

**IS THE PEN MIGHTIER
THAN THE MOUSE?
ANALYZING THE MOVE FROM
PAPER & PENCIL TO ONLINE
PLACEMENT TESTING**

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With the change to online testing:

- ▣ Are there changes in algebra and calculus test scores?
- ▣ How are test scores related to course performance?
- ▣ Do students placed in a given course perform better or worse in that course than those taking the paper & pencil tests?

New Freshman Math Placement Test Type by Semester Fall Semesters Only - 2003 through 2008

	Total Fall Cohort	PP (F03 to F05)		OL (F06 to F08)	
		#	%	#	%
200309	1487	1424	99.9%	1	0.1%
200409	1402	1311	99.9%	1	0.1%
200509	1414	1166	89.6%	135	10.4%
200609	1419	106	7.9%	1238	92.1%
200709	1424	40	3.1%	1238	96.9%
200809	1557	153	11.2%	1218	88.8%

* Subsequent analysis will exclude students taking paper test after Fall 2005 and online test prior to Fall 2006.

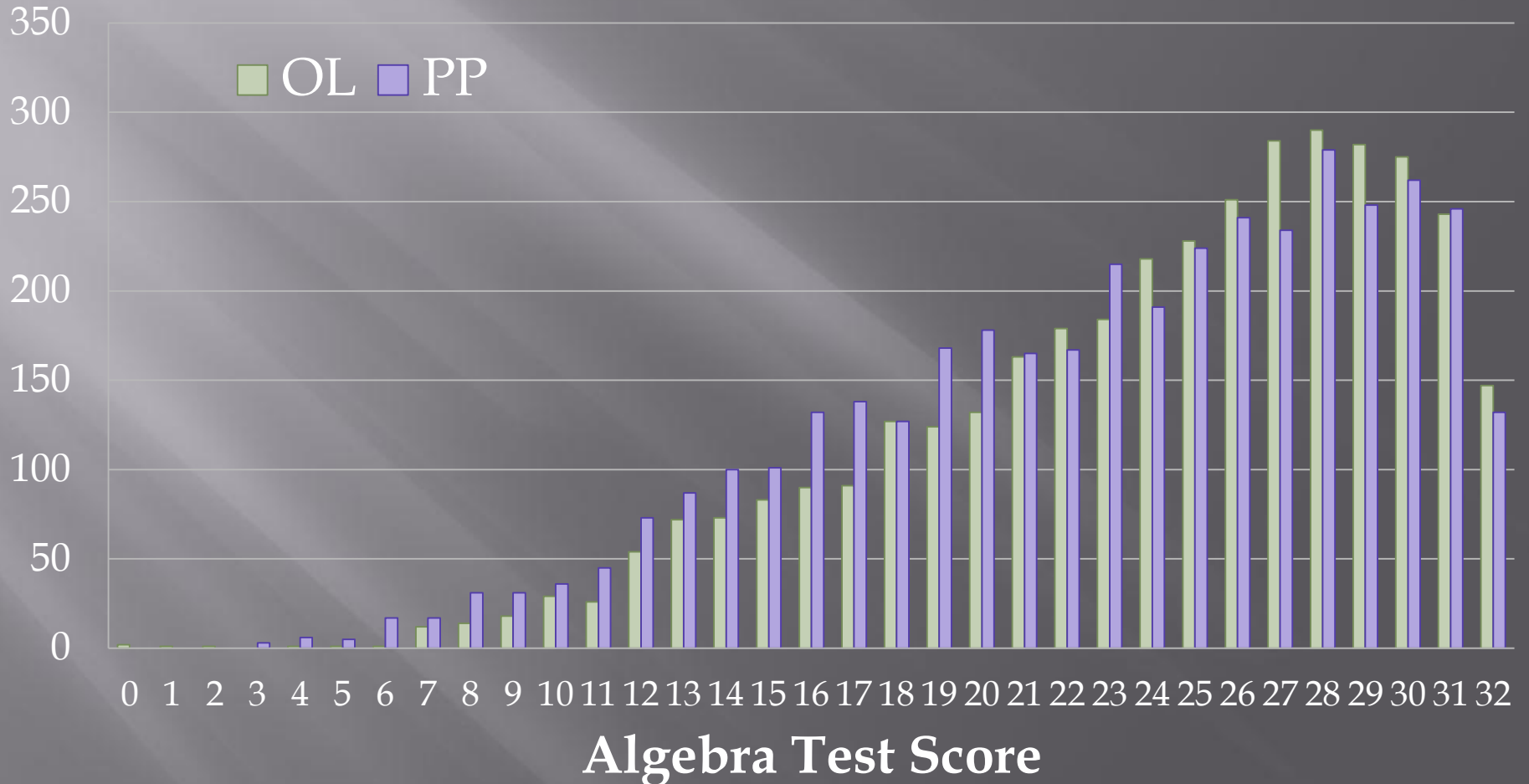
New Freshman Math Placement by Test Type

