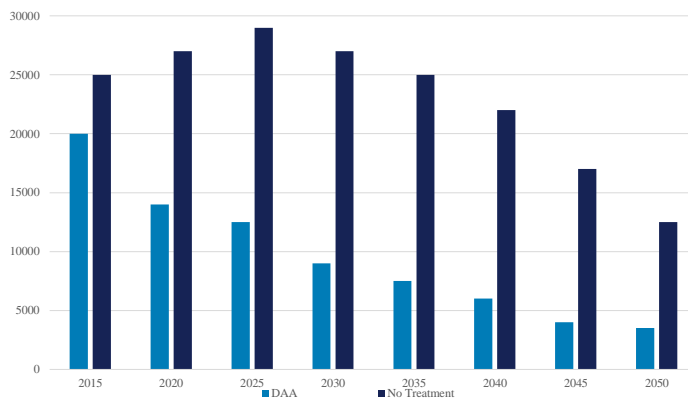
FIGURE 2. Age distribution of newly reported confirmed cases of hepatitis C virus infection — Massachusetts, 2002 and 2009



\* N = 6,281; excludes 35 cases with missing age or sex information.  
 † N = 3,904; excludes 346 cases with missing age or sex information.

MMWR, May 6, 2011; 60(17): 537-541

## Projected Burden of Hepatocellular Carcinoma Related to HCV 2015-2050



Chhatwal et al., *Hepatology*, 2016

## Appalachian “Pain Culture”

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



### **Longitudinal Study to Determine Vulnerabilities to Prescription Opioid Abuse and Associated Harms in Rural Appalachia**

- Social Networks among Appalachian People (SNAP) study
- Purpose: determine prevalence and incidence of HCV, HIV and HSV-2 in relation to social network characteristics among rural drug users
- 500 rural out-of-treatment PWID/non-PWID recruited and followed at 6-, 12-, 18-, 24-, 30-, and 36-months post-baseline (95% f/u at 18-months; 91% at 36-months)



Young, Rudolph, Quillen and Havens. *J Epidemiol and Community Health*, 2014



## Eligibility Criteria

- Age 18+
- English-speaking
- PWID (initial seeds)
- Use of at least 1 of the following drugs to get high in prior 30 days:
  - Rx Opiates (illicit use)
  - Cocaine
  - Heroin
  - Methamphetamine



## 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



## Recent Drug Use 2008 and 2016

	Past 30 Days 2008	Past 30 Days 2016
Buprenorphine (illicit) <sup>1</sup>	Not queried	19.2%
Methadone (illicit) <sup>2</sup>	60.8	7.9
Heroin	4.4	<b>1.4</b>
OxyContin <sup>3</sup>	69.8	1.1
Roxicodone	72.4	17.3
Hydrocodone	81.3	23.3
Benzodiazepines	85.3	28.8
Methamphetamine	3.4	4.6
Cocaine	22.5	9.8
Gabapentin <sup>4</sup>	0	<b>47.7</b>



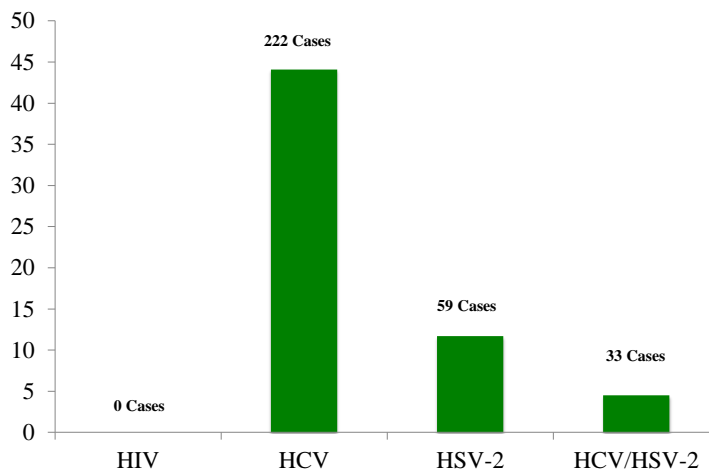
<sup>1</sup>Lofwall and Havens. *Drug and Alcohol Depend*, 2012

