

# Understanding Wyoming's Growing Education and Employment Database

WDQI #1: A Supplemental Discussion of Tables 1-7

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## **Abstract**

*Which industry has the highest percentage of workers simultaneously enrolled in college? In terms of wages, how much do students sacrifice to attend college and how does this vary across industries? Which county has the highest percentage of non-graduate females that work in primarily in retail trade the following year? Are wages in the year following anticipated graduation different between students who had an Individualized Education Plan and graduated compared to their respective counterparts who did not graduate? What are the average differences in wages between students overall and students in the Gifted & Talented Program following graduation? New data is available through Research & Planning to answer these questions.*

## **Introduction**

In 2013, the Research & Planning (R&P) section of the Wyoming Department of Workforce Services received a Workforce Data Quality Initiative Grant from the Employment and Training Administration of the U.S. Department of Labor for the purposes of building and maintaining a longitudinal database profiling the state workforce. Through the grant, R&P has established memorandums of understanding with the Wyoming Department of Education, the University of Wyoming, and the Wyoming Community College Commission to facilitate the use of student records. In addition R&P has data sharing agreements with the Wyoming Department of Transportation, and the labor market information offices of 11 other states in order to develop a more accurate understanding of labor market behavior.

R&P's first report produced under the grant, titled *Workforce Data Quality Initiative Report No. 1 for Wyoming: School Attendance and Employment, 2006 to 2013* (WDQI #1), focused on high school students' interaction with the labor market, including earnings and post-secondary enrollment in the years prior to anticipated graduation, and the years following the exit from high school. It is possible to explore the data using multiple categories, such as Cohort Year (or the year of anticipated graduation), Geographic Area (including by county, region, and statewide), Gender, and Completion Status (that is, whether or not R&P can assume the student received a diploma). For a map of the Geographic Areas, please see the cover of WDQI #1: Appendix A ([http://doe.state.wy.us/LmI/education\\_we\\_connect/WDQI\\_Pub1\\_Appendix\\_A.pdf](http://doe.state.wy.us/LmI/education_we_connect/WDQI_Pub1_Appendix_A.pdf)). R&P has categorized the data into seven tables, each with its own subcategories, in order to make the data more accessible. A more detailed explanation of the database can be found in Chapter Four of WDQI #1, here: [https://doe.state.wy.us/lmi/education\\_we\\_connect/WDQI\\_Pub1.pdf](https://doe.state.wy.us/lmi/education_we_connect/WDQI_Pub1.pdf).

## **Understanding the Layout of the Database**

Table 1 uses the above categories to sort all secondary students found in Wyoming; it can be used to answer questions like “How many students from Laramie County work in Colorado in the year following graduation and how much do they make?” (Figure 1), or “Which county has the highest percentage of non-graduate females who work in primarily in retail trade the following year?” (Figure 2), and even “In the second year following graduation, does the Central Southeast region of the state have higher post-secondary enrollment rates than the state as a whole and does this change over time?” (Figure 3).

While Table 1 provides data on all high school students, other tables show data for groups of secondary students with specific characteristics. Table 2, titled “Not Enrolled in Post-Secondary with Wages in Wage Records,” takes all secondary students (by cohort year, geographic area, gender, and completion status) and shows the data for students who worked but were not enrolled in any post-secondary classes during a given year. Using Table 2, it would be possible to determine the percent of females in Wyoming who worked but did not enroll in a post-secondary class in the year following anticipated graduation and compare it to their male equivalents (Figure 4). Table 3, similar to Table 2, is titled “Concurrently Enrolled in Post-

Secondary with Wages in Wage Records,” meaning that Table 3 displays the information for the group of students who worked while attending college in a given year. If one wanted to know how the mean wage in a given industry for working college students compared to the mean wage in the same industry for their unenrolled counterparts, or which industry has the highest percentage of workers simultaneously enrolled in college, Table 3 could help answer that question (Figure 5).

Wages and post-secondary enrollment for students who were enrolled at any point in a Section 504 Vocational Rehabilitation accommodation plan (Section 504), an Individualized Educational Program (IEP), and in their district’s Gifted & Talented (GT) Program are found in the respective Tables 4, 5, and 6. Comparing the three tables could answer questions such as “Are Section 504 students in Teton County more or less likely than the all secondary students in the state to work in the state of Wyoming after the cohort’s graduation?” (Figure 6), “Are wages in the year following anticipated graduation different between students who had an IEP compared and graduated compared to the related non-graduates?” (Figure 7), and “What are the average wage differences between students overall and students who participated in the GT Program?” (Figure 8). More information concerning students with IEPs and students with a Section 504 accommodation plan can be found in Chapter 3 of WDQI #1, “Outcomes for Students with Disabilities.”

Table 7 is similar to Table 1 but only shows data for students who were never enrolled in college for the years in which R&P has data, that is, 2007 to 2014. Wages and state of employment for those with no college experience can be compared, over time, to Table 1. If one wanted to know how much male Campbell County high school students make if they never attended college compared to the wages of male Campbell County high school overall, Table 7 could help answer that question (Figure 9).

