

## Elements of the Demand for Texas Public School Teachers (2002)

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The demand for public school teachers in Texas is driven largely by three factors:

- Number of students enrolled in Texas public schools,
- Student-teacher ratios, and
- Number of teachers leaving the profession.

Identifying the relative contribution of each of these three elements to the overall demand for teachers is important so that policymakers can understand why there is such a relatively high demand for new teachers each year. Such a detailed understanding will then allow policymakers to develop policies or strategies that specifically address the most critical element in the demand for new teachers. This issue brief divides the overall demand for teachers into three elements. Student enrollment and student-teacher ratio are discussed first as part of the “new” demand for teachers and, subsequently, teacher attrition is discussed as part of the “recurring” demand for teachers.

### New Demand for Teachers

As shown in **TABLE 1**, the number of students enrolled in Texas public schools has increased dramatically since 1996. However, as also shown in **TABLE 1**, the statewide student-teacher ratio for Texas public schools has decreased by almost one student per teacher from 1995 to 2002.

**TABLE 1: Number of Students Enrolled in Texas Public Schools and Student-Teacher Ratio\* for Texas Public Schools (1995 to 2002)**

	1995	1996	1997	1998	1999	2000	2001	2002	# Chg	% Chg
Number Students (in 100s)	3,670	3,740	3,828	3,891	3,945	3,991	4,059	4,165	495	13.5%
Number Teachers	238,095	243,867	251,372	258,438	264,997	272,534	280,108	288,986	50,891	21.4%
Student-Teacher Ratio	15.41:1	15.34:1	15.23:1	15.06:1	14.89:1	14.65:1	14.49:1	14.41:1	1.0	6.1%

\* Calculated as the number of students enrolled divided by the number of teachers employed. The student-teacher ratio on the TEA website is calculated as the number of students enrolled divided by the number of teacher full-time equivalents (FTEs).

One can estimate the effect of the change in student enrollment on the demand for teachers by holding the student-teacher ratio constant across years. For example, to estimate the effect of the increase in the number of students on the demand for teachers from 1995 to 1996, the change in the number of students (70,064) is divided by the student-teacher ratio from 1995 (15.41). The result (4,545) is shown in **TABLE 2**.

Similarly, one can estimate the effect of the change in student-teacher ratio on the demand for teachers by holding the number of students constant across years. For example, to estimate the

effect of the decrease in the student-teacher ratio on the demand for teachers from 1995 to 1996, the number of students in 1996 (3,740,260) is first divided by the student-teacher ratio in 1996 (15.34) to determine the number of teachers under the 1996 student-teacher ratio (243,867). The number of students (3,740,260) is then divided by the student-teacher in 1995 (15.41) to determine the number of teachers in 1996 (238,095) if the student-teacher ratio in 1996 was the same as the 1995 student-teacher ratio. The difference between the 1996 number of teachers under the 1996 student-teacher ratio and the 1996 number of teachers under the 1995 student-teacher ratio is 5,772 as shown in **TABLE 2**. This is the number of additional teachers required because of changes in the student-teacher ratio.

As shown in **TABLE 2**, if the student-teacher ratio had remained at the 1995 level, the increase in students from 1996 to 2001 would have required the hiring of an additional 33,038 teachers. The decrease in the student-teacher ratio resulted in an increase in the demand for teachers increasing by 17,853 teachers.

**TABLE 2: Increase in New Demand for Texas Public School Teachers (1996 to 2002)**

Elements of Demand	95-96	96-97	97-98	98-99	99-00	00-01	01-02	TOTAL
Student Enrollment Change	+4,545	+5,784	+4,130	+3,552	+3,118	+4,631	+7,278	+33,038
Student-Teacher Ratio Change	+1,227	+1,721	+2,936	+3,007	+4,419	+2,943	+1,600	+17,853
Total Change in New Demand	+5,772	+7,505	+7,066	+6,559	+7,537	+7,574	+8,878	+50,891

The sum of the increases in the demand for teachers resulting from changes in student enrollment and student-teacher ratios is the *new* demand for teachers. This demand is in addition to the demand to fill the vacant positions due to teacher attrition. Clearly, the increase in the number of students coupled with the decrease in the student-teacher ratio has resulted in a significant increase in the demand for teachers.

Recurring Demand for Teachers

The overall yearly demand for teachers is also impacted by teachers leaving the Texas public school system. If the number of students and student-teacher ratio remain the same from one year to the next, then any positions vacated by teachers leaving the Texas public school system must be filled by teachers from outside the Texas public school system. Teachers may leave the Texas public school system for a number of reasons, including retirement, re-location out-of-state, career change, or dissatisfaction with some element of the profession (see a forthcoming on the reasons why teachers in Texas leave teaching).

As shown in **TABLE 3**, a fairly large number of positions are vacated each year by teachers leaving the profession. From 1996 to 2002, the number of teachers leaving the profession has increased by nearly 9,000 teachers.

Although the number of teachers employed each year has increased substantially, the number of teachers leaving the profession has increased at an even greater rate. Consequently, the attrition rate has increased from 1996 to 2002.

