

Prevalence of Alcohol Consumption during Pregnancy and Fetal Alcohol Spectrum Disorder

Presented by
Svetlana (Lana) Popova, MD, PhDs, MPH

Centre for Addiction and Mental Health,
University of Toronto,
PAHO/WHO Collaborating Centre
Toronto, Canada

15th INEBRIA Conference
Santiago, Chile
September 27-28, 2018



Centre
for Addiction and
Mental Health
Centre de
toxicomanie et
de santé mentale

OVERVIEW

- **Prevalence of alcohol consumption and binge drinking during pregnancy in general population of different countries (including countries of Latin America and the Caribbean), World Health Organization (WHO) regions and globally.**
- **Prevalence of FAS/FASD in different populations in different countries (including countries of Latin America and the Caribbean), WHO regions and globally.**

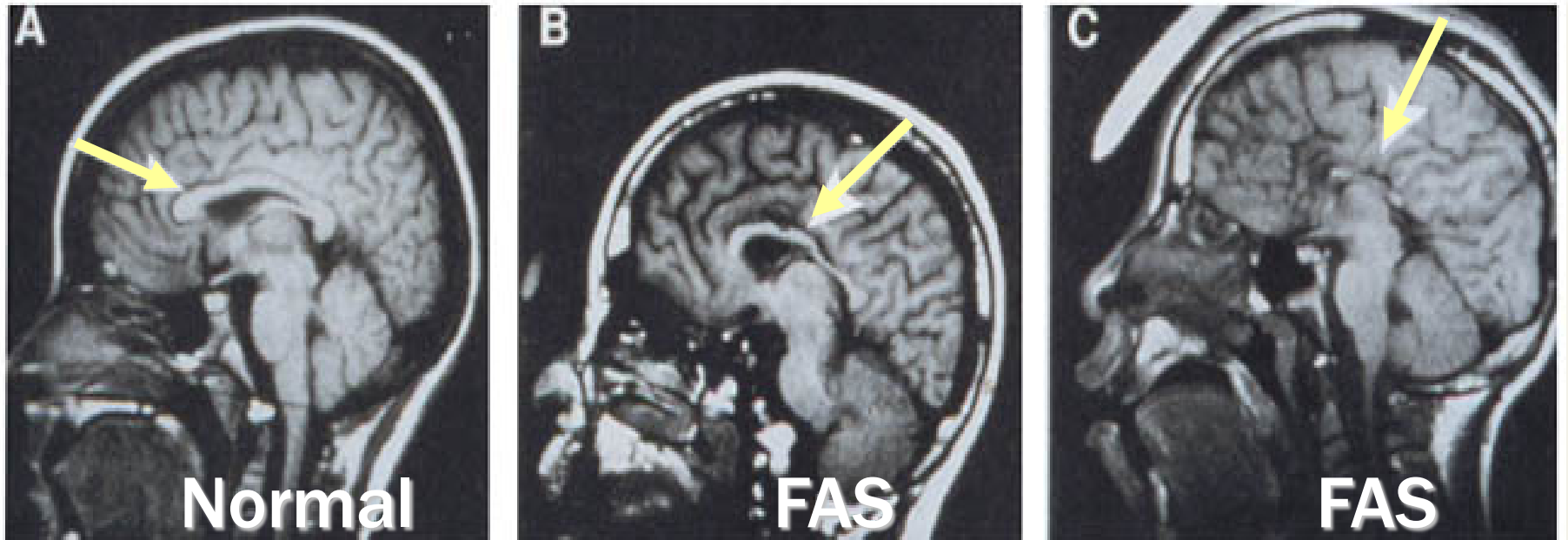
FASD is one of the leading known preventable cause of birth defects and developmental delay (PHAC, 2005)

- Alcohol => Harm to others! FASD is one of the most dramatic examples of such harm
- **What is FASD?**
 - An umbrella term describing the range of effects that can occur in a person whose mother drank alcohol during pregnancy
- **Primary disabilities:** permanent brain injury, learning disorders, developmental disabilities, maladaptive behaviours, physical malformations, and growth restrictions
- **Other common outcomes:** early school dropout, addiction problems, poorly recognized mental health conditions, promiscuous sexual behaviour, and trouble with the law
- Irreversible and lifelong



Permanent Brain Damage

- Prenatal alcohol exposure can permanently damage the brain affecting important structures such as the cerebellum and corpus callosum

