

# Secondary science teachers and professional development: Descriptive statistics from the SASS 07-08

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# The Schools and Staffing Survey 07-08

- NCES collects data through teacher, principal, school, and district questionnaires
- Stratified probability-proportion-to-size sampling design
  - Nationally and regionally representative
- Sample size:
  - 12,740 schools
  - 55,610 teachers
- Provides probability sampling weights
- Restricted access version

# Analytical sample

- Schools:
  - Public and private (excluded BIE)
  - Secondary or combined
- All Teachers (20,630):
  - Regular, full or part-time
  - Departmentalized instruction
  - Teach 7<sup>th</sup> to 12<sup>th</sup> grade
- Science teachers (2,760):
  - Report science field as main assignment; AND
  - Report teaching at least one science class to secondary students (7<sup>th</sup>-12<sup>th</sup> grades)

# Outline of Presentation

- Basic information: all teachers vs. science teachers
  - Demographics
  - Teaching experience
  - Education
  - Type of certification
- Science field certification
- Professional development for science teachers
- Differences by school sector, region

# Demographic Characteristics

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	<u>All Teachers</u>	<u>Science Teachers</u>
Age	43.1	43.3
Female	58.4%	54.4%
<i>Race/Ethnicity</i>		
White	84.0%	87.3%
Black	6.3%	5.3%
Asian	1.7%	2.3%
Pacific Islander	0.4%	0.5%
American Native	1.2%	1.1%
Hispanic/Latino	6.5%	3.5%
N	20630	2760

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# Experience

	<u>All Teachers</u>	<u>Science Teachers</u>
Years experience	13.5	13.3
Tenure at current school	7.9	7.7
N	20630	2760

# Certification

	All Teachers	Science Teachers
Alternative Certification	16.7%	22.6%
National Board Certification	19.8%	17.8%
National Board Certification in progress	6.0%	6.5%
<i>Type of Certification</i>		
Issued to person who must complete certification program in order to continue teaching	4.5%	3.9%
Requires additional coursework, student teaching, or passage of test before regular certification	3.1%	3.4%
Certificate issued after satisfying all requirements except probationary period	4.5%	4.5%
Regular or standard state certificate	87.9%	88.2%
N	20630	2760

# Education

	All Teachers	Science Teachers
Bachelor's degree	98.0%	99.5%
BA in Science	12.0%	76.1%
BA in Education	63.7%	51.3%
Master's degree	50.5%	56.8%
MA in Science	2.8%	18.8%
MA in Education	40.9%	44.2%
PhD	2.0%	3.6%
PhD in Science	0.3%	1.8%
PhD in Education	0.4%	0.5%
N	20630	2760



# Class Characteristics

	<u>All Teachers</u>	<u>Science Teachers</u>
Average class size	22.3	22.9
Number of classes	5.07	4.94
<i>Science field(s) teaching</i>		
Science, General		12.6%
Biology/Life		51.3%
Chemistry		26.1%
Physics		14.5%
Physical Sciences		17.3%
Earth Sciences		16.9%
Integrated Science		11.2%
N	20630	2760

# Certification in Science Field

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	<u>Science Teachers</u>
Any Science Certification	82.8%
<i>Field of Certification</i>	
Science, general	34.6%
Biology/Life	51.3%
Chemistry	25.7%
Physics	11.7%
Physical Sciences	18.4%
Earth Sciences	13.4%
N	2760

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# Certification match

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	<u>Science Teachers</u>
Science, general	42.5%
Biology/Life	73.1%
Chemistry	59.3%
Physics	47.3%
Physical Sciences	34.6%
Earth Sciences	34.7%
N	2760

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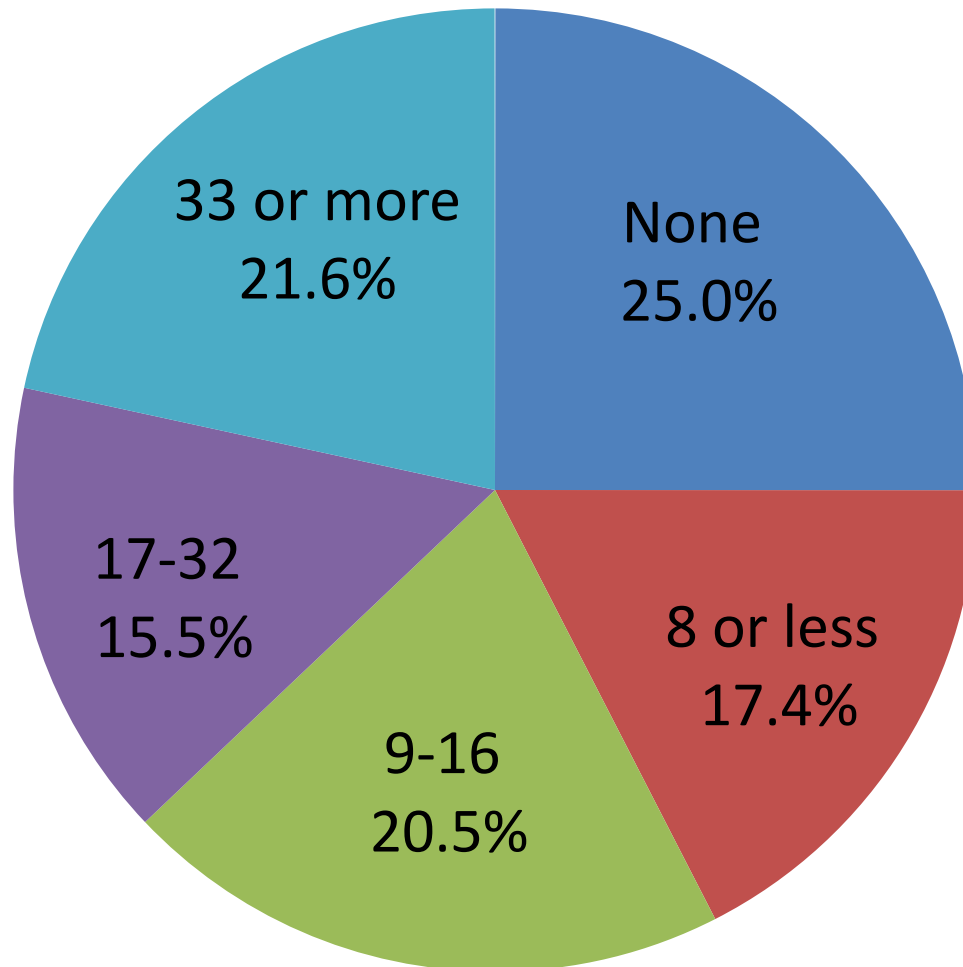
# Professional Development Participation

