



PRESIDENCY OF THE REPUBLIC OF TÜRKİYE
HUMAN RESOURCES OFFICE

METHODOLOGY OF UNI-VERİ

Objective and Definition: UNI-VERİ aims to evaluate the performance of the higher education system in the labor market and to guide policy recommendations to strengthen the structure of human capital in Turkey. Comprehensive microdata sets are used by matching the university graduate information with the employee information obtained from the Social Security Institution (SSI). These microdata sets are analyzed using various econometric models, statistical methods, and modern tools. In this regard, the labor market performances of university graduates are evaluated based on their “departments” and presented to the use of professionals and students who will choose a program or profession.

Data Structure: This study is carried out using the information of students who graduated from a 4-year program between 2010 and 2022. Graduates of open and distance faculties of universities¹ and over the age of 35 are excluded. First of all, the departments are grouped based on their curriculum and reduced to 81 different departments in ANNEX 1. The details of department classifications can be found in ANNEX 2. In order to ensure statistical reliability, programs that at least 20 and more people have graduated and employed are analyzed. Graduates who found a job up to 6 months before graduation are also evaluated, provided that they did not quit the job before graduation. Secondly, the labor market performances of the graduates are revealed using fifteen indicators detailed below and reported in a way to allow comparisons based on departments.

(1) Entry Level Wage Distribution: To calculate the wage distribution, wages of the graduates in their first job after graduation are divided into five groups, starting from the “17.002 ₺” which is minimum wage in Türkiye. Unemployed graduates are excluded since they don’t have wage data. Wages are adjusted for inflation and expressed in terms of

¹ The graduates of open and distance faculties of universities are excluded since it extensively covers those who already work in a job and/or aim to have more than one university degree.

2024 prices. It should be noted that wages are reported by the firms and this may cause a bias on average earnings.

- (2) Duration Until First Employment:** It measures the length of time between graduation and the first job of graduates. University students who find a job up to 6 months before graduation are also included if they do not quit the job before graduating.
- (3) Skill Mismatch:** Skill Mismatch occurs when the jobs require fewer or higher qualifications compared to the employee's education level. This indicator was constructed using the graduates' level of education and employment data. The required skill for the first job and education level of graduates are matched using International Standard Classification of Occupation (ISCO) and skill set classification of the International Labor Organization (ILO). This indicator shows whether the graduates work in suitable jobs for their qualifications. The detailed technical explanations about the skill mismatch indicator can be found in ANNEX 3. It should be noted that the administrative data can't evaluate the graduates' soft and cognitive skills, qualifications obtained by undergraduate degrees, or the jobs they hold.
- (4) Employment Rate in Public Sector:** It shows the proportion of graduates who are employed in public sector institutions in 2024, including civil servants and contracted public employees. The distinction between the public and private sectors is determined according to the insurance information in employment data of SSI.
- (5) Average Number of Workplace Worked At:** It refers to the average count of distinct workplaces or employers that an individual has employed at after graduation.
- (6) Average Duration of Employment in a Job:** It is the total number of months that the graduate worked in Türkiye after graduation divided by the total number of workplaces where the graduate worked. While calculating the total number of workplaces, multiple entries and exits to the same workplace are excluded, and workplaces are included individually.
- (7) Employment Rate:** It calculates the percentage of graduates who are in registered employment in the public or private institutions, or self-employed in 2024.
- (8) Entrepreneurship Rate:** It indicates the proportion of graduates who engage in entrepreneurial activities in Türkiye at any time after graduation. The success of these enterprises has not been evaluated, and even if the enterprises fail, it is accepted that graduates gain entrepreneurship skills.

