



# SOMETIMES THE LOGICAL CHOICE ISN'T THE BEST ONE

Wayne State University

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# Abstract

- ❑ Decisions about policies affecting admissions requirements intended to increase student success in college are stronger when they are data-driven.
- ❑ Typical admissions indicators of high school rigor beyond ACT/SAT and High School GPA include number of Advanced Placement tests taken and weighted GPA.
- ❑ However, the literature does not support this practice.



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## Wayne State University

is a public research university (RUVH) located in Detroit's Midtown District, the city's Cultural Center & Historic District.

# Wayne State University

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- As a nationally recognized urban, public research university, Wayne State's mission is to create knowledge and prepare a diverse body of students to excel in an increasingly complex and global society.



# Wayne State University- Degree Programs Offered



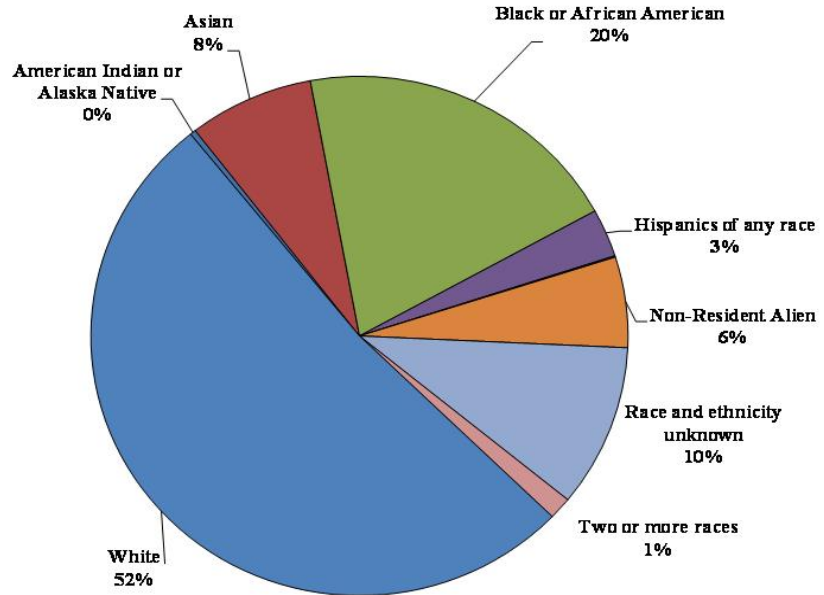
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Degree/Certificate Type	Number Offered
Bachelors	128
Masters	124
Doctorate	59
Undergraduate Certificate	2
Post-Bachelors Certificates	41
Post-Masters Certificates	17
Professional	3
First-Professional Certificate (Post-Degree)	2
Total	376

# Wayne State University

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We have a very diversified student body



# Consulting on policy

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- When asked to provide assistance when making decisions affecting policy, it is better to:
  - Check the literature, in case of counter-intuitive outcomes.
  - Investigate institutional data
- Data driven decisions are stronger than those based upon discussion alone.



# Our Case: AP as a criteria for admission

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- ❑ Whether/how should AP courses fit in to making admission decision
- ❑ It can be tempting to support the decision because it seems logical
  - AP test score
  - Counted AP courses





# AP – Advanced Placement Program

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- Began in the 1950's
- Run by the College Board
- Allows student to take college-level course in high school
- Currently, 34 subject test available
- Institutions have differing policies regarding college credit assigned to AP courses