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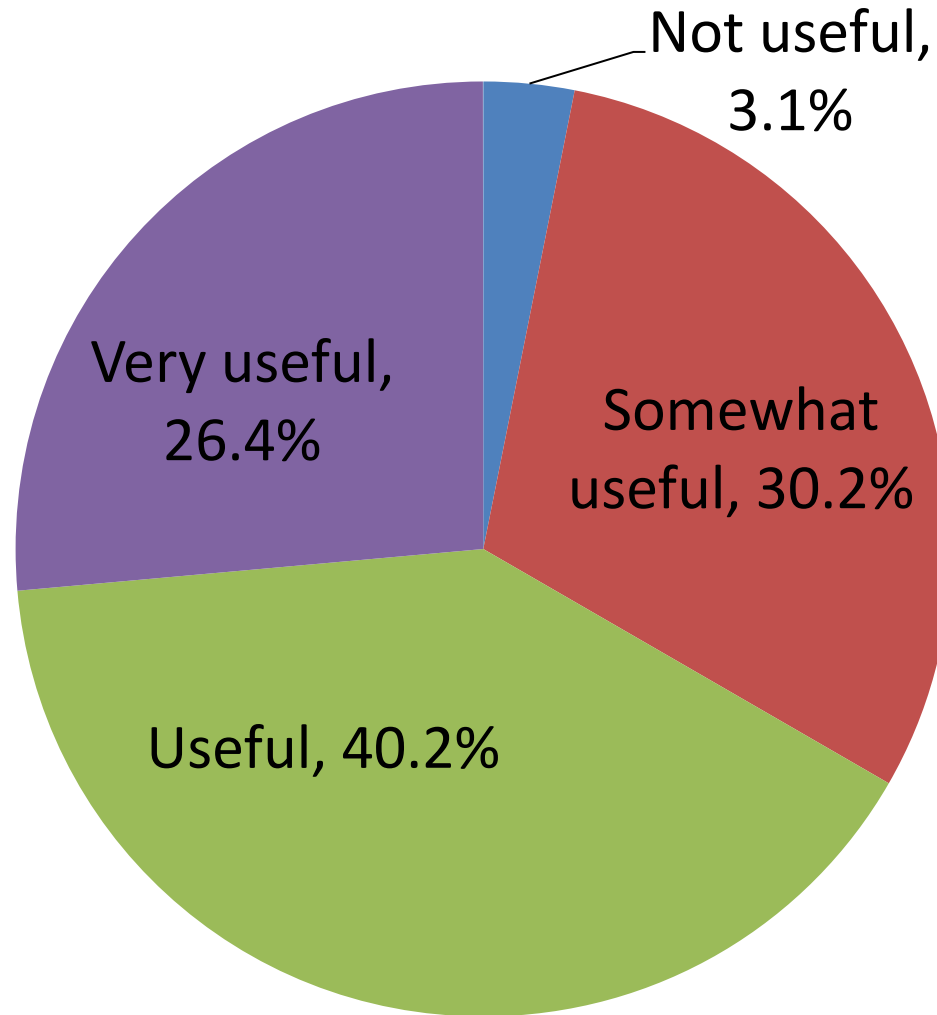
	<u>All Teachers</u>	<u>Science Teachers</u>
Content specific	78.4%	75.0%
Computers in instruction	65.0%	65.5%
Reading instruction	39.0%	35.9%
Student discipline and management	41.6%	36.4%
Teaching students with disabilities	35.3%	33.8%
Teaching LEP students	22.5%	22.4%
Other topics	41.3%	42.5%
N	20630	2760

