

## Study Objectives/Background

### Objectives

To assess the prevalence of hepatitis B virus (HBV) infection and hepatitis C virus (HCV) infection among immigrants by their country of birth in the Baltimore-Washington Metropolitan Area in 2014.

### Background

#### Hepatocellular Carcinoma (HCC) from a Global perspective

- Ranks 4<sup>th</sup> in cancer incidence and 3<sup>rd</sup> in cancer mortality
- >80% of HCC occurs in the developing world
- HCC is largely preventable (80% caused by chronic HBV, 15% chronic HCV)

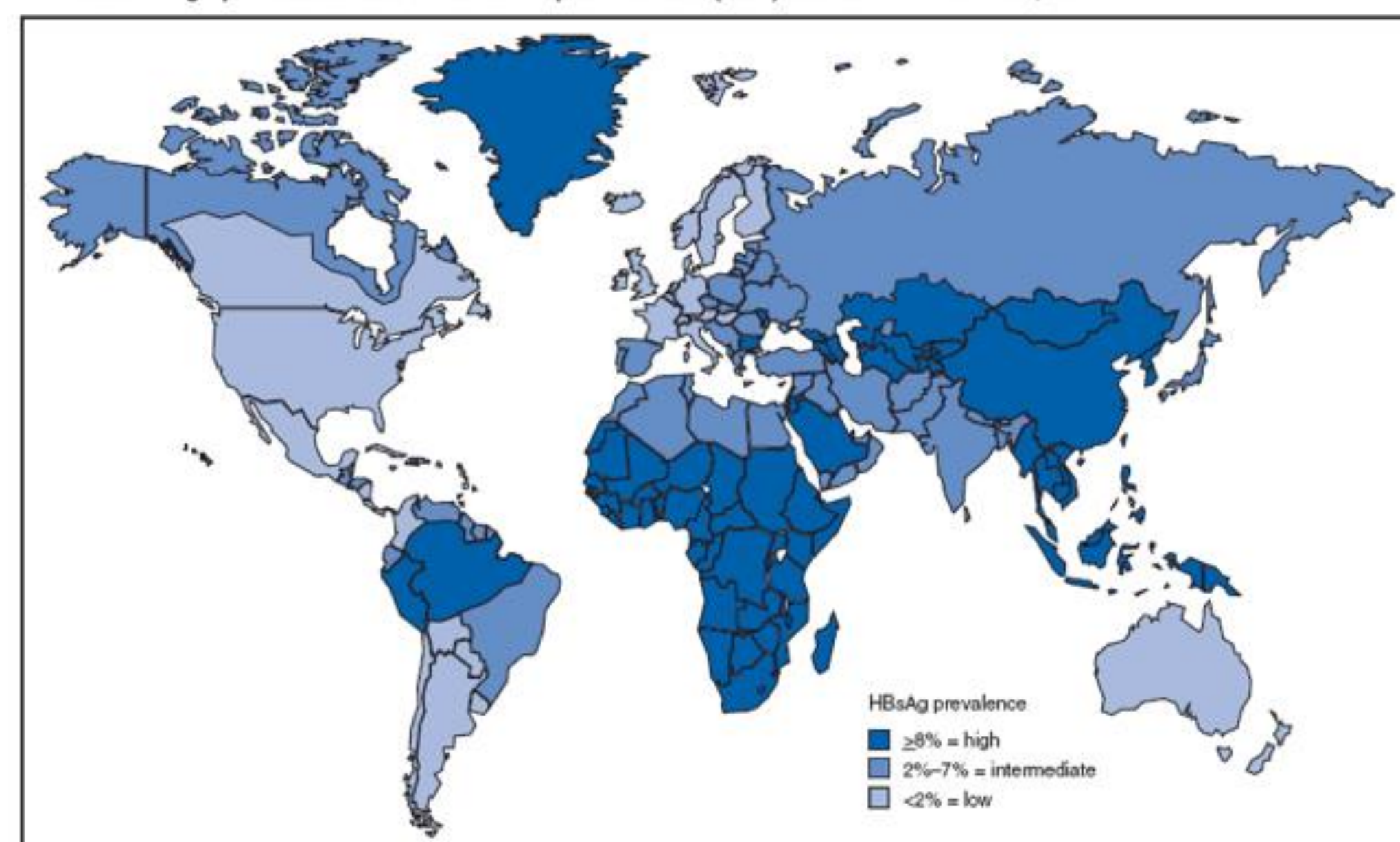
#### HBV infection

- >400 million HBV carriers worldwide
- Highest prevalent rates in Asia, Africa, and the Pacific Islands
- 1.4 million people chronically infected and 3,000 deaths due to HBV in the U.S.
- 40-70% infected may be foreign-born persons
- 15-25% risk of premature death due to liver cancer or end-stage liver disease

