

ANALYSIS OF TEACHER SALARY COSTS BY COMPONENT

FY 2015-16 to FY 2019-20

This report analyzes the change in the statewide cost of teacher salaries by each component impacting total teacher salaries over the five-year period from FY 2015-16 to FY 2019-20. The state minimum teacher salary schedule provides a base level salary for teachers that increases based upon years of experience and education level, commonly referred to as the teacher salary schedule step. Total teacher salary costs are impacted by three components:

- the total number of teachers,
- changes to the minimum salary schedule itself, and
- changes in the average degree classification and years of experience of teachers, or the step.

Revenue and Fiscal Affairs (RFA) analyzed the change in each of these components over the five-year period.

The following documents provide estimates of the change in teacher salaries over the past five years by each component and the resulting overall impact on total salaries for teachers statewide. It is important to note that district by district experience may vary based upon a district's makeup of teachers.

Salary costs are based upon the state cost of the salary schedule only and do not include any associated employer benefits costs or local salary supplements. The S.C. Department of Education provided teacher count data used by RFA in the report. Detailed data sources and calculations are provided in the Appendix.

Summary

- The change in total teacher salaries between FY 2015-16 to FY 2019-20 is due to three components: changes in the salary schedule, changes in the number of teachers, and the years of experience and level of education completed by the teachers (step).
- Total teacher salary costs increased 12.33 percent, or \$294.2 million, over this period.
- Tables 1 and 2, and the corresponding Figures 1 and 2, provide the summary of the percentage and total dollar change in each component.
- The increases in the salary schedule and increase in the overall number of teachers are driving the majority of the increase in teacher salary costs.
- The largest increase in teacher salary costs is due to the changes in the minimum salary schedule.
 - The state minimum salary schedule was increased in FY 2016-17, FY 2018-19, and FY 2019-20. Further, the schedule was expanded to include the 23rd year on the schedule in FY 2016-17.
 - The increases in the salary schedule and the addition of the 23rd year

resulted in an 8.65 percent change in total salaries over the five-year period.

- The total estimated cost due to changes in the salary schedule was \$206.6 million, or 70.2 percent of the total cost.
- The next largest component is the change in the total number of teachers.
 - Increases in the number of teachers overall increased total salaries by 3.19 percent over 5 years.
 - The increase in the number of teachers raised salary costs by a total of \$76 million, or 25.8 percent of the total cost.
- The step in the salary schedule appears to have little impact on total teacher salaries.
 - The change in average salary, a function of the years of experience and degree level, has ranged between -0.25 percent and 0.38 percent and totaled 0.30 percent over the five-year period. See Table 1
 - The net dollar change from changes in teacher education and years of experience was \$7.1 million over the period, or 2.4 percent of the total cost. See Table 2
 - Average years of experience ranges from a low of 11.91 years up to 12.10 years, and only changed 1.17 percent over the five-year period. See Table 3
 - Average degree level of teachers remains relatively constant across all 5 years. After indexing education level so that 1 = Bachelor's Degree, 2 = Bachelor's Degree + 18 Hours, 3 = Master's Degree, 4 = Master's Degree + 30 Hours, and 5 = Doctorate Degree, the average index was between 2.60 and 2.62. See Table 4
- In summary, of the total 12.33 percent increase in teacher salary costs, approximately 0.30 percent is due to the step increase.

Please note, the interaction between the growth in teachers and changes in the average salary results in slightly higher total growth than the sum of the parts. Over the five-years, the interaction between components totals 0.18 percent in additional growth not attributed to the individual components.

TABLE 1 - SUMMARY OF PERCENT CHANGE BY FISCAL YEAR AND COMPONENT

	FY 2015-16 to FY 2016-17	FY 2016-17 to FY 2017-18	FY 2017-18 to FY 2018-19	FY 2018-19 to FY 2019-20	5-Year Change: FY 2015-16 to FY 2019-20*
Change Due to Teacher Education and Experience (Step Increase)	0.14%	(0.00%)	(0.25%)	0.38%	0.30%
Change Due to Salary Schedule	2.23%	0.00%	1.28%	4.88%	8.65%
Change Due to Teacher Count	0.93%	0.98%	1.03%	0.21%	3.19%
Change Due to All Components**	3.33%	0.98%	2.08%	5.46%	12.33%

** 5-Year Percent Change may not be the sum of the individual years due to compounding growth effects and interactions between components.*

***Change due to all components includes interactions between the increase in number of teachers and salary and may be slightly different than the sum of individual components as a result.*

Note: Teacher counts and salary calculations included in Table 5 of the Appendix.

