Administrative Records and Survey Research: A Two-Pronged Approach

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Overview

- Introduction
- Data Sources Used
- Methodology
- Expected Deliverables
- Next Steps

Introduction

- Wyoming Community Colleges:
  - Could not answer legislative requirement and needed employer satisfaction data
- Administrative Records + Survey Research
- Administrative Records (AR) provides the sample frame
- Wyoming Lodging & Restaurant Assoc
  - "In 1999 the Wyoming Lodging & Restaurant Association (WLRA) created its Education Foundation with one major goal in mind: creating a skilled workforce for Wyoming's hospitality industry by establishing WHAM, the Wyoming Hospitality Alliance Mentoring Program. Through WHAM we hoped to offer hospitality school-to-career programs in 6-10 high schools across Wyoming by 2005."
  - ROI on Culinary Arts Program
  - Students >>>> Wage Records >>>> Employers

Fast-Forward to Present Day

- LMI Improvement Grants present the same issues (making connections)
  - "…assist those most impacted by recession"
  - "…to teach workers the skills they need…" to get a "green" job
  - "…to enhance the labor exchange function"

- Direct scarce resources towards people more likely to retain long-term work
- Move from a cross-sectional (point in time) description to longitudinal analysis and prediction

# Data Sources

- "Universe" Data Sets
  - Unemployment Insurance Wage Records (WR)
  - Quarterly Census of Employment and Wages (QCEW)
  - Driver's License Database (DL)
  - Workers' Compensation Database (WC)
- "Sample" Data Sets
  - Employment Services Database (ES)
  - Survey Instrument (Questionnaire)
  - Unemployment Insurance (UI) claimant and benefit exhaustee files

AR is Comprehensive, but…

- Data not present in AR….
  - Skills
  - Training
  - Time spent on efficiency, remediation, etc.
  - Occupation
  - Direct and indirect compensation
  - Hours worked
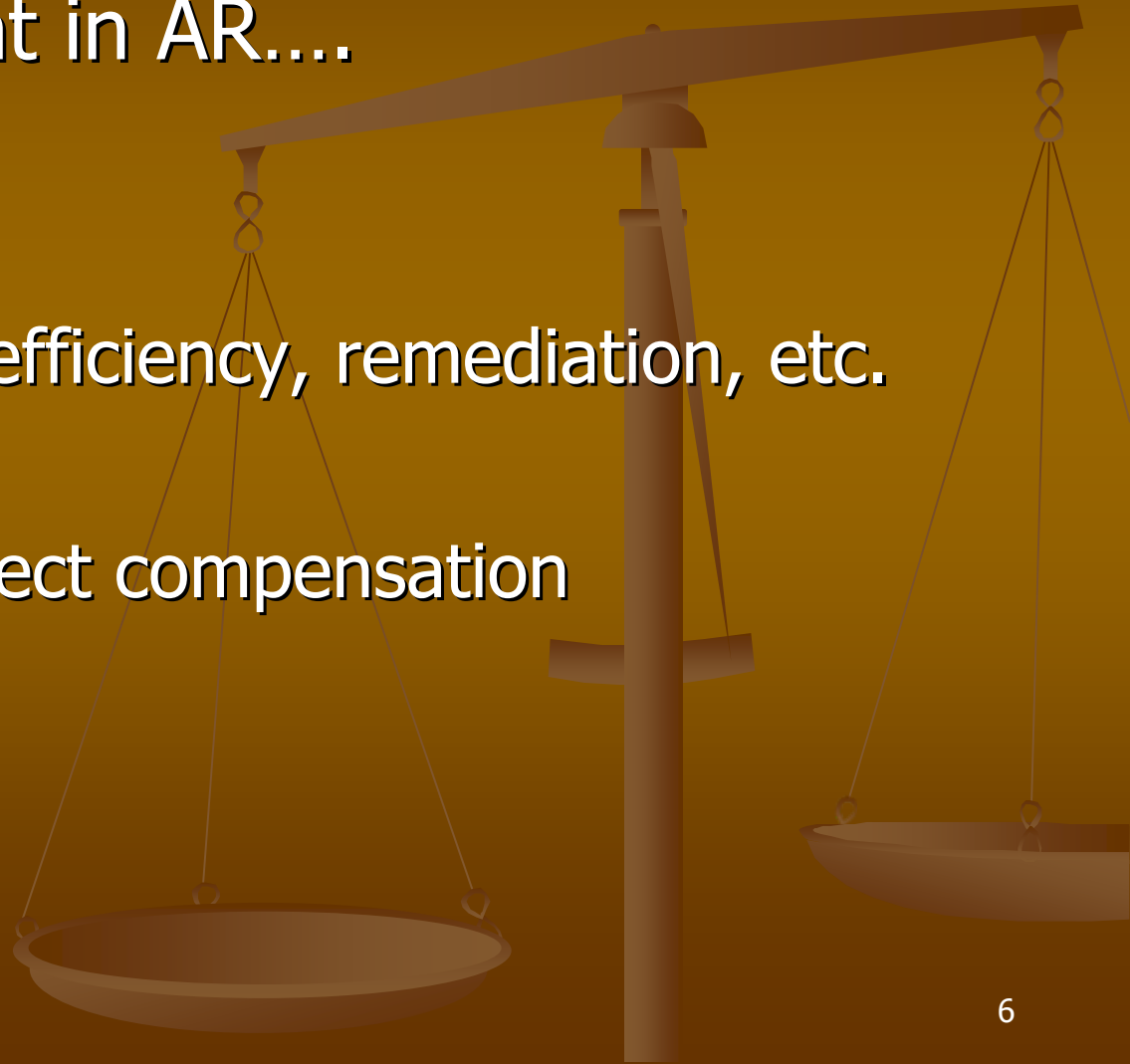
Methodology: Connecting AR and Survey Research

- Expected Start Date: May 2010
- Instrument & introductory letter cognitive testing (University of Wyoming Survey Analysis Center) complete
- First run of survey research
  - 29,000 new hires
  - 20,000 made probability cutoff
  - 4,200 questionnaires mailed
- We welcome design input!

Instrument Questions

2a. What was this worker's rate of pay as of November 12, 2009? Please include base rate of pay, tips, commissions, and other monetary compensation. If the worker was not employed as of November 12, 2009, please report his or her last pay rate in October, November, or December 2009.

 Hour
 Week
 2 Weeks
 Month
 Other *(specify: e.g. supplemental insurance)*

_____

Instrument Questions (2)

4a. On November 12, 2009, what was this worker's occupation *(For example, secretary, accountant, personnel manager. Please print in the shaded spaces.)*

4b. On November 12, 2009, what were this worker's most important activities or duties? *(For example, typing and filing, reconciling financial records, directing hiring policies. Please print in the shaded spaces.)*

5. Check the qualifications required for the type of work described in questions 4a and 4b. *(Please check all that apply)*
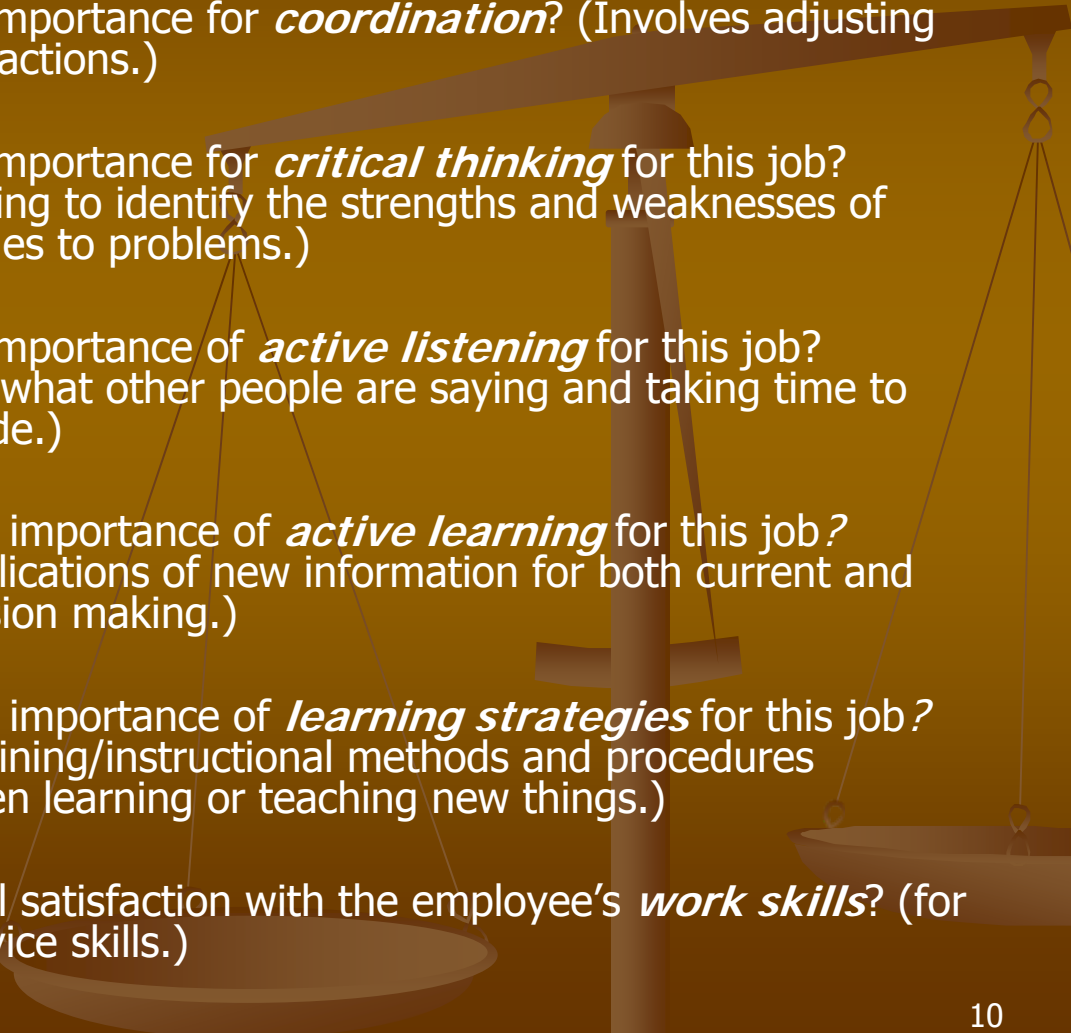On-the-job training Associate's degree None required
Postsecondary technical training Bachelor's degree or greater
 Other *(specify; for example, a course in medical terminology)* _____
Work experience in related occupations Licensure or certification occupations

Instrument Questions (3)

6. How would you rate the level of importance for *reading comprehension* for this job? (Involves understanding written sentences and paragraphs in work related documents.)

