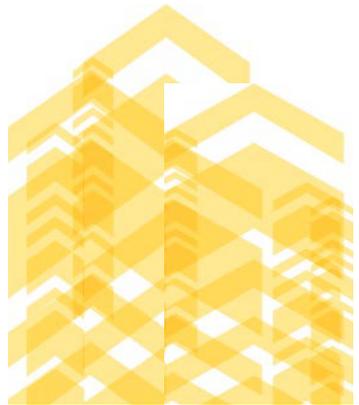


The State of the Kansas Economy

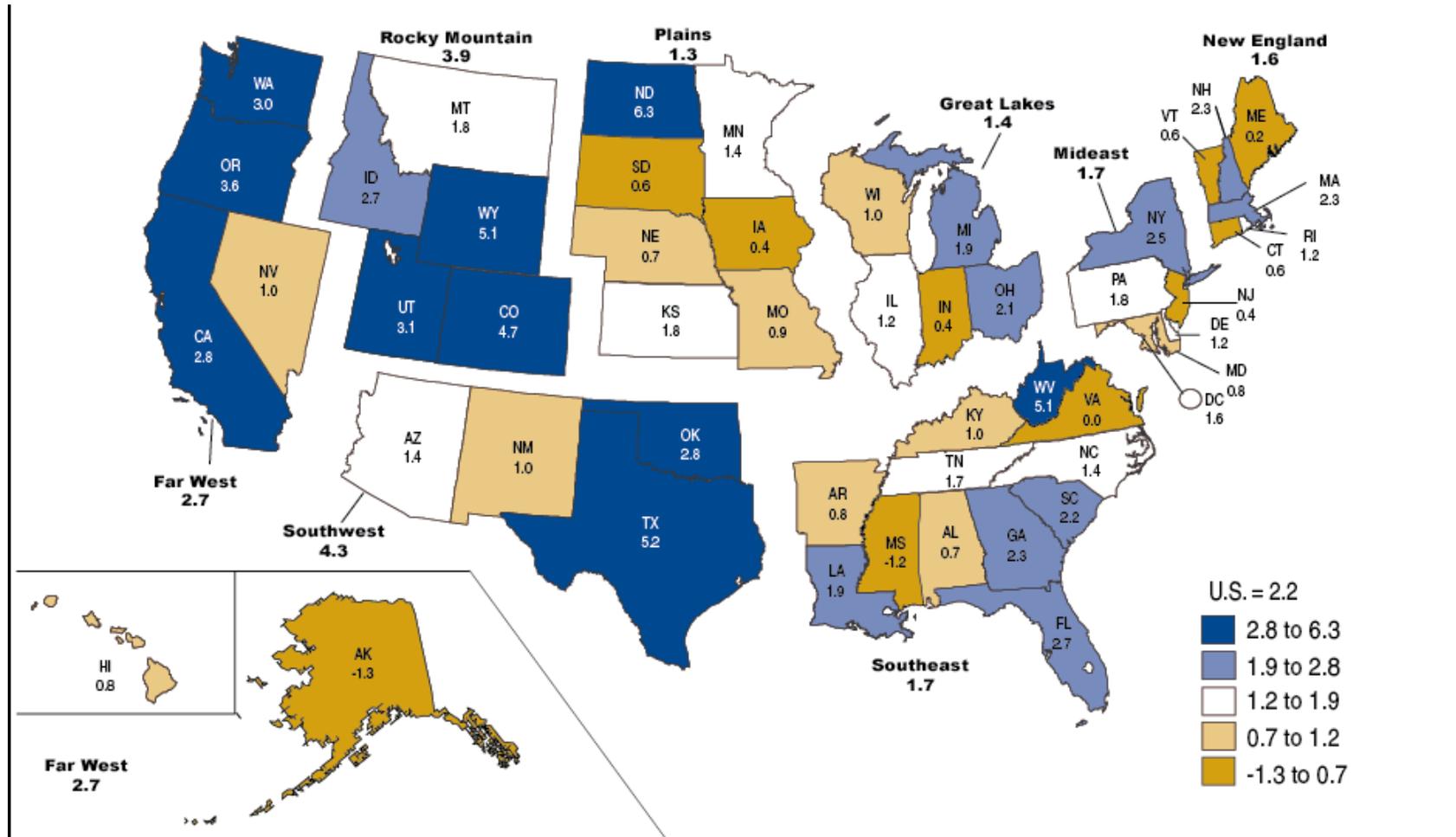
Kenneth A. Kriz

Regents Distinguished Professor of Public Finance



OUTPUT MEASURES

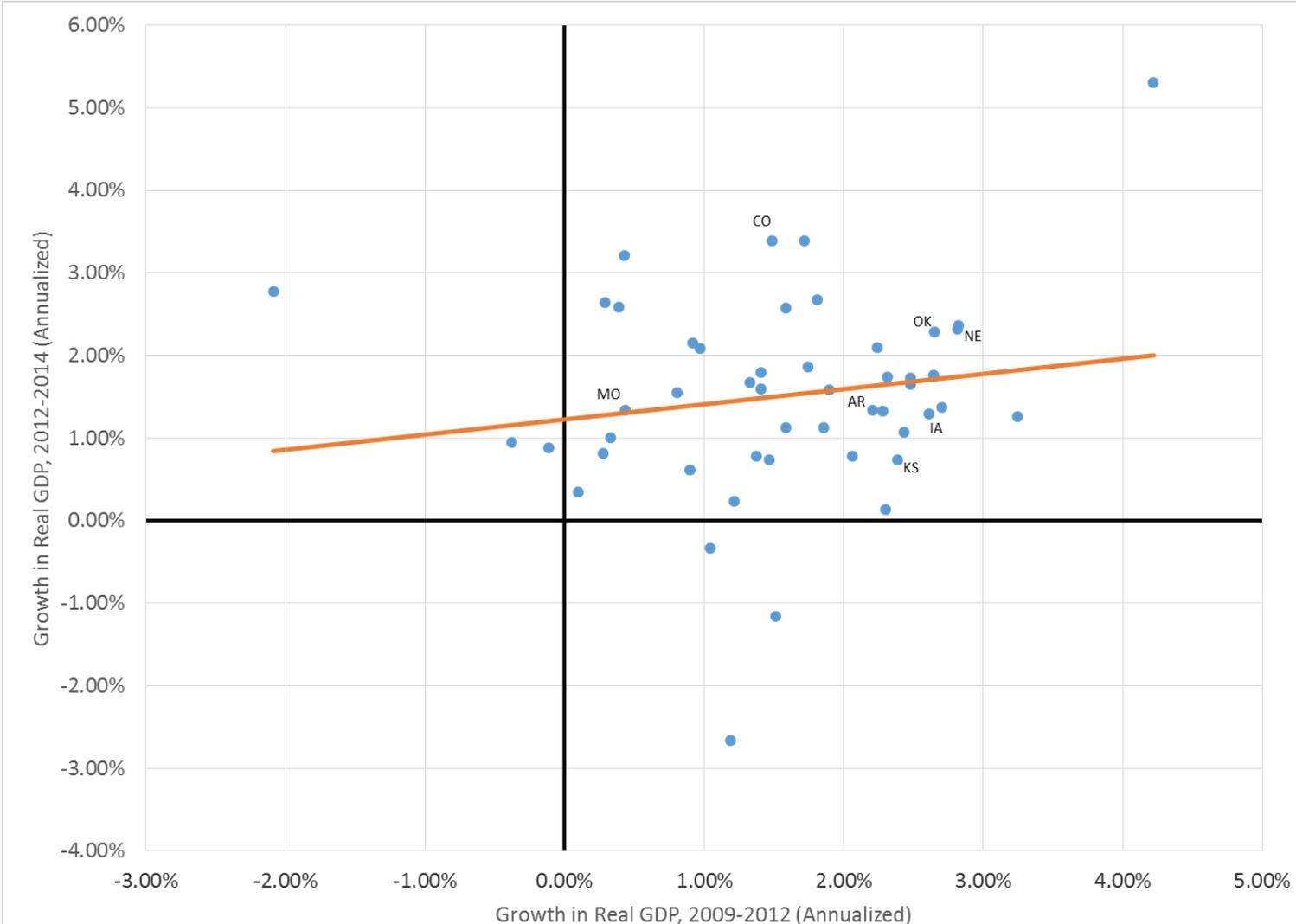
Percent Change in Real GDP, 2014



U.S. Bureau of Economic Analysis

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Growth in State Real GDP

