

SDG indicator metadata

(Harmonized metadata template - format version 1.1)

0. Indicator information (SDG_INDICATOR_INFO)

0.a. Goal (SDG_GOAL)

Goal 16: Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels

0.b. Target (SDG_TARGET)

Target 16.7: Ensure responsive, inclusive, participatory and representative decision-making at all levels

0.c. Indicator (SDG_INDICATOR)

Indicator 16.7.1: Proportions of positions in national and local institutions, including (a) the legislatures; (b) the public service; and (c) the judiciary, compared to national distributions, by sex, age, persons with disabilities and population groups

0.d. Series (SDG_SERIES_DESCR)

SG_DMK_PARLCC_JC - Number of chairs of permanent committees, by age sex and focus of the committee, Joint Committees [16.7.1]

SG_DMK_PARLCC_LC - Number of chairs of permanent committees, by age, sex and focus of the committee, Lower Chamber or Unicameral [16.7.1]

SG_DMK_PARLCC_UC - Number of chairs of permanent committees, by age, sex and focus of the committee, Upper Chamber [16.7.1]

SG_DMK_PARLMP_LC - Ratio for female members of parliaments (Ratio of the proportion of women in parliament in the proportion of women in the national population with the age of eligibility as a lower bound boundary), Lower Chamber or Unicameral [16.7.1]

SG_DMK_PARLMP_UC - Ratio for female members of parliaments (Ratio of the proportion of women in parliament in the proportion of women in the national population with the age of eligibility as a lower bound boundary), Upper Chamber [16.7.1]

SG_DMK_PARLSP_LC - Number of speakers in parliament, by age and sex , Lower Chamber or Unicameral [16.7.1]

SG_DMK_PARLSP_UC - Number of speakers in parliament, by age and sex, Upper Chamber [16.7.1]

SG_DMK_PARLYN_LC - Number of youth in parliament (age 45 or below), Lower Chamber or Unicameral [16.7.1]

SG_DMK_PARLYN_UC - Number of youth in parliament (age 45 or below), Upper Chamber [16.7.1]

SG_DMK_PARLYP_LC - Proportion of youth in parliament (age 45 or below), Lower Chamber or Unicameral [16.7.1]

SG_DMK_PARLYP_UC - Proportion of youth in parliament (age 45 or below), Upper Chamber [16.7.1]

SG_DMK_PARLYR_LC - Ratio of young members in parliament (Ratio of the proportion of young members in parliament (age 45 or below) in the proportion of the national population (age 45 or below) with the age of eligibility as a lower bound boundary), Lower Chamber or Unicameral [16.7.1]

SG_DMK_PARLYR_UC - Ratio of young members in parliament (Ratio of the proportion of young members in parliament (age 45 or below) in the proportion of the national population (age 45 or below) with the age of eligibility as a lower bound boundary), Upper Chamber [16.7.1]

0.e. Metadata update (META_LAST_UPDATE)

2023-12-15

0.f. Related indicators (SDG_RELATED_INDICATORS)

Indicator 5.5.1(a) looks at the proportion of seats held by women in national parliaments while indicator 5.5.1(b) considers the proportion of women in local governments. The metadata developed for the latter only considers elected positions in legislative bodies of local government, thus focusing on the same positions that would be covered by indicator 16.7.1(a) at sub-national level. The Methodology Development Narrative Report for the present indicator recommends building on the methodology elaborated for indicator 5.5.1(b) for future reporting on indicator 16.7.1(a) at local level.

0.g. International organisations(s) responsible for global monitoring

(SDG_CUSTODIAN_AGENCIES)

Inter-Parliamentary Union (IPU)

1. Data reporter (CONTACT)**1.a. Organisation** (CONTACT_ORGANISATION)

Inter-Parliamentary Union (IPU)

2. Definition, concepts, and classifications (IND_DEF_CON_CLASS)**2.a. Definition and concepts** (STAT_CONC_DEF)**Definition:**

This metadata sheet is focused only on the first sub-component of indicator 16.7.1, namely on positions in national legislatures held by individuals of each target population (sex, age, persons with disabilities, and contextually relevant population groups).

The legislative sub-component of indicator 16.7.1 aims to measure how representative of the general population are the individuals occupying key decision-making positions in national legislatures. More specifically, this indicator measures the proportional representation of various demographic groups (women, age groups) in the national population amongst individuals occupying the following positions in national legislatures: (1) Members, (2) Speakers and (3) Chairs of permanent committees in charge of the following portfolios: Foreign Affairs, Defence, Finance, Human Rights and Gender Equality. Furthermore, it looks at the electoral and constitutional provisions adopted by countries to secure representation in national legislatures of persons with disabilities and contextually relevant population groups.

Concepts:

The indicator is based on the following key concepts and terms:

- *National legislature*: A legislature (alternatively called 'assembly' or 'parliament') is the multi-member branch of government that considers public issues, makes laws and oversees the executive.
 - *Unicameral / bicameral parliaments*: A legislature may consist of a single chamber (unicameral parliament) or two chambers (bicameral parliament). The organization of a country's legislature is prescribed by its constitution. Around the world, about 59% of all countries have unicameral legislatures, while the remaining 41% are bicameral¹. To

¹ Source: Structure of Parliaments, IPU New Parline database on national parliaments
 <https://data.ipu.org/compare?field=country%3A%3Afield_structure_of_parliament#pie>

allow for a comprehensive analysis, this indicator will consider both chambers in bicameral parliaments.

