Class Size Reduction (CSR)
The Questions:

- Does lowering the student-teacher ratio increase student achievement?
- Is this a cost-effective policy?
- What is the role of context and implementation in mediating effects of CSR?
Overview:

- Large-scale experimental research indicates that CSR increases student achievement, particularly for students of color.
- When carefully implemented, CSR is cost-effective.
- Issues such as teacher quality, resources, and actual class sizes may mediate the effects of CSR.
- Although more research is needed to determine how CSR increases student achievement, the results of Tennessee’s STAR experiment indicate that CSR is a viable means by which to increase student achievement.
A Historical Perspective

- CSR one of many kinds of school reform made popular beginning in the late 1970s
- 20+ states and federal government have adopted CSR policies (Ehrenberg et al., 2001)
- “…The concept of class size [is] somewhat difficult to pin down, [and] the policies that are termed “class-size reduction” can be very different from each other” (Ehrenberg et al., 2001, p. 3)
Past Research

- Non- and quasiexperimental studies have been conducted on CSR over the past several decades.
- Hanushek (1999): nonexperimental data “points to no systematic effects of class size reductions” (p. 3)
- Finn and Achilles (1999): nonexperimental data indicates that CSR increases student achievement (classes below 20 students, in math and reading, primary grades, for economically disadvantaged or ethnic minority students).
- Flaws in methodology and conceptual frameworks (e.g. “student-teacher ratio” vs. “class size”) limit reliability of findings, lead to very different interpretations of findings.
Tennessee’s STAR Experiment

- Funded in 1985 by Tennessee’s legislature
- Controlled scientific experiment with random assignment of students to small, regular, or regular with an aide classrooms
- More than 6,000 students in 329 classrooms, grades K-3
- Longitudinal—4 year intervention, follow-up data through 7th grade, with additional analyses underway
- Norm-referenced and criterion-referenced tests administered at the end of each school year
- Learning behaviors, school experiences assessed in grades 4 and 8
- Results analyzed by outside researchers using a variety of statistical approaches
- Outcomes replicated in Wisconsin and North Carolina

Finn & Achilles, 1999
Findings from STAR

- Students in small classes consistently outperformed those in regular classes (statistically significant effect sizes for both kinds of tests)
- Small-class advantage for both boys and girls
- Minority or inner-city students—substantially greater benefits (also see Jepsen & Rivkin, 2002; Krueger, 1999)
- Small-class advantage persists at least through grade 7
- Behavioral benefits for students from small classes persist beyond grade 3

Finn & Achilles, 1999
Challenges to STAR

- Hanushek (1999) argues, “Project STAR…included a series of implementation problems that introduce uncertainty about the interpretation of any of its results” (p. 18)

- Krueger (1999) counters, “The implementation of the STAR experiment was not flawless, but my reanalysis suggests that the flaws in the experiment did not jeopardize the main results” (p. 528)

- Ehrenberg (1999) also observes, “…Although one cannot be certain that biases did not creep into the STAR demonstration as it proceeded, they do not appear to threaten the basic conclusions of the study” (p. 18)
The Cost-Effectiveness of CSR

- Difficult to do a precise cost-benefit analysis of CSR
- Cost of CSR (reducing class size by 1/3 for entering K students for 4 years) = approximately $7400
- With CSR’s .22 SD gain, value of earnings gain from raising test scores = $9603 for men, $7851 for women

- “These calculations suggest that the benefit of reducing class size in terms of future earnings is in the same ballpark as the costs” (Krueger, 1999, p. 531)
How CSR is implemented makes a difference:
--CSR may be more effective with some student populations (e.g. primary students, students of color and those who are economically disadvantaged) and may need to be more drastic (15 students per class) than some states are implementing or considering
--Further research is needed to determine whether CSR should be implemented in conjunction with other reform measures (e.g. teacher professional development to support CSR)
--Another area for future research: How, on a classroom level, does CSR work to increase student achievement?
--Resource issues: STAR vs. the California counterexample: widespread shortages of qualified teachers and inadequate facilities