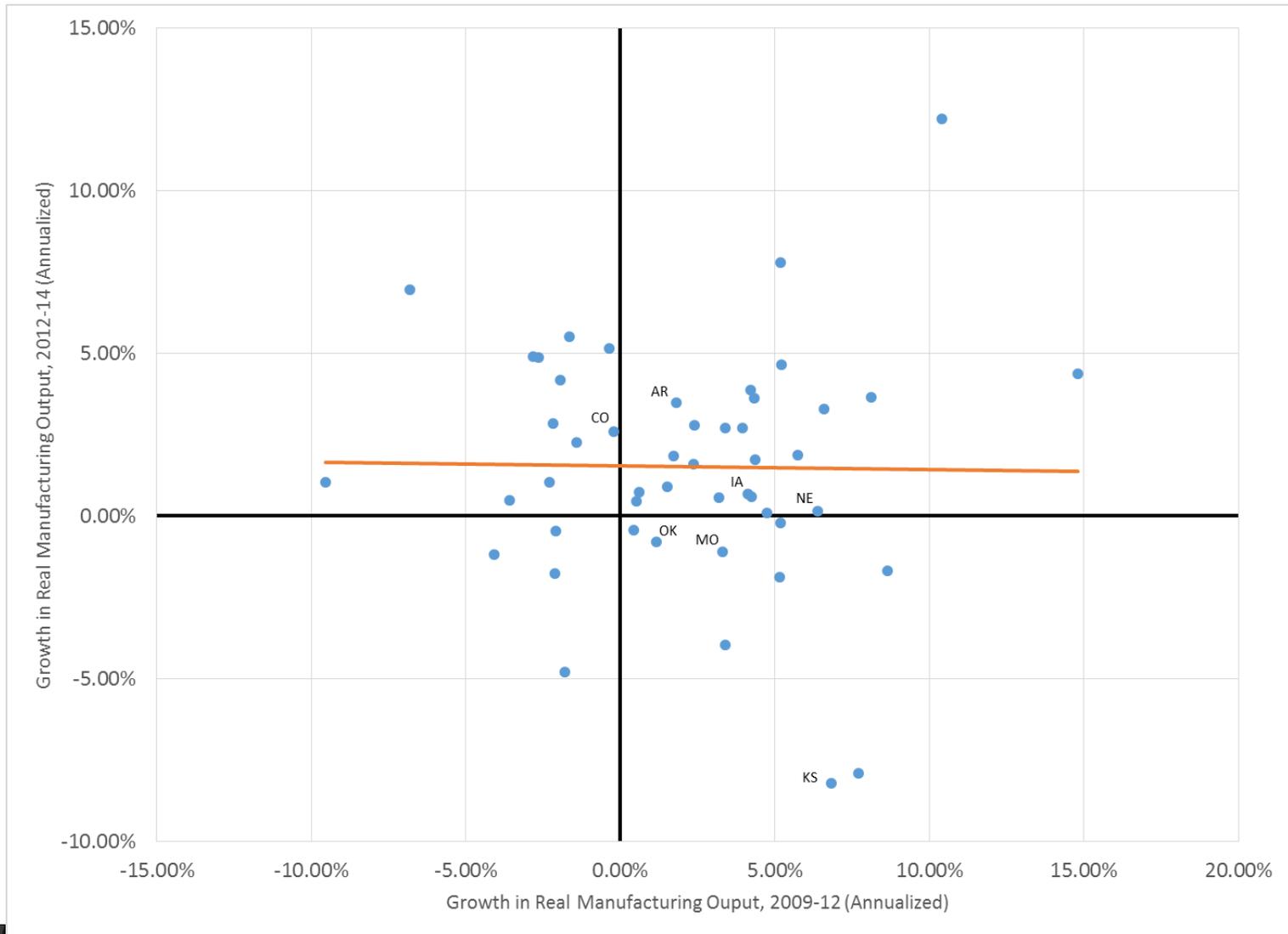


Source: US Bureau of Economic Analysis, Interactive Data, Real GDP in Chained Dollars



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Growth in State Real Manufacturing Output

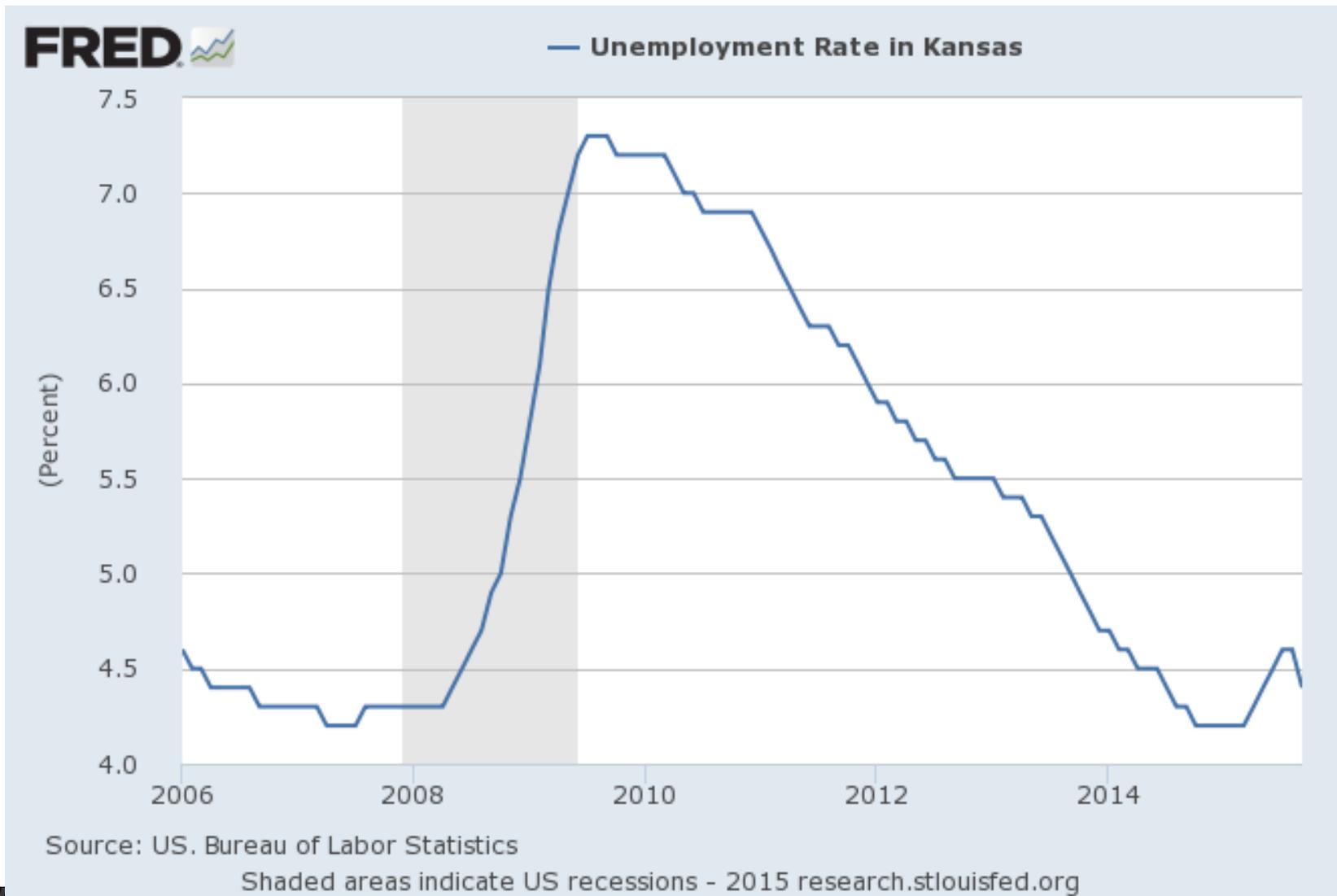


Source: US Bureau of Economic Analysis, Interactive Data, Real GDP in Chained Dollars

