Regional Electricity Forecasting

presented to

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- Began developing its energy forecasting models 25 years ago
- Released its 12th set of Indiana electricity projections in December
- Does not have a forecasting model for Michigan or the region

Energy information Administration (EIA)

- EIA uses its National Energy Modeling System to produce long-term forecasts on an annual basis
- Finest level of detail is the census region
- East North Central region
  - IL, IN, MI, OH, WI

EIA 2010 Annual Outlook

- Electricity consumption forecast for the period 2008-2035 (average compound growth rates) for East North Central region
  - residential 0.49%
  - commercial 1.20%
  - industrial 0.44%
  - all sectors 0.74%

Questions

- How much variation might we expect between individual states in the region?
- What factors are likely to cause those variations?
- How does this forecast compare to recent growth in electricity usage?

Typical Drivers of Electricity Usage

- Residential
  - demographics, personal income, energy prices
- Commercial
  - floor space, employment, demographics, energy prices
- Industrial
  - manufacturing output, employment, energy prices

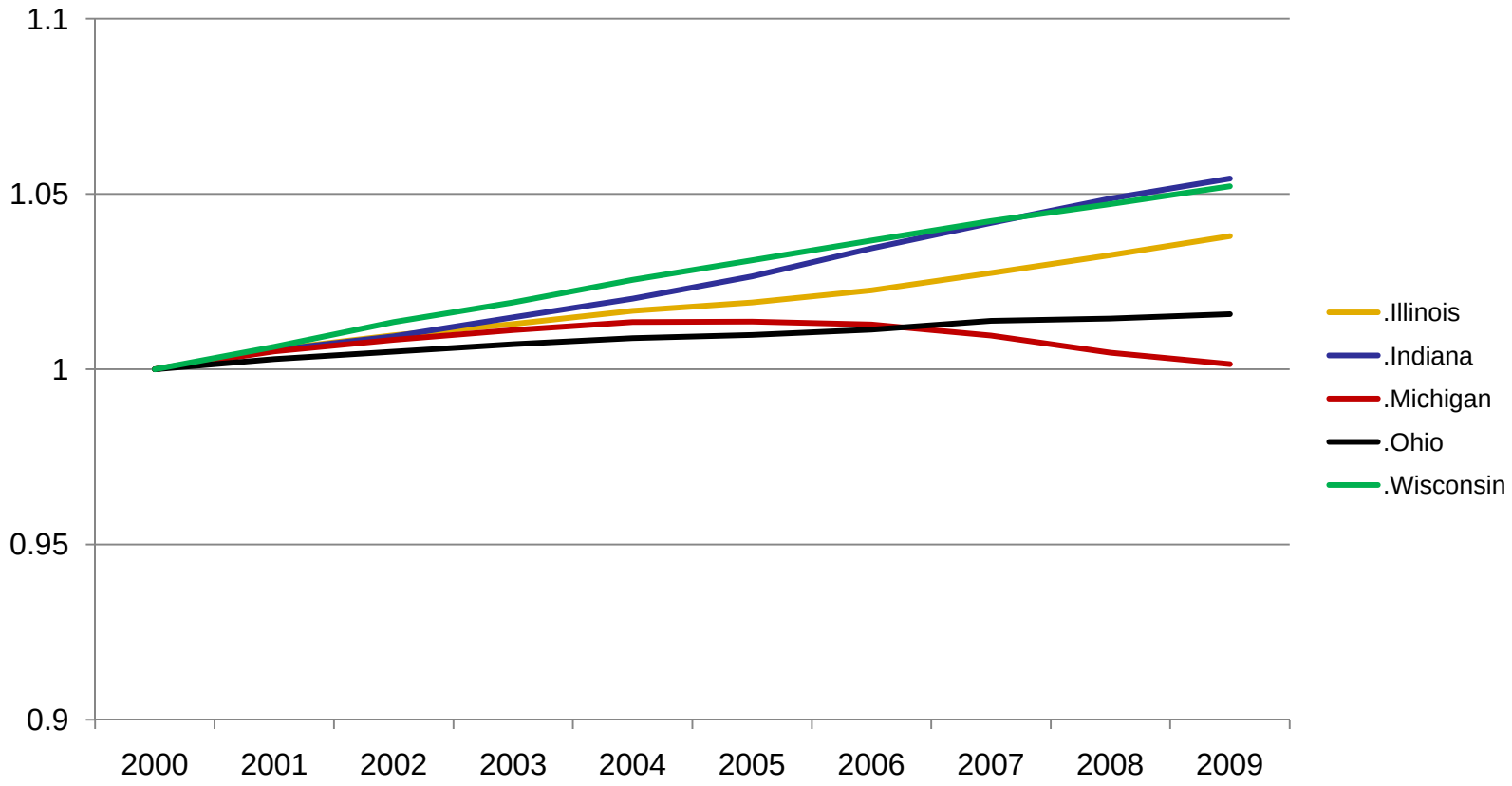
Data Sources

- Bureau of Economic Analysis (Commerce)
  - personal income, gross domestic product
- Bureau of Labor Statistics (Labor)
  - employment
- Bureau of the Census (Commerce)
  - population
- Energy Information Administration (Energy)
  - electricity prices, electricity sales

