

SkillTRAN PROCESS FOR ESTIMATING EMPLOYMENT NUMBERS **

** This document is an update and expansion of the original 2008 document by this name.

SUMMARY STATEMENT / ABSTRACT

SkillTRAN uses only government information (Bureau of Census - Current Population Survey and Bureau of Labor Statistics - Occupational Employment Survey (OES) and National Long-term Employment Projections) for its Dictionary of Occupational Titles (DOT) estimates. The key additional piece is that SkillTRAN has examined each of the 12,761 DOT occupations and cross-references to assign one or more North American Industry Classification System (NAICS) industry codes to each DOT to indicate which NAICS industries are the most likely to employ the given DOT occupation. Job Browser *Pro* and OASYS Web then filter the government data to show only the NAICS industries relevant for a specific DOT occupation. The estimate is immediately responsive to user input for National, State, Sub-State, Full-Time and/or Part-Time employment estimates. The program retrieves, calculates, and sums the values to prepare a DOT-specific estimate. It is only at this final step of industry level employment of an occupation that an equal distribution calculation is made. This NAICS industry-level approach provides substantial differentiation among DOT occupations in the same SOC group.

INTRODUCTION

There is an overwhelming and urgent need for sound foundations to build reliable vocational opinions. This document explains the SkillTRAN methodology for using existing, accepted U.S. government data sources to estimate employment numbers at the DOT level. This technology is currently deployed in SkillTRAN's Job Browser *Pro* software – Version 1.6, 1.7, Job Browser *Pro* Web, and OASYS Web.

The SkillTRAN methodology is the result of 35+ years of discontent with the often improper, but generally accepted practice among some - often built on the faulty assumption that all DOT occupations occur with equal frequency within a given Census or OES Statistical Group. This assumption can lead to gross overestimates of the number of jobs for some DOT occupations, and underestimates of the number of jobs for other DOT occupations. Proper methodology is important for fair decisions in disability adjudication for Social Security claims and other venues, including vocational rehabilitation, worker compensation, and other litigated venues.

PROBLEMATIC POPULAR METHODS

A considerable amount of confusion surrounds the reporting and estimation of job numbers at the occupational level. There are various layers of complexity, including multiple occupational coding systems, differing survey respondent sources, sample sizes, survey questions, and level of details reported. It is relevant for the consumer of this kind of data to understand these complexities to enable best use of these available resources. What may be sufficient for career exploration or career guidance/planning may not be adequate for adjudication of disability claims, whether in worker compensation, insurance long term disability, Social Security, or other litigated settings.

Estimation Methods

In venues such as the adjudication of disability claims by the Social Security Administration (SSA), SkillTRAN has observed that its customers use various methods to estimate employment numbers at the DOT level. Every DOT occupation has (at least) one SOC code associated with it. Most SOC codes include multiple DOT occupations. [Only 182 SOC codes have one DOT code.](#) These 182 SOC/OES occupations cover 14.55% of the May 2016 OES National labor force of 140,400,040 full-time and part-time employees. In these pure situations, the reported OES employment numbers can be cited for the SOC group with confidence. For all the remaining 98.6% of the DOT codes in 77.8% of the rest of the labor force, there is a need to subdivide the aggregated OES/SOC data by some method.

Three methods of estimation in popular use:

1. **Total Group.** Report only the total OES group employment number
2. **Equal Distribution.** Equally divide the total OES group employment number by the total number of DOT occupations in that SOC group.
3. **Proportionate Distribution.** Use the national proportion of employment reported in the OES survey attributable to the industry or industries in which the DOT occupation is likely to be found.

Option 1 is valid only for the 1.43% of the DOT occupations in which there is a 1:1 ratio of SOC to DOT code (182 SOC groups each representing exactly 1 DOT occupation).

Option 2 requires the assumption that all of the DOT occupations in an SOC group do occur with equal frequency. While this may be reasonable for some SOC groups in which there are just a few highly similar DOT occupations, it is quite unlikely to hold true when many DOT occupations share a single SOC code. It is more likely to lead to significant over- or under-estimation for a specific DOT occupation. In a remand decision within SSA ([Hill v Colvin](#) - 12/3/2015), the notion of equal distribution was described as "preposterous" (see. III. Conclusion, end of paragraph 3).

Option 3 examines the North American Industry Classification System (NAICS) industry context in which a specific DOT occupation is likely to occur, using available government reported OES industry proportions to estimate employment for a specific DOT.

There is considerable discussion within the vocational expert and claimant representative communities about methods used to estimate numbers at the DOT level. Comparing estimation methods 2 and 3 for the group of sedentary, unskilled occupations, one study by SkillTRAN shows that option 2 shows 350% more employment when compared to option 3 estimates.