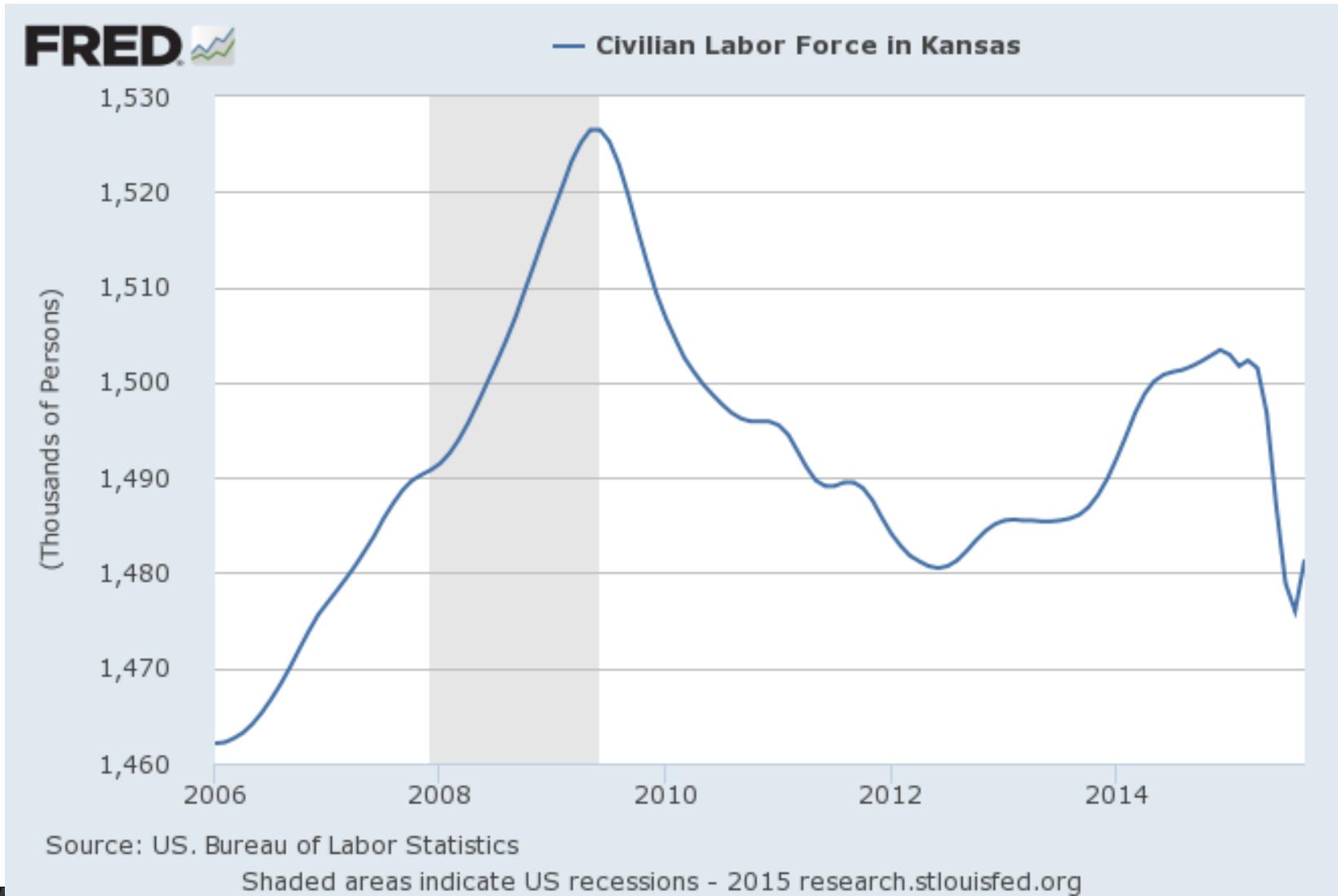
LABOR MARKET MEASURES



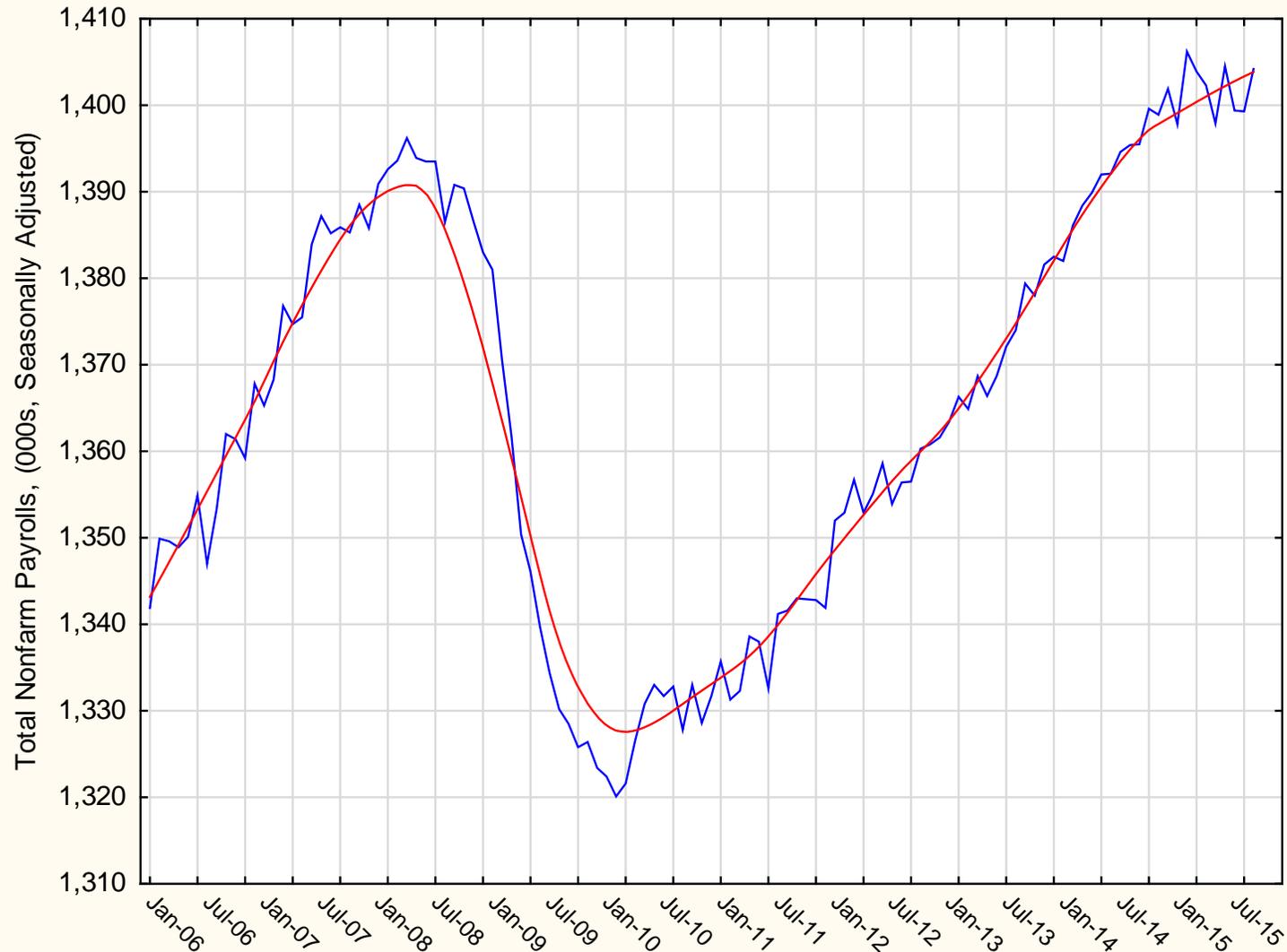
Unemployment Rate



Labor Force



Nonfarm Payrolls

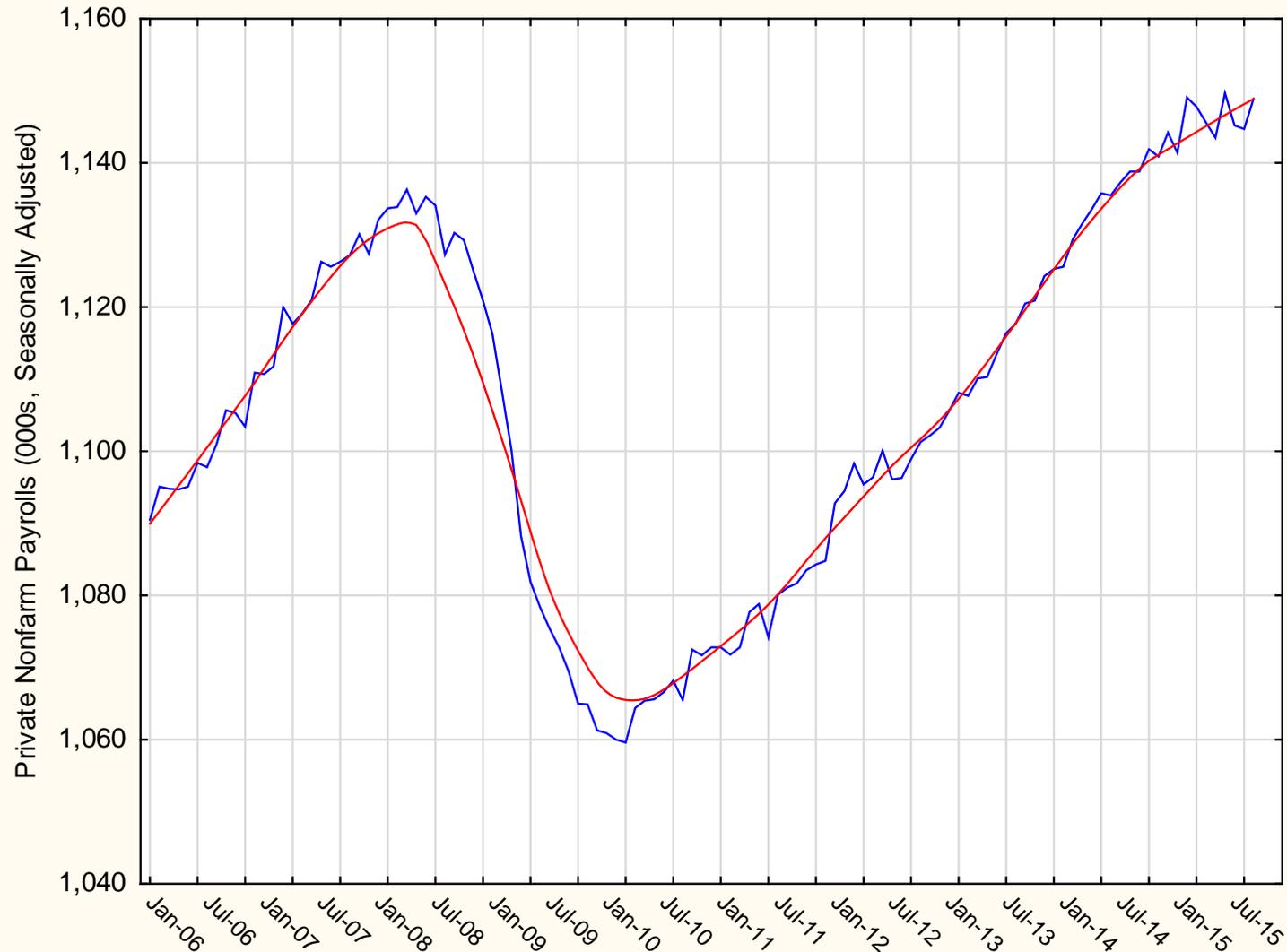


Source: US. Bureau of Labor Statistics, All Employees: Total Nonfarm in Kansas [KSNA], retrieved from FRED, Federal Reserve Bank of St. Louis <https://research.stlouisfed.org/fred2/series/KSNA/>



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Private Nonfarm Payrolls

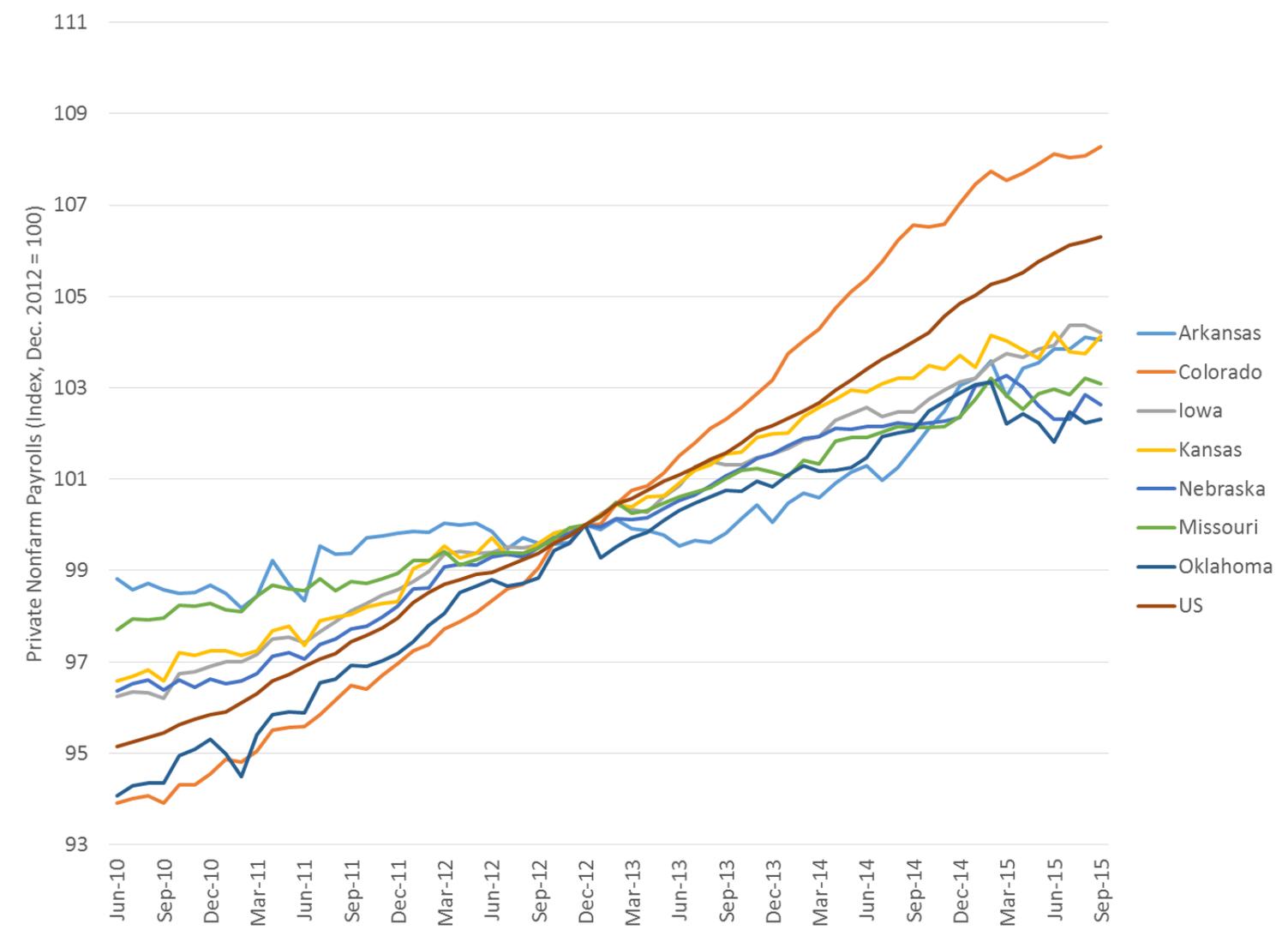


Source: US. Bureau of Labor Statistics, *All Employees: Total Private in Kansas* [SMS20000000500000001], retrieved from FRED, Federal Reserve Bank of St. Louis <https://research.stlouisfed.org/fred2/series/SMS20000000500000001/>