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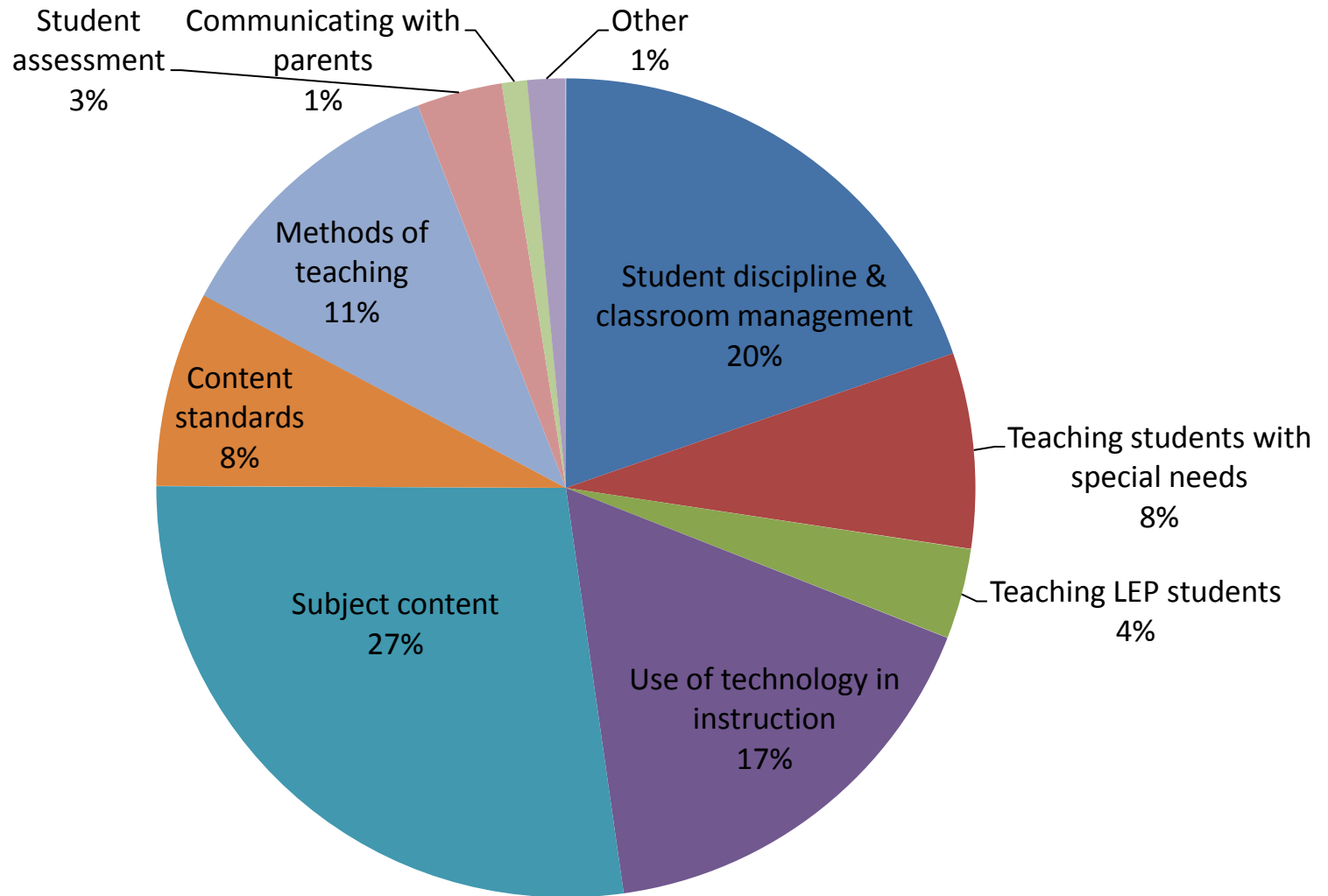
# Hours of Content Specific PD (science teachers)



# Usefulness of Content Specific PD (science teachers)



# Top Priority for PD (science teachers)



# Public school science teachers compared to private school science teachers

- More likely to have BA in science field
- Less likely to have MA or PhD in science field
- 2.5x more likely to be certified in science field
- 12% more likely to receive content specific PD



# Differences across regions

- West:
  - Least content specific PD
- Northeast:
  - Most masters/PhDs in science field
- Midwest:
  - Highest certification match
  - Highest certification in science field
- South:
  - Most content specific PD
  - Highest alternative certification

# Questions?



# BONUS SLIDES

# Demographic Characteristics

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	<u>Public Schools</u>	<u>Private Schools</u>
Age	42.8	46.2
Female	55.2%	50.0%
<i>Race/Ethnicity</i>		
White	86.8%	90.1%
Black	5.6%	3.6%
Asian	2.1%	3.5%
Pacific Islander	0.6%	0.0%
American Native	1.3%	0.1%
Hispanic/Latino	3.6%	2.6%
N	2550	210

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# Experience

	<u>Public Schools</u>	<u>Private Schools</u>
Years experience	13.3	13.3
Tenure at current school	7.8	7.3
N	2550	210

# Certification

	Public Schools	Private Schools
Alternative Certification	23.4%	17.6%
National Board Certification	18.2%	15.2%
National Board Certification in progress	6.4%	7.0%
<i>Type of Certification</i>		
Issued to person who must complete certification program in order to continue teaching	4.1%	1.3%
Requires additional coursework, student teaching, or passage of test before regular certification	3.5%	2.1%
Certificate issued after satisfying all requirements except probationary period	4.8%	0.6%
Regular or standard state certificate	87.6%	96.1%
N	2550	210

# Education

	<u>Public Schools</u>	<u>Private Schools</u>
Bachelor's degree	99.5%	99.9%
BA in Science	77.1%	70.4%
BA in Education	54.0%	35.3%
Master's degree	57.0%	55.5%
MA in Science	18.3%	21.7%
MA in Education	45.5%	36.0%
PhD	2.7%	8.9%
PhD in Science	0.9%	6.7%
PhD in Education	0.5%	0.7%
N	2550	210



