

## Employees End-of-Quarter: Average Monthly Earnings

**Datafile label:** EarnEnd

**QWI indicator:** Worker earnings

**Level of measurement:** Job (PIK-SEIN pair)

**Level of estimation:** A worker's job (monthly calculation)

**Employment status:** Point-in-time

**Definition:** The reported quarterly UI wages for workers who fit the definition of Employment End-of-Quarter (EmpEnd) in the reference (t) quarter summed across firms, and divided by the count of such workers. The result is then multiplied by 1/3 to derive the monthly average.

**Explanation:**

- The average monthly earnings for all workers who were employed by a given employer on the last calendar day of the reference quarter.
  - Only the average of the earnings for workers who fit the definition of Employment End-of-Quarter (EmpEnd) are included in this definition. Employment End-of-Quarter (EmpEnd) is defined as all workers who were employed by a given employer in both the reference and subsequent quarters.
- Average earnings for workers employed at the end of the reference quarter.
- Represents an average of earnings in the reference quarter.
- Employees End-of-Quarter: Average Monthly Earnings (EarnEnd) defines a category of workers.

**Measure:**

$$ZWE_{(t)} = \frac{1}{3} \left( \frac{WE_{(t)}}{E_{(t)}} \right)$$

$$\left( \begin{array}{l} WE_{(t)} = \sum_j \sum_i we_{(ijt)} \\ E_{(t)} = \sum_j \sum_i e_{(ijt)} \end{array} \right)$$

where the measure of employment end-of-quarter is:

$$e_{(ijt)} = \begin{cases} 1, & \text{if } m_{(ijt)} = 1 \text{ \& } m_{(ijt+1)} = 1 \\ 0, & \text{otherwise} \end{cases}$$

(See above Definition and Explanation sections for a narrative description.)

**QWI availability:** Not defined for the first two quarters or the final quarter of available data from a given state.

### Employees End-of-Quarter: Average Monthly Earnings (EarnEnd) Example

The State of New Columbia contains three firms, Happy Teeth, Quick Lunch, and Daily Tribune. For the purpose of estimating Employees End-of-Quarter: Average Monthly Earnings (EarnEnd), the reference quarter is 1996:Q3.

History of UI Wage Reports for HAPPY TEETH								EmpEnd
Employees	1995:Q2	1995:Q3	1995:Q4	1996:Q1	1996:Q2	1996:Q3	1996:Q4	1996:Q3
Almez	\$ 4,825	\$ 4,750	\$ 2,500	\$ -	\$ -	\$ -	\$ 5,625	
Suresh	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 3,750	\$ 8,800	1
Tom	\$ 3,750	\$ 3,800	\$ 3,775	\$ 3,775	\$ 3,750	\$ 3,875	\$ 3,850	1
Iona	\$ -	\$ -	\$ -	\$ -	\$ 4,250	\$ 4,875	\$ -	
Dr. Ali	\$13,250	\$ 12,750	\$13,250	\$13,000	\$13,250	\$13,750	\$13,625	1
Totals for employees who fit the definition of EmpEnd in the reference (1996:Q3) quarter:						\$21,375		3

At Happy Teeth, Suresh, Tom, Dr. Ali fit the definition of EmpEnd in the reference (1996:Q3) quarter. The firm's combined wage was \$21,375 and its Employment End-of-Quarter (EmpEnd) count was 3 jobs.

History of UI Wage Reports for QUICK LUNCH								EmpEnd
Employees	1996:Q3	1995:Q3	1995:Q4	1996:Q1	1996:Q2	1996:Q3	1996:Q4	1996:Q3
Ly	\$ -	\$ -	\$ 4,350	\$ 4,975	\$ 4,875	\$ 4,950	\$ 4,800	1
Ms. White	\$ -	\$ -	\$ 9,050	\$ 9,500	\$ 9,450	\$ 9,350	\$ 9,475	1
Totals for employees who fit the definition of EmpEnd in the reference (1996:Q3) quarter:						\$14,300		2

At Quick Lunch, Ly and Ms. White fit the definition of EmpEnd in the reference (1996:Q3) quarter. The firm's combined quarterly wage was \$14,300 and its Employment End-of-Quarter (EmpEnd) count was 2.