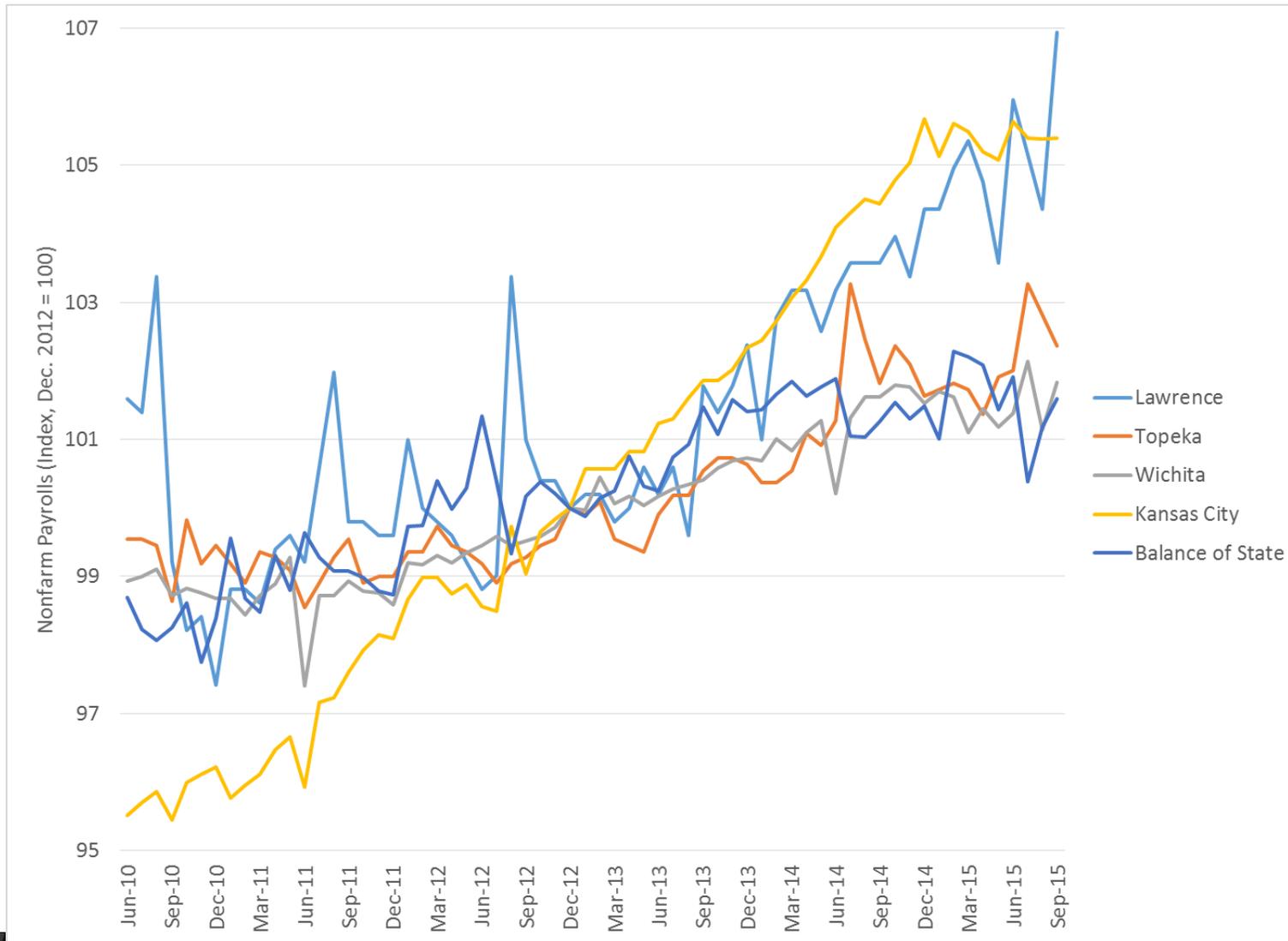
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Relative Private Nonfarm Payroll Growth



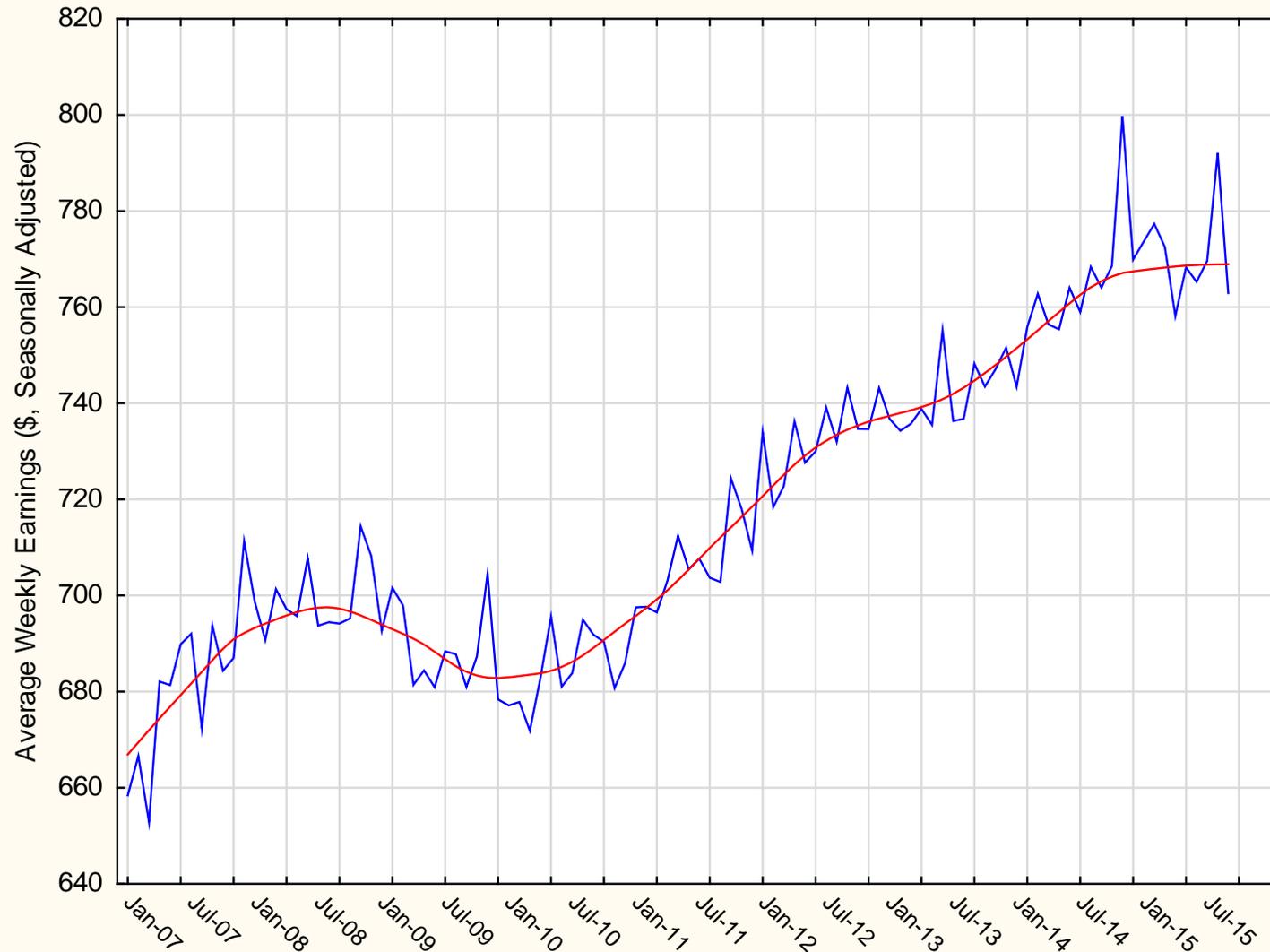
Source: US. Bureau of Labor Statistics, *All Employees: Total Private*, retrieved from FRED, Federal Reserve Bank of St. Louis (Various Series)

Regional Nonfarm Payroll Growth



Source: US. Bureau of Labor
Statistics, *State and Area
Employment, Hours and Earnings*,
Series SMS200000000000000001
SMS20299400000000000001
SMS20458200000000000001
SMS20486200000000000001
SMS20928120000000000001

Average Weekly Earnings



Source: US. Bureau of Labor
Statistics, *State and Area
Employment, Hours and Earnings*,
Series SMU20000000500000011



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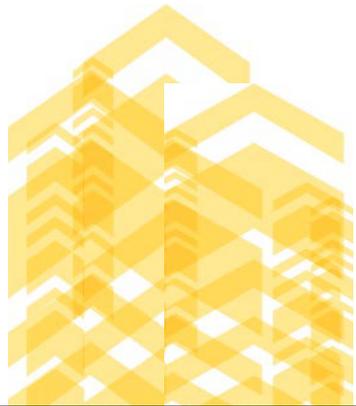
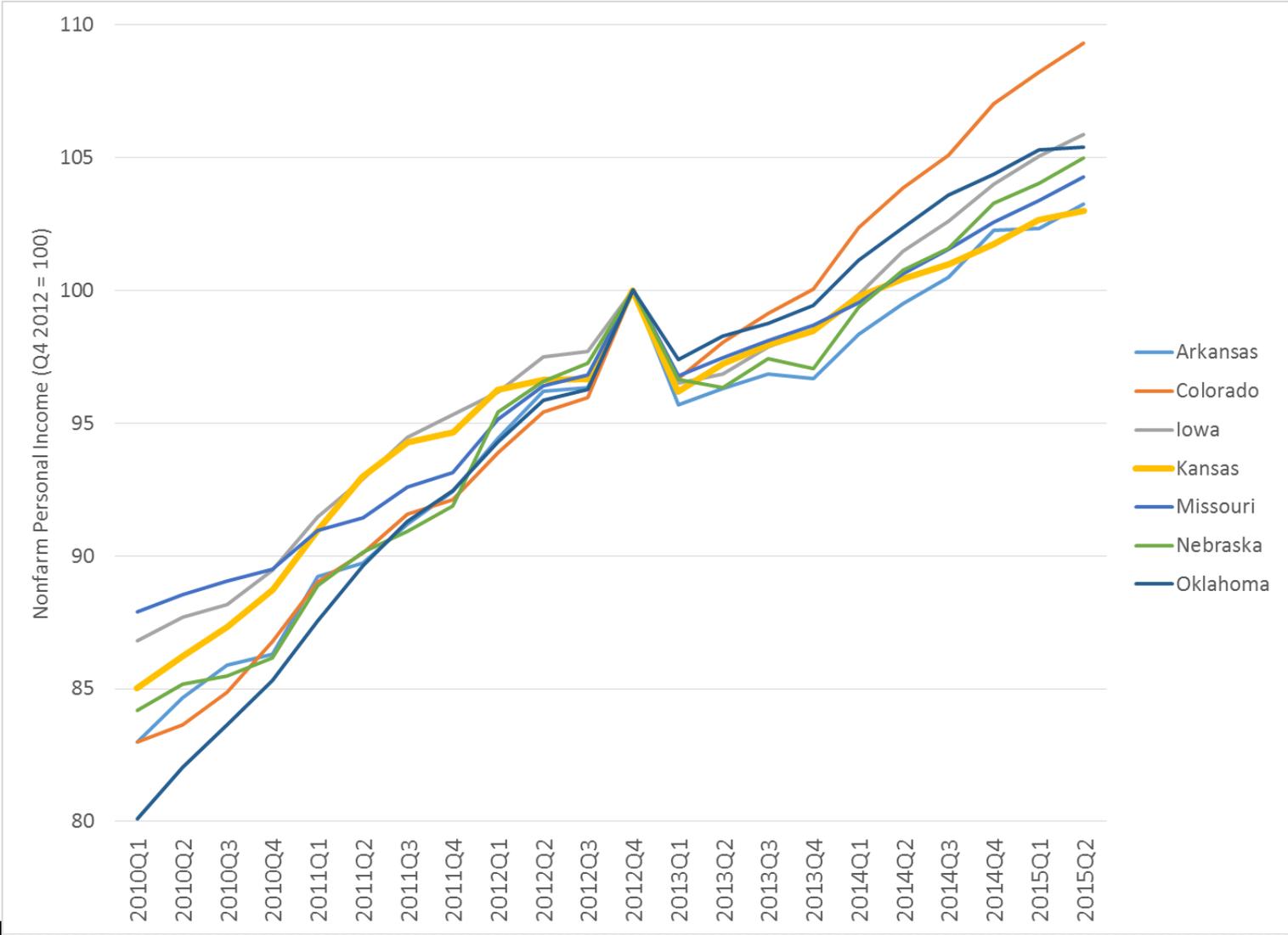
INCOME MEASURES

