

**Salaries of Kentucky public school teachers through time:  
a novel statewide individual-level dataset**

**Meg Streams and Eugenia Toma**



# **Salaries of Kentucky public school teachers through time: a novel statewide individual-level dataset**

## **Acknowledgments**

- Appalachian Mathematics and Science Partnership
- Kentucky Department of Education,  
Education Professional Standards Board
- Terry Hibpshman (EPSB)

# Background and relevance

- Importance for Kentucky/Appalachian policy issues...
  - Teacher compensation is a dominant feature of district budgets
  - Administrative data offer some advantages over individual-level survey data in national datasets
  - Scope of final dataset will permit hypothesis testing in a variety of current areas of research

# Dataset

- Administrative data from KDE, assembled by districts and submitted annually to the state
- Combined with data from other sources (NCES, Census, KY Workforce)

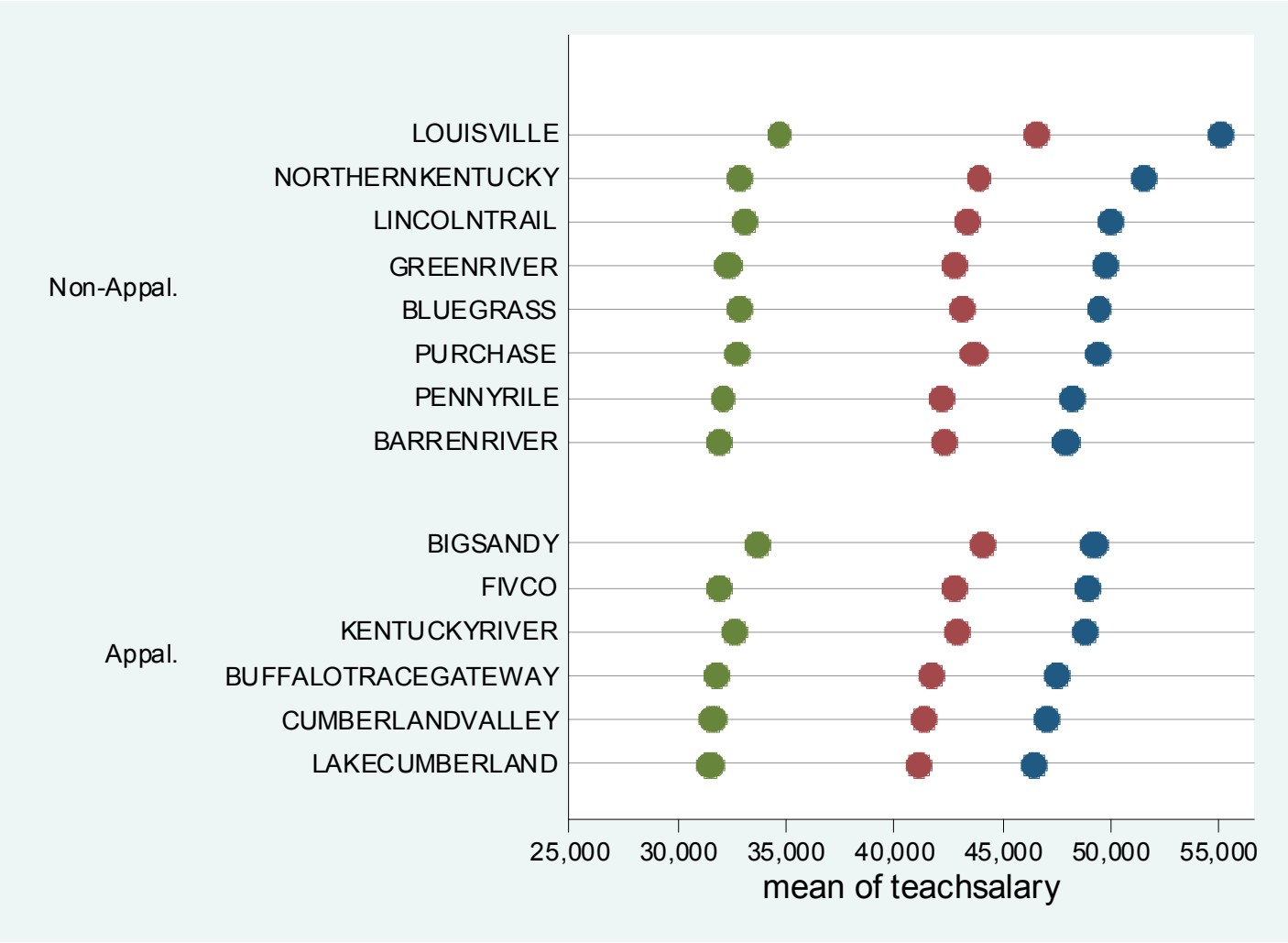
# Dataset

- Teacher-level (2000/1- 2005/6 for pilot work)
  - **salary (by type of duties)**
  - **age**
  - **gender**
  - **ethnicity**
  - **years of experience**
  - **rank**
  - **content area of teaching, including math or science fields**
  - degree(s) completed
  - location(s) of training
  - certificates held, including emergency
  - year of certification
  - score on teacher entrance exams
  - score on ACT exams (for recent graduates of Kentucky institutions of higher education)

