

# Predicting Academic Risk for Intervention

## IU Kokomo

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University Planning, Institutional Research, and Accountability

May 13, 2008



INDIANA UNIVERSITY

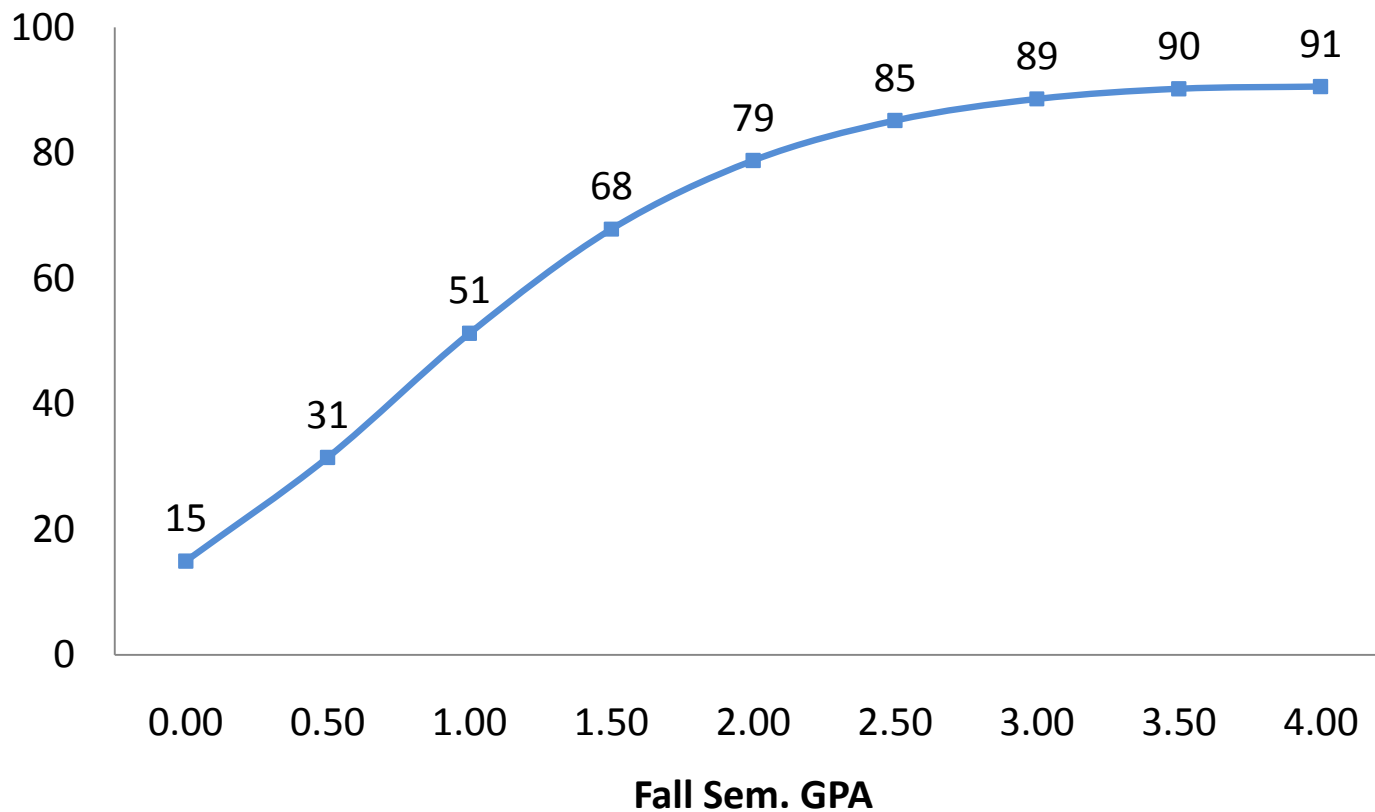


## **A Blast from the Past: UPIRA Retention Tour '07**

- ◆ Study: 'Retention among first-time full-time students'
- ◆ Fall to fall retention as a set of sequential decisions
  - Retention between fall and spring
  - Retention between spring and second year
  - Reasons for retention/departure differ by semester
- ◆ Sample ~ 5,300 from 2004 and 2005 cohorts
- ◆ First-time full-time students at IU Regionals or IUPUC



# Important Finding: Second Semester Retention Rate by GPA





# The Good, the Bad, and the Ugly

## The Good (News)

GPA is among the BEST predictors of retention

## The Bad (News)

End-of-semester measures may be too late

## The Ugly (Solution)

Predicting academic risk at the time of admission

What we'll attempt here, but then what...?!



## Sample: Adelman Cohorts

- ◆ Students New to IU Kokomo
  - Beginners/Transfers
  - Six or more credit hours
  - Fall or Spring Semester
  - 2005-06 & 2006-07 Academic Yrs.
  - Sample size = 1,468 students



## Who are these students?

Beginner/Transfer = 66/34

Howard Co./Other = 38/62

Full-time/Part-time = 73/27

Core-40/Regular = 55/45

Avg. Age = 23

Regular app./Late app. = 74/26

Male/Female = 35/65

Avg. SAT = 958 (36% not reporting)

White/Other race = 90/10

Need/No need = 37/63

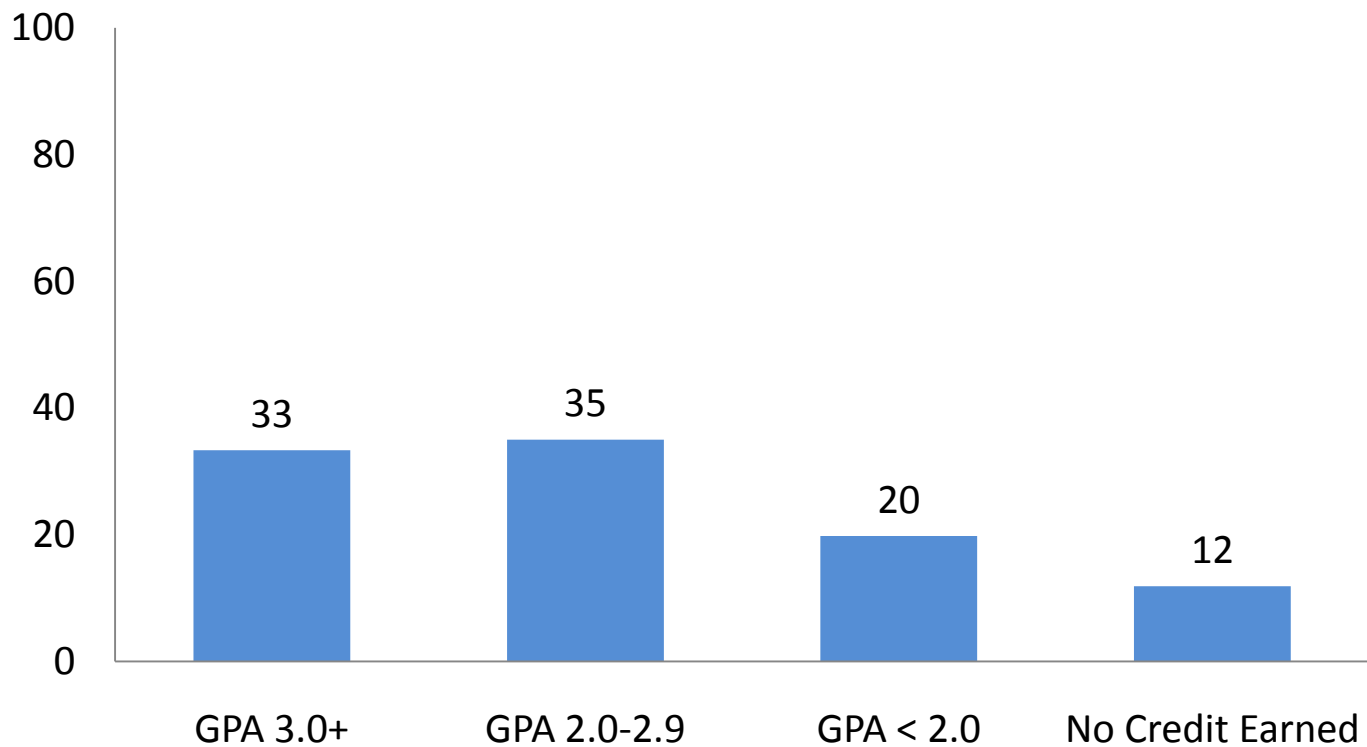


## End-of-Semester Status

- ◆ Four Groups:
  - GPA 3.0+
  - GPA 2.0 – 2.9
  - GPA < 2.0
  - No Credit Earned



