

Estimating the True Prevalence of Hepatitis C in Rhode Island

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Background

- HCV = **most common bloodborne infection** in the U.S. and worldwide
- If left **undiagnosed** and **untreated**, HCV can lead to:
 - cirrhosis
 - hepatocellular carcinoma
 - liver failure
 - death
- **Acute HCV** is a “**silent**” infection due to the fact that **most individuals are asymptomatic**, or have symptoms that are **mild and nonspecific**
- The number of HCV infections far surpasses that of HIV infections (5:1 nationally, and an estimated **7:1 in Rhode Island**). However, the precise number of persons infected with HCV in Rhode Island is unknown

Research Objective

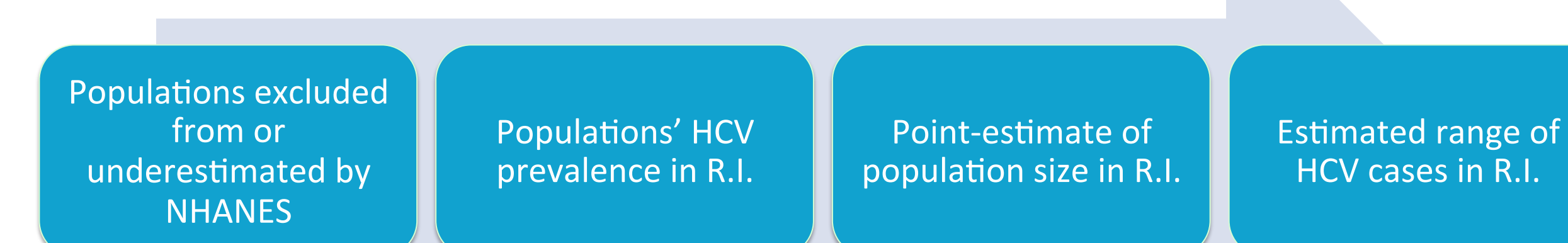
- To **calculate an accurate estimation** of the true number of HCV infected individuals in the state of R.I.
 - At the national level, the National Health and Nutrition Examination Survey (NHANES) provides an estimate of HCV prevalence, but only for the **civilian, non-institutionalized population**
 - Thus, the NHANES is the **best epidemiological estimate** we have, but it underrepresents the true number of infections
 - The true prevalence of HCV infection should consider the following populations, which are **underestimated by or excluded from NHANES**:
 - Homeless persons
 - Incarcerated
 - Veterans
 - Individuals on active military duty
 - Healthcare workers
 - Nursing home residents
 - Individuals on chronic hemodialysis
 - Hemophiliacs with transfusions before 1992

