ORANGE COUNTY
BOARD OF EDUCATION

AGENDA ITEM ABSTRACT

Meeting Date: November 22, 2010

AGENDA ITEM No. 10-11-(2)-09

ACTION ITEM (Y/N) N

SUBJECT: Student Reassignment Discussion #2

INFO. CONTACT Dr. George McFarley, Jr. and Mr. Jeff Tsai **PHONE:** 919-732-8126

ATTACHMENTS:

1. Operations Research/Education Laboratory (ORED) PowerPoint entitled "Integrated Planning for Schools and Community,", dated November 22, 2010.
2. Timeline - Integrated Planning for School and Community Proposed Project Tasks and Schedule.

PURPOSE: To allow the Board of Education the opportunity to receive a presentation from ORED and to discuss the student reassignment study being conducted by the ORED research group.

BACKGROUND: The last student reassignment study was conducted in OCS in 2005-2006. On April 10, 2010, OCS contracted with ORED to conduct a student reassignment study beginning in July 2010, for possible implementation during the 2011-2012 school year.

Members of the ORED staff are here to discuss possible criteria for the student reassignment study. Additionally, the following items will be presented for further discussion:

- Historical ADM and cohort survival ratio analysis
- System-level forecast models
- Land use study interview findings
- GIS subdivision analysis
- Out of capacity worksheets (present and future)
- Optimization preliminary findings

FINANCIAL IMPACT: None.

RECOMMENDATION: The Superintendent recommends the Board of Education discuss the presentation for the student reassignment study being conducted by the ORED and provide staff with more definitive guidance.

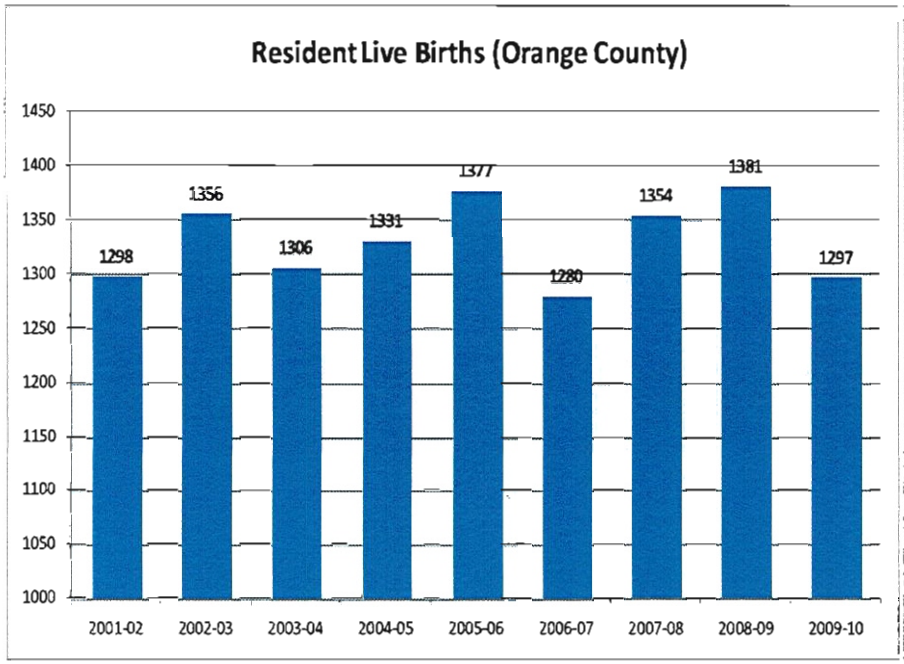
Integrated Planning for Schools and Community

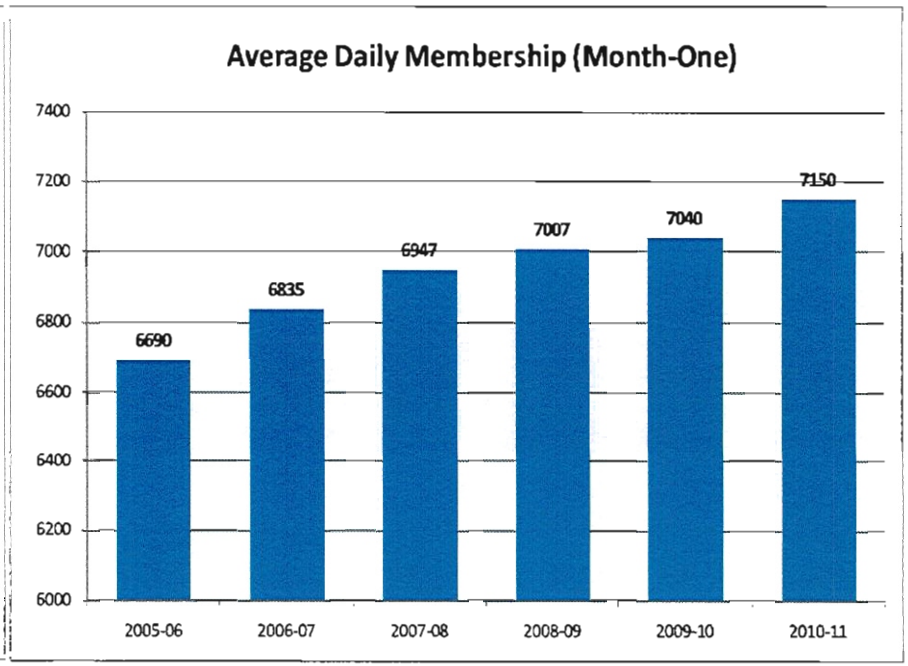
Orange County Schools
Hillsborough, North Carolina

November 22, 2010

Operations Research/Education Lab (OR/Ed. Lab)
Institute for Transportation Research and Education
North Carolina State University

Orange County Resident Birth History
Orange County Schools DPI Certified Month-One ADM





Avg. annual increase = 92 students (1.34%)

Historical Cohort Survival Ratio Analysis

	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
NB	1298	1356	1306	1331	1377	1280	1354	1381	1297	1341
K					495	494	550	518	452	558
1					545	507	496	549	540	481
2					480	552	524	505	572	558
3					506	496	569	513	519	586
4					475	520	494	564	531	529
5					497	494	504	520	565	531
Total K-5			45.4%		2998	3063	3137	3169	3179	3243
					K-5 delta:	65	74	32	10	64
6					561	509	519	528	545	558
7					499	562	527	532	568	567
8					523	497	576	545	554	566
Total 6-8			23.7%		1583	1568	1622	1605	1659	1691
					6-8 delta:	-15	54	-17	54	32
9					683	646	645	686	637	642
10					596	638	558	543	596	541
11					476	533	526	509	509	598
12					354	387	459	495	460	435
Total 9-12			31.0%		2109	2204	2188	2233	2202	2216
Total K-12					6690	6835	6947	7007	7040	7150
					9-12 delta:	95	-16	45	-31	14
					K-12 delta:	145	112	60	33	110
					K-12 %:	0.02	0.02	0.01	0.00	0.02
K				0.010955	0.406	0.381	0.406	0.397	0.394	0.405
1				0.046923	1.064	1.024	1.004	0.998	1.042	1.034
2	Cohort Average			0.006730	1.042	1.013	1.034	1.018	1.042	1.033
3	Historic:	0.958		0.006760	1.033	1.033	1.031	0.979	1.028	1.024
4	Projected:			0.006784	1.035	1.028	0.996	0.991	1.035	1.019
5	Add'l Growth			0.015909	1.053	1.040	0.969	1.053	1.002	1.000
6		0.000		0.055001	1.051	1.024	1.051	1.048	1.048	0.988
7				0.009667	1.061	1.002	1.035	1.025	1.061	1.040
8				0.013389	1.041	0.996	1.025	1.034	1.041	1.011
9				0.064342	1.298	1.235	1.298	1.191	1.169	1.159
10				0.027846	0.934	0.934	0.864	0.842	0.869	0.843
11				0.111276	1.003	0.894	0.824	0.912	0.937	1.003
12				0.025130	0.941	0.813	0.861	0.941	0.904	0.855

=558/1377

=624/554

Challenge: how to forecast future grade level CSR?

