# Regulations Governing the Certification of Educators in Rhode Island
# Benefit-Cost Analysis

Rhode Island Department of Education | August 2018

## Introduction

The Rhode Island Department of Education (RIDE) has undertaken an update of its teacher certification regulations. These regulations impact the almost 16,000 educators who are certified to work in Rhode Island. RIDE has attempted to both update the regulation using education policy best practices, and to respond to the feedback from the many stakeholders in public education.

## Scope

This analysis considers regulatory provisions where RIDE exercised discretion and does not analyze any provision mandated by state or federal law. The scope of the analysis is 20 years, from 2018 through 2038. This 20-year horizon is justified by fact that the benefits are seen over the entire lifetime of the students being educated. The costs are subtracted from the benefits to calculate a net benefit. To analyze benefits and costs that occur at different times, this analysis uses discount rates to calculate a present value for all future costs and benefits. Discount rates of three percent and seven percent are used as a sensitivity analysis. The table below summarizes the net present value of those provisions analyzed.

## Summary

This analysis looks in depth at two regulatory amendments and computes cost and benefits for each. These provisions are (1) an increase of required time spent student teaching from 12 to 24 weeks (the residency requirement), and (2) a new professional learning requirement of 30 hours per year per educator. Additional regulatory changes that could not be quantified, either because of a lack of data or a de minimis impact, are discussed in the section titled “Additional Regulatory Changes.”

| ***Item*** | ***Net Benefit (2018-2038), 3% Discount Rate*** | ***Net Benefit (2018-2038), 7% Discount Rate*** |
|---|---|---|
| Residency | ($20,450,401) | ($14,716,327) |
| Professional Learning | $763,256,712 | $363,254,451 |
| **Total** | **$742,806,312** | **$348,538,125** |

## Alternatives

Following the discussion of amendments analyzed, there is a discussion of regulatory alternatives that were considered for several of the provisions.

## Conclusion

This analysis shows a positive net benefit for the entire proposed regulation over a 20-year analytical horizon. The residency requirement shows a negative net benefit

because it takes time for teachers trained under this requirement to grow as a share of the total workforce, which delays the accrual of benefits. However, RIDE also recognizes the increased, but unquantifiable, benefits from residency in less new teacher turnover and better recruitment in high-need subjects. Taking all of the potential benefits into account, the enhanced residency requirement is expected to provide net positive benefits to the state.

## Determination

This analysis was drafted pursuant to R.I. Gen. Laws § 42-35-2.9. As required by this statute, RIDE has determined that the benefits of the proposed rule justify the costs and that the proposed rule will achieve the objectives of the authorizing statute in a more cost-effective manner, or with greater net benefits, than other regulatory alternatives.

# Residency

## Proposed Change

This amendment would require teacher training programs to offer 24 weeks of residency (student teaching), an increase from the current 12 weeks.

## Regulatory Citation

1.6(C)

## Costs

This requirement takes effect in 2022. The practical effect of this amendment is that teachers in training will spend less time taking education classes and more time student teaching. Because participation in a teacher training program is unpaid (including any time spent teaching), the implicit value of the labor of these students is $0. However, some fraction of teachers in training have regular jobs and take classes at night. The time this cohort spends student teaching (which is during regular work hours) reduces their hours available for paid labor. This analysis assumes that 23% of the 800 annual completers of teacher training programs work outside the classroom. This 23% figure is the national percentage of students in four-year institutions who attend part time.[1] This cohort experiences a loss of available time to work in a paid job equal to 12 weeks at eight hours per day. To calculate a cost, labor is valued at the Rhode Island median hourly wage for all occupations, $25.54.[2]

There are expected to be additional costs to teacher training programs who need to employ more supervisors to oversee and observe student teachers. Local districts will also need to provide more cooperating teachers, or at least dedicate more time from the current group of cooperating teachers. However, teacher training programs will also see a reduction in classroom instruction needed as students spend more time in schools, and local districts will experience the benefit of employing unpaid student teachers to take part of their course load. These specific costs and benefits are not analyzed here.

| | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Value of labor forgone by | $0 | $0 | $0 | $0 | $2,255,693 | $2,255,693 | $2,255,693 | $2,255,693 | $2,255,693 | $2,255,693 | $2,255,693 |

1 “Characteristics of Postsecondary Students,” National Center for Education Statistics, https://nces.ed.gov/programs/coe/indicator_csb.asp.
2 May 2017 State Occupational Employment and Wage Estimates, Rhode Island, Bureau of Labor Statistics, https://www.bls.gov/oes/current/oes_ri.htm.

| | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 | 2038 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| student teachers | $2,255,693 | $2,255,693 | $2,255,693 | $2,255,693 | $2,255,693 | $2,255,693 | $2,255,693 | $2,255,693 | $2,255,693 | $2,255,693 | |

## Benefits

### Quantifiable Benefits – Student Achievement

Increased residency requirements are expected to improve teacher performance, especially among teachers at the beginning of their careers. There is empirical work that supports this finding. A study by Boyd et al. of the effectiveness of teachers in New York City schools notes that: "Teacher preparation that focuses more on the work of the classroom and provides opportunities for teachers to study what they will be doing produces teachers who are more effective during their first year of teaching."[3] A study by Papay et al. finds that a residency program in Boston actually improved teacher performance in the fourth and fifth years of teacher, instead of in the first year.[4]

| **Calculating the Benefit of Residency** | |
|---|---|
| Benefit of residency program for student achievement | 0.04 SD |
| Change in student achievement for 1 SD change in teacher quality | 0.12 SD |
| Implied teacher quality improvement needed to realize benefit of residency program | 0.04 / 0.12 = 0.33 |
| Rhode Island per capita income | $31,904 |
| Increase in annual wages starting at age 28 for a 1 SD increase in teacher quality in a single year | 1.3% |
| Increased annual wages for a student taught for a single year by a teacher who participated in residency | $31,905 x 0.33 x 1.3% = $138.25 |

3 Boyd, D. et al., "Teacher Preparation and Student Achievement," NBER Working Paper No. 14314, http://www.nber.org/papers/w14314, page 26.
4 Papay, J. et al., "Does Practice-Based Teacher Preparation Increase Student Achievement? Early Evidence from the Boston Teacher Residency," NBER Working Paper No. 17646, http://www.nber.org/papers/w17646, page 3.

| program | |
|---|---|
| Increased wages for a student taught for all 13 years by a teacher who participated in residency program | $138.25 x 13 = $1,797.26 |

The study by Papay et al. found that the Boston residency program improved student achievement by 0.04 standard deviations (SD) per year. A research paper by Chetty et al. determined that for a one standard deviation increase in teacher quality in a single year, a typical student would see a 1.3% annual increase in wages starting at age 28.[5] Because these studies measure different things (student achievement and teacher quality), RIDE needed to find a way to convert a change in student achievement to a change in teacher quality. A different paper by Chetty et al. found that a one standard deviation improvement in teacher quality improves student test scores by 0.14 SD in math and 0.1 SD in English (averaged to 0.12 SD for this analysis).[6] This implies that a 0.04 SD increase in student achievement must be caused by a 0.33 SD increase in teacher quality (0.04 / 0.12 = 0.33).

To calculate the benefit, two other estimates are needed: (1) the income boost per year, and (2) the number of students impacted. The baseline income is Rhode Island per capita income, reported by the U.S. Census Bureau at $31,904.[7] For an individual student taught for a single year by a teacher who undertook the enhanced residency program, a $138.25 boost in wages per year is expected starting at age 28 (see chart). The number of students impacted is estimated by looking at the share of new teachers to the total number of teachers (800/15,988 = 5%) and multiplying that fraction by the number of graduates (8,715 x 5% = 436).[8] This means that in 2023 (one year after the residency requirement goes into effect), 436 graduates are expected to see an annual boost in their income by $138.25 starting in 2033. The next cohort is expected to be 872 students (percentage of teachers who participated doubles to 10%), and the benefit is $276.50 annually starting in 2034 (the benefit doubles because these graduates are taught by teachers who participated for two years). This pattern repeats, with more graduates accruing more benefit every year, as shown below:

| | **2018** | **2019** | **2020** | **2021** | **2022** | **2023** | **2024** | **2025** | **2026** | **2027** | **2028** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benefit of enhanced | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| | **2029** | **2030** | **2031** | **2032** | **2033** | **2034** | **2035** | **2036** | **2037** | **2038** | |

5 Chetty, R. et al., “Measuring the Impacts of Teachers II: Teacher Value-Added and Student Outcomes in Adulthood,” NBER Working Paper No. 19424, http://www.nber.org/papers/w19424.pdf, page 2.
6 Chetty, R. et al., “Measuring the Impacts of Teachers I: Evaluating Bias in Teacher Value-Added Estimates,” NBER Working Paper No. 19423, http://www.nber.org/papers/w19423.pdf, page 2.
7 QuickFacts: Rhode Island, U.S. Census Bureau, https://www.census.gov/quickfacts/fact/table/ri/PST045217.
8 InfoWorks!, Rhode Island Department of Education, http://infoworks.ride.ri.gov/state/ri; Rhode Island Department of Education Information Services, Reports, http://www.eride.ri.gov/reports/reports.asp.

