NC ATEC
University of North Carolina at Chapel Hill
AIDS Training and Education Center

By The Numbers

HCV and HIV Epidemiology in the US

Coinfection Fridays

Session 1

18 January 2019

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University of North Carolina at Chapel Hill
School of Medicine

Dr. Hurt serves as UNC site PI for a study of PrEP funded by Gilead Sciences (DISCOVER) and previously oversaw a study of HCV therapy sponsored by AbbVie (EXPEDITION-2).

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The views expressed are not necessarily those of CDC, HRSA, or the NIH.

Acknowledgments

This presentation is based on the
first 3 core competencies of the
Curriculum on HIV/HCV Coinfection,
from the AETC National Coordinating Center:

https://aidsetc.org/hivhcv/1/contents

Data have been updated where possible
and augmented throughout.

Please see individual modules for additional
details about the content.

Objectives

- Describe trends in HCV and HIV infection in the United States
- Identify which populations are at greatest risk for HIV and HCV infection
- Explain the natural history of HCV and how it impacts the wellness of people also living with HIV
- Characterize some of the barriers facing people living with HCV, HIV, and coinfection in receiving care

Hepatitis C

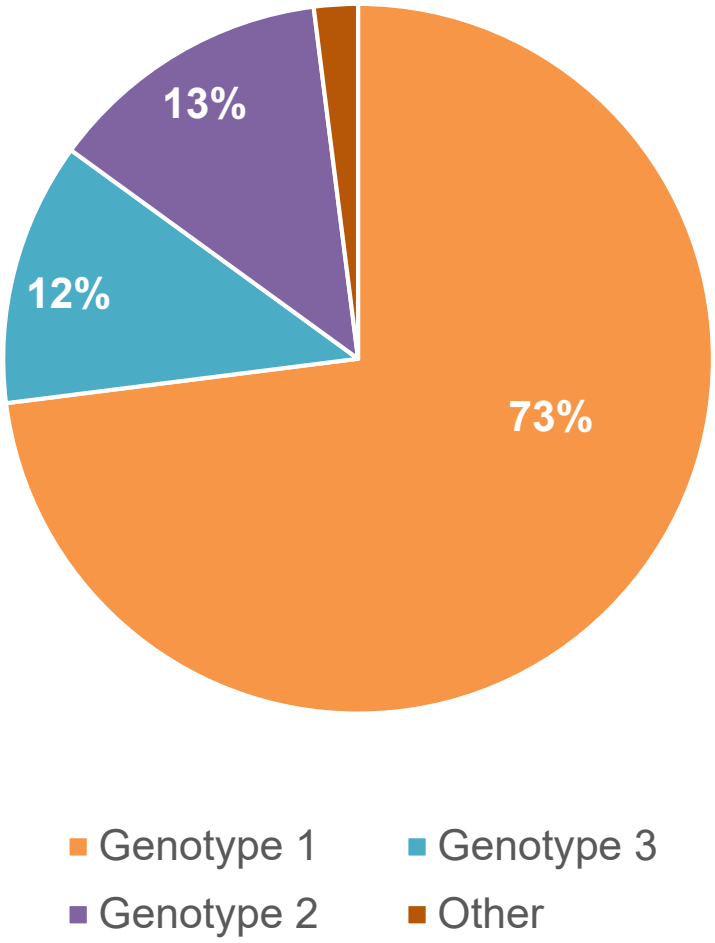
Most common chronic blood-borne infection in the US

RNA-based flavivirus

- Distant relative of yellow fever, Zika, and West Nile viruses
- Remains separate from the host's genetic material (unlike HIV)

Six different "genotypes"

- Closely related, yet each has unique characteristics
- Genotype 1 predominates in US →
- No major differences in transmission or natural history



Germer JJ, et al. J Clin Microbiol. 2011 Aug;49(8):3040-3.

How many Americans have HCV?

US Population

309.3

million

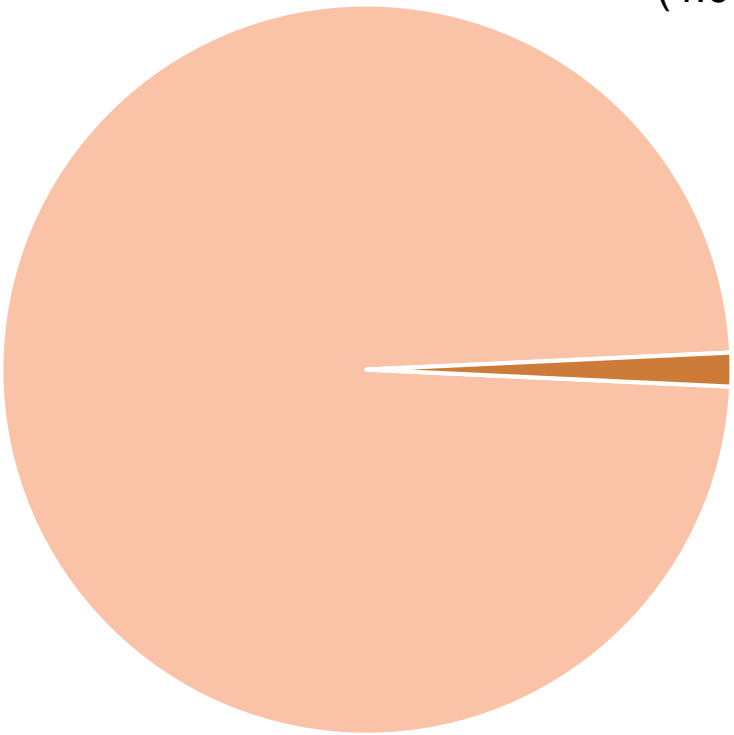
in 2010

Approximately

1.5%

ever infected

(4.6 million)



Edlin BR, et al. Hepatology. Nov 2015;62(5):1353-1363.

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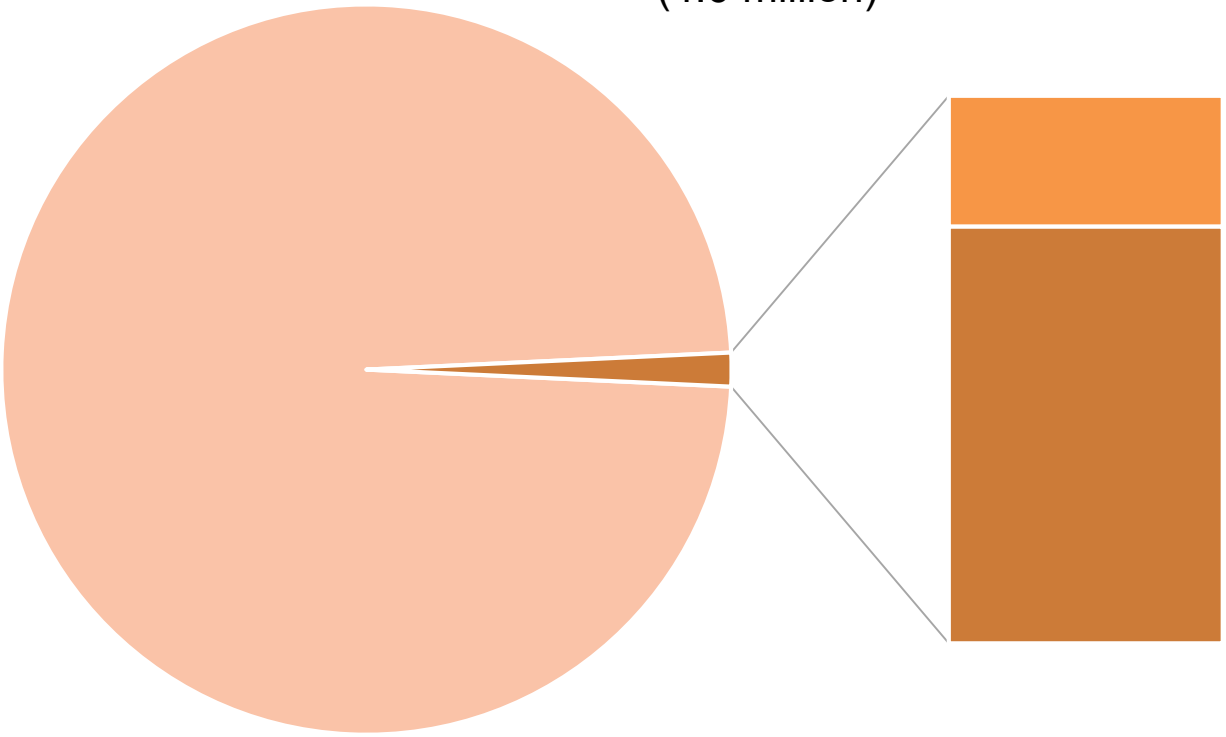


Approximately

1.1

million

cleared

(Ab+ and RNA–)

At least

3.5

million actively infected

(Ab+ and RNA+)

Edlin BR, et al. Hepatology. Nov 2015;62(5):1353-1363.

Who are those persons living with HCV?

Among **non-institutionalized** civilians with active HCV:

64%
male

10%
Hispanic

25%
Black

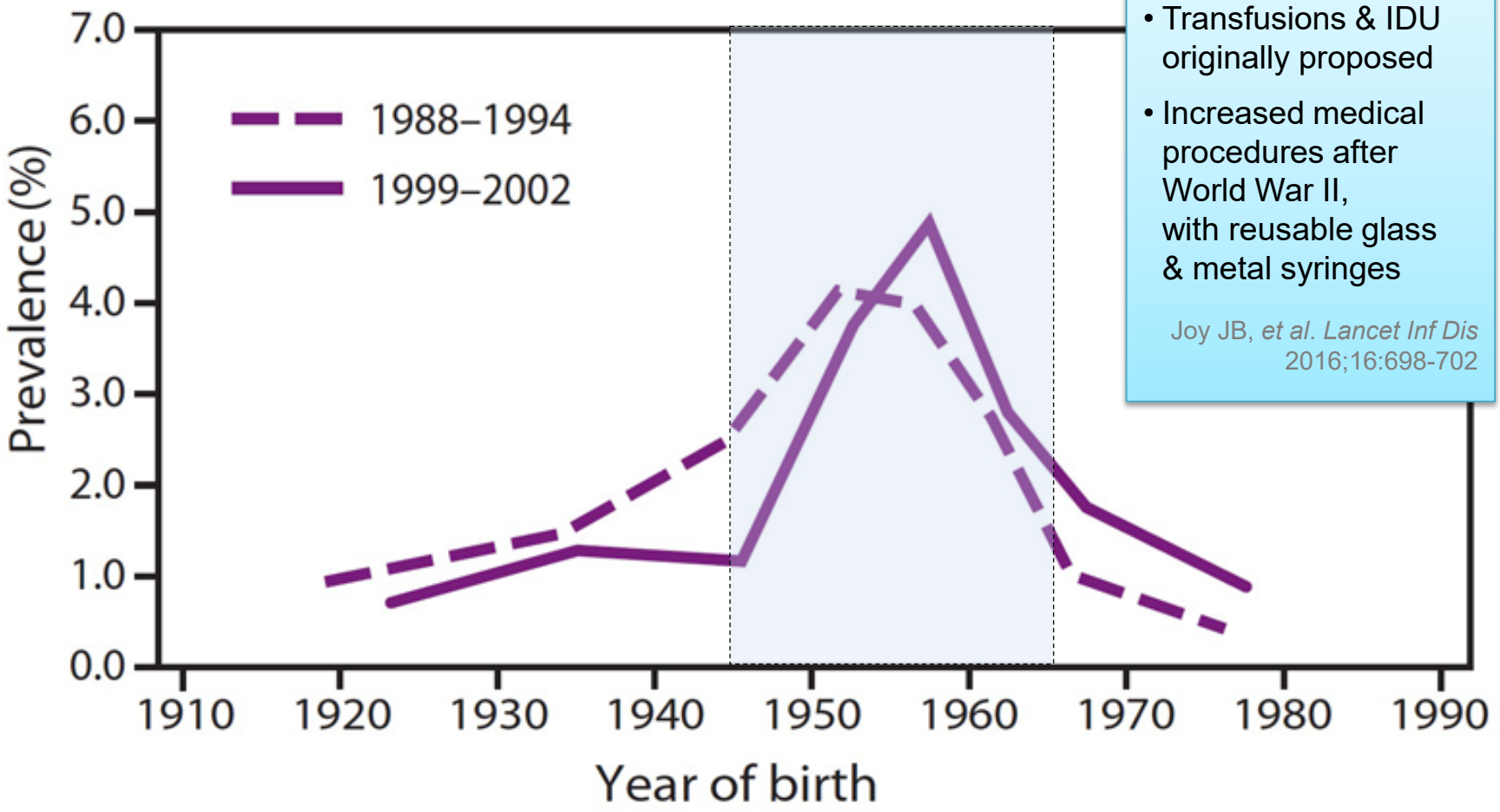
48%
aged 50 or older

Who's missing?

