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Innovative Approach to Measuring Skill Shortages: Insights from the Chilean Labour Market

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1. Labour market through online data

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Most research have access only on online job advertisements (demand side)

This study also used jobseeker CVs from the same platforms—capturing both sides of the market

The goal then was to explore deeper patterns related to the skill shortage problem

2. Skill Shortage Tracking Challenges

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What is a skill shortage?

A skill shortage arises when the demand for workers with specific skills exceeds the available supply at a particular wage level, location, and point in time (Eurofound, 2021)

Why is it hard to measure?

The concept is complex and multi-dimensional

2. Skill Shortage Tracking Challenges

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Limitations of traditional methods:

Labour surveys rely on employer perceptions → risk of bias.

Surveys are not conducted frequently enough → limited responsiveness.

Why this matters:

Without early detection, shortages intensify over time.

Once shortages are visible, corrective action is slow, costly, and less effective.

3. Proposed methodological approach

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1. Detecting and removing duplicates	• Removing multiple job ads for the same vacancy
2. Coded data into 4-digit ISCO-08 occupations	• Through custom-built code tailored to the Chilean labour market
3. Pre-processed data to extract key information	• Developed multiple information extractors using: text mining, machine learning, and LLMs. • Generated structured variables from unstructured text.
4. Built occupaciontal indicators for single features	• New variables enable analysis of location, wages (offered/expected), requirements consistency, type of skill in demand, previous work experiences, among others
5. Combined indicators into a composite index of skill shortages	• Aggregated indicator: higher scores reflect stronger skill shortage signals in the occupation

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4. Key findings from the index

Chilean data 2017-2020

4. Key findings from the index

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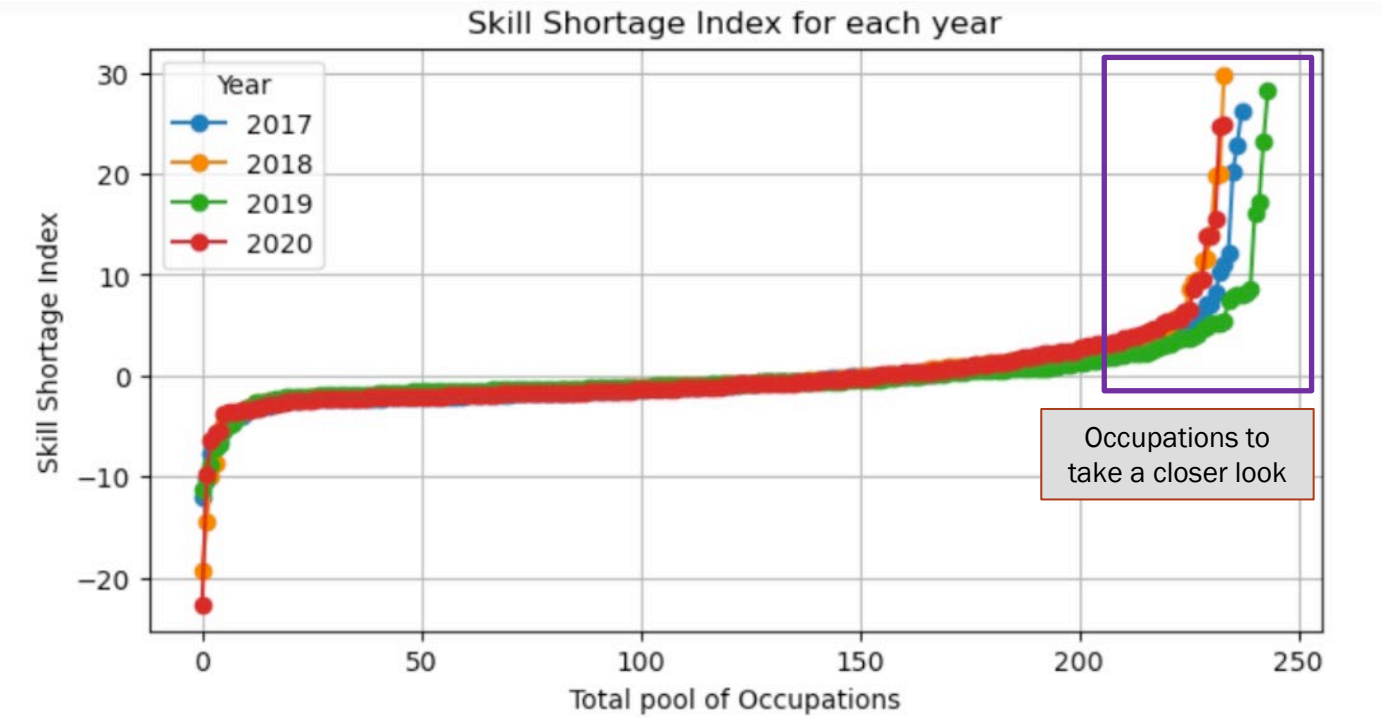
- Consistent results across four years (2017–2020).
- Only ~20 occupations per year show high skill shortage signals
- Intuitively, it makes sense that only a small margin of all occupations show signs of skill shortage.



