International Standard Classification of Occupations 2008 (ISCO-08):
Recent developments and revision

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Senior Statistician, ILO Department of Statistics
Outline and objectives

Outline

- Overview of recent development and the progress of work on the revision of ISCO-08
- Major proposed approaches
- The modernization of ISCO & next steps

Objectives

- Share updates on the progress of work undertaken by the TWG
- Receive feedback on:
  - Relevance of the proposed approaches
  - Areas of potential improvements
  - Priorities and interest to support activities
Overview

• Recent developments
• Progress of work on the revision of ISCO-08
Recent developments

ISCO is widely adopted by most countries worldwide

Classification to code information on occupations (number of countries)

- ISCO-08 or NOC based on it, 101
- Previous version of ISCO or NOC aligned with it, 10
- ISCO-08/NOC different from ISCO, 14

From Survey on country practice review, ILO 2023 (n: 125)

We provided support on ISCO-08 to:
- Armenia, Eswatini, Iraq, Lebanon, Mauritius, Namibia, Qatar, Uganda, Ukraine and Viet Nam and others

New ISCO webpage

- Basic ‘search code function’
- Material in Excel

‘ISCO-08 companion guide’

- Systematic approach for ISCO-08 use and adaptation
- Examples based on countries practices

Source: Survey on country practice review, ILO 2023 (n: 125)
The case to revise ISCO-08 at the 20th ICLS in 2018

Discussions and recommendations

• Issues and technical recommendations (Room document N.19)
  • Basis of the current revision of ISCO
• Support and mandate to start the revision of ISCO-08, after the 20th ICLS
  • To be completed in time for the 2030 round of housing and population censuses
• Recommendation to establish a working group
Undertaking the revision of ISCO-08 following the 20th ICLS

Established the TWG, in June 2021

<table>
<thead>
<tr>
<th>REPRESENTING GOVERNMENTS</th>
<th>REPRESENTING THE EMPLOYERS</th>
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<tbody>
<tr>
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<td>Australian Chamber of Commerce and Industry</td>
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<td>Asociación de Azucareros de Guatemala</td>
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<td>Uruguay</td>
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<td>Viet Nam</td>
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**Sub working groups**

‘Improve the ISCO structure’ - chaired by Mexico

‘Improve ISCO group descriptions’ - chaired by Switzerland

‘The modernization of ISCO’ - chaired by New Zealand

Thank you for the support!
Undertaking the revision of ISCO-08 following the 20th ICLS

Undertook initial, but extensive consultations (several online meetings)

Identified and evaluated a considerable number of issues in ISCO-08, from various sources

Main types of issues in ISCO-08:
- Structure, group descriptions
- Skill model
- Align ISCO with recent standards
- The modernization of ISCO

Top-down approach: address structural concerns/issues, update ISCO structure and related concerns

Identified approaches to address many issues, but not all, as the work is in progress (may improve some)
Proposed approaches to address major skill-related issues in ISCO-08
Overview of the ISCO-08 skill model

ISCO-08 skill model

- Two dimensions of skill are used to arrange occupations into groups (classification criterion)
  - skill level and skill specialization
- Operational measurement of skill level, by considering one or more of:
  - the **nature of the work performed** in an occupation in relation to the characteristic tasks and duties defined for each ISCO-08 skill level;
  - the level of **formal education** defined in terms ISCED-97;
  - the amount of **informal on-the-job training and/or previous experience** in a related occupation required for competent performance of the tasks and duties in an occupation

<table>
<thead>
<tr>
<th>4 broad skill levels are defined and mainly applied at the level of major groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISCO-08 Skill levels</td>
</tr>
<tr>
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Major skill-related issues in ISCO-08

Major concerns/issues identified by users regarding skill levels

- Breadth of Skill Level 2/ Boundary between Skill Levels 2 and 3
- Measurement and application of skill level as a classification criterion
- Occupational groups that are not at the most appropriate skill level- ongoing
Breadth of Skill Level 2/ boundary between skill levels 2 and 3

The nature of the issue(s)

Skill Level 2: most problematic level, it incorporates a broad range of skill complexity