# Class Characteristics

	Public Schools	Private Schools
Average class size	23.9	17.2
Number of classes	4.96	4.86
<i>Science field(s) teaching</i>		
Science, General	12.9%	11.1%
Biology/Life	51.6%	49.3%
Chemistry	24.6%	35.4%
Physics	11.8%	30.5%
Physical Sciences	16.1%	24.3%
Earth Sciences	16.9%	16.6%
Integrated Science	11.6%	8.5%
N	2550	210

# Certification in Science Field

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	<u>Public Schools</u>	<u>Private Schools</u>
Any Science Certification	90.6%	36.4%
<i>Field of Certification</i>		
Science, general	37.8%	15.3%
Biology/Life	56.3%	21.4%
Chemistry	27.5%	14.7%
Physics	12.5%	6.9%
Physical Sciences	19.8%	10.1%
Earth Sciences	15.0%	3.8%
N	2550	210

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# Certification match

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	<u>Public Schools</u>	<u>Private Schools</u>
Science, general	48.6%	0.5%
Biology/Life	79.5%	33.3%
Chemistry	67.1%	27.2%
Physics	59.7%	18.6%
Physical Sciences	40.1%	12.7%
Earth Sciences	39.0%	8.6%
N	2550	210

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# PD Participation

	<u>Public Schools</u>	<u>Private Schools</u>
Content specific	76.2%	67.9%
Computers in instruction	67.4%	54.4%
Reading instruction	39.6%	13.8%
Student discipline and management	37.3%	31.1%
Teaching students with disabilities	35.9%	21.6%
Teaching LEP students	25.2%	6.4%
Other topics	43.4%	37.0%
N	2550	210

# Demographic Characteristics

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		<u>Northeast</u>	<u>Midwest</u>	<u>South</u>	<u>West</u>
Age		44.3	42.3	43.2	43.3
Female		50.7%	52.4%	60.9%	49.0%
<i>Race/Ethnicity</i>					
	White	91.0%	95.1%	81.4%	84.6%
	Black	3.8%	2.6%	10.5%	0.7%
	Asian	2.1%	1.3%	1.5%	5.3%
	Pacific Islander	0.0%	0.0%	0.0%	2.5%
	American Native	0.9%	0.8%	1.5%	1.3%
	Hispanic/Latino	2.3%	0.2%	5.2%	5.7%
	N	450	710	960	650

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# Experience

	<u>Northeast</u>	<u>Midwest</u>	<u>South</u>	<u>West</u>
Years experience	13.5	14.1	13.2	12.6
Tenure at current school	9.1	9.4	6.1	7.4
N	450	710	960	650

# Certification

	<u>Northeast</u>	<u>Midwest</u>	<u>South</u>	<u>West</u>
Alternative Certification	23.5%	13.6%	29.9%	18.5%
National Board Certification	18.8%	15.4%	18.5%	18.0%
National Board Certification in progress	8.2%	3.1%	8.0%	5.8%
<i>Type of Certification</i>				
Issued to person who must complete certification program in order to continue teaching	4.3%	3.3%	3.2%	5.2%
Requires additional coursework, student teaching, or passage of test before regular certification	4.0%	1.4%	4.4%	3.4%
Certificate issued after satisfying all requirements except probationary period	6.7%	3.6%	4.8%	2.7%
Regular or standard state certificate	85.0%	91.8%	87.5%	88.6%
N	450	710	960	650

# Education

	<u>Northeast</u>	<u>Midwest</u>	<u>South</u>	<u>West</u>
Bachelor's degree	100.0%	99.7%	99.0%	99.8%
BA in Science	77.2%	80.3%	72.6%	76.6%
BA in Education	44.6%	62.7%	49.6%	48.9%
Master's degree	74.0%	59.3%	46.9%	52.0%
MA in Science	24.9%	13.8%	19.2%	16.5%
MA in Education	54.3%	50.5%	36.4%	39.2%
PhD	4.9%	1.9%	3.9%	3.5%
PhD in Science	2.1%	0.3%	2.5%	1.8%
PhD in Education	0.2%	0.9%	0.5%	0.5%
N	450	710	960	650



# Class Characteristics

	<u>Northeast</u>	<u>Midwest</u>	<u>South</u>	<u>West</u>
Average class size	20.2	23.1	22.3	27.1
Number of classes	4.80	5.10	4.88	5.03
<i>Science field(s) teaching</i>				
Science, General	12.9%	13.3%	12.6%	11.5%
Biology/Life	52.1%	51.2%	49.6%	53.6%
Chemistry	24.3%	29.6%	24.2%	27.7%
Physics	15.5%	16.4%	12.1%	15.5%
Physical Sciences	11.8%	21.6%	18.3%	16.8%
Earth Sciences	16.2%	18.7%	14.8%	19.3%
Integrated Science	9.4%	10.4%	12.8%	11.1%
N	450	710	960	650

# Certification in Science Field

	<u>Northeast</u>	<u>Midwest</u>	<u>South</u>	<u>West</u>
Any Science Certification	84.0%	88.0%	77.9%	84.2%
<i>Field of Certification</i>				
Science, general	31.8%	41.0%	35.4%	28.3%
Biology/Life	53.9%	57.4%	44.3%	53.9%
Chemistry	21.5%	35.6%	23.2%	23.3%
Physics	10.3%	16.5%	10.3%	10.0%
Physical Sciences	12.4%	25.0%	17.3%	19.5%
Earth Sciences	13.0%	17.9%	10.6%	13.7%
N	450	710	960	650