TABLE 2 - SUMMARY OF DOLLAR CHANGE BY FISCAL YEAR AND COMPONENT

	FY 2015-16 to FY 2016-17	FY 2016-17 to FY 2017-18	FY 2017-18 to FY 2018-19	FY 2018-19 to FY 2019-20	5-Year Change: FY 2015-16 to FY 2019-20*
Change Due to Teacher Education and Experience (Step Increase)	\$3,413,467	(\$1,399)	(\$6,230,456)	\$9,564,855	\$7,092,590
Change Due to Salary Schedule	\$53,225,431	\$0	\$31,885,000	\$124,043,739	\$206,586,955
Change Due to Teacher Count	\$22,298,826	\$24,057,096	\$25,549,675	\$5,456,189	\$76,030,422
Change Due to All Components**	\$79,463,312	\$24,055,683	\$51,883,885	\$138,806,344	\$294,209,224

** 5-Year Change may not be the sum of the individual years due to compounding growth effects and interactions between components.*

***Dollar change due to each component is estimated based upon the percentage growth in each component. The change due to all components includes interactions between the increase in number of teachers and salary and may be slightly different than the sum of individual components as a result.*

Note: Teacher counts and salary calculations included in Table 5 of the Appendix.

FIGURE 1: PERCENT CHANGE IN TOTAL SALARIES BY COMPONENT

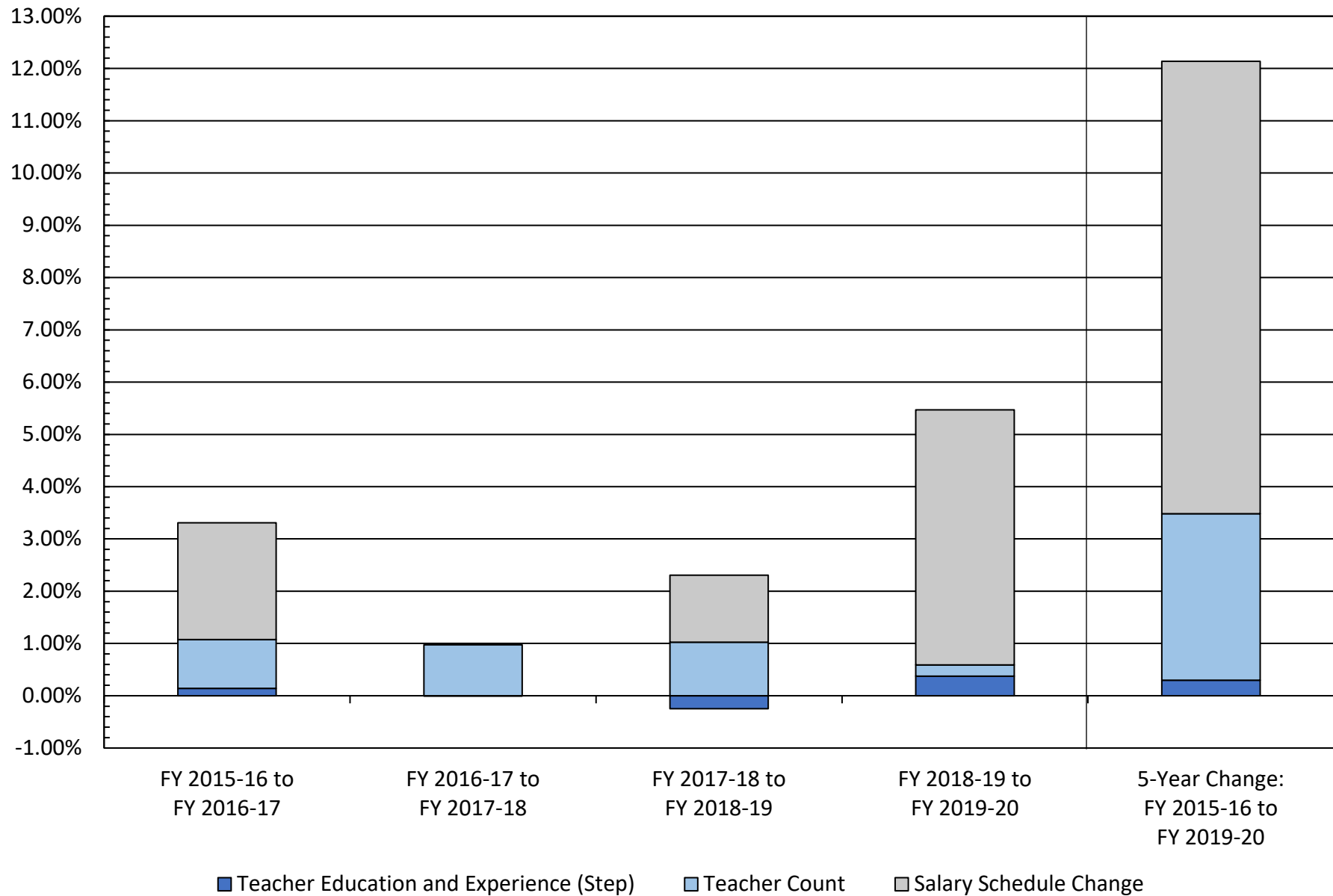


FIGURE 2: DOLLAR CHANGE IN TOTAL SALARIES BY COMPONENT