- *Member of Parliament (MP)*: A person who is formally an elected or appointed member of a national legislature. This metadata considers all members of lower and upper chamber regardless of the selection modality (direct election, indirect election and appointment).
- *Speaker*: A Speaker (alternatively called 'president' or 'chairperson' of the legislature) is the presiding officer of the legislature.
- *Permanent committee* (alternatively called 'standing committee'): established for the full duration of the legislature and generally aligned with the specific policy areas of key government departments. For the purpose of SDG indicator 16.7.1(a), the permanent committees in charge of five portfolios are being considered: Foreign Affairs, Defence, Finance, Human Rights and Gender Equality.
- *Permanent Committee Chair*: A person designated to preside over the work of a permanent committee, selected through nomination by political parties, election by MPs, appointment by the Speaker, or other means.
- *Disability*: long-term physical, mental, intellectual or sensory impairments which in interaction with various barriers may hinder the full and effective participation of disabled persons in society on an equal basis with others.²
- *Population group*: The population of a country is a mosaic of different population groups that can be identified according to racial or ethnic, language, migration status, religious affiliation, sexual orientation, as well as disability status (UNECE). The indicator adopts a broad definition of population groups, not limited to minorities³ and indigenous peoples⁴, in order to capture all nationally relevant groups tracked by a given parliament, which depends on the constitutional and electoral measures in place to guarantee the representation of certain groups. Such measures sometimes extend to groups other than 'minorities', such as, for instance, occupational groups.⁵

2.b. Unit of measure (UNIT_MEASURE)

Number, Ratio, Percent (%)

2.c. Classifications (CLASS_SYSTEM)

Not applicable

3. Data source type and data collection method (SRC_TYPE_COLL_METHOD)

3.a. Data sources (SOURCE_TYPE)

² UN General Assembly, Convention on the Rights of Persons with Disabilities: resolution / adopted by the General Assembly, 24 January 2007, A/RES/61/106, available at: <http://www.refworld.org/docid/45f973632.html>

³ *Minority group*: a group numerically inferior to the rest of the population of a State, in a non-dominant position, whose members—being nationals of the State—possess ethnic, religious or linguistic characteristics differing from those of the rest of the population and show, if only implicitly, a sense of solidarity, directed towards preserving their culture, traditions, religion or language. Source: UN Office of the High Commissioner for Human Rights (OHCHR), *Minority Rights: International Standards and Guidance for Implementation*, 2010, HR/PUB/10/3, <<http://www.refworld.org/docid/4db80ca52.html>>

⁴ *Indigenous peoples*: peoples in independent countries who are regarded as indigenous on account of their descent from the populations which inhabited the country, or a geographical region to which the country belongs, at the time of conquest or colonization or the establishment of present state boundaries and who, irrespective of their legal status, retain some or all of their own social, economic, cultural and political institutions. Source: C169 - Indigenous and Tribal Peoples Convention, 1989 (No. 169)

⁵ For example, Egypt's electoral law reserves 50 per cent of seats in the People's Assembly for "workers and farmers".

The multiple data points pertaining to the parliamentary sub-component of indicator 16.7.1 will be compiled by the Inter-Parliamentary Union (IPU) based on information gathered in its New PARLINE database on national parliaments:

Data on age and sex of Members and Speakers:

The IPU already collects data from secretariats of national parliaments on an ongoing basis for New PARLINE. The Platform already provides up-to-date and disaggregated data on the following positions:

- *Members*: data disaggregated by sex and age.
- *Speakers*: data disaggregated by sex and age.
- *Chairs of permanent committees on Human Rights and Gender Equality*: data disaggregated by sex and age.

Data on age and sex of Chairs of permanent committee on Foreign Affairs, Defense and Finance:

Data on the sex and age of Chairs of permanent committees on Foreign Affairs, Defense and Finance New Parline, will be added to Parline in 2020 . This is building on the successful attempt made by the IPU in 2011 to collect sex-disaggregated data on committee Chairs, broken down by area of competence (see IPU, Gender-sensitive parliaments, 2011).

Data on disability and population group status of Members:

In the immediate future, data on the disability and population group status of individual members will not be collected. As explained above, (1) such characteristics are very rarely tracked by parliaments in a systematic way; (2) confidentiality and data protection concerns are likely to make such data collection challenging, if not legally impossible; (3) data on the representation of persons with disabilities or various population groups will likely be of limited potential use.

Instead, lists of electoral or constitutional provisions guaranteeing representation of persons with disabilities and various population groups in parliament are already compiled in the New PARLINE database (see 'Reserved seats and quotas' section) and will be used to report on this indicator.

In the future, it is recommended that the 'Inclusion Survey' (see Annex) be considered by the IPU's network of national parliaments. In this survey, each member is asked to self-report on (1) levels of difficulty in performing activities in five⁶ core functional domains – namely seeing, hearing, walking, cognition and communication (the 'Inclusion Survey' is an adapted version of the standardized Short Set of Questions on Disability elaborated by the Washington Group), and (2) his/her affiliation to a national, ethnic, religious or linguistic minority group, or to an indigenous or occupational group, in keeping with the UN principle of self-identification with regards to indigenous peoples and minorities.

Given the potential sensitivity of disclosing information on population groups and disability, declaring and being transparent as to who is the sponsor of the Inclusion Survey can make respondents more comfortable. It is important for the sponsor to be a neutral entity independent from the employer institution, and to be able to protect the confidentiality of survey respondents. In this regard,

⁶ It was advised by the Washington Group to omit the sixth domain of 'self-care' from the Short Set of Questions on Disability, as this question does not capture additional disability cases but acts more like a 'severity indicator'. Given the target population for this survey (members of parliament), this question was found unnecessary.

organisations such as IPU and National Statistical Offices are particularly well positioned to administer the Inclusion Survey in national parliaments, and to perform subsequent data analysis.

3.b. Data collection method (COLL_METHOD)

The compilation of data by the Inter-Parliamentary Union uses the following mechanisms:

- data collection forms sent to Parliaments⁷
- internal review and validation of data obtained from national parliaments by the IPU
- on-line dissemination of data by IPU on New PARLINE

The IPU will apply the data validation procedures developed for New Parline, plus additional checks specifically for SDG indicator 16.7.1(a), prior to submitting data at the international level for SDG reporting.

3.c. Data collection calendar (FREQ_COLL)

Data should be collected at least once every legislative term (preferably within 6 months of the opening of a new parliament). If possible, data should be updated annually. This will ensure timely capturing of changes in the composition of parliament and/or permanent committees which may come as a consequence of the electoral cycle, snap elections and by-elections held in selected constituencies to fill vacancies arising from the death or resignation of members.

- Sex and age of members: updated after every election
- Sex and age of Speakers: updated on a daily basis, every time a change occurs
- Sex and age of permanent committee Chairs: updated after every election
- Data on electoral or constitutional provisions guaranteeing representation of persons with disabilities and various population groups: updated at the time of every election
- In addition, all data will be reviewed and updated annually by parliaments.

3.d. Data release calendar (REL_CAL_POLICY)

Data will be reported at the international level in February each year, and will provide a snapshot of the situation as at 1 January of that year.

The first full release of data for the indicator will take place in February 2020, on the basis of data as at 1 January 2020.

