

OVERCROWDING	
GENERAL CONSIDERATIONS	
<i>Issues</i>	Respiratory diseases
<i>Type of indicator</i>	Exposure (proximal)
<i>Rationale</i>	The increased likelihood of disease transmission that occurs in overcrowded environments, means that occupational densities are an important risk factor for a wide range of respiratory diseases, including pneumonia, tuberculosis and many allergies.
<i>Issues in indicator design</i>	Overcrowding can probably best be measured in terms of the average living area per person in the place of residence. Alternatively, if a suitable norm or target for 'overcrowding' can be defined (e.g. the minimum acceptable living area per person), it can be computed as the percentage or number of children living in overcrowded homes. In either case, however, information is needed on both the number of residents in each home and the available living area: the latter, especially, is not always available and can be difficult to define, especially where people spend large amounts of time outdoors, where homes comprise multiple, separate units or in nomadic/semi-nomadic communities. Alternatively, the indicator may be expressed simply as the average number of people per dwelling unit. Clearly this is less satisfactory since it takes no account of the size of the dwelling unit. Problems may also exist in this case in defining a dwelling. UNCHS (1995) define this as 'a space in a housing unit, or other living quarters enclosed by walls reaching from the floor to the ceiling or roof covering, at least to a height of two metres, of a size large enough to hold a bed for an adult'
SPECIFICATION	
<i>Definition</i>	Average floor area per person
<i>Terms and concepts</i>	<p>Floor area: area (m²) of usable floorspace in occupied dwellings.</p> <p>Dwelling: a housing unit or other living quarters, enclosed by walls at least 2 metres high and completely covered by a ceiling or roof, forming an area large enough to hold a bed for an adult.</p> <p>Total resident population: total number of people resident in the area (whether or not they live in a dwelling as defined above).</p>
<i>Data needs</i>	<p>Total floor area in occupied dwellings</p> <p>Total resident population</p>
<i>Data sources, availability and quality</i>	<p>Data on the floorspace in dwellings may be obtainable from national censuses, in which case data are likely to be reliable. Where census statistics are not available, information may be collected through household surveys. Estimates may also be made from aerial photographs, satellite imagery or maps, if necessary.</p> <p>Data on total resident population should also usually be available from routine censuses and should thus be of a reasonable standard.</p>
<i>Level of spatial aggregation</i>	Community or administrative district
<i>Averaging period</i>	Annual or longer term
<i>Computation</i>	<p>The indicator can be computed as:</p> <p style="text-align: center;">P_{tot} / F_{avail}</p>

	<p>where: P_{tot} is the total resident population;</p> <p>F is the available floorspace in dwellings.</p>
<i>Units of measurement</i>	Square metres per person
<i>Worked example</i>	<p>Assume that an area has a population of 13 750 people and a total floor space in dwellings of 92 125 m². In this case, the value of the indicator is:</p> $92\,125 / 13\,750 = 6.7 \text{ m}^2/\text{person}$
<i>Interpretation</i>	<p>This indicator can be interpreted as a measure of the degree of overcrowding in households: the higher the indicator value, the more overcrowded housing conditions are. As such, it indicates risks of respiratory (and other) infections in children.</p> <p>For several reasons, however, the indicator needs to be interpreted with care. The first is that, like any indicator based on a measure of central tendency, it takes no account of the degree of spread within the population. Thus, a small number of very large houses may bias the indicator value upwards. Problems may also occur in obtaining consistent measures of floorspace. Variations in the quality of this floorspace are also not shown by the indicator.</p>
<i>Variations and alternatives</i>	<p>This indicator can be defined and computed in many different ways. One alternative, which may be more appropriate at the local scale, is to compute the median available floorspace per person. This can be calculated by measuring the floorspace per person in each household separately, ranking these, and then taking the midpoint (50th percentile) value. This has the advantage of being less affected by extreme values. Other alternatives include number of persons/bedroom, bedroom area/person, number of persons/room, number of persons/housing unit. Each of these indicators may also be computed in terms of the number of children (rather than total population), though to do so can be misleading since variations may reflect variations in family structure, rather than degree of overcrowding.</p> <p>Another alternative is to calculate the number or percentage of children living in overcrowded households. This requires an explicit definition of 'overcrowding'; one such definition (Abu Helwa and Birch 1993) is 2.5 persons per room. Thus all children living in households with more than 2.5 persons per room would be classed as overcrowded.</p>
<i>Examples</i>	<p><i>UNCHS Monitoring human settlements with urban indicators</i></p> <ul style="list-style-type: none"> • Average household size
<i>Useful references</i>	<p>Abu Helwa, M. and Birch, B. 1993 The demography and housing conditions of Palestinian refugees in and around the camps in Amman, Jordan, <i>Journal of Refugee Studies</i>, 6 (4), 403-13.</p> <p>Clauson-Kaas, J. <i>et al.</i> 1996 Urban health: human settlement indicators of crowding," <i>Third World Planning Review</i> 18 (3), 349-63.</p> <p>UNCHS (Habitat) 1995 <i>Human settlement interventions addressing crowding and health issues</i>. Nairobi: United Nations Centre for Human Settlements.</p> <p>UNCHS Urban Indicators Programme: http://www.urbanobservatory.org/indicators/database/</p> <p>Marshy, M. 1999 <i>Social and Psychological Effects of Overcrowding in Palestinian Refugee Camps in the West Bank and Gaza. Literature Review and Preliminary Assessment of the Problem</i>. International Development Research Centre, Ottawa, Canada. (Available at http://www.arts.mcgill.ca/MEPP/PRRN/marshy.html#2)</p>