The Evaluation Group
Dynamic Program Evaluation

U.S Department of Education
Investing in Innovation Fund (i3)
March 15, 2019

Impact Evaluation of *UNISON:*
Uplifting Non-cognitive Skills and
Innovation through Student
Opportunity Networks

Presented by:
Melissa Page, Ph.D.
Olivia Stevenson, M.S.
The Evaluation Group
www.evaluationgroup.com

Judy Saylor
Project Director
Take Stock in Children
www.takestockinchildren.org

UNISON
Final Impact Evaluation Report

Table of Contents

1. Abstract

UNISON was an Investing in Innovation (i3) development grant funded by the Office of Innovation and Improvement, U.S. Department of Education to Take Stock in Children (TSIC), a state-wide, 501(c)(3) non-profit, private-public partnership in Florida. *UNISON* provided a whole school mentoring approach and focused on developing students' non-cognitive skills with a focus on improving academic success and attainment thereby impacting graduation rates in low-performing schools. Intervention strategies included a whole-school culture program with clubs and activities focused on sustaining the culture of kindness and compassion, BARR teacher training, block meetings, and implementation of the I-Time curricula, TSIC 1:1 mentoring, group mentoring, summer Leadership Institute, and parent engagement. The grant funded a collective impact coordinator for each county and a college success coach in each school. *UNISON* targeted three treatment schools in northeast Florida, and the impact study included 15 comparison schools using a comparative short interrupted time series (CSITS) to measure the effect on graduation rates after three years of intervention strategies. Using the publicly available graduation rate data from the Florida Department of Education website, baseline equivalence was established based on rural/urban county designations and baseline graduation rates from 2014-15 prior to the intervention. The study found a statistically significant positive difference in the one urban and two rural treatment schools compared to the six urban and nine rural "business-as-usual" comparison schools. The treatment schools gained almost 20 percentage points in their graduation rate during the three-year intervention from 72.43% to 91.73%, while comparison schools moved from 72.98% to 83.40%.

2. Introduction

UNISON: *U*plifting *N*on-cognitive Skills and *I*nnovation through *S*tudent *O*pportunity *N*etworks, a 4-year i3 development project to address Absolute Priority 2: Improving Low Performing Schools, Subpart B: Implementing programs, supports, or other strategies that improve students' non-cognitive abilities, was awarded to Take Stock in Children (TSIC), a state-wide, 501(c)(3) non-profit, private-public partnership in Florida. *UNISON* focused on two goals: 1) build strong evidence of success for promoting students' non-cognitive skill set development to improve academic achievement; and 2) strengthen the case for adoption of a collective impact, whole-school mentoring approach as an effective vehicle to increase stakeholder engagement, promoting sustained improvements in low-performing schools.

Research has suggested students' non-cognitive skills are a key component of their academic achievement, persistence, and secondary and post-secondary attainment (Conley, 2007; Dweck, Walton, & Cohen, 2011; Farrington, et. al, 2012; Heckman, 2008), but low-income and minority students often lag behind their non-minority, more affluent peers in developing these skills (Farrington, et. al, 2012; Heckman, 2008). While non-cognitive skills are typically fostered in the home environment, outside forces (e.g. social capital, school factors) including mentoring, can further their development, particularly in high-need students (Lippman, Atienza, Rivers, & Keith, 2008; Wimberly, 2002). Existing research has been correlational and it is unclear which particular factors can be intentionally developed in classroom or whole school contexts or if changing them impacts academic performance (Farrington, et. al, 2012; Heckman, 2008).

Previous research on the TSIC traditional mentoring model and College Success program indicates their potential to increase high school graduation and college enrollment rates. This is evidenced by substantially higher graduation and college enrollment rates among TSIC Scholars than peer comparison groups and statewide averages, in student populations that are predominantly minority (62%) and economically disadvantaged (100%) (The Evaluation Group, 2013).

The *UNISON* project used three unique elements that differed from previous studies including: 1) schoolwide mentoring at the whole-school, classroom/small group, and individual levels to build high school students' non-cognitive skill sets and improve academic achievement; 2) building students' self-efficacy to successfully access post-secondary education and career goals within the context of a whole-school mentoring approach; and 3) aligning existing and new school and community supports around a shared impact agenda to create and promote sustained improvements in low-performing schools. The combination of these three elements and their impact on the development of non-cognitive skills, academic achievement, and post-secondary access in three differing contexts (i.e. whole-school, classroom, individual levels) in three different settings (i.e. urban, suburban, rural) made the project approach novel compared to previous studies.

2.1 Description of the Intervention

UNISON implemented key program components at the school level, the classroom level, and the individual student level. While several interventions were selected in the proposal, other strategies were finalized during the first year such as the culture program. This framework of strategies represents key focal areas based on research and prior successes from the first TSIC i3 *FLIGHT* (The Evaluation Group, 2013; The Evaluation Group, 2014), thus future replication allows schools

to select curricula or programs relevant to address their students'needs. Each strategy includes a description as well as information about implementation.

1. ***Collective Impact***
   a. The Collective Impact Teams were formed in 2015 and developed comprehensive written plans describing the collective impact process, strengths, challenges, goals, and road maps for each school. Collective Impact Team meetings were held monthly throughout the grant period. Teams created and implemented new initiatives centered around increasing students' social and emotional learning, promoting and advising students on college and career readiness, and creating a college-going culture within the schools. The teams' activities included collaboration on school college and career fairs, coordination of school visits from college and university representatives, and coordination of college tours and FAFSA workshops for seniors. They also initiated bi-monthly visits with college advisors to the high school campuses. Students and parents scheduled on-site appointments at each high school for advisement on financial aid, college enrollment, dual enrollment, career opportunities, and college programs.

