Methodology

The study examines nine years of data collected from 2002 to 2010. The data includes statistics for the 50 states and the District of Columbia, which were assembled into a panel set. Labor force data were taken from the U.S. Bureau of Labor Statistics (BLS) website. Gross Domestic Product (GDP) by aggregate and personal income data by state came from the U.S. Bureau of Economic Analysis (BEA) website. A higher cost of living may induce further participation within the workforce to maintain a standard of living. A statewide measure of cost of living was calculated by Zimmer and Linville (2011) using Census data and ACCRA metropolitan cost of living estimates.[1]

Educational data was obtained from the U.S. Census Bureau's American Community Survey, 2002-2010. It represents the percentage of individuals 25 and older who have achieved at least a bachelor's degree. Homeownership statistics were provided by the STATS Indiana website maintained by the Indiana Business Research Center (IBRC). The inclusion of homeownership follows a line of research introduced by Andrew Oswald (1996) examining the relationship between employee mobility, homeownership and unemployment.[2] Population data was also obtained from the U.S. Census Bureau.

State binaries were created to account for state-specific biases altering the labor force. A fixed effects model was used to accommodate yearly variation. The complete dataset contained 4,849 observations. Summary statistics are provided:

Table 1 - Summary Statistics

Observations	4,849			
	Mean	Std. Dev	Min.	Max.
Labor Force	2,944,161	3,216,213	269,654	1.83E+07
GDP (mil. $)	251,919	304,308	19,262	1,900,463
Per Capita Income ($)	36,006	6,975	23,131	7.07E+04
Cost of Living Adjustment	106.59	18.15	89	167
Home Ownership (%)	0.69699	0.0588	0.43	0.814
Population	5,855,804	6,528,044	497,069	37,300,000
Educational Attainment (%)	0.26856	0.0540	0.1607758	0.4979999
Older	0.00012	0.0000	0.0000576	0.0001608

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[1] T.E. Zimmer and K. Linville, "Does Cost of Living Affect Indiana Incomes?" *InContext,* November-December 2011, www.incontext.indiana.edu/2011/nov-dec/article2.asp.

[2] A. Oswald, "A Conjecture on the Explanation for High Unemployment in the Industrialized Nations: Part I," Warwick Economics Research Paper, University of Warwick (1996): 475.

A fixed effects model was constructed to test for influences on labor force participation rate. The model uses labor force participation rate as the dependent variable and independent variables which include measures to test for the potential of influence.

$$\text{Labor Force Participation Rate}_a = \beta_0 + \sum_i \beta_i(X_i) + \varepsilon$$

Labor Force Participation Rate: U.S. States and the District of Columbia

X_i :   GDP (mil $)
          Per Capita Income ($)
          Cost of Living Adjustment
          Home Ownership
          Population
          Educational Attainment
          Older (65 yrs or older)
          State (Binary)

Table 2 - Labor Force Participation Rate

Observations			4,849	
Variable			8	
F-Value			6.28E+02	
Prob>F			0.0000	
	Coeff.	Std. Error	|t|	p
Labor Force Participation Rate (%)				
GDP (mil. $)	0.00001	0.00001	0.87	0.386
Per Capita Income ($)	0.0001497	0.00003	4.92	0.000
Cost of Living Adjustment	0.0554302	0.11278	0.49	0.623
Home Ownership (%)	-10.30	1.80	-5.71	0.000
Population	0.00	0.00	-0.97	0.334
Educational Attainment (%)	36.62	3.71	9.88	0.000
Older (65 yrs+)	-45,517.08	4,161.35	-10.94	0.000
Alabama	-4.7	0.5	-9.23	0.000
Alaska	-5.2	4.0	-1.30	0.194
Arizona	-4.6	0.7	-6.31	0.000
Arkansas	-2.1	0.7	-3.15	0.002
California	-6.5	5.6	-1.17	0.241
Colorado	-2.4	0.8	-2.93	0.003
Connecticut	-7.7	4.0	-1.94	0.052
Delaware	-3.7	1.1	-3.38	0.001
Washington D.C.	-19.3	5.3	-3.67	0.000
Florida	-3.8	1.7	-2.21	0.027
Georgia	-4.2	0.8	-5.10	0.000
Hawaii	-9.3	8.1	-1.15	0.250
Idaho	(omitted)			
Indiana	0.522	0.756	0.69	0.490
Illinois	-3.8	1.8	-2.16	0.031
Iowa	4.5	0.3	13.77	0.000
Kansas	0.6	0.5	1.18	0.239
Kentucky	-3.0	0.8	-3.55	0.000
Louisiana	-5.1	0.4	-12.62	0.000
Maine	-2.4	2.3	-1.05	0.292
Maryland	-6.1	3.4	-1.80	0.072
Massachusetts	-9.7	3.8	-2.57	0.010
Michigan	-2.2	0.9	-2.60	0.009
Minnesota	1.3	1.6	0.79	0.428
Mississippi	-4.0	0.5	-8.72	0.000
Missouri	0.3	0.6	0.47	0.637
Montana	-2.1	0.6	-3.55	0.000
Nebraska	3.8	0.7	5.56	0.000
Nevada	-1.1	0.8	-1.41	0.158
New Hampshire	-2.0	2.6	-0.78	0.437
New Jersey	-8.5	4.0	-2.14	0.033
New Mexico	-4.0	0.2	-16.68	0.000
New York	-13.1	8.1	-1.61	0.106
North Carolina	-2.4	0.8	-3.11	0.002
North Dakota	3.8	0.3	12.90	0.000
Ohio	-0.3	1.0	-0.33	0.739
Oklahoma	-2.1	0.6	-3.47	0.001
Oregon	-4.3	1.8	-2.43	0.015
Pennsylvania	-3.3	2.2	-1.52	0.129
Rhode Island	-5.1	3.3	-1.55	0.120
South Carolina	-3.8	0.4	-10.32	0.000
South Dakota	-0.2	0.3	-0.82	0.415
Tennessee	-0.6	0.9	-0.68	0.498
Texas	-1.4	2.2	-0.62	0.537
Utah	0.5	0.5	1.04	0.300
Vermont	-1.6	2.9	-0.56	0.576
Virginia	-4.0	1.2	-3.24	0.001
Washington	-5.3	1.7	-3.05	0.002
West Virginia	-7.0	0.4	-15.97	0.000
Wisconsin	-11.4	0.8	-14.80	0.000
Wyoming	1.8	0.5	3.45	0.001
Constant	61.8			

** Significant at the 1% level
* Significant at the 5% level