

# What High School Curricular Experience Tells Us About College Success

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# Purpose of Study

- Relate high school curricular experience to first-year college success
- Assess metrics of high school curricular rigor that best predict first-year success
- Support K-16 curriculum alignment, prospective student academic preparation

# Relevant Previous Research

- *The Toolbox Revisited* (Adelman, 2006)
  - Academic intensity of student's high school curriculum
    - English, math, science units completed
    - Highest level math course completed
    - AP courses completed
  - High school attended (course offerings)
  - Delayed college entry of high school graduates
  - College-level math credits completed by 2<sup>nd</sup> year
  - Less than 20 college credits earned in first year
  - Trend in grades received
  - Attempted vs. completed courses in college
  - Covariate controls (e.g., SES, college financial aid)
  - Findings based on NELS:88/2000

# Data Analyzed for this Study

- New full-time freshmen at moderately selective public research university
  - Fall entry 2001 through 2008
  - Graduated from public high school in 2 in-state counties/districts in primary capture area 2001-08
  - Attended high school at least 3.5 years
  - With matched high school/college transcript records (~ 85% matched, ~30% of population)
- Data sources
  - University student information system
  - High school district transcript files
- Data accuracy
  - Does not depend on retrospective recall of responses from student surveys (e.g., NCES' BPS, CIRP)

# Gauging High School Academic Influence

- Curricular rigor
  - Diploma type received
  - Honors/AP courses taken by discipline
  - Units completed by discipline
- Academic performance
  - GPA in core courses, within discipline
- Academic momentum
  - Senior year units completed by discipline
  - Senior year GPA overall, within core, within discipline
  - GPA trend senior year to prior years, within core, within discipline
  - Highest level math course taken

# Gauging High School Academic Influence

- Covariate controls
  - Admission test score (ACT/SAT verbal, math)
  - Graduating high school
  - Delayed college matriculation
  - Student age, gender, race/ethnicity
  - On-campus living
  - Financial aid profile (including aid type, remaining need in \$)
  - Undeclared college major
  - Articulated AP/IB credits
  - Number of science courses taken as college freshman
  - College intent (proxy via test date to college entry period)

# Gauging First-Year College Success

- End of fall semester academic momentum
  - Index score composed of credits earned and GPA:  
 $((\text{credits quintile} * 10) + (\text{GPA} * 12.5)) = 100 \text{ pt max}$
- End of first-year academic momentum
  - Retained in spring semester
  - Index score composed of cumulative credits earned and cumulative GPA (formula as above)
- Credits earned grouping
  - Fall semester: <12, 12, 13-14, 15, > 15
  - First-year: <20, 20-25, 26-28, 29-30, > 30
  - Grouping logic reflects findings in Adelman (2006) and correlation with financial aid impact
  - Metric measures earned, not attempted credits

# Preliminary Findings

- No difference in academic momentum, fall or first-year, between standard and advanced diploma holders
- Honors diploma holders score 14-15 points higher (~2/3 SD)
- Loss of fall-to-spring momentum for all, but greatest for advanced holders, least for honors holders
- Those from schools # 508 and 509 differ sig from rest

## Multiple Comparisons

FirstY Momentum  
Dunnett T3

| (I) HSDiplType        | (J) HSDiplType        | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval |             |
|-----------------------|-----------------------|-----------------------|------------|------|-------------------------|-------------|
|                       |                       |                       |            |      | Lower Bound             | Upper Bound |
| Standard/Adult/GED/NG | Advanced              | .96280                | .68696     | .410 | -.6784                  | 2.6040      |
|                       | Honors                | -15.54735*            | .58780     | .000 | -16.9511                | -14.1436    |
| Advanced              | Standard/Adult/GED/NG | -.96280               | .68696     | .410 | -2.6040                 | .6784       |
|                       | Honors                | -16.51015*            | .63593     | .000 | -18.0295                | -14.9908    |
| Honors                | Standard/Adult/GED/NG | 15.54735*             | .58780     | .000 | 14.1436                 | 16.9511     |
|                       | Advanced              | 16.51015*             | .63593     | .000 | 14.9908                 | 18.0295     |

\*. The mean difference is significant at the 0.05 level.



