Research Report

The Expanding Landscape of Career-Connected Learning in New York City

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Housed at NYU Steinhardt, the Research Alliance for New York City Schools is an independent, nonpartisan research center that conducts rigorous studies on topics that matter to the City's public schools. We strive to advance excellence and equity in education by providing evidence about the policies and practices that promote students' development and academic success.

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The Expanding Landscape of Career-Connected Learning in New York City

Executive Summary

The Research Alliance for New York City Schools, in partnership with MDRC, has undertaken a study to understand the recent expansion of career-connected learning (CCL) in New York City's public education system. Career-connected learning is an umbrella term gaining popularity among policymakers, educators, and employers across the United States (Bierly & Smith, 2019). It refers to a vision for schooling that bridges the divide between college and career preparation, emphasizing integrated educational experiences and systematic, cross-sector coordination that sets students up for "gainful employment and fulfilling lives" (Bierly & Smith, 2024).

This initial report examines two recent CCL initiatives in NYC, Future Ready NYC (FRNYC) and the Career Readiness and Modern Youth Apprenticeship (CRMYA) program. It outlines their design and goals, alongside those of longstanding Career and Technical Education (CTE) programs, and describes how the adoption and spread of these initiatives have changed the landscape of CCL offerings at schools citywide. CTE and FRNYC offer career-connected pathways for students, which combine career-themed instruction and experiences geared toward college and career opportunities in a specific industry. CRMYA features universal career readiness instruction (i.e., not tied to a particular industry) and paid apprenticeships. We have identified the following key takeaways from our analysis of these three CCL models:

- New York City Public Schools (NYCPS) added formal CCL offerings in nearly 100 schools between the 2021–2022 and 2024–2025 school years, while maintaining preexisting programming. So much growth in a three-year period is a considerable accomplishment given the challenges of implementing the program components (Bailey et al., 2000; Kistler & Dougherty, 2025; Zimmerman, 2025).
- The increase in CCL programs has been driven primarily by the expansion of FRNYC pathways in high-wage, high-demand sectors (i.e., Technology, Healthcare, Business, Human and Social Services, HVAC and Building Decarbonization, and Teaching). While similar in some ways to CTE pathways, FRNYC pathways are more structured: expectations for school staff and students are meticulously planned, and the milestones are more granular. FRNYC also emphasizes integration and alignment among its five core programmatic components—career-connected instruction, work-based learning, financial literacy, early college credits and credentials, and personalized advising—to a greater extent than does CTE.
- A smaller share of schools have been offering CRMYA programming than those offering FRNYC and/or CTE. As CRMYA schools have added Future Ready pathways, apprenticeships are increasingly available as capstone experiences for FRNYC students.
- On average, FRNYC pathways are aligned to occupations that require more postsecondary education or training than occupations that are the focus of CTE pathways. Prior research in New York City has shown that programs aligned to career pathways requiring a bachelor's degree or higher are linked to positive impacts on Regents' diploma receipt and immediate college enrollment (Kemple et al., 2023).

The rapid growth of formal CCL, particularly in schools without previous programming, presents an opportunity to learn about the supports and strategies that school-level staff find most helpful for establishing new programs. Our ongoing research aims to uncover lessons about what works for scaling CCL programs and to identify best practices that can inform NYCPS's continued expansion of Future Ready, as well as the development of career-connected pathways in other large districts.

Forthcoming analyses will explore connections between student and school characteristics, participation and persistence in the five core CCL components embedded in the Future Ready model, and student outcomes. This work will shed light on the conditions under which CCL is associated with positive outcomes, and for whom. Our study will also provide important information for the field about whether and how new career-connected learning pathways can avoid inequities that have undermined past efforts to strengthen career opportunities for high school students.

Overview of Key Terms

Career-Connected Learning (CCL)

CCL is an educational approach integrating classroom instruction and relevant, real-world experiences intended to promote general career readiness and prepare students for postsecondary training leading to a career and economic security. High schools, intermediaries, employers, and postsecondary institutions collaborate to implement CCL. We use CCL as the broad, umbrella term for formal career-related programming in NYC high schools.

CCL Program Models

NYC currently offers CCL through a variety of models. In this document, we focus on the three most prevalent models available to NYC public high school students: Career and Technical Education (CTE), Career Readiness and Modern Youth Apprenticeship (CRMYA), and Future Ready NYC (FRNYC). NYC high schools may offer one program model, a combination of models, or none.

Career-Connected Pathways

Career-connected pathways are models of CCL that integrate instruction and experiences linked to college and career opportunities in a specific industry. New York City high schools provide pathways via CTE or the FRNYC program model (e.g., a CTE business pathway, an FRNYC business pathway, an FRNYC healthcare pathway, etc.). Note that the CRMYA program model does not offer distinct pathways; rather, students may access this program separately or as a capstone through a CTE or FRNYC pathway.

Introduction

In the last decade, K-12 policymakers across the country have extended their focus beyond college, broadening their expectations for what all students should be prepared to do after high school. Many states, including New York, have formalized this shift through a "Portrait" or "Profile" of a graduate framework that outlines the skills and knowledge students should master by high school graduation. These portraits often integrate career-related awareness and skill-building as one piece of a holistic approach to education that includes academic coursework, college planning, and inter- and intra-personal competencies (Atwell & Tucker, 2024; NYS Education Department, 2024).