No systematic distinction between occupations requiring the completion of extensive, structured training/ VET and those requiring a short period of training

Problems with the boundary in skill level between the most skilled technical occupations of Major Group 7 and occupations of Major Group 3

• e.g., vehicle and aircraft maintenance or electrical, electronics and telecommunications installation and maintenance

Informal on-the-job training and experience broadly described
Reducing the breadth of Skill Level 2 / adjusting the boundary between Skill Levels 2 and 3

**Proposed approach**

- **Adjust the boundary** between Skill Levels 2 and 3 to reduce the breadth of Skill Level 2
  - Moving ISCED-11 Level 4 *Post-secondary non-tertiary education* from Skill Level 2 to Skill Level 3
  - Move occupations with high requirements to Skill Level 3 - To be identified by the TWG (in progress)

**Main improvements**

- No impact on Skill Levels 1 and 4 and associated MG
- Appropriate placement of categories
- Improve analysis (including mismatches) and the use of ISCO in various operations

<table>
<thead>
<tr>
<th>ISCO-08 Skill levels</th>
<th>ISCED-97 levels of education</th>
<th>Revised ISCO skill levels</th>
<th>ISCED-11 levels of education</th>
<th>Scope of change on ISCO skill levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>6 - Second stage of tertiary education</td>
<td>4</td>
<td>8 - Doctoral or equivalent</td>
<td>Unchanged</td>
</tr>
<tr>
<td></td>
<td>5a - First stage of tertiary education, 1st degree (medium duration)</td>
<td></td>
<td>7 - Master's or equivalent</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5b - First stage of tertiary education (short or medium duration)</td>
<td></td>
<td>6 - Bachelor's or equivalent</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>5b - First stage of tertiary education (short or medium duration)</td>
<td>3</td>
<td>5 - Short-cycle tertiary education</td>
<td>ISCED level 4 Post-secondary non-tertiary education is moved from ISCO Skill Level 2 to Skill Level 3.</td>
</tr>
<tr>
<td></td>
<td>4 - Post-secondary non-tertiary education</td>
<td></td>
<td>4 - Post-secondary non-tertiary education</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 - Upper secondary education</td>
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<td>3 - Upper secondary education</td>
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</tr>
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<td></td>
<td>2 - Lower secondary education</td>
<td></td>
<td>2 - Lower secondary education</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1 - Primary level of education</td>
<td>2</td>
<td>1 - Primary level of education</td>
<td>Unchanged</td>
</tr>
<tr>
<td></td>
<td>1 - Early childhood education</td>
<td></td>
<td>0 - Early childhood education</td>
<td></td>
</tr>
</tbody>
</table>
Measurement and application of skill level as a classification criterion

The nature of the issue(s)

- Dimensions, other than formal levels of education, are not identified as a possible requirement in themselves (such as experience, on-the-job training)
  - Do not contribute to the placement of categories within the framework of ISCO
- Some dimensions were broadly described (no typical requirements or measurement guidelines were provided)
- Responsibilities were not defined at each skill level

Examples of main limitations

- No appropriate placement and systematic treatment of some categories
  - Supervisors might require higher skills than workers supervised
  - Some supervisors are in MG3, some in MG5, etc
- No recognition of the administrative responsibilities for operators of small businesses
  - Their work involves the performance of some tasks of an administrative or managerial nature
- Main focus on formal education
  - Use of ISCED does not imply that the skills can be acquired only through formal education
Improving the measurement and application of skill levels as a classification criterion

The proposed approach (ongoing work, further refinement can be expected)

- Builds on ISCO-08, considers the recommendations of the 20th ICLS, country practices

- **Extend the measurement** of skill levels, reflects a more comprehensive approach that extends beyond formal education.
  - the boundaries between skill levels would be based on sets of criteria or dimension, in addition to the level of formal education

- The measurement of skill levels will be operationalized by considering one or more of the following:
  (mainly unchanged compared to ISCO-08)
  - the **nature of work performed** in an occupation, (unchanged)
  - the level of **formal education** required defined in terms of ISCED-11 (replace ISCED-97 by ISCED-11)
  - the **responsibilities** required (explicitly used)
  - the amount of previous **experience** (objectively defined using a duration)
  - and ‘**other forms of training/learning**’ (which the TWG is currently identifying)
## The skill level framework