With such a wide disparity between these options, a current research effort has begun by a significant number of vocational experts to better establish employment numbers, particularly for this important group of 137 sedentary, unskilled DOT occupations. Some of these occupations may no longer exist at all due to automation, outsourcing, offshoring, combination with other occupations, or obsolescence.

Practical Example:

The problem can best be explored by considering a commonly cited occupation: 211.462-010 Cashier II. Using self-reported Census data or employer-reported Occupational Employment Statistics (OES), the assumption is made that all DOT occupations within a Census or OES occupational group occur equally frequently. Since there are 19 DOT occupations in this Census group (18 DOTs in the OES group), the assumption works out to 5.26% / 5.56% of all employment per Census / OES group. A study of the list of the 18 DOTs within the OES 41-2011 Cashier group shows that 6 of the 18 (i.e. 1/3) are found employed ONLY in racetracks (pari-mutuel ticket sales). The faulty conclusion then is that 33.3 % of employment of cashiers is found in racetracks (a small subdivision of the NAICS industry 7112 "Spectator Sports").

The reality of employment reported by employers in the OES long-term employment projections for 2018-2028, shows that in the year 2020, only 5,027 of 3,596,630 cashiers are located in the industry "Spectator Sports". Even adding the 5,973 cashiers reported employed in the Gambling industry (NAICS 7132) and the 4,909 cashiers reported in Casino hotels (NAICS 72112), these 15,909 cashiers represent less than 1% of employment of cashiers (.4%) – not 33% as poorly estimated by the popular method. And these 15,909 cashiers are the count for the 6 DOT cashier occupations that are only found in these industries!

Using government long-term employment projections (2018-2028, adjusted for 2020), which is based on employer-reported occupational counts (<https://www.bls.gov/oes>) and US Department of Labor (DOL) economic projections (<https://www.bls.gov/emp>), the following can be empirically established about OES Group 41-2011 Cashiers: 24.82% work in grocery stores (NAICS 4450A1); 17.04% work in Gasoline

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Stations (NAICS 447); and so on. Use of this empirical OES industry frequency data reported by employers with long-term employment projections by government economists to adjust for projected employment in the current year enables more precise analysis of the likely occurrence of DOT occupations, which are often described in the DOT as existing in only a few, very specific industry settings. However, the DOL acknowledged in its Introduction to the 1977 and 1991 DOT editions that, "DOT industry designations are to be regarded as indicative of industrial location, but not necessarily restrictive." (See page xxi at https://skilltran.com/pubs/1991DOT_Foreword.pdf#page=5).

The real problem is connecting the older DOT occupations with the industry codes for which today's statistics are available (i.e., NAICS codes). The DOL has never undertaken any effort to achieve this crosswalk to NAICS, nor to the predecessor system called Standard Industry Classification (SIC). The DOT's "Industry Classification" or "Industry Designation" codes were reduced from the 1977 edition to the 1991 version. Some of the classifications are not industries at all, but rather broad groups, such as: Any Industry with n=741 DOT occupations, Professional & Kindred with n=510 DOT occupations, and Clerical & Kindred with n=182 DOT occupations. These three groups alone account for 1,433 (11.2%) of the occupations described in the DOT. Further, there are 795 DOT occupations which are associated with two or more DOT industry designations. This raises the count to 2,228 DOT occupations likely to be found in many industries (17.5% of the DOT).

In a November 19, 2007 letter by then Assistant Commissioner of the Office of Occupational Statistics and Employment Projections, Dixie Sommers responded to an attorney that the "DOT is no longer in use by the Bureau of Labor Statistics, and we do regard it as obsolete since so much of the information contained in the most recent version is based on research conducted at least two decades ago." She further stated "We are not aware of any data source or methodology for reliably determining the number of jobs by DOT code." This was certainly true in 2007 as SkillTRAN did not introduce its unique methodology in its products until 2008. See <https://skilltran.com/index.php/support-area/documentation/214-dead-dot> for more details.

Yet here we are 13 years later, SSA is continuing to depend on the DOT in all its disability claims adjudication process. So while the DOT is dead to the DOL, it remains very much a critical resource in SSA's annual processing of 2-3 million disability claims.

SkillTRAN encourages the use of OES data for this process for the following reasons:

- OES data is **employer-reported**
- OES employment numbers are available for national, statewide, and for regional (sub-state) areas
- OES classifies more occupations than the Census code system
- OES employment numbers are updated annually and reflect an average of 6 panels of data
- OES industry projections are updated annually at the national level
- OES is based on the Standard Occupational Classification (SOC) 2018 covering 867 occupations
- OES does not distinguish between full-time or part-time hours worked

Census data from the Current Population Survey (CPS):

- CENSUS data is **based on household survey responses**, not employer responses
- CENSUS data is only available nationally
- CENSUS data is only reported at the industry level once every 10 years
- CENSUS data is reported using Census Occupational Codes covering only 535 occupations
- CENSUS data does not gather household report about the number of hours worked per week