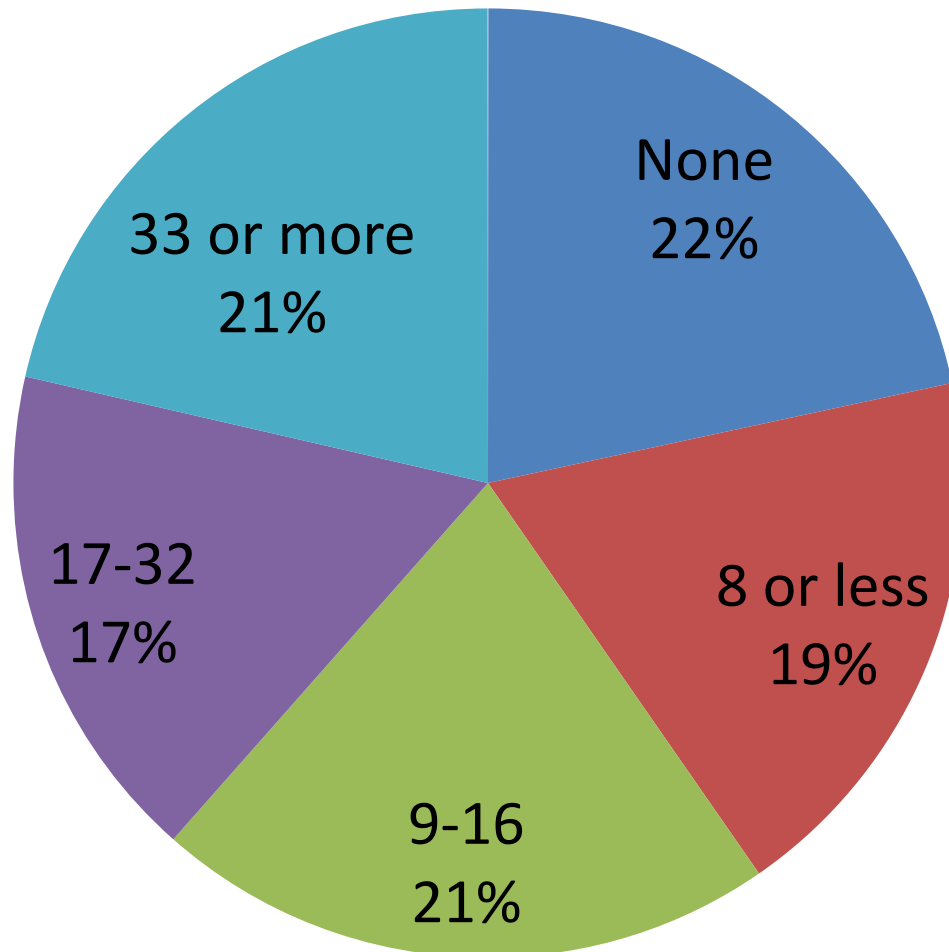
# Certification match

	<u>Northeast</u>	<u>Midwest</u>	<u>South</u>	<u>West</u>
Science, general	35.4%	52.5%	41.8%	39.1%
Biology/Life	81.2%	81.0%	62.6%	73.1%
Chemistry	60.7%	69.7%	50.8%	58.5%
Physics	50.4%	54.2%	45.2%	37.6%
Physical Sciences	37.0%	42.0%	30.9%	28.5%
Earth Sciences	38.1%	43.9%	23.7%	36.6%
N	450	710	960	650