History of UI Wage Reports for DAILY TRIBUNE								EmpEnd
Employees	1996:Q3	1995:Q3	1995:Q4	1996:Q1	1996:Q2	1996:Q3	1996:Q4	1996:Q3
Chaitley	\$ -	\$ 3,000	\$ 5,500	\$ -	\$ -	\$ -	\$ -	
Khone	\$ -	\$ -	\$ 5,325	\$ 8,800	\$ 8,825	\$ 8,875	\$ 8,850	1
Mr. Ramirez	\$17,500	\$17,775	\$17,875	\$17,750	\$17,825	\$17,925	\$17,800	1
Totals for employees who fit the definition of EmpEnd in reference (1996:Q3) quarter:						\$26,800		2

At Daily Tribune, Khone and Mr. Ramirez fit the definition of EmpEnd in the reference (1996:Q3) quarter. The firm's combined quarterly wage was \$26,800 and its Employment End-of-Quarter (EmpEnd) count was 2 jobs.

The combined quarterly wage for those who fit the definition of EmpEnd and the counts of those workers are summed across firms. The total quarterly wage is divided by the count of workers, and the value is multiplied by 1/3 to derive the monthly average earnings:

$$\frac{1}{3} \left( \frac{\$62,475}{7} \right) = \$2,975$$

The Employees End-of-Quarter: Average Monthly Earnings (EarnEnd) for the State of New Columbia in the reference (1996:Q3) quarter is \$2,975.

Totals for the State of New Columbia	Wage	EmpEnd
	1996:Q3	1996:Q3
Happy Teeth	\$21,375	3
Quick Lunch	\$14,300	2
Daily Tribune	\$26,800	2
Totals:	\$62,475	7

## Employees Stable Jobs: Average Monthly Earnings

**Datafile label:** EarnS

**QWI indicator:** Worker earnings

**Level of measurement:** Job (PIK-SEIN pair)

**Level of estimation:** A worker's job (monthly calculation)

**Employment status:** Full quarter

**Definition:** The reported quarterly UI wages for workers who fit the definition of Employment Stable Jobs (EmpS) in the reference (t) quarter summed across firms and divided by the count of such workers. The result is then multiplied by 1/3 to derive the monthly average.

**Explanation:**

- The average monthly earnings for all workers employed by a given employer for three consecutive quarters.  
Only the average of the earnings for workers who fit the definition of Employment Stable Jobs (EmpS) are included in this definition. Employment Stable Jobs (EmpS) is defined as all workers who were employed by a given employer in the reference, subsequent, and previous quarters.
- Average earnings for workers employed in stable jobs.
- Represents an average of earnings during the reference quarter.
- Employees Stable Jobs: Average Monthly Earnings (EarnS) defines a category of workers.

**Measure:**

$$ZWF_{(t)} = \frac{1}{3} \left( \frac{WF_{(t)}}{F_{(t)}} \right)$$

$$\left( \begin{array}{l} WF_{(t)} = \sum_j \sum_i wf_{(ijt)} \\ F_{(t)} = \sum_j \sum_i f_{(ijt)} \end{array} \right)$$

where the measure of employment stable jobs is:

$$f_{(ijt)} = \begin{cases} 1, & \text{if } m_{(ijt-1)} = 1 \ \& \ m_{(ijt)} = 1 \ \& \ m_{(ijt+1)} = 1 \\ 0, & \text{otherwise} \end{cases}$$

(See above Definition and Explanation sections for a narrative description.)

**QWI availability:** Not defined for the first or final quarter of available data from a given state.

### Employees Stable Jobs: Average Monthly Earnings (EarnS) Example

The State of New Columbia contains three firms, Happy Teeth, Quick Lunch, and Daily Tribune. For the purpose of estimating Employees Stable Jobs: Average Monthly Earnings (EarnS), the reference quarter is 1996:Q3.

History of UI Wage Reports for HAPPY TEETH								EmpS
Employees	1995:Q2	1995:Q3	1995:Q4	1996:Q1	1996:Q2	1996:Q3	1996:Q4	1996:Q3
Almez	\$ 4,825	\$ 4,750	\$ 2,500	\$ -	\$ -	\$ -	\$ 5,625	
Suresh	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 3,750	\$ 8,800	
Tom	\$ 3,750	\$ 3,800	\$ 3,775	\$ 3,775	\$ 3,750	\$ 3,875	\$ 3,850	1
Iona	\$ -	\$ -	\$ -	\$ -	\$ 4,250	\$ 4,875	\$ -	
Dr. Ali	\$13,250	\$12,750	\$13,250	\$13,000	\$13,250	\$13,750	\$13,625	1
Totals for employees who fit the definition of EmpS in the reference (1996:Q3) quarter:						\$17,625		2

At Happy Teeth, Tom and Dr. Ali fit the definition of EmpS in the reference (1996:Q3) quarter. The firm's combined wage was \$17,625 and its Employment Stable Jobs (EmpS) count was 2 jobs.