### **Limitations to the Database**

There are a number of limitations to the data discussed here. First, it is important to note that not all Cohort Year participants are graduates: Cohort Year only indicates that the specified year is the year in which the student would have graduated. For example, Cohort Year 2009/10 means

R&P anticipated that the student would have graduated in the spring of 2010. A student with an indicated Cohort Year of 2009/10 may not have participated through the entirety of high school, or the whole of their senior year; a student could have been prevented from participation because of early graduation, death, dropping out, or leaving the state to complete their secondary education elsewhere.

Second, R&P's ability to determine Completion Status has changed over time. Prior to the exit of Cohort 2009/10 from secondary school, R&P does not have information concerning exactly which groups of students received diplomas. For the Cohorts 2006/07, 2007/08, and 2008/09, graduation rates are calculated by assuming a student who participated in secondary school in March of their graduation year received a diploma. Though there are many drawbacks to this assumption, it is the best alternative available from the latest data received for the above-mentioned groups. For the Cohorts after and including 2009/10, R&P defines high school graduates as students who "graduated with a Wyoming regular high school diploma AND completed district defined college-bound course of study" or "graduated with a Wyoming regular high school diploma BUT WITHOUT having completed the district defined college-bound course of study" (Wuerth, 2013). All others are considered non-graduates.

Finally, suppressions to protect anonymity also limit the data. If a field, or cell, has less than five observations, including zero, the field is blacked out. This means related fields may also be suppressed in order to prevent someone from back-calculating the value of a field. Table 5 contains an example of suppression: for the state's entire 2009/10 Cohort, the number of students who had IEPs at one point and worked in Colorado during the calendar year 2010 is blocked from view, as is the corresponding mean annual wage. Suppressions are more likely to occur as tables become more specific to a geographic area, gender, or completion status.

## **Conclusion**

Through the Workforce Data Quality Initiative Grant from the Employment and Training Administration of the U.S. Department of Labor, R&P is developing one of the most extensive longitudinal education and workforce databases in the country, fostering ongoing data exchanges with the Wyoming Department of Education, the National Student Clearinghouse, the Wyoming Department of Transportation, and the Unemployment Insurance systems of 11 other states.

Within the limits of confidentiality, the data discussed in this paper is available for public use, allowing anyone interested in the progress of Wyoming high school students to explore the data by Cohort Year, Geographic Area, Gender, and high school Completion Status. Further details discussing methodology, job stability, income inequality, labor market participation, economic and social mobility, and outcomes of students with disabilities can be found in WDQI #1 ([https://doe.state.wy.us/lmi/education\\_we\\_connect/WDQI\\_Pub1.pdf](https://doe.state.wy.us/lmi/education_we_connect/WDQI_Pub1.pdf)).

## References

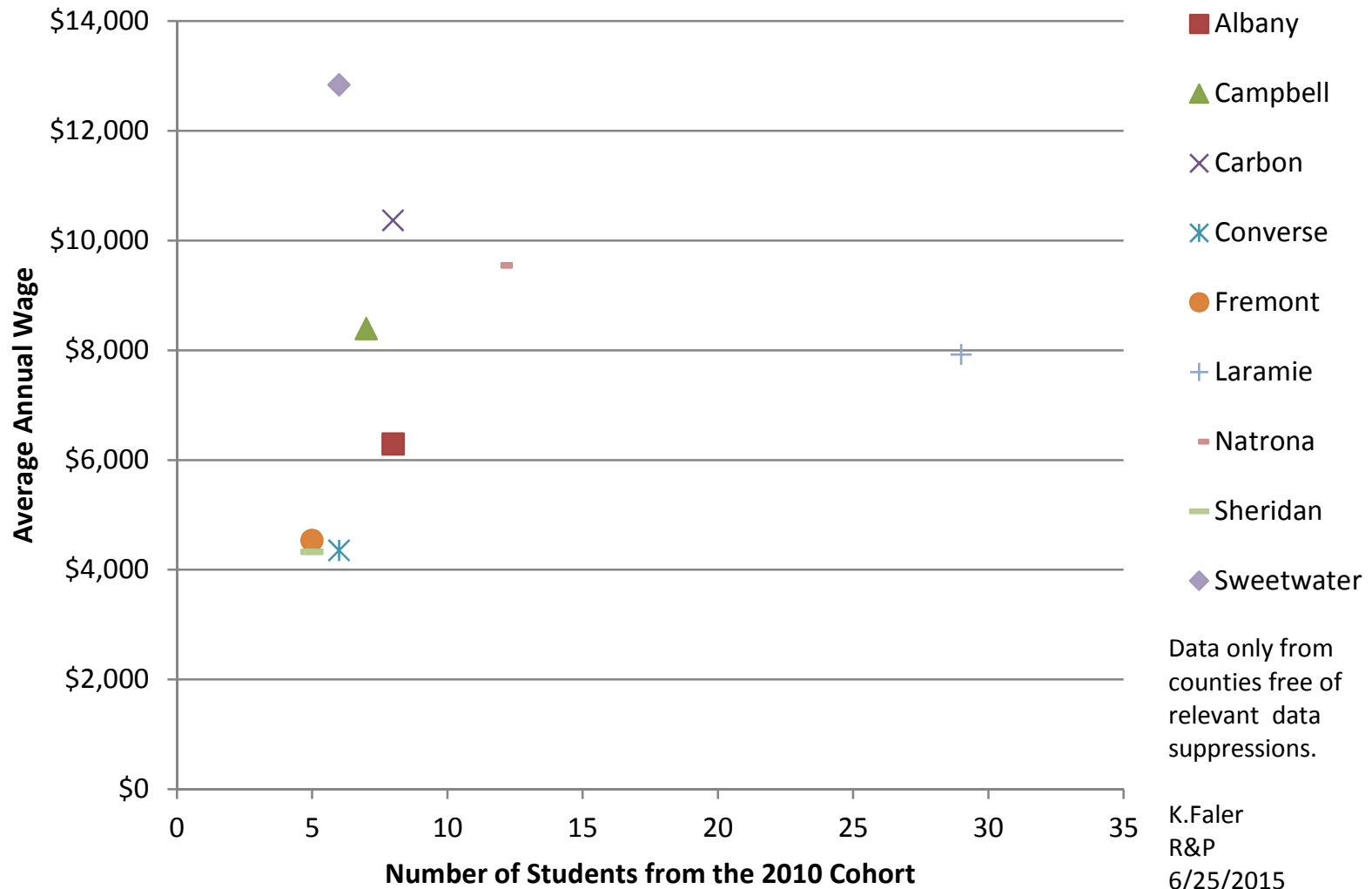
Gallagher, T., Glover, T., Hammer, L., Holmes, M., & Moore, M. (2013, April). Workforce Data Quality Initiative report No. 1 for Wyoming: Appendix A: Region-level data. In Wyoming labor market information. Retrieved from [https://doe.state.wy.us/lmi/education\\_we\\_connect/WDQI\\_Pub1\\_Appendix\\_B.pdf](https://doe.state.wy.us/lmi/education_we_connect/WDQI_Pub1_Appendix_B.pdf).