<sup>2</sup>Hall, Leukefeld, Havens. *Am J Drug Alcohol Abuse*, 2013

<sup>3</sup>Jonas, Young, Oser, Leukefeld, Havens. *Soc Sci Med*, 2012

<sup>4</sup>Smith, Lofwall, Havens. *Am J Psychiatry*, 2015

## Baseline Prevalence HIV, HCV, HSV-2



**HIV:** Crosby, Oser, Leukefeld, Havens, Young. *Annals of Epidemiol*, 2012  
**HCV:** Havens, Lofwall, Frost, Oser, Leukefeld, Crosby. *Am J Public Health*, 2013  
**HSV2:** Stephens, Young, Mullins, Havens. *J Med Virology*, 2016

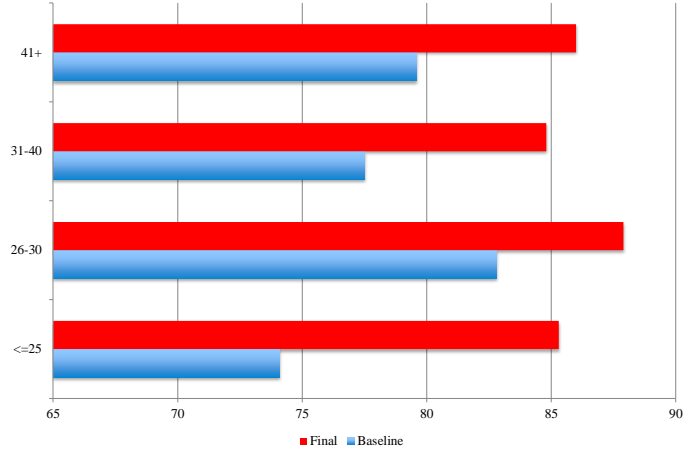
## Independent Correlates of Seroprevalent HCV Infection

	aOR	95% CI
Syringe sharing	2.04	1.20 – 3.45
Years IDU	1.04	1.01 – 1.07
Injecting Rx opiates	2.37	1.21 – 4.63
Injecting cocaine	2.24	1.41 – 3.54

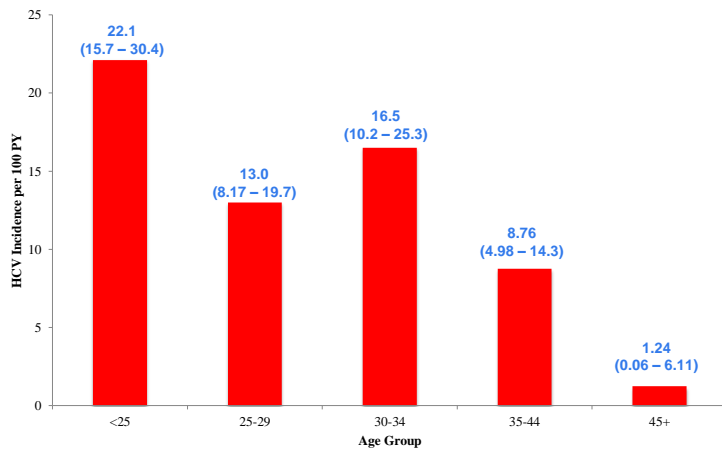
Havens et al. *Am J Public Health*, 2013



## Initiation to Injection by Age



## HCV Incidence among PWID





## Predictors of HCV Seroconversion

- Recent incarceration increased risk for HCV almost two-fold among PWID
- Those injecting for less than 1 year had the highest risk of seroconversion
- PWID who were only injecting prescription opioids were at greater risk for seroconverting
- PWID who were central in their works-sharing network were at greater risk of seroconverting