# AP scores

5 - Extremely well qualified to receive college credit

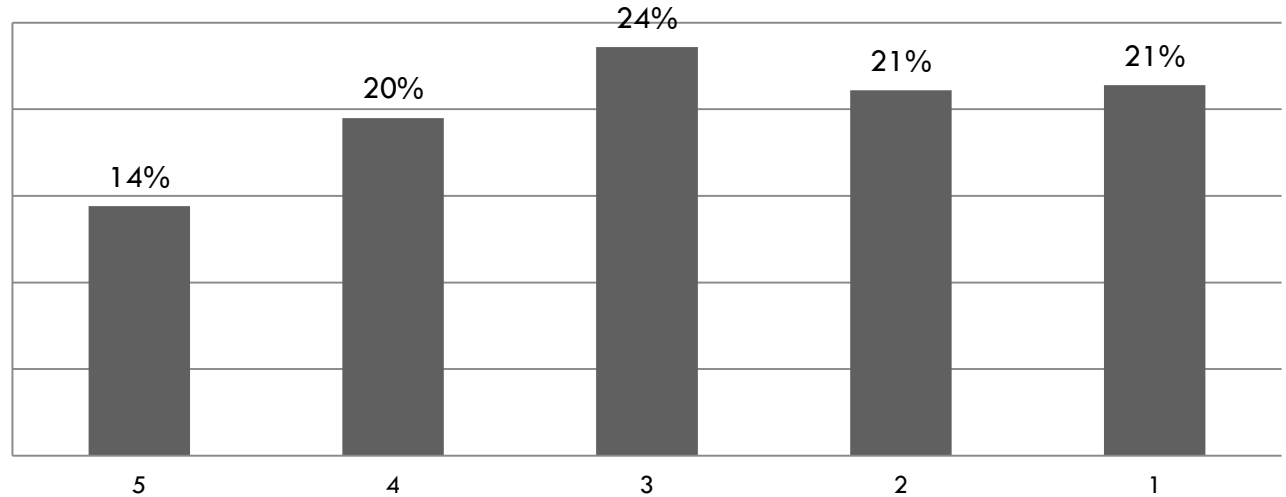
4 - Well qualified to receive college credit

3 - Qualified to receive college credit

2 - Possibly qualified to receive college credit

1 - No recommendation to receive college credit

### Frequency of AP Scores, 2011



*In 2011, more than 3 million AP exams were administered*

# Literature review

- Is AP score a predictor of student success?
- Is # of AP test taken as a predictor?
- Relation between # of AP and time-to-degree

# Literature review

- AP scores, themselves, can be very predictive of student success in college.
  - Patterson, Packman, & Kobrin (2011)
- However, many universities began using the presence of an AP score as proof that students were engaged in a more rigorous curriculum, without investigating data first.

# Counter-intuitive outcomes: Not predictive of student success

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## ■ Counted AP scores

- The number of AP courses a student was not strongly related to student success (GPA), but was strongly related to demographic and socioeconomic differences.
  - Geiser and Santelices (2004)
- Regression analysis and decision tree analysis indicated no clear linear relationship between time to degree and number of AP units.
  - Eykamp (2006)

# Counter-intuitive outcomes:

## Not predictive of student success

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### □ Unpredictive of student success

#### ■ Weighted GPA

- Many high schools offer an extra point to students as encouragement to take an honors or AP class.
- Justified because it reflects a more rigorous curriculum.
- Very unpredictable of student success in college. Instead, standard GPAs are good predictors of student success in college.
  - Geiser and Santelices (2004)

# Counter-intuitive outcomes

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## Predictive of student success

