



Illinois Education Research Council

Teacher Academic Capital in Illinois, 2001-2006: Closing the Gap?

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The Index of Teacher Academic Capital (ITAC)

- ITAC statistically combines five school-level measures of teacher academic ability that research finds are related to student achievement

ITAC Components	Weight
Teachers' Mean ACT Composite Score	0.91
Teachers' Mean ACT English Score	0.90
% of Teachers Failing the Basic Skills Test on Their First Attempt	-0.36
% of Teachers with Emergency or Provisional Certification	-0.50
Teachers' Mean Undergraduate College Competitiveness Ranking	0.45

- Data for every school in Illinois over six years (2001-2006)
 - Approximately 4,200 schools and 125,000 teachers per year
 - Component weights based on 2003 distribution
 - Mean of 0.0 and Standard Deviation of 1.0 in 2003

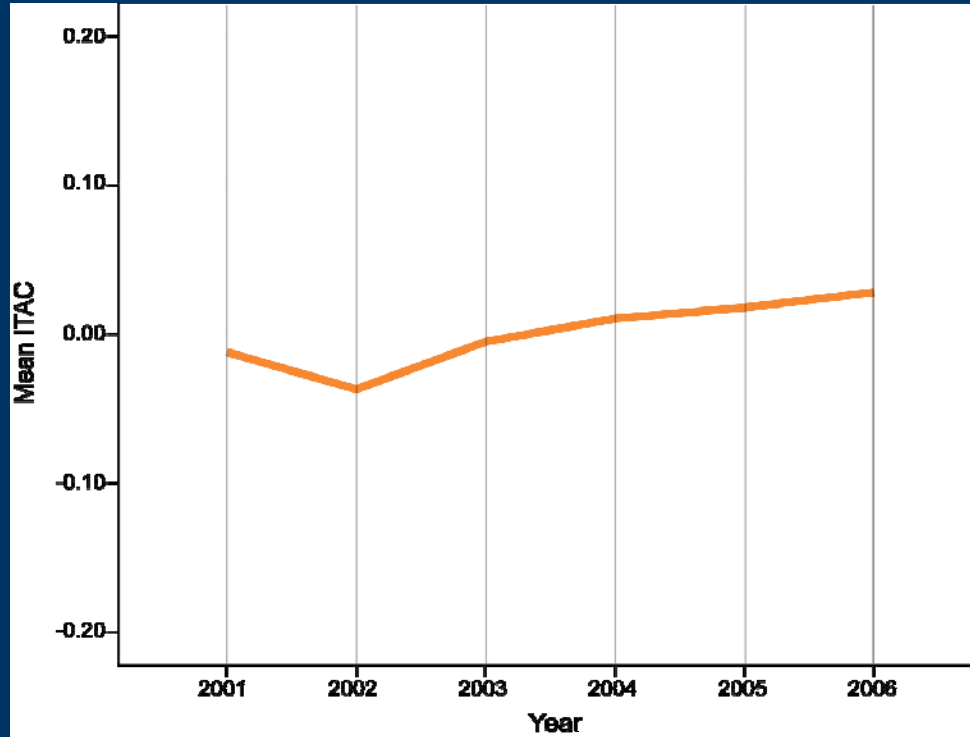


Questions

- Is overall ITAC level improving?
- Do all students have equal access to ITAC?
- If there are gaps in access to ITAC, are they widening or closing?
- Is ITAC related to student achievement?