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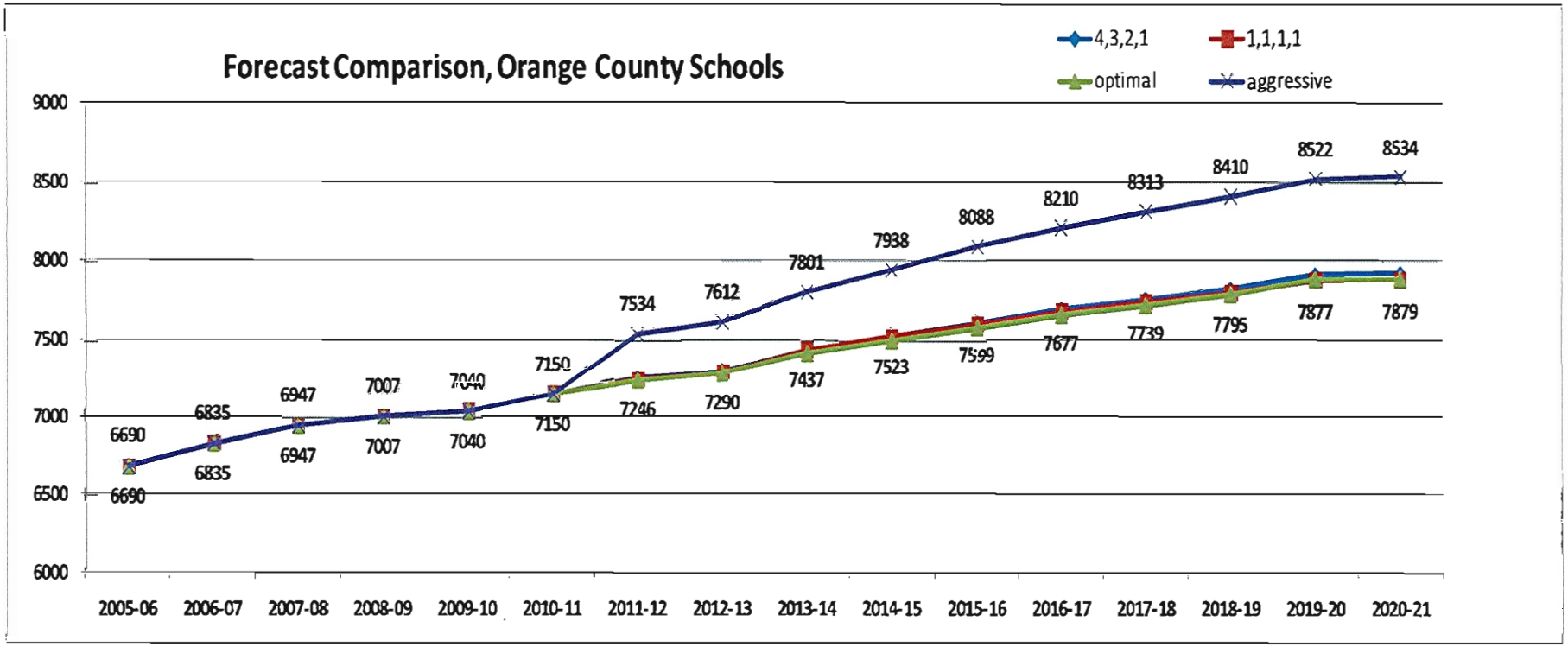
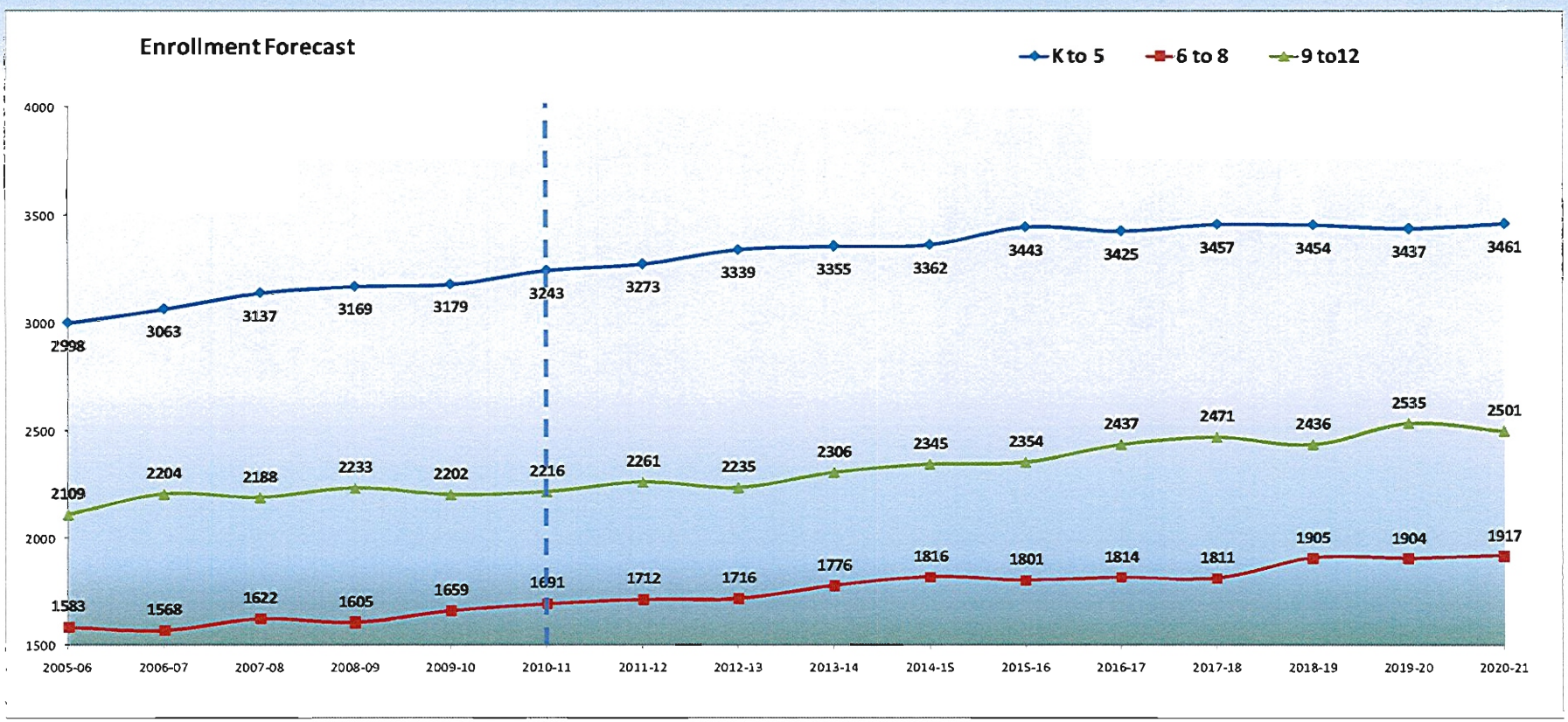
Forecast Model Comparison