- ▣ Actual AP scores
- ▣ Unweighted GPA

## Not predictive of student success

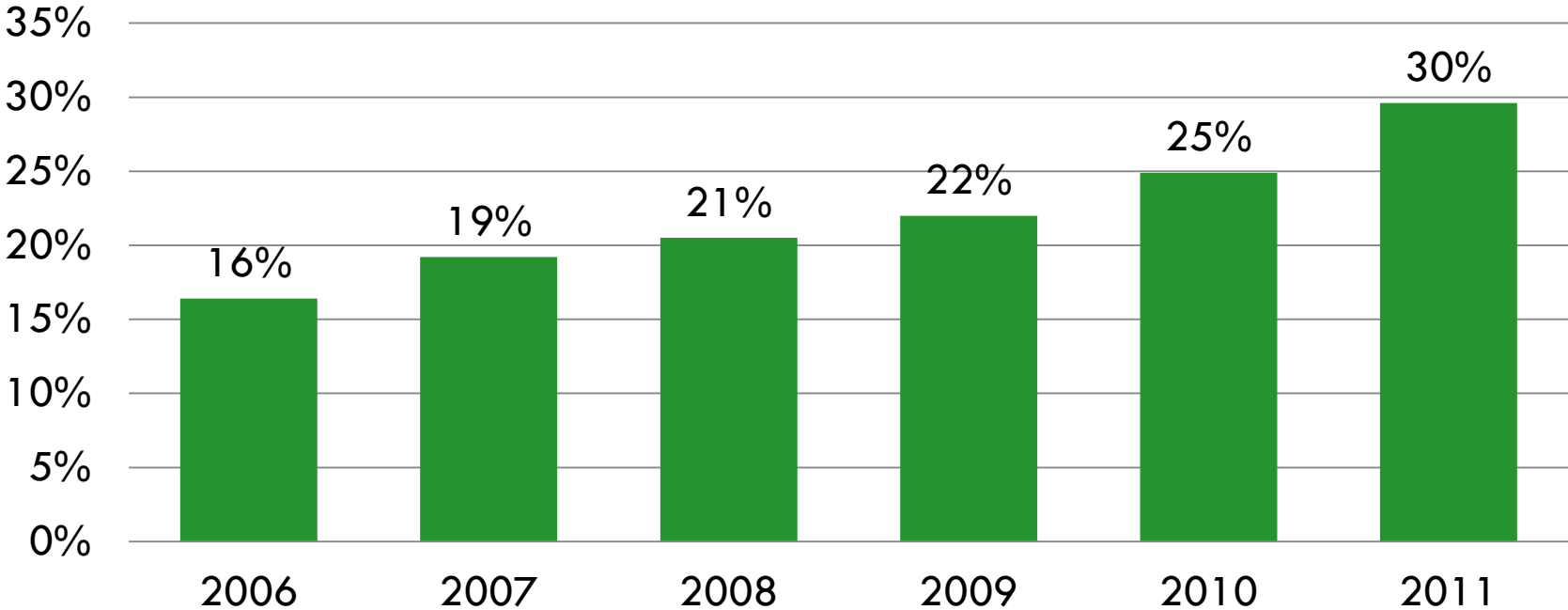
- ▣ Number of AP scores
- ▣ Number of AP scores resulting in class credit
- ▣ Weighted GPA

# Institutional Data: FTIAC Cohorts With AP Scores

Cohort	Cohort Count	# (%) AP test taker	Average # of AP test taken	Average AP test grade
Fall 2006	2,517	414 (16.4%)	2.45	2.62
Fall 2007	2,820	541 (19.2%)	2.35	2.65
Fall 2008	2,625	537 (20.5%)	2.52	2.65
Fall 2009	2,770	609 (22.0%)	2.68	2.70
Fall 2010	2,465	613 (24.9%)	2.77	2.69
Fall 2011	2,226	660 (29.6%)	3.02	2.69
Total	15,423	3,374	2.66	2.67