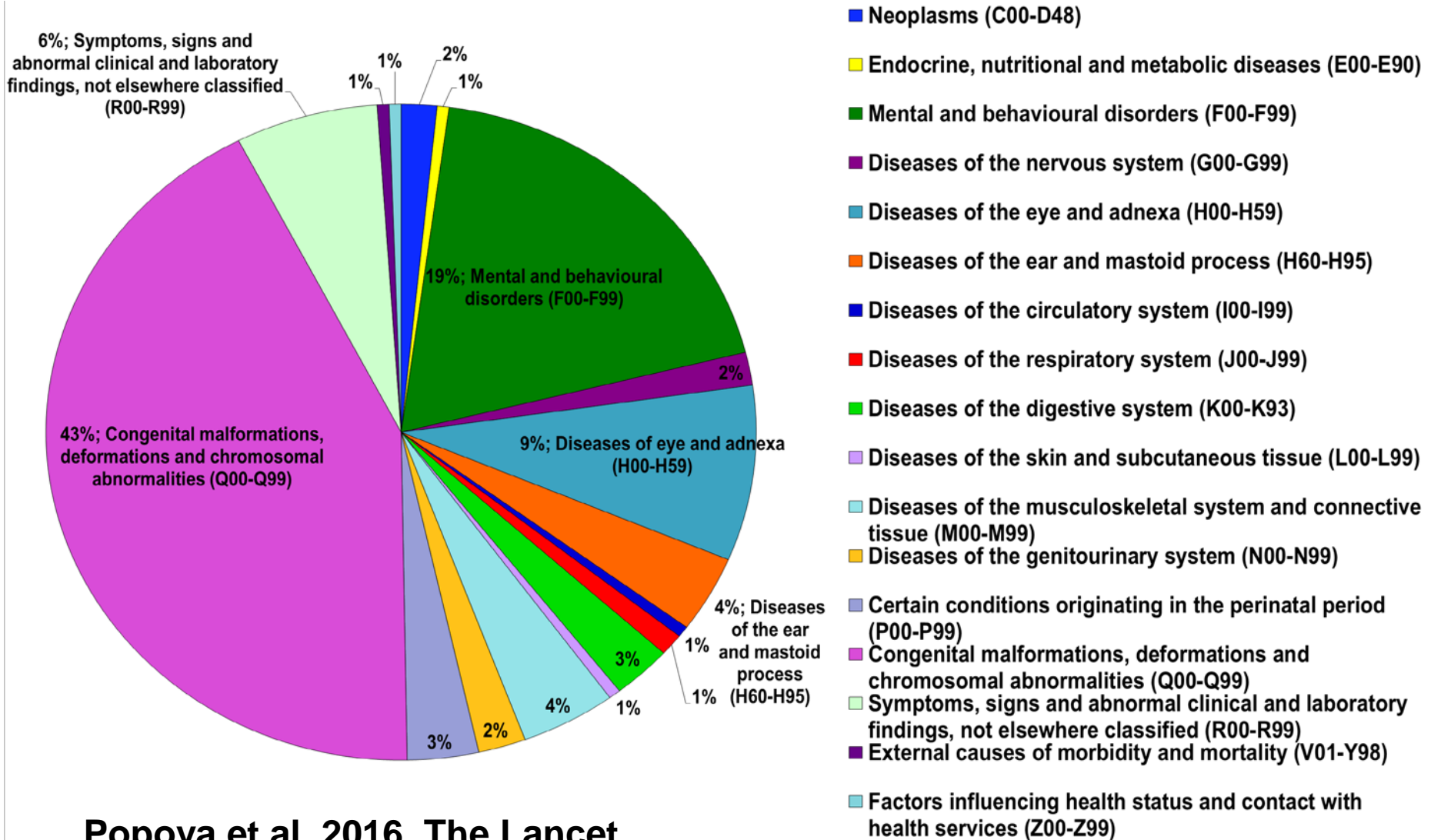


Permanent loss of the tissue indicated by the arrows (portions of the corpus callosum).

Source: Mattson et al. 1994. Alcohol Health & Research World

428 comorbid conditions, spanning across 18 (out of 22) chapters of the ICD-10

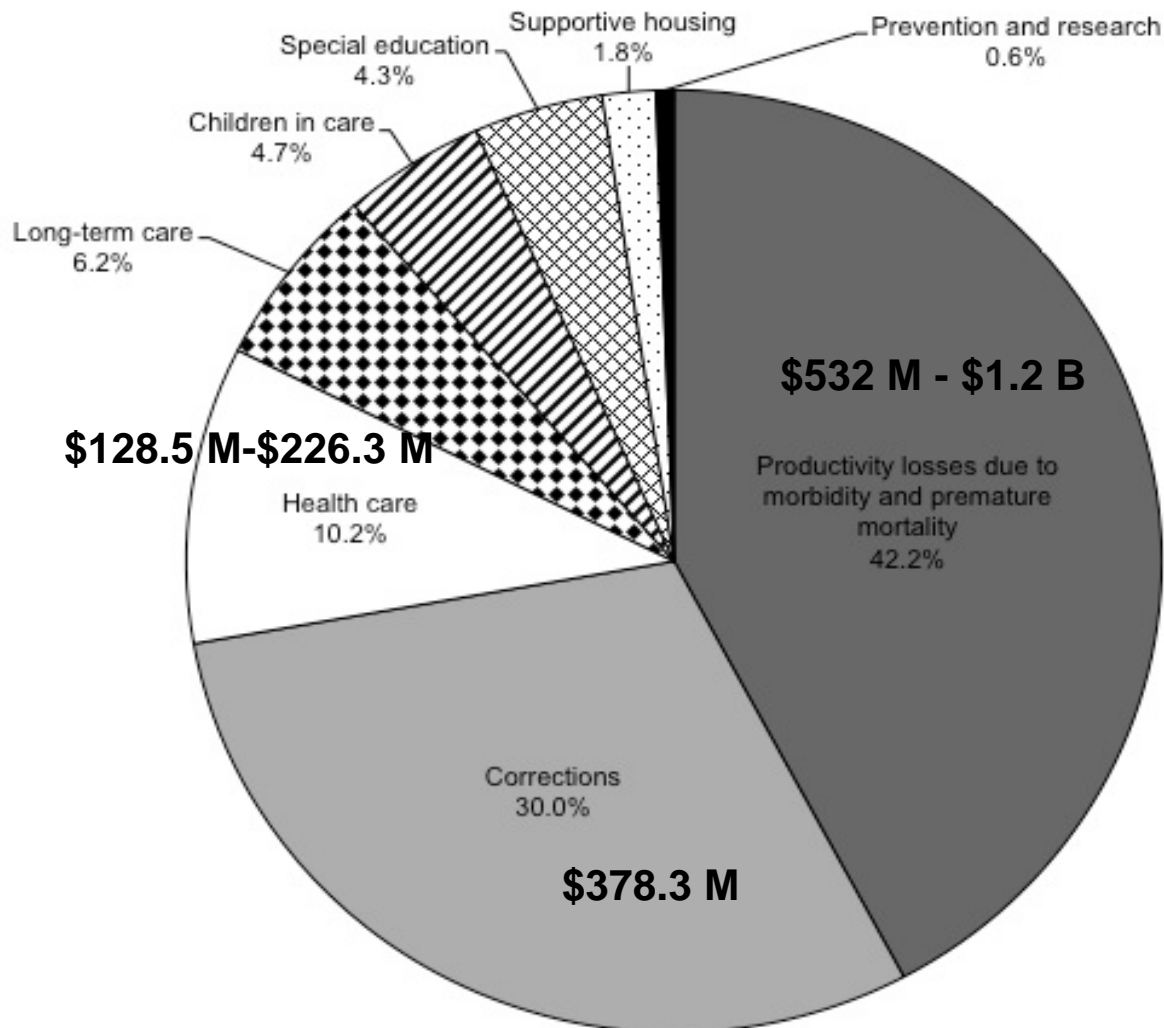
Percentage of conditions found to occur among individuals with FASD by ICD-10 chapter



FASD is costly!