Month-One ADM History and Forecast



Average annual growth in the next five years = 90 (1.2%)

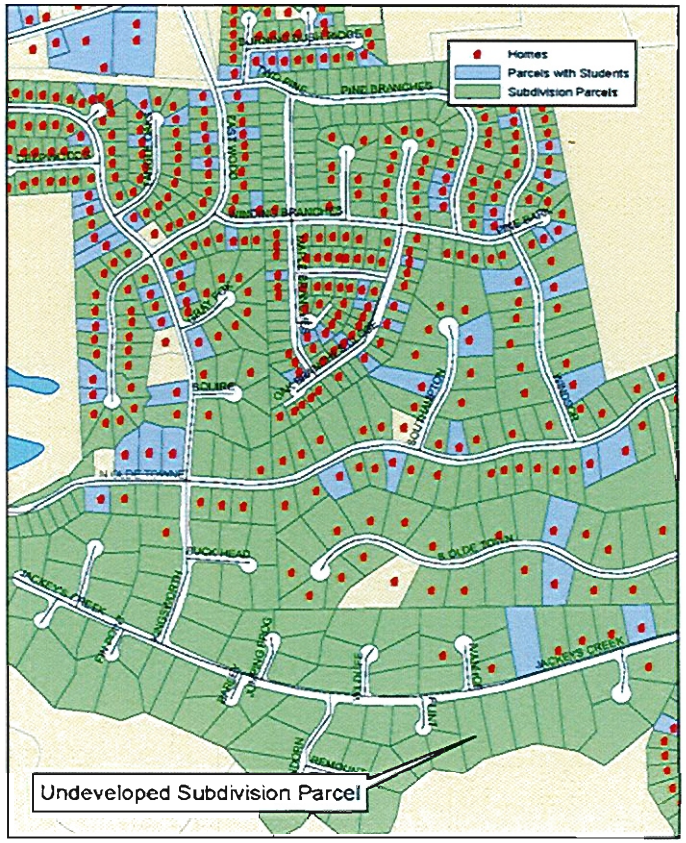
Close to or exceed 7,600 students in 2016 school year

Land Use Studies
Land Use Interviews and GIS Parcel Analysis

- Land Use Stakeholder Interviews
  - ✓ Key trend indicators
  - ✓ Growth - factors encouraging/constraining growth
  - ✓ Infrastructure - transportation, water/sewer
  - ✓ Anticipated non-residential development
  - ✓ Anticipated residential development

- GIS Parcel Analysis

Subdivision Parcel Analysis



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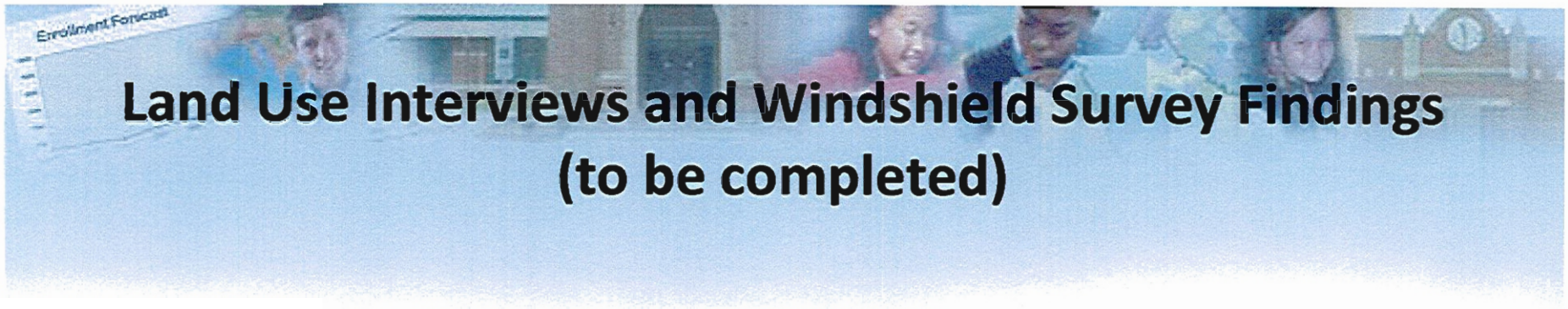

Land Use Interviews and Windshield Survey Findings (to be completed)