The IPU will have a rolling schedule of publication of parts of the data for the indicator in the New Parline database. For example, data on the sex of members of parliament is already available; whereas data on the age and sex of the Chairs of permanent committees on Foreign Affairs, Defence and Finance will be published in the database in 2020.

⁷ In case of bicameral parliaments, data will be obtained separately from the secretariat of each chamber, except where the two chambers share a secretariat / contact point.

3.e. Data providers (DATA_SOURCE)

The Inter-Parliamentary Union is responsible for the provision of data on all dimensions of the indicator. Data is directly provided by national parliaments and then made available on New Parline.

3.f. Data compilers (COMPILING_ORG)

The Inter-Parliamentary Union is responsible for the compilation of all data points required by this indicator and for the computation of the two ratios for each parliamentary chamber of each country.

3.g. Institutional mandate (INST_MANDATE)

The IPU is a global organization of national parliaments founded in 1889 that promotes democracy and sustainable development and helps parliaments to become stronger, younger, gender-balanced and more diverse. The IPU has a historical record of collecting reference data on parliaments since the 1960s. It also maintains the flagship Parline database on national parliaments - an authoritative and up-to-date resource containing over 600 data fields for every functioning parliament in the world.

In 2017 UNDP approached the IPU to jointly develop metadata for the 16.7.1a component of this indicator and in November 2018 the UN-IAEG approved the metadata and confirmed IPU as custodian.

4. Other methodological considerations (OTHER_METHOD)

4.a. Rationale (RATIONALE)

The concept of representation

There are different approaches to the concept of representation in parliament, with two of the most widely-known being descriptive and substantive representation (Bird, 2003; Floor Eelbode, 2010). Descriptive representation is concerned with the extent to which the composition of parliament mirrors the various socio-demographic groups in the national population. Substantive representation, meanwhile, is concerned with the extent to which parliament acts in the interest of certain population groups (irrespective of whether or not members of parliament consider themselves as members of those groups).

Indicator 16.7.1 focuses on descriptive representation. The underlying assumption is that when parliament reflects the social diversity of a nation, this may lead to greater legitimacy of the parliament in the eyes of the electorate, as members resemble the people they represent in respect to gender, age, ethnicity and disability. Descriptive representation has been found to be associated with higher levels of trust in public institutions, as people feel closer to elected representatives who resemble them and perceive more visibly representative political bodies with better quality and fairness of policy decisions, and with less undue influence of vested interests over decision-making.⁸ Such descriptive representation should then enhance the substantive influence of population groups.

The methodology for this indicator measures representation in parliamentary decision-making with respect to the sex and age of members of parliament. It identifies the extent to which the proportion of women members of parliament, and the proportion of young members of parliament, corresponds to the proportion of these groups in society as a whole.

⁸ See OECD (2017)

A different approach is taken with regard to disability and population group status, which focuses on electoral and constitutional provisions guaranteeing the representation of persons with disabilities and various population groups in national parliaments (see 'Comments and limitations').

'Decision-making positions' in national parliaments

Target 16.7 focuses on 'decision-making' and the extent to which it is responsive, inclusive, participatory and representative. For the purpose of this indicator, three positions were identified for their importance in decision-making and leadership: Members of parliament, the Speaker of parliament and permanent committee Chairs. Broadly speaking, the decision-making power of individuals holding these positions can be described as follows:

- *Members of parliament* play important roles in public decision-making by voting on laws and holding the government to account.
- *The Speaker* of a legislature presides over the proceedings of parliament and typically plays a significant role in setting the parliamentary agenda and organizing the business of parliament. The Speaker is responsible for ensuring parliamentary business is conducted fairly and effectively, and for protecting the autonomy of the legislature in relation to the other branches of government.
- *Committee Chairs* preside over the work of parliamentary committees, and typically have great influence over the committee agenda and business, including the legislative and oversight work carried out. In addition, committee Chairs often participate in the management boards or bureau that guide the overall work of parliament. As the number and mandates of permanent committees vary between parliaments, for the sake of better-quality data and greater comparability, this indicator only considers five Permanent Committees : Foreign Affairs, Defence, Finance, Human Rights and Gender Equality (see 'Comments and limitations').

Political representation and disaggregation dimensions

The indicator calls for disaggregation of positions by age, sex, contextually relevant population groups and disability status. The following international human rights instruments contain provisions on enhancing opportunities for political participation by individuals and groups holding such characteristics:

The right and opportunity to participate in public affairs

Article 25 of the International Covenant on Civil and Political Rights (ICCPR) recognizes "the right and opportunity, without distinction of any kind such as race, color, sex, language, religion, political or other opinion, national or social origin, property, birth or other status to take part in the conduct of public affairs, directly or through freely chosen representatives".

Age

The 2015 Security Council Resolution 2250 urges Member States to consider ways to increase inclusive representation of youth in decision-making at all levels in local, national, regional and international institutions and mechanisms to prevent and resolve conflict and counter violent extremism.

Sex

The 2000 Security Council Resolution 1325 and the six supporting resolutions between 2000-2013 on Women, Peace and Security urge member states to increase the numbers of women at all levels of decision-making institutions. The 1979 Convention on the Elimination of All Forms of Discrimination

against Women (CEDAW) provides the basis for realizing equality between women and men through ensuring women's equal access to, and equal opportunities in, political and public life, including the right to vote and to stand for election, as well as to hold public office at all levels of government (Article 7). States parties agree to take all appropriate measures to overcome historical discrimination against women and obstacles to women's participation in decision-making processes (Article 8), including legislation and temporary special measures (Article 4).

Ethnic or minority status

The Declaration on the Rights of Persons belonging to National or Ethnic, Religious and Linguistic Minorities (1992) and the Declaration on the Rights of Indigenous Peoples (2007) provide that persons belonging to minorities and indigenous peoples have the right to participate in the political, economic, social and cultural life of the State.

Disability status

The United Nations Convention on the Rights of Persons with Disabilities (2006) calls upon State Parties to ensure that persons with disabilities can effectively and fully participate in political and public life on an equal basis with others, directly or through freely chosen representatives, including the right and opportunity for persons with disabilities to vote and be elected. Resolution 2155 (2017) of the Parliamentary Assembly of the Council of Europe (PACE) on the political rights of persons with disabilities recommends for countries to consider the establishment of quotas for the participation of persons with disabilities in parliamentary and local elections, with a view to increasing participation and representation.

