



# ITWORKS' JOB PLACEMENT PROGRAMS: AN ASSESSMENT OF DIRECT AND MULTIPLIER IMPACTS

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This publication is an independent third-party assessment of the impact, both current and projected, of ITWorks' job placement programs and model of operation

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## Executive Summary

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### BACKGROUND: ISRAELI UNEMPLOYMENT, JOB OPPORTUNITIES, AND ITWORKS

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Although the hi-tech industry is quickly growing in Israel, the information and communications sector in Israel has approximately 7,000 unfilled entry-level positions annually (Central Bureau of Statistics, 2014). At the same time, Israel is experiencing rising unemployment and a large proportion of unskilled laborers.

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*Thousands of new entry-level hi-tech positions remain unfilled each year in Israel. This is despite increasing levels of unemployment, especially among Israel's social, economic, and geographic periphery.*

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ITWorks is a non-profit job placement and economic empowerment organization operating since 2006, that provides economically disenfranchised populations throughout Israel with technical training, professional skills, and job placement support, helping them launch careers in unfilled positions in Israel's hi-tech and communications industries.

### PURPOSE OF ASSESSMENT

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ITWorks has contracted a third party, ERI institute, to conduct an independent assessment of:

- (i) Past and projected future impact of ITWorks' job placement programs.
- (ii) The efficacy of ITWorks' Multiplier Impacts Model (MIM) for job placement, a model that aims to increase net employment in the economy and thus generate a range of positive multiplier effects above and beyond the direct impact on the people placed (e.g., job creation within other industries, net savings in government expenditure on benefits).

In particular, this assessment focuses on three main issues:

1. The scientific basis of ITWorks' theory of change, and in particular the Multiplier Impacts Model.
2. The direct impact of ITWorks' programs on the lives and wellbeing of their participants.
3. The multiplier impact effects of ITWorks programs at the individual, household, community and national levels

## MAIN FINDINGS

### IMPACT TO DATE

Since 2006, more than 2,250 people have participated in ITWorks programs, out of which 1655 have been successfully placed and enjoyed gross earnings of more than \$112 million and a net increase in their total income (defined as gross earnings beyond what their unemployment benefits would have been) of approximately \$56 million.

In addition to direct impact, ITWorks programs have also produced multiplier impact effects that extend beyond the monetary value added to the participants, at the individual, household, and community levels.

In particular, we have identified two main quantifiable multiplier impact effects. First, for every 1,000 ITWorks graduates placed in hi-tech jobs, an estimated 335 new jobs are created in the non-tradable, unskilled sector. This equates to approximately \$18.8 million in additional gross earnings and a total net income increase of close to \$6 million.

Table 1: Impacts to Date

Activity Year	Direct Value Added	Multiplier Value Added	Total Value Added	Government Savings
2006	\$1,074,672	\$0	\$1,074,672	\$1,067,328
2007	\$2,397,106	\$77,498	\$2,474,604	\$2,559,502
2008	\$3,705,785	\$253,767	\$3,959,551	\$4,265,869
2009	\$5,272,778	\$455,868	\$5,728,646	\$6,288,377
2010	\$7,618,273	\$686,461	\$8,304,734	\$9,149,795
2011	\$9,881,955	\$1,005,189	\$10,887,144	\$12,133,273
2012	\$11,998,510	\$1,396,096	\$13,394,606	\$15,137,139
2013	\$14,310,364	\$1,802,958	\$16,113,322	\$18,371,776
<b>Total</b>	<b>\$56,259,443</b>	<b>\$5,677,836</b>	<b>\$61,937,279</b>	<b>\$68,973,059</b>

As such, the total value added in additional income generated by ITWorks' activities to date is approximately \$62 million. With a cost per participant of \$2,800. This equates to a total return on investment estimated at 983%.

Second, as a result of employment realized by individuals previously unemployed, the Israeli government is estimated to have realized approximately \$70 million saved on social benefits spending.

## PROJECTED IMPACT

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Projected impact of future ITWorks programming over the cohorts 2014-2022, under conservative assumptions, is expected to produce approximately \$419 million dollars in direct value, \$60 million in multiplier value-added, and \$556 million in government savings. This equates to a total return on investment of 1546%.

