

# ***New Jersey's Teacher Workforce, 2019***

*Diversity Lags, Wage Gap Persists*

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## Author's Note

*In any work of research, an author should always be clear regarding their own positionality. Given the topic of this policy brief, readers should know:*

- *In addition to my work as an education policy researcher, I am a teacher in a New Jersey public school district.*
- *I am a member of the New Jersey Education Association (NJEA), the state's largest teachers' union. I hold no local or statewide offices, but I have served in the past on negotiations committees in my local union.*
- *The NJEA is one of the funders of New Jersey Policy Perspective.*

*Given my background, it is especially important to lay out the methodologies employed in this report, and to cite every data source used and every piece of research referenced. The Appendix and the footnotes have all of the relevant details.*

*I hope my commitment to transparency allows readers to approach this report for what it is: a factual analysis, using standard methods and data sources, of New Jersey's teaching workforce.*

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## Executive Summary

In this report, I investigate New Jersey's teacher workforce: the characteristics of the state's teachers, how they are paid, and how teachers vary between different types of school districts. I find:

- New Jersey's teaching workforce is mostly white and female; there is little evidence of a trend toward a more diverse teaching corps.
- A demographic bubble is coming, as many teachers will reach retirement age over the next two to three decades.
- Affluent districts tend to have more teachers with advanced degrees and appear to pay a premium to attract and retain them.
- There is a significant gap in wages between New Jersey teachers and other similarly-educated workers, even accounting for differences in time worked.
- On average, other workers get a much larger increase in their wages after earning an advanced degree than New Jersey's teachers.
- While the teacher pay gap is partially explained by the gender pay gap, women still suffer a wage penalty for going into teaching.
- Pensions and health benefits do not fully close the teacher pay gap.
- The former Abbott districts and most affluent districts pay their teachers more than other districts, holding teacher characteristics and labor market forces constant.
- Charter schools and special services districts have the least competitive salaries.

Based on the findings in this report, I make the following recommendations to ensure all New Jersey students — regardless of their school district — have access to highly qualified teachers:

1. New Jersey must offer competitive wages and other compensation to attract qualified workers into teaching.
2. Given the wage gap for teachers, New Jersey should not degrade the value of pensions and benefits, which help to close that gap.
3. The state needs to make teacher compensation competitive in *all* of its districts, not just the affluent ones.
4. New Jersey should take steps to make its teaching workforce more diverse to ensure teachers better reflect the state's diverse study body.

## Introduction

Teachers are the lifeblood of New Jersey's schools. The educational success of the state's students is dependent, in large part, on the ability of school districts to recruit and retain well-qualified candidates to do the critical work of teaching. And the economic health of the state depends, in turn, on the state's students: without a well-educated workforce, New Jersey runs the risk of falling behind other states in creating jobs and growing businesses.

If New Jersey is to make good education policy, it should have a clear understanding of the characteristics of its more than 100,000 classroom teachers.<sup>1</sup> It should know who teaches: their age, their race, their gender, their education. It should know whether its school districts pay teachers competitive wages so it can maintain a high-quality teacher corps. It should know how teachers vary across different types of districts, and it should know whether all districts have the ability to recruit good teaching candidates with competitive salaries.

In this report, I leverage a variety of data sources to describe New Jersey's teachers. I analyze the characteristics of educators and reveal trends in how the state's teacher workforce is changing. I explore whether there is, in fact, a teacher wage gap, and how that gap varies across the state's schools.

I begin with a summary of what the research tells us about teaching and teacher compensation.

## Teachers and Compensation: A Review of the Research

Educator compensation has traditionally been the largest driver of school expenditures: in 2015, 58.3 percent of the total spending on U.S. public K-12 schools went toward the salaries and benefits of school staff providing instruction and instruction-related services.<sup>2</sup> According to federal data, New Jersey spends 56.6 percent of its total expenditures on instructional staff compensation, slightly less than the national average.

Given the relative size of the spending on educators, teacher compensation and effectiveness has been a regular topic of the work of education policy researchers. The following review highlights some of these efforts.

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<sup>1</sup> New Jersey Department of Education, "New Jersey Public Schools Fact Sheet," <https://www.state.nj.us/education/data/fact.htm>

<sup>2</sup> Cornman, S.Q., Ampadu, O.L., Wheeler, S., and Zhou, L. (2018). *Revenues and Expenditures for Public Elementary and Secondary School Districts: School Year 2014–15 (Fiscal Year 2015): First Look* (NCES 2018-303). U.S. Department of Education. Washington, DC. National Center for Education Statistics. <http://nces.ed.gov/pubsearch>.

## Teacher Effectiveness

A common claim in education policy circles is that teachers are the most important “in-school” factor influencing student achievement.<sup>3</sup> In fact, the truth is more subtle: while teachers are important, variations in teacher effectiveness can only account for a fraction of the variation in student outcomes. In a 2014 statement, the American Statistical Association noted: “... *teachers account for about 1% to 14% of the variability in test scores, and that the majority of opportunities for quality improvement are found in the system-level conditions.*”<sup>4</sup>

One recent study on teacher effectiveness that is often cited in media reports comes from a team led by economist Raj Chetty;<sup>5</sup> the study finds that teacher effectiveness does vary, and the effects of teacher quality persist into students’ adulthood, where they influence the incomes of former students in their 20s. Critics of the study, however, including economist Moshe Adler,<sup>6</sup> have noted that the effects found are practically small (for a 1 standard deviation change in teacher quality, income rises \$286 per year at age 28 in the one large city studied) and inconsistent across different cohorts of students. Further, the limits of the data make it impossible to state with certainty that these effects will persist over time.

One of the problems in attempting to quantify the influence of teachers on students is that much of the research relies on test scores, which may not capture the full extent of that influence. Recent work by economist Kirabo Jackson<sup>7</sup> finds that teachers affect a variety of non-academic student behaviors, including school absences, suspensions, and grade repetitions.

One of the more intriguing findings in recent years is that racial alignment between teachers and students often leads to small but significant increases in student outcomes.<sup>8</sup> Students of color, therefore, may see benefits when they are taught by

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<sup>3</sup> An example: former Secretary of Education Arne Duncan recently wrote, “Teachers are the most important factor in a student’s school experience.” <https://www.edsurge.com/news/2018-12-21-arne-duncan-6-lessons-i-ve-learned-from-my-time-in-education>

<sup>4</sup> “ASA Statement on Using Value-Added Models for Educational Assessment” (American Statistical Association, April 8, 2014), <http://www.amstat.org/asa/files/pdfs/POL-ASAVAM-Statement.pdf>.

<sup>5</sup> Raj Chetty, John N. Friedman, and Jonah E. Rockoff, “Measuring the Impacts of Teachers II: Teacher Value-Added and Student Outcomes in Adulthood,” *American Economic Review* 104, no. 9 (2014): 2633–79.

<sup>6</sup> Moshe Adler, “Review of Measuring the Impacts of Teachers,” *National Education Policy Center*, April 10, 2014, <http://nepc.colorado.edu/thinktank/review-measuring-impact-of-teachers>.

<sup>7</sup> C Kirabo Jackson, “What Do Test Scores Miss? The Importance of Teacher Effects on Non-Test Score Outcomes,” *Journal of Political Economy* 126, no. 5 (August 30, 2018): 2072–2107.

<sup>8</sup> Colette N. Cann, “What School Movies and TFA Teach Us About Who Should Teach Urban Youth: Dominant Narratives as Public Pedagogy,” *Urban Education* 50, no. 3 (April 1, 2015): 288–315, <https://doi.org/10.1177/0042085913507458>; Anna J. Egalite, Brian Kisida, and Marcus A. Winters, “Representation in the Classroom: The Effect of Own-Race Teachers on Student Achievement,” *Economics of Education Review* 45 (April 1, 2015): 44–52, <https://doi.org/10.1016/j.econedurev.2015.01.007>; Constance A. Lindsay and Cassandra M. D. Hart, “Exposure to Same-Race Teachers and Student Disciplinary Outcomes for Black Students in North

teachers of color. These studies also suggest that teachers may influence student achievement in ways other than their instructional methods.

In summary, the literature suggests that:

- Teachers matter, although other factors outside of the control of schools matter more.
- Teachers do vary in effectiveness.<sup>9</sup>
- Teachers influence students in ways that may not manifest in test scores.

Given these conclusions, how we pay teachers – and *how much* – is an important consideration.

## Teacher Pay Systems

Over 95 percent of school districts pay their teachers using a traditional “salary guide.”<sup>10</sup> The guide provides pay raises for each year of service, as well as raises for professional development credits and advanced degrees. Research consistently shows that, on average, teaching effectiveness increases with experience, particularly in the early years of a teacher’s career.<sup>11</sup>

Linking pay to experience, therefore, is a policy that has some basis in the evidence. There is less evidence to support tying pay to advanced degrees, as research has shown these teacher characteristics are generally not correlated with student achievement.<sup>12</sup> This said, the research on the topic is quite limited: most studies only look at the effects of advanced degrees on math and English language arts test

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Carolina,” *Educational Evaluation and Policy Analysis* 39, no. 3 (September 1, 2017): 485–510, <https://doi.org/10.3102/0162373717693109>.

<sup>9</sup> Daniel Aaronson, Lisa Barrow, and William Sander, “Teachers and Student Achievement in the Chicago Public High Schools,” *Journal of Labor Economics* 25, no. 1 (2007): 95–135; Steven G. Rivkin, Eric A. Hanushek, and John F. Kain, “Teachers, Schools, and Academic Achievement,” *Econometrica* 73, no. 2 (2005): 417–458.

<sup>10</sup> Matthew G. Springer, Lam D. Pham, and Tuan D. Nguyen, “Teacher Merit Pay and Student Test Scores: A Meta-Analysis” (Vanderbilt University, April 3, 2017), <https://news.vanderbilt.edu/2017/04/11/teacher-merit-pay-has-merit-new-report/>.

<sup>11</sup> Helen F. Ladd and Lucy C. Sorensen, “Returns to Teacher Experience: Student Achievement and Motivation in Middle School” (CALDER • American Institutes for Research, December 2015), [http://www.caldercenter.org/sites/default/files/WP%20112%20Update\\_0.pdf](http://www.caldercenter.org/sites/default/files/WP%20112%20Update_0.pdf); John P. Papay and Matthew A. Kraft, “Productivity Returns to Experience in the Teacher Labor Market: Methodological Challenges and New Evidence on Long-Term Career Improvement,” *Journal of Public Economics* 130 (October 2015): 105–19, <https://doi.org/10.1016/j.jpubeo.2015.02.008>; Jennifer King Rice, “The Impact of Teacher Experience: Examining the Evidence and Policy Implications. Brief No. 11.,” *National Center for Analysis of Longitudinal Data in Education Research*, 2010, <https://eric.ed.gov/?id=ED511988>.

<sup>12</sup> Aaronson, Barrow, and Sander, “Teachers and Student Achievement in the Chicago Public High Schools”; Charles T. Clotfelter, Helen F. Ladd, and Jacob L. Vigdor, “Teacher Credentials and Student Achievement: Longitudinal Analysis with Student Fixed Effects,” *Economics of Education Review* 26, no. 6 (December 2007): 673–82, <https://doi.org/10.1016/j.econedurev.2007.10.002>; Douglas N. Harris and Tim R. Sass, “Teacher Training, Teacher Quality and Student Achievement,” *Journal of Public Economics* 95, no. 7–8 (August 2011): 798–812, <https://doi.org/10.1016/j.jpubeo.2010.11.009>.

outcomes between Grades 3 and 8, and the research often does not consider the alignment of degrees with teacher assignments (for example, a master's degree in English literature is not likely to improve the effectiveness of a math teacher, yet some studies do not differentiate between the two).

Despite the correlation of experience and teacher effectiveness, some critics of teacher salary guides contend that directly tying teacher compensation to performance would improve student achievement. Experiments in “merit pay” have proliferated in recent years; at best, the evidence on their efficacy is mixed.<sup>13</sup> It is, however, difficult to draw a firm conclusion about the effectiveness of pay-for-performance, in large part because different merit pay programs vary greatly in their structure.

As an illustration: a recent meta-analysis of research on teacher merit pay found a positive but small effect (0.052 SD) of these programs on student test scores.<sup>14</sup> The effect is smaller, however, when only considering research conducted in the United States (0.035 SD). Further, the programs studied varied widely in the size of their bonuses, whether bonuses were tied to more challenging assignments, and how teacher effectiveness was evaluated.

I reserve a more complete discussion of merit pay for future work. For now, a summary of the research on teachers and compensation suggests:

- The vast majority of public K-12 districts in the U.S. – and in New Jersey – pay their teachers based on a salary guide tied to experience and educational credentials, including advanced degrees.
- Experience is generally correlated with teacher effectiveness.
- The evidence on merit pay is not conclusive as of today, in part because the merit pay programs attempted in the U.S. vary greatly in scope and implementation.

### Attracting Qualified Workers to Teaching

Economic theory suggests that if we wish to attract well-qualified candidates to the teaching profession, we should pay them competitive wages. Research on teacher quality and pay supports this theory.

One study using international data indicates countries that pay teachers more relative to other professions realize a significant advantage in student test scores compared to countries that pay their teachers relatively less.<sup>15</sup> Another recent analysis finds that in countries where teachers are paid better compared to other workers with similar

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<sup>13</sup> Scott Imberman, “How Effective Are Financial Incentives for Teachers?,” *IZA World of Labor*, 2015, <https://doi.org/10.15185/izawol.158>.

<sup>14</sup> Springer, Pham, and Nguyen, “Teacher Merit Pay and Student Test Scores: A Meta-Analysis.”

<sup>15</sup> Peter Dolton et al., “If You Pay Peanuts Do You Get Monkeys? A Cross-Country Analysis of Teacher Pay and Pupil Performance,” *Economic Policy* 26, no. 65 (2011): 5–55.

education, experience, and skills, student achievement tends to rise.<sup>16</sup> Research based on data from Texas shows that raising teacher pay reduces turnover, which positively impacts student performance on tests.<sup>17</sup>

Teaching has traditionally been a career dominated by women; however, since the 1960s, opportunities for college-educated women outside of the teaching field have increased. Research finds that during this period fewer women and minorities chose to teach, and fewer among those who taught were high-scorers on standardized tests.<sup>18</sup>

This suggests that workers who might become effective teachers are influenced by the other opportunities available to them in the job market. In a study of Florida educators, more effective teachers (as determined by a value-added model) who left the profession were found to earn more in their new jobs than less effective teachers.<sup>19</sup>

In summary:

- Evidence suggests that paying teachers more competitive wages improves student outcomes.
- The supply of effective teachers is influenced by the other opportunities available in the labor market for similar workers.

## The Teacher Pay Gap

Comparing teacher compensation to pay in other careers is a complex task. Any valid analysis must account for differences in time worked, experience, age, labor market differences (such as relative cost of living) and education levels.

