



# Evaluation of the NYC Business Solutions Customized Training Program

July, 2014

Prepared for:  
New York City Center for Economic  
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## CEO Response to the Business Solutions Customized Training Evaluation

October 2014

This report demonstrates the Customized Training strategy is an effective way to help both low-wage workers as well as local businesses. While many strategies seek to help low-wage workers advance up a career ladder by providing services to workers directly seeking help, CT helps these workers by partnering directly with employers. By taking a demand driven strategy that starts with employers, the CT program delivers trainings that businesses need, and helps workers get new skills and wage gains.

In 2007 the New York City Center for Economic Opportunity (CEO) worked with the NYC's Department of Small Business Services' (SBS) to expand and transform the Business Solutions Customized Training (CT<sup>1</sup>) program to further help businesses train, retain, and promote their low-wage employees. CEO funds in particular give businesses the incentive to provide training to their lower-wage workers earning \$15 per hour or less. By eliminating the financial constraints that keep businesses from investing in the development of their lowest paid staff and giving the flexibility to provide strategies that were not easily supported through existing federal funds, the CT program invests in businesses to help them train their workers in a way that increases workers skills and wages, maintains business competitiveness, and helps to increase business' revenues.

Businesses are granted funding following an extensive application and review process. SBS staff provide hands-on assistance to the employers to help them design their staff training and understand its potential return on investment for their firm. Selected business grantees must provide a match to the funds provided by the City as part of the strategy, and a portion of the grant is performance based and only delivered to the business when they demonstrate that they have provided a wage boost to their workers.

Once selected, grantee businesses provide their incumbent staff the opportunity to build necessary skills by delivering training customized to both the needs of the employees and business. This approach supports participating businesses in staying competitive, while enabling low-wage workers the opportunity to obtain wage gains upon training completion.

Westat's evaluation showed that participants in the CT program overall experienced a statistically significant wage gain of nine percent, which translates to approximately \$3,286 annually. When compared to the level participants were earning prior to training, lower wage employees (those making \$15 per hour or less) received average wage gains of 11 percent (\$2,621 more a year). Participants with higher wages (those making over \$15 per hour) prior to the program saw a wage gain of eight percent on average (\$4,014 a year). These findings of wage growth are notable given they occurred during the Great Recession- a time when many workers were losing their jobs or suffering from wage stagnation.

The evaluation results suggest that the program's unique approach to helping low-wage workers advance by intervening at the employer level, provides a strong complement to CEO's other workforce program models that recruit on an individual basis and tailor services to specific needs.

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<sup>1</sup> Business Solutions Training Funds is now referred to as the Customized Training (CT) program.

CEO poverty research shows that more than 650,000 NYC residents living in poverty live in a household with at least one full-time year round worker (CEO 2012). Effective workforce strategies coupled with efforts to enhance job quality such as paid sick leave and expansion of the Earned Income Tax Credit are vital steps in helping address income inequalities and promote mobility. CT, a program that helps both workers and businesses, is a valuable strategy for the City to help lift the floor for low-wage incumbent workers. As a program with demonstrated effectiveness, the CT strategy is one that CEO will continue to explore with its partners as it works to bring successful workforce initiatives to scale.

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## Foreword

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The Center for Economic Opportunity (CEO) is committed to evaluating its programs and policies and has contracted with Westat and Metis Associates in order to inform decision-making within CEO and the sponsoring city agencies. Westat and Metis have developed a collaborative team approach in the planning, design, and implementation of various types of evaluations, including impact, outcome, and implementation studies. In some cases staff members from both Westat and Metis share duties and responsibilities in implementing the study. In other cases, staff from either Westat or Metis is responsible for conducting the study. This study of the Business Solution Customized Training program was conducted by staff from Westat.

The analytic plan was developed by Jennifer Hamilton and Debra Rog. Analysis was conducted by Eva Chen, Ian Petta, and Joseph Gasper. The authors of this report are Jennifer Hamilton and Eva Chen.

We would like to acknowledge the cooperation of the Small Business Services (SBS) staff, specifically Sara Schlossberg, for their assistance in accessing the data and familiarizing the evaluators with the program model. All of the individuals who were contacted for background information or to review drafts of the report generously offered their time and their ideas. We also appreciate the help provided by the staff of CEO, especially David Berman, who facilitated this relationship with SBS and has served as an invaluable resource during the project.

## Executive Summary

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The Center for Economic Opportunity (CEO) was created in 2006 to implement and test innovative strategies for reducing poverty in New York City. In 2007 CEO partnered with the New York City Department of Small Business Services (SBS) to pilot a new way of supporting the City's low-income workers. This innovative new program utilized the "double bottom line" approach some large corporations were experimenting with around the same time.

This "double bottom line" approach utilizes strategies that support both incumbent workers and businesses. The NYC Business Solutions Customized Training (CT) program hypothesized that helping businesses improve the skills of their existing workforce (and thus improve profits) would result in fundamental improvements in the lives of low-income workers. The premise was that CEO and SBS would pay the upfront costs of training, while requiring that employers give participating workers a raise. By using this two-pronged approach to workforce development, businesses could provide low-wage earners the opportunity to build their individual professional skills and increase their income, while simultaneously training their own workforce to meet their specific needs.

In addition to the double bottom line approach described above, the NYC Business Solutions Customized Training (CT) program includes these important components:

- 1) Businesses compete for funding by proposing both the training type and the expected benefit (thus incentivizing businesses to only propose training they believe in and to strive for the highest results they think can be realistically achieved).
- 2) Businesses select the trainees and trainers (freeing businesses to provide the specific training they need, exclusively to the workers who are most likely to benefit from it).
- 3) Businesses who focus on training their lowest-wage workers (\$15 an hour or lower) receive priority.
- 4) Businesses co-invest 30-40% of their own funds in the training.

