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POLICY PERSPECTIVES

# From Rusty Wire Fences to Wrought-Iron Gates

*How the Poor Succeed in  
Getting to—and Through—College*



Beth Macy



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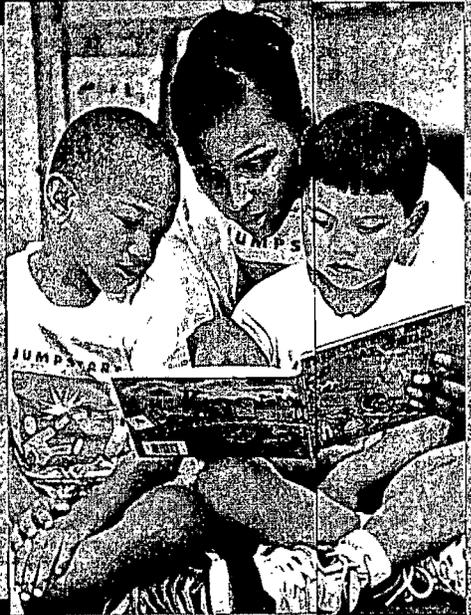
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# NATIONAL CENTER FOR EDUCATION STATISTICS

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**Statistical Analysis Report**

**June 2000**

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## **Condition of America's Public School Facilities: 1999**

  
*Fast Response Survey System*

# EXECUTIVE SUMMARY

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## Background

Over the past decade, the physical condition of America's public schools has received considerable attention (e.g., Kozol 1991; Lewis et al. 1989). For example, a number of lawsuits challenging school funding for facilities have drawn attention to the poor conditions that many students encounter at school [e.g., *Roosevelt Elementary School No. 66 v. Bishop*, 877 P. 2d 306 (Ariz. 1994)]. Newspaper stories and research studies describing poor ventilation, broken plumbing, and overcrowding have raised concerns about the effects of school facilities on teaching and learning. More importantly, some conditions, like sagging roofs or poor air quality, have raised serious questions about student and teacher safety.

The physical condition of schools is described in a series of reports based on a 1994 study conducted by the United States General Accounting Office (GAO). In addition, several studies have reported on school repair and construction costs, each with a somewhat different focus. The 1994 GAO study provided estimates of the cost of repairs, renovations, and modernizations to put schools into good overall condition (U.S. GAO 1995a), while a more recent GAO study reported actual school construction expenditures for fiscal years 1990 through 1997 (U.S. GAO 2000). Another report included actual costs of completed school construction projects in 1998 and projected expenditures for new construction, additions, and renovations for 1999 (Abramson 1999). A report recently released by the National Education Association (NEA) gave a cost estimate of the funds needed for various kinds of school infrastructure (including new construction) and education technology (NEA2000).

This report provides national data about the condition of public schools in 1999 based on a survey conducted by the National Center for

Education Statistics (NCES) using its Fast Response Survey System (FRSS). Specifically, this report provides information about the condition of school facilities and the costs to bring them into good condition; school plans for repairs, renovations, and replacements; the age of public schools; and overcrowding and practices used to address overcrowding. The results presented in this report are based on questionnaire data for 903 public elementary and secondary schools in the United States. The responses were weighted to produce national estimates that represent all regular public schools in the United States. Information about the condition of school facilities is based on questionnaire rating scales rather than on physical observation of school conditions by outside observers.

## Key Findings

### Estimates of Cost to Put Buildings Into Good Condition

A major barrier for schools to improve their facilities is the substantial cost (U.S. GAO 1995a). If schools are unable to obtain the funding they need to perform maintenance or construct new buildings when necessary, facilities problems multiply, which can result not only in health and safety problems, but also in increased costs of repairs (Hansen 1992). Results of the 1999 FRSS survey indicate that:

- Three-quarters of schools reported needing to spend some money on repairs, renovations, and modernizations to put the school's onsite buildings into good overall condition<sup>1</sup> (table

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<sup>1</sup> Schools that reported on the questionnaire that the condition of any type of onsite school building (original and temporary buildings, permanent addition) or any building feature (e.g., roofs, plumbing, electric power) was less than good (i.e., any type of building or building feature was given a rating of adequate, fair, poor, or replace) provided information about the cost of the needed repairs, renovations, and modernizations. This is somewhat different from the approach used by GAO in 1994, which prevents direct

5). The total amount needed by schools was estimated to be approximately \$127 billion (see table 23 in appendix B).

- The average dollar amount per school for schools needing to spend money was about \$2.2 million (see table 23 in appendix B). The average cost per student of repairs, renovations, and modernizations to put the school into good overall condition among the schools that reported needing to spend money was \$3,800 (table 5).