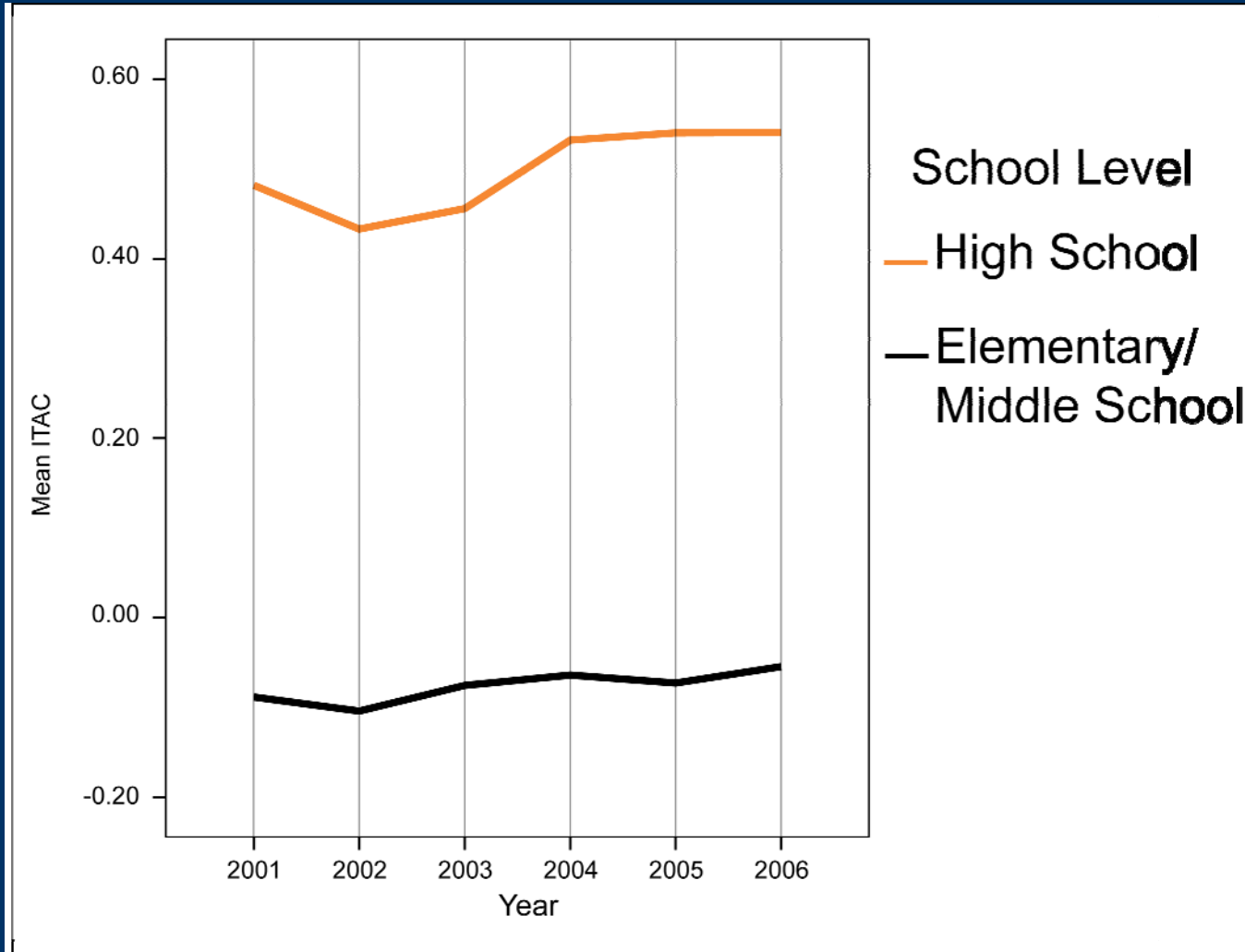
Slight ITAC improvement from 2001 to 2006



ITAC Component	2001	2002	2003	2004	2005	2006	Change
Emergency Certified	5.12%	5.33%	5.26%	4.79%	4.77%	4.50%	-0.62
Failed Basic Skills Test	0.27%	0.44%	0.42%	0.44%	0.44%	0.51%	+0.24
ACT Composite	20.98	20.99	21.06	21.10	21.13	21.16	+0.18
ACT English	21.59	21.54	21.59	21.59	21.59	21.58	-0.01
College Competitiveness	3.04	3.03	3.04	3.03	3.03	3.04	0.00