#### HCV infection

- 130-170 million people worldwide infected
- 350,000 die of HCV-related liver disease every year
- 1-5% will die from cirrhosis or HCC
- Surveillance programs of viral hepatitis are underfunded, underdeveloped, and poorly integrated (IOM, 2010)

FIGURE 3. Geographic distribution of chronic hepatitis B virus (HBV) infection — worldwide, 2006\*

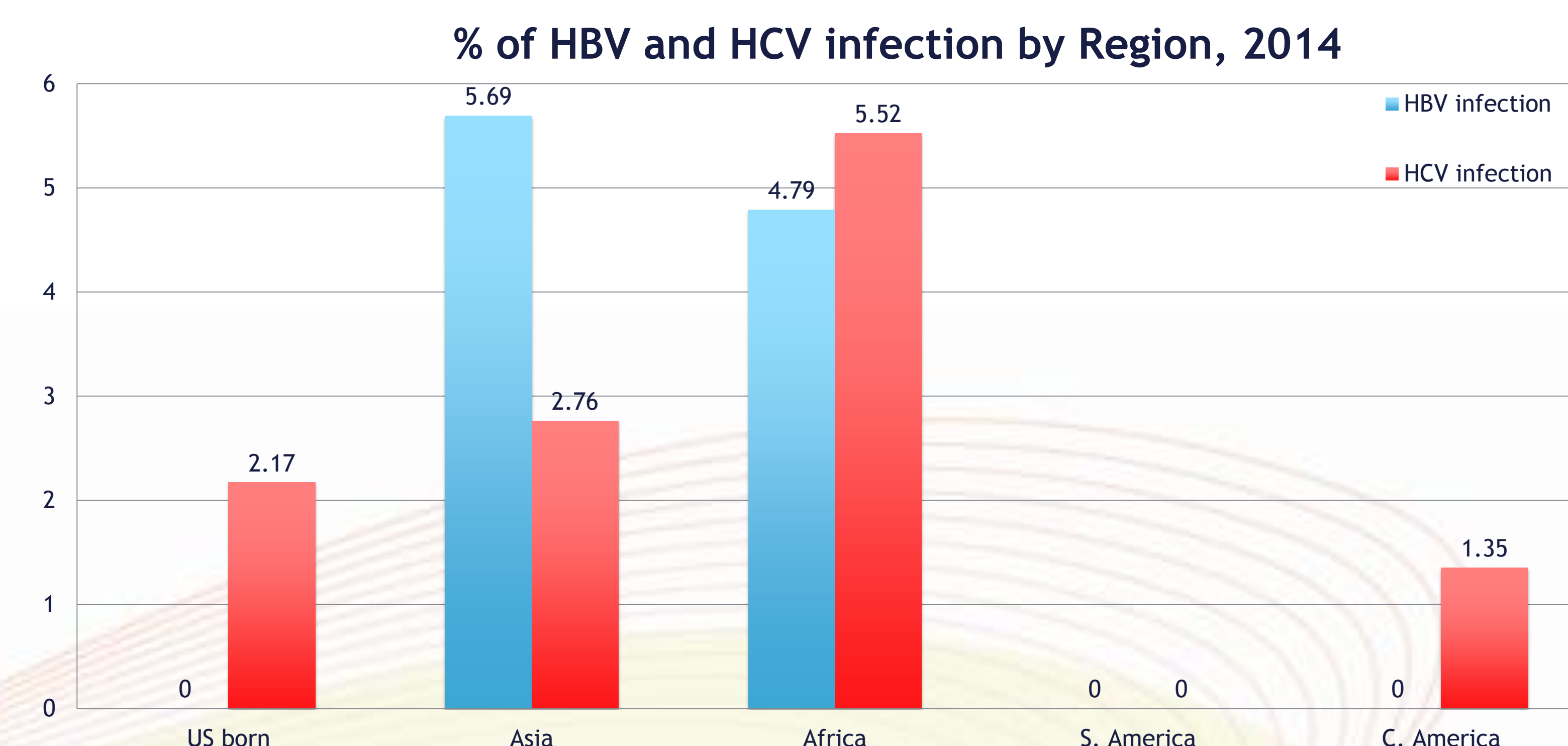
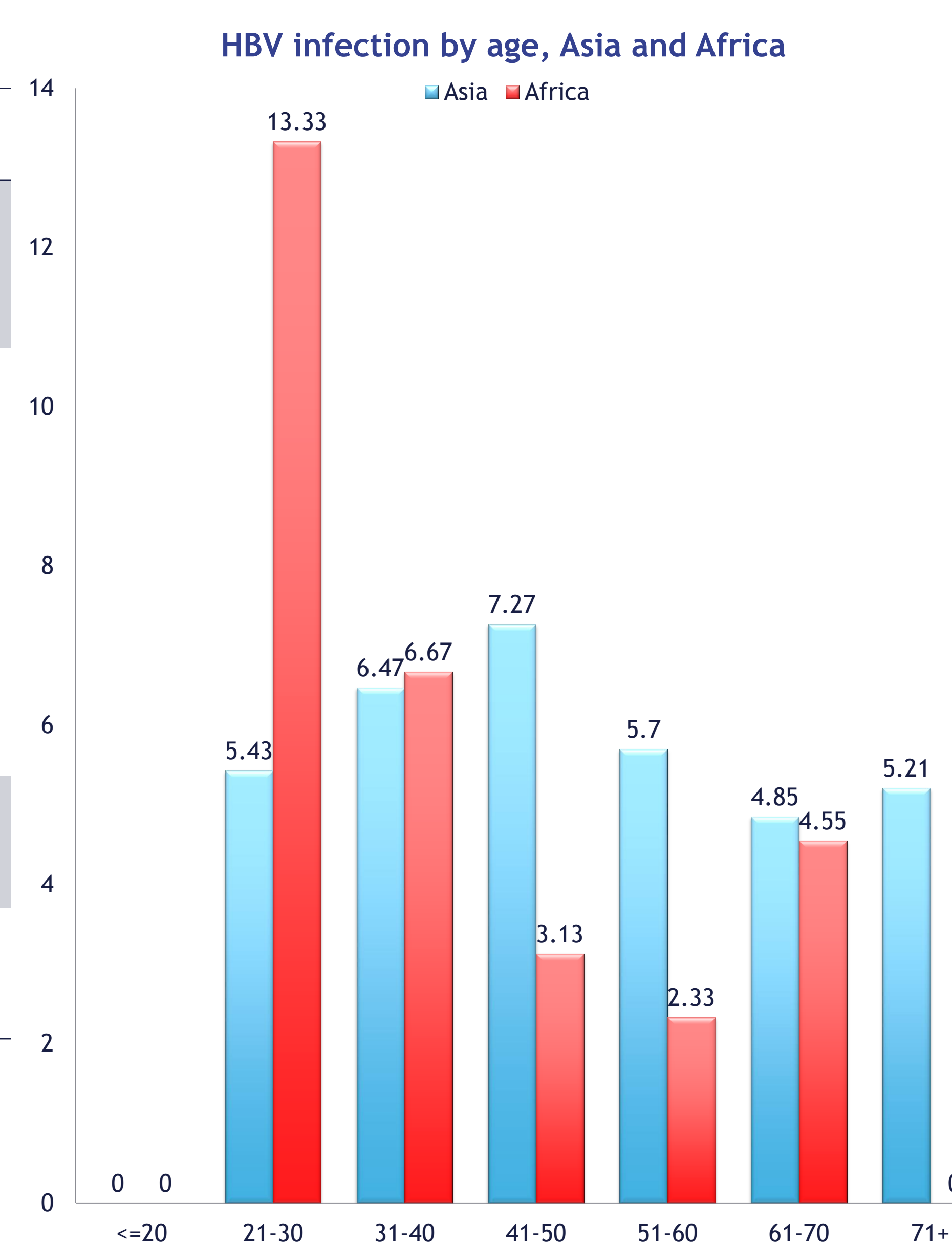


