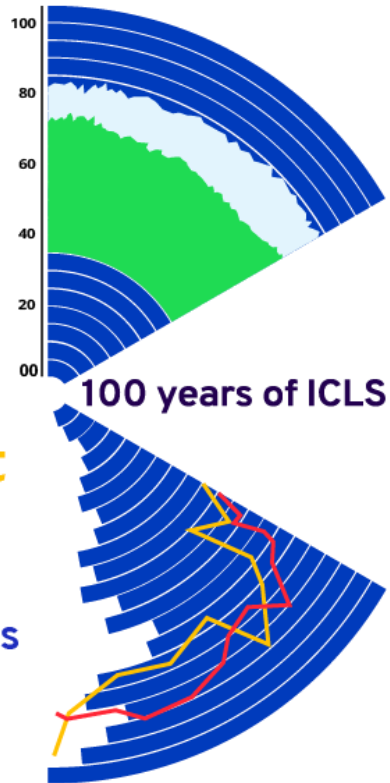




International
Conference of
Labour Statisticians
11-20 October 2023



Updating occupational classifications using machine learning:

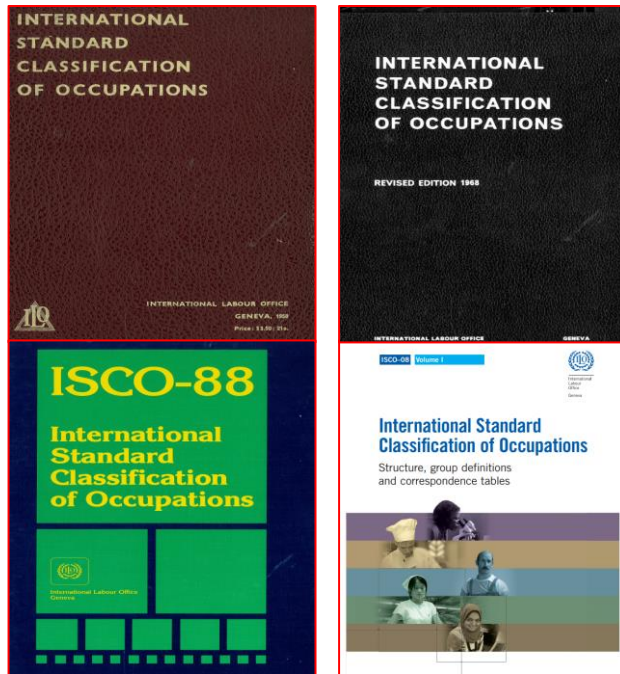
Context and the modernization of ISCO

Lara BADRE
Senior Statistician, ILO Department of Statistics

► ISCO revision: the current practice

Conducted in a 20-year cycle since ISCO-68

- Requested/ Mandated by the ICLS
- Facilitated by the office with the assistance of a working group



- The current revision of ISCO follows the same practice
 - Requested by the 20th ICLS, to be completed on time for 2030 round of housing and population censuses
 - TWG: Governments, employers, workers and observers
 - Information and data sources used in revising ISCO
 - TWG: advice, experience and proposals for improvement,
 - Recently updated NOCs,
 - Literature review, analysis of available information/ data,
 - Ad-hoc consultations with experts and working groups,
 - Etc,

► ISCO revision: the current practice

- **Strength, such as:**

- Stability of the classification over a long period of time (less break in series)
- Requires less resources for implementation/adaptation at national level
- Input from the TWG (various countries, regions of the world, different labour markets, etc)

- **Limitations, such as:**

- No maintenance is undertaken between major consecutive revisions
- No (systematic) guidance is provided to users e.g., how to treat new and emerging occupations
- (Re) source dependent
- Lengthy process

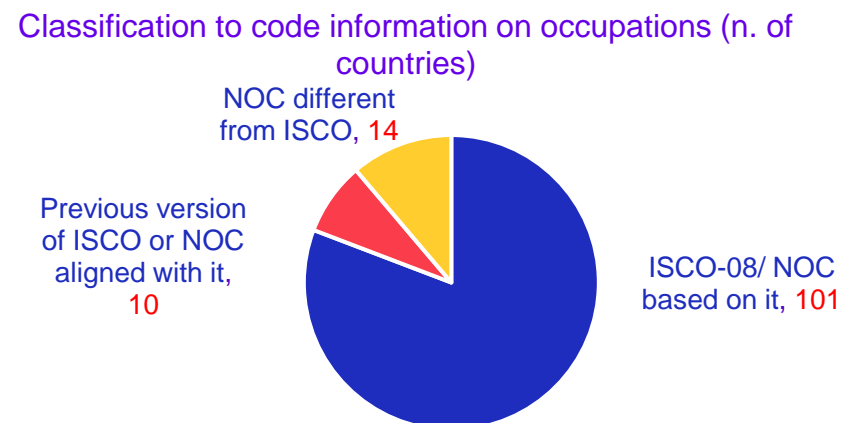
ISCO revision: consequences of the current practice