The goal of this evaluation is to examine the effects of the CT program on the wages of participating workers. This is done in three stages. The first stage determines the extent to which the wages of incumbent workers increase after their participation in the CT program. The second stage links these wage gains directly to program participation. The third stage provides a larger context for understanding these changes over time. Each stage of the evaluation has a corresponding research question as follows:

- **Stage 1:** How do the wages of CT participants before training compare to their wages 6-months after training?
- **Stage 2:** How do CT participants fare 6-months after training compared to similar participants receiving other kinds of workforce training?
- **Stage 3:** How do CT participants fare 6-months after training compared to the New York City general population?

The results of each stage are summarized below.

### **Stage 1: How do the wages of CT participants before training compare to their wages 6-months after training?**

CT program participants, on average, experienced a statistically significant wage gain of 9%, which translates to approximately \$3,286 more a year. When broken into two groups based on how much they were earning prior to

training<sup>2</sup>, participants in the lowest wage group received average wage gains of 11% (\$2,621 more a year) while the wage gains for the other group was lower, with an average of 8% (\$4,014 a year).

### **Stage 2: How do CT participants fare 6-months after training compared to similar participants receiving other kinds of workforce training?**

The wage gains of CT program participants were compared to similar workers receiving training from Workforce1 Career Centers (WF1CC). Our findings indicated that, as a whole, the wages of CT program participants increased significantly more than the wages of their counterparts (10% compared to 1%).

Looking at those workers who began with the lowest hourly wages, the CT program did not increase earnings significantly more than the training provided by the WF1CCs (11% compared to 8%). However, wage gains for the CT participants in the above low-wage group were significantly larger than those in the WF1CC group (9% compared to -4%).

In addition, we compared the wage gains of CT program participants to New York City workers who received general employment services through the Workforce Investment Act (WIA). We found that the wage gains for CT participants were higher than WIA participants (9% compared to 5%). And breaking the population into pre-wage groups, we found that the low-wage comparison group participants experienced larger (but not statistically significantly larger) wage increases than participants in the CT program (17% compared to 10%). Wage gains for the CT participants in the above low-wage group however, were significantly larger than those in the WIA group (8% compared to -3%).

### **Stage 3: How do CT participants fare 6-months after training compared to the New York City general population?**

Despite starting with wages that were lower than those of the general NYC population, the hourly wages for CT participants increased, while the overall wages of workers in similar industries tended to either decrease or increase only slightly. Descriptive analyses showed that CT program participants had an average 9% wage increase compared to New York City workers in general, who had an average wage increase of 3%.

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<sup>2</sup> Workers earning \$15 an hour or less were in the 'low-wage' group, while workers earning above this threshold were classified as 'above low-wage'.

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# I. Introduction

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The Center for Economic Opportunity (CEO) has funded approximately 50 initiatives across 20 sponsoring city agencies aimed at reducing the number of workers, young adults, and children living in poverty in New York City. CEO is committed to assessing the impact of its programs through rigorous evaluation and close program monitoring.

This report evaluates the NYC Business Solutions Customized Training (CT) program, an initiative sponsored and managed by the New York City Department of Small Business Services (SBS) through CEO and Workforce Investment Act (WIA) funding. The program provides New York City employers with funding to support the career advancement of their employees through the provision of targeted training. This report determines the extent to which the CT program is successful in helping participants earn higher wages. To do this, Westat conducted a 3-stage evaluation. The first stage compares the wages of CT participants 6 months after their training to their earnings prior to training. Positive and statistically significant wage increases would indicate that the program may be having a positive impact on the income of low-wage workers. Without a comparison group, however, we cannot rule out the possibility that the increase was due to something other than program participation. For example, wages may have increased anyway due to market factors, and not necessarily due to their participation in the CT program. To rule out these alternate explanations, comparison groups were added to the analysis. In stage two, the wage gain of CT participants are compared to those of similar full time workers who participated in other types of workforce training. If these comparisons show that other workers with similar characteristics are not experiencing the same wage gain as CT participants, the conclusion that the program was responsible for wage increases is greatly strengthened. The third stage provides broader context for the findings by comparing CT wage gains to those of the general NYC population during the same time period.

This report first describes the program model and outlines the research design, including the research questions, the data, and the analytic framework. Then we provide a description of the program participants, and provide the results of our analyses. Finally, we discuss conclusions and implications of the findings.

## NYC Business Solutions Customized Training Program

Launched in February of 2007 by the Department of Small Business Services (SBS) and with funding from the Center for Economic Opportunity (CEO), the Business Solutions Customized Training (CT) program is designed to encourage businesses to invest in their future by investing in their workers. By offering financial support to businesses for training, the program allows businesses to reduce turnover and increase productivity through targeted training that simultaneously creates opportunities for workers to obtain new skills and increase their wages.

The CT program targets employers with New York City workers earning \$15/hour or less. To be eligible employees must work full time upon completion of the training.<sup>3</sup> The content and duration of CT funded training varies by employee job-specific skills and employer needs, with the length of training ranging from 12 weeks to a year. One of the benefits of CEO funding is that training can include education skills such as reading, math, and English as a second language (CEO 2011). As a key component of the program, each employer commits to providing more than half of their trained employees a wage increase (CEO 2011). Other significant benefits include workers getting paid during training and obtaining skills that will lead to long term career growth. Since the program's inception, SBS has awarded more than \$7.9 million<sup>4</sup> in CT training funds to 111 companies to train over 4,900 workers (CEO 2011).

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<sup>1</sup> See NYC Business Solutions Customized Training Program Guidelines for more detail, [http://www.nyc.gov/html/sbs/nycbiz/downloads/pdf/summary/training/TF\\_Program\\_Guidelines.pdf](http://www.nyc.gov/html/sbs/nycbiz/downloads/pdf/summary/training/TF_Program_Guidelines.pdf).

<sup>2</sup> Matched by over \$7.7 million in employer contributions.