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| earnings by | $0 | $0 | $0 | $0 | $60,288 | $301,440 | $844,031 | $1,808,638 | $3,315,837 | $5,486,203 | |

## Net Present Value (2018-2038)

| | |
|---|---|
| 3% Discount Rate | ($20,450,401) |
| 7% Discount Rate | ($14,716,327) |

## Unquantifiable Benefits – Teacher Recruitment and Retention

Programs with a 24 week residency requirement are designed to also: (1) lessen new teacher turnover; and (2) recruit new teachers in high-need subject areas such as English Language Learners, special education, mathematics, and science. RIDE expects that these benefits to districts and their students to be commensurately greater as a result of this enhanced residency program. However, the magnitude of these benefits is quantitatively unknown due to a paucity of data on this subject. Therefore, RIDE includes this as a qualitative adjustment offsetting the costs as increased the net benefits.

The Boston residency program study by Papay et al. cited in the above section also found that the district was successful in recruiting more new teachers in high-need subject areas, with a focused increase on math and science teachers.[9] Additionally, the Boston residency program was successful in increasing diversity among new teachers who better reflect district demographics leading to enhanced student engagement and achievement.[10] A study by Gunha, et al. for the Learning Policy Institute found similar success in residency programs nationwide for the recruitment of a more diverse workforce in high-need subject areas.[11]

Enhanced residency programs have further benefitted districts and students through a decrease in new teacher turnover. The Gunha, et al. study found that nationally, approximately 20 to 30% of new teachers leave teaching within the first five years. However, school districts employing graduates of enhanced residency programs have had

9 Papay, J. et al., "Does Practice-Based Teacher Preparation Increase Student Achievement? Early Evidence from the Boston Teacher Residency," NBER Working Paper No. 17646, http://www.nber.org/papers/w17646, page 12.
10 *Id.*, at page 12.
11 Gunha, et al. , "The Teacher Residency: An Innovative Model for Preparing Teachers," Learning Policy Institute (2016) https://learningpolicyinstitute.org/sites/default/files/product-files/Teacher_Residency_Innovative_Model_Preparing_Teachers_REPORT.pdf, page 13.

a retention rate of 70-80% after five years.[12] These findings were also echoed in similar studies by Silvia, et al.,[13]and Paypay, et al.[14] Silvia, et al. found that in 6 districts served by 12 residency programs under the U.S. Department of Education Teacher Quality Participation (TQP) program; residency graduates were more likely to be retained in their districts after 3 years. The Paypay et al. study found that in the Boston program, approximately 75% of new teachers who were residency graduates remained in the profession after five-years as opposed to normal 49% attrition rate in the district. This study further found that while 17% of "novice" teachers left after one year, this attrition rate was reduced to 12% for residency program graduates. [15]

RIDE notes that the all of the programs studied and implemented to date have been based on one (or more) school districts within a state. The regulation's 24 week residency program would be the first to be implemented on a statewide basis. It is for the above reasons, that RIDE concludes that the benefits of this program total as a net benefit.

12 *Id.*, at page 14.
13 Silvia, et al., "NEW FINDINGS ON THE RETENTION OF NOVICE TEACHERS FROM TEACHING RESIDENCY PROGRAMS" (2015) https://ies.ed.gov/ncee/pubs/20154015/pdf/20154015.pdf, page 13.

14 Papay, J. et al., "Does Practice-Based Teacher Preparation Increase Student Achievement? Early Evidence from the Boston Teacher Residency," NBER Working Paper No. 17646, http://www.nber.org/papers/w17646, page 13.
15 *Id.*, at page 13.

# Professional Learning

## Proposed Change

This regulatory change would impose professional learning requirement on all educators in Rhode Island, equal to 30 hours per year. The regulation prescribes general categories of professional learning activities, but delegates the certification of which activities qualify to principals.