Since 2004, researchers at the Economic Policy Institute have tracked the relative change in teacher pay using a statistical model that accounts for these differences. Nationally, the gap between teacher and non-teacher wages reached a record high of 21.4 percent in 2018, up from 5.3 percent in 1993.<sup>20</sup> Another report published by EPI

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<sup>16</sup> Eric A. Hanushek, Marc Piopiunik, and Simon Wiederhold, "Do Smarter Teachers Make Smarter Students?," *EducationNext* 19, no. 2 (Spring 2019), <https://www.educationnext.org/do-smarter-teachers-make-smarter-students-international-evidence-cognitive-skills-performance/>.

<sup>17</sup> Matthew D. Hendricks, "Does It Pay to Pay Teachers More? Evidence from Texas," *Journal of Public Economics* 109 (January 2014): 50–63, <https://doi.org/10.1016/j.jpubeco.2013.11.001>.

<sup>18</sup> Marigee P. Bacolod, "Do Alternative Opportunities Matter? The Role of Female Labor Markets in the Decline of Teacher Quality," *The Review of Economics and Statistics* 89, no. 4 (2007): 737–51; Sean P. Corcoran, William N. Evans, and Robert M. Schwab, "Women, the Labor Market, and the Declining Relative Quality of Teachers," *Journal of Policy Analysis and Management* 23, no. 3 (2004): 449–70, <https://doi.org/10.1002/pam.20021>.

<sup>19</sup> Matthew M. Chingos and Martin R. West, "Do More Effective Teachers Earn More Outside the Classroom?," *Education Finance and Policy* 7, no. 1 (January 2012): 8–43, [https://doi.org/10.1162/EDFP\\_a\\_00052](https://doi.org/10.1162/EDFP_a_00052).

<sup>20</sup> Sylvia Allegretto and Lawrence Mishel, "The Teacher Weekly Wage Penalty Hit 21.4 Percent in 2018, a Record High" (Economic Policy Institute, April 24, 2019), <https://www.epi.org/publication/the-teacher-weekly-wage-penalty-hit-21-4-percent-in-2018-a-record-high-trends-in-the-teacher-wage-and-compensation-penalties-through-2018/>.



and authored by Rutgers professor Jeffrey Keefe from 2017 found New Jersey teachers had a weekly compensation gap of 16.8 percent.<sup>21</sup> When comparing total compensation, including retirement and health care benefits, the gap was 12.5 percent.

Recently released data and analysis from a team of researchers led by Bruce Baker of Rutgers University (and including this author) uses similar methods but different data to determine the extent of the teacher wage gap.<sup>22</sup> There is great variation between states: for example, using modeled wages for workers at age 35, teachers in Oklahoma earn 62 cents for each dollar earned by similar workers in other professions. By this measure, Montana has the smallest teacher wage gap: 89 cents on the dollar. For a 45 year-old New Jersey teacher with a master's degree, the wage gap is 15.9 percent.

There is research that finds variations in relative teacher wages across the teaching profession. One study, which attempted to account for hours worked per week, found that high school teachers suffered a wage penalty while other teachers did not.<sup>23</sup>

One difficulty in making the comparisons between teachers and other workers is how to account for health care, retirement, and other benefits. The EPI researchers do find that benefits help close the overall teacher compensation gap, as teachers tend to have more generous benefit packages. Yet an overall teacher compensation gap remains: 11.1 percent in 2017.<sup>24</sup>

In addition to questioning the methods used by EPI,<sup>25</sup> some critics have suggested that teacher compensation includes things like tenure protections, which should be included in comparisons to other professions.<sup>26</sup> This point, however, reinforces the idea that taking away workplace protections or devaluing retirement and health benefits is an economic penalty on teachers. When policies cause these benefits to erode in value, the overall compensation gap increases.

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<sup>21</sup> Jeffrey H Keefe, "New Jersey Public School Teachers Are Underpaid, Not Overpaid" (Economic Policy Institute, February 15, 2017), <https://www.epi.org/publication/new-jersey-public-school-teachers-are-underpaid-not-overpaid/>.

<sup>22</sup> Bruce D. Baker, Matthew Di Carlo, and Mark Weber, "School Finance Indicators Database" (Washington, D.C.: The s, 2019), <http://schoolfinancedata.org/>.

<sup>23</sup> Kristine L. West, "New Measures of Teachers' Work Hours and Implications for Wage Comparisons," *Education Finance and Policy* 9, no. 3 (July 2014): 231–63, [https://doi.org/10.1162/EDFP\\_a\\_00133](https://doi.org/10.1162/EDFP_a_00133).

<sup>24</sup> Sylvia Allegretto and Lawrence Mishel, "The Teacher Pay Penalty Has Hit a New High" (Washington, D.C.: Economic Policy Institute, September 5, 2018), <https://www.epi.org/publication/teacher-pay-gap-2018/>.

<sup>25</sup> Andrew G. Biggs and Jason Richwine, "Debunking the Myth of the 'teacher Pay Gap,' Again," AEI, October 6, 2016, <https://www.aei.org/publication/debunking-the-myth-of-the-teacher-pay-gap-again/>.

<sup>26</sup> Andrew G. Biggs, "Public School Teachers: Desperately Underpaid?," AEI, November 1, 2011, <https://www.aei.org/publication/public-school-teachers-desperately-underpaid/>.

To summarize:

- When accounting for time worked, education, experience, and other relevant factors, there is substantial evidence that teachers are paid less in wages than comparable workers in other professions.
- The extent of this teacher wage gap varies, however, depending on the state and how the time at work is calculated.
- Teachers' compensation advantage in health and pension benefits only partially closes this gap.

## Who Teaches in New Jersey?

### Defining School District Differences

In the next several sections of this report, I classify districts into different types. These classifications rely on the New Jersey Department of Education’s “District Factor Groups” (DFGs), which are based on districts’ socio-economic status. I also separate out three special types of districts, leaving the following as the as classifications:

- DFG-A&B, Abbotts: The former “Abbott Districts” that were party to a series of lawsuits regarding school funding.<sup>27</sup> These are low-socioeconomic status (SES) districts that have received different treatment at times from the state regarding school funding.
- DFG-A&B, Non-Abbotts: Low-SES districts that were not party to the Abbott lawsuits.
- DFG-CD/DE/FG: Middle level-SES districts.
- DFG-GH/I/J: The highest SES districts.
- Charter schools: In NJ, charter schools operate as *de facto* autonomous districts, although they have no taxing capacity and receive state and local funding as a “pass through” from public districts.
- Special Services: Districts that provide special education services.<sup>28</sup>
- Vo-Tech: Vocational and technical high schools that operate independently from public districts.<sup>29</sup>

While there are certainly differences within these groups, the seven classifications used here provide a reasonable method for exploring the differences in staffing between different types of school districts.

Throughout this section, “teacher” refers to a certificated school staff member who is not an administrator, teaching in a public school.<sup>30</sup>

### Age and Experience

There are at least two reasons policymakers should care about the age and experience of New Jersey’s teachers. First, teachers tend to increase their effectiveness as they gain experience. These gains are largest at the start of a teacher’s career, but they tend to continue well into the second decade of teaching.

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<sup>27</sup> Education Law Center, “Abbott Overview,” <https://edlawcenter.org/litigation/abbott-v-burke/abbott-v.-burke-overview.html>

<sup>28</sup> New Jersey Joint Council of County Special Services School Districts, <http://www.njspecialservices.org>

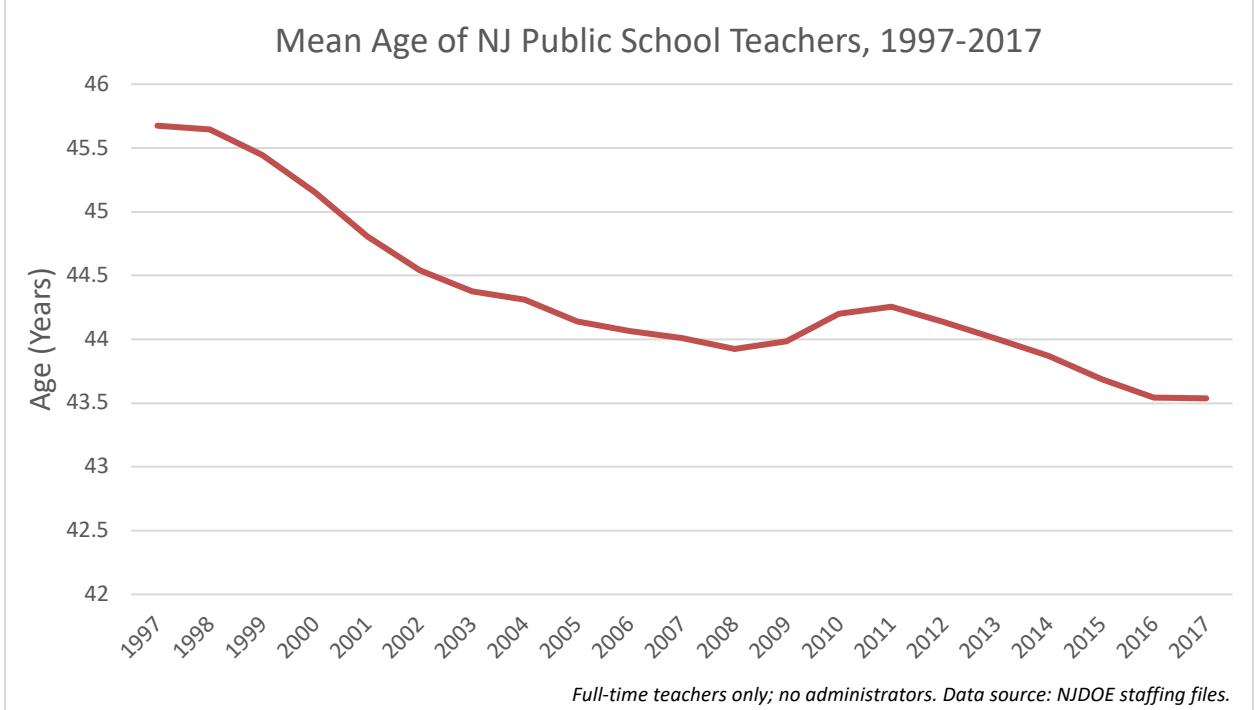
<sup>29</sup> <https://www.careertechnj.org>

<sup>30</sup> For simplicity’s sake, a “public” school is a district school, special services school, vo-tech school, or charter school. Whether a charter school is “public” in the same sense as the others is a topic I reserve for future reports.

Second: it's well known that New Jersey's teacher pension system is underfunded. To prepare to meet its obligations, the state should assess trends in the average age of the teaching corps. As the analysis below reveals, a demographic bubble passed through the teacher workforce several years ago – but another appears to be heading toward retirement age. This may be the best possible time for the state to strengthen and support its pension system, well before another wave of teachers starts to retire.

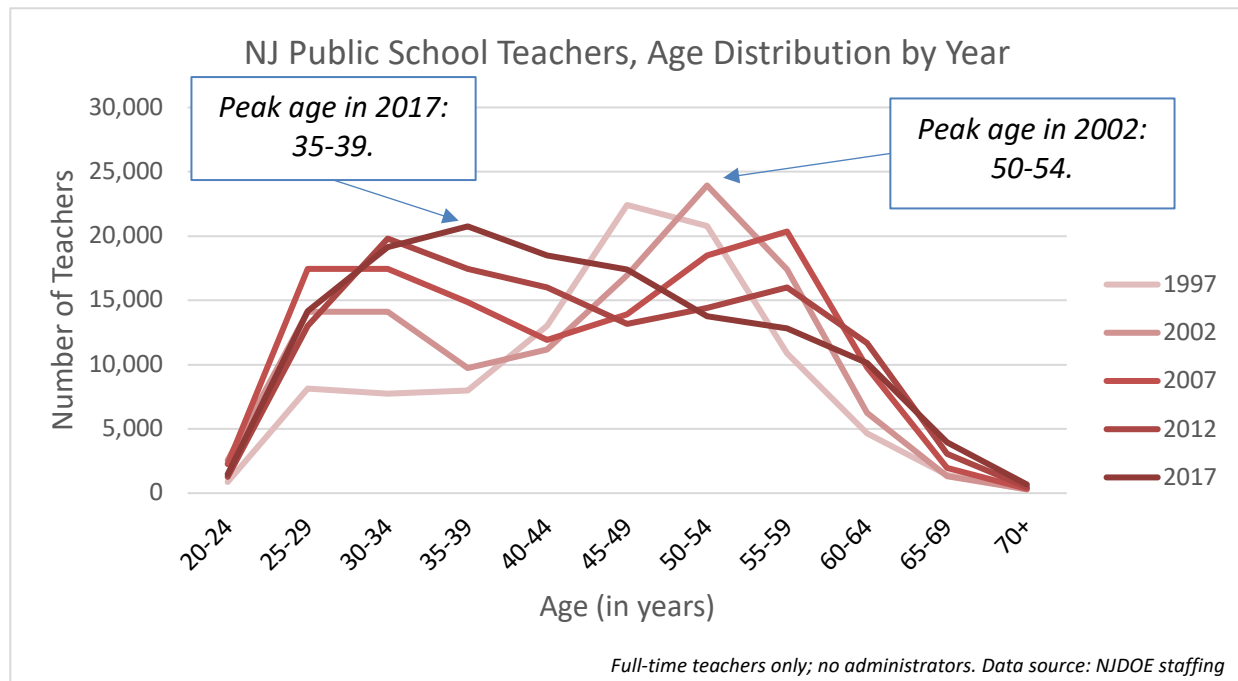
Figure 1 shows the change in the average (mean) age of teachers over the past two decades. Overall, New Jersey's teachers have become younger: the average age was 45.6 years in 1997, but 43.5 years in 2017.

Figure 1



One of the reasons for this change is that a demographic bubble has passed through the state's teaching workforce. Figure 2 shows how this bubble moved through the teaching corps. In 2002, the peak age for teachers was between 50 and 54 years; eventually, these teachers retired. A new demographic bubble appears to be moving through the workforce: the peak age for teachers is now between 35 and 39.