4.b. Comment and limitations (REC_USE_LIM)

Measuring representation

- The significance of descriptive representation has been challenged in different ways. First, there is the question of what and who should be mirrored in the representative body; why be attentive to some groups (women, young people, minorities etc) but not others (the poor, LGBTI, "ethnic" groups who might not be officially recognized etc)? Second, the mirror notion of descriptive representation may be deemed dangerous if it precludes citizens from choosing representatives who do not look like them. One of the base tenets of democracy is freedom of choice at the ballot box and if one is corralled into having to vote for a candidate of your own sex or ethnicity, then that intrinsic liberty is constrained. Third, descriptive representation has the danger of ultimately becoming an end in itself. Concerns about effective representation should not end once parliament has the appropriate number of members for each minority groups. Indeed, at this stage concerns about adequate political representation should be just beginning. These members should be able to articulate minority concerns and have the same opportunities to influence policy as other members. Nevertheless, if a parliament includes none, or very few, women, young people, minorities etc., that is probably a worrying sign that their interests are not being heard.⁹
- Representation needs to go hand in hand with participation, with both concepts being part of target 16.7. Without meaningful opportunities for citizens to participate in parliamentary

⁹ IPU and UNDP, "Frequently Asked Questions on the representation of minorities and indigenous peoples in parliament" (2008) in "Promoting inclusive parliaments: The representation of minorities and indigenous peoples in parliament"

decision-making, representation alone is unlikely to automatically lead to effective popular control of the government - one of the fundamental principles of democracy (International IDEA, 2013).

- The age and sex of individuals holding decision-making positions in parliament provide an indication at the symbolic level of the way in which power is shared within this institution. However, there is no certainty that because a Speaker or committee Chair is young (or old), a woman (or a man), or belongs to a minority group, s/he will bring to the fore issues of interest to groups with the same socio-demographic profile.
- Tracking the age of MPs over time offers some measure of youth representation in parliament. However, in most parliaments around the world, leadership positions such as Speaker and permanent committee Chairs are considered senior functions which require considerable experience, and are awarded in recognition of parliamentary achievement. This means that such positions are by nature unlikely to be held by members below the 'youth' age bracket of '45 years old and under'. As such, for the positions of Speaker and committee Chairs, more relevant insights will be generated on the basis of sex disaggregation.
- IPU studies on women in parliaments¹⁰ have found that committees representing the three 'hard' policy portfolios of Foreign Affairs, Defence and Finance are traditionally male-dominated. The two other committees tracked by this indicator, representing cross-cutting portfolios of Human Rights and Gender Equality, are also of interest given their specific areas of focus. Although not found in every parliament, the very existence of these two committees suggests a particular commitment within parliament to safeguarding human rights and promoting gender equality.
- In certain countries, particularly Small Island Developing States, the number of members of parliament may be very small. Consequently, there may not be a committee system, or the committee system may not contain the same distribution by areas of responsibility as observed in the majority of parliaments. In addition, in parliaments with a very small number of members, the addition or reduction of just one or two people to the number of women or the number of young MPs may have a significant impact on the overall percentage of representation of these groups.

Methodology

- As regards the scope of 'population groups', while representation of minorities and indigenous peoples may be more often tracked by national parliaments due to the availability of internationally accepted definitions, the indicator also invites reporting on any other tracked population groups, including, for instance, occupational groups.
- An obvious limitation of this metadata is that it only considers members of parliament, in keeping with the focus of target 16.7 on 'decision-making'. However, some parliaments may find it useful to also look at the composition of various staff categories such as clerks of the parliament, committee clerks or researchers, etc.
- Who holds the Chairs of parliamentary committees is largely tributary to the overall distribution of seats within the parliament. For example, parliaments with no members under the age of 30 will not have any committee Chairs under that age. Since committee chairs are typically awarded on the basis of experience and seniority,¹¹ higher age groups are expected to be common among committee Chairs and Speakers.

Data collection

¹⁰ See, for example: IPU, "Gender-Sensitive Parliaments" (2011), "Equality in Politics: A Survey of Women and Men in Parliaments" (2008), "Women in Parliament: 20 Years in Review" (2016), "Women in Politics" (2017)

¹¹ See e.g. IPU "Gender-sensitive Parliaments", p. 18 (on committee chairs: "All leaders, irrespective of gender, need to demonstrate their capabilities before they can be accepted as credible and legitimate authority bearers").

- In between reporting dates, it may be difficult to maintain up-to-date information on the results of by-elections held in selected constituencies to fill vacancies arising from the death or resignation of members.
- From one year to another during any given parliamentary term (typically 4 or 5 years), some Members may fall into a different age group amongst those considered for this indicator. For this reason, age of Members is collected at the time of their election to parliament.
- Age of Speakers and permanent committee Chairs is collected at the time of their appointment to the position, then verified and updated as of 1 January each year.

Recommended approach to monitoring disability and population groups:

1) Sensitivity of disability and population group data

- Efforts to promote inclusive parliaments presuppose recognition of ethno-cultural diversity¹². In certain contexts, population group status may prove to be a sensitive and politically charged variable. For example, several countries actively restrict or ban identification of ethnic or religious status, in order to protect vulnerable populations or discourage inter-ethnic conflict. In addition, definitions of groups that constitute a minority vary greatly between countries.
- Furthermore, there is a strong human rights principle that individuals must be able to choose to identify themselves as members of a minority, or not. It would not be appropriate for parliaments (or any other body) to assume or to assign MPs' membership of a particular population group.
- Similarly, discriminatory perceptions and implicit bias against disability can make the collection of data by parliaments on this characteristic equally sensitive. This is partly because parliamentarians with disabilities, like everyone else, have a right to privacy and therefore are not under an obligation to reveal a disability. Moreover, in many states, information concerning disability falls under the umbrella of health data and is therefore confidential, thus preventing parliaments to release this information even on an anonymous basis.¹³
- As a result, currently, next to no countries systematically collect data on disability among members of parliaments. As pointed out by the European Union Agency for Fundamental Rights (FRA), while collecting reliable and accurate statistical data regarding the experiences of persons with disabilities presents numerous challenges, the lack of comparable data hinders the understanding of barriers to political participation.¹⁴

2) Limitations of the descriptive representation approach to tracking disability and population group status

- Unlike for sex and age, monitoring the descriptive representation of members of parliament based on disability or population group status would be neither feasible nor meaningful.
- Considering how broad the concept of disability is, encompassing various types of impairments and various degrees of severity, it would be unrealistic and unwarranted to expect a one-to-one ratio of representation in parliament. Furthermore, since national-level disability statistics are

¹² IPU and UNDP, "The representation of minorities and indigenous peoples in parliament: A global overview" (2010).