## Regulatory Citation

1.8.5

## Costs

The revised regulation requires professional learnings hours to be completed by the time each educator renews their certification, starting with the 2022 renewals. While these requirements relate to a three-year or five-year renewal cycle, they practically equate to 30 hours per year of professional learning. According to a survey undertaken by RIDE, there are just over an average of two days devoted to professional learning across Rhode Island's school districts. For this analysis, these two days (14 hours) are treated as the baseline, and educators will have to complete an additional 16 hours annually to comply with the regulation. There are 15,988 educators in the state, and the weighted average mean annual wage for educators in Rhode Island is $33.61 per hour.[16] The marginal cost of these increased hours of professional learning are $7.3 million annually.

It is important to note that this cost represents the value of these educator's time, and not the fiscal cost to educators to participate in professional learning. Many professional learning activities, such as coaching and mentoring, are expected to take place during work hours at no additional fiscal cost to educators.

| | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Value of additional educator time spent in professional learning | $0 | $0 | $7,330,541 | $7,330,541 | $7,330,541 | $7,330,541 | $7,330,541 | $7,330,541 | $7,330,541 | $7,330,541 | $7,330,541 |
| | **2029** | **2030** | **2031** | **2032** | **2033** | **2034** | **2035** | **2036** | **2037** | **2038** | |
| | $7,330,5 | $7,330,5 | $7,330,54 | $7,330,54 | $7,330,54 | $7,330,54 | $7,330,54 | $7,330,54 | $7,330,54 | $7,330,54 | |

16 InfoWorks!, Rhode Island Department of Education, http://infoworks.ride.ri.gov/state/ri; May 2017 State Occupational Employment and Wage Estimates, Rhode Island, Bureau of Labor Statistics, https://www.bls.gov/oes/current/oes_ri.htm.

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| activities | 41 | 41 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |

## Benefits

The expected benefit of introducing professional learning requirements is an increase in teacher effectiveness, which should translate to increased student achievement. A meta-analysis by Yoon et al. found that professional learning improved student achievement by 0.41 standard deviations when looking at the median of several studies.[17] A research paper by Chetty et al. determined that for a one standard deviation increase in teacher quality in a single year, a typical student would see a 1.3% annual increase in wages starting at age 28.[18] Because these studies measure different things (student achievement and teacher quality), RIDE needed to find a way to convert a change in student achievement to a change in teacher quality. A different paper by Chetty et al. found that a one standard deviation improvement in teacher quality improves student test scores by 0.14 SD in math and 0.1 SD in English (averaged to 0.12 SD for this analysis).[19] This implies that a 0.41 SD increase in student achievement must be caused by a 3.42 SD increase in teacher quality (0.41 / 0.12 = 3.42).

| **Calculating the Benefit of Professional Learning** | |
|---|---|
| Benefit of professional learning program for student achievement | 0.41 SD |
| Change in student achievement for 1 SD change in teacher quality | 0.12 SD |
| Implied teacher quality improvement needed to realize benefit of professional learning program | 0.41 / 0.12 = 3.42 |
| Rhode Island per capita income | $31,904 |
| Increase in annual wages starting at age 28 for a 1 SD increase in teacher quality in a single year | 1.3% |
| Increased annual wages for a student taught for a single year by a teacher who participated in professional learning | $31,905 x 3.42 x 1.3% = $1,417.07 |
| Increased wages for a student taught for all 13 years by a teacher who | $1,417.07 x 13 = |

17 Yoon, K. et al., “Reviewing the evidence on how teacher professional development affects student achievement,” Institute of Education Sciences, REL 2007–No. 033, https://ies.ed.gov/ncee/edlabs/regions/southwest/pdf/REL_2007033.pdf, page 6.
18 Chetty, R. et al., “Measuring the Impacts of Teachers II: Teacher Value-Added and Student Outcomes in Adulthood,” NBER Working Paper No. 19424, http://www.nber.org/papers/w19424.pdf, page 2.
19 Chetty, R. et al., “Measuring the Impacts of Teachers I: Evaluating Bias in Teacher Value-Added Estimates,” NBER Working Paper No. 19423, http://www.nber.org/papers/w19423.pdf, page 2.