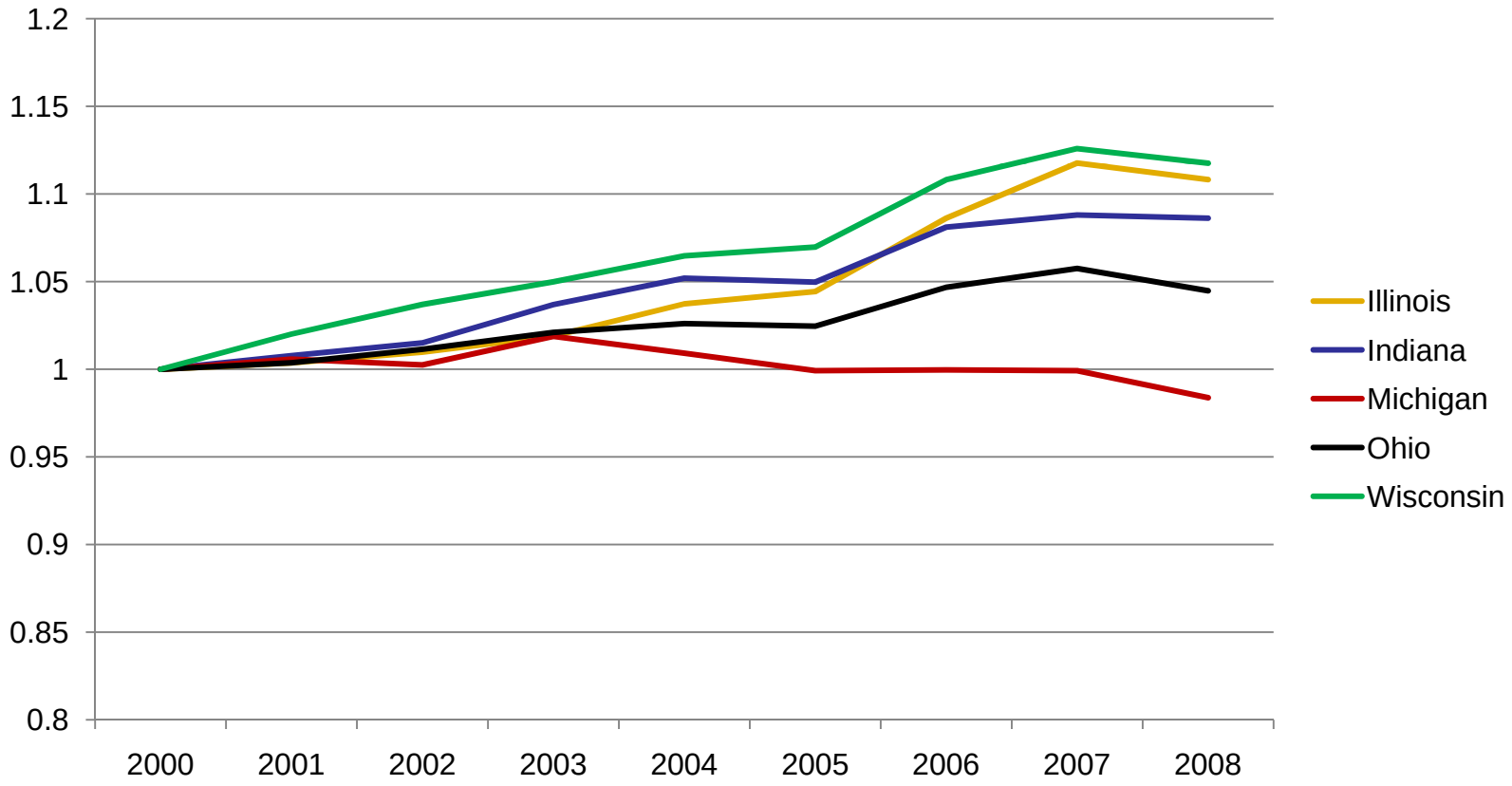
Data Presentation

- Historical trends are normalized to 2000 values to show how each state has changed over time
- Most recent year available varies depending on data source

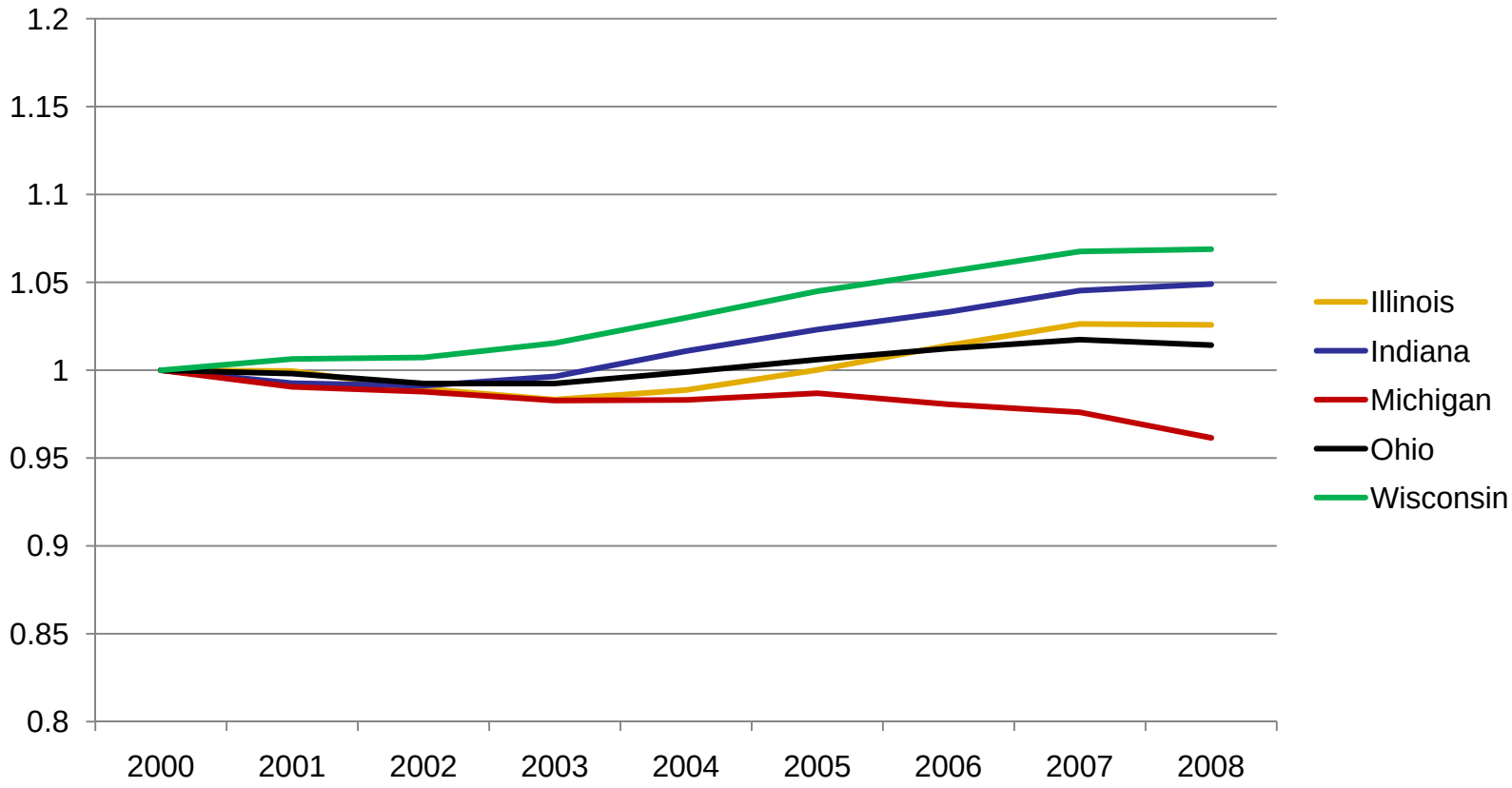
Population


1.1
1.05
1
0.95
0.9
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
.Illinois
.Indiana
.Michigan
.Ohio
.Wisconsin