- (9) Distribution of Enterprise Lifespan:** It refers to the length of time that businesses remain operational from their establishment until they close or cease operations. It measures the lifespan or longevity of enterprises established by the graduates in Türkiye, often used to assess business stability and success. The duration of enterprises is measured in four categories as “0-12 Months”, “12-36 Months”, “36-60 Months” and “60 Months and Above”.
- (10) Entrepreneurship in High Value-Added Sectors:** It is an index evaluating graduates’ entrepreneurship activities in high value-added sectors in Türkiye. The high value-added sectors are determined using Sector Balance Sheets from the Central Bank of the Republic of Türkiye and Productivity Statistics from the Ministry of Industry and Technology.
- (11) Employment Rate in Managerial Positions:** It shows the proportions of graduates working as executives after graduation, and evaluates how many graduates gained managerial skills during tertiary education. The managerial roles are based on executives specified in ISCO-08 occupational standards.
- (12) Employment Rate in Academic Positions:** It examines the last jobs of graduates who are employed in teaching or research positions within educational institutions. This rate indicates the proportion of graduates working as professors, lecturers, researchers, or other academic roles being measured.
- (13) Firm Size Distribution:** It refers to the categorization of businesses where graduates are currently employed, based on the size of the firm. It is the distribution of the graduates by the firm size that is determined by using the conventional definitions of MSMEs.
- (14) Sectoral Distribution:** It is the distribution of the graduates who are currently employed, based on the sectors classified using NACE.
- (15) Duration Between Two Jobs:** It measures the length of time that elapses between a graduate leaving one job and starting another. This metric is used to analyze job mobility and transitions in the labor market for graduates.

ANNEX 1: DEPARTMENTS

Agriculture	International Trade
Aircraft Engineering	Islamic Sciences
Anthropology	Labor Economics
Aquaculture	Law
Archaeology	Manufacturing Engineering
Architecture	Marine Engineering
Audiology	Material Engineering
Automotive Engineering	Mathematics
Banking and Insurance	Mathematics Teaching
Bioengineering	Mechanical Engineering
Biology	Medicine
Business Management	Mining Engineering
Chemical Engineering	Nursing
Chemistry	Nutrition and Dietetics
Child Development	Petroleum Engineering
Civil Engineering	Pharmacy
Communication	Philosophy
Computer and Instructional Technologies Teaching	Physics
Computer Engineering	Physics, Chemistry and Biology Teaching
Conservatory	Physiotherapy
Dentistry	Pilotage
Econometrics	Political Science, Public Administration and International Relations
Economics	Preschool Teaching
Education	Primary School Teaching
Electrical and Electronic Engineering	Psychological Counseling and Guidance
Environmental Engineering	Psychology

Fine Arts	Public Finance
Food Engineering	Science Teaching
Foreign Languages	Social Sciences Teaching
Forest Engineering	Social Services
Geography	Sociology
Geological Engineering	Sport Sciences
Geomatics Engineering	Statistics
Geophysical Engineering	Technical Education
Health Care Management	Textile Engineering
Health Care Services	Tourism
Health Management	Turkish Language and Literature
History	Turkish Language Teaching
Industrial Design	Urban and Landscape Design
Industrial Engineering	Veterinary Medicine
Interior Architecture	

ANNEX 2: DEPARTMENT CLASSIFICATION

Aeronautical Engineering	•Aerospace Engineering •Aeronautical Engineering •Aircraft and Aerospace Engineering •Meteorological Engineering
Agriculture	•Agricultural Economics •Agricultural Engineering •Agricultural Genetic Engineering •Agricultural Structures and Irrigation •Agricultural Machinery and Technologies •Agricultural Technology •Dairy Technology •Field Crops •Herbal Production and Technologies •Animal Production •Horticulture •Nutrient Technology• Organic Agriculture •Poultry Farming •Soil Science and Plant Nutrition •Tobacco Expertise •Wildlife Ecology •Zoology
Anthropology	•Anthropology •Ethnology •Social Anthropology •Turkish Ethnology
Aquaculture	•Aquaculture •Aquaculture Engineering •Aquatic Sciences and Engineering •Fisheries Technology •Fisheries Technology Engineering
Archaeology	•Archaeology •Archaeology and Art History •Classical Archaeology •Conservation and Restoration of Cultural Heritage •Museology •Prehistoric Archaeology •Prehistory •Protohistoric and Near Eastern Archaeology •Turkish Islamic Archaeology
Architecture	•Architecture
Audiology	•Audiology
Automotive Engineering	•Automotive Engineering •Rail Systems Engineering •Transportation Engineering
Banking And Insurance	•Banking •Banking and Finance •Banking and Insurance •Capital Markets and Portfolio Management •Capital Markets Auditing and Rating •Insurance and Risk Management •Insurance and Social Security
Bioengineering	•Bioengineering •Bioinformatics and Genetics •Biomedical Engineering •Biosystems Engineering •Biotechnology •Biotechnology and Molecular Biology •Genetics and Bioinformatics •Genetics and Bioengineering •Medical Engineering •Molecular Biology and Genetics •Molecular Biology, Genetics and Bioengineering

