

## Using the Career Path Calculator (v.5-13k)

The career path calculator will generate simulated earnings growth profiles for a set of career paths, based upon the LEHD between-job and within-job wage growth regressions. This document describes the use of the career path calculator.

Career paths are defined for a specified demographic group in a given industry. Demographic characteristics are:

- Sex
- Age group
- Education group

The career path itself is defined as an alternating sequence of jobs and job changes. A job is defined by:

- The job tenure
- Characteristics of the firm in which the job is held (industry, net growth, size, and turnover.)

A job change is defined by:

- Length of jobless spell
- Characteristics of the old and new firms, as defined above.

Earnings growth is defined as annualized full-quarter earnings growth deviated from the national mean.

### Installing the calculator

The calculator is wholly contained in one Microsoft Excel workbook, "Career Path Calculator 5-13k.xls". No special installation is required; simply unzip the file to any location on a local hard disk. The career path calculator has been tested on Microsoft Excel 2002 SP3.

### Inputting a career path

Open the Excel workbook, and open the "Career Path Calculator" worksheet by selecting the appropriate tab on the bottom left-hand corner. Go to the top-left of the worksheet, and look at the large box labeled "Career Path Input." All of the following steps occur in this box:

1. In the white cell, type in the abbreviation for the **base industry** (e.g. "SC" for semiconductor)
2. Leave the **national growth rate** as .013535
3. In the box immediately to the right, input the **sex** (M/F), **age group** (1/2/3/4), and **education group** (1/2/3) for the desired demographic group to simulate. Refer to the key in the top-left corner for the age/education group values.
4. In the "**Path Name**" field, type in a name for this career path (e.g. "Job Hopper")
5. The "**Frequency**" value has no effect on the calculations, and is simply copied into the corresponding box in the "summary table" worksheet for reporting purposes.
6. In the rightmost column, in the white box labeled "**Index Earnings**," enter a value for the worker's initial annualized earnings in his/her first job.

7. Career paths are defined as a sequence of jobs and job changes. A career path should have a minimum of one job. A career path must end with a job, rather than a job change.
8. For the rows labeled “Job *n*:” type in the appropriate characteristics for the job and the firm.
  - **Tenure** – the total job tenure, in full quarters
  - **In-Industry** – “1” if the job is in the base industry, “0” if not.
  - **Firm Net Growth** – “+” if the firm experienced positive net growth during the job period, “-” if negative.
  - **Firm Size** – “S” for small firms ( $\leq 100$  employees,) “L” for large firms ( $> 100$  employees)
  - **Firm Churn** – “L” for low turnover firms, “H” for high turnover firm
  - **Censoring** – “U” to use regression results for uncensored spells, “R” to use regression results for right-censored spells (typically for the last job in the sequence).
9. For the rows labeled “Change”, type in the appropriate characteristics for the between-job period:
  - a. **Tenure** – length of the jobless spell between jobs. Should be a minimum of 1.
  - b. **Censoring** – “U” to use regression results for uncensored spells, “R” to use regression results for right-censored spells (typically for the last job in the sequence).
10. The columns to the right of the job path input give the annualized earnings growth as estimated by the WJWG and BJWG regressions for each job or between-job spell, and the indexed earnings at the end of each job or jobless spell.
  - a. The “Firm Growth Only” column gives results based on the regression specification that does not include the firm size and turnover variables.
  - b. The “All firm Characteristics” column gives results based on the full specification.

## Example:

<b>Base Industry:</b>	<input type="text" value="SW"/>	SC, FS, TR, SW, RF	<b>Sex:</b>	<input type="text" value="M"/>					
<b>National growth rate:</b>	<input type="text" value="0.013535"/>		<b>Age:</b>	<input type="text" value="3"/>					
<b>Education:</b>			<b>Education:</b>	<input type="text" value="3"/>					
<b>Path Name:</b>	<input type="text" value="Loyalist"/>	<b>Frequency:</b>	<input type="text" value="17.0%"/>						
	<b>Tenure (Qtrs)</b>	<b>In-Industry (1/0)</b>	<b>Firm Net Growth (+/-)</b>	<b>Firm Size (S/L)</b>	<b>Firm Churn (L/H)</b>	<b>Censoring (U,R)</b>	<b>Annualized Growth</b>	<b>Index Earnings</b>	<b>Earnings</b>
Job 1:	28	0	-	L	L	U	0.055	100.00	11
Change:	1					U	0.111	146.61	17
Job 2:	11	1	-	L	L	R	0.115	207.00	24
Change:									
Job 3:									
Change:									
Job 4:									
Change:									
Job 5:									
Change:									
Job 6:									
<b>Total:</b>	<b>40</b>						<b>0.073</b>	<b>206.999</b>	<b>24</b>

The input above gives earnings growth for a male, age 35-54, high education, in software. He holds his first job for 28 quarters, in a large, low-turnover firm experiencing negative net growth outside the software industry. After a one-quarter jobless spell, he moves to a software-industry job for a right-censored 11 quarter spell, in a large, low-turnover firm experiencing negative net growth.