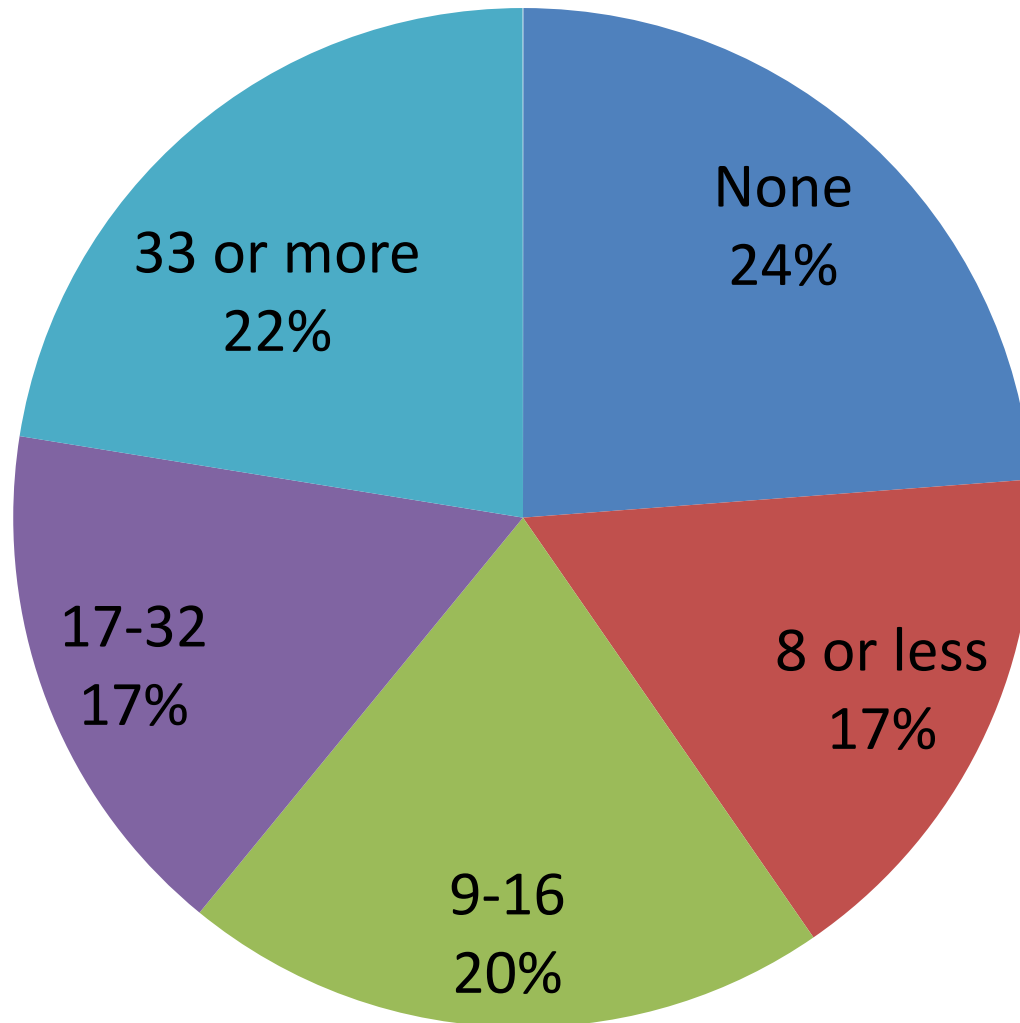
# PD Participation

	<u>Northeast</u>	<u>Midwest</u>	<u>South</u>	<u>West</u>
Content specific	76.5%	71.2%	79.8%	68.7%
Computers in instruction	70.1%	61.8%	69.3%	57.4%
Reading instruction	32.0%	37.0%	35.7%	39.4%
Student discipline and management	32.5%	31.7%	43.5%	33.1%
Teaching students with disabilities	37.0%	31.6%	35.5%	29.7%
Teaching LEP students	15.9%	12.2%	22.9%	41.5%
Other topics	45.3%	49.4%	35.8%	43.4%
N	450	710	960	650

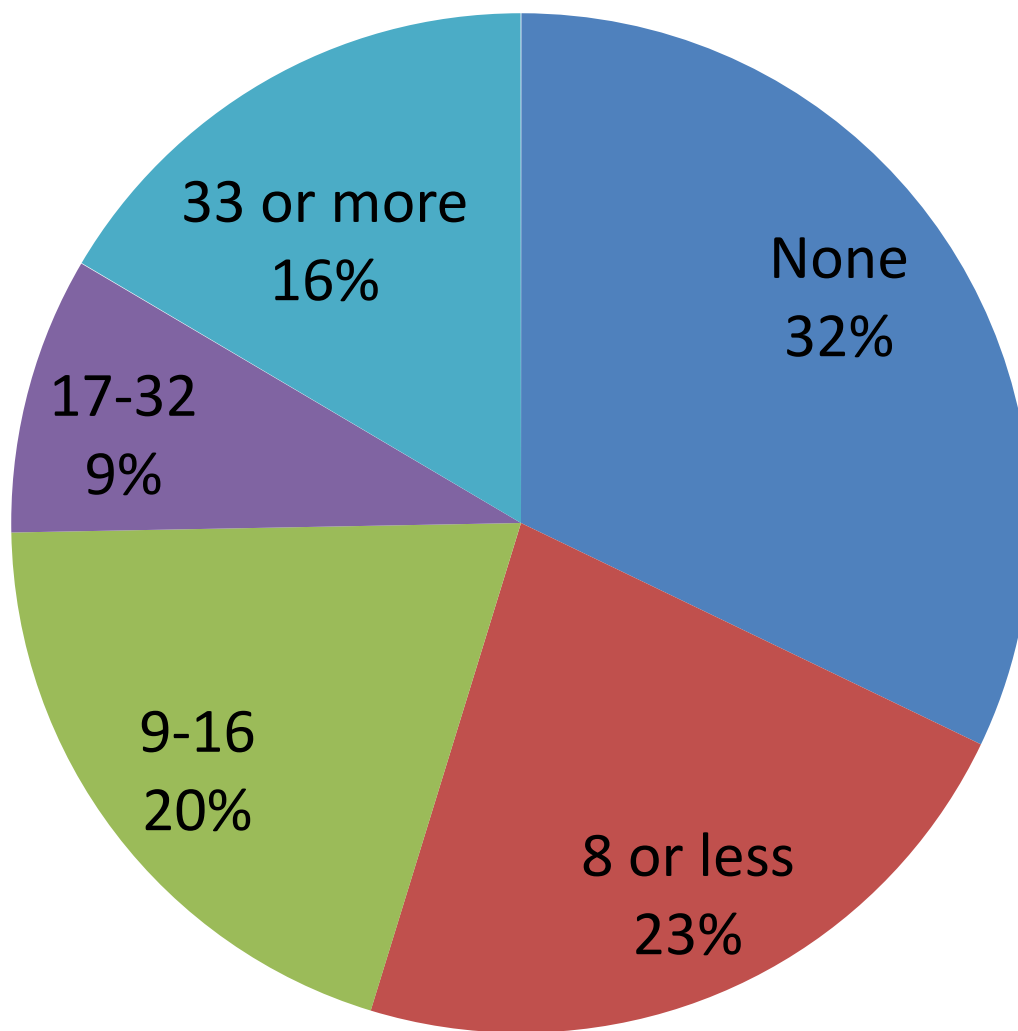
# Hours of PD (all teachers)



