EXECUTIVE SUMMARY/INTRODUCTION
The ultimate goal of any college student is to increase their knowledge for the purpose of either continuing their education or entering the workforce. Our job as an institution is to ensure those goals are achieved in the most efficient way possible. Students should know and not wonder where they stand on the road to completion. We need to ensure they have a plan to follow from entry to exit. It’s the right thing to do.

RELEVANT LITERATURE REVIEWED
As cited by Ambriz, the rise in multi/interdisciplinary studies associate degrees might be an indication of students either lacking or being overloaded with information with respect to career paths. As such, it becomes important that students have the ability to start their journey with the end in sight. This pathway serves “as a reality check” for students to know what they need to complete their degree.

Moore and Shulock cite the need for measuring student success as part of the reason for expanding measures to track student progress and degree completion. This expansion goes beyond traditional measures of success, which typically ignore “the intermediate outcomes that students must achieve on the path to degree completion” (2). When the intermediate outcomes are ignored traditional means of measuring success fails to “provide guidance for interventions” that might otherwise increase degree completion (2).

Traditional students are often successful because our colleges were designed specifically for them. Given the large population of non-traditional students in the community colleges, traditional measures of success are often ineffective. This reason alone suggests that we need to redesign both our programs and institutions for the students we have today. Such redesign would help us “deal with the realities of non-traditional student populations” allowing us to
identify students at-risk while developing processes that lead to greater student success (3).

Numerous mechanisms of measurement tied to course completion can provide indicators of student success in both transferring and completing a college degree. One such mechanism is that of monitoring credit accumulation within the first year of college. Acquisition of fewer than 20 credits within the first year is correlated with diminished transfer and degree completion rates (3). And this research holds true both for four-year institutions as well as community colleges. Another mechanism is that of monitoring the completion of gateway courses early within a student’s college career. For example, transfer and degree completion are positively correlated to the acquisition of college-level math during the first two years of study (4). And similar correlations were found with respect to science courses as indicators of success (5). One final measurable indicator of success is that of course completion as “excessive course withdrawals have a negative impact on degree completion” (5).

When we examine the aforementioned mechanisms, we find they are related to completion of individual components of college work. Research shows that students who set their own goals achieve more than when the goals are established for them (“Developing, Monitoring and Reporting on Personal Learning Goals”). Students should feel as though they own their progress, but students also need a straightforward way to review their progress. Therefore, helping to guide students with respect to the goals they might set for themselves is important.

We can examine the work that has been done at other colleges to find ways to support both student goals and the need to measure success. In their paper, Davis Jenkins and Sarah Griffin report that Cuyahoga Community College mapped programs into nine meta-majors (pathways) thereby creating better connections between career-technical and academic programs. The static PDF course catalog was replaced with a dynamic, online catalog ordered by the meta-majors. And student plans are stored in DegreeWorks, which both students and staff use to monitor progress toward the students’ goals. Furthermore, students are helped in creating a full-program plan with a yearlong class schedule. Students who are registering during a given semester can look ahead to the next semesters and plan accordingly. Furthermore, this college developed a homegrown information system used by all student services staff and faculty to document their interactions with students; they also developed a dashboard for tracking program performance. All this leads to consistent messaging and consistent experiences for students, faculty, and staff. And this allows for better communication allowing the college to provide assistance to students quickly and efficiently.

One of the goals of Cuyahoga’s information systems is to enable counselors to move toward a case management approach to guiding students from program entry through completion” (Jenkins and Griffin, 2019). We must remember that every student has a goal. Institutionally we must do everything possible to help every
student succeed; “a student should never fail because of a barrier we overlooked or unintentionally created” (Jenkins et al., 2019).

DATA EXAMINED
Taking a case study approach, metrics from four institutions were reviewed. This resulted in the identification of five metrics that can be applied to track the impact of an academic map. Metrics included three early or lead metrics; Credit accumulation milestones (12, 24, 36), Course completion rates, Gateway English and Math completion rates, and two outcome or lag metrics; time to degree and excess credits. One of the case study institutions has seen a decrease in credits to degree from 72.6 to 66.5 (2013 to 2018). This data supports that a clear path to completion ensures students are taking the courses they need to complete and not incurring extra cost, time, and credits. Additionally, the same institution has seen a 94% increase for First-time, full-time, degree-seeking students within 150% time. Many of the metrics relate to State Share of Instruction (SSI) success measures. We encourage institutions, especially those with limited data to leverage the SSI data and reports to understand trends.

PROPOSED CHANGES/REFORMS TO BE ADOPTED
Community colleges do not typically monitor students’ progress toward program completion unless the student is enrolled in a selective-entry program (i.e. Nursing). Advising is available, however, most students self-advise their way through college; taking credits that do not add up to a degree, taking courses that are off their plan of study and thus not financial-aid eligible, or quitting in frustration.

Colleges that choose to embark on a guided pathways project will likely need to redesign their advising procedures and systems to assist students on the educational journey to successful completion – whether that be transitioning to a four-year institution or moving directly into the workforce upon completion of their chosen degree.

Under a guided pathways model, every student, working with an advisor, would be placed on an academic mapping plan (pathway) and their advisor would track how far along that student is toward completion. Students need and desire to understand their progress and what is required of them.

