SURVEY FUTURES

SURVEY DATA COLLECTION METHODS COLLABORATION

Occupation Coding in Online Self-Completion Surveys: Evidence, Practice and Challenges

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Background

- Occupation is a core measurement in social surveys:
  - Indicator of socio-economic status
  - Strongly linked to income, health, and lifestyle
- Traditional Measurement Approach:
  1. **Interviewers** asking **open questions** to collect job title and a description of duties (Lyberg & Dean, 1992)
  2. **Interviewers** ensure the necessary information is provided (Conrad et al., 2016)
  3. **Software assisted** manual coding by specialist **office-based coders** to a **standard classification** (e.g., SOC 2020)

Background

- Methodological challenges:
  - Job titles/ descriptions are highly diverse
  - Same job may be described in multiple ways
  - In **self-completion surveys**, the absence of interviewers can have a negative impact on the quality of the collected data for coding (Conrad et al., 2016)
- Ongoing research aims to improve validity and reliability of occupation coding in surveys

Survey Futures Evidence Review

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Report 3: Occupation coding in self-completion surveys: Evidence Review

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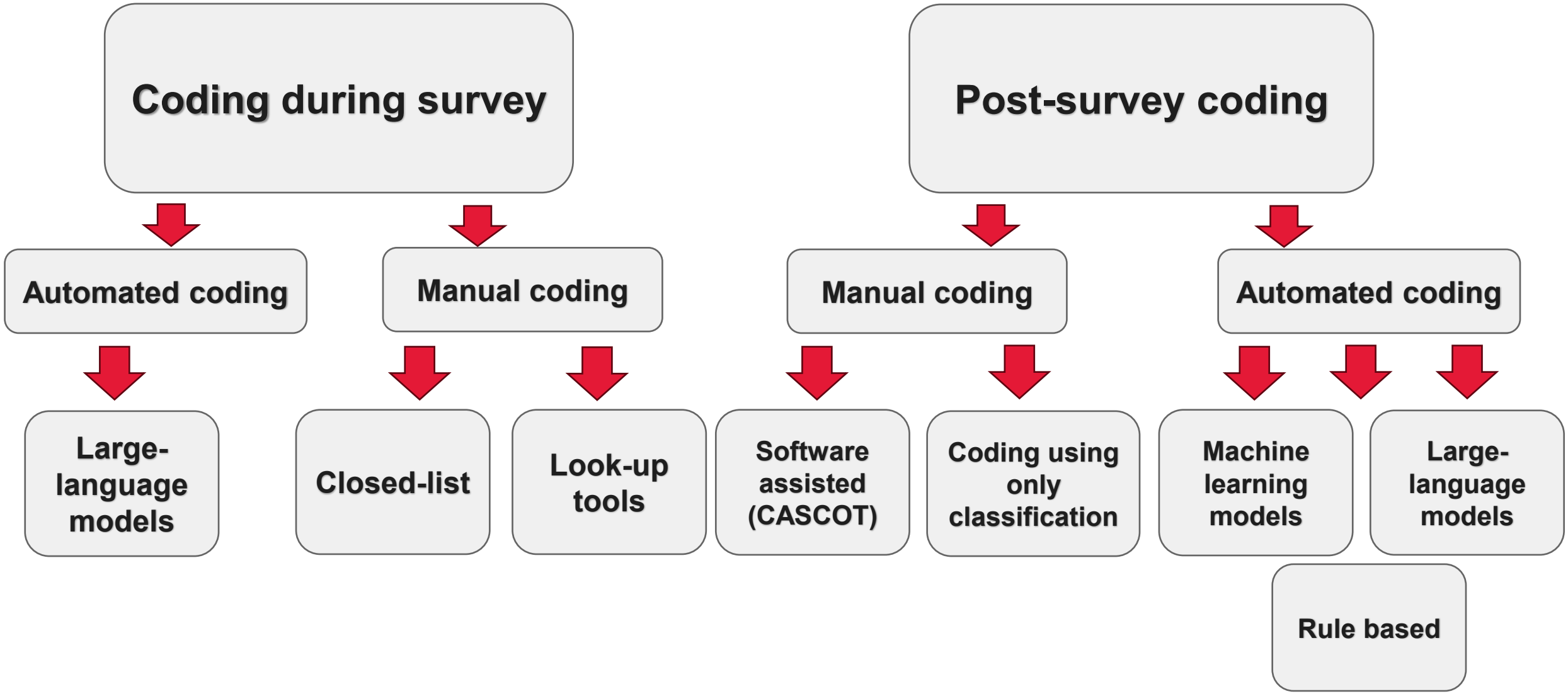
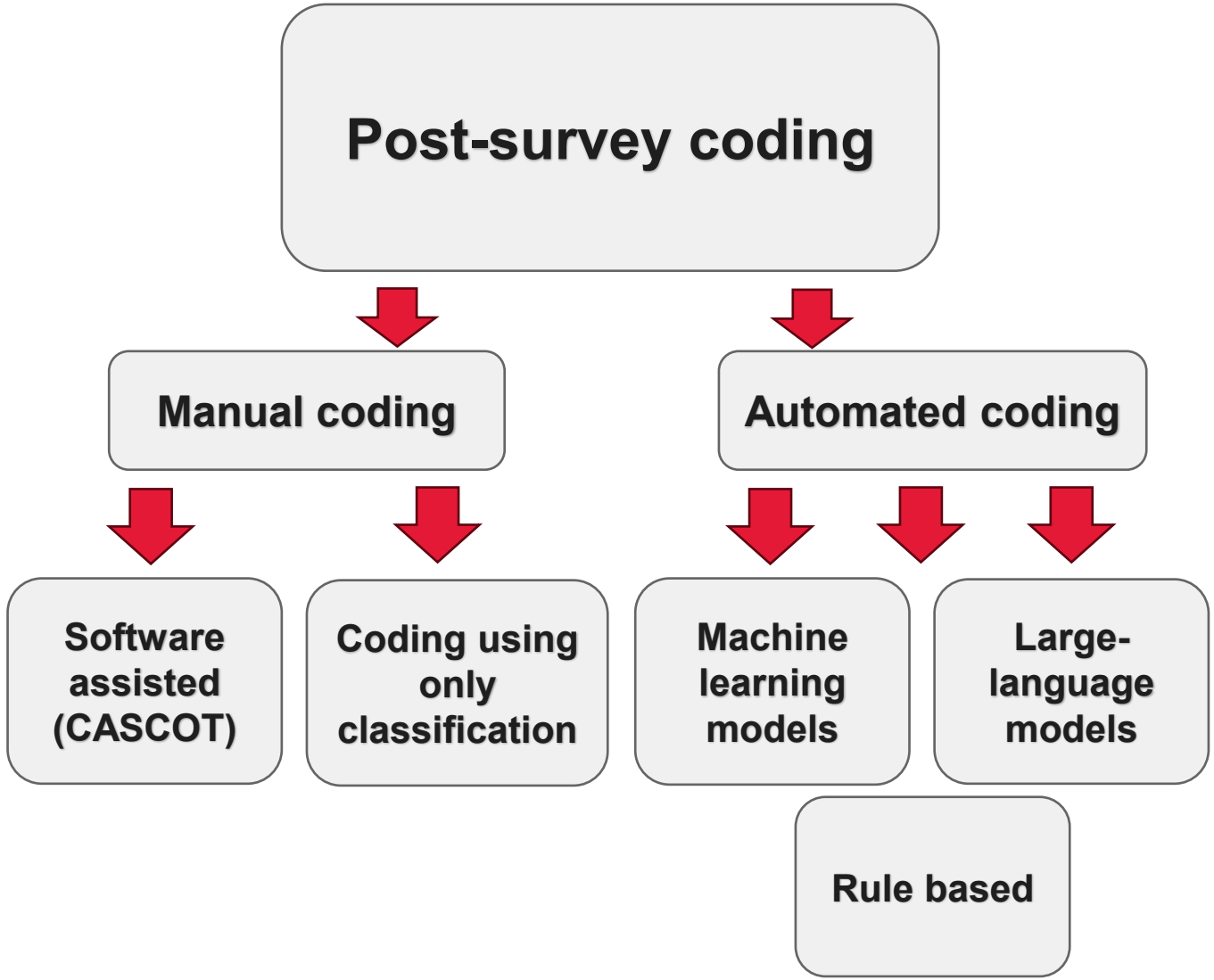
Coding Approaches