2. ***School Culture***
   a. Rachel's Challenge
      i. Principals selected Rachel's Challenge (RC) as the program they thought would promote a positive and immediate affect on their school culture. RC is based on the writings and life of 17-year-old Rachel Scott who was the first student killed at Columbine High School in 1999. RC is a school-wide intervention designed to create a culture of kindness and compassion and equip students and adults with the skills necessary to create and sustain a safe, caring, and supportive learning environment. The elements of RC included a 1-hour PD session delivered to the entire school staff that was was implemented in Year 1 only; a kick-off assembly delivered to all students and staff that was implemented in Years 1 and 2; and a Legacy assembly offered to students in Year 2 who had previously attended the kick-off assembly in Year 1. During Years 3 and 4, schools selected a whole-school culture presentation/presenter to transition the school from using RC and Rachel's Legacy to continue the kindness theme, but at the same time to take ownership of their school culture and climate for sustaining the work.
   b. School Culture Clubs
      i. Friends of Rachel (FOR) Student Clubs were formed and were intended to reinforce the RC message and create a permanent and positive cultural change in the school through acts of charity, appreciation, kindness, and compassion. Club members held monthly meetings to build cohesiveness, define roles, and devise strategy. They then conducted activities that reinforced the school-wide message of showing empathy and compassion to others. Club meetings and activities were implemented all four years.
      ii. Towards the end of the Year 2, the FOR Clubs transitioned to a more sustainable initiative that reflected the spirit and culture of each school. Both Columbia High School and Andrew Jackson High School share the same school mascot, the Tigers. Students at both schools changed the *FOR Club* name to *The Pawsitives Club* as a reflection of their schools' identity and culture. Fort White High School incorporated the *FOR Club* mission and activities into existing school clubs.
   c. Teacher Professional Development Training

i. Teachers and school staff were provided on-site trainings by experts to increase awareness and understanding of social and emotional learning, noncognitive skills acquisition, and trauma-informed care for students. Teachers learned how social and emotional skills can positively impact students' learning, motivation and persistence. Teachers were given tools and activities to reinforce and incorporate the lessons into a classroom setting. Teachers also learned that, by fostering better relationships with students, they can increase student engagement and learning which will also result in a decrease of classroom disruptions.

3. *BARR*
   a. Professional Development: 9th grade and 10th grade teachers were provided with two days of professional development in recognizing and growing student's non-cognitive skills. In Years 2 and 3, teachers received an additional six hours each year of BARR training on relevant topics to continue learning about social-emotional development and non-cognitive strategies. BARR trainers conducted site visits each year to provide support to the school teams.
   b. I-Time: Teachers conducted weekly group meetings with 9th grade students to strengthen and address non-cognitive factors. The I-Time curriculum consists of 33 structured 30-minute activities in the following 10 areas: Building a Connected Community; Setting Goals; Leadership; Communication; Understanding your Assets; Grief and Loss; Bullying; Diversity; Risky Behaviors; and Pursuing your Dreams.
   c. Student Risk Management: Classes in the 9th grade were structured into blocks of four teachers, (social studies, English, math and science) with approximately 85 students per block. Teachers met weekly in Block meetings to discuss the progress of each student and provided real time interventions to support to students that were falling behind. High-risk students were referred to a risk review team for additional services.

4. *College and Career Readiness*
   a. TSIC college and career readiness advocacy services
      i. TSIC college and career readiness advocacy services were provided to increase academic achievement and students' readiness for post-secondary education and employment. We provided the services on a schoolwide basis for the last three years (2017-2019), with a significant concentration on the senior class at all three schools. The staff, in partnership with our Collective Impact Teams, were creative in how they delivered the services in order to reach as many seniors as possible. Staff worked with the senior teachers to provide classroom or small group presentations on important topics such as financial literacy, essay writing, FAFSA completions, scholarship applications, and ACT/SAT prep. They also invited local businesses to present career opportunities to students and the associated post-secondary pathways that are available to them at local colleges. Seniors at all three high schools completed post-secondary plans, participated in scholarship boot camps, and college representatives met with students and parents throughout the year on the high school campuses. All students were invited to attend workshops and participate in various activities that focused on college readiness.
   b. Parent Engagement
      i. School phone banks, a texting platform and social media were employed to increase parents' awareness of the college enrollment process and offer assistance to parents so

that they could provide support, materials and guidance to their students. Parent Orientations, Ed Fairs and College and Career Fairs were also used as opportunities to educate parents. A Senior Parent Handbook/folder was distributed to parents that contained a parent and student college readiness checklist; high school graduation requirements; deadlines for college applications; FAFSA, financial and scholarship information; and a list of college readiness websites. The folder also contained a letter from the local college outlining the financial aid opportunities and affirming the affordability of attending college. College representatives also visited high school campuses twice a month to meet with students and parents to help with college applications, FAFSA, dual enrollment, and financial aid and staff was available to parents on an individual basis to answer questions on how to select the right college, explain the application process and give guidance on financial aid.

5. *Mentoring*
   a. Traditional mentoring: *UNISON* utilized the already successful TSIC school-based mentoring model using a traditional 1:1 match with eligible students per school. Students met weekly with their mentors for 30-45 minutes during the school day, often over lunch. Students were provided with a college success coach and a TSIC Florida Prepaid STARS scholarship if they actively participated in the mentoring program; maintained grades; avoided suspensions, expulsions, or criminal activity; and successfully completed high school. Scholarships were not paid through i3 funds.
   b. Non-traditional group mentoring: *UNISON* implemented a new non-traditional mentoring approach which provided targeted group mentoring (in which school faculty and staff or a college/career/ community volunteer mentor student groups) for students that met the same eligibility guidelines as a TSIC student. Groups focused on college and career readiness and promoting social and emotional learning skills such as self-awareness, social awareness, self-management, relationship building and responsible decision making which encouraged motivation, persistence and conflict resolution skills.
   c. Peer-to-peer mentoring: *UNISON* introduced peer mentoring to the schools in 2017-18. Upperclassmen, who were typically members of the school culture clubs, took leadership roles in presenting their high school experiences, lessons learned and the importance of graduating high school to the underclassmen. They also served as school ambassadors and peer mentors to students who needed assistance and encouragement.
   d. Summer Leadership Institute: A day-long Summer Leadership Institute was offered to 75 or more students in three successive summers. The purpose of the institute was to provide leadership training, communication skills and further prepare students for college and career through supplemental college prep workshops. During the third year, the program was offered while school was still in session to minimize challenges of time and transportation during the summer.