Fall Semesters Only - 2003 through 2008

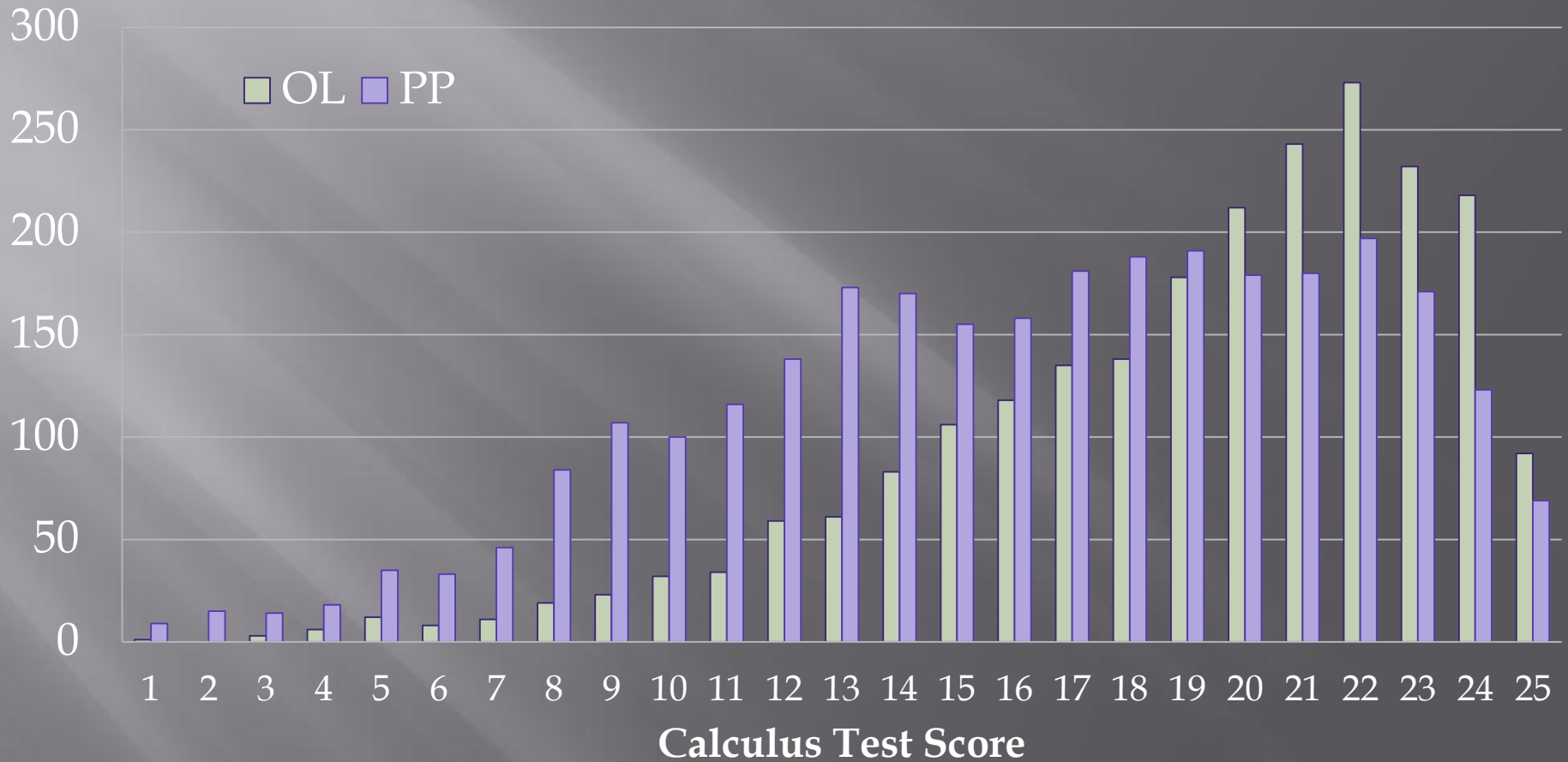
	Test Type					
	Paper (F03 to F05)			Online (F06 to F08)		
Placement	#	%	% not taking calc test	#	%	% not taking calc test
106	1236	31.7%	49.9%	976	26.4%	70.0%
150	1034	26.5%	20.6%	970	26.3%	46.7%
151	1104	28.3%	0.1%	1340	36.3%	0.1%
99	187	4.8%	78.2%	101	2.7%	88.1%
ADV1	340	8.7%	31.4%	307	8.3%	56.0%
Total	3901			3694		