¹³ See, for example, the EU General Data Protection Regulation (GDPR, 2016/679) which introduced a particularly broad definition of health data and a range of restrictions on processing it. GDPR took effect in all EU Member States in May 2018.

¹⁴ European Union Agency for Fundamental Rights, "The right to political participation for persons with disabilities: human rights indicators" (2014): <http://fra.europa.eu/en/publication/2014/right-political-participation-persons-disabilities-human-rights-indicators>

not always up-to-date, let alone available, the comparison between the share of disabled in the national population and in parliament could be unsound, or difficult to establish.

- There are similar concerns with respect to monitoring the representation of various population groups. In countries whose populations are a mosaic of many diverse groups (some of which may account for less than 1 percent of the population) an exact reflection of such pluralism in the composition of parliament would be impossible and unnecessary.
- For ethical reasons, data on disability and population group status of MPs could only be collected through individual surveys that meet required standards of confidentiality. Seeing that such practice is currently not in place, the testing of this approach will be explored in the future to establish whether surveying the world's 46,000 parliamentarians is feasible.

3) Adopting an incremental approach

- Given the perceived sensitivity of collecting data on disability and population group status and concerns related to the feasibility and usefulness of monitoring descriptive representation, it is proposed to take stock instead of electoral and constitutional provisions guaranteeing the representation of persons with disabilities and various population groups in national parliaments.
- **Reserved seats and quotas** are among the most commonly utilized electoral means to ensure representation of certain groups in the political process. Above and beyond guaranteeing a minimum number of seats held by persons with disabilities and certain population groups, the existence of such provisions substantiates a country's commitment to the right to equal participation in public and political life.
- Provisions on quotas can be found in countries' constitutions or electoral laws (i.e. legislated quotas).¹⁵ Such electoral measures are used to achieve equal or balanced access to political power by increasing access to political decision-making processes of certain sociodemographic groups. In 2010, the constitutions or electoral laws of more than 30 countries included electoral quotas for various groups (e.g. ethnic, religious) that commonly go under the name of 'minority groups'. A few countries have similar provisions for persons with disabilities¹⁶.
- The impracticality of looking at descriptive representation does not mean there is no merit in producing statistics on disability or population groups in parliament. Even an indicative number of MPs self-reporting disability could help parliamentary administrations around the world to better accommodate their special needs. It could also provide valuable information on the actual exercise (and not only the legal status) of the human right to equal opportunity to participate in the public and political life. When supported by concrete figures, such information can be valuable to a broad range of actors trying to identify and address barriers to political participation, including civil society, community advocates, researchers, development partners and political institutions themselves.
- In line with the proposed incremental approach, an 'Inclusion Survey' (see Annex and Data Sources) was developed to facilitate the collection of self-reported data on disability (using the Short Set of Questions on Disability elaborated by the Washington Group) and population group status by parliaments. This short survey module of 8 questions, developed specifically for the purpose of reporting on indicator 16.7.1(a), could be administered directly to all Members by a neutral sponsor such as a national statistical office or the IPU itself. Importantly, the introduction to the survey reassures respondents of the anonymity and confidentiality of their responses, which is essential to overcome individual reluctance to disclose sensitive personal information.

Recommendations for reporting also on the composition of local parliaments

¹⁵ Voluntary party quotas fall outside the scope of this indicator.

¹⁶ Countries with constitutional or electoral provisions guaranteeing the representation of persons with disabilities in parliaments include Uganda, India, Afghanistan and Rwanda.

While at present the indicator looks only at national parliaments, broadening its scope to include legislative bodies of local governments could be considered in the future, in line with target 16.7 which calls for decision-making to be representative “at all levels”. Local councils or assemblies hold important decision-making powers, including the ability to issue by-laws that influence the lives of their respective local communities. While it is premature at this stage to propose a global methodology to report on representation in local legislatures due to the varying quality of data collection systems in place at the local level, and to a number of methodological complexities (notably with regards to the need for disaggregated population statistics to be available for each administrative division, in order to compute representation ratios in each local parliament), countries should nonetheless be encouraged to track diversity in local parliaments, using methodologies appropriate to their local context. As far as global SDG reporting is concerned, a recommendation for the future inclusion of local legislatures in indicator 16.7.1(a) can be found in Annex 1 to the Methodology Development Narrative. A custodian for this part of the indicator on local legislatures remains to be identified.

4.c. Method of computation (DATA_COMP)

- *Members:*

Indicator 16.7.1(a) aims to compare the proportion of various demographic groups (by sex and age) represented in national parliaments, relative to the proportion of these same groups in the national population above the age of eligibility.

To report on indicator 16.7.1(a), two ratios must be calculated, namely:

- For ‘young’ MPs (aged 45 and below)
- For female MPs

When comparing ratios of ‘young’ MPs and female MPs with corresponding shares of the national population that is aged 45 and below (for the first ratio) and female (for the second ratio), *it is important to consider the population of, or above, the age of eligibility*, the latter being, by definition, the lowest possible age of members of parliament. In other words, if the age of eligibility in a given country is 18 years old, the national population to be used as a comparator for the first ratio (for ‘young’ MPs) will be the national population aged 18-45 (*not* 0-45), and for the second ratio (for female MPs), the female population aged 18 and above.

1) To calculate the ratio for ‘young’ MPs (aged 45 and below), the following formula is to be used:

$$\text{Ratio 1} = \frac{\text{Proportion of MPs aged 45 and below in parliament}}{\text{Proportion of the national population aged 45 and below}}$$

(with the age of eligibility as a lower boundary)

where:

- The numerator is the number of seats held by MPs aged 45 and below, divided by the total number of members in parliament
- The denominator can be computed using national population figures as follows:

$$\frac{[\text{Size of national population} \leq 45] - [\text{Size of national population} < \text{age of eligibility}]}{\text{Size of the national population}}$$

The resulting ratio can then be interpreted as follows:

- 0 means no representation at all of 'youth' (45 years and below) in parliament
- 1 means perfectly proportional representation of 'youth' (45 years and below) in parliament
- <1 means under-representation of 'youth' (45 years and below) in parliament
- >1 means over-representation of 'youth' (45 years and below) in parliament

Example:

Say in country A, 30% of the national population is aged 45 or younger (but above the age of eligibility), but only 25% of MPs fall in this age category:

$$\text{Ratio 1} = \frac{\text{Proportion of MPs aged 45 and below in parliament}}{\text{Proportion of the national population aged 45 and below}}$$

(with the age of eligibility as a lower boundary)

$$\text{Ratio} = 0.25 / 0.3 = \mathbf{0.83}$$

(<1 since MPs aged 45 or younger are under-represented amongst MPs compared to the proportion of this age group in the national population. The ratio is close to 1 as the share of 'young' MPs is not too far from the corresponding share of the national population falling in this age group.)

