

Hope College Four-Year Retention Study

August 2015

The population for this study is the incoming first-year first-time in college students over the four year period of 2008 to 2011. The measure of retention, chosen after an evaluation of several alternatives, is four-year retention. A student is considered retained for four years if she has either graduated or is still enrolled at Hope four years after her entrance. The population for this study is 3,094.

The study included as independent variables only variables that are determined at time of student entrance to Hope College. These come from admissions data and financial aid data. These variables are listed in Appendix A with a corresponding four-year retention rate and the level of significance of that variable, if any.

Results

Twenty seven variables have a significant relationship with the four-year retention rate. These variables are listed below by category.

Academic achievement – Three variables measuring academic achievement are significantly related to retention rate at the 0.001 level. These are 1) high school GPA, 2) ACT score or equivalent for those taking only SAT, and 3) meeting the qualifications for a Hope College merit award.

Financial – Eight financial variables have a significant relationship with the four-year retention rate. Four are positively related, meaning the higher the variable the higher the retention rate. These are Expected Family Contribution (0.05 level), the income of each student as estimated by the median income of his/her home zip code (0.05 level), the amount of Hope Merit Scholarship awarded (0.001 level), and the total Hope aid received (0.005 level). The four variables that have a significant negative relationship with four-year retention are not receiving any aid from Hope (.01 level), amount of demonstrated need (0.001 level), amount of loan aid received (0.001 level), and amount of Hope need-based aid (0.001 level).

Engagement – Four variables related to engagement have a significant positive relationship to four-year retention, namely count of number of admissions contacts (0.001 level) and date of first contact with admissions, with a positive relationship for those whose first contact was before their junior year of high school (0.01 level) and a negative relationship for those whose first contact was during their senior year (0.001 level). Also, students who submitted their applications early have a significantly higher (0.001 level) rate of four-year retention.

Connection to college – The variable called Preferred Legacy flags those students who have a parent or sibling who attended Hope. That variable has a significant positive relationship to four-year retention at the 0.001 level.

Gender – Male students have a significantly negative relationship to four-year retention with females having the corresponding positive relationship (0.001 level).

Geography – Overall, the geographical location of a student's home shows a significant relationship to retention (0.001 level). Students from Midwest states other than Michigan and Illinois have a higher retention rate at the 0.001 level. Students from Michigan (0.05 level) and western states (0.01 level)

have lower retention rates. In addition, the distance of the student's home from Holland, as measured by zip code, has a significant negative relationship to four-year retention (0.01 level).

Religion – Overall, religion was related to 4-year retention at the 0.001 level. Students who self-report as Reformed Church in America have a significantly higher retention rate (0.05 level) while those who self-report as other religion, non-Christian have a lower retention rate (0.001 level).

Race/Ethnicity—While race/ethnicity overall is not significantly related to four-year retention, three specific ethnicities have significant relationships. White is significantly related to a higher four-year retention (0.001 level), whereas Hispanic (0.05 level) and multi-racial (0.01 level) are associated with significantly lower four-year retention.

Academic Interest—The area of academic interest is related to the 4-year retention rate at the 0.001 level. There is a negative relationship to four-year retention by applicants expressing interest in social sciences (0.001 level).

Logistic Regression

A Logistic Regression model was constructed with four-year retention as the dependent variable. This model provides a method of calculating a predicted probability that a student remains at Hope for four years from a set of independent variables that are available. The model determines independent variables that contribute to this calculation one at a time, with the highest contributing variable that is not yet included entering the model at each step. The model that was constructed stopped after nine variables were included as none of the non-included variables added a significant contribution.

These variables do not necessarily include all of the variables that have a significant relationship since some variables' relationships to retention are overlapping. For example, high school GPA was the first variable introduced in the model, but its inclusion eliminated the other three academic achievement variables with significant relationships (high school rank, Hope merit award, ACT score) because once high school GPA was introduced the other three made very little additional contribution.

This model can be used to generate a predicted four-year retention probability for incoming Hope students. In addition, it can be used as a tool to determine how various activities or experiences during students' time at Hope affect a student's chance of staying for four years by comparing the predicted retention rate to the actual rate for students participating in the experience compared with those who do not.