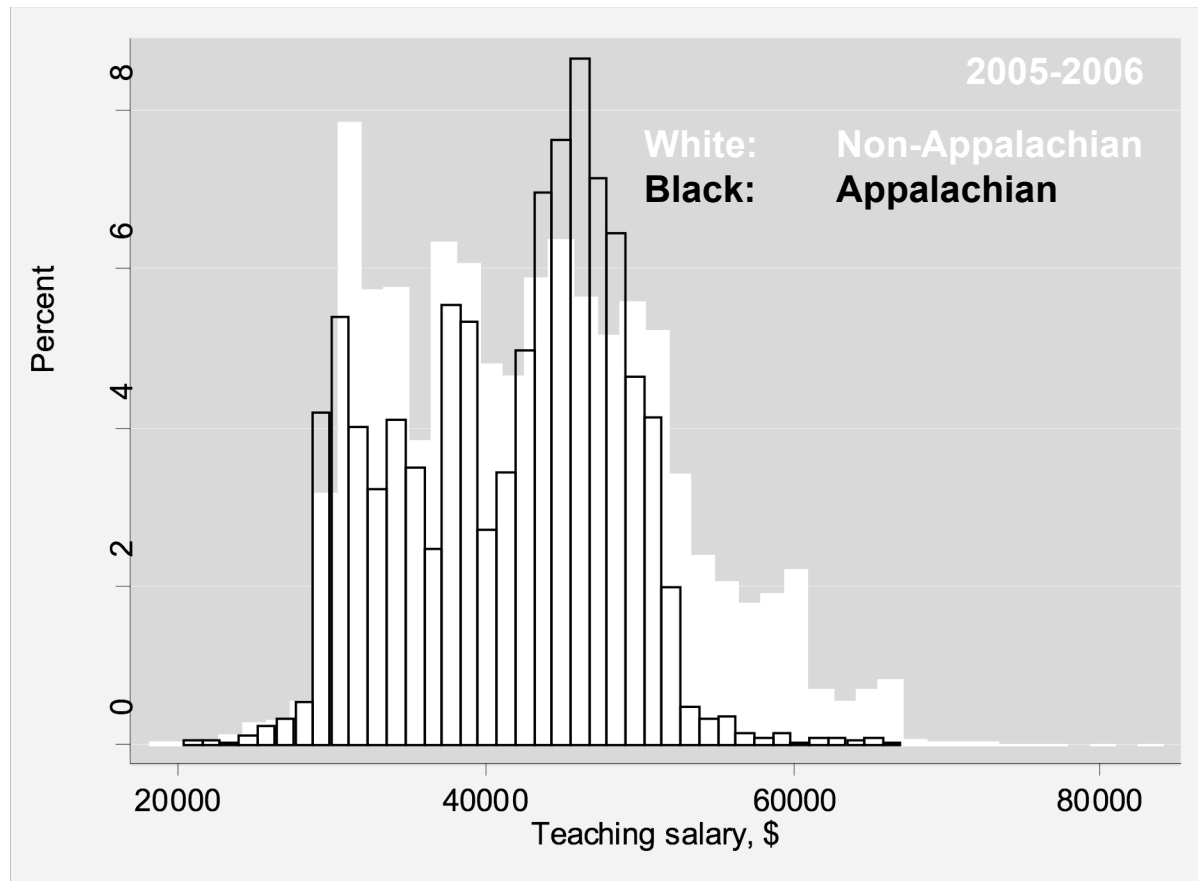
## Examples of research topics

- What variability exists across Kentucky districts in teacher compensation?
  - Is there a salary gap between Appalachian and non-Appalachian teachers?
- Wage differentials within Kentucky between teachers and other workers: where is teaching a more attractive occupational choice?

# Variability by region: Ranks 1,2,3 by ADD



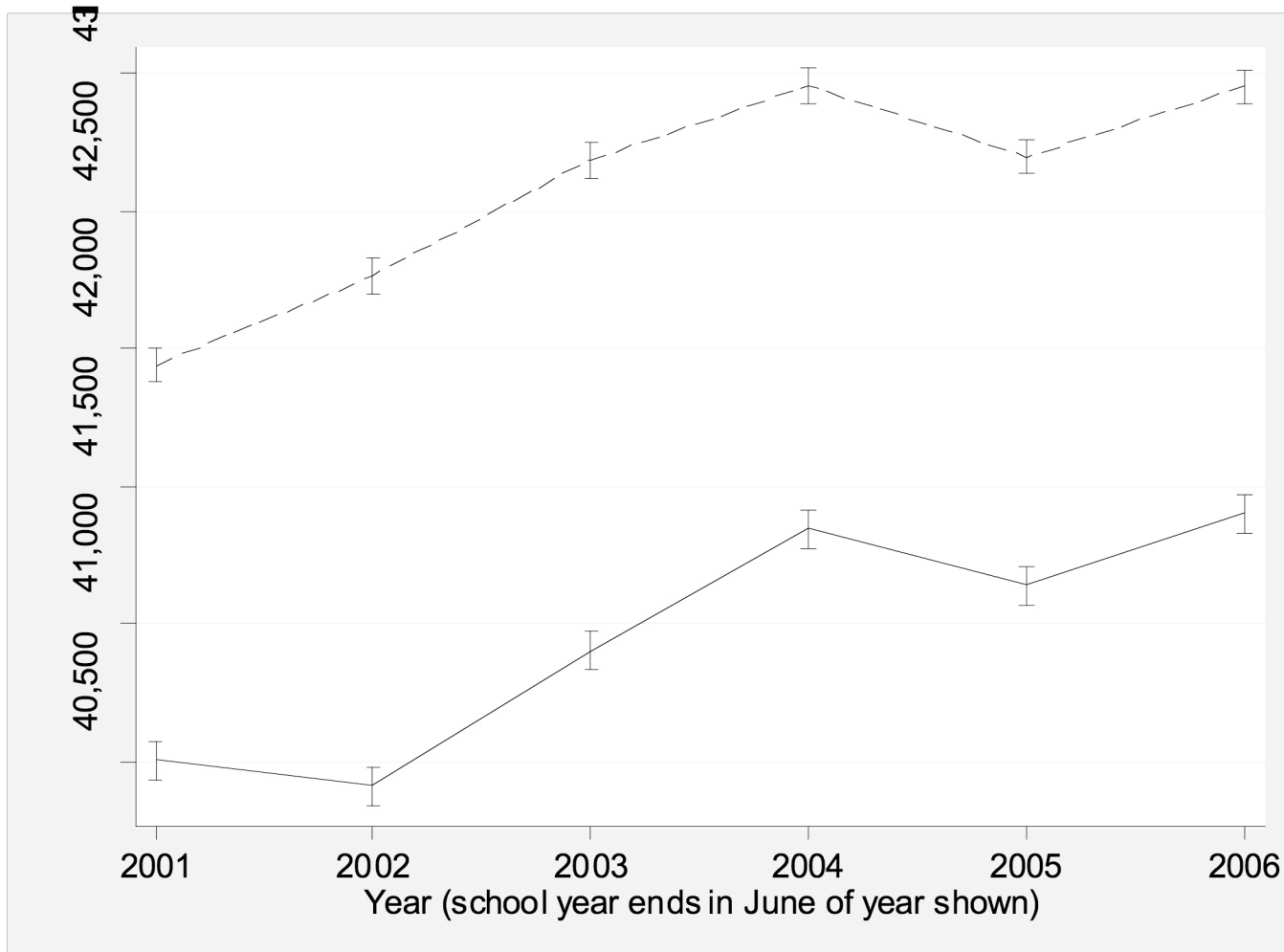
# Teaching salary: regional gap?