In addition to the strategies, *UNISON* embedded a TSIC college success coach in each school and a collective impact coordinator in each county to facilitate delivery of BARR, RC, and mentoring; coordinate school-based and community-based resources; coordinate college tours or college representatives on campus; invite guest speakers, and provide student workshops, advocacy, support, and PD using the TSIC model.

2.2 Logic Model

The *UNISON* logic model (Figure 1) shows our theory of change based upon the three grouping levels (school, classroom, and individual) with the key components and planned activities associated with each level. Additionally, the linkage from activities to short-term or mediating outcomes that, in turn, impact the long-term outcome/impact of increased graduation rates.

Vision: *UNISON* will expand TSIC's traditional 1:1 mentoring model to implement a novel, non-traditional schoolwide mentoring approach designed to build students' non-cognitive skill sets utilizing three strategic pathways at the whole school, classroom, and individual level.

Goal 1: Improve students' non-cognitive skill sets to increase academic achievement and students' readiness for post-secondary education and employment.

Goal 2: Strengthen the case for adoption of a collective impact, whole-school mentoring approach as an effective vehicle to increase stakeholder engagement, promoting sustained improvements in low-performing schools.

Figure 1. *UNISON* Logic Model

RESOURCES		ACTIVITIES	MEDIATING OUTCOMES	IMPACT
• Mentor Corps • Collective Impact Teams • College Success Coach at each school and Collective Impact Coordinator for each county • TSIC College and Careers Success model • School district leadership at three high schools • Existing programs at each school • i3 and private funding • Community Partners • Colleges & Universities	Whole School	**1. Collective Impact Team** Create a strategic plan to align existing and new resources to impact school improvement plans **2. Culture Program** Implement *Rachel's' Challenge* (RC), a school-wide social-emotional program designed to improve the school culture by promoting empathy and compassion by: • Orienting teachers to RC (Year 1 only) • Presenting the principles of RC in an inspirational school-wide assembly • Holding monthly *Friends of Rachel* (FOR) Club meetings to plan sustaining events • Conducting FOR activities that build and sustain the concepts of empathy and compassion	• Increase daily attendance • Decrease discipline referrals • Coordinate, systemic post-secondary support • Complete strategic plan • CIT collaboration assessment • CIT monthly meetings and referrals/coordination of services • Increase parent engagement	Increased graduation rates
	Classroom	**3. Building Assets-Reducing Risks (BARR)** Implement the BARR non-cognitive skills development program with participating 9th and 10th grade teachers and students by: • Providing 2-day PD to teachers (Year 1; supplemented with six hours in Years 2 & 3) • Delivering I-Time curriculum to 9th grade students • Student Risk Management teacher meetings	• Increase academic achievement (GPA) • Increase non-cognitive skill development (GRIT and self-regulation) • Increase academic momentum (grade promotion, testing) • Prepare/equip teachers	
	Individual	**4. College and Career Readiness** • TSIC college and career readiness advocacy services • Parent engagement using phone banks, meetings **5. Mentoring** Implement quality mentoring and leadership opportunities to promote college and career readiness with at-risk students by: • Providing traditional 1:1 mentoring, college scholarships, and employment opportunities to eligible students in each school • Implementing a non-traditional group mentoring approach to students that meet the same eligibility requirement in each school • Peer-to-peer mentoring using upperclassmen or club leaders to talk to underclassmen about high school graduation requirements and college and career readiness • Reinforce college enrollment, leadership, and communication skills through a Student Summer/Yearend Leadership Institute	• Increase college and career aspirations • Increase ACT/SAT participation rate and scores • Increase FAFSA completion rate • Increase application submissions to college or for scholarships/financial aid	

3. Impact Study Design

UNISON used a comparative short interrupted time series (CSITS) quasi-experimental design (QED). The three treatment high schools were matched to comparison schools at a 1:5 ratio using scaled Euclidean distance scores without replacement to ensure baseline equivalence on the key school characteristic of graduation rate in the year immediately prior to the intervention (2014-15). Schools' graduation rates were tracked for eight years over the course of the time series, starting five years prior to the start of the *UNISON* intervention and ending three years after the start of the intervention. The impact study used the federal 4-year adjusted cohort graduation rate. Federal regulations require each state to calculate a 4-year adjusted cohort graduation rate, which includes standard diplomas but excludes GEDs, both regular and adult, and special diplomas. The US Department of Education (USED) adopted this calculation method to develop uniform, accurate and comparable graduation rates across all states.

The USED required states to begin calculating the new graduation rate in 2010-11. The 4-year adjusted cohort graduation rate is the percentage of students who graduated with a standard diploma within four years of their initial enrollment in ninth grade (the numerator). Incoming transfer students were included in the appropriate cohort based on their grade level and year of entry. Deceased students and students who withdrew to attend school in another school system that would culminate with a standard diploma were removed from the cohort (the denominator). Each student in the resulting adjusted cohort received a final classification as a graduate, dropout or non-graduate. The federal 4-year adjusted cohort graduation rate was used for the five pre-treatment years (2010-11, 2011-12, 2012-13, 2013-14, 2014-15) and three treatment years (2015-16, 2016-17, and 2017-18). Data collected by the evaluation team came from publicly available graduation rates published annually by the Florida Department of Education.

SY2015-16 was the first year of the *UNISON* intervention. Graduation rates at the end of the SY2016, SY2017, and SY2018 included in the impact study assessed program impact after implementation for one to three years. Each treatment school year contributed a data point to the treatment time series. Table 1 below indicates the five pre-treatment years (SY 2010-11 to 2014-15) and the three treatment years (SY2015-16 to SY 2017-18) for *UNISON* and comparison schools.