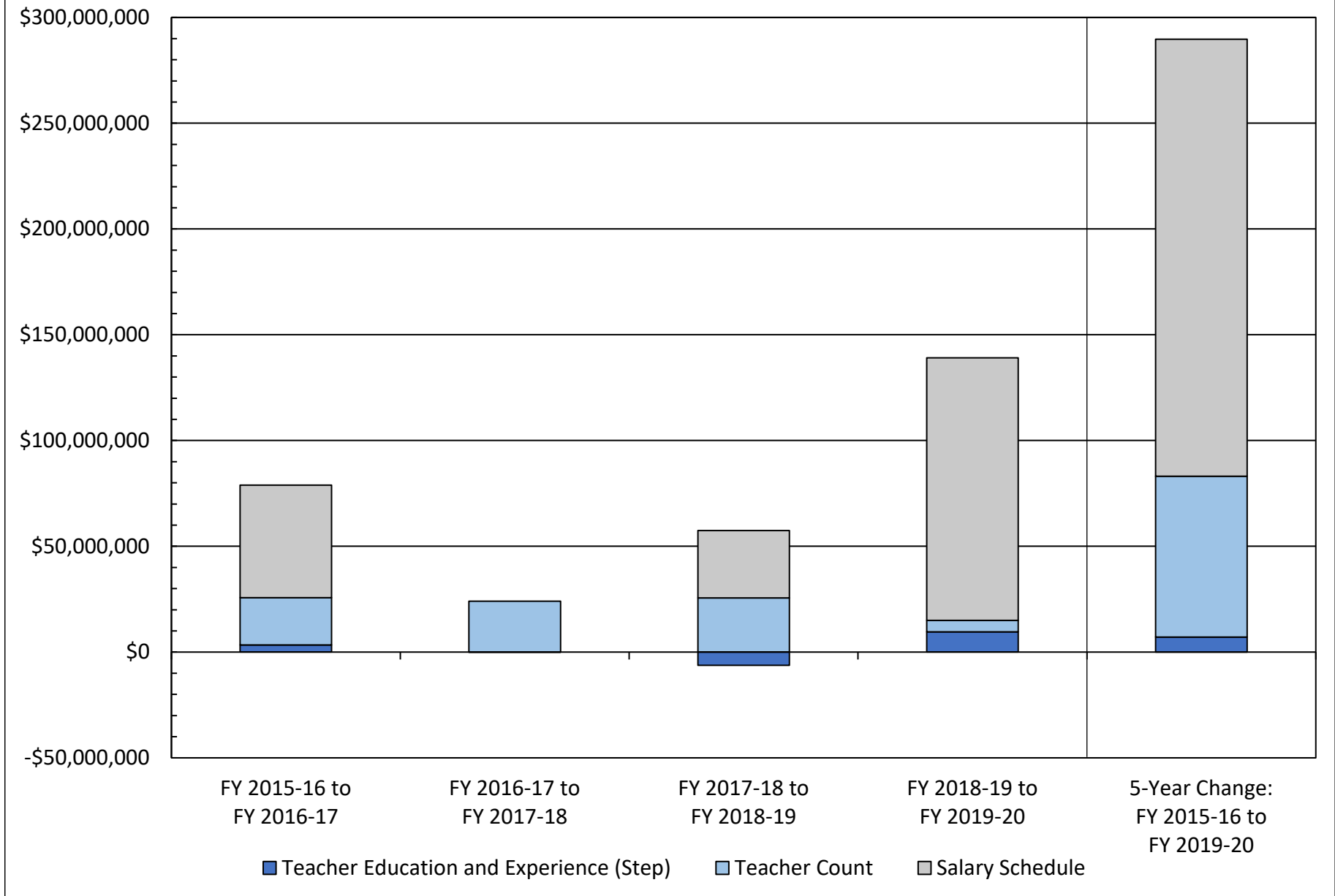


TABLE 3 - AVERAGE YEARS OF EXPERIENCE

Fiscal Year	Average Years of Experience	Percent Change
FY 2015-16	11.96	
FY 2016-17	12.03	0.6%
FY 2017-18	12.04	0.1%
FY 2018-19	11.91	(1.1%)
FY 2019-20	12.10	1.6%

The decrease in average years of teaching experience in FY 2018-19 may be explained by an increase in teachers with zero or one year of experience from the previous years, and a decrease in teachers with 23 or more years of experience from the previous years.

TABLE 4 - AVERAGE DEGREE CLASSIFICATION OF TEACHERS

Fiscal Year	Average Indexed Education Level	Percent Change
FY 2015-16	2.62	
FY 2016-17	2.62	0.0%
FY 2017-18	2.61	(0.4%)
FY 2018-19	2.60	(0.4%)
FY 2019-20	2.61	0.4%

The average degree classification was found by indexing each degree level, then calculating the weighted average for each Fiscal Year. The index of each education level is as follows:

- 1 = Bachelor's Degree
- 2 = Bachelor's Degree + 18 Hours
- 3 = Master's Degree
- 4 = Master's Degree + 30 Hours
- 5 = Doctorate Degree

APPENDIX

TEACHER COUNTS - FY 2015-16 TO FY 2019-20

Total teacher counts for each position are reported based upon data provided to RFA from the Department of Education as reported by each district in the Professional Certified Staff (PCS) system. Counts below include only state funded FTEs and do not include federally funded positions. These positions are eligible for the EIA teacher salary supplement.