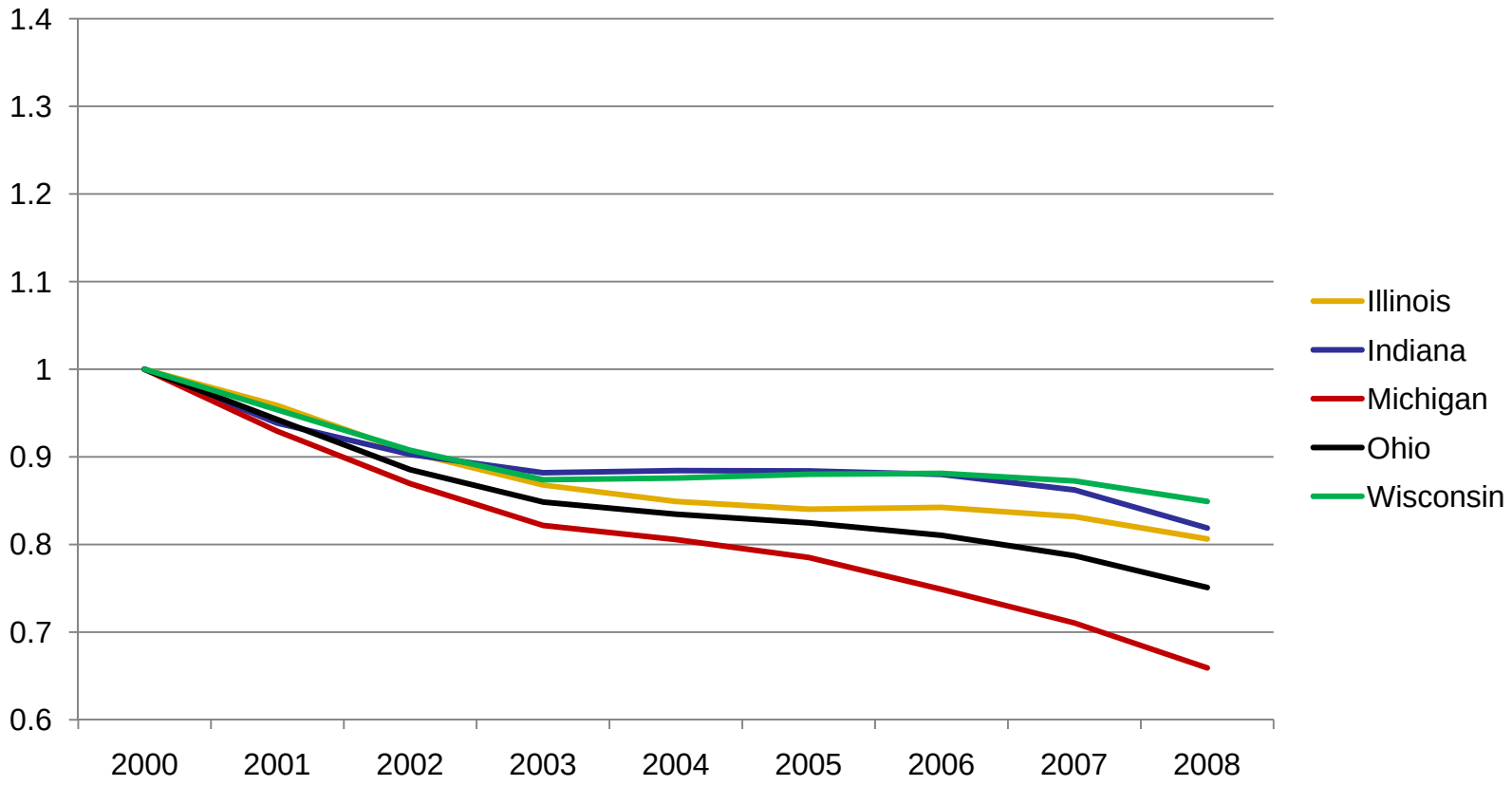
Total Real Personal Income



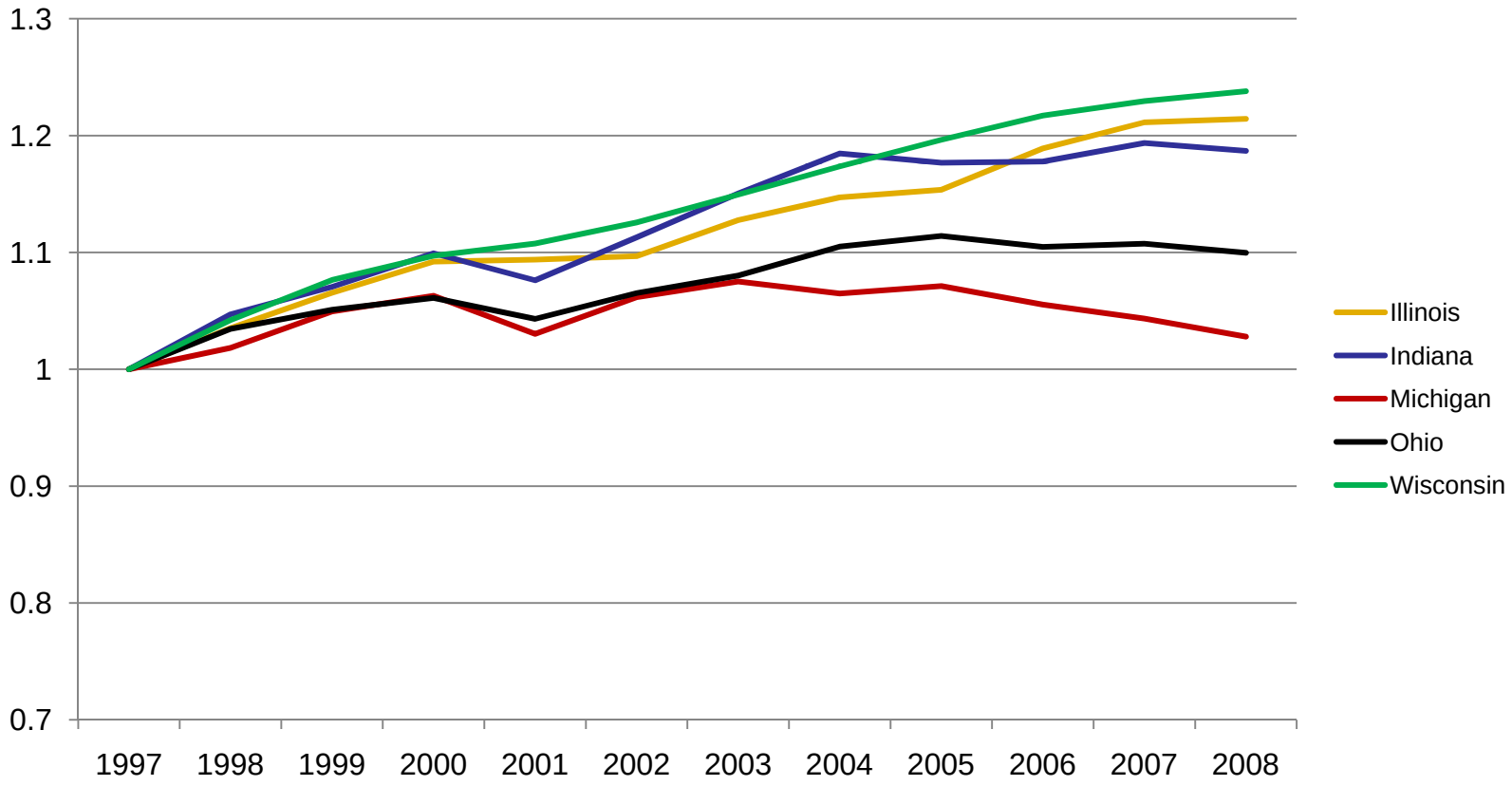
Commercial Employment



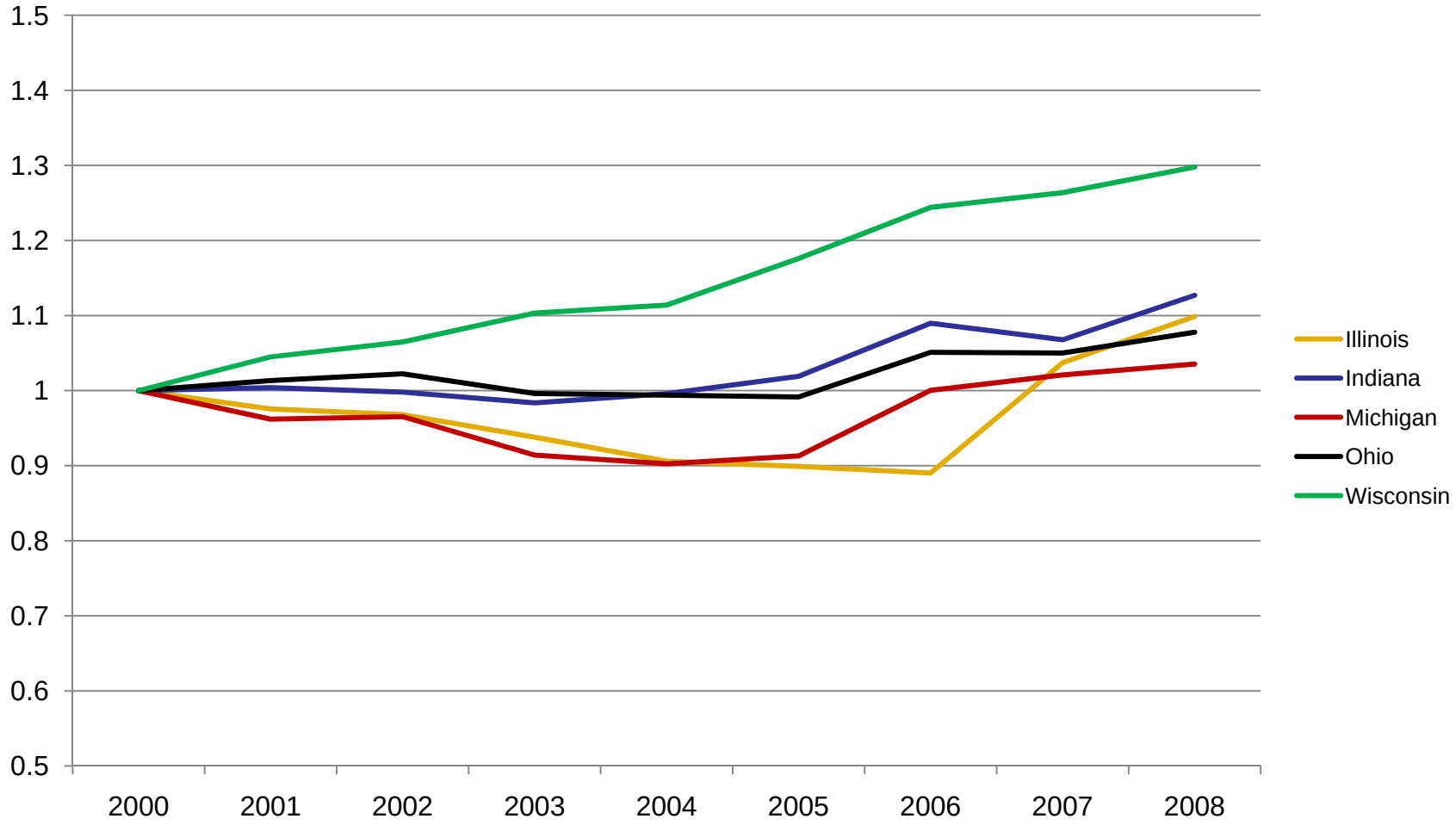
Manufacturing Employment



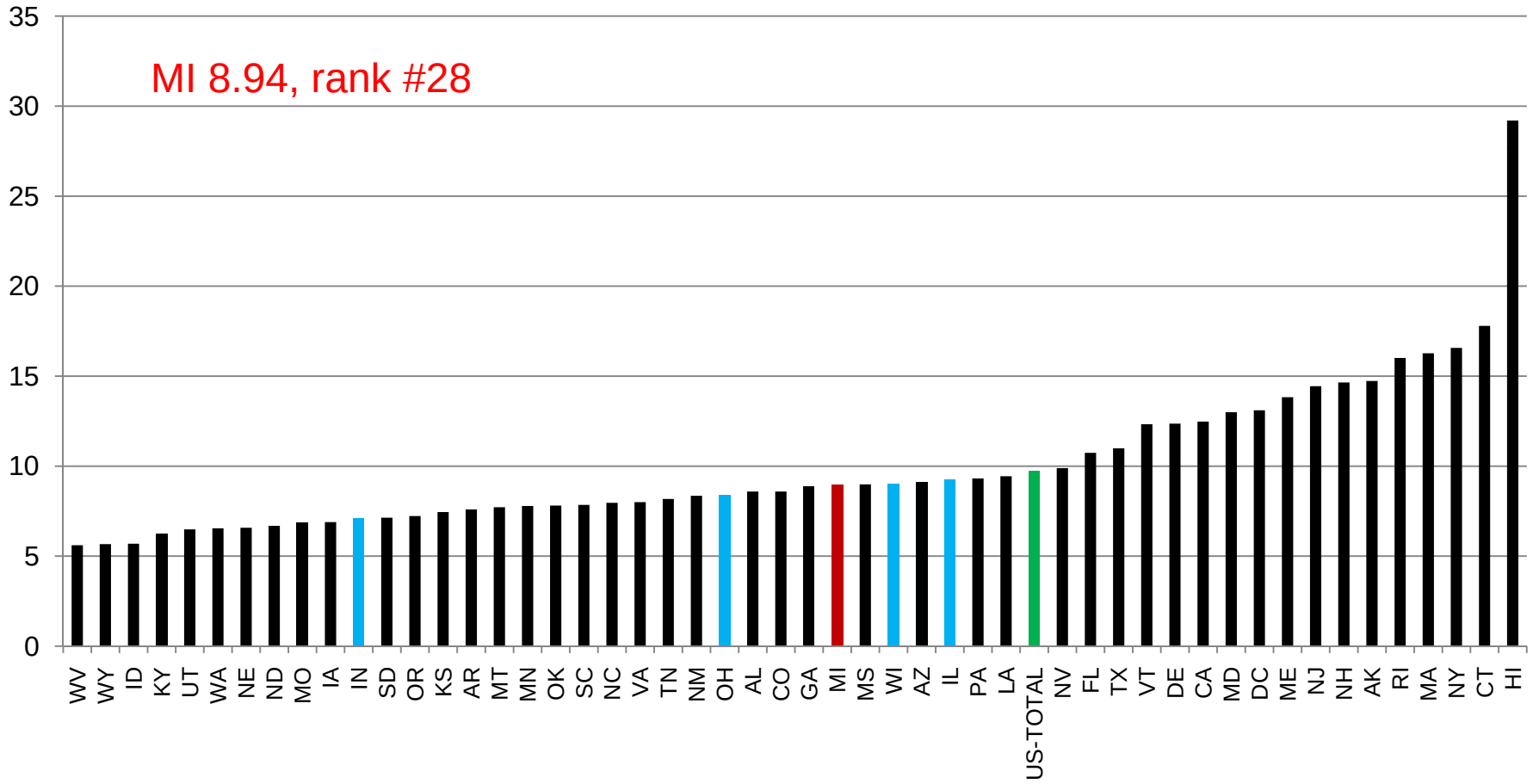