# Preliminary Findings

## Bivariate Correlation with Fall Momentum (N=6,100)

|                |        |                    |         |
|----------------|--------|--------------------|---------|
| CoreGPA        | .515** | ACT/SAT English^   | .271**  |
| OverallGPA     | .499** | EnglHon            | .266**  |
| UptoSenGPA     | .481** | MathHon            | .257**  |
| UptoSenCoreGPA | .478** | SenArtsHumGPA*     | .249**  |
| EnglGPA        | .468** | ArtsHumHon         | .203**  |
| SeniorGPA      | .439** | MathUnits          | .192**  |
| ScienceGPA     | .438** | ScienceUnits       | .159**  |
| SenCoreGPA     | .438** | SenCoreUnits       | .129**  |
| MathGPA        | .433** | SenScienceUnits    | .124**  |
| JuniorGPA      | .430** | SenMathUnits       | .110**  |
| HistGovGPA     | .412** | EnglUnits          | -.095** |
| SenEnglGPA     | .388** | SenEnglUnits       | -.064** |
| SenMathGPA*    | .371** | Arts&Hum Units     | .045**  |
| SenScienceGPA* | .362** | SenArtsHumUnits    | -0.014  |
| TotalHon       | .351** | DiffSenJunGPA      | -0.012  |
| ACT/SAT math^  | .296** | DiffSenCoreUptoSen | 0.011   |
| ArtsHumGPA     | .290** | DiffSentoSenGPA    | 0       |
| ScienceHon     | .278** |                    |         |

\* Limited to students who took course(s) in this area

\*\* . Correlation is significant at the 0.01 level (2-tailed).

^ SAT score converted to ACT scale, highest score selected

# Preliminary Findings

- The higher the level of high school math completed, the greater the academic momentum in college
- The 25-point difference between a 'lower math' student and a 'calculus' student is equivalent to a jump from the 50%tile to the 90%tile on the academic momentum scale

## Fall Momentum Score Difference by Highest HS Math

|            |               | Mean Diff* | Std. Error |
|------------|---------------|------------|------------|
| Calculus   | Pre-Calc/Trig | 10.89      | 0.80       |
|            | Stats/Pre-IB  | 14.78      | 0.94       |
|            | Algebra 4     | 21.44      | 0.85       |
| Lower math | Lower math    | 25.16      | 1.61       |
|            | Calculus      | -25.16     | 1.61       |
|            | Pre-Calc/Trig | -14.26     | 1.57       |
|            | Stats/Pre-IB  | -10.37     | 1.64       |
|            | Algebra 4**   | -3.72      | 1.59       |

\*. The mean difference is significant at the 0.05 level.