- Incarcerated persons **(~1 in 3 living with HCV)**
- Homeless persons
- Hospitalized or in nursing homes
- Active-duty military personnel
- Native Americans living on reservations

National Health & Nutrition Examination 2003-2010 – Denniston MM, et al. Ann Intern Med. Mar 4 2014;160(5):293-300.
Who's Missing – Edlin BR, et al. Hepatology. Nov 2015;62(5):1353-1363.
Prevalence in incarcerated population – MMWR 1998;47(No. RR-19):[i1-54]

HCV seropositivity by birth year, NHANES



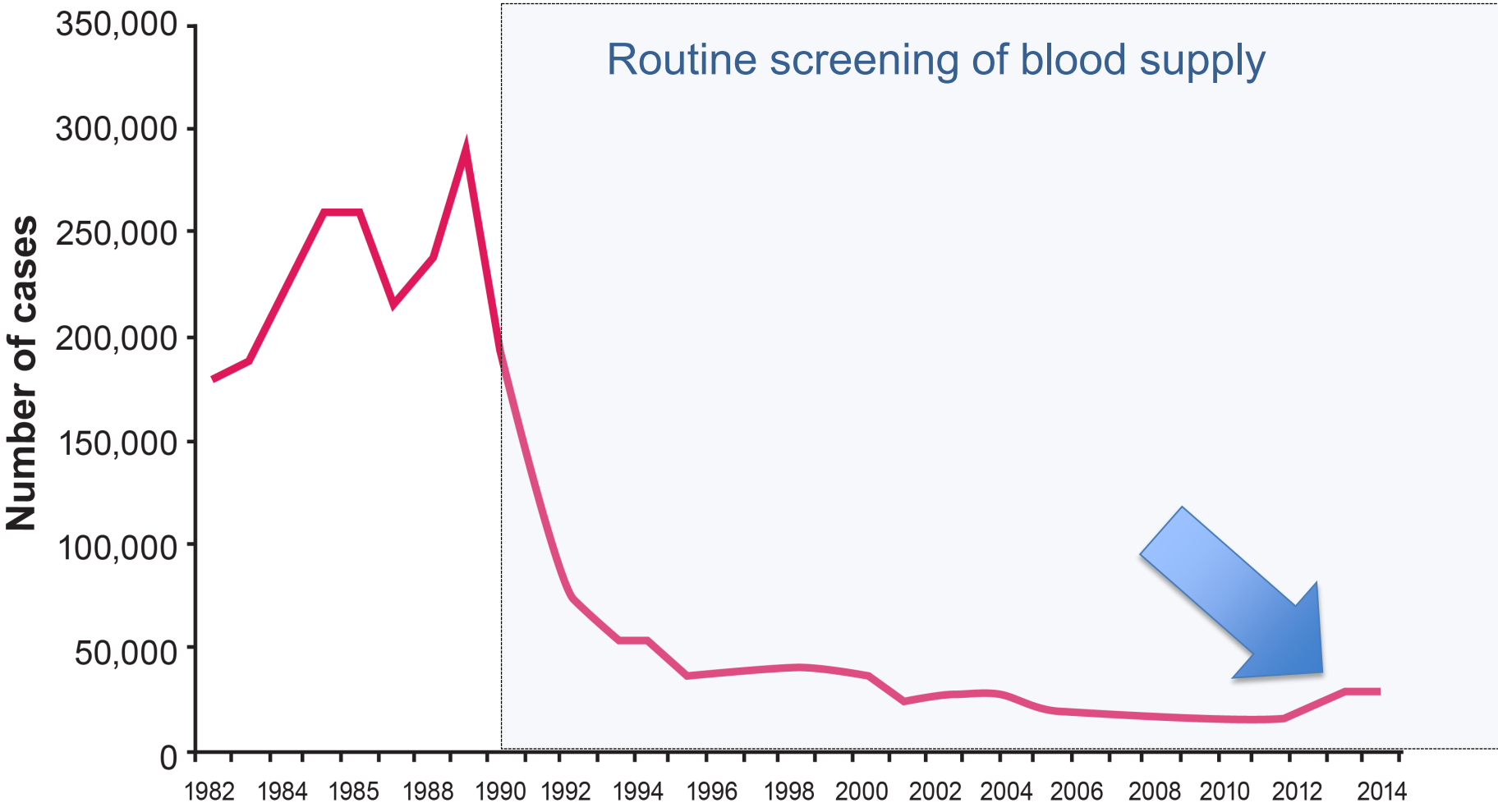
Why the Boomers?

- Transfusions & IDU originally proposed
- Increased medical procedures after World War II, with reusable glass & metal syringes

Joy JB, *et al. Lancet Inf Dis* 2016;16:698-702

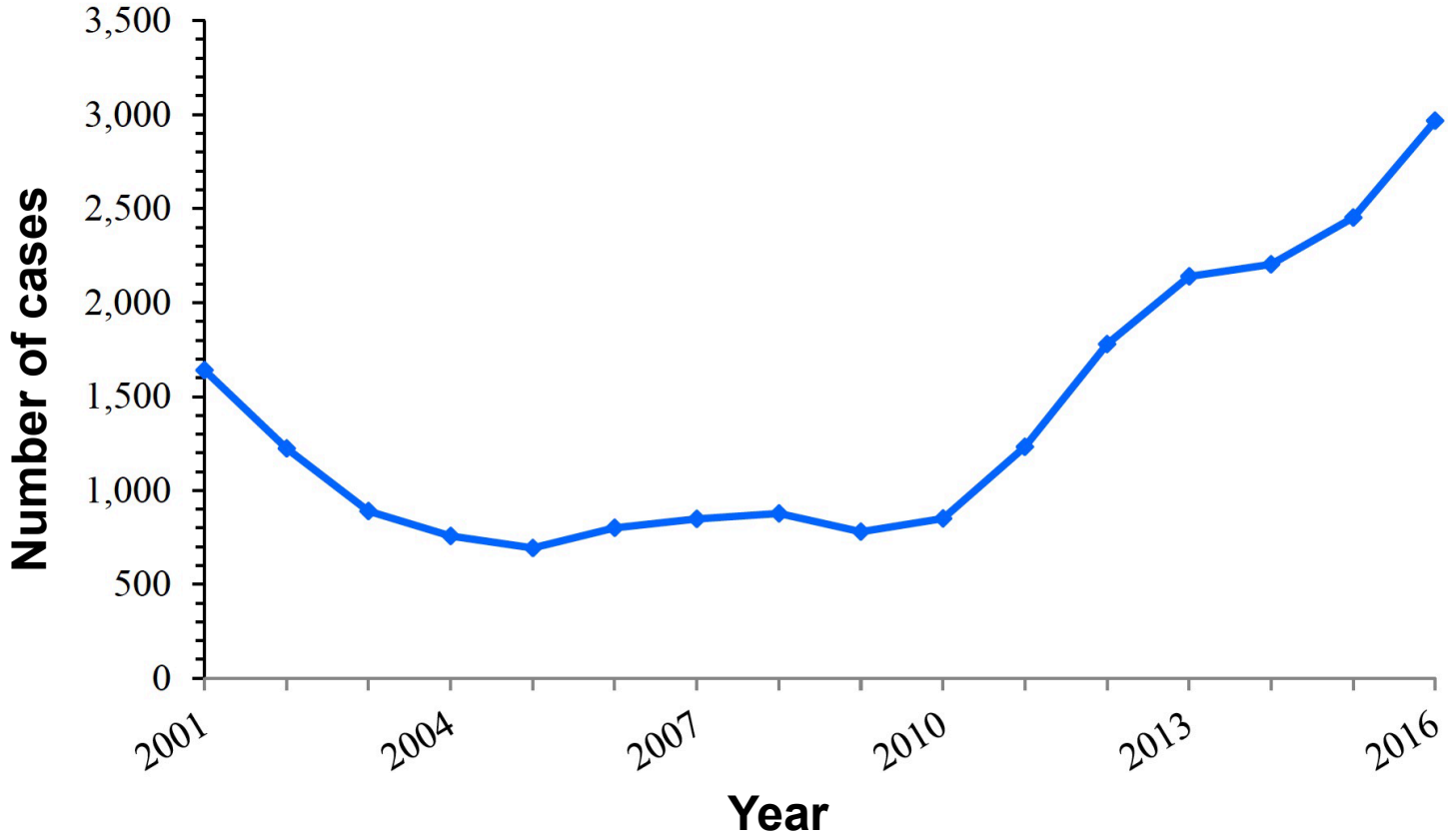
MMWR Recomm Rep. 2012 Aug 17;61(RR-4):1-32.

Estimated HCV incidence in US, 1982-2014



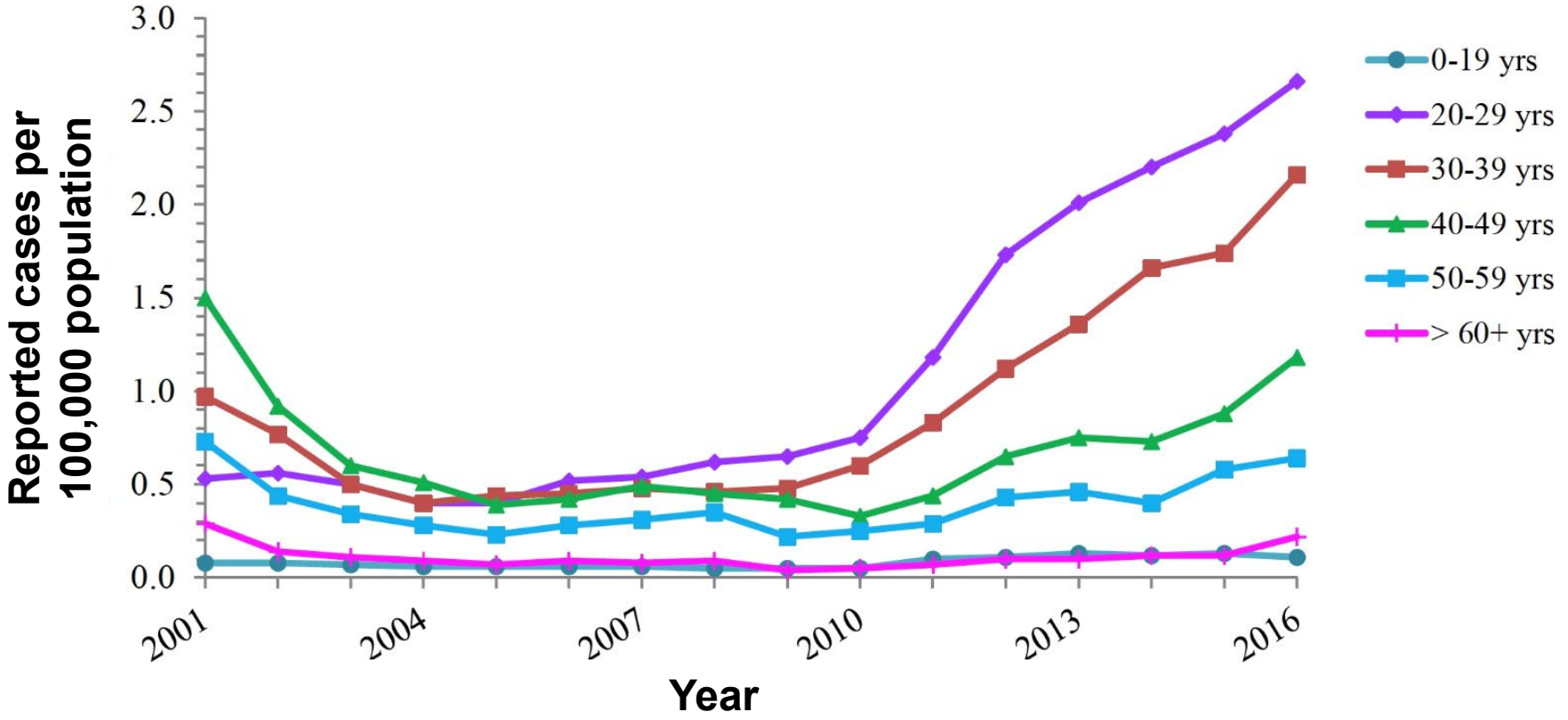
https://www.cdc.gov/hepatitis/statistics/2016surveillance/

Incidence of acute HCV, 2001-2006



https://www.cdc.gov/hepatitis/statistics/2016surveillance/

Incidence of acute HCV by age, 2001-2006



https://www.cdc.gov/hepatitis/statistics/2016surveillance/

Who is at risk for HCV infection?

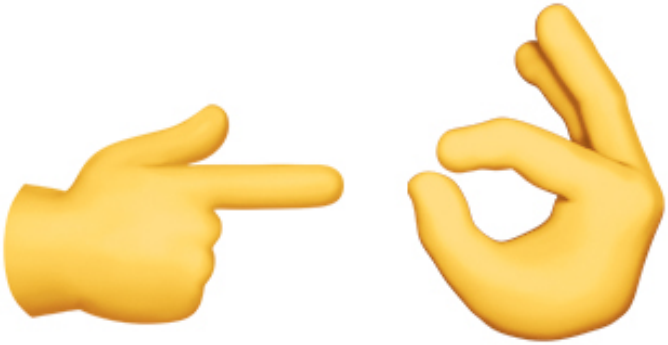
Illicit drug users
(IDU, crack, snorting)

Blood before ~1990
(1987 clotting factors;
1992 blood or organs)

Long-term hemodialysis

https://www.cdc.gov/hepatitis/statistics/2016surveillance/

What about sexual transmission of HCV?



“Vanilla” sex
(MSM and heterosexual)

Very inefficient at transmission

Condoms suggested
(but not essential)

Sex that could cause bleeding
(MSM more than hetero)

Shared sex toys

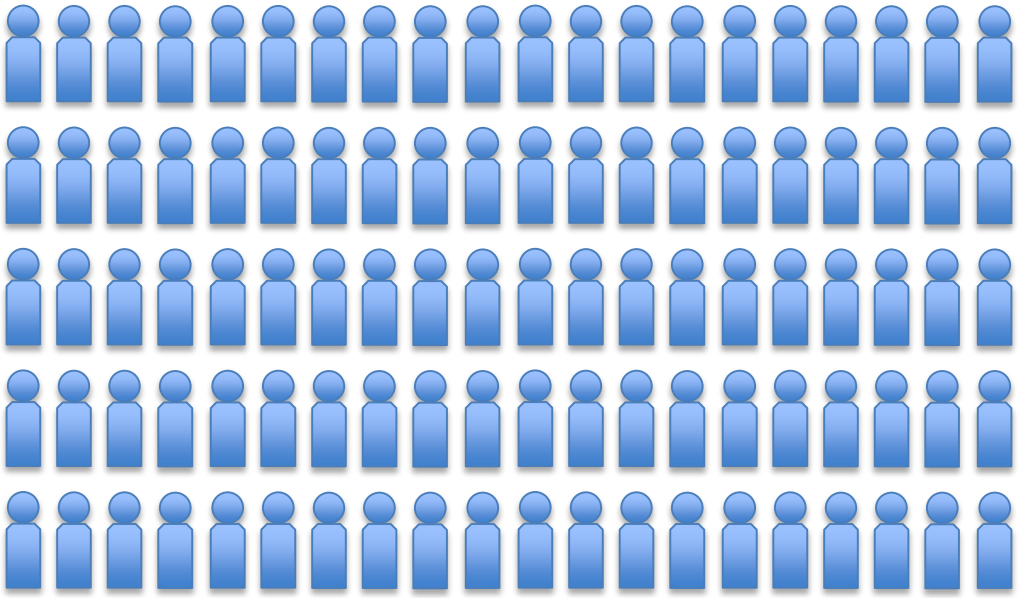
Fisting

Group sex

Sex under influence

Tohme RA, Holmberg SD. Hepatology. 2010 Oct;52(4):1497-505.
Terrault NA, et al. Hepatology. 2013 Mar;57(3):881-9.
McFaul K, et al. J Viral Hepat. 2015 Jun;22(6):535-8.

