UNESCO Institute for Statistics

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Expert Group Meeting on Data Disaggregation
27-29 June 2016
New York

Data disaggregated by sex for monitoring of the education SDG

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Relevance of sex-disaggregated data for SDG monitoring

- Emphasis on equity and gender parity in SDG 4
- Examples:
  - Target 4.1: By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes
  - Target 4.5: By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations

Indicators disaggregated by sex

Global indicators	4.1.1 Percentage of children/young people achieving minimum proficiency in reading and math 4.2.1 Percentage of children under 5 developmentally on track 4.2.2 Participation rate in organized learning (one year before primary entry age) 4.3.1 Participation rate of youth and adults in formal and non-formal education and training 4.4.1 Percentage of youth/adults with ICT skills **4.5.1 Parity indices for all indicators that can be disaggregated** 4.6.1 Percentage of population achieving fixed level of proficiency in literacy and numeracy 4.7.1 Percentage of 15-year-old students with fixed level of knowledge across selection of topics

Indicators disaggregated by sex

Thematic indicators	4.1: Gross intake ratio to last grade, completion rate, out-of-school rate, percentage of children over-age for grade 4.2: Percentage of children under 5 experiencing positive and stimulating home learning environment, pre-primary GER 4.3: Tertiary GER, participation rate in technical-vocational education 4.4: Youth/adult educational attainment rate 4.5: Percentage of students in primary education whose first or home language is language of instruction 4.6: Youth/adult literacy rate, participation rate in literacy programmes 4.7: Percentage of students showing understanding of global citizenship and sustainability 4.a: Percentage of students experiencing bullying, corporal punishment, etc. 4.c: Percentage of qualified teachers, teacher attrition rate, percentage of teachers receiving in-service training

UIS sources of education data

1. Annual UIS education survey, sent to all UNESCO Member States

- Enrolment by age, sex, level and grade of education
- Repeaters, new entrants, graduates by age, sex, level of education
- Teachers by sex, level of education, employment status, type of institution, qualification
- Internationally mobile students by sex
- Graduates from tertiary education by level of education, field and sex
- Educational attainment by age, sex and location
- Literacy by age, sex and location

2. Household surveys and censuses

- Demographic and Health Surveys
- Multiple Indicator Cluster Surveys
- National survey programs
- Population censuses

} Age, sex, location, household wealth, etc.

3. Learning assessments: data by age, sex, location, etc.

4. UN Population Division: population by age, sex

Methodological challenge #1: Capping (1/3)

- Capping necessary in case of mismatch of numerator (e.g. enrolment) and denominator (e.g. population data)
- Simplified example:
  - Pupils of primary age in primary school: 50 female + 50 male = 100
  - Population of primary age: 50 female + 48 male = 98
  - Primary net enrolment rate:
    - Female 50/50 = 100%
    - Male 50/48 = 104%
    - Both sexes 100/98 = 102%
  - Capping factor = *max*(male NER, female NER)/100 = 104/100 = 1.04
  - Capped primary NER:
    - Female: 100% / 1.04 = 96%
    - Male: 104% / 1.04 = 100%
    - Both sexes 102% / 1.04 = 98%

Methodological challenge #1: Capping (2/3)

- **Problem: Capping can lead to loss of sex-disaggregated data**
- Example:
  - Capped primary NER:
    - Female 96%
    - Male 100%
  - Primary out-of-school rate = 100% - primary NER:
    - Female = 100% - 96% = 4%
    - Male = 100% - 100% = 0%

    } All out-of-school children are girls
- If all out-of-school children are male or female, UIS suppresses male and female enrolment rates and out-of-school rates
  → no data by sex, no gender parity index

Methodological challenge #1: Capping (3/3)

- Capped enrolment rates in UIS database (1970 to present):
  - 8% of all primary enrolment rates
  - 4% of all lower secondary enrolment rates
  - 1% of all upper secondary enrolment rates
- Countries without male and female data (2014 or most recent year):
  - Primary out-of-school rate: 13 of 171
  - Lower secondary out-of-school rate: 15 of 140
  - Upper secondary out-of-school rate: 5 of 140
- **Solutions:**
  - Better enrolment data
  - Better population estimates by single year of age
  - Use survey data to analyze gender disparity: numerator and denominator from same source

Methodological challenge #2: Gender parity index (1/3)

- GPI = female/male indicator value
- Gender parity at GPI values between 0.97 and 1.03
- Problem: GPI is not symmetrical around 1 and has no upper limit (theoretical range: 0 to infinity)
- **Example:**
  - Female NER = 80%
  - Male NER = 100%