\*\* non-significant difference

# Regression Analysis

| Parameter Estimates for Fall Momentum (N ~6,100) |                  |                                 |                                |                  |                                 |
|--|------------------|---------------------------------|--------------------------------|------------------|---------------------------------|
|  | <i>Coeff. **</i> | <i>Wald <math>\chi^2</math></i> |                                | <i>Coeff. **</i> | <i>Wald <math>\chi^2</math></i> |
| OverallGPA                                       | 26.30            | 1014                            | ArtsHumHon classes             | 1.37             | 89                              |
| UptoSenGPA                                       | 22.79            | 881                             | ScienceHon classes             | 1.26             | 79                              |
| CoreGPA  | 20.75            | 1089                            | MathHon classes                | 1.07             | 44                              |
| SeniorGPA  | 19.90            | 1031                            | EnglHon classes                | 0.95             | 82                              |
| UptoSenCoreGPA                                   | 17.85            | 876                             | TotalHon classes               | 0.35             | 79                              |
| EnglGPA  | 17.02            | 952                             | SenMathUnits                   | 2.69             | 23                              |
| JuniorGPA  | 16.78            | 690                             | SenCoreUnits                   | 2.46             | 62                              |
| SenCoreGPA                                       | 15.70            | 1055                            | SenScienceUnits                | 2.19             | 19                              |
| HistGovGPA                                       | 15.17            | 727                             | SenEnglUnits                   | -7.19            | 25                              |
| ScienceGPA                                       | 13.45            | 693                             | SenArtsHumUnits                | ns               | ns                              |
| MathGPA  | 12.05            | 628                             | EnglUnits (binary)             | ns               | ns                              |
| SenEnglGPA                                       | 11.15            | 747                             | MathUnits (binary)             | ns               | ns                              |
| ArtsHumGPA                                       | 10.73            | 242                             | ScienceUnits (binary)          | 1.67             | 12                              |
| SenArtsHumGPA*                                   | 9.14             | 179                             | Last math calculus             | 13.59            | 72                              |
| SenScienceGPA*                                   | 8.18             | 316                             | Last math precalc/trig         | 9.41             | 45                              |
| SenMathGPA*                                      | 7.20             | 400                             | Last math stats/preIB          | 6.03             | 17                              |
| DiffSenJunGPA                                    | 3.25             | 24                              | Last math algebra 4            | 2.28             | 3                               |
| ACT/SAT math Q <sup>^</sup>                      | 2.1-5.4          | 6 to 32                         | ACT/SAT English Q <sup>^</sup> | 1.6-5.5          | 4 to 40                         |

\* Limited to students who took course(s) in this area

\*\* Correlation is significant at the 0.01 level (2-tailed).

<sup>^</sup> SAT score converted to ACT scale, highest score selected

**Control variables:** student age, gender, ethnicity/race; ACT/SAT test date, ACT/SAT Engl Quartile, AP credits, delayed entry, # of college science courses, living on campus, Pell aid, institutional aid, non-Mill merit aid, loan aid, remaining need (\$1K), undeclared major, high school origin

**Note:** coefficients based on 1-unit increments, single variable entry

# Regression Analysis

**Parameter Estimates for First-Year Momentum (N = 5,524)**

|                             | <i>Coeff. **</i> | <i>Wald <math>\chi^2</math></i> |                                | <i>Coeff. **</i> | <i>Wald <math>\chi^2</math></i> |
|-----------------------------|------------------|---------------------------------|--------------------------------|------------------|---------------------------------|
| OverallGPA                  | 25.20            | 1252                            | ArtsHumHon classes             | 0.98             | 62                              |
| UptoSenGPA                  | 21.94            | 1092                            | ScienceHon classes             | 1.10             | 80                              |
| CoreGPA                     | 20.75            | 1464                            | MathHon classes                | 1.10             | 60                              |
| SeniorGPA                   | 18.22            | 1111                            | EnglHon classes                | 0.75             | 65                              |
| UptoSenCoreGPA              | 17.30            | 1092                            | TotalHon classes               | 0.45             | 157                             |
| EnglGPA                     | 16.08            | 1043                            | SenMathUnits                   | 1.99             | 17                              |
| JuniorGPA                   | 15.65            | 789                             | SenCoreUnits                   | 0.77             | 7                               |
| SenCoreGPA                  | 14.13            | 1102                            | SenScienceUnits                | 1.58             | 13                              |
| HistGovGPA                  | 14.42            | 873                             | SenEnglUnits                   | -8.95            | 50                              |
| ScienceGPA                  | 12.69            | 822                             | SenArtsHumUnits                | ns               | ns                              |
| MathGPA                     | 11.80            | 822                             | EnglUnits (binary)             | ns               | ns                              |
| SenEnglGPA                  | 10.04            | 751                             | MathUnits (binary)             | ns               | ns                              |
| ArtsHumGPA                  | 10.04            | 269                             | ScienceUnits (binary)          | 1.48             | 9                               |
| SenArtsHumGPA*              | 8.10             | 172                             | Last math calculus             | 13.12            | 92                              |
| SenScienceGPA*              | 7.44             | 334                             | Last math precalc/trig         | 10.54            | 150                             |
| SenMathGPA*                 | 6.61             | 445                             | Last math stats/preIB          | 7.62             | 78                              |
| DiffSenJunGPA               | 2.27             | 15                              | Last math algebra 4            | 3.85             | 26                              |
| ACT/SAT math Q <sup>^</sup> | 1.4-6.3          | 4 to 64                         | ACT/SAT English Q <sup>^</sup> | 2.8-7.5          | 1 to 120                        |

\* Limited to students who took course(s) in this area

\*\* . Correlation is significant at the 0.01 level (2-tailed).