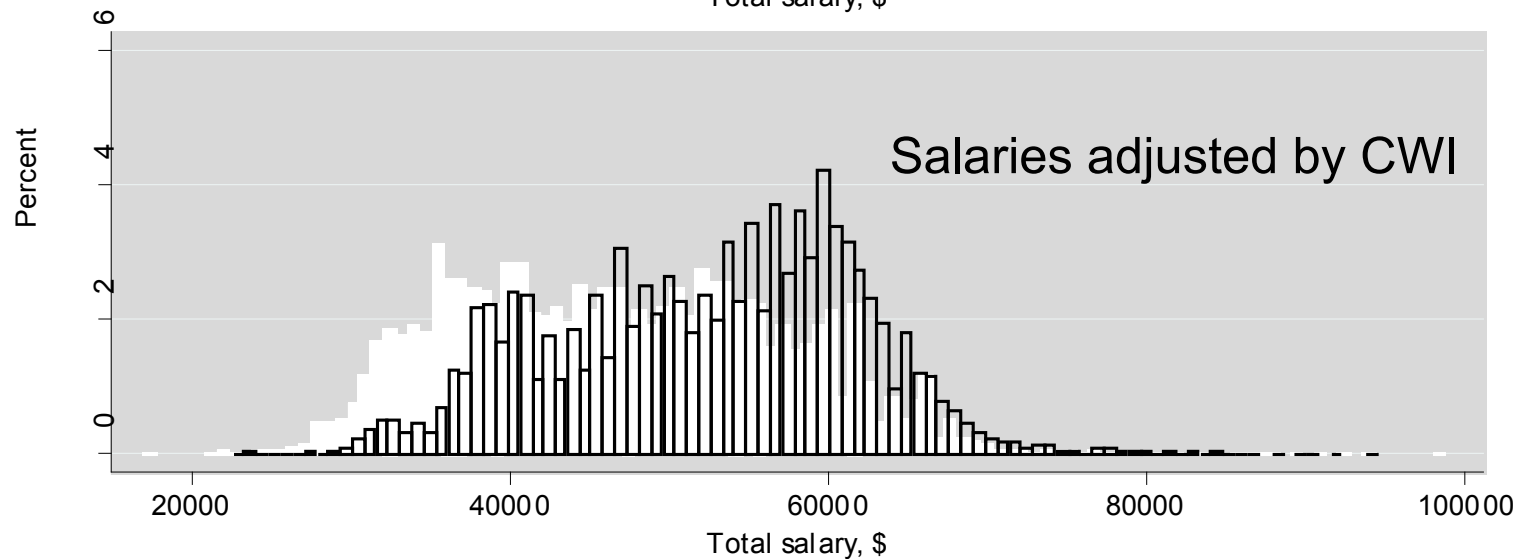
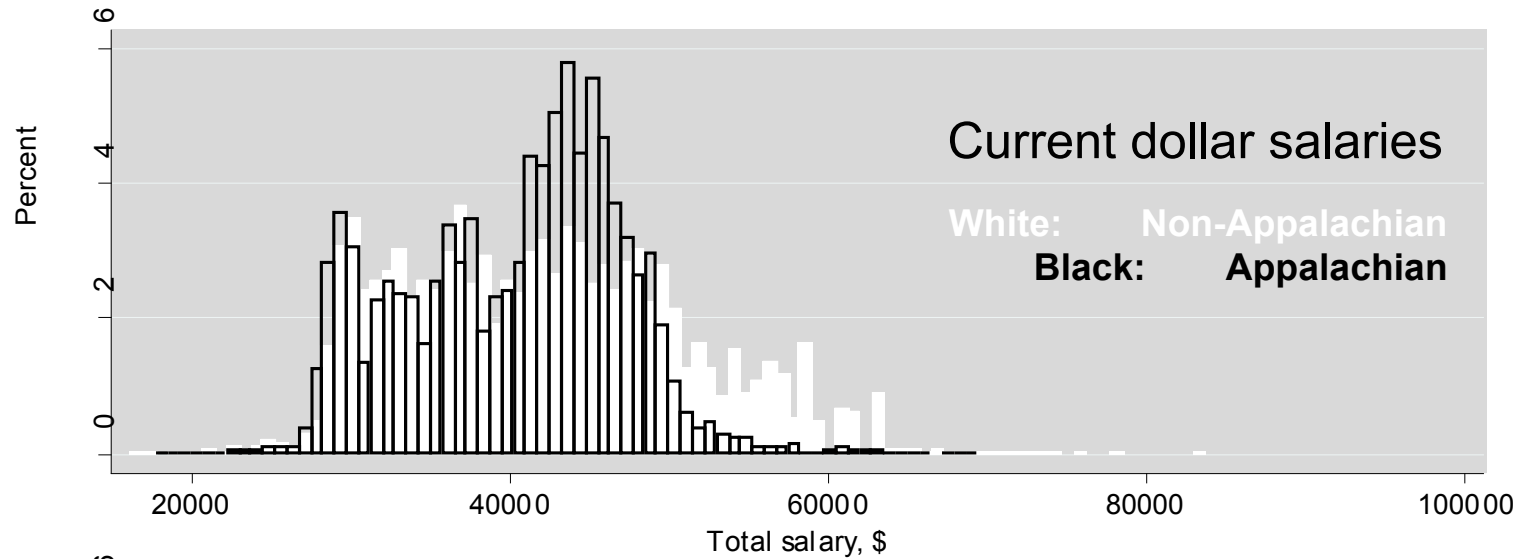
- **Mean (Appal.): \$ 41,405 (9,661 teachers)**
- **Mean (Non-Appal.): \$ 42,956 (21,358 teachers)**