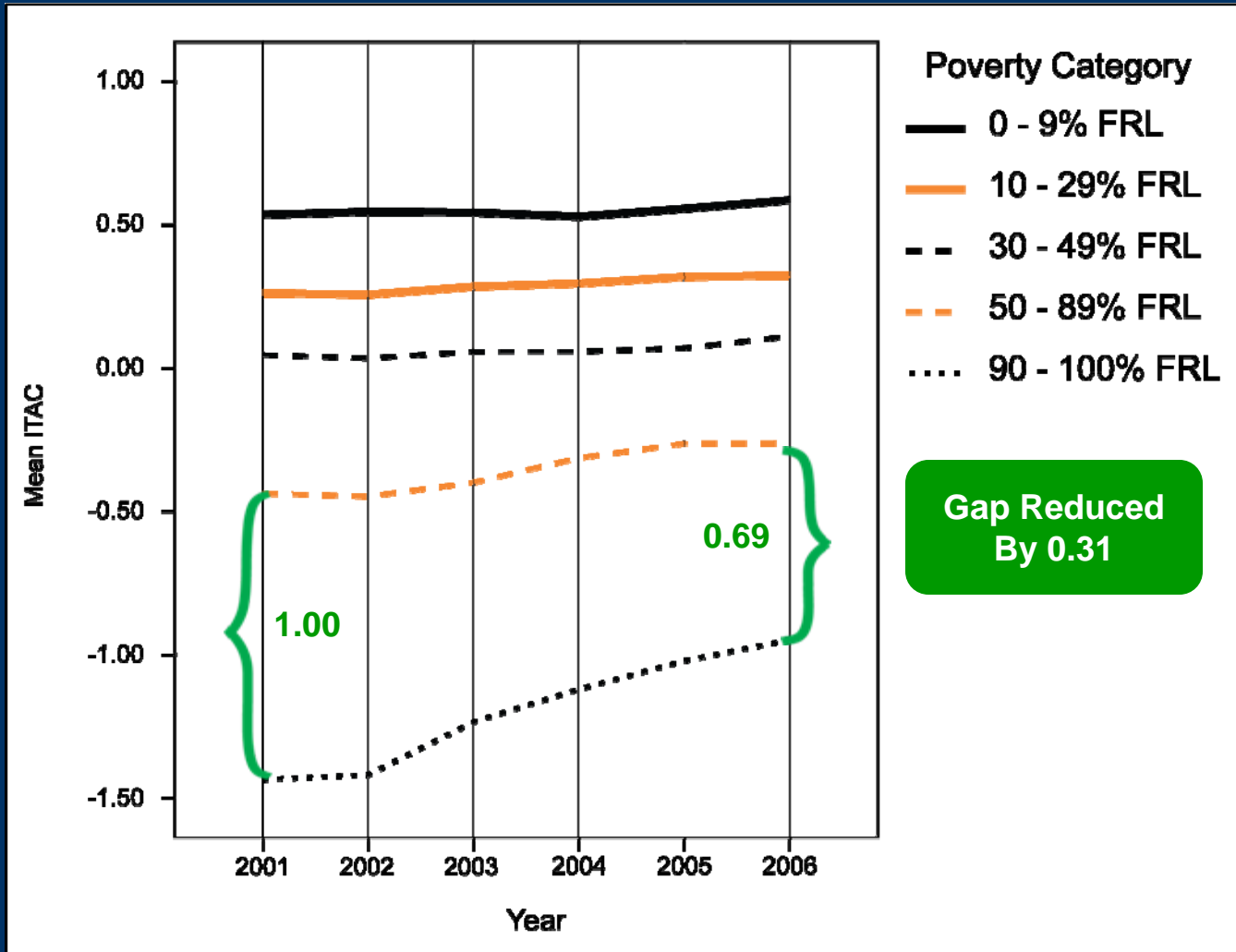


Large ITAC differences by school level