Under the assumption that ITWorks future activities will continue to employ a similar program model (see additional information in theory of change section), the scaling up of ITWorks' programs over the next nine years is very likely (per extrapolation from scientific literature) to generate the following household and community level positive multiplicative impacts:

- ❖ Net increase in job creation and **employment in the non-tradable sectors**;
- ❖ Increased consumption and disposable income;
- ❖ **Decreased poverty** rates;
- ❖ **Decreased inequality** rates between demographic groups;
- ❖ **Reduced crime rates**;
- ❖ **Intergenerational** improvements in **educational** levels; and
- ❖ Improved individual and family **psychological well-being**.

If scaled up significantly, ITWorks' operations are likely to also produce the following macroeconomic or national level effects:

- ❖ Net increase in **overall employment** across various sectors;
- ❖ Net increase in job creation;
- ❖ Increased consumption and disposable income;
- ❖ **Decreased poverty** rates;
- ❖ **Decreased inequality** between demographic groups; and
- ❖ **Household debt relief**.

## THEORY OF CHANGE: THE MULTIPLIER IMPACTS MODEL

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The basic principle underlying ITWorks' job placement strategy, the Multiplier Impacts Model, is as follows:

By placing unemployed people in positions, which are (i) otherwise left unfilled and (ii) are within a growing sector of the economy, the job placement constitutes a **net increase in employment**, as opposed to placing disadvantaged individuals at the expense of other disadvantaged individuals not participating in the empowerment programs.

Our review of the scientific literature supports the claim that the Multiplier Impacts Model is an effective method to generate net multiplier impact effects that are not counteracted by offsetting factors resulting from crowding-out effects (i.e., competition between ITWorks program participants and non-participants).

## SCALING UP: RISKS AND SAFEGUARDS

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Given a limited number of jobs, increasing job placements for certain individuals could potentially have negative spillover effects by crowding out opportunities for other individuals. This is because as the number of people being placed increases, after vacancies in relevant jobs are filled, there may develop competition for employment opportunities between job placement program graduates and individuals not receiving job placement program support. Before all entry-level vacancies in the hi-tech sector (approximately 7,000 jobs annually) are filled, the risk of crowding out is expected to be avoided.

In order to mitigate the crowding out risk in scaling up, it is important to identify additional untapped yet reliable and long-term market opportunities for industry employment in other sectors.

## RECOMMENDATIONS

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Based on our assessment, we identify four key recommendations for the prospective scaling up of ITWorks' programs:

1. If ITWorks' programs are scaled up beyond the number of unfilled hi-tech positions, we recommend that additional scaling up should be based on identifying additional sectors where there is a significant number of unfilled positions.
2. We recommend the introduction of safeguard monitoring mechanisms to ensure that future job placement activities do not crowd out opportunities for other disadvantaged individuals not participating in ITWorks' programs.
3. We recommend the introduction of additional graduate status monitoring mechanisms, in particular regarding the employment status of participants post-placement, their annual income, and their job category and position.
4. We recommend that future impact assessments should include randomized control trials (RCTs) in order to isolate and thereby best evaluate program versus non-program effects on success metrics.

## DOCUMENT OVERVIEW

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In this document, we first assess the theory of change underlying ITWorks' Multiplier Impacts Model, based on a review of scientific literature about the multiplicative positive impacts of effective job placement programs. Second, we provide an assessment of the direct and multiplier economic and social impacts of ITWorks programs across individual, family, community, and macroeconomic levels. Finally, we assess the potential impact of scaling up ITWorks' programs.

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## About ITWorks

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ITWorks is a non-profit job placement and economic empowerment organization, operating since 2006 that provides economically disenfranchised populations throughout Israel with technical training, professional skills, and job placement support helping them launch careers in unfilled positions in Israel's hi-tech and communications industries.

ITWorks currently operates six programs:

1. **ExcelHT Leadership:** Provides Arab students tools for successful entry into Israel's Hi-Tech industry.
2. **ExcelHT Employment:** Provides Druze and Circassian graduates with tools for successful entry into Israel's Hi-Tech industry.
3. **Securing Israel's Future Through Employment:** Provides non-degreed adults throughout Israel's social and geographical periphery professional and technological training.
4. **Technology Accessibility Program (TAP):** Vocational training program for adults with intellectual and sensory disabilities.
5. **Women's Empowerment Program (WEP):** Empowering women to change their lives through employment in the technology and communications sector.
6. **Ultra-Orthodox Program:** Provides technological training for Ultra-Orthodox men and women.