Total annual cost: \$1.3B - \$2.3B

Percentage of main cost components attributable to FASD in Canada in 2013



Prevalence of Alcohol Use During Pregnancy and FAS/FASD

- 1) Popova S, Lange S, Probst C, Gmel G, & Rehm J (2017). *Lancet Global Health*
- 2) Lange S, Probst C, Gmel G, Rehm J, Popova S (2017). *JAMA, Pediatrics*
- 3) Popova S, Lange S, Probst C, Gmel G, & Rehm J (2018). *Biochemistry and Cell Biology, special issue on FASD*

Objective: To estimate the prevalence of alcohol use and binge drinking during pregnancy and FAS/FASD by country, WHO region, and globally

Methodology:

Comprehensive Literature search: not limited geographically/language

Meta-analyses: Pooled prevalence for countries with 2+ studies, assuming a random-effects model

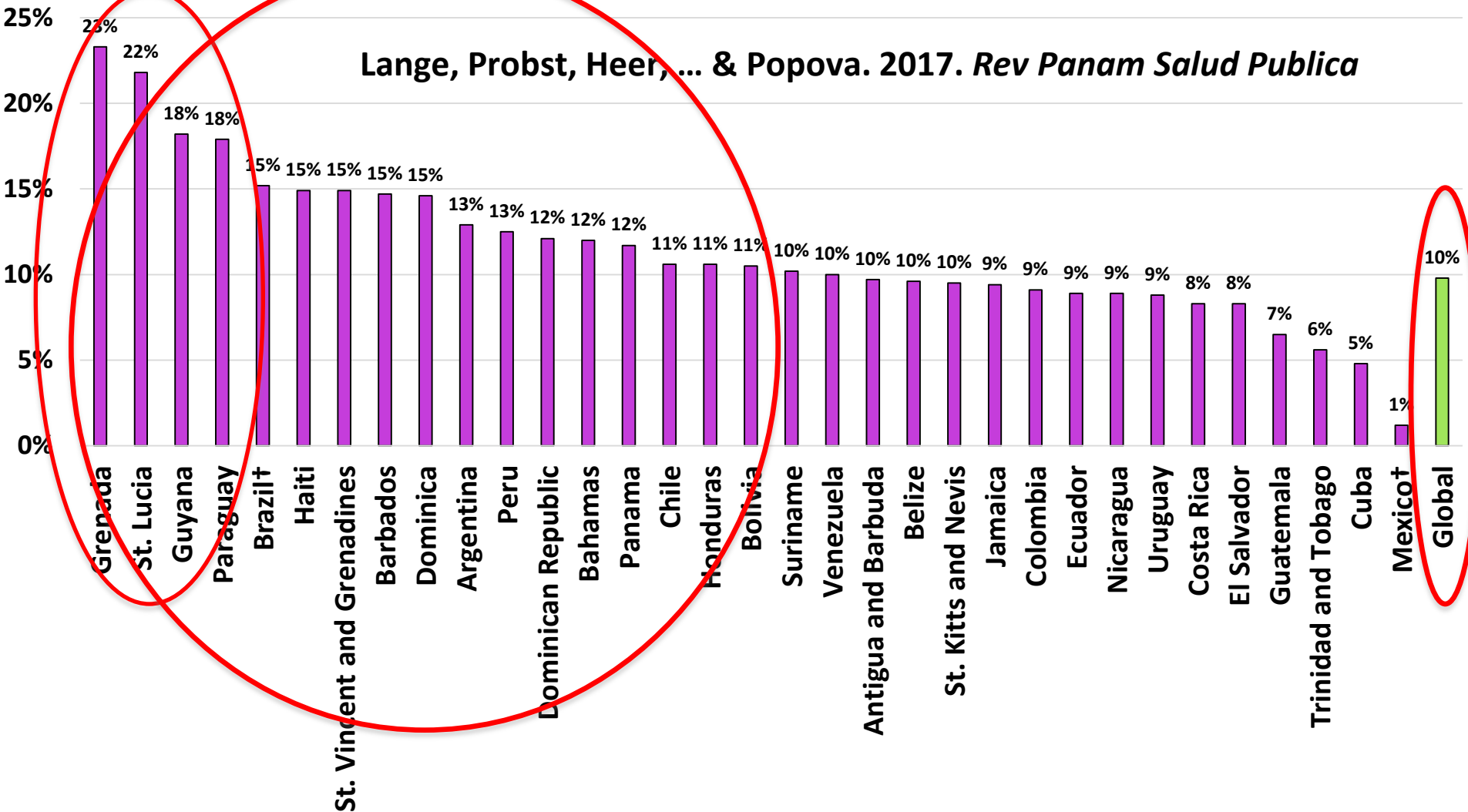
Data prediction: For countries with one or no studies:

- a) For AC: using fractional response regression modelling and;
 - b) For FAS/FASD: based on the proportion of women who gave birth to a child with FAS/FASD among women who consumed alcohol during pregnancy
- Estimated WHO regional and global averages of FAS/FASD prevalence weighted by the number of live births in each country

Prevalence of Any Amount of Alcohol Use During Pregnancy in General Population of Latin America and the Caribbean in 2012