Table 1. Pre-treatment Years and Treatment Years for Assessing Graduation Rate in *UNISON* and Comparison Schools								
School Years								
	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	Number of Schools
UNISON Schools	x	x	x	x	x	T	T	T	3
Comparison Schools	x	x	x	x	x	t	t	t	15

Notes: Graduation rates are compiled at the conclusion of each academic year and reported in the fall.
"x": indicates a pre-treatment year when a school-level graduation rate will be obtained
"T": For Treatment schools T indicates a treatment year
"t": For comparison schools, "t" indicates a year when the schools' treatment group counterparts have received treatment

3.1 Sample

UNISON proposed to test the intervention in one school located in an urban, suburban, and rural locale. In the first academic year of the intervention (2015-16), one of the schools became a dedicated military leadership academy. The decision was made to replace this school, and the external evaluator conducted a thorough analysis to identify a replacement school that met the criteria for the proposed intervention (i.e., Title 1, serving high-need students). This school was replaced by a rural school that began full implementation of all strategies in the 2016-17 school year. The three treatment schools were from Columbia County (n=2) and Duval County (n=1). Given the change in schools to include two schools from Columbia County, both schools were, in effect, rural rather than one rural and one suburban; thus, the analysis focused on comparing graduation rates based on the county designation for rural or urban according to the 2010 Census. The two schools from Columbia County represented rural while the one school from Duval County represented an urban setting.

"Business-as-usual" schools did not participate in the *UNISON* program. Scaled Euclidean distance scores were used to create a comparison set of 15 schools. The three treatment schools come from two school districts; the 15 comparison schools came from 12 county-level districts in Florida.

The evaluation team reviewed the list of potential comparison schools and removed the following: school for the deaf and blind, virtual/online schools, detention, residential, exceptional, hospital or jail, and career. We also removed schools containing any of the following key words: middle, junior, youth, center, or academy. Finally, we removed schools with a 0% or 100% graduation rate. The final dataset contained 533 potential comparison public schools for matching with the three treatment schools. A total of 543 schools were removed prior to running the propensity score match (PSM) for comparison schools, leaving 533 schools to identify 15 matches.

As stated previously, our program took place in one urban school and two rural schools. An initial PSM run using the MatchIt program in R, included key independent variables such as graduation rate, urbanicity, percent non-white, and average daily attendance. Our limited sample size resulted in an underpowered model; therefore, we removed variables one at a time, but in the end, used graduation rate (which is our outcome or dependent variable) to establish baseline equivalence.

Further limitations from the initial PSM resulted in the selection of 15 comparison schools to the comparison group that were closely matched to the schools in the treatment group with a baseline difference of 0.05 measured with Hedge's g. However, only two rural schools were pulled to match with our two rural treatment schools. Our proposed ratio of 1:5 was not met using PSM. In In accordance with What Works Clearinghouse (WWC) 4.0 guidelines (WWC, 2017), we stratified the matching by urbanicity. This resulted in 62 potential schools in the rural stratum and 471 potential schools in the urban stratum.

We ordered the list of schools within the rural and the urban strata by graduation rate and selected the nine comparison schools closest to the rural treatment schools within the rural stratum and six comparison schools from the urban stratum closest to the urban treatment school. Checking for complete data revealed one comparison school was missing the first pre-treatment year graduation

rate and one school was replaced missing the final year of data. These schools were replaced and the Hedge's g recalculated.

3.2 Study Question

There was one main confirmatory research question: What is the effect of the *UNISON* program on school-level graduation rates for 12th grade student cohorts after three years of the intervention, as compared to school-level graduation rates for 12th grade student cohorts in the "business-as-usual" condition?

4. Analysis and Results

4.1 Baseline Equivalence

Baseline equivalence was established for the final set of 15 comparison schools and three treatment schools and resulted in a difference measured by Hedge's g of -0.21, thereby meeting baseline equivalence on graduation rate with statistical control. Our planned comparison called for a 1:5 comparison school selection using urbanicity as a stratification variable and a covariate in the planned impact analysis for the *UNISON* intervention; however, our baseline sample included six urban and nine rural schools. Our comparison data included in Table 2 satisfies the two conditions in the What Works Clearinghouse Standards 4.0 (p. 15). First, baseline and outcome data came from the same measure since we used the publicly available graduation rate. Second, there is a correlation between the baseline and outcome measure of .60 or higher, which can be seen in Table 2 for at least two time periods.

Table 2. Correlation of Graduation Rates for Baseline and Outcome Years								
Year	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
2010-11	1	0.413	.643**	-0.023	.524*	0.076	-0.202	-0.255
2011-12	0.413	1	.792**	0.221	0.255	0.323	0.3	0.205
2012-13	.643**	.792**	1	0.236	0.269	0.241	0.23	0.043
2013-14	-0.023	0.221	0.236	1	0.214	0.456	0.025	-0.371
2014-15	.524*	0.255	0.269	0.214	1	0.061	-0.264	-0.16
2015-16	0.076	0.323	0.241	0.456	0.061	1	0.09	0.085
2016-17	-0.202	0.3	0.23	0.025	-0.264	0.09	1	.572*
2017-18	-0.255	0.205	0.043	-0.371	-0.16	0.085	.572*	1

Note: **p < .01 *p < .05

The means and standard deviations of the treatment and comparison schools are listed below for the matching variable, graduation rate, from SY2014-15:

- Treatment (n=3): Mean 72.43, SD 1.85
- Comparison (n=15) Mean 72.98, SD 2.63
- Hedge's g = -0.2072

Table 3 includes characteristics for all schools accessed from the Florida Department of Education website (FLDOE, 2015a-c) for baseline year 2014-15.