Appendix A
Hope College 4-Year Retention Study
Entering Students 2008-2011

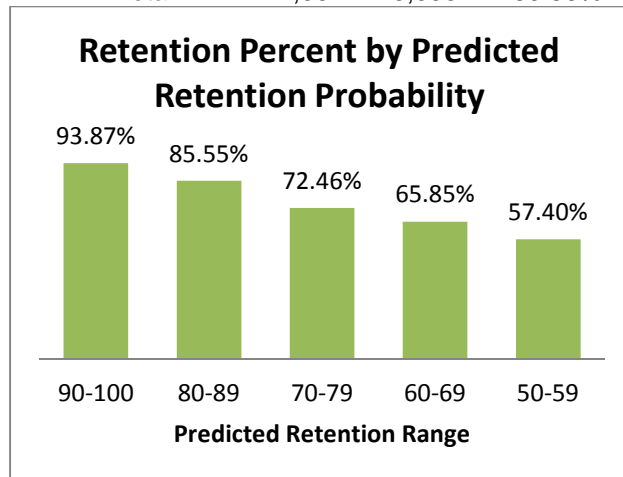
| Category | Metric | Percent Retained | Ave of Retained | Ave of not Retained | Significance | Incl in Model |
|--------------------|---------------------|------------------|-----------------|---------------------|--------------|---------------|
| Academics | Merit Aid yes/no | 83.2% | | | +++ | |
| | HS GPA | | 3.74 | 3.51 | +++ | * |
| | ACT Equiv | | 26.28 | 24.40 | +++ | |
| | FinAid Applied | 80.4% | | | | |
| | No Hope Aid | 74.2% | | | -- | |
| Financial | Income by zip | | \$58,044 | \$56,328 | + | * |
| | EFC | | \$26,196 | \$22,676 | + | |
| | Need | | \$18,474 | \$22,112 | --- | |
| | Hope Merit | | \$5,691 | \$3,090 | +++ | * |
| | Other Hope | | \$4,876 | \$6,527 | --- | |
| | Loan | | \$4,717 | \$5,147 | --- | |
| | All Hope Aid | | \$10,920 | \$10,058 | + | |
| Engagement | FC PreJr | 85.4% | | | ++ | |
| | FC Jr | 82.2% | | | | |
| | FC Sum | 84.6% | | | | |
| | FC Sr | 72.8% | | | --- | * |
| | Early App | 83.4% | | | +++ | * |
| | Contact Count | | 7.23 | 6.36 | +++ | |
| Connection to Hope | Preferred Legacy | 85.5% | | | +++ | * |
| | Other Legacy | 81.8% | | | | |
| Gender | Male | 75.5% | | | --- | |
| | State - MI | 79.7% | | | - | * |
| | State - IL | 82.9% | | | | |
| | State - NYNJ | 80.6% | | | | |
| Geography | State - MW | 88.8% | | | +++ | |
| | State - East | 80.0% | | | | |
| | State - West | 71.8% | | | -- | |
| | State - None | 84.8% | | | | |
| | Distance | | 315 | 454 | -- | |
| | Catholic | 82.8% | | | | |
| | RCA | 84.6% | | | + | |
| Religion | Other Christian | 81.5% | | | | |
| | Other non-Christian | 45.5% | | | --- | * |
| | White | 82.0% | | | +++ | |
| | African American | 75.4% | | | | |
| Race/Ethnicity | Asian | 81.3% | | | | |
| | Not Specified | 76.1% | | | | |
| | Multi-Racial | 63.2% | | | -- | |
| | None | 81.7% | | | | |
| | NAS | 81.5% | | | | |
| Academic Interest | SS | 74.5% | | | --- | |
| | Hum | 78.5% | | | | |
| | Arts | 80.6% | | | | |
| | Pre-Vocational | 78.2% | | | -- | * |
| High School | High Yield HS | 79.8% | | | | |
| | Home School | 84.4% | | | | |

**Prediction of Four-Year Retention
Logistic Regression Model
Metrics in decreasing order of impact on Model**

| |
|--------------------------------|
| High School GPA |
| Amount of Merit Award |
| Interest in Pre-Vocation |
| Religion – Other non-Christian |
| State – Michigan |
| Early Applicant |
| Preferred Legacy |
| First Contact – Senior Year |
| Income by Zip code |