## Similar Training Programs

In the workforce development field, this goal of utilizing employer-provided trainings to build the skills of existing low-wage employees is known as ‘incumbent worker training.’ The guiding principle of incumbent worker training is to stabilize workers in entry-level positions so that they can stay within an industry sector and have greater potential for advancement (WSC 2006). An early example of this approach is the California Employment Training Panel Program (ETP), which is the largest state-funded customized training program in the nation. Created by the California state legislature in 1982, ETP’s goal is to retrain unemployed workers and move them quickly back into employment. Trainees are workers covered by unemployment insurance (UI). The trainees’ next employers select them for training when a training contract is secured. Moore, Blake, Phillips and McConaughy (2003) conducted an evaluation study of the ETP program and found that it had a positive impact on workers’ wages. The study found that ETP participants had higher post-training wages compared to a control group of workers who did not participate in the program. After one year of training, participants in the ETP program had an average wage increase of 10.1%. Those workers who were in the comparison group experienced a wage decrease of 9.6% during the same period.

On a federal level, another incumbent worker program is provided by the Workforce Investment Act (WIA). The goal of WIA is to create a universal access system of one-stop career centers to increase the employment, retention and earnings of participants by offering education and job training programs to workers, including low-income adults. WIA offers federal funding for workforce development activities, for which customized training is an allowable activity (although not every local area chooses to invest its funds this way). When used for customized training, WIA funds can only cover half of the training costs and does not prioritize funding toward those with the lowest wages. In comparison, CT covers 70 percent of training costs up to \$400,000, with employer contributions making up the rest.

Under the supervision of SBS, Workforce1 Career Centers (WF1CC) also provide incumbent worker training. These Centers are operated by vendors consisting of nonprofits, for profits and community colleges and use a combination of recruitment expertise, industry knowledge and skill-building workshops to strengthen candidates’ employment prospects. An Individual Training Grant (ITG) is one of the services provided within WF1CCs, and covers the cost of specialized occupational training, such as a commercial driver’s license training course.

## 2. Research Design

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SBS provided the data<sup>5</sup> for the analyses, which included both data from their Dashboard electronic record system, as well as payroll data of participating employers. The SBS system tracks program enrollment, work history, service receipts, and employment outcomes (including wages and average hours worked). These data were augmented by adding demographic information on program participants. These data were supplemented with two other sources of data. First, hardcopy demographic information on program participants was entered into the database. Next, the database was supplemented by payroll record data.

The design of this evaluation is divided into three stages, each with a corresponding research question. The first two stages build the causal argument that wage gains are a result of program participation, and not due to other factors. The third stage takes these findings and puts them in the larger context of all individuals in the NYC metropolitan area. Specifically, the research questions are as follows:

- **Stage 1:** How do the wages of CT participants before training compare to their wages 6-months after training?
- **Stage 2:** How do CT participants fare 6-months after training compared to similar workers receiving other kinds of workforce training?
- **Stage 3:** How do CT participants fare 6-months after training compared to the New York City general population?

Different analytic methods were used to respond to each of the three research questions. These methods are described below.

### **Stage 1: How do the Wages of CT participants before Training Compare to their Wages 6-Months after Training?**

To determine the extent to which hourly wages for CT participants change after training, a simple pre/post analysis was conducted. Pre-training quarterly wages were compared to their wages 6 month post-training. T-tests were conducted to determine if the differences between pre- and post-training wages were statistically significant. Next, we conducted subgroup analyses by pre-training wage. Participants earning \$15 an hour or less before training were categorized as the “low-wage” group, while those earning above that threshold formed the “above-low-wage” group.

### **Stage 2: How do CT Participants Fare 6-Months after Training Compared to Similar Workers Receiving Other Kinds of Workforce Training?**

To strengthen the inference that any significant wage gains found in response to the Stage 1 research question were due to the training program, CT participants must be compared to an equivalent group of workers. Therefore, a quasi-experimental approach was employed that matched CT participants to similar workers receiving other types of workforce training. Two different comparison groups were used. The first comparison group contained employed individuals receiving Individual Training Grants (ITGs) from Workforce1 Career Centers. While ITGs are issued to both unemployed and incumbent full time workers, only incumbent full-time workers were used for this analysis. In order to have a fair comparison, it is important that both groups start with approximately the same pre-training wage. We therefore used propensity score matching to select incumbent ITG recipients that were a close match to each CT participant on pre-training wage, gender, age, industry, race/ethnicity, and education background. Based

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<sup>5</sup> Covering the period May 2011 to November 2011.

on each propensity score, a one-to-one nearest neighbor matching was performed. The two groups were then statistically equivalent on all of these matching variables.

The second comparison group used the Workforce Investment Act Standardized Record Data (WIASRD) database to obtain the quarterly wages of employed adults participating in the WIA program. Because the WIASRD data does not include industry code, matching at the individual level was not possible. Therefore to create a comparison group that is as similar as possible to the CT participants, a series of exclusions were made. First, WIA participants missing either pre-training or post-training wage information, or having a pre-training wage below the New York state minimal hourly wage were removed from the sample. Next, non-incumbent workers were excluded from the WIASRD data.

Next, we conducted subgroup analyses by pre-training wage category and by industry. The pre-training wage categories employed were the same as used in Stage 1 - Participants earning \$15 an hour or less before training were categorized as the “low-wage” group, while those earning above that threshold formed the “above-low-wage” group. For the industry subgroups, it is important to note that because different data sets are used for different sections of the analyses, the industry categories for Stage 3 (BSTF vs. NYC general population) are not exactly the same as those used for Stage 2 (BSTF vs. WF1 and BSTF vs. WISARD).

To ensure a fair apples-to-apples comparison when conducting statistical tests of significance, two conditions must be met for each group. The subgroups must have: (1) a sufficient sample size<sup>6</sup> and (2) similar pre-training wages<sup>7</sup>. If these two conditions are not met, tests of statistical significance were not performed.

### **Stage 3: How do CT Participants fare 6-Months after Training Compared to the New York City General Population?**

To provide broader context to the results of the above two analyses, the wage gain of CT participants were compared to that of all incumbent workers in NYC during the same time period. We used the Quarterly Census of Employment and Wages (QCEW) database<sup>8</sup> to obtain the quarterly wages of everyone who worked in the greater NYC area. The 6-month post training wages of CT participants were then compared to that of the individuals in the QCEW database overall, and again by industry group using the NAICS industry codes. Because the QCEW is not at the individual level, we could not compare conduct the pre-wage subgroup analysis.