Coding Approaches



Post-Survey Coding:
Manual Coding of Open Text

1. Respondent enters job title and duties
2. Professional coders assign SOC code with help of software (CASCOT)

Benefits

✓High coding success

✓High intercoder-reliability

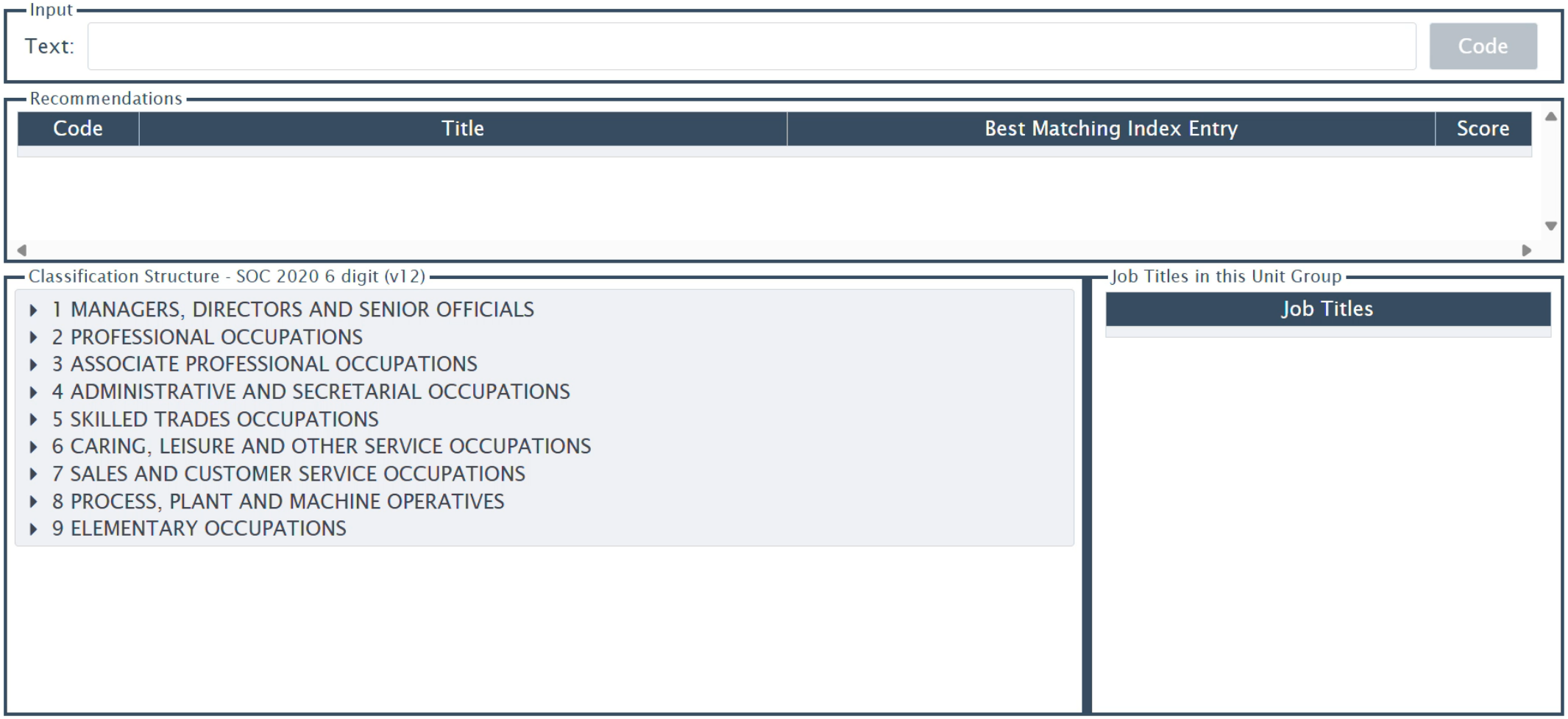
✓Comparatively high coding consistency over time