Over the past 8 years, over 2,250 participants from diverse backgrounds have completed ITWorks' technological training and professional skills building programs, and more than 70% are now employed in their new field.

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## Theory of Change: ITWorks' Multiplier Impacts Model (MIM)

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### MULTIPLIER IMPACTS MODEL OVERVIEW

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The central concept underlying the Multiplier Impacts Model is that by placing unemployed people in positions that (i) would otherwise be left unfilled and (ii) are within a growing sector of the economy, two additional value categories are produced in addition to the established benefits of conventional job placement interventions:

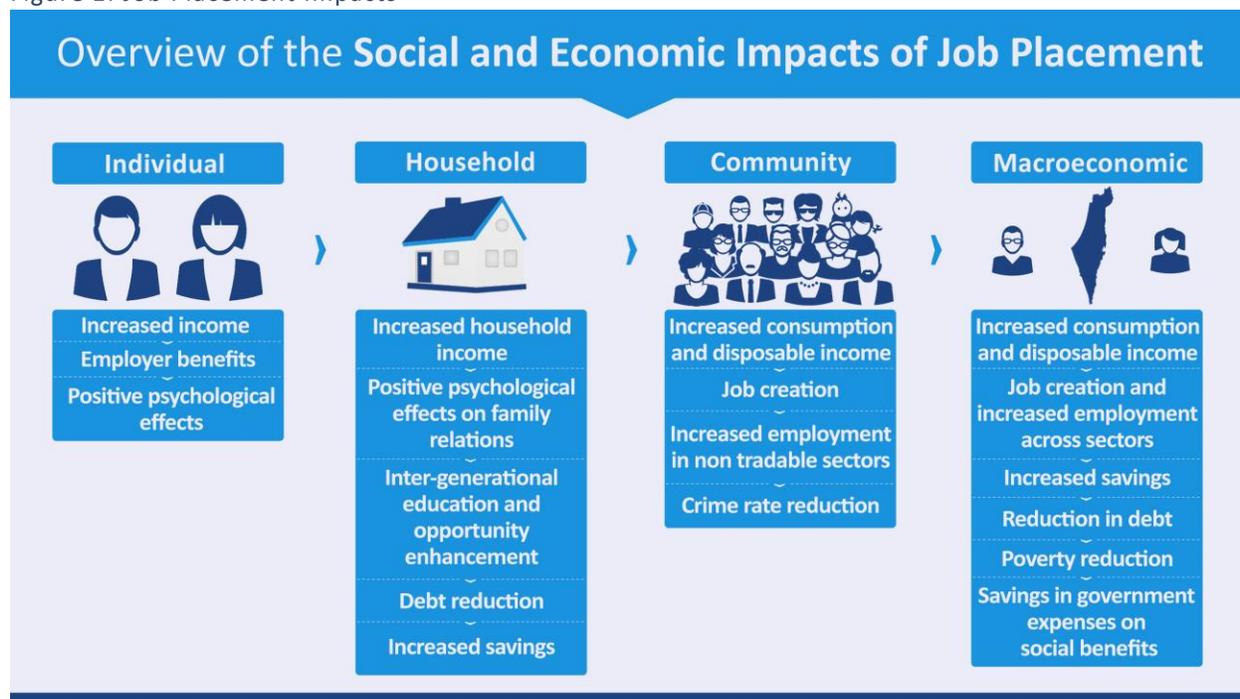
1. Creating a **net increase in employment**, as opposed to placing disadvantaged individuals at the expense of other disadvantaged individuals not participating in the empowerment programs; and
2. Avoiding negative offsetting impacts resulting from potential crowding-out effects (i.e., competition between ITWorks program participants and non-participants).

In the following sub-sections, we will examine the range of multiplier impact effects generated by effective job placement and how they are affected by employing the MIM strategy.