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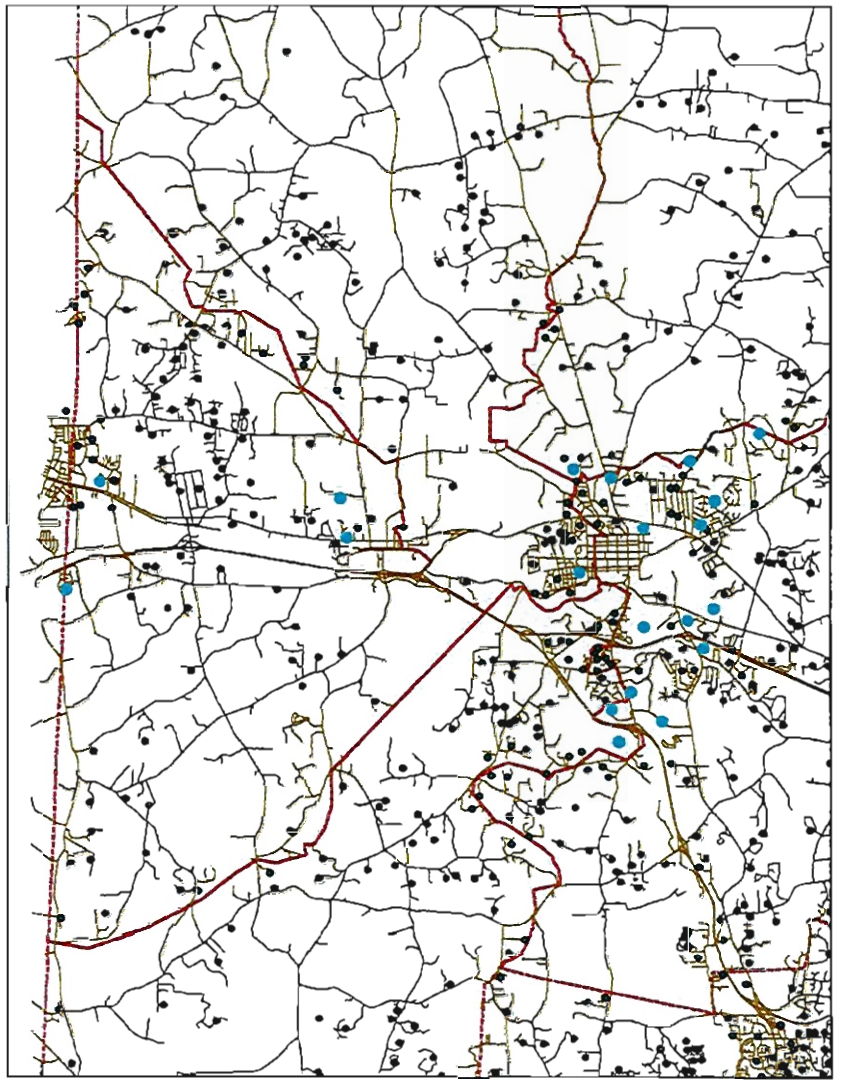
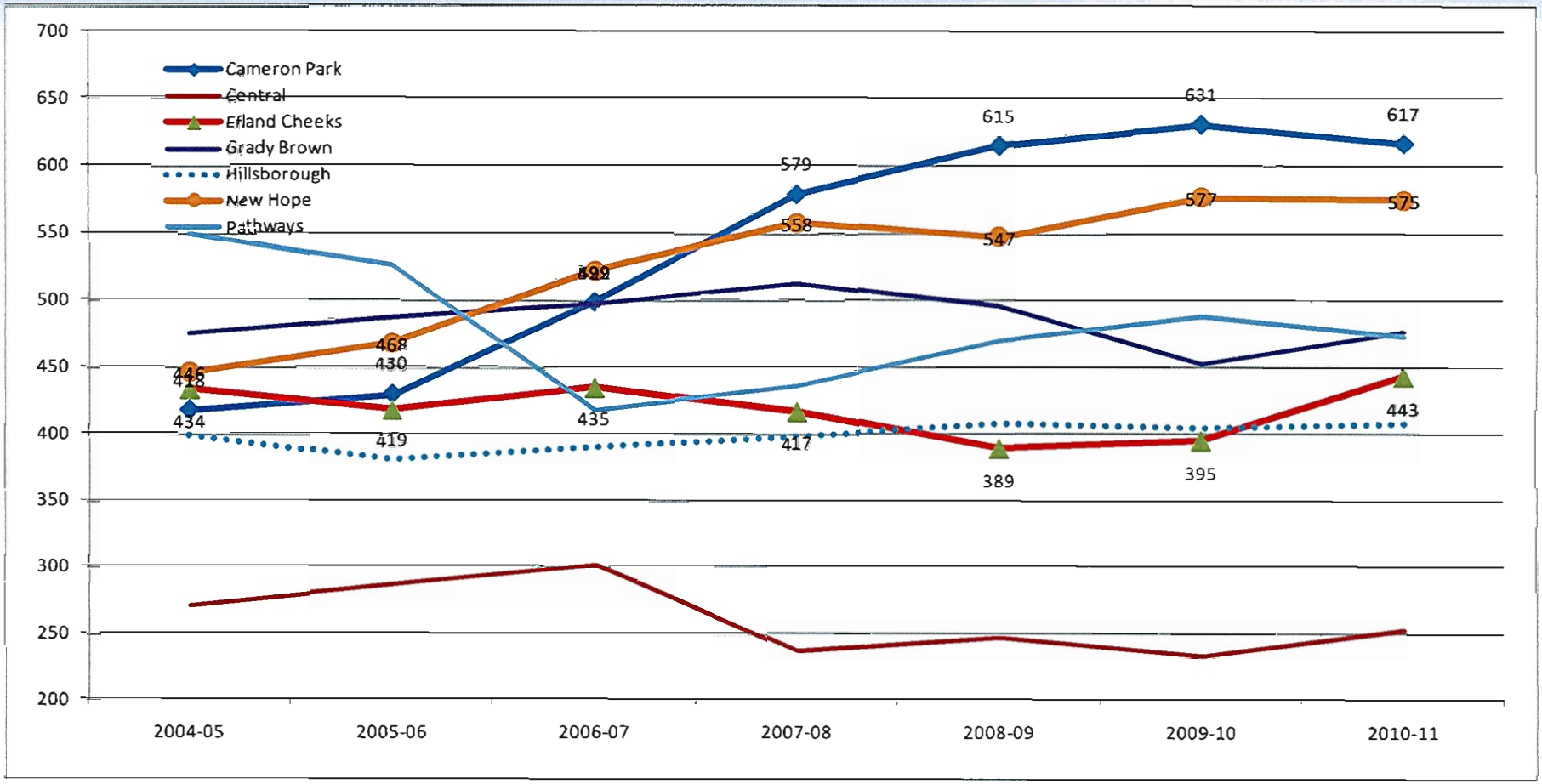
Subdivision Parcel Analysis

Attendance Area	Subdivision Student Generating Ratio
Cameron Elementary School	0.47
Central Elementary School	0.37
Efland-Cheeks Elementary School	0.42
Grady A. Brown Elementary School	0.34
New Hope Elementary School	0.41
Pathways Elementary School	0.44



Elementary School Enrollment History



Allocation of Gain

	SUMS >>>	1.0000			1.0000			1.0000
	ES	AOG		MS	AOG		HS	AOG
1	Cameron Park	0.2250	1	Al Stanback	0.4005	1	Cedar Ridge	0.3080
2	Central	0.1250	2	CW Stanford	0.3398	2	Orange High	0.6920
3	Efland Cheeks	0.2500	3	Gravelly Hill	0.2598	3	Partnership Academy	0.0000
4	Grady Brown	0.1000	4	0	0.0000	4	0	0.0000
5	Hillsborough	0.0000	5	0	0.0000	5	0	0.0000
6	New Hope	0.2000	6	0	0.0000	6	0	0.0000
7	Pathways	0.1000	7	0	0.0000	7	0	0.0000

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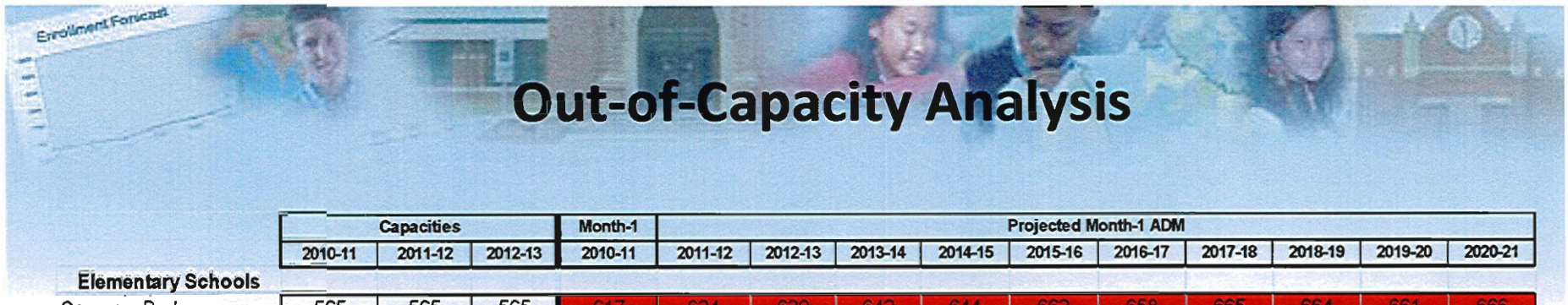