Gallagher, T., Glover, T., Hammer, L., Holmes, M., & Moore, M. (2013, April). Workforce Data Quality Initiative report no. 1 for Wyoming: Appendix B: County-level data. In Wyoming labor market information. Retrieved from [https://doe.state.wy.us/lmi/education\\_we\\_connect/WDQI\\_Pub1\\_Appendix\\_B.pdf](https://doe.state.wy.us/lmi/education_we_connect/WDQI_Pub1_Appendix_B.pdf).

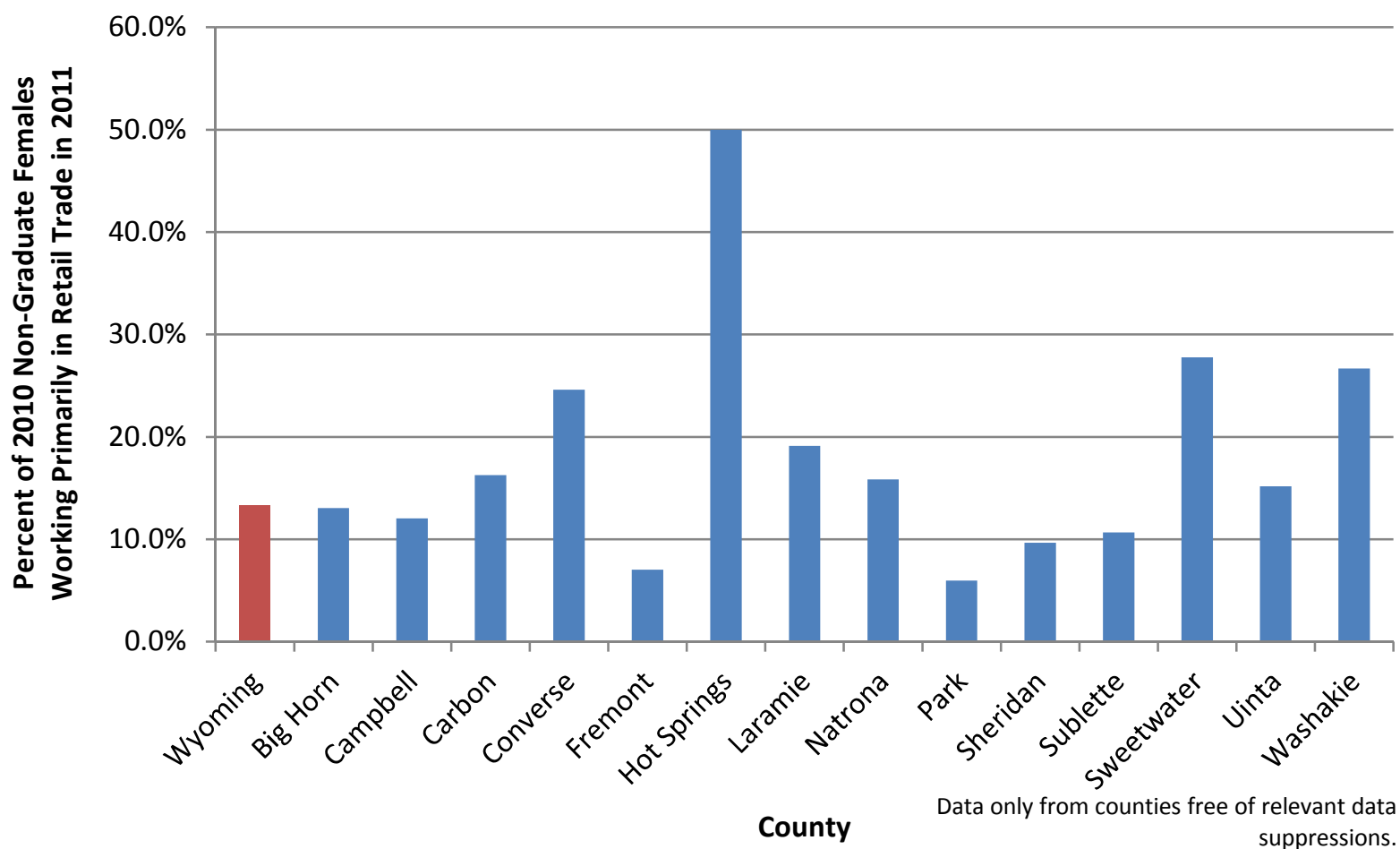
Gallagher, T., Glover, T., Hammer, L., Holmes, M., & Moore, M. (2013, April). Workforce Data Quality Initiative report no. 1 for Wyoming: School attendance and employment, 2006 to 2013. In Wyoming labor market information. Retrieved from [https://doe.state.wy.us/lmi/education\\_we\\_connect/WDQI\\_Pub1.pdf](https://doe.state.wy.us/lmi/education_we_connect/WDQI_Pub1.pdf).