Key limitations

×Time-consuming and labour-intensive

×Expensive for large surveys

CASCOT Assisted Office Coding



Post-Survey Coding:
Manual Coding of Open Text

Examples from UK surveys

- Understanding Society
- National Child Development Study (NCDS)
- 1970 British Cohort Study (BCS70)
- European Social Survey (ESS)

Post-Survey Coding:
Automated Coding

Rule-based	Machine Learning
Expert-defined rules	Learns from data
Matches keywords and phrases	Predicts occupation codes
Transparent process	More flexible and scalable

Key challenge

- Higher accuracy ↔ Higher coding rate
- Not yet widely adopted as evidence suggests they are not as accurate as manual coding (Gweon et al., 2017).

Post-Survey Coding:
Automated Coding

Examples

- SOCcer (United States)
- 2021 Census (England & Wales)
- Transformed Labour Force Survey (TLFS)

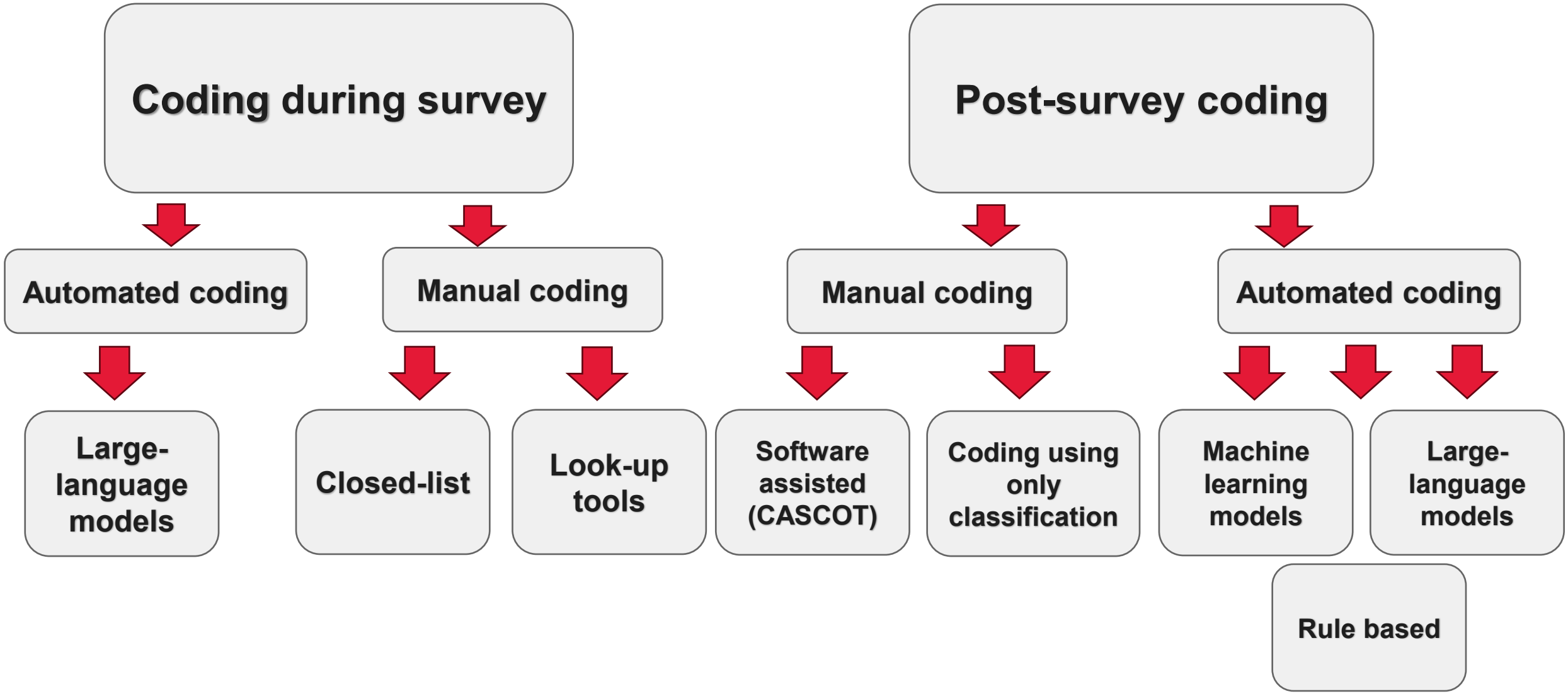
Post-Survey Coding:
Automated Coding: Large Language Models