Natural history of hepatitis C



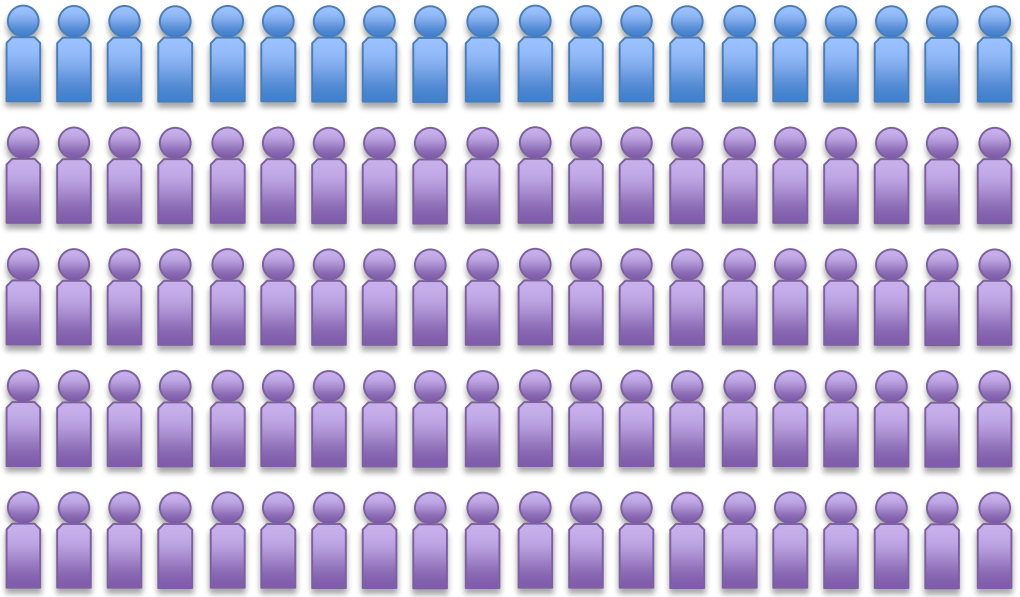
Out of

100

people infected with hepatitis C

http://www.cdc.gov/hepatitis/hcv/hcvfaq.htm

Natural history of hepatitis C

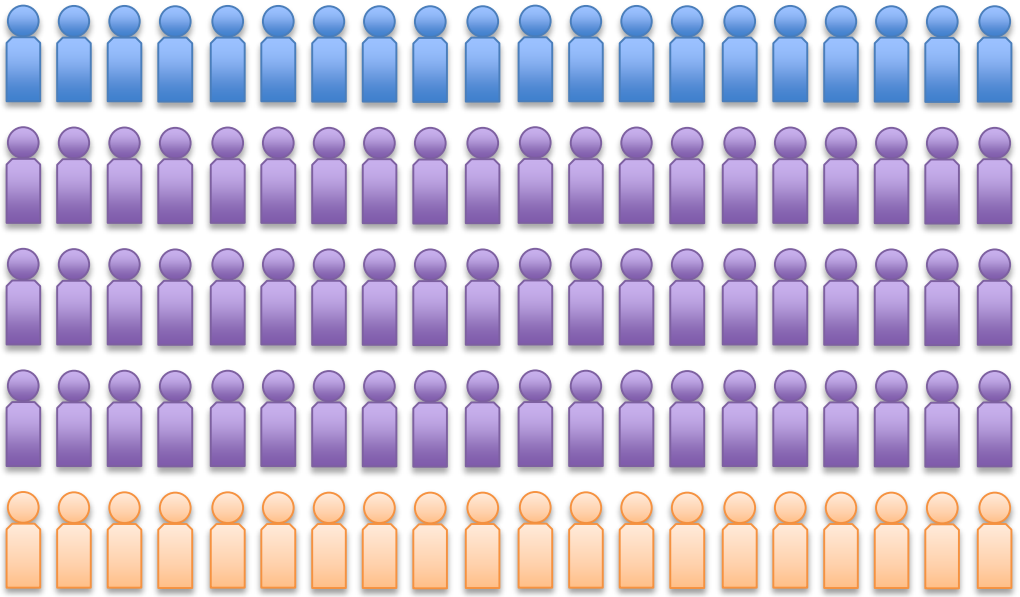


80

will develop chronic infection

http://www.cdc.gov/hepatitis/hcv/hcvfaq.htm

Natural history of hepatitis C

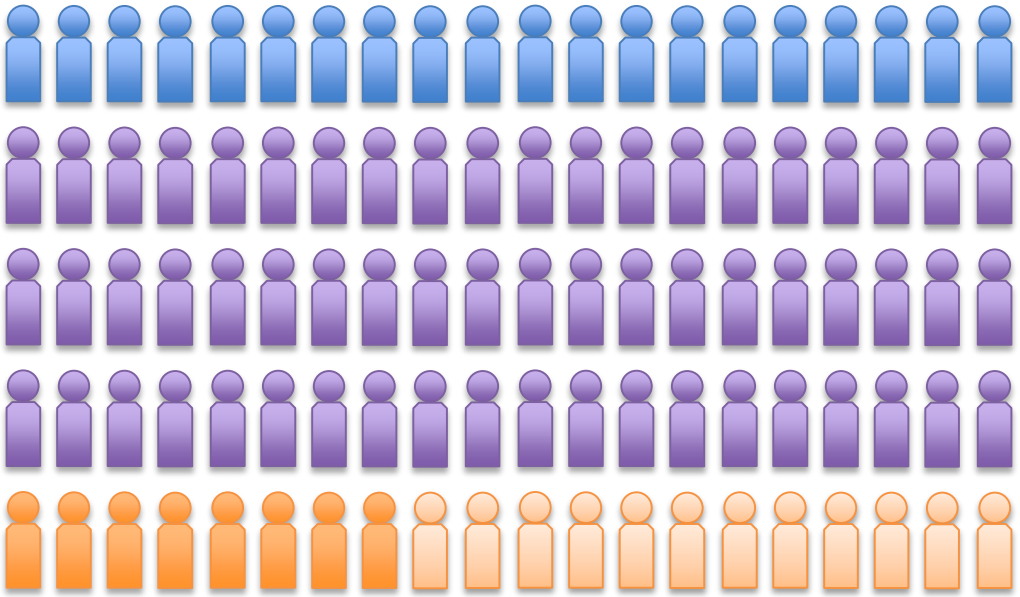


20

will develop cirrhosis
over a 20-30 year period

http://www.cdc.gov/hepatitis/hcv/hcvfaq.htm

Natural history of hepatitis C

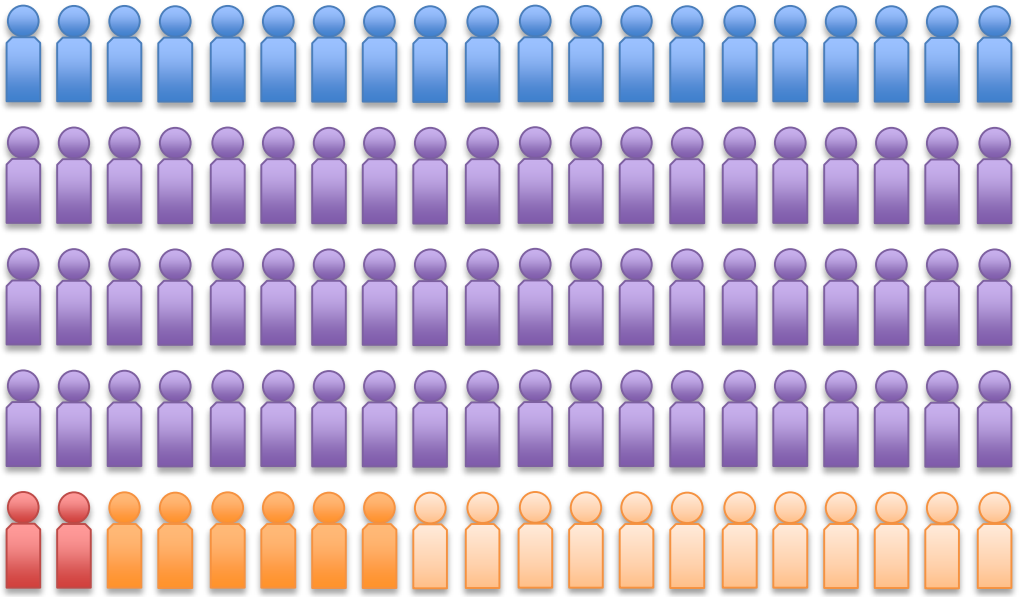


8

persons with cirrhosis will have decompensated, after 10 years

http://www.cdc.gov/hepatitis/hcv/hcvfaq.htm

Natural history of hepatitis C

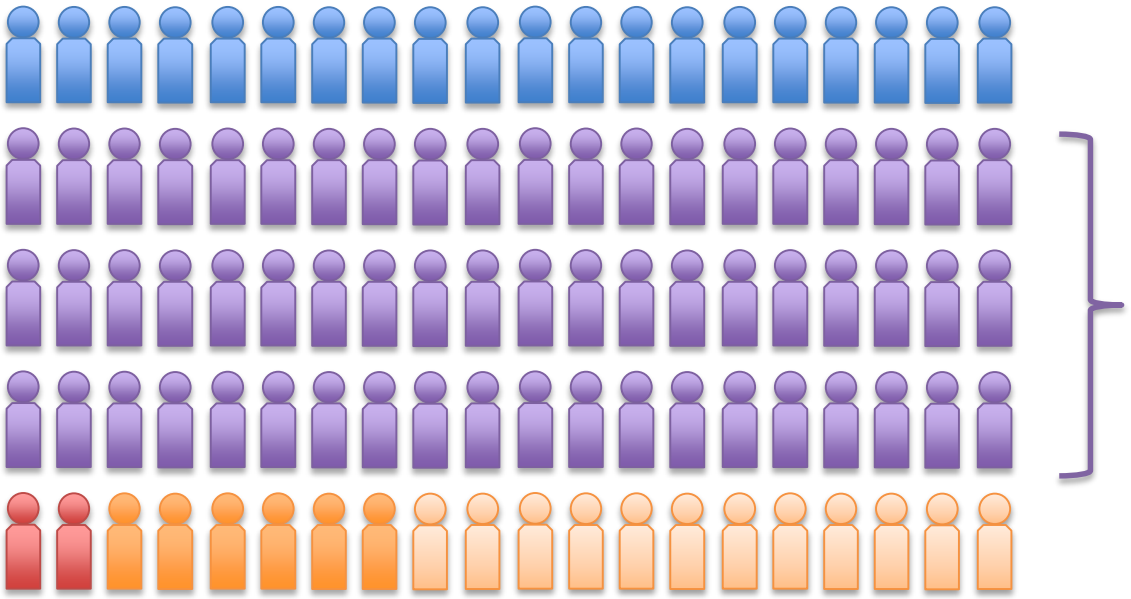


1-2

persons with cirrhosis will develop HCC, per year

http://www.cdc.gov/hepatitis/hcv/hcvfaq.htm

Natural history of hepatitis C

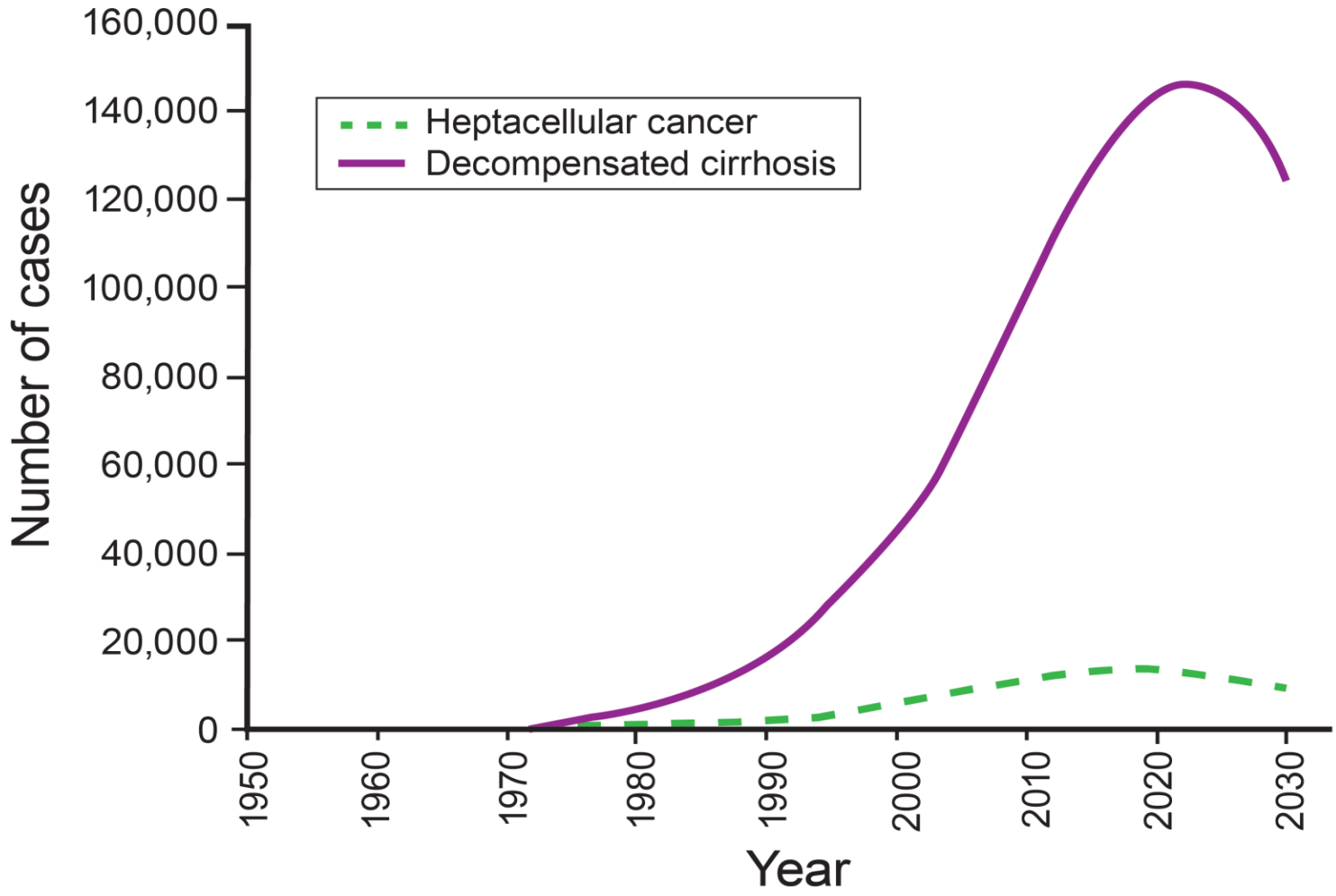


60

will die *with* HCV,
not *from* HCV

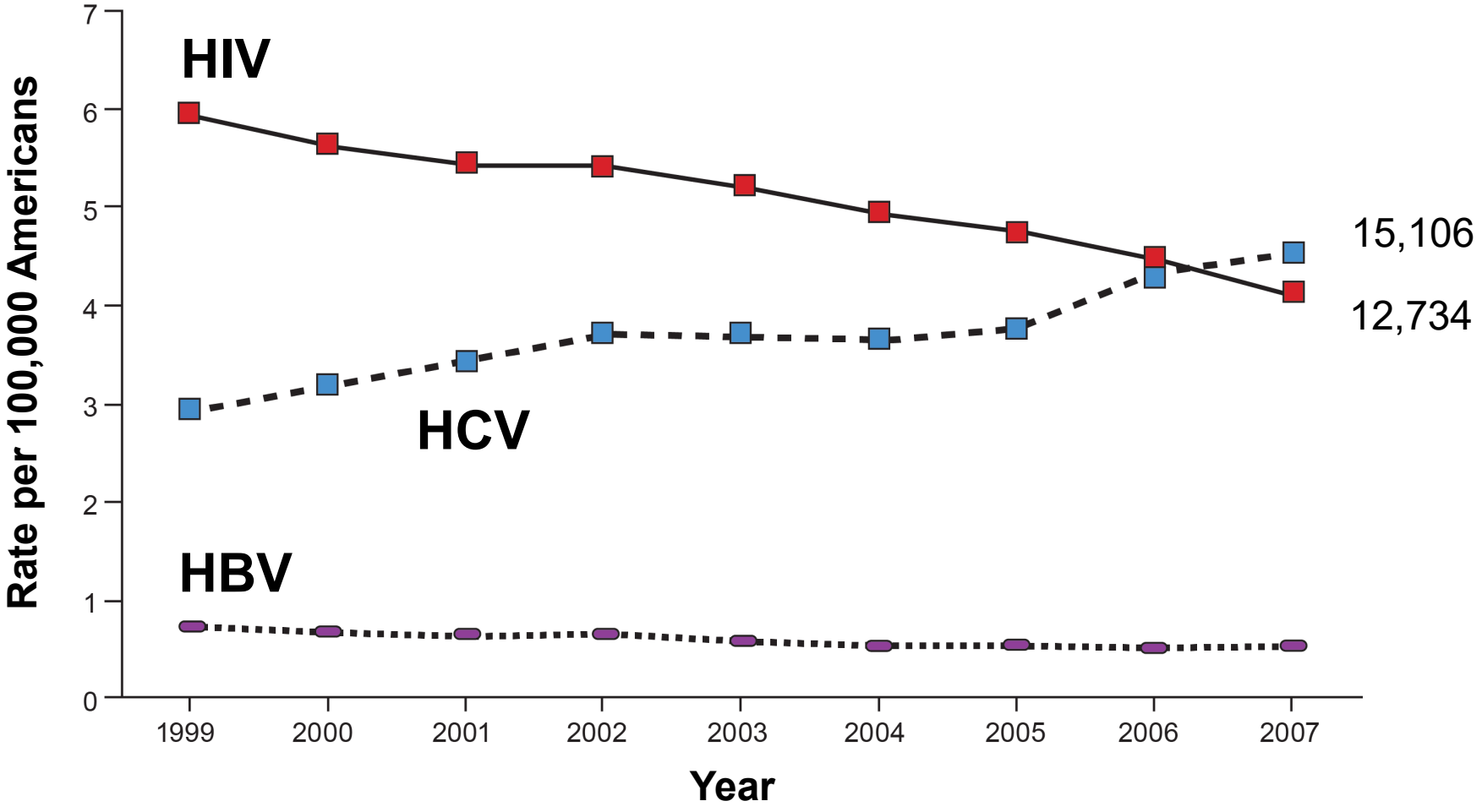
http://www.cdc.gov/hepatitis/hcv/hcvfaq.htm