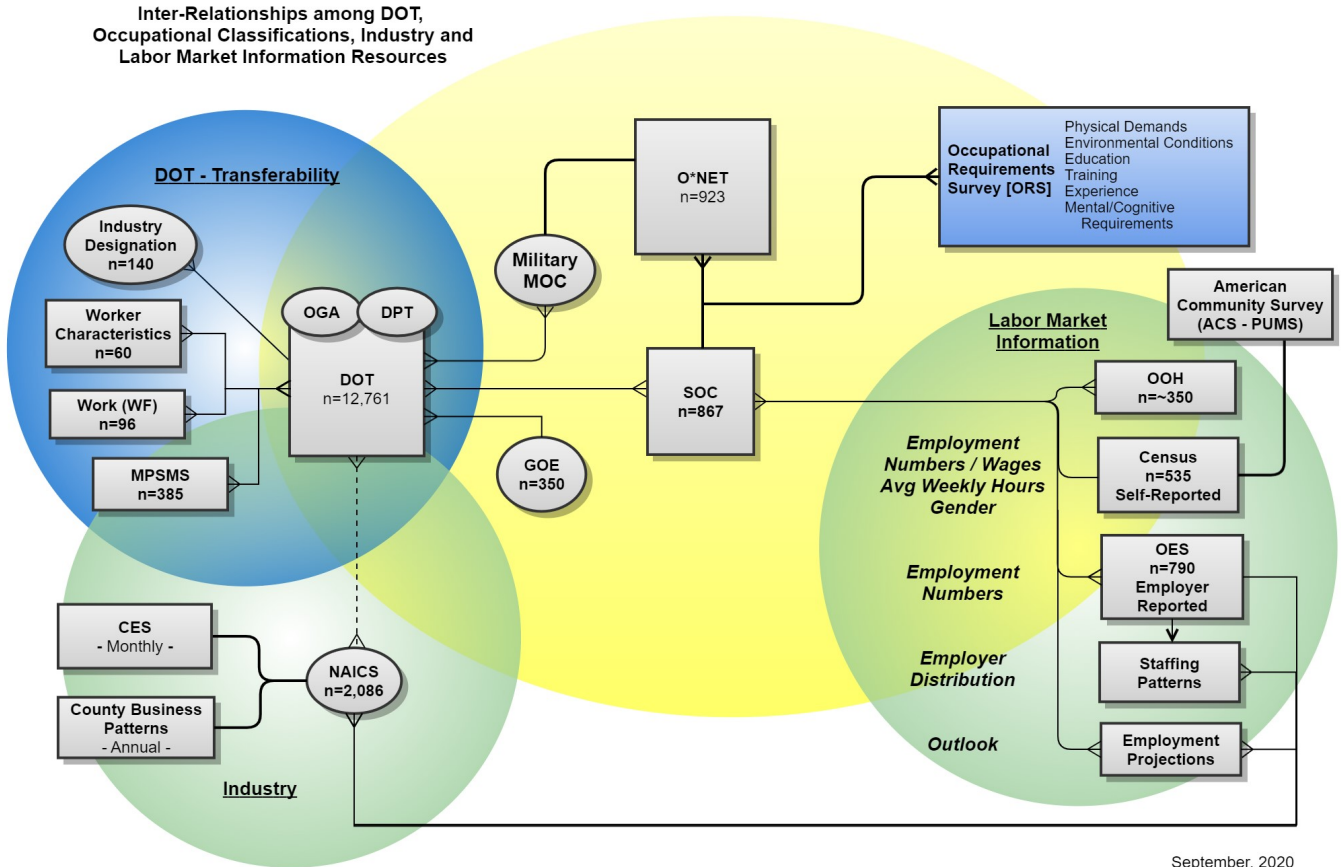
There is often a large discrepancy between the national total employment numbers estimated for essentially the same occupational group when comparing OES to Census. SkillTRAN believes that employers are more likely to accurately report employment of a specific occupational group than when self-reported during the Census household survey.

It is only within the last few years that it has become clearer how to converge/triangulate various generally accepted government data sources (https://www.socialsecurity.gov/OP_Home/cfr20/404/404-1566.htm) in a new way to efficiently use more information from available public data resources.

CORE DATA SOURCES

- Occupational Employment Survey (OES) – <https://www.bls.gov/oes>
- Employment Projections – <https://www.bls.gov/emp>
- Current Population Survey (CPS) - <https://www.bls.gov/CPS>
- North American Industry Classification System (NAICS) - <https://www.census.gov/eos/www/naics>.
- SkillTRAN NAICS Industry Suggestions for each DOT occupation
- County Business Patterns (CBP) - <https://www.census.gov/programs-surveys/cbp.html>

The diagram below shows how these various resources are interrelated and woven together.