Wuerth, B. (2013). WDE684 data collection Guidebook. Wyoming department of education. Retrieved from <http://portals.edu.wyoming.gov/WISE/sf-docs/spring-2015/wde684-guidebook-end-of-year-2015-v1.pdf?sfvrsn=4>.

**Figure 1: Average Wage and Number of Students from the 2009/10 Cohort Working Primarily in Colorado in Calendar Year 2011, by County**



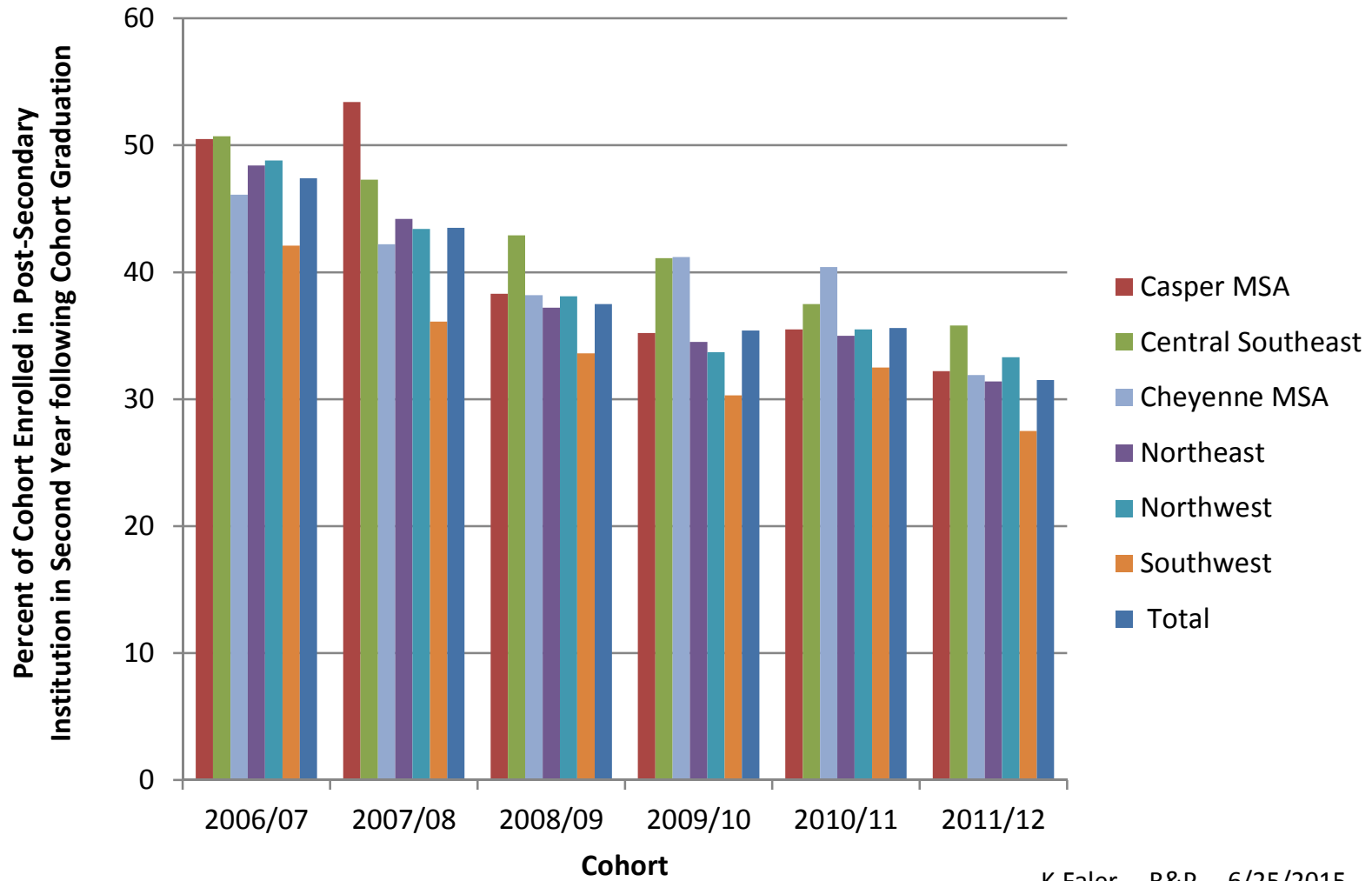
## Figure 2: Percent of 2009/10 Non-Graduate Females Working Primarily in Retail Trade in 2011, by County



