

HC2.1. LIVING SPACE

Definitions and methodology

Space is an important dimension of housing quality. Ample space for all household members can be defined in different ways (note that Indicator HC2.2 considers housing quality in terms of sanitary facilities). Several studies outline the negative effects of overcrowded dwellings on health and particularly on child outcomes (Eurofound, 2012; Solari and Mare, 2012). As discussed below, the COVID-19 pandemic has renewed such concerns, as preliminary evidence from some countries found that people living in overcrowded dwellings recorded higher infection rates of the virus (see OECD, 2021).

This indicator uses (1) the *average number of rooms per household member* to illustrate how space constraints differ across countries as well as across households within countries, and (2) *overcrowding* as an alternative measure of dwelling space that takes into account household composition. Rooms refer to bedrooms, living and dining rooms and, in non-European countries, also kitchens (see the section on Data on Comparability Issues for further details).

While the number of rooms available to household members highlights the importance of adequate space for housing quality, it makes no distinction between the different needs of households, depending on their composition. Yet, the space requirements for a couple-family with, for example, three toddlers may be quite different compared to those of a single-parent family with two sons aged 21 and 16 and a daughter aged 17. The overcrowding rate takes into account households' different personal space needs depending on household members' age, gender and relationship.

This indicator follows the EU-wide agreed definition of overcrowding (Eurostat, 2016). A household is considered overcrowded if it does not have at its disposal a minimum number of rooms equal to:

- one room for the household;
- one room per adult couple in the household;
- one room for each single person aged 18 and over;
- one room per pair of single persons of the same sex between 12 and 17 years of age;
- one room for each single person between 12 and 17 years of age and not included in the previous category;
- one room per pair of children under 12 years of age.

Key findings

Outright owner households have on average more rooms per person than owners with a mortgage or tenants

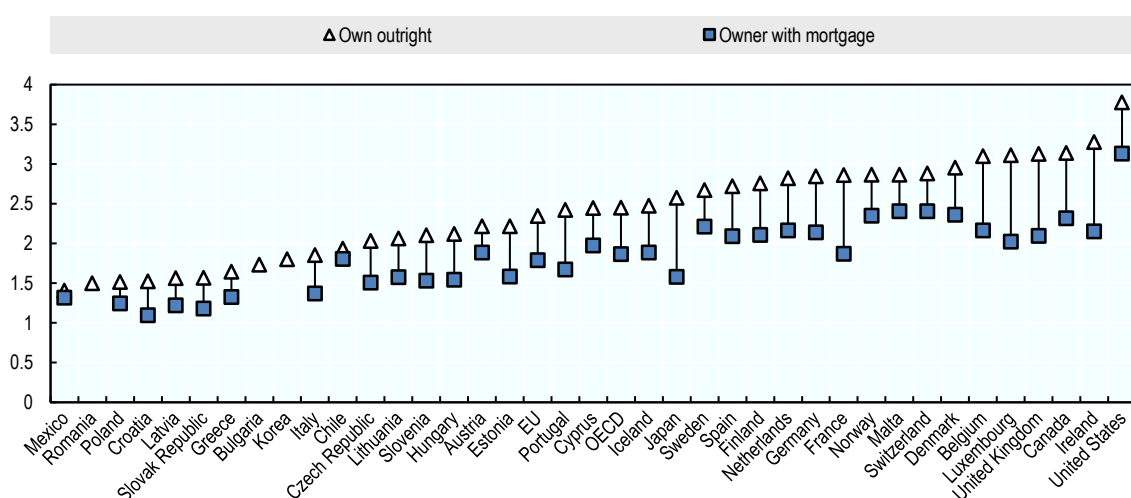
Figure HC2.1.1 shows the average number of rooms per household member for owners (see data under HC.2.1.A1 in the online worksheet for earlier years). Outright homeowner households have on average more rooms at their disposal than owners with a mortgage. This relates in part to people's housing decisions over the life cycle: typically, younger people with children are owners paying off a mortgage;

they become outright owners by the time their children move out (also see indicator HM1.3 on Tenure structure in general).

Outright owners in many Central and Eastern European countries, Chile, Greece, Italy, Korea and Mexico have on average fewer than two rooms per household member. In most Southern European, Nordic and German-speaking countries, as well as in Estonia, France, the Netherlands and Japan, homes that are owned outright have on average between two and three rooms per household member. Canada, Ireland and the United States top the list as outright homeowners have, on average, well over three rooms per household member: the United States has the highest average by far with 3.8 rooms per household member.