SOURCE FOR ALL MEASURES IS US BUREAU OF ECONOMIC ANALYSIS, *INTERACTIVE DATA, QUARTERLY STATE PERSONAL INCOME, TABLES SQ4, SQ5, SQ35.*

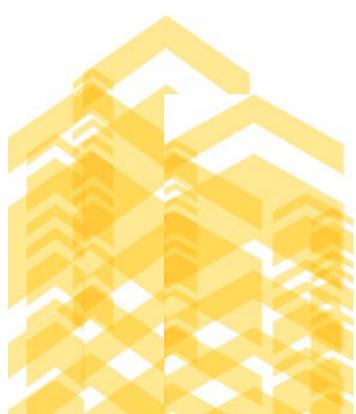
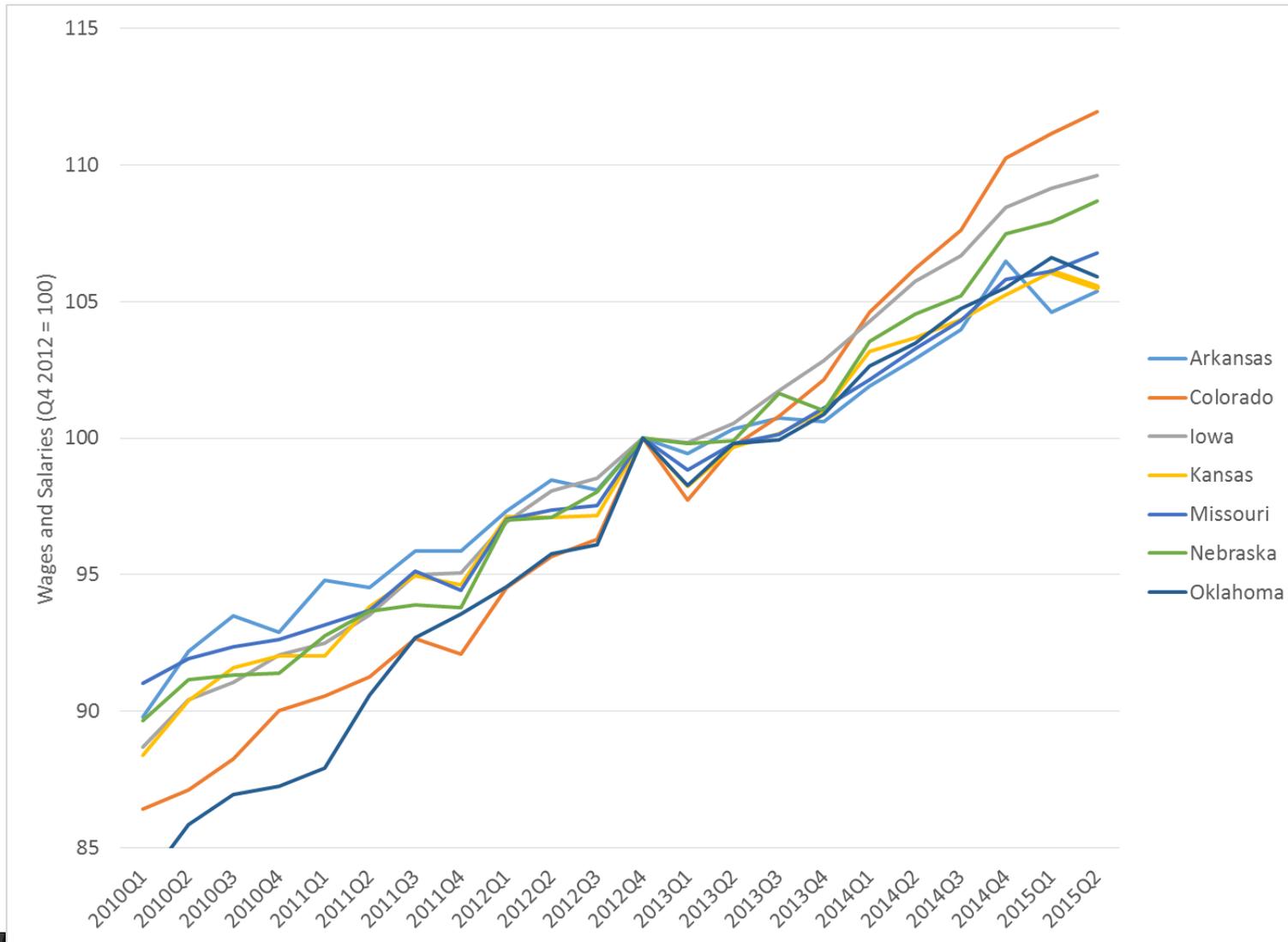


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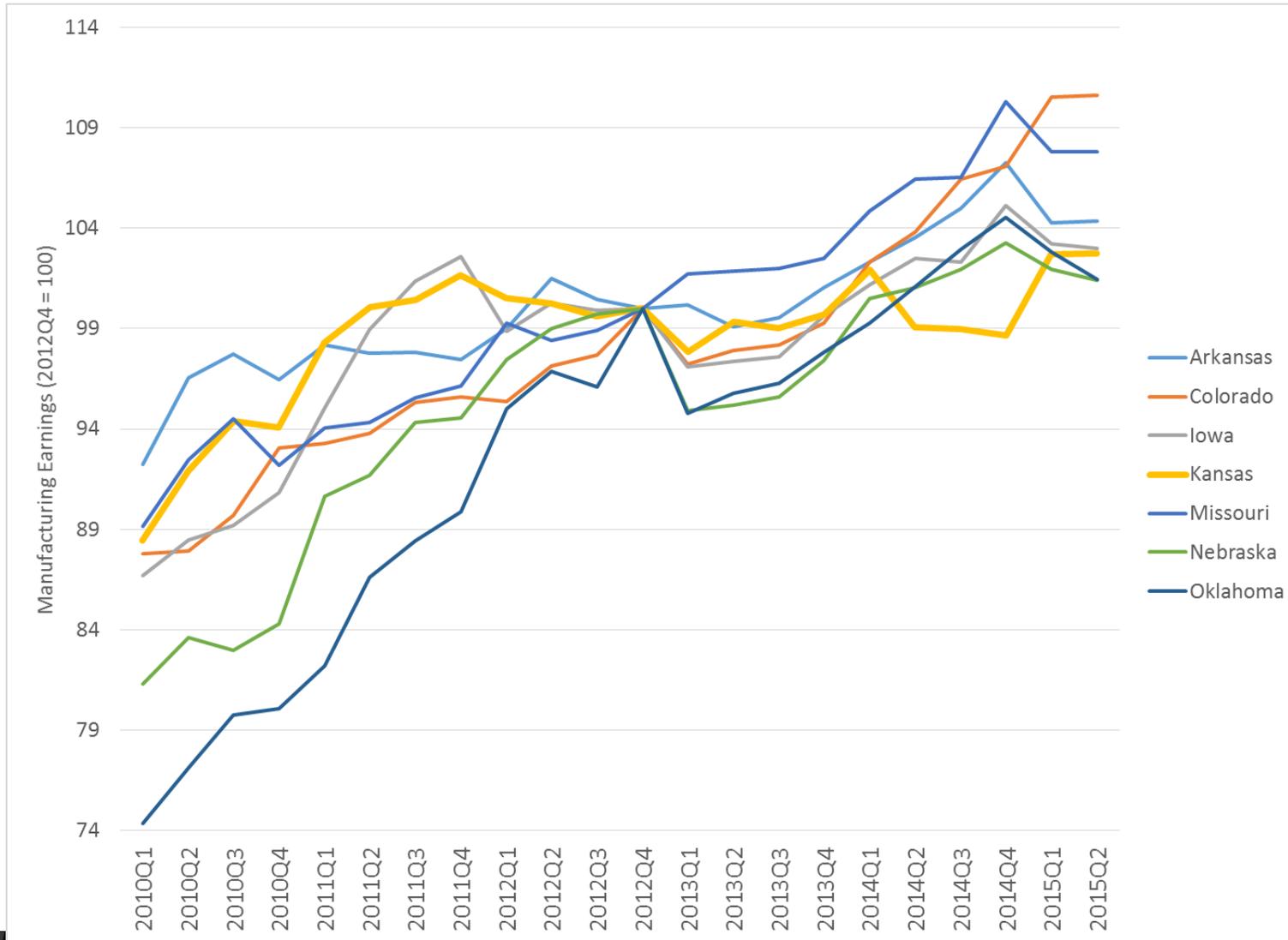
Nonfarm Personal Income Growth