7. How would you rate the level of importance for *coordination*? (Involves adjusting actions in relation to coworkers' actions.)

8. How would you rate the level of importance for *critical thinking* for this job? (Involves using logic and reasoning to identify the strengths and weaknesses of alternative solutions or approaches to problems.)

9. How would you rate the level of importance of *active listening* for this job? (Involves giving full attention to what other people are saying and taking time to understand the points being made.)

10. How would you rate the level of importance of *active learning* for this job? (Involves understanding the implications of new information for both current and future problem solving and decision making.)

11. How would you rate the level of importance of *learning strategies* for this job? (Involves selecting and using training/instructional methods and procedures appropriate for the situation when learning or teaching new things.)

12. How would you rate your overall satisfaction with the employee's *work skills*? (for example, cooking, customer service skills.)

Instrument Questions (4)

13. In your opinion, what one skill is **most** important to this job? It could be one of the above or it could be another skill.

14. On a scale of 1 to 5 where 1 means "No Hours" and 5 means "All of the Time", how would you rate the extent to which this job is involved in increasing energy efficiency, utilizing or developing renewable energy resources, or preserving and/or restoring the environment?

15. Is this person still employed at your firm?

Yes   No   Don't know

Methodology

- Questionnaire Items Tested in Previous Projects
  - 2a: Tom's "past"
  - 4a – 4b: American Community Survey
  - 5: Wyoming Community College Surveys
  - 6 – 12: O*Net green jobs skills
  - 13: Open-ended for content analysis/text mining
 - 14: Northern Plains Consortium

Methodology (contd.)

- Other states performing similar research:
 - NE, SD, MT, IA
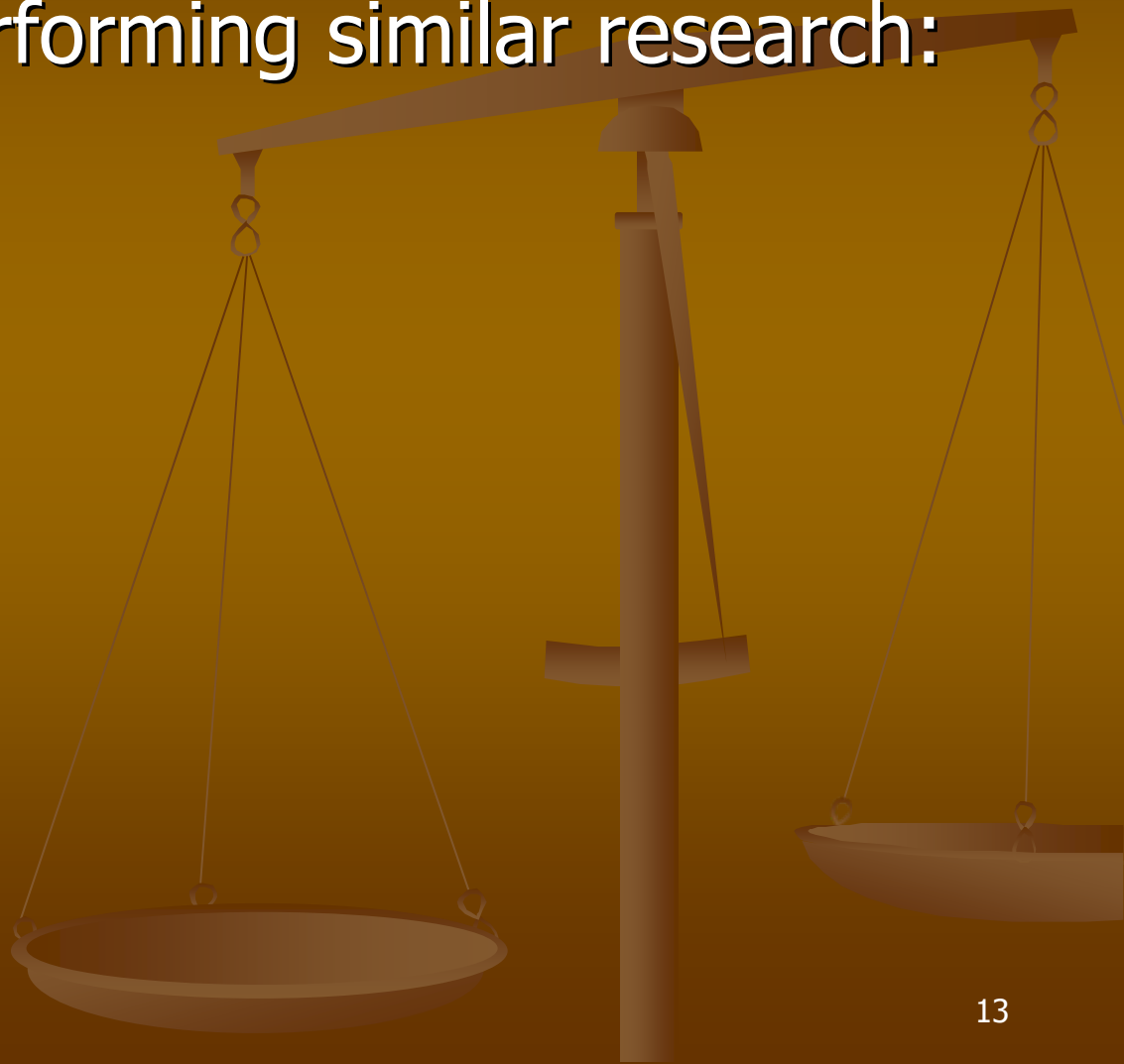
New Hires Survey Definitions

- **<u>New Hires</u>**: People who prior to the quarter of interest had no work history with the employer(s) who hired them
- **<u>Attached New Hires</u>**: New hires who were still working for the same employer(s) one quarter later