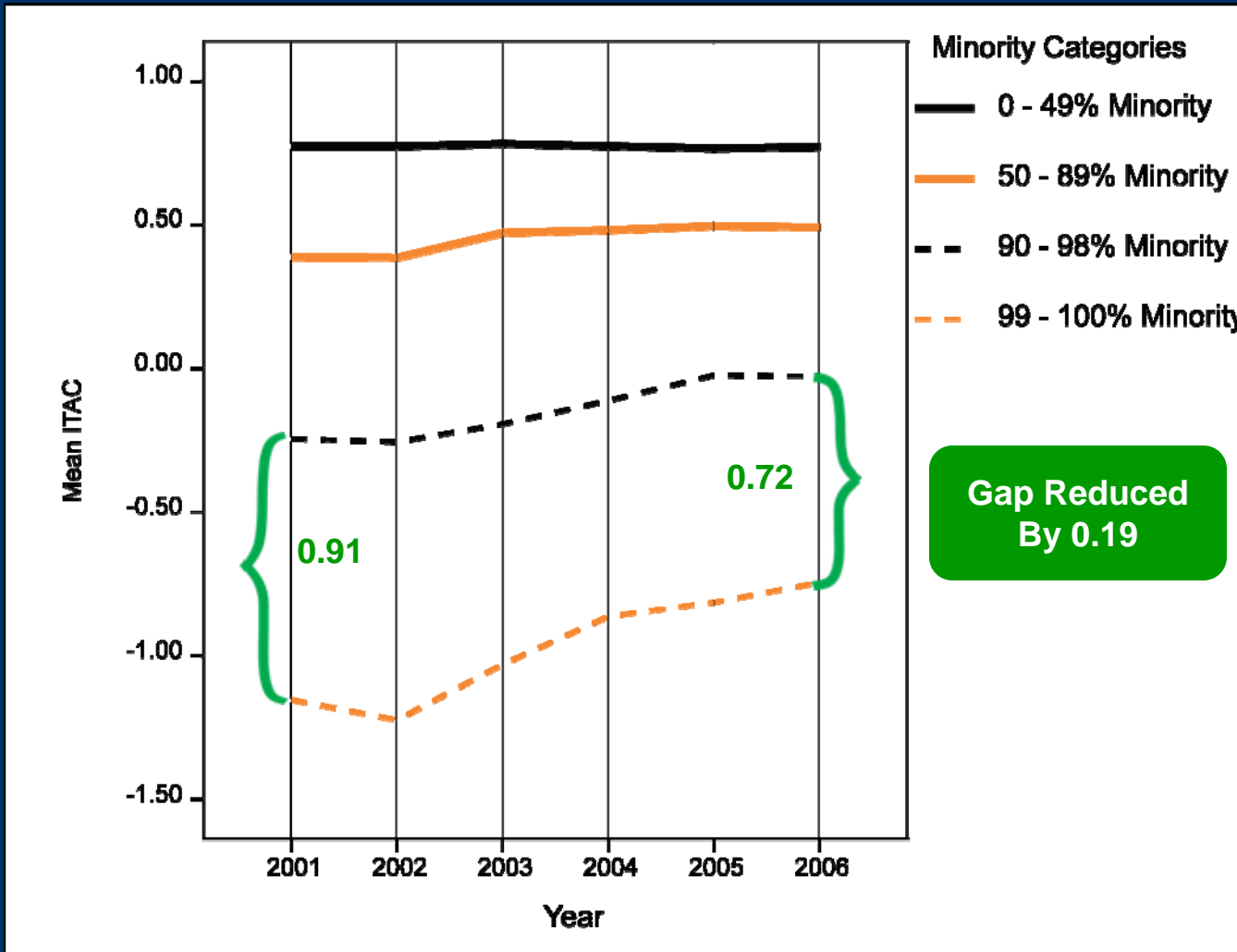
Large ITAC differences by student poverty category...



... but gaps are closing.