4. Key findings from the index

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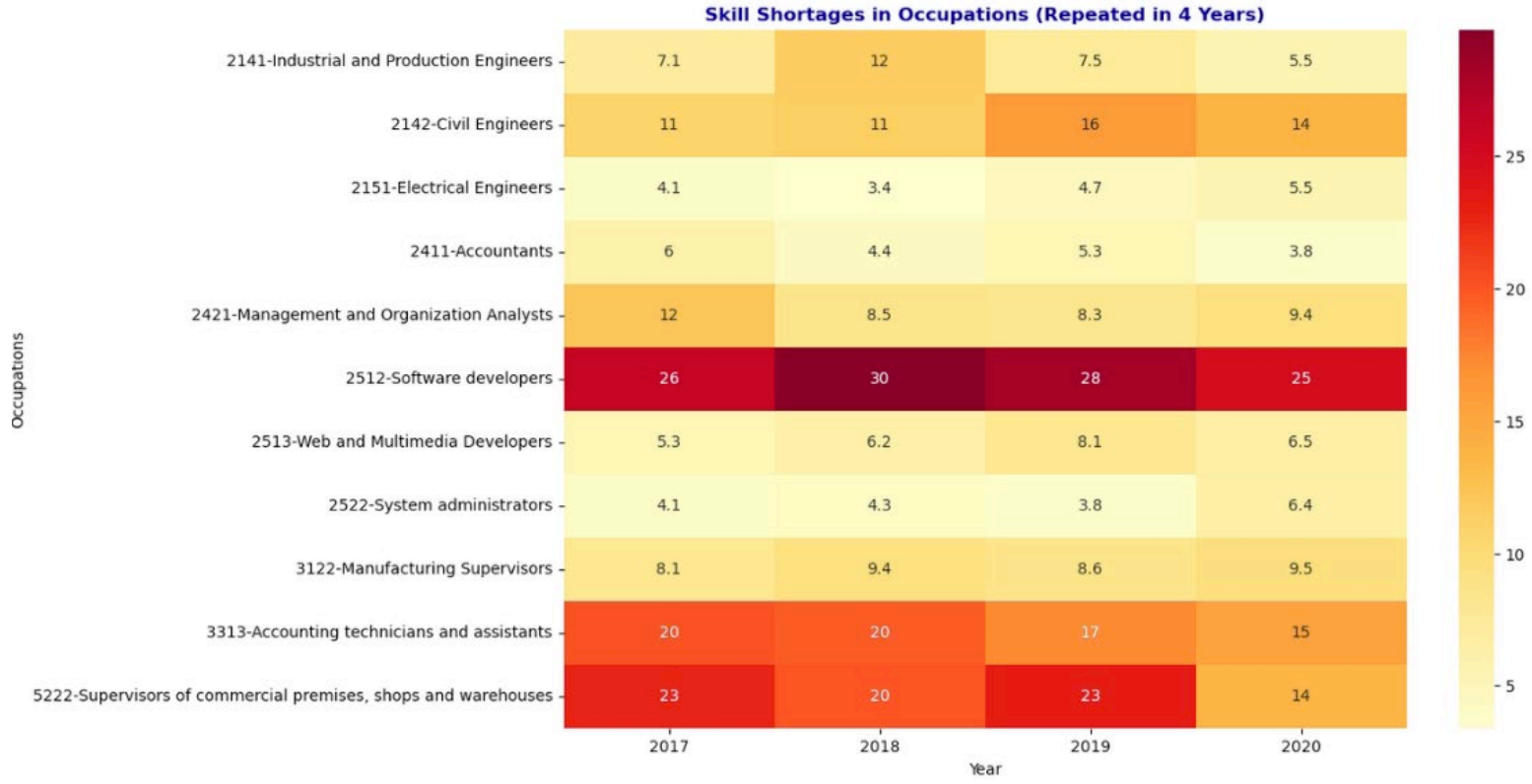
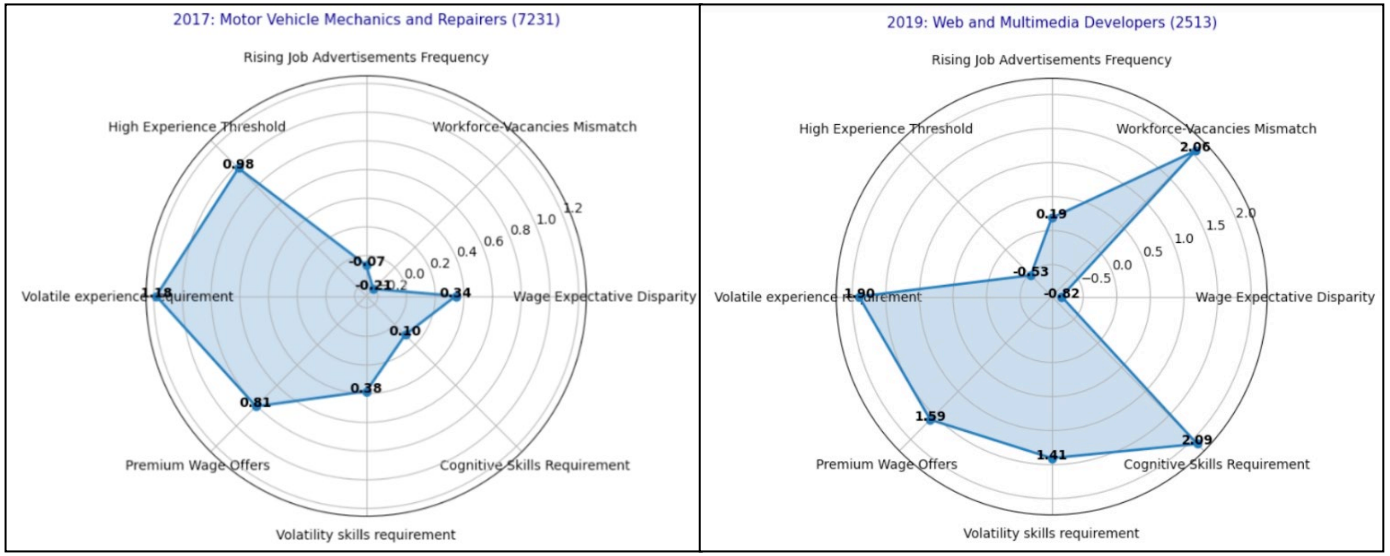
- Two types of skill shortages identified:
  - **Temporal skill shortages**: present in 1 or 2 years.
  - **Structural skill shortages**: persist across 3–4 years.



4. Key findings from the index

- The index allows granular analysis:
  - Disaggregate by indicator to understand which variables drive the score for each occupation.