The emphasis on career preparation for *all* students is a recent development. Throughout most of the 1900s, vocational education systematically tracked students of color, immigrants, and students from lower socioeconomic classes into low-wage careers (Gamoran, 1987; Hodge et al., 2020; Imperatore & Hyslop, 2017; Oakes, 1983, 2005). In the late 1990s, in recognition of these disparities, and in response to economic shifts, policymakers and educators began thinking differently about career-related instruction and adopted the term "Career and Technical Education" (Dougherty & Lombardi, 2016). Whereas vocational education typically led to limited career options for a narrow subset of students, modern Career and Technical Education (CTE) was intended to integrate academic and career skills, preparing students for a variety of options after high school, whether that be two- or four-year college, a training program, or immediate entry into the labor market (Castellano et al., 2003; Dougherty & Lombardi, 2016; Kim et al., 2021; Neuhouser et al., 2023).

New York City Public Schools (NYCPS) has been at the forefront of this evolution (Lorenz, 1978; Robinson, 2005). In the first decades of the 21st century, NYCPS redefined standards and expectations for CTE (Mayoral Task Force on Career and Technical Education Innovation, 2008), modernized and expanded its offerings to more schools and students (Jacoby & Dougherty, 2016; Kemple et al., 2023), and designed new, career-oriented "P-TECH" schools to directly link high school students to colleges and workforce systems (Rosen et al., 2023).

Research suggests that NYC's modern CTE programs have had some successes, with gains in short- and medium-term outcomes. These include improvements in attendance, being on track for graduation, on-time receipt of a high school diploma, and college enrollment, particularly for newer, smaller schools with pathways into careers that require a bachelor's degree or higher (Kemple et al., 2023, 2024; Rosen et al., 2023). In other states, causal studies of participation in whole-school or school-within-a-school models of secondary CTE have found positive average effects on high school graduation rates (Hemelt et al., 2019) and employment and earnings (Dougherty, 2018; Kemple & Wilner, 2008). Additional correlational evidence suggests that benefits may be greater when students earn three or more credits in a specific pathway (Ecton & Dougherty, 2023), when career-connected course content is advanced rather than introductory (Kreisman & Stange, 2020), and when students take career-connected courses later in high school (Gottfried & Plasman, 2017).

NYCPS's two recent initiatives—Future Ready NYC (FRNYC) and Career Readiness and Modern Youth Apprenticeship (CRMYA)—have evolved in response to this research base, including the Research Alliance's recent CTE studies (Kemple et al., 2023, 2024; Flack et al., 2025). Launched in 2022, the initiatives also represent an intentional districtwide shift toward career-connected learning (CCL), a vision for schooling that rejects dichotomies between college and career preparation, in favor of integrated educational experiences and systematic, cross-sector coordination designed to offer all students access to "gainful employment and fulfilling lives" (Bierly & Smith, 2024). The programs are led by the Office of Student Pathways, which organizes CTE, FRNYC, and CRMYA under the CCL umbrella and strives to ensure that all NYC students have pathways to a successful career and long-term economic security (NYC Office of the Mayor, 2022).

As the adoption and expansion of CCL in NYC continues, it will be important for stakeholders to learn more about: the facilitators and challenges of implementation, the distribution of access to these programs, what factors promote participation and enhance scalability, and how participation in CCL components and pathways is associated with student outcomes. The Research Alliance for New York City Schools, in partnership with MDRC, has undertaken a study that will explore these issues. The current report, the first from our project, provides readers with an accessible primer on the history and evolution of CCL in New York City. We describe the design and goals of FRNYC, CRMYA, and longstanding CTE programs, and examine how the adoption and expansion of these initiatives are changing the landscape of CCL opportunities across NYC schools. We conclude by discussing how our ongoing research will address questions around implementation, student participation, and outcomes.

Launching New Models of Career-Connected Learning

NYCPS launched Future Ready NYC and Career Readiness and Modern Youth Apprenticeship in Fall 2022 in response to growing concern that NYC students had difficulty obtaining jobs with economically viable wages after high school graduation. This led to FRNYC's prioritization of supporting entry into high-wage, high-demand careers, including a focus on providing personalized, career-aligned postsecondary advising (Perry & Johnson, 2025). Together, these initiatives reflect an increasingly explicit focus on preparing high school students for meaningful opportunities in both postsecondary education and the labor market.

While all CCL programs in NYCPS aim to help students build a path to a rewarding career and lifelong economic security (NYCPS, 2025a), the program models differ. CRMYA offers career readiness coursework in high school and the opportunity for placement in multi-year apprenticeships (NYC Office of the Mayor, 2023), but unless combined with FRNYC, CRMYA programs are not connected to specific industries.

As with CTE, FRNYC programs create "pathways" for students—career-themed instruction and experiences that connect students to college and career opportunities in a specific industry. FRNYC specifically aims to support students' transition into one of six high-wage, high-demand careers: Technology, Healthcare, Business, Human and Social Services, HVAC and Building Decarbonization, and Teaching. Compared to careers in hospitality, agriculture, and communications, FRNYC's six career pathways are linked to the greatest

postsecondary wage earnings (Ecton & Dougherty, 2023). In FRNYC schools, all 9th graders take a year-long foundational career exploration course; at the end of the year, interested students apply to a pathway, and selected students start their pathway at the beginning of 10th grade. Participating schools receive funding, resources, and support with employer, college, and intermediary partnerships to develop integrated college and career preparation activities, including aligned early college credits and credentials and paid work-based learning.