DISTRIBUTION OF ALGEBRA TEST SCORE BY TEST TYPE

Fall 2003 to Fall 2008



DISTRIBUTION OF CALCULUS TEST SCORE BY TEST TYPE Fall 2003 to Fall 2008

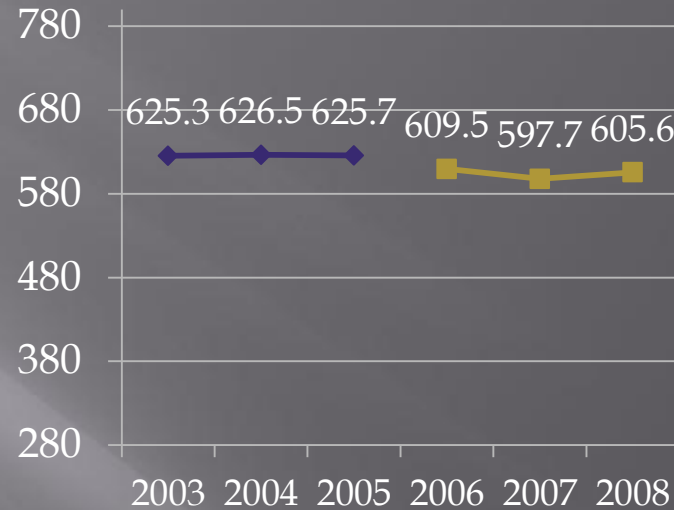


**Average Math SAT Scores &
Math Test Scores
by Placement & Test Type**

MATH 106



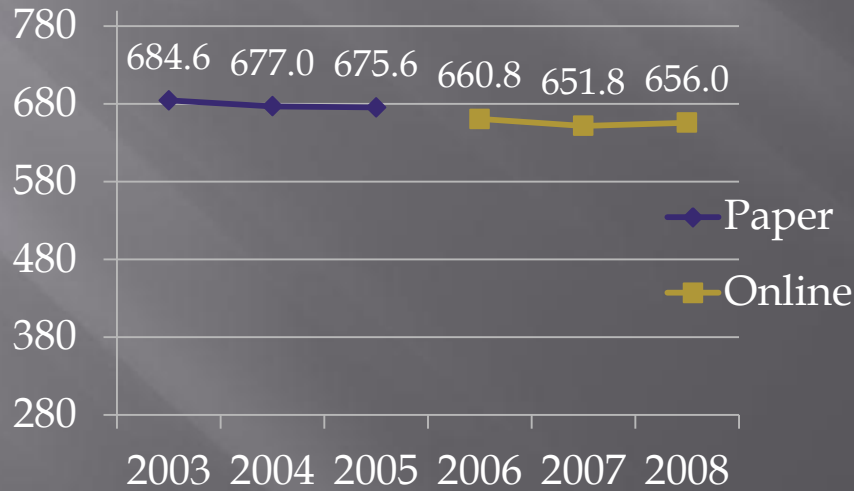
MATH 150



Fall

Fall

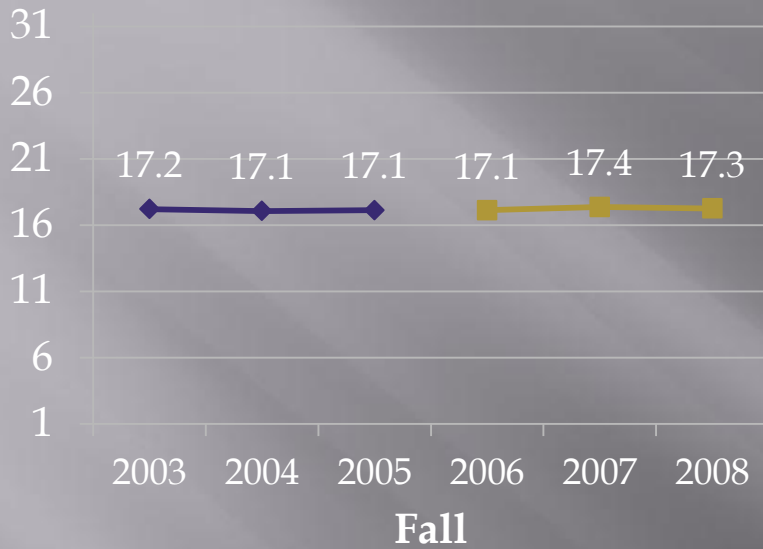
MATH 151



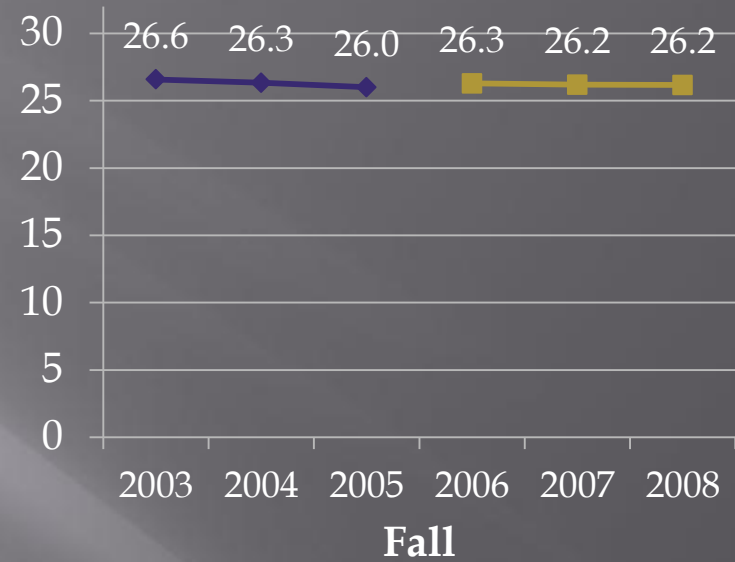
Fall

Average
MATH
SAT
Scores

Math 106

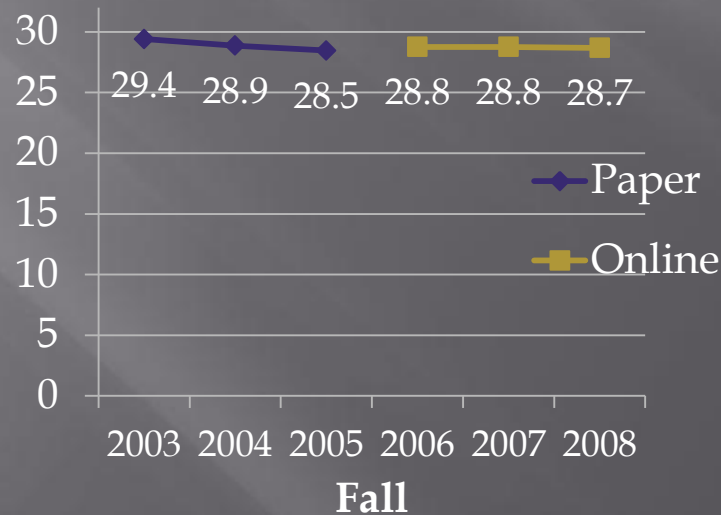


Math 150



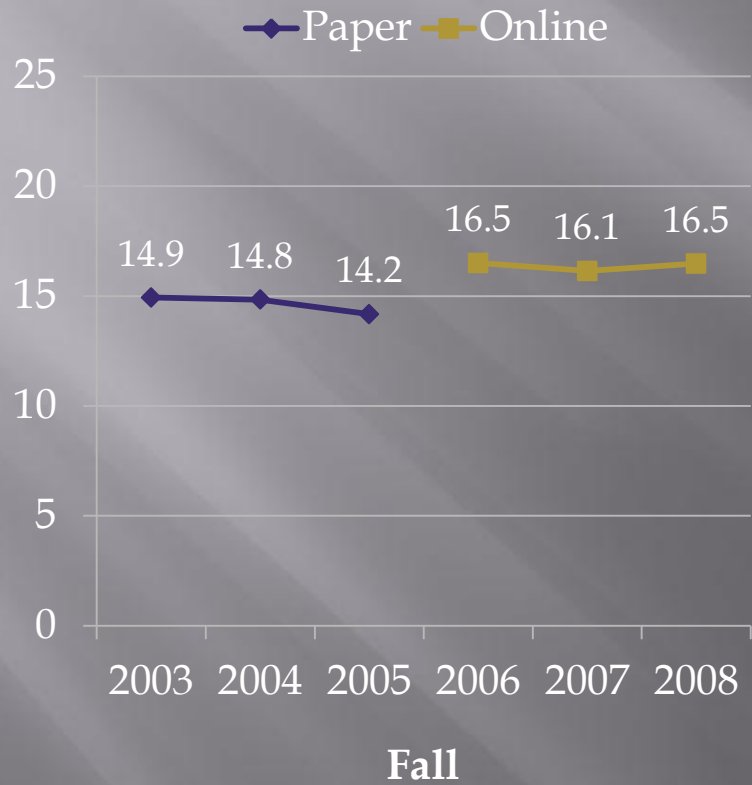
Average Algebra Test Scores