Projected outcomes without HCV treatment



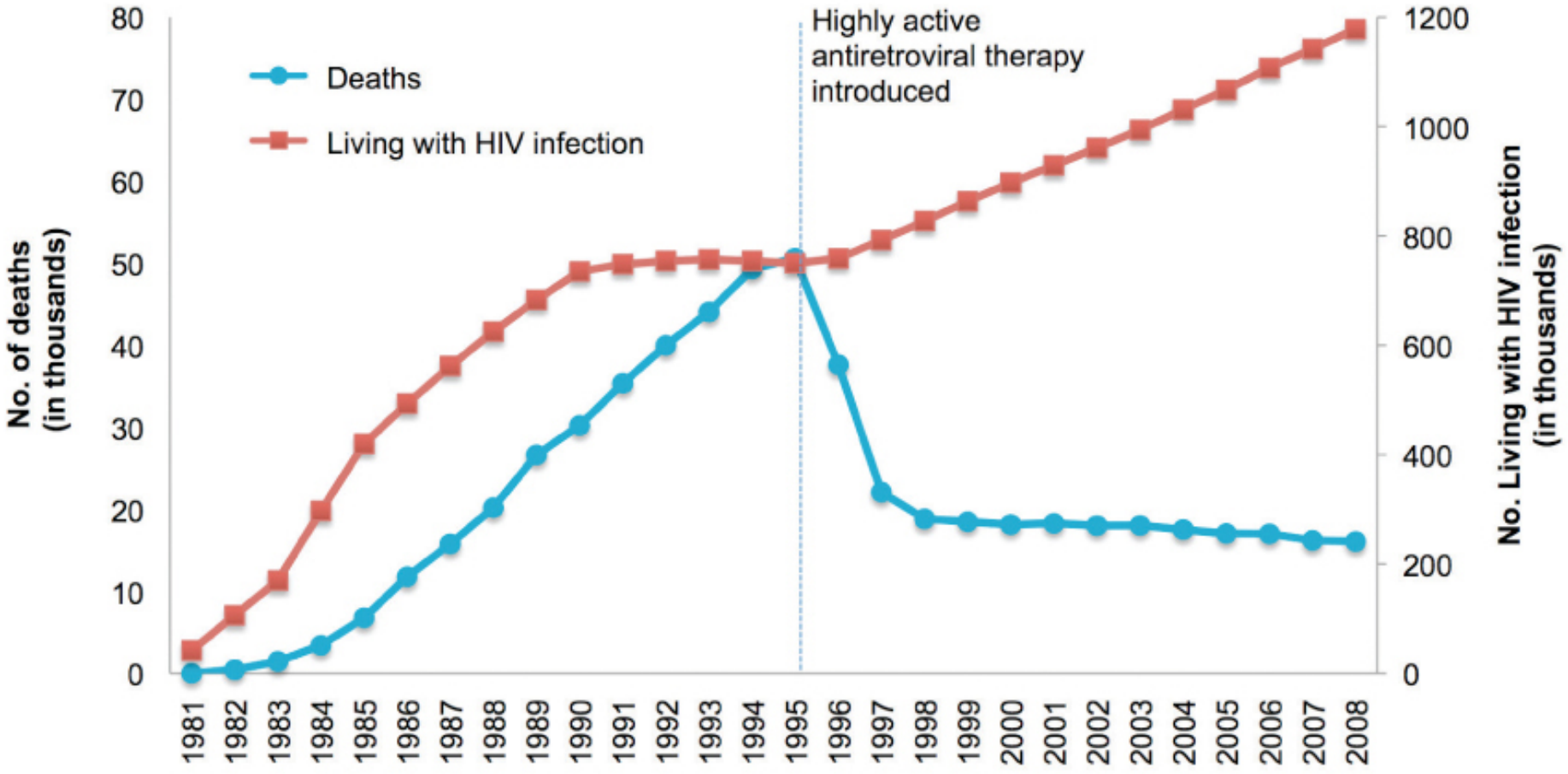
Davis GL, et al. Gastroenterology. 2010 Feb;138(2):513-21, 521.e1-6

Deaths from HCV surpassed HIV in 2006-07



Ly KN, et al. Ann Intern Med. 2012; 156: 271-278.

HIV is no longer a death sentence



http://www.drugabuse.gov/publications/research-reports/hivaids/how-does-drug-abuse-affect-hiv-epidemic

How many Americans have HIV?

US Population

309.3

million

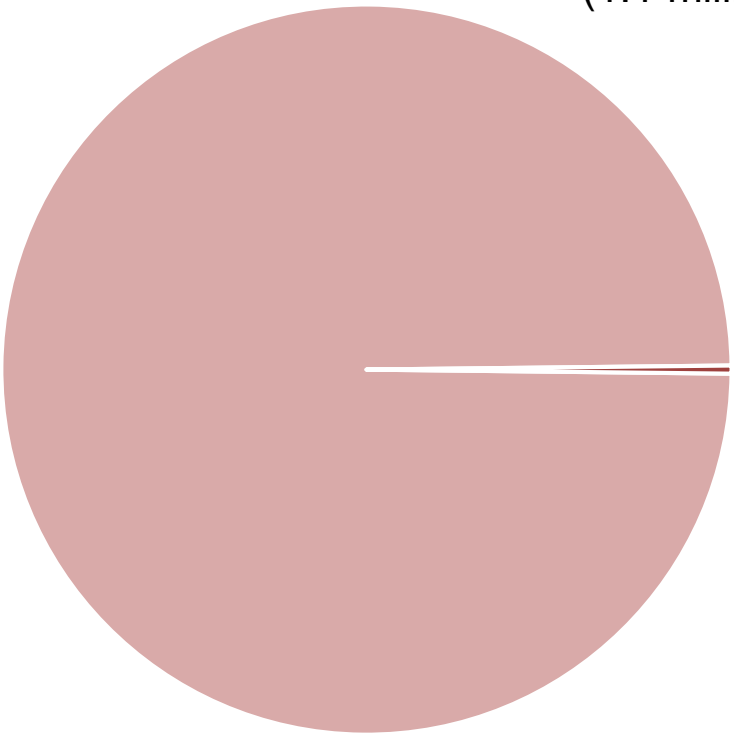
in 2010

Approximately

0.4%

infected

(1.1 million in 2015)



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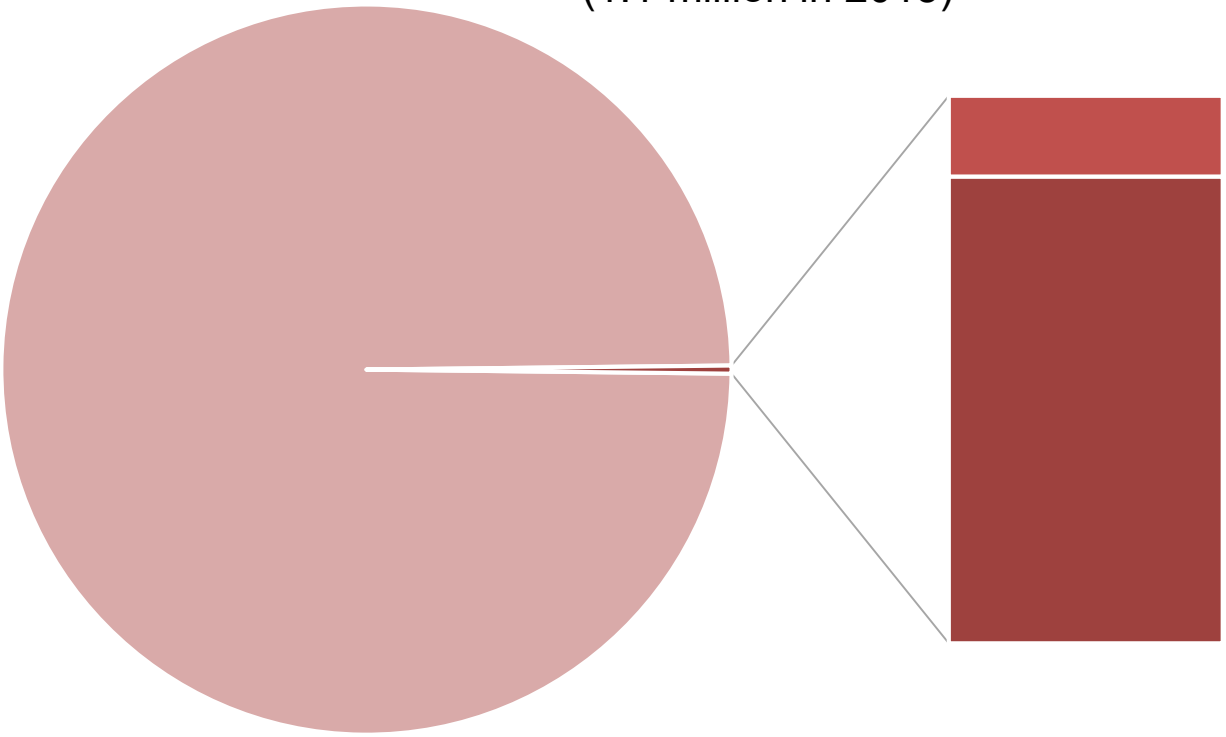


Approximately

162,500

unaware of their infection

(in 2015)

937,500

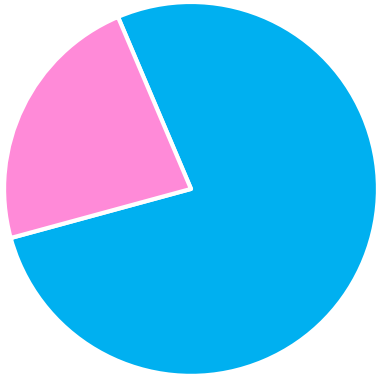
diagnosed with HIV

(in 2015)

https://www.cdc.gov/hiv/statistics/overview/ataglance.html. Accessed 16 Jan 2019.

Who are those persons living with HIV?

23%
cisgender women
(n=256,500)



77%
cisgender men
(n=866,400)

CDC. HIV Surveillance Supplemental Report. Vol 23 (No. 1) 2018.