### Types of School Buildings and Overall Facilities Conditions

Observations of school facilities have appeared in headlines, speeches, and reports that focus on the deteriorating environmental and physical conditions of the nation's schools. Results of the 1999 FRSS survey confirm that although most schools are in relatively good condition, many schools are in less than adequate condition:

- One in four schools reported that at least one type of onsite building (i.e., original and temporary buildings, permanent additions) was in less than adequate condition.<sup>2</sup>
- Approximately 11 million students were enrolled in schools reporting at least one type of onsite building in less than adequate condition (table 3). Of these students, about 3.5 million attended schools where at least one type of building was in poor condition or needed to be replaced because it was non-operational or showed significantly substandard performance (see table 23 in appendix B).
- Eighty-one percent of schools reported that their original buildings were in adequate or better condition, 84 percent of those schools with permanent additions reported them to be in adequate or better condition, and 81 percent of schools with temporary buildings

reported them to be in adequate or better condition (table 1). This means that approximately one in five schools having a particular type of building reported that these building types were in less than adequate condition. This included 4 to 6 percent reporting buildings in poor condition (defined as consistent substandard performance), and 1 to 2 percent reporting that buildings needed to be replaced due to significantly substandard performance or non-operational condition.

- The condition of original buildings and temporary structures did not vary significantly by school characteristics<sup>3</sup>; however, the condition of permanent additions varied by concentration of poverty: schools with the highest concentration of poverty (defined here as 70 percent or more of the students eligible for free or reduced-price lunch) were more likely to report that their permanent additions were in less than adequate condition than were schools with 20 to 39 percent or schools with less than 20 percent of their students eligible for free or reduced-price lunch (30 percent versus 13 percent and 8 percent, respectively; table 2).

### Condition of Building Features

The 1999 FRSS survey on the condition of public school facilities also collected information on the condition of nine different building features: roofs; framing, floors, and foundations; exterior walls, finishes, windows, and doors; interior finishes and trim; plumbing; heating, ventilation and air conditioning; electric power; electrical lighting; and life safety features. The 1999 FRSS survey found that:

comparison of the cost estimates between the FRSS and GAO studies.

This is based on types of onsite buildings, and does not include building features. It is also based on ratings of less than adequate condition, which includes the ratings of fair, poor, and replace.

<sup>2</sup> The school characteristics used as analysis variables in this report are school instructional level, school enrollment size, locale (central city, urban fringe/large town, rural/small town), region, percent minority enrollment, and percent of students in the school eligible for free or reduced-price school lunch (which indicates the concentration of poverty in the school). Throughout this report, differences (particularly those by school characteristics) that may appear large may not be statistically significant. This is due in part to the relatively large standard errors surrounding the estimates (because of the small sample size) and the use of the Bonferroni adjustment to control for multiple comparisons.

- Fifty percent of schools reported that at least one of the nine building features at their school was in less than adequate condition (table 4), and three-quarters of those schools had more than one building feature in less than adequate condition (figure 1). Schools in central cities were more likely than schools in urban fringe areas and large towns to report at least one building feature as less than adequate (56 percent compared with 44 percent; table 4). Schools with the highest concentration of poverty (70 percent or more of the students eligible for free or reduced-price lunch) were more likely to report that at least one building feature was in less than adequate condition than were schools with 20 to 39 percent or schools with less than 20 percent of their students eligible for free or reduced-price lunch (63 percent versus 45 percent each).
- Approximately one-fifth of schools indicated less than adequate conditions for life safety features, roofs, and electric power, and about a quarter of schools reported less than adequate conditions for plumbing, and for exterior walls, finishes, windows, and doors (table 4). Heating, ventilation, and air conditioning systems were reported to be in less than adequate condition at 29 percent of schools.

### Environmental Conditions

Environmental conditions, such as heating, ventilation, and air conditioning, are important aspects of the day-to-day environment for students. The 1999 FRSS survey on the condition of public school facilities also collected information on satisfaction with six different environmental conditions: lighting, heating, ventilation, indoor air quality, acoustics or noise control, and physical security of buildings. The results of the 1999 FRSS survey indicate that:

- Forty-three percent of the schools reported that at least one of the six environmental factors was in unsatisfactory condition (table 8), and approximately two-thirds of those schools had more than one environmental condition in unsatisfactory condition (figure

2). Ventilation was the environmental condition most likely to be perceived as unsatisfactory (26 percent of schools; table 8). About a fifth of schools reported they were unsatisfied with heating, indoor air quality, acoustics or noise control, and the physical security of buildings, and 12 percent were unsatisfied with lighting conditions.