Out-of-Capacity Analysis

	Capacities			Month-1	Projected Month-1 ADM									
	2010-11	2011-12	2012-13	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Elementary Schools														
Cameron Park	565	565	565	617	624	639	642	644	662	658	665	664	661	666
Central	455	455	455	252	256	264	266	267	277	275	279	278	276	279
Efland Cheeks	497	497	497	443	450	467	471	473	493	489	496	496	492	498
Grady Brown	544	544	544	476	479	486	487	488	496	494	497	497	495	498
Hillsborough	471	471	471	408	408	408	408	408	408	408	408	408	408	408
New Hope	586	586	586	575	581	594	597	599	615	611	618	617	614	619
Pathways	576	576	576	472	475	482	483	484	492	490	493	493	491	494
Totals	**3694**	**3694**	**3694**	**3243**	**3273**	**3339**	**3355**	**3362**	**3443**	**3425**	**3457**	**3454**	**3437**	**3461**
Middle Schools														
Al Stanback	740	740	740	611	619	621	645	661	655	660	659	697	696	702
CW Stanford	726	726	726	585	592	594	614	628	623	627	626	658	657	662
Gravelly Hill	700	700	700	495	500	502	517	528	524	527	526	551	550	554
Totals	**2166**	**2166**	**2166**	**1691**	**1712**	**1716**	**1776**	**1816**	**1801**	**1814**	**1811**	**1905**	**1904**	**1917**
High Schools														
Cedar Ridge	1000	1000	1000	1004	1018	1010	1032	1044	1046	1072	1083	1072	1102	1092
Orange High	1518	1518	1518	1190	1221	1203	1252	1279	1285	1343	1367	1342	1411	1387
Partnership Academy	50	50	50	22	22	22	22	22	22	22	22	22	22	22
Totals	**2568**	**2568**	**2568**	**2216**	**2261**	**2235**	**2306**	**2345**	**2354**	**2437**	**2471**	**2436**	**2535**	**2501**
System Totals	**8428**	**8428**	**8428**	**7150**	**7246**	**7290**	**7437**	**7523**	**7599**	**7677**	**7739**	**7796**	**7877**	**7879**

Capacity Legend

< 95%	95% - 100%	100% - 105%	> 105%

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Planning Segments

PS Construction Guidelines

- Preserve subdivisions and communities
- Use parcel line if all possible
- Use natural and man-made barriers
- Adhere to elementary, middle, and high school attendance boundaries
- Consider busing efficiency
- Capture between 50 to 100 K-12 students