History of UI Wage Reports for QUICK LUNCH								EmpS
Employees	1996:Q3	1995:Q3	1995:Q4	1996:Q1	1996:Q2	1996:Q3	1996:Q4	1996:Q3
Ly	\$ -	\$ -	\$ 4,350	\$ 4,975	\$ 4,875	\$ 4,950	\$ -	
Ms. White	\$ -	\$ -	\$ 9,050	\$ 9,500	\$ 9,450	\$ 9,350	\$ 9,475	1
Totals for employees who fit the definition of EmpEnd in the reference (1996:Q3) quarter:						\$ 9,350		1

At Quick Lunch, Ms. White fit the definition of EmpS in the reference (1996:Q3) quarter. The firm's combined quarterly wage was \$9,350 and its Employment Stable Jobs (EmpS) count was 1 job.

History of UI Wage Reports for DAILY TRIBUNE								EmpS
Employees	1996:Q3	1995:Q3	1995:Q4	1996:Q1	1996:Q2	1996:Q3	1996:Q4	1996:Q3
Chaitley	\$ -	\$ 3,000	\$ 5,500	\$ -	\$ -	\$ -	\$ -	
Khone	\$ -	\$ -	\$ 5,325	\$ 8,800	\$ 8,825	\$ 8,875	\$ 8,850	1
Mr. Ramirez	\$17,500	\$17,775	\$17,875	\$17,750	\$17,825	\$17,925	\$17,800	1
Totals for employees who fit the definition of EmpS in reference (1996:Q3) quarter:						\$26,800		2

At Daily Tribune, Khone and Mr. Ramirez fit the definition of EmpS in the reference (1996:Q3) quarter. The firm's combined quarterly wage was \$26,800 and its Employment Stable Jobs (EmpS) count was 2 jobs.

The combined quarterly wage for those who fit the definition of EmpS and the counts of those workers are summed across firms. The total quarterly wage is divided by the count of workers, and the value is multiplied by 1/3 to derive the monthly average earnings:

$$\frac{1}{3} \left( \frac{\$53,775}{5} \right) = \$3,585$$

Employees Stable Jobs: Average Monthly Earnings (EarnS) for the State of New Columbia in the reference (1996:Q3) quarter is \$3,585.

Totals for the State of New Columbia	Wage	EmpS
	1996:Q3	1996:Q3
Happy Teeth	\$17,625	2
Quick Lunch	\$ 9,350	1
Daily Tribune	\$26,800	2
Totals:	\$53,775	5

## Hires All Stable Jobs: Average Monthly Earnings

**Datafile label:** EarnHirAS

**QWI indicator:** Worker earnings

**Level of measurement:** Job (PIK-SEIN pair)

**Level of estimation:** A worker's job (monthly calculation)

**Employment status:** Full quarter

**Definition:** The reported quarterly UI wages for workers who fit the definition of Hires All Stable Jobs (HirAS) in the reference (t) quarter summed across firms and divided by the count of such workers. The result is then multiplied by 1/3 to derive the monthly average.

**Explanation:**

- The average monthly earnings for all workers who were hired by a given employer and worked for three consecutive quarters.
  - Only the average of the earnings for workers who fit the definition of Hires All Stable Jobs (HirAS) are included in this definition. Hires All Stable Jobs (HirAS) is defined as all workers who were employed at a firm in the reference quarter, subsequent quarter, and previous quarter, but were not employed in the preceding quarter.
- Average earnings for workers who started a job that turned into a stable job.
- Represents an average of earnings during the reference quarter.
- Hires All Stable Jobs: Average Monthly Earnings (EarnHirAS) defines a category of workers.

