A User Guide to
DEO Occupation Projections

Bureau of Workforce Statistics and Economic Research

Our Mission is to Produce, Analyze, and Deliver Labor Statistics to Improve Economic Decision-Making

- *Employment data is the state's most important economic indicator*

- *Data is collected under Federal/State Cooperative Statistical Programs*

- *Comparable nationwide for all states, counties, and metro areas*

- *Collected through a combination of employer surveys, modeling, and administrative records*

Thanks to Florida employers—without them we would not be able to provide data

How Do We Fulfill this Mission?

Produce
- Quarterly Census of Employment & Wage
- Current Employment Statistics
- Local Area Unemployment Statistics
- Occupational Employment Statistics & Wages
- Projections

Analyze
- Economic Analysis Unit
- Program data requests

Deliver
- Websites
- Monthly data releases
- Presentations

Projections Overview

- *Florida's Bureau of Workforce Statistics and Economic Research (WSER) produces annually 8-year employment projections for all industries and occupations*

- *The data used to create these projections are:*

  - ➢ *Quarterly Census of Employment and Wages (QCEW)*

  - ➢ *Occupational Employment Statistics (OES)*

  - ➢ *Current Population Survey (CPS)*

What is QCEW?

- *QCEW measures employment and wages by industry*
- *It includes all firms covered by Reemployment Assistance (RA)*
  - ➢ *Does not included self-employed or other non-covered workers*
  - ➢ *Collects individual worksite data from multi-establishment employers*
- *Important to compare same quarter over the year or annual averages*
- *Estimates are produced for the state, metropolitan statistical areas (MSAs), counties, and workforce regions*
- *QCEW serves as the sampling frame and benchmark for establishment-based statistical surveys such as OES*

QCEW Process

Employers to Revenue

- *Employers report RA tax data to the Department of Revenue, including:*
  - *Total employment for the quarter*
  - *Total wages for the quarter*

Revenue to WSER

- *Department of Revenue provides WSER with 3 tax record extracts*
- *2-3 months from the end of quarter*

WSER to Public

- *WSER edits data:*
  - *calls employers to verify, assign industry codes to new employers, Annual Refiling survey, Multi-worksite Report*
- *Publish 6 months from the end of quarter*
- *Submit micro-data to Bureau of Workforce Statistics and Economic Research which is used as sample frame for surveys*

What is OES?

- *OES measures employment and wages for all full-time and part-time <u>workers</u> in nonfarm industries*

  - ➢ *OES covers each occupation and industry*

- *Over 20,000 establishments are surveyed each year, representing more than 1.4 million employees*

- *Estimates are produced for the state, MSAs, large counties, workforce regions, and 3 balance of state areas (non-metro counties) published annually*

- *Final estimates used to calculate the occupational employment distributions (staffing patterns) for each industry in each area*

OES Process

Data Collection
- BLS selects a sample of employers by size, industry and MSA from QCEW
- Two survey panels are collected each year by mail, phone and web
- Asks employers to provide total employment and the distribution of that employment by occupation and wage range

Estimation
- Over 20,000 establishments are surveyed each year, representing more than 1.4 million employees
- The total 3 year sample represents more than 5.1 million employees
- Employment and wage estimates are based on a full 3-years of sample data

Projections
- Final estimates for each occupation within each industry and area are used to calculate the occupational employment distributions (staffing patterns) for each industry in each area
- This serves as the basis for Industry and Occupational Employment Projections

What is CPS?

- *CPS is the primary nationwide monthly survey measuring labor force statistics for the entire U.S. population*
  - *Statistics include unemployment rate, employment counts, earnings, as well as extensive demographic data*

- *50,000 households are surveyed each month.*

- *Estimates are produced for all states, MSAs and counties*

Separations Methodology

- ## *Projections produced prior to 2016 had several issues:*

  - ➤ *Old method primarily captured openings due to those exiting the labor force, thus undercounting total available jobs in an occupation*

  - ➤ *Old method failed to capture demographic variables (age, sex, etc.)*

  - ➤ *Old method was indirect at best by measuring employment changes by age groups instead of individual persons*

  - ➤ *Required 10 years of data to produce estimates, therefore it was slow in responding to changes in occupational definitions*