<sup>^</sup> SAT score converted to ACT scale, highest score selected

**Control variables:** student age, gender, ethnicity/race; ACT/SAT test date, ACT/SAT Engl Quartile, AP credits, delayed entry, # of college science courses, living on campus, Pell aid, institutional aid, non-Mill merit aid, loan aid, remaining need (\$1K), undeclared major, high school origin

**Note:** coefficients based on 1-unit increments, single variable entry

# Regression Analysis

**Changes in Parameter Estimates from Fall to First-Year Momentum**

|                             | <i>Coeff.</i> | <i>Wald <math>\chi^2</math></i> |                                | <i>Coeff.</i> | <i>Wald <math>\chi^2</math></i> |
|-----------------------------|---------------|---------------------------------|--------------------------------|---------------|---------------------------------|
| OverallGPA                  | -1.10         | 238                             | ArtsHumHon classes             | -0.39         | -27                             |
| UptoSenGPA                  | -0.85         | 211                             | ScienceHon classes             | -0.16         | 1                               |
| CoreGPA                     | 0.00          | 375                             | MathHon classes                | 0.03          | 16                              |
| SeniorGPA                   | -1.68         | 80                              | EnglHon classes                | -0.20         | -17                             |
| UptoSenCoreGPA              | -0.55         | 216                             | TotalHon classes               | 0.10          | 78                              |
| EnglGPA                     | -0.94         | 91                              | SenMathUnits                   | -0.70         | -6                              |
| JuniorGPA                   | -1.13         | 99                              | SenCoreUnits                   | -1.69         | -55                             |
| SenCoreGPA                  | -1.57         | 47                              | SenScienceUnits                | -0.61         | -6                              |
| HistGovGPA                  | -0.75         | 146                             | <i>SenEnglUnits</i>            | <i>1.76</i>   | <i>25</i>                       |
| ScienceGPA                  | -0.76         | 129                             | SenArtsHumUnits                | ns            | ns                              |
| MathGPA                     | -0.25         | 194                             | EnglUnits (binary)             | ns            | ns                              |
| SenEnglGPA                  | -1.11         | 4                               | MathUnits (binary)             | ns            | ns                              |
| ArtsHumGPA                  | -0.69         | 27                              | ScienceUnits (binary)          | -0.19         | -3                              |
| SenArtsHumGPA*              | -1.04         | -7                              | Last math calculus             | -0.47         | 20                              |
| SenScienceGPA*              | -0.74         | 18                              | Last math precalc/trig         | 1.13          | 105                             |
| SenMathGPA*                 | -0.59         | 45                              | Last math stats/preIB          | 1.59          | 61                              |
| DiffSenJunGPA               | -0.98         | -9                              | Last math algebra 4            | 1.57          | 23                              |
| ACT/SAT math Q <sup>^</sup> | 0.90          | 32                              | ACT/SAT English Q <sup>^</sup> | 2.00          | 80                              |

\* Limited to students who took course(s) in this area

\*\* . Correlation is significant at the 0.01 level (2-tailed).

<sup>^</sup> SAT score converted to ACT scale, highest score selected

**Control variables:** student age, gender, ethnicity/race; ACT/SAT test date, ACT/SAT Engl Quartile, AP credits, delayed entry, # of college science courses, living on campus, Pell aid, institutional aid, non-Mill merit aid, loan aid, remaining need (\$1K), undeclared major, high school origin