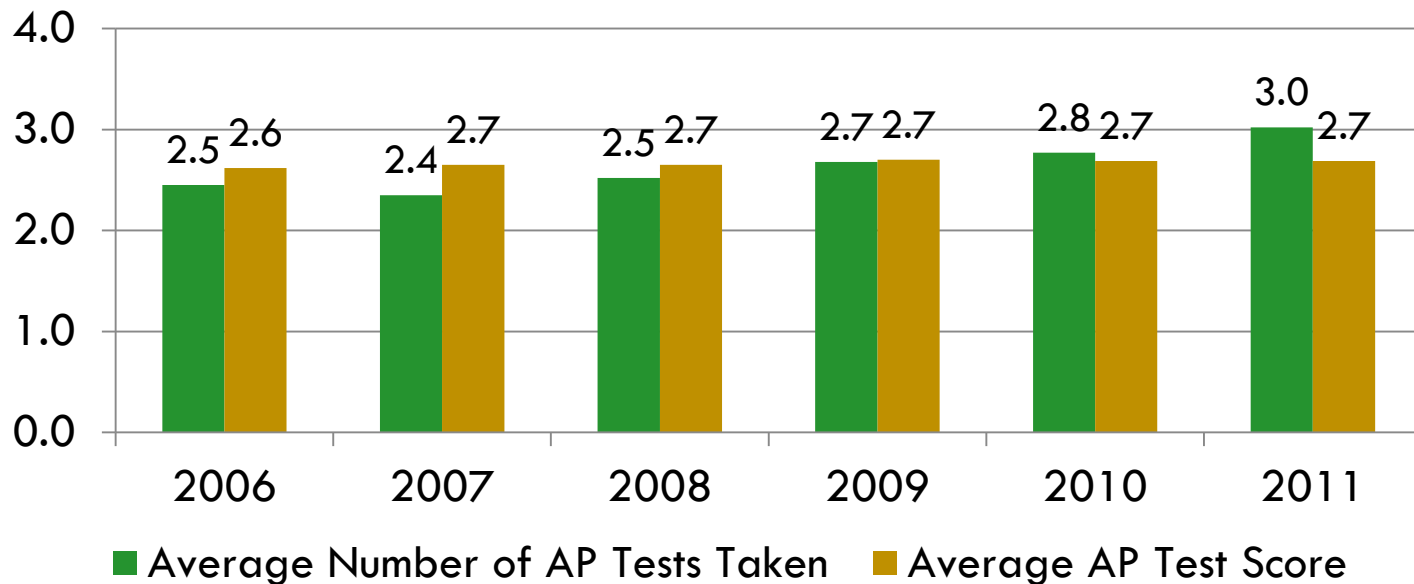


# Institutional Data: % of FTIAC cohorts taking AP



# Institutional Data: Average # of test taken and average test score

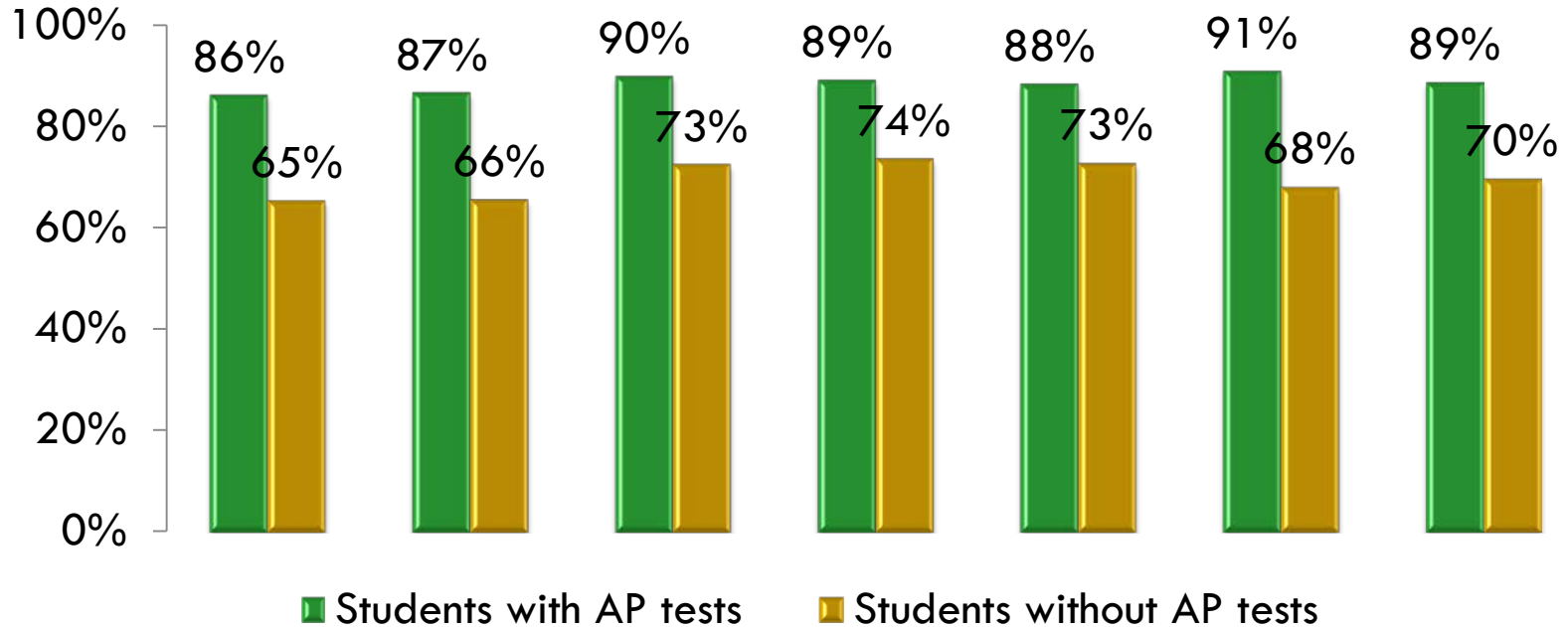
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# Institutional Data: Comparing of AP Test Takers

