O*NET: A Source of Information for Measurement of Socioeconomic Status?

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Discussion Topics

What is O*NET?

National Research Council Study

O*NET Strengths and Weaknesses as a Source of Socioeconomic Data

Selected Uses of O*NET Data for Socioeconomic Analysis

What is the Occupational Information Network (O*NET)?

Launched in 1998 by DoL to replace the Dictionary of Occupational Titles

Provides information about occupation and worker characteristics for a variety of purposes

- Career guidance
- Reemployment
- Counseling
- Workforce development
- Research

Two components

- Content model – frame work for occupational data
- Searchable electronic data base
  - www.onetonline.org

Content Model

Data Collection

Continuing data collection program populates and maintains the O*NET database.

Data collected by the National Center for O*NET Development, through its contractor Research Triangle Institute

Information is collected using a two-stage design in which:

-- a statistically random sample of businesses expected to employ workers in the targeted occupations are identified and

-- a random sample of workers in those occupations within those businesses is selected and administered one of four standardized questionnaires.

Data Collection

Several hundred rating scales are provided, based on responses by the sampled workers on the O*NET questionnaires.

Four questionnaires, each containing a different set of questions. Sampled job incumbents for each occupation are randomly assigned one of the four questionnaires.

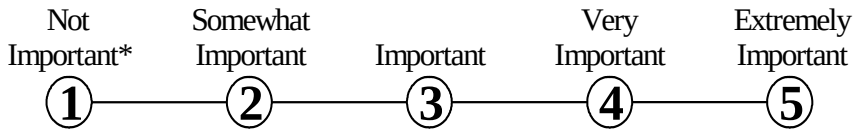
All respondents are also asked to complete a task questionnaire and provide some general demographic information.

A fifth questionnaire, focusing on Abilities, is completed by occupational analysts (SMEs) using the updated information from incumbent workers.

Sample Questions

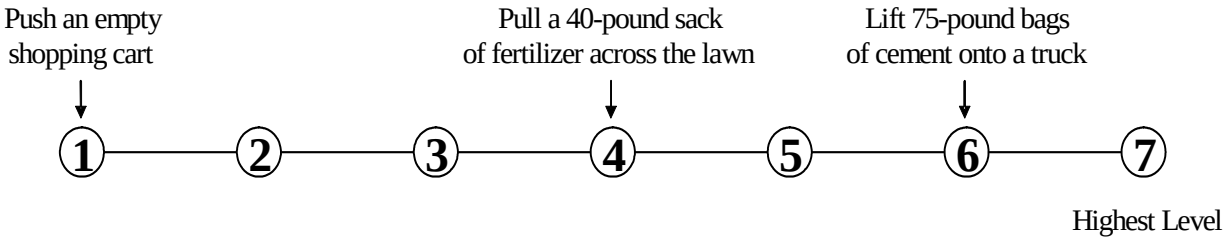
32. Static Strength — **The ability to exert maximum muscle force to lift, push, pull, or carry objects.**

A. How <u>important</u> is STATIC STRENGTH to the performance of *your current job*?



* If you marked Not Important, skip LEVEL below and go on to the next activity.

B. What <u>level</u> of STATIC STRENGTH is needed to perform *your current job*?



National Research Council Study Panel Charge

Document and evaluate current and potential uses of O*NET in:

- workforce development
- HRM
- disability determination
- research

Explore linkage to SOC and other data sets

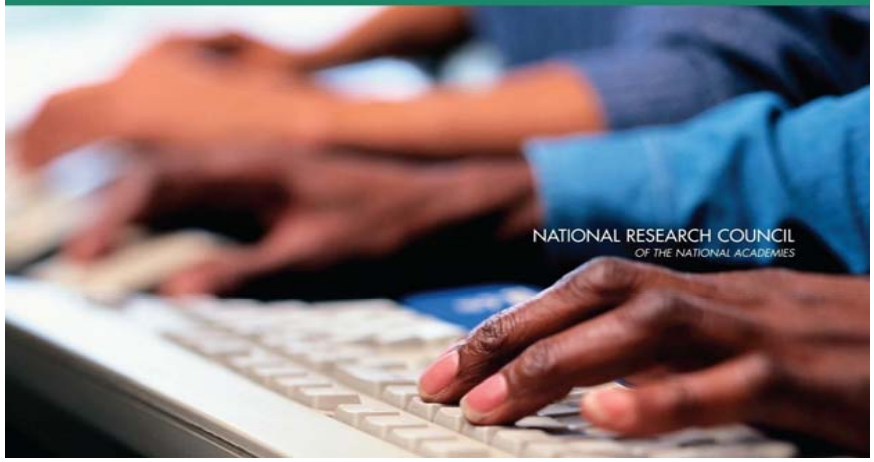
Identify improvements, especially in:

- currency
- efficiency
- cost-effectiveness
- use of new technology
- content model

NATIONAL ACADEMIES

A DATABASE FOR A CHANGING ECONOMY

Review of the Occupational Information Network (O*NET)



Strengths

Theoretically informed and research-driven content model and comprehensive work descriptor taxonomies

Provides a "common language" across jobs.

Hierarchical organization of descriptors.

Both work activities and worker requirements (describes jobs and people).

Multiple types of descriptors and multiple levels of analysis (i.e., "multiple windows" of accessing job information) allows versatility of application.

Work descriptor ratings collected via differential use of both professional analysts (for Abilities and Skills ratings) and job incumbents (for Knowledge, GWA, Work Styles, Education & Training, Work Context, and Task ratings) as appropriate for different domains.

