Why Launch Years? Why Now?
Executive Summary

Why Launch Years?

Too many of our students are blocked from postsecondary and career opportunities by inequitable opportunities to learn that are fueled by misaligned and outdated mathematics requirements and policies.

Postsecondary options include

- **Certification**
- **Apprenticeship**
- **Two- and four-year degrees**
- **Education opportunities in the military**

The Launch Years initiative aims to remove these barriers by mobilizing a coordinated movement to develop new mathematics pathways that propel students smoothly from high school through postsecondary education and into the work world.

One of the most urgent education issues of our time is ensuring equitable access to an excellent, and progressively more advanced, mathematics education for all students. The rapidly evolving labor market and the quantitative demands of daily life require increasingly sophisticated mathematical knowledge and skills. And we see exciting potential for greater, and more diverse, applications of mathematics for everyday people in everyday life.

Yet, a mathematics pipeline that experts term "dysfunctional"* is contributing to inequitable access to postsecondary opportunities such as certifications, apprenticeships, two- and four-year college degrees, and education options in the military. These inequities particularly affect students who are Black, Latinx, Native American, or who come from low-income backgrounds.

*See, for example, page 5 in Phil Daro and Harold Asturias. (2019 October). *Branching Out: Designing High School Math Pathways for Equity.* Berkeley, CA: Just Equations. Available via https://justequations.org/resource/branching-out-designing-high-school-math-pathways-for-equity

About the Launch Years Collaborative and This Call to Action

In 2019, the Charles A. Dana Center at The University of Texas at Austin convened the Launch Years Consensus Panel—made up of leaders representing K–12 and higher education, state governance, business and industry, research, and equity advocacy—to join a collaborative effort to establish a new vision for the transition from high school mathematics to postsecondary success.

The Consensus Panel helped develop this **Call to Action** and a set of supporting recommendations to mobilize action across sectors and stakeholder groups. The full-length call to action and the recommendations are included in the complete report: *Launch Years: A New Vision for the Transition from High School to Postsecondary Mathematics*.

We are optimistic that policymakers, researchers, educators, and other leaders across the K–12, higher education, business, and workforce sectors will heed the Launch Years collaborative's call. Many already recognize the need for change and have begun work.

Together, we can remove barriers and create new pathways so that all students can pursue postsecondary training and education, enter into rewarding careers, and engage in society as quantitatively literate consumers and citizens.

The Case for Change

Three major barriers impede students during the crucial transition from their junior and senior years of high school mathematics through their first year of postsecondary education.

1) Students experience inequitable opportunities to learn.

A large body of research literature documents the many inequities—from the state policy level down to local implementation—in American students' opportunities to learn and succeed in mathematics.

Mathematics requirements vary across states, but the high school mathematics curriculum commonly offered across the nation has been, and remains, a course in geometry sandwiched between two courses in algebra, advancing students on a narrow pathway toward calculus. This course sequence fails to serve most students.

The quality of local curriculum and instruction varies, with students coming from higher-income backgrounds tending to have access to higher-quality programs. Access to advanced courses is too often influenced by race or family income. And inequitable access to courses and effective instruction may reflect, or be exacerbated by, educators' biases and racial stereotypes about mathematics ability—all of which interfere with student learning.

2) Mathematics is misused in college admissions criteria.

The negative effects of inequitable opportunities to learn in high school are amplified by inconsistent and often arbitrary college admissions requirements across states—and across institutions of higher education.

Many colleges and universities use mathematics as an admissions gatekeeper. Admissions requirements often explicitly stipulate that a student must have completed Algebra II. Yet requirements that prioritize algebra have little to no relation to students' readiness to succeed in courses such as statistics or quantitative reasoning—which are more relevant to a wide range of credentials and careers.

College admission standards requiring Algebra II signal to high schools, parents, and students that courses leading to calculus are the best, or only, mathematics options to pursue in preparation for college. Yet there is mounting evidence that those students who do not take the traditionally required algebra courses and sequences are still successful in college.

3) Postsecondary readiness policies are inconsistent and misaligned.

The definition of *postsecondary readiness* varies across K–12 and higher education, leading to incoherent articulation of coursework requirements across the sectors. How postsecondary readiness is defined, and how that definition is used, often determines whether a student will be required to repeat courses or be placed into non-college-credit remedial courses, both of which are barriers to on-time graduation.

This lack of a shared understanding between K–12 and higher education of what constitutes postsecondary readiness raises the question of whether high schools can adequately prepare students for postsecondary education. High school students are too often told to aim for a certain standard or course sequence, only to find that after they graduate, the criteria at their new institution are different. And such experiences naturally most negatively affect families with less understanding of—and experience with—postsecondary education, as they of necessity must rely more heavily on the guidance provided by their local K–12 schools.

The Opportunities for Action

While the barriers we have described are not new and may feel intractable, we see opportunities for positive, achievable change. Four opportunities in particular hold promise:

1) Advanced quantitative literacy skills are increasingly in demand.

