



Title: Trends in Education and Healthcare Services Employment and Price Movements in 9 SPDR ETF's, 2009-2016

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Study Objective: Determine if education and healthcare services employment are predictors of SPDR Sector ETF returns.

Research Design #1: Regression Analysis

- Regress Education and Healthcare Services employment on price indices of 9 SPDR sector ETF's.
- Time period: 2009-2016
- Time Frequency: Monthly Data
- Model Specification

$$S_i = A + B(EH) + e$$

S_i = ith Sector

A, B = Equation Parameters

EH = Education/Healthcare Employment

e = Error Term

Research Design #2: Portfolio Weighting

Model

$$W_i = B_i / \sum B_i$$

$$D_i = W_i \times 1,000,000$$

$$SHR_i(t) = D_i(t) / P_i(t)$$

$$MV_i(t+1) = SHR_i(t) \times P_i(t+1)$$

$$PORT(t+1) = \sum MV_i(t+1)$$

Where:

W_i = Stock Weight(i)

D_i = Dollar Invested

SHR_i = Shares Held

MV_i = Market Value(i)

PORT = Portfolio Value

I = ith stock

t = time; 2009-2016

Table 1: Education/Health Services Employment Cumulative Returns				
Year	Sector Portfolio	SPY	Alpha	Cumulative Alpha
2009	34%	33%	1%	6%
2010	67%	62%	5%	14%
2011	78%	69%	9%	13%
2012	102%	97%	5%	8%
2013	142%	139%	3%	12%
2014	181%	173%	8%	20%
2015	181%	170%	11%	126%
2016	335%	220%	115%	115%

Table 1: Education/Health Services: Health Care Employment Cumulative Returns				
Year	Sector Portfolio	SPY	Alpha	Cumulative Alpha
2009	32%	30%	2%	4%
2010	57%	55%	2%	10%
2011	67%	59%	8%	19%
2012	91%	81%	11%	31%
2013	136%	115%	20%	45%
2014	165%	141%	25%	54%
2015	163%	134%	29%	47%
2016	193%	175%	18%	65%

Conclusion

- EHS outperforms SPY
- EHS alpha 115%
- HCE outperforms SPY
- HCE alpha 65%
- EHS outperforms HCE