FY 2015-16		
Position Code	Position	Count
03	Special Education (Itinerant)	168
04	Prekindergarten (Child Development)	1,152
05	Kindergarten	2,568
06	Special Education (Self-Contained)	2,506
07	Special Education (Resource)	2,944
08	Classroom Teacher	42,062
09	Retired Teachers	533
10	Library Media Specialist	1,116
11	Guidance Counselor	2,183
17	Speech Therapist	967
18	ROTC Instructor	369
36	School Nurse	1,331
37	Occupational/Physical Therapist	275
38	Orientation/Mobility Instructor	10
39	Audiologist	10
40	Social Worker	172
85	Psychologist	559
	Total	58,925

FY 2016-17		
Position Code	Position	Count
03	Special Education (Itinerant)	150
04	Prekindergarten (Child Development)	1,198
05	Kindergarten	2,559
06	Special Education (Self-Contained)	2,526
07	Special Education (Resource)	2,972
08	Classroom Teacher	42,765
09	Retired Teachers	414
10	Library Media Specialist	1,121
11	Guidance Counselor	2,225
17	Speech Therapist	955
18	ROTC Instructor	371
36	School Nurse	1,369
37	Occupational/Physical Therapist	298
38	Orientation/Mobility Instructor	10
39	Audiologist	10
40	Social Worker	187
85	Psychologist	562
	Total	59,692