REPLACEMENT METHOD

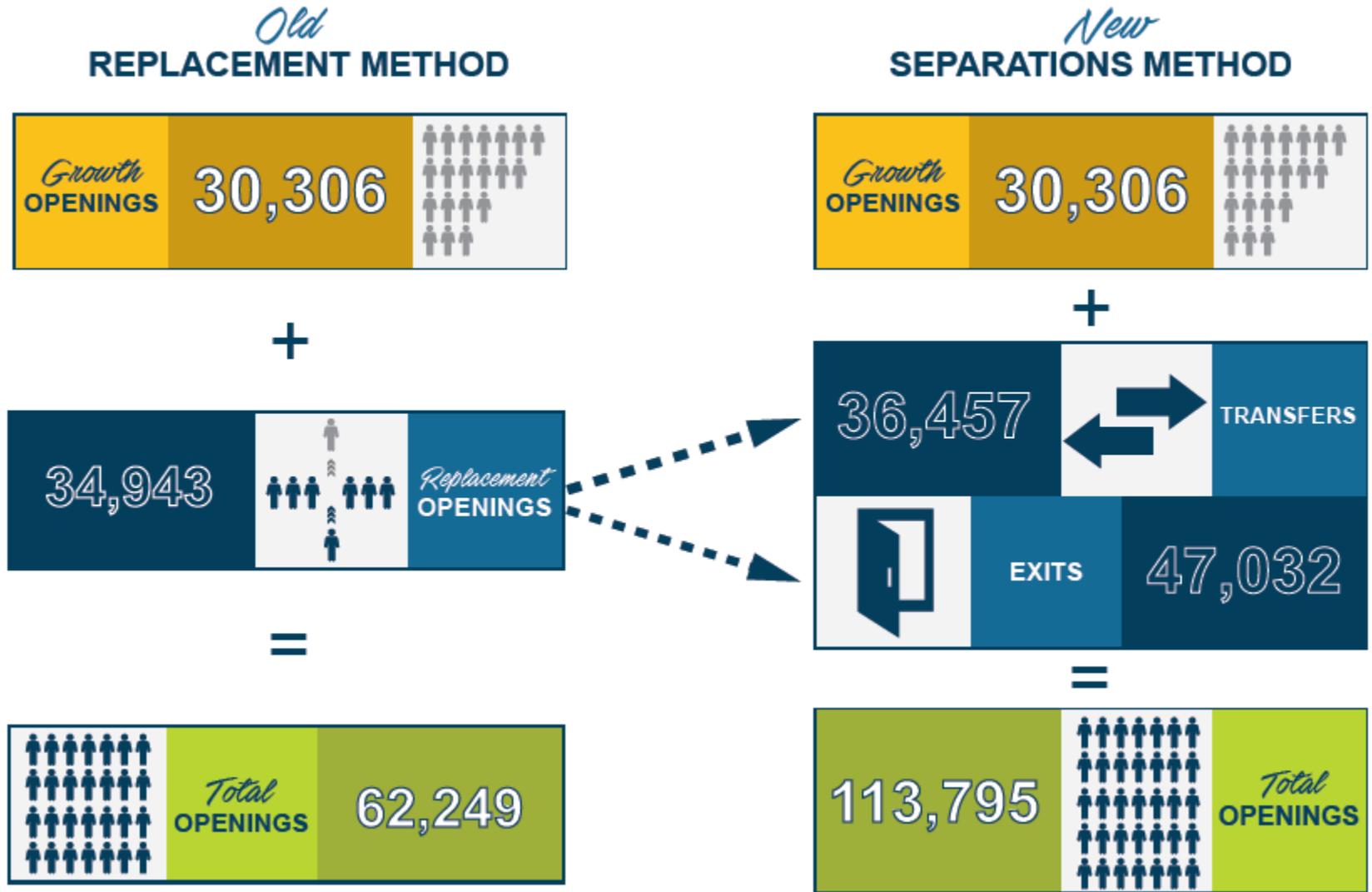| GROWTH OPENINGS | 30,306 | REPLACEMENT OPENINGS | 34,943 | » | TOTAL OPENINGS | 62,249 |

Separations Methodology

➢ *New method is regression-based and statistically more robust*

➢ *New method incorporates demographic variables in its model and other longitudinal data from the CPS monthly surveys*

➢ *New method more accurately accounts for future occupational change by incorporating employment projections data, also from OES*

➢ *New method can quickly adjust to new occupations added to the classification system and can more accurately estimate occupations with small employment levels*

SEPARATIONS METHOD

GROWTH OPENINGS	TRANSFERS	EXITS		TOTAL OPENINGS
30,306	36,457	47,032	»»	113,795

Separations Methodology

Projections Guide Overview

- *This Guide will walk through the various data elements in the spreadsheets prepared by DEO for the employment projections data.*