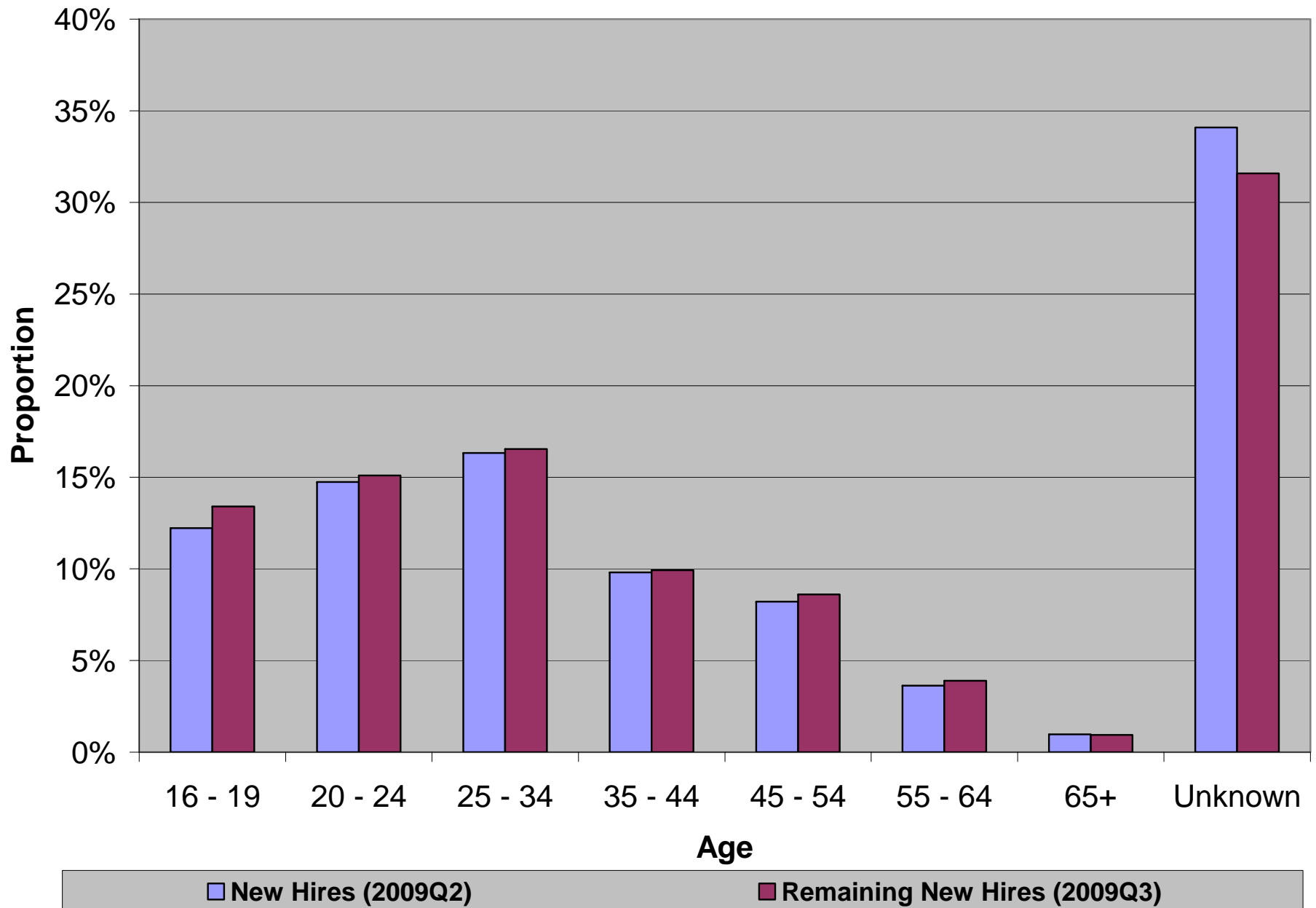**Distributions of New Hires and Attached New Hires, 2009Q2**
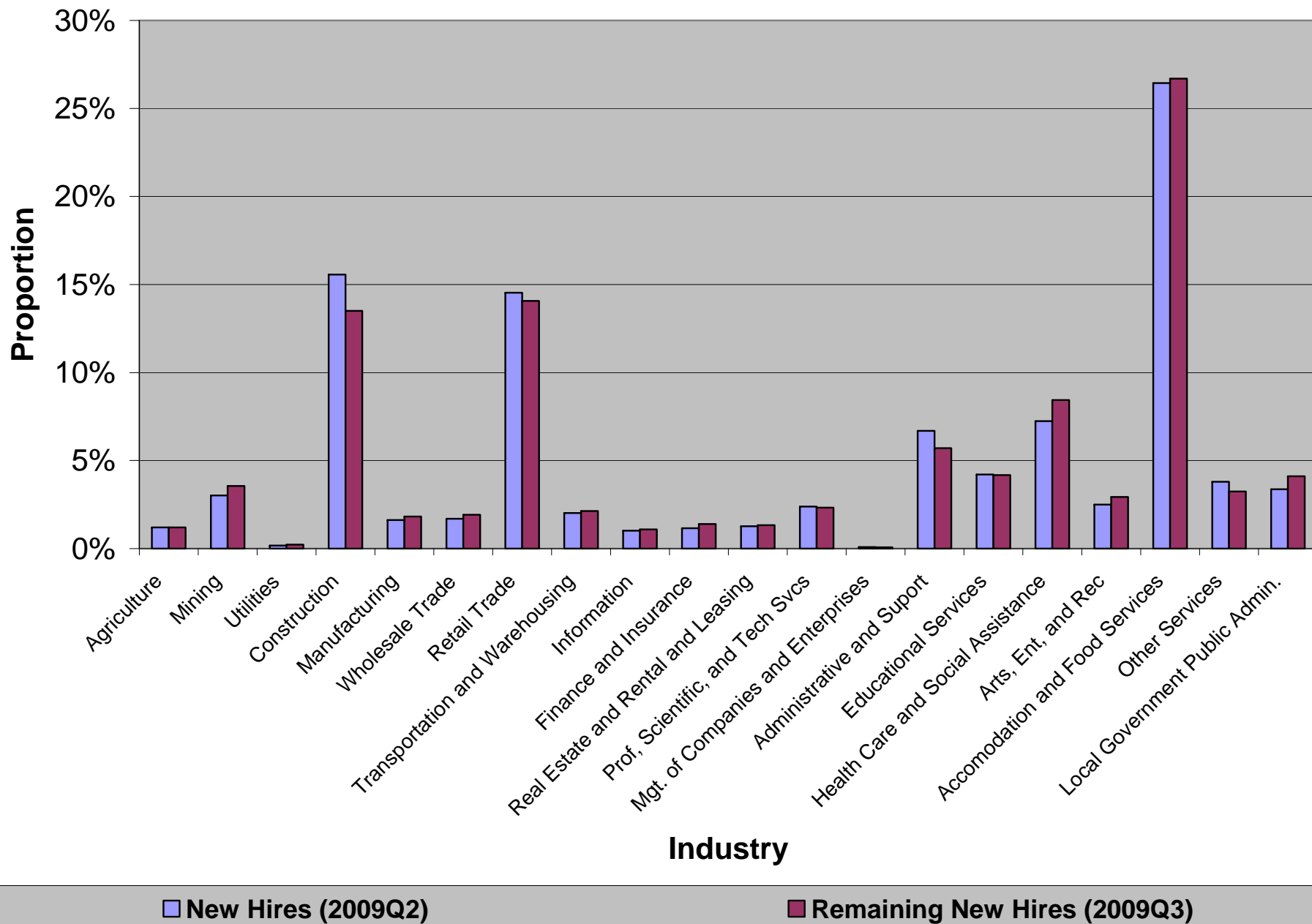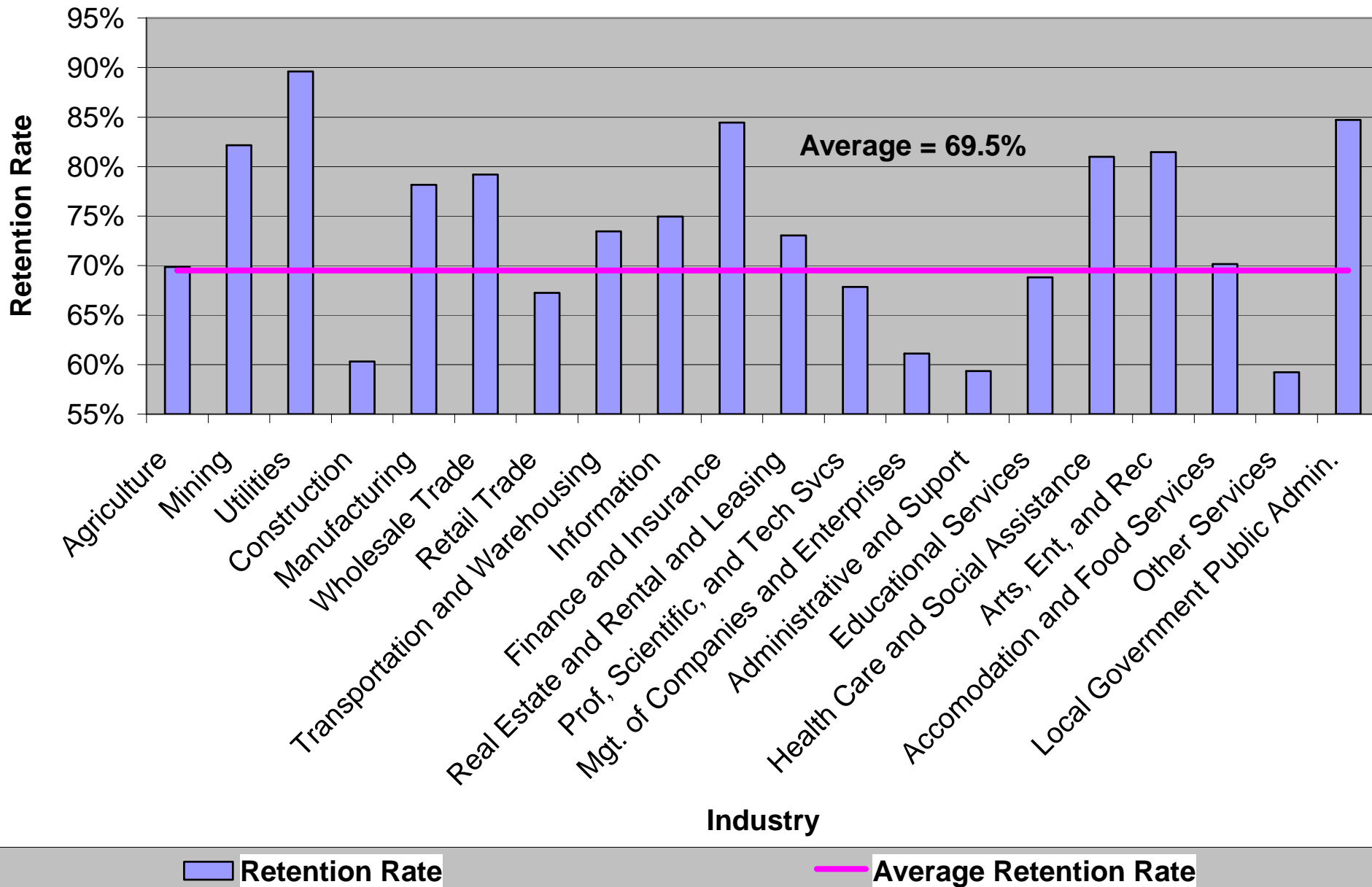
Distributions of New Hires by Sex

Distributions of New Hires by Age

Legend: New Hires (2009Q2) | Remaining New Hires (2009Q3)
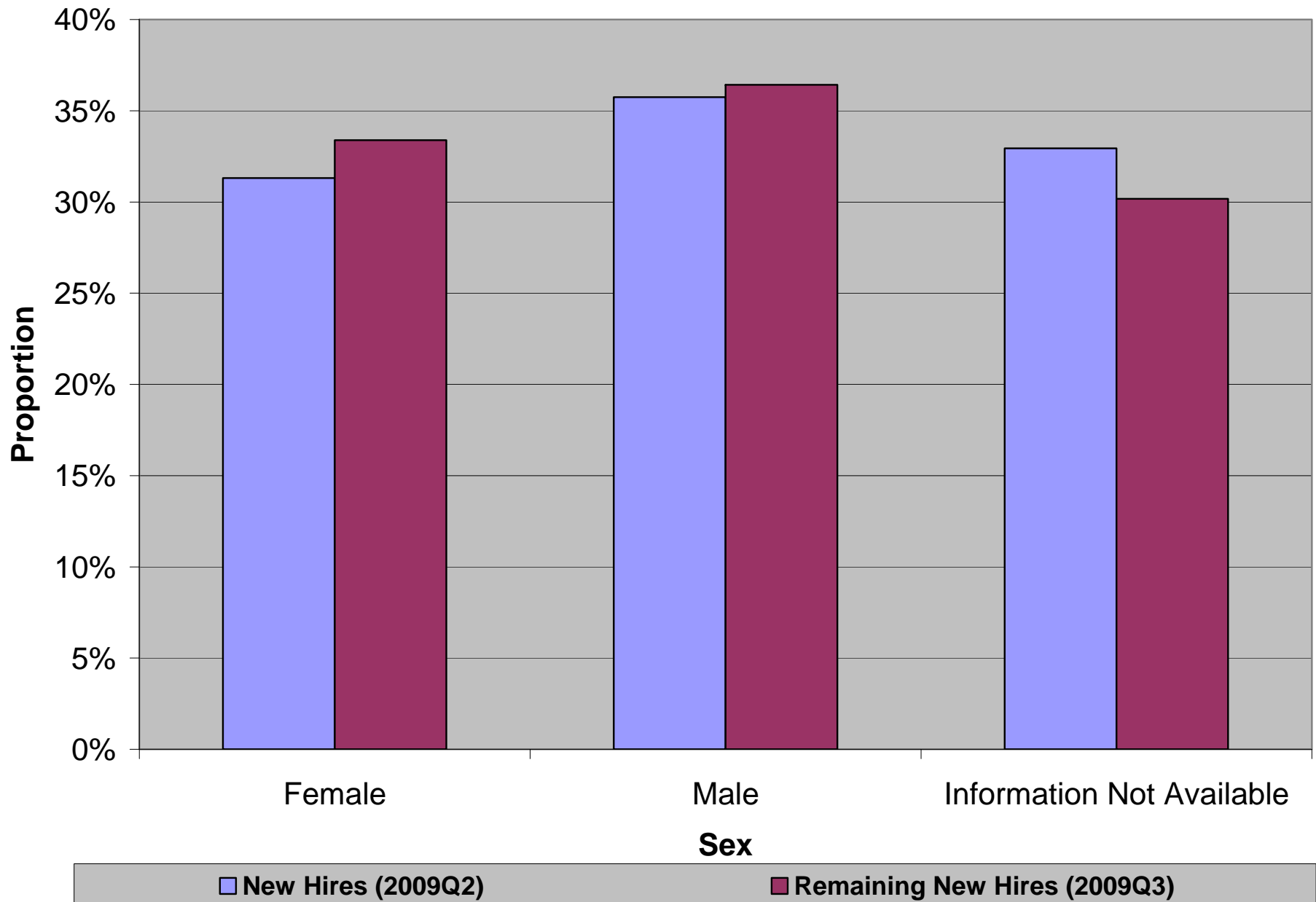
2009Q2 New Hire Retention Rates in 2009Q3 by Industry