FY 2017-18		
Position Code	Position	Count
03	Special Education (Itinerant)	165
04	Prekindergarten (Child Development)	1,220
05	Kindergarten	2,580
06	Special Education (Self-Contained)	2,555
07	Special Education (Resource)	3,057
08	Classroom Teacher	43,073
09	Retired Teachers	453
10	Library Media Specialist	1,138
11	Guidance Counselor	2,265
17	Speech Therapist	950
18	ROTC Instructor	367
36	School Nurse	1,396
37	Occupational/Physical Therapist	301
38	Orientation/Mobility Instructor	9
39	Audiologist	11
40	Social Worker	200
85	Psychologist	565
	Total	60,305

FY 2018-19		
Position Code	Position	Count
03	Special Education (Itinerant)	170
04	Prekindergarten (Child Development)	1,181
05	Kindergarten	2,558
06	Special Education (Self-Contained)	2,639
07	Special Education (Resource)	3,059
08	Classroom Teacher	43,571
09	Retired Teachers	498
10	Library Media Specialist	1,136
11	Guidance Counselor	2,307
17	Speech Therapist	938
18	ROTC Instructor	356
36	School Nurse	1,397
37	Occupational/Physical Therapist	325
38	Orientation/Mobility Instructor	8
39	Audiologist	11
40	Social Worker	204
85	Psychologist	582
	Total	60,940

FY 2019-20		
Position Code	Position	Count
03	Special Education (Itinerant)	179
04	Prekindergarten (Child Development)	1,196
05	Kindergarten	2,558
06	Special Education (Self-Contained)	2,592
07	Special Education (Resource)	3,186
08	Classroom Teacher	43,549
09	Retired Teachers	481
10	Library Media Specialist	1,123
11	Guidance Counselor	2,329
17	Speech Therapist	908
18	ROTC Instructor	346
36	School Nurse	1,419
37	Occupational/Physical Therapist	329
38	Orientation/Mobility Instructor	8
39	Audiologist	11
40	Social Worker	224
85	Psychologist	576
	Total	61,014



Percent of Teacher Records with Missing Data	
FY 2015-16	5.53%
FY 2016-17	5.88%
FY 2017-18	5.92%
FY 2018-19	5.95%
FY 2019-20	5.84%

The percentage of teacher records that did not include a degree classification is listed for each year. Approximately half of these missing values occurred in records for teachers that had zero years of experience. Position codes 18, 36, 37, 39, and 40 had between 80 percent and 97 percent of the entries with blank degree classifications. Missing data records were roughly evenly distributed across districts. These trends were consistent across all 5 years.

METHODOLOGY

All calculated values used to determine the percentage change in salaries by component are included in Appendix Table 5. Each example below references the line numbers of Table 5 for reference.

To determine change due to teacher count:

- The year-over-year percent change was calculated between each fiscal year’s total teacher count.
- For example, the change between FY 2015-16 and FY 2016-17 due to teacher count is the growth in teachers from FY 2015-16 to FY 2016-17.

Line #	Salaries Year	Teacher Count Year	Total Salary	Total Teachers	Average Salary
1	FY 2015-16	FY 2015-16	\$2,387,003,604	55,664	\$42,882
2	FY 2015-16	FY 2016-17	\$2,412,747,785	56,184	\$42,944
	Percent Change due to Teacher Count			0.93%	

To determine change due to salary schedule:

- Total salary cost each year was calculated by multiplying teacher counts for each cell of the schedule by its respective salary on the salary schedule, then summing these figures.
- Total salary cost was then calculated by holding constant the number of teachers for a particular year, but using the next year’s salary schedule and comparing these cost figures.
- For example, the change between FY 2015-16 and FY 2016-17 due to the salary schedule was found by calculating total salaries using the FY 2015-16 teacher count and FY 2015-16 salary schedule, then comparing this figure to the total salaries calculated using the FY 2015-16 teacher count but the FY 2016-17 salary schedule.