Strengths

Rigorous sampling plan, high response rates, strong business participation, and frequent updates

Database is national in scope and maximizes data quality, currency, and reliability.

Provides of "metadata" (i.e., detailed rating-level, occupational-level, and distributional statistics) to users, enhancing data interpretation.

Provides mechanisms to collect data on new and emerging occupations, and to collect new task data on existing occupations.

Methodology allows for occupational description beyond the most detailed occupational level of the *SOC.*

Data collection process and methodology vetted through rigorous OMB clearance process

Strengths

Ease of system access and cost-free use; minimizes burden to public.

Standardized information within organizations and across organizations and within industries.

Reduced costs of information gathering (than if done individually/independently).

Data/information availability and comprehensiveness (online products/tools, public access data, occupational crosswalks, technical reports, etc.).

Linkages to multiple information sources and databases.

Strengths

Dynamic system allows for updating, capable of incorporating new jobs and descriptors.

Provision of online training supports for use of database.

Use of *SOC* as occupational classification basis facilitates mapping to other occupational information/data systems.

Ongoing research program provides knowledge base for ongoing content and methodology enhancements (e.g., improved ways to identify high-growth and new/emerging occupations).

Weaknesses

Occupational categories (812) are too broad; data not specific enough (e.g., compared to 12,000-job *DOT*) and hence not suitable for selection and other applications.

Descriptors too general; tools/mechanisms needed to permit finer level of occupational classification where desired by users.

Some descriptor sets are insufficiently differentiated, too abstract, and lack construct validity.

Context analysis information may not provide sufficient information for considering job adaptability for dislocated or disabled workers.

Conceptual/definitional overlap of some descriptor elements.

Weaknesses

Lack of necessary degree of data currency; limited ability to capture new and emerging occupations.

Establishment sampling method leads to under-sampling of small establishments (while employment in such organizations in growing), and overlooks self-employed, part-time, and contract employees (all growth employment areas).

Sampling of only U.S.-based workers may limit data utility for multinationals.

Weaknesses

Questionable reliability and validity of some descriptor data due to use of single-item ratings of broad constructs.

Ratings subject to method effects—spurious correlation of responses (e.g., level and importance) when data are collected via same instrument.

Use of incumbents inflates ratings (i.e., socially desirable responding).

Low inter-rater convergence for some descriptors.

No "future-oriented" component to data collection.

Weaknesses

Lack of public access to respondent-level data (i.e., in addition to aggregated occupation-level data) to enable generation of alternative analyses and support research

No public use files or licensing arrangements.

Difficult to match Content Model elements with the items used to measure them and with the associated database codes

Differential degrees of variability among jobs/titles comprising an O*NET Occupational Unit (OU) may result in differential degrees of accuracy (validity) of OU descriptor ratings when (accurate) SME data from different jobs/positions are combined.

Aggregation Issues

O*NET now includes 1,102 occupations (collects data on 965)

SOC 2010 includes 840 occupations

Since 2006, O*NET has added occupations-- more "breakouts" of SOC occupations and green occupations

Some O*NET users need these disaggregated data and would welcome further disaggregation

Other users need aggregated occupational categories aligned with the SOC

The panel did not agree about the appropriate level of aggregation

Aggregation Issues

Recommendation: **Assess benefits and costs of changing the occupational classification system**

Data Collection Issues

Conclusion: **The O*NET Center uses a multi-method sampling approach, collecting data from different types of respondents who may or may not represent the work performed in that occupation. The impact on measurement error is unclear.**

Data Collection Issues

Conclusion**: The construct validity of the taxonomies of descriptors varies across the content model domains**

Improving Database Quality

Conclusion: **Over the past decade, DOL has achieved its goal of populating O*NET with updated information, but short-term policy agendas have sometimes reduced focus on core database activities.**

Recommendation: **Focus resources on core database activities, leaving development of most new applications and tools to others.**

How O*NET Data is Used for Socioeconomic Analysis

Primary research data sets (Census, BLS, NCHS) used for socioeconomic status analysis provide measures of human capital (education, occupation, experience, gender, race, place of birth) but no information on job tasks and skills.

To overcome this limitation, researchers impute task requirements from O*NET to person-level observations from surveys.

How O*NET Data is Used for Socioeconomic Analysis

-- The tasks that workers perform on the job are significant predictors of hourly wages. (Autor and Handel, 2009)

-- Job tasks vary substantially between occupations (Autor and Handel, 2009)

-- Variation in job tasks among workers in the same occupation is systematically related to race, gender and English-proficiency (Autor and Handel, 2009)

How O*NET Data is Used for Socioeconomic Analysis

Other studies classify O*NET job titles into SES strata based on educational requirements and responsibilities

-- Analysis of work injury risk by SES showed higher risk in lower SES categories (D'Errico et al, 2006)

-- O*NET can be used a job level source of psychosocial exposure information for healthcare typical jobs (Cifuentes, 2006)

How O*NET Data is Used for Socioeconomic Analysis

Still other studies use data collected by O*NET for job classification for analysis of health issues

-- O*NET noise exposure data were assigned to NHANES occupational data (Choi et al, 2011)

-- O*NET has good predictive validity for health outcomes compared with MIDUS data (Meyer et al, 2011)

-- O*NET has been used in 28 studies to estimate work exposures related to health and safety outcomes (Cifuentes et al, 2010)

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