Schools can participate in FRNYC, CRMYA, and/or CTE. As of the 2024–2025 school year, 159 NYC high schools were implementing Future Ready and/or Career Readiness and Modern Youth Apprenticeships; 69 additional schools offered CTE but no FRNYC or CRYMA.

The Five Core Components of Career-Connected Learning

The FutureReady model is grounded in five core components supported by the CTE research base (Kistler & Dougherty, 2025): career-connected instruction; early college credits and credentials; work-based learning (WBL); personalized advising; and financial literacy coursework (see Table 1 below).

Table 1: FRNYC Components and Goals

Career-Connected Instruction	Early College Credits & Credentials	Work-Based Learning	Personalized Advising	Financial Literacy
Develop students' career awareness and sector-specific skills, knowledge, and abilities through introductory career exploration coursework and a sequence of industry-specific coursework.	Support students' college and career readiness through opportunities to earn early college credits and credentials aligned to their pathway.	Provide students with opportunities to explore career interests and gain skills through a continuum of activities, such as job shadowing, guest speakers, and paid internships.	Support students' postsecondary planning and readiness with twice yearly individualized advising sessions, digital tools, and annual preparation tasks.	Teach students to make informed financial decisions and properly manage their money through a stand-alone financial literacy course or coursework embedded within an existing course.

Students enrolled in CRMYA and CTE may also participate in these components to some extent, but FRNYC has the most intensive, detailed requirements. Also, FRNYC emphasizes the alignment of program components to a student's specific career pathway more than CTE typically has. For example, an FRNYC student in a pre-nursing pathway might take a three-year sequence consisting of two healthcare courses plus one anatomy and physiology course; take a CUNY College Now course on the United States healthcare system; and participate in a workplace challenge and internship in healthcare settings. Through changes to dosage, alignment, and integration of program components, FRNYC aims to deepen career-connected learning across New York City. The model extends the programmatic elements of CTE in four ways:

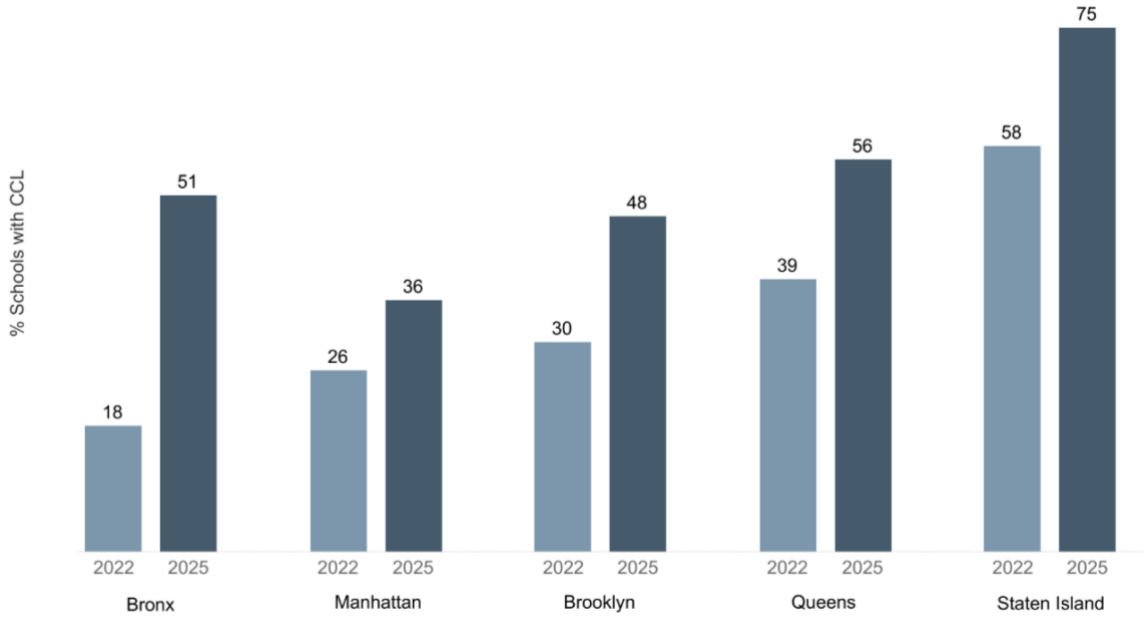
1. Offering a coherent sequence of career-connected courses that is integrated with opportunities for earning aligned early college credits and/or an industry credential;
2. Involving students in a continuum of work-based learning activities that begins with broad exposure in 9th grade and culminates with completion of at least one paid, pathway-aligned work experience prior to graduation;
3. Requiring, rather than encouraging, aligned early college credits; and
4. Engaging students in more frequent and intensive college- and career-related tasks each year as part of personalized advising.

Through FRNYC, NYCPS has extended its partnerships with The City University of New York (CUNY)—in the area of early college credits—and with the Department of Youth and Community Development (DYCD)—in the area of youth employment. These efforts are part of a collective strategy to foster tighter coordination across the largest City institutions that serve youth, with the goal of ensuring their economic mobility and wellbeing in adulthood (City of New York, 2023). Table 2 on page 7 provides an in-depth look at intended dosages for the five CCL components in FRNYC, CTE, and CRMYA, respectively. Although schools without formal CCL programming often offer these five components to some degree, they are not integrated or aligned to a specific career pathway. Fewer students participate in each component, and fewer still participate in multiple components. A subsequent report from this study will explore participation patterns across the district in depth.