Figure HC2.1.1. Average number of rooms per household member by tenure

Average number of rooms per household member, by type of ownership, 2019 or latest year available^{1, 2, 3, 4}



Note:1. See "Data and comparability issues" of Indicator HC2.1 on limits to comparability across countries due to the definition of rooms.
 2. Data for Japan only available on the respondent level due to data limitations. Results therefore refer to the population, rather than to households.
 3. Data for Canada are adjusted by Statistics Canada based on the assumption of the presence of a kitchen in dwellings where it is expected.
 4. The present publication presents time series which end before the United Kingdom's withdrawal from the European Union on 1 February 2020. The EU aggregate presented here therefore refers to the EU including the UK. In future publications, as soon as the time series presented extend to periods beyond the UK withdrawal (February 2020 for monthly, Q1 2020 for quarterly, 2020 for annual data), the "European Union" aggregate will change to reflect the new EU country composition."

Source: OECD calculations based on European Union Statistics on Income and Living Conditions (EU SILC) survey 2019 except for Iceland, Ireland, Italy, and the United Kingdom where they refer to 2018; calculations from Statistics Canada based on the 2016 Canada Census of Population for Canada; Encuesta de Caracterización Socioeconómica Nacional (CASEN) for Chile (2013); the German Socioeconomic Panel (GSOEP) for Germany (2014); the Korean Housing Survey (2019); the Japan Household Panel Study (JHPS) for Japan (2018); Encuesta Nacional de Ingresos y Gastos de los Hogares (ENIGH) for Mexico (2018); and the American Community Survey (ACS) for the United States (2019).

Figure HC2.1.2 shows the average number of rooms per household member in low-income households for owners (Panel A) and tenants (Panel B). The basic patterns observed in Figure HC2.1.1 persist

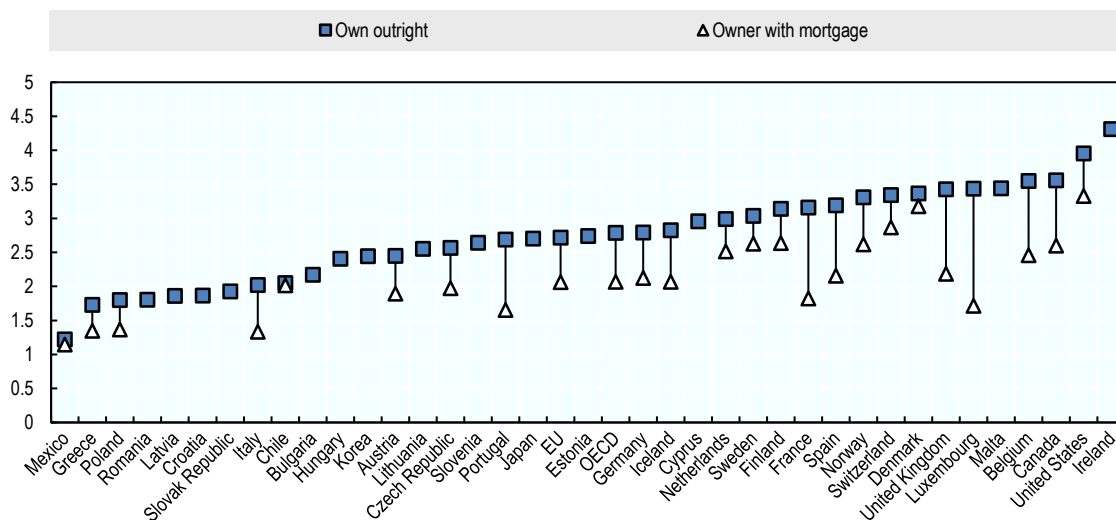
Footnote by Turkey: The information in this document with reference to "Cyprus" relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognizes the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the "Cyprus issue";

Footnote by all the European Union Member States of the OECD and the European Commission: The Republic of Cyprus is recognized by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.