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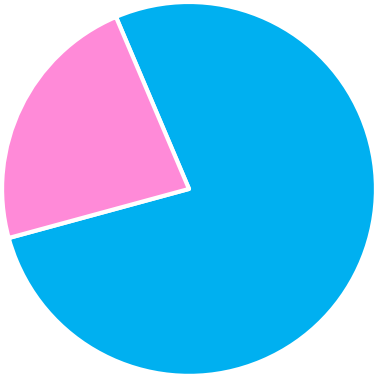

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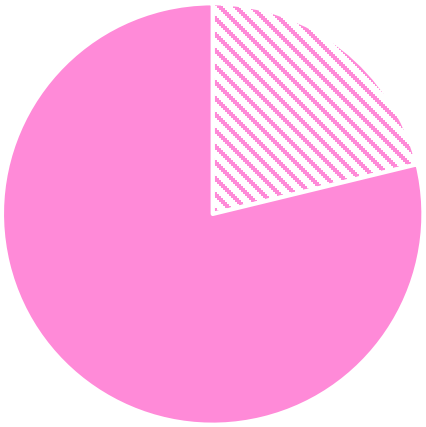
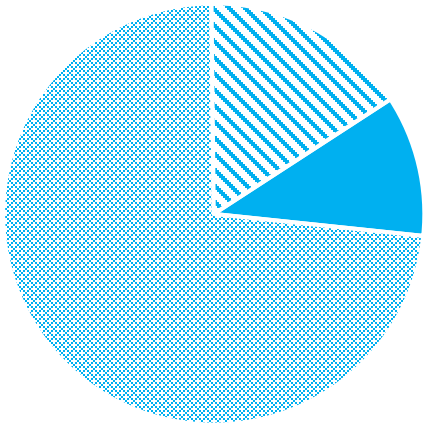


21% 54,100	**IDU**	**16%*** 57,300 + 81,000
78% 201,000	**Het**	**11%** 93,600
–	**MSM**	**73%** 632,300

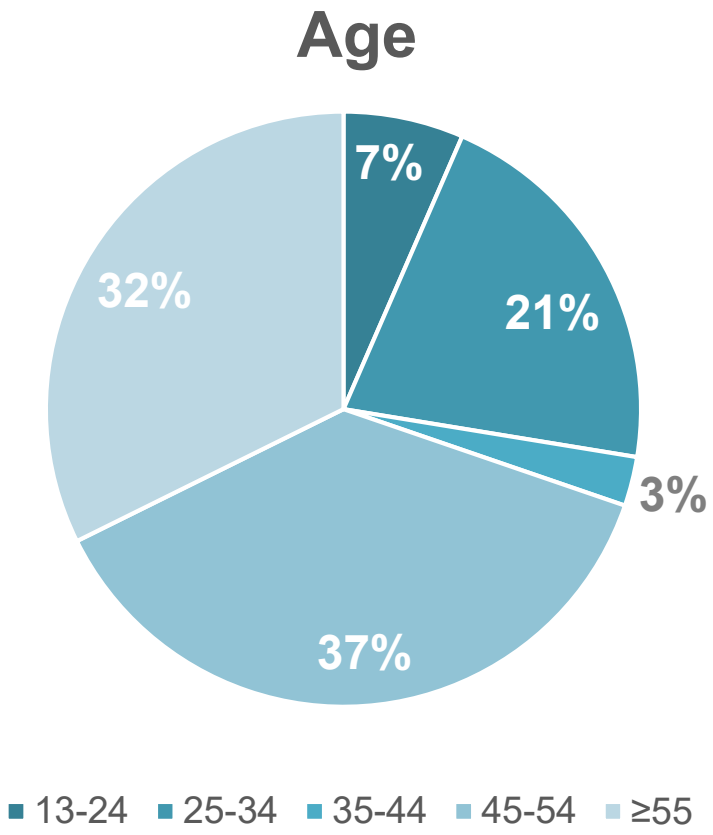


*** This chart is simplified from CDC data**
MSM who also inject drugs = 6.6% of IDUs here;
MSM-IDUs not included in this MSM figure

Who's missing? Trans folks

CDC. HIV Surveillance Supplemental Report. Vol 23 (No. 1) 2018.

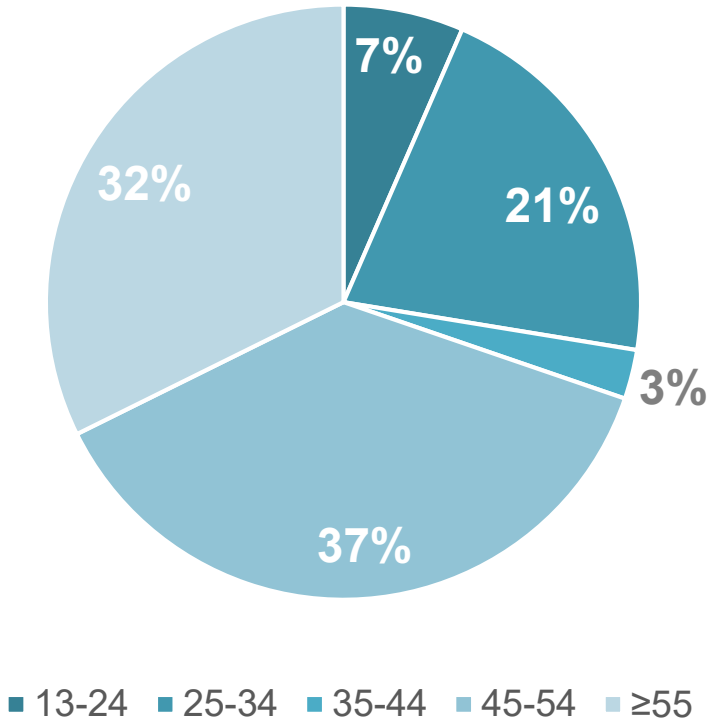
Who are those persons living with HIV?



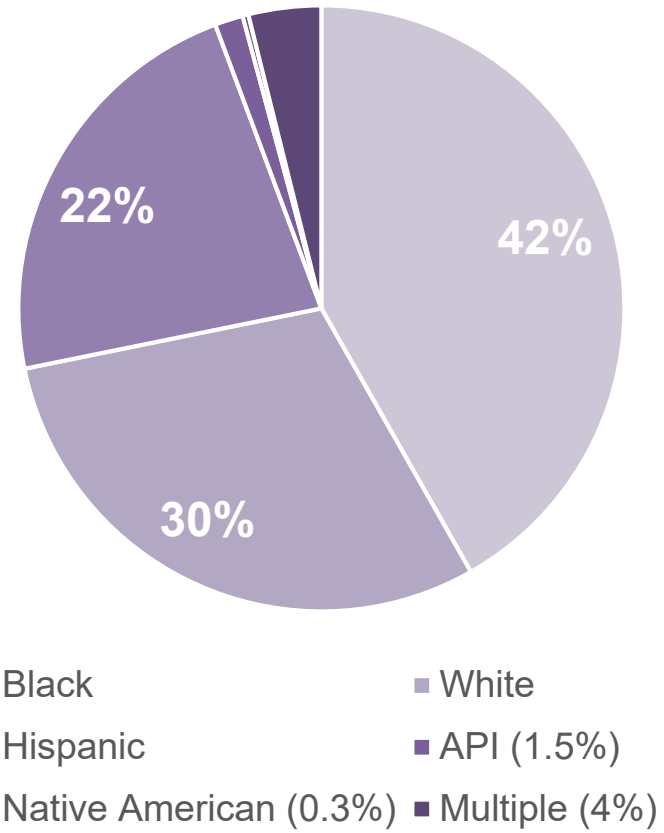
CDC. HIV Surveillance Supplemental Report. Vol 23 (No. 1) 2018.

Who are those persons living with HIV?

Age



Race/Ethnicity



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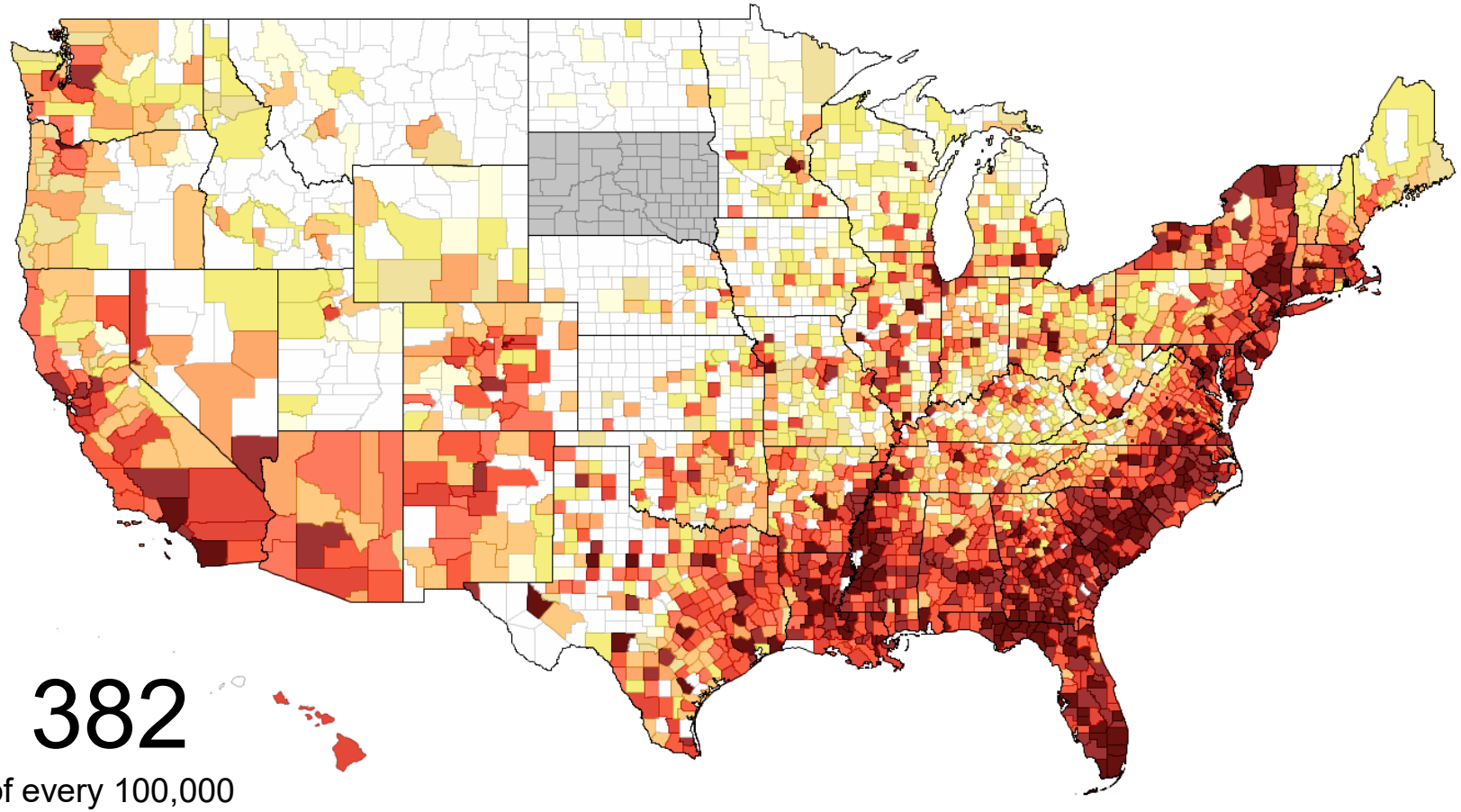


382

of every 100,000 Americans

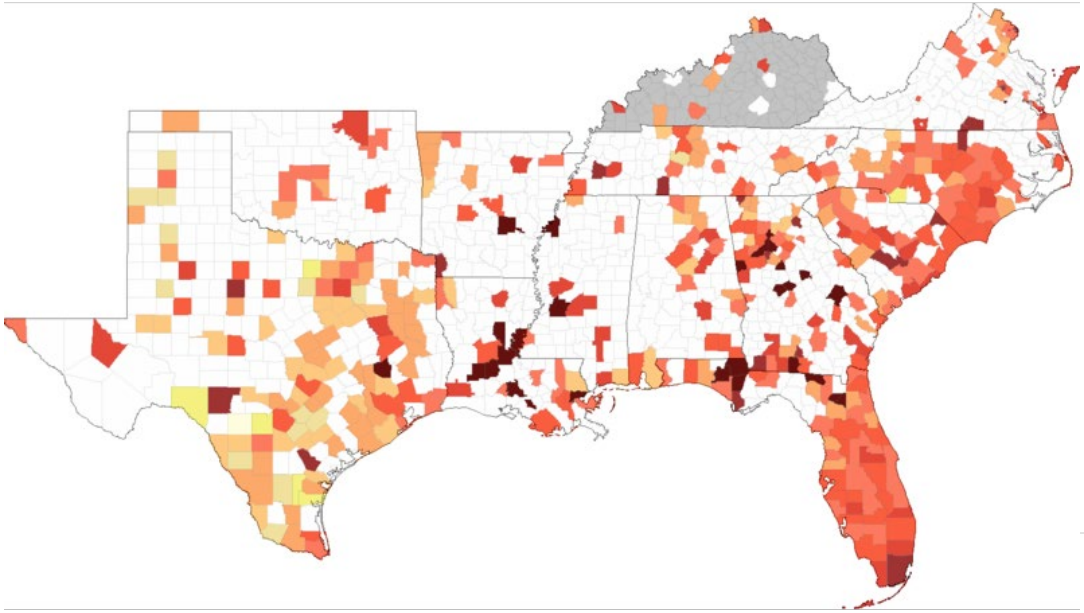
(1.2M HIV+ of 314.1M, in **2012**)

AIDSVu
www.AIDSVu.org

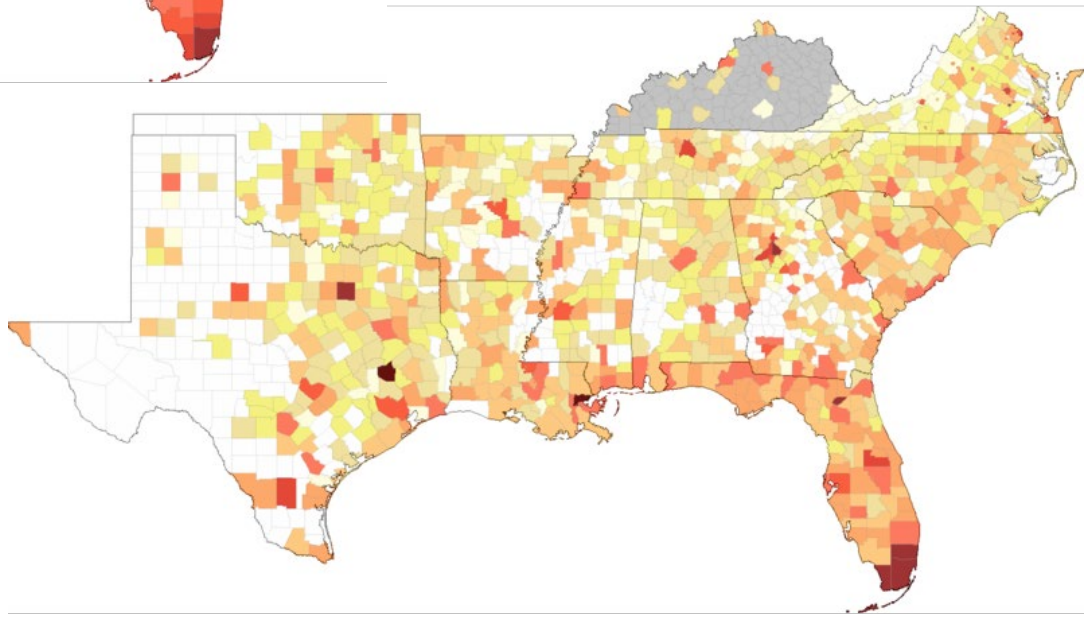
2013

0 - 40	41 - 60	61 - 70	71 - 90	91 - 110	111 - 140	141 - 190	191 - 260	261 - 410	411+

Where are those persons living with HIV?