While a simple proportion of 'young' MPs in parliament is not internationally comparable, a ratio computed using the above formula is. For instance, 48% of 'young' MPs (45 years old or younger) may be an overrepresentation of youth in country A where only 30% of the national population above eligibility age falls in this age bracket (Ratio = 48/30 = 1.6), but in country B where 70% of the national population is 45 years old or younger, the same 48% would be interpreted as under-representation (Ratio = 48/70 = 0.69). In this example, the figure of 48% is not internationally comparable in relation to the national population (it means over-representation in one country and under-representation in another), but the ratios 1.6 and 0.69 *are* internationally comparable. They help us understand whether 48% of MPs aged 45 years old or less is close to, or far from, proportional representation of this age group in the national population.

2) To calculate the ratio for female MPs, the following formula is to be used:

$$\text{Ratio 2} = \frac{\text{Proportion of women in parliament}}{\text{Proportion of women in the national population}}$$

(with the age of eligibility as a lower boundary)

where:

- The numerator is the number of seats held by female MPs, divided by the total number of members in parliament
- The denominator can be computed using national population figures as follows:

$$\frac{[\text{Size of female national population} \geq \text{age of eligibility}]}{[\text{Size of the national population} \geq \text{age of eligibility}]}$$

Note: This denominator can be set at 50 in most countries, as women generally represent around 50% of the national population in any given age bracket.

The resulting ratio can be:

- 0, when there is no representation of women at all in parliament
- <1, when the proportion of women in parliament is lower than that in the national population
- =1, when the proportion of women in parliament equals that in the national population
- >1, when the proportion of women in parliament is higher than that in the national population

Example:

Say in the same country A, 10% of seats are held by women MPs and women represent 50% of the national population in the given age bracket):

$$\text{Ratio 2} = \frac{\text{Proportion of women in parliament}}{\text{Proportion of women in the national population}}$$

(with the age of eligibility as a lower boundary)

$$\text{Ratio} = 0.10 / 0.50 = \mathbf{0.2}$$

(<1 since women are under-represented amongst MPs, but this time the ratio is much smaller as sex-based representation in parliament is far from parity.)

- *Speakers:* No computation, as most parliaments will only have one Speaker per parliament in unicameral parliaments or one Speaker per chamber in bicameral parliaments¹⁷. Personal

¹⁷ In very rare cases, there are two or more speakers per parliament / chamber. For the sake of clarity and consistency of the analysis, this metadata does not introduce computation for such cases.

characteristics of the individual(s) holding the position of Speaker are recorded (i.e. age group and sex).

- *Chairs of permanent committees on Foreign Affairs, Defence, Finance, Human Rights and Gender Equality*: No computation, as data is collected only on five committee Chairs. Personal characteristics of the five individuals chairing these three committees are recorded (i.e. age group and sex).

Computation in bicameral legislatures

In bicameral parliaments, data will be collected and computed separately for the same set of positions in each chamber.

Regional/global aggregates:

Regional and global aggregates can be calculated on the basis of the data compiled for the indicator.

- **Members**: Regional and global aggregates should be calculated using raw data, not the ratio
- **Speakers**: Regional and global aggregates can be calculated
- **Committee chairs**: When calculating regional and global aggregates, attention must be paid to committees that cover more than one portfolio and/or that are joint committees of both chambers in a bicameral parliament.

Effect of the age of eligibility for upper chambers on the age ratio

While in many bicameral legislatures, the age of eligibility for the upper chamber is significantly higher than that for the lower chamber, some have adopted an equal or similar age requirement for both chambers. However, regardless of the minimum age of eligibility set for upper chambers, members of these chambers throughout the world are older on average than members of lower chambers (see New Parline). As such, those upper chambers that have a low eligibility age are likely to have a lower ratio for 'young' MPs than upper chambers that have a higher eligibility age. In other words, in upper chambers where the eligibility age is lower, the share of MPs who are 45 or younger is likely to be considerably less than the corresponding proportion of the national population that falls between the eligibility age and 45 years old.

4.d. Validation (DATA_VALIDATION)

IPU member parliaments provide information on changes and updates to the IPU secretariat via IPU Groups within each parliamentary chamber or via the Parline Correspondent's Network.

Parline Correspondents are staff members of national parliaments who act as the IPU focal point for IPU's Parline database within each chamber or parliament. Their main role is to make sure that all the data in Parline for their parliament is up-to-date and correct, including for this indicator. If no response is provided to questionnaires, other methods are used to obtain the information, such as from the electoral management body, parliamentary web sites or internet searches. Additional information gathered from other sources is regularly crosschecked with parliaments.

4.e. Adjustments (ADJUSTMENT)

Not applicable

4.f. Treatment of missing values (i) at country level and (ii) at regional level

(IMPUTATION)

- **At country level**

There is no treatment of missing values.

- **At regional and global levels**

There is no imputation of missing values.

4.g. Regional aggregations (REG_AGG)

Regional aggregations are a simple sum of country and chamber level data. A weighting structure is not applied.

4.h. Methods and guidance available to countries for the compilation of the data at the national level (DOC_METHOD)

Methods and guidance available to countries for the compilation of data at national level:

Data on the age and sex of Members, Speakers and Committee Chairs, as well as of electoral or constitutional provisions guaranteeing representation of persons with disabilities and various population groups in parliament, will be reported directly by the IPU. The IPU already compiles this data in the New Parline database on national parliaments (<https://data.ipu.org>).

