

Estimating the True Prevalence of Hepatitis C in Rhode Island

Elizabeth N. Kinnard,¹ Lynn E. Taylor, M.D.,^{2,3} Omar Galárraga, Ph.D.,⁴ & Brandon DL Marshall, Ph.D.^{5*}

1. Program in Community Health, Brown University School of Public Health, Providence, RI
2. HIV/Viral Hepatitis Coinfection Program, The Miriam Hospital, Providence, RI, USA
3. Warren Alpert Medical School, Brown University, Providence, RI, USA
4. Department of Health Services, Policy, and Practice, Brown University School of Public Health, Providence, RI, USA
5. Department of Epidemiology, Brown University School of Public Health, Providence, RI, USA

Background

- HCV = **most common blood-borne infection** in the U.S. and worldwide
- If left **undiagnosed** and **untreated**, HCV can lead to:
 - advanced liver disease
 - liver cirrhosis
 - hepatic fibrosis
 - hepatocellular carcinoma
 - liver failure and 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

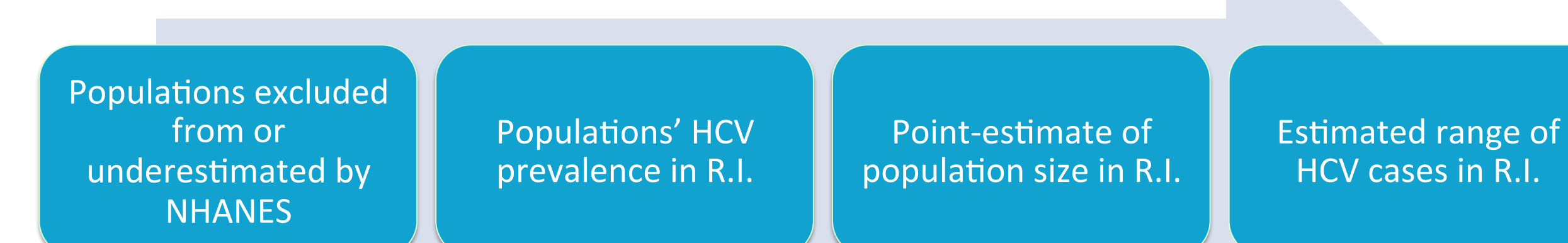
- To **calculate an accurate estimation** of the true number of HCV infected individuals in the state of R.I.
 - At the national level, the National Health and Nutrition Examination Survey (NHANES) provides an estimate of HCV prevalence, but only for the **civilian, non-institutionalized population**
 - 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

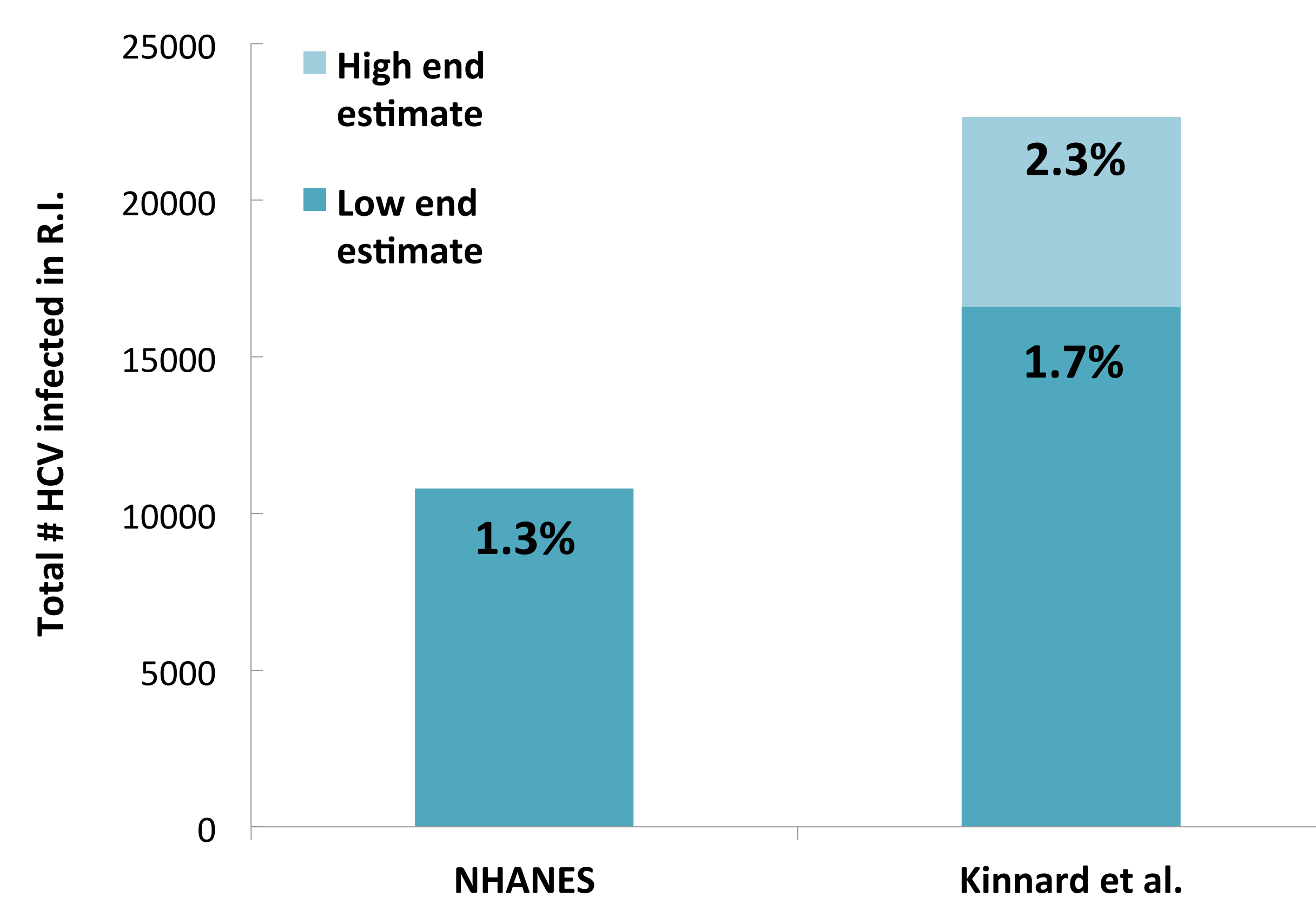
- We reviewed published, peer-reviewed studies & grey literature to estimate:
 - the **HCV prevalence** among these eight sub-populations in Rhode Island
 - how many people** are estimated to belong to each group in Rhode Island
- To calculate the **number of HCV cases** in each sub-population of interest, 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)

* Brandon DL Marshall, PhD, Brown University. t: 401-863-6427, f: 401-863-3713 e: brandon_marshall@brown.edu

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