Average = 69.5%

Sample Selection Procedures

- **<u>Step 1</u>**: Extract workers from WR who were new hires anytime between 2005Q1 and 2009Q1

- **<u>Step 2</u>**: Of those extracted in Step 1, retain those who were still working for the same employer one quarter after hire

- **<u>Step 3</u>**: Of those remaining from Step 2, fit a binary logistic regression model using work history and demographics to predict retention (Yes or No)

- **<u>Step 4</u>**: Any record with a probability > 0.5 was classified as "predicted retained", while remaining records were classified as "predicted not retained"

Sample Selection (2)

- **<u>Step 5</u>**: Check accuracy of the model against fitted data (71% accurate)

- **<u>Step 6</u>**: Export model parameters

- **<u>Step 7</u>**: Using the variables employed in the fitted model, score workers from the next quarter (2009Q2)

- **<u>Step 8</u>**: Extract workers scoring 0.5 or greater – this is the sample frame (Slide 17)

Sample Selection (3)

- **<u>Step 9</u>**: The sample amount desired from each industry was determined using the following parameters:
    - Desired Measurement Error ±5%
    - Probability = 0.5 (gives maximum sample size)
- Because of the small size of some sample frame cells, a finite population correction factor was used. This slightly reduced the number of required observations.
- The final sample selection for the trial run is shown on the next slide.

Table B: Sample Selection Criteria to Ensure Results with 95% Confidence Interval with +/-5% Error

Industry[1]	N (Hired in 2009Q2, still employed in 2009Q3)	Sample	Weight (N/Sample)
Agriculture, Forestry, Fishing, and Hunting	206	134	1.537
Mining, Quarrying, and Oil and Gas Extraction	1,139	287	3.969
Utilities	55	48	1.146
Construction	3,274	344	9.517
Manufacturing	593	233	2.545
Wholesale Trade	535	224	2.388
Retail Trade	3,650	348	10.489
Transportation and Warehousing	644	241	2.672
Information	410	199	2.060
Finance and Insurance	421	201	2.095
Real Estate and Rental and Leasing	360	186	1.935
Professional, Scientific, and Technical Services	654	242	2.702
Management of Companies and Enterprises	12	12	1.000
Administrative and Suport and Waste Management and Remediation Services	1,282	296	4.331
Educational Services	2,212	327	6.765
Health Care and Social Assistance	3,014	341	8.839
Arts, Entertainment, and Recreation	603	235	2.566
Accomodation and Food Services	5,320	358	14.860
Other Services (except Public Administration)	765	256	2.988
Total	25,149	4,512	5.574

[1]Excludes Public Administration and Undetermined industries

Reference: Daniel, W. & Terrell, J. (1995). Business Statistics for Management and Economics, 7th Ed., p. 293. Houghton Mifflin, Boston, MA.

Sampling without replacement:
$n = N z^2 pq / (d^2 (N-1) / z^2 pq)$
where:
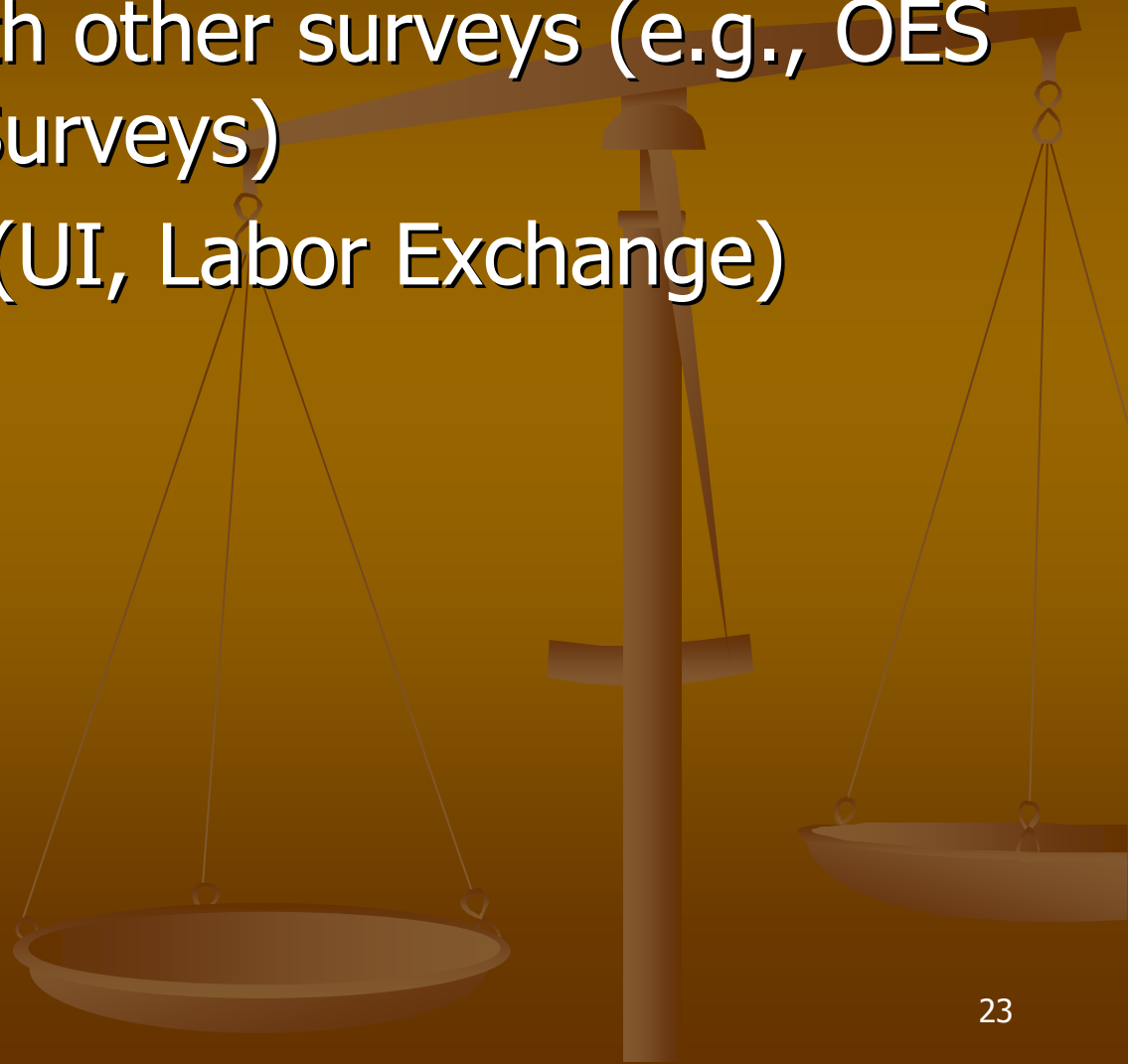z = z -score
p = probability
q = 1 - probability
d = width of error range
N = population

Local Government Public Administration added later

Sample Frame

Other Sampling Considerations

- Non-overlap with other surveys (e.g., OES and Base Line Surveys)
- Certainty Units (UI, Labor Exchange)

Results

- Combine questionnaire responses with AR
- "those most impacted"
    - Claimants and exhaustees
    - Occupations and skills of those finding work
- "needed skills"
    - What skills are associated with high compensation?
    - Link skills to occupational projections
- "enhance labor exchange"
    - Identify occupation and wage progression & retention rates for those using and those not using the ES
    - Identify potential markets into which ES could expand
- To emphasize:
    - **Moving toward explanation with modeling and quasi-experimental methods**