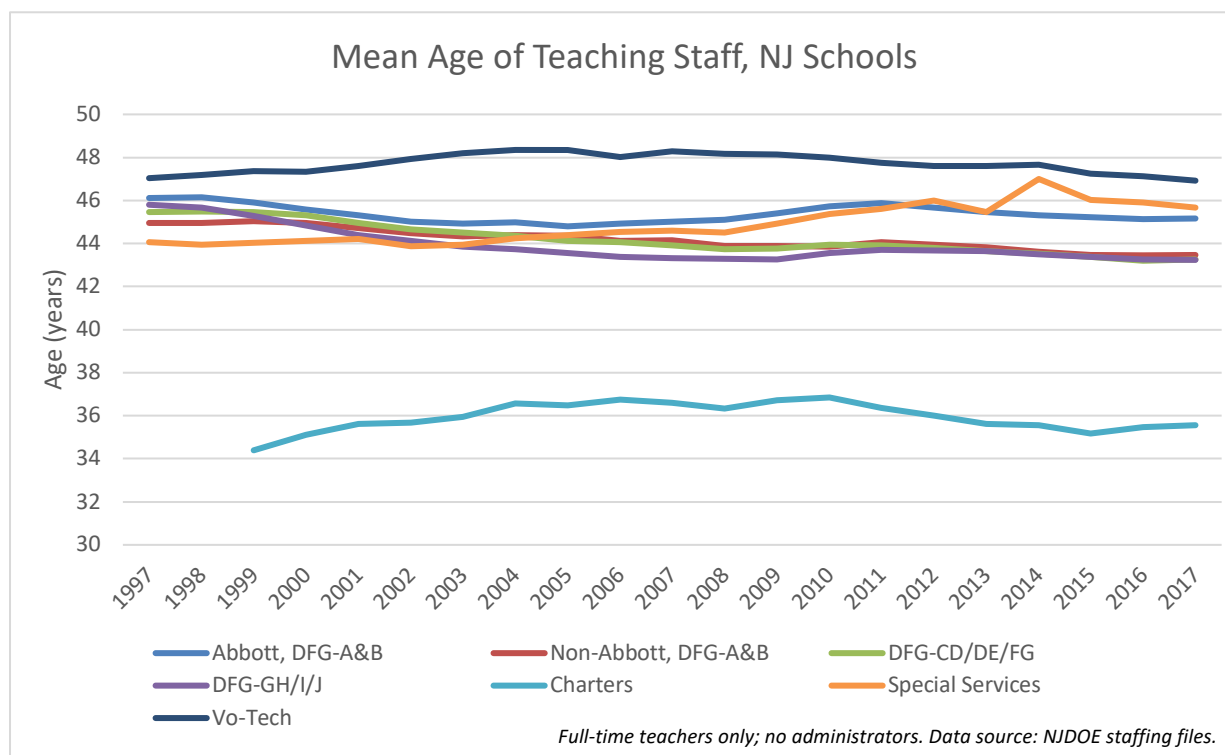
Figure 2



This trend has implications for the state’s teacher pension system. If this new bubble of teachers continues in the profession until the standard retirement age, New Jersey will see an influx of new pensioners in two to three decades.

There are differences across New Jersey’s publicly funded schools in the age of their teachers. Figure 3 shows the average age over the past two decades of teachers in various types of school districts and charter schools. Teachers in the former Abbott districts are, on average, more than two years older than teachers in the other regular school districts. Defying the overall trend, the average age of teachers in special services districts has risen; the average age of teachers in vo-tech schools has stayed about the same. Notably, charter school teachers are, on average, much younger than teachers in the state’s other publicly-funded schools.

Figure 3

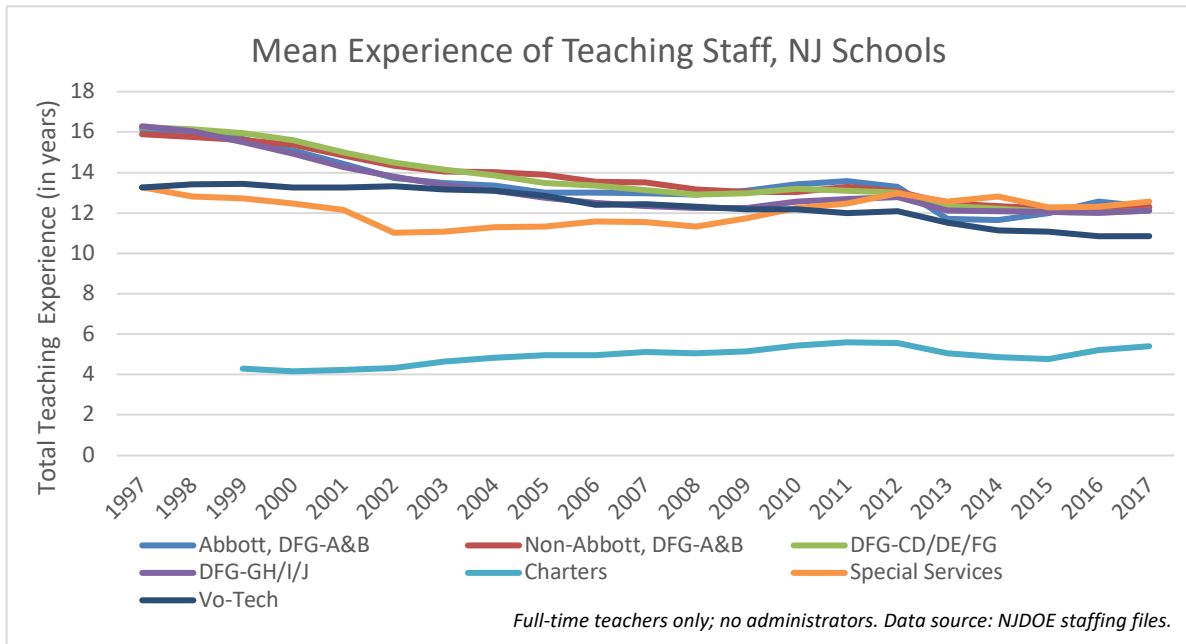


A teacher’s age is related to their years of experience; however, as Figure 4 shows, the relationship is not perfect. Currently, the four types of regular school districts – Abbott, non-Abbott DFG-A&B, DFG-CD/DE/FG, and DFG-GH/I/J – all have teacher workforces with an average experience of a little more than 12 years, as do special services districts. Vo-tech teachers, however, have an average experience of a little less than 11 years, even as their teachers are older.

Charter school teachers – who, again, are much younger on average than others – also have far less experience: about five and a half years, on average. This difference explains, in part, why charters have lower expenses per pupil than other schools; because inexperienced teachers earn less, charter school staffs will cost less per teacher than staffs in district schools.<sup>31</sup>

<sup>31</sup> Mark Alan Weber and Julia Sass Rubin, “New Jersey Charter Schools: A Data-Driven View - 2018 Update, Part I” (Daniel Tanner Foundation, 2018), <https://rucore.libraries.rutgers.edu/rutgers-lib/56004/>.

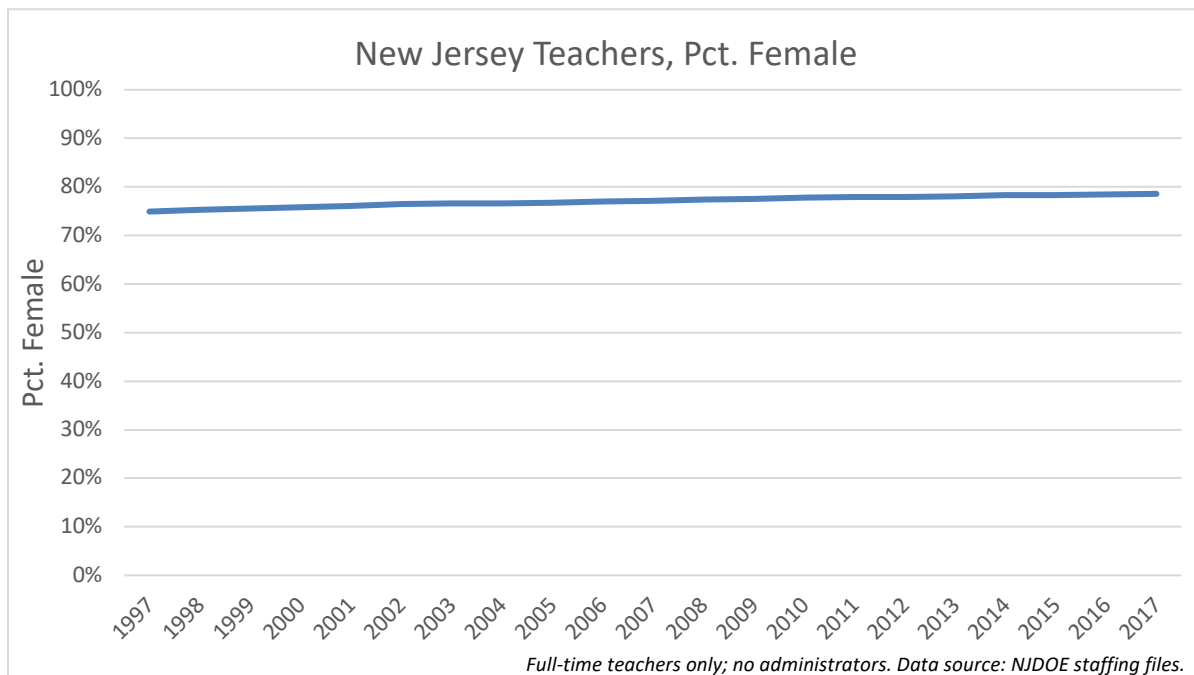
Figure 4



## Race and Gender

Like the rest of the nation, New Jersey’s teachers are overwhelmingly women, as shown in Figure 5. In 1997, the teaching corps was 75 percent female; in 2017, that proportion rose to 79 percent.

Figure 5



The teaching workforce is also largely white: 84 percent of teachers identify as white, down from 88 percent in 1997. Figure 6 shows this small but steady change over two decades.

Figure 6

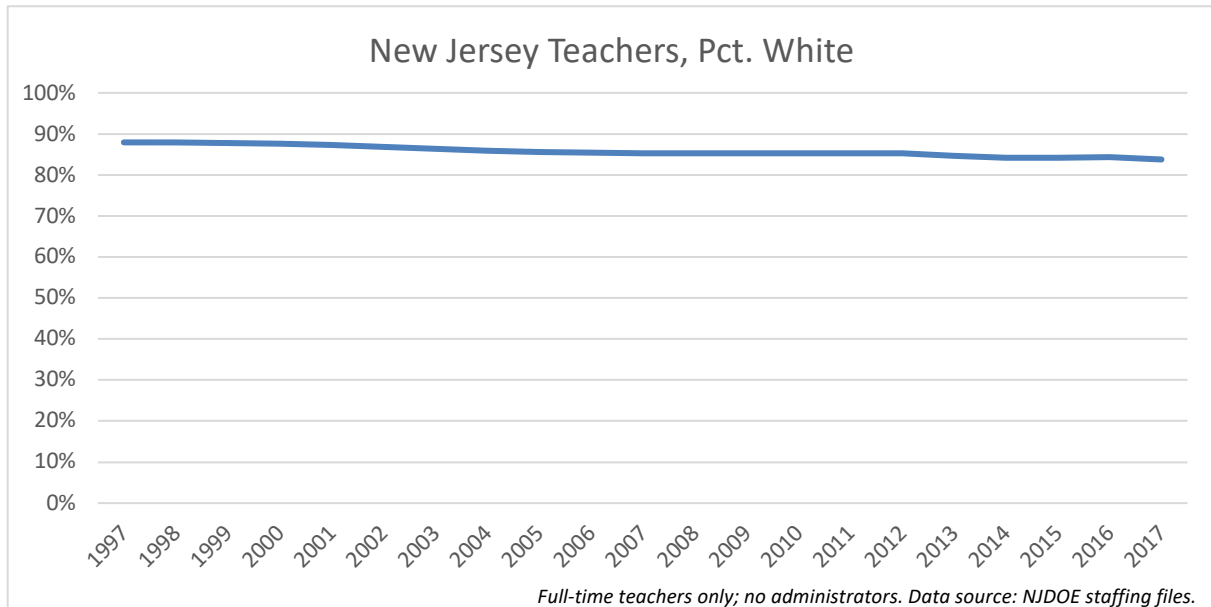
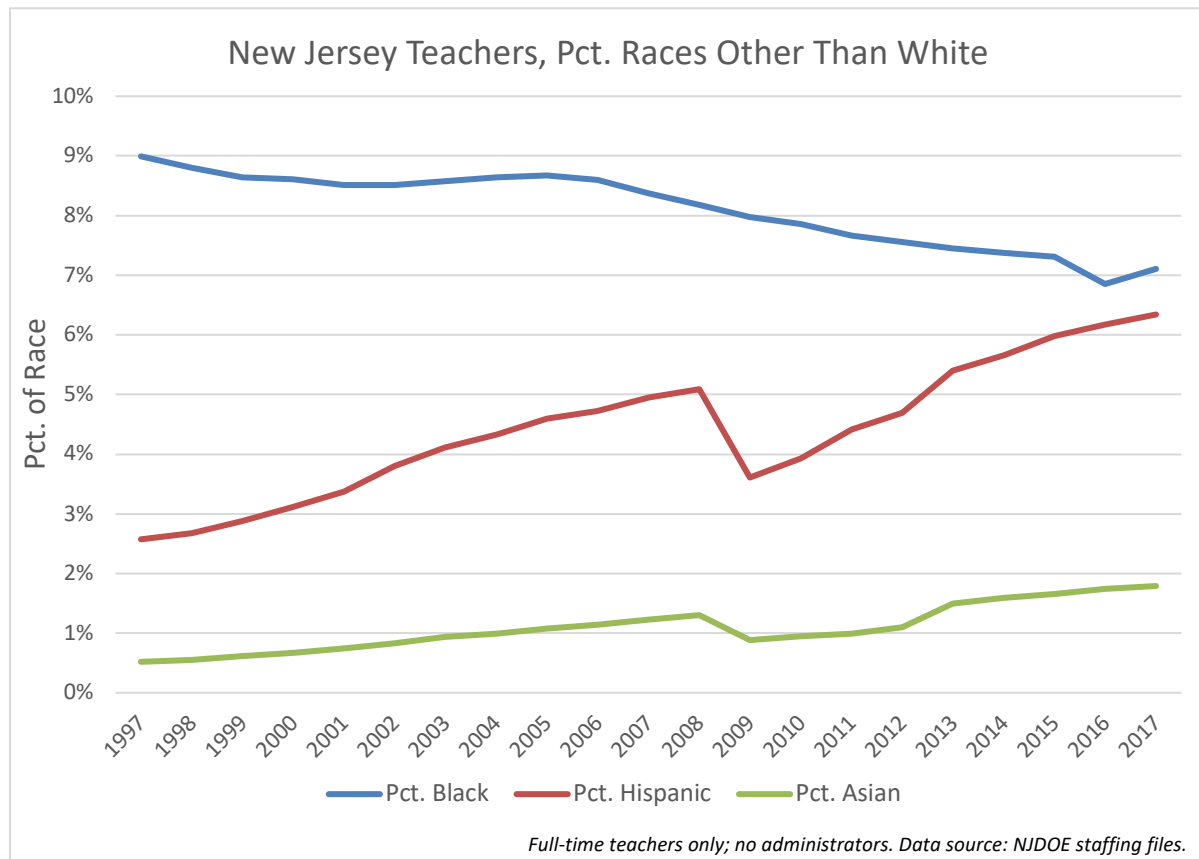


Figure 7 shows the shifts over the same time in the percentage of teachers who are black, Hispanic, or Asian.<sup>32</sup> The percentage of black teachers has declined, while the percentage of Hispanic teachers has increased. The proportion of Asian teachers remains small, under 2 percent. In all cases, however, the proportion of teachers who are persons of color remains relatively small (for clarity's sake, I have adjusted the scale of the vertical axis).