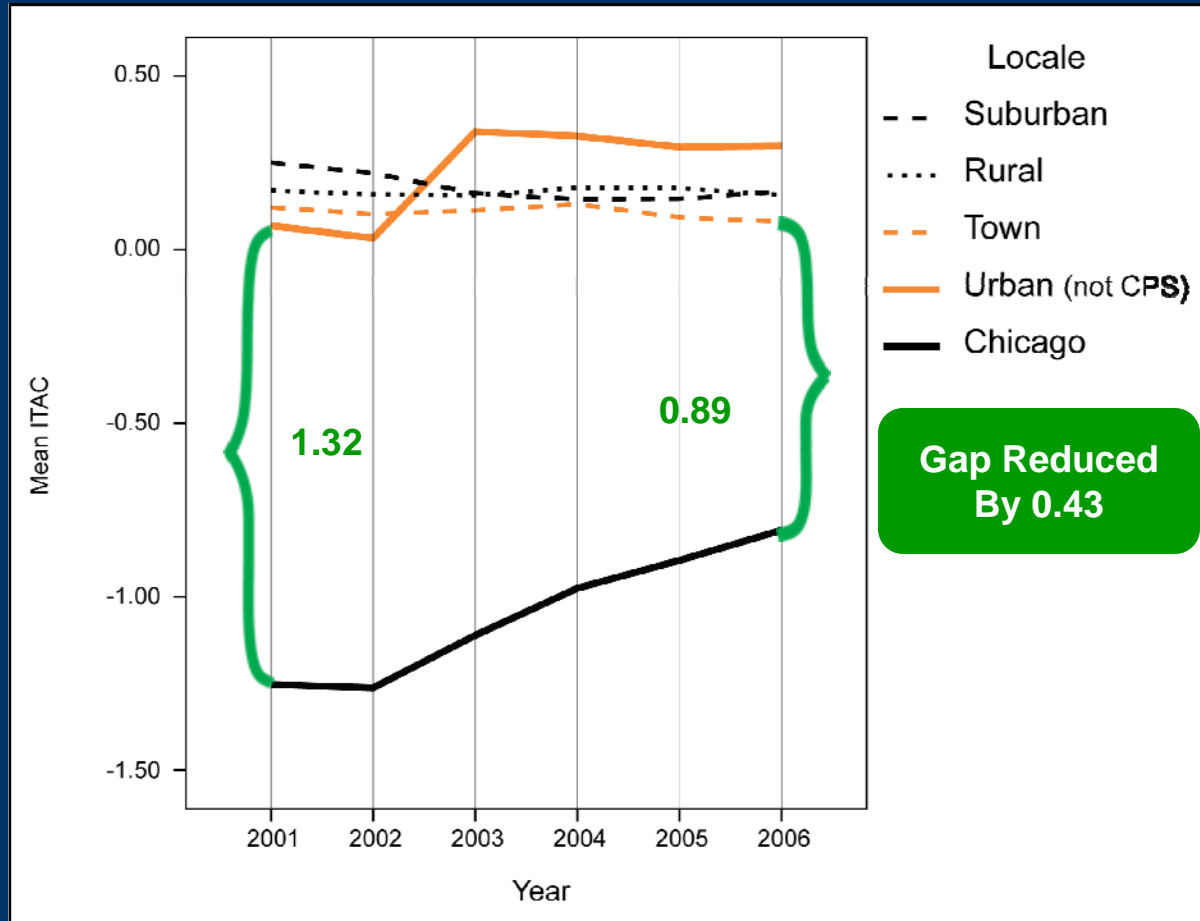
Also by student minority category...



... but gaps are closing.



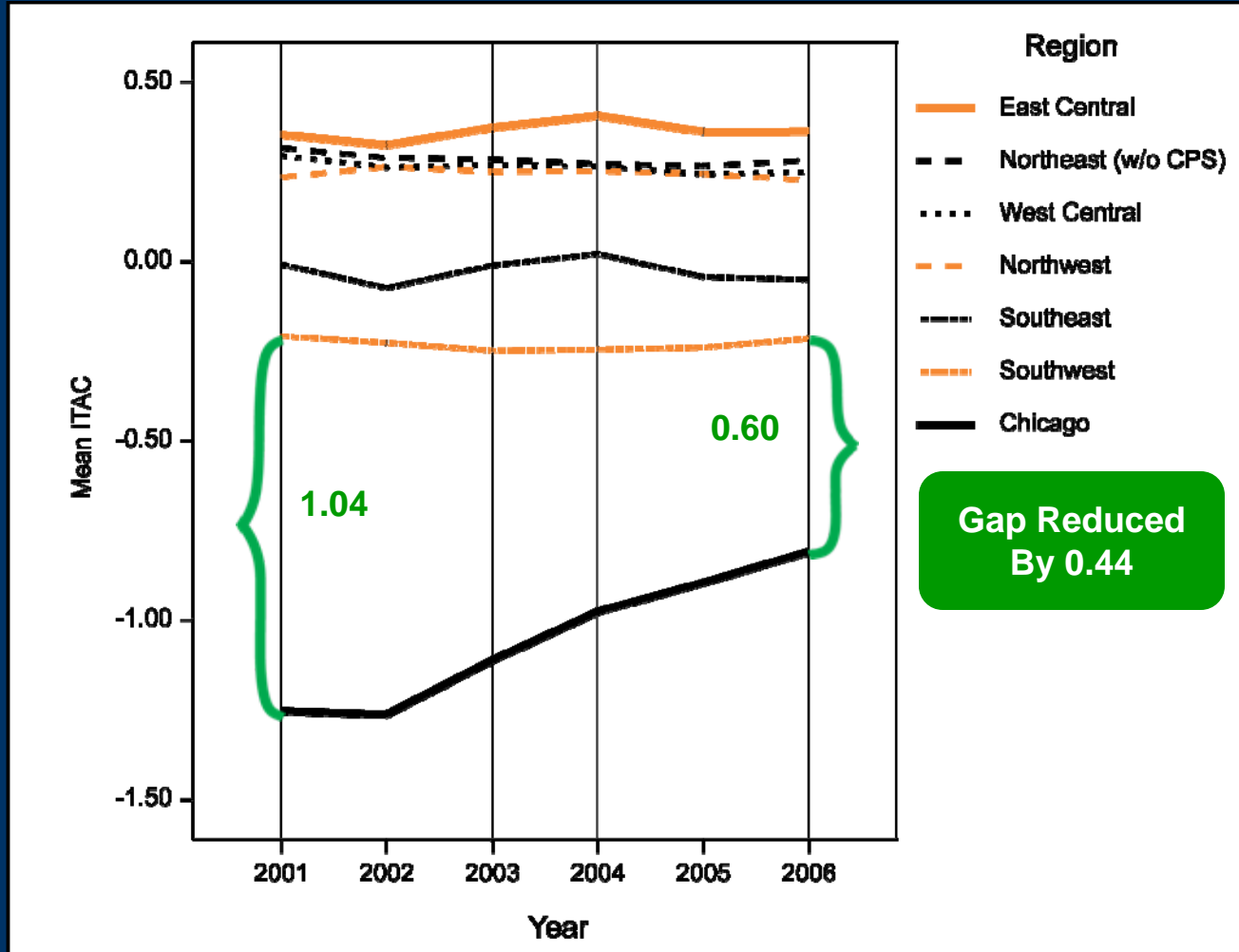
And Chicago versus other locales...