- Traditional machine learning approaches require large amounts of manually coded training data
- LLMs may offer alternative where training data is limited

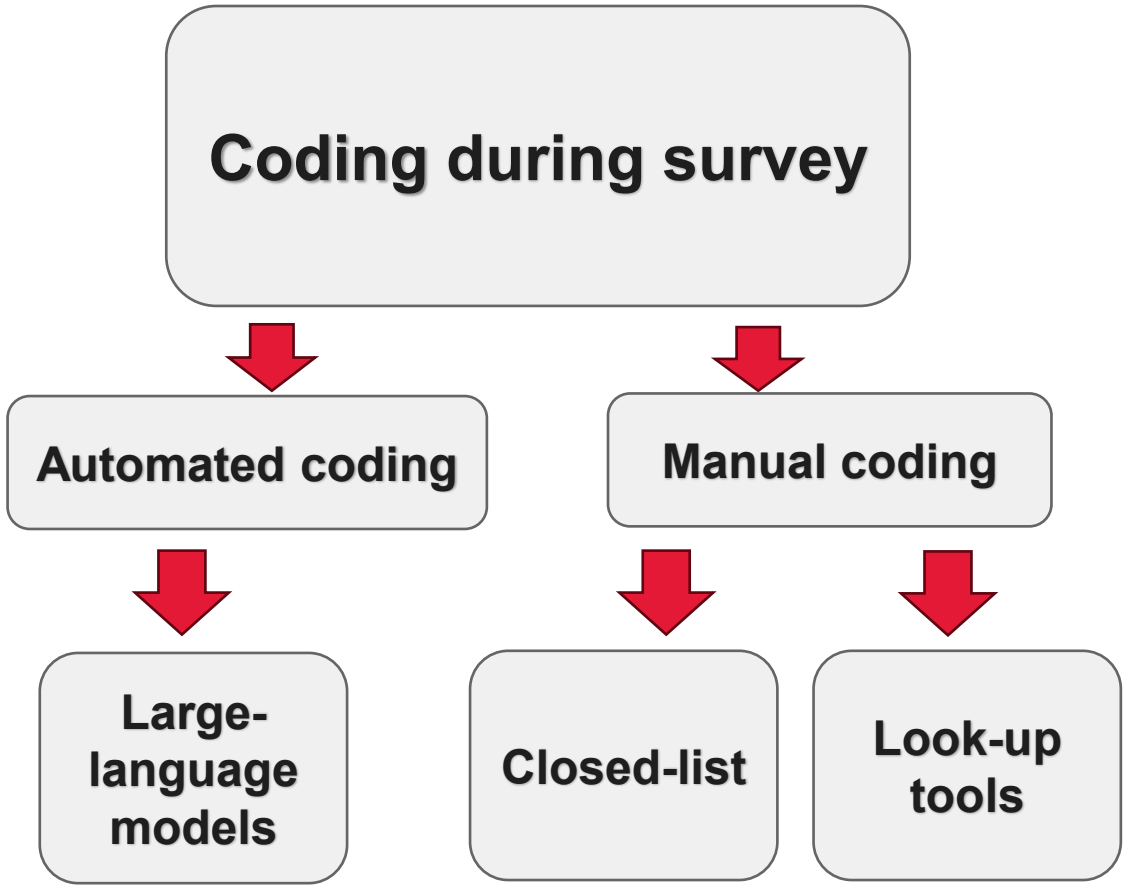
Example approach (Kononykhina & Schierholz, 2026)

