

Tracking MSM migration in China: a web-based pilot study

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Outline

- Overview of migration and HIV/AIDS epidemic among MSM in China
- Pilot study for tracking MSM migration

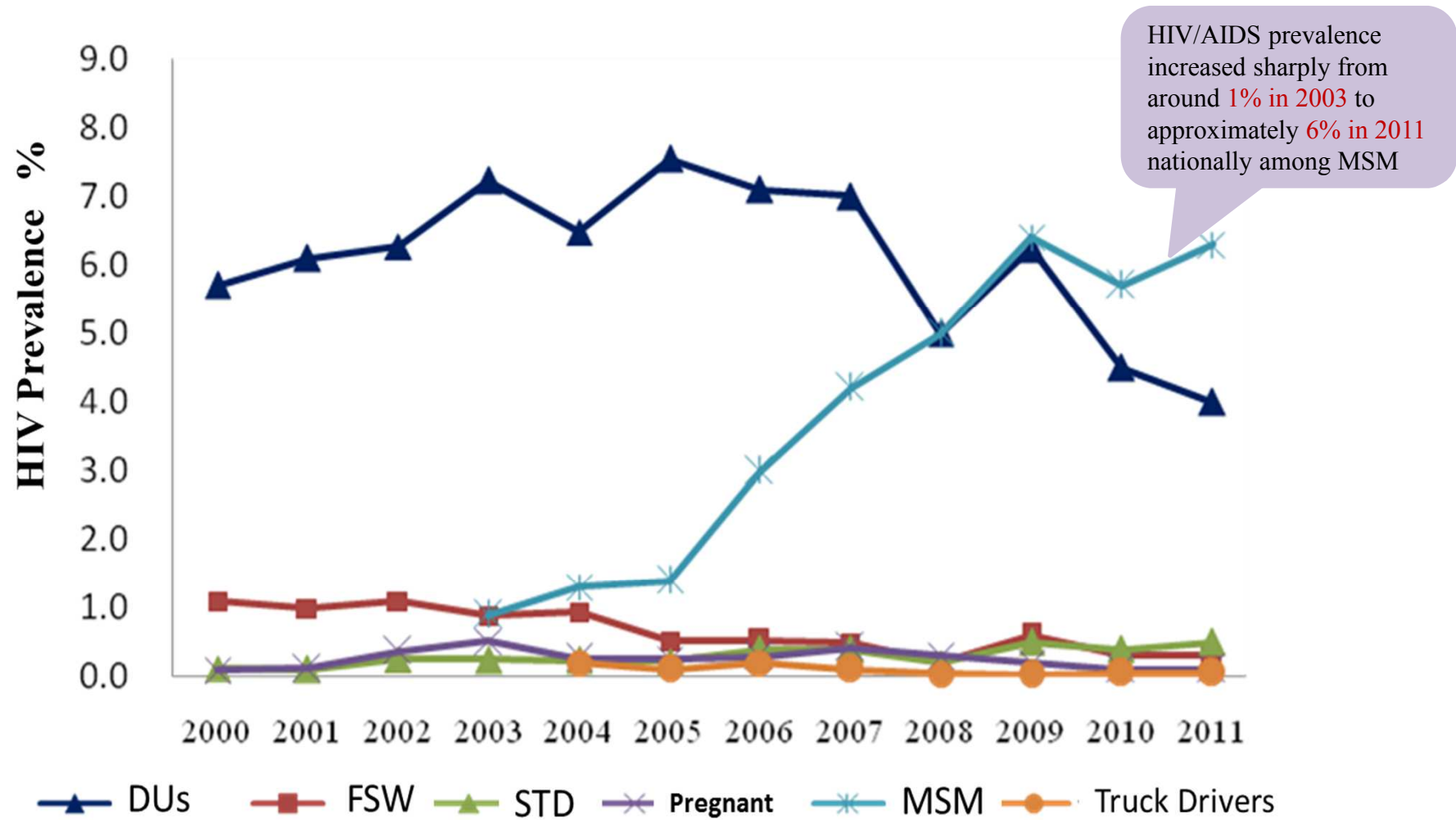
Migration in China

- **Definition of migrant:** Anyone who has been away from his or her registered residence for more than 6 months in the last year
(National Population and Family Planning Commission)
- **Size of migrant population:** 230 million people by 2011, accounting for 16% of the total population of China
(National Bureau of Statistics)

HIV/AIDS epidemic among migrants

- **Sentinel surveillance system**
 - 37 sentinel surveillance sites target migrants
 - 400 people recruited per site per year through domestic migrant registration system or physical check-up
 - HIV prevalence: ~0.1%
- **HIV/AIDS case reporting system**
 - In Shandong Province, 70% of reported cases in last 10 years were migrants.

HIV/AIDS epidemic among MSM



National Sentinel Surveillance Data (2000-2011)

Objectives

- To explore migration patterns among MSM in China
- To predict impact of migration on regional population size estimation and HIV-1 transmission

Methods: Sampling

- Analyzed database of MSM dating website
 - Believed to be the largest and most representative in the country
 - More than 3 million registered members in 2012
 - National coverage
- Included all registered members who visited the website at least once from 2008 till 2012

Methods: Tracking

- Internet protocol (IP) address recorded automatically by website at each visit:
 - To determine migration routes: compare the IP records with the resident city which was filled in member registry form.
 - For de-duplication purpose, this was combined with other information such as username and email address.

Ethical Issues and Confidentiality

- Website introduction page:
 - Notifies that IP address will be recorded
 - Complies with Chinese laws and regulations
 - Registration and provision of demographic information are entirely voluntary
- Website manager ‘cleaned’ the database before any analysis:
 - Replaced IP address with provincial and city name
 - Removed all identifying information.