- *This portal can be found here: http://www.floridajobs.org/wser/ep*

Occupation Code and Title

A   **B**

Occupation Code	Title
Occs	*Total, All Occupations*
110000	**Management Occupations**
111000	*Top Executives*
111011	Chief Executives
111021	General and Operations Managers
111031	Legislators
112000	*Marketing, Public Relations & Sales Managers*
112011	Advertising and Promotions Managers
112021	Marketing Managers
112022	Sales Managers
112031	Public Relations and Fundraising Managers
113000	*Operations Specialties Managers*
113011	Administrative Services Managers
113021	Computer and Information Systems Managers
113031	Financial Managers
113051	Industrial Production Managers
113061	Purchasing Managers
113071	Transportation, Storage, and Distribution Managers
113111	Compensation and Benefits Managers
113121	Human Resources Managers
113131	Training and Development Managers

- *Columns A & B show the Standard Occupation Classification (SOC) code for each occupation and the title associated with that code. The 2010 Standard Occupational Classification (SOC) system is used by Federal statistical agencies to classify workers into occupational categories for the purpose of collecting, calculating, or disseminating data*

- *All workers are classified into one of 840 detailed occupations according to their occupational definition*

Employment

C	D
Employment	
2017	2025
9,316,220	10,366,167
413,213	454,054
104,605	116,514
20,000	21,379
82,913	93,393
1,692	1,742
26,240	29,580
865	964
8,336	9,705
14,475	16,061
2,564	2,850
65,323	73,482
11,319	12,799
12,257	14,470
22,399	24,967
5,051	5,277
2,564	2,832

- *Columns C & D show employment for each occupation in the base year and the projected employment level*

- *Column C is the base year and the numbers come from industry employment levels captured in QCEW data and other sources. The occupational numbers are based on staffing ratios collected from OES survey data*
  - ➢ *The staffing ratios are unique to Florida and are revised every year*

Employment

C	D
Employment	
2017	2025
9,316,220	10,366,167
413,213	454,054
104,605	116,514
20,000	21,379
82,913	93,393
1,692	1,742
26,240	29,580
865	964
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14,475	16,061
2,564	2,850
65,323	73,482
11,319	12,799
12,257	14,470
22,399	24,967
5,051	5,277
2,564	2,832

- *Column D is the projected year and the numbers come from historical industry data also produced by QCEW and other sources.*

- *The projections are generated using a machine learning statistical package developed by a state consortium called the Projections Management Partnership*

- *Once the industry projections are complete, Florida's staffing ratios, collected by OES, are overlaid on the industry projections data to generate the occupation breakout*

Replacements Method

C	D	E	F
Employment		2017 - 2025	
2017	2025	Growth	Percent Growth
9,316,220	10,366,167	1,072,354	11.3
413,213	454,054	42,919	9.9
104,605	116,514	11,909	11.4
20,000	21,379	1,379	6.9
82,913	93,393	10,480	12.6
1,692	1,742	50	3.0
26,240	29,580	3,340	12.7
865	964	99	11.5
8,336	9,705	1,369	16.4
14,475	16,061	1,586	11.0
2,564	2,850	286	11.2
65,323	73,482	8,159	12.5
11,319	12,799	1,480	13.1
12,257	14,470	2,213	18.1
22,399	24,967	2,568	11.5
5,051	5,277	226	4.5
2,564	2,832	268	10.5
4,291	4,670	379	8.8
679	764	85	12.5
5,486	6,243	757	13.8
1,277	1,460	183	14.3

- *Under the old Replacements method:*
  - *Column E is generally the difference between column D and C. However, this is not always true for aggregate categories because of limitations of the calculation method*
    - *E = D-C*

  - *Column F is a calculation of the percentage of the level growth captured in column E*
    - *F = (D/C) – 1*

Replacements Method

E   F   G

| 2017 - 2025 | | |
Growth	Percent Growth	Total Job Openings*
1,072,354	11.3	2,856,949
42,919	9.9	112,041
11,909	11.4	31,401
1,379	6.9	4,089
10,480	12.6	26,969
50	3.0	343
3,340	12.7	8,497
99	11.5	321
1,369	16.4	2,920
1,586	11.0	4,279
286	11.2	977
8,159	12.5	19,076
1,480	13.1	3,115
2,213	18.1	3,293
2,568	11.5	6,727
226	4.5	1,345
268	10.5	737
379	8.8	1,114
85	12.5	242
757	13.8	2,025

- *Under the old Replacements method:*
  - ➢ *Column G is calculated by applying a replacement needs factor to column E based on historical occupational replacement rates derived from the Current Population Survey (CPS)*

  - ➢ *This factor attempted to capture job openings due to replacement needs, but often only captured needs due to labor force exits, thus undercounting total needed replacements*