- Create embeddings (numerical representations of text) for standard occupational descriptions
- Convert respondents' free-text job descriptions into embeddings
- Calculate **cosine similarity** between respondent descriptions and occupation descriptions
- Return the most likely occupation codes

Coding Approaches



Coding Approaches



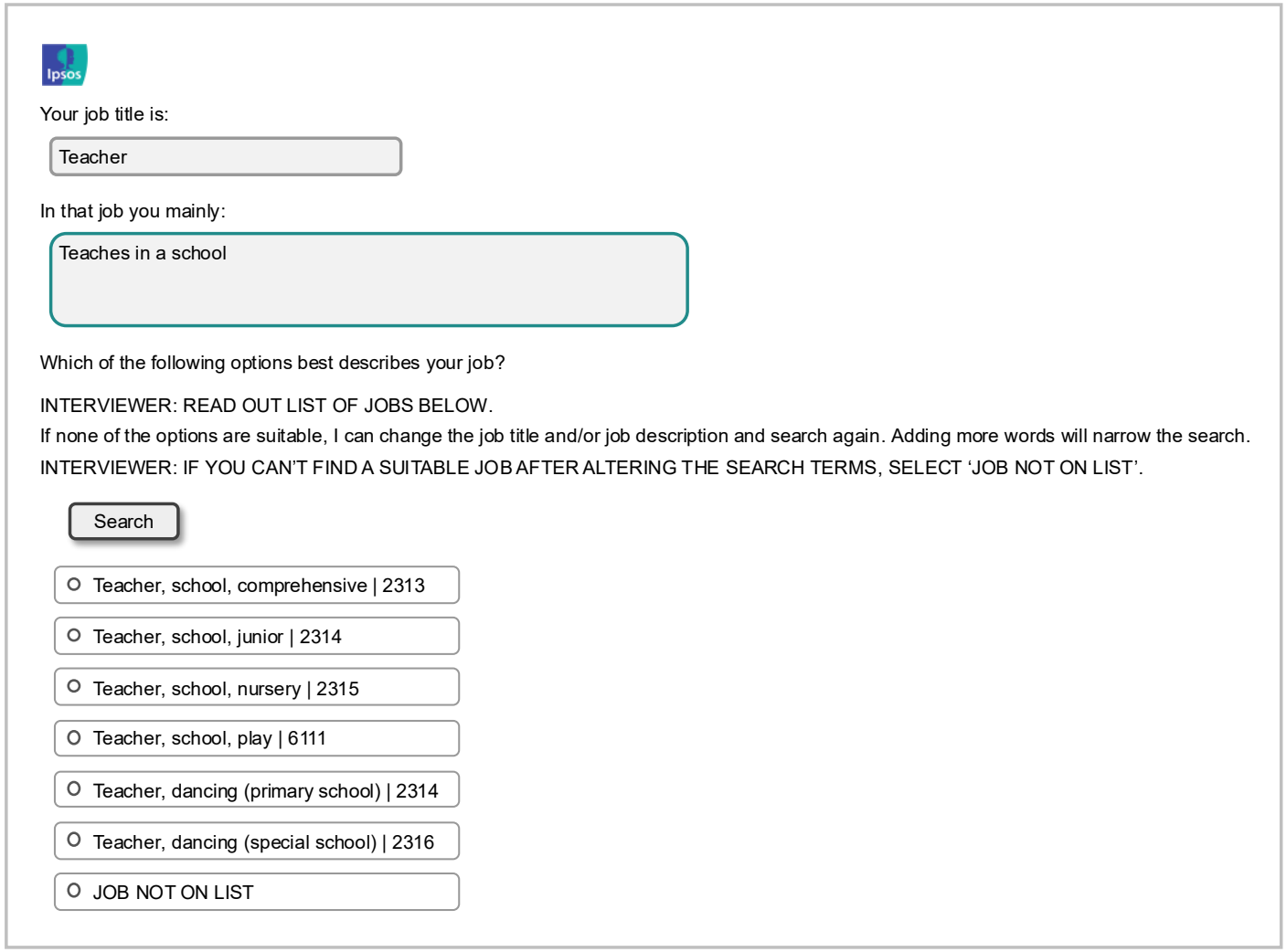
Coding During Survey:
Manual Coding: Look-Up Tool