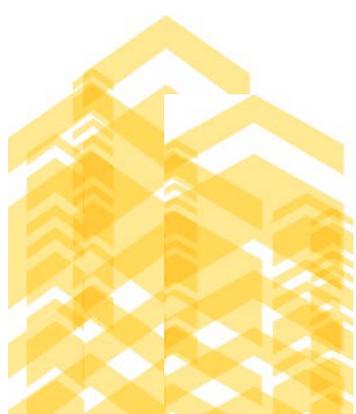
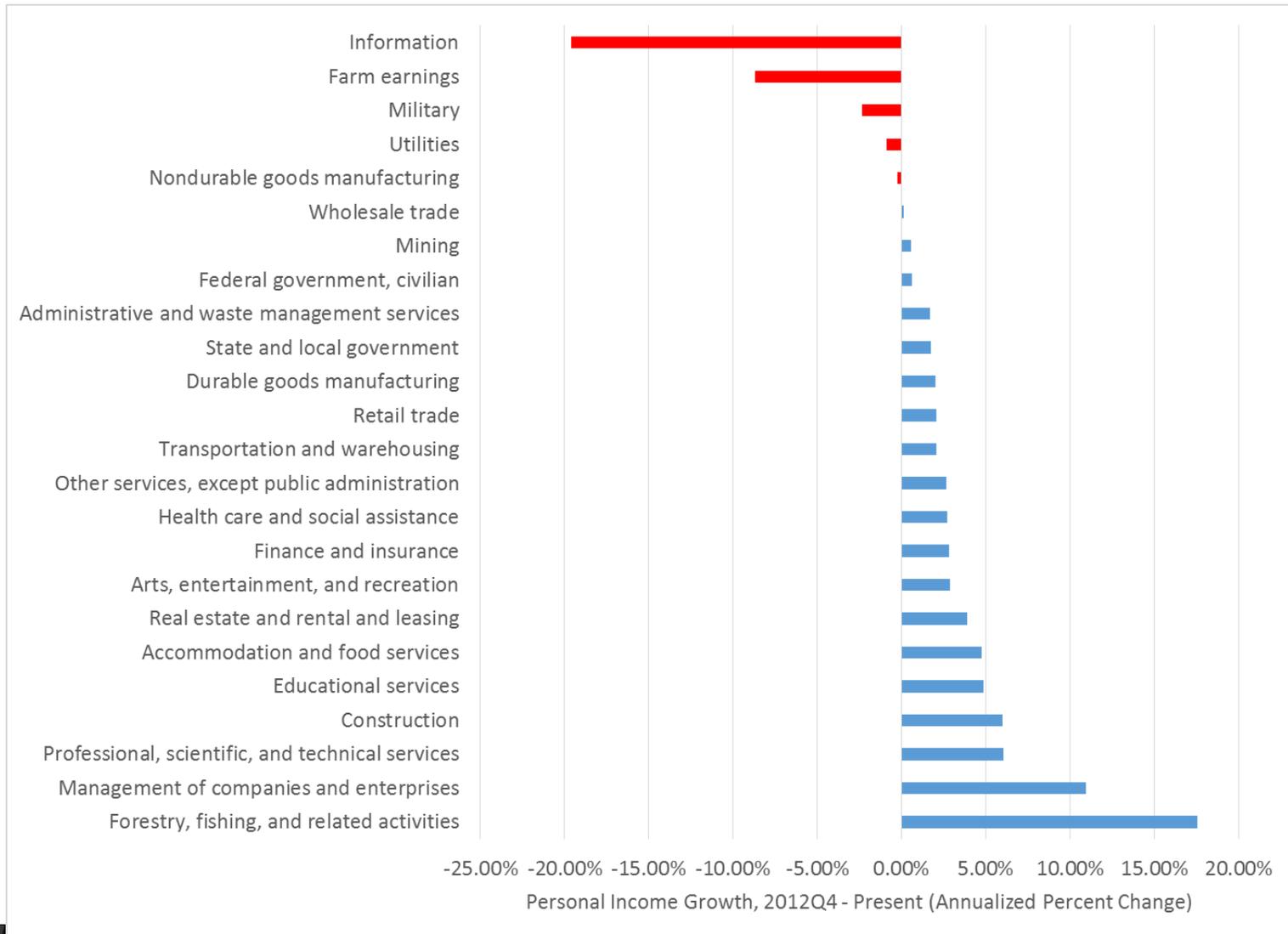
Wage and Salary Growth



Manufacturing Earnings Growth



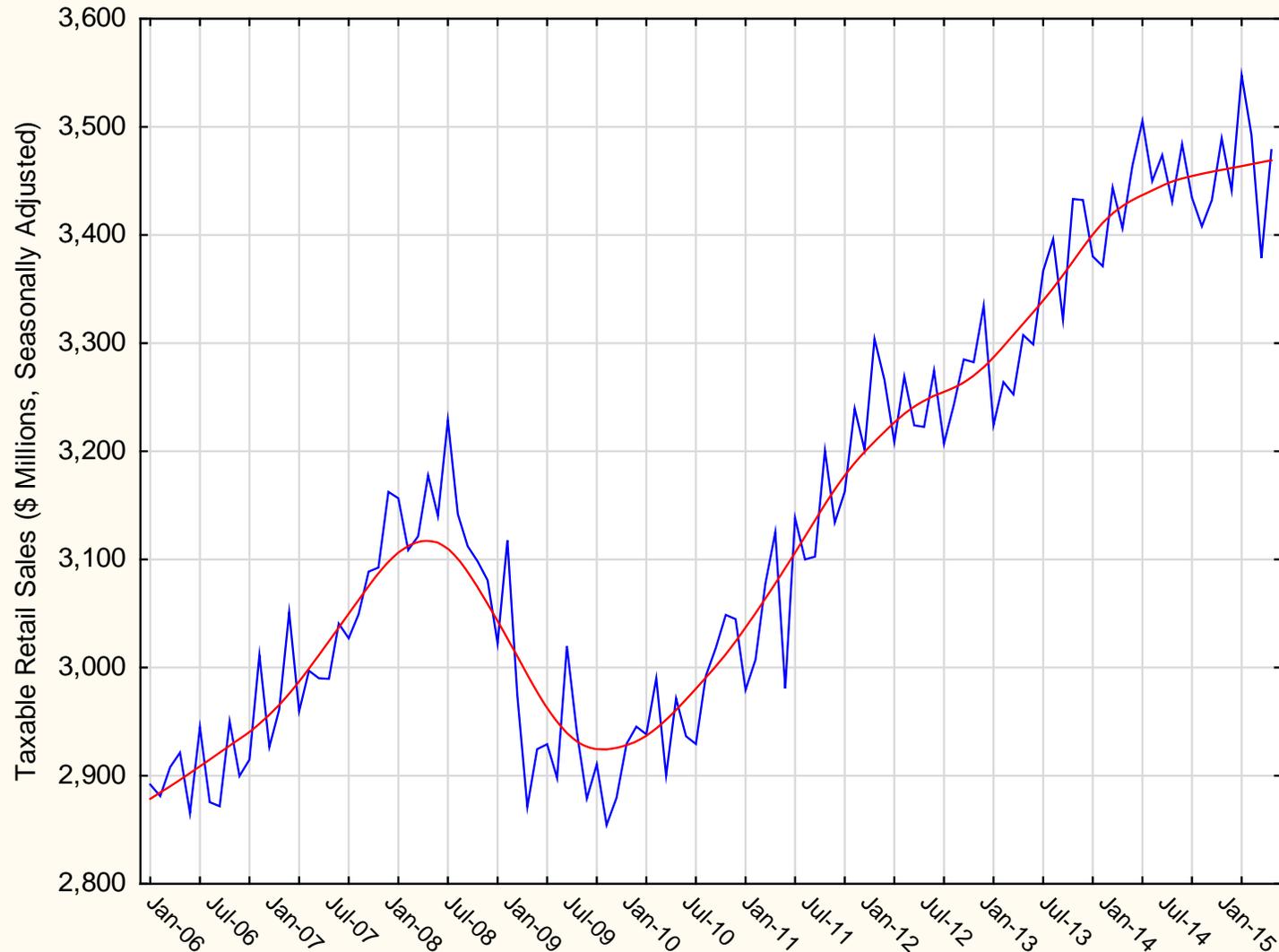
Personal Income Growth by Sector



MISCELLANEOUS MEASURES



Growth in Retail Sales

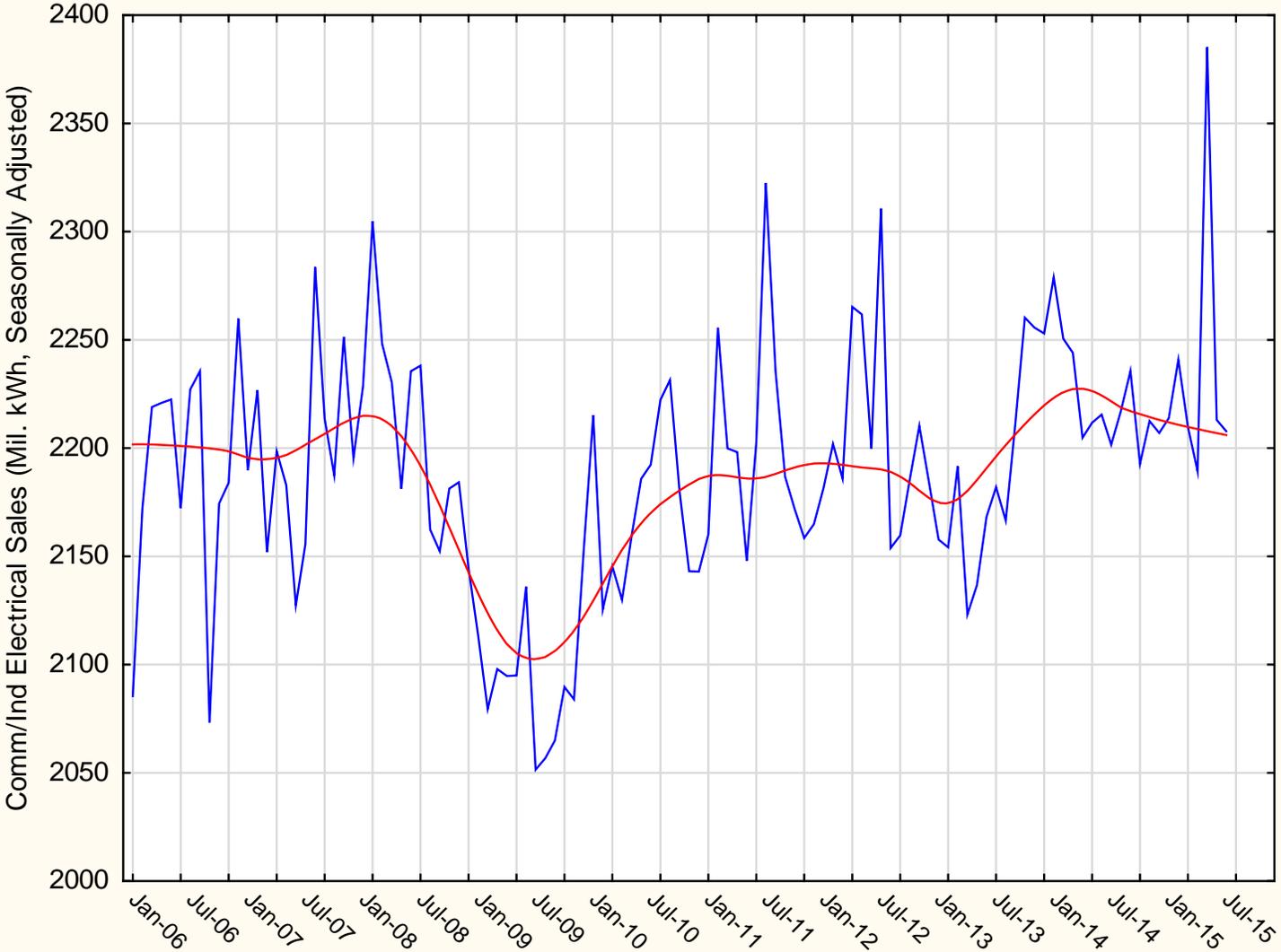


Source: Kansas Department of Revenue, State Sales Tax Collections by County



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Growth in Commercial/Industrial Electrical Sales