**Note:** coefficients based on 1-unit increments, single variable entry

# Regression Analysis Findings

- Academic momentum at end of first semester
  - Overall HS GPA and core GPA
  - Senior GPA nearly as good as overall core GPA
  - By discipline: 1) English, 2) Hist/Gov, 3) Science, 4) math, 5) arts & humanities
  - By senior units: 1) math, 2) science, 3) arts & humanities, 4) *English (negative)*
  - HS math effect: ‘calculus’ student is 0.45 SD higher than ‘Algebra’ student (or 0.63 SD compared to ‘consumer math’ student)
- Academic momentum at end of first year
  - Level of HS math, ACT/SAT score effect: up
  - GPA, courses taken: down

# Regression Analysis Findings

- Negative effect of senior-year English intensity
  - Student is catching up to complete course sequence
  - No correlation with ACT/SAT Verbal or college remediation ( $\chi^2$  non-sig), but with highest-level math ( $\chi^2 = 39.3, 4df$ ) and student ethnicity/race ( $\chi^2 = 38.1, 2df$ )
  - English electives offer ‘senior year coasting’ ?

| Senior Year English Profile |           | EnglGPA | SenEnglGPA | UptoSenGPA | JuniorGPA | MathGPA | TotalHon | EnglUnits |
|-----------------------------|-----------|---------|------------|------------|-----------|---------|----------|-----------|
| <b>2≤ classes</b>           | N=5239    |         |            |            |           |         |          |           |
|                             | Mean      | 3.26    | 3.34       | 3.32       | 3.29      | 2.96    | 15.81    | 4.01      |
| <b>2&gt; classes</b>        | N=296     |         |            |            |           |         |          |           |
|                             | Mean      | 3.00    | 3.17       | 3.07       | 3.03      | 2.70    | 13.47    | 4.73      |
|                             | Mean Diff | 0.26    | 0.17       | 0.24       | 0.26      | 0.27    | 2.34     | -0.72     |
|                             | SD diff.  | 52.27%  | 26.45%     | 61.99%     | 58.92%    | 42.68%  | 26.65%   | -269.34%  |
| <b>Total</b>                | N=5535    |         |            |            |           |         |          |           |
|                             | Mean      | 3.25    | 3.33       | 3.30       | 3.28      | 2.95    | 15.68    | 4.05      |
|                             | SD        | 0.50    | 0.64       | 0.39       | 0.45      | 0.63    | 8.78     | 0.27      |

# Regression Analysis Findings

- HS GPA measures dwarf other HS measures, college covariates in estimating first-year academic momentum

## Ranking of Standardized Coefficients: First-Year Momentum

(N=5524, high school metrics )

|                                     | Beta   | Sig. | VIF  |                                     | Beta   | Sig. | VIF  |
|-------------------------------------|--------|------|------|-------------------------------------|--------|------|------|
| <i>HS core GPA</i>                  | 0.474  | **   | 1.45 | # science courses in college        | 0.058  | **   | 1.41 |
| <i>HS GPA</i>                       | 0.450  | **   | 1.45 | On loan aid                         | -0.050 | **   | 1.11 |
| <i>HS English GPA</i>               | 0.402  | **   | 1.31 | Major undeclared                    | -0.045 | **   | 1.04 |
| <i>HS Senior GPA</i>                | 0.382  | **   | 1.15 | ACT/SAT Test date <1 year           | 0.045  | **   | 1.15 |
| <i>HS Math GPA</i>                  | 0.373  | **   | 1.48 | Male                                | -0.044 | **   | 1.22 |
| <i>HS HistGov GPA</i>               | 0.354  | **   | 1.19 | Pell student                        | 0.043  | **   | 1.58 |
| <i>HS Science GPA</i>               | 0.353  | **   | 1.30 | <i>HS # 508/509</i>                 | 0.043  | **   | 1.05 |
| <i>HS # of honors courses</i>       | 0.195  | **   | 1.81 | ACTM20to23                          | 0.043  | **   | 1.73 |
| ACTE26up                            | 0.143  | **   | 2.40 | <i>HS highest math Algebra 4</i>    | 0.042  | *    | 3.28 |
| <i>HS highest math calculus</i>     | 0.138  | **   | 3.53 | Non-Mill merit aid                  | -0.040 | **   | 1.17 |
| ACTE23to25                          | 0.122  | **   | 1.81 | ACT/SAT Test date >1 year           | 0.031  | **   | 1.22 |
| AP/IB credits                       | 0.094  | **   | 1.37 | Black/Hispanic/Native               | -0.028 | **   | 1.12 |
| ACTE20to22                          | 0.089  | **   | 1.65 | Asian                               | 0.027  | *    | 1.10 |
| <i>HS highest math precalc/trig</i> | 0.085  | **   | 3.67 | Age < 18                            | -0.016 | NS   | 1.05 |
| ACTM27up                            | 0.078  | **   | 2.76 | <i>HS highest math stats/pre-IB</i> | 0.008  | NS   | 2.73 |
| Lived on campus                     | 0.074  | **   | 1.08 | Delayed college entry               | 0.007  | NS   | 1.41 |
| Remaining need (1K 2007-\$)         | -0.062 | **   | 1.51 | Age > 18                            | 0.002  | NS   | 1.41 |
| ACTM24to26                          | 0.061  | **   | 2.03 |                                     |        |      | 16   |