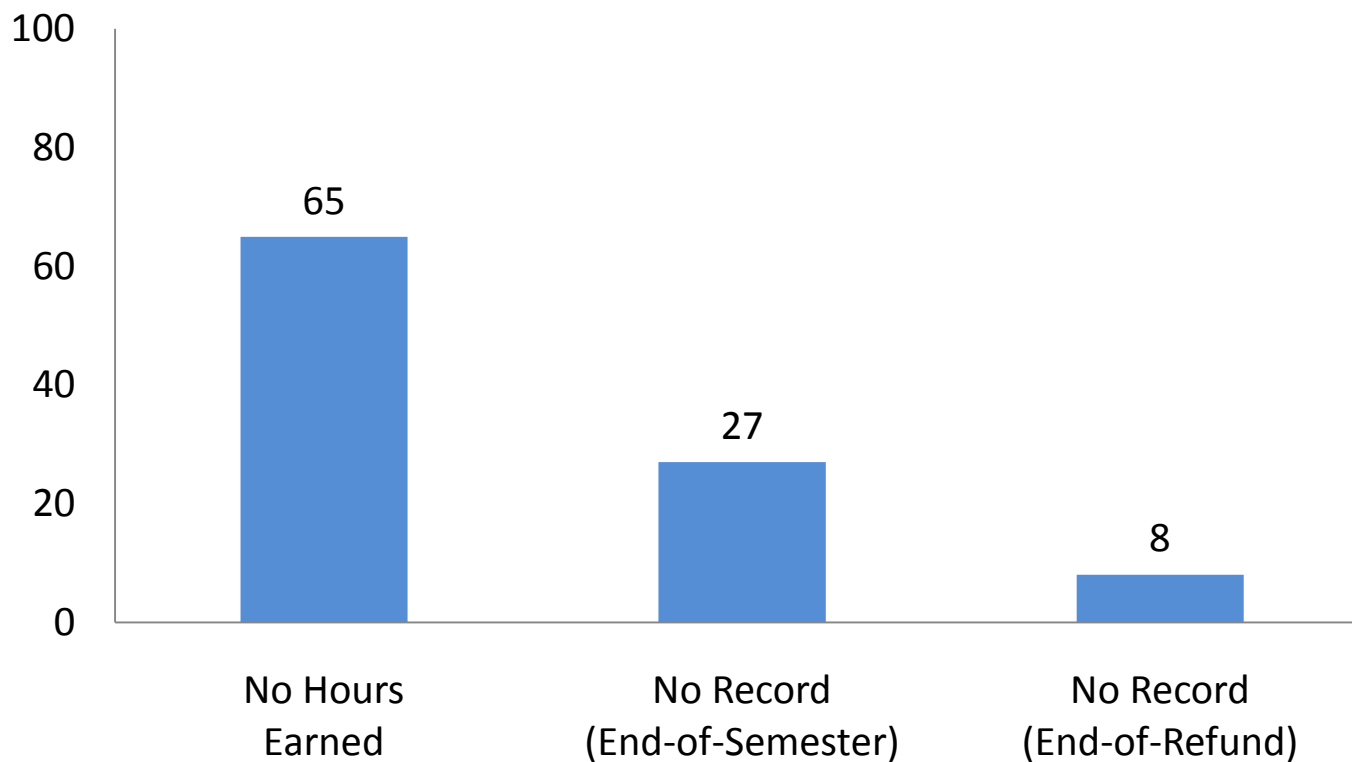
# % of New Students Within Each Group





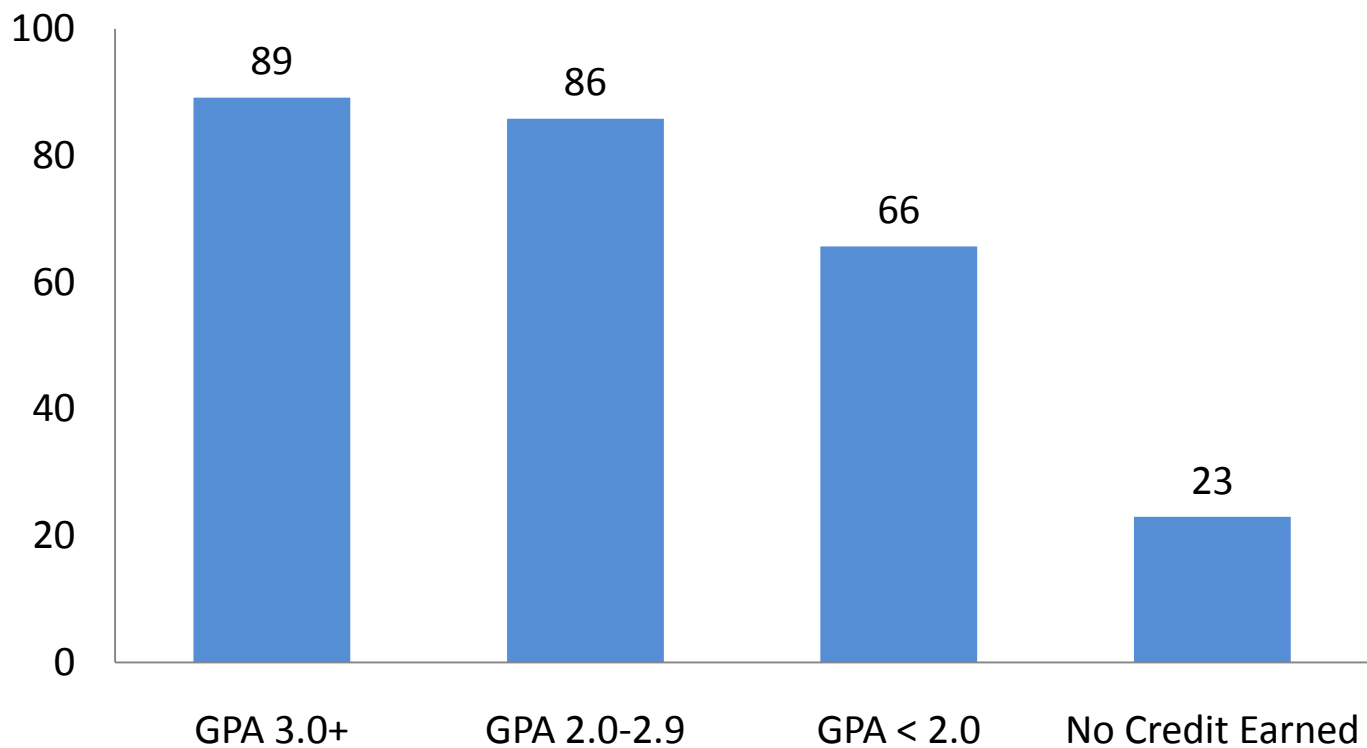


# % of Students Within 'No Credit Earned'



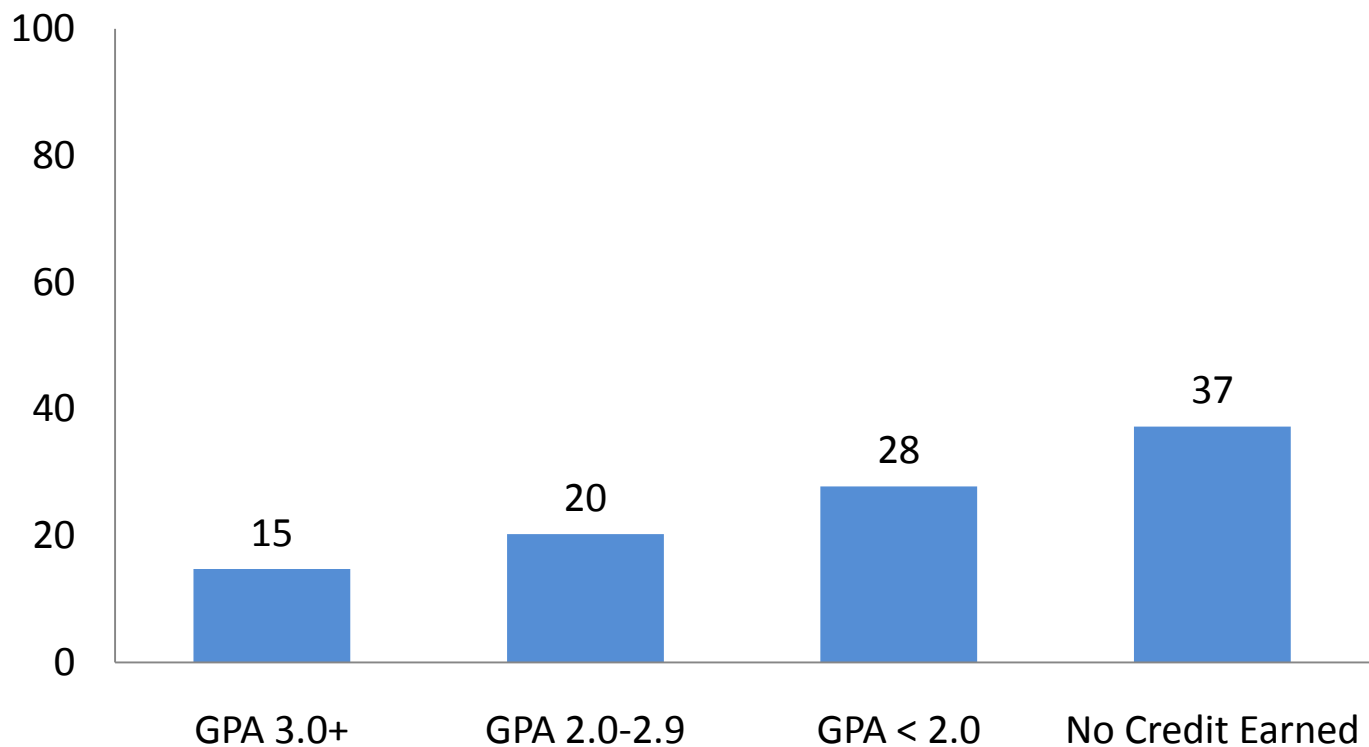


# Subsequent Semester Retention Rate



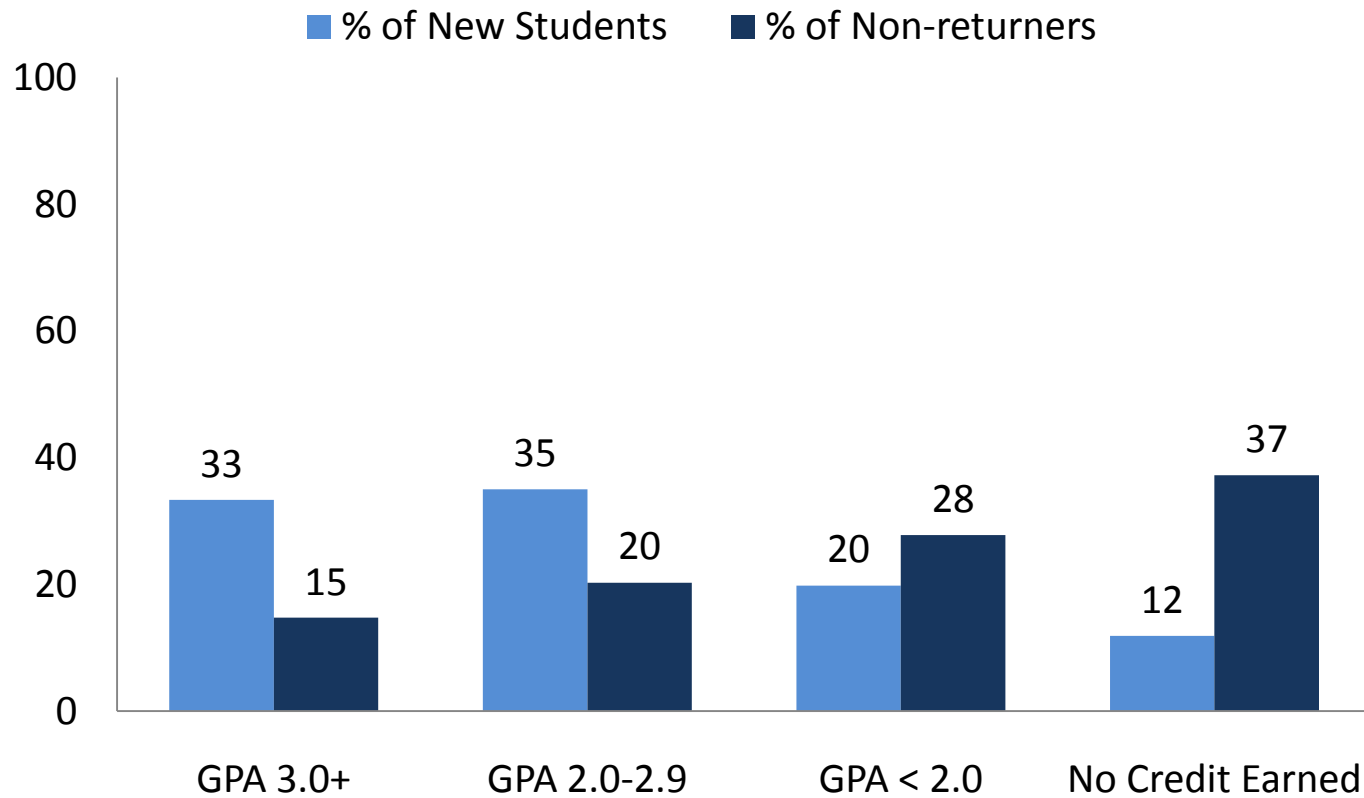


# % of Non-Returners Within Each Group





# Between-Group Comparison: New Students and Non-Returners





## Predictors of End-of-Semester Status

- ◆ Cohort (Beginner, Transfer)
- ◆ Credit Load (Full-time, Part-time)
- ◆ Gender (Female, Male)
- ◆ Race (White, Nonwhite)
- ◆ Age (< 20, 20 – 24, 25+)
- ◆ Geographic Origin (Home Co., Other Co.)