Porosity of the Labor Market

- Must use a multi-state approach
- Viewing one state's results in a vacuum provides an incomplete picture
- Movement of workers is an important component in any labor market interventions or monitoring
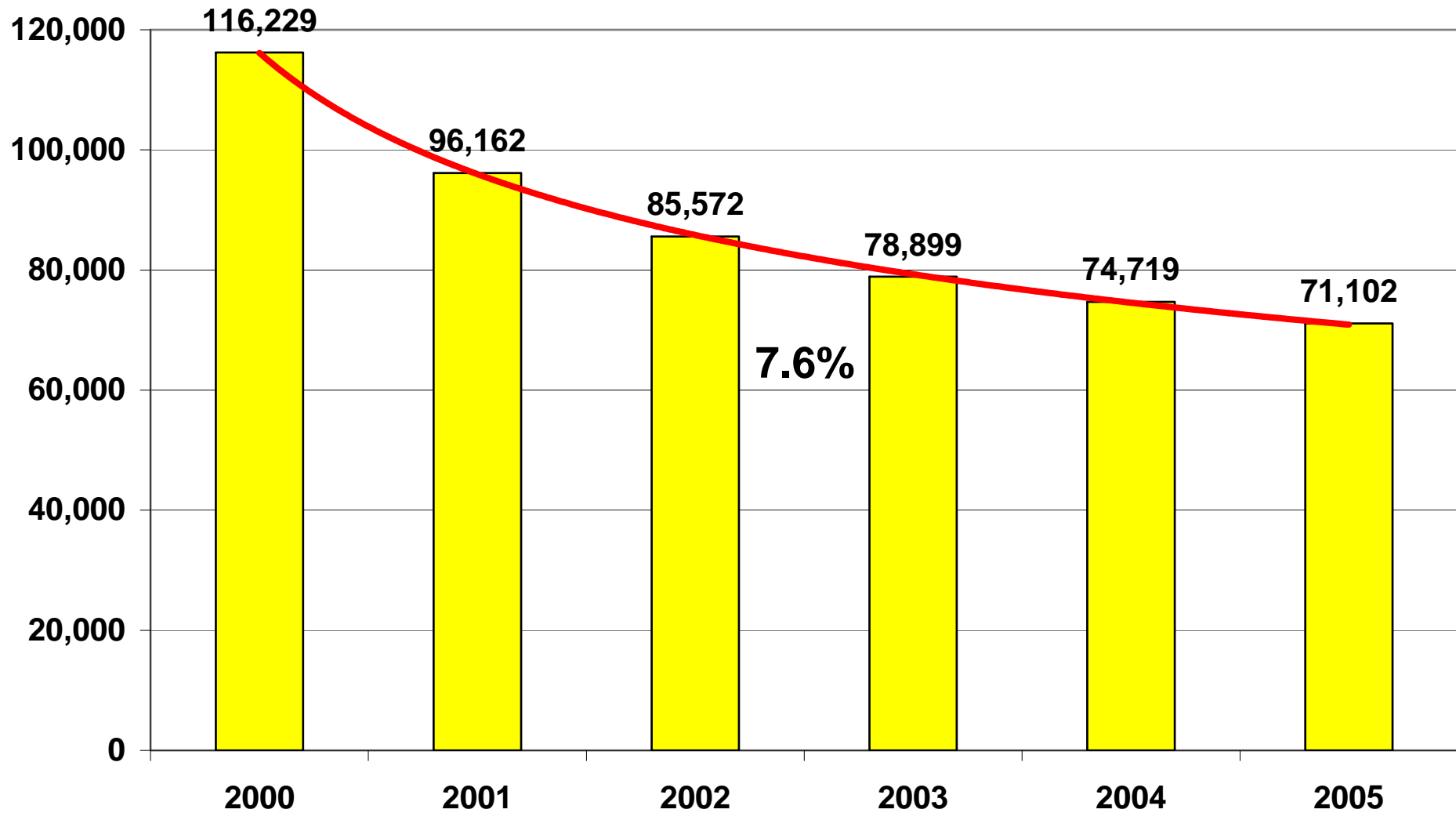
Wyoming CES Employment, 2005 - 2009