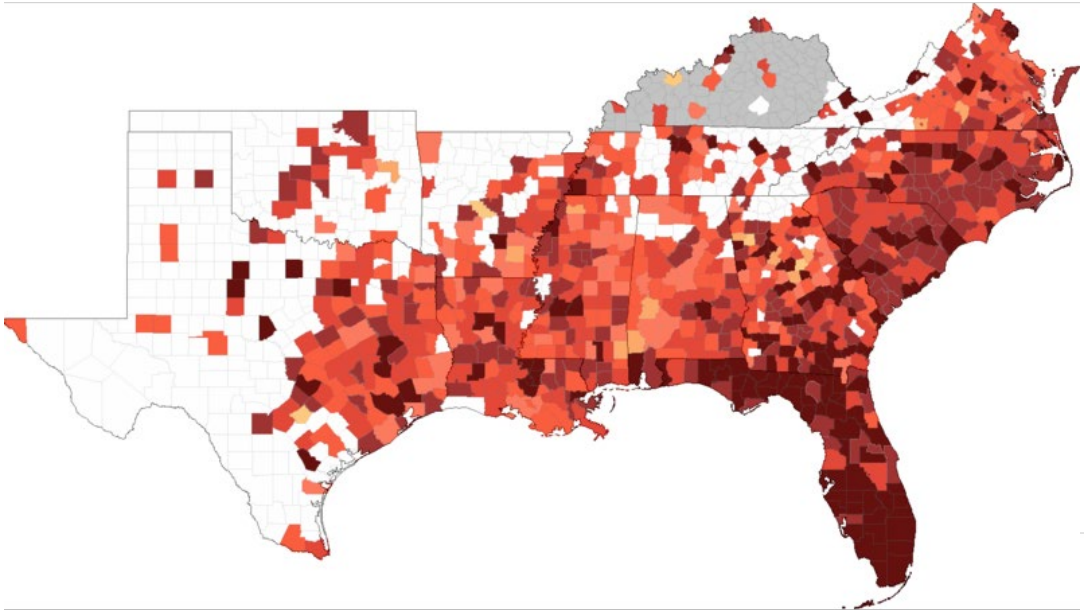
Hispanic/Latino



White

2012

Where are those persons living with HIV?



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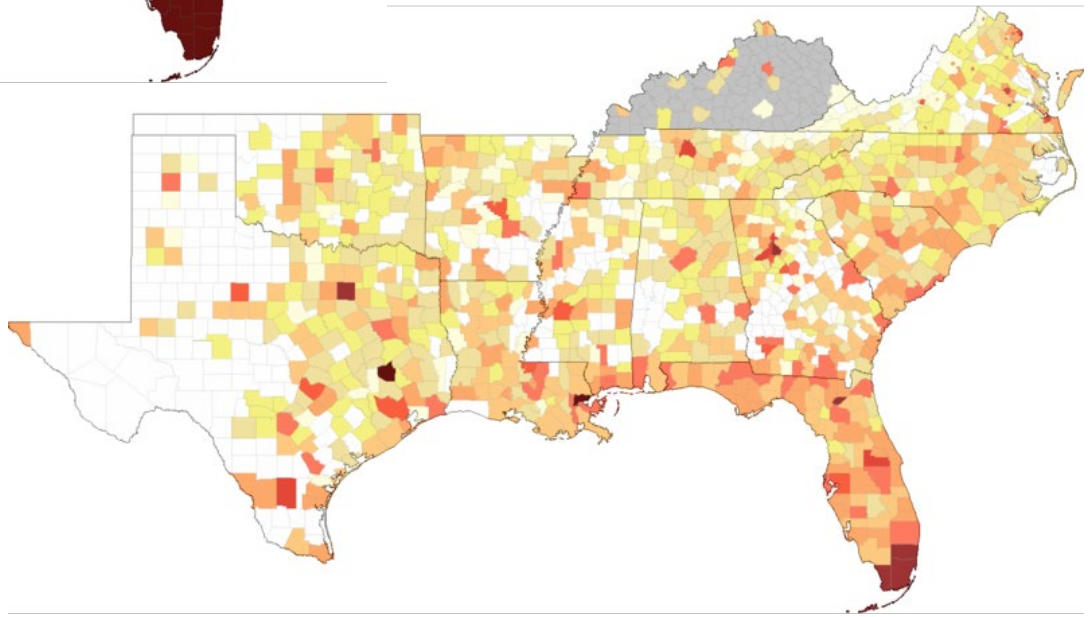
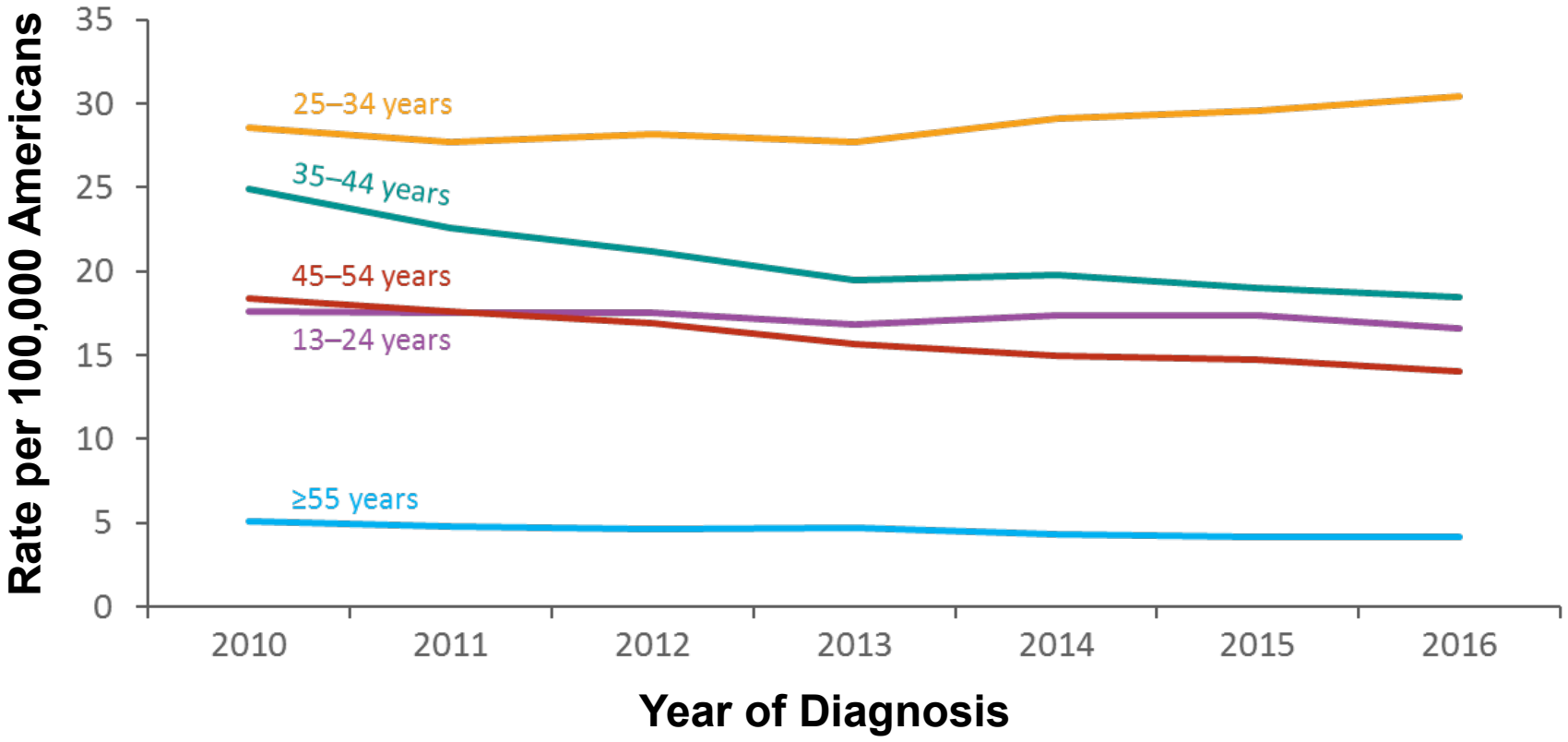


White

2012

Who is acquiring HIV in the US?

Rates of HIV Diagnosis among Adolescents & Adults, 2010-2016



https://www.cdc.gov/hiv/ppt/library/slidesets/cdc-hiv-surveillance-epidemiology-2017.pptx

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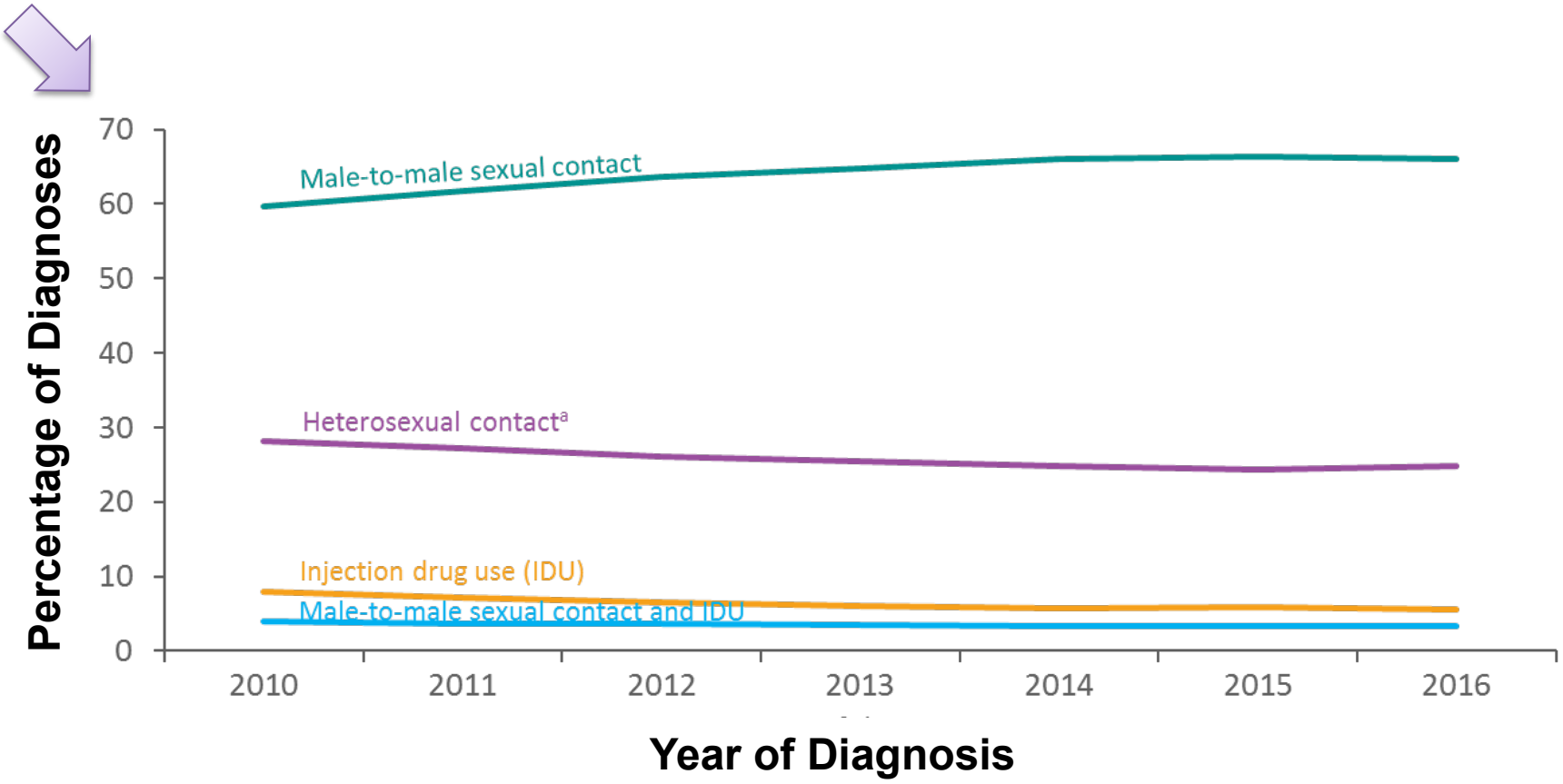

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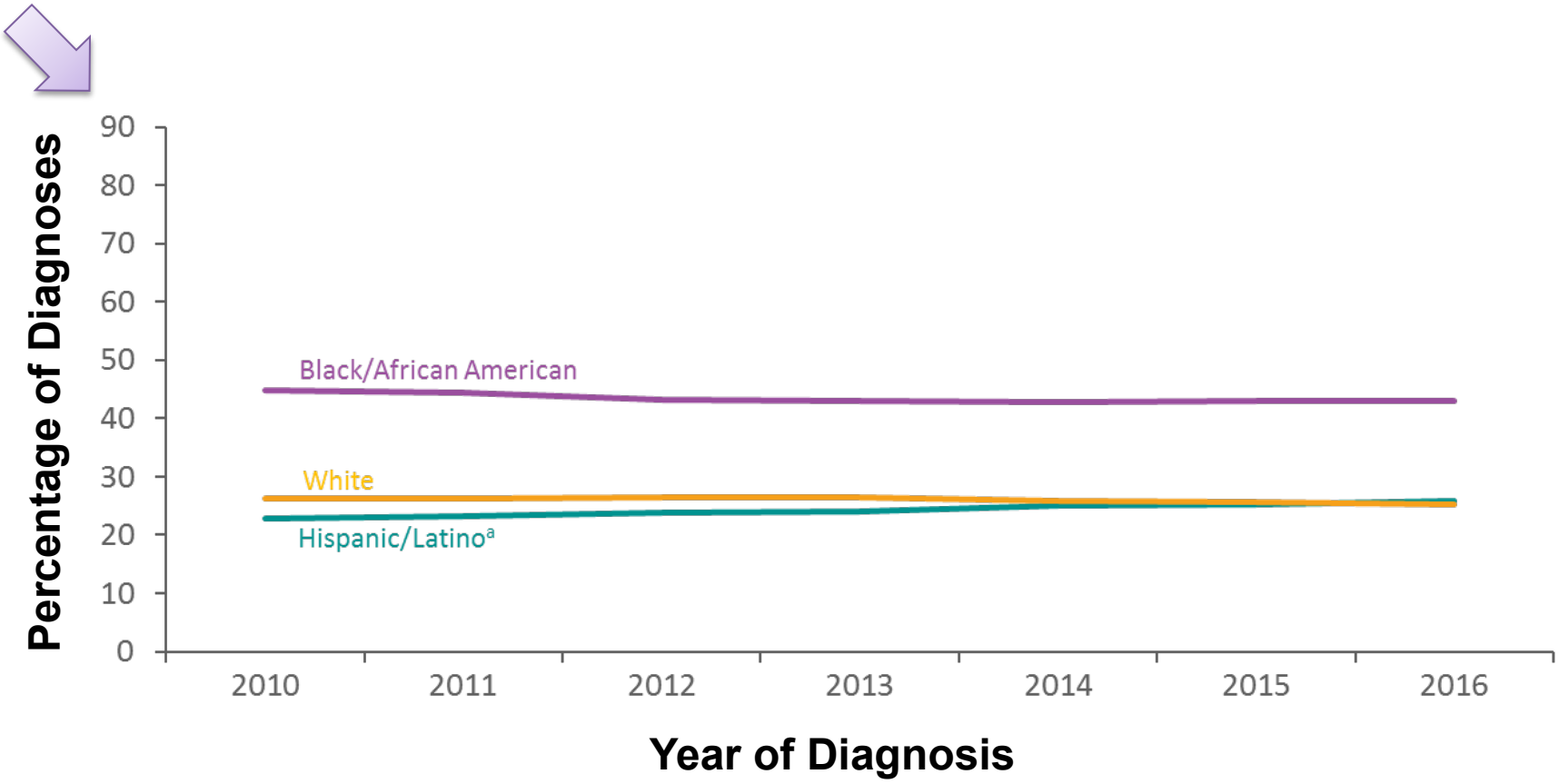