## Predictors of End-of-Semester Status

- ◆ Diploma Type (Core-40/Honors, Regular)
- ◆ Application Date:
  - Early (Fall: Before Mar., Spr: Before Sep.)
  - Mid (Fall: Mar. – May, Spr: Sep. – Nov.)
  - Late (Fall: Jun. – Aug., Spr.: Dec. – Jan.)
- ◆ SAT (< 850, 850 – 990, 1000+, Not Provided)
- ◆ % Need Met by Gift (No need, <25, 25-50, <50)

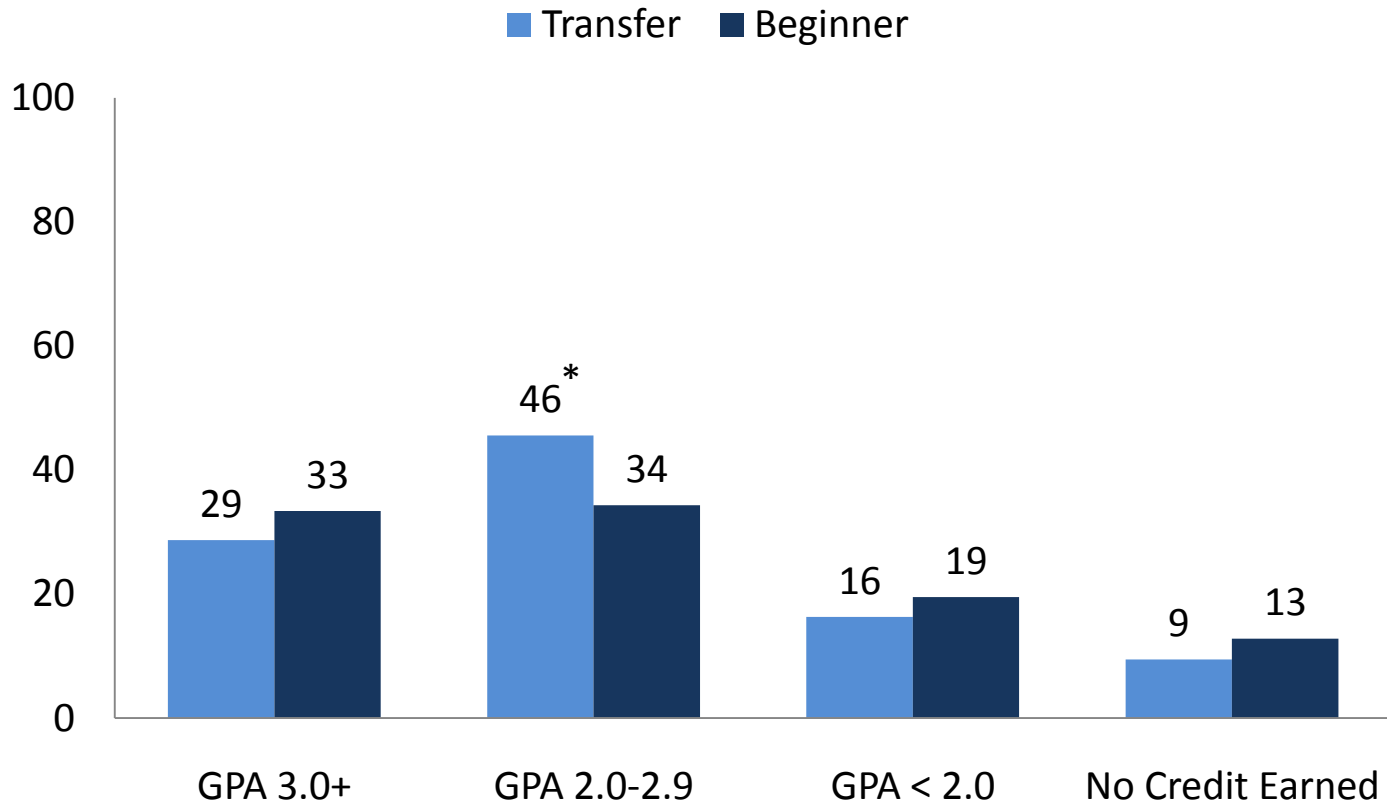


## Method and Interpretation

- ◆ Method: Multinomial logistic regression
  - Appropriate for outcomes with multiple categories
  - Results reported as predicted probabilities
- ◆ Interpretation: A Hypothetical
  - Two students who are similar in every way but one
  - Ex. – “All else being equal, females have a greater probability than males of earning a 3.0+ GPA.”



# Results: End-of-Semester Status by Cohort

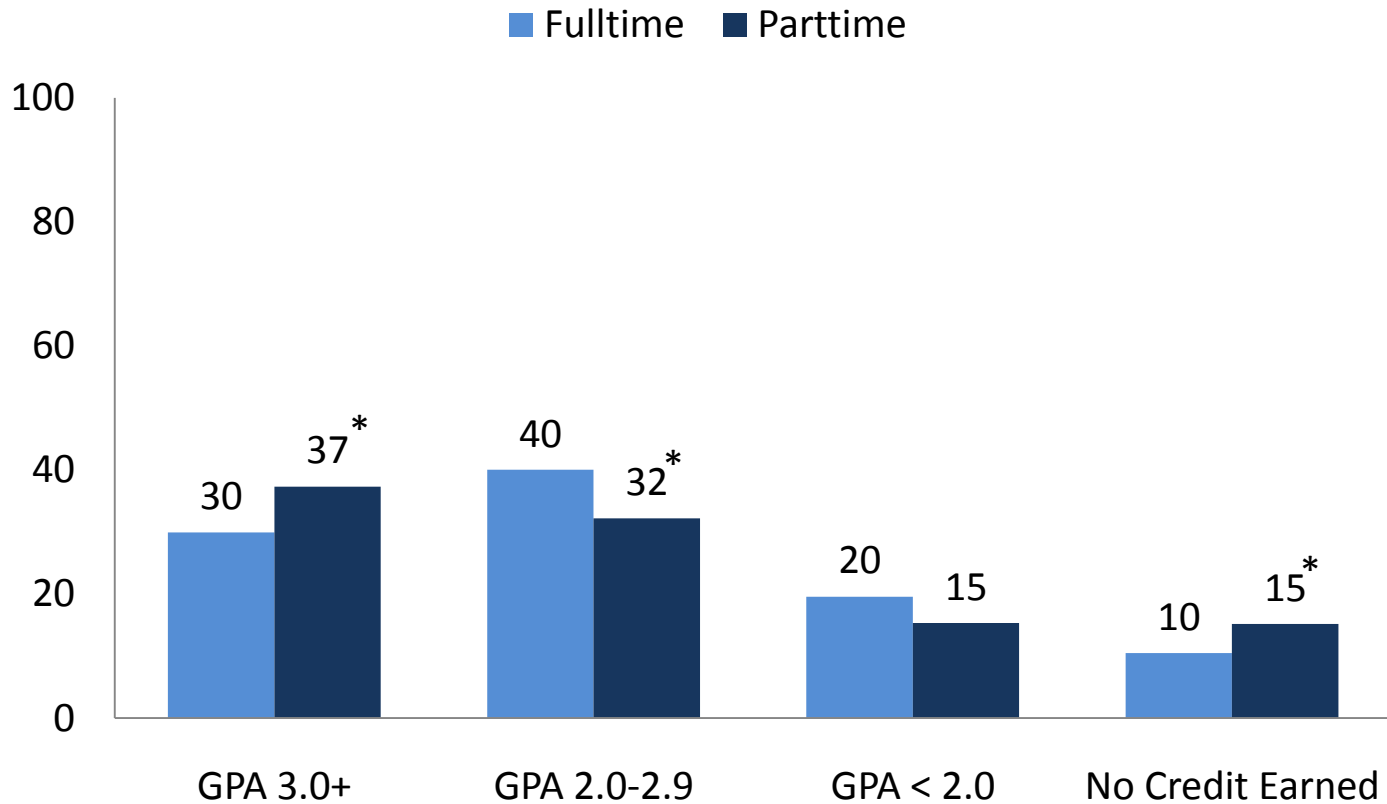


\* Statistically significantly different than “Beginner”