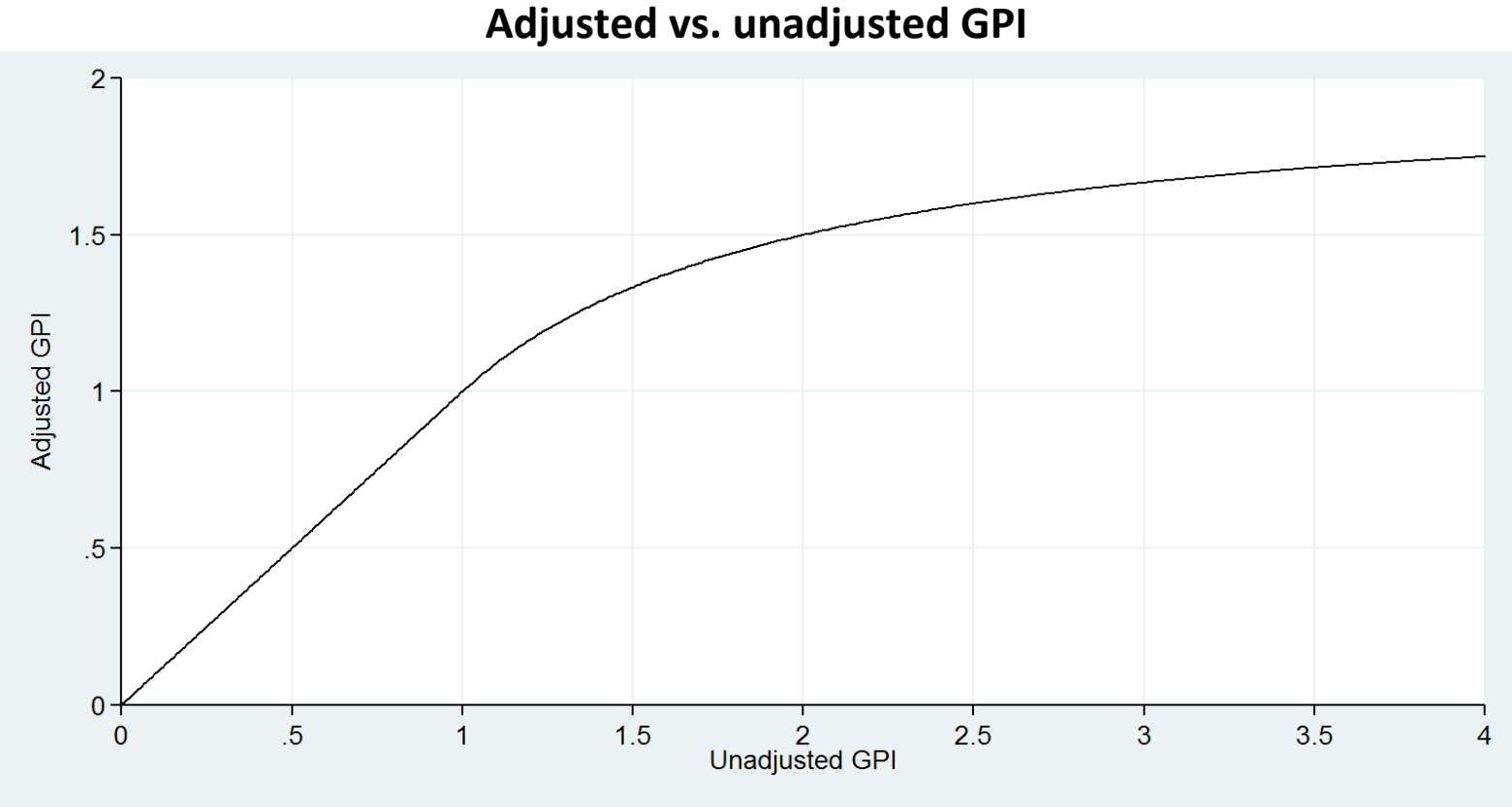
  } GPI = 80/100 = 0.8

  - Female NER = 100%
  - Male NER = 80%

  } GPI = 100/80 = 1.25
- **Solution:** modify calculation if female value > male value
  - Adjusted GPI = 2-1/(F/M) = 2-1/(100/80) = 1.2
  - 1.2 and 0.8 are same distance from 1
- Same principle can be applied to other parity indices (location, wealth, etc.)

Methodological challenge #2: Gender parity index (2/3)