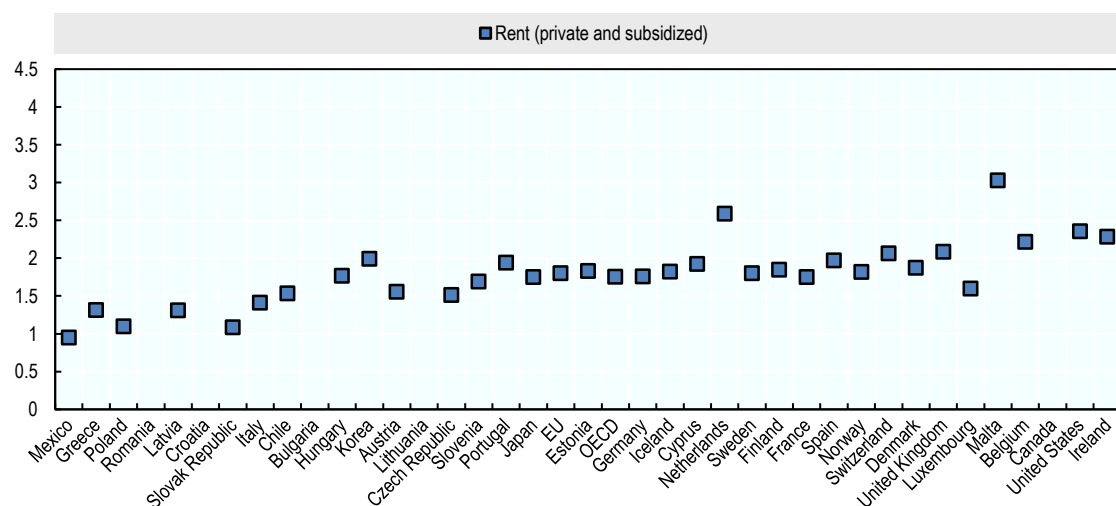
across countries for low-income households: in most countries, outright owners live in dwellings with on average more rooms per household member than mortgaged owners and tenants. Yet, the differences between outright owners and owners paying off a mortgage are considerably larger for low-income households, except in Chile and Mexico.

Figure HC2.1.2. Number of rooms per household member in low-income households by tenure type

Panel A. Average number of rooms per household member in owner households (with and without mortgage) in the bottom quintile of the income distribution, 2019 or latest year available ^{1, 2, 3, 4}



Panel B. Average number of rooms per household member in tenant households (private market and subsidised rent combined) in the bottom quintile of the income distribution, 2019 or latest year available



Note: 1. See "Data and comparability issues" of Indicator HC2.1 on limits to comparability across countries due to the definition of rooms.
 2. Low-income households are households in the bottom quintile of the (net) income distribution. In Chile, Mexico, Korea and the United States gross income is used due to data limitations.
 3. Data for Japan only available on the respondent level due to data limitations. Results therefore refer to the population, rather than to households.
 4. Data for Canada are adjusted by Statistics Canada based on the assumption of the presence of a kitchen in dwellings where it is expected. "Bottom quintile" for Canada is defined as the first quintile of adjusted after-tax household income.

Source: OECD calculations based on European Union Statistics on Income and Living Conditions (EU SILC) survey 2019 except for Iceland, Ireland, Italy, and the United Kingdom (2018); calculations from Statistics Canada based on the 2016 Canada Census of Population for Canada; Encuesta de Caracterización Socioeconómica Nacional (CASEN) for Chile (2013); the German Socioeconomic Panel (GSOEP) for Germany (2014); the Korean Housing Survey (2019); the Japan Household Panel Study (JHPS) for Japan (2018); Encuesta Nacional de Ingresos y Gastos de los Hogares (ENIGH) for Mexico (2018); and the American Community Survey (ACS) for the United States (2019).

Overcrowding is higher in low-income households but also occurs in better-off households in many countries