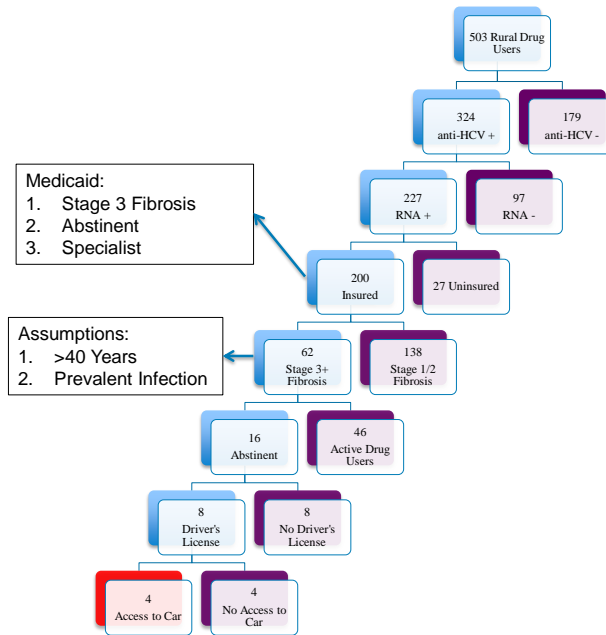


## Persistence of HCV in Rural Appalachia without Intervention

- Lack of access to evidence-based substance abuse treatments
- **Few HCV treatment providers in area/Lack of access to affordable treatment**
- Little access to harm reduction
- Social networks
  - Drug and sharing networks in particular



## HCV Treatment Eligibility

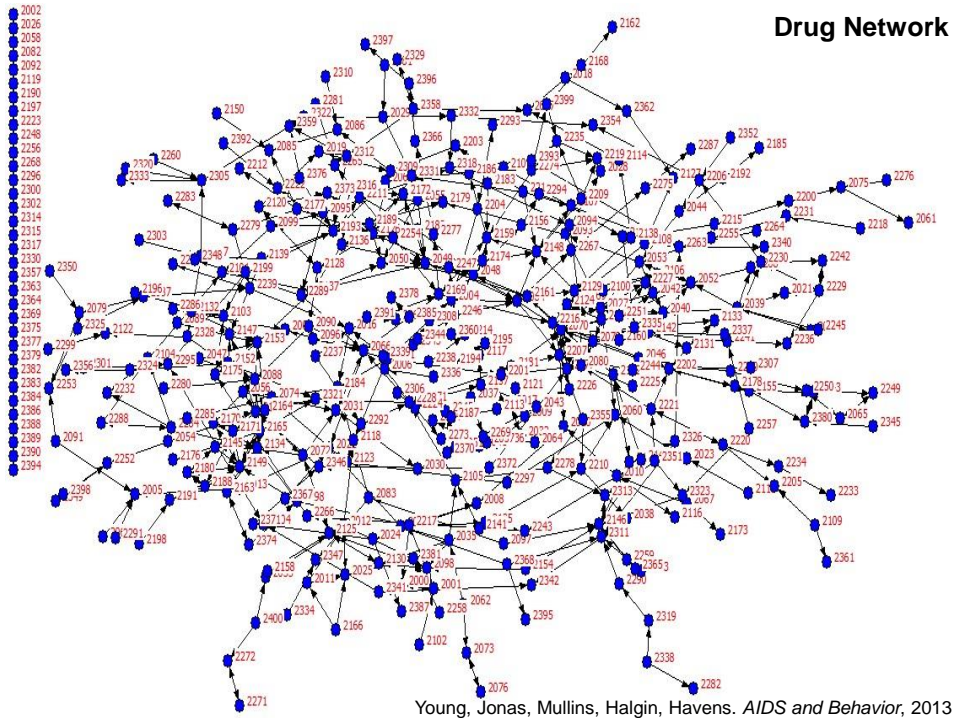


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## Next Steps

- Develop a model to improve HCV treatment access and delivery in rural areas
  - Affordable drug
  - Incorporation of evidence-based substance abuse treatment
  - Training providers on delivery of HCV treatments
  - Case management to remove barriers to care



## Acknowledgements

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- Study Participants