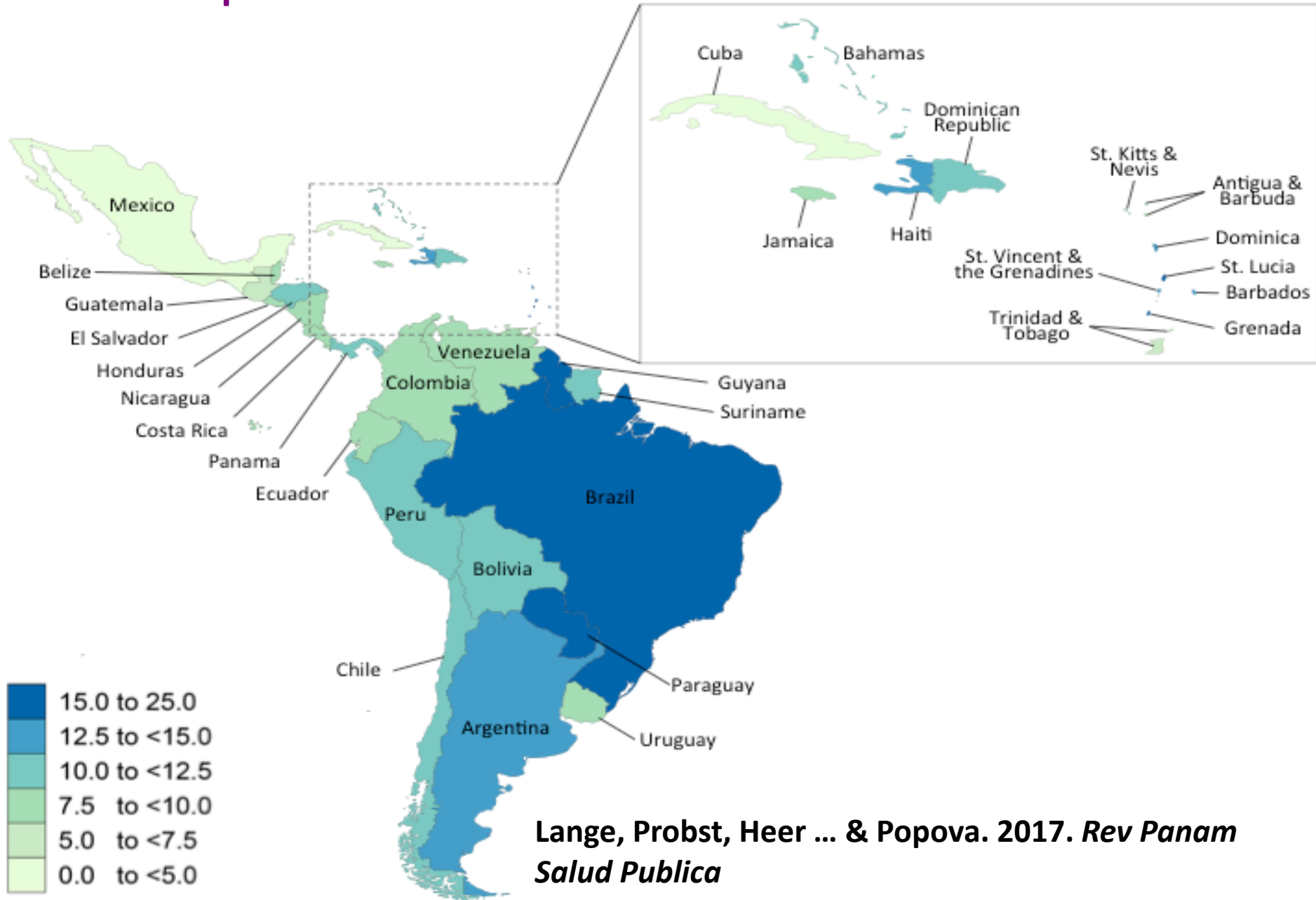
- Lange, Probst, Heer, Roerecke, Rehm, Monteiro, Shield, de Oliveira & Popova. (2017). *Rev Panam Salud Publica [Pan American Journal of Public Health]*
- Data from published studies on the prevalence of alcohol consumption during pregnancy were available from 5 of the 33 countries in Latin America and the Caribbean:
- Brazil [n=17], Chile [n=2], Guatemala [n=1], Mexico [n=3], and Uruguay [n=1]; no studies from the Caribbean.
- Meta-analysis for Brazil and Mexico, based on the criterion of three available studies per country.
- The prevalence of alcohol consumption during pregnancy was predicted for 31 countries.

Prevalence of Any Amount of Alcohol Use During Pregnancy in General Population of Latin America and the Caribbean in 2012