- Schools in rural areas and small towns were more likely than schools in urban fringe areas and large towns to report that at least one of their environmental conditions was unsatisfactory (47 percent compared with 37 percent; table 8). Schools with the highest concentration of poverty were more likely to report at least one unsatisfactory environmental condition than were schools with the lowest concentration of poverty (55 percent compared with 38 percent).
- About one-third of schools were unsatisfied with the energy efficiency of the school, and 38 percent were unsatisfied with their flexibility of instructional space (see table 23 in appendix B).

### Plans for Repairs, Renovation, or Replacement

The condition of school facilities is continuously changing, and information about schools' future plans for building or installing new structures or additions, as well as plans to make major repairs, renovations, or replacements in the next 2 years, may provide insights into the future condition of these facilities. The 1999 FRSS survey found that:

- About two-thirds of public schools had written long-range facilities plans that guide their planning for facilities improvements (table 12). One-fifth of schools reported plans to build new attached and/or detached permanent additions in the next 2 years, and 1 in 10 reported plans to install new temporary buildings in the next 2 years (table 13).
- About half of the schools planned to make major repairs, renovations, or replacements to at least one building feature in the next 2 years (table 14). Overall, 41 percent of schools indicated plans to make major repairs

or renovations to at least one building feature, and one-quarter planned to replace at least one building feature in the next 2 years.

- Schools in less than adequate condition were more likely to have plans for repairs, renovations, or replacement. While 46 percent of schools in adequate or better overall condition reported plans to repair, renovate, or replace at least one building feature in the next 2 years, 67 percent of schools in less than adequate condition reported such plans (figure 4).

### Functional Age of Schools and School Conditions

A number of reports have raised concerns about the age of America's public schools (e.g., U.S. Department of Education 1999b). Because age of the building, by itself, may be somewhat less important than its history of maintenance and renovation, a more accurate indication of a school's age is its functional age. Functional age is defined as the age of the school based on the year of the most recent renovation or the year of construction of the main instructional building(s) if no renovation has occurred. Results of the 1999 FRSS survey indicate that:

- In 1999, the average age of the main instructional building(s) of public schools was 40 years, based on years since original construction (table 17). Among schools that had been renovated since construction, the renovation, on average, occurred 11 years ago.
- The average functional age of schools, based on the year of the most recent renovation or the year of construction if no renovation had occurred, was calculated to be 16 years. In general, average functional age did not vary by school characteristics, although small schools were older than medium or large schools.
- The functional age of schools was found to be related to their condition. Older schools were more likely than newer schools to report less than adequate or unsatisfactory conditions (figure 6).

### Overcrowding

Dramatic increases in enrollment due to the "baby-boom echo," immigration, and migration have led many schools to enroll far more students than they were designed to accommodate.<sup>4</sup> Compounding these conditions are initiatives to reduce class size, resulting in the need for even more classrooms. As the public school system copes with such conditions, there is growing concern about the degree of overcrowding that may exist in some schools. This report provides information about the extent to which public schools are overcrowded, at capacity, or underenrolled.<sup>5</sup> Overcrowded schools were defined as having an enrollment that was more than 5 percent above the capacity of the school's permanent instructional buildings and space (i.e., overenrolled). Schools with enrollments within 5 percent of the capacity of their permanent buildings and space were considered to be at capacity, and schools with enrollments more than 5 percent below the capacity of their permanent buildings and space were considered underenrolled. The 1999 FRSS survey indicates that:

- Overall, about half of public schools were underenrolled, about one-quarter were within 5 percent of their capacity, and about a quarter were overcrowded, based on the capacity of their permanent instructional buildings and space (table 19).
- Large schools were more likely than other schools to be seriously overcrowded (more than 25 percent overenrolled), while small schools were more likely than other schools to be severely underenrolled (table 19).

<sup>4</sup> Migration patterns (e.g., families moving out of particular areas) and decisions families make with regard to their children's schooling (e.g., private school enrollment) may also lead to a decline in enrollments among some public schools. These declines may result in schools that are underenrolled.

<sup>5</sup> The proportion indicating the degree to which enrollment exceeds or falls below the capacity of the permanent buildings and instructional space was calculated using the following formula:

$$X = \frac{((\text{total student enrollment}) - (\text{capacity of permanent instructional buildings and space}))}{(\text{capacity of permanent instructional buildings and space})}$$

Schools with a high minority enrollment (more than 50 percent) were more likely than schools with a low minority enrollment (5 percent or less) to be seriously overcrowded.

- Schools that were classified as overcrowded were more likely than other schools to report that at least one type of onsite building was in less than adequate condition (figure 9). Overcrowded schools were also more likely than other schools to have at least one building feature in less than adequate condition, and to have at least one environmental factor in unsatisfactory condition.
- About a third (36 percent) of schools indicated that they used portable classrooms, and 20 percent reported using temporary instructional space (table 22). Among these schools, most reported using portables and temporary instructional space to alleviate overcrowding.