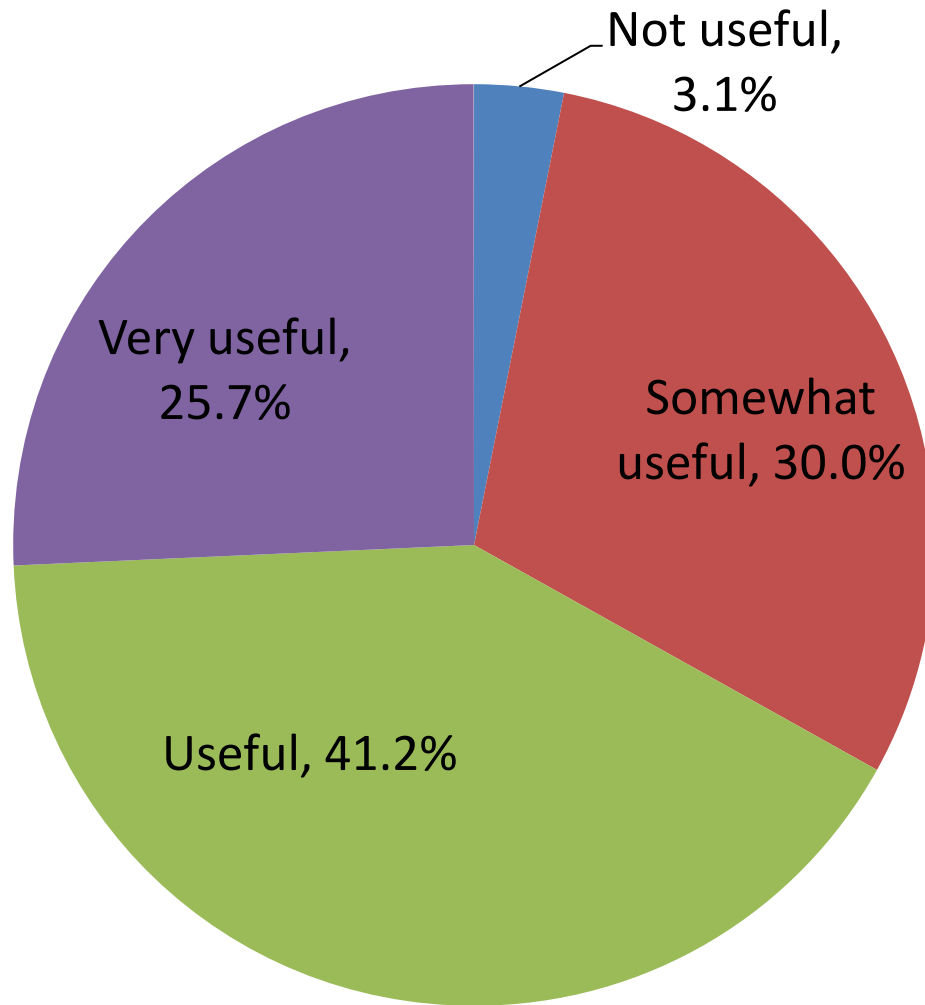
# Hours of PD (public schools)