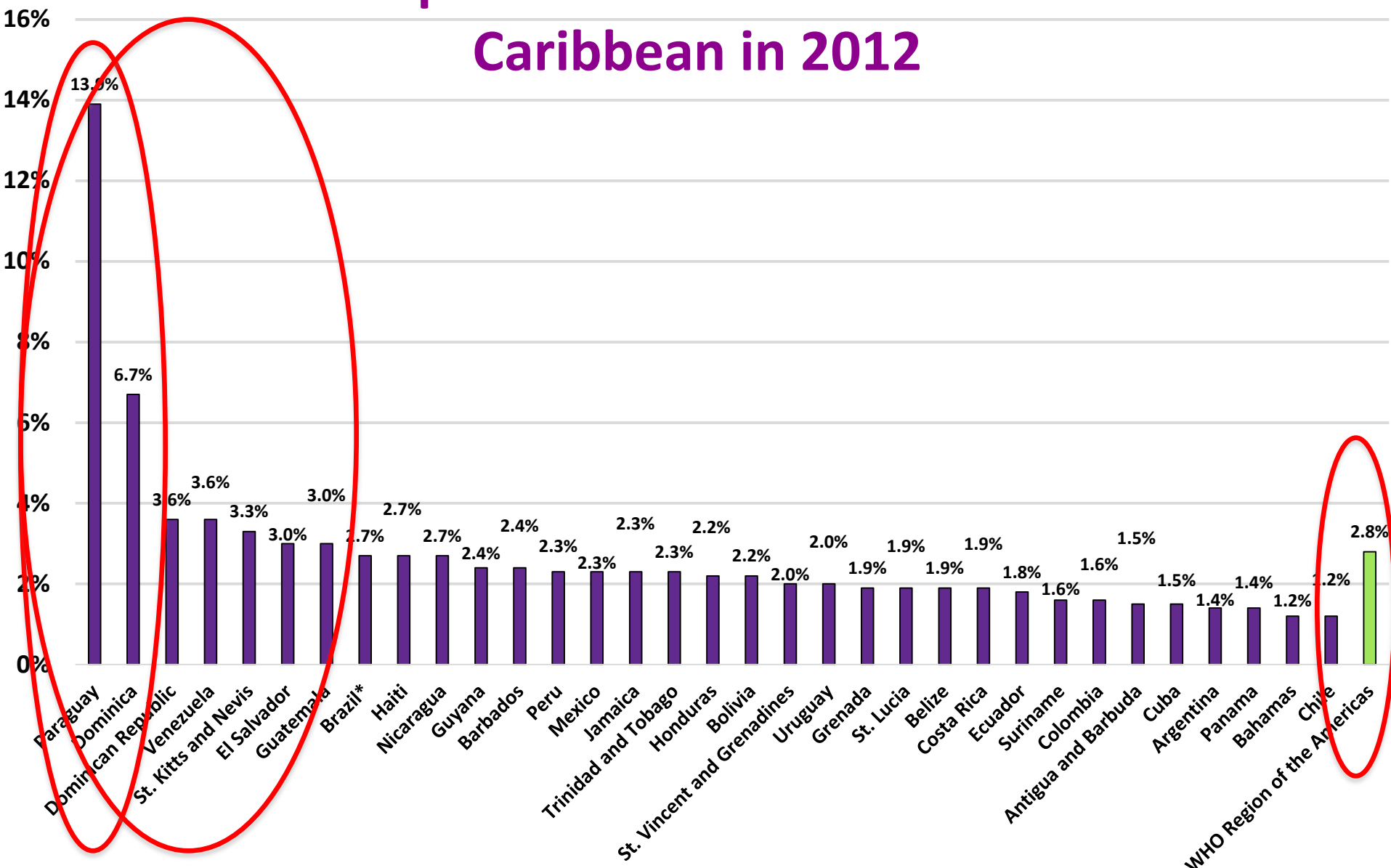


†Estimate of alcohol use (any amount) during pregnancy based on a meta-analysis of the current literature

Prevalence of Any Amount of Alcohol Use During Pregnancy in General Population of Latin America and the Caribbean in 2012



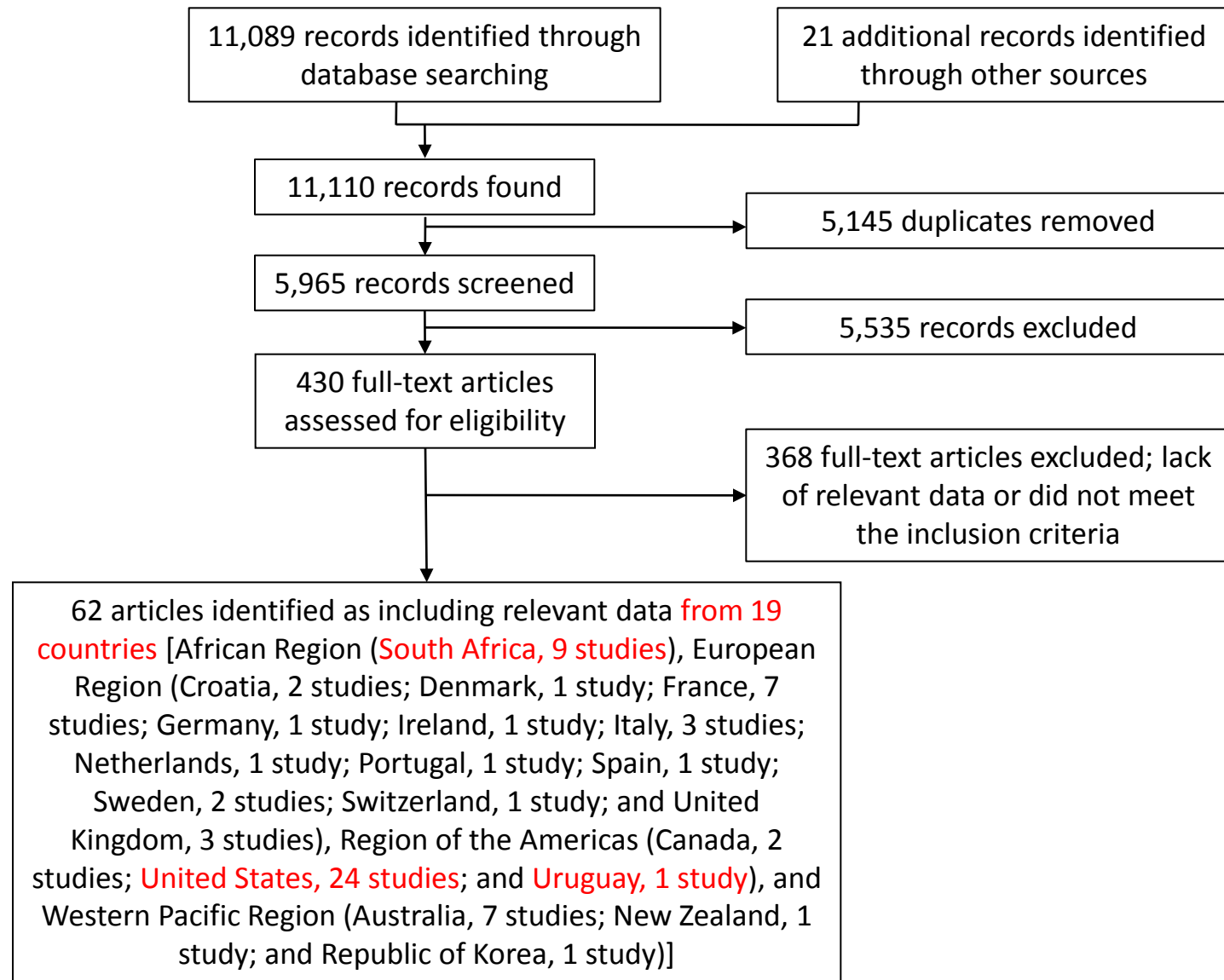
Prevalence of Binge Drinking During Pregnancy in General Population of Latin America and the Caribbean in 2012



