

# Metadata for SDG indicator 4.3.3

Participation rate in technical and vocational  
programmes (15- to 24-year-olds), by sex

2025

## SDG 4 Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

### METADATA

#### 4.3 **By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university**

4.3.3 Participation rate in technical and vocational programmes (15- to 24-year-olds), by sex

##### **Definition**

Percentage of young people aged 15-24 years participating in technical or vocational education either in formal or non-formal (e.g. work-based, or other settings) education, on a given date or during a specified period.

##### **Purpose**

To show the level of participation of youth in technical and vocational education and training.

##### **Calculation method**

The number of young people aged 15-24 years participating in technical and vocational education at secondary, post-secondary non-tertiary or tertiary levels of education is expressed as a percentage of the population of the same age group.

$$PR_{V,15t24} = \frac{E_{V,15t24}}{P_{15t24}}$$

where:

$PR_{V,15t24}$  = participation rate of young people aged 15-24 years in technical and vocational education and training.

$E_{V,15t24}$  = enrolment in technical and vocational education and training of young people aged 15-24 years.

$P_{15t24}$  = population aged 15-24 years.

##### **Interpretation**

A high value indicates a large share of the 15 to 24-year-old population are participating in education and training designed specifically to lead to a job.

**Type of data source**

Administrative data, household surveys such as the Labour Force Survey (LFS), or a combination of both through modelling. The different sources will be reported separately.

**Disaggregation**

By age group and sex.

**Data required**

Numbers of participants aged 15-24 years in technical and vocational education and training (enrolled in formal TVET; Number of participants aged 15-24 years engaged in work-based, apprenticeship, and informal training (primarily estimated from Labor Force Survey (LFS) data) or that have completed in case that there is no participation information available; population estimates for the age group 15-24 years in case administrative data is utilized.

**Data sources**

Administrative data from schools and other places of education and training or household survey data on enrolment in technical and vocational programmes by single year of age; population censuses and surveys for population estimates for the age group 15-24 years (if using administrative data on enrolment).

To address gaps in non-formal TVET participation data, LFS estimates on Vocational Education and Training (VET) attainment—adjusted for time using regression-based adjustments, a Bayesian estimation approach, or a weighted combination method—can approximate past participation trends, as VET attainment is cumulative and reflects historical enrollment patterns. The optimal approach is a hybrid of the weighted combination and Bayesian estimation, as it dynamically adjusts weights based on data reliability.

The Technical Cooperation Group on the Indicators for SDG 4 - Education 2030 (TCG) has recommended a set of survey questions to collect data for SDG indicators 4.3.1, 4.3.3 and 4.6.3 (see <http://tcg.uis.unesco.org/wp-content/uploads/sites/4/2019/01/TCG5-REF-4-indicator-4.3.1.pdf>).

**Quality assurance**

The indicator should be calculated based on data on the given age-group participation in technical and vocational education and training from both public and private schools. The UIS maintains a global database used to produce this indicator.

**Limitations and comments**

Technical and vocational education and training can be offered in a variety of settings including schools and universities, workplace environments and others. Administrative data

often capture only provision in formal settings (such as schools and universities), leading to underreporting of work-based and informal training. Differences in data collection across countries affect comparability, and many non-formal TVET activities, like apprenticeships, go unrecorded. Labour Force Surveys (LFS) may suffer from recall bias and inconsistent definitions, while administrative data often exclude private providers. Reporting delays limit timely policy use, and Bayesian estimation relies on assumptions that, if flawed, may introduce bias. Additionally, age-specific disaggregation remains a challenge, requiring estimations that add uncertainty. However, combining administrative and LFS data provides a more comprehensive view of youth participation in TVET.

### **Annotated metadata points**

The indicator will be reported on separate lines, accompanied by metadata that describes the source type (e.g., administrative data, Labor Force data, Bayesian modeling) as well as the type of training, including formal, non-formal, and work-based learning (WBL).

### **Calculation method - Bayesian estimation approach**

To improve the reliability of the participation rate estimate, Bayesian inference dynamically adjusts administrative (ADM) and LFS estimates based on their relative uncertainty. The formula is given by:

$$PR_{V,15t24} = \frac{\left(\frac{E_{V,15t24}}{\sigma_E^2}\right) + \left(\frac{A_{V,15t24}}{\sigma_A^2}\right)}{\left(\frac{1}{\sigma_E^2}\right) + \left(\frac{1}{\sigma_A^2}\right)}$$

Where

$PR_{V,15t24}$  = participation rate of young people aged 15-24 years in technical and vocational education and training.

$E_{V,15t24}$  = enrolment rate in technical and vocational education and training.

$A_{A,15t24}$  = adjusted attainment-based VET participation rate estimates from LFS data (or VET participation rate estimates adjusted using attainment data from LFS).

$\sigma_E^2$  and  $\sigma_A^2$  represent the variance of administrative and LFS estimates respectively.

This method enhances data accuracy by reducing reliance on a single source, especially when one has high uncertainty. It effectively handles missing or incomplete data by adjusting the final estimate based on available information, ensuring a more comprehensive representation of TVET participation. Additionally, it dynamically accounts for data quality by assigning greater weight to the more reliable source, minimizing the impact of errors and inconsistencies.