To ensure a fair apples-to-apples comparison when conducting statistical tests of significance, two conditions must be met for each group. The subgroups must have: (1) a sufficient sample size<sup>9</sup> and (2) similar pre-training wages<sup>10</sup>. If these two conditions are not met, tests of statistical significance were not performed.

### **Limitations and Challenges**

The research methodology of any study must address multiple threats to the internal validity of its findings. For this study, one threat is the requirement that employers receiving CT training funds increase the post-training salaries of more than 50 percent of participants. Thus, wage gains for participants may be a result of enhanced worker skills, or may simply be a result of this employer requirement. These two reasons for the increase are confounded in the current study.

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<sup>6</sup> Each subgroup sample must contain at least 10 individuals.

<sup>7</sup> The difference must be less than a quarter of a standard deviation.

<sup>8</sup> See the Quarterly Census for Employment and Wages for more detail: <http://www.bls.gov/cew/data.htm>

<sup>9</sup> Each subgroup sample must contain at least 10 individuals.

<sup>10</sup> The difference must be less than a quarter of a standard deviation.

A second threat to internal validity relates to the equivalence of CT and comparison group members. Random assignment enhances the internal validity of research studies because it controls for both measured and unmeasured differences across groups. However, random assignment was not possible for this study so we instead utilized a quasi-experimental design. This design controls for measured but not unmeasured differences between the groups. Therefore, it is possible that unmeasured differences (such as skills or motivation) between the groups exist and may have impacted the outcomes. That is, these potential unmeasured differences in participant characteristics, rather than the program, could explain differences in outcomes between the groups. To the extent possible, we controlled for these differences in our analyses, by including a series of covariates in the model including gender, age, ethnicity, educational attainment, and pre-training wages.

A final threat is related to sample size--the sample size for many of the analyses is not large, and the sample sizes are particularly small in the subgroup analyses. Due to the limited sample size, impact estimates can bounce around and can be swayed by the inclusion of single data points. Therefore, these subgroup analyses are presented as exploratory, and should not be given the full weight of a causal analysis.

Lastly, the overarching goal of this study is to assess the impact of the CT program on participant wages. The impact of the program on employers receiving the training grants is beyond the scope of this study, but may be addressed in future research.

### 3. Description of Program Participants

The first step in our data analysis was to examine the characteristics of the individuals in the program. In this section we present the demographics of all participants and the distribution of their pre-training wages. Lastly, we provide the demographics of participants by pre-training wage groups.

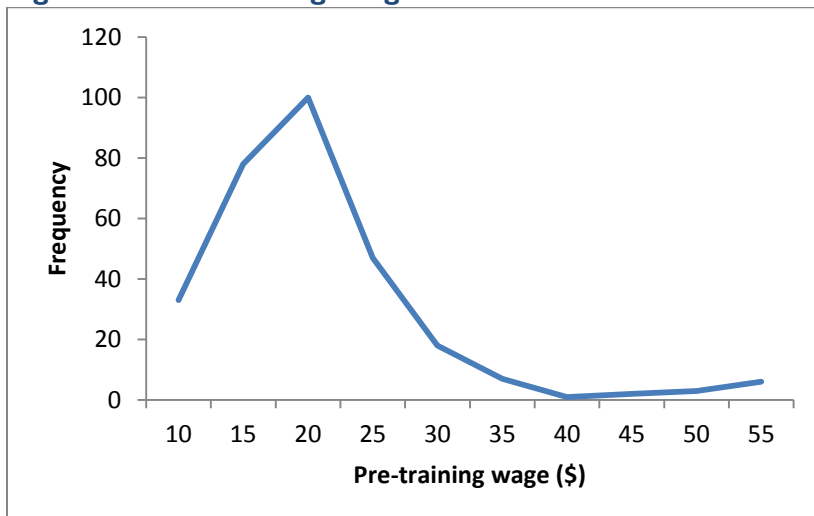
The majority of CT participants in our sample are male, with an average age of 42. Table 3.1 provides a summary of the demographic characteristics of the CT participants.

**Table 3.1. CT Participant Characteristics**

Variables	CT Participants
<b>Sample size</b>	<b>814</b>
<b>Gender (male)</b>	59%
<b>Age (mean)</b>	42
<b>Race/Ethnicity</b>	
White	21%
Black	20%
Hispanic	29%
Other Race	14%
<b>Educational attainment</b>	
Below High School	13%
High School Graduate	23%
Some College	30%
Bachelor Degree	19%
Graduate School	6%
<b>Pre-training wage (mean)</b>	\$17.93
<b>Pre-training wage (median)</b>	\$16.76

Most CT participants (69%) were earning between \$9 and \$20 per hour prior to the start of training, as shown in Figure 3.1.

**Figure 3.1 Pre-Training Wage Distribution**



Next, the 814 CT participants were divided into two groups based on their hourly wages prior to training. Participants earning \$15 an hour or less before training were categorized as the “low-wage” group, while those earning above that threshold formed the “above-low-wage” group. The low-wage group has significantly more male and Hispanic participants, and also more workers who did not graduate from high school than the above low-wage group. This group also had fewer Whites and fewer participants with a bachelor’s degree than the above low-wage group, as shown in Table 3.2.

**Table 3.2. CT Participant Characteristics by Pre-Wage Group**

Variables	Low-Wage	Above Low-Wage
<b>Sample size</b>	350	464
<b>Gender (male)</b>	70%*	50%
<b>Age (mean)</b>	41	44
<b>Race/Ethnicity</b>		
White	12%	27%*
Black	18%	22%
Hispanic	37%*	23%
Other Race	21%	10%
<b>Educational attainment</b>		
Below High School	21%*	8%
High School Graduates	28%	19%
Some College	24%	34%
Bachelor Degree	10%	25%*
Graduate School	5%	7%
<b>Pre-training Wage (mean)</b>	\$11.58	\$22.72
<b>Pre-training Wage (median)</b>	\$11.52	\$20.85

\*statistically significant difference  $p < .05$  \*\* $p < .01$  \*\*\* $p < .001$

## 4. Results

This study investigates the impact of CT training on participants' wages through a three-stage process. Specifically the responds to the following research questions corresponding to each stage:

- **Stage 1:** How do the wages of CT participants before training compare to their wages 6-months after training?
- **Stage 2:** How do CT participants fare 6-months after training compared to similar workers receiving other kinds of workforce training?
- **Stage3:** How do CT participants fare 6-months after training compared to the New York City general population?