Real Gross Domestic Product



Real Electricity Prices



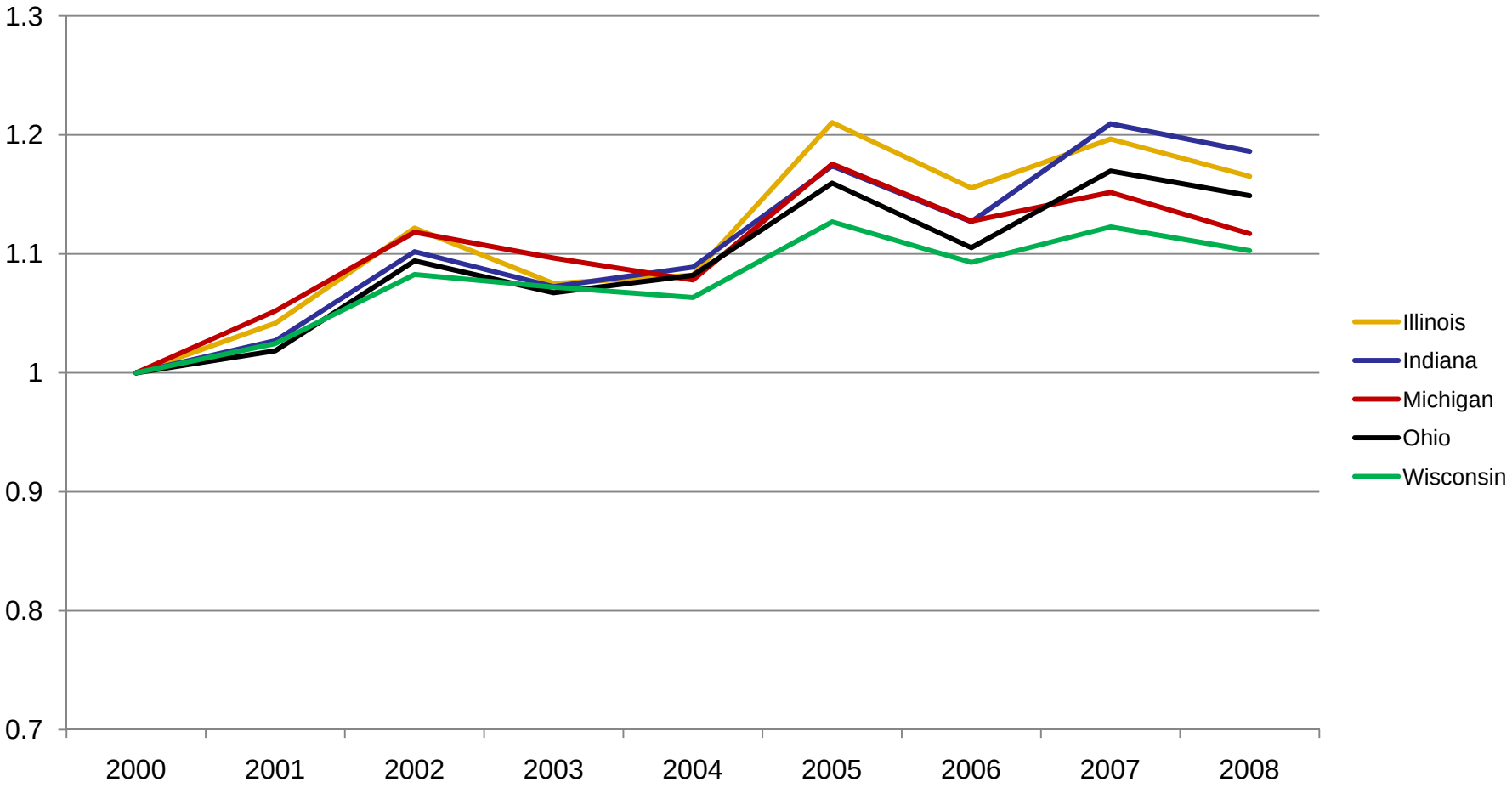
2008 All Sector Electricity Retail Price (cents/kWh)



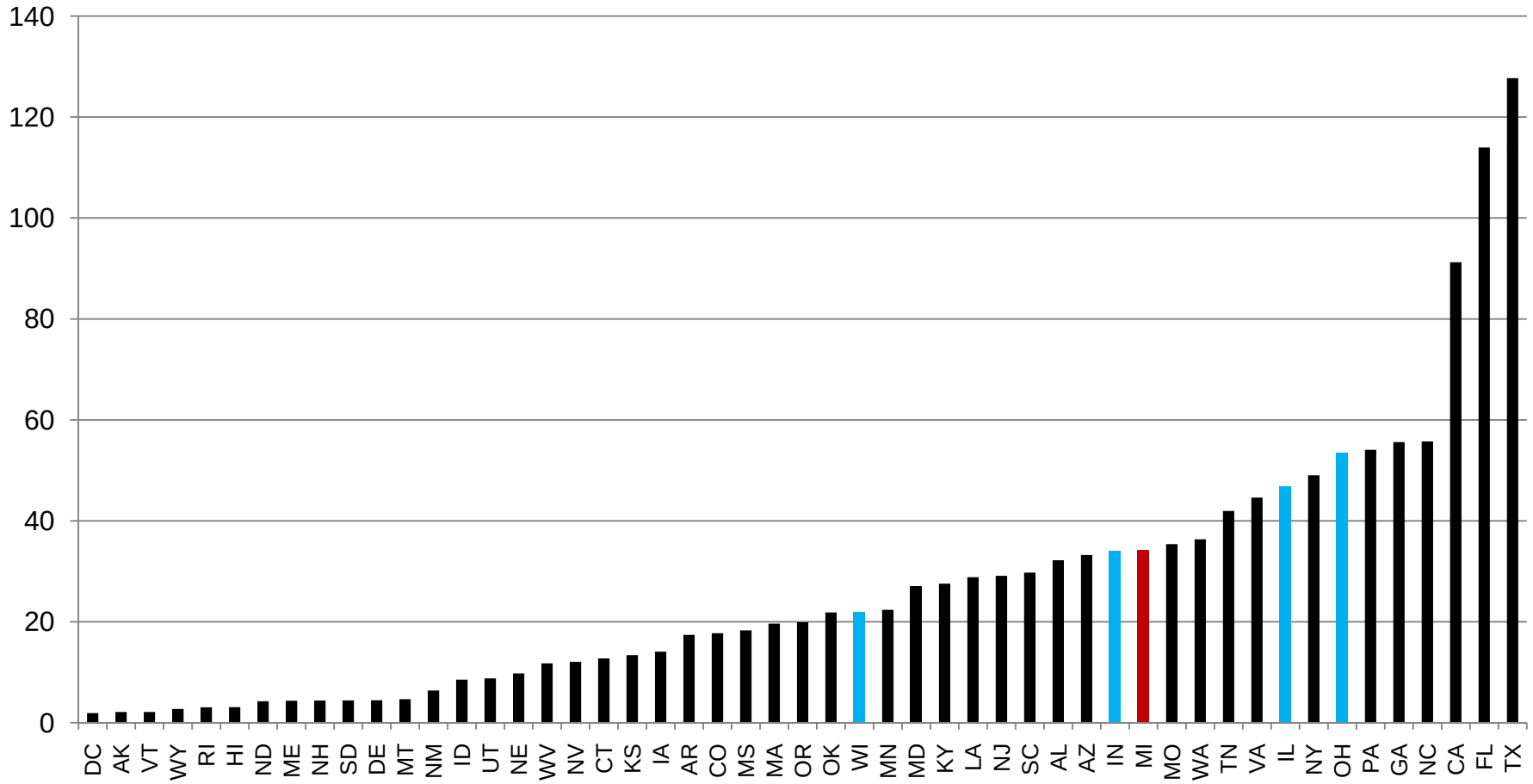
EIA Sales Data Caveats

- EIA reports historical sales but forecasts consumption
  - self and co-generation will show up in consumption but not in sales
- EIA reclassified its “other” category in 2003, moving the energy into commercial, industrial, and transportation
- There are questionable data points