Separations Method

	C	D	E	F
	Employment			2017 - 2025
	2017	2025	Growth	Percent Growth
	9,316,220	10,366,167	1,072,354	11.3
	413,213	454,054	42,919	9.9
	104,605	116,514	11,909	11.4
	20,000	21,379	1,379	6.9
	82,913	93,393	10,480	12.6
	1,692	1,742	50	3.0
	26,240	29,580	3,340	12.7
	865	964	99	11.5
	8,336	9,705	1,369	16.4
	14,475	16,061	1,586	11.0
	2,564	2,850	286	11.2
	65,323	73,482	8,159	12.5
	11,319	12,799	1,480	13.1
	12,257	14,470	2,213	18.1
	22,399	24,967	2,568	11.5
	5,051	5,277	226	4.5
	2,564	2,832	268	10.5
	4,291	4,670	379	8.8
	679	764	85	12.5
	5,486	6,243	757	13.8
	1,277	1,460	183	14.3

- *Under the new Separations method:*
  - *Column E is the difference between column D and C*
    - $E = D - C$

  - *Column F is a calculation of the percentage of the level growth captured in column E*
    - $F = (D/C) - 1$

Separations Method

E	F	G
	2017 - 2025	
Growth	Percent Growth	Total Job Openings*
1,072,354	11.3	2,856,949
42,919	9.9	112,041
11,909	11.4	31,401
1,379	6.9	4,089
10,480	12.6	26,969
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3,340	12.7	8,497
99	11.5	321
1,369	16.4	2,920
1,586	11.0	4,279
286	11.2	977
8,159	12.5	19,076
1,480	13.1	3,115
2,213	18.1	3,293
2,568	11.5	6,727
226	4.5	1,345
268	10.5	737
379	8.8	1,114
85	12.5	242
757	13.8	2,025

- *Under the new Separations method:*
  - *Column G is now calculated adding together column E with two new estimates– annual exits and annual transfers*
    - *Annual exits (not shown) captures the number of people who are leaving the labor force permanently*
    - *Annual transfers (not shown) captures the number of people who are moving to another occupation from this occupation*
  - *Annual exits and transfers are new estimates calculated using regression models that incorporate age and other demographic variables from the CPS longitudinal data*

Total Job Openings: New vs Old Methodology

Median Hourly Wage

H

2017 Median Hourly Wage ($)**	Education Level	
	FL†	BLS†
-	-	-
-	-	-
-	-	-
102.41	B	B
54.51	A	A
24.94	B	B
-	-	-
58.75	B	B
54.45	B	B
60.14	B	B
52.90	B	B
-	-	-
49.23	A	HS
62.89	B	B
61.14	B	B
49.29	A	B
55.08	A	B
45.84	A	HS
47.17	A	B
50.12	B	B
46.86	A	B

I   J

- Column H reports median hourly wage for a given occupation

- The wage data come from the same OES survey of employers used to create Florida's occupational staffing patterns

Florida's Education Level

| 2017 Median Hourly Wage ($)** | Education Level | |
	FL†	BLS†
34.37	B	B
49.20	B	B
29.45	PS	B
35.42	B	B
20.39	A	B
34.90	A	HS
17.97	B	B
12.55	PS	HS
32.64	PS	B
-	-	-
-	-	-
45.61	M+	D
39.24	A	B
39.72	PS	B
34.79	PS	B
41.79	A	B
47.22	B	B
28.26	PS	B
39.71	A	B

H *I* *J*

- *Column I shows the minimum education level expected to be able to enter a given occupation as defined by the state of Florida*

†Florida education levels are abbreviated as follow:

A: Associate Degree
B: Bachelor's Degree
HS: High School Diploma or GED
M+: Master's, Doctoral or Professional Degree
NR: No formal educational credential required
PS: Postsecondary Non-Degree Award

BLS Education Level

H	I	J
2017 Median Hourly Wage ($)**	Education Level	
	FL†	BLS†
34.37	B	B
49.20	B	B
29.45	PS	B
35.42	B	B
20.39	A	B
34.90	A	HS
17.97	B	B
12.55	PS	HS
32.64	PS	B
-	-	-
-	-	-
45.61	M+	D
39.24	A	B
39.72	PS	B
34.79	PS	B
41.79	A	B
47.22	B	B
28.26	PS	B
39.71	A	B
37.87	A	B
33.67	PS	B

- *Column J shows the typical entry-level education level expected of those who are in a given occupation.*

- *These are based on data collected by the Bureau of Labor Statistics.*

†U.S. Department of Labor, Bureau of Labor Statistics education levels are abbreviated as follow:

A: Associate Degree
B: Bachelor's Degree
D: Doctoral or Professional Degree
HS: High School Diploma or GED
M: Master's Degree
NR: No formal educational credential required
PS: Postsecondary Non-Degree Award
SC: Some college, no degree

Thank You.

If you have questions or comments about this presentation or need to discuss a future project; please contact our office.

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