\*For multiple countries, estimates of prevalence of hepatitis B surface antigen (HBsAg), a marker of chronic HBV infection, are based on limited data and might not reflect current prevalence in countries that have implemented childhood hepatitis B vaccination. In addition, HBsAg prevalence might vary within countries by subpopulation and locality.  
Source: CDC. *Travelers' Health*, yellow book. Atlanta, GA: US Department of Health and Human Services, CDC, 2008. Available at <http://www.cdc.gov/travel/yellowbook/chapter-14/hepb>.

## Participants by Country of Birth (n=1293)

WHO Region	Country (>10 participants)	Country (<10 participants)	# of country	# of participants
Asia	China, Korea, Vietnam, Burma, Thailand, Laos, Pakistan, Myanmar	India, Sri Lanka, Nepal, Philippines, Malaysia, Bangladesh, Hong Kong, Iran, Indonesia	17	928 (71.8%)
South America		Argentina, Bolivia, Brazil, Chile, Columbia, Ecuador, Guyana, Peru	8	28 (2.2%)
Central America	El-Salvador, Mexico, Guatemala	Honduras, Costa Rica	5	74 (5.7%)
Africa	Ethiopia, Liberia, Cameroon, Nigeria, Sierra Leone	Egypt, Togo	7	146 (11.3%)
North America	USA	Canada	2	97 (7.5%)
Missing				20 (1.5%)
Total			39	1293

	N (%)
Gender	
-Males	547 (42.3%)
-Females	745 (57.7%)
Age	
-<=20	54 (4.2%)
-21-30	153 (11.8%)
-31-40	216 (16.7%)
-41-50	245 (19.0%)
-51-60	308 (23.8%)
-61-70	210 (16.2%)
-71+	107 (8.3%)
<b>HBV infection (n=1278)</b>	<b>59 (4.62%)</b>
<b>HCV infection (n=1045)</b>	<b>31 (2.97%)</b>



## HBV infection by Country of Birth

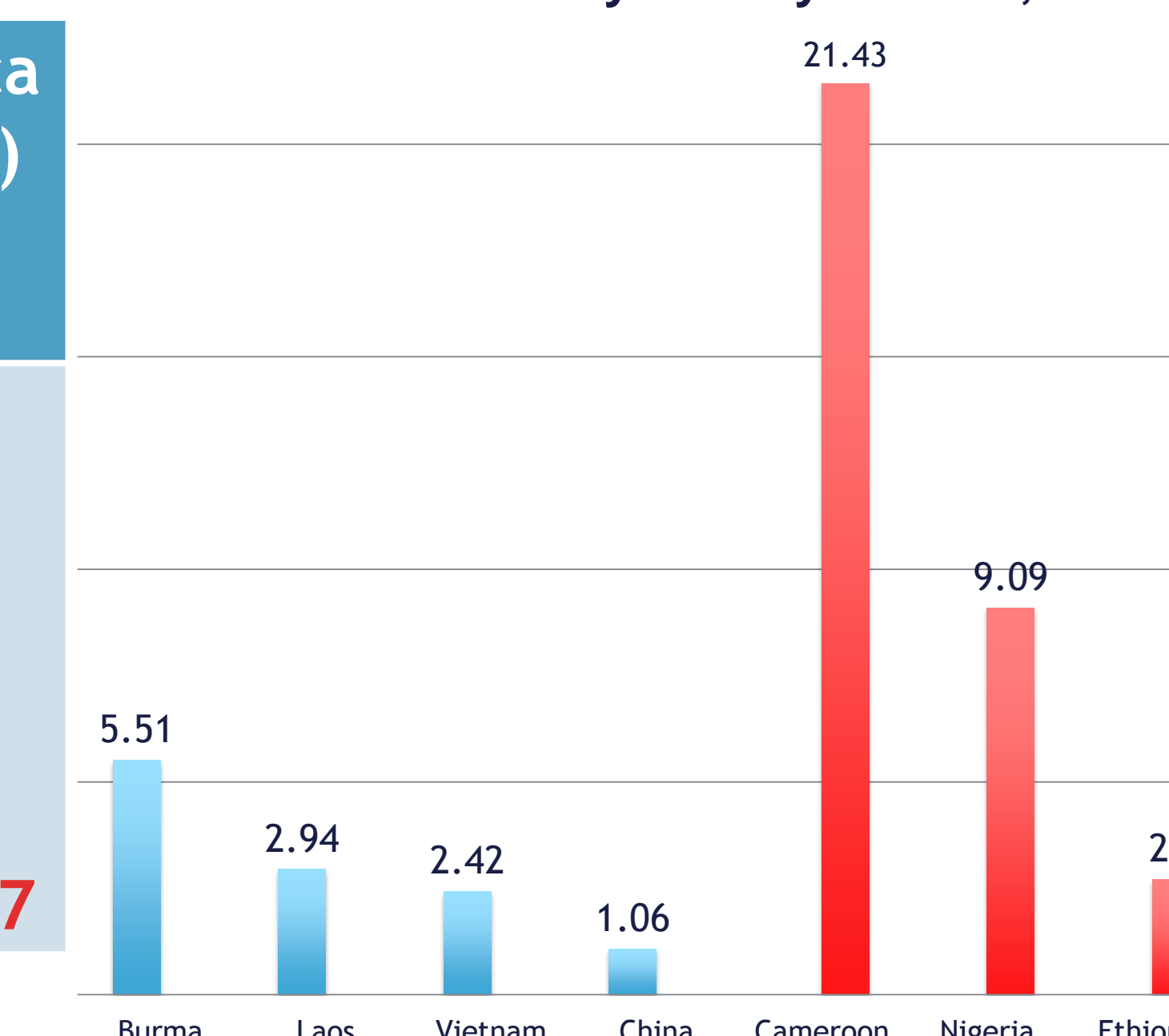
	HBV Prevalence	Meta analysis*	95% CI
<b>Asia</b>			
<b>China</b>	<b>8.70</b>	<b>12.25</b>	<b>11.70, 12.80</b>
<b>Korea</b>	<b>3.49</b>	<b>5.26</b>	<b>4.69, 5.83</b>
<b>Vietnam</b>	<b>10.65</b>	<b>12.48</b>	<b>11.46, 13.50</b>
<b>Myanmar</b>	<b>9.09</b>	<b>11.63</b>	<b>9.53, 13.73</b>
<b>Laos</b>	<b>8.82</b>	<b>13.61</b>	<b>11.58, 15.64</b>
<b>Thailand</b>	<b>1.85</b>	<b>5.97</b>	<b>5.42, 6.52</b>
<b>Pakistan</b>	<b>0</b>	<b>4.17</b>	<b>3.59, 4.75</b>
<b>Burma</b>	<b>2.37</b>	<b>N/A</b>	
<b>Africa</b>			
<b>Liberia</b>	<b>18.18</b>	<b>16.54</b>	<b>11.56, 21.53</b>
<b>Cameroon</b>	<b>7.14</b>	<b>11.44</b>	<b>8.46, 14.43</b>
<b>Ethiopia</b>	<b>5.41</b>	<b>9.59</b>	<b>8.11, 11.07</b>