116 total Planning Segments

Average 59 students per PS

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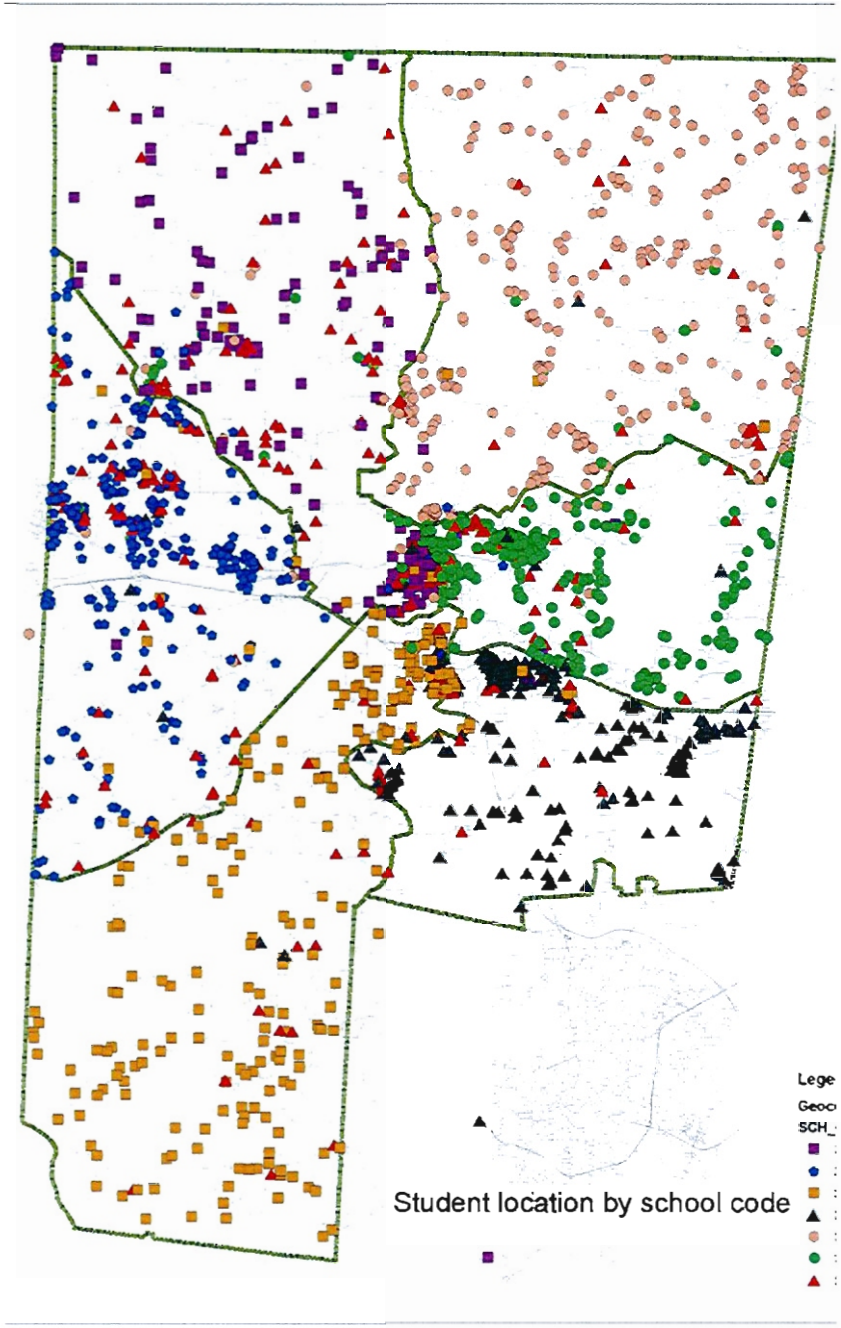
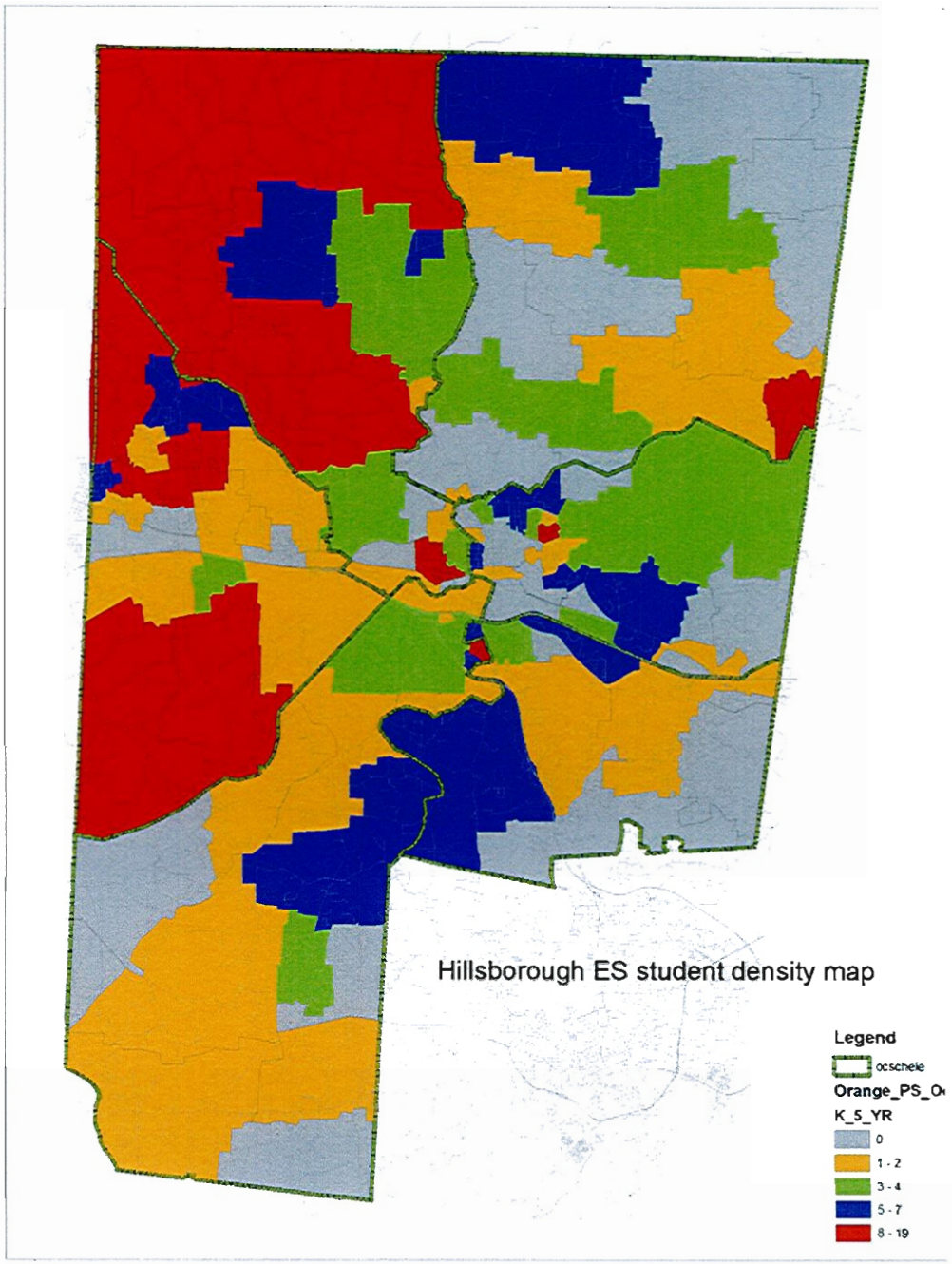
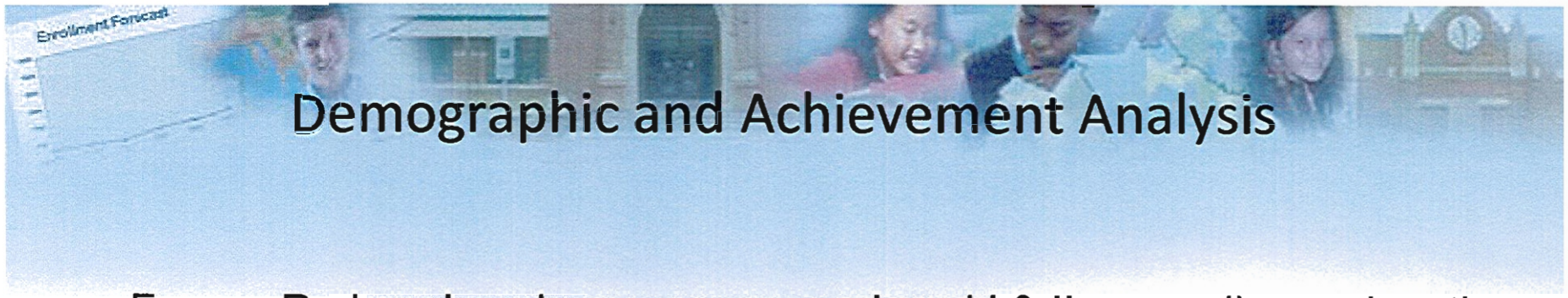


Student location by school code



Hillsborough ES student density map



Demographic and Achievement Analysis

- Free or Reduce Lunch
  - ORED supplies OCS list of K-5 students for each planning segment
  - OCS exams the list and enters number of students receiving free or reduced lunch
- Level I & II on reading and math tests
  - ORED supplies OCS list of 3-8 students for each planning segment
  - OCS enters # of students tested and # of students performed at level I or II

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FRL, Math_12, Reading_12, VAR Analyses

Correlations	FRL	Read_1_2	Math_1_2	Var1
FRL				
Read_1_2	0.673			
Math_1_2	0.580	0.796		
VAR1	0.656	0.526	0.480	