<sup>32</sup> The other race classifications in the NJDOE data – American Indian, Pacific Islander/Native Alaskan, and 2 or More Races – are a very small part of the overall New Jersey teaching workforce. I omit them from this analysis for clarity's sake.



Figure 7



This racial and gender homogeneity has created a teaching workforce that looks very different from the state's student population. Figure 8 and Figure 9 show the racial and gender composition of New Jersey's teachers and students. White females are 65.8 percent of the teaching corps, but only 21.9 percent of the student population. Black males, on the other hand, are 7.9 percent of the student population, but only 1.7 percent of the teacher workforce. Similarly, Hispanic males are 13.9 percent of the student population, but only 1.3 percent of the teacher corps.

Given the recent research on racial alignment and student achievement, the composition of the teaching workforce is a cause for concern. The imbalance on race may be due to barriers to entry in the profession, a lack of attraction to the profession by people of color, or some combination of the two; this is a topic worthy of further research. As I show below, the imbalance on gender is likely driven by economics: men in particular pay a steep wage penalty for entering the teaching profession.

Figure 8

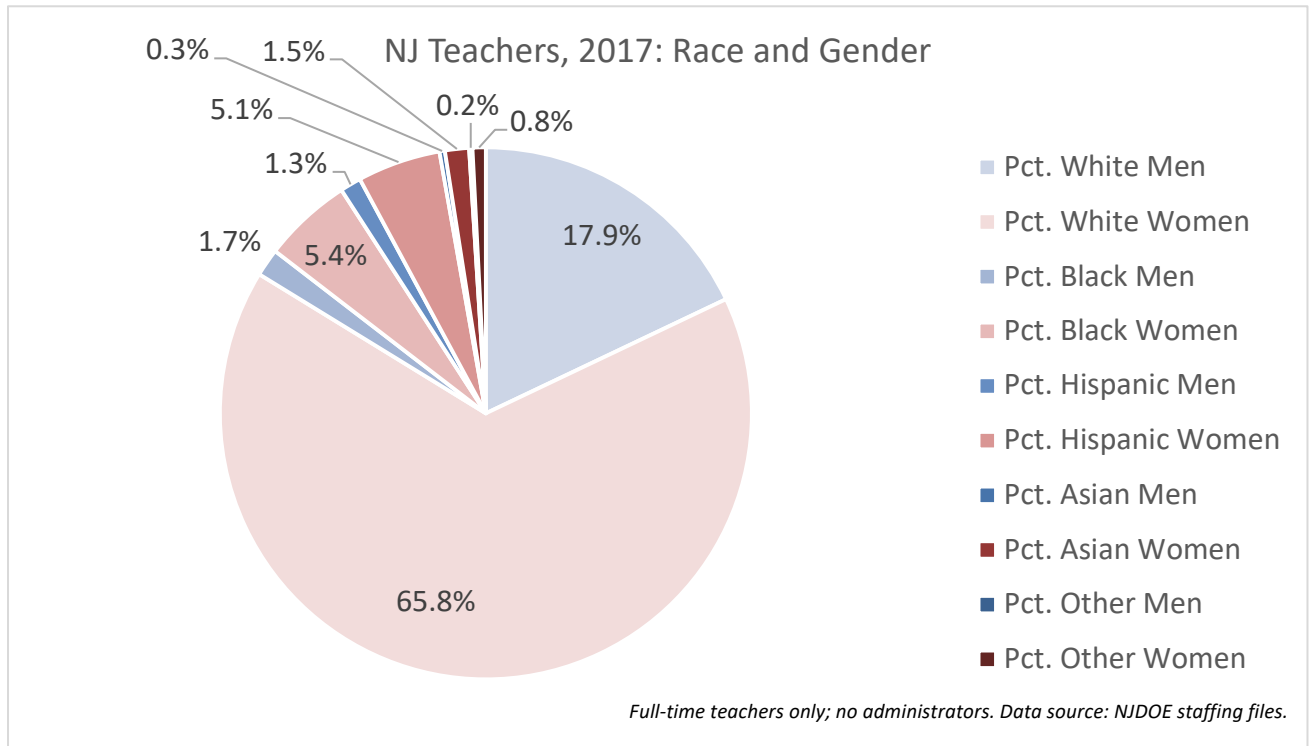
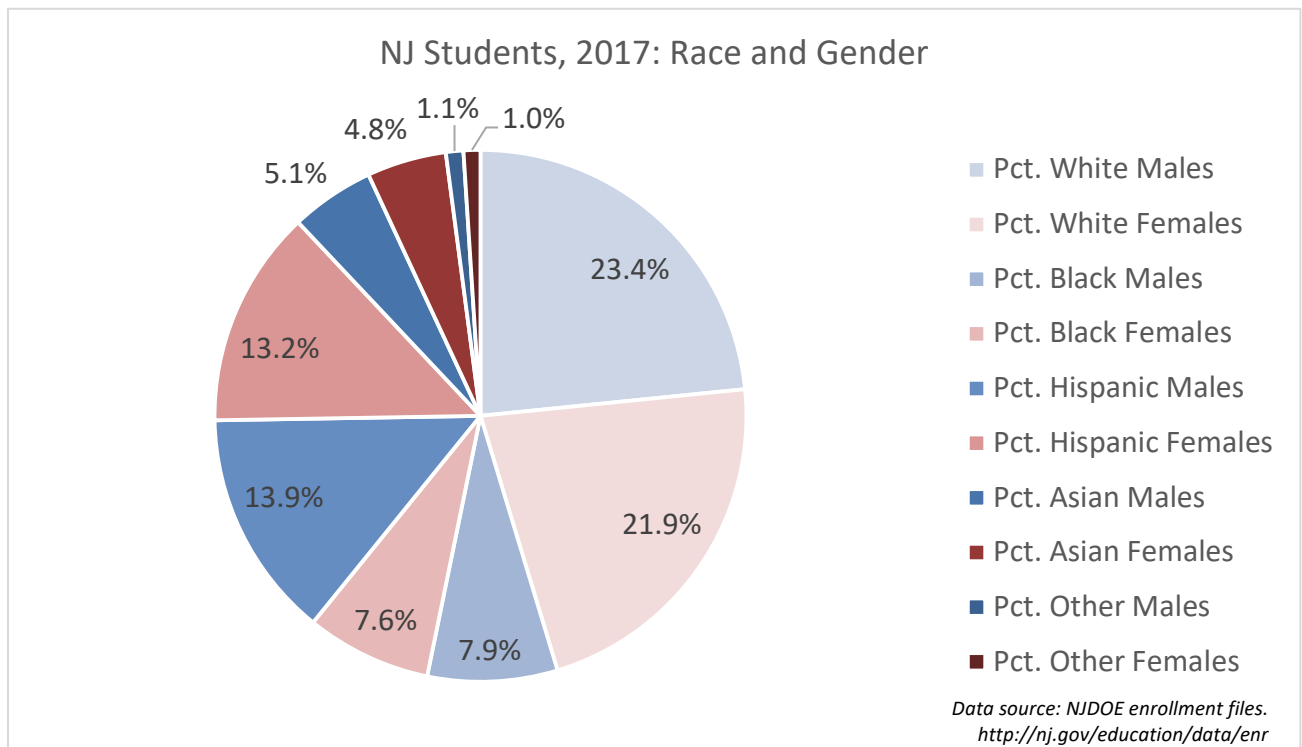


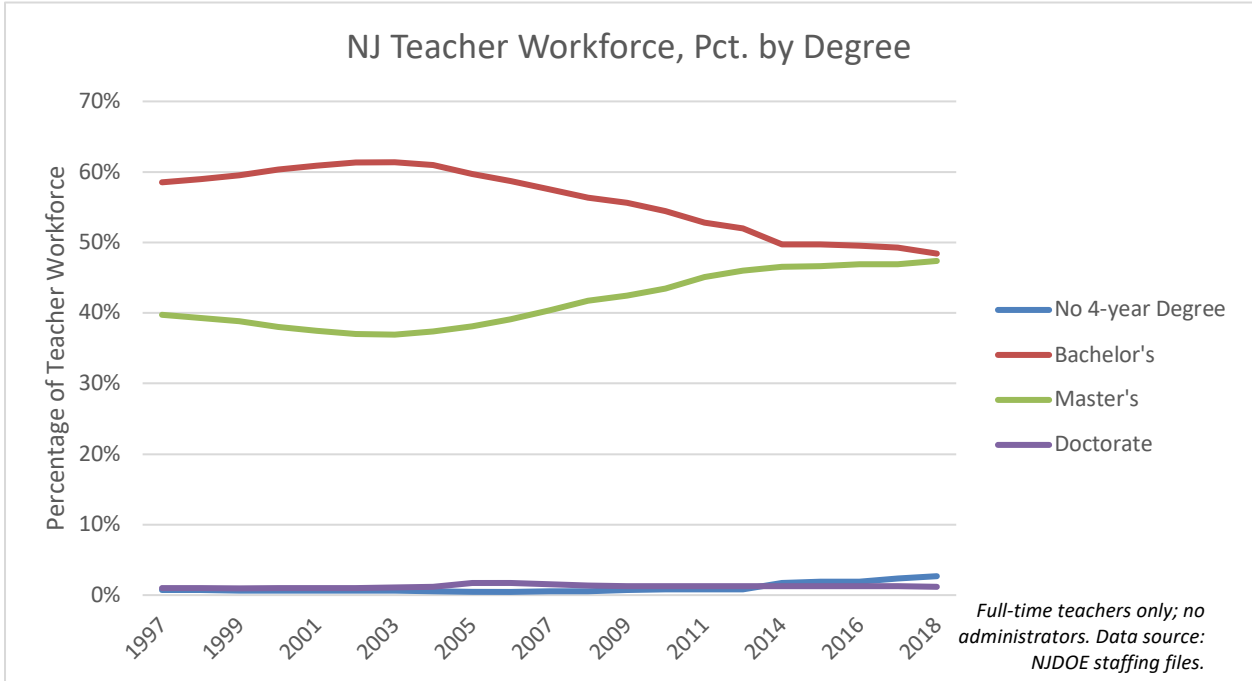
Figure 9



## Teacher Education

Many of New Jersey’s teachers hold an advanced degree. As Figure 10 shows, half of all teachers hold at least a master’s degree, up from about 40 percent two decades ago. Curiously, NJDOE data shows that over 2 percent of certificated school staff (excluding administrators) do not have a four-year degree, up from almost 0 percent in 1997. This may simply be a data reporting issue, but it is worth exploring further, as a college degree is a minimal requirement for most certificated positions.

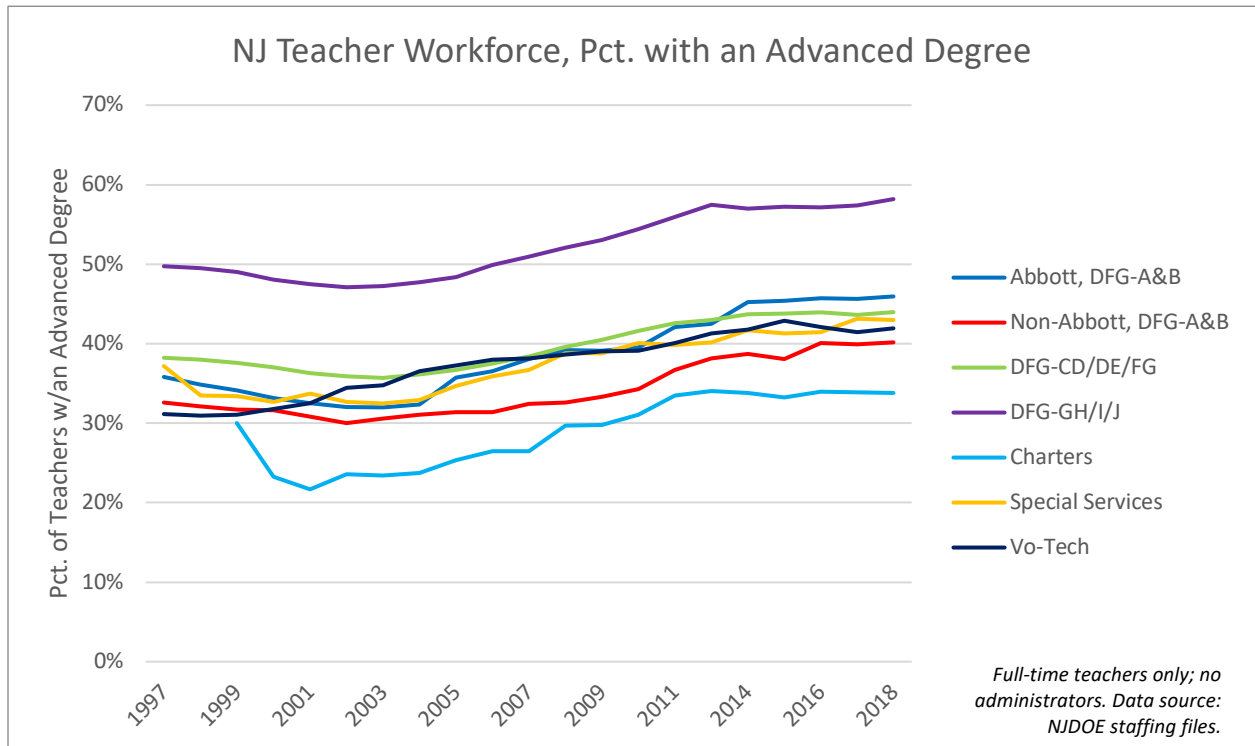
Figure 10



Teachers who hold advanced degrees are not spread evenly across different types of school districts and charter schools. As Figure 11 shows, the most affluent districts – DFG-GH/I/J districts – are more likely to employ teachers with at least a master’s degree. It may be that these districts go out of their way to recruit candidates with an advanced degree; they may also provide incentives to earn a degree after employment through their salary guides. It is also possible these districts employ more staff in positions where they would be more likely to hold an advanced degree.

Again: the research on teacher effectiveness and advanced degrees is quite limited. It is likely, however, that New Jersey’s most affluent districts see an advantage in maintaining teaching faculties with advanced degrees. Policymakers should examine whether these districts have funding advantages that allow them to recruit and retain these more educated staff members.