Math 151

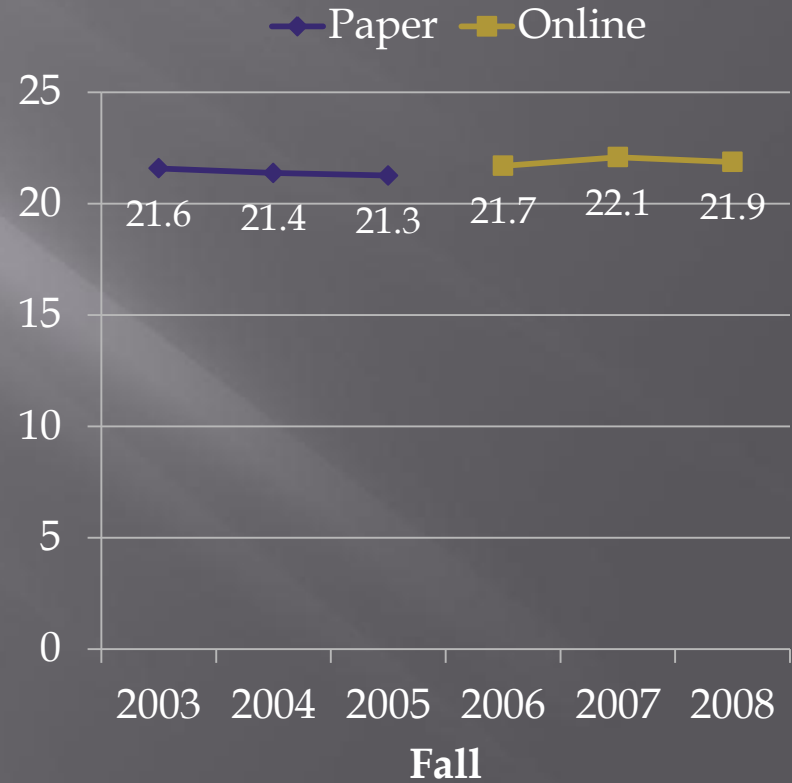


Average Calculus Test Scores

MATH 150



MATH 151



**Course Grades in First Semester
for Students Taking
the Placed Course**

Math Course Taken in First Semester by Math Placement & Test Type

Placement	% Taking Placement Course		% Taking No Math Course	
	PP	OL	PP	OL
LRC 099	56.1	61.4	39.0	34.7
MATH 106	77.1	76.2	19.5	20.6
MATH 150	60.3	60.2	22.1	23.9
MATH 151	58.8	49.6	22.2	30.4

Course Performance in Placed Course by Test Type

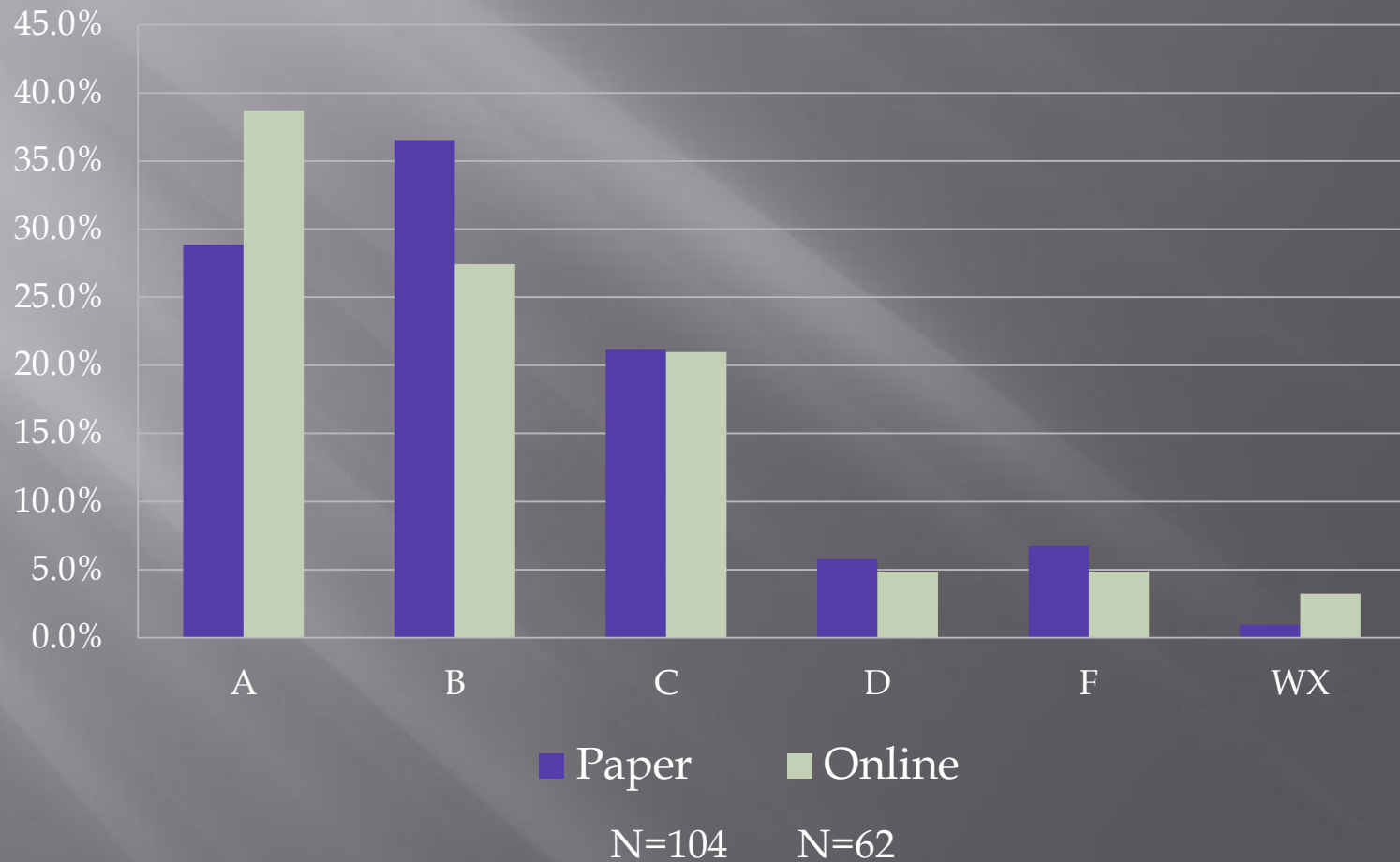
LRC 099		
	C or better	<C
PP (F03-F05)	86.5%	13.5%
OL (F06-F08)	87.1%	12.9%