- No systematic treatment: Countries identify different solutions

Country	ISCO code used by countries to code <i>Youtuber</i>
Country 1	Coded within 2513 Web and Multimedia Developers
Country 2	Coded within 2432 Public Relations Professionals
Country 3	Coded within 2641 Authors and Related Writers
Country 4	Coded within a different group within major group 3

Based on information collected during initial consultations within the TWG

- Hamper international comparability of statistics on occupations, impact on many countries



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

- Questioning the relevance of this practice and some aspects of ISCO, in light of the:



Major transformation in the world of work



Emergence of new occupations



Rapid technological change



Recent practices



Artificial Intelligence (AI)



Data availability

The modernization of ISCO

Targeted periodic updates and maintenance

- Adopting a pro-active ISCO maintenance process
 - Aiming at:
 - incorporating NEO,
 - Improving/ developing group descriptions (typical tasks),
 - providing systematic guidance to ILO constituents
 - Between major revisions (long term)



Impact

- Relevance of the classification
- Mirror the reality of the labour market
- Maintain international comparability of statistics on occupations
- Contribute to improving analysis and policy-making based on ISCO (statistics on occupations, labour migration, etc.)
- Assist countries in planning and anticipating changes
- Synchronized revision cycles

Long term major revision

- Requiring structural changes, i.e., conceptual framework, core principle, boundaries between groups or skill levels, etc



**Strong support and
interest by delegates**

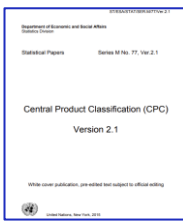
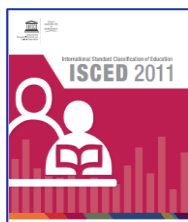
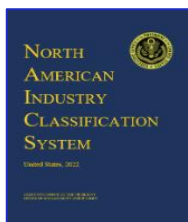
Practices worldwide

Country level

- Different revision practices are observed across countries
 - Short-term: Evergreen process (yearly update), e.g., Canada NOC
 - Mid/ long-term (5-10 years), e.g., Singapore SSOC, UK SOC, US SOC, Korea SOC, etc.
 - Follow the ISCO revision cycle

Regional/ International levels (other classifications)

- Many are (or will be) updated more frequently, such as



ILO Survey of country practice review, in preparation for the 21st ICLS

Any process in place to adapt/ revise your NOC? (n: 126)

36.4%

Yes



43.2%

No

20.3%

Not applicable

72.1% (or 31 countries)

Have a future plans to revise/update the NOC? (n: 31)

•year known?

Year/ time frame	Number of countries
Started	5
2023	4
2024	7
2025	3
2026	2
2028	2
5-year plan	1
Following ISCO revision	3
Not defined	2
On necessity	2

► The modernization of ISCO

Information and data sources used in revising ISCO

- Recently updated NOCs: a challenge?

Explore additional sources and methods to maintain ISCO updated in the future?

- Opportunities: technological advancement in availability of data from various sources

Proposed approach for the modernization of the current process

- Leveraging new technologies and various data sources
 - To complement existing sources of information

How?

- Proof of Concept (PoC): Feasibility study on identifying NEO candidates using data from OJA to support the future ISCO revision



- Pilot tests for sustainable industry solutions: leveraging advanced AI technologies such as ChatGPT and Azure ML Cloud, and coupling with new data acquired through collaborations with the private sector, by the office

▶ Practices worldwide

The use of Machine Learning/ data from OJA in Occupational Classifications, few examples:

Updating/ maintaining occupation classification (of features of it, such as skills)

- Chile (dedicated presentation on the topic by David Niculcar- INE)
- ESCO : The use of artificial intelligence in updating the ESCO ,using ML and OJA

Use of OJA in similar or related activities

- ILO work on skills using OJA in anticipating and matching skills needs
- UNESCWA Job/ skills monitor

► **Thank you**