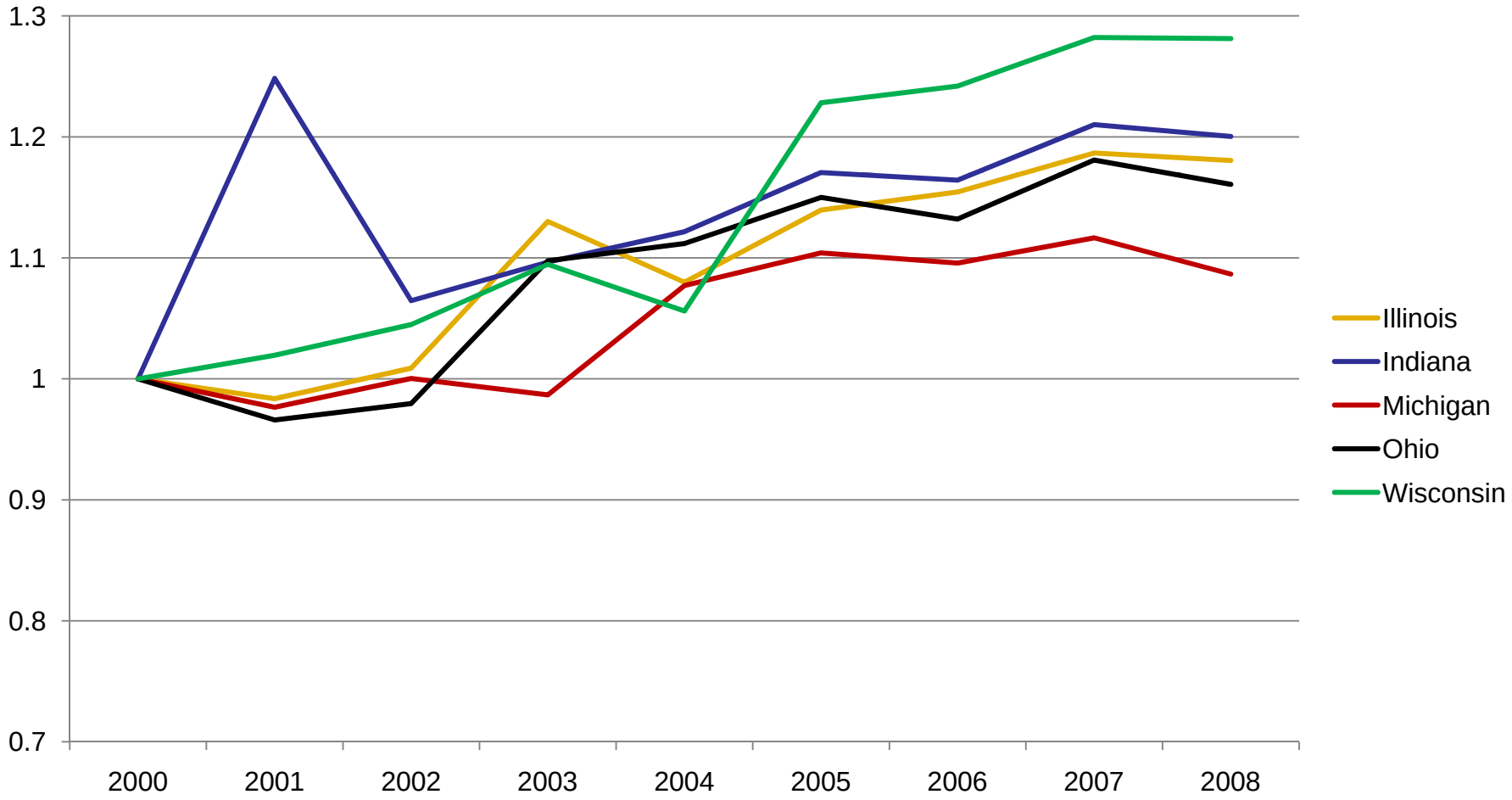
Residential Electricity Sales



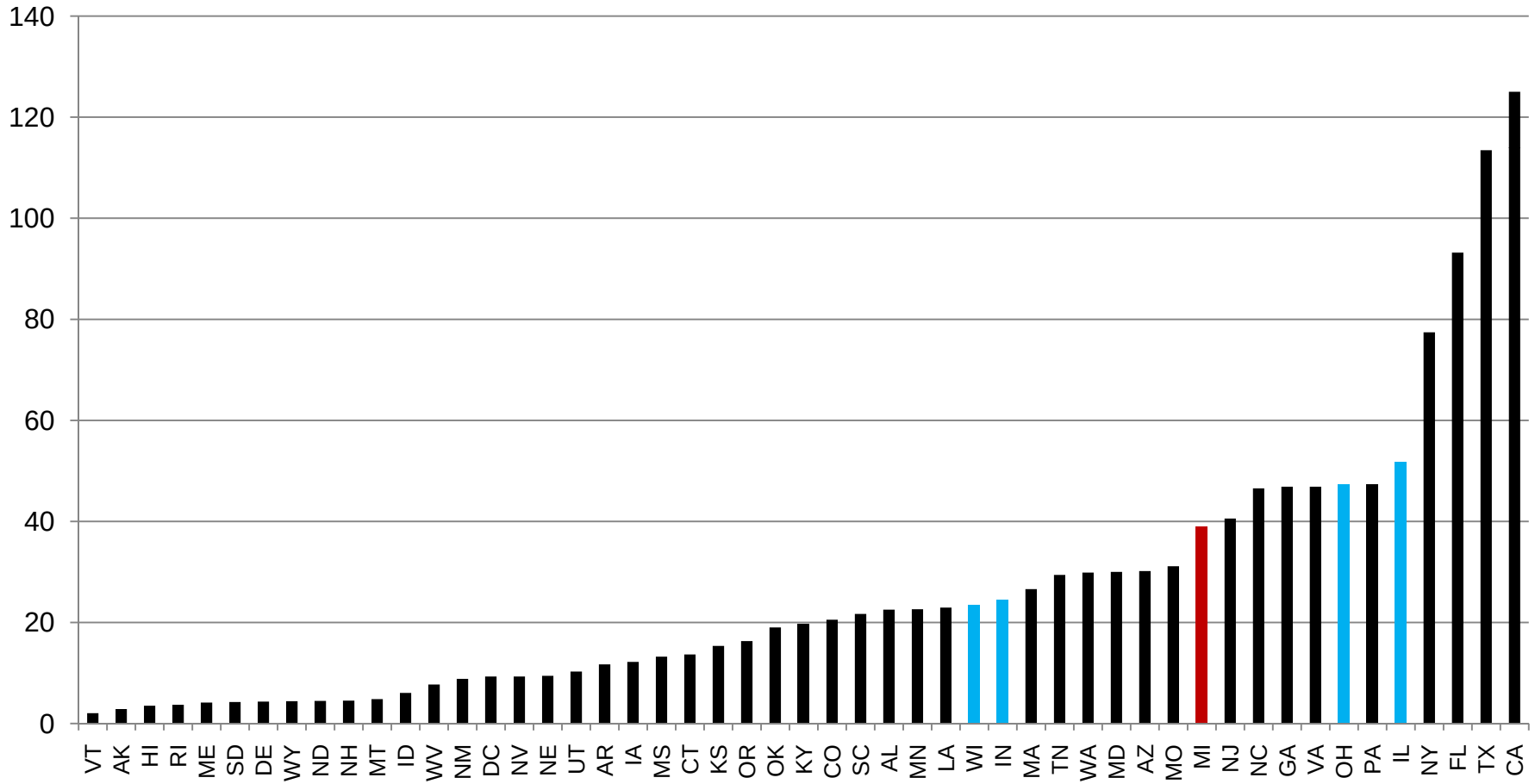
2008 Residential Electricity Sales (million MWh)