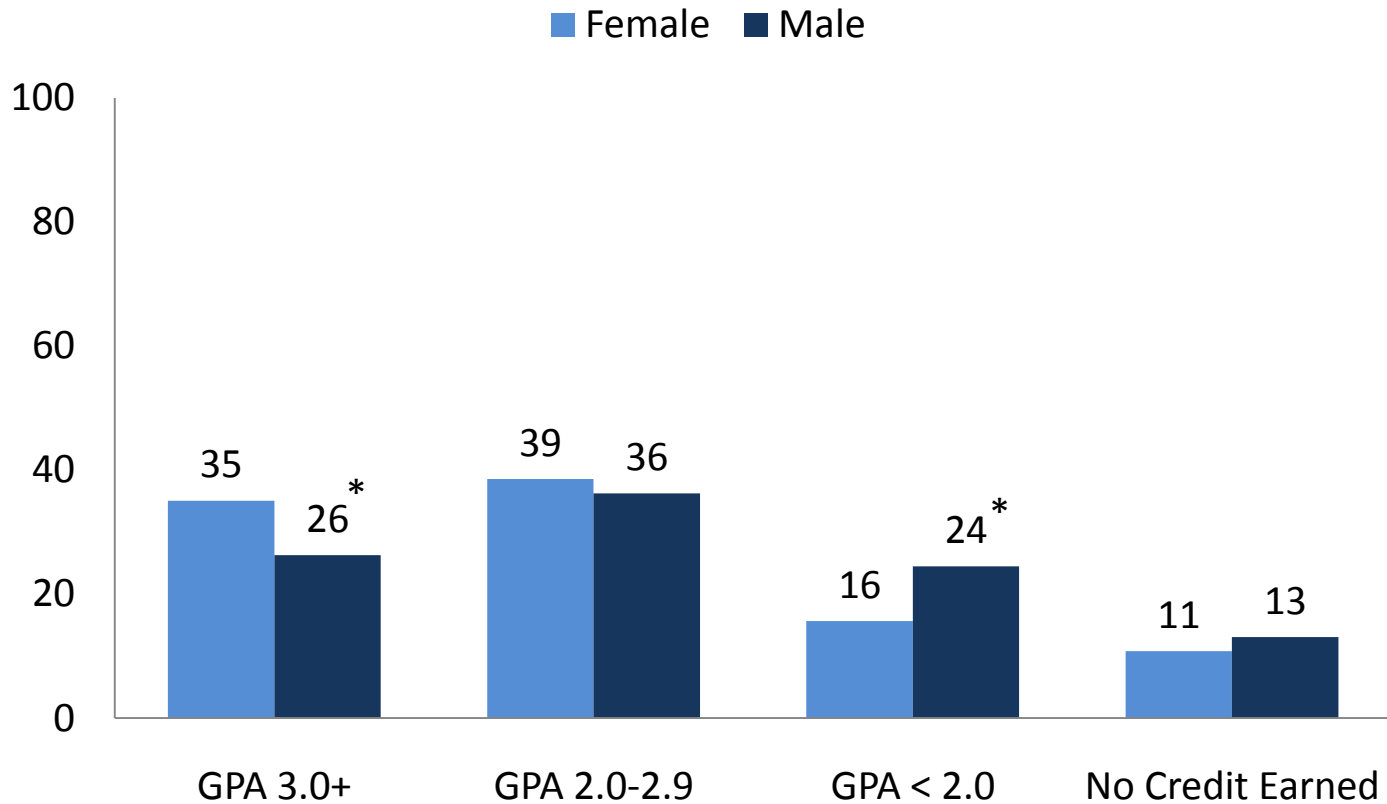
## Results: End-of-Semester Status by FT/PT



\* Statistically significantly different than “Fulltime”



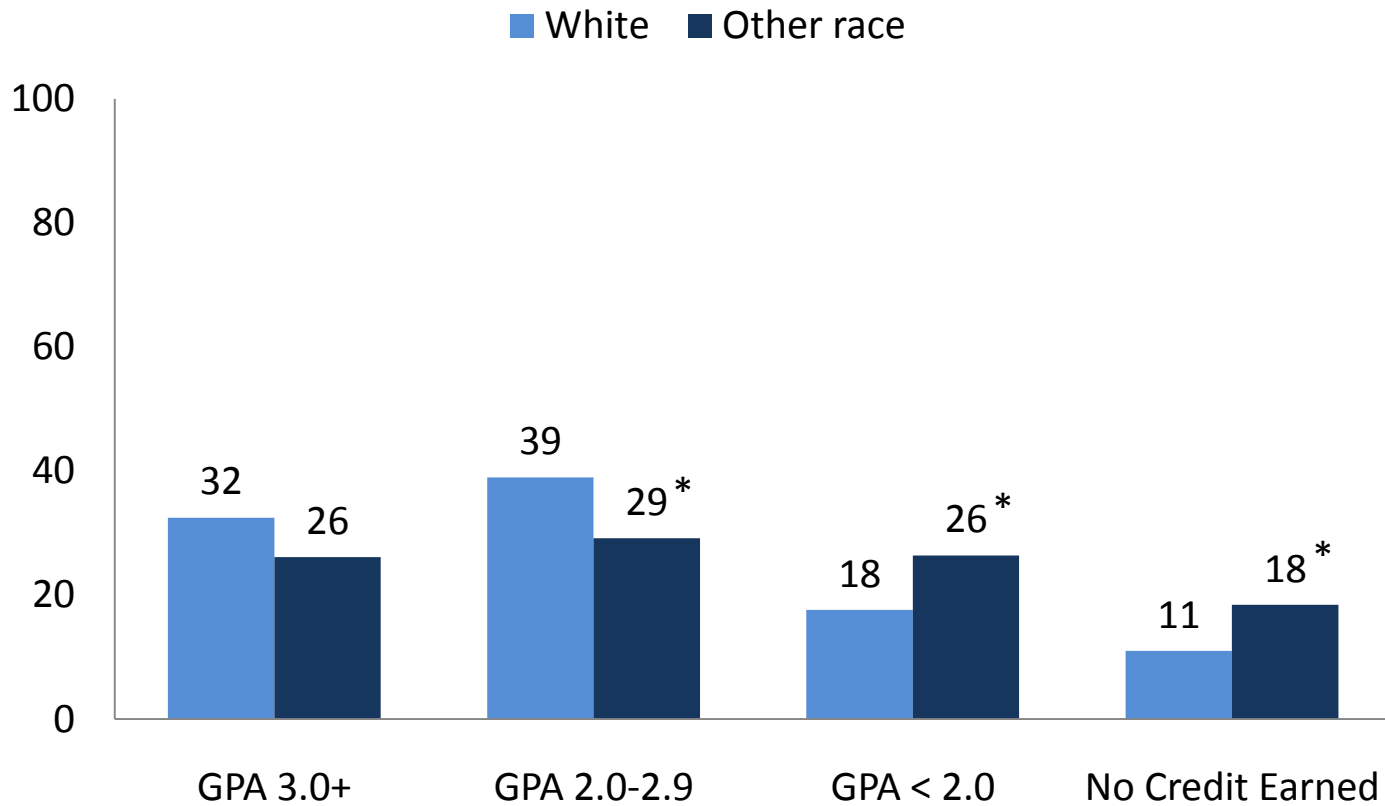
# Results: End-of-Semester Status by Gender



\* Statistically significantly different than “Female”