MATH 106		
	C or better	<C
PP (F03-F05)	73.6%	26.4%
OL (F06-F08)	66.6%	33.4%

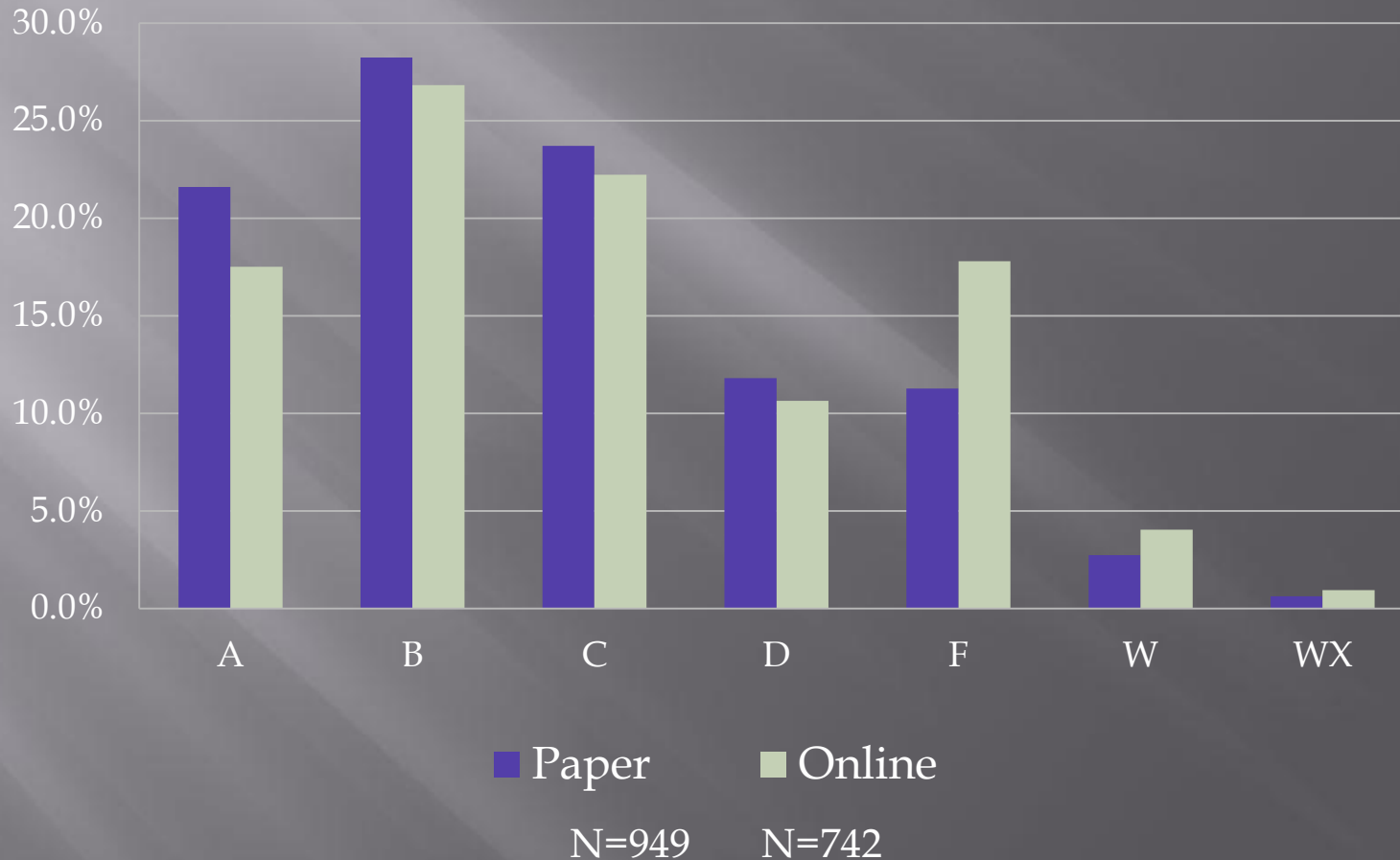
MATH 150		
	C or better	<C
PP (F03-F05)	81.4%	18.6%
OL (F06-F08)	70.7%	29.3%

MATH 151		
	C or better	<C
PP (F03-F05)	85.8%	14.2%
OL (F06-F08)	80.4%	19.6%

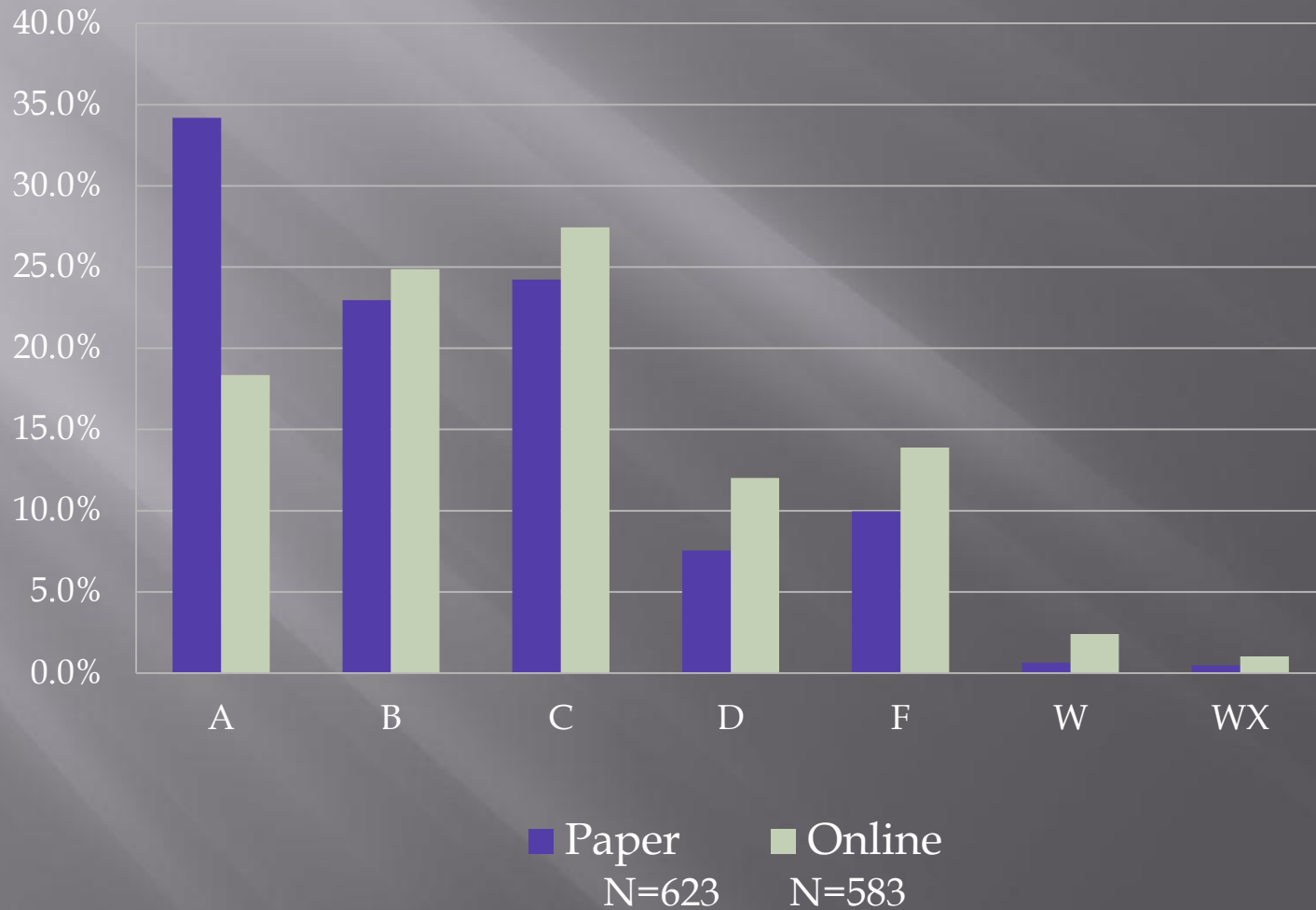
Grades for Students Placed in LRC099 Taking LRC099 in First Semester