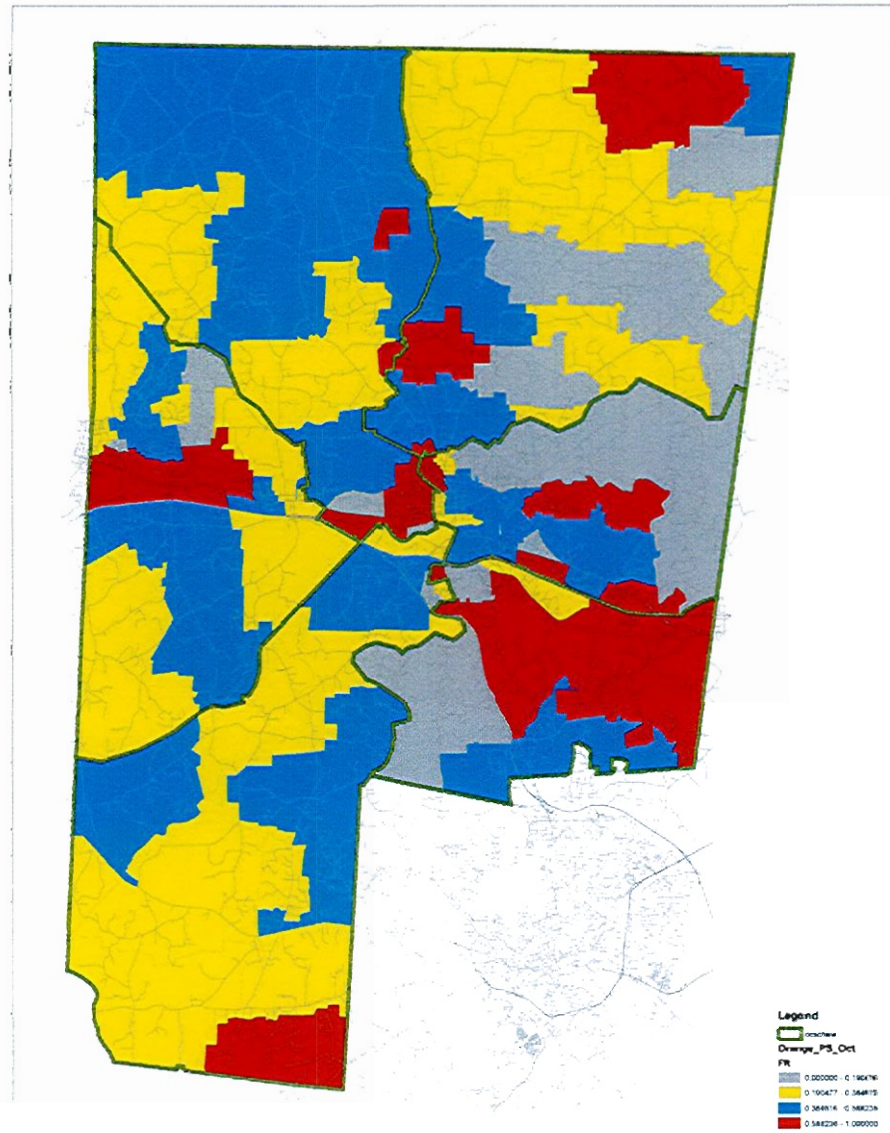
	FRL	Read_1_2	Math_1_2	Var1
LEA Average	0.423	0.327	0.234	0.331
Cameron Park	0.358	0.261	0.189	0.33
Central	0.470	0.346	0.281	0.436
Efland Cheeks	0.457	0.339	0.244	0.425
Grady Brown	0.308	0.301	0.190	0.246
New Hope	0.444	0.341	0.191	0.406
Pathways	0.363	0.314	0.220	0.227

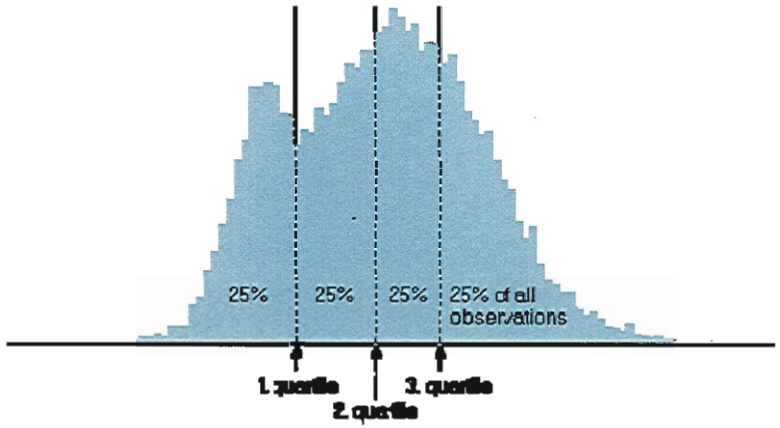
Cameron Park	-0.07	-0.07	-0.05	0.00
Central	0.05	0.02	0.05	0.11
Efland Cheeks	0.03	0.01	0.01	0.09
Grady Brown	-0.12	-0.03	-0.04	-0.09
New Hope	0.02	0.01	-0.04	0.08
Pathways	-0.06	-0.01	-0.01	-0.10

Note: Hillsborough ES students are included in all analyses

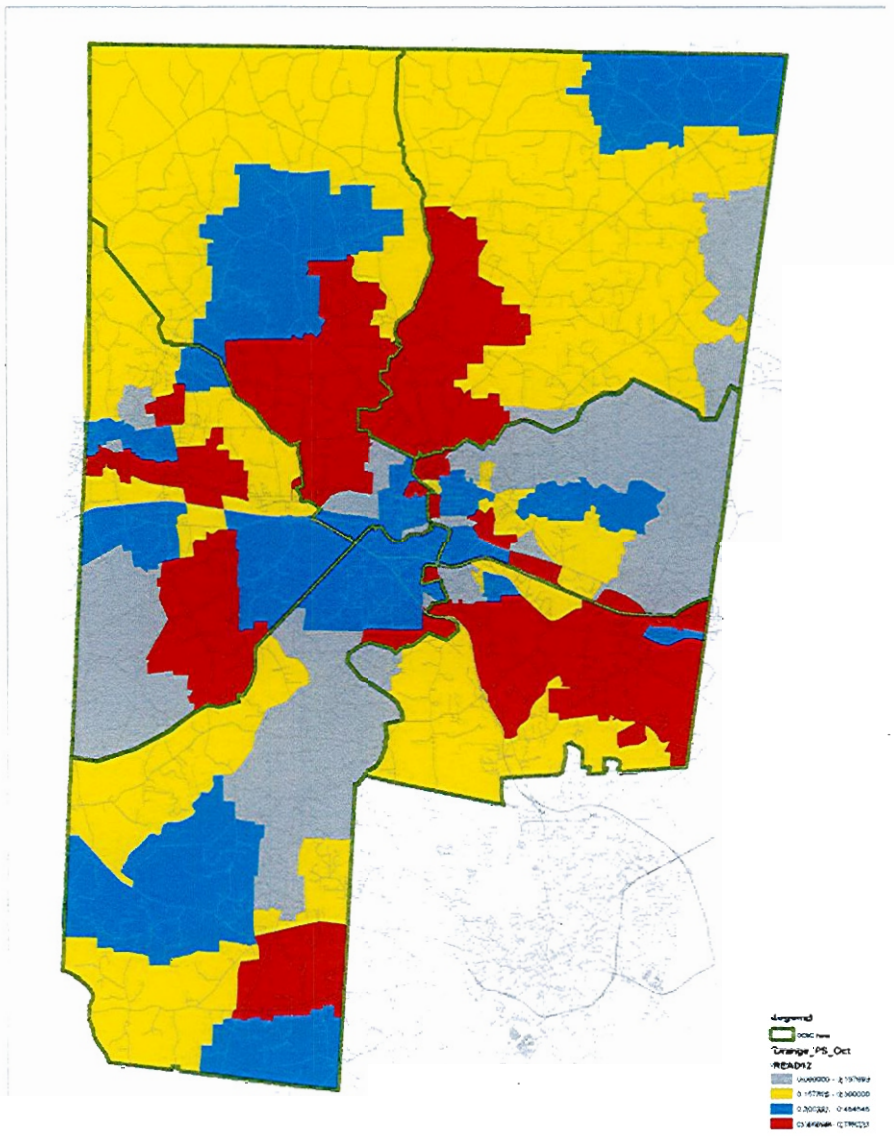
LEA average is calculated from raw number, not averaged in this worksheet