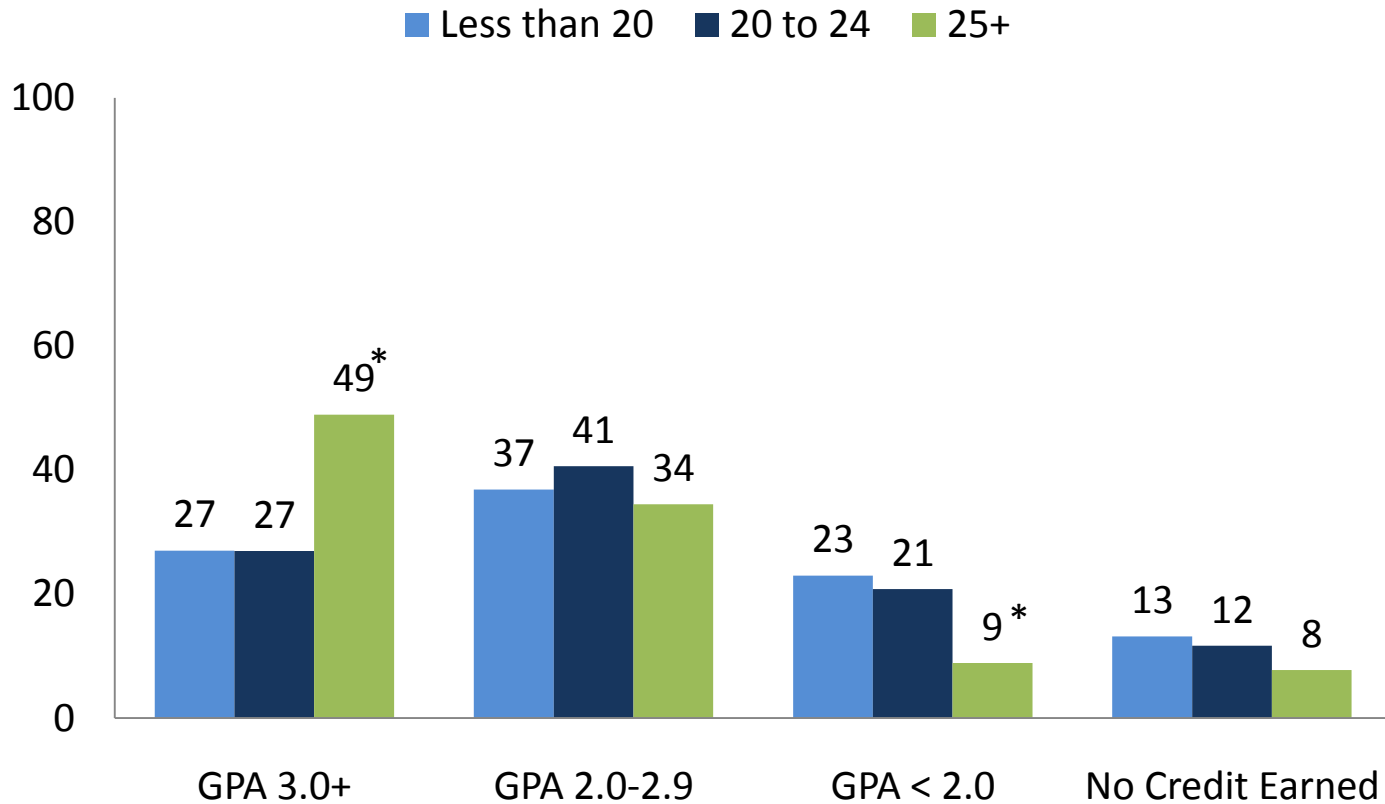
# Results: End-of-Semester Status by Ethnicity



\* Statistically significantly different than “White”



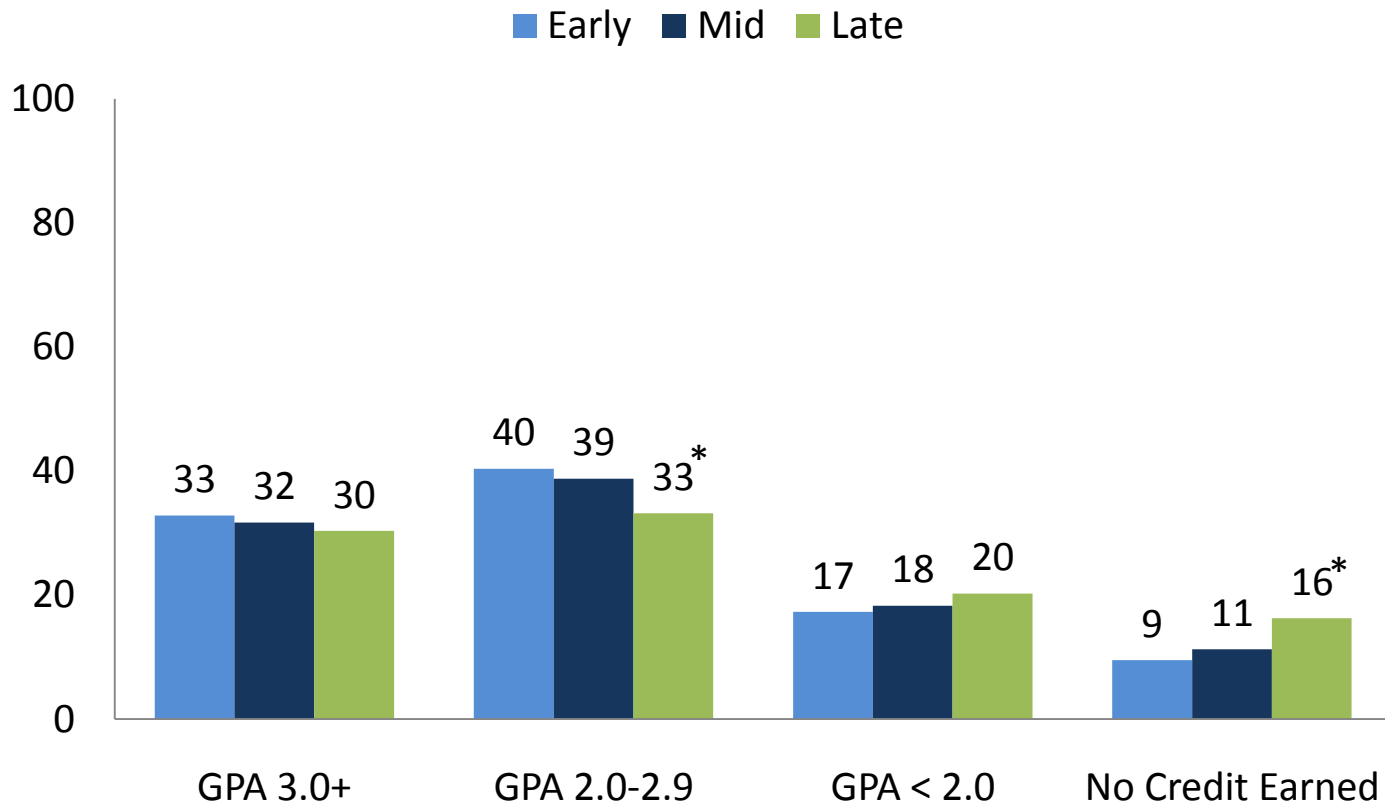
## Results: End-of-Semester Status by Age



\* Statistically significantly different than “Less than 20”