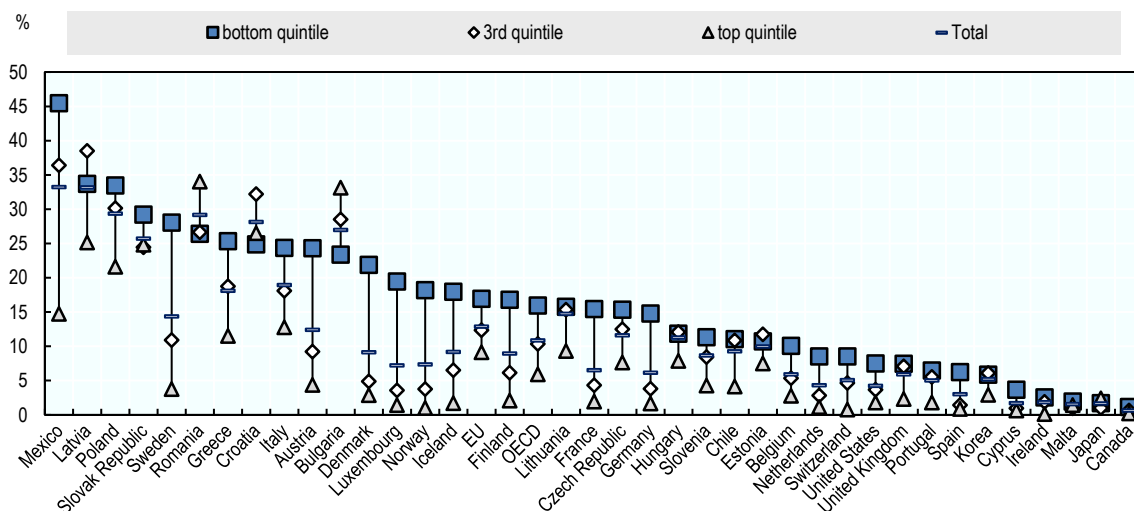
Overcrowding rates vary considerably across countries (Figure HC2.1.3, see online worksheet HC2.1.A3 for earlier years and additional quintiles). While in some countries, less than 3% of households are considered overcrowded, regardless of their income level (Canada, Cyprus, Ireland, Malta, and Japan), the problem is much larger in Mexico and many Central and Eastern European countries. In Bulgaria, Croatia, Latvia, Poland, Romania and the Slovak Republic, overcrowding is an issue even for households in the top quintile of the income distribution – in each country, over 20% of top-quintile households live in overcrowded housing conditions.

Among households in the bottom quintile, overcrowding rates are highest in Latvia, Mexico, and Poland, with overcrowding affecting around 30% or more of low-income households. By contrast, less than one in ten low-income households lives in overcrowded dwellings in Malta, Canada, Cyprus, Ireland, Japan, Korea, the Netherlands, Portugal, Spain, Switzerland, the United Kingdom and the United States.

In nearly all countries, the overcrowding rate decreases as household income increases. In most countries, overcrowding rates in the bottom quintile are clearly higher than for households in the third quintile. Overcrowding rates for households in the third quintile of the income distribution are often similar to those for households in the top quintile of the income distribution. In a few countries, overcrowding rates either: (1) vary little across the entire income distribution (e.g. Estonia, and Slovak Republic); or (2), vary only slightly between the bottom and the middle part of the income distribution (e.g. Chile, Hungary, and the United Kingdom).

Figure HC2.1.3. Overcrowding rates in households across the income distribution

Share of overcrowded households, by quintiles of the income distribution, in percent, 2019 or latest year available^{1, 2, 3, 4}



- Note: 1. See "Data and comparability issues" of Indicator HC2.1 on limits to comparability across countries due to the definition of rooms.
 2. Low-income households are households in the bottom quintile of the (net) income distribution. In Chile, Mexico, Korea and the United States gross income is used due to data limitations.
 3. Data for Japan only available on the respondent level due to data limitations. Results therefore refer to the population, rather than to households.
 4. Data for Canada are adjusted by Statistics Canada based on the assumption of the presence of a kitchen in dwellings where it is expected. Income quintiles for Canada are based on adjusted after-tax household income.