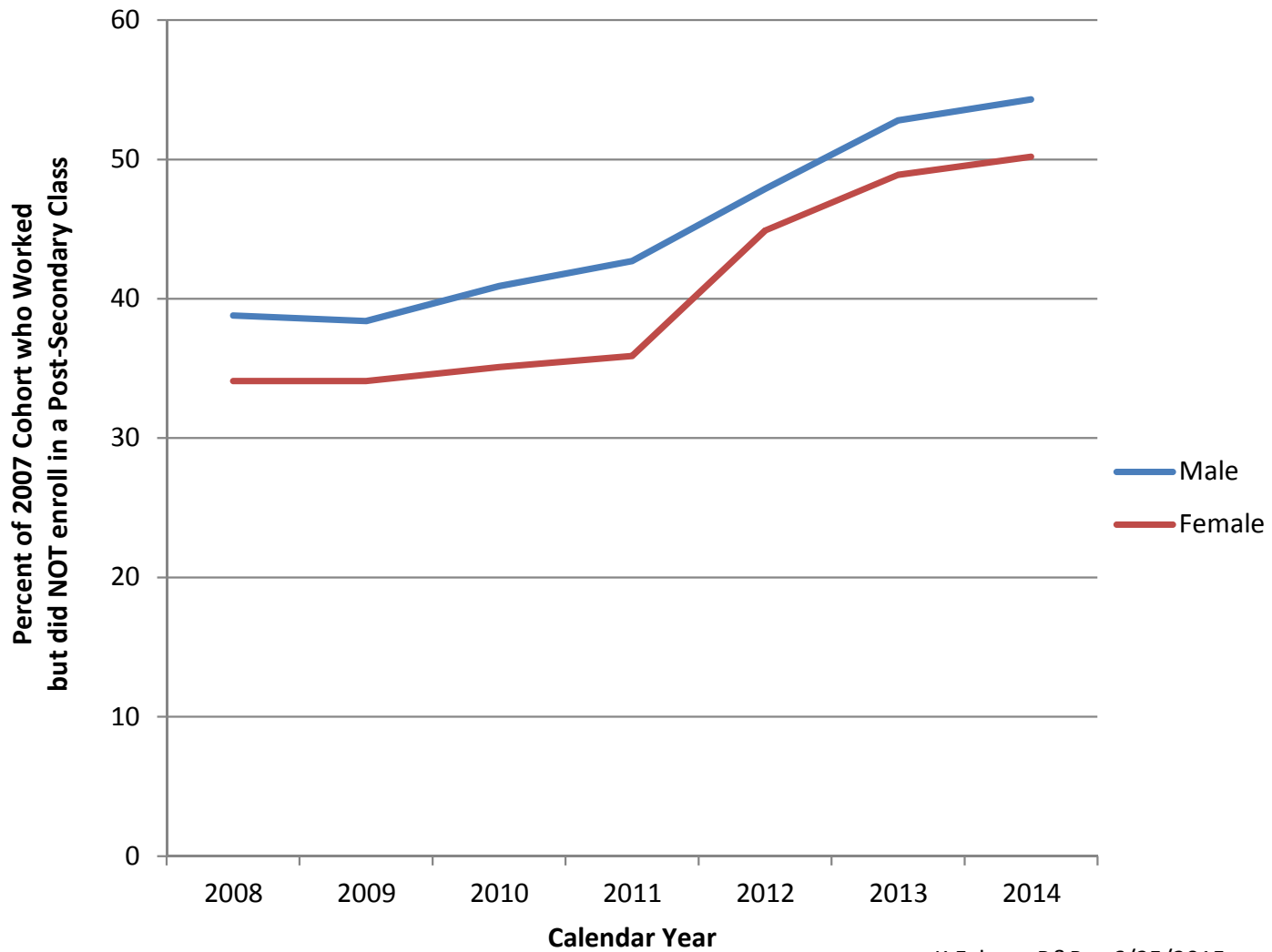
Data only from counties free of relevant data suppressions.  
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### Figure 3: Regional Post-Secondary Enrollment Rates in the Second Year following Cohort Graduation