**Measure:**

$$ZWFA_{(t)} = \frac{1}{3} \left( \frac{WFA_{(t)}}{FA_{(t)}} \right)$$

$$\left( \begin{array}{l} WFA_{(t)} = \sum_j \sum_i wfa_{(ijt)} \\ FA_{(t)} = \sum_j \sum_i fa_{(ijt)} \end{array} \right)$$

where the measure of hires all stable jobs is:

$$fa_{(ijt)} = \begin{cases} 1, & \text{if } m_{(ijt-2)} = 0 \text{ \& } m_{(ijt-1)} = 1 \text{ \& } m_{(ijt)} = 1 \text{ \& } m_{(ijt+1)} = 1 \\ 0, & \text{otherwise} \end{cases}$$

(See above Definition and Explanation sections for a narrative description.)

**QWI availability:** Not defined for the first two quarters or final quarter of available data from a given state.

### Hires All Stable Jobs: Average Monthly Earnings (EarnHirAS) Example

The State of New Columbia contains three firms, Happy Teeth, Quick Lunch, and Daily Tribune. For the purpose of estimating Hires All Stable Jobs: Average Monthly Earnings (EarnHirAS), the reference quarter is 1996:Q3.

History of UI Wage Reports for HAPPY TEETH								HirAS
Employees	1995:Q2	1995:Q3	1995:Q4	1996:Q1	1996:Q2	1996:Q3	1996:Q4	1996:Q3
Almez	\$ 4,825	\$ 4,750	\$ 2,500	\$ -	\$ -	\$ -	\$ 5,625	
Suresh	\$ -	\$ -	\$ -	\$ -	\$ 7,550	\$ 8,300	\$ 8,050	1
Tom	\$ 3,750	\$ 3,800	\$ -	\$ -	\$ 3,750	\$ 3,875	\$ 3,850	1
Iona	\$ -	\$ -	\$ -	\$ -	\$ 4,250	\$ 4,875	\$ -	
Dr. Ali	\$13,250	\$12,750	\$13,250	\$13,000	\$13,250	\$13,750	\$13,625	
Totals for employees who fit the definition of EarnHirAS in the reference (1996:Q3) quarter:						\$12,175		2

At Happy Teeth, Suresh and Tom fit the definition of HirAS in the reference (1996:Q3) quarter. The firm's combined quarterly wage was \$12,175 and its Hires All Stable Jobs (HirAS) count was 2.

History of UI Wage Reports for QUICK LUNCH								HirAS
Employees	1996:Q3	1995:Q3	1995:Q4	1996:Q1	1996:Q2	1996:Q3	1996:Q4	1996:Q3
Ly	\$ -	\$ 4,150	\$ 4,350	\$ 4,975	\$ 4,878	\$ 4,950	\$ 4,800	
Ms. White	\$ -	\$ 9,032	\$ 9,050	\$ 9,500	\$ 9,450	\$ 9,350	\$ 9,475	
Totals for employees who fit the definition of EarnHirAS in the reference (1996:Q3) quarter:						\$ -		0

At Quick Lunch, nobody fit the definition of HirAS in the reference (1996:Q3) quarter. The firm's combined quarterly wage was \$0 and its Hires All Stable Jobs (HirAS) count was 0 jobs.

History of UI Wage Reports for DAILY TRIBUNE								HirAS
Employees	1996:Q3	1995:Q3	1995:Q4	1996:Q1	1996:Q2	1996:Q3	1996:Q4	1996:Q3
Chaitley	\$ -	\$ -	\$ 5,905	\$ -	\$ 5,500	\$ 5,550	\$ 5,525	1
Khone	\$ -	\$ -	\$ 5,325	\$ 8,800	\$ 8,825	\$ 8,875	\$ 8,850	
Mr. Ramirez	\$17,500	\$17,875	\$17,750	\$17,750	\$17,825	\$17,925	\$17,800	
Totals for employees who fit the definition of EarnHirAS in the reference (1996:Q3) quarter:						\$ 5,550		1

At Daily Tribune, Chaitley fit the definition of HirAS for the reference (1996:Q3) quarter. The firm's combined quarterly wage was \$5,550 and its Hires All Stable Jobs (HirAS) count was 1.

The combined quarterly wage for those who fit the definition of HirAS and the counts of those workers are summed across firms. The total quarterly wage is divided by the count of workers, and the value is multiplied by 1/3 to derive the monthly average earnings:

$$\frac{1}{3} \left( \frac{\$17,675}{3} \right) = \$1,964$$

Hires All Stable Jobs: Average Monthly Earnings (EarnHirAS) for the State of New Columbia in the reference (1996:Q3) quarter is \$1,964.