Results (1)

- Total of **794,912** individual records for study period, **34% migrants**
- Median age: **26.0 years** (range: 17-61)
- Migrants were **younger** (median age: 25.3 vs. 26.6, $p < 0.001$) and more likely to be **single** (5.4% Vs. 8.9%, $p < 0.001$) than non-migrants

Results (2)

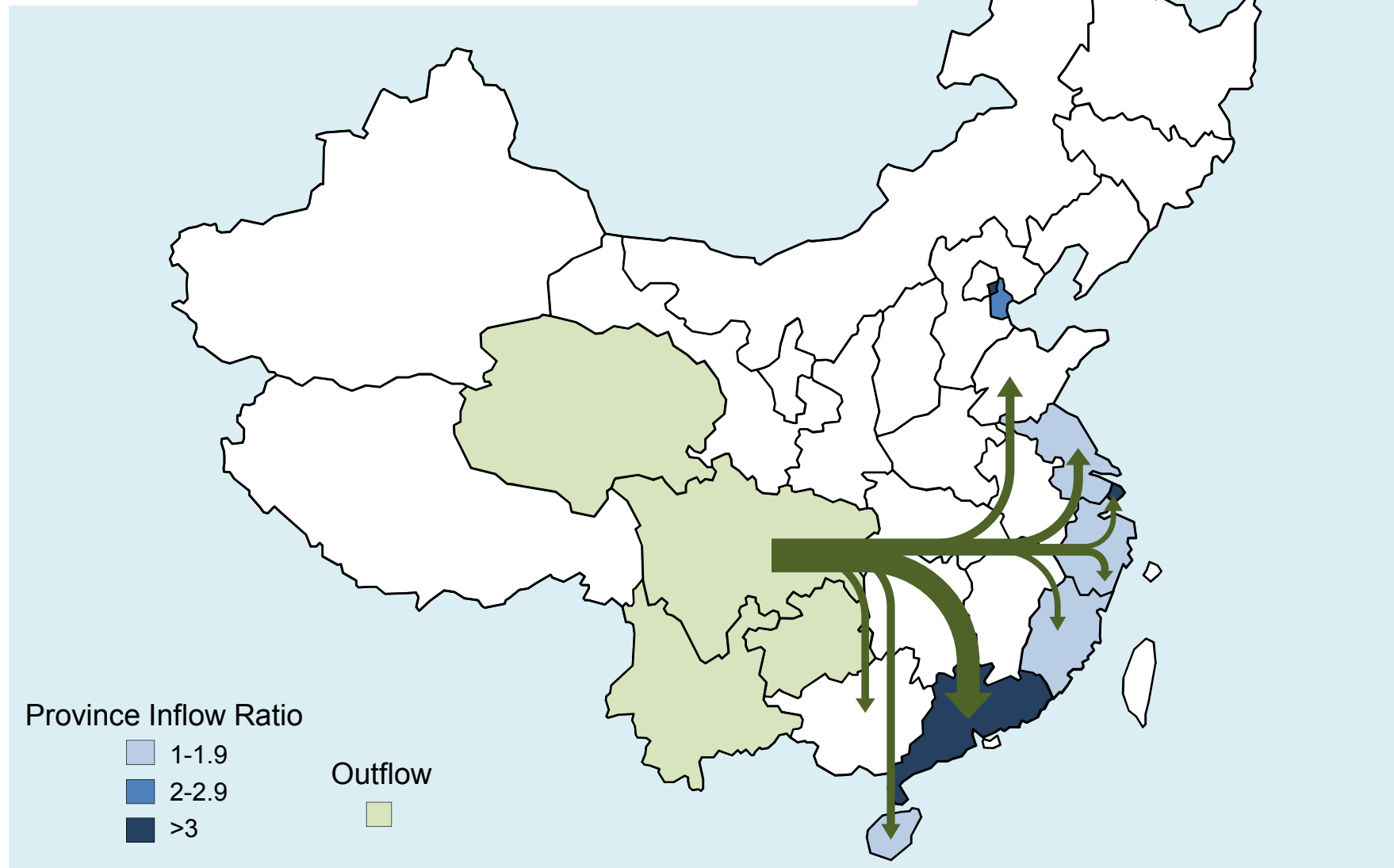
- Top 5 provinces with **high inflow** and **low outflow** of MSM

Province	Inflow vs. outflow*				
	2008	2009	2010	2011	2012
Guangdong	6.7	6.7	7.3	6.9	7.1
Shanghai	4.3	4.0	4.2	4.5	4.1
Beijing	4.4	3.9	3.8	4.3	4.7
Tianjin	2.3	2.4	2.1	2.4	2.4
Zhejiang	1.9	1.8	1.9	2.1	1.9

* Inflow versus outflow is a ratio of people migrating-in to people migrating-out (e.g., approximately 7 MSM moved in for every MSM who moved out of Guangdong province)

- **The MSM population size will likely increase substantially in the above provinces due to in-migration**

Results (3) :Migration Patterns of MSM



Guodong Mi et al. *Hidden and mobile: A web-based study of migration patterns of men who have sex with men in China.* (in preparation)

Conclusions

- Migration of MSM can strongly influence regional population size estimation.
- MSM migration patterns between 2008 and 2012 suggest the potential for enhanced HIV transmission from higher-prevalence Southwestern China to lower-prevalence Eastern coastal cities.
- Web-based tracking of MSM migration is a relatively simple and practical method to identify relevant patterns and help inform HIV prevention.

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