New Parline contains data on the composition, structure and working methods of all national parliaments. New Parline was launched in September 2018, as the successor to the Parline database on national parliaments that was established by the IPU in 1996. New Parline contains some 450 different fields, which are collected or updated at varying intervals, depending on the nature of the data. Data is collected by the IPU directly from national parliaments and other official sources (such as electoral commissions). Data is collected using questionnaires and surveys that are distributed via national IPU Groups in parliament (via the Secretary General of non-member parliaments. As at 19 September 2018, the IPU has 177 members; a further 16 national parliaments are not members). Data is then processed by the IPU prior to inclusion in the database. Some fields are updated daily, while others are updated annually, after each election, or when the constitutional or legal powers of parliament are changed. Parliaments are invited to check and update their data at least annually.

The IPU will inform parliaments that part of the data they provide will be used for the purpose of monitoring this indicator and will provide appropriate guidelines to respondents. In addition, the IPU will extend its data collection to include information on the age and sex of the Chairs of permanent committees on Foreign Affairs, Defense and Finance (data on Chairs of permanent committees on women and human rights is already collected within the scope of New Parline).

Methods and guidance available to countries for the compilation of data at international level:

The Declaration on Parliamentary Openness calls on parliaments to make publicly available information “about the backgrounds, activities and affairs of members, including sufficient information for citizens to make informed judgments regarding their integrity and probity, and potential conflicts of interest.”

The Commonwealth Parliamentary Association (CPA)'s Study Group on 'The Financing and Administration of Parliament' recommended for parliaments to have in place an information strategy detailing how the membership of the Legislature will be communicated to the general public.

Inter-Parliamentary Union (IPU)'s "Guidelines for the Content and Structure of Parliamentary Websites" (2000) recommend that for the sake of informing the electorate about Members, official parliamentary websites should feature biodata of the current speaker and a list of members and permanent committee Chairs as recommended minimum. Biodata of members is a much-welcomed optional element.

Under Article 31 of the Convention on the Rights of Persons with Disabilities, State Parties undertake to collect disaggregated information, including statistical and research data to give effect to the Convention, and assume responsibility for the dissemination of these statistics.

4.i. Quality management (QUALITY_MGMNT)

Data for this indicator is input and housed within the Parline database (data.ipu.org).

IPU has dedicated staff for data collection and management, a Network of Parline Correspondents to provide data updates, and a constant exchange with parliaments via IPU groups housed within member parliaments.

4.j Quality assurance (QUALITY_ASSURE)

Data for the indicator will follow the quality assurance measures put in place by IPU for Parline data. Data is collected directly from national parliaments. Quality controls and "sanity checks" are carried out by the IPU, using comparison against historical records for the same country and comparison between countries. In the case of any inconsistencies, a dialogue is opened with the parliament to clarify and, where necessary, correct the data. In addition, parliaments are invited to review all of their data on New Parline at regular intervals, at least annually and following elections.

4.k Quality assessment (QUALITY_ASSMNT)

IPU data is housed within the Parline database which automatically generates calculations on number and percentage of women to ensure accuracy. Exports from the database are utilised for SDG reporting.

5. Data availability and disaggregation (COVERAGE)

Description and time series:

Data on age and sex:

As a general rule, (nearly) all parliamentary secretariats keep records of basic information on all members. While the format and scope of information provided vary, most feature the MPs' date of birth and sex. As such, parliamentary secretariats are the primary source of data for the **age** and **sex** dimensions of this indicator.

The IPU publishes data points on the sex and age of Members, Speakers and committee Chairs for the following number of countries:

- *Members*: Sex-disaggregated data available for parliaments in 193 countries and split between chambers in case of bicameral parliaments. Data on age is collected at the start of each new legislature, following parliamentary elections. The New PARLINE database provides information on the number of MPs in each parliament across 10 statistical intervals (age 18-20; age 21-30; age 31-40; age 41-45; age 46-50; age 51-60; age 61-70; age 71-80; age 81-90; age 91 and over) and the percentage of members age 45 and younger, with 45 being the cut-off age for 'young' MPs.
- *Speakers*: Sex and age of Speakers available on New PARLINE for all parliamentary chambers in 193 countries. This data is updated on a daily basis, every time a change occurs.
- *Permanent committee Chairs*: Sex and age of chairs on committees on Human Rights and Gender Equality are featured on New PARLINE and sex and age data of foreign affairs, defence, and finance committees will be added in 2020. This data is updated after every election and checked with parliaments at the start of each year. In addition, New PARLINE provides information on the age of eligibility in all countries with national parliaments (i.e. the age of eligibility will be the cut-off age above which the demographic profile of the national population will be compared to that of members in parliament). This is required for defining the national population to be used as a comparator for the share of 'young' MPs in parliament (see Ratio 1). This data is updated every time a change occurs.
- *National population statistics*: National population statistics are required to calculate the denominator of Ratio 1 (see 'Computation Method'), namely to calculate the "size of national population \leq to 45" and the "size of national population $<$ age of eligibility", for the current year, and for both sexes combined. [The World Population Prospects 2017 database](#) is the most recent official United Nations population estimates and projections¹⁸. It presents population estimates for 233 countries and areas.¹⁹ Estimates are available in annually interpolated series [graduated into single age distributions](#) (0, 1, 2, ..., 99, 100), for both sexes, as of 1 July of the year indicated.

¹⁸ The Population Division of the Department of Economic and Social Affairs of the United Nations issues a new Revision of the *World Population Prospects* every two years, with the next one due in the first half of 2019. Estimates from the *World Population Prospects* sometimes differ from official statistics as "official demographic statistics are affected by incompleteness of coverage, lack of timeliness and errors in the reporting or coding of the basic information. The analysis carried out by the Population Division takes into account those deficiencies and seeks to establish past population trends by resolving the inconsistencies affecting the basic data. Use of the cohort-component method to reconstruct populations is the major tool to ensure that the population trends estimated by the Population Division are internally consistent." The availability of data gathered by major survey programs, such as the Demographic and Health Surveys or the Multiple-Indicator Cluster Surveys, are useful in generating some of the data that is not currently being produced by official statistics. For more information on the methodology used by the United Nations Population Division to produce the estimates and projections for the *World Population Prospects*, please refer to the publication on Methodology.

¹⁹ About half of those countries or areas do not report official demographic statistics with the detail necessary for the preparation of cohort-component population projections, hence this estimation work undertaken by the Population Division in order to close those gaps.

Data on electoral and constitutional measures for guaranteeing representation of persons with disabilities and population groups in parliament:

The 'Reserved seats and quotas' section of New PARLINE provides details of electoral and constitutional measures in each parliament regarding women, youth, indigenous peoples, minorities, persons with disabilities and other groups. This data is updated every time a change occurs.