Note. \*Kowdley et al. (2012). Prevalence of chronic hepatitis B among foreign-born persons living in the US by country origin. Hepatology.

## HCV infection by age and country of birth

	Total (n=31) %	US born (n=2) %	Asia (n=19) %	Central America (n=1) %	Africa (n=8) %
<=20	0	0	0	0	0
21-30	1.43	0	2.41	0	0
31-40	<b>5.15</b>	<b>16.67</b>	<b>5.93</b>	0	3.33
41-50	1.44	0	0.75	<b>8.33</b>	3.13
51-60	2.50	0	2.45	0	4.65
61-70	3.36	0	2.78	0	<b>9.09</b>
71+	<b>7.69</b>	0	<b>3.57</b>	0	<b>66.67</b>

HCV Infection by County of Birth, 2014



## Conclusions

- Most participants were foreign born (FB) Asians (72%) and FB Africans (11%).
- There were gender differences for HBV infection (6.1% for males vs. 3.5% for females,  $p < .05$ )
- There were different age patterns of HBV infection in Asia and Africa: Highest rates was found in those of 41-50 age group (7.3%) from Asia, and those of 21-30 age group from Africa (13.3%)
- For country of origin, Vietnamese (10.65%) had highest rates of HBV infection followed by those from Myanmar (9.1%), Laos (8.8%), and China (8.7%) in Asia. In Africa, those from Liberia, Cameroon, and Ethiopia were 18.22%, 7.1%, 5.4% respectively.
- There were different age patterns of HCV infection: Highest rates was found in those of 31-40 age group (16.7%) from Asia, and those of older than 71 years older from Africa (66.7%).
- For country of origin, Those from Cameroon (21.4%) had highest rates of HCV infection followed by Nigeria (9.1%)

### Limitation

- Selection bias/ generalization

### Recommendation

- Since HBV screening is not part of routine care, health care providers are not aware of the importance of screening for those immigrants from Asia and Africa.
- This study suggests better estimates of true burden of HBV and HCV infection which will help programs for prevention, earlier diagnosis, and linkage to care.

## Study Design

Cross-sectional data collection in the communities in Maryland, Washington, DC, and northern Virginia by organizing 39 free screening events in 2014

A total of 1293 immigrants from Asia, South America, Central America, and Sub-Saharan Africa, 12 years and older, participated in free hepatitis screening events

### Different recruitment strategy for each group

- Churches, temples, mosque, community health fairs, community centers

### Community-based participatory research (CBPR)

- Working with community leaders to discuss culturally tailored recruitment strategy
- Design the flyers to announce the events in the community

### Procedures

- Registration/signed consent and waiver of liability
- Collect demographic and history of hepatitis infection
- Hepatitis screening to send the blood sample to the lab
- Sent the results to participants by mail
- For those unprotected, called 3 times to remind HBV vaccinations
- For those infected, provided medical counseling

### Outcome: HBV screening test (HBsAg, HBsAb) and HCV (screening tests)