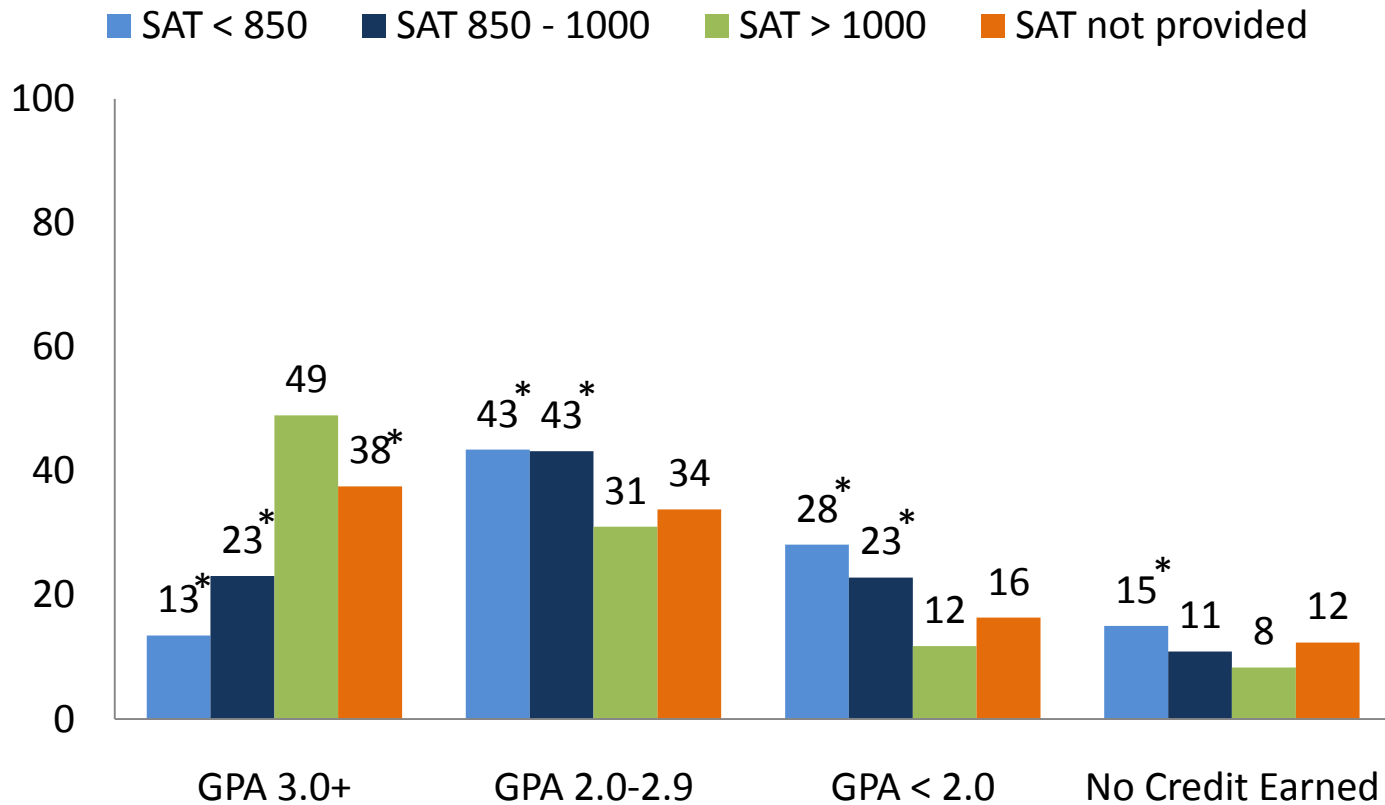
# Results: End-of-Semester Status by App. Date



\* Statistically significantly different than “Early”



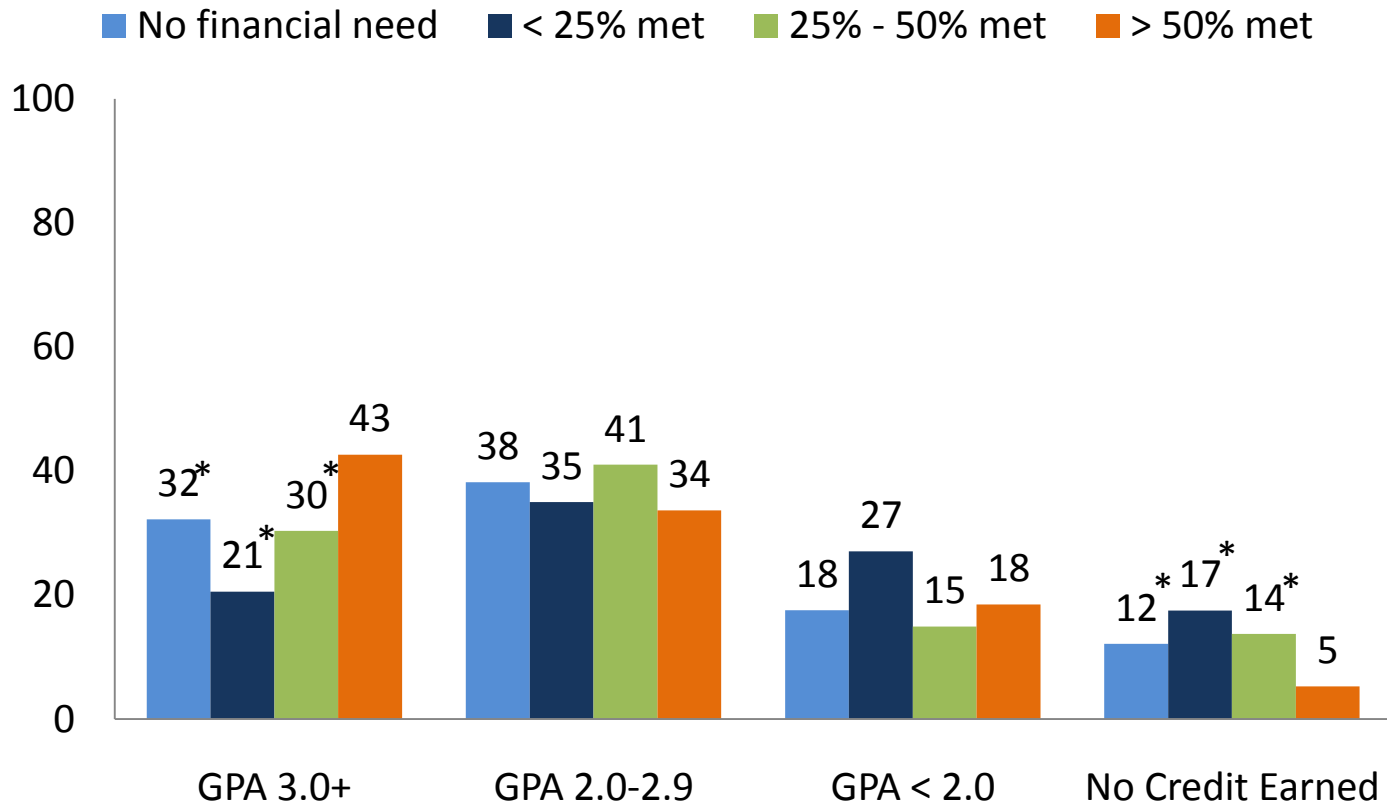
# Results: End-of-Semester Status by SAT Score



\* Statistically significantly different than "SAT > 1000"



# Results: End-of-Semester Status by % Need Met



\* Statistically significantly different than "> 50% met"