... but gap is closing (and Urban non-CPS improved also).



Finally, Chicago versus other regions...



... and gap is still closing.



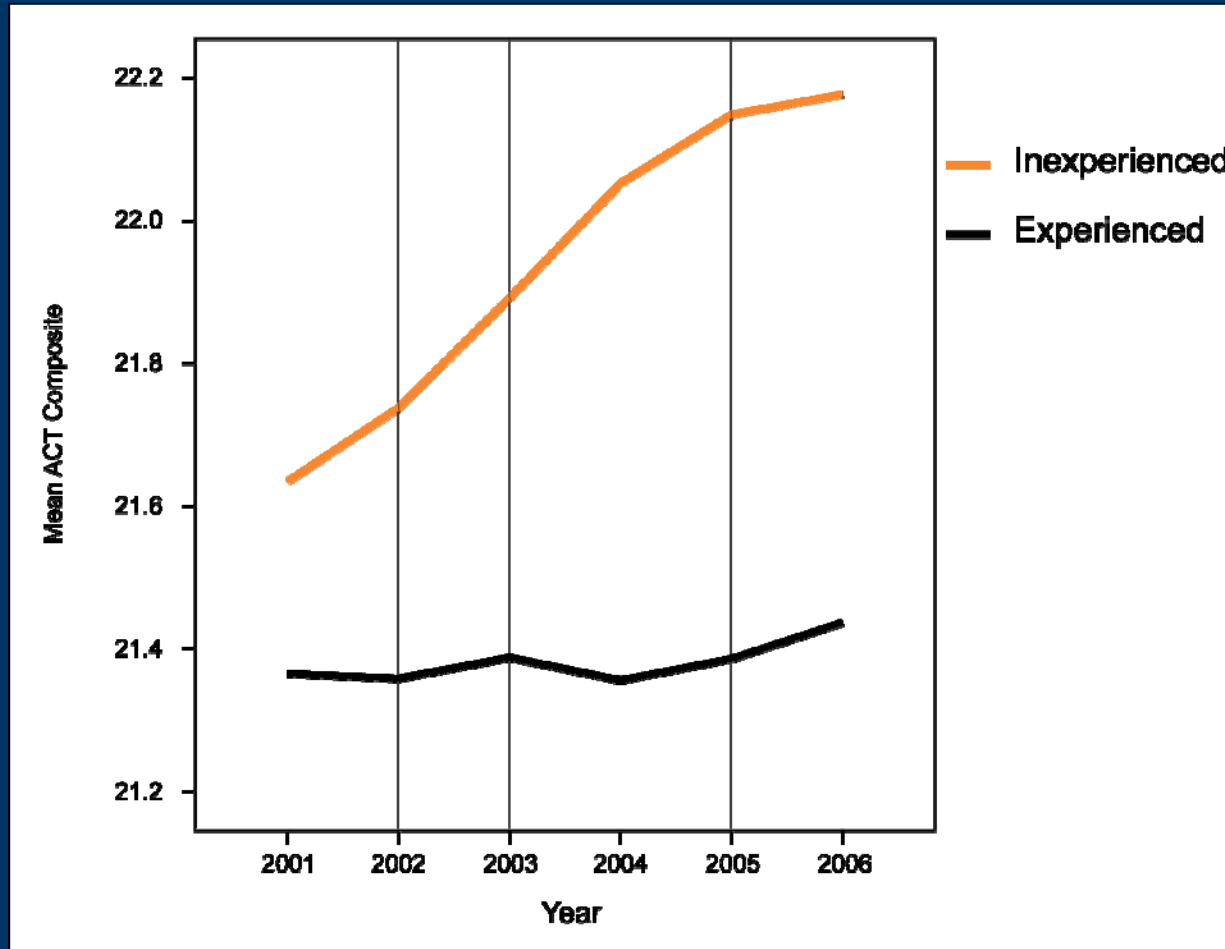
Large improvements to ITAC in Chicago

ITAC Component	2001	2002	2003	2004	2005	2006	Change
ITAC	-1.25	-1.26	-1.11	-0.98	-0.90	-0.81	+0.44
Emergency Certified	22.03%	22.52%	21.45%	18.96%	18.49%	16.37%	-5.66