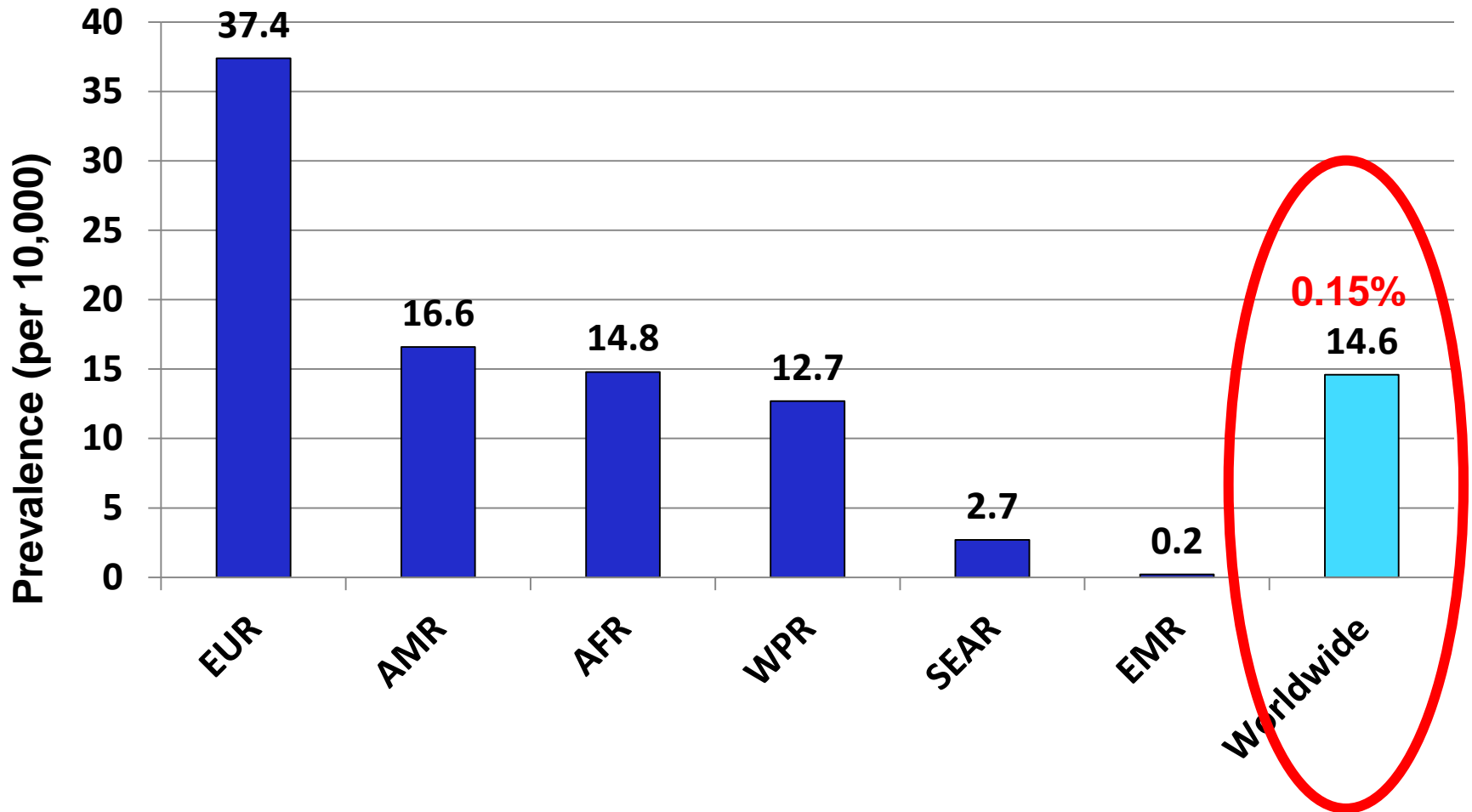
*Estimate of binge drinking during pregnancy based on a meta-analysis of the current literature

