

# Estimating the Size of the MSM Population Using Multiple Methods and Data Sources in Vancouver, British Columbia

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## Background

- Gay, bisexual and other men who have sex with men (GBMSM) were the first population affected by the HIV epidemic in BC and continues to be the most disproportionately impacted group in the province.
- Lack of a reliable GBMSM population size estimate impedes research and epidemiologic depictions of the HIV epidemic.
- Globally, estimates of GBMSM populations, particularly those in urban centres, are predominantly based on population surveys, capture/recapture estimates, and indirect sampling through serodiagnostic databases. More diverse methodology is necessary for a more accurate understanding of the HIV epidemic.

## Methods

We estimated the Metro Vancouver GBMSM population size drawing on four data sources:

- Momentum Health Study cross-sectional survey of GBMSM aged >15 years recruited from February 2012 – February 2014 using respondent-driven sampling (RDS)
- British Columbia Centre for Disease Control (BC CDC) HIV testing data from three sexual health clinics serving GBMSM, February 2012 - February 2014
- Facebook (social networking website)
- 2011-2012 Canadian Community Health Survey (CCHS) administered by Statistics Canada

Estimates were calculated using the following two methods:

- 1) Indirect method** where  $N$  is the population estimate,  $n$  is the number of GBMSM in the group and  $p$  is the proportion of the Momentum Health Study participants self-reporting such membership. Weights for Momentum estimates were developed using respondents’ reported social network size and each corresponding variable.

$$N = n/p$$
- 2) ‘Wisdom of The Crowds’ (WOTC) method** was used to produce an additional point estimate based on the mean of Momentum participants’ estimates of the local GBMSM population size.

## Conclusion

- Using multiple data sources, our estimates of the Metro Vancouver GBMSM population ranged from 22,120-45,800 or 2.3%-4.8% of the 2011 Metro Vancouver census male population aged 15+ (948,010)<sup>1</sup>. This range is similar to estimates in other jurisdictions, including the 3.9% (3.5%-4.4%) the United States Centre for Disease Control (CDC) reports from nationally representative surveys<sup>2</sup>.
- These findings will support better epidemiologic understanding of the HIV epidemic among GBMSM as well as policy, prevention, and care program decision-making.

## References

1. Statistics Canada. 2012. *Focus on Geography Series, 2011 Census*. Statistic Canada Catalogue no. 98-310-XWE2011004. Ottawa, Ontario. Analytical products, 2011 Census. Last updated October 24, 2012.

2. Purcell, D. W., Johnson, C. H., Lansky, A., Prejean, J., Stein, R., Denning, P., ...Crepaz, N. 2012. *Estimating the Population Size of Men Who Have Sex with Men in the United States to Obtain HIV and Syphilis Rates*. The Open AIDS Journal, 6, 98-107.

## Results

- Table 1** presents the range of population estimates.
- CCHS and Facebook data resulted in the lowest population estimates (22,100 and 23,700 respectively), though both sources required disclosure of one’s gender and sexual identity.
- HIV testing clinic data and the WOTC method produced estimates (44,300 and 45,800 respectively) nearly double those based on CCHS and Facebook.

**Table 1.** Population estimates by data source

Data Source & Method	% of total Metro Vancouver population of men	Estimate (N)	n	p	Notes
Sexual Health Clinic HIV Testing Data, adjusted average	4.7%	44,300	Number of HIV tests for men at 3 Vancouver clinics serving GBMSM: 5,084	Proportion of Momentum participants reporting HIV testing at any of the 3 GBMSM clinics in the past 2 years: 7.79%	Momentum estimate is adjusted for the average number of HIV tests (1.5) Momentum participants reported in the past 2 years
Facebook	2.5%	23,700	Number Facebook profiles from within 25 miles of Vancouver specifying gender identity “Male” and preferred partner gender “Interested in men” or “...men and women”: 18,200	Proportion of Momentum participants reporting a Facebook profile: 76.60%	Facebook data is based on optional disclosure of gender and sexual identity in user profiles
Canadian Community Health Survey (CCHS) 2011-2012	2.3%	22,100	CCHS question: “Do you consider yourself to be: 1) heterosexual (sexual relations with people of the opposite sex); 2) homosexual, that is lesbian or gay (sexual relations with people of your own sex); 3) bisexual (sexual relations with people of both sexes)?”	-	CCHS data is for the BC Lower Mainland (Vancouver Coastal Health Authority and Fraser Health Authority regions)  CCHS sexual identity disclosure on a government-sponsored, telephone-based interviewer-administered cross-sectional national survey
WOTC	4.8%	45,800 (Q1-Q3: 200-75,000)	Mean estimate and IQR based on Momentum question: “To the best of your knowledge, how many men who have sex with men, whether they identify as gay or not, do you think live in the Greater Vancouver region?”	-	

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