School	Treatment	Rural/Urban County name	Number Enrolled	Males	Females	Percent non-white	Average daily attendance	Graduation rate
Andrew Jackson High School	Yes	Urban Duval	731	339	392	97%	95.1%	70.3%
Columbia High School	Yes	Rural Columbia	1,913	945	968	34%	93.1%	73.4%
Fort White High School*	Yes	Rural Columbia	607	308	299	21%	92.5%	73.6%
Anclote High School	No	Urban Pasco	1,382	724	658	31%	92.9%	69.9%
Hudson High School	No	Urban Pasco	1,267	622	645	16%	91.7%	70.9%
Chamberlain High School	No	Urban Hillsborough	1,772	937	835	76%	90.7%	69.1%
Miami Senior High School	No	Urban Dade	2,964	1,583	1,381	98%	91.4%	70.5%
Port St. Lucie High School	No	Urban St. Lucie	1,561	838	723	51%	88.6%	70.7%
T. Dewitt Taylor High School*	No	Urban Volusia	576	302	274	60%	93.0%	70.6%
Clewiston High School	No	Rural Hendry	937	460	477	78%	92.1%	76%
Cottondale High School*	No	Rural Jackson	1,518	761	757	90%	91.7%	76.4%
Graceville High School*	No	Rural Jackson	237	118	119	33%	94.3%	75%
Hamilton High School*	No	Rural Hamilton	420	215	205	53%	90.6%	75.3%
Marathon School*	No	Rural Monroe	404	210	194	53%	93.2%	74.1%
Mariana High School	No	Rural Jackson	779	354	425	42%	90.7%	76.9%
Okeechobee High School	No	Rural Okeechobee	1,751	923	828	46%	91.4%	71.4%
Taylor County High School	No	Rural Taylor	662	335	327	30%	90.8%	73.9%
West Gadsden High School*	No	Rural Gadsden	235	115	120	93%	94.5%	74%
Treatment Average n=2	Yes	Rural	1,260	627	633	27%	92.8%	73.5%

Table 3. 2014-15 Baseline Demographic Data from Treatment and Comparison Schools

Table 3. 2014-15 Baseline Demographic Data from Treatment and Comparison Schools								
School	Treatment	Rural/ Urban County name	Number Enrolled	Males	Females	Percent non-white	Average daily attendance	Graduation rate
Comparison Average n=9	No	Rural	706	361	345	59%	92.8%	74.8%
Treatment Average n=1	Yes	Urban	731	339	392	97%	95.1%	70.3%
Comparison Average n=6	No	Urban	1,587	834	753	56%	91.4%	70.3%

Figure 2 shows the locations of treatment schools within county designations of rural or urban based on the 2010 census data. Figure 3 includes all treatment and comparison schools with rural counties shaded blue and urban counties shaded orange. Each county includes the number of schools participating in the study.

Figure 2. Treatment Schools by County Designation.
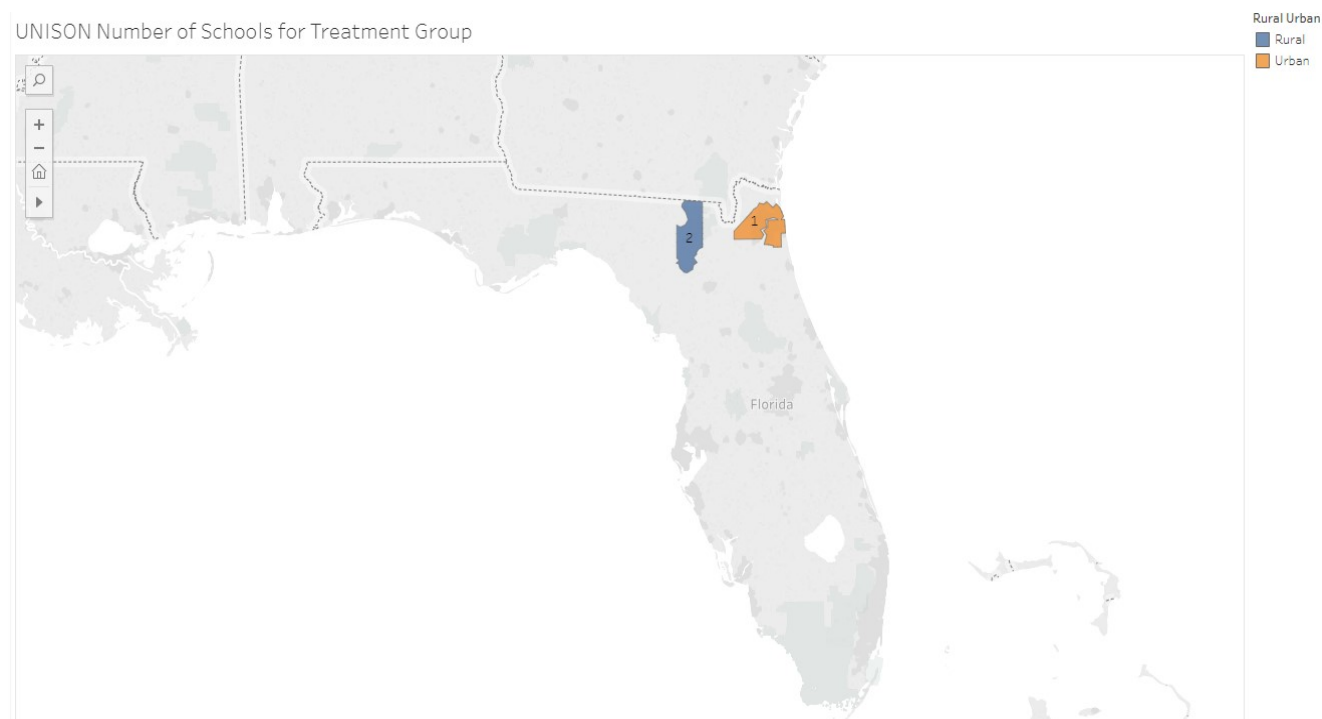
Figure 3. Rural and Urban Counties and Number of Schools per County.
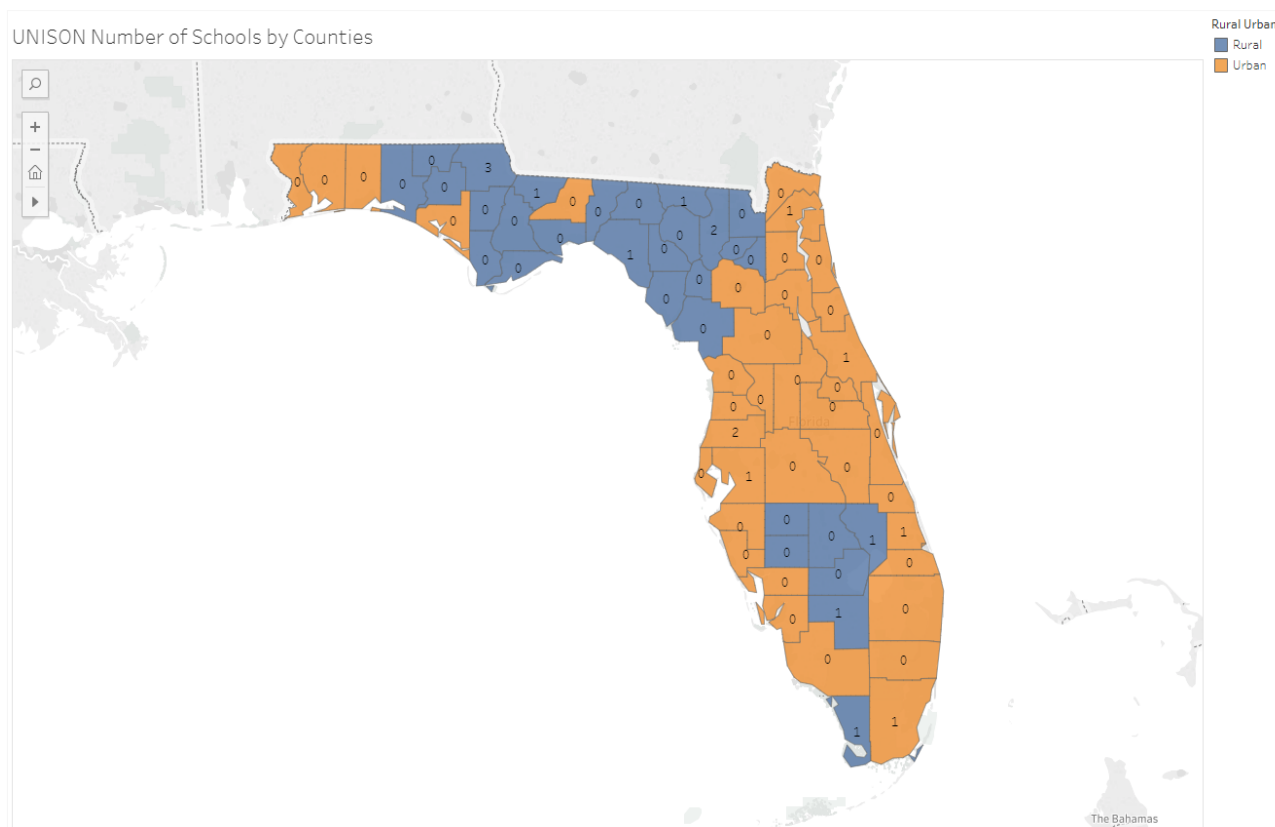
4.2 Confirmatory Analytic Model