Reference categories: Age = 18, ACT < 20, HS highest math < 4 yrs Algebra, race = white, ACT/SAT test date at college entry



# Regression Analysis

**Parameter Estimates for Freshmen Retention, Spring-to-Fall**

| (N=5314)                | B      | S.E.  | Wald   | Sig. | Exp(B) | Δ-p    |
|-------------------------|--------|-------|--------|------|--------|--------|
| Male                    | 0.090  | 0.101 | 0.794  |      | 1.095  | 0.94%  |
| Asian                   | 0.313  | 0.174 | 3.236  |      | 1.368  | 3.28%  |
| Hispanic/Black/NA       | 0.425  | 0.150 | 7.961  | **   | 1.529  | 4.46%  |
| Age < 18 years          | 0.083  | 0.119 | 0.495  |      | 1.087  | 0.87%  |
| Age > 18 years          | -0.193 | 0.215 | 0.804  |      | 0.824  | -2.02% |
| HS # 508/509            | 0.284  | 0.104 | 7.387  | **   | 1.328  | 2.98%  |
| HS core GPA             | -0.693 | 0.133 | 27.126 | ***  | 0.500  | -7.27% |
| HS Calculus             | -0.375 | 0.260 | 2.072  | 0.15 | 0.688  | -3.93% |
| HS Pre-Calc/Trig        | -0.228 | 0.224 | 1.031  | 0.31 | 0.796  | -2.39% |
| HS Stats/Pre-IB         | -0.036 | 0.234 | 0.024  | 0.88 | 0.964  | -0.38% |
| HS Algebra 4            | -0.174 | 0.218 | 0.634  | 0.43 | 0.840  | -1.82% |
| ACT/SAT test < 1 yr     | -0.091 | 0.113 | 0.646  |      | 0.913  | -0.95% |
| ACT/SAT test > 1 yr     | 0.093  | 0.132 | 0.493  |      | 1.097  | 0.98%  |
| ACT English > 25        | -0.541 | 0.146 | 13.813 | ***  | 0.582  | -5.67% |
| ACT English 23-25       | -0.308 | 0.144 | 4.559  | *    | 0.735  | -3.23% |
| ACT English 20-22       | -0.154 | 0.126 | 1.499  |      | 0.857  | -1.61% |
| Delayed college         | -0.622 | 0.328 | 3.601  | 0.06 | 0.537  | -6.52% |
| On campus living        | 0.337  | 0.128 | 6.983  | **   | 1.401  | 3.53%  |
| Articulated AP credits  | -0.040 | 0.122 | 0.106  |      | 0.961  | -0.42% |
| Major undeclared        | -0.144 | 0.098 | 2.142  |      | 0.866  | -1.51% |
| Took 1 science course   | 0.238  | 0.113 | 4.436  | *    | 1.268  | 2.50%  |
| Took 2+ science courses | 0.325  | 0.157 | 4.276  | *    | 1.384  | 3.41%  |
| Pell Grant student      | -0.036 | 0.176 | 0.041  |      | 0.965  | -0.38% |
| Non-Mill merit aid      | 0.010  | 0.102 | 0.01   |      | 1.010  | 0.10%  |
| On load aid             | -0.283 | 0.147 | 3.697  | 0.06 | 0.753  | -2.97% |
| Remaining need (\$1K)   | -0.023 | 0.018 | 1.642  |      | 0.977  | -0.24% |
| First-year momentum     | 0.063  | 0.003 | 432.24 | ***  | 1.065  | 0.66%  |