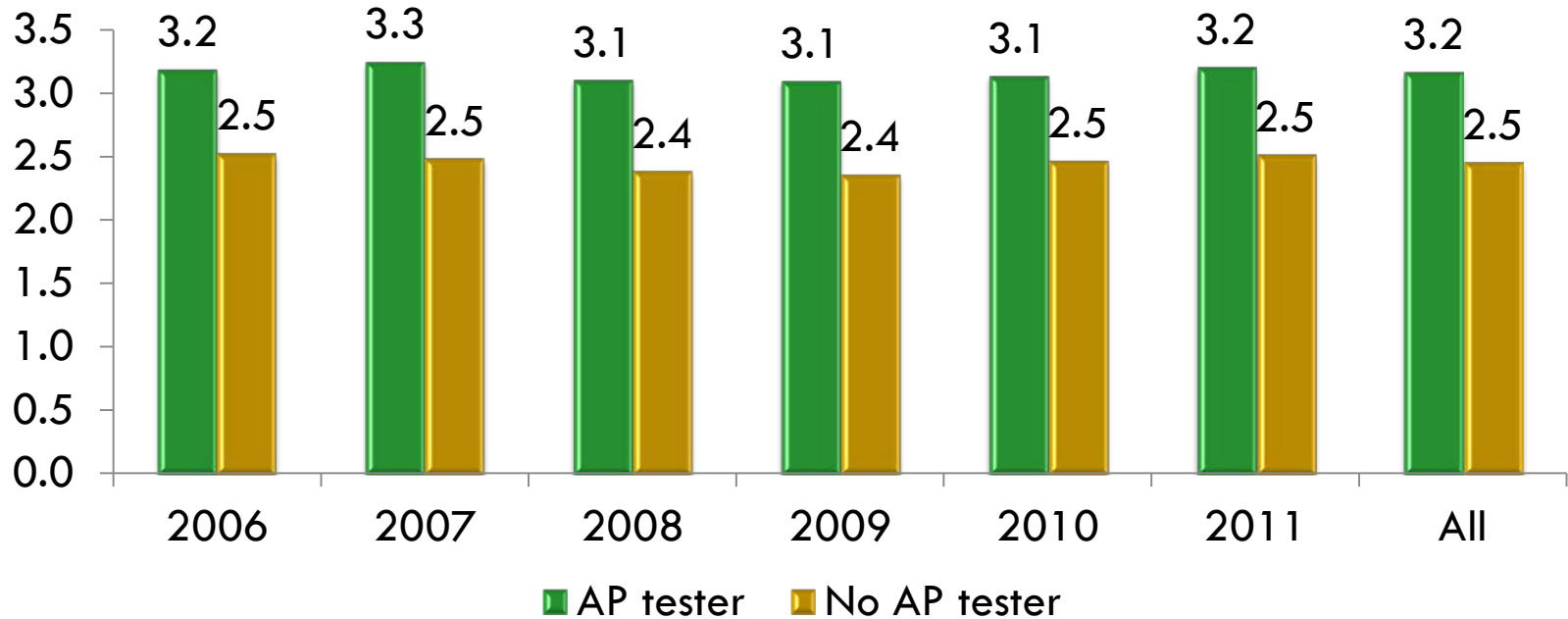
	AP test takers	Non AP test takers
Female	21.1%	78.9%
Male	23.0%	77.0%
Asian	36%	64%
White	32%	68%
Hispanic	20%	80%
African American	6%	94%
Other	25%	75%

# Institutional Data: One Year Retention



# Institutional Data: Student Success (First Year GPA)

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# Institutional Data: Is Number Of AP Tests Taken A Good Predictor Of Student Success?