Expansion of Formal Career-Connected Learning in New York City

The FRNYC and CRMYA initiatives have sharply increased career-connected learning offerings in NYC. Prior to their launch, about a quarter of the City's high schools provided one or more formal CCL pathway via CTE programs of study (28%; 132 of 468 schools in Districts 1–32). Three years after the launch of FRNYC and CRMYA, nearly half of high schools offer formalized CCL (48%; 226 of 474).

Figure 1: Percentage of High Schools with Formal CCL by Borough, 2022 to 2025



Source: Research Alliance analysis of NYCPS data.

Note: Figure shows the share of schools with formal CCL (delivered via CTE, FRNYC, and/or CRMYA) by borough, excluding schools in Districts 75 and 84.

Table 2: Intended CCL Component Dosages in New York City's CTE, FRNYC, and CRMYA Program Models

Component	FRNYC	CTE*	CRMYA
Career-Connected Instruction	All 9th grade students at Future Ready schools take two credits of career explorations coursework and decide whether to apply to a pathway. In 10th grade, accepted FRNYC students continue into their chosen pathway with a four to eight credit career-connected sequence aligned to a specific career and industry.	Seven credit minimum career-connected sequence.	Two to three credits of *industry agnostic* career exploration and development, and a one credit course for apprenticeship preparation.
Financial Literacy	54 hours of financial literacy instruction [a]		
Work-Based Learning	Career exposure for 9th and 10th grade and WBL opportunities for 11th & 12th graders; students graduate having completed at least one *paid* WBL experience. (In FRNYC + CRMYA hybrid schools, apprenticeship is a capstone option.)	54 hours of WBL before graduation.	9th grade career exposure *plus* on-the-job pre-apprenticeship training and apprenticeship hours starting in 10th grade, with more time in the workplace each year.
Early College Credits and Credentials	Requirements include: 1) CUNY/SUNY Explorers campus visit for 9th graders; 2) CUNY/SUNY Seminar; and 3) two FRNYC Early College Pathway courses for eligible juniors and seniors. Early College Pathway courses are debt-free and aligned to pathway careers. Sequences align with credentials.	Access to early college credits available; enrollment encouraged but not required. Students can earn CTE endorsement on diploma. [b]	Starting in 11th grade, the option for debt-free early college coursework based on career goals and interests. Training in a state-approved, paid, apprenticeship.
Personalized Advising	Universal NYCPS advising model [c] plus participation in orientation, workshops, career experiences, and senior exit survey. Annual schedule of college- and career-related tasks. [d]	Universal NYCPS advising model [c]	Universal NYCPS advising model [c]

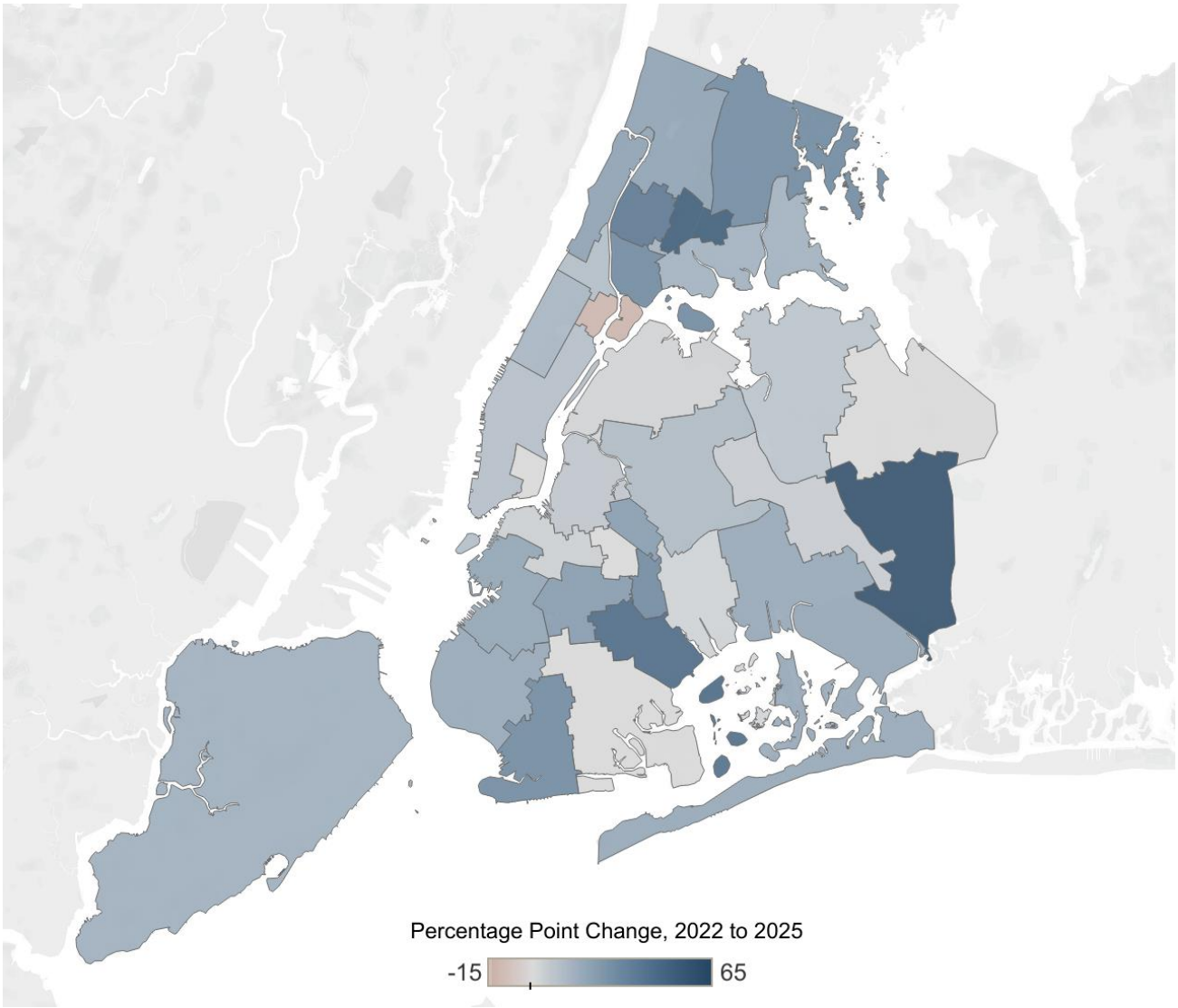
Sources: CareerWise New York; New York State Education Department; New York City Public Schools High School Academic Policy Guide; FRNYC School Playbook.