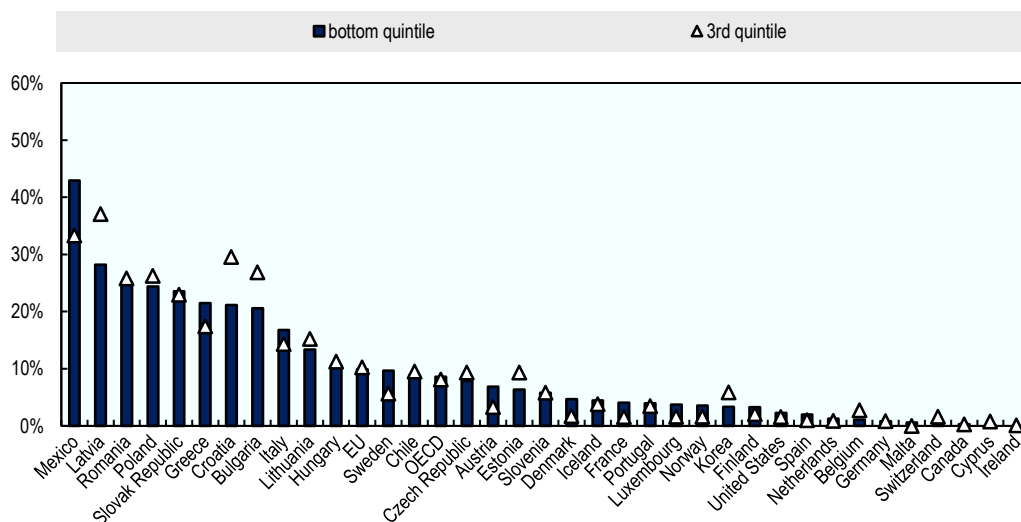
Source: OECD calculations based on European Union Statistics on Income and Living Conditions (EU SILC) survey 2019 except for Iceland, Ireland, Italy (2018) and the United Kingdom (2016); calculations from Statistics Canada based on the 2016 Canada Census of Population for Canada; Encuesta de Caracterización Socioeconómica Nacional (CASEN) for Chile (2013); the German Socioeconomic Panel (GSOEP) for Germany (2014); the Korean Housing Survey (2019); the Japan Household Panel Study (JHPS) for Japan (2018); Encuesta Nacional de Ingresos y Gastos de los Hogares (ENIGH) for Mexico (2018); and the American Community Survey (ACS) for the United States (2019).

Low-income tenants are more likely than low-income owner households to live in overcrowded conditions

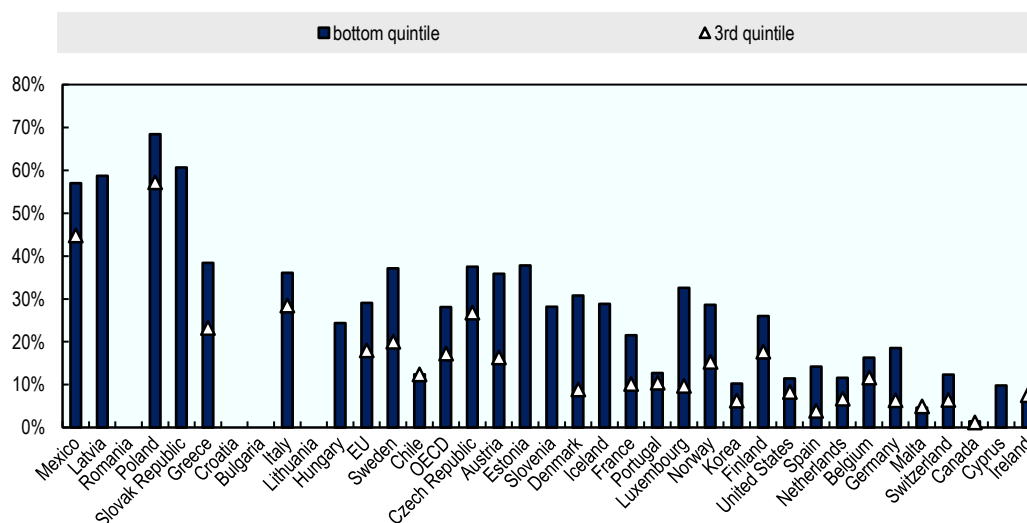
In most countries, the difference in overcrowding rates between the bottom and the third quintile is more pronounced among tenant households (Panel B of Figure HC1.2.4) than among owner households (Panel A of Figure HC2.1.4, see HC2.1.A4 in the online Annex for earlier years and a further breakdown of tenure type). At more than 15 percentage points, the greatest differences by income level for tenant households are in Austria, Denmark, Luxembourg, and Sweden (Panel B). There are small differences in overcrowding rates between low and middle-income tenant households in Canada and Malta (where overcrowding rates are low), as well as Chile and Portugal.