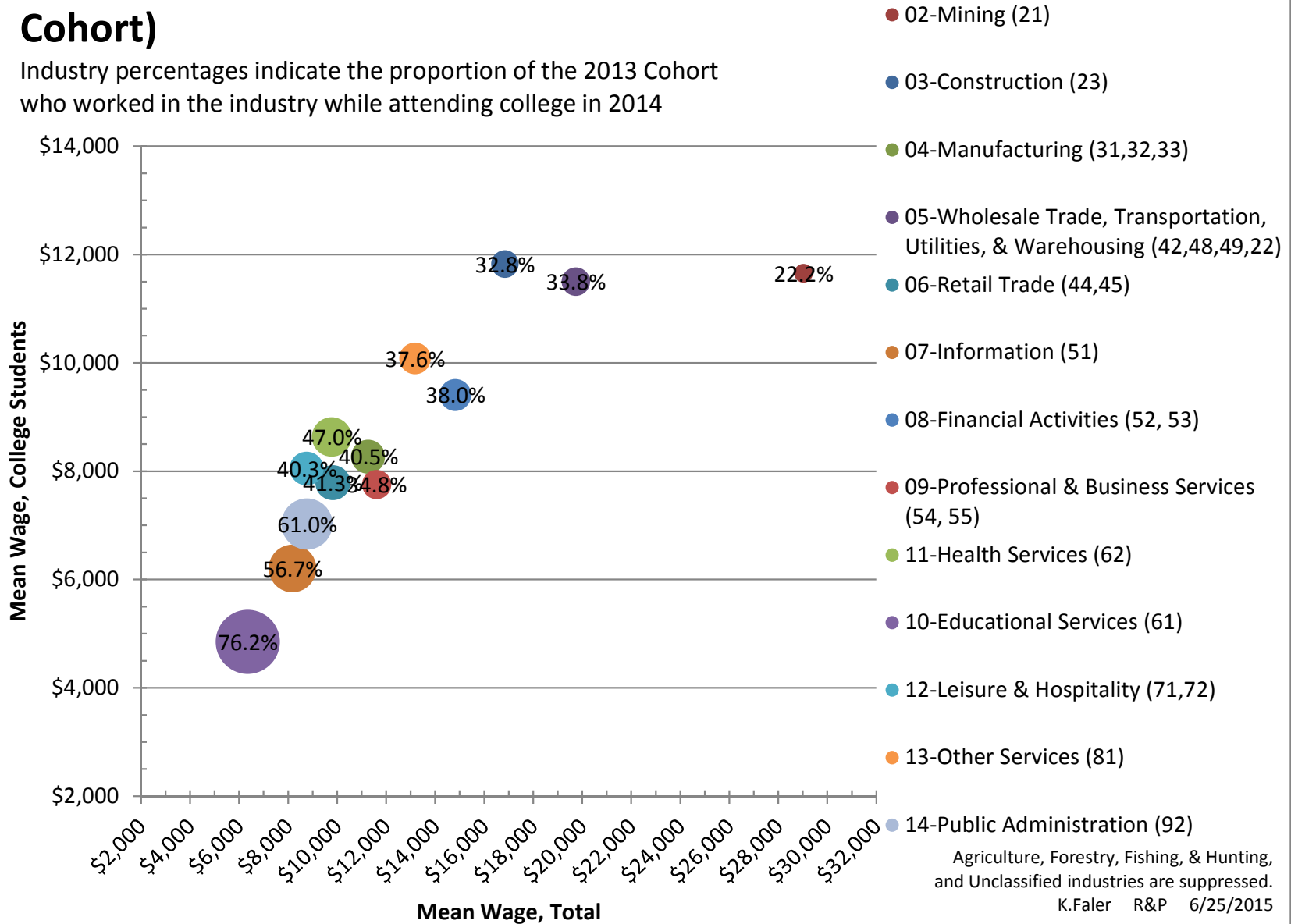


**Figure 4: Percent of 2006/07 Cohort who Worked but Did NOT enroll in a Post-Secondary Class, Over Time**

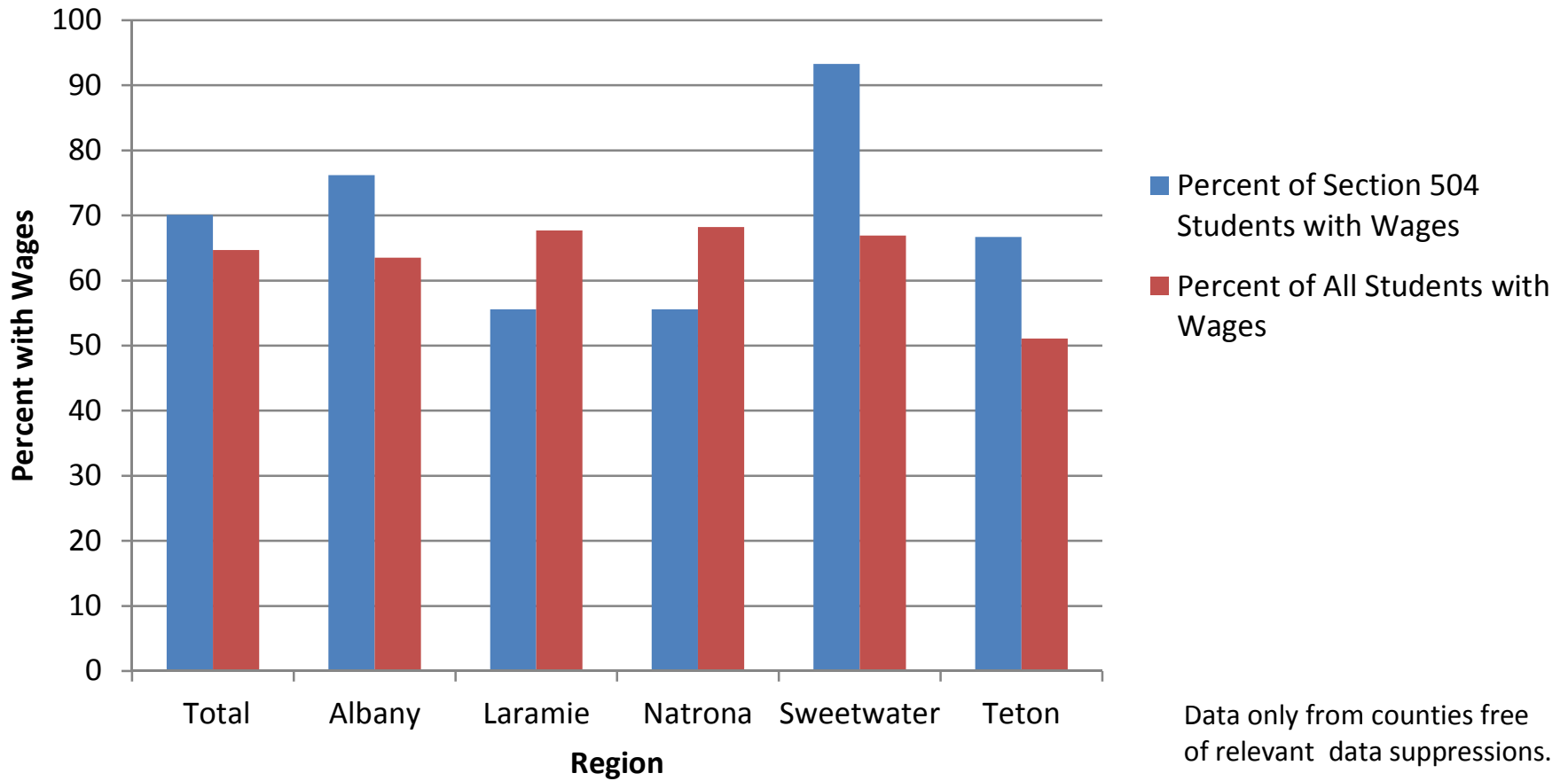


# Figure 5: Total 2014 Mean Industry Wages