# Hours of PD (private schools)

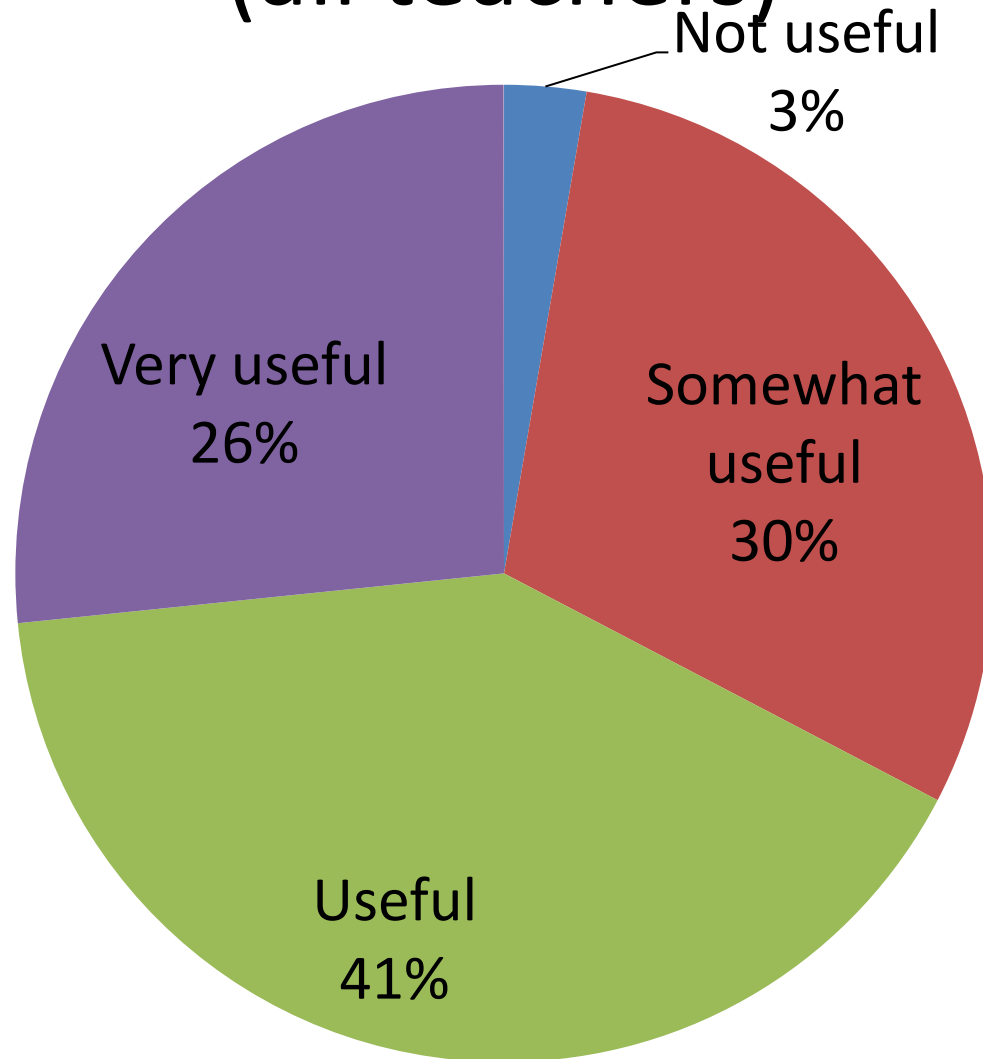


# Usefulness of PD (public schools)

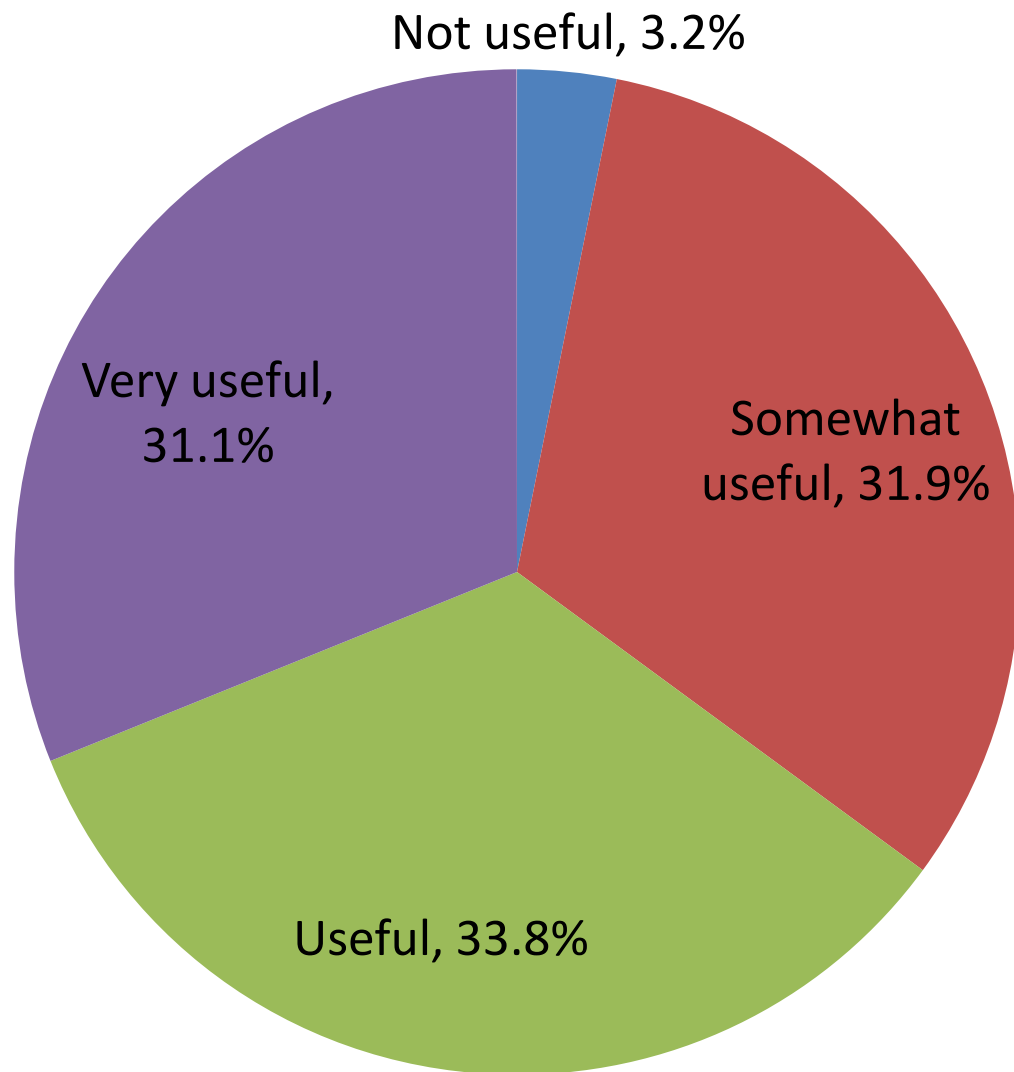




# Usefulness of Content Specific PD (all teachers)



# Usefulness of PD (private schools)



# Top priority for PD (all teachers)