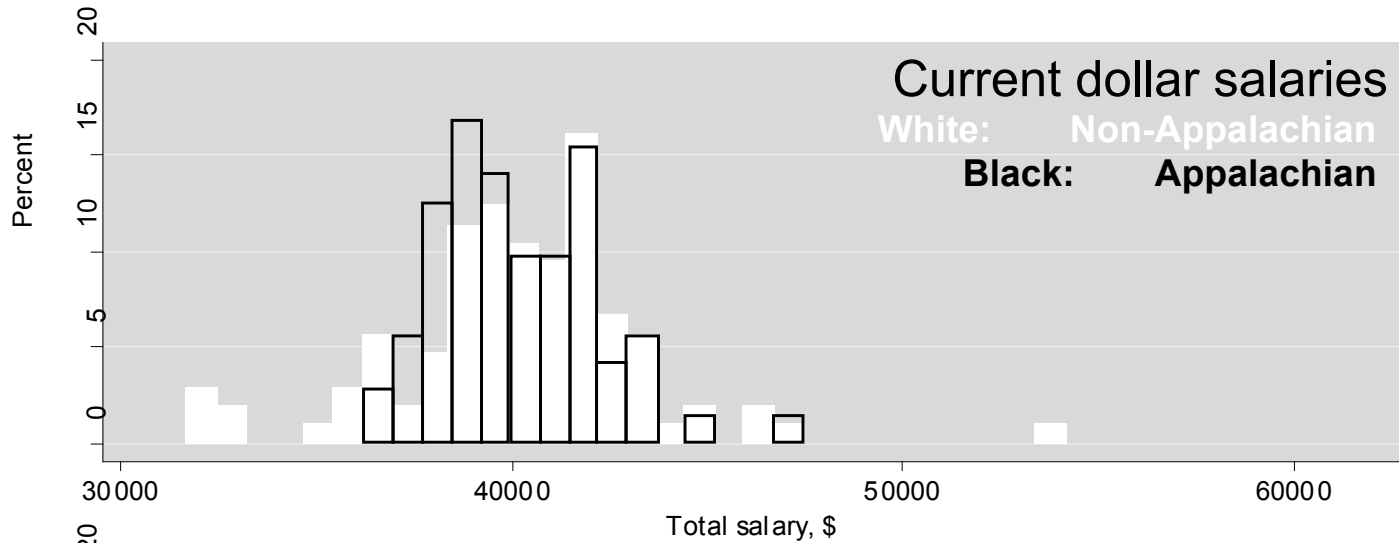
# Teaching salary: regional gap?