Legend: Mining, Construction, Manufacturing, Education & Health, Leisure & Hospitality
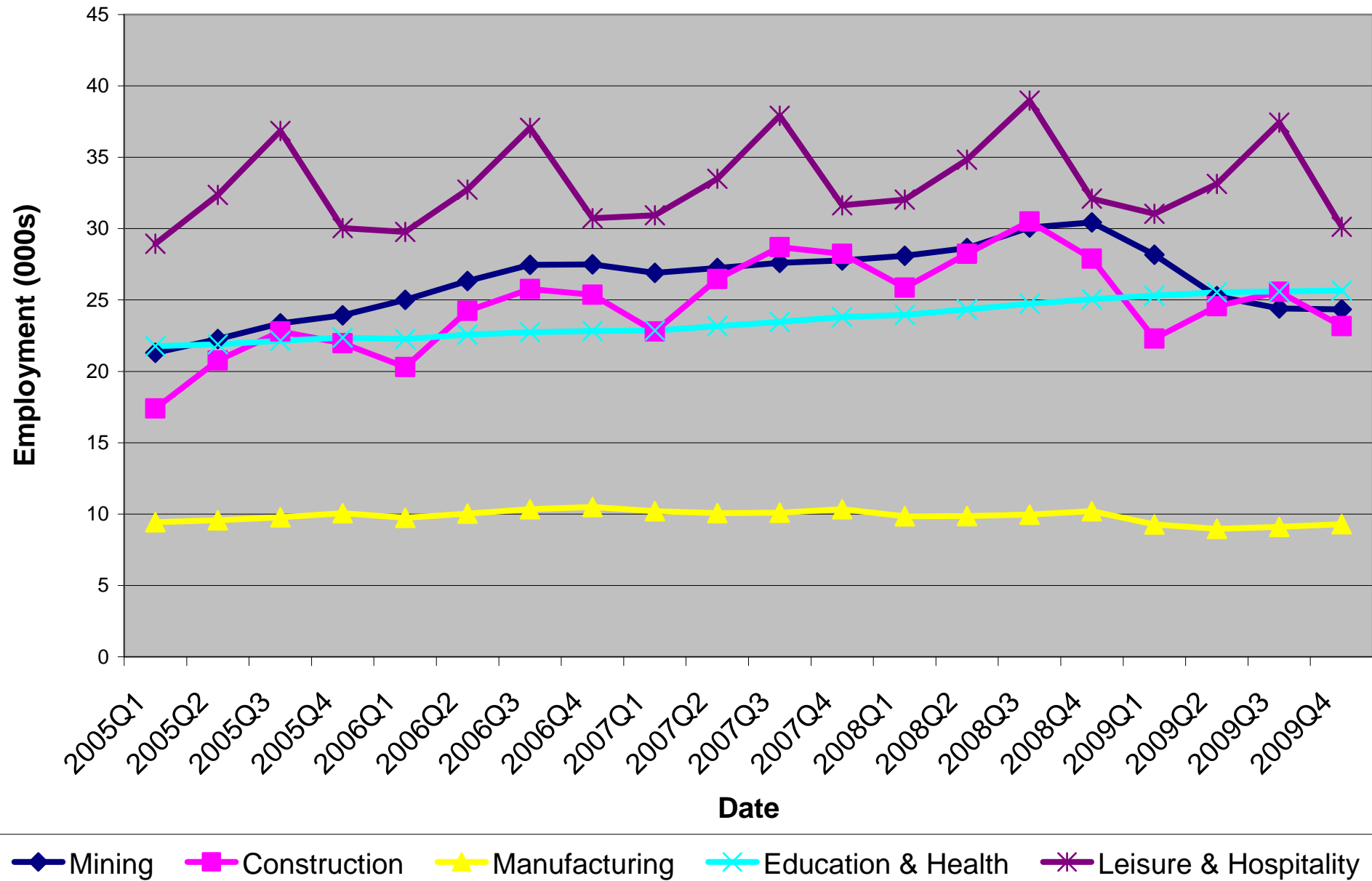
Number of Private Sector Hires in Wyoming, 2005 - 2009
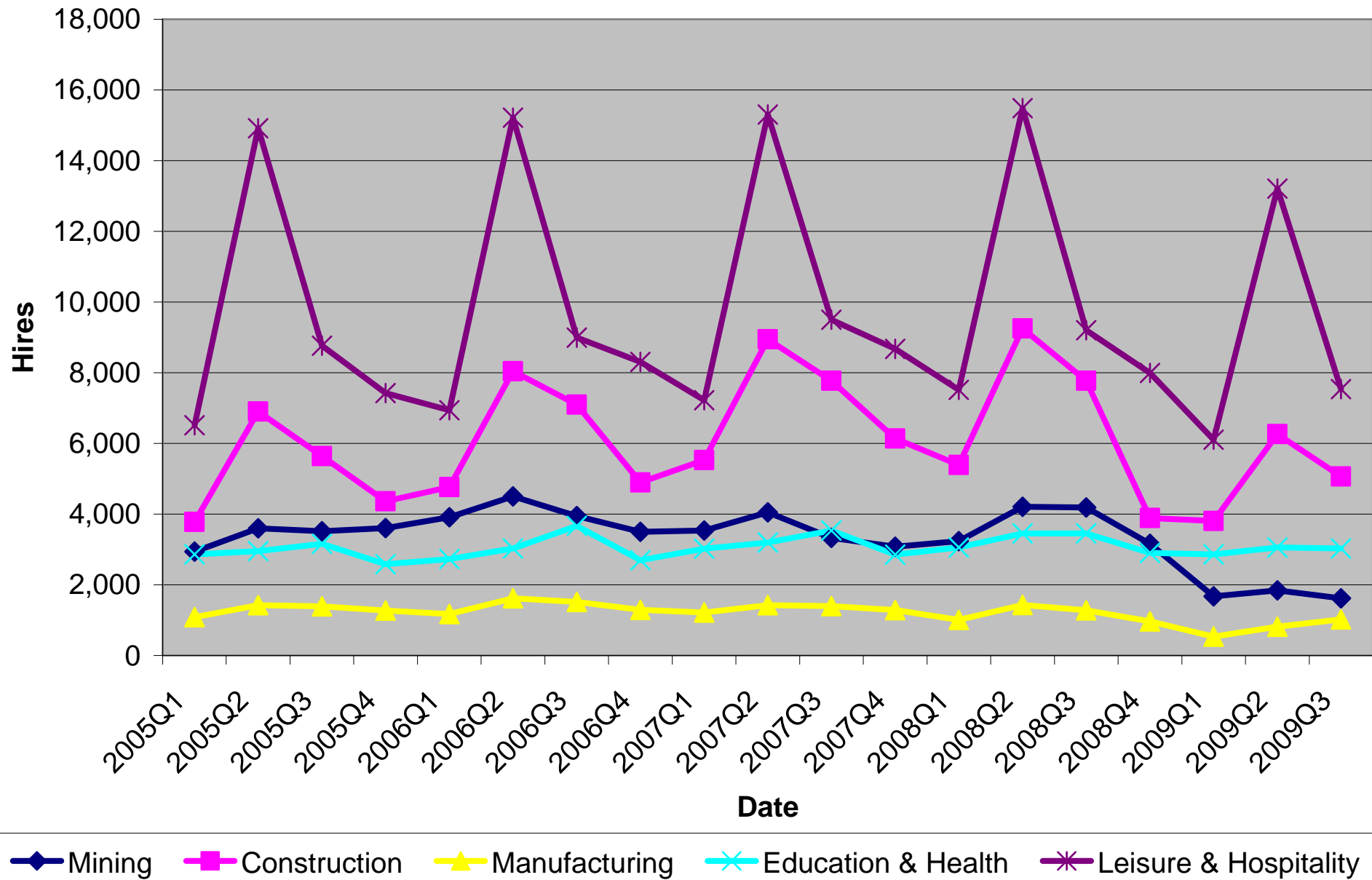
Number of 1992 Worker Cohort Age 16-34 Still Working in Wyoming
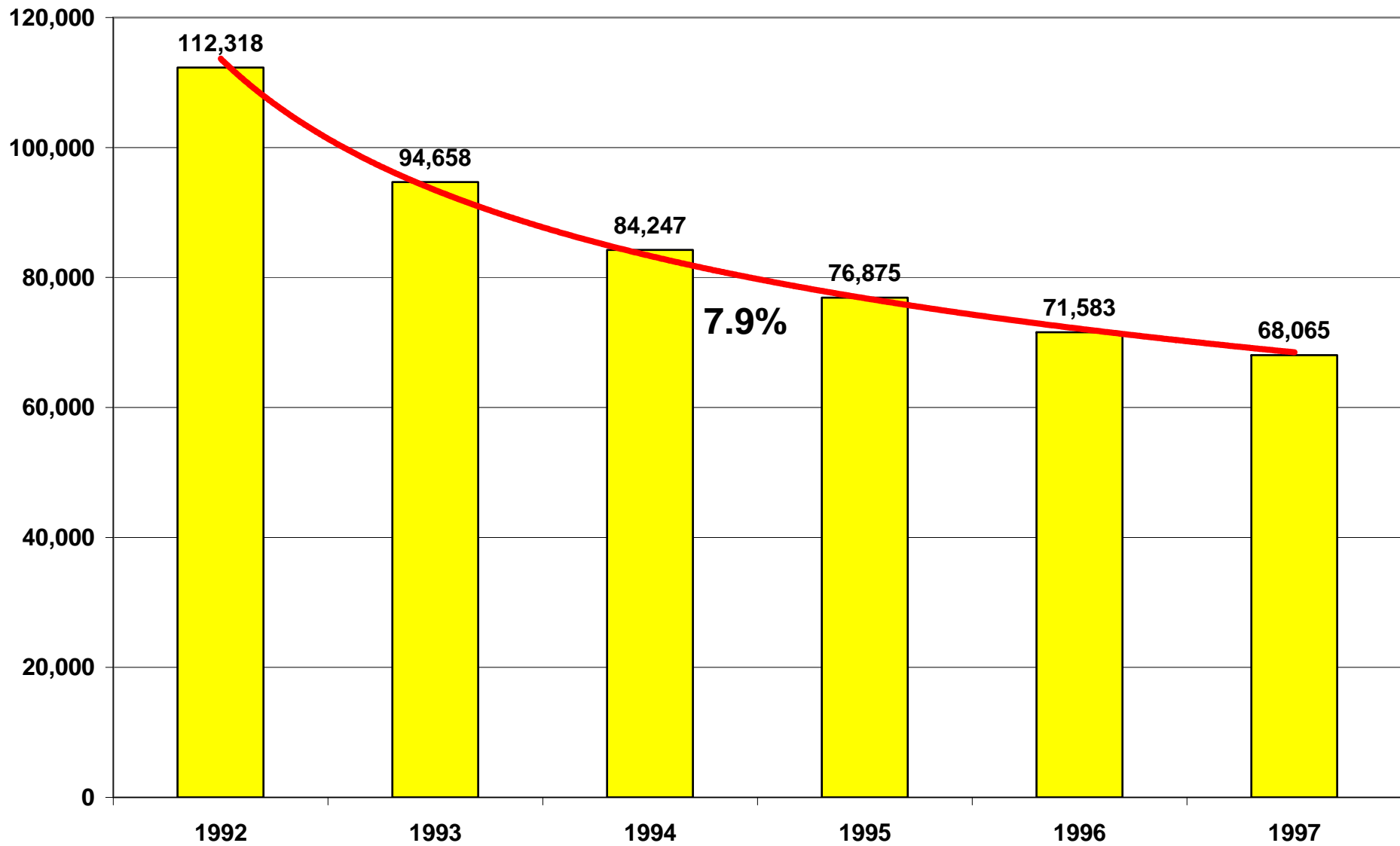
Number of 2000 Worker Cohort Age 16-34 Still Working in Wyoming