Approach:

1. Respondents first provide a free-text description of their job
2. A system automatically generates a list of possible occupation codes or categories
3. The respondent (or interviewer) selects the best match from the list

- Coding responsibility shifts from expert coders to participants
- Promises fast and cost-efficient data

Look-Up Approach



Evidence on a Look-Up Tool

Next Steps Age 32 and mode experiment (Kocar et al. 2026; Koerber et al., 2026)

Strengths

✓ High coding success rates (around 80–90% of respondents selected a code)

✓ Respondents generally reported that the selected occupation matched their job

✓ Performed mostly similarly across web and interviewer-administered modes

Challenges

✗ Only moderate agreement with office-coded occupations (around 65%)

✗ Moderate stability over time: only around 60% selected the same occupation code when re-interviewed two weeks later

Coding During Survey:
Manual Coding: Closed-List Approach

Approach:

- Respondents choose their industry and occupation from **pre-defined categories**
- Closed-list questions are frequently used across surveys that only require higher-level classifications of industries and jobs
- A challenge is that category labels can be difficult to interpret for respondents

Closed-List Approach: Industry

Section	Industry
A	Agriculture, forestry and fishing
B	Mining and quarrying
C	Manufacturing
D	Electricity, gas, steam & air conditioning
E	Water supply, sewerage and waste management
F	Construction
G	Trade (retail sales and wholesales) and vehicle repair
H	Transportation and storage
I	Accommodation and food service
J	Information and communication

Section	Industry
K	Finance and insurance
L	Real estate
M	Professional, scientific and technical
N	Administrative and support services
O	Public administration and defence
P	Education
Q	Human health and social work
R	Arts, entertainment and recreation
S	Other service activities
T	Employed by a household as domestic staff
U	International organisations and bodies

Evidence on a Closed-List Approach

NatCen Panel Survey (UK) (Domarchi et al., 2026)

Main findings:

- Agreement between respondent-selected categories and professional coding was moderate
- Accuracy varied across different industry groups
- Some respondents appeared to interpret categories differently from professional coders
- Approach is unlikely to be suitable if high degree of accuracy is required

Coding During Survey:
Automated Coding: Emerging AI Approaches

Approach:

- Large Language Models (LLMs) assign occupation codes in real time during the survey
- Generate follow-up questions when information is incomplete or ambiguous

Potential advantages

✓ Reduced costs and faster data

✓ Lower respondent burden

✓ Potentially higher coding accuracy through interactive questioning

Examples

- **SOCBot** (LSE; Sturgis et al., 2026)
- **SurveyAssist** (ONS)

Summary and Conclusion

- **Traditional office coding** remains effective, but its status as the “gold standard” is challenged by variation across organisations and collection modes
- **Look-up tools show potential but require further development** to improve usability and better reflect the language respondents use to describe their jobs and industries
- **Closed-list approaches reduce burden and costs**, but respondents often struggle to identify with higher-level classification categories, potentially reducing coding accuracy and detail
- **Respondent experience is critical**: many respondents find it difficult to map their occupation or industry to formal classification systems
- **Large Language Models (LLMs)** offer promising new possibilities for post survey coding of open text as well as real-time coding during the survey, but further validation and testing are needed before widespread adoption

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Thank you for your attention!

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