Reference categories : Age = 18, ACT < 20, HS highest math < 4 yrs Algebra, race = white, ACT/SAT test date at college entry, took no science courses; Sig-level: \* ≤ .05, \*\* ≤ .01, \*\*\* ≤ .001

# Regression Analysis Findings

- Predicted scenarios for second-year retention
  - One standard deviation rise in first-year momentum increases return probability by 14% (i.e., most sig factor)
  - Impact of academic momentum varies with ACT/SAT test score, i.e. higher test scores are associated with slightly lower persistence due to academic momentum (interaction effect of test score quartile with momentum score)
  - High school origin may impact retention (3% rise for schools # 508/509)
  - Delaying college entry may affect retention (marginal sig)
  - Taking rigorous courses in college improves retention (3% rise for science courses)
  - Taking out student loans may lower retention (marginal)

# Canonical Correlation Findings

- HS GPA/Calculus strongly related to college curricular rigor (science courses), advanced standing (AP), and college academic momentum; converse is true for Algebra 4 students
- Low-income students (Pell) face higher unmet financial need
- Expectedly, delayed entry is associated with older students

**Canonical Solution for High School Curricular Experience Predicting College Readiness/Momentum**

Structure Coefficients Greater than |.45| are bolded

| Function    | 1              | 2             | 3              | Function       | 1             | 2             | 3              |
|-------------|----------------|---------------|----------------|----------------|---------------|---------------|----------------|
| Asian       | .10678         | .12468        | -.05182        | Delayed Entry  | -.11609       | -.10107       | <b>-.98111</b> |
| Minority    | -.21993        | .18149        | .05367         | On campus      | .08292        | -.00244       | -.00169        |
| Age <18     | -.02936        | .02652        | .14816         | # science crse | <b>.58386</b> | .11097        | -.10366        |
| Age >18     | -.10762        | -.09042       | <b>-.98478</b> | RemNeed(\$1K)  | -.24693       | <b>.95627</b> | -.07880        |
| Male        | .09856         | -.05770       | -.06877        | AP credits     | <b>.62896</b> | .16012        | .03222         |
| HS#508/09   | .15005         | -.11483       | .00980         | Major Undecl   | -.08530       | -.11174       | .03167         |
| CoreGPA     | <b>.81855</b>  | .14080        | -.06131        | AdmTest <1y    | .06402        | -.00010       | .07679         |
| Pell Stu    | -.17162        | <b>.97486</b> | -.05625        | AdmTest>1y     | .26377        | -.04121       | -.18279        |
| HS Calculus | <b>.66525</b>  | .13615        | -.10585        | ACTE20to22     | -.11649       | -.06990       | .05076         |
| HS PreCalc  | .05138         | .04734        | .04297         | ACTE26up       | .43836        | .02173        | -.03201        |
| HS Stats    | -.09367        | -.12600       | .02874         | ACTE23to25     | .14010        | .00802        | .03839         |
| Algebra 4   | <b>-.46609</b> | -.09916       | .04942         | 1stY Momentum  | <b>.83670</b> | .12363        | -.08752        |

# Summary

- High school attended may matter
- Credit hr/GPA momentum is key to enrollment persistence
- HS senior year momentum contributes to college momentum (3.25 point rise)
- HS senior year coasting associated with taking English electives?
- HS GPA is strongest predictor of college momentum, but waning in 2<sup>nd</sup> semester compared to HS content mastery (math) and admission test scores
- HS GPA influence on freshmen persistence varies by HS content mastery (math)

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Link to presentation:

[http://www.cis.unr.edu/IA\\_Web/research.aspx](http://www.cis.unr.edu/IA_Web/research.aspx)