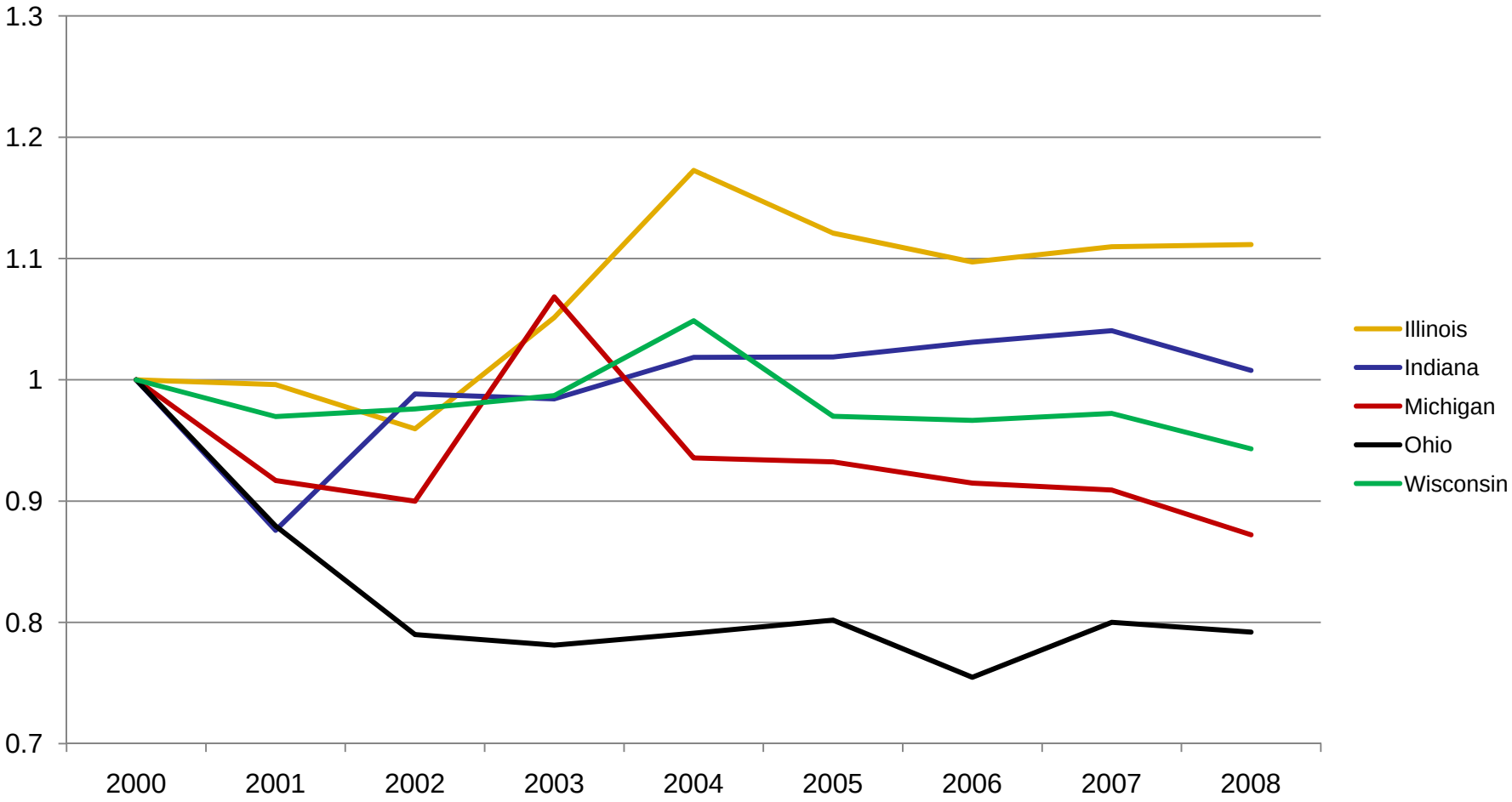
Commercial Electricity Sales



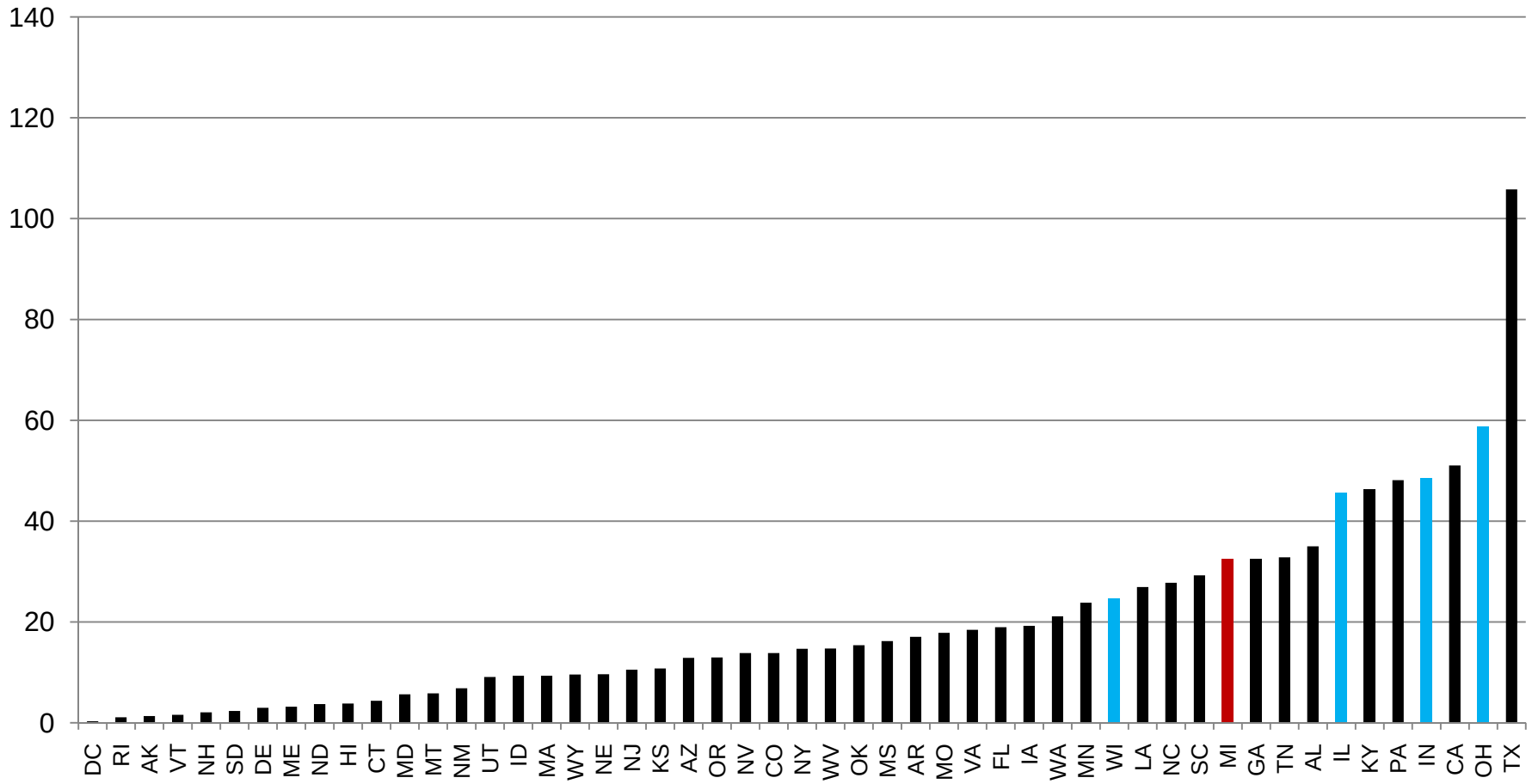
2008 Commercial Electricity Sales (million MWh)