Biology	•Biology
Business Administration	•Business •Management Sciences
Business Management	•Accounting •Accounting and Finance •Accounting and Financial Management •Aeronautics Management •Art and Culture Management •Business Management •Energy Management •Entrepreneurship •Family and Consumer Sciences •Human Resources Management •Informatics Management •Information and Records Management •International Retail Management •Land Registry and Cadastre •Librarianship •Local Governments •Management •Maritime Business Management •Marketing •Real Estate and Asset Valuation •Textile Development and Marketing
Chemical Engineering	•Applied Chemistry •Chemical Engineering •Chemical-Biological Engineering •Polymer Engineering •Process Engineering
Chemistry	•Biochemistry •Chemistry
Child Development	•Child Development
Civil Engineering	•Civil Engineering
Communication	•Cinema and Digital Media •Cinema and Television •Communication •Communication and Design •Culture Management •Journalism •Media and Communication •Media and Communication Systems •Media and Visual Arts •New Media and Journalism •Plastic Arts •Public Relations •Public Relations and Advertising •Radio, Television and Cinema •Advertising Design and Communication •Television News Casting •Visual Arts and Communication
Computer and Instructional Technologies Teaching	•Computer and Instructional Technologies Teaching •Computer Control Teaching •Computer Electronics Teaching •Computer Systems Teaching •Computer Teaching
Computer Engineering	•Computer Engineering •Forensic Informatics Engineering •Information Systems Engineering •Software Engineering

Environmental Engineering	•Environmental Engineering
Fine Arts	<ul style="list-style-type: none"> •Accessory Design •Animation Film Design and Directing •Art and Cultural Management •Art and Design •Artworks Conservation and Restoration •Calligraphy •Carpet, Rug and Old Fabric Patterns •Cartoon and Animation •Ceramics Design •Compound Arts •Dramatic Writing-Dramaturgy •Editing-Sound and Image •Fashion Design •Film Design and Directing •Film Design and Writing •Gemology •Glass Design •Graphic Illustration and Printing •Graphic Design •Handcrafts Design and Production •Ancient Ceramics Restoration •Jewelry and Jewelry Design •Jewelry Technology and Design •Photograph and Graphic Arts •Photograph and Video •Plastic Arts and Painting •Printing Arts •Sculpture •Stage and Performing Arts •Stage Design •Textile Design and Production •Textile and Fashion Design •Illumination •Tourism Animation •Traditional Turkish Handcrafts •Traditional Turkish Arts •Visual Arts Graphics •Vocal Arts Design
Food Engineering	•Food Engineering
Foreign Languages	<ul style="list-style-type: none"> •Albanian Language and Literature •American Culture and Literature •Ancient Greek Language and Literature •Arabic Language and Literature •Armenian Language and Literature •Azerbaijani Turkish Language and Literature •Bosnian Language and Literature •Bulgarian Language and Literature •Chinese Language and Literature •Choreology •Circassian Language and Literature •Comparative Literature •Croatian Language and Literature •English Language and Comparative Literature •English Language and Literature •French Language and Literature •Georgian Language and Literature •German Language and Literature •Greek Language and Literature •Hebrew Language and Literature •Hindology •Hittitology •Hungarology •Italian Language and Literature •Japanese Language and Literature •Korean Language and Literature •Kurd Language and Literature •Latin Language and Literature •Linguistics •Modern Greek Language and Literature •Modern •Turkish Dialects and Literature •Persian