Figure HC2.1.4. Overcrowding rates of low and middle-income households, by tenure type

Panel A: Share of overcrowded owner households (with and without mortgage), bottom and third quintile of the income distribution, in percent, 2019 or latest year available ^{1, 2, 3, 4}



Panel B: Share of overcrowded tenant households (renting at market or subsidised rate), bottom and third quintile of the income distribution, in percent, 2019 or latest year available



Note: 1. For Chile, Mexico, Denmark, the Netherlands and the United States no information on subsidised tenants due to data limitations. See section "Data and comparability issues" of Indicator HC2.1 on limits to comparability across countries due to the definition of rooms
 2. Low-income households are households in the bottom quintile of the (net) income distribution. In Chile, Mexico, Korea and the United States gross income is used due to data limitations.
 3. Data for Canada are adjusted by Statistics Canada based on the assumption of the presence of a kitchen in dwellings where it is expected. Income quintiles for Canada are based on adjusted after-tax household income.
 Source: OECD calculations based on European Union Statistics on Income and Living Conditions (EU SILC) survey 2019 except for Iceland, Ireland, Italy (2018) ; calculations from Statistics Canada based on the 2016 Canada Census of Population for Canada; Encuesta de Caracterización Socioeconómica Nacional (CASEN) for Chile (2013); the German Socioeconomic Panel (GSOEP) for Germany (2014); the Korean Housing Survey (2019); Encuesta Nacional de Ingresos y Gastos de los Hogares (ENIGH) for Mexico (2018); and the American Community Survey (ACS) for the United States (2019).

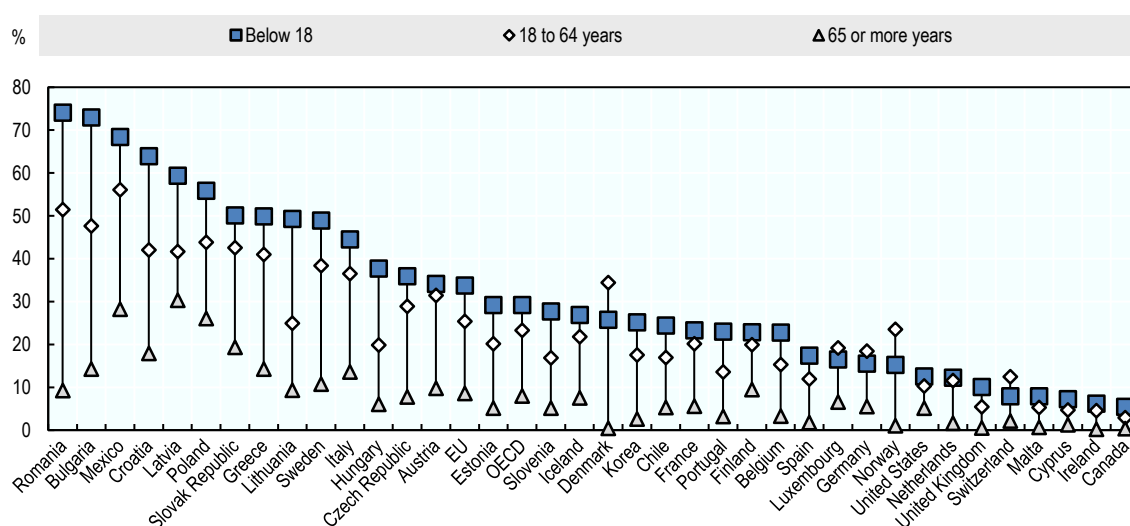
Children are more likely to experience overcrowding than the adult population

Within the low-income population, children are more likely than other age groups to live in overcrowded dwellings, and senior citizens are less likely to live in such conditions (Figure HC2.1.5, refer to HC2.1.A5 for earlier years). In Bulgaria and Romania, more than seven in ten children (under 18 years of age) in low-income households live in overcrowded dwellings. By contrast, in Canada, Cyprus, Ireland, Malta and Switzerland, fewer than one in ten children in low-income households live in overcrowded dwellings.

Differences in overcrowding rates between age groups are often largest in Central and Eastern European countries, but are also considerable in Italy, Greece, Mexico and Sweden. As couples have children they need more space, yet may be forced to live in overcrowded quarters if they lack affordable alternatives. Tsenkova (2005), for example, reports for South Eastern European countries that high outright ownership rates among low-income households together with rising prices, particularly in the capital regions, and a small private rental market sector limit housing choices. In countries with low or very low overall overcrowding rates, the situation is largely the same for everyone under the age of 65 (e.g. Canada, Cyprus, Ireland, Malta, the Netherlands and the United States).