### Stage 1: How do the Wages of CT Participants before Training Compare to their Wages 6 Months after Training?

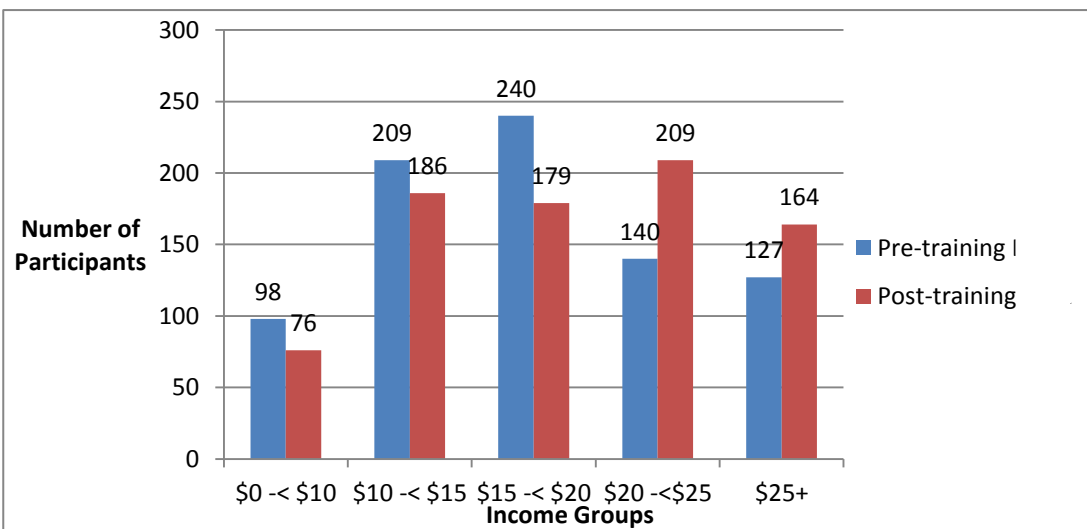
The first stage of the study explores the degree to which CT participant wages changed after participation in the training. Table 4.1 shows that participants earned \$17.93 an hour before training and \$19.51 an hour 6 months after training. This wage increase is statistically significant. To put this increase in context, for full time employees who work 40 hours per week (2080 hours per year), the \$1.58 increase in the hourly pay rate corresponds to an increase of \$3,286 annually.

**Table 4.1 CT wage change: All participants**

Group	Sample Size	Pre-Wage	Post-Wage	Wage Change (\$)	Wage Change (%)	Sig?
All CT participants	814	\$17.93	\$19.52	\$1.59	9%	Yes

Figure 4.1 shows the distributions of pre- and post-training wages. The number of participants in the two highest wage categories increases after training, illustrating the shift towards higher pay.

**Figure 4.1. CT pre- and post-training wage distributions**



#### Subgroup Analysis: Pre-Training Wage Category

Table 4.2 looks at the pre- and post-wage differences for the low-wage and above low-wage subgroups. For the low-wage group, hourly wages increased 11% (\$1.26), the equivalent to an annual salary increase of \$2,621.



Similarly, the above low-wage group experienced an 8% increase in wages -- corresponding to a \$4,014 more per year. The differences between pre- and post-training wages are statistically significant for workers in both groups.

**Table 4.2. CT wage change by pre-wage category**

Group	Sample Size	Pre-Wage	Post-Wage	Wage Change (\$)	Wage Change (%)	Sig?
Low-wage	350	\$11.58	\$12.84	\$1.26	11%	Yes
Above-low-wage	464	\$22.72	\$24.56	\$1.84	8%	Yes

### Do Certain Subgroups Benefit more from CT Participation?

Finally, we wanted to see if different types of participants benefitted from the program more than others. A regression analysis was therefore conducted to investigate which variables best predicted participants' post-training wages. Results indicate that women earned significantly higher post training wages than men, and Blacks and 'other race' participants earned significantly more than Whites. Similarly, college graduates earned more 6 months after training than participants without a high school diploma.

## Stage 2: How do CT Participants Fare 6-Months after Training Compared to Similar Workers Receiving other kinds of Workforce Training?

After having found statistically significant wage increases for CT participants, the next step is to assess whether these wage gains can be attributed to the CT program. To make this assessment, we compare the wage gain of CT participants to similar workers receiving (1) Individualized Training Grants (ITG) from Workforce1 Career Centers, and (2) WIA training services.

### Were the Wage Gains of CT Participants Greater than those of Matched WF1CC Workers?

Table 4.3 shows that CT participants made significantly greater wage gains than their employed WF1CC counterparts receiving ITGs (10% compared to 1%), which indicates that their participation in the CT program is responsible for the increase in participant wages.

**Table 4.3. Comparison of wage data between CT and matched WF1CC participants**

Group	Sample Size	Pre-Wage	Post-Wage	Wage Change (\$)	Wage Change (%)	Sig?
CT	727	\$16.94	\$18.57	\$1.63	10%	Yes
WF1CC	727	\$16.43	\$16.57	\$0.14	1%	

### Subgroup Analysis: Pre-Training Wage Category

The wage increases of CT and WF1CC workers by pre-wage category were compared (see Table 4.4). This comparison shows that for the participants who enter training with the lowest wages, the CT program improved their wages by 11%, an amount that was not a statistically different improvement from the WF1CC group. . CT participants in the above low-wage category, however, received a 9% increase while the wages for the comparison group fell by 4%. This difference is statistically significant and implies that, compared to other workforce training programs, the CT and WF1CC programs benefit low-wage workers to a similar extent, but the CT program benefits participants entering with slightly higher hourly wages significantly more than the WF1CCs. In addition, it is important to note that CT participants are selected by their employer to receive training, whereas WF1CC workers have actively sought out training opportunities themselves. The CT program has thus helped a group of workers that may not have sought out advancement on their own, and whose needs might have otherwise gone unmet.