Set of independent criteria, considered as a possible requirement in themselves

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Inclusion criteria for Skill level 1</th>
<th>Inclusion criteria for Skill level 2</th>
<th>Inclusion criteria for Skill level 3</th>
<th>Inclusion criteria for Skill level 4</th>
</tr>
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<tbody>
<tr>
<td><strong>Formal levels of education</strong></td>
<td>Up to primary education</td>
<td>Lower secondary education or Upper secondary education</td>
<td>Post-secondary non-tertiary education or Short-cycle tertiary education</td>
<td>Bachelor's or Master's or Doctoral or equivalent level</td>
</tr>
<tr>
<td><strong>Typical requirements using ISCED-11 levels</strong></td>
<td>Up to ISCED-11 level 1</td>
<td>ISCED-11 level 2 or level 3</td>
<td>ISCED-11 level 4 or level 5</td>
<td>ISCED-11 level 6 or level 7 or level 8</td>
</tr>
<tr>
<td><strong>Responsibilities</strong></td>
<td>No responsibilities are involved (none)</td>
<td>Not a significant component of the work</td>
<td>Moderate component of the work</td>
<td>Significant component of the work</td>
</tr>
<tr>
<td><strong>Typical requirements</strong></td>
<td>Not a requirement, most jobs are supervised by workers at other Skill levels. Occupations at this skill level require close and extensive guidance. They typically involve performing simple and routine tasks with minimal decision-making.</td>
<td>Relevant for some occupations when this involves carrying out the line or technical work with limited supervision of workers and/or overseeing of the day-to-day activities of a small business, but responsibilities are not a major component of the work. Occupations at this skill level typically involve a range of tasks that may require some degree of judgement.</td>
<td>Relevant for some occupations when this involves: - Supervision of staff when supervisors do not mainly perform the same tasks as the workers they supervise, or - Considerable safety responsibility Occupations at this level typically involve a variety of tasks that require independent decision-making.</td>
<td>Relevant for some occupations when management of an enterprise or organization or a department within an organization with a hierarchy of managers is the major or significant component of the work. - or when occupations typically involve complex tasks that require advanced skills, knowledge, and significant decision-making.</td>
</tr>
<tr>
<td><strong>Experience</strong></td>
<td>Little or no previous experience is required</td>
<td>Some previous relevant experience is required</td>
<td>Considerable previous relevant experience is required</td>
<td>Extensive previous relevant experience is required</td>
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<td><strong>Typical requirements</strong></td>
<td>Few days to a few months, when applicable</td>
<td>Less than 2 years in a related occupation, when applicable</td>
<td>Between 2 and less than 5 years in a related occupation from skill level 2, possibly in a related field, when applicable.</td>
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<td><strong>Other training/learning dimensions (To be identified)</strong></td>
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<td>Ongoing discussion within the TWG (example: may involve long-term or advanced levels of specialized training/learning provided after completion of secondary education, in some cases leading to a diploma, if any)</td>
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The skill level framework

• Criteria broadly described and measured using a typical requirement
  • Consider and progressively illustrate the corresponding levels of complexity and range of tasks and duties to be performed in an occupation at each skill level
  • Most common requirements necessary to obtain the relevant skills to enter and competently perform the role in a job
  • Comparable to minimum requirements established in NOCs and other sources

• Principles and guidance for implementation
  • To ensure a systematic treatment & maintain comparability of statistics, even when multiple dimensions can be used for inclusion, or when typical requirements are slightly different
  • Various sources of information for adaptation and use
    • No dedicated survey need to be designed
    • Collaboration between national stakeholders is key (NSO, Ministries, employers and workers organizations, professional and industry associations, etc)

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Improving the measurement and use of skill levels as a classification criterion

Main improvements

• Improved placement of categories (move to another major group for an appropriate skill level)
  
  • Move some categories to Skill Level 3, such as:
    • Supervisors when responsibilities form a significant part of their work, requiring higher skill levels
    • Some categories involving considerable safety responsibilities, longer (on-the-job or supervised practical training) requirements will be better reflected, e.g., police officers and firefighters
    • Some categories based on the ‘other forms of training/learning’ (e.g., apprenticeship) or post-secondary non-tertiary education requirements, e.g., aircraft engine mechanics and repairers and electrical mechanics and repairers.
  