This impact study tested a bundled intervention. In one key component, student mentoring, Florida pre-paid scholarships were provided to each of the students enrolled in the traditional 1:1 TSIC mentoring program. These scholarships were offered by TSIC, the developer of the i3-funded intervention, but were paid for privately and are NOT paid through i3 funds. This design was unconfounded.

The model specified below is a two-level hierarchical linear model with repeated observations over time nested in schools[1]. The subscripts i and j represent the ith time point in the jth school. The dependent variable (G_{ij}) is the graduation rate at the ith time point in the jth school. The model includes random intercepts for schools (denoted as μ_j^{Schs}), and a residual error term (denoted as ε_{ij}^{Years}), and indicator variables for treatment school, treatment years, and a treatment school-by-treatment year interaction term. The impact model will include an adjustment for potential autocorrelation among repeated observations within schools over time.

Model (2-Level Model Written in Combined Notation)

$$G_{ij} = \beta_0 + \beta_1(T_j) + \beta_2(TrtYr_{ij}) + \beta_3(T_j * TrtYr_{ij}) + \beta_4 RuralStatus + \mu_j^{Schs} + \varepsilon_{ij}^{Years}$$

---

[1] For a detailed explanation of the C-SITS design, See Price, C. (2013). Research on Educational Effectiveness (SREE) 2013 Spring Conference Workshop: Planning for a Short-Interrupted Time Series Design. Workshop materials updated 03-30-2015.

where,

G_{ij}	=	the graduation rate from the ith time point in the jth school
T_j	=	1 if school j is an intervention (treatment) school, and
	=	0 if comparison school
$TrtYr_{ij}$	=	1 if year is a treatment year (indicated by "T" or "t" in Table 1 below)
	=	0 if a pre-treatment year (indicated by "x" in Table 1), above.
β_0	=	the intercept, which is the comparison school mean graduation rate in pre-treatment years for schools.
μ_j^{Schs}	=	is the deviation of school j's intercept from the mean intercept, conditional on T_j, distributed with mean 0 and variance σ_{Schs}^2
β_1	=	the average difference between treatment and comparison schools during pre-treatment years;
β_2	=	the average difference between pre-treatment years and treatment years for comparison schools. (Comparison schools are never treated, but the "treatment years" are the years indicated with lower case "t" in Table 1. They are the years in which the treatment schools that they are matched to are being treated.)
β_3	=	the treatment effect. This is the difference-in-difference estimator. It is the difference between treatment and comparison schools in their differences between pre-treatment and treatment years.
β_4	=	The effect of rural status, where 1 indicates a rural school district and 0 indicates an urban school district.
ε_{ij}^{Years}	=	the random error effect representing the difference between the graduation rate at year i for school j and the predicted graduation rate for school j. These residual effects are assumed normally distributed with mean 0 and variance σ_{Years}^2, and are assumed to have 1st order autoregressive correlation. They are assumed independent from μ_j^{Schs}

The CSITS design used five years of pre-treatment data and three years of treatment data. *UNISON* was a 4-year program, ending on 3/31/19, however, only three years of treatment data were used in the impact study. Graduation rates on the previous school year were compiled over the summer and reported in the fall of the next school year. Our final data for SY2017-18 was publicly available as of December 2018.