# Individual total salaries: 2004-2005



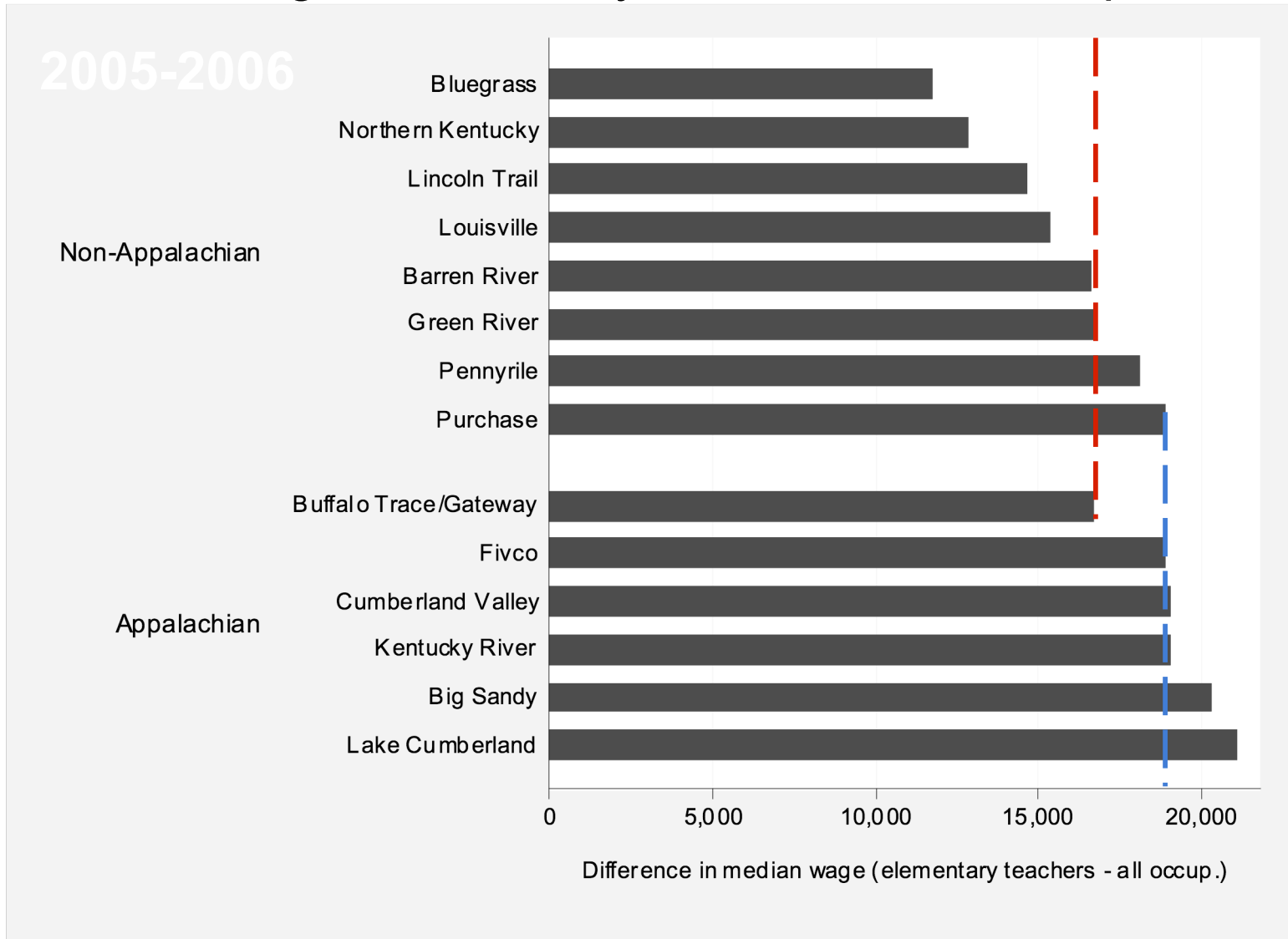
# District mean salaries: 2004-2005



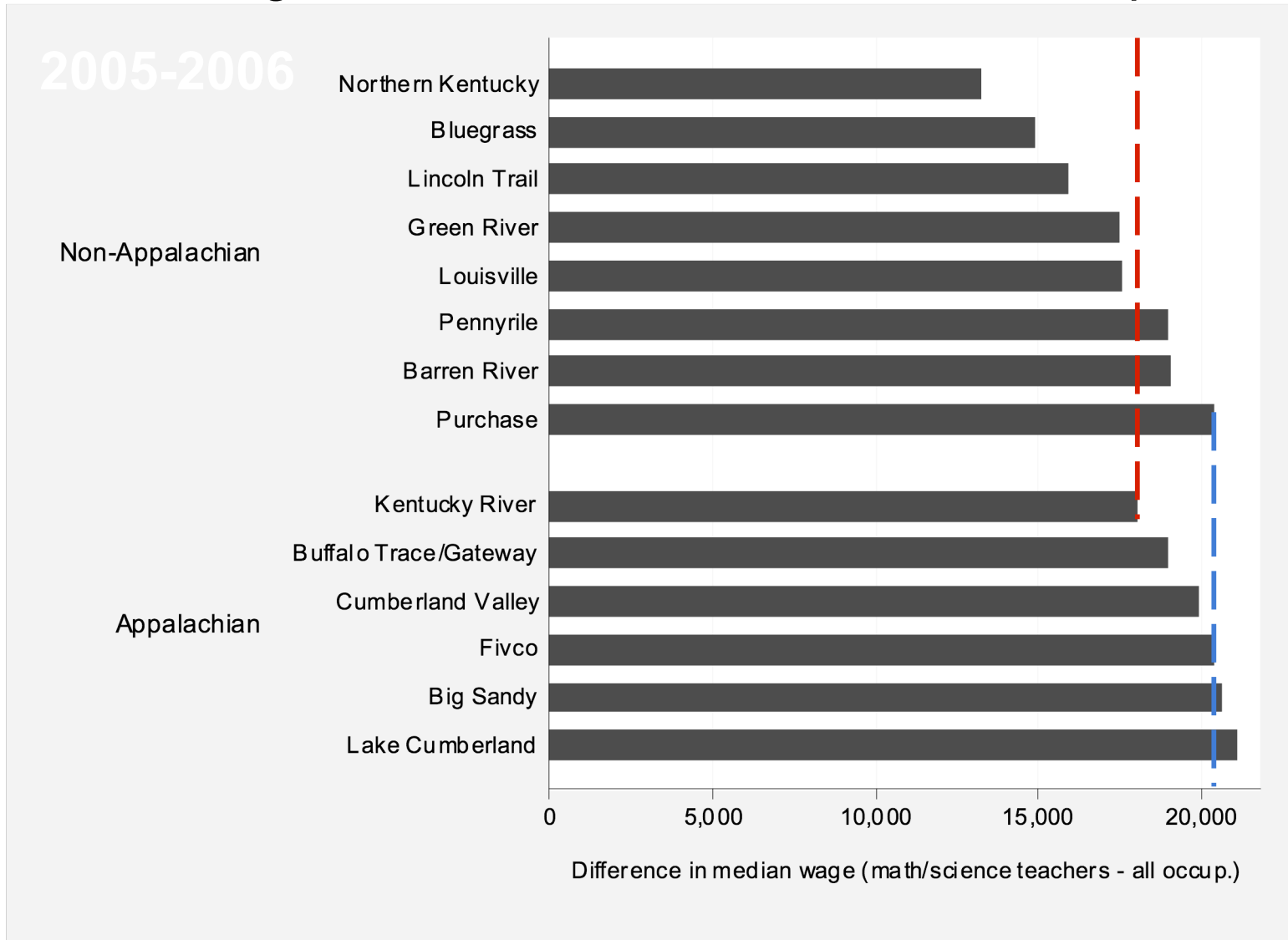
## Conclusions from work to date

- **Is there an Appalachian salary gap?**
  - Appalachian total and teaching salaries are significantly lower on average after controlling for ...
    - teacher experience, rank and school level; ethnicity, gender, content area (Math/science) (regression with individual data)
    - teacher experience, school level, no. teachers, non-white student share, and metropolitan character (regression with district mean data)
  - Taking into account variation in cost-of-living as reflected in overall wage level may affect this perceived gap, however – closer look at wages follows