Line #	Salaries Year	Teacher Count Year	Total Salary	Total Teachers	Average Salary
1	FY 2015-16	FY 2015-16	\$2,387,003,604	55,664	\$42,882
3	FY 2016-17	FY 2015-16	\$2,440,229,035	55,664	\$43,839
	Percent Change Due to Salary Schedule			2.23%	

To determine change due to teacher education and experience:

- Average salary by year was calculated by multiplying teacher counts for each cell of the schedule by its respective salary on the salary schedule, summing these figures, then dividing by the total number of teachers.

- Average salary was then calculated by holding constant the salary schedule from the previous year, but using the teacher count for the next year.
- For example, the change between FY 2015-16 and FY 2016-17 due to teacher education and experience was found by calculating average salary using the FY 2015-16 teacher count and FY 2015-16 salary schedule, then comparing this figure to the average salary calculated using the FY 2015-16 salary schedule again but FY 2016-17 teacher counts.

Line #	Salaries Year	Teacher Count Year	Total Salary	Total Teachers	Average Salary
1	FY 2015-16	FY 2015-16	\$2,387,003,604	55,664	\$42,882
2	FY 2015-16	FY 2016-17	\$2,412,747,785	56,184	\$42,944
	Percent Change Due to Teacher Education and Experience (Step)				0.14%

To determine change due to all components:

- Percent change due to the interaction of all three components was calculated by finding total salaries using the salary schedule and teacher count for one year, and comparing this figure to total salaries using the salary schedule and the teacher count of the next year.
- For example, the change between FY 2015-16 and FY 2016-17 due to all components was found by calculating total salaries using the FY 2015-16 teacher count and FY 2015-16 salary schedule, then comparing this figure to the total salaries calculated using the FY 2016-17 salary schedule and FY 2016-17 teacher counts.
- This growth calculation includes the interaction of each component of changes in teacher salary schedule, teacher counts, and cell on the salary schedule and may differ slightly from the sum of the parts. The total difference is 0.18% over the full five-year period.

Line #	Salaries Year	Teacher Count Year	Total Salary	Total Teachers	Average Salary
1	FY 2015-16	FY 2015-16	\$2,387,003,604	55,664	\$42,882
4	FY 2016-17	FY 2016-17	\$2,466,466,916	56,184	\$43,900
	Percent Change Due to All Components for FY 2015-16 to FY 2016-17				3.33%

TABLE 5 - SALARY CALCULATIONS TABLE

Line #	Salaries Year	Teacher Count Year	Total Salary	Total Teachers	Average Salary
1	FY 2015-16	FY 2015-16	\$2,387,003,604	55,664	\$42,882
2	FY 2015-16	FY 2016-17	\$2,412,747,785	56,184	\$42,944
3	FY 2016-17	FY 2015-16	\$2,440,229,035	55,664	\$43,839
4	FY 2016-17	FY 2016-17	\$2,466,466,916	56,184	\$43,900
5	FY 2016-17	FY 2016-17	\$2,466,466,916	56,184	\$43,900
6	FY 2016-17	FY 2017-18	\$2,490,522,599	56,732	\$43,900
7	FY 2017-18	FY 2016-17	\$2,466,466,916	56,184	\$43,900
8	FY 2017-18	FY 2017-18	\$2,490,522,599	56,732	\$43,900
9	FY 2017-18	FY 2017-18	\$2,490,522,599	56,732	\$43,900
10	FY 2017-18	FY 2018-19	\$2,509,777,901	57,314	\$43,790
11	FY 2018-19	FY 2017-18	\$2,522,407,599	56,732	\$44,462
12	FY 2018-19	FY 2018-19	\$2,542,406,484	57,314	\$44,359
13	FY 2018-19	FY 2018-19	\$2,542,406,484	57,314	\$44,359
14	FY 2018-19	FY 2019-20	\$2,557,448,055	57,437	\$44,526
15	FY 2019-20	FY 2018-19	\$2,666,450,223	57,314	\$46,524
16	FY 2019-20	FY 2019-20	\$2,681,212,828	57,437	\$46,681
17	FY 2015-16	FY 2015-16	\$2,387,003,604	55,664	\$42,882
18	FY 2015-16	FY 2019-20	\$2,470,352,528	57,437	\$43,010
19	FY 2019-20	FY 2015-16	\$2,593,590,559	55,664	\$46,594
20	FY 2019-20	FY 2019-20	\$2,681,212,828	57,437	\$46,681