September, 2020

The SkillTRAN method relies heavily on the annual OES national, statewide, and regional employment numbers and now annual long-term occupational Employment Projections (occupational projections by OES occupation by NAICS industry). Often, there are hundreds of NAICS industries in which employers report the presence of various SOC occupations. The same data is used to create the staffing patterns which employers report in their industry. <https://www.bls.gov/oes/current/oessrci.htm>

The OES program reports national employment numbers industry by industry for an OES occupation. Long-term (10 year) projections are developed from economist-prepared projections to estimate the unique rate of change for an OES occupation in each NAICS industry. Employment change for an OES occupation is often shown to increase in some industries, but to decline in others. These long-term national industry projections are adjusted now annually. Projections at a state level are also prepared for some OES occupations, but rarely released on an industry-by-industry basis, since sometimes the numbers are quite small and individual employers might potentially be identified. The OES survey program promises confidentiality to the employers who respond. The OES program requires a high response rate (75-80%) and at least 50-100 jobs before it will report industry employment data for an occupation.

CORE SKILLTRAN ASSUMPTIONS

SkillTRAN makes the following core economic assumptions in its methodology:

1. Jobs exist to fulfill an economic purpose/business activity.
2. The operation of a specific business requires specific occupations.
3. As a business grows or contracts, it requires a different number of some occupations than others. This is also known as the staffing pattern for the organization.
4. Business activity (and hence occupations) can be influenced by a variety of factors such as: opportunity, automation, outsourcing, competition, external economic factors, restructuring, etc.
5. In any given business, there may be only one or a very few job positions for a specific occupation (such as Human Resources Manager, President, Comptroller, etc.).
6. A business may need to be of a certain size (in terms of number of employees) before certain occupations are likely to exist.

SkillTRAN METHODOLOGY

Using a constant rate of change specific to the OES occupational group for each related industry (straight-line interpolation method), SkillTRAN estimates the current year (or some other target year) national employment level within each reported industry. The percentage of estimated national employment of an OES occupation in each NAICS industry is calculated for the target year and shown as the occupational density factor. There are often hundreds of NAICS industries in which an OES occupation is reported by employers, but only some of those NAICS apply for a specific DOT occupation.

SkillTRAN uses the annual OES occupation employment numbers reported nationally, statewide, and regionally when available. SkillTRAN suggests relevant industries for each DOT occupation, carrying forward the target year occupational density factor for each NAICS industry relevant to a DOT occupation to estimate DOT employment numbers for each relevant industry for both an unweighted total for the OES group in that NAICS industry and a weighted basis. The unweighted number for the OES group in that industry is equally divided by the total number of DOT occupations in that OES group that are likely to be employed in that specific NAICS industry. This is equal distribution at the industry level for an occupation, which is completely different from equal distribution at the SOC/OES level.

The NAICS industry suggestions for a specific DOT are initially built on SkillTRAN's review of the DOT from an industry perspective. Over multiple decades, SkillTRAN staff and various consultants have read the DOT cover to cover from a job placement perspective. SkillTRAN has assigned various NAICS industries to each DOT occupation. SkillTRAN used the DOT description for industry clues implying where the occupation is likely to be observed. Special research tools built by SkillTRAN enable linkage of products produced, serviced, sold, maintained, and services rendered in appropriate NAICS industries.

Some DOT occupations have only one NAICS assignment because the occupation is quite narrowly defined. Other occupations have 25 or more likely NAICS industries. Sometimes, an obsolete occupation such as 371.667-010 – Crossing Tender (railroad) has an appropriate industry tied to it, but no OES statistics to support its continued existence. Occupations with low or no numbers are less likely to continue to exist than occupations with higher numbers.

The “Estimated DOT Employment Numbers” screen (see next page) shows only the SkillTRAN-assigned NAICS industries in which employment seems most likely for the specific DOT. Customer desired changes to these suggested industries can be submitted to SkillTRAN to remove an irrelevant industry and/or to add more industries. SkillTRAN multiplies the unweighted industry estimate times the selected national/statewide/regional employment number for the OES occupation. This yields an unweighted estimate of OES employment in each displayed NAICS industry (“Estimated % For this OES Group”, i.e., occupational density factor). There can be 1 or more other DOT occupations in the same SOC group that might also be employed in each specific NAICS industry row. The count is under N in N DOTs. Click the [WT](#) hyperlink to display the other DOT occupations that are also likely employed in that industry row. The N for “Estimated % For this OES Group” divided by the N in [WT](#), equals the N Estimated for that NAICS and the selected DOT occupation. **Equal distribution is the math method only at this deep industry level. Equal distribution is not used at the occupation level.**

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Estimated DOT Employment Numbers