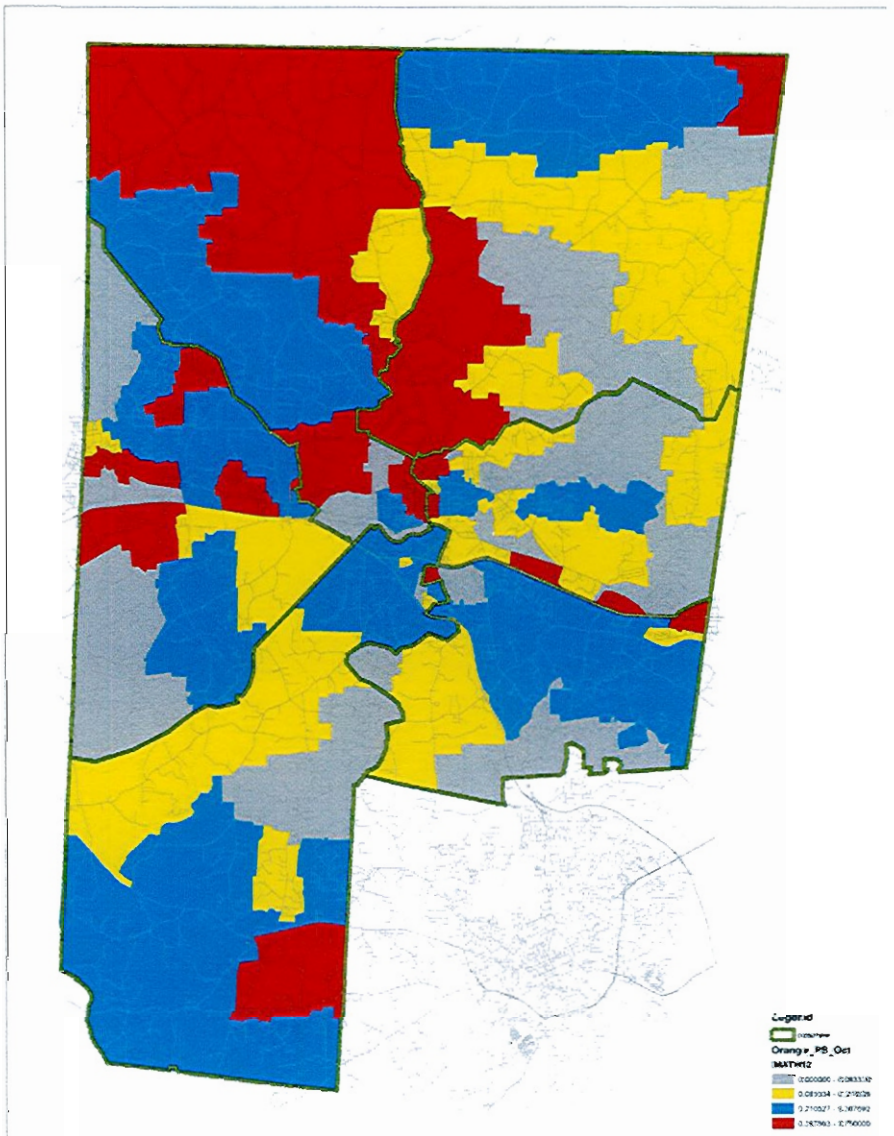
FRL Color Ramp by Quartile

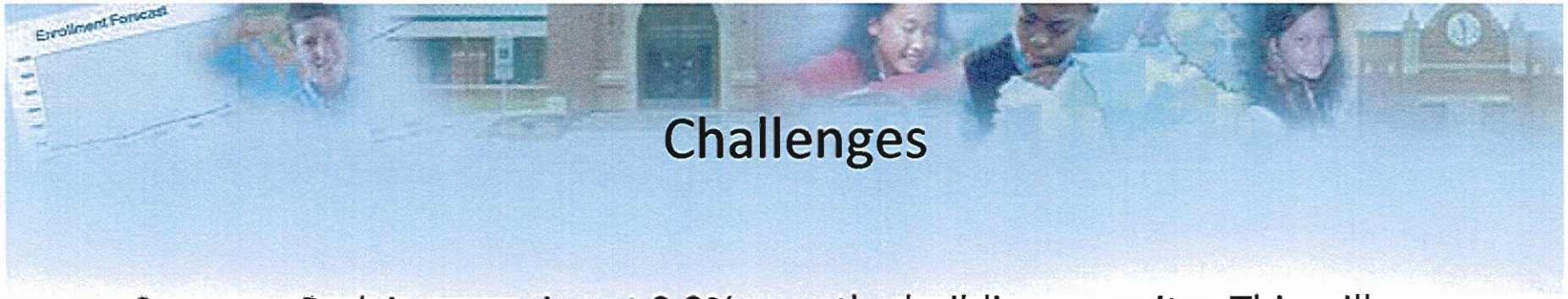




Academic Achievement Color Ramp by Quartile







Challenges

- Cameron Park is operating at 9.2% over the building capacity. This will increase to be 17% in 2016
- New Hope will exceed the building capacity in two years
- Efland Cheeks will nearly exceed the building capacity in 5 years (maybe sooner)
- Cedar Ridge is over capacity

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Orange County Schools
Integrated Planning for School and Community
Proposed Project Tasks and Schedule
2010-2011

Note: The Redistricting Committee meeting schedule below is subject to change depending on redistricting criteria and assumptions. More meetings may be necessary.

June 2010

Data Collection Tasks

- Collect County GIS data (centerline, parcel, address points, school sites, attendances)
- Collect 2009-10 NCWISE student data
- Collect building capacity data
- OCS Decision Point: Additional student data to be included for the study

Student Data Analysis

- Geocoding students
- Validate school locations, grade configurations and attendances
- Capture historical month-one ADM
- Conduct cohort survival ratio analysis
- Construct preliminary system enrollment forecasts

Planning Segment Construction

- Preliminary construction of the Planning Segments (PS). PS are the fundamental building blocks of existing and future attendances
- PS review with OCS

July 2010

- Phase I attendance optimization scenarios (to establish baseline understanding of optimization parameters)
- Presentation to the OCS/OCS BOE-
  - Snap shot of OCS demographics
  - Study optimal scenario statistics under various constraints
  - Seek OCS input on school balance objectives and % of allowances (+/- from the goal)

August 2010

- Land Use Interviews
- OCS assembles redistricting study committee

September 2010

- Collect 2010-2011 month-1 ADM
- Update cohort survival ratio analysis and system enrollment forecasts
- Collect 2010-11 NCWISE data (note: quality of the student address data will dictate subsequent task schedule)
- Geocode 2010-2011 students

- Review building capacity data
- GIS land use study and Planning Segment level analysis
- OCS Decision Point: Optimization parameters: utilization, balance, etc.

October - November 2010

- Presentation to the OCS/OCS BOE on findings (land use study, enrollment forecast, Out-of-Capacity worksheet). Present optimization parameters and redistricting timeline.
- First meeting with the redistricting study committee (primarily objective: education)
- Phase II attendance optimization scenarios: refine constraints and balance
- Second meeting with the redistricting study committee (primarily objective: illustrate preliminary proposals, eliminate infeasible plans, refine balancing objectives and criteria)

November – December 2010

- Phase III attendance boundary scenarios
- Construct the Scenario Builder tool
- Third meeting with the redistricting study committee
- Meeting with OCS transportation staff to refine boundaries
- Additional committee meetings can be conducted without ORED staff presence

January 2011

- Committee presents attendance boundary scenario(s) to BOE.