Failed Basic Skills Test	0.66%	1.00%	0.79%	0.84%	0.78%	0.80%	+0.14
ACT Composite	19.11	19.18	19.44	19.69	19.85	19.92	+0.81
ACT English	19.57	19.62	19.87	20.04	20.17	20.23	+0.66
College Competitiveness	2.94	2.93	2.95	2.94	2.95	2.98	+0.04

How did ITAC change?



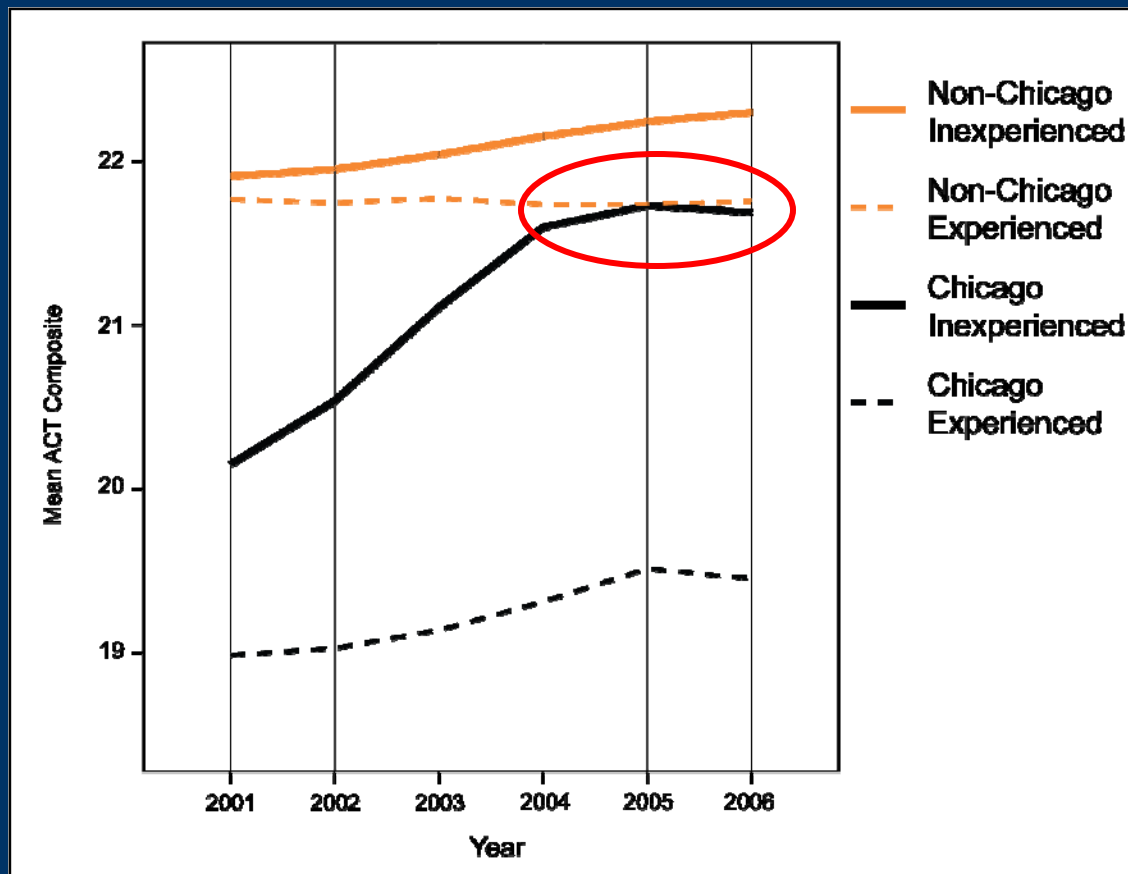
Inexperienced teachers have higher average ACT Composites...