## OVERVIEW OF SOCIAL AND ECONOMIC IMPACTS OF JOB PLACEMENT

Figure 1 provides an overview of the social and economic impacts of job placement across individual, household, community, and national levels.

Figure 1: Job Placement Impacts



### JOB PLACEMENT IMPACTS AT THE HOUSEHOLD LEVEL

The potential effect of job placements of previously unemployed individuals could bear significant impact on both individual and family socio-economic welfare. First, the increase in disposable income would **allow households to save**, as well as **obtain goods and services that were previously unaffordable**. In addition, job placement assistance has been shown to significantly increase the likelihood of increased **long-term job security, job quality, and the receipt of employer benefits** such as health insurance (Ibarraran and Shady, 2009).

Importantly, these effects are not necessarily restricted to the lifetime of the employed individual, but may, in fact, have **significant positive effects on socio-economic welfare across generations** through a process known as intergenerational transfer. Employment status, including movement from unemployment to employment, is highly likely to **positively affect children's education and opportunities**, leading to improved economic welfare for the next generation. The next generation

will therefore be able provide even greater opportunities to their children and thus future generations. There are numerous theoretical and empirical economic studies that demonstrate the significant effects of intergenerational processes (Black et al, 2005; Chevalier, 2003; Currie and Moretti, 2003; Naschold, 2012). These studies demonstrate that the probability of being poor and/or less educated is highly correlated with parental poverty and education status; that is, these studies provide strong evidence of the existence of “poverty traps.” Job placement support for the unemployed helps individuals and families to **escape these poverty traps**.

Another effect of becoming employed is the psychological effect on the individual and the resultant effect on the environment in her home, surroundings, and the people with whom she interacts. The high risk of the negative psychological effects of being unemployed has been well documented in psychology literature. Studies reviewed by McKee-Ryan et al (2005), conclude that unemployed workers have significantly lower mental health, life, marital or family satisfaction, and subjective physical health than employed individuals. There is also some indication that **measures of mental health improve** after unemployed individuals find employment. In the Economics literature, several studies also show that there exists a significant gap in well-being between employed and unemployed individuals (for example, see Green, 2011; De Cuyper et al, 2008).

#### JOB PLACEMENT IMPACTS AT THE COMMUNITY AND REGIONAL LEVEL

Increased employment has the potential to impact the local or regional economy because of the interconnectedness of different economic agents and activities, and subsequently the national economy as well, if it is the case that the net increase in employment is large relative to the national workforce.

When there is an increase in employment in a particular sector, the resultant increase in disposable income of newly employed individuals leads to local multiplier effects<sup>1</sup>: an increase in the demand for goods and services in other sectors and thus greater consumption expenditures. This, in turn, leads to **job creation and increased employment in other sectors** as well.<sup>2</sup> Using data from the 1980, 1990, and 2000 in the US, Moretti (2010) estimates that within a region or city, the sensitivity of employment in the non-tradable sector to changes in employment in the tradable sector is approximately .335. This means that when employment increases, by, for example, 1000, in sectors (such as hi-tech) whose products can be traded on the international market, there will be an increase in employment of 335 people in the non-tradable (e.g., local restaurants and haircuts) sector.

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<sup>1</sup> The term “local multipliers” was coined by Moretti (2010).

<sup>2</sup> Given a limited number of jobs, increasing job placements for certain individuals could potentially have negative spillover effects by crowding out opportunities for other individuals. This point is discussed in subsequent sections.

That the related non-tradable sector typically relies primarily on low-skilled labor means that job creation is enjoyed by relatively poorer and less educated households, leading to accelerated reduction in the poverty rate. Moreover, this positive local multiplier effect is likely to have a larger magnitude when the initial increase in employment is in the skilled sector. Therefore an increase in hi-tech employment, being in the skilled tradable sector, is likely to have strong such local effects.

In addition to increased employment in other sectors operating within the community, job placement may also lead to a **reduction in regional crime rates**. Studies find a causal relationship between unemployment and crime. For example, using data from the US, Raphael and Winter-Ebmer (2001) find significant and positive effects of unemployment on property crime rates. Their results are used to suggest that a portion of the decline in US crime during the 1990s was a result of the decline in the unemployment rate.