Figure 11

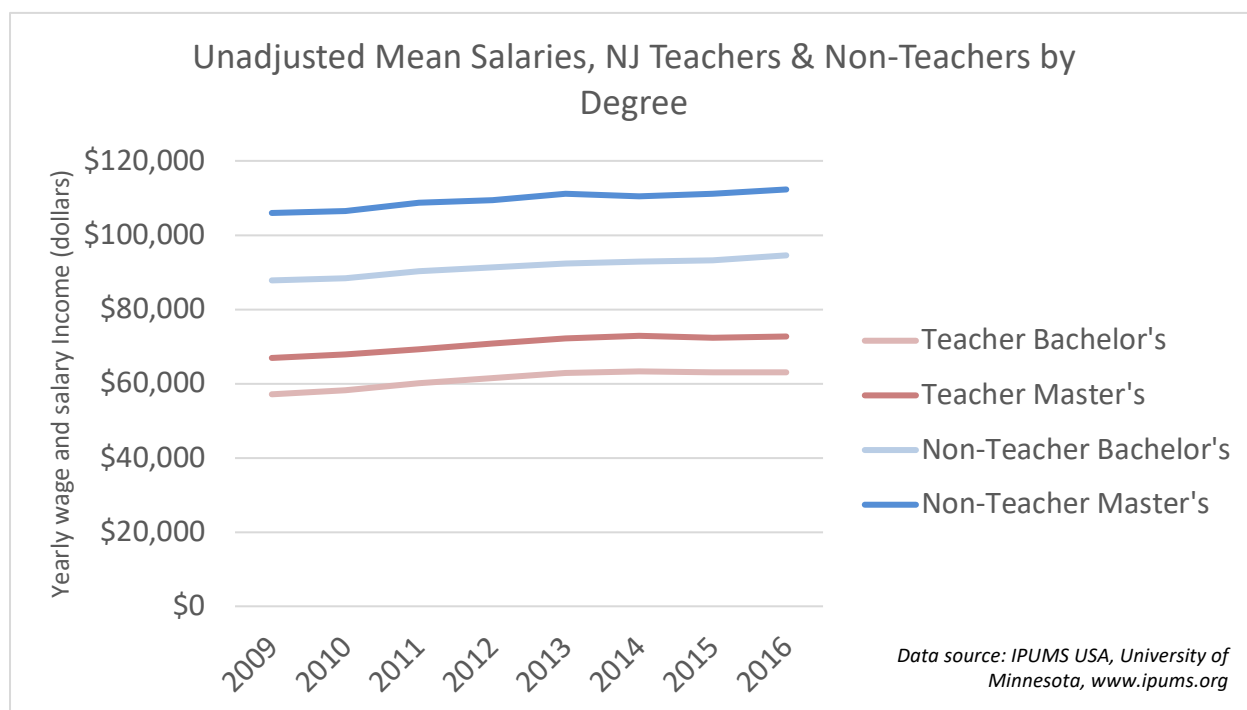


## The NJ Teacher Wage Gap

Comparing pay between any profession and the rest of the workforce is inherently complicated. Different careers may pay differently because of the education required to enter the profession, the typical length of the workday and work-year, and other factors. Two workers in the same profession may make different salaries because of their age and experience, the labor market pressures where they work, and so on.

On the surface, it is clear that New Jersey teachers do not earn salaries that are comparable to other college-educated workers; Figure 12 shows the gap in unadjusted average (mean) salaries between teachers and other workers who hold a bachelor's or master's degree.

Figure 12



This comparison, however, does not account for many important factors that would affect teacher pay. Foremost among these is the fact that the vast majority of public school teachers are contracted to work only 10 months out of the year (it is misleading to describe teachers as having “summers off” when they do not get paid during the two months they do not work). Differences in age and labor markets wage pressures may also affect differences in teacher and non-teacher pay.

If we are to determine the relative pay of teachers compared to similar workers, we must “hold constant” these other factors. In this report, I employ a regression model to make a more valid determination of the difference in pay between teachers and non-teachers.

## Modeling Teacher Pay

The data used in this section is from the IPUMS USA collection of U.S. Census Bureau's American Community Survey (ACS) data.<sup>33</sup> While this data is useful, it has several limitations that warrant caution when interpreting this report's findings. Chief among these is that public and private school teachers are not distinguished from one another in the coding that identifies the subjects' occupation. This likely biases the reported teacher pay downward, and, subsequently, makes the gap between teachers and other workers larger than if only public school teachers were included.

However, as I show in the Appendix, the findings here are in line with previous studies using data that compare only the salaries of public school teachers with other workers. In addition, teacher salary data from a different source that only includes public school teachers shows even the most generous assumption of bias in the IPUMS data cannot account for the size of the teacher wage gap shown below.

Readers may question why I compare teacher pay only to other college-educated workers, and not all workers. New Jersey certification rules require most teachers to have at least a baccalaureate degree,<sup>34</sup> so the comparison to other similarly educated workers is warranted. In addition, the attainment of an advanced degree is a powerful predictor of earnings. Figure 13 reports the returns to wages from earning various degrees, based on a regression model described in the Appendix. A master's degree, on average, will increase a worker's salary over a worker without a degree by an additional 30 percentage points more than a worker with only a bachelor's degree. A doctorate leads to even higher earnings.

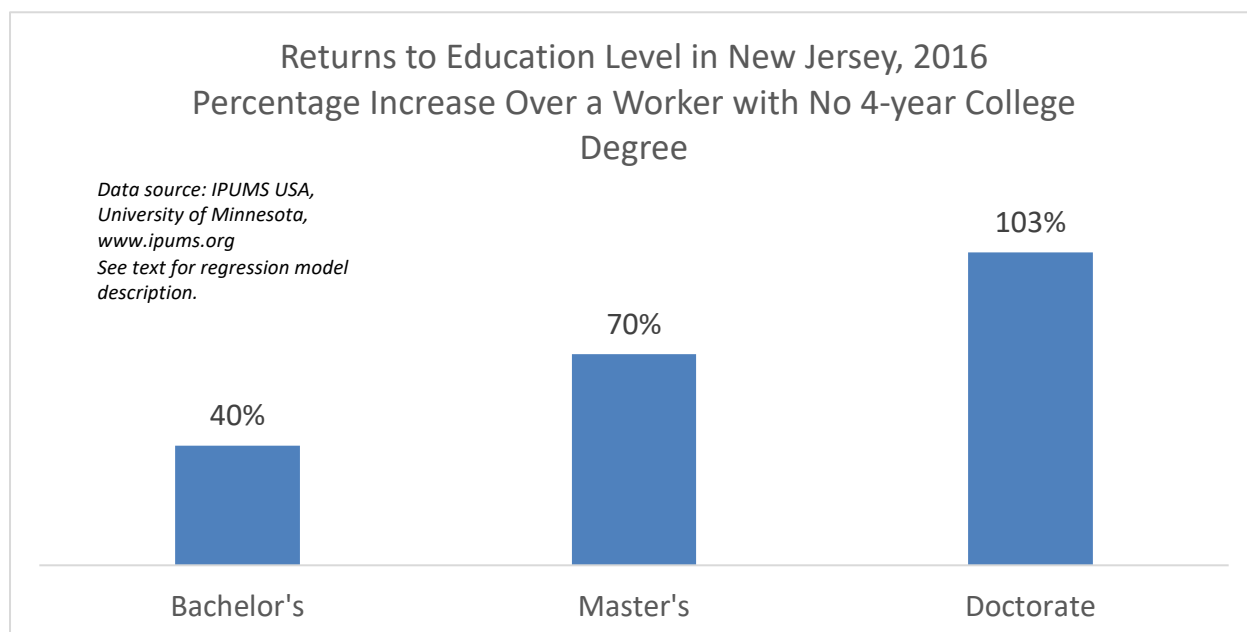
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<sup>33</sup> Steven Ruggles, Sarah Flood, Ronald Goeken, Josiah Grover, Erin Meyer, Jose Pacas, and Matthew Sobek. IPUMS USA: Version 9.0 [dataset]. Minneapolis, MN: IPUMS, 2019.

<https://doi.org/10.18128/D010.V9.0>

<sup>34</sup> N.J.A.C. 6A:9B, "State Board Of Examiners And Certification," <https://nj.gov/education/code/current/title6a/chap9b.pdf>

Figure 13



One variable often included in wage models is the number of hours worked in a typical week, the idea being that longer hours will lead to more pay. How to measure the number of hours teachers actually work, however, is a source of controversy. Teachers are more likely to report working at home than other professionals,<sup>35</sup> but the accuracy of that reporting, as for all workers, is questionable.<sup>36</sup>

Rather than struggle to verify the accuracy of the hours reported working, I run the model used here both with and without hours of work as a covariate, and report both results; further details are in the Appendix.

### The NJ Teacher Pay Gap

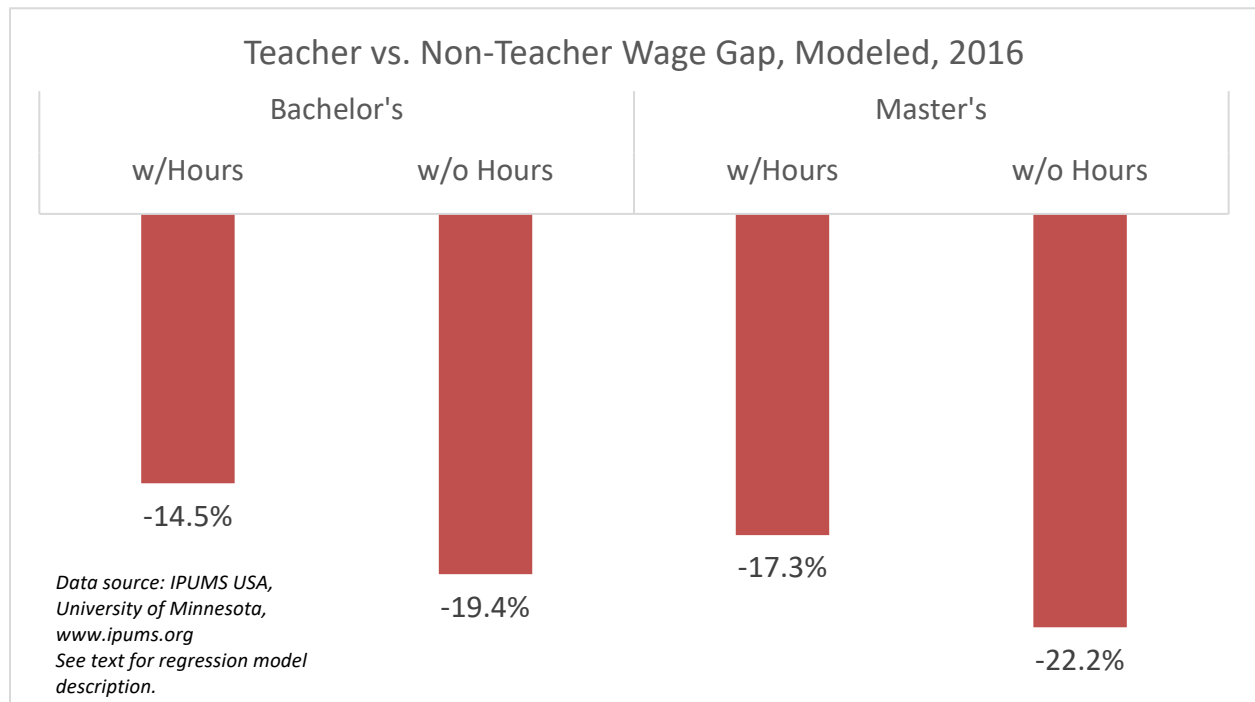
Figure 14 shows the regression-based differences in wages between teachers and non-teachers, holding weeks worked, education, and labor market differences constant. The model that also holds hours worked constant shows teachers with a bachelor's degree make, on average, 14.5 percent less than similarly educated non-teachers. The gap is greater for teachers with a master's degree: 17.3 percent.

If we remove reported hours worked from the model the gap grows: 19.4 percent for holders of a bachelor's degree, and 22.2 percent for holders of a master's.

<sup>35</sup> Krantz-Kent, R. (2008). Teachers' work patterns: when, where, and how much do U.S. teachers work? *Monthly Labor Review*, 52–59.

<sup>36</sup> West, K. L. (2014). New Measures of Teachers' Work Hours and Implications for Wage Comparisons. *Education Finance and Policy*, 9(3), 231–263. [https://doi.org/10.1162/EDFP\\_a\\_00133](https://doi.org/10.1162/EDFP_a_00133)

Figure 14



## Gender and the Teacher Pay Gap

As noted above, the majority of New Jersey teachers are women. The wage gap between male and female workers in all careers has been well-documented.<sup>37</sup> Is the teacher wage gap simply a manifestation of the wage gap between men and women?

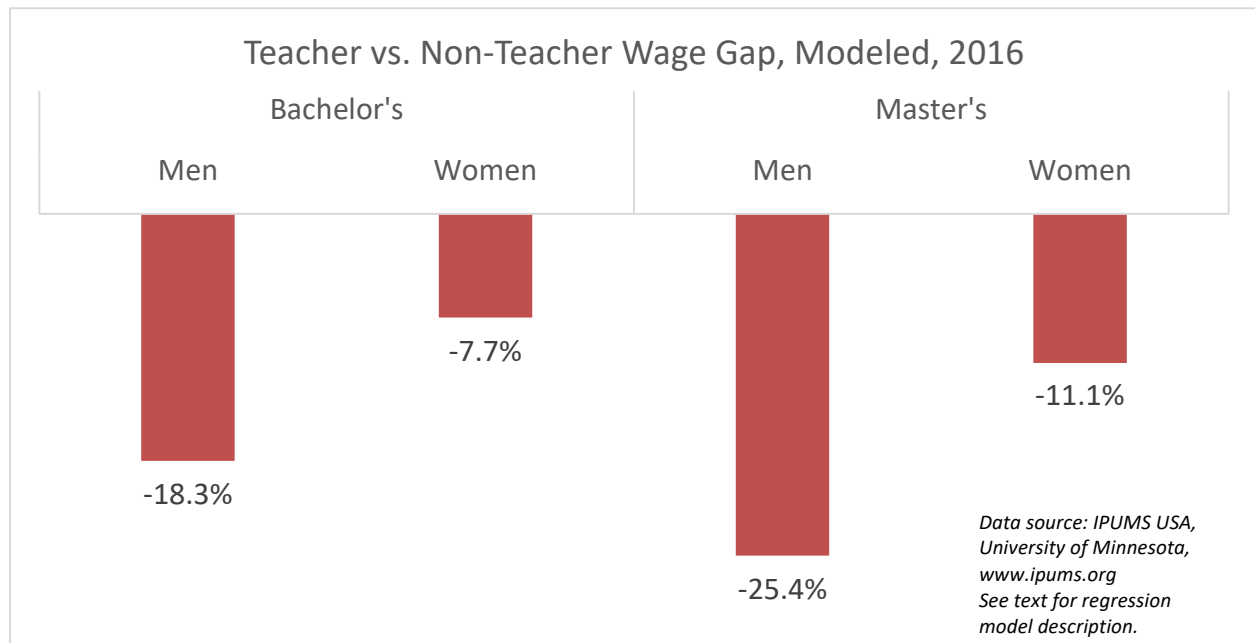
To address this question, I employ a regression model that includes gender (interacted with the teacher and education variables). The results then show different wage gaps for men and women with similar education.