  • Recognition of the additional administrative responsibilities (operators of small businesses) without having to move them all to SL3, etc. (under consideration within the TWG, boundary adjustment can be expected)
  
  • Improves the use of ISCO in various operations and analysis (including mismatches)
Align ISCO with recent statistical standards
Align ISCO with recent statistical standards

SMG 63 Subsistence Farmers, Fishers, Hunters and Gatherers was created in ISCO:

- absence of any other international statistical instrument to allow the measurement of subsistence activity,
- workers engaged in the production of goods for own or household consumption, including subsistence workers, were considered to be in employment according to the 13th ICLS standard

The 19th ICLS resolution I concerning statistics of work, employment and labour underutilization adopted five forms of work

Forms of work and the System of National Accounts 2008

- Restricts employment to any activity to produce goods and provide services for pay or profit and uses work activity to measure forms of work other than employment
- Market orientation distinction is now possible at the level of the forms of work, making such a distinction irrelevant at the level of any specific group in ISCO
- Questions the need for the ongoing identification of subsistence agriculture as a separate sub major group in ISCO,
- SMG 63 now irrelevant for employment
Align ISCO with recent statistical standards

Proposal

Align ISCO with relevant recent standards

- Not maintain market orientation in any category in ISCO, discontinue SMG 63 Subsistence Farmers, Fishers, Hunters and Gatherers and merge with SMG 61/62 as relevant (many tasks in common)

  - Market orientation distinction is now possible at the level of the forms of work (19th ICLS resolution)

  - Countries not adopting the 19th ICLS framework yet, can add a question to surveys asking whether or not production is mainly for sale or mainly for own or family/household use
Conclusions related to the proposed approaches

- Not deviating from the approach used in ISCO-08, builds and capitalizes on ISCO-08
- Improve many areas and reflect many of the recommendations of the 20\textsuperscript{th} ICLS
  - Maintain 4 skill levels, broadly defined
  - Maintain one skill level per major group
  - Primacy to skill levels over skill specialization
  - Alternative sets of criteria to be used as part of the measurement of skill levels
  - Discontinue SMG 63,
  - etc
- Similar approaches (varying details) were used in recently updated NOCs or similar frameworks
Approaches to other issues in ISCO-08

• Suggesting the use of definitions and improved terminology
  • Skill level framework
• Contributing to improving the measurement of mismatches (reducing breadth of SL2, introducing additional criteria in the measurement of skill levels, etc)
• Clarification of boundary issues
  • Major component of work in the case of managers, operators of small businesses and supervisors
• Addressing a number of categories or occupation-specific issues
  • Specialist Medical practitioner (a separate category for Surgeons)
  • Biomedical engineer (a separate category)
  • Vehicle and mechanics and accessory fitters (a separate category)
  • Home improvement installers (a separate category)
  • etc
The modernization of ISCO and future plans
The modernization of ISCO

Objectives

• Approaches and activities to improve various aspects of ISCO, including:
  • Maintaining ISCO relevant between major revisions
  • Improving ISCO presentation and dissemination
    • Establishing a research agenda on the future of ISCO (resolve outstanding and non-priority issues, rethink critical aspects of ISCO, anticipate change to the ISCO conceptual approach, rethink the future of ISCO, etc)
  • Long-term plans and are subject to discussion at the 21st ICLS, but
    • Concrete work was undertaken by the TWG or the office
    • Feedback and views from the ICLS are essential to guide this work
Maintain ISCO relevant between major revisions

The current practice

- Since ISCO-68, revision of ISCO in 20-year cycle, when mandated/ requested by the ICLS

Main advantages

- Classification stability over time
- Requires fewer resources for implementation and adaptation at the national level