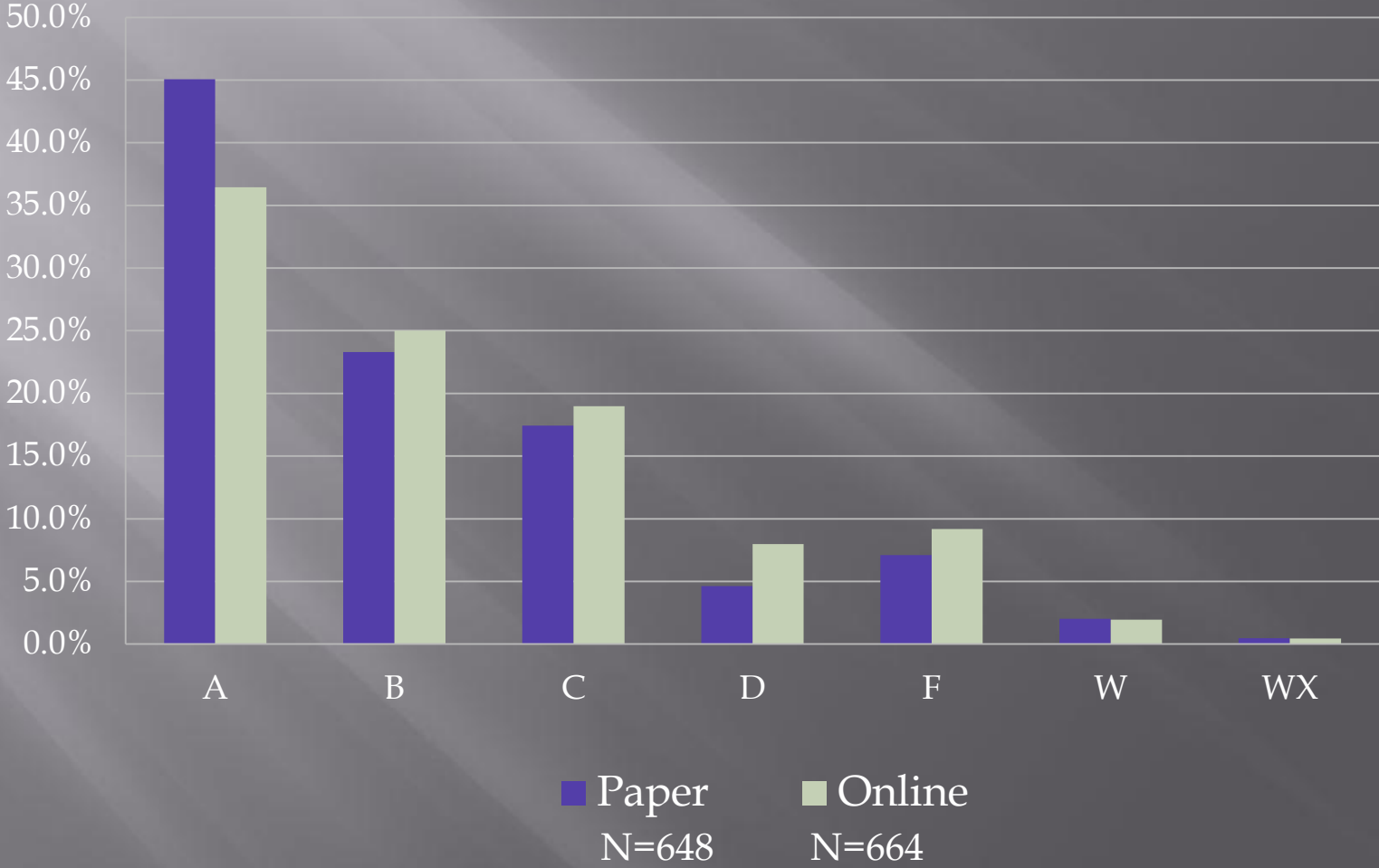
Grades for Students Placed in Math 106 Taking Math 106 in First Semester