Compared to Mean Industry Wages for College Students (2012/13 Cohort)

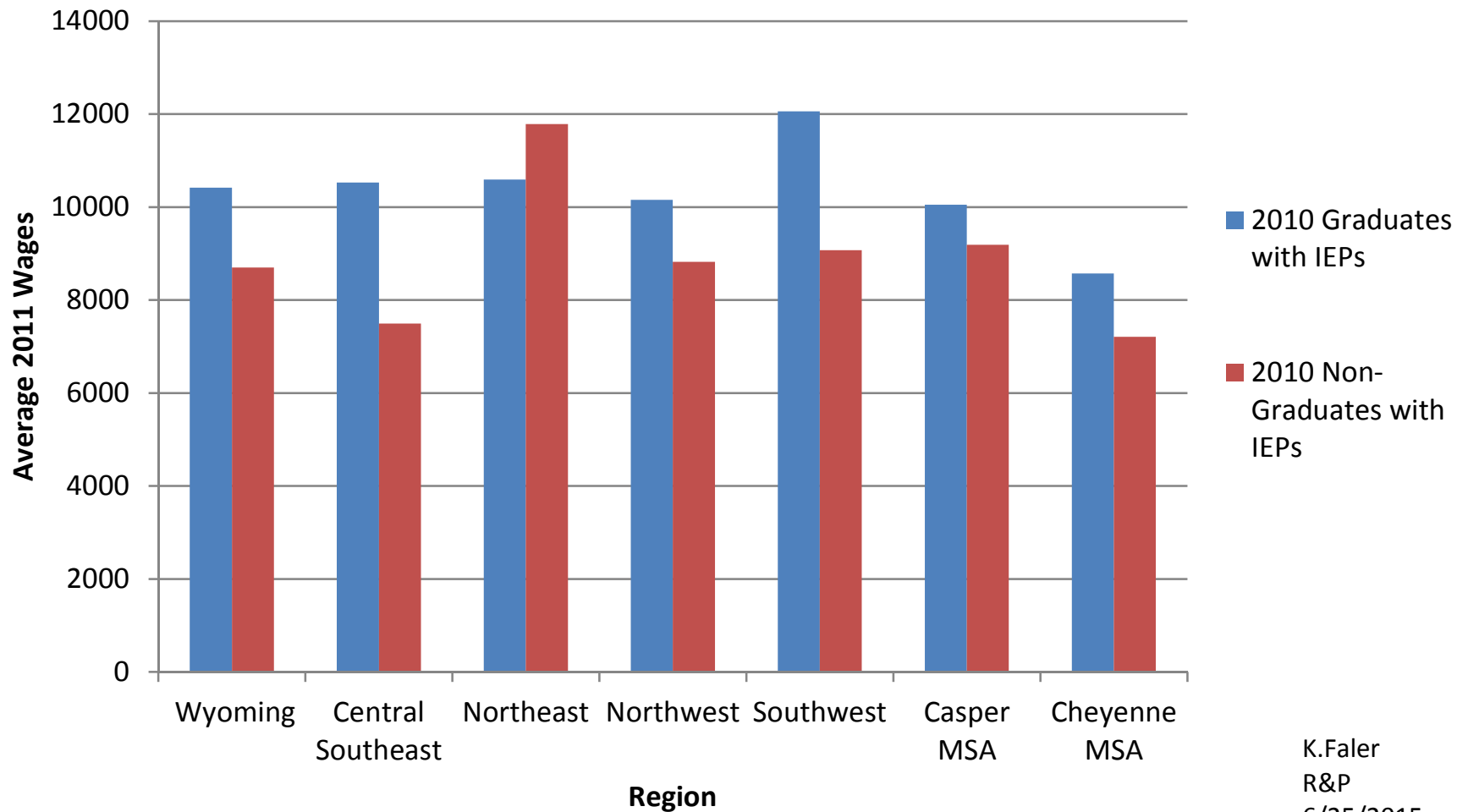
Industry percentages indicate the proportion of the 2013 Cohort who worked in the industry while attending college in 2014