With academic mapping plans (pathways) in place colleges will then need to determine the best and most effective method of tracking progress. This can take many forms from college to college but will likely have some common design features or objectives. These include 1) providing students personal contact early on so they feel welcomed, 2) including a case management style so each student has one advisor throughout their college journey, 3) providing contact with faculty for guidance and networking support, and finally 4) building a culture of responsibility for guiding students is shared by all faculty, staff and students.
In addition to the personal attention colleges can provide students with monitoring progress, colleges can also utilize their student information system to further enhance the experience so that both students and advisors can monitor progress toward completion. These upgrades and enhancements can take many forms depending on the current information system in place, funding available for the enhancement, abilities of the colleges IT division, and the colleges goals for their guided pathway program.

Successful leveraging or enhancements of systems can also take many forms, from a one stop dashboard [see Figure 1] with links to the student’s advisor and other student service departments, all the way to a sophisticated, interactive module that houses all academic mapping plans and allows for students to explore alternative course options to their individual academic plan.

Implementation of a tool for use by students and advisors can be expected to take six to twelve months depending upon the individual colleges financial and personnel resources to contribute to the project.

**Figure 1**
IMPLEMENTATION CHALLENGES
There are various challenges that can be encountered throughout the process of implementing a student friendly academic plan mapping tool. Awareness of potential pitfalls and challenges is crucial to the successful navigation of them. The following information outlines the challenges to consider at each stage of the process and offers solutions to support the work from need assessment and solution identification to implementation and build out.

Assessment of Needs

Challenge
While this paper outlines the ideal solution for campuses, a need still exists for engaging various stakeholders to identify campus specific applications. During this phase ensuring multiple voices and perspectives are shared is key to deeply understanding the current state and what is needed to reach the ideal state. Engagement can be challenging, especially given the virtual workplace.

“It is very important to get lots of input from potential users. ... If you roll out a major system or process change and people don’t understand what it is intended to do or where it came from, it won’t be successful. ... When everyone is at the table and everyone has a voice in [the design], then everyone wants it to succeed” (Jenkins and Griffin, 2019).

Solution
Pre-planning can set this engagement up for success. Based on your institution’s culture, identify the appropriate method for the engagement. Keep in mind large groups can create synergies and ensure that everyone is on the same page, however it can be difficult to hear all voices. To support this work consider developing a tool to support the conversation and ask participants to co-create a response in smaller breakout sessions. The tool may be a table of each stakeholder with columns for the different considerations or categories of need. This probing can uncover some of the easy wins, pitfalls, and must haves before getting further into the process. Sharing these back with the larger group allows for everyone to give time to the different responses.

Identification of Best Fit Solution

Challenge
This stage will be bound by the resources available, both human and financial. The solution options will likely be dependent on the financial commitment or other competing priorities (like large IT projects).

Even when the budget is known and IT is committed, vendor selection can be tricky. Often the solutions are similar and it’s difficult to identify what the ‘stand apart’
feature is. Additionally, 1-hour demos provide a brief overview and many times not enough depth.

**Solution**
Providing a longer road map for a solution may be necessary to allow for resources to be identified and IT to give it priority. Engaging and gaining support from the C-suite at the very beginning of the process will minimize resource challenges. Demonstrating the need and the urgency of this solution for the benefit of students is crucial.

Before being to review demos, develop a rubric that can be used to evaluate each tool against the same identified set of requirements. This tool will also be a prompt for questions. In other words, if the vendor doesn’t touch on a requirement, the group can ask pointed questions about the requirement to ensure it is a part of the product features. Including a subset of the stakeholder from the needs assessment phase is another way to guarantee that ‘all the bases are covered’. Specifically, including IT staff so that technical, accessibility, and integration questions can be considered during this phase is important to implementation success.

**Acquisition of Solution**

**Challenge**
Contract terms and negotiations can be complex and have long term negative impacts if not closely examined.

**Solution**
Consider the length of the contract and determine if prices can be adjusted based on term lengths. Having the contract reviewed by the appropriate legal council will insulate the institution from unintended consequences. If a vendor is out-of-state the agreement may contain state specific language that would not apply to the institution’s state or should be adjusted to include the state.

**Implementation and Integration**

**Challenge**
Depending on the platform the degree of support required by IT for implementation will vary. Unforeseen system and integration requirements will present challenges for the implementation and extend the timeline for go live. System configuration choices need to be made at this phase, applying pressure to change institutional processes. Data import considerations and user build out of the system are also precarious at this point.

**Solution**
Learnings from past system implementations can shed light on potential issues that could be
encountered. Involving IT throughout the process and ensuring that questions they have are addressed by the vendor in a timely manner can help smooth the process. A new system is a change. While the degree of change will vary from institution to institution, thinking from the perspectives of end users will help to inform the decisions for set up. The project lead will need to steward the decisions and use an institutional perspective to mitigate unintended consequences. Including Institutional Research on the team making the decisions will strengthen the institutional perspective as IR staff frequently leverage systems thinking and encounter the whole institution.

**Go Live**

**Challenge**
It's live! Now what? System adoption may occur in pockets and training may lag. The direct result is a slow and incomplete transition. Individuals cling to the ‘old way’ of doing things.

**Solution**
Board engagement in the process as well as training before the go live will help to deepen the commitment to the new solution. At this stage it is important to reinforce why the institution has made this commitment and to support people in the new process. Frequently having check-ins and data validation checks will help to see issues before they become too pervasive. This will also allow for the determination of institution training needs or if the need is isolated.

**CONCLUSION**
The facilitation of goal achievement is at the core of why community colleges exist. Knowledge of progress and future direction is key to motivating a student. Having an academic tracking plan available for use by all students can make all the difference between stopping out or continuing. While full implementation of such a system is a large undertaking, the benefit far outweighs the risk and the effort needed for execution. Colleges should take the risk to make sure students have what they need to succeed.
REFERENCES