## Comparing career paths

To compare up to 3 different career paths for a given demographic group and base industry, input additional career paths in the boxes below the “Career Path Input.” Be sure to give a “path name” to each career path. The worksheet “Graph” will compare the different earning paths.

## Calculator Output

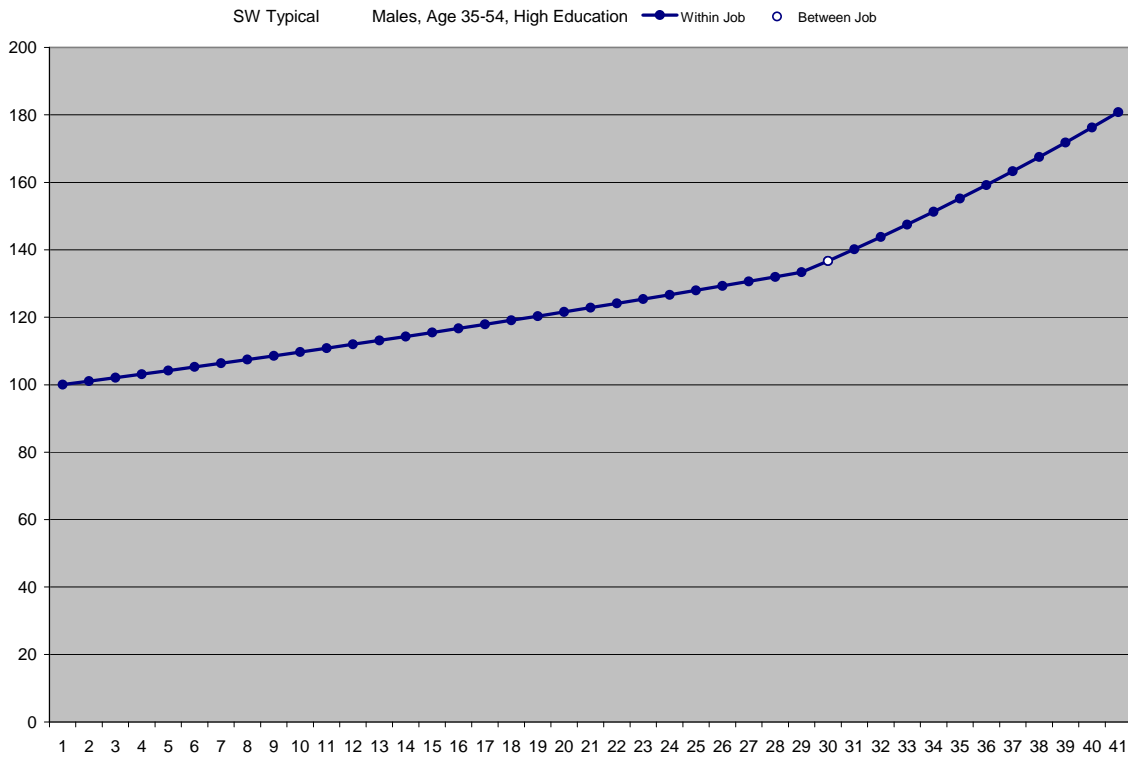
Calculator outputs are evaluated in real-time as the inputs above are entered.

On the “Career Path Calculator” worksheet, the three rightmost columns show:

- The estimated annualized growth rate within and between each job spell; the last row shows the net annualized growth rate over the total specified career path.

- The estimated earnings at the completion of each job or job spell, with initial earnings indexed to 100.
- The estimated earnings at the completion of each job or job spell, with initial earnings indexed as specified.

On the worksheet labeled “Graph,” the earnings growth path for the first 40 quarters of the specified career paths, based on the “All Firm Characteristics” results, is shown. Within-job periods are represented by solid dots, between-job periods by white dots.



On the worksheet labeled “Summary Table,” the results in the “Career Path Calculator” worksheet are summarized.

### **Saving and copying results**

Because of the large size of the career path calculator, results are probably best copied into a Microsoft Word file or a new Excel workbook. For simplicity, results are probably best saved to a word file: if results are copied to a new Excel workbook, these will be copied as “links” back to the original workbook unless “Paste Special... Values” is used.