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<b>Average AP test</b>	<b>Average 1<sup>st</sup> year GPA</b>	<b>Pearson's r</b>	<b>P-value</b>
2.66 (1.87)	2.62 (1.01)	0.224	.000

# Institutional Data: Advanced Placement Subject Area

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- Most popular AP tests:
  - English Literature and Comp
  - Biology
  - Calculus AB

# Institutional Data: AP Subject

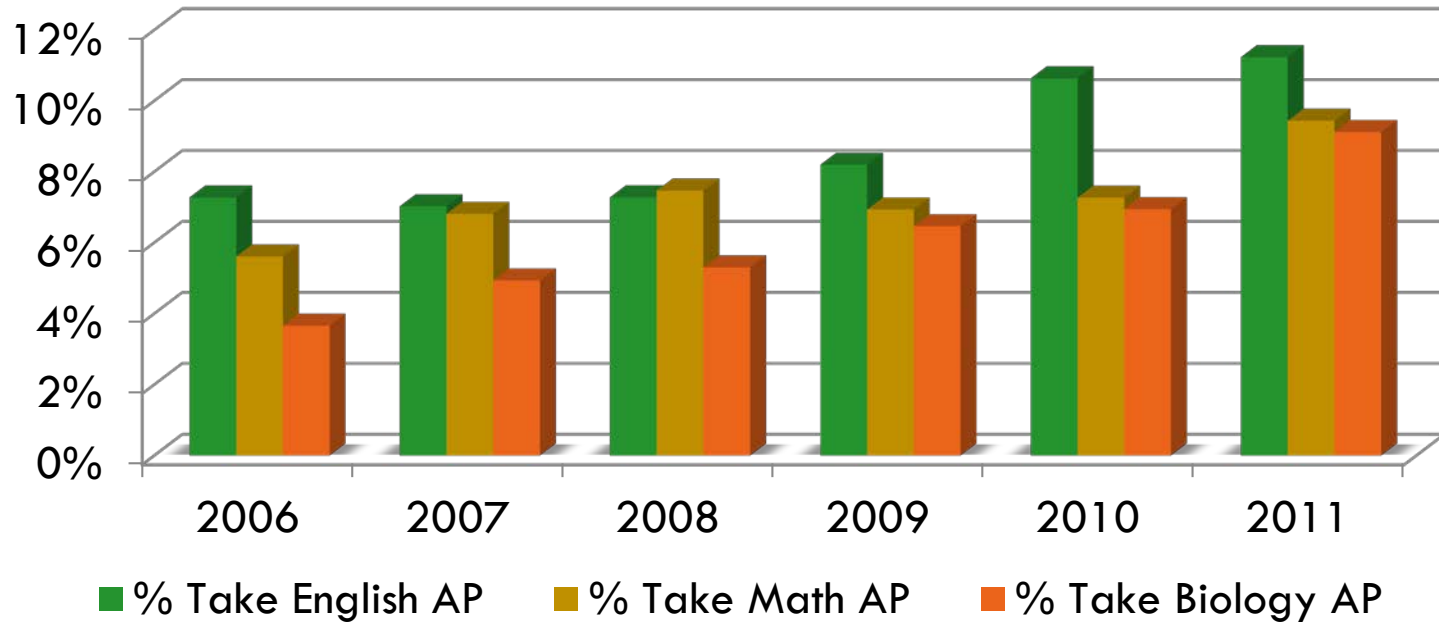
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Cohort	Count	# Take AP	# take English AP	# take Math AP	# take Biology AP
Fall 06	2,517	414	183	141	92
Fall 07	2,820	541	198	192	139
Fall 08	2,625	537	191	196	139
Fall 09	2,770	609	227	192	179
Fall 10	2,465	613	262	179	171
Fall 11	2,226	660	250	210	203
Total	15,423	3,374	1,311	1,110	923



# Institutional Data: Percent of FTIACs who take AP by subject

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# Institutional Data: Relationship Between AP English Test Score And Student Success

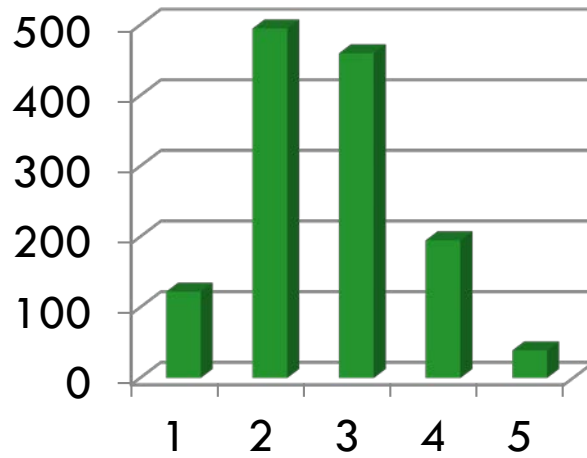
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In our university, AP English:

Score=3, credit award =4;

Score=4, 5 credit award =7

## Frequency of AP English Score



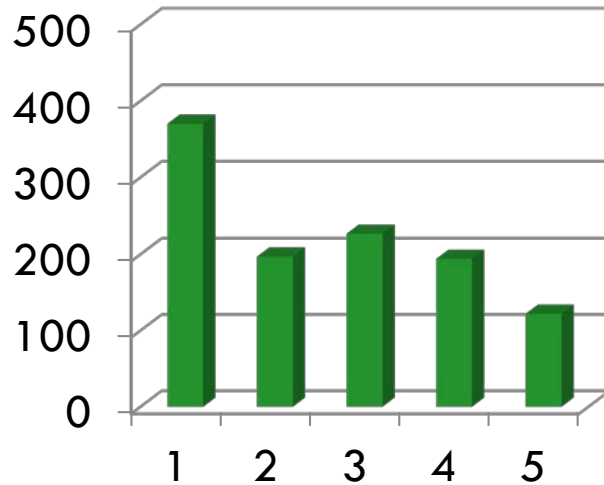
N	Mean AP English	Mean 1 <sup>st</sup> Year GPA
1311	2.64 (0.94)	2.62 (1.01)
$r=0.381^{**}$ ( $p<0.01$ )		

# Institutional Data: Relationship Between AP Math Test Score And Student Success

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In our university, AP Calculus AB: Score=3, 4, 5, credit award =4;

## Frequency of AP Calculus AB Score



N	Mean AP Calc. AB	Mean 1 <sup>st</sup> Year GPA
1110	2.55 (1.39)	2.62 (1.01)
$r=0.289^{**}$ ( $p<0.01$ )		

# Institutional Data: Relationship Between AP Biology Test Score and Student Success

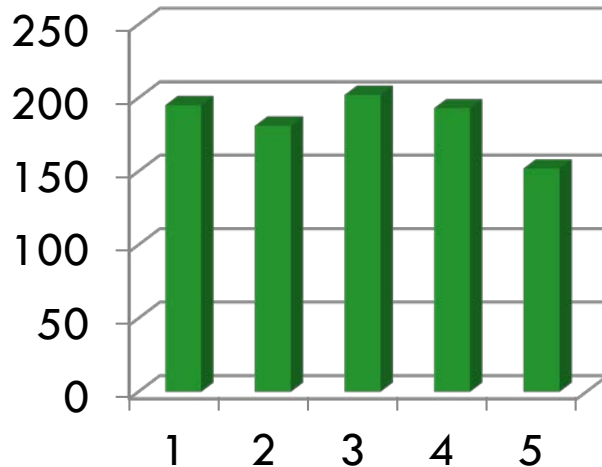
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In our university, AP Biology:

Score=3, 4 credit award =4;

Score=5 credit award =8

## Frequency of AP Biology Score



N	Mean Biology	Mean 1 <sup>st</sup> Year GPA
923	2.92 (1.38)	2.62 (1.01)
r=0.391** (p<0.01)		

# Institutional Data: Relationship Between AP Subject and Student Success

AP Subject	N	r
AP Biology	923	0.391
AP English	1311	0.381
AP Calculus AB	1110	0.289

# Next Step:

- Build models and control for demographic variables
  - After control demographic variables, are there still relationship between counted AP test and students success
  - After control for demographic variables, are there still relationship between AP test score and students success
- Analysis of student major and AP subject
- Time-to-degree

# Literature

- B.F. Patterson, S. Packman, and J. L. Koblin, *Advanced Placement® Exam-Taking and Performance: Relationships with First-Year Subject Area College Grades (Research Report No. 2011-4)* (New York: The College Board, 2011). Retrieved from <http://professionals.collegeboard.com/data-reports-research/cb/RR2011-4/>.
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- Eykamp (2006) Using Data Mining to Explore Which Students Use Advanced Placement to Reduce Time to Degree. *New Directions For Institutional Research*. 131, 83-99. Retrieved from <http://dx.doi.org/10.1002/ir.189>.

Thank you for attending!