DOT Employment Estimate for Year: 2020 DOT: 211.462-010 CASHIER II

CASH CLERK; CASHIER, GENERAL; CASHIER, OFFICE; TICKET CLERK. Receives cash from customers or employees in payment for goods or services and records amounts received; Recomputes or computes bill, itemized lists, and tickets showing amount due, using adding machine or cash register. Makes change, cashes checks, and issues receipts or tickets to customers. Records amounts received and prepares reports of transactions. Reads and records totals shown on cash register tape and verifies against cash on hand. May be required to know value and features of items for which money is received. May give cash refunds or issue credit memorandums to customers for returned merchandise. May operate ticket-dispensing machine. May operate cash register with peripheral electronic data processing equipment by passing individual price coded items across electronic scanner to record price, compile printed list, and display cost of customer purchase, tax, and rebates on monitor screen. May sell candy, cigarettes, gum, and gift certificates, and issue trading stamps. May be designated according to nature of establishment as Cafeteria Cashier

OES Group **41-2011 Cashiers**
 Estimate OES Industry Employment Numbers for: **National**

National Statewide Regional [Show Counties](#) [Show All DOTs in this OES Group](#) [Show ORS Data](#)

NAICS Industries where this DOT Code is likely to be employed:

Remove	NAICS	NAICS Title	Estimated % For this OES Group	N	N DOTs	Estimated % For this DOT	N
<input type="checkbox"/>	443000	Electronics and appliance stores	0.424	15,245	2	WT.	0.212 7,622 CBP
<input type="checkbox"/>	444100	Building material and supplies dealers	2.983	107,288	2	WT.	1.492 53,644 CBP
<input type="checkbox"/>	444200	Lawn and garden equipment and supplies stores	0.265	9,538	1		0.265 9,538 CBP
<input type="checkbox"/>	4450A1	Grocery and specialty food stores	24.803	892,057	4	WT.	6.201 223,014 CBP
<input type="checkbox"/>	445300	Beer, wine, and liquor stores	2.009	72,244	2	WT.	1.004 36,122 CBP
<input type="checkbox"/>	446100	Health and personal care stores	5.398	194,135	3	WT.	1.799 64,711 CBP
<input type="checkbox"/>	447000	Gasoline stations	17.028	612,443	1		17.028 612,443 CBP
<input checked="" type="checkbox"/>	448100	Clothing stores	1.945	69,942	4	WT.	0.486 17,485 CBP

Adjust Estimates by Employment Status

Employment Status	Percentage	TOTAL EMPLOYMENT IN THIS OES GROUP	Industry Employment of this OES Group	Estimated # Employed in this DOT Code
<input checked="" type="checkbox"/> Full-Time	32.0%	3,596,630 National	93.556% Percent	49,621%
<input checked="" type="checkbox"/> Part-Time	68.0%	66,200 State	3,364,866 US National	1,784,683
<input type="checkbox"/> Self-Empl	0.8%	34,610 Region	61,934 State: Washinatr	32,849
			32,380 Region:	17,174

CPS Estimate: Men 27.1% Women 72.9% Seattle-Tacoma-Bellevue, WA

Most OES occupational groups (n=608) contain many DOT occupations (n=12,579). When more than one occupation is likely, the list of likely DOT occupations is available for review by clicking the [WT.](#) hyperlink. Only at this much smaller NAICS industry subset level does SkillTRAN initially assume equal distribution of employment. A skilled vocational expert or other subject matter expert with deep knowledge in a NAICS industry may eventually be able to guide a re-set from the assumed equal distribution to more accurately apportion employment of the DOTs in a specific NAICS industry across the set of likely DOT occupations. But this challenge is magnified lately by the reduction of the OES groups with data (n=790) vs. the number of SOC Groups (n=867). Further development on this idea is deferred for the time being.

In the NAICS Industry Distribution portion of the screen, the weighted column initially reflects the assumption of equal frequency of employment by the member DOT occupations within that OES job family in that specific NAICS industry. For example, if the WT column for an industry shows 4 DOT occupations, then 1/4th of that industry's employment is attributed to a specific DOT occupation. This apportionment/weighting to a different portion is repeated for as many NAICS industries as are listed on the screen that are relevant to the specific DOT occupation. If there is only one DOT occupation in a specific NAICS industry for an OES group, all OES employment for that NAICS is attributed to the weighted DOT column (i.e., unweighted and weighted are the same values).

The user can suggest NAICS industries for removal found to be irrelevant for the selected DOT occupation. The user can also suggest additional NAICS industries for which OES statistics are available and its associated national Occupational Density factor value to the mix. The suggestions are sent to SkillTRAN for review and subsequent revision of a master crosswalk, which is periodically redistributed to customers. PC version 1.6.x allowed customers to modify NAICS industry suggestions, but this has been halted in the version 1.7 and web version for the time being since customers were not considering the impact of their changes on all of the other DOTs in a specific SOC group.