**Figure 6: Percent of 2009/10 Cohort Working in Wyoming in 2011 by Select Counties and Section 504 Status**

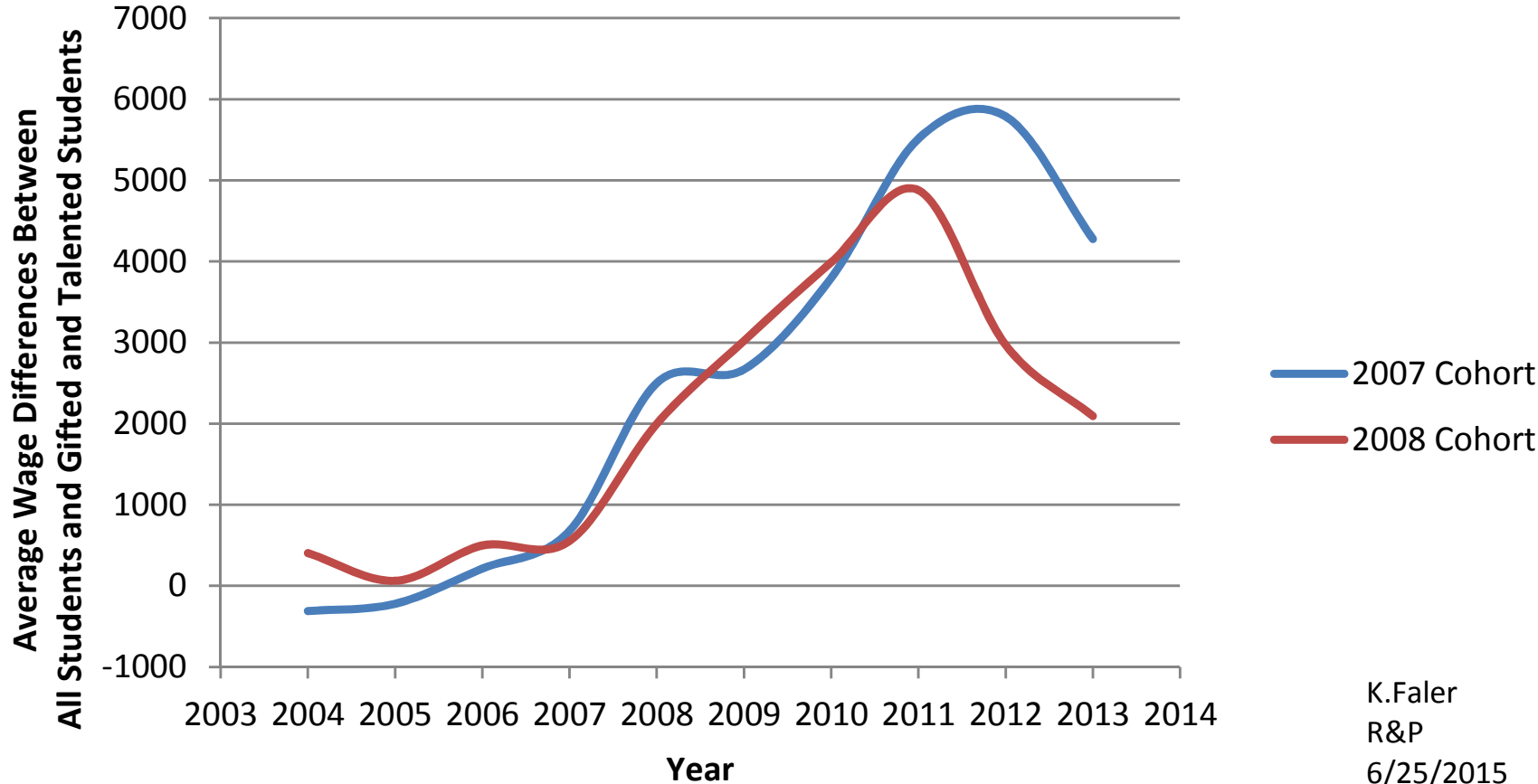


### Figure 7: Regional Average 2011 Wages for Graduates and Non-Graduates in the 2009/10 Cohort with IEPs



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**Figure 8: Statewide Average Wage Differences Over Time Between All Students and Gifted & Talented Students for the 2006/07 and 2007/08 Cohorts**



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**Figure 9: Mean Wages Over Time for Campbell County Males and Females of the 2006/07 Cohort who Never Enrolled in College Compared to Total Campbell County Males and Females**