Figure 15 shows that men who teach have a much larger wage gap than women when compared to workers of their own gender. Men who teach with a bachelor's degree make over 18 percent less, on average, than men who do not teach. The gap increases to over 25 percent for holders of an advanced degree.

<sup>37</sup> "New Jersey Women and the Wage Gap" (Washington, D.C.: National Partnership for Women & Families, April 2017), <http://www.nationalpartnership.org/our-work/resources/workplace/fair-pay/4-2017-nj-wage-gap.pdf>.



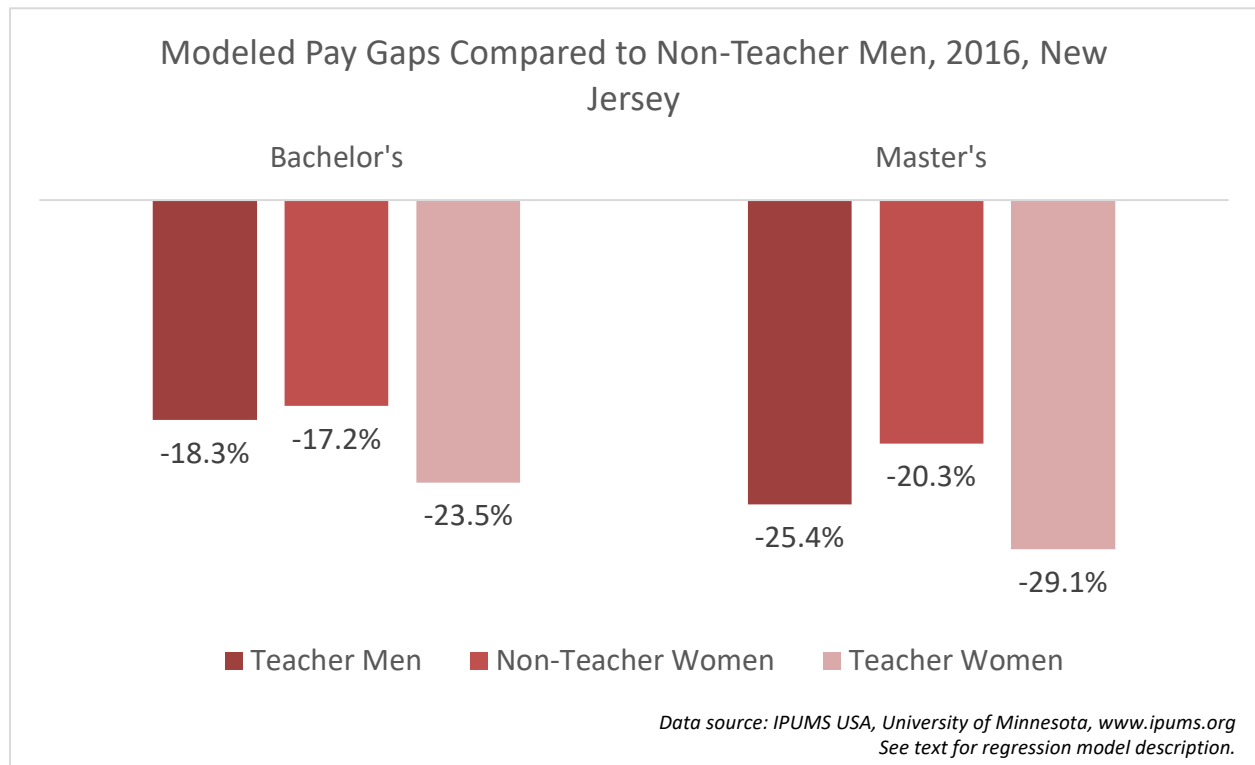
Figure 15



And yet women who teach still suffer a wage gap: nearly 8 percent for holders of a bachelor's degree, and over 11 percent for those with an advanced degree.

Another way to view these estimates is to compare teaching men, non-teaching women, and teaching women to non-teaching men. Figure 16 shows these comparisons. Men who teach and hold a bachelor's suffer a wage penalty a bit greater than non-teaching women with the same education. However, that gap grows as teaching men earn an advanced degree. Women who teach receive a double blow to their paychecks: they earn much less than non-teaching men due to a combination of both the gender pay gap and the teacher pay gap.

Figure 16



As I show above, only 1 in 5 teachers in New Jersey are male. The estimates here give a clear reason for this gender disparity: men who choose to become teachers will, on average, make far less than if they chose another career. Yet it is clear that the teacher pay gap cannot be explained entirely by the gender pay gap: women, especially if they hold an advanced degree, also pay a price for choosing to become teachers.

### Do Benefits Close the Teacher Pay Gap?

A usual response to research that shows a teacher pay gap is to point to compensation teachers receive outside of pay that is allegedly more valuable than similar compensation in the private sector: pensions, health care, and tenure, among others. It is important to note that this argument tacitly concedes that teachers do, in fact, receive lower wages for their work than similarly educated workers.

Further, the argument implicitly acknowledges that teacher retirement and healthcare benefits are necessary to make up for the gap in teacher wages. If this is the case, any changes to teacher pensions and health care that erode their value will make the overall teaching compensation gap even wider.

It has been well documented how Chapter 78, the 2011 pension and benefits law, has required teachers to contribute significantly more to their health insurance premiums and pension contributions. The New Jersey School Boards Associations has advised

the state's school boards that Chapter 78 is now the "status quo,"<sup>38</sup> and should be regarded as the baseline for contract negotiations. New Jersey's teachers, therefore, will likely be paying substantially more than they used to for their pensions and health care for the foreseeable future.

In addition, reports over the past several years have found that New Jersey's retirement and health care benefits for teachers and other public workers are not particularly generous to begin with. In a 2014 analysis for *NJ Spotlight*,<sup>39</sup> Mark Magyar found:

*Today, however, while the cost of New Jersey public employee health insurance coverage remains the third-highest in the nation, most New Jersey public employees are paying more than the national average for state government workers toward their health insurance costs, an NJ Spotlight analysis shows.*

*In fact, the average New Jersey government employee is paying more for individual health insurance coverage than government workers in any other state and the 10th-highest average premium for family coverage in the country.*

*Further, state and local government workers are paying a much higher percentage of the cost of their individual health insurance policies than private-sector employees in New Jersey have been paying, and not much less than the percentage paid by the state's private-sector workers for family coverage.*

In 2015, an NJPP analysis found: "...New Jersey ranks 95th in pension generosity among the country's 100 largest plans."<sup>40</sup> The ranking was based on the fact the New Jersey pensions have relatively low multipliers – the percentage by which the state calculates pension payments per years of service – as well as no protection for inflation and higher employee contributions than two-thirds of the other plans surveyed. In addition, a 2017 survey of teacher pensions across states found New Jersey's vesting requirement of 10 years to be among the highest in the nation.<sup>41</sup>

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<sup>38</sup> New Jersey School Boards Association, "Chapter 78 – Negotiating Over Health Benefits Costs," <https://www.njsba.org/services/labor-relations/resources/chapter-78/>

<sup>39</sup> Mark J. Magyar, "Analysis: Nj Public Employees Pay High Percentage Of Healthcare Costs," *NJ Spotlight*, November 18, 2014. <https://www.njspointlight.com/stories/14/11/18/analysis-nj-public-employees-pay-high-percentage-of-healthcare-costs/>

<sup>40</sup> Stephen Herzenberg, "New Jersey Has Modest Public Pension Benefits," (New Jersey Policy Perspective, December 17, 2014). <https://www.njpp.org/reports/new-jersey-has-modest-public-pension-benefits>

<sup>41</sup> Kirsten Schmitz and Chad Aldeman, "Retirement Reality Check: Grading State Teacher Pension Plans" (Bellwether Education Partners, June 2017), [https://www.teacherpensions.org/sites/default/files/Retirement%20Reality%20Check\\_Grading%20State%20Teacher%20Pension%20Plans.pdf](https://www.teacherpensions.org/sites/default/files/Retirement%20Reality%20Check_Grading%20State%20Teacher%20Pension%20Plans.pdf).

Allegretto and Mishel's 2018 report for EPI<sup>42</sup> found that, nationally, teacher benefits are not generous enough to make up for their wage gap. Keefe's 2017 EPI report specific to New Jersey<sup>43</sup> also found retirement and health care benefits do not close the teacher pay gap. In addition, federal data shows that New Jersey is not an outlier when it comes to budgeting for teacher benefits: the state spends 16.7 percent of current expenditures on instruction and instruction-related staff benefits, compared to a national average of 16.5 percent.<sup>44</sup>

In summary, there is little reason to believe non-wage compensation makes up for New Jersey's teacher pay gap. And any continued erosion of teacher pensions and health care benefits will only make the overall compensation gap even wider.

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<sup>42</sup> Allegretto and Mishel, "The Teacher Pay Penalty Has Hit a New High."

<sup>43</sup> Keefe, "New Jersey Public School Teachers Are Underpaid, Not Overpaid."

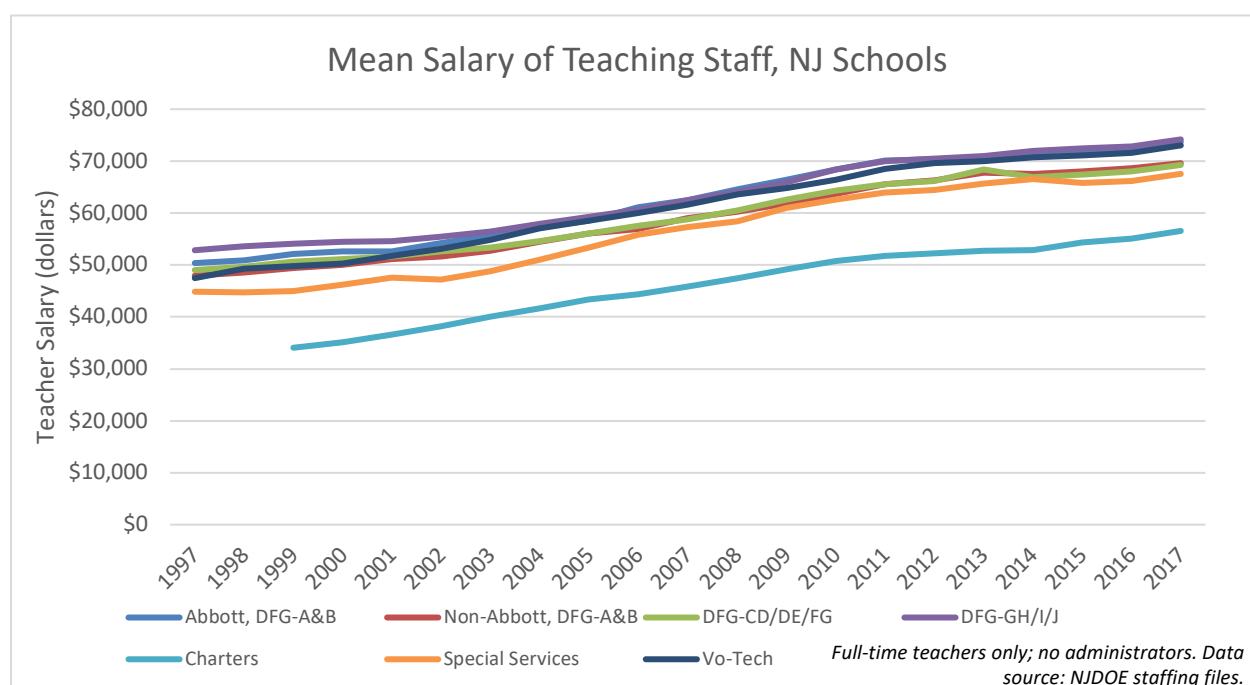
<sup>44</sup> Cornman, S.Q., Ampadu, O.L., Wheeler, S., and Zhou, L. (2018). *Revenues and Expenditures for Public Elementary and Secondary School Districts: School Year 2014–15 (Fiscal Year 2015): First Look* (NCES 2018-303). U.S. Department of Education. Washington, DC. National Center for Education Statistics. <http://nces.ed.gov/pubsearch>.

## Teacher Pay Across NJ School Districts

In this section, I explore how teacher pay varies across different types of New Jersey school districts. The topic is important, as districts with lower property values – and thus, a lower tax base – may have difficulty competing with more affluent districts for well-qualified teaching staff. There is also evidence that districts with higher levels of student poverty may need to offer prospective employees higher compensation to attract well-qualified and fully credentialed teachers.<sup>45</sup>

Figure 17 shows the unadjusted average salary of teachers in New Jersey over two decades. Unsurprisingly, salaries have risen; however, there is a clear slowing of that rise following the Great Recession of 2008. Charter school salaries lag significantly behind all other districts; however, without adjusting salaries for experience and other factors, it is impossible to tell why charter wages lag.

Figure 17



<sup>45</sup> James Cowan and Dan Goldhaber, “Do Bonuses Affect Teacher Staffing and Student Achievement in High Poverty Schools? Evidence from an Incentive for National Board Certified Teachers in Washington State,” *Economics of Education Review* 65 (August 2018): 138–52, <https://doi.org/10.1016/j.econedurev.2018.06.010>; Charles Clotfelter et al., “Would Higher Salaries Keep Teachers in High-Poverty Schools? Evidence from a Policy Intervention in North Carolina,” *Journal of Public Economics* 92, no. 5–6 (June 2008): 1352–70, <https://doi.org/10.1016/j.jpubeco.2007.07.003>; Charles Clotfelter, Helen Ladd, and Jacob Vigdor, “Teacher Mobility, School Segregation, and Pay-Based Policies to Level the Playing Field,” *Education Finance and Policy* 6, no. 3 (2011): 399–438.

To begin to account for salary differences due to experience, Figure 18 shows the average salary for 2017 by experience level for different types of districts; here, I only include regular districts. The most affluent districts – DFG-GH/I/J – pay more than non-Abbott DFG-A&B districts and DFG-CD/DE/FG districts at every stage of a teacher’s career. The former Abbott districts are competitive on pay with the most affluent districts at the beginning and end of a teacher’s career; however, the Abbotts lag for a period for mid-career teachers before catching up later. It is worth noting that the average salary for the most senior teachers in all districts is still under \$100,000.