Source: US Energy Information Administration, Form EIA-826, Tables 5.4 & 5.5



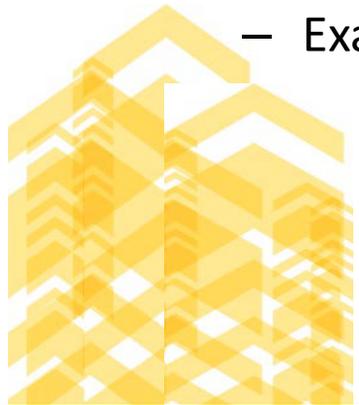
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INDICES OF ECONOMIC CONDITION



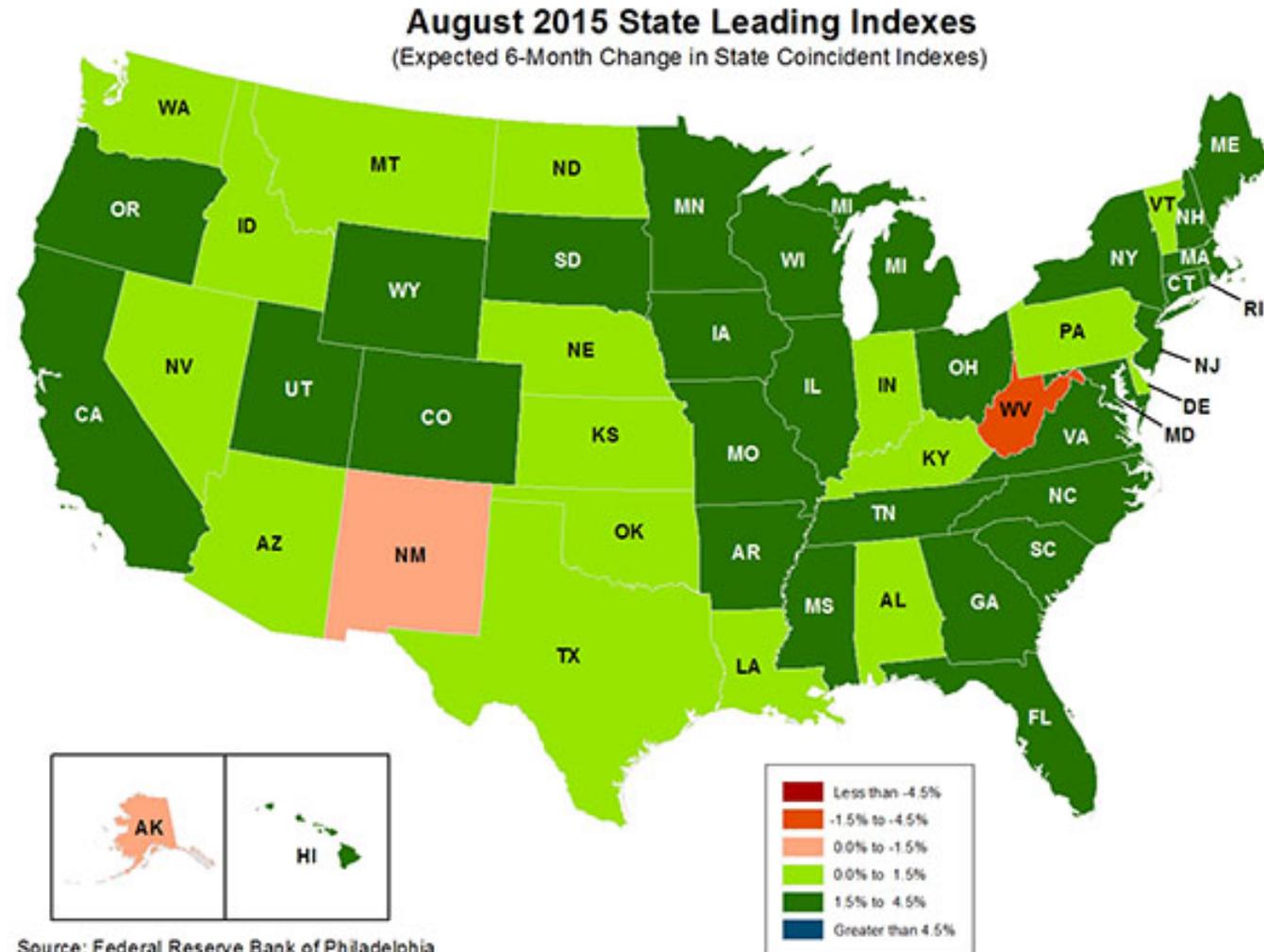
Philadelphia Federal Reserve Bank State Coincident Indices

- Index of 4 Monthly Indicators compiled for each state (and the US as a Whole) by the Philadelphia Federal Reserve Bank: <http://www.philadelphiafed.org/research-and-data/regional-economy/indexes/coincident/>
 - Nonfarm payroll employment, Average hours worked in manufacturing, Unemployment rate, Real wage and salary disbursements
- Dynamic Factor Analysis
 - Methodology developed by James Stock and Mark Watson from Harvard University to predict inflation, adopted by many others to predict economic activity
 - Examines “co-movements” in various time series



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Philadelphia Fed State Leading Index, August 2015



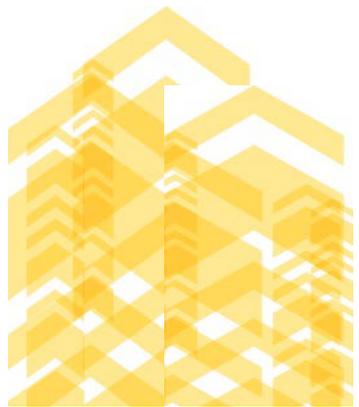
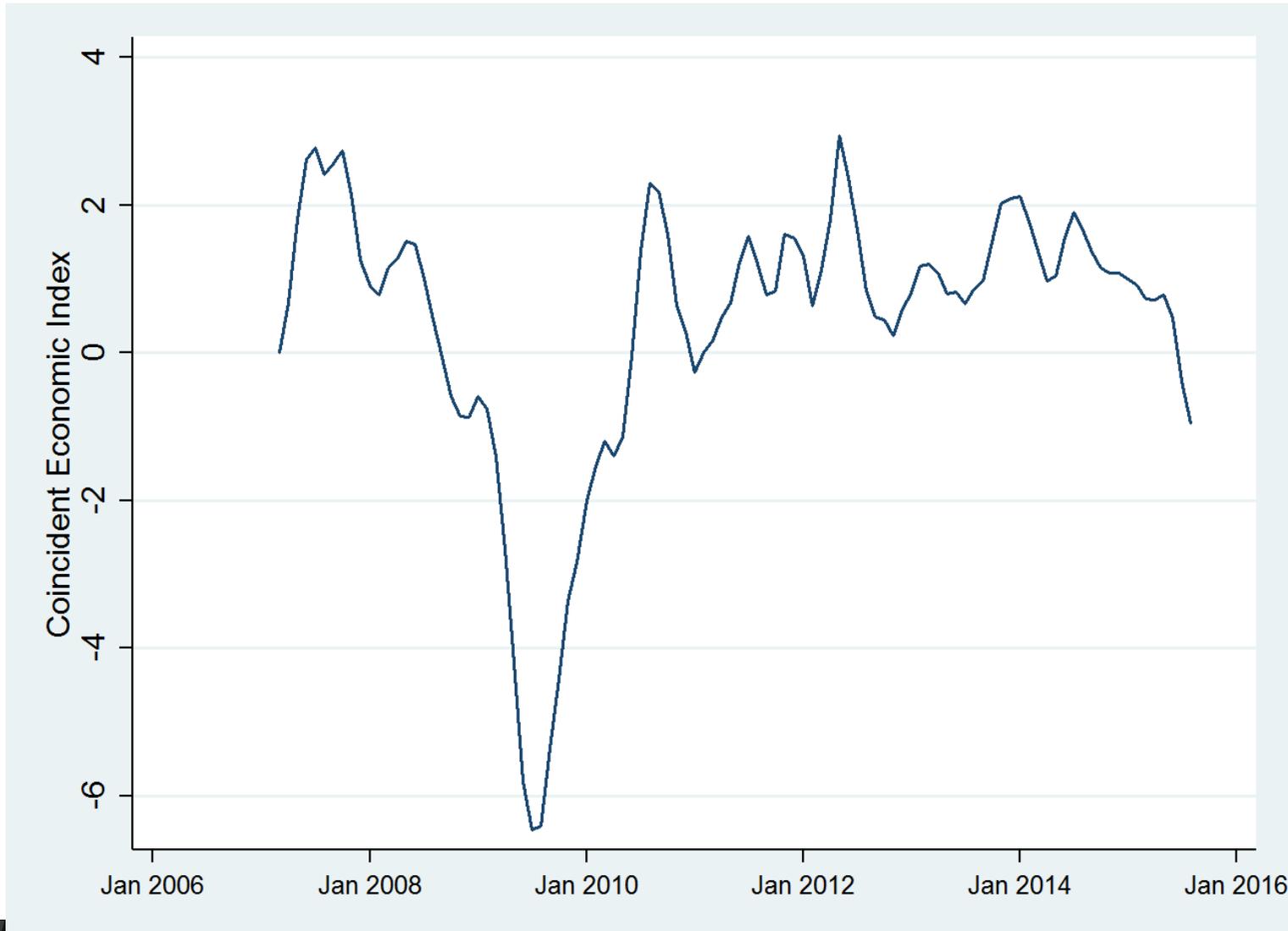
Kansas Coincident Economic Index