Table 4. Pre-treatment Years and Treatment Years for Assessing Graduation Rate in *UNISON* and Comparison Schools, with Coding of ntime and TrtYr.									
School Year									
	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	Number of Schools
UNISON Schools	x	x	x	x	x	T	T	T	3
Comparison Schools	x	x	x	x	x	t	t	t	15
ntime coded as:	-4	-3	-2	-1	0	1	2	3	
TrtYr coded as:	0	0	0	0	0	1	1	1	
Graduation rates are compiled at the conclusion of each academic year and reported in the fall. "x": indicates a pre-treatment year when a school-level graduation rate will be obtained "T": For Treatment schools T indicates a treatment year "t": For comparison schools, "t" indicates a year when the schools' treatment group counterparts have received treatment.									

Florida graduation rates were compiled annually to meet federally mandated reporting requirements and were publicly available on the FLDOE website. Upon reviewing the final list of selected schools identified in our baseline equivalence test (see next section) to determine if all eight years of data was available, one school was replaced as the first pre-treatment year was missing. Additionally, a rural school missing the final year official graduation rate was also replaced so that all schools had no missing data for the eight-year span.

4.3 Results for Confirmatory Question: Graduation Rate

The CSITS analysis utilized a difference-in-difference model to test for mean differences in graduation rates of treated schools compared to comparison schools. The graduation rate from the five pre-treatment years were all coded as a 0 and the three treatment years were coded as 1. The difference-in-difference compares the average mean score from the three treatment years to the five pre-treatment years. The final mean average (SY2017-18) for the treatment schools was 91.73 (2.41) and the final mean average for the comparison schools was 83.40 (6.52). Baseline for all schools from 2014-15 was 72.43 (1.85) for treatment and 72.98 (2.63) for comparison schools. The analysis found a statistically significant result for treatment schools for the variable "time by condition" (treatment years times school condition (0 for comparison and 1 for treated)) (t-value 2.1859, $p = 0.0307$). A summary table of the regression is included in Table 5.

Table 5. *UNISON* Graduation Rate Model				
Variable	Estimate	Standard Error	*t*-value	*p*-value
Intercept	32.25	48.05	0.67	0.503
Baseline	0.54	0.68	0.79	0.442
Condition	-3.43	2.48	-1.38	0.188
TrtYr	8.39	1.37	6.13	0.000***
TimeByCondition	7.30	3.35	2.18	0.031*
RuralStatus	-0.55	3.37	-0.16	0.872

Note: ***p < .000; **p < .01; *p < .05

Figure 4 shows the annual means for treatment and comparison schools. Data points are listed by the end of year for each school year beginning with 2010-11 and ending with 2017-18. Baseline is noted on the graph for 2014-15 with the three intervention years showing an increase above the comparison group by the end of the three-year intervention. The average for treatment and comparison schools are listed below in Table 6 with a row to show the difference in mean averages for each of the eight years.

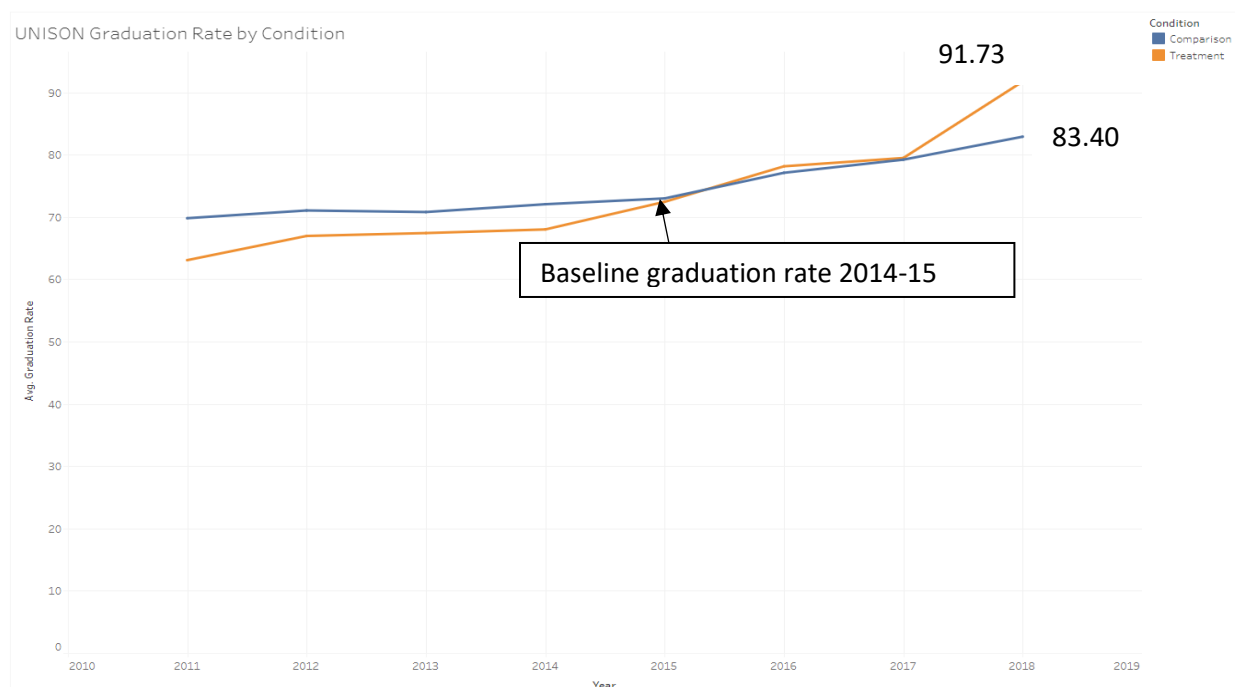**Figure 4. Annual Graduation Rates 2010-11 through 2017-18**

UNISON Graduation Rate by Condition

91.73

83.40

Baseline graduation rate 2014-15

Table 6. Mean Average Graduation Rate for Treatment and Comparison SchoolsThe a								
Condition	**Pre-Treatment Years**					**Treatment Years**		
Year	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Treatment	63.07	66.95	67.42	68.00	72.43	78.13	79.47	91.73
Comparison	70.17	71.29	71.40	72.05	72.98	77.09	79.20	83.40
Difference T-C	-7.10	-4.34	-3.98	-4.05	-0.55	1.04	0.27	8.33

5. Discussion

Prior to the intervention, Florida Department of Education released their Every Student Succeeds Act (ESSA) plan to increase the 4-year adjusted cohort graduation rate by 7.1 percentage points from 77.9 in 2014-15 to 85% by 2019-20. The three treatment schools surpassed this rate during the 2017-18 school year by an additional 6.73 percentage points, while the comparison schools fell short by 1.60 percentage points.