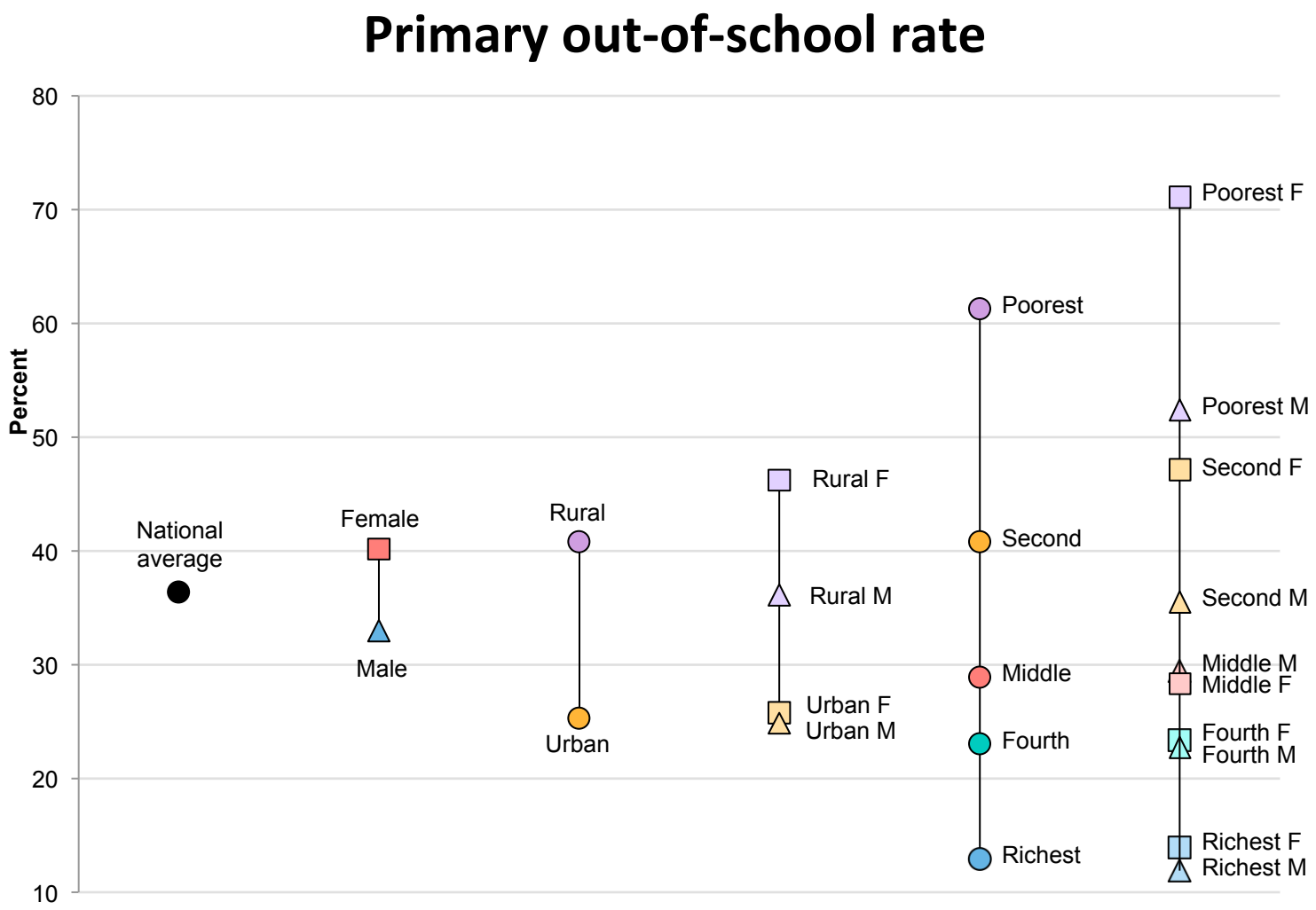
- Properties of adjusted GPI:
  - Theoretical range: 0 – 2
  - Symmetrical around 1
  - More accurate measure of gender (dis)parity



Methodological challenge #2: Gender parity index (3/3)

Source: UIS database, June 2016

Methodological challenge #3: Sample size (1/2)



Source: Pakistan DHS 2012-2013

Methodological challenge #3: Sample size (2/2)

- Survey data allows combination of sex with other dimensions to reveal marginalized groups
- But: number of observations per group decreases with increasing disaggregation
- **Example: completion rate** (indicator for SDG target 4.1: percentage of a cohort aged 3-5 years above the intended age for the last grade of a level of education who have completed that grade)
  - UIS calculated completion rate by sex, location, wealth quintile
  - Ca. 33,700 indicator estimates
  - Ca. 3,400 estimates (10% of total) calculated for groups with fewer than 25 unweighted observations (e.g. rural girls 14-16 years from poorest household quintile) → not disseminated by UIS
- **Solutions:**
  - Oversample small population groups
  - Agree on standard approach to treatment of data for small groups

Priorities for future work

- **Increase availability, coverage and quality of education data**
  - Explore new sources of data for monitoring of the SDGs
  - Assess options for use of more precise population estimates to improve consistency between enrolment and population data
- **Define and implement common standards for data analysis**
  - Develop new indicators and equity measures
  - Review existing indicators, revise if necessary (e.g. GPI)
  - Agree on and promote standard approaches to analysis of survey data, including treatment of small groups
  - Collaborate through inter-agency groups, e.g. TCG SDG4-ED2030 and the new Inter-Agency Group on Education Inequality Indicators (UIS, UNICEF, World Bank, others)
- **Promote dissemination and use of disaggregated data**
  - Improve and expand data portals, websites (e.g. UIS Data Centre)
  - Develop comprehensive monitoring frameworks and reference documents
  - Capacity building in countries on use of household survey data

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