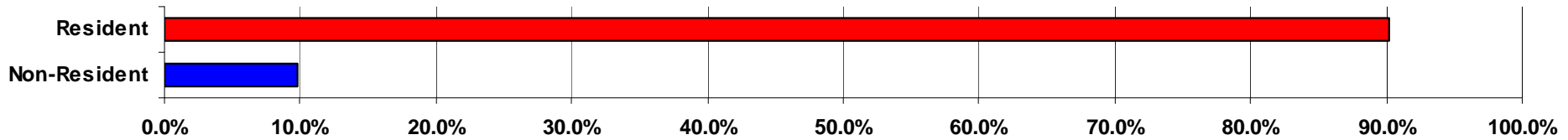
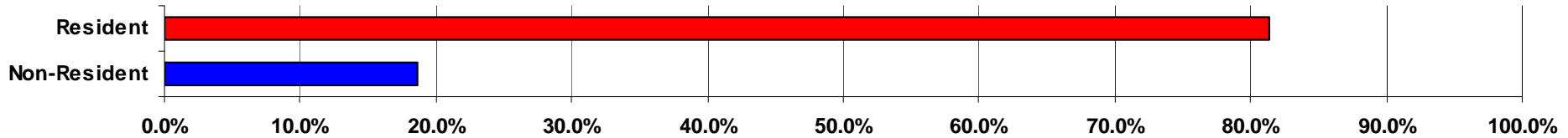**Age Distribution**
1992
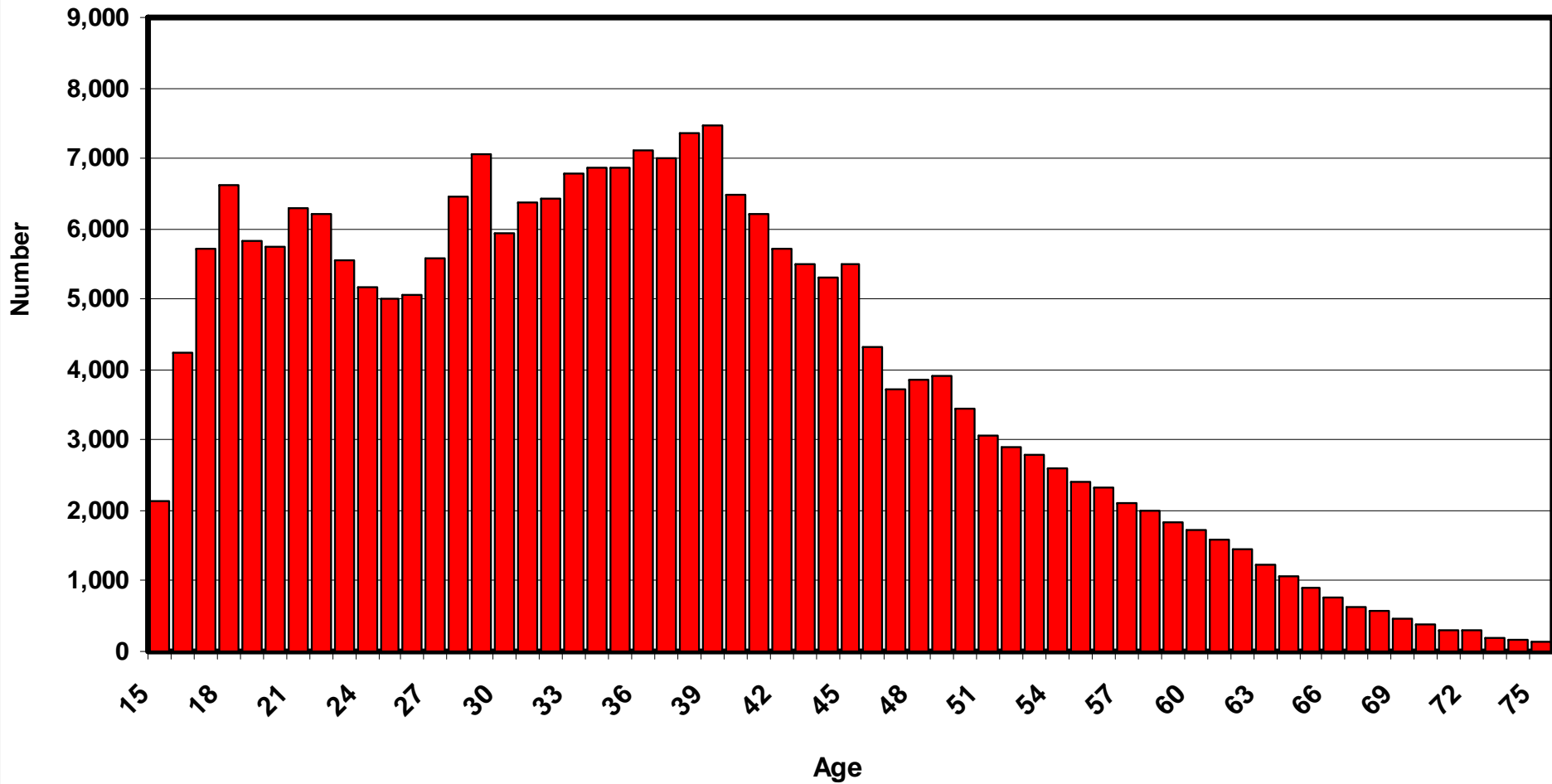
**Age Distribution
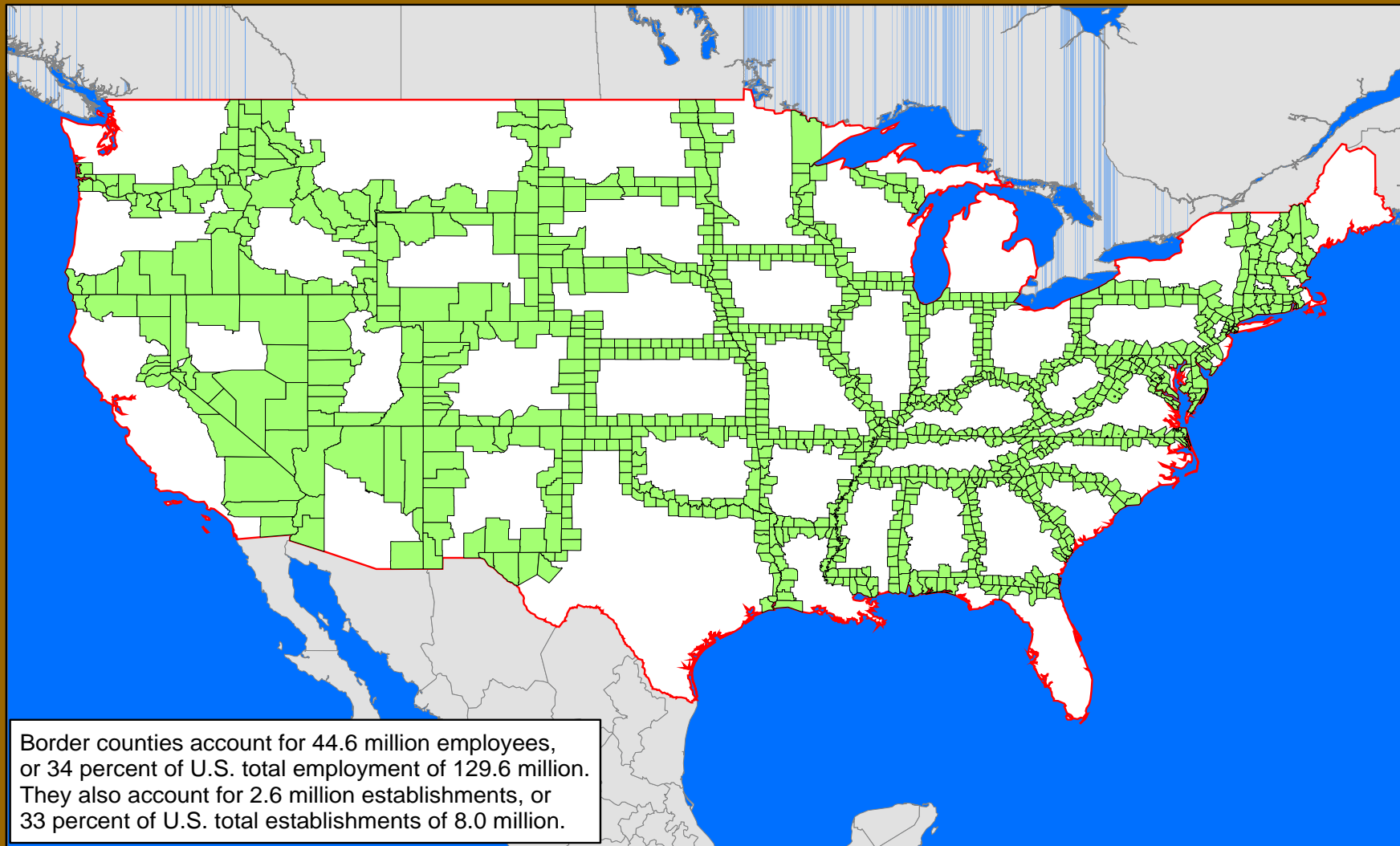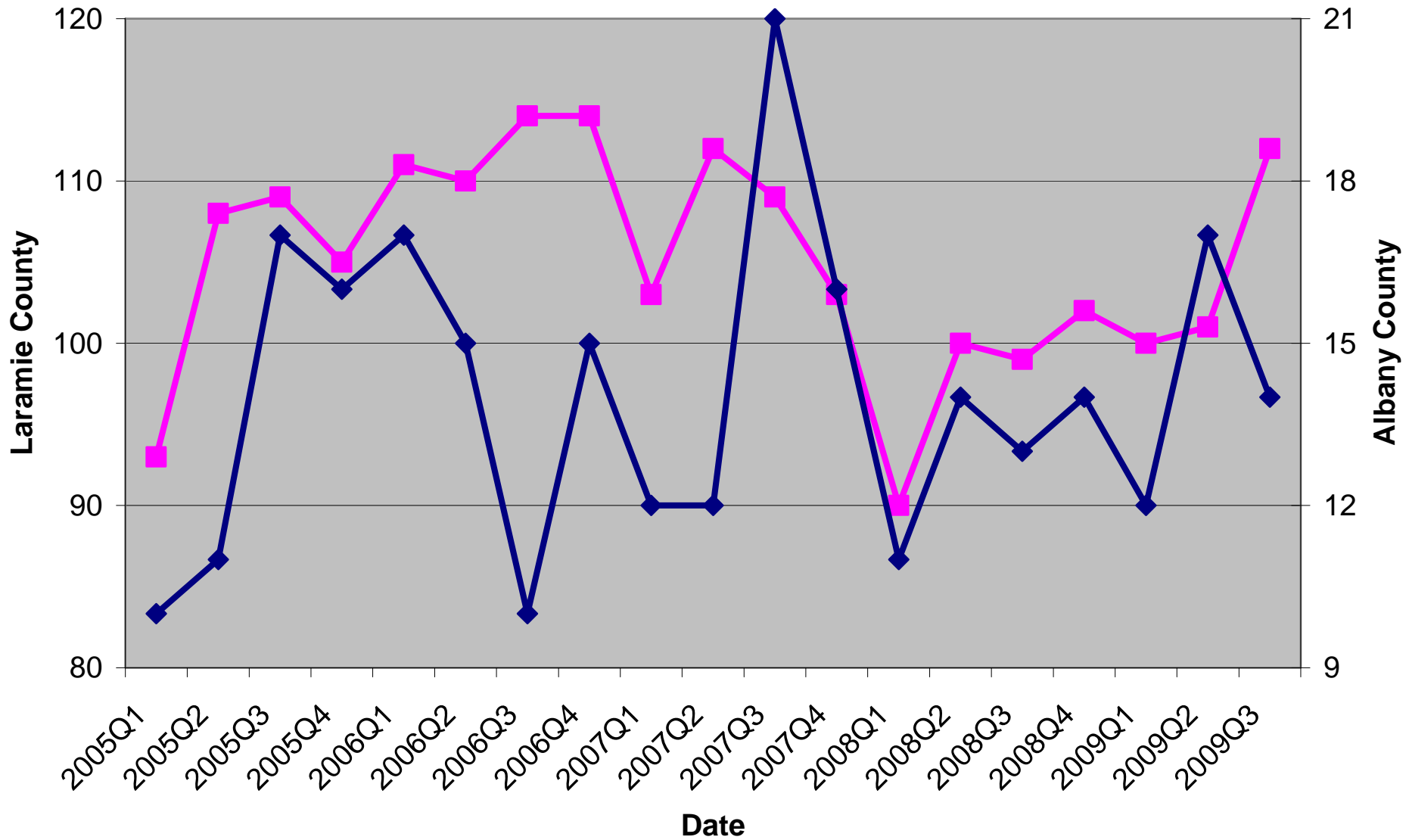2009**
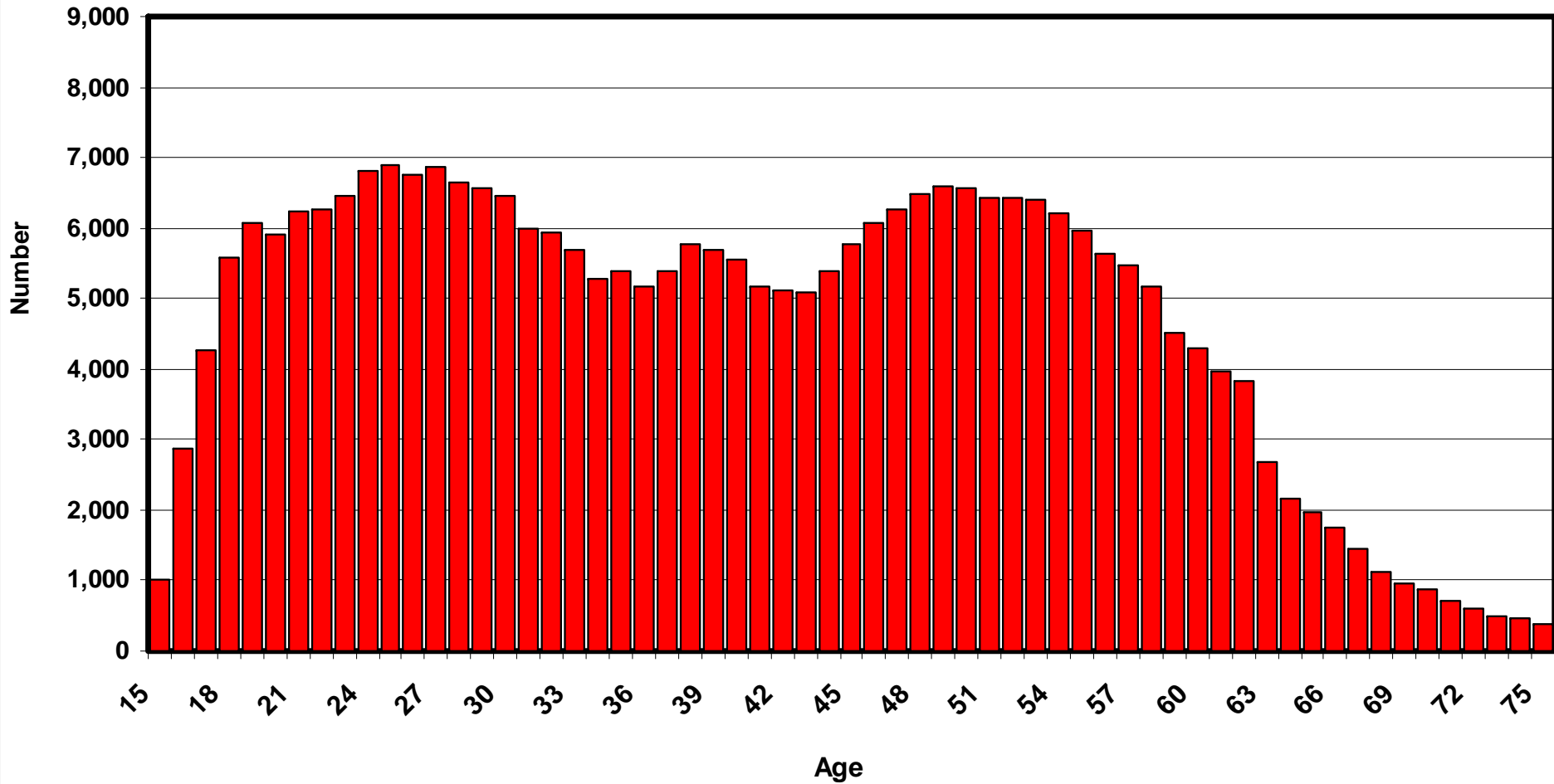
Proportion of Residents Working in Wyoming