Notes: *Refers to requirements for CTE programs of study approved by the NYS Department of Education.
[a] As of Fall 2025, these hours are now embedded in career-connected coursework. Previously, specific courses outside of career-connected sequences counted toward this requirement. [b] Endorsement earned through employability profile and end-of-program technical assessment. Other requirements include graduating with a minimum of 44 credits, passing Regents exams, and completion of WBL activities. [c] As of October 2025, NYCPS policy requires that students in grades 9 and 10 receive one Individual Progress Review (IPR) that includes college and career planning. Students in grades 11 and 12 receive the IPR along with one additional individualized postsecondary planning session. [d] This includes completing career awareness experiences, completing a postsecondary plan, taking college entrance exams, completing college applications and FAFSA, etc.

As shown in Figure 1 (on page 6), CCL growth has been most dramatic in the Bronx, where the share of schools with CCL programming jumped to 51 percent, up from 18 percent in 2022. This increase has been intentional, as NYC policymakers have targeted expansion in areas with fewer preexisting options (internal correspondence).

The expansion of CCL has reached nearly all of the City's 32 community school districts (see Figure 2 below). The largest increases in the percentage of schools with formal CCL programming can be seen in Districts 7, 9, and 12 in the Bronx; Districts 18, 21, and 23 in Brooklyn; and District 29 in outer Queens. The latter had the largest growth in CCL programming of any district (63.6 percentage points).

Figure 2: Growth in the Percentage of High Schools with Formal CCL by Community School District, 2022 to 2025

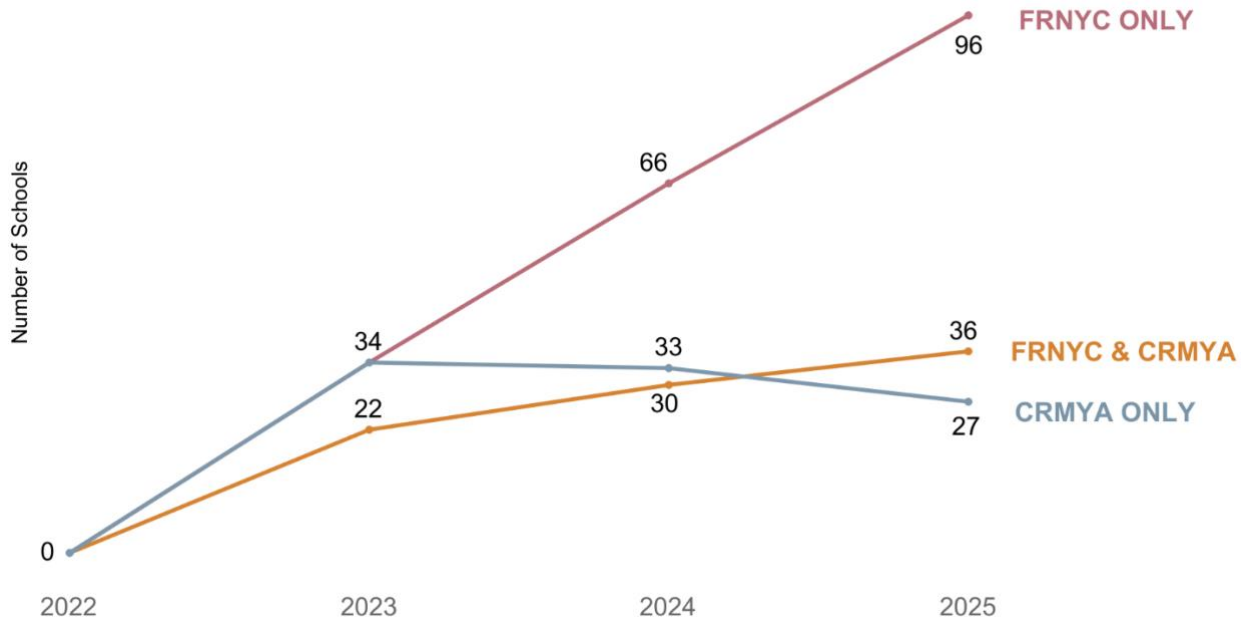


Source: Research Alliance analysis of NYCPS data.