	<p>Language and Literature • Polish Language and Literature • Polish Language and Literature (Polish) • Russian Language and Literature • Sinology • Spanish Language and Literature • Sumerology • Translation and Interpreting (Arabic) • Translation and Interpreting (Bulgarian) • Translation and Interpreting (Chinese) • Translation and Interpreting (Double Language: English- German) • Translation and Interpreting (Double Language: English- French) • Translation and Interpreting (English) • Translation and Interpreting (French) • Translation and Interpreting (German) • Translation and Interpreting (Persian) • Translation and Interpreting (Russian) • Translation and Interpreting (Turkish- English - French)</p> <p>• Translation and Interpreting (Turkish-German- English) • Translation Studies (English) • Translation Studies (German) • Urdu Language and Literature • Zaza Language and Literature</p>
Forest Engineering	<p>• Forest Engineering • Forest Industry Engineering • Wood works engineering</p>
Geography	<p>• Geography</p>
Geological Engineering	<p>• Geological Engineering • Hydrogeological Engineer</p>
Geophysical Engineering	<p>• Geophysical Engineering</p>
Health Care Services	<p>• Emergency Aid and Disaster Management • Gerontology • Language and Speech Therapy • Occupational Health and Safety • Orthotics- Prosthetics • Perfusion</p>
Health Management	<p>• Health Care Administration • Health Care Management • Health Institutions Management</p>
History	<p>• Art History • History • History of Science</p>
Industrial Design	<p>• Industrial Design • Industrial Design Engineering • Industry Design</p>
Industrial Engineering	<p>• Industrial Design Engineering • Industrial Engineering • Industrial Systems Engineering • Management Engineering • Systems Engineering</p>

Interior Architecture	• Interior Architecture •Environmental Design
International Trade	•International Business Management •International Entrepreneurship •International Finance and Banking •International Logistics and Transportation •International Trade •International Trade and Business Management •International Trade and Financing •International Trade and Logistics •International Trade and Marketing •Transportation and Logistics
Islamic Sciences	•Common Religion Education and Applications •International Theology •Islam and Religion Sciences •Islamic Sciences •Religious Education •Theology •World Religions
Labor Economics	•Labor Economics and Industrial Relations
Law	• Law
Manufacturing Engineering	•Mechatronics Engineering •Control and Automation Engineering •Control Engineering •Manufacturing Engineering
Marine Engineering	•Naval Architecture and Marine Engineering •Ocean Engineering •Shipbuilding Engineering
Material Engineering	•Material Engineering •Metallurgical and Material Engineering •Nanotechnology Engineering
Mathematics	•Finance Mathematics •Mathematics •Mathematics and Computer Sciences •Mathematics Engineering
Mathematics Teaching	•Elementary Mathematics Teaching •Mathematics Teaching
Mechanical Engineering	•Mechanical Engineering
Medicine	•Medicine
Mining Engineering	•Mineral Processing Engineering •Mining Engineering
Nursing	•Midwifery •Nursing and Health Care Services •Nursing

Nutrition And Dietetics	•Nutrition And Dietetics
Petroleum Engineering	•Energy Systems Engineering •Nuclear Energy Engineering •Petroleum and Natural Gas Engineering
Pharmacy	•Pharmacy
Philosophy	•Economics, Politics and Social Philosophy •Philosophy
Physics	•Astronomy and Space Sciences •Optics and Acoustical Engineering •Physics •Physics Engineering •Space Sciences and Technologies
Physics, Chemistry and Biology Teaching	•Biology Teaching •Chemistry Teaching •Physics Teaching
Physiotherapy	•Ergo therapy •Physical Therapy and Rehabilitation •Physiotherapy and Rehabilitation
Piloting	•Piloting
Political Science & Public Administration and International Relations	•European Union Relations •Global and International Relations •International Relations •International Relations and Maritime Security •International Relations and the European Union •Political Science •Public Administration
Preschool Education	•Preschool Education
Primary School Education	•Primary School Education
Psychological Counseling and Guidance	•Psychological Counseling and Guidance
Psychology	•Psychology
Public Economics	•Public Economics
Science Teaching	•Science Teaching
Social Services	•Social Services
Social Studies Teaching	•Social Studies Teaching

Sociology	•Cultural Studies •Human Science •Sociology
Sport Sciences	•Coach Training •Exercise and Sport Sciences •Sports Management •Sports Sciences
Statistics	•Actuary and Risk Management •Actuary Sciences •Statistics •Statistics and Computer Sciences
Technical Education	•Air Traffic Control •Aircraft Electric-Electronics •Airframe-Engine Maintenance •Aviation Management •Business Information Management •Commercial Air Transportation Management •Computer Sciences •Customs Management •Electricity and Electronics •Household Economics •Informatics Systems and Technologies •Logistics and Transportation •Logistics Management •Management Information Systems •Printing Technologies •Technology and Information Management
Textile Engineering	•Leather Engineering •Textile Engineering
Tourism	•Gastronomy •Gastronomy and Culinary Arts •Hospitality Management •Hotel Management •Travel Management •Tourism Management •Tourism Guidance •Food and Beverage Management
Turkish Language and Literature	•Turkish Language and Literature
Turkish Teaching	•Turkish Teaching •Turkish Language and Literature Teaching
Urban and Landscape Design	•Landscape Architecture •Urban and Regional Planning •Urban Design
Veterinary Medicine	•Veterinary Medicine