Totals for the State of New Columbia	Wage	HirAS
	1996:Q3	1996:Q3
Happy Teeth	\$12,175	2
Daily Tribune	\$ 5,500	1
Totals:	\$17,675	3

## Hires New Stable Jobs: Average Monthly Earnings

**Datafile label:** EarnHirNS

**QWI indicator:** Worker earnings

**Level of measurement:** Job (PIK-SEIN pair)

**Level of estimation:** A worker's job (monthly calculation)

**Employment status:** Full quarter

**Definition:** The reported quarterly UI wages for workers who fit the definition of Hires New Stable Jobs (HirNS) in the reference (t) quarter summed across firms and divided by the count of such workers. The result is then multiplied by 1/3 to derive the monthly average.

- Explanation:**
- The average monthly earnings for all workers who were hired by a given employer and worked for three consecutive quarters, but had not been employed by that employer within the past year.
    - Only the average of the earnings for workers who fit the definition of Hires New Stable Jobs (HirNS) are included in this definition. Hires New Stable Jobs (HirNS) is defined as all workers who were employed at a firm in the reference quarter, subsequent quarter, and previous quarter, but were not employed at the firm in any of the preceding four quarters.
  - Average earnings for workers who started a job that they had not held within the past year and the job turned into a stable job.
  - Represents an average of earnings during the reference quarter.
  - Hires New Stable Jobs: Average Monthly Earnings (EarnHirNS) defines a category of workers.

**Measure:**

$$ZWFH_{(t)} = \frac{1}{3} * \left( \frac{WFH_{(t)}}{FH_{(t)}} \right)$$

$$\left( \begin{array}{l} WFH_{(t)} = \sum_j \sum_i wfh_{(ijt)} \\ FH_{(t)} = \sum_j \sum_i fh_{(ijt)} \end{array} \right)$$

where the measure of hires new stable jobs is:

$$fh_{(ijt)} = \begin{cases} 1, & \text{if } m_{(ijt-5)} = 0 \ \& \ m_{(ijt-4)} = 0 \ \& \ m_{(ijt-3)} = 0 \ \& \\ & m_{(ijt-2)} = 0 \ \& \ m_{(ijt-1)} = 1 \ \& \ m_{(ijt)} = 1 \ \& \ m_{(ijt+1)} = 1 \\ 0, & \text{otherwise} \end{cases}$$

(See above Definition and Explanation sections for a narrative description.)

**QWI availability:** Not defined for the first five quarters or final quarter of available data from a given state.

### Hires New Stable Jobs: Average Monthly Earnings (EarnHirNS) Example

The State of New Columbia contains three firms, Happy Teeth, Quick Lunch, and Daily Tribune. For the purpose of estimating Hires New Stable Jobs: Average Monthly Earnings (EarnHirNS), the reference quarter is 1996:Q3.

History of UI Wage Reports for HAPPY TEETH								EarnHirNS
Employees	1995:Q2	1995:Q3	1995:Q4	1996:Q1	1996:Q2	1996:Q3	1996:Q4	1996:Q3
Almez	\$ -	\$ -	\$ -	\$ -	\$ 5,025	\$ 5,575	\$ 5,625	1
Suresh	\$ -	\$ -	\$ -	\$ -	\$ 7,550	\$ 8,300	\$ 8,050	1
Tom	\$ 3,750	\$ 3,800	\$ 3,775	\$ 3,775	\$ 3,750	\$ 3,875	\$ 3,850	
Iona	\$ -	\$ -	\$ -	\$ -	\$ 4,250	\$ 4,875	\$ 4,432	1
Dr. Ali	\$13,250	\$12,750	\$13,250	\$13,000	\$13,250	\$13,750	\$13,625	
Totals for employees who fit the definition of EarnHirNS in the reference (1996:Q3) quarter:						\$18,750		3

At Happy Teeth, Almez, Suresh and Iona fit the definition of EarnHirNS in the reference (1996:Q3) quarter. The firm's combined quarterly wage was \$18,750 and its Hires New Stable Jobs: Average Monthly Earnings (EarnHirNS) count was 3.