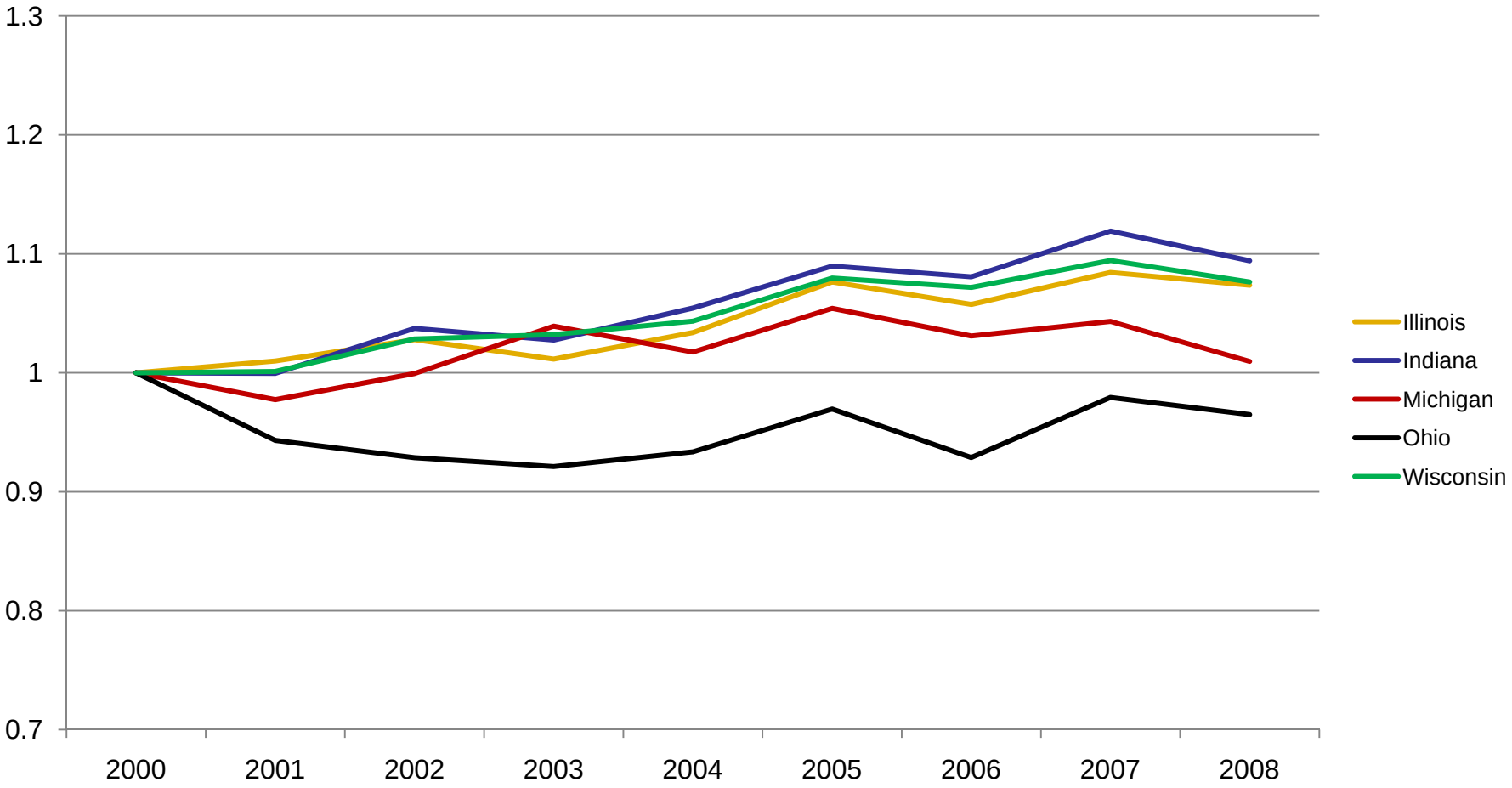
Industrial Electricity Sales



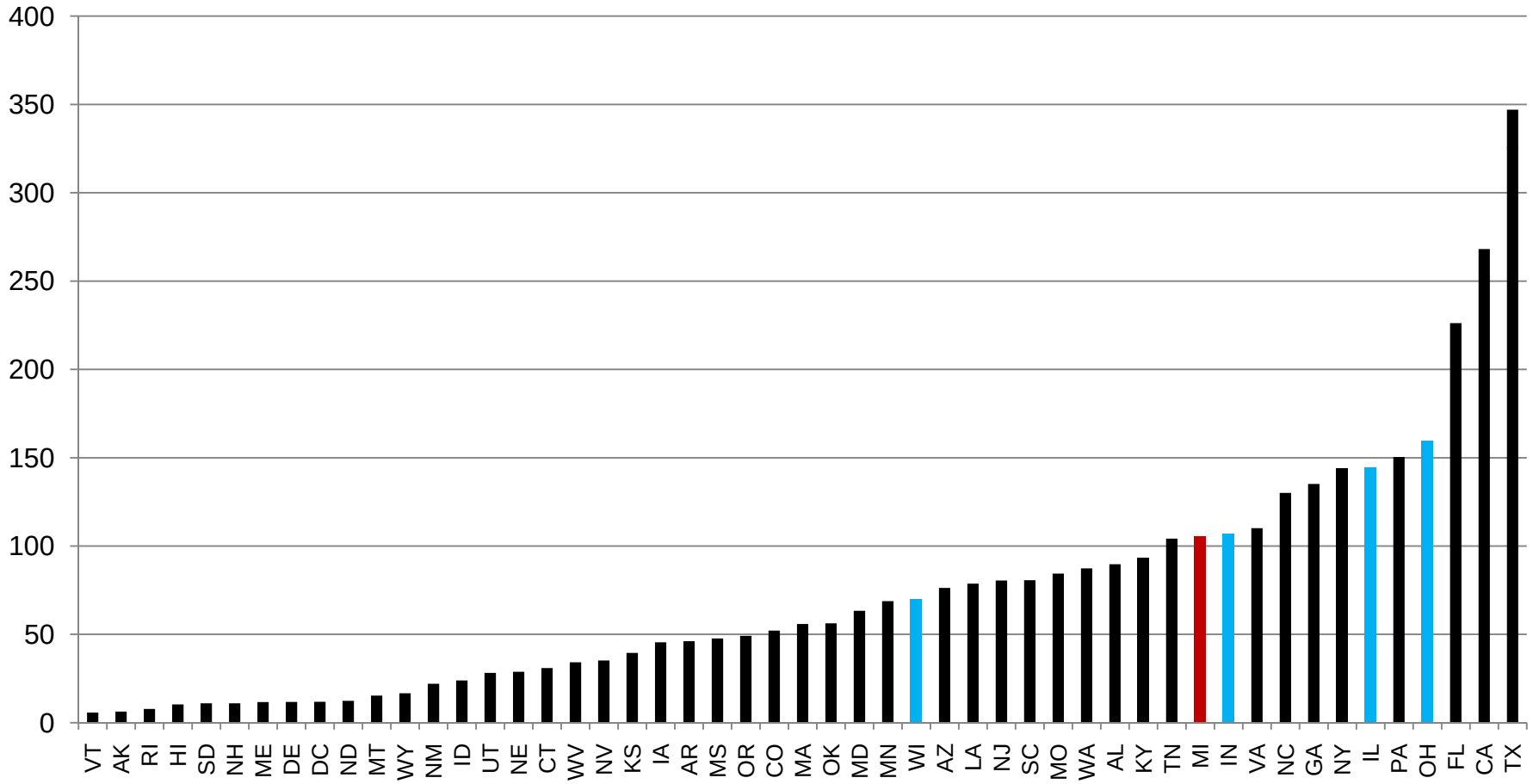
2008 Industrial Electricity Sales (million MWh)



All Sector Electricity Sales



2008 Total Electricity Sales (million MWh)



Electricity Sales 2000-2008

	RES	COM	IND	TOTAL
Illinois	1.93%	2.10%	1.33%	0.89%
Indiana	2.16%	2.31%	0.10%	1.13%
Michigan	1.39%	1.04%	-1.69%	0.12%
Ohio	1.75%	1.88%	-2.87%	-0.45%
Wisconsin	1.23%	3.15%	-0.73%	0.92%
Region	1.74%	1.97%	-0.95%	0.42%

- Average compound growth rates
- Reclassification of “other” sales inflates commercial & industrial growth rates somewhat but does not affect residential & total (Illinois is most significantly affected)
- Development of new self and co-generation deflates industrial & total growth rates (Ohio?)

Comparison of History to Forecast for the Region

- Historical sales (2000-2008)
  - residential 1.74%
  - commercial 1.97%
  - industrial -0.95%
  - total 0.42%
- Forecast consumption (2008-2035)
  - residential 0.49%
  - commercial 1.20%
  - industrial 0.44%
  - total 0.74%