SkillTRAN sums the weighted occupational density values for each relevant industry and multiplies this summed percentage by the OES national, state, and regional employment numbers to estimate DOT

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employment numbers. The user can select/unselect whether to consider full-time or part-time employment. The percentages vary by occupational group and come from SkillTRAN's detailed study of the Public Use Microdata System (PUMS) data set of the Current Population Survey (CPS) and American Community Survey (ACS) by the US Bureau of the Census. SkillTRAN downloads the PUMS data (usually about 1.6 million data records). SkillTRAN then builds a database table and runs queries on the Census data by detailed Census Occupational Code to determine the frequency of percentage of workers reporting employment of 35 or more hours per week, which is the [BLS standard break point between full-time and part-time employment](#). Gender data is also extracted similarly from the PUMS data. Both are collected and reported at the Census occupational code level and remapped to SOC/OES codes using standard government crosswalks. SkillTRAN chooses to do this PUMS-level database research since the [highly aggregated level reported by BLS](#) is not reported at the SOC or CENSUS level.

Each NAICS row has a [CBP](#) hyperlink to SkillTRAN's new *Industry Analyzer*. This links to the latest available County Business Patterns (CBP) data, which is available at the National, State, MSA, County, and Zip code levels. CBP data comes from federal government administrative and tax records and are a census (not a sample) of all tax-reporting business establishment in the US for a given calendar year. Data include a breakout of the number of employers (establishments) and their relative size in terms of several different ranges of the number of employees. The Industry Analyzer gives greater context to the absolute number of business establishment by NAICS industry coding. It also reports Current Employment Statistics (CES) and historical data back to at least 1990 to show the change in employment over time. There is also a way to show all of the products and services in the selected NAICS industry, and a display of all of the OES occupations reported in that 3- or 4-digit NAICS industry. A click on any of those OES codes reveals the DOT occupations that SkillTRAN has associated with employment in that OES in that NAICS. SkillTRAN has more than 116,000 such linkages to tie DOT with NAICS with various standard government labor market resources. On the data resources map (page 4), these links provided by SkillTRAN are shown as the simple dotted line connecting NAICS to the DOT. This linkage is what informs the DOT estimate process to filter the display of appropriate NAICS-related government data. Related NAICS are hyperlinked to the SkillTRAN Industry Analyzer.

ADVANTAGES OF THIS METHODOLOGY

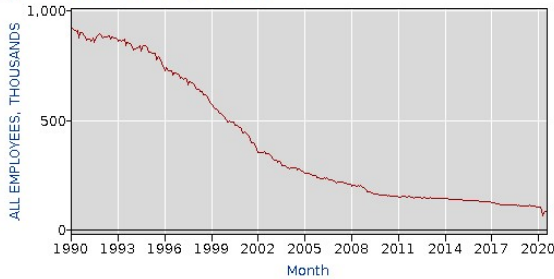
1. Rather than using self-reported, consumer-based CPS data, the methodology is rooted in OES employer responses, a more reliable resource than CPS. Consider that the CPS reports 2018 employment of 1,390,000 Cashiers nationally (self-report) vs. employer-reported May 2019 count of 3,596,630 ± 21,580. This is just one example of the substantial variance in self-reported vs. employer-reported data.
2. OES data is collected from employers in a systematic sampling of various industries and adjusted across a 3- year cycle. This smooths out wild data sampling fluctuations, such as COVID, which will begin to show up in 2021 on first report of the May 2020 OES data.
3. Long-term projections are national and by industry. Dynamic adjustments every year reflect changes in the economy, including the decline of various manufacturing industries and subtle gradual changes in NAICS employment due to the impact of automation, offshoring, or other technology changes. Industry change values may apply to one OES occupation within an industry, but not to another. For example, automation in an industry may reduce the number of production workers but increase the number of maintenance mechanics needed to support more automated equipment and processes.
4. OES employment numbers are reported annually at the national, state, and regional levels.
5. SkillTRAN's method does not use a simple fixed ratio staffing pattern captured once every 10 years in the decennial census, then proportionately adjusted each year, simply based on the size of a labor force, such as done in some competitive methodologies.
6. SkillTRAN's special cross-reference between NAICS and the DOT is the result of decades of research. SkillTRAN undertook this effort because the US Department of Labor did not report SIC or NAICS-based industry data. Recent internal studies show that the SkillTRAN method estimates employment at more than 88% of OES employment for SOC groups.