Disaggregation:

- Sex (Male/Female)
- Age: Cut-off age of 45 years of age or younger at the time of election, for members of the current legislature. For the Speaker and permanent committee Chairs, same cut-off age of 45 years of age or younger at the time of nomination to the position.²⁰
- Disability: List of electoral or constitutional provisions guaranteeing representation of persons with disabilities in parliament.
- Contextually relevant population groups (e.g. indigenous/linguistic/ethnic/religious/occupational groups): List of electoral or constitutional provisions guaranteeing representation of various population groups in parliament.

6. Comparability / deviation from international standards (COMPARABILITY)

Sources of discrepancies:

There is no internationally estimated data for this indicator.

7. References and Documentation (OTHER_DOC)

Arnesen and Peters, "The Legitimacy of Representation: How Descriptive, Formal, and Responsiveness Representation Affect the Acceptability of Political Decisions", *Comparative Political Studies* 2018, Vol. 51(7) 868–899.

Bird, "Comparing the political representation of ethnic minorities in advanced democracies. Annual meeting of the Canadian Political Science Association Winnipeg" (2003)

Commonwealth Parliamentary Association (CPA)'s Study Group on 'Administration and Financing of Parliament', Zanzibar, Tanzania on May 25-29, 2005, in CPA "Benchmarks for Democratic Legislatures" (2006): <https://www.cpahq.org/media/awydqld2/administration-and-financing-of-parliament-study-group-report-1.pdf>.

Congleton, On the Merits of Bicameral Legislatures: Policy Stability within Partisan Politics (2012): https://www.researchgate.net/publication/228527163_On_the_merits_of_bicameral_legislatures_Policy_stability_within_partisan_politics

Declaration on Parliamentary Openness (2012): <https://www.openingparliament.org/static/pdfs/english.pdf>

Eelbode, "The political representation of ethnic minorities: A framework for a comparative analysis of ethnic minority representation" (2010), available from: <http://hdl.handle.net/1854/LU-2001816>

²⁰ In an attempt to maximize data availability and minimize gaps in submissions of data on age and sex, this indicator is aligned with existing data collection practices of the IPU with regards to age, and adopts IPU's definition of young MPs as those under 45 years old.

Hague, Harrop, McCormick, "Comparative Government and Politics: An Introduction", 10th Edition, Palgrave, London (2016).

Heywood, "Politics", 4th Edition, Palgrave Macmillan, Basingstoke (2013).

Institute for International Law and Human Rights, "Minority Representation in Electoral Legislation" (2009), <http://lawandhumanrights.org/documents/compreviewminorityrepinelectoralleg.pdf>

International IDEA, "Inclusive Political Participation and Representation. The Role of Regional Organizations" (2013): <https://www.idea.int/sites/default/files/publications/inclusive-political-participation-and-representation.pdf>

International IDEA, "Bicameralism", International IDEA Constitution-Building Primer 2 (2016): <https://www.idea.int/sites/default/files/publications/bicameralism-primer.pdf>

International Republican Institute (IRI) 2016, Women's Political Empowerment, Representation and Influence in Africa: A Pilot Study of Women's Leadership in Political Decision-Making: https://www.iri.org/sites/default/files/wysiwyg/womens_political_index_0.pdf

Inter-Parliamentary Union "Equality in Politics: A Survey of Women and Men in Parliaments" (2008): <https://www.ipu.org/resources/publications/reports/2016-07/equality-in-politics-survey-women-and-men-in-parliaments>

Inter-Parliamentary Union "Gender-Sensitive Parliaments" (2011): <http://archive.ipu.org/pdf/publications/gsp11-e.pdf>

IPU's "Guidelines for the Content and Structure of Parliamentary Websites" (2000): <http://archive.ipu.org/cntr-e/web.pdf>

Inter-Parliamentary Union former PARLINE database on national parliaments: <http://archive.ipu.org/parline/parlinesearch.asp>

Inter-Parliamentary Union New Parline database on national parliaments: <https://data.ipu.org/>

Inter-Parliamentary Union, "Women in Parliament: 20 Years in Review" (2016): <https://www.ipu.org/resources/publications/reports/2016-07/women-in-parliament-20-years-in-review>

Inter-Parliamentary Union and UNDP, "The representation of minorities and indigenous peoples in parliament: A global overview" (2010) <https://ipu.org/resources/publications/reports/2016-07/representation-minorities-and-indigenous-peoples-in-parliament-global-overview>

Inter-Parliamentary Union and UN Women, "Women in Politics" (2017): <https://www.ipu.org/resources/publications/infographics/2017-03/women-in-politics-2017>

Inter-Parliamentary Union, "Youth participation in national parliaments" (2016), <https://www.ipu.org/resources/publications/reports/2016-07/youth-participation-in-national-parliaments>

Krook & O'Brien, "The politics of group representation: Quotas for women and minorities worldwide" (2010), Comparative Politics, 42 (3), 253–272.

Kreppel in Martin, Saalfeld and Strøm (ed) 2014, The Oxford Handbook of Legislative Studies, Oxford University Press.

Lupu, "Class and Representation in Latin America" (2015), Swiss Political Science Review 21(2): 229–236.

Norton; Parliament in British Politics, 2nd Edition, Palgrave Macmillan, Basingstoke (2013).

OECD (2017), *Trust and Public Policy: How Better Governance Can Help Rebuild Public Trust*, OECD Public Governance Reviews, OECD Publishing, Paris, <https://doi.org/10.1787/9789264268920-en>.

Reynolds, "Reserved seats in national legislatures: A research note" (2005), *Legislative Studies Quarterly*, 301–310.

UNDP, GOPAC, IDB, "Parliament's Role in Implementing the Sustainable Development Goals: A Parliamentary Handbook" (2017). See http://www.undp.org/content/undp/en/home/librarypage/democratic-governance/parliamentary_development/parliament-s-role-in-implementing-the-sustainable-development-go.html

UN Women, Methodological Note on SDG Indicator 5.5.1b "Proportion of seats held by women in local governments" (October 2017). See <https://unstats.un.org/sdgs/iaeg-sdgs/metadata-compilation/>

Zhanarstanova & Nechayeva, "Contemporary Principles of Political Representation of Ethnic Groups" (2016): doi:[10.1016/S2212-5671\(16\)30243-X](https://doi.org/10.1016/S2212-5671(16)30243-X)