Distribution of Retentions by Predicted Probability

| Probability Range | 4 Yr Ret. | Total | Ret Rate |
|--------------------------|------------------|--------------|-----------------|
| 90 - 100 | 873 | 930 | 93.87% |
| 80 - 89 | 870 | 1,017 | 85.55% |
| 70 - 79 | 350 | 483 | 72.46% |
| 60 - 69 | 214 | 325 | 65.85% |
| 50 - 59 | 194 | 338 | 57.40% |
| Total | 2,501 | 3,093 | 80.86% |



**Hope College
Four Year Retention
by High School
2007-2011**

High Schools with 10 or more incoming students during period are included

| | Students 2007-11 | Four Year Retention | | Students 2007-11 | Four Year Retention |
|---------------------------------|---------------------|------------------------|---------------------------------|---------------------|------------------------|
| Saline Area HS | 23 | 100.0% | Forest Hills Northern HS | 20 | 80.0% |
| Neuqua Valley HS | 16 | 100.0% | Gross Pointe South HS | 15 | 80.0% |
| Plainwell HS | 15 | 100.0% | Notre Dame Preparatory | 10 | 80.0% |
| Grand Rapids Baptist Academy | 14 | 100.0% | Upper Arlington HS | 10 | 80.0% |
| Byron Center Sr HS | 11 | 100.0% | Grandville HS | 54 | 79.6% |
| Davison HS | 11 | 100.0% | Grand Rapids Christian HS | 44 | 79.5% |
| Calvin Christian HS | 11 | 100.0% | Holland Christian HS | 53 | 79.2% |
| Minnehaha Academy | 11 | 100.0% | Wheaton Warrenville South HS | 14 | 78.6% |
| Chelsea HS | 10 | 100.0% | Unknown | 13 | 76.9% |
| Flushing Sr HS | 10 | 100.0% | Spring Lake HS | 17 | 76.5% |
| Milford HS | 10 | 100.0% | Brighton HS | 24 | 75.0% |
| Forest Hills Central HS | 41 | 95.1% | Gull Lake HS | 12 | 75.0% |
| Herbert Henry Dow HS | 17 | 94.1% | Forest Hills Eastern HS | 23 | 73.9% |
| Seaholm HS | 14 | 92.9% | Portage Central HS | 19 | 73.7% |
| Kalamazoo Christian HS | 23 | 91.3% | Holland HS | 41 | 73.2% |
| Wheaton North HS | 22 | 90.9% | Wheaton Academy | 11 | 72.7% |
| Hudsonville HS | 31 | 90.3% | Jenison HS | 14 | 71.4% |
| Timothy Christian | 10 | 90.0% | Whitehall Sr HS | 14 | 71.4% |
| Zeeland East HS | 38 | 89.5% | Portage Northern HS | 30 | 70.0% |
| Zeeland West HS | 36 | 88.9% | Marshall HS | 10 | 70.0% |
| Grand Haven HS | 16 | 87.5% | Unity Christian HS | 19 | 68.4% |
| Rockford HS | 23 | 87.0% | Hamilton HS | 26 | 65.4% |
| Okemos HS | 21 | 85.7% | Traverse City Central HS | 20 | 65.0% |
| South Christian HS | 14 | 85.7% | Petoskey HS | 14 | 64.3% |
| Lakeshore HS | 14 | 85.7% | Mason HS | 11 | 63.6% |
| Naperville Central HS | 19 | 84.2% | Hopkins HS | 11 | 63.6% |
| Rochester Adams HS | 18 | 83.3% | Northville HS | 11 | 63.6% |
| Traverse City West HS | 18 | 83.3% | Midland HS | 19 | 63.2% |
| Mona Shores HS | 12 | 83.3% | Glenbrook South HS | 15 | 60.0% |
| East Grand Rapids HS | 33 | 81.8% | Northview HS | 10 | 60.0% |
| Ann Arbor Pioneer HS | 16 | 81.3% | Black River Public School | 10 | 60.0% |
| West Ottawa HS | 77 | 80.5% | North Muskegon Public HS | 10 | 60.0% |
| Home School | 25 | 80.0% | Williamston HS | 10 | 60.0% |