Notes*:* Analysis of school-level files constructed from NYCPS documents, removing District 75 and 84 schools. Formal CCL programs included are CTE (2008–25); FRNYC (2022–25), and CRMYA (2022–25).

Growth in CCL across the City has been driven primarily by the expansion of FRNYC. As shown in Figure 3 below, the number of schools offering FRNYC, CRMYA, or both was fairly similar in the pilot year (2023). But, by design, the number of schools offering FRNYC has continued to grow, while stand-alone CRMYA offerings have not expanded beyond the original group of adoptees. Between 2024 and 2025, there was a noticeable jump in the number of schools offering both CRMYA and FRNYC. Current plans are to stop offering CRMYA as a stand-alone model in Fall 2027; apprenticeships will be offered as an optional capstone experience within hybrid programs that each focus on a particular career pathway. Our ongoing implementation research will offer insight into this transition.

Figure 3: Growth in the Number of Schools Offering FRNYC, CRMYA, or Both, 2022–2025



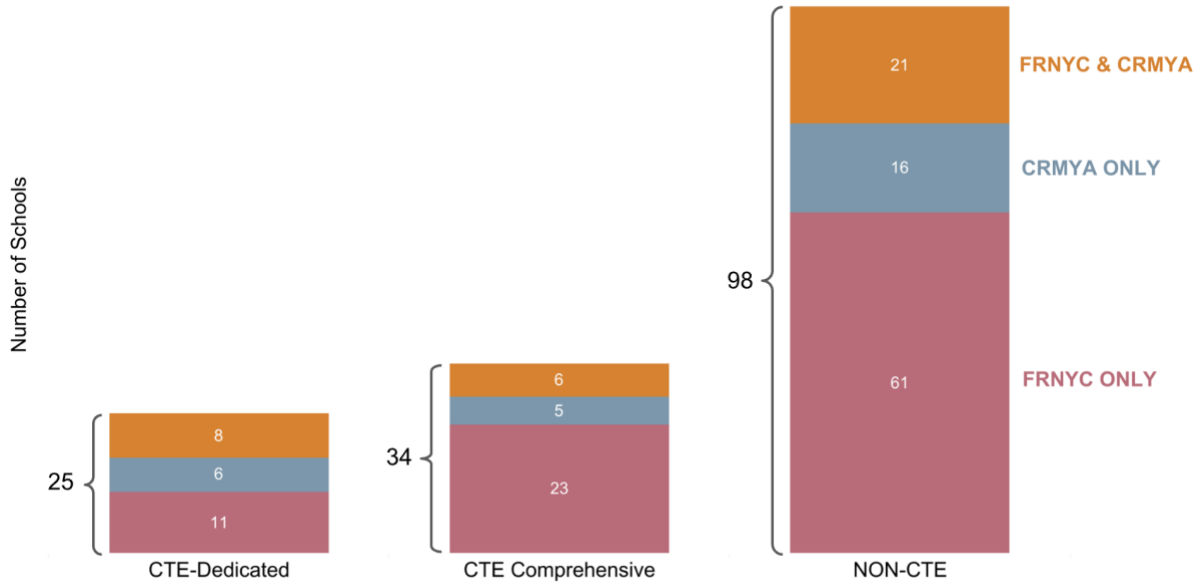
Source: Research Alliance analysis of NYCPS data.
Note: Counts exclude Districts 75 and 84.

There is also interesting variation across the settings in which CCL programs are offered. Historically, the majority of NYC's CCL programs have been provided by two types of schools (see Kemple et al., 2023, 2024):

- CTE-Dedicated high schools, where all students are expected to participate in a career-oriented program of study; and
- Comprehensive high schools, which are typically larger high schools with a variety of electives, including one or more CTE programs of study, where it is not expected that all students will participate in CTE.

The FRNYC and CRMYA initiatives have expanded CCL programming beyond these settings into traditional academic high schools without any CTE. Figure 4 below shows the distribution of FRNYC and CRMYA across the three types of high schools. Notably, 98 of the 157 new programs (62%) are located in schools that had no formal CCL prior to 2022.

Figure 4: Number of NYCPS Schools Offering FRNYC and/or CRMYA by School Type, 2025



Source: Research Alliance analysis of NYCPS data.