Prevalence of FAS/FASD in General Population

Flow chart for systematic literature search on prevalence of FAS/FASD

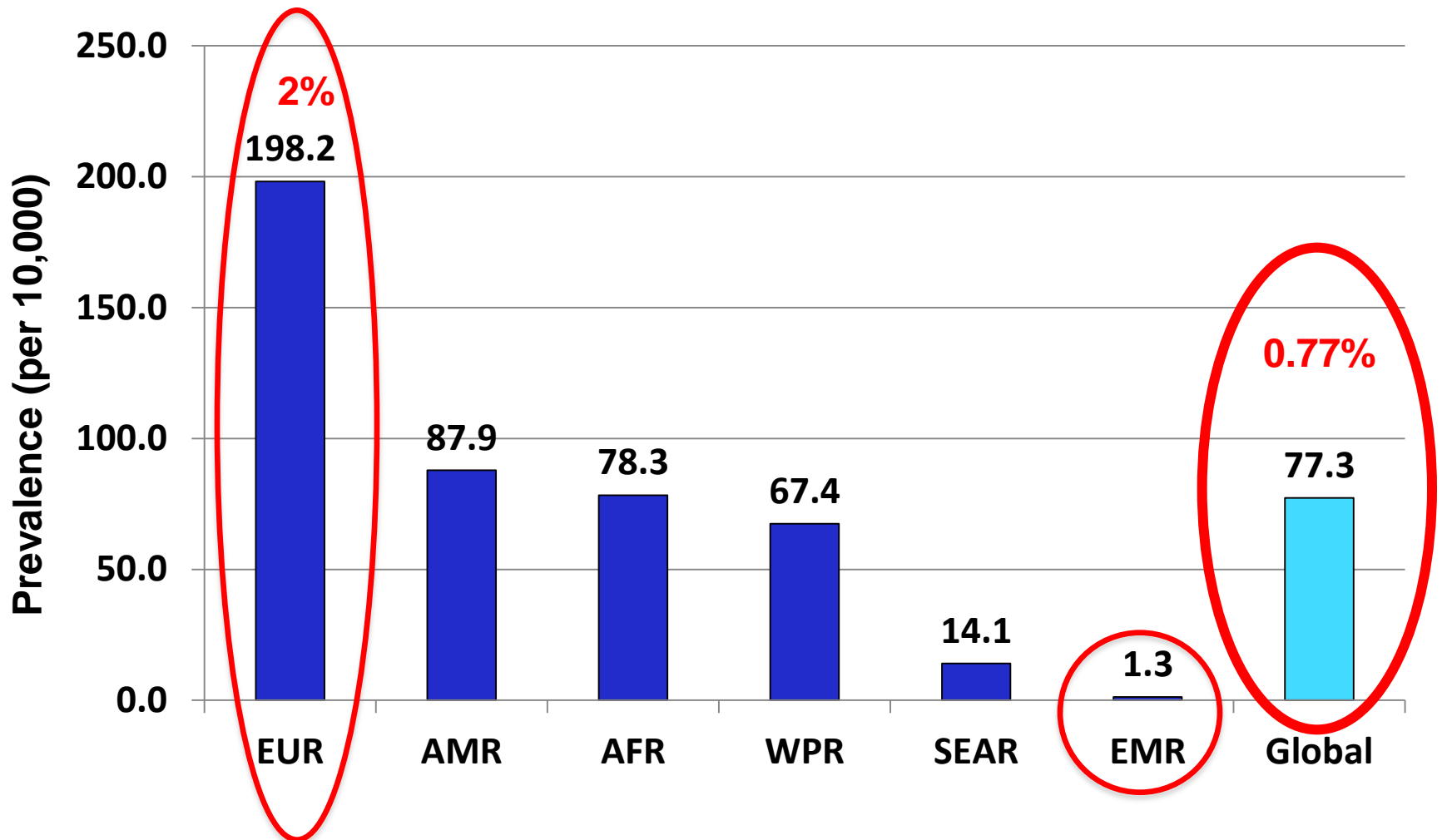


Prevalence of FAS in General Population by WHO Region and Globally, 2012



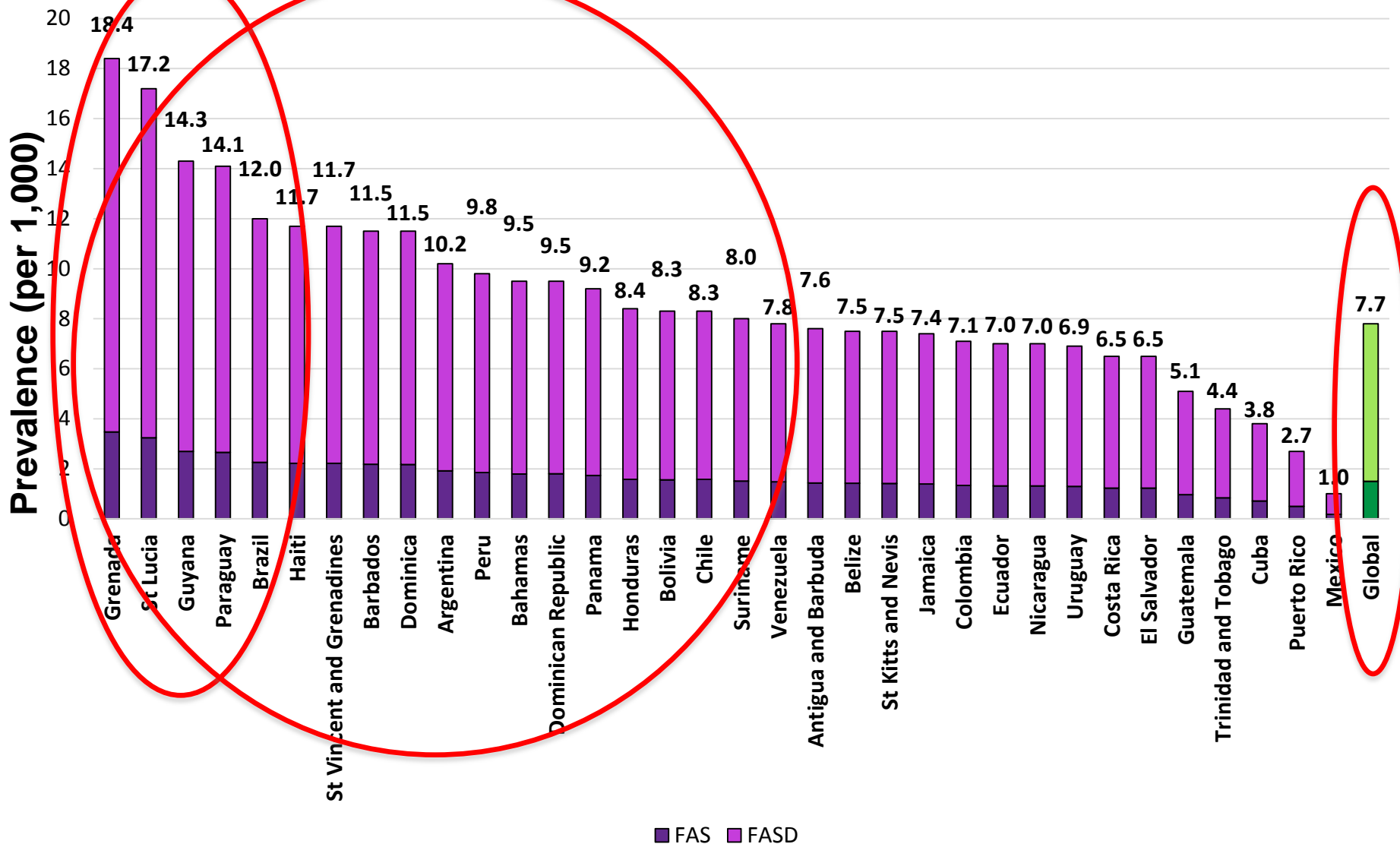
AFR=African R, AMR=R of the Americas, EMR=Eastern-Mediterranean R, EUR=European R, SEAR=South-East Asia R, WPR=Western Pacific R