Figure 18

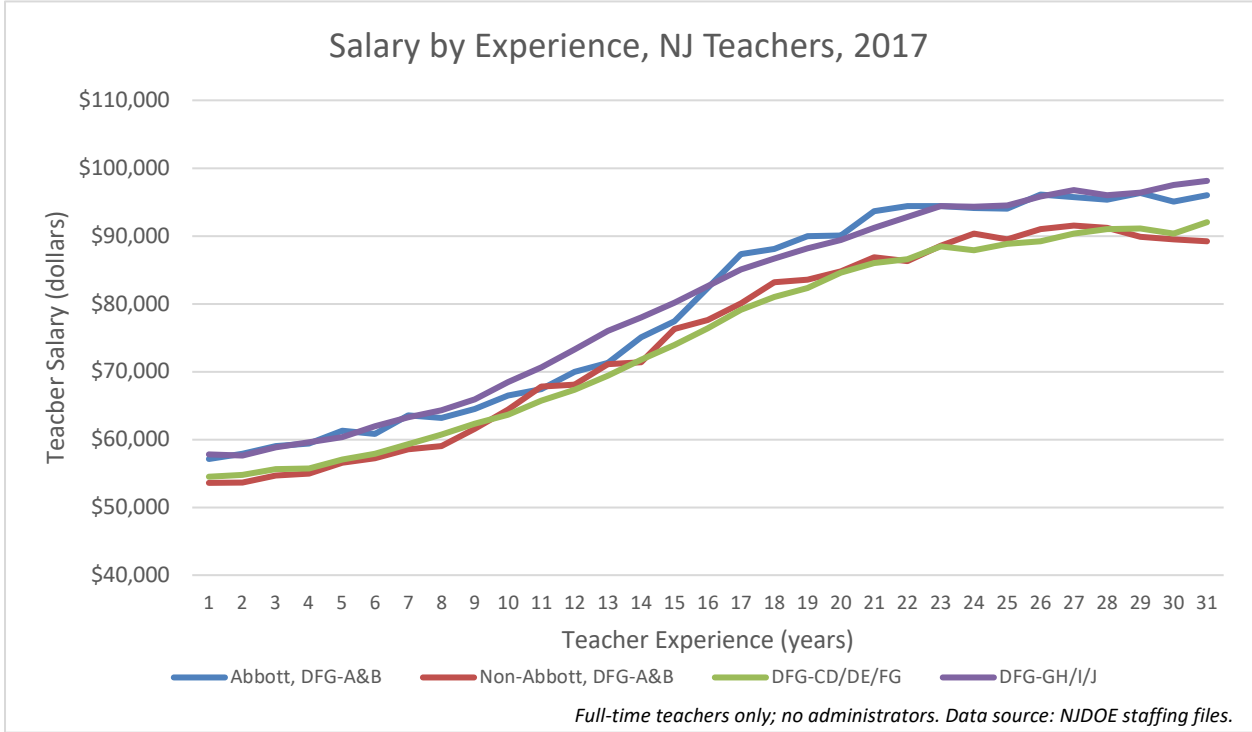
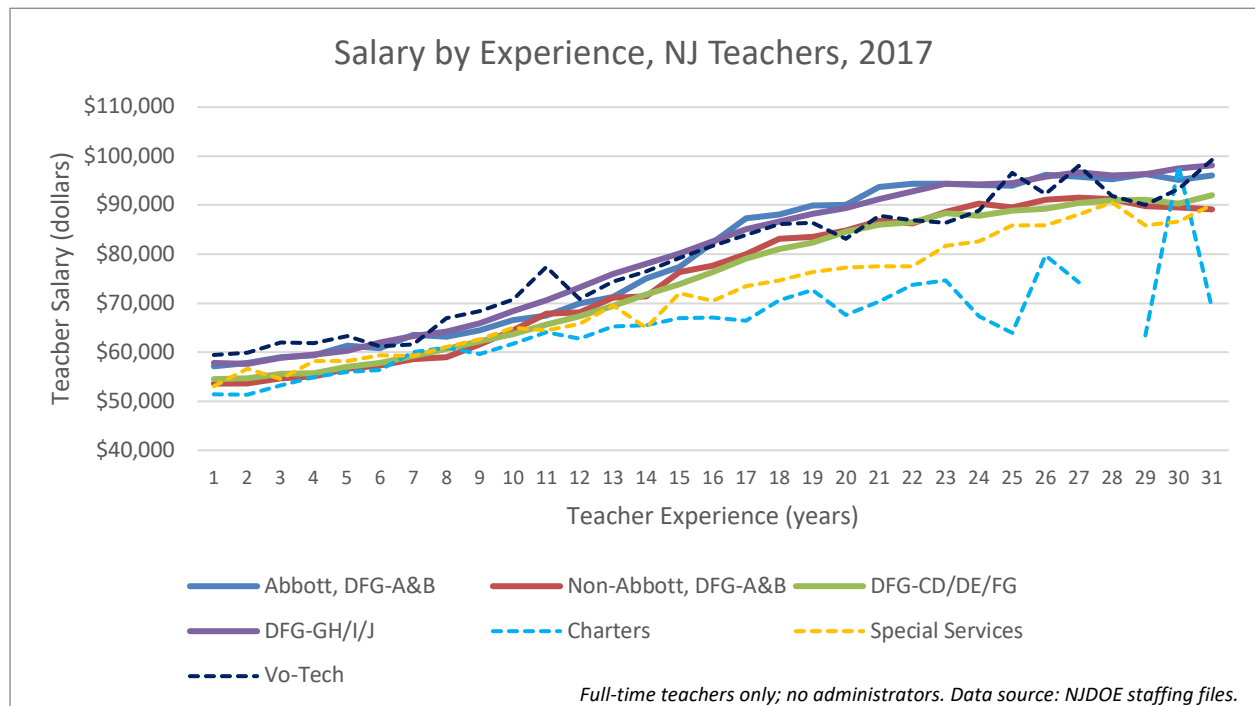


Figure 19 replicates the previous graph, but now adds charter schools, special services districts, and vo-techs. The large swings in charter salaries over year 20 are due to the fact that so few charter teachers have that much experience. In general, however, the charter pay gap appears to grow as experience increases. Special services districts also lag compared to regular districts as experience grows. Vo-tech pay lags former Abbott and affluent districts somewhat in the third decade of experience.

Figure 19



## Modeled Salaries Across NJ Districts

To further explore differences in teacher salaries between districts, I once again employ a regression model; see the Appendix for details. The model accounts for the following factors that affect teacher pay:

- Experience.
- Credentials.
- Time worked (full-time vs. part-time).
- Education.
- Job type.
- Year-to-year changes in wages.
- Labor market effects.

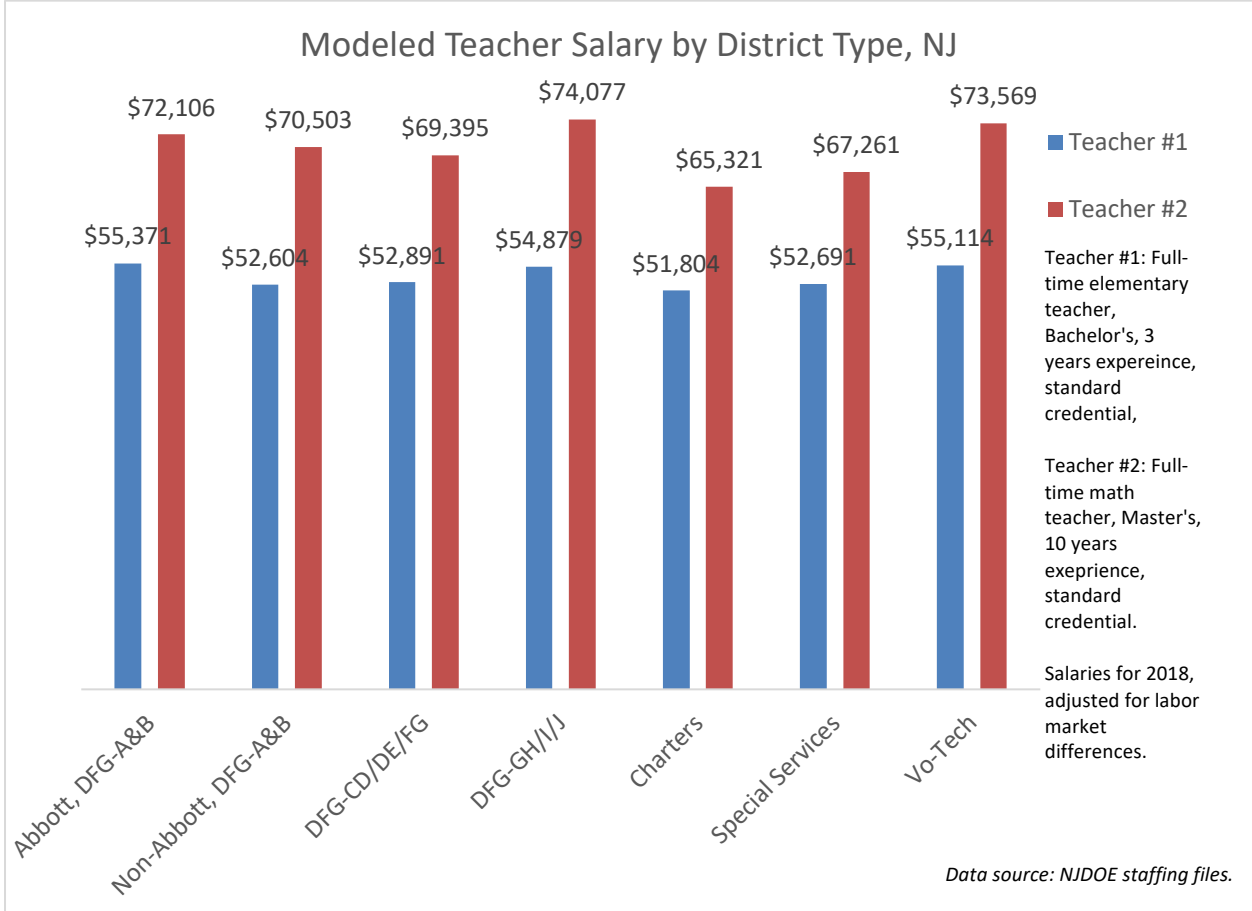
To show the wages differences between districts, I use two examples derived from the model:

- An elementary teacher with a bachelor's degree, working full-time, with 3 years of experience and a standard credential.
- A math teacher with a master's degree, working full-time, with 10 years of experience and a standard credential.

The modeled salaries for these two hypothetical teachers in various types of districts are shown in Figure 20. For the less experienced elementary teacher, Abbott districts salaries are competitive; however, it is difficult to know if the somewhat higher salaries offered in these districts is enough to attract the most qualified candidates away from the most affluent school districts. The pay in non-Abbott DFG-A&B districts and in DFG-CD/DE/FG districts lags compared to both the former Abbotts and the most affluent districts, as does pay in the charters.<sup>46</sup>

For the more experienced and more highly educated math teacher, salaries are most competitive in the most affluent districts. This teacher would suffer a wage penalty of nearly \$5,000 to teach in DFG-CD/DE/FG district compared to an affluent district, and an even larger penalty to teach in a charter school.

Figure 20



<sup>46</sup> While special services and vo-tech pay is presented, it is less likely the hypothetical teachers here would actually have jobs in those districts than they would in charter schools or regular districts.



## Summary and Conclusions

Regarding the New Jersey teacher workforce, this report finds the following:

- **The teaching workforce is largely white and female; there is little evidence of a trend toward a more diverse teaching corps.** The percentage of Hispanic teachers has gone up slightly while the percentage of black teachers has fallen. Proportionally, fewer men are teaching in New Jersey than 20 years ago.
- **A demographic bubble has passed through the teacher workforce, but another bubble is coming, leading to more retired teachers.** This trend has important implications for New Jersey's beleaguered pension system.
- **Affluent districts tend to have more teachers with advanced degrees and appear to pay a premium to attract and retain them.** The research on teacher effectiveness and advanced degrees is thin; however, it appears the most affluent New Jersey districts value teachers who have advanced degrees.
- **There is a significant gap in wages between New Jersey teachers and other similarly-educated workers, even accounting for differences in time worked.** On average, a teacher with a bachelor's degree will see a wage gap of 14.5 percent compared to a similarly educated worker in another profession.
- **New Jersey teachers have a much smaller return to wages from earning an advanced degree than other workers.** Teachers with a master's degree make 17.3 percent less, on average, than other workers with a master's degree.
- **While the teacher pay gap is partially explained by the gender pay gap, women still suffer a wage penalty for going into teaching.** College-educated women continue to make less, on average, than college-educated men. But women who teach make substantially less than women who do not. In addition, men who teach see a substantial gap in their wages compared to men who do not.
- **Previous analyses have shown pensions and health benefits do not fully close the teacher pay gap.** There is little reason to believe pensions and health care benefits close the teacher wage gap. That gap would also increase if New Jersey teachers' benefits were further eroded.
- **The former Abbott districts and most affluent districts pay their teachers more than other districts.** Teachers in non-Abbott DFG-A&B districts and DFG-CD/DE/FG districts lag behind their colleagues in the Abbotts and the most affluent districts. It is unknown, however, if the higher wages in the Abbotts are enough to attract highly qualified candidates away from other types of districts.
- **Charter schools and special services districts have the least competitive salaries.** Even accounting for experience, charter school salaries are less competitive than those in regular school districts.

Based on the findings in this report, I make the following recommendations:

- 1. New Jersey must offer competitive wages and other compensation to attract qualified workers into teaching.** Qualified workers will pay a wage penalty if they choose to become New Jersey teachers. The state cannot hope to continue to attract the best candidates into its schools unless and until it addresses the disparity in pay between teaching and other professions.
- 2. Given the wage gap for teachers, New Jersey should not degrade the value of pensions and benefits, which help to close that gap.** While the evidence all suggests that pensions and health care do not close the teacher wage gap, any further erosion of benefits will make that gap even worse. Certainly, the state should take steps to reduce health care costs and shore up its pension obligations. But doing so at the expense of teachers runs the risk of making it even more difficult to attract workers into a profession that already lags in pay.
- 3. The state needs to make teacher compensation competitive in *all* of its districts, not just the affluent ones.** The most affluent districts in New Jersey pay their teachers more than less-affluent districts. Former Abbott districts are closer in pay, but other less-affluent districts lag behind. In order to provide all schools with good teachers, these districts must also be able to offer competitive pay.
- 4. New Jersey should take steps to make its teaching workforce more diverse.** The state's teaching workforce is overwhelmingly white and female. Targeted recruitment of teachers of color and male teachers may be useful; however, it is doubtful that New Jersey will be able to attract a more diverse group of teaching candidates until the teacher pay gap is addressed.