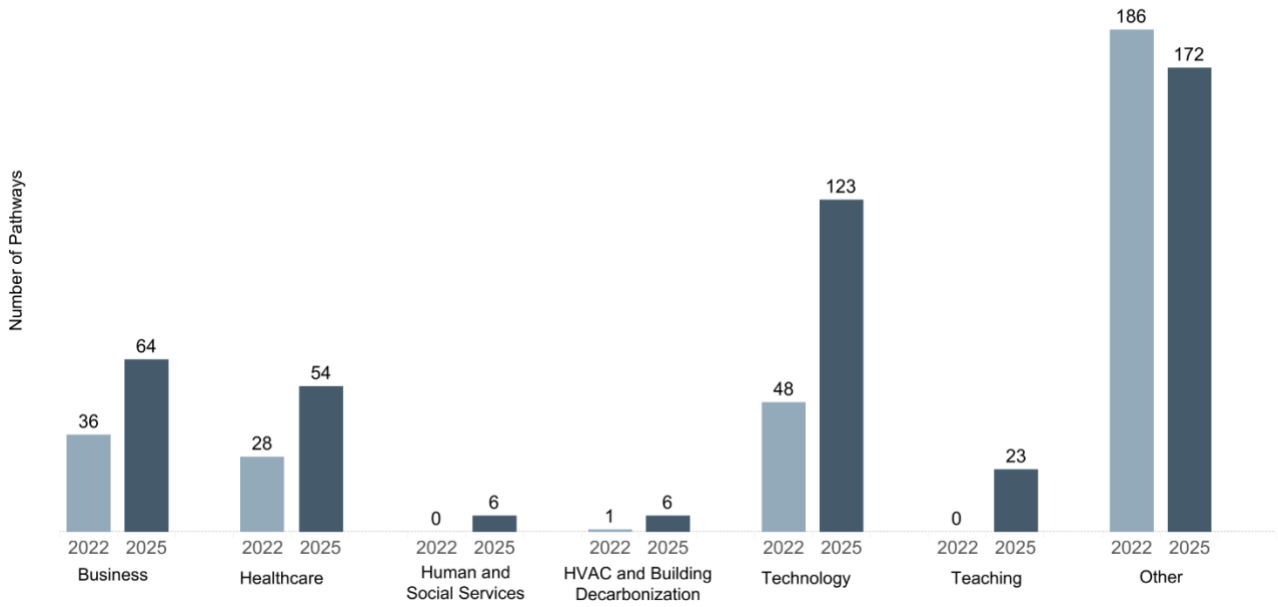
Notes: CTE-Dedicated (n = 46), Comprehensive high schools with CTE (n = 82), and non-CTE high schools (n = 368). Analysis excludes programs in Districts 75 and 84. By 2027, stand-alone CRMYA programs (in blue) will be phased out, and all CRMYA programs will be part of FRNYC hybrid programs in which the apprenticeship is an optional capstone experience.

Although the number of new formalized CCL programs is greatest in the traditional academic high schools, a greater proportion of schools that were offering CTE prior to the pilot have adopted FRNYC and/or CRMYA. Specifically, 54 percent of CTE-Dedicated high schools (n = 25) and 41 percent of Comprehensive high schools with CTE (n = 34) have adopted FRNYC, CRMYA, or both, compared to 27 percent of high schools without CTE (n = 98). This reflects how NYCPS strategically targeted CTE schools for early adoption.

Occupational Clusters

Recent research suggests differences in the impact of CCL by industry pathway (Ecton & Dougherty, 2023). FRNYC's focus on high-demand, high-wage careers has led to shifts in the CCL pathways available to NYC students. Figure 5 on the next page shows the total number of formal career-connected pathways by occupational cluster in 2022 and 2025. In 2022, prior to the launch of FRNYC, these were all CTE programs of study. By 2025, career-connected pathways had been greatly expanded through FRNYC, specifically pathways in Business, Teaching, Healthcare, Technology, Human and Social Services, and HVAC and Building Decarbonization. During the three-year period, the share of pathways in these six industries rose to 62 percent (276 of 448 pathways citywide), up from 38 percent (113 of 299 pathways) in 2022.

Figure 5: Count of Pathways by Occupational Cluster, 2022 and 2025



Source: Research Alliance analysis of NYCPS data.
Notes: Analysis excludes programs in Districts 75 and 84. 2022 reflects CTE pathways available to students prior to FRNYC implementation. The Other Industries category includes Arts, Agriculture, Logistics, Manufacturing, and STEM.

Table 3 on the next page shows industry clusters—for either CTE or FRNYC—by school type to illustrate how industry offerings vary by setting. For example:

- FRNYC Business pathways are far more likely to be housed in Comprehensive schools with CTE (52% of all Business pathways) and schools with no CTE (34%) compared to CTE-Dedicated high schools (14%).
- The majority of FRNYC Teaching pathways (70%) have been created in traditional academic high schools without any CTE.
- NYCPS placed new FRNYC HVAC and Building Decarbonization pathways in schools with CTE in the pilot year, by design. Starting in Fall 2025, any school can launch one of these pathways. This presents an opportunity to learn about how contextual factors (e.g., equipment needs, requirements for dedicated lab/classroom space, supply of qualified instructors, prior experience with CTE, etc.) may influence schools' decisions about program adoption and shape program implementation.
- Technology is the most popular industry across school types (123 pathways). Career-connected pathways in this industry include information security, data science, and software development.
- On average, there are three pathways (CTE or FRNYC) housed in CTE-Dedicated high schools, 2.5 in Comprehensive high schools with CTE, and one in schools with no CTE.

Table 3: Percentage of Pathways by School Type and Industry, 2025

	CTE-Dedicated High Schools	Comprehensive High Schools with CTE	High Schools with No CTE	Total Number of Pathways
Future Ready Industry				
Business	14%	52%	34%	64
Healthcare	33%	41%	26%	54
HVAC/Building Decarbonization	50%	50%	0%	6
Human and Social Services	0%	0%	100%	6
Technology	31%	38%	31%	123
Teaching	13%	17%	70%	23
Non Future Ready Industry				
Agriculture	50%	50%		8
Architecture	67%	33%		21
Arts	45%	55%		56
Education	0%	100%		2
Hospitality	17%	83%		18
Law & Public Safety	0%	100%		18
Manufacturing	55%	45%		22
STEM	23%	77%		13
Transportation	86%	14%		14
Total Pathways (N)	144	208	96	448
Total Schools (N)	46	82	82	210
Average Number of Pathways per School	3.1	2.5	1.2	2.1

Source: Research Alliance analysis of NYCPS data.
Notes: Excludes programs in Districts 75 and 84. Total counts reflect schools with CTE and/or FRNYC programming. The Non Future Ready Education industry includes pathways in sports medicine and personal training.