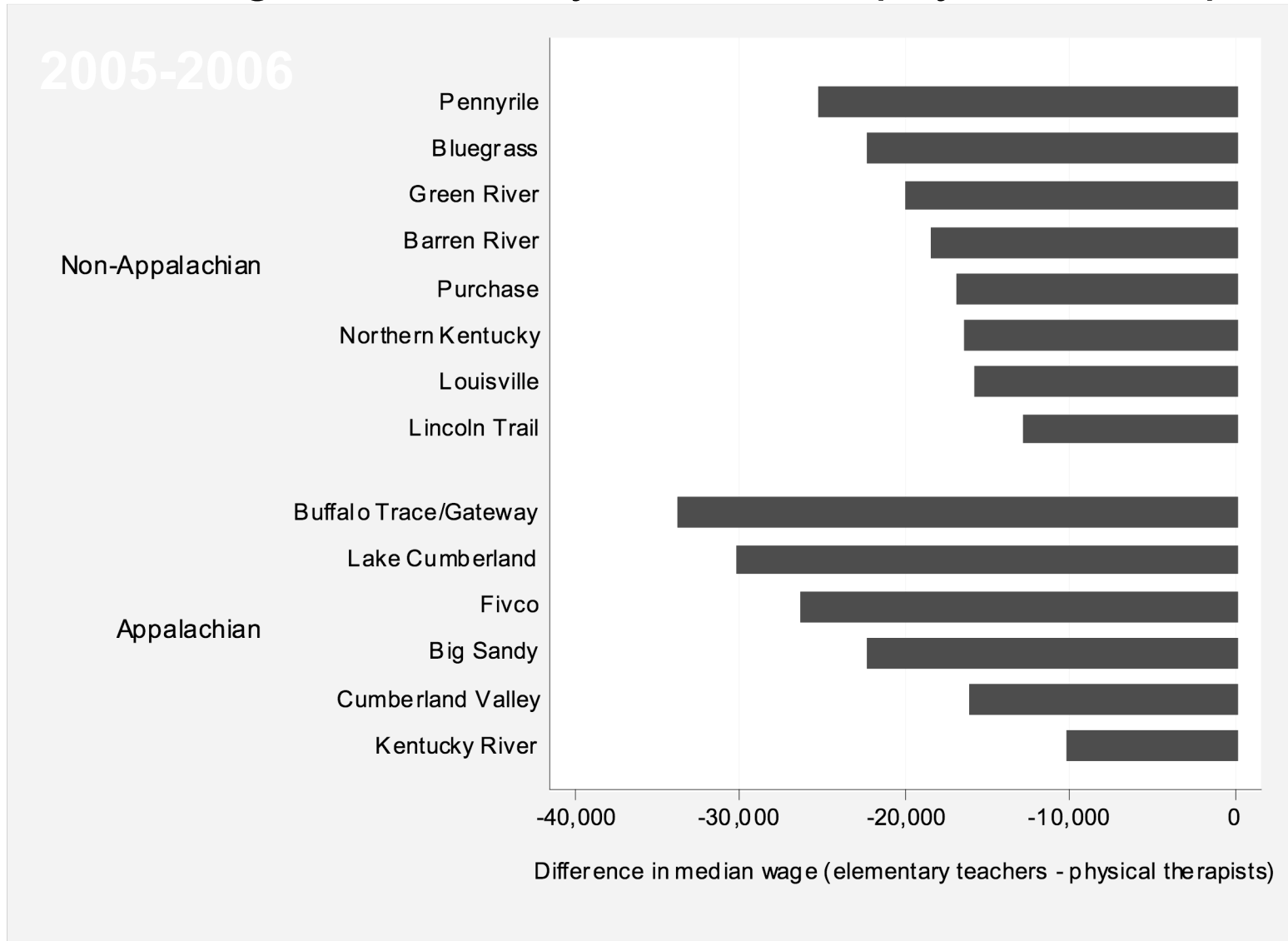
# Median wage: elementary teachers – all occupations