Quantitative literacy is increasingly important for informed participation in our society and democracy. In addition, new and expanding fields of work center on working with data and on quantitative analysis and reasoning. Just as important, many existing fields, such as social work and nursing, are increasingly relying on data-driven analysis to inform research and decision making.

But employers and studies on workforce needs report a lack of in-demand math skills. Some cite a lack of general math skills, while others are more specific about the kinds of skills—such as mathematical modeling and statistical analysis—that are increasingly in demand yet difficult to find in the U.S. labor force.

More than half of those pursuing higher education say that their primary reason for doing so is to get a good job.** It is essential, then, that our education systems collaborate to respond to these new and diverse applications of mathematics and to prepare students appropriately and equitably.

2) Mathematics leaders are calling for modernizing mathematics pathways.

Mathematics professional associations across education sectors are reaching an emerging consensus that algebraically intensive courses, such as College Algebra, ought not to be the default requirement for all students.

These associations make the case that students are not well served by the traditional College Algebra course; thus, mathematics pathways focused on problem solving, modeling, statistics, and applications should be developed and aligned to the mathematics requirements in students' intended fields of study. Importantly, this redesign creates an opportunity for new mathematics pathways to be designed to achieve more equitable outcomes.

3) Higher education innovations are increasing options, equity, and success.

The higher education sector is responding to the call to modernize mathematics content with widespread implementation of multiple mathematics pathways that offer differentiated, rigorous mathematics options tailored to students' academic and career goals. In addition, more institutions of higher education are implementing co-requisite models that enable more students to enter immediately into college-credit-bearing courses with support. Colleges and universities are also

**Strada Education Network and Gallup. (2018 January). *Why Higher Ed? Top Reasons U.S. Consumers Choose Their Educational Pathways*. Indianapolis, IN: Author. Available at https://futureu.education/wp-content/uploads/2018/03/Strada-Gallup-January-2018-Why-Choose-Higher-Ed.pdf

using a variety of measures for college placement that may include factors other than a placement test, such as student performance in relevant high school coursework.

There is evidence that mathematics pathways with co-requisite supports combined with new placement practices are drastically increasing student success across demographic groups. These findings call into question preconceptions about the ability and postsecondary readiness of students, particularly those students who have historically been marginalized by the system.

4) Innovations in K–12 systems are showing promise.

Efforts to create new mathematics pathways in higher education provide the K–12 sector with the opportunity to re-envision high school mathematics as well. The National Council of Teachers of Mathematics recommends moving away from the traditional high school mathematics sequence and instead moving toward courses that cover essential concepts—such as statistics and mathematical modeling—for all high school students. NCTM also advises that after these courses, students should choose a fourth-year course based on their personal and professional goals.

Some states and districts are heeding this call to establish new pathways in statistics, mathematical modeling, and the data sciences. Others are also addressing policies and practices to increase student success and achieve more equitable outcomes.

We see strong interest in engagement across sectors as part of state-level mathematics pathways work and in a recent forum held by the Conference Board of the Mathematical Sciences in which 22 states participated. The dramatic increase in dual enrollment is also driving collaboration at the local level.

Conclusion: The Launch Years Call to Action

No student should face unnecessary obstacles in the transition from high school to postsecondary education.

We acknowledge that the work ahead includes many challenges, including

- Removing outdated, irrelevant, and misaligned gatekeeper requirements to college access and college completion;
- Creating mathematics courses that prepare students for programs, careers, and lives that engage a range of mathematical skills; and
- Monitoring student enrollment patterns and outcomes to measure explicitly whether equity is being achieved.

All students should leave high school prepared to engage in college-level mathematics aligned to their future goals—and ready to pursue, and succeed in, their chosen postsecondary pathway.

It is our collective responsibility, then, to

- Address systemic factors that create obstacles to success and that fuel inequity.
- Ensure that our education systems help students expand their ideas of what is possible and what they can achieve.
- Enact new policies, structures, and practices that propel students forward to successful futures.

Launch Years: A New Vision for the Transition from High School to Postsecondary Mathematics

Find the full report online at https://utdanacenter.org/launchyears

Please cite the full report as follows:

Charles A. Dana Center at The University of Texas at Austin. (2020). *Launch Years: A New Vision for the Transition from High School to Postsecondary Mathematics*. Austin, Texas: Author. Available via the Dana Center's Launch Years website:

https://utdanacenter.org/launchyears

The full report includes the Launch Years collaborative's

- "Call to Action," summarizing the case for change and the opportunities for action and
- "Taking Action on Launch Years," detailing recommendations and strategies for advancing the movement.

It also includes an extensive list of references that informed the development of these resources.

About Launch Years

Launch Years is an initiative led by the Charles A. Dana Center at The University of Texas at Austin—in collaboration with Community College Research Center, Achieve, Education Strategy Group, and the Association of Public and Land-grant Universities—focused on addressing systemic barriers that prevent students from succeeding in mathematics and progressing to postsecondary and career success. Leveraging work within states, the initiative seeks to modernize math in high school through relevant and rigorous math courses as well as policies and practices leading to more equitable outcomes for all students. **Learn more at: utdanacenter.org/launch-years.**