Variable	Data Source
Total Nonfarm Payrolls	US Bureau of Labor Statistics, Regional and State Employment and Unemployment, Table 5
Retail Sales of Electricity for Commercial Users (Million kWh)	US Energy Information Administration, Form EIA-826 Data, Table 5.4
Retail Sales of Electricity for Industrial Users (Million kWh)	US Energy Information Administration, Form EIA-826 Data, Table 5.5
Retail Sales of Electricity for Commercial and Industrial Users (Million kWh)	Calculated Field (Commercial + Industrial)
Taxable Retail Sales	Calculated from Kansas Department of Revenue, State Sales Tax Collections by County, http://ksrevenue.org/salesreports.html#state
Privately Owned Housing Starts Authorized by Building Permits: 1-Unit Structures	US Bureau of Census, Housing Units Authorized By Building Permits
Average Weekly Earnings of All Employees, Total Private Sector	US Bureau of Labor Statistics, State and Metro Employment, Hours, and Earnings



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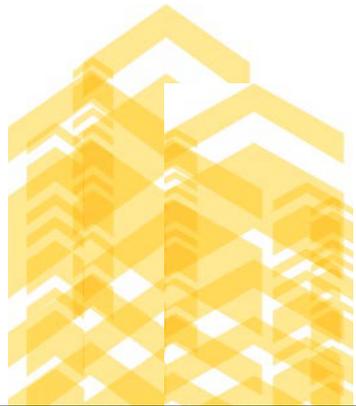
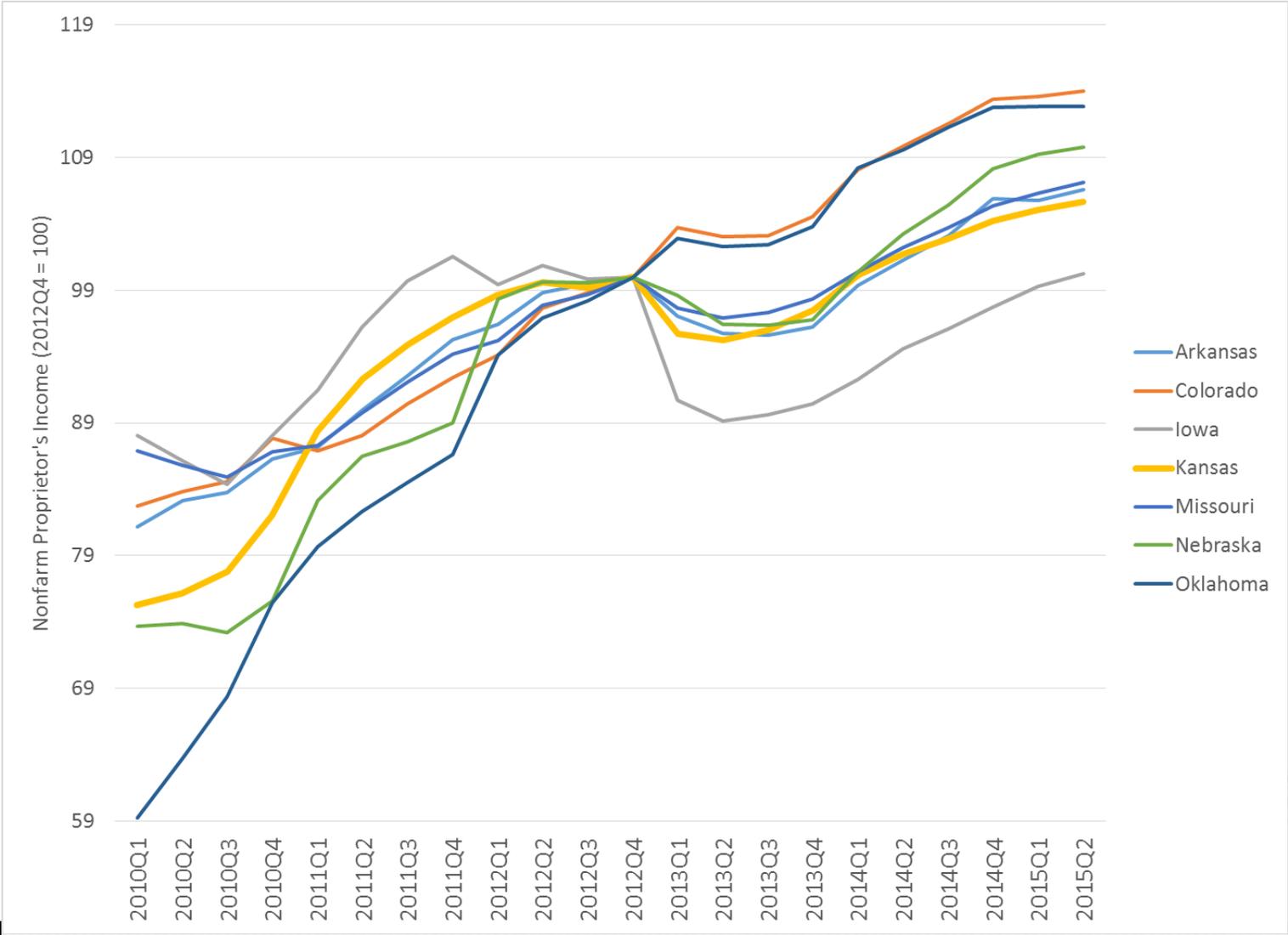
Coincident Economic Index, 2007 - Present



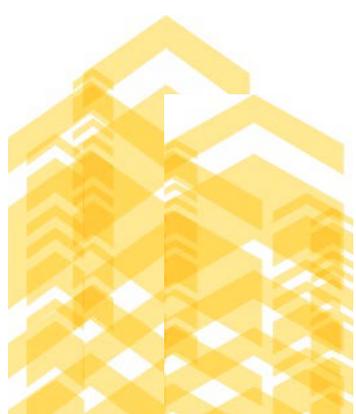
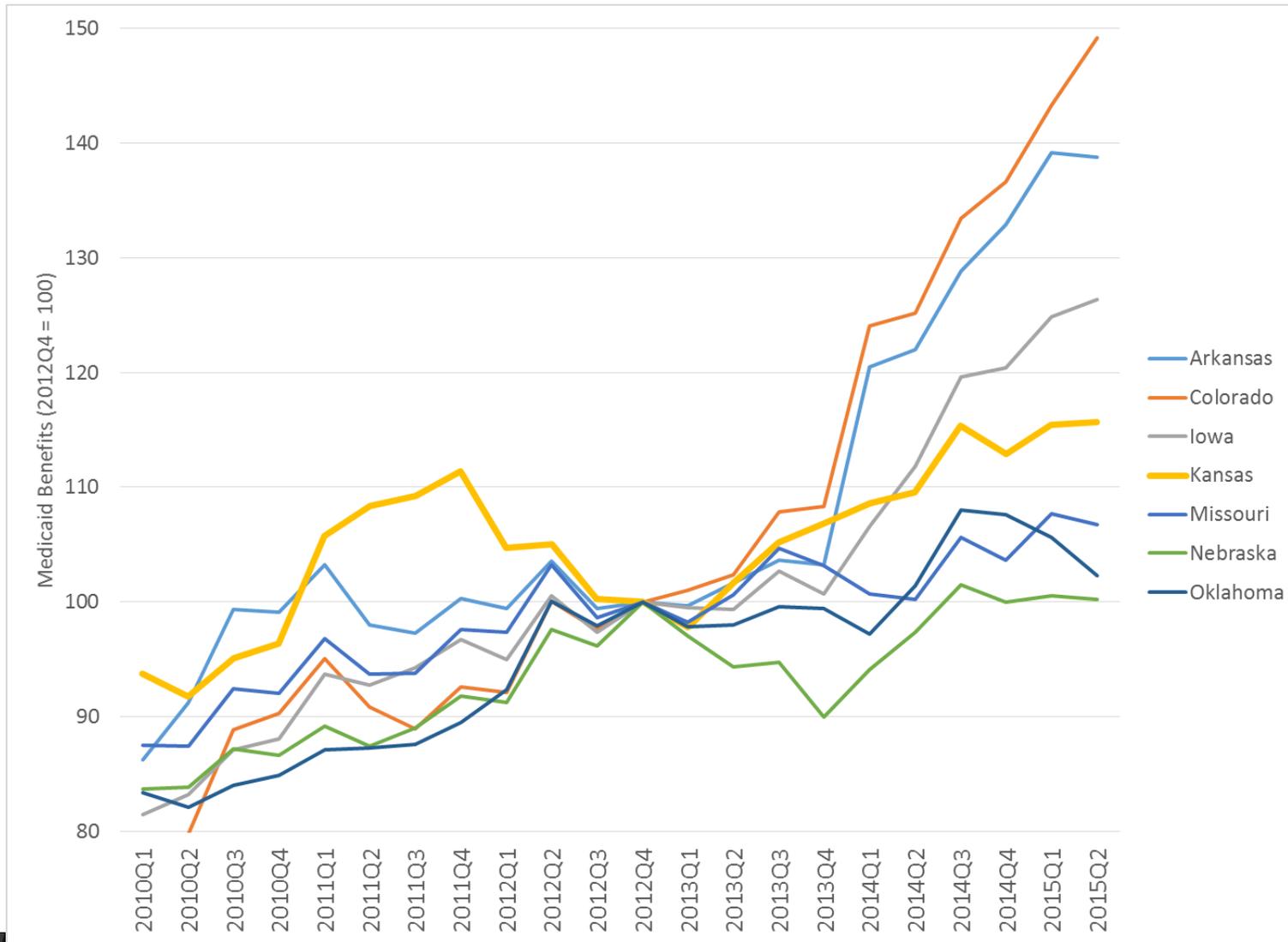
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ADDITIONAL SLIDES

Nonfarm Proprietor's Income Growth



Medicaid Benefits Growth



Dynamic Factor Analysis

- Simultaneous model of time-series relationships among
 - Observed variables
 - Unobserved “factor(s)”
 - Estimated using Kalman filter
 - For our purpose, 1st factor of observed economic variables is economic condition (Stock & Watson, 1989, 1991)

$$f_t = \phi_1 f_{t-1} + \phi_2 f_{t-2} + \eta_t \quad (12)$$

$$f_{t-1} = f_{t-1} \quad (13)$$

$$\mu_t = \Psi \mu_{t-1} + \epsilon_t \quad (14)$$

$$y_t = \mathbf{b} f_t + \mu_t \quad (15)$$