Main limitations

- Does not support incorporating updates (NEO)
- Long frame (various changes can take place, at faster pace)
- A lack of systematic and comprehensive guidance on managing these changes
- Not aligned with (similar) practices (national, regional levels)

Main consequences

- ISCO is not relevant and not reflective of the labour market
- Aspects of ISCO become outdated and lose relevance
- Different solutions across countries
  - Example, the case of Youtuber
  - International comparability of statistics?
Maintain ISCO relevant between major revisions

Periodic targeted ISCO updates or maintenance

- Non-structural changes
  - Will not alter the groups at aggregate levels, they remain stable until the next major revision (structural changes, revision of skills, conceptual approach, boundaries, etc)

- Focus on areas where changes are essential for the proper use of the classification:
  - Incorporating NEO
  - Guidance on how to treat these
  - Updating/ drafting related group descriptions
  - Updating the Index of occupational titles, etc

<table>
<thead>
<tr>
<th>ISCO code</th>
<th>ISCO Unit group title</th>
<th>Status</th>
<th>Type of change</th>
<th>Date of change</th>
</tr>
</thead>
<tbody>
<tr>
<td>2120</td>
<td>Mathematicians, Actuaries and Statisticians</td>
<td>Existing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>212X</td>
<td>Data Scientist</td>
<td>New entry</td>
<td>New Unit Group</td>
<td>XXX</td>
</tr>
</tbody>
</table>

ISCO- XX V 1.0.0 Versioning protocol

- Group description, guidance, etc
- Index
- Crosswalk with ISCO-08
Maintain ISCO relevant between major revisions

Key requirements of the successful maintenance and targeted updates of ISCO

Periodicity and type of modifications

- Structured proposal for discussions at the 22nd ICLS (type and nature of change, modalities, considering country practices)

Governance arrangements

- Feedback mechanism
- Establish an advisory committee to co-chair & collaboratively undertake the task, decision-making and advice on areas of improvements in ISCO

Essential data sources to update ISCO

- In addition to current available sources
- Explore avenues of using new data sources and technologies

Versioning protocol of ISCO

- Clear and transparent understanding of the updates
- ILO constituents anticipate and plan for necessary modifications

Availability of resources

- Collaborations and partnerships

SIDE EVENT OCTOBER 18th

- PoC on the feasibility of updating ISCO by leveraging AI and new data sources from OJA

- Pilot tests for sustainable industry solutions: leveraging advanced AI technologies (ChatGPT and Azure ML Cloud)

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Versioning protocol of ISCO

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Availability of resources

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Enhanced ISCO presentation and dissemination

• Categories in ISCO are organized on the basis of skill levels first, and then on skill specialization
  • E.g. agriculture related groups are not only in Major Group 6; health-related groups are found in several major groups, etc.

Proposal: Developing job families or thematic views

• Group together categories in a thematic view or job cluster/family regardless of skill levels or their current organization in the framework of ISCO
  • Example: science, technology, engineering, and math (STEM) occupations, health occupations, tourism occupations, ICT occupations, agriculture occupations, etc
  • Demand on grouping together occupations on certain topics (policy needs, including planning and analysis, coding)

• Future work, but TWG needs proposals from users on the topics of interest and (methodological) proposals on grouping categories together
Key milestones and next steps
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Technical Working Group Meetings (depending on the availability of resources: mixed mode: online + in person)

- **2023-2025**
  - Address major outstanding issues
  - Develop an updated structure of ISCO (Incorporate NEO, improve structure, address group specific issues, etc)

- **2026-2027**
  - Update/ develop group descriptions, scope
  - Global/ essential consultations (draft structure, approaches & major proposed modifications) and group descriptions, etc
  - Analyse and incorporate feedback

- **ICLS**
  - Revised ISCO Documentation Meetings

- **Implementation**
  - Modernization activities
  - Guidance for implementation
  - Capacity building and training to ILO constituents

- **Necessary meetings**

- **Develop necessary methodological material (conceptual approach, changes, Index, crosswalk)**
Thank you!

- Extend our appreciation to members of the TWG for their continuous support and dedication
- Thanks to ILO colleagues who supported the revision of ISCO-08