Grades for Students Placed in Math 150 Taking Math 150 in First Semester



Grades for Students Placed in Math 151 Taking Math 151 in First Semester

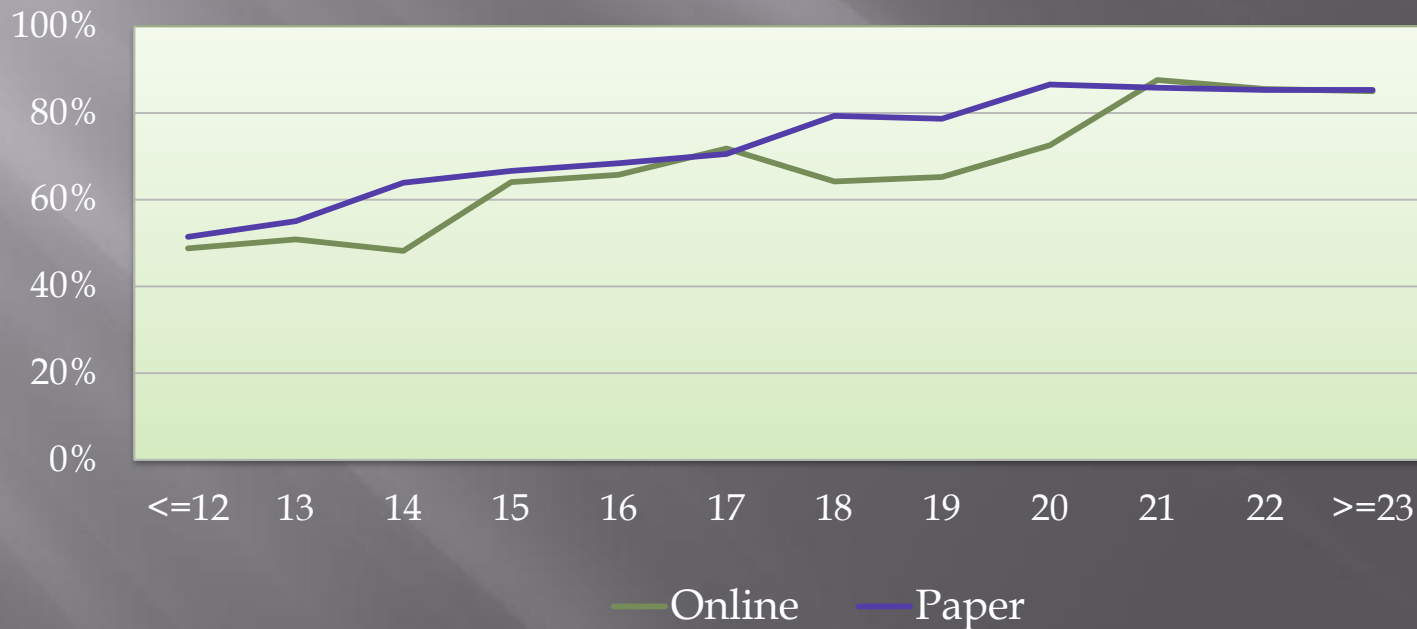


Math Course Grades in First
Semester
by Test Scores

MATH 106 Course Grades by Algebra Test Score and Placement Test Type – Fall 2003 to Fall 2008

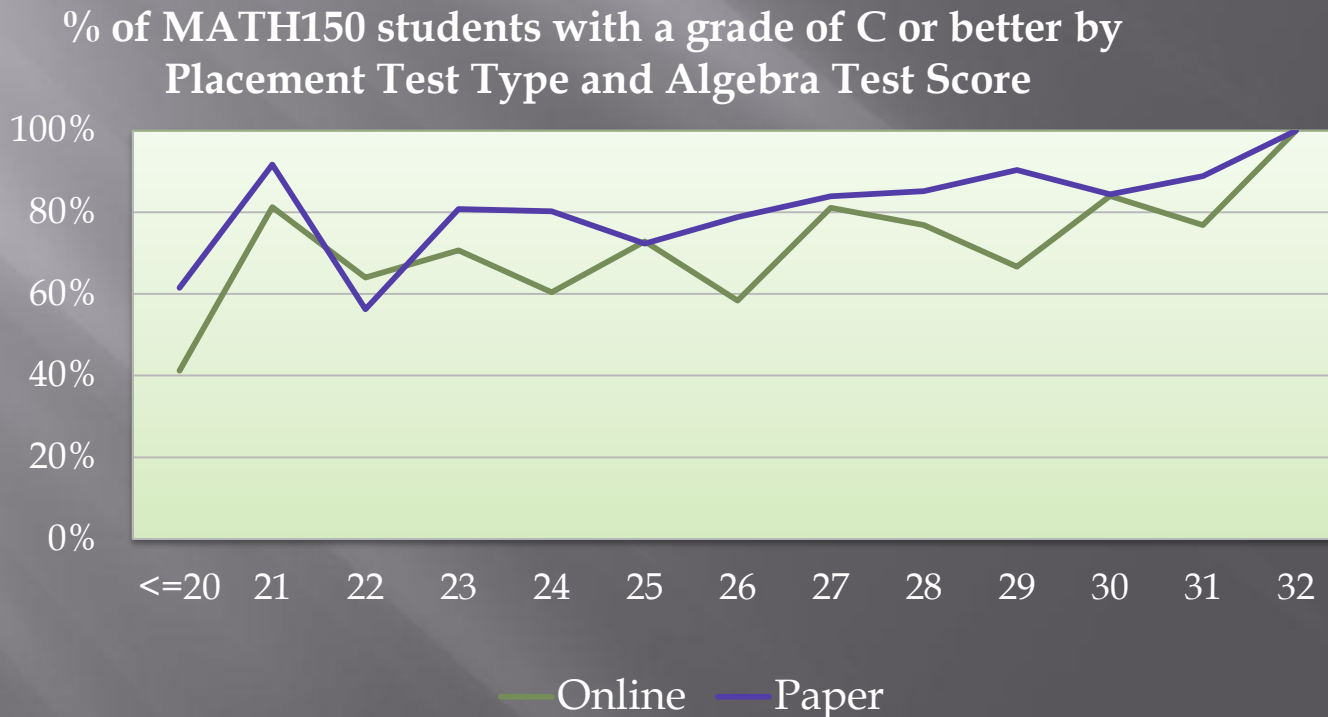
	ALGEBRA TEST SCORE												
Type	<=12	13	14	15	16	17	18	19	20	21	22	>=23	
# Online	41	57	56	64	70	71	95	95	102	105	76	60	
# Paper	68	69	72	72	95	112	92	131	134	120	68	68	

% of MATH106 students with a grade of C or better by Placement Test Type and Algebra Test Score



MATH 150 Course Grades by Algebra Test Score and Placement Test Type – Fall 2003 to Fall 2008

	ALGEBRA TEST SCORE													
Type	<=20	21	22	23	24	25	26	27	28	29	30	31	32	
# Online	17	16	25	41	101	96	101	90	65	54	25	26	5	
# Paper	26	12	16	52	91	123	104	87	88	52	32	9	2	



MATH 150 Course Grades by Calculus Test Score and Placement Test Type – Fall 2003 to Fall 2008

	CALCULUS TEST SCORE															
Type	<=7	8	9	10	11	12	13	14	15	16	17	18	19	20	>=21	No test
# Online	6	5	2	7	10	14	16	31	53	49	60	62	15	22	48	262
# Paper	23	25	19	20	25	39	61	60	68	80	80	64	11	10	7	102