**Table 4.4. Comparison of CT and WFICC wage change by pre-wage category**

Group		Sample Size	Pre-Wage	Post-Wage	Wage Change (\$)	Wage Change (%)	Sig?
Low-Wage	CT	350	\$11.58	\$12.84	\$1.26	11%	No
	WFICC	428	\$11.53	\$12.50	\$0.97	8%	
Above Low-Wage	CT	377	\$21.93	\$23.89	\$1.96	9%	Yes
	WFICC	299	\$23.43	\$22.40	\$-1.03	-4%	

**Subgroup Analysis: Industry**

An additional analysis focused on comparing the wages of CT and WF1CC participants in different industries. Workers in Educational Services and Other Services industries could be compared because both criteria were met: the sample sizes in both groups were large enough, and the groups had equivalent pre-training wages. The remaining industries could not be compared statistically, but their data are provided below for context. Wage information for all industries is provided in Table 4.5.

**Table 4.5. Wage differences by industry**

Industry	Pre-Wage	Post-Wage	Wage Change (\$)	Wage Change (%)	Sig?
<b>Educational Services</b>					
CT (n=16)	\$17.43	\$18.16	\$0.73	4%	No
WFICC (n=16)	\$18.42	\$19.75	\$1.33	7%	
<b>Other Services</b>					
CT (n=27)	\$14.96	\$15.32	\$0.36	2%	No
WFICC (n=146)	\$13.00	\$13.44	\$0.44	3%	
<b>Construction</b>					
CT (n=49)	\$18.92	\$20.76	\$1.84	10%	NA
WFICC (n=23)	\$16.97	\$24.11	\$7.14	42%	
<b>Manufacturing</b>					
CT (n=374)	\$18.12	\$18.80	\$0.68	4%	NA
WFICC (n=7)	\$10.80	\$12.62	\$1.82	17%	
<b>Wholesale Trade</b>					
CT (n=113)	\$13.67	\$16.02	\$2.35	17%	NA
WFICC (n=5)	\$12.19	\$11.13	-\$1.06	-9%	
<b>Retail Trade</b>					
CT (n=49)	\$19.50	\$21.63	\$2.13	11%	NA
WFICC (n=81)	\$9.42	\$10.37	\$0.95	10%	
<b>Professional Services</b>					
CT (n=43)	\$15.52	\$17.48	\$1.96	13%	NA
WFICC (n=34)	\$12.63	\$13.27	\$0.64	5%	
<b>Health Care</b>					
CT (n=138)	\$21.68	\$25.27	\$3.59	17%	NA
WFICC (n=257)	\$10.12	\$10.58	\$0.46	5%	
<b>Accommodation and Food Service</b>					
CT (n=5)	\$9.70	\$12.79	\$3.09	32%	NA
WFICC (n=36)	\$8.70	\$9.82	\$1.12	13%	

## Were the Wage Gains of CT Participants Greater than those of Similar WIA Participants?

Here, the wage gains of CT participants are compared to a second comparison group - Workforce Investment Act (WIA) participants. Using the WIASRD national database, we selected a subset of New York City workers that were as similar as possible to the CT participants. We could not match at the individual level for this comparison; instead we restricted the WIA sample to match the CT sample as much as possible. Despite these efforts, the two groups overall have significantly different pre-training wages and therefore cannot be statistically compared (see table 4.6) However, comparisons at the subgroup level were possible, and these results are presented in the subsequent section.

**Table 4.6. Comparison of wage change between CT and WIA participants**

Group	Sample Size	Pre-Wage	Post-Wage	Wage Change (\$)	Wage Change (%)	Sig?
CT	814	\$17.93	\$19.52	\$1.59	9%	NA
WIA	412	\$16.22	\$17.07	\$0.85	5%	

NA: Because CT participants had an average pre-training hourly wage that is significantly higher than that of the WIA participants, their change in wages cannot be statistically compared. These data are therefore descriptive only.

### *Subgroup Analysis: Pre-Training Wage Category*

When the groups are broken out by pre-wage category, the findings mirror that of the previous comparison group (see Table 4.7). For participants who enter training with the lowest wages, the CT program does not improve their earnings compared to similar individuals who enroll in a different training program. However, CT participants in the above low-wage category received an 8% increase while the wages for the comparison group fell by 3%. This difference is statistically significant and implies that, compared to both WF1CC and WIA training programs; the CT program specifically benefits participants entering with higher hourly wages.

**Table 4.7. Comparison of wage change by pre-wage category**

Group	Sample Size	Pre-Wage	Post-Wage	Wage Change (\$)	Wage Change (%)	Sig?	
<b>Low-Wage</b>	CT	350	\$11.58	\$12.84	\$1.26	10%	No
	WIA	234	\$11.50	\$13.43	\$1.93	17%	
<b>Above Low-Wage</b>	CT	464	\$22.72	\$24.64	\$1.92	8%	Yes
	WIA	178	\$22.43	\$21.86	-\$0.57	-3%	

## Stage 3: How Do CT Participants Fare 6-Months after Training Compared to the New York City General Population?

Stage 1 results indicated that CT participants received statistically significant wage increases after receipt of training. Stage 2 analyses went on to compare these wage gains to those of similar workers receiving other types of training. These analyses found that, in general, CT participants received statistically larger wage gains as a result of their program participation, especially participants that begin with higher wages (above \$15 per hour). The goal of the stage 3 analysis is to provide a larger context for these findings by comparing CT wage gains to a broader population. Here, we compare the wage gain of CT participants to the average wages of employees who worked in NYC during the same time period using the Quarterly Census of Employment and Wages (QCEW) database.