## Appendix

### Data Sources

Data on teacher characteristics and the salary differences across districts are from the New Jersey Department of Education's staffing files. These files were delivered upon an Open Public Records Act (OPRA) request.

Data on student characteristics are from the NJDOE's enrollment files:

<https://nj.gov/education/data/enr/>

Data used for comparisons of teacher and non-teacher salaries are from IPUMS USA:

*Steven Ruggles, Sarah Flood, Ronald Goeken, Josiah Grover, Erin Meyer, Jose Pacas, and Matthew Sobek. IPUMS USA: Version 9.0 [dataset]. Minneapolis, MN: IPUMS, 2019.*  
<https://doi.org/10.18128/D010.V9.0>

### About the Models

#### Teacher Wages Compared to Other Workers

The regression model used for this section takes the form:

$$wage(\ln) = f(\text{teacher} * \text{education}, \text{age}(\ln), \text{hours}(\ln), \text{weeksworked}, \text{labormarket}, \text{year})$$

As is typical for wage models, I use the natural log of wages as the dependent variable; the gaps are calculated using marginal effects that are retransformed. Hours are excluded from the models when specified.

The study group has these characteristics:

- At least a bachelor's degree.
- Yearly wage income of at least \$30,000 per year.
- At least 25 per week of work, but no more than 70.
- Age between 25 and 65.

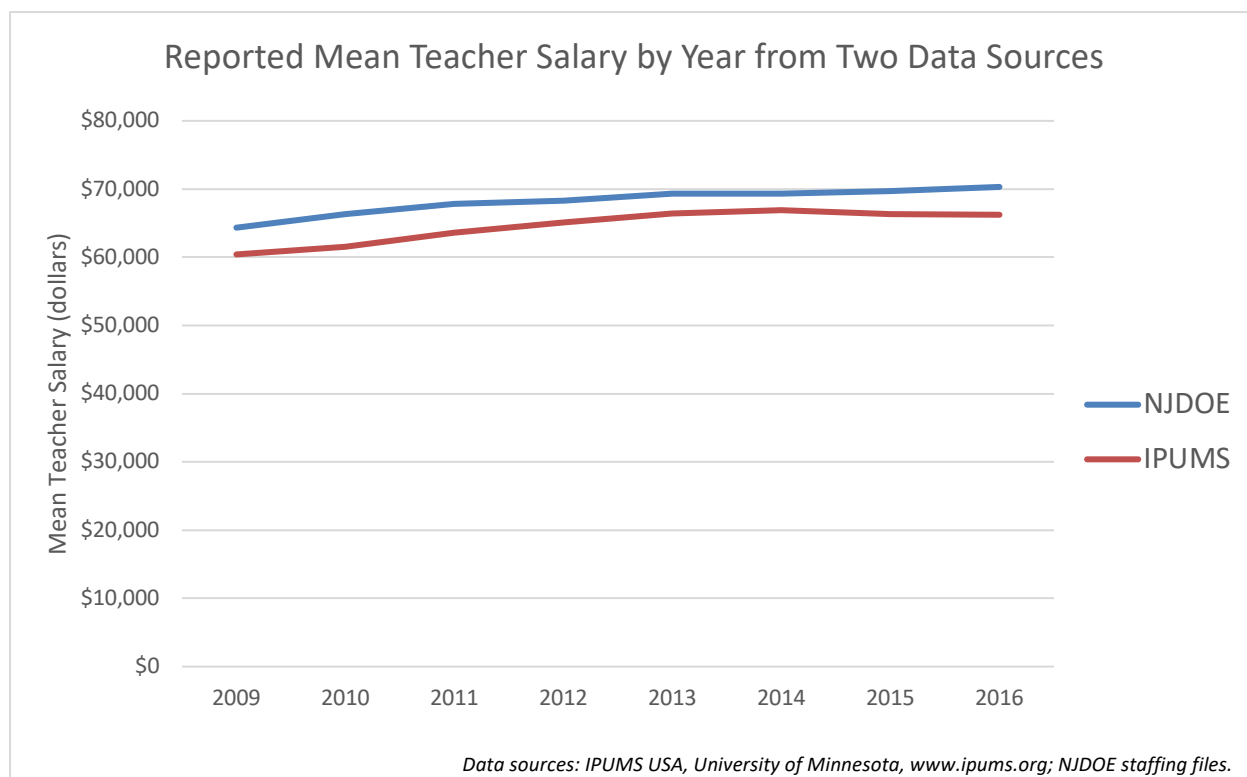
Labor markets are first defined using the Education Comparable Wage Index.<sup>47</sup> I combine several of the smaller labor markets to create three larger ones that roughly correspond to North, Central, and South New Jersey.

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<sup>47</sup> Lori Taylor, "Extending the NCES CWI" (Bush School of Government and Public Service, Texas A&M University, 2016), [http://bush.tamu.edu/research/faculty/Taylor\\_CWI/](http://bush.tamu.edu/research/faculty/Taylor_CWI/). [https://bush.tamu.edu/research/faculty/Taylor\\_CWI/](https://bush.tamu.edu/research/faculty/Taylor_CWI/)

As noted in the text, the ACS data does not clearly delineate between public and private school teachers. Again, this likely biases the gap between public school teachers and other workers upward, as private school teachers likely make less than public school teachers. Figure 21 shows the difference in mean teacher salaries for the years between 2009 and 2016 for the two data sources used in this report. NJDOE staffing data, depending on the year, shows teacher salaries between 3.6 and 7.8 percent higher than the IPUMS data. We do not know how much of this gap may be attributed to the inclusion of private school teachers in the IPMUS data; however, given comparisons to other research on New Jersey teacher wages, it is unlikely this gap is fully explained by that inclusion.

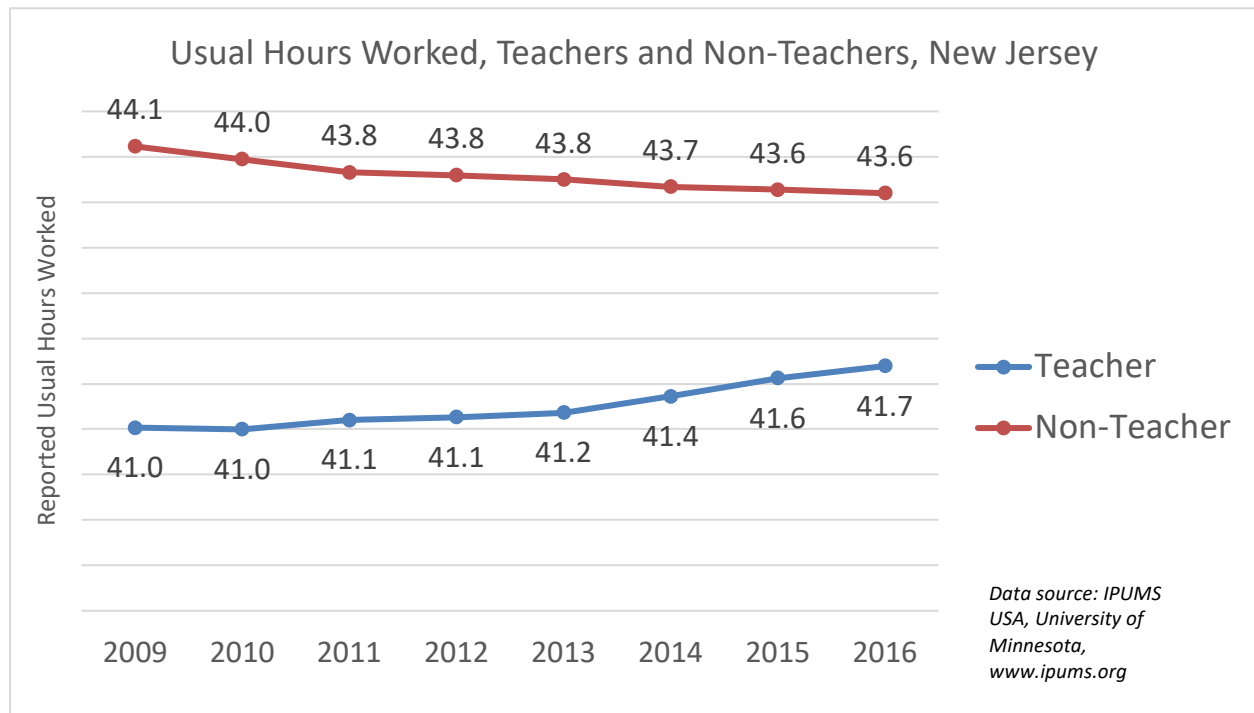
Figure 21



As I state in the text, there is some question as to the validity of the data regarding the hours teachers work compared to other workers. Figure 22 shows the mean difference in hours worked for the study group in the IPUMS data. Interestingly, reported hours worked have risen for teachers since 2013, while hours worked for non-teachers have decreased. The rise in teacher hours coincides with the passage of TEACHNJ, New Jersey’s 2012 overhaul of teacher tenure and evaluation.<sup>48</sup> It is possible teachers are working longer hours – or perhaps *perceive* that they are working longer hours – since the passage of that act, and other changes such as the implementation of new learning standards.

<sup>48</sup> New Jersey Department of Education, AchieveNJ, Frequently Asked Questions, [https://www.nj.gov/education/genfo/faq/faq\\_eval.shtml#tenure](https://www.nj.gov/education/genfo/faq/faq_eval.shtml#tenure)

Figure 22



The model that includes gender takes the form of:

$$wage(\ln) = f(\text{teacher} * \text{education} * \text{gender}, \text{age}(\ln), \text{hours}(\ln), \text{weeksworked}, \text{labormarket}, \text{year})$$

Finally, the model that describes the returns on education for all workers is:

$$wage(\ln) = f(\text{education}, \text{gender}, \text{age}(\ln), \text{hours}(\ln), \text{weeksworked}, \text{industry}, \text{labormarket}, \text{year})$$

### Teacher Wages Across School Districts

The regression model for this section is:

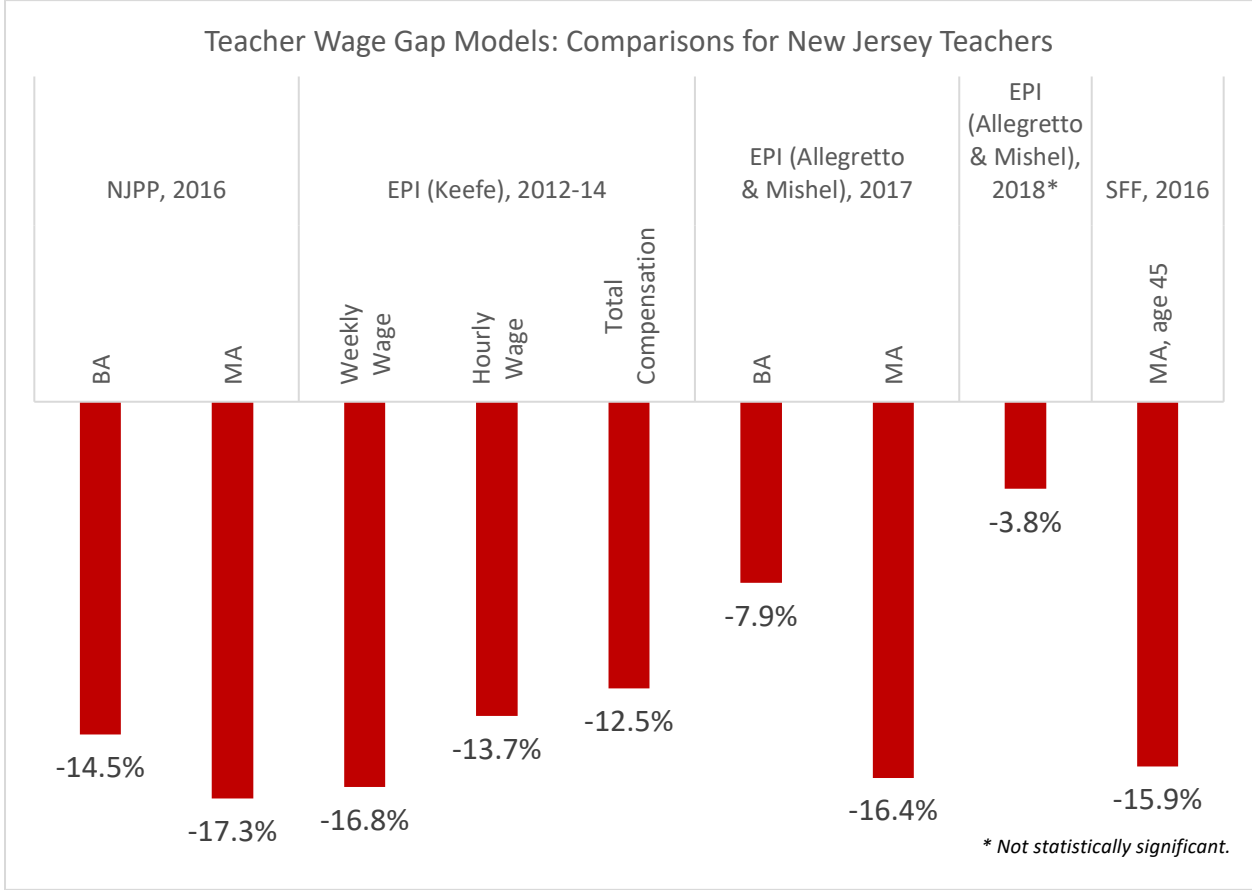
$$wage(\ln) = f(\text{DFG} * \text{totalexperience}, \text{credential}, \text{FTE}, \text{highestdegree}, \text{jobcodelargecategory}, \text{year} * \text{labormarket})$$

The District Factor Groups (DFGs) are compressed as described in the text. Job codes are compressed by large category according to NJDOE coding; for example, all music teachers are grouped together under “music,” rather than by separate codes for “vocal music,” “instrumental music,” etc. FTE is “full-time equivalent,” where 1 is a full-time job. The reported differences of the two examples across the DFGs are predicted values using marginal effects.

## Model Comparisons

Replicating is a hallmark of good social science research. Here, I compare the estimates of the teacher wage gap to previous studies, using different methods and/or different data. The dates refer to the latest date of the data used in the study.

Figure 23



In general, the results I find in this report match estimates from other sources. By far, the largest outlier is the recent national study of the teacher wage gap by Allegretto & Mishel,<sup>49</sup> which reports a much smaller gap for New Jersey teachers than any other research – including their own study from the previous year. The authors detail substantial changes they made in their methods for this latest study, which appear to have significantly diminished estimates of New Jersey’s teacher pay gap.

New Jersey is not the only state to have seen a significant change in its teacher pay gap between the two iterations of this report. I hope the authors will address the causes for this shift in future work.

<sup>49</sup> Allegretto and Mishel, “The Teacher Weekly Wage Penalty Hit 21.4 Percent in 2018, a Record High.”

## About the Author

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