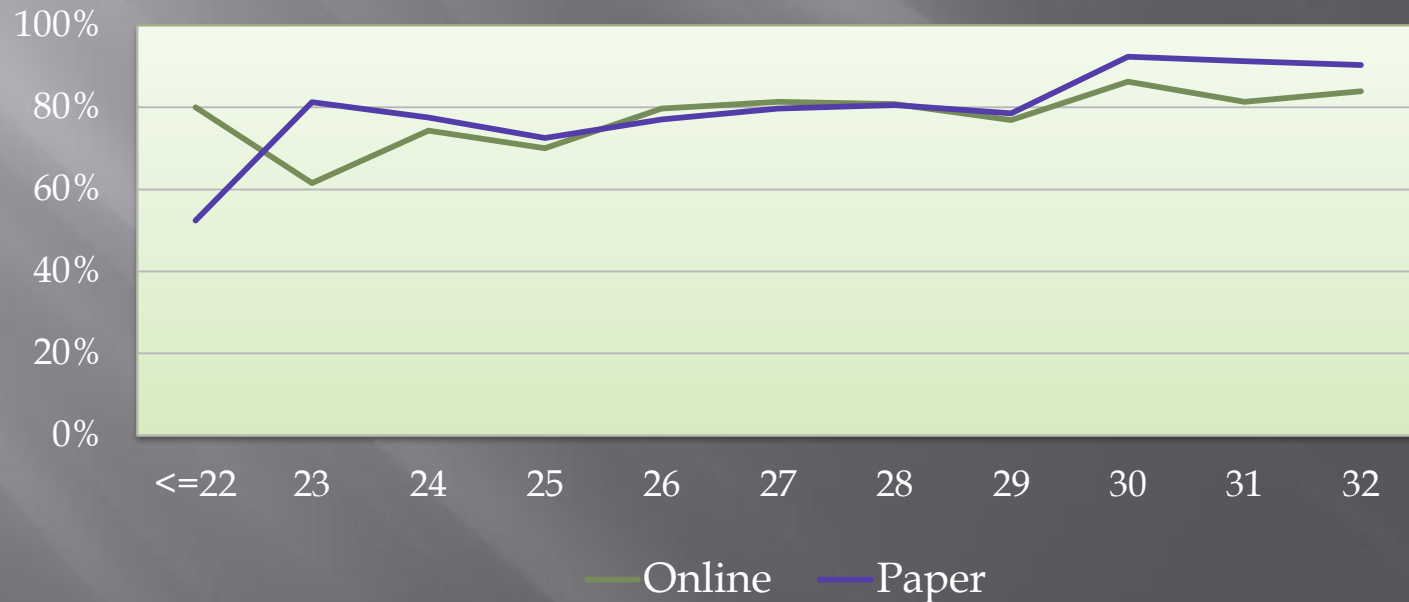
% of MATH150 students with a grade of C or better by Placement Test Type and Calculus Test Score



MATH 151 Course Grades by Algebra Test Score and Placement Test Type – Fall 2003 to Fall 2008

	ALGEBRA TEST SCORE										
Type	<=22	23	24	25	26	27	28	29	30	31	32
# Online	10	13	35	60	59	91	99	108	109	91	56
# Paper	21	16	40	40	61	74	108	107	130	114	62

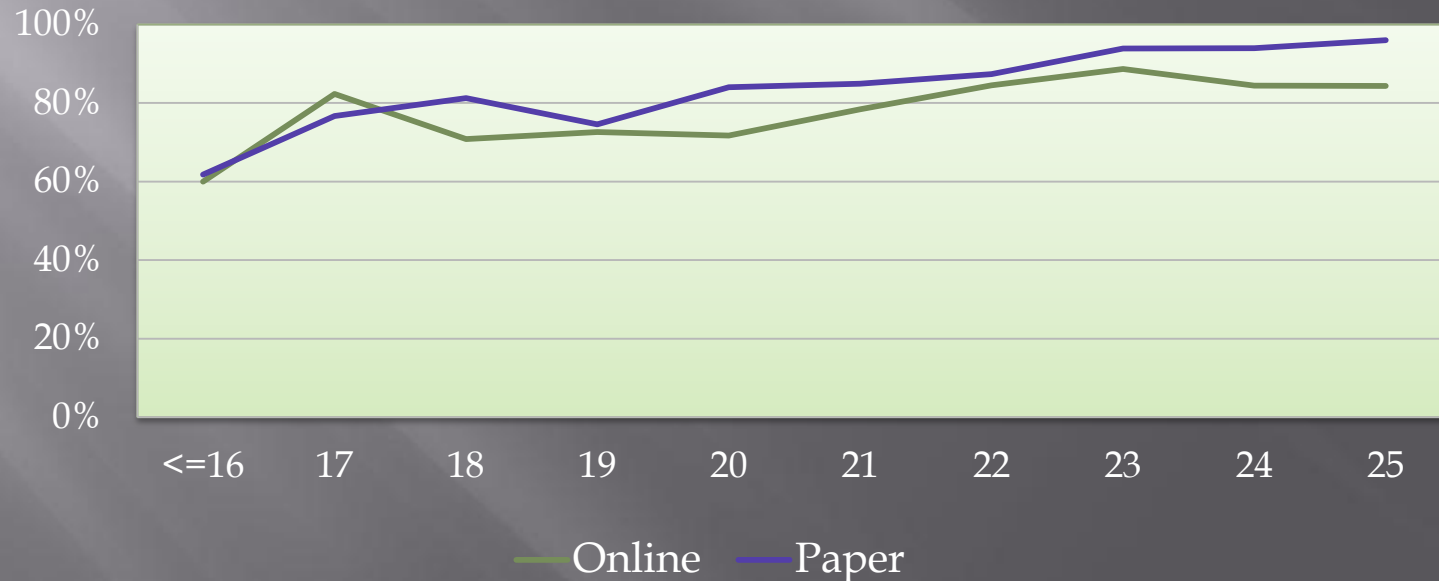
% of MATH151 students with a grade of C or better by Placement Test Type and Algebra Test Score



MATH 151 Course Grades by Calculus Test Score and Placement Test Type – Fall 2003 to Fall 2008

Type	CALCULUS TEST SCORE										
	<=16	17	18	19	20	21	22	23	24	25	No test
# Online	10	17	24	95	99	125	129	97	90	32	13
# Paper	55	30	64	130	100	113	119	82	50	25	5

% of MATH151 students with a grade of C or better by Placement Test Type and Calculus Test Score



Conclusions

- ▣ Results presented to key stakeholders on campus.
- ▣ Decision made to accept online testing methods as reasonably comparable to paper & pencil
- ▣ More focus needed on advising efforts
- ▣ Analysis of performance in Math 150 and 151
 - ▣ Determine factors related to success in these courses
 - ▣ Develop model to help students choose their best course of action
- ▣ Questions/comments – krach@umbc.edu