## Conclusions

Although the majority of America's public schools are in adequate or better condition, a sizable minority are not. About a quarter of the schools reported that at least one type of onsite building was in less than adequate condition, half reported that at least one building feature was in less than adequate condition, and about 4 out of 10 reported at least one unsatisfactory environmental condition. Data about the functional age of schools suggest that the oldest schools are most in need of attention, but that many of these schools do not have plans for improvement. About three-quarters of public schools do not have problems with overcrowding, but close to 10 percent have enrollments that are more than 25 percent greater than the capacity of their permanent buildings. Collectively, these data provide a complex portrait of the current physical condition and crowding in America's public schools. Although the majority of schools are in adequate condition, functionally young, and not overcrowded, a substantial number of schools are in poor condition, and some of them suffer from age and overcrowding. Past experience suggests that correcting these problems will be costly.

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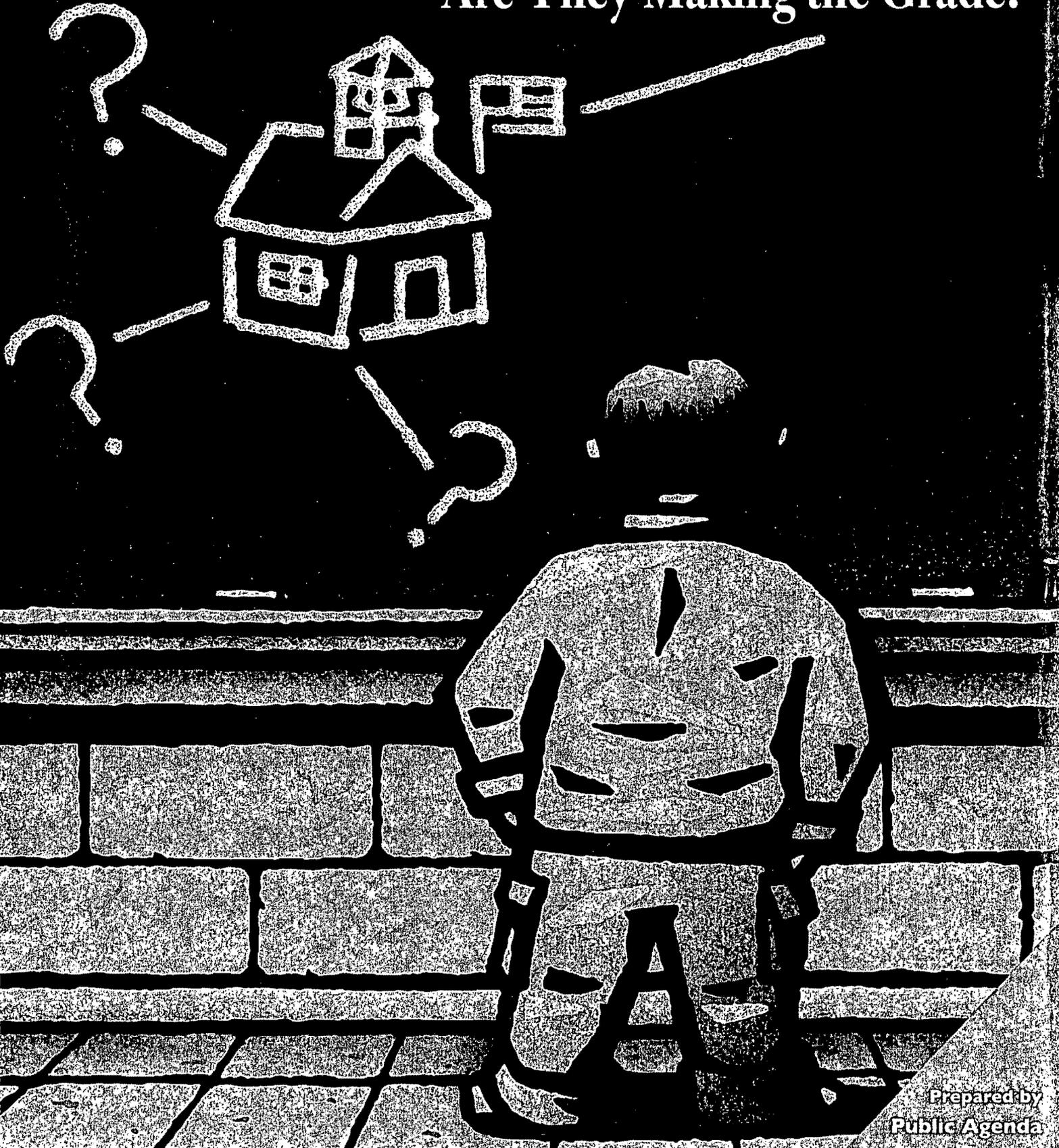


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# Public Schools

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