**TABLE 3: Increase in Recurring Demand for Texas Public School Teachers (1996 to 2002)**

	95-96	96-97	97-98	98-99	99-00	00-01	01-02	# Chg	% Chg
Number of Teachers*	238,095	243,867	251,372	258,438	264,997	272,534	280,108	42,013	17.6%
Number of Teachers Leaving	19,870	20,967	22,308	25,685	26,039	28,610	28,861	8,991	45.2%
Attrition Rate	8.3%	8.6%	8.9%	9.9%	9.8%	10.5%	10.3%	+2.0**	24.1%

\*Number of teachers in the first of the two academic years. \*\* Calculated as 8.3% subtracted from 10.3%.

As shown in **TABLE 4**, the total demand for teachers has increased each year from 1996 to 2002. On average, the total demand for teachers has been nearly 32,000 per year, but was almost 38,000 in 2002. While the demand for teachers due to teacher attrition has increased each year, the demand for teachers due to student enrollment and student-teacher ratio changes have been less consistent over time.

**TABLE 4: Increase in Demand for Texas Public School Teachers Due to All Elements of Demand (1996 to 2002)**

Elements of Demand	1996	1997	1998	1999	2000	2001	2002	AVG 96 - 02
Student Enrollment Change	+4,545	+5,784	+4,130	+3,552	+3,118	+4,631	+7,278	+4,720
Student-Teacher Ratio Change	+1,227	+1,721	+2,936	+3,007	+4,419	+2,943	+1,600	+2,550
Number of Teachers Leaving	+19,870	+20,967	+22,308	+25,685	+26,039	+28,610	+28,861	+24,620
<b>TOTAL DEMAND</b>	<b>+25,642</b>	<b>+28,472</b>	<b>+29,374</b>	<b>+32,244</b>	<b>+33,576</b>	<b>+36,184</b>	<b>+37,739</b>	<b>+31,890</b>

Finally, as shown in **TABLE 5**, teacher attrition is the single largest factor contributing to the demand for new teachers each year. Indeed, approximately 75 percent of the demand for new teachers is caused by teacher attrition. This percentage has remained fairly constant over time. There have been, however, fluctuations over this time period. For example, from 1996 to 1997, the demand for teachers due to attrition actually decreased while the demand due to increases in student enrollment and decreases in the student-teacher ratio increased. With respect to the percentage of the demand due to student enrollment increases, there was a marked decrease from 1997 to 1998, but a major increase from 2000 to 2002.

**TABLE 5: Percentage of the Total Demand for Teachers by the Three Major Elements of the Demand for Teachers (1996 to 2002)\*\*\***

Elements of Demand	1996	1997	1998	1999	2000	2001	2002	AVG 96-02
Student Enrollment Change	17.7%	20.3%	14.1%	11.0%	9.3%	12.8%	19.3%	14.8%
Student-Teacher Ratio Chg	4.8%	6.0%	10.0%	9.3%	13.2%	8.1%	4.2%	8.0%
Number of Teachers Leaving	77.5%	73.6%	75.9%	79.7%	77.6%	79.1%	76.5%	77.2%

\*\*\* The percentages in this table are calculated by dividing the numbers in rows one through three in TABLE 4 by the total demand in row four of TABLE 4.

Problems with the Analysis

Unfortunately, there is no available data to suggest the reasons behind the decrease in the student-teacher ratio from 1995 to 2002. Possible reasons include a greater percentage of students in the grades required to have smaller class sizes<sup>1</sup>, a greater percentage of students enrolled in small districts that tend to have smaller student-teacher ratios, an increase in upper-level classes offered across the state which tend to have smaller student-teacher ratios, an increase in the number of special education classes which traditionally have relatively small student-teacher ratios, or simply a decision by school district personnel to attempt to reduce student-teacher ratios in an attempt to positively effect student achievement.

Conclusion

The demand for public school teachers in Texas has increased substantially over the past five years. Specifically, the demand for teachers has increased 47 percent from 25,642 in 1996 to 37,739 in 2002. On average, about 77 percent of the increase in the demand was due to teacher attrition. In fact, overall teacher attrition has risen from 8.3 percent for the 1995-1996 academic years to 10.3 percent for the 2001-2002 academic years. Current trends in teacher demographics suggest that the increase in the teacher attrition rate will likely continue to increase. Specifically, the percentage of teachers with the greatest likelihood of leaving the profession—those with fewer than five years of experience and with greater than 20 years of experience—is increasing.

Given that most of the demand for newly hired teachers each year is due to teacher attrition, any policies attempting to reduce the shortage of certified teachers should focus primarily on reducing the attrition rate. Some of these policies should provide incentives for experienced teachers to remain in the field or for retired teachers to return to the profession. However, most of those quitting the profession each year are teachers not eligible for retirement. Indeed, nearly 50 percent of teachers leave the profession within five years of their first year of employment.

Data Source:

Public Education Information and Management System, TEA  
Teacher Employment files, 1995 through 2002

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<sup>1</sup> Districts are required to limit class sizes to 22 students in grades K through 3 unless waived by TEA. If the increases in student enrollment occurred in these grades more than other grades, then such a student enrollment increase would drive down the student-teacher ratio.