CORROBORATING EVIDENCE

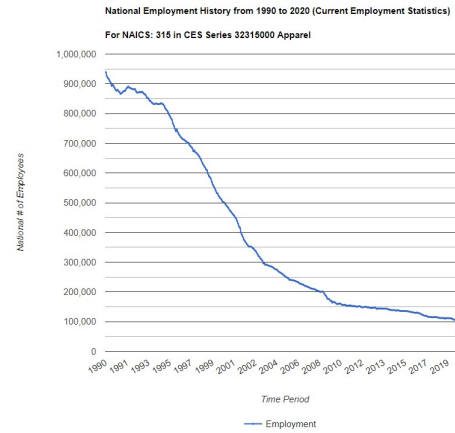
There are substantial declines in employment numbers for many occupations that common sense tells us probably exist in very low frequency. For example, the boot & shoe industry (NAICS 3162 - Footwear Manufacturing) had a total 1990 work force of 82,500 workers. In 1995, total employment in this industry had dropped to 57,100. In 2000, the number dropped to 30,700. By 2005, total employment in this industry (across all occupations) had dropped to 18,200 – a 78% plummet in employment over a 15-year period. Employment numbers were so small that the industry was rolled up into NAICS 316 – Leather and Allied Product Manufacturing until that number shrank, and it was then rolled up into the current NAICS 3329 – Miscellaneous nondurable goods manufacturing.

Similar precipitous decline is seen in the Apparel manufacturing industry (NAICS 315). 1990 employment was 924,300. In March 2020 (pre-COVID), national employment was only 103,500.

Series Id: CEU3231500001
 Not Seasonally Adjusted
 Series Title: All employees, thousands, apparel, not seasonally adjusted
 Super Sector: Nondurable Goods
 Industry: Apparel
 NAICS Code: 315
 Data Type: ALL EMPLOYEES, THOUSANDS



BLS CES Data format



SkillTRAN format for BLS CES Data

Decline in the overall work force of an industry absolutely impacts the number of DOT occupations within that industry as well. Source: <http://data.bls.gov/PDQ/outside.jsp?survey=ce>

To present this information in a more easily accessible format than the standard government user interface (designed more for economists than consumers), SkillTRAN downloaded the publicly available government data files from:

- Current Employment Statistics (Current and Historic)
- County Business Patterns (Most recent available)
- ZIP Code Business Patterns (Most recent available)
- Occupational Employment Statistics (OES) Staffing Patterns by NAICS industries

SkillTRAN then combined all of these resources into a product called Industry Analyzer, which is available to Job Browser Pro and OASYS Web customers to easily and quickly see the absolute outer boundaries of total employment by NAICS industry and OES Staffing Patterns for 3- and 4-digit NAICS from multiple perspectives.

Many DOT occupations show small estimated numbers of employment, in the expected direction. This is exactly what is needed to show low frequency of occupations particularly in industries that are known to have huge declines over the last 30 years due to offshoring, outsourcing, automation, and obsolescence. Some occupations show no frequency in the expected industry, exactly what is expected due to automation - e.g. 371.667-010 Crossing Tender (railroad). SkillTRAN will continue to study various sources of published government data to inform the process of estimating employment at the DOT and NAICS level. The data reported in SkillTRAN products is government data. The SkillTRAN DOT to NAICS crosswalk (the dotted line connecting DOT and NAICS on the page 4 diagram) isolates the vast range of government data to consider. SkillTRAN's method present only the NAICS industry data relevant for a single DOT at a time, presents it in a spreadsheet-like template, then allows the customer to choose to apply National, State, or MSA-level employment, full-time and/or part-time filters, and calculate confidence intervals (Web version only). The spreadsheet adapts instantly to user changes.

SkillTRAN REVIEW PROCESS – Present and Future

SkillTRAN has engineered and continues to refine its technology to stand up to a Daubert challenge. This includes:

- a. Review of all 3,100+ unskilled occupations for suitable industry suggestions.
- b. Ongoing review of the NAICS industry suggestions for all DOT occupations by SOC Group.
- c. Widespread distribution of the methodology to vocational experts and claimant representatives.
- d. Adoption, review, and revision of NAICS industry suggestions by the SkillTRAN customer base.
- e. Informal anecdotal investigations.
- f. Continuous peer review of our industry suggestions (from ongoing customer input).
- g. Harvesting of customer-initiated changes to the NAICS suggestions for archiving/backup.
- h. SkillTRAN study of the customer-suggested industry changes (i.e., continuous peer review).
- i. Sharing of SkillTRAN modifications of industry suggestions with the customer community.
- j. Establishing a conservative minimum size (in terms of total number of employees that a company would likely require) for a specific DOT occupation to even exist. This feature is now built-in to the Industry Analyzer feature in a tab called Workforce Distribution.
- k. Use of County Business Patterns (CBP) to determine the number of employers in a national, state, or specific geographic area to establish the frequency of appropriately sized employers in the context of each DOT occupation. This feature is now included in Industry Analyzer.

Future Development

- l. Further adjust the state/regional estimates of DOT employment numbers using the CBP distribution data to reflect the unique and actual industry distribution of each state/region.
- m. Identify actual appropriately sized potential employers in a specific geographic area so that contact can be established for labor market survey.
- n. Correlate actual results of labor market surveys to the estimated numbers.