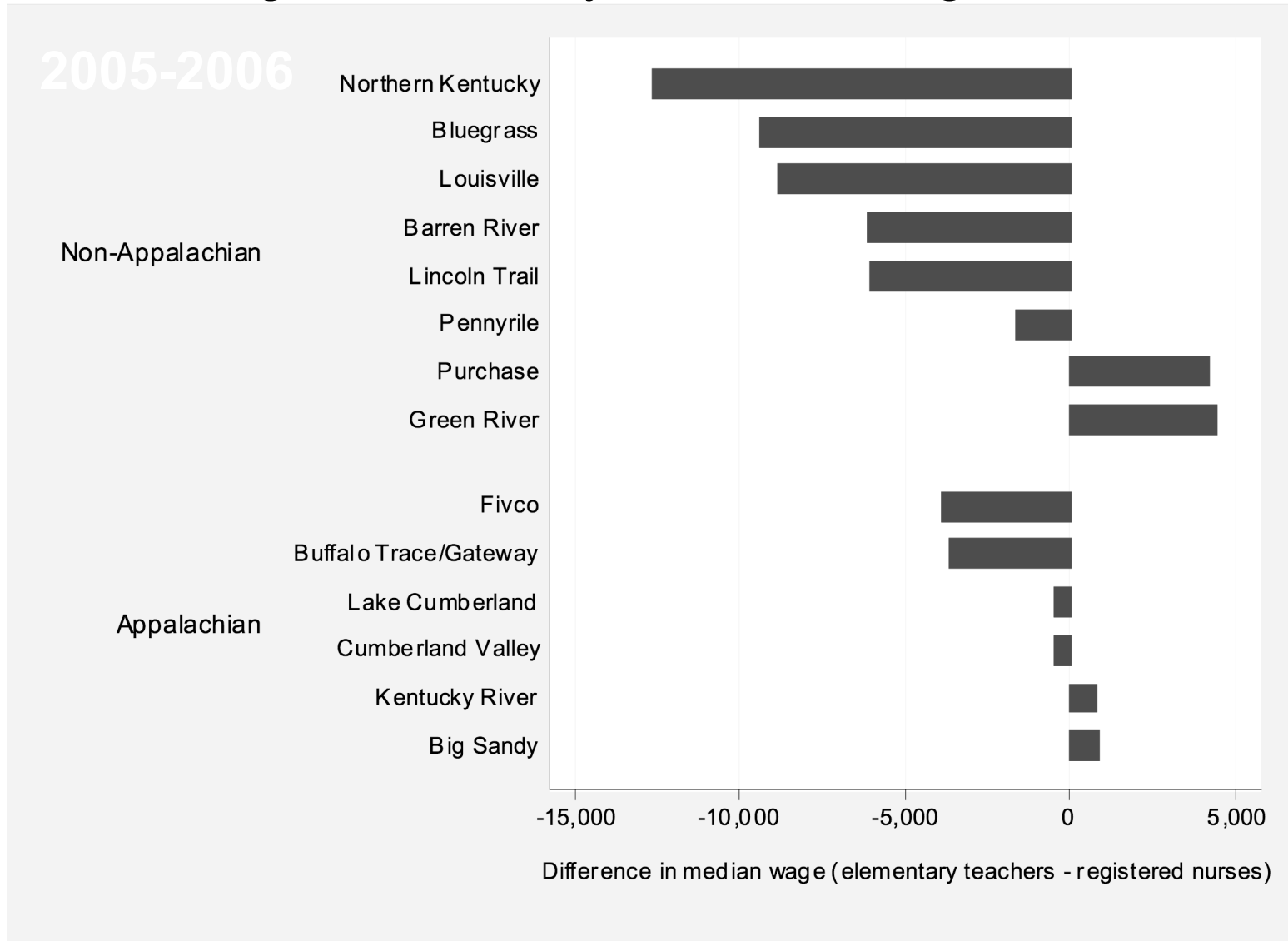
# Median wage: math/science teachers – all occupations



# Median wage: elementary teachers – physical therapists



# Median wage: elementary teachers – registered nurses





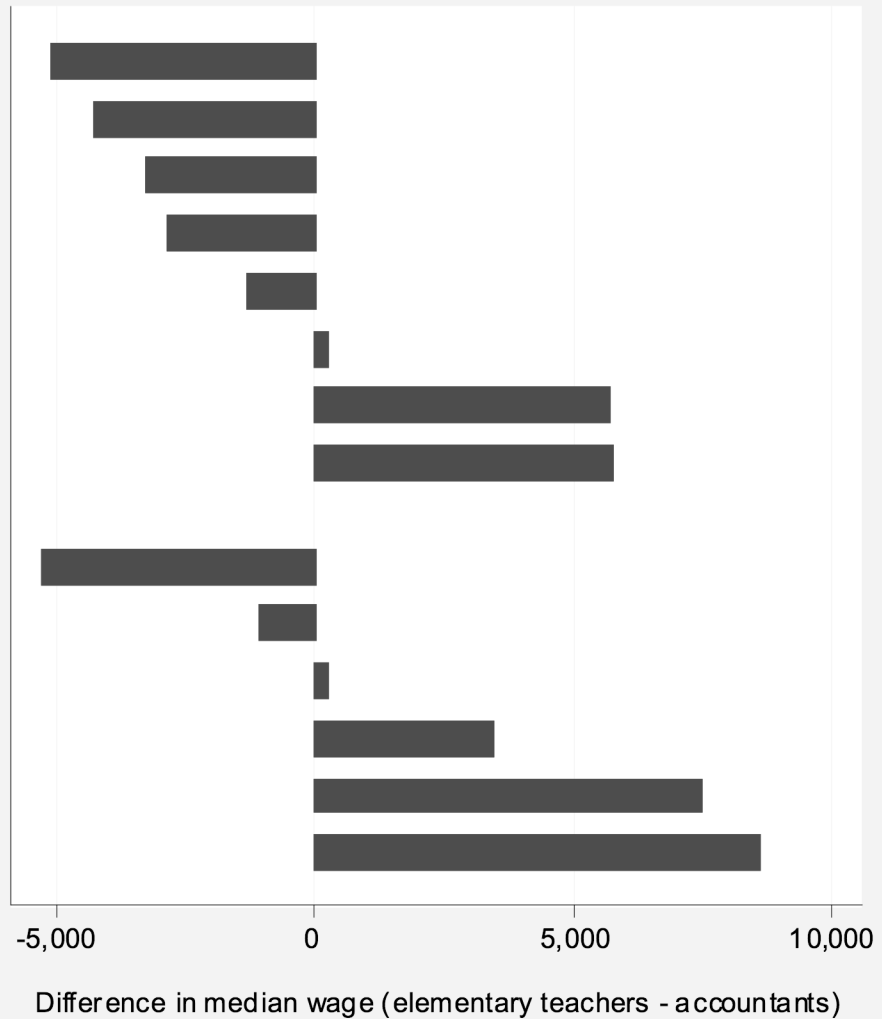
# Median wage: elementary teachers – accountants

2005-2006

Non-Appalachian

Appalachian

- Northern Kentucky
- Lincoln Trail
- Bluegrass
- Louisville
- Green River
- Barren River
- Pennyrile
- Purchase
- Fivco
- Buffalo Trace/Gateway
- Lake Cumberland
- Cumberland Valley
- Kentucky River
- Big Sandy