| | |
|---|---|
| participated in residency program | $18,421.90 |

To calculate the benefit, two other estimates are needed: (1) the income boost per year, and (2) the number of students impacted. The baseline income is Rhode Island per capita income, reported by the U.S. Census Bureau at $31,904.[20] For an individual student taught for a single year by a teacher who underwent professional development, a $1,417.07 boost in wages per year is expected starting at age 28 (see chart). Because all educators participate in professional learning, all 8,715 graduates receive a benefit. [21] This means that in 2021 (one year after the residency requirement goes into effect), 8,715 graduates are expected to see an annual boost in their income by $1,417.07 starting in 2031. For the next cohort of 8,715 graduates the benefit is $2,834 annually starting in 2032 (the benefit doubles because these graduates are taught by teachers who participated for two years). This pattern repeats, with more graduates accruing more benefit every year, as shown below:

| | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benefit of enhanced earnings by graduates | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| | **2029** | **2030** | **2031** | **2032** | **2033** | **2034** | **2035** | **2036** | **2037** | **2038** | |
| | $0 | $0 | $12,349,759 | $37,049,278 | $74,098,555 | $123,497,592 | $185,246,389 | $259,344,944 | $345,793,259 | $444,591,333 | |

## Net Present Value (2018-2038)

| | |
|---|---|
| 3% Discount Rate | $763,256,712 |
| 7% Discount Rate | $363,254,451 |

20 QuickFacts: Rhode Island, U.S. Census Bureau, https://www.census.gov/quickfacts/fact/table/ri/PST045217.
21 InfoWorks!, Rhode Island Department of Education, http://infoworks.ride.ri.gov/state/ri; Rhode Island Department of Education Information Services, Reports, http://www.eride.ri.gov/reports/reports.asp.

# Additional Regulatory Changes

The following changes are part of the proposed regulation but were not analyzed because either (1) there was a paucity of data about the change, or (2) the change was considered de minimis.

## Long-Term Substitutes

Substitutes are now classified as “day-to-day” or “long-term,” with day-to-day substitutes only allowed to teach for 45 consecutive days. A long-term substitute is allowed to teach for longer than 45 days but must have the appropriate certification for the assignment. This change is effective in August 2019. There are around 1,300 substitutes you work every year in Rhode Island. This proposed amendment may raise costs for substitutes and districts by imposing certification requirements on long-term substitutes. The benefit is to increased student achievement for students who are taught by long-term substitutes who are better qualified to teach the material.

## Reciprocity

This proposed regulation allows teachers from Massachusetts and Connecticut are now exempt from testing requirements when they apply to work in Rhode Island. This provision takes effect in January 2019, and does not apply to Special Education, English as a Second Language, Math Specialists or Reading Specialists. This change is expected to lower the barriers to entry for teachers from these two states. Lower barriers to entry equates to increased competition, which lowers costs for school districts. Exempting teachers from Massachusetts and Connecticut from testing will create more competition, allowing districts to hire better teachers who will positively impact student achievement.

## Out of Subject Area

Under the amended regulation, teachers may only teach 20% of their time out of their certified subject area. Currently, teachers cannot teacher in out-of-certificate areas. This is expected to yield a cost savings to districts with minimal impact on student achievement.

## Non-Teaching Nurse

A new license category is being added to the regulation, effective June 2019, for a school nurse who does not teach but only acts in a healthcare capacity. These nurses do not have to comply with the residency and testing requirements that demonstrate a knowledge of teaching. This is expected to lower costs for districts by expanding the labor pool for school nurses. Given that this new license category still requires training as a nurse, these employees are expected to perform their healthcare duties as well as current school nurse teachers.

# Alternatives

This following regulatory alternatives were considered when drafting this regulation.

## Residency

### *Alternative 1*

The residency requirement could be maintained at 12 weeks.

### *Alternative 2*

The residency requirement could be increased to 36 weeks.

### *Determination*

Given that residency requirements do have measurable benefits, the status quo was rejected. Setting the residency requirement at 36 weeks would crowd out too much of their own classroom time for teachers in training.

## Professional Learning

### *Alternative 1*

The status quo system, where districts certify teacher performance with no statewide requirement for professional learning, could be maintained.

### *Alternative 2*

The professional learning requirement could be set to 15 hours per year.

### *Determination*

The meta-analysis by Yoon et al. found that studies of professional learning of less than 14 hours per year "showed no statistically significant effects on student achievement."[22] While the 15 hour per year requirement would serve to codify the existing level of professional learning activity and lead to little marginal cost, this level of activity does not seem to be enough to lead to any benefit for students. Given that professional learning (of greater than 14 hours) does have measurable benefits, the status quo was rejected.

22 Yoon, K. et al., "Reviewing the evidence on how teacher professional development affects student achievement," Institute of Education Sciences, REL 2007–No. 033, https://ies.ed.gov/ncee/edlabs/regions/southwest/pdf/REL_2007033.pdf, page 3.