A difference-in-difference means regression conducted in R found significance for our treatment variable and the interaction variable 'TimeByCondition'. The three treatment schools gained 19-percentage points over the 2014-15 baseline in the three years during the intervention compared to a 10-percentage point gain by the 15 comparison schools. Through a stratified propensity score matching, equivalence was established using our outcome variable, graduation rate, as well as urbanicity, thus ensuring that our results supported the intervention as one contributing factor to the increase in graduation rate. As seen in Table 2, the percent non-White and average daily attendance were not included as co-variates in our baseline model due to our sample size and proposed research question. We recognize the limitations in the differences in ethnicity, specifically between urban and rural schools and treatment and comparison schools. The ideal study could include these and other variables that potentially impact graduation rates. While all

schools by virtue of the ESSA plan reported gains in graduation, the use of the CSITS design takes into account the average growth both pre- and post-intervention.

While the intervention was delivered as a bundle during the three years, during year four of the grant, the schools adapted/sustained several key strategies, including the whole-school culture assembly, the clubs and activities, and the college and career-ready activities. In the two Columbia County high schools, the weekly I-Time sessions were restructured into a freshmen Workplace Essentials required course, teachers trained in BARR continued to create classroom cultures of trust and respect focusing on building relationships with their students and among their students, and TSIC 1:1 mentoring continued for eligible students, as well as group mentoring contingent on available school or community mentors.

As noted in our introduction, the proposed implementation sites included a suburban/city fringe high school. Due to the change in schools in Year 1, the resulting analysis occurred in one urban and two rural schools, thus eliminating our ability to assess three different school settings as a co-variate of graduation rate. While all schools reported gains in graduation rates compared to baseline, the three treatment schools, exceeded the Florida ESSA 2020 goal by an additional six percentage points suggesting that the *UNISON* program positively impacted student graduation rates through the implementation of key strategies. Thus, further testing the implementation of key strategies by other schools within or outside Florida could prove the success of these strategies as influencing the graduation rate for students. Additionally, increasing the sample size of treatment and comparison schools would allow for subgroup analyses to disaggregate the findings by gender, race/ethnicity, economic disadvantage status, English language learners, and students with disabilities.

References

Conley, D. (2007). *Toward a more comprehensive conception of college readiness*. Eugene: Education Policy Improvement Center. Retrieved from https://docs.gatesfoundation.org/documents/collegereadinesspaper.pdf

Dweck, C. S., Walton, G. M., & Cohen, G. L. (2011). *Academic tenacity: Mindsets and skills that promote learning*. Seattle: Gates Foundation. Retrieved from www.howyouthlearn.org/pdf/Academic%20Tenacity,%20Dweck%20et%20al..pdf

Farrington, C. A., Roderick, M., Allensworth, E., Nagaoka, J., Keyes, T. S., Johnson, D. W., & Beechum, N. O. (2012). *Teaching Adolescents to become learners: The role of noncognitive factors in shaping school performance: A critical literature review*. Chicago: University of Chicago Consortium on Chicago School Research. Retrieved from https://ccsr.uchicago.edu/sites/default/files/publications/ Noncognitive%20Report.pdf

FL Department of Education. (2015a). *Average Daily Attendance by School 2014-15*. Tallahassee: Florida Department of Education. Retrieved from http://www.fldoe.org/core/fileparse.php/7584/urlt/ADAADMSchl1415.xlsx

FL Department of Education. (2015b). *Graduation Rate 2014-15*. Tallahassee: Florida Department of Education. Retrieved from http://www.fldoe.org/core/fileparse.php/7584/urlt/GraduationRates1415Final.pdf

FL Department of Education. (2015c). *Membership by race/sex by school 2014-15*. Tallahassee: Florida Department of Education. Retrieved from http://www.fldoe.org/core/fileparse.php/7584/urlt/MembershipSchoolRaceGender1415.xls

Heckman, J. (2008). Schools, skills, and synapses. *Economic Inquiry*, 46(3), 289-324. Retrieved from http://jenni.uchicago.edu/papers/Heckman_2008_EI_v46_n3.pdf

Lippman, L., Atienza, A., Rivers, A., & Keith, J. (2008). A developmental perspective on college and workplace readiness. Washington: *Child Trends*. Retrieved March 29, 2014, from www.childtrends.org/wp-content/uploads/2013/04/Child_Trends-2008_09_15_FR_ReadinessReport.pdf

Price, C. (2013). Research on Educational Effectiveness (SREE) 2013 Spring Conference Workshop: Planning for a Short-Interrupted Time Series Design. Workshop materials updated 03-30-2015.

The Evaluation Group. (2013). FLIGHT i3 Year 2 Evaluation Report: Implementation and Outcomes. Columbia: The Evaluation Group. Retrieved from www.grant-documents.com/year-2-flight-i3

The Evaluation Group. (2014). *FLIGHT: Report on i3 Implementation and Impact in Year 3*. Columbia: The Evaluation Group. Retrieved from www.grant-documents.com/year-3-flight-i3

What Works Clearinghouse (2017). *Procedures and standards handbook version 4.0.* Retrieved from https://ies.ed.gov/ncee/wwc/handbooks

Wimberly, G. L. (2002). School relationships foster success for African American students. Iowa City: ACT. Retrieved from www.act.org/research/policymakers/pdf/school_relation.pdf