Figure HC2.1.5. Overcrowding rates among the low-income population, by age group

Share of population in the bottom quintile of the income distribution living in overcrowded dwellings, in percent, 2019 or latest year available ^{1,2,3}



Note: 1. For Chile, Mexico, Denmark, the Netherlands and the United States no information on subsidised tenants due to data limitations. See section "Data and comparability issues" of Indicator HC2.1 on limits to comparability across countries due to the definition of rooms.

2. Low-income households are households in the bottom quintile of the (net) income distribution. In Chile, Mexico, Korea and the United States gross income is used due to data limitations.

3. Data for Canada are adjusted by Statistics Canada based on the assumption of the presence of a kitchen in dwellings where it is expected. "Bottom quintile" for Canada is defined as the first quintile of adjusted after-tax household income.

Source: OECD calculations based on European Union Statistics on Income and Living Conditions (EU SILC) survey 2019 except for Iceland, Ireland, Italy, and the United Kingdom (2018); calculations from Statistics Canada based on the 2016 Canada Census of Population for Canada; Encuesta de Caracterización Socioeconómica Nacional (CASEN) for Chile (2017); the German Socioeconomic Panel (GSOEP) for Germany (2014); the Korean Housing Survey (2019); the Japan Household Panel Study (JHPS) for Japan (2018); Encuesta Nacional de Ingresos y Gastos de los Hogares (ENIGH) for Mexico (2018); and the American Community Survey (ACS) for the United States (2019).

Overcrowding can affect health and education outcomes (World Health Organization (WHO), 2018; OECD, 2021; United Kingdom Office of the Deputy Prime Minister, 2004). At the outset of the COVID-19 crisis, housing quality gaps gained increased attention, as many people were spending much more

time at home. In particular, the pandemic renewed concerns among policy makers around overcrowded housing conditions, which make it more difficult to effectively self-isolate and puts people at greater risk of contracting and spreading infectious diseases (OECD, 2021). Preliminary evidence suggest that overcrowded living conditions and high-density living environments were associated with higher infection rates of COVID-19 (OECD, 2021). (Inserm, 2020; Barker, 2020).

Data and comparability issues

This indicator is calculated based on household surveys. For European countries, the European Union Statistics on Income and Living Conditions (EU-SILC) survey is used; for Canada, calculations from Statistics Canada based on the 2016 Canada Census of Population; for Chile, the Encuesta de Caracterización Socioeconómica Nacional (CASEN); for Germany, the German Socioeconomic Panel (GSOEP); for Korea the Korean Housing Survey; for Mexico the Encuesta Nacional de Ingresos y Gastos de los Hogares (ENIGH); for the United States, the American Community Survey (ACS). For Japan, the Japan Household Panel Study is used. Data in the JHPS is sampled on the respondent level and not on the household level, so data reflect housing conditions for the population as individuals, rather than for households.

The Household and the Income and Labour Dynamics Survey in Australia (HILDA) only record the number of bedrooms; data from Australia are therefore not included in the analysis.

While all surveys do not count bathrooms as a room, definitions differ for kitchens. JHPS counts kitchens towards the total number of rooms. EU-SILC and GSOEP do not count a kitchen used exclusively for cooking as a room; “kitchen-cum-dining rooms”, by contrast, are counted as such. In ACS, CASEN, ENIGH and the Korean Housing Survey, kitchens used exclusively for cooking and “kitchen-cum-dining rooms” both qualify as a room. In Canada, for dwellings where a kitchen would be expected, the presence of a kitchen is assumed and counted as a room. As ACS, CASEN, ENIGH, the Korean Housing Survey and the data for Canada do not provide detail on which type of kitchen is counted towards number of rooms, it is not possible to completely harmonise the number of rooms between EU-SILC and other surveys. The overcrowding rates for European countries are thus likely to be slightly overestimated compared to other countries.

EU-SILC, GSOEP and ACS also impose minimum space restrictions on rooms: in EU-SILC, spaces with less than four square meters are not considered rooms; in GSOEP, the threshold is six square meters; and in the ACS, rooms "must extend out at least 6 inches and go from floor to ceiling" according to the questionnaire.

Sources and further reading

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