Prevalence of FASD in General Population by WHO Region and Globally, 2012



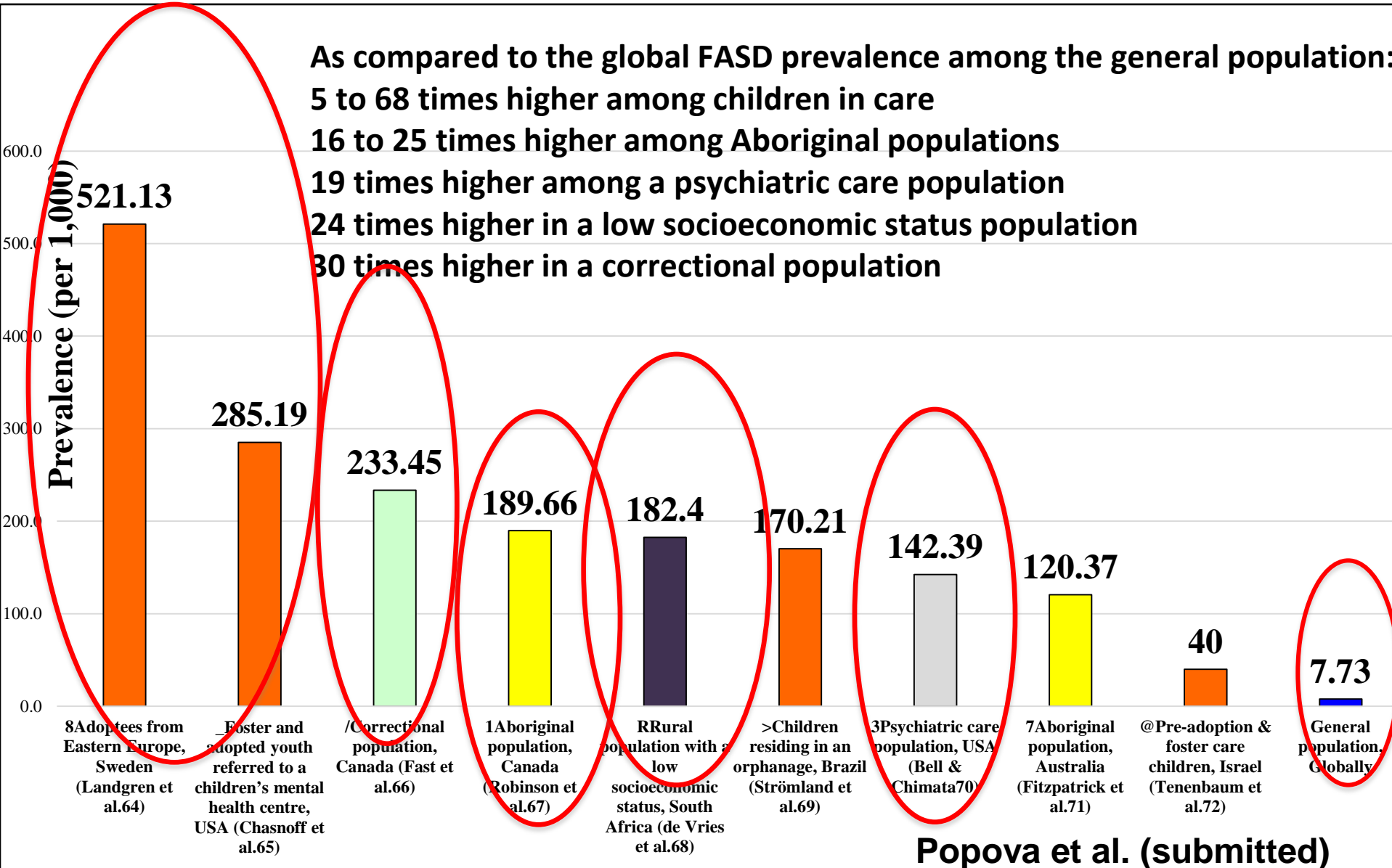
AFR=African Region, AMR=Region of the Americas, EMR=Eastern-Mediterranean Region, EUR=European Region, SEAR=South-East Asia Region, WPR=Western Pacific Region

Prevalence of FAS and FASD in Latin America and the Caribbean in 2012



Comparison FASD prevalence among special populations, based on select studies, to the global prevalence among the general population

As compared to the global FASD prevalence among the general population:
 5 to 68 times higher among children in care
 16 to 25 times higher among Aboriginal populations
 19 times higher among a psychiatric care population
 24 times higher in a low socioeconomic status population
 30 times higher in a correctional population



Discussion

- **FASD is a prevalent alcohol-related developmental disability globally**
- **Establish a universal public health message about the potential harm of prenatal alcohol exposure**
- **Establish routine screening protocols**
- **Provide brief interventions, where appropriate, to all pregnant women**
- **Special attention has to be paid to high-risk populations where the impact of FASD is especially severe**

References

- 1) Popova, S., Lange, S., Probst, C., Gmel, G., & Rehm, J. (2017). Estimation of national, regional, and global prevalence of alcohol use during pregnancy and fetal alcohol syndrome: a systematic review and meta-analysis. *The Lancet Global Health*, 5(3), e290–e299. Available from: [http://dx.doi.org/10.1016/S2214-109X\(17\)30021-9](http://dx.doi.org/10.1016/S2214-109X(17)30021-9)
- 2) Lange, S., Probst, C., Gmel, G., Rehm, J., & Popova, S. (2017). Global prevalence of fetal alcohol spectrum disorder among children and youth: a systematic review and meta-analysis. *JAMA Pediatrics*, 171(10), 948-956.
- 3) Popova, S., Lange, S., Probst, C., Gmel, G., & Rehm, J. (2018). Global prevalence of alcohol use and binge drinking during pregnancy and Fetal Alcohol Spectrum Disorder. *Biochemistry and Cell Biology, special issue on FASD*, 96(2), 237-240. doi: 10.1139/bcb-2017-0077.
- 4) Lange, S., Probst, C., Heer, N., Roerecke, M., Rehm, J., Monteiro, M. G., Shield, K., de Oliveir, C., & Popova, S. (2017). Actual and predicted prevalence of alcohol consumption during pregnancy in Latin America and the Caribbean: systematic review and meta-analysis. *Rev Panam Salud Publica [Pan American Journal of Public Health]*, 41, e89.

Contact Information

Svetlana (Lana) Popova

Senior Scientist, Associate Professor

Institute for Mental Health Policy Research

Centre for Addiction & Mental Health,

University of Toronto, WHO Collaborating Centre

33 Russell Street, room T507

Toronto, ON, Canada M5S 2S1

Tel. (416) 535-8501 ext. 34558

e-mail: lane.popova@camh.ca



Remember: When you drink,
so does your child