Methods

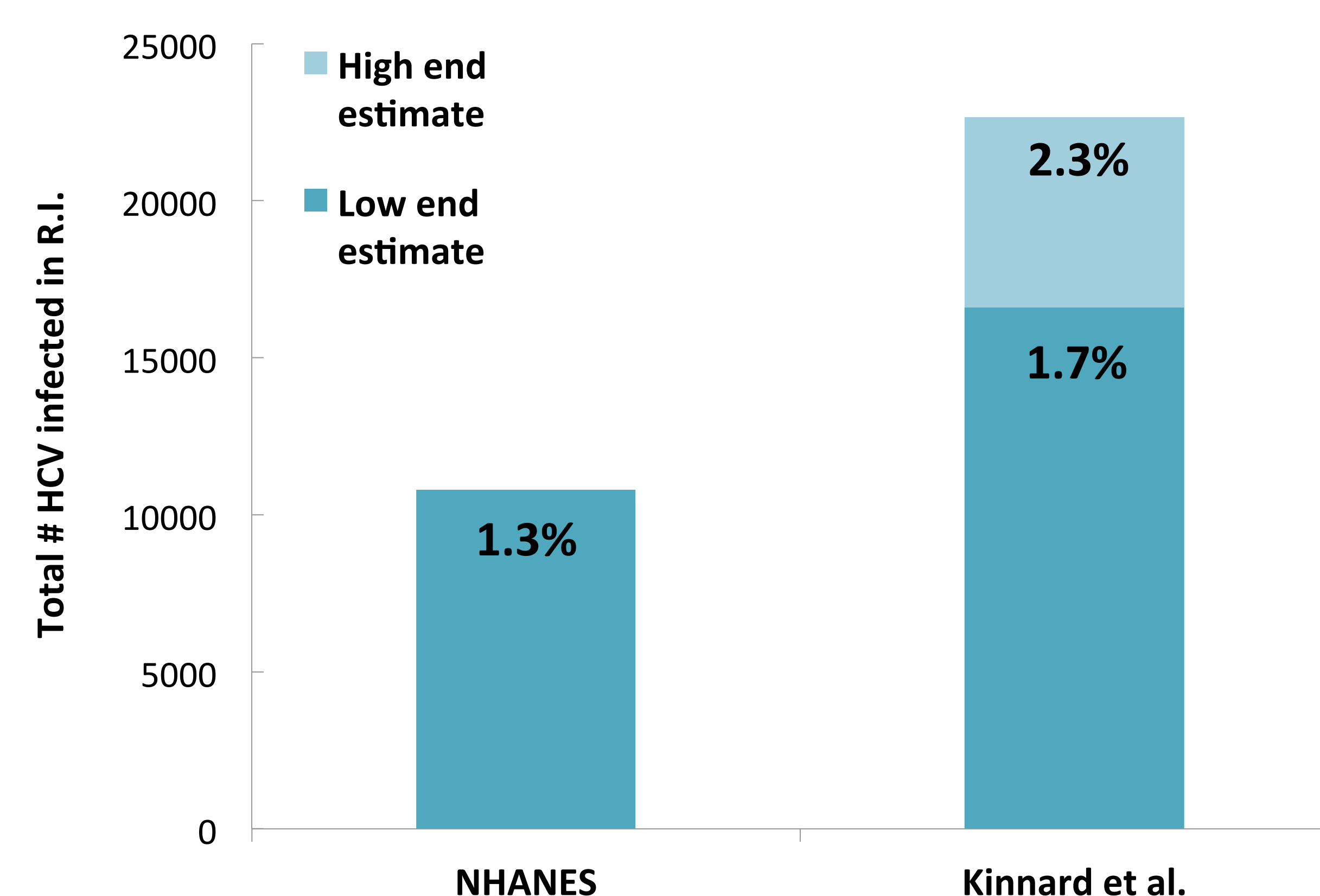
- We reviewed published, peer-reviewed studies & grey literature to estimate:
 - the **HCV prevalence** among these eight sub-populations in Rhode Island
 - **how many people** are estimated to belong to each group in Rhode Island
- To calculate the **number of HCV cases** in each sub-population of interest, we multiplied each population size by the range of group-specific HCV prevalence estimates [Table 1]

Methods (ctd)

- We conducted **indirect standardization by race** to adjust the Rhode Island-specific NHANES estimate, as Rhode Island differs notably from the national population in terms of race and ethnicity, and **added our estimates to the NHANES [Table 2]**
- We assumed that approximately 26% of persons ever exposed to HCV would **spontaneously clear the virus [Table 2]**



Results



Discussion & Implications

- NHANES **underestimates the true prevalence of HCV in R.I.**; there are **thousands of infected individuals** who would be **missed** by this survey and potentially by the healthcare system
 - 1.5% (1.2% - 1.7%) of Rhode Islanders above age 5 **have ever been or are currently chronically infected with HCV**
- Improved HCV surveillance in Rhode Island and a dramatic scale-up of **testing, linkage to care, treatment, and cure** is needed
- **On-site, integrated care** – at HIV clinics, methadone programs, needle exchange programs, primary care offices – may be an effective way to identify HCV-infected persons from underrepresented and disenfranchised populations

Table 1. Estimated total prevalence of hepatitis C in R.I. for populations under-represented by or excluded from the NHANES (RI population in 2012 above age 5 = 995,677)

Population	HCV Prevalence	Point-estimate of Population Size in RI	Estimated Range of HCV Cases in RI
Homeless	22.2% - 52.5%	1048	233 - 550
Incarcerated	20.0% - 25.0%	3191	638 - 798
Veterans	5.40% - 10.7%	73420	3965 - 7856
Active Military Duty	0.48%	1490	7
Healthcare Workers	0.90% - 3.60%	59894	539 - 2156
Nursing Home Residents	4.50%	8040	362
Chronic Hemodialysis	2.30% - 7.90%	1041	24 - 82
Hemophiliacs with Transfusions Before 1992	76.3% - 100%	*	43 - 57
Total			5811 - 11868

Table 2. Estimated total number of hepatitis C cases in R.I.

Unaccounted # of HCV Positive in RI from Table 1	5811 - 11868		
Total # of HCV Positive in RI Estimated by NHANES	11109		
Total # of HCV Positive in RI Estimated by NHANES, Race Adjusted	10792		
Total RI HCV Cases (HCV Antibody +)	16920 - 22977	Chronically Infected in RI	12521 - 17003
Total RI HCV Cases, Race Adjusted (HCV Antibody +)	16603 - 22660 (1.7% - 2.3%)	Chronically Infected in RI, Race Adjusted	12286 - 16768 (1.2% - 1.7%)

*Original NHANES estimate minus HCV cases attributed to veterans (12944 total – 1835 veterans)

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