Looking at these data we see that, because the CT program targets low-wage workers, CT participants start with wages far below those of the general population. Table 4.8 provides the pre- and post-training wages for both groups. On average, CT participants experienced wage gains of 9%, while the average wages for New Yorkers during the same timeframe increased by 3%. While it is not possible to statistically test the difference for these two groups, it is important to note that these wage gains for the CT participants occurred during a deep economic downturn, when unemployment was almost 10% (Lotke, 2012). Such downturns generally have more adverse

implication for vulnerable segments of the population, and the wage gains for CT participants must be viewed in this context.

**Table 4.8. Comparison of wage change for CT participants and the NYC population**

Group	Pre-Wage	Post-Wage	Wage Change (\$)	Wage Change (%)	Sig?
CT	\$17.69	\$19.25	\$1.56	9%	NA
QCEW	\$29.57	\$30.33	\$0.76	3%	

NA Because the CQEW data is not at the individual level, statistical tests of significance could not be calculated. CQEW data are therefore descriptive only.

**Subgroup Analysis: Industry**

Comparing the CT participants to the New York City general population by industry, wages for CT participants rose for all industries, while those of the general population varied. CT workers in the construction industry achieved comparable wage increases to the industry average. In the remaining four industries CT wages increased while those of other workers in the same industries remained relatively stagnant, or fell. These changes are shown below, in Table 4.9.

**Table 4.9. Wage differences by industry**

Industry	Pre-Wage	Post-Wage	Wage Change (\$)	Wage Change (%)	Sig?
<b>Construction</b>					
CT (n=49)	\$19.01	\$20.83	\$1.82	10%	NA
QCEW (n=963)	\$31.24	\$35.36	\$4.12	13%	
<b>Information/ Professional Services/Other</b>					
CT (n=60)	\$14.43	\$16.61	\$2.18	15%	NA
QCEW(n=51,765)	\$39.10	\$39.08	-\$0.02	-0.05%	
<b>Wholesale Trade</b>					
CT (n=113)	\$13.82	\$16.17	\$2.35	17%	NA
QCEW(n=13,760)	\$36.32	\$38.71	\$2.39	7%	
<b>Manufacturing</b>					
CT (n=374)	\$18.01	\$18.53	\$0.52	3%	NA
QCEW (n=4,737)	\$23.69	\$23.43	-\$0.26	-1%	
<b>Retail Trade</b>					
CT (n=49)	\$18.66	\$20.97	\$2.31	12%	NA
QCEW (n=4,190)	\$30.88	\$29.02	-\$1.86	-6%	
<b>Education &amp; Healthcare</b>					
CT (n=154)	\$21.41	\$24.65	\$3.24	15%	NA
QCEW (n=3,227)	\$31.40	\$33.87	\$2.47	8%	

NA Because the CQEW data is not at the individual level, statistical tests of significance could not be calculated. CQEW data are therefore descriptive only.

## 5. Conclusion

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This report provides a description of CT participant wage outcomes, compares these outcomes to a matched group of similar individuals, and then places these findings in the context of the larger metropolitan population. Results suggest that the CT model can significantly increase the wages of low-wage incumbent workers. Major findings include:

- CT participants earned 9 % more after training than they did before training. This change is significantly more than would be expected to occur by chance alone.
  - Of all of the CT participants, women and minorities made the greatest wage gains (controlling for all other variables), **indicating that the CT program may help to reduce the wage gap for these populations**. Participants with a college degree also benefited from the program when compared to participants without a high school diploma.
- Overall, CT participants made significantly greater wage gains than similar workers who participated in other training programs.
  - However, when compared to other training programs, this increase for the low-wage group was not any greater than would be expected if they had enrolled in a different training program.
  - In contrast, the above-low-wage group saw a significantly greater increase in wages compared to matched participants in other training programs.
  - The wages of CT participants increased by 10% while the wages of WF1CC participants increased by only 1% during the same time period.
  - This finding was replicated with a second comparison group. The wages of CT participants increased by 9% compared to 5% for WIA participants. However, statistical tests of significance could not be conducted because their wages were not equivalence at baseline.
  - **These findings indicate that the significant wage gains of CT participants can be attributed to the program itself, and not to other factors.**
- Despite starting with wages far below that of the average New York City worker, CT participants increased their wages by 9%, compared to a 3% for all other NYC workers.
  - These gains were most evident in the Information/Professional Services industry where the CT participants gained 15% more than their NYC counterparts.
  - **These findings indicate that despite a severe economic downturn, CT participants were making progress towards an improved quality of life.**

In conclusion, our study findings indicate that the CT program results in higher wages for its participants. These wage gains are significantly greater than those of similar individuals participating in other training programs. Importantly, as wages in New York City overall remain relatively stagnant overall; the wages of CT participants were rising.

## Appendix A. Literature Review

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According to the report published by the U.S. Department of Labor, more than nine million working Americans (25 percent of whom work full time, year round) earn less than the official poverty level, and more than 40 million Americans earn below 200 percent of the poverty level. In New York City alone, approximately 350,000 individuals are working, but still living in poverty (CEO 2011). Opportunities for these workers to advance over time, either in the same firm or outside it, through seniority or on-the-job training are very limited. These result in large numbers of low-skilled workers trapped in jobs that provide few, if any, opportunities to improve wages, skills and career opportunities (Horn, Fichtner, Altman & Whittaker, 2001).

At the same time, employers need workers with problem-solving, interpersonal and technical skills to successfully compete in the global economy. Skilled employees can lead to increased productivity and can improve the competitiveness of the firm. However, a scarcity of workers with the necessary skills and high employee turnover are serious challenges. Even though the employer-provided training is the primary source of training for many low-skilled workers (Horn, Fichtner, Altman & Whittaker, 2001), the cost of providing high-quality, on-site training to their existing workforce is often prohibitive, especially for small employers. Providing public funding to train incumbent workers is designed to have the dual benefit of improving retention for employers as well as providing a strong foundation for advancement for employees (CEO 2011).