... and the gap is widening.



Regardless of experience level, ACT Composite averages are lower in Chicago...



... but new teachers in Chicago are improving more quickly and approaching experienced teachers elsewhere.



And new teachers in Chicago elementary/middle schools are distributed more equitably

- No large differences in hiring patterns between school types at the elementary/middle school level.
 - Suggests that overall inequities are a result of sorting that takes place *after* teachers' initial entry – through transitions to other schools or from the profession.
- However, there is some evidence that new teachers are being sorted upon initial entry at the high school level.



ITAC helps boost achievement in elementary/middle schools statewide

School-Level Fixed Effects, Illinois

	Elementary/Middle		High School	
	Stand. Coeff.	Sig.	Stand. Coeff.	Sig.
% Inexperienced	-0.01	0.16	-0.04	0.00
% Minority	-0.23	0.00	-0.20	0.05
% FRL	-0.01	0.37	-0.10	0.04
ITAC	0.02	0.00	0.00	0.80
Lagged Test Score	0.23	0.00	-0.12	0.00
Constant	-0.18	0.00	-0.08	0.06
<i>R-Square</i>	0.78		0.19	

Year dummies included in model but not shown on table

DV is % of students in school meeting or exceeding standards on state tests



ITAC has some impact at both school levels in Chicago

School-Level Fixed Effects, Chicago

	Elementary/Middle		High School	
	<i>Stand. Coeff.</i>	<i>Sig.</i>	<i>Stand. Coeff.</i>	<i>Sig.</i>
% Inexperienced	-0.02	0.06	-0.02	0.53
% Minority	-0.07	0.48	-0.38	0.13
% FRL	-0.05	0.26	-0.14	0.11
ITAC	0.02	0.08	0.06	0.08
Lagged Test Score	0.34	0.00	0.26	0.00
Constant	-0.85	0.00	-0.38	0.32
<i>R-Square</i>	0.80		0.93	

Year dummies included in model but not shown on table

- And ITAC trumps inexperience in Chicago



Summary

- Bad news: There are quite large ITAC gaps by school level, school poverty and minority concentrations, and between Chicago and other regions and locales.
- Good news: ITAC gaps have shrunk considerably over the past six years, and recent data about new teachers, especially in Chicago, indicates that this trend is likely to continue.
- ITAC has a small independent effect on student achievement – reason to believe that improving ITAC would improve achievement.



Discussion

- New teacher ITAC is improving considerably, especially in Chicago and other urban areas – to what extent did NCLB contribute to this?
 - Others find similar trends elsewhere with regard to improvements in new teacher academic capital.
 - If inexperienced teachers bring with them increasingly stronger academic capital (especially to more needy schools), should we worry if some schools have more inexperienced teachers than others?
- School-level achievement measures are only a rough approximation of performance, so it is difficult to be conclusive about the role of ITAC (or any other measures) in school improvement.
 - But Boyd et al (2007) were able to use student value-added data and found a direct link between teacher academic capital and student progress.



More Discussion

- It is possible to improve teacher academic capital, and some schools – especially those in Chicago – have made great strides in a short time.
 - The challenge is to continue to close these ITAC gaps, continue to improve new teacher academic capital, and to ensure that all schools provide working conditions suitable to the retention of successful teachers.
 - Our results suggest that, in order to make the kind of impact that is needed across the board, ITAC changes may need to be quite large – perhaps reaching a critical mass of higher academic capital teachers in a school over time.
- Teacher academic capital is not a magic bullet and it is just one of many aspects of teacher quality – but it does mean something.
 - ITAC may serve as an indicator of a school's teaching climate and its potential for improvement, and the evidence that ITAC is improving in our neediest schools is significant and cause for optimism.