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|  | **Fundamental Findings** | **Example** | **Actions** |
| Critical Course Analysis | The grades in critical courses provide ongoing indications of a student’s likelihood of completing their program. Earning grades below the data-informed benchmark grade in critical classes reduces a student’s likelihood of completing their program. While a student may earn a passing grade, that grade may still be below the key data-informed benchmark.  | According to the data, ECON 2010: Accounting I is a critical course for Business majors. A grade of B is the benchmark in ECON 2010 for successful accounting degree-earners. Earning less than a B in ECON 2010 reduces a student’s chances of successfully completing a Business program by half. | Institutions should develop strategies to communicate critical course grade and momentum expectations to students and advisors to ensure that students take steps to earn grades above their data-informed benchmark levels. |
| Students who earn two or more grades below the critical data-informed benchmarks in their program’s critical courses are extremely unlikely ever to complete that program. | According to the data, MATH 1530: Intro Statistics and PSYC1010: Intro Psychology are critical classes for Psychology. Earning less than a C in MATH1530 along with earning less than a B in PSYC1010 reduces the likelihood of completing the Psychology program by a factor of 10. | Institutions should develop advising interventions that require students who have made too many grades below the critical data-informed benchmarks in their program to make an alternative graduation plan. |
| The timeliness of successful completion of critical courses also provides ongoing information about the likelihood of program completion. Students who do not successfully complete at least two critical courses on time are extremely unlikely to complete that program. | The curricular map for the AS in Accounting for the Tennessee Transfer Pathway recommends that the student take ACCT 2010 in the third semester. The student delays taking ACCT 2010 until the fourth semester and is thus unable to take ACCT 2020 in the fourth semester as 2010 is a prerequisite. Data analysis shows that this delay more than halves their likelihood of successful graduation.  | Institutions should develop advising interventions that require students who are not maintaining momentum in their program to take action. |

Data Analytics-informed Guided Pathways

Below are the basic research findings that inform what can at present be reliably known about student progress from predictive analytic techniques together with suggested practical steps to take actions from those plans.

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|  | **Fundamental Findings** | **Example** | **Actions** |
| Program Progress Analysis | While many students change their major, students who earn grades below critical data-informed benchmarks in their programs are often unaware that their graduation is in peril, and do not know of other possibilities, which might hold greater likelihood of success. | Struggling in initial courses required in pre-Nursing, a student drops out of college without realizing he has alternative degree pathways to successful graduation in other health fields, education or business.  | Institutions should employ data-analytics to support advising interventions that empower students to make informed decisions about alternative program options that bear their previous academic record and future predicted success in mind.  |
| Institutions should develop ancillary program options for students who do not have a high likelihood of being chosen for a selective program or who are not maintaining sufficient momentum to succeed in their existing non-selective program or major. |
| Course Recommendation and Scheduling Analysis | When more than one course can satisfy a curricular requirement the student is often much more likely to succeed in one option rather than another. | An Accounting major has to take a literature course to meet general education requirements. She takes Early British Literature because it is the only general education literature class that fits her Fall semester schedule. However, individualized data suggests a greater propensity for her success by taking modern American Literature, even though is only offered in the Spring semester by that institution.  | Institutions should employ data-analytics to support advising interventions that empower students to make informed course selections that bear their previous academic record and future predicted success in mind.  |
| Institutions should develop methodologies so that critical courses are scheduled with sufficient capacity and variety of modality to ensure that students are able to enroll in the coursework that maintains their program momentum. |
| Learning Analytics | The timeliness of successful completion of critical elements and course engagement provides ongoing information about the likelihood of successful course completion.  |  | Institutions should employ data-analytics to support classroom faculty, both online and face-to face in identifying and intervening with students who are at risk of not performing well in their class, either because of some learning behavior, or an inability to grasp or master a critical learning competency.  |
| Grades and assessments in critical course elements and competencies provide ongoing indications of a student’s likelihood of successful course completion.  |

Framework Rubric

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| Integration into Campus Strategic plan |
| The institution has not begun to employ the predictive analytics framework | The institution is exploring ways in which it might begin to use the predictive analytics framework.  | The institution has begun to use predictive analytics technology, but use has limited availability. | The institution has a broad commitment to the use of predictive analytics techniques, but is still exploring ways to provide ongoing funding and/or staffing for this work. | The institution has a full commitment to the use of predictive analytics techniques. Sustained funding and staffing is in place for this work. |

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| Critical Course Analysis |
| The institution has not developed and implemented a methodology to identify critical courses and benchmark grades | The institution is developing a methodology to identify critical courses and benchmark grades | The institution has identified critical courses and benchmark grades. | The institution has identified critical courses and benchmark grades and is beginning to make this information available to advisors and/or students | The institution has identified critical courses and benchmark grades and make this information available to faculty, advisors, and/or students |
| The institution is not employing critical course data-analytics to support advising interventions  | The institution is developing interventions based on critical course data-analytics | The institution has developed interventions based on critical course data-analytics. | The institution is beginning to implement interventions based on critical course data-analytics. | The institution has fully implemented interventions based on critical course data-analytics. |

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| Program Progress Analysis |
| The institution has not developed and implemented a methodology to empower students to make informed decisions about alternative program options | The institution is developing a methodology to empower students to make informed decisions about alternative program options | The institution has developed and a methodology to empower students to make informed decisions about alternative program options. | The institution has developed analytics to inform student selection of alternative programs, and is beginning to make this information available to advisors and/or students. | The institution is employing data-analytics to support advising interventions that empower students to make an informed selection of alternative programs. |

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| Course Recommendation and Scheduling |
| The institution has not developed and implemented a methodology to schedule critical courses with sufficient capacity to ensure student success. | The institution is developing a methodology to schedule critical courses with sufficient capacity to ensure student success. | The institution has developed and a methodology to schedule critical courses.  | The institution has developed and is implementing a methodology to schedule critical courses with sufficient capacity to ensure student success. | The institution has developed and implemented a methodology to schedule critical courses with sufficient capacity to ensure student success. |
| The institution is not employing data-analytics to support advising interventions that empower students to make informed course selections | The institution is developing analytics to inform student course selection. | The institution has developed analytics to inform student course selection. | The institution has developed analytics to inform student course selection, and is beginning to make this information available to advisors and/or students. | The institution is employing data-analytics to support advising interventions that empower students to make informed course selections. |

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| Learning Analytics |
| The institution does not use technology that supports classroom faculty, in identifying students who are at risk because of a learning behavior. | The institution is developing technology that supports classroom faculty in identifying students who are at risk because of a learning behavior. | A few faculty use technology to identify and intervene with students who are at risk because of a learning behavior. | Many faculty use technology to identify and intervene with students who are at risk because of a learning behavior. | There is an institutional commitment to using technology to identify and intervene with students who are at risk because of a learning behavior. |
| The institution does not use technology that supports classroom faculty, in identifying students who are at risk because of an inability to grasp or master a critical learning competency. | The institution is developing technology that supports classroom faculty, in identifying students who are at risk because of an inability to grasp or master a critical learning competency. | A few faculty use technology to identify and intervene with students who are at risk because of an inability to grasp or master a critical learning competency. | Many faculty use technology to identify and intervene with students who are at risk because of an inability to grasp or master a critical learning competency. | There is an institutional commitment to using technology to identify and intervene with students who are at risk because of an inability to grasp or master a critical learning competency. |