ANNEX 3: SKILL MISMATCH INDICATOR

Definition: Skill mismatch occurs when jobs that people work in require fewer or higher qualifications than their education level. Graduates work in less-skilled jobs than their education level requires, there is an over-qualification; if they have higher skills above those needed for the job, there is an under-qualification problem. In other words, if a university graduate is employed in a job that requires the high school graduation, there is an overqualification mismatch, and if a high school graduate is employed in a job that requires the university graduation, an under-qualification conflict occurs. Skill mismatch is an important labor market indicator that affects job satisfaction, productivity, and inequalities in wage increases.

Methodology of Skill Mismatch Indicator: For the skill mismatch indicator calculated using education and employment data, the method was developed based on the standard occupation (ISCO) and skill sets classification of the International Labor Organization (ILO). According to this method, the skill levels of the individuals are evaluated on a scale ranging from 1-4. The value 1 defines the qualifications acquired through primary education and the value 4 defines the qualifications acquired through higher education. This scale, which considers the duration of education and levels of expertise, is classified as follows.

Table 1: Classification of Skill Levels

Skill Level	Explanation
1	It is defined by taking into consideration the category 1 of ISCED, which is the International Standard Classification of Education, and requires 5 years primary education level. Level 1 professions include performing basic physical and manual tasks.
2	It is described by considering Category 2 and Category 3 of ISCED, which covers the first and second stages of secondary education. Occupations at Level 2 generally include the use of machinery and electronic equipment; the use of vehicles; repair and maintenance of electrical and mechanical equipment; and performing tasks such as storing, organizing and using information.
3	It is identified considering the category 5 of ISCED, it includes an education that starts at the age of 17-18 and lasts about 4 years and provides a degree that is not equivalent to undergraduate degree. Occupations at Level 3 usually involve performing complex technical and application in a specialized field that require extensive technical and operational knowledge.
4	It is prepared based on the Category 6 and Category 7 of ISCED and includes education starting at the age of 17-18, lasting about 3, 4 or more years, leading to a higher education degree or a postgraduate degree. Occupations at Skill Level 4 usually involve complex problem solving, decision making and performing tasks that require comprehensive theoretical and practical knowledge in a profession.

Source: ILO, International Standard Classification of Occupations, 2008 (ISCO-08).

In the qualification mismatch calculations, the difference between the skill levels of individuals and the skill levels required by the ISCO-08 occupational groups are considered. In this context, it is appropriate to employ a person who has received undergraduate degree in one of the professional occupational groups with skill level 4. If a person with a undergraduate degree is employed in professions with skill level 3, 2 or 1, the problem of skill mismatch arises because he is employed in a job that requires lower qualifications than his/ her qualifications.

Table 2: Occupational Groups and Skill Levels

Occupational Groups (ISCO-08)	Skill Levels
Legislators, Senior Executives and Managers	3, 4
Experts of a Profession	4
Assistants of a Profession	3
Office Workers and Customer Service Employees	2
Service Employees and Sales Staff	2
Qualified Agriculture, Animal Husbandry, Hunting, Forestry and Aquaculture Workers	2
Artists	2
Plant and Machine Operators and Assemblers	2
Elementary Occupations	1

Source: ILO, International Standard Classification of Occupations, 2008 (ISCO-08).

This method only evaluates skill match in terms of occupation code-training duration and does not take into consideration the skills acquired after person is employed. On the other hand, skill mismatch can also occur when the cognitive characteristics and interests of graduates do not match the qualifications required by the preferred department or the occupation. However, it is not possible to measure this dimension of the skill mismatch with the available administrative data obtained by public sector. The limitations of the method should be evaluated within this framework.

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