Notes:

1. *Teacher Counts include only state funded FTEs and do not include federally funded positions. Positions are eligible for the EIA teacher salary supplement. Included position codes are listed in the teacher count tables in the Appendix.*
2. *Total salary does not include fringe benefits costs and reflect only the state minimum salary schedule cost.*
3. *Average salary is the calculated minimum salary from the state salary schedule based upon the reflected teacher counts by year. This calculation does not include local salary supplements or National Board supplements that are included in the total actual average teacher salary reported annually by the Department of Education.*

DISTRIBUTION OF TEACHERS BY YEARS OF EXPERIENCE

The distribution of teachers by years of experience has changed over the five-year period from FY 2015-16 to FY 2019-20. Table 6 and Figure 3 outline the change in the percentage of total teachers in each cell of the salary schedule over this period. In FY 2019-20, 1.83% fewer teachers are in the 0 – 3 years of experience group compared to FY 2015-16. The largest growth occurred in the 4-7 years range, with 2.5% greater teachers.

TABLE 6 - CHANGE IN DISTRIBUTION OF TEACHERS
From FY 2015-16 to FY 2019-20

	<i>Doctorate</i>	<i>Master's + 30</i>	<i>Master's</i>	<i>Bachelor's + 18</i>	<i>Bachelor's</i>	
<i>Years of Experience</i>	<i>Class 8</i>	<i>Class 7</i>	<i>Class 1</i>	<i>Class 2</i>	<i>Class 3</i>	<i>Total</i>
0	0.04%	(0.06%)	(0.37%)	(0.02%)	(0.20%)	(0.61%)
1	0.02%	0.04%	(0.16%)	(0.05%)	0.06%	(0.10%)
2	0.01%	0.00%	(0.22%)	(0.09%)	(0.04%)	(0.33%)
3	(0.01%)	(0.13%)	(0.43%)	(0.14%)	(0.07%)	(0.79%)
4	0.01%	(0.03%)	(0.07%)	(0.05%)	0.18%	0.05%
5	0.00%	0.04%	0.44%	0.06%	0.70%	1.24%
6	0.02%	0.15%	0.43%	0.02%	0.44%	1.07%
7	0.00%	0.02%	0.01%	(0.04%)	0.14%	0.14%
8	0.01%	(0.11%)	(0.29%)	(0.06%)	0.03%	(0.44%)
9	0.00%	(0.15%)	(0.68%)	(0.11%)	(0.24%)	(1.18%)
10	0.01%	(0.16%)	(0.61%)	(0.03%)	(0.18%)	(0.96%)
11	(0.01%)	(0.11%)	(0.05%)	(0.06%)	0.10%	(0.13%)
12	0.01%	0.11%	0.30%	(0.04%)	0.11%	0.49%
13	0.03%	0.10%	0.43%	0.00%	0.18%	0.75%
14	0.02%	(0.11%)	0.37%	(0.07%)	0.13%	0.33%
15	0.02%	0.09%	0.14%	(0.02%)	0.06%	0.29%
16	0.03%	(0.05%)	(0.09%)	(0.06%)	(0.02%)	(0.19%)
17	0.03%	(0.07%)	(0.02%)	(0.10%)	(0.06%)	(0.22%)
18	0.02%	0.05%	(0.02%)	0.00%	(0.02%)	0.03%
19	0.04%	0.00%	0.08%	(0.03%)	0.02%	0.11%
20	0.03%	0.08%	0.14%	(0.05%)	0.09%	0.29%
21	0.03%	0.12%	0.15%	0.06%	0.08%	0.43%
22	0.03%	0.08%	0.32%	(0.06%)	0.09%	0.45%
23+	0.15%	(0.79%)	0.42%	(0.69%)	0.20%	(0.71%)
Total	0.55%	(0.91%)	0.21%	(1.62%)	1.77%	0.00%

**FIGURE 3: CHANGE IN DISTRIBUTION OF TEACHERS
By Years of Experience, FY 2015-16 to FY 2019-20**