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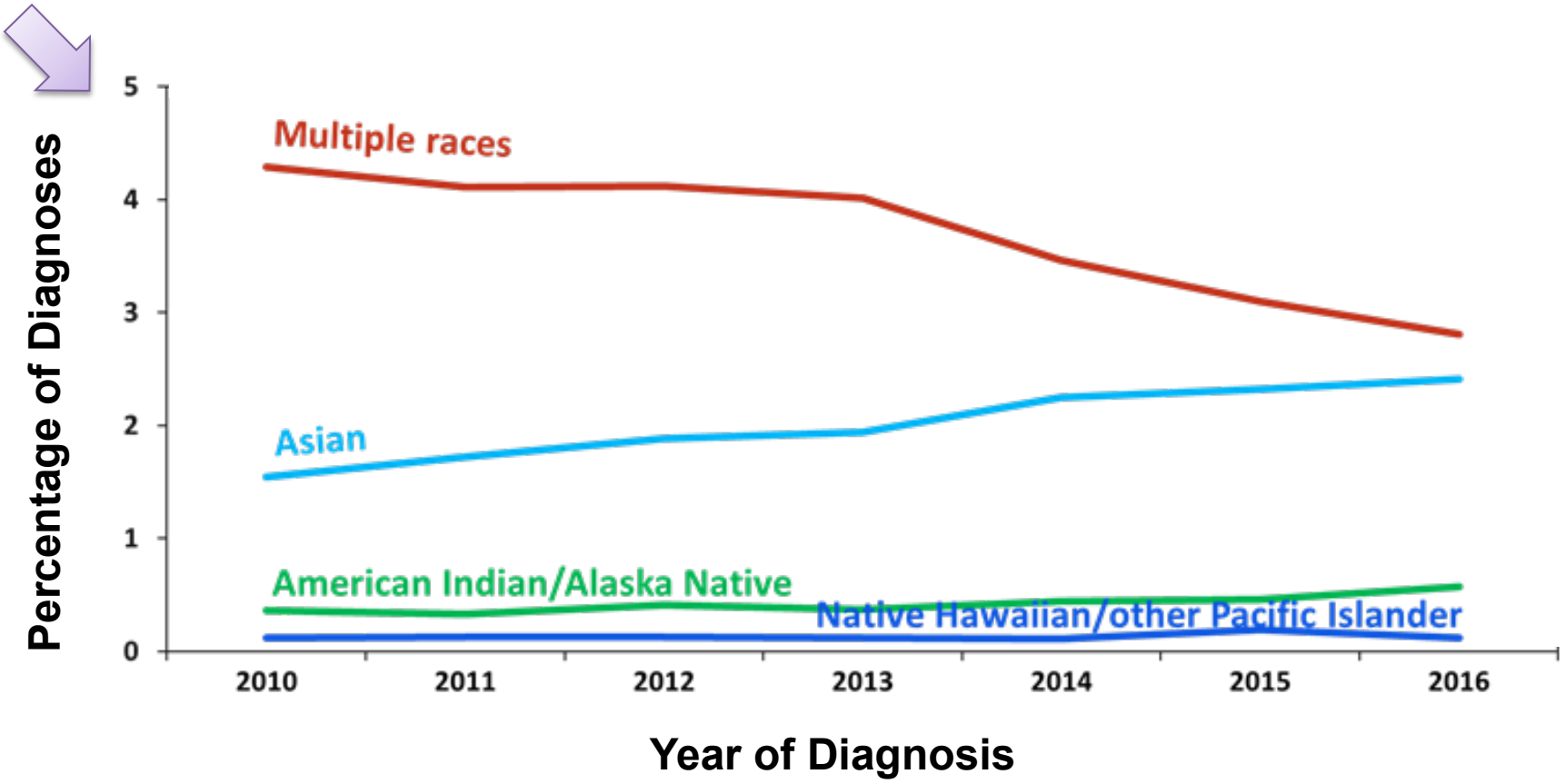
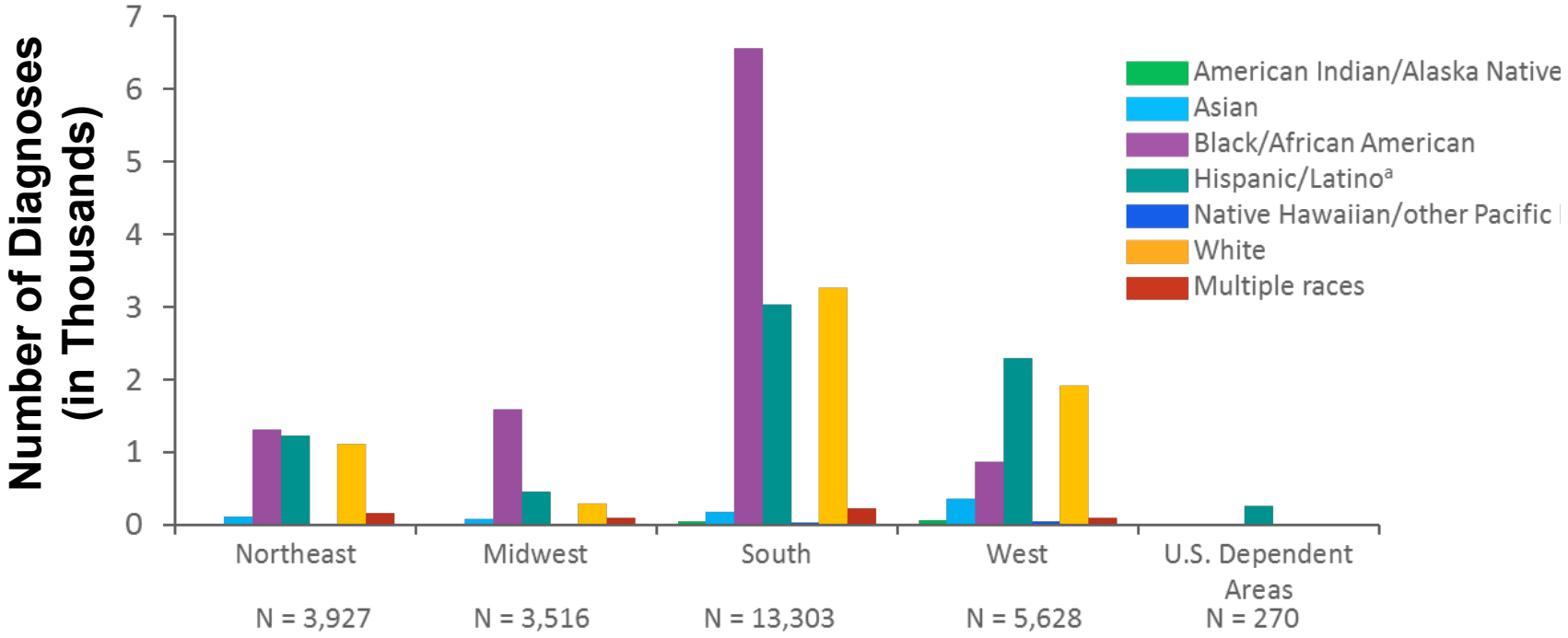


https://www.cdc.gov/hiv/ppt/library/slidesets/cdc-hiv-surveillance-epidemiology-2017.pptx

Who is acquiring HIV in the US?

Number of Diagnoses among Adolescents & Adults, 2010-2016

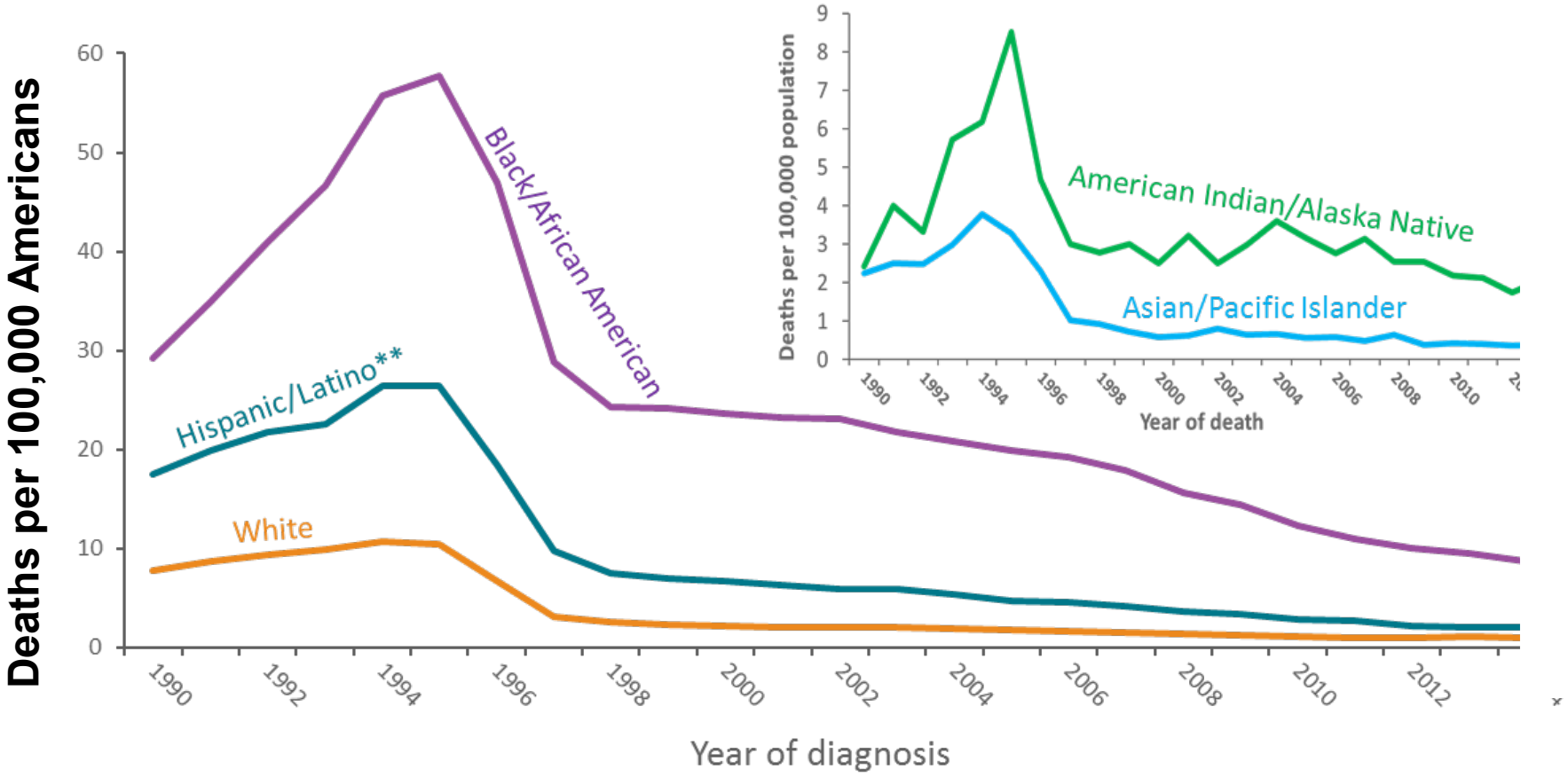


https://www.cdc.gov/hiv/ppt/library/slidesets/cdc-hiv-surveillance-epidemiology-2017.pptx

Why are there such disparities in HIV by race?

"The Louisville Flood" by Margaret Bourke-White, 1937
https://rarehistoricalphotos.com/there-no-way-like-american-way-1937/

Who is dying from HIV in the US?



Note. For comparison with data for 1999 and later years, data for 1987–1998 were modified to account for *ICD-10* 10rules instead of *ICD-9* rules.