Recent Review Process

Beginning in 2017, SkillTRAN created new research tools to facilitate its internal research efforts. One of the fruits of this tool development was to review, retrieve, and search for the various products and services associated with the NAICS industry classification system. This enabled SkillTRAN to better associate the products and services of a NAICS industry to appropriate DOT occupational definitions.

SkillTRAN also devoted a significant effort to add DOT occupations in the temporary employment services industry, government employment, and self-employment sectors. The calculated DOT estimate of employment was summed for each SOC group to determine how well the SkillTRAN DOT estimation process accounts for total employment in the entire SOC group (that can contain anywhere from 1 to nearly 1,600 DOT occupations). After reviewing the estimated DOT employment for each of the SOC groups, SkillTRAN carefully studied those SOC groups with lower overall total estimates. In most cases, there was simply no supporting OES industry data available to support a higher level of employment for these DOT occupations. Either the OES program had changed its data collection focus or the industries had shrunk in employment to such an extent that available data was not reportable in the OES survey.

Prior to its release of the version 1.7 series, SkillTRAN summed the DOT Estimate values within each SOC group. This provides a better understanding of how well the process differentiates DOT employment within each SOC Group. The average per SOC group was greater than 88%, with MANY groups in the high 90% range. Because SkillTRAN spent so much time tuning its cross reference to this achieve this level, it has imposed a temporary moratorium on immediate customer changes in its products. Customers can submit changes for a DOT occupation for subsequent SkillTRAN review; it will be done in the context of its total impact on the employment estimate for the entire SOC group.

CAVEATS

- a. The SkillTRAN method is an ESTIMATION process, not any kind of assurance that these ARE the actual numbers. Because the estimated numbers are based on national staffing patterns, SkillTRAN believes that this estimation process is most reliable at the national level than the state/regional level that is most sensitive to variable changes, unless the industry distribution in a specific state closely parallels the national economy, which happens for some sectors of the economy.
- b. Long-term employment projections are not sensitive to short-term or cyclic economic changes, such as a high oil prices, economic recession, or natural disaster (e.g., Katrina, COVID-19, etc.). Partial adjustment for these events occurs retrospectively as the OES data are updated.
- c. The OES program is reducing its sample size due to cost-reduction. Hopefully the reliability of its collected data will not significantly decline.
- d. The SkillTRAN method does not consider the effect of several discrete DOT occupations being combined into a single occupational definition. To handle this situation, the practitioner could combine the DOT employment number estimates for each discrete occupation.
- e. This method does not address obsolete job descriptions or occupations, nor does it update the DOT. It is sensitive to the declining employment of many occupations, particularly in the manufacturing sector due to off-shoring, outsourcing, automation, technology deployment, and/or overall industrial change/decline.

When first introduced in 2008, SkillTRAN's approach was a disruptive new methodology - shaking up the disability market and causing a reconsideration of traditional methods. Its use is now more widespread and refined. It is ready for careful scientific dissection and research studies. It is not perfect. No process built on an estimate of estimates can be. It still takes skilled interpretation and clinical judgment by a vocational professional to implement, but it has improved over time. The SkillTRAN method is a disability industry first. Ongoing research is an important part of the design to deal with Daubert defensibility. [Several recent court decisions are discussed here.](#)

SkillTRAN's mission is to provide a better methodology for estimating DOT employment numbers than has previously existed. At this point, SkillTRAN has anecdotal information supporting this new method from different sources, most of whom are vocational experts. In many cases, the numbers estimated are quite small. Vocational experts often share that the SkillTRAN estimates are surprisingly accurate based on a prior labor market survey conducted.

A peer-reviewed article about Job Browser *Pro* was published in the Rehabilitation Professional, the journal of the International Association of Rehabilitation Professionals (IARP). https://skilltran.com/RehabPro_Vol_16_No_4.pdf Additional documents are available at <https://skilltran.com/index.php/support-area/documentation> to further explain details about the process and various [recent court decisions](#).

SkillTRAN leadership is regularly invited to speak at various industry professional conferences, including:

- [ABVE](#) – American Board of Vocational Experts
- [IARP](#) – International Association of Rehabilitation Professionals
- [NADR](#) – National Association of Disability Representatives
- [NOSSCR](#) – National Organization of Social Security Claimant Representatives
- [VECAP](#) – Vocational Evaluation and Career Assessment Professionals Association

SkillTRAN embraces all constructive suggestions about how to further refine its processes. We welcome customer feedback and will do our best to respond to customer needs. This document is periodically revised to reflect changes and systematic improvements. SkillTRAN is grateful to a significant number of industry leaders who have already reviewed this methodology and made some great suggestions.

Please direct further questions about this steadily evolving methodology to:

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