A review of the past research in this field indicates that employer-provided job training for adults funded by the public is most often provided to unemployed individuals. Very few evaluation studies have been conducted to examine the impact of on-the-job training provided to incumbent workers (Hollenback 2008). Of the employer-provided training that exists, most is targeted towards higher earners (Horn, Fichtner, Altman & Whittaker, 2001). In fact, research has documented the scarcity of training available for low-wage compared to higher-wage incumbent workers. Using three different national surveys, Barron, Berger and Black (1997) found that college graduates received up to 60 percent more training than high school graduates in the first three months of employment. Similarly, Frazis et al (1998) found that workers in the bottom quartile of weekly earnings received an average of 4 hours of training compared to 23 hours for those in the top earning quartile. Lack of resources and lack of information on the benefits of training low-wage employees were cited as barriers to providing training (U.S. Department of Labor, 2008).

In addition to demonstrating the scarcity of training provided to low-wage incumbent workers, past research provided mixed findings regarding the effectiveness of training programs intended to promote retention and career advancement in this population. Using a randomized design, the evaluation of the Employment Retention and Advancement (ERA) project evaluated 12 ERA programs and reported impact estimates on employment retention, earnings and advancement. Results indicate that only three out of the twelve programs demonstrated statistically significant impacts (Hendra et al, 2010). One of these was the Texas ERA program, which offered a monthly stipend of \$200 to participants in the treatment group in addition to other pre- and post-employment services. The evaluation found that the program increased average annual earning by almost 15 percent relative to control group earnings over the four-year follow-up period. A second program that produced increases in employment retention and earnings was the ERA program in Chicago. The Chicago program was a mandatory, work-focus advancement program that helped participants identify and access career ladders provided by staff in a private, for-profit firm. The program produced statistically significant increases in employment retention and earnings. However, while the Chicago ERA program raised average annual earnings by seven percent relative to the control group, these effects weakened over time. Finally the ERA program in Riverside, California was a retention and advancement program provided primarily by three community-based organizations and a community college. This program increased average annual earnings by ten percent relative to the control group level. In addition, this program generated its largest effects on earnings (\$970) in the fourth year of follow-up (Hendra et al, 2010). Based on the study findings from these three sites, the study authors proposed two effective strategies to promote job retention and



advancement in low-wage incumbent workers: (1) provide financial incentives to supplement earnings in combination with services; and (2) matching individuals with specific jobs that pay higher wages (Miller, Dietch & Hill, 2010; Hendra et al, 2010).

Nine out of the twelve ERA programs in the RCT study described above did not demonstrate any positive effect. This suggests that despite a range of programs, approaches and significant effort by staff, gains in employment retention and advancement are difficult to realize. However, the evaluation study conducted by Moore, Blake, Phillips and McConaughy (2003) demonstrated positive impact of California Employment Training Panel Program (ETP) on different cohorts of participants over years. ETP is the largest state-funded customized training program in the nation. Created by the California state legislature in 1982, the program goal was to retrain unemployed workers and move them quickly back into employment. Since training was customized, companies may use in-house trainers; hire private training companies or contract with public or private vocational schools or colleges. ETP trainees were workers covered by unemployment insurance (UI) whose employers selected them for training when the companies secured DTP training contract. During the evaluation, the study authors followed training cohorts defined by a period of ETP training contract completion. The first three sub-studies followed trainees in contract completed in fiscal years 1989-1990, 1990-1991 and 1991-1992, and the last sub-study covered contracts completed in fiscal years 1994-1995 and 1995-1996. The ETP participants were compared to a random sample of California UI-covered workers during comparable time periods. The study found that in every cohort, those who completed ETP training increased their earning relative to the comparison group. In before-to-after change in unemployment, training completers fared better than their comparisons groups, further attesting to ETP's success in achieving its goal of reducing unemployment. In addition, ETP training completers also increased their employment stability relative to the comparison groups (Moore, Blake, Phillips & McConaughy 2003).

Other less rigorous evaluation studies also describe the impact of training provided to incumbent workers from the employers' perspective. Hollenbeck (2007) reported survey data that described the competitive grant program initiated by the state of Massachusetts to support incumbent workers. The survey indicated the state-funded training had positive impact on the participating companies. About half of the firms indicated that the training had resulted in increased employee skills and knowledge, while 40 percent of the employers reported they promoted workers as a direct result of the training and 20 percent of the firms indicated that layoffs had been prevented because of the training. Half of the firms indicated they gave workers increased wages because of the training. These increases averaged 8.9 percent of the workers' wages (Hollenbeck 2007).

Another descriptive study in this field is the multi-year evaluation study to examine the operations and performance outcomes of six employment initiative that developed industry-based approaches to workforce development. Findings from their longitudinal survey of 732 individuals who participated in the training indicated that among those who worked, median personal earning rose from \$8,580 at baseline to \$14,040 in the year following training to \$17,732 in the second year after training. Responses to open-ended survey questions also show that participants generally feel better about the quality of their jobs and their opportunities for advancement after the training, and that they attribute this improvement to the training program (Rademacher, 2002).

Jobs for the Future (2008) describes a Community College of Denver program that enables Certified Nursing Assistants and other entry-level workers to advance to become Licensed Practical Nurses (LPN). This worksite LPN training program was designed to meet employer needs for skilled nurses while providing a career advancement ladder for dedicated, frontline caregivers. Employers adjusted the work schedules of participating employees to accommodate program demands. In addition, most employers helped participants pay for tuition and fees; some provided paid release time. The program was found to have a remarkable retention and completing rate, despite the low reading and math abilities of participants. Sixty-seven percent of those who began the program had either earned their LPN diploma or were still enrolled at the time of the report (Jobs for the Future, 2008).

Evidence from past research suggests that providing training to incumbent workers may have significant returns for both employers and workers. The training programs can potentially avert the social costs of unemployment, which include income losses that are not insured by the Unemployment Insurance system. In the current economic

downturn, skilled workers with up-to-date training have the best chance of keeping a job and earning higher wages, especially in high-growth occupations. However, more research is needed to document the benefits and the challenges in investing public funding for training incumbent low-wage workers. This evaluation of the CT program is designed to estimate the impact of training in various industries, and to contribute to our current knowledge and understanding in this field.



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