1992

2009

Counties that border other states

Border counties account for 44.6 million employees, or 34 percent of U.S. total employment of 129.6 million. They also account for 2.6 million establishments, or 33 percent of U.S. total establishments of 8.0 million.

Commuting from Colorado Front Range Counties to Laramie and Albany County, WY

Laramie County (Left Axis) Albany County (Right Axis)

Counties: Adams, Arapahoe, Boulder, Denver, Douglas, El Paso, Jefferson, Larimer, Pueblo, Teller, Weld

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Definition http://www.coworkforce.com/lmi/WRA/HighTech.pdf

% Out of State Continued Unemployment Insurance Claimants, 2000-2010 (Normalized)

Legend:
- % Out of State Claimants

X-axis: Date
Y-axis: % Out of State Continued Claimants
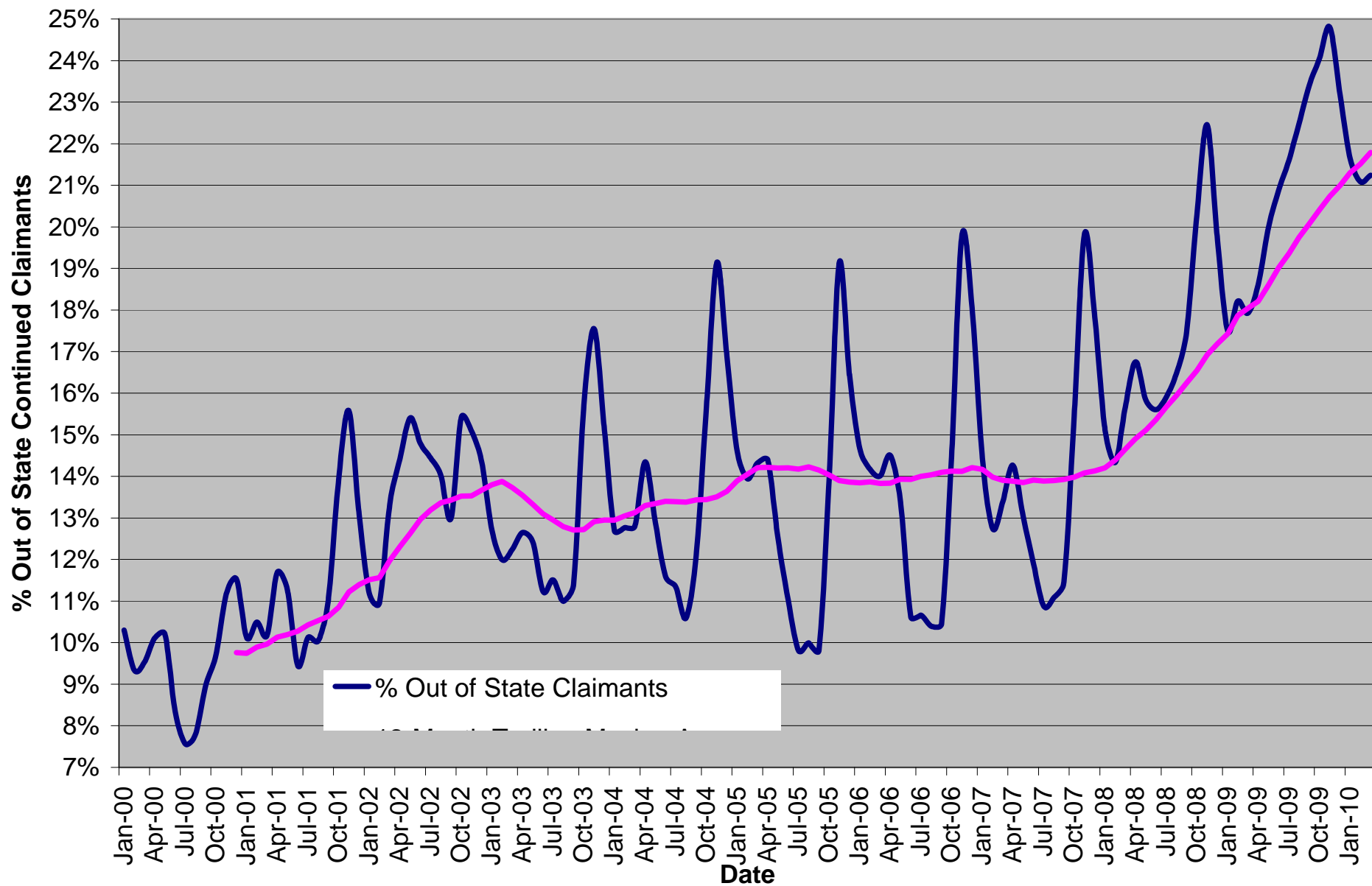
Challenges and Limitations

- Labor Market Porosity
- Funding Sustainability
- Coordination of state evaluations under WIA §136(e) and evaluations of the Secretary under WIA §172
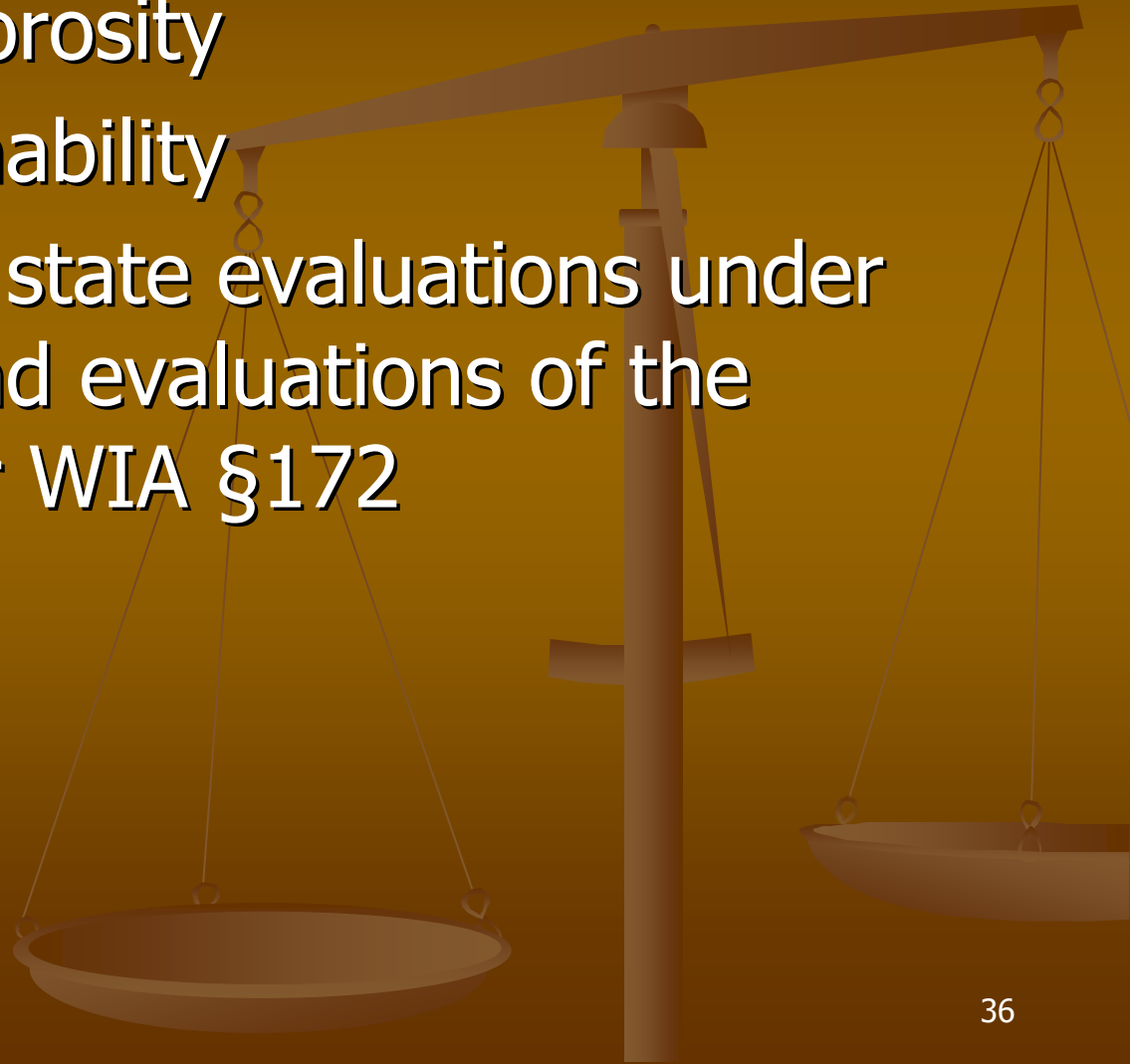
Future Work

- Post-hoc control group analysis using propensity scoring method
  - See "Post Injury Wage Loss: A Quasi Experimental Design" @ http://doe.state.wy.us/LMI/post_injury/report.pdf for details

Questions/Comments?