Patterns in the distribution of pathways raise questions about variation in student experience and outcomes by industry and across school type. Preliminary analysis showed that, on average, occupations associated with FRNYC pathways require more postsecondary education or training compared to occupations associated with CTE programs.[1] A prior Research Alliance/MDRC study of the CTE-Dedicated high schools found that college-aligned programs (i.e., those linked to career pathways that require a

[1] FRNYC Pathways have an average Job Zone score of 4.0 compared to CTE Pathways score of 3.6.

bachelor's degree or higher) had greater positive impacts on Regents' receipt and immediate college enrollment than careers requiring less postsecondary training (Kemple et al., 2023). In addition, analysis of school expenditure data suggested that college-aligned pathways were more cost-effective (Flack et al., 2025).

Plans for Ongoing Implementation Research

Together, FRNYC and CRMYA represent a notable expansion and evolution of the delivery, format, and scale of career-connected learning across New York City high schools. Ultimately, when these programs have matured and sufficient years of follow-up data become available, it will be important to assess the impact of FRNYC and CRMYA on students' educational attainment, labor market participation, and transitions to adulthood.

In the near term, there is much to learn from the initiatives' early years of implementation and expansion. To this end, the Research Alliance for New York City Schools and MDRC are studying factors related to student participation in core pathways components and assessing relationships between pathways participation and students' college and career readiness outcomes. Our three-year mixed methods study combines exploratory analysis of longitudinal student-level data and administrative records with rich fieldwork—including interviews with school staff, intermediaries, and employers—to produce a nuanced picture of how schools are rising to the challenge of implementing CCL pathways. This includes new structures and expectations for career-connected instruction, early college credit, personalized advising, work-based learning, and financial literacy.

Our study will place a special focus on work-based learning and personalized advising, where new expectations are especially complex. Work-based learning, in particular, requires interest, capacity, and continued engagement not only from schools but also employers (Bailey et al., 2000; Haimson & Belotti, 2003). For students, CCL programs bring additional requirements and time commitments that compete with other school and life demands (Haimson & Belotti, 2003; Flack et al., 2023; Zimmerman, 2025). Schools implementing CCL pathways need to make course scheduling more flexible while helping students concretize future plans, something advisors do not always have the capacity to facilitate (Hutchins et al., 2024). Meanwhile, districts and school staff face the challenge of building and maintaining data collection systems to track CCL access and progress (Shields et al., 2024).

Our fieldwork will explore how schools are navigating district structures and supports (e.g., additional per-pupil funding, pacing guides, toolkits, performance metrics, data systems, communities of practice, and summer workshops). Key research questions about implementation and context include:

- What strategies are schools using to implement the core components of FRNYC?
- What are the facilitators and challenges of implementation?
- What does implementation of pathways look like across different schools and settings, including schools that have just begun offering CCL and schools that have offered CCL in the past?

In conjunction with launching Future Ready and CRMYA, NYCPS has broadened its metrics and updated its systems for tracking students' participation in the five core components of CCL. Leveraging these novel data sources, we will be among the first researchers to examine nuanced relationships between participation in one or more of the components and short-term outcomes. This analysis can offer needed insight into questions around equity, particularly with respect to variation across industry pathways (Cox et al., 2015; Ecton & Dougherty, 2023; Evan et al., 2013; Hodge et al., 2020; Kim et al., 2021).

Ultimately, the study aims to shed light on the conditions under which pathway participation in New York City is associated with positive outcomes, and for whom. (Later causal studies will be able to provide more definitive evidence.) Our research questions about participation and outcomes include:

- To what extent do students participate in all five core components of the FutureReady model of career-connected learning? How do levels of exposure to the five components vary across schools with and without CTE, FRNYC, and/or CRMYA?
- How are student characteristics (e.g., demographics, grade level, prior academic performance, attendance) and school characteristics (e.g., industry partners, number and type of CCL programs, and history of CTE programming) associated with variation in participation?
- How is participation in the five components related to positive student outcomes, such as improved attendance and a greater likelihood of being on track for high school graduation?
- Are there particular components or combinations of components that are more strongly associated with positive outcomes than others? Under what conditions is program participation associated with positive outcomes, and for whom?
- Are there particular pathways industries that are more strongly associated with positive outcomes than others?

Our fieldwork will provide further insight into the findings about participation, outcomes, and equitable access. This work will document recruitment and enrollment practices, as well as key factors that may facilitate or serve as barriers to high-quality implementation (as defined by NYCPS Key Implementation Measures).

The results of our study will not only inform ongoing NYCPS work, but will also offer insights that policymakers in other urban districts can leverage during CCL development and implementation. In particular, the early years of FRNYC provide a unique opportunity to learn how district staff and intermediaries can support the scaling of new CCL pathways across a larger number of schools and a broader population of students. By attending to the intersections among student characteristics and participation in the core components of FRNYC, this study will also provide important information about whether and how new career-connected learning pathways can avoid gendered, racialized, and class-based inequities that have undermined past efforts to strengthen opportunities for high school students.

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