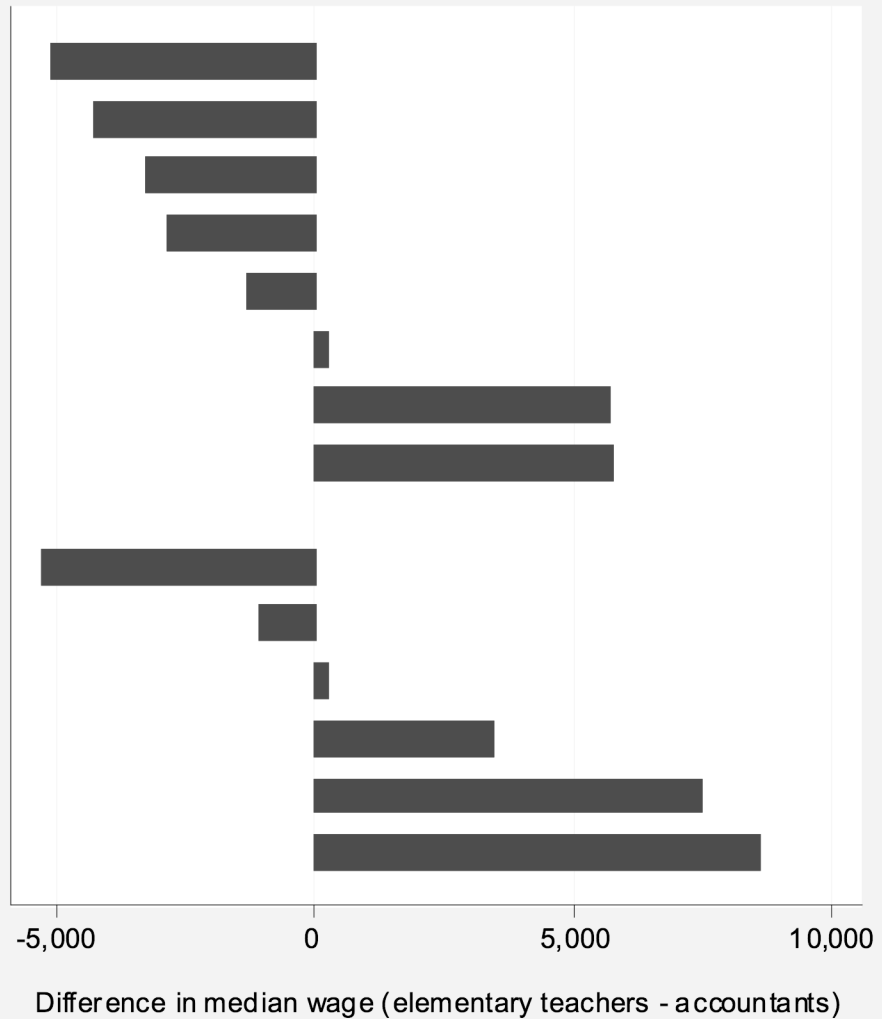
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## Conclusions from work to date

- **Within-Kentucky wage comparisons: where is teaching a more attractive occupational choice?**
  - Compared to general wage level, teaching appears more attractive in rural Eastern and far Western Kentucky than in the more urban area development districts (Bluegrass, N. Kentucky, Louisville).
  - Teaching's draw relative to several occupations with similar educational/certification requirements does vary across the state.
  - This type of information could inform efforts to recruit young people from particular regions into teaching high demand subjects, given the importance of personal geography

## 2005-2006: Math and science teachers vs. other middle and high school-level teachers

|                               | KY, all middle and high-school teachers | KY, Not math or science | KY, Math or science |
|-------------------------------|---|-------------------------|---------------------|
| <b>Age</b>                    | 41.6                                    | 41.8                    | 41.3                |
| <b>% Male</b>                 | 36 %                                    | 37 %                    | 33 %                |
| <b>% Non-white</b>            | 4.3 %                                   | 4.8 %                   | 3.3 %               |
| <b>Experience</b>             | 11.7                                    | 11.7                    | 11.6                |
| <b>Rank 1</b>                 | 25 %                                    | 24 %                    | 26 %                |
| <b>Rank 2</b>                 | 51 %                                    | 51 %                    | 51 %                |
| <b>Rank 3</b>                 | 23 %                                    | 24 %                    | 22 %                |
| <b>Ranks 4, 5</b>             | 1.0 %                                   | 0.9 %                   | 1.1 %               |
| <b>Total salary</b>           | 43,749                                  | 43,921                  | 43,398              |
| <b>Teaching salary</b>        | 42,685                                  | 42,727                  | 42,599              |
| <b><i>N (non-missing)</i></b> | 14,993 – 15,235                         | 10,059 – 10,236         | 4,934 – 4,999       |

**Determinants of individual salaries:  
2005-2006; N=29,742; OLS w/robust SE's**

| <b>Variable</b>           | <b>Y=ln(teaching salary)</b> |     | <b>Y= teaching salary (\$)</b> |     |
|---------------------------|------------------------------|-----|--------------------------------|-----|
| Experience (years)        | 0.029                        | *** | 1,113                          | *** |
| Experience <sup>2</sup>   | - 0.0001                     | *** | -17                            | *** |
| Male teacher              | 0.009                        | *** | 377                            | *** |
| Non-white teacher         | 0.047                        | *** | 2,102                          | *** |
| Middle school (vs. Elem.) | 0.004                        | **  | 176                            | *** |
| High school (vs. Elem.)   | 0.010                        | *** | 500                            | *** |
| Rank II (vs. Rank I)      | -0.082                       | *** | -3,900                         | *** |
| Rank III (vs. Rank I)     | -0.184                       | *** | -7,341                         | *** |
| Rank IV/V (vs. Rank I)    | -0.235                       | *** | -8,693                         | *** |
| Math/Science              | -0.007                       | *** | -321                           | *** |
| Appalachian district      | - 0.052                      | **  | -2,455                         | *** |
| Constant <sup>a</sup>     | 10.5                         | *** | 37,449                         | *** |

\* p < 0.10, \*\*p < 0.05, \*\*\* p < 0.01