- This enables a more targeted response—identifying not only where shortages exist, but also what type of intervention might be needed.

5. Granular mapping of skills

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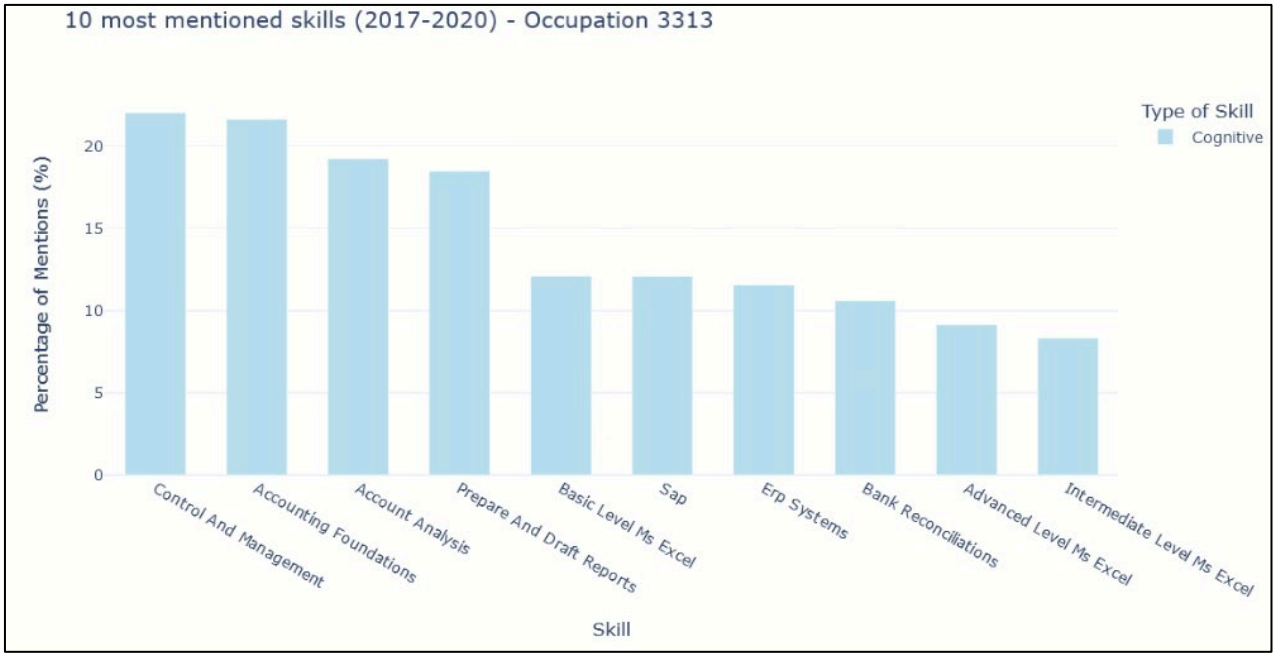
- Automated extraction of in-demand skills from job advertisements.
- Identifies skills most required by employers
- Example – Accounting Technicians:
  - Control and management skills⟶ mentioned in 24% of job postings
  - Knowledge on Ms Excel (basic) ⟶ mentioned in 13% of job postings

- These insights could inform targeted training, reskilling policies.



6. Conclusions

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Methodological Contributions:
Introduces a novel, data-driven approach to measuring skill shortages
The methodology complements, rather than replaces, traditional survey-based approaches
Enables early-warning systems to detect emerging skill shortages
Scalable and transferable to other labour markets
Incorporates the online supply side (jobseekers), less studied at scale due to limited access

Limitation – jobseeker data:
CVs offer valuable insights, but often lack explicit skill descriptions, limiting precision

Policy Relevance:
Supports evidence-based workforce planning and upskilling strategies
Enables policymakers to target interventions by occupation and skill
Offers a flexible framework to monitor both persistent and emerging skill shortage patterns

For more information

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