History of UI Wage Reports for QUICK LUNCH								EarnHirNS
Employees	1996:Q3	1995:Q3	1995:Q4	1996:Q1	1996:Q2	1996:Q3	1996:Q4	1996:Q3
Ly	\$ -	\$ -	\$ -	\$ -	\$ 4,978	\$ 4,950	\$ 4,800	1
Ms. White	\$ -	\$ -	\$ -	\$ -	\$ 9,450	\$ 9,350	\$ 9,475	1
Totals for employees who fit the definition of EarnHirNS in the reference (1996:Q3) quarter:						\$14,300		2

At Quick Lunch, Ly and Mrs. White fit the definition of EarnHirNS in the reference (1996:Q3) quarter. The firm's combined quarterly wage was \$14,300 and its Hires New Stable Jobs: Average Monthly Earnings (EarnHirNS) count was 2.

History of UI Wage Reports for DAILY TRIBUNE								EarnHirNS
Employees	1996:Q3	1995:Q3	1995:Q4	1996:Q1	1996:Q2	1996:Q3	1996:Q4	1996:Q3
Chaitley	\$ 5,250	\$ -	\$ -	\$ -	\$ 5,500	\$ 5,550	\$ 5,525	
Khone	\$ -	\$ -	\$ 5,325	\$ 8,800	\$ 8,825	\$ 8,875	\$ 8,850	
Mr. Ramirez	\$17,500	\$17,775	\$17,875	\$17,750	\$17,825	\$17,925	\$17,800	
Totals for employees who fit the definition of EarnHirNS in the reference (1996:Q3) quarter:						\$ -		0

At Daily Tribune, no one fit the definition of EarnHirNS for the reference (1996:Q3) quarter. The firm's combined quarterly wage was \$0 and its Hires New Stable Jobs: Average Monthly Earnings (EarnHirNS) count was 0.

The combined quarterly wage for those who fit the definition of EarnHirNS and the counts of those workers are summed across firms. The total quarterly wage is divided by the count of workers, and the value is multiplied by 1/3 to derive the monthly average earnings:

$$\frac{1}{3} \left( \frac{\$33,050}{5} \right) = \$2,203$$

Hires New Stable Jobs: Average Monthly Earnings (EarnHirNS) for the State of New Columbia in the reference (1996:Q3) quarter is \$2,203.

Totals for the State of New Columbia	Wage	EarnHirNS
	1996:Q3	1996:Q3
Happy Teeth	\$18,750	3
Quick Lunch	\$14,300	2
Totals:	\$33,050	5



## Hires All: Average Change in Monthly Earnings

**Datafile label:** EarnHirAC

**QWI indicator:** Worker earnings

**Level of measurement:** Job (PIK-SEIN pair)

**Level of estimation:** All jobs for a worker (monthly calculation)

**Employment status:** Point-in-time

**Definition:** The reported quarterly UI Earnings for workers who fit the definition of Hires All (HirA) in the reference (t) quarter *summed across all firms at which they were employed*, minus the reported quarterly UI Earnings of that group *summed across all firms at which they were employed* in the previous (t-1) quarter. That difference is divided by the count of workers who fit the definition of HirA in the reference (t) quarter. The result is multiplied by 1/3 to derive the monthly average.

**Explanation:**

- The change in average monthly earnings for workers who were hired in the reference quarter, compared to their earnings in the previous quarter.
  - The earnings for workers who fit the definition of Hires All (HirA) at a firm in the reference quarter *summed across all employers* are included in this definition. Hires All (HirA) is defined as all workers who established employment status with a given employer in the reference quarter.
- Change in average earnings for workers who started a job in the reference quarter *summed across all employers* compared to their wages *summed across all employers* in the previous quarter.
- Represents a change in average earnings during the reference quarter.
- Hires All: Average Change in Monthly Earnings (EarnHirAC) defines a category of workers.

**Measure:**

$$Z\Delta WA_{(t)} = \frac{1}{3} \left( \frac{WA_{(t)} - WP_{(t-1)}}{A_{(t)}} \right)$$

$$\left( \begin{array}{l} WA_{(t)} = \sum_i \sum_j wa_{(ijt)} \quad WP_{(t-1)} = \sum_i \sum_j wp_{(ijt-1)} \\ A_{(t)} = \sum_j \sum_i a_{(ijt)} \end{array} \right)$$

where the measure of Hires All is: and the measure of Hires All Previous is:

$$a_{(ijt)} = \begin{cases} 1, & \text{if } m_{(ijt-1)} = 0 \text{ \& } m_{(ijt)} = 1 \\ 0, & \text{otherwise} \end{cases} \quad p_{(ijt-1)} = \begin{cases} 1, & \text{if } a_{(ijt)} = 1 \\ 0, & \text{otherwise} \end{cases}$$

(See above Definition and Explanation sections for a narrative description.)