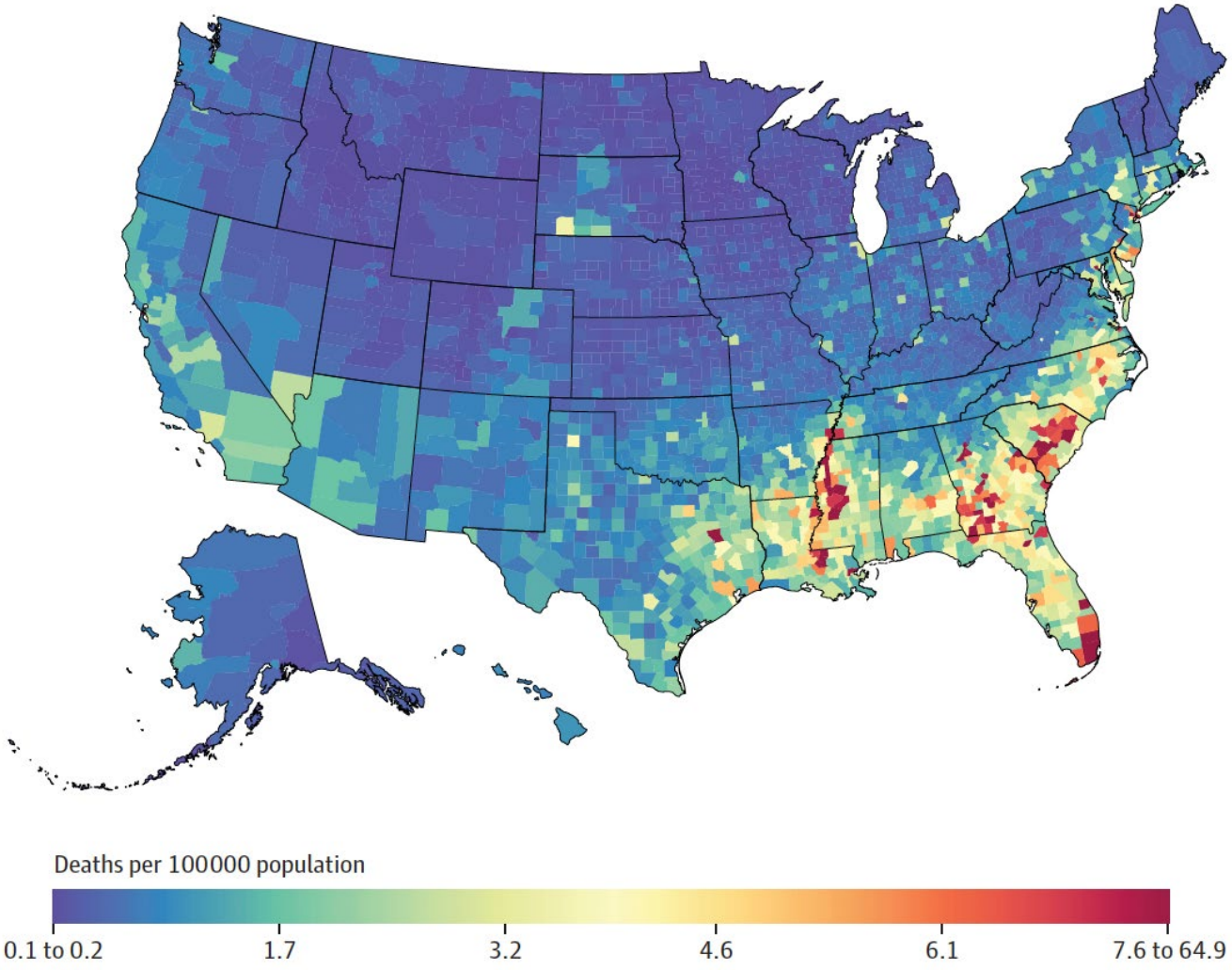
*Standard age distribution of 2000 US population.

**Hispanic/Latinos can be of any race.

https://www.cdc.gov/hiv/ppt/library/slidesets/cdc-hiv-surveillance-epidemiology-2017.pptx

Where are people dying from HIV in the US?

Age-standardized HIV/AIDS mortality rate, men and women, 2014



El Bcheraoui, et al. JAMA 2018 Mar 27;319(12):1248-1260

How does HCV contribute to HIV morbidity?

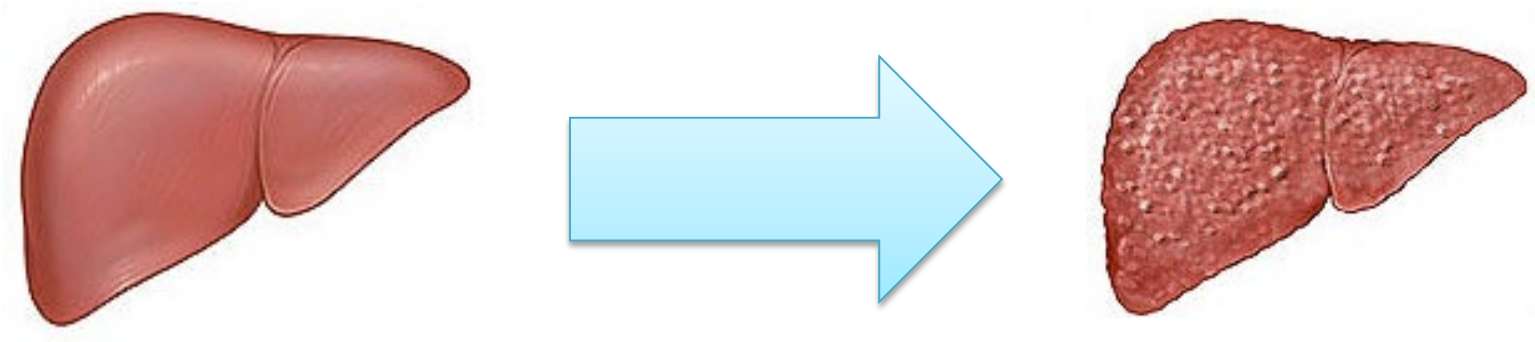
Approximately

25%

of PLWH are also living with HCV

https://www.cdc.gov/hepatitis/hiv-hepatitis-coinfection.htm . Accessed 16 Jan 2019.

How does HCV contribute to HIV morbidity?



HIV and HCV are synergistically bad

- HIV increases pace of HCV liver scarring (fibrosis)
  - Specific risks:
    - ✓ Lower nadir CD4 and higher HIV RNA
    - ✓ Alcohol use
    - ✓ Older age and higher BMI

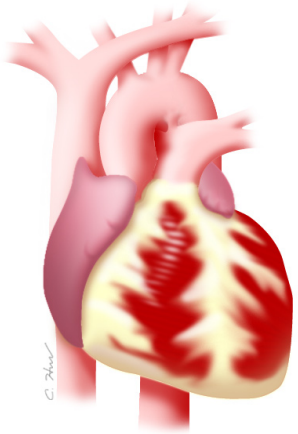
- <u>Some</u> PLWH who acquire new HCV progress rapidly

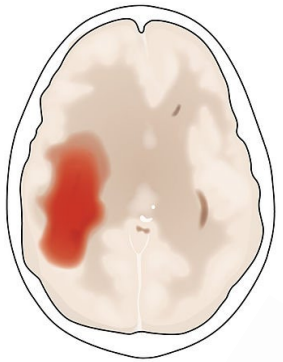
de Lédinghen V, et al. J Viral Hepat. 2008 Jun;15(6):427-33.
Kirk GD, et al. Ann Intern Med. 2013 May 7;158(9):658-66.
Fierer DS, et al. Clin Infect Dis. 2013 Apr;56(7):1038-43.

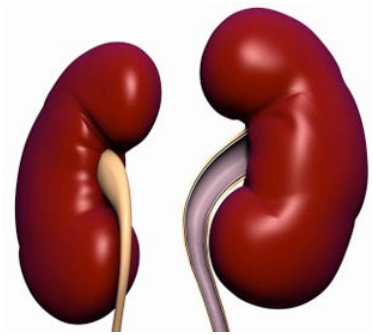
How does HCV contribute to HIV morbidity?

Extrahepatic complications are increased – at least as long as HCV is untreated

- Cardiovascular risk
- Stroke risk
- Renal disease
- Bone fractures

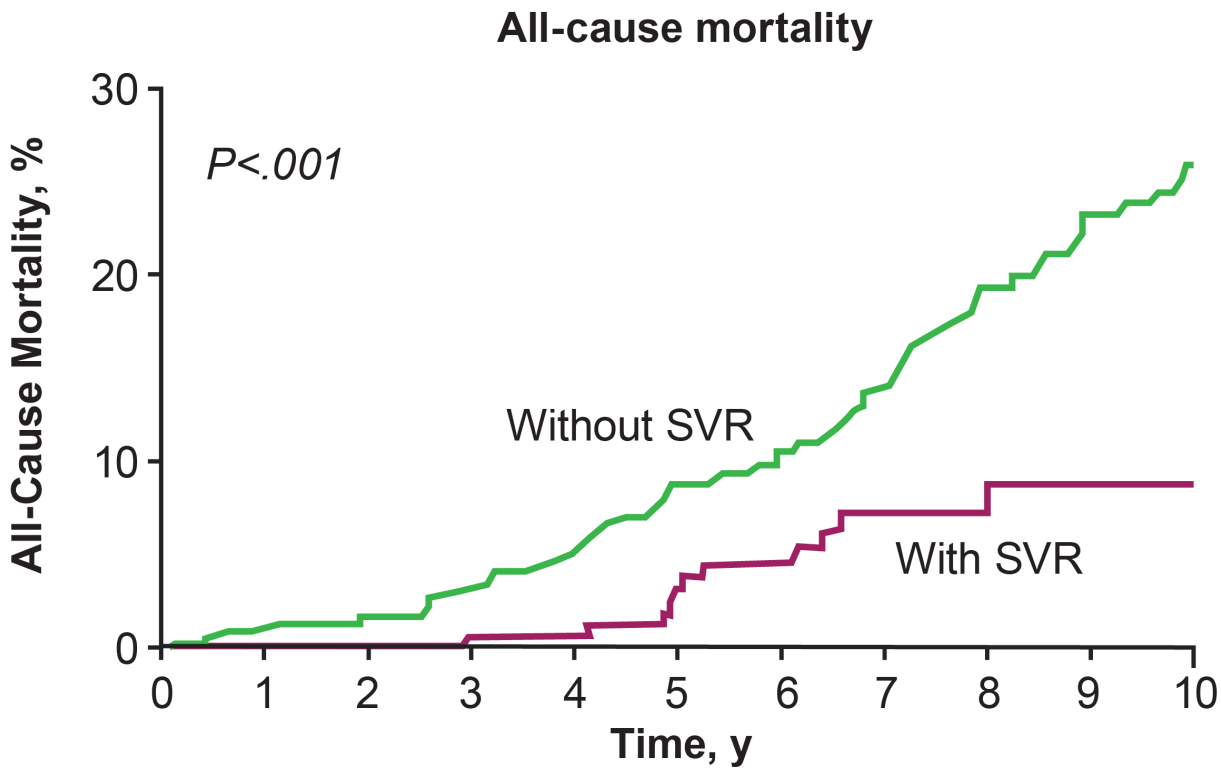






Adapted from slide – https://aidsetc.org/hivhcv/1/morbidity-mortality

Access to HCV treatment reduces mortality*…

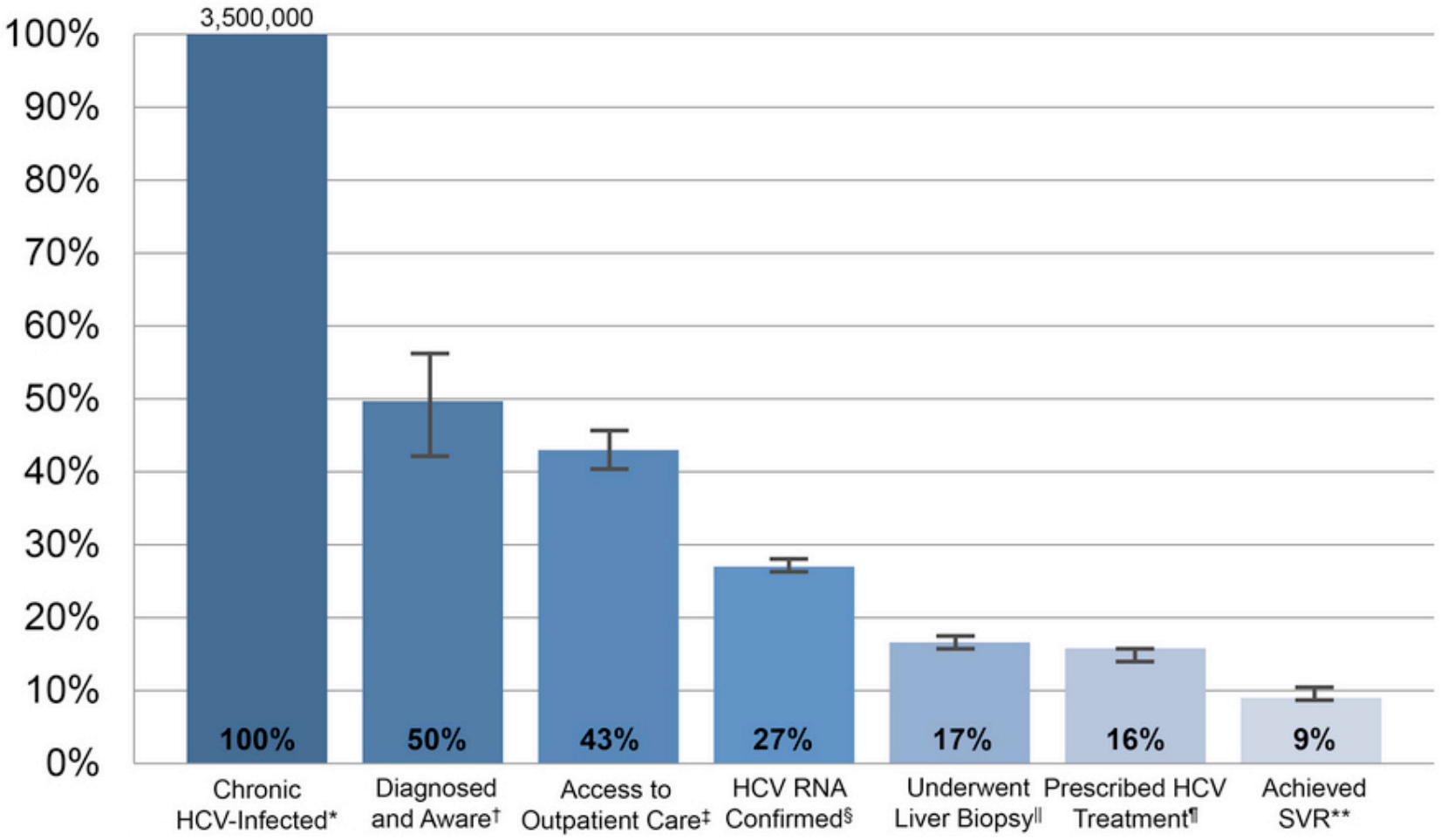


No. at risk											
Without SVR	405	393	392	363	344	317	295	250	207	164	135
With SVR	192	181	168	162	155	144	125	88	56	40	28

*** monoinfected patients**

van der Meer AJ, et al. JAMA. 2012 Dec 26;308(24):2584-93

…but a care cascade exists for HCV, too



Yehia BR, et al. PLOS One. 2014 Jul 2;9(7):e101554.

KNOW MORE HEPATITIS™

Take-home messages

- HCV and HIV disproportionately impact marginalized groups within our society
- Individually, each infection can be life-threatening – but treatment can dramatically improve outcomes
- About ¼ of all PLWH also are living with HCV – so screening, diagnosis, and treatment are essential (stay tuned!)

NC AETC
University of North Carolina at Chapel Hill
AIDS Training and Education Center

Coinfection Fridays

February 15

March 15

April 19

May 17

June 21

Speakers and topics coming soon!

Questions?

Please email me!

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