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Methodology— understanding the HIV estimates in the *OUTLOOK: Cities report*

Produced by the Strategic Information and Monitoring Division, UNAIDS

Notes on UNAIDS' methodology

Data sources

The results of the analyses were derived using data from various sources, including UNAIDS' modelled 2013 estimates (details at www.epidem.org), population-based household surveys with HIV testing, antenatal care surveillance, HIV surveys among key populations and case-based HIV reports. Population size estimates for 2013 were taken from the *World population prospects 2012* revisions and the *World urbanization prospects 2014* revisions (<http://esa.un.org/unpd/wup/CD-ROM/Default.aspx>), in which cities are defined as areas of urban agglomeration with more than 300 000 inhabitants. These areas may include one or more political jurisdictions.

Deriving estimates of the number of people living with HIV in cities

UNAIDS' 2013 modelled estimates that the HIV prevalence in the urban areas of countries in sub-Saharan Africa is twice the national HIV prevalence elsewhere were multiplied by the population sizes of cities to identify a preliminary list of 300 cities in which the largest number of people living with HIV were likely to reside. For each of the 300 top-ranked cities, a comprehensive review of all available data sources was conducted to refine the modelled estimates and to produce a final estimate of the total number of people living with HIV in each city for the top-ranked 200 cities.

In 31 of the 300 cities, estimates could not be constructed, owing to a lack of available surveillance, survey and case report data. For these 31 cities, estimates were constructed from UNAIDS' modelled 2013 national data and adjusted upwards by a further 10% in eastern Europe and central Asia and 59% in the Asia and Pacific region based on evidence of a higher concentration of HIV infections in cities relative to other areas in those regions. For all city-specific estimates of the number of people living with HIV, upper and lower bounds were calculated using UNAIDS' national modelled ranges for 2013. This range was increased by an additional 20% to account for uncertainty of estimates in cities as opposed to at the national level.

Deriving estimates of the number of people living with HIV in urban areas and over time

To derive urban and rural estimates of people living with HIV, residence-specific HIV prevalence data for people aged 15–49 years were abstracted from 25 population-based surveys in sub-Saharan Africa. To calculate the number of people living with HIV at all ages, the rural–urban ratio from these surveys was applied to UNAIDS' 2013 national estimates for those aged 0–14 and 50+, and then multiplied by the *World population prospects* distribution of the population by these age

groups in urban and rural areas. Trends in the urban share of adults living with HIV were analysed for the 16 countries that had repeated HIV population surveys.

Limitations

UNAIDS does not systematically collect and validate data at the subnational level, thus the findings of the report are derived from analyses of secondary data sources, which may be of limited quality. Results in these countries may not reflect the actual geographic distribution of the epidemic burden.

For many countries, an estimate of burden (either HIV prevalence or the number of people living with HIV) was available for the primary municipality in the city but not for other geographic areas that comprise the total area of urban agglomeration. Where this occurs, the number of people living with HIV is estimated for the larger geographic area assuming the same HIV prevalence and proportion of people living with HIV in the primary municipality.

Finally, estimates of people living with HIV and prevalence in urban and rural areas have been derived using country-specific definitions of urban and rural areas, which are known to vary across countries. As a result, results may not be directly comparable across countries.

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