**QWI availability:** Not defined for the first quarter of available data from a given state.

**Hires All: Average Change in Monthly Earnings (EarnHirAC) Example:**

The State of New Columbia contains three firms, Happy Teeth, Quick Lunch, and Daily Tribune. For the purpose of estimating Hires All: Average Change in Monthly Earnings (EarnHirAC), the reference quarter is 1996:Q3.

History of UI Wage Reports for HAPPY TEETH								HirA
Employees	1995:Q2	1995:Q3	1995:Q4	1996:Q1	1996:Q2	1996:Q3	1996:Q4	1996:Q3
Almez	\$ -	\$ -	\$ -	\$ 5,625	\$ 5,625	\$ 5,625	\$ 5,625	
Suresh	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 8,050	\$ 7,525	1
Tom	\$ -	\$ -	\$ -	\$ -	\$ 1,925	\$ 1,913	\$ 1,950	
Iona	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 3,925	\$ 3,925	1
Dr. Ali	\$13,250	\$12,750	\$13,250	\$13,000	\$13,250	\$13,750	\$13,625	
Totals for employees who fit the definition of HirA in the reference (1996:Q3) quarter:					\$ -	\$11,975		2

At Happy Teeth, Suresh and Iona fit the definition of HirA in the reference (1996:Q3) quarter, so their quarterly wage in the reference (1996:Q3) quarter will be used in computation of EarnHirAC.

History of UI Wage Reports for QUICK LUNCH								HirA
Employees	1996:Q3	1995:Q3	1995:Q4	1996:Q1	1996:Q2	1996:Q3	1996:Q4	1996:Q3
Suresh	\$ -	\$ -	\$ 3,300	\$ 3,120	\$ 3,450	\$ 3,000	\$ 3,025	0
Ms. White	\$ -	\$ -	\$ 9,450	\$ 9,330	\$ 9,550	\$ 9,350	\$ 9,475	
Totals for employees who fit the definition of HirA at any firm in the state of New Columbia in the reference (1996:Q3) quarter:					\$ 3,450	\$ 3,000		0

At Quick Lunch, no one fit the definition of HirA in the reference (1996:Q3) quarter. Suresh, however, started a second job at Happy Teeth in the reference (1996:Q3), and fit the definition of HirA at that firm. So his quarterly wage at Quick Lunch in the previous (1996:Q2) and reference (1996:Q3) quarters will be used in the computation of EarnHirAC.

History of UI Wage Reports for DAILY TRIBUNE								HirA
Employees	1996:Q3	1995:Q3	1995:Q4	1996:Q1	1996:Q2	1996:Q3	1996:Q4	1996:Q3
Iona	\$ -	\$ -	\$ -	\$ -	\$ 5,225	\$ 5,550	\$ 5,525	0
Khone	\$ 7,550	\$ 8,300	\$ 8,850	\$ 8,800	\$ 8,825	\$ 8,875	\$ 8,850	
Mr. Ramirez	\$ 17,500	\$17,775	\$17,875	\$17,750	\$17,825	\$17,925	\$17,800	
Totals for employees who fit the definition of HirA at any firm in the state of New Columbia in the reference (1996:Q3) quarter:					\$ 5,225	\$ 5,550		0

At Daily Tribune, no one fit the definition of HirA for the reference (1996:Q3) quarter. Iona, however, started a second job at Happy Teeth in the reference (1996:Q3), and fit the definition of HirA at that firm. So her quarterly wage at Daily Tribune in the previous (1996:Q2) and reference (1996:Q3) quarters will be used in the computation of EarnHirAC.

The combined quarterly wage for those who fit the definition of HirA in the reference (1996:Q3) quarter is summed across ALL firms where they were employed. The combined quarterly wage those workers received in the previous (1996:Q2) quarter across ALL firms where they were employed is also summed. The difference between the two quarterly sums is divided by the HirA count for the reference (1996:Q3) quarter, and that amount is multiplied by 1/3 to derive the monthly average earnings:

$$\frac{1}{3} \left( \frac{(\$20,525) - (\$8,675)}{2} \right) = \$1,975$$

Hires All: Average Change in Monthly Earnings (EarnHirAC) for the State of New Columbia in the reference (1996:Q3) quarter is \$1,975.