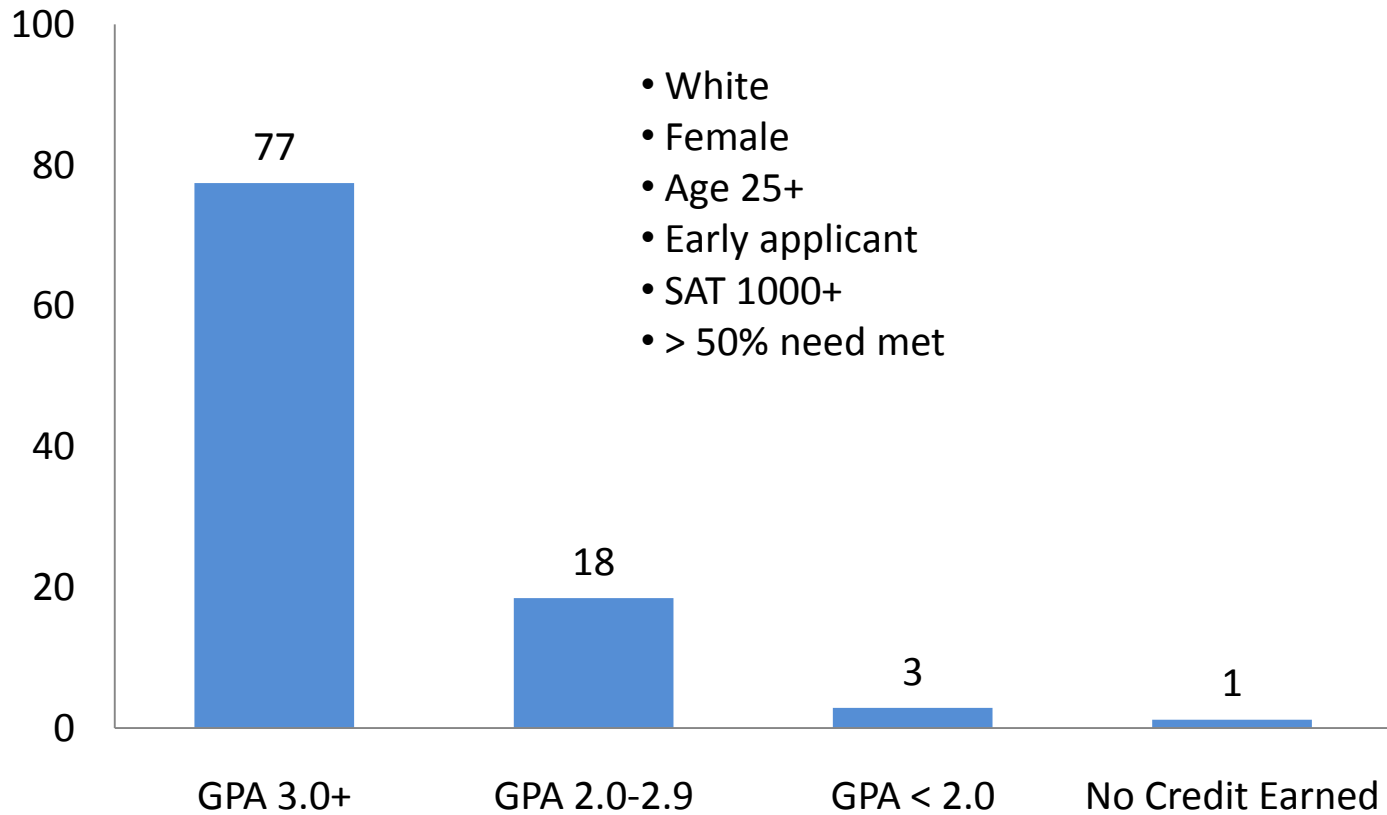
## **Results: Non-Significant Predictors**

- ◆ Geographic Origin (Home Co., Other Co.)
- ◆ Diploma Type (Core-40/Honors, Regular)



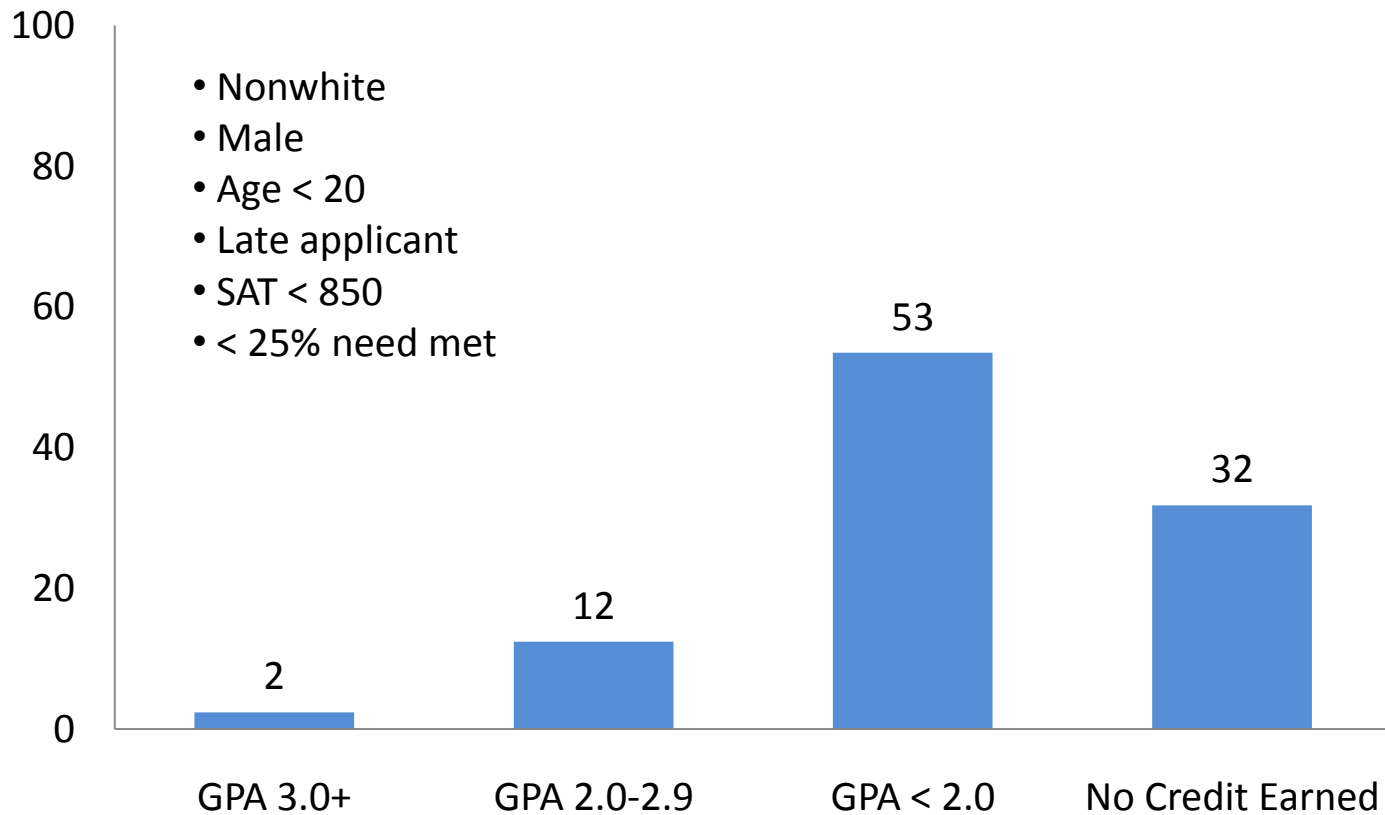


# Simulation: Low Risk Scenario





# Simulation: High Risk Scenario





## What Next? Using the Data...

Option 1: Be with the one you love

- ◆ “Score” new applicants based on model
- ◆ Identify high risk applicants
- ◆ Create alternative admissions/enrollment options
- ◆ Reshape entering classes of students via recruitment/aid



## What Next? Using the Data...

Option 2: Love the one you're with

- ◆ “Score” new enrollees based on model
- ◆ Identify high risk enrollees
- ◆ Redirect for early academic success
  - Course placement (DFW rates)
  - Target academic support and other interventions



## What Next? Using the Data...

Option 2 (continued)

- ◆ Create more feedback loops
  - Course level: assessment strategies
  - Campus level: track intervention participation