<b>Totals for the State of New Columbia</b>	Wage	<b>Wage</b>	<b>HirA</b>
	1996:Q2	<b>1996:Q3</b>	<b>1996:Q3</b>
Happy Teeth	\$ -	<b>\$11,975</b>	<b>2</b>
Quick Lunch	\$ 3,450	<b>\$ 3,000</b>	<b>0</b>
Daily Tribune	\$ 5,225	<b>\$ 5,550</b>	<b>0</b>
Totals:	\$ 8,675	<b>\$20,525</b>	<b>2</b>

## QWI Definitions at a Glance

<u>Lead/Lag Notation</u>	<u>Date</u>	<u>EarnEnd</u>	<u>EarnS</u>	<u>EarnHirAS</u>	<u>EarnHirNS</u>	<u>EarnHirAC</u>
t-6	1995:Q1					
t-5	1995:Q2				0	
t-4	1995:Q3				0	
t-3	1995:Q4				0	
t-2	1996:Q1			0	0	
t-1	1996:Q2		1	1	1	0
<b>t (reference)</b>	<b>1996:Q3</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>
t+1	1996:Q4	1	1	1	1	
t+2	1997:Q1					
t+3	1997:Q2					
t+4	1997:Q3					
t+5	1997:Q4					

t(reference)= the year/quarter for which the QWI is estimated

1= PIK-SEIN pairing observed in the reference quarter is present in the designated quarter.

0= PIK-SEIN pairing observed in the reference quarter is not present in the designated quarter.

### QWI

EarnEnd	Employees End-of-Quarter: Average Monthly Earnings	The reported quarterly UI wages for workers who fit the definition of Employment End-of-Quarter (EmpEnd) in the reference (t) quarter summed across firms, and divided by the count of such workers. The result is then multiplied by 1/3 to derive the monthly average.
EarnS	Employees Stable Jobs: Average Monthly Earnings	The reported quarterly UI wages for workers who fit the definition of Employment Stable Jobs (EmpS) in the reference (t) quarter summed across firms and divided by the count of such workers. The result is then multiplied by 1/3 to derive the monthly average.
EarnHirAS	Hires All Stable Jobs: Average Monthly Earnings	The reported quarterly UI wages for workers who fit the definition of Hires All Stable Jobs (HirAS) in the reference (t) quarter summed across firms and divided by the count of such workers. The result is then multiplied by 1/3 to derive the monthly average.
EarnHirNS	Hires New Stable Jobs: Average Monthly Earnings	The reported quarterly UI wages for workers who fit the definition of Hires New Stable Jobs (HirNS) in the reference (t) quarter summed across firms and divided by the count of such workers. The result is then multiplied by 1/3 to derive the monthly average.
EarnHirAC	Hires All: Average Change in Monthly Earnings	The reported quarterly UI Earnings for workers who fit the definition of Hires All (HirA) in the reference (t) quarter <i>summed across all firms at which they were employed</i> , minus the reported quarterly UI Earnings of that group <i>summed across all firms at which they were employed</i> in the previous (t-1) quarter. That difference is divided by the count of workers who fit the definition of HirA in the reference (t) quarter. The result is multiplied by 1/3 to derive the monthly average.

## QWI Availability at a Glance

<u>State Input Data</u>	<u>Date</u>	<u>EarnEnd</u>	<u>EarnS</u>	<u>EarnHirAS</u>	<u>EarnHirNS</u>	<u>EarnHirAC</u>
first quarter	1990:Q1	X	X	X	X	X
	1990:Q2			X	X	
	1990:Q3				X	
	1990:Q4				X	
	1991:Q1				X	
	1991:Q2					
	1991:Q3					
	1991:Q4					
	:::					
	:::					
	:::					
	:::					
	2002:Q1					
	2002:Q2					
	2002:Q3					
	2002:Q4					
	2003:Q1					
	2003:Q2					
	2003:Q3					
	last quarter	2003:Q4	X	X	X	X

State Input Data- State ES202 and UI Wage Records

X- QWI estimate is not calculated