## JOB PLACEMENT IMPACTS AT THE MACROECONOMIC LEVEL

Studies examining macroeconomic or general equilibrium impacts of specific job placement programs are scarce given limitations in existing econometric tools to study such phenomena. However, if the magnitude of the increase in initial net employment is large enough, one may see macroeconomic effects beyond local multiplier effects. That is, as at the regional level, when additional jobs are filled (and created) in a particular sector, the increase in disposable income of the industry's new hires leads to an increase in the demand for goods and services in other sectors. This, in turn, leads to **job creation and increased employment in those other sectors** as well.<sup>3</sup> With effects at a national scale, the resultant increase in aggregate demand in the economy would reduce potential pressure on the government to introduce fiscal stimuli into the economy through fiscal spending.

Changes in macroeconomic indicators do not necessarily impact human development indicators. However, the **positive effects of job placement on households and communities (reduction in poverty, increased household savings, receipt of employer benefits, intergenerational educational and opportunity enhancement, improvement in psychological welfare, etc.) are very likely to be broadly enjoyed when job placement and/or increased sector-specific employment achieves macroeconomic impact.**

## CROWDING OUT: RISK AND SAFEGUARDS

Given a limited number of jobs, increasing job placements for certain individuals could potentially have negative spillover effects by crowding out opportunities for other individuals. This is because

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<sup>3</sup> Israel, has a fiscal multiplier that is relatively small (greater than zero, but less than one), implying that an increase in net employment and incomes would lead to a change in other macroeconomic economic indicators such as the GDP and aggregate employment levels less than proportionately (Bank of Israel, 2013).

as the number of people being placed increases, after vacancies in relevant jobs are filled, there may develop competition for employment opportunities between job placement program graduates and individuals not receiving job placement program support.<sup>4</sup> At least several job placement programs, not including those of ITWorks, have experienced such challenges.<sup>5</sup>

To see any job placement program effects on a national scale, it is likely that a very large number of previously unemployed individuals would need to be placed in new jobs, but only to the extent that these placements do not crowd out employment opportunities for other individuals. Furthermore, at a general equilibrium level, increased industry-specific employment and resulting multiplier effects in the form of higher employment in other sectors may be partly counteracted by the resulting change in wages and prices across the secondary sectors. The correlation between scaling up national job placement efforts and the macroeconomic benefits will thus be non-linear. However, the multiplier effects could potentially be large and result in greater stimulus in the economy as a whole.

As a result of the crowding out risk, it is important to identify untapped yet reliable and long-term market opportunities for industry employment in order to ensure high job placement rates, job sustainability rates, and return on investment among program participants. By leveraging untapped market opportunities through, for example, the MIM strategy, job placement programs can support an increase in *net* employment and avoid this risk. Thus, job placement programs that consistently employ MIM are expected to generate multiplier effects that are not counteracted by crowding out effects.

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<sup>4</sup> While there is theoretical work on this potential negative externality effect, evidence suggesting the same is limited.

<sup>5</sup> Using a randomized control trial, Crepon et al (2013) evaluate the effects of a job assistance program in France and show that the program had little net benefit. The program was run in two phases: the first aimed to help job-seekers (who had been unemployed for six months or more) to find work. No industry or sectoral focus was made; rather, program participants received individualized support in job-seeking. The second phase aimed to support individuals in their jobs. In the first six months of the job, individuals received advisory services from a private agency to help them keep their jobs or find new ones in the case of termination.

Individuals in the program were significantly more likely to have found a stable job than those who were not. After eight months, eligible, unemployed youths who were assigned to the program were significantly 12% more likely to find a job with a contract lasting at least six months compared to individuals in the control group. However, researchers found that these gains were transitory and that they were partly at the expense of eligible workers who did not benefit from the program. There was a negative impact of being in an area where the program was implemented for eligible youth who were not assigned to the program. The effect was stronger for individuals who were looking for jobs in sectors where there was high demand for jobs by youths eligible for the program (that is, where the competition was greater).

## ITWorks' Impact To Date

### QUANTIFIED IMPACTS TO DATE

ITWorks monitors job placement status against demographic information on each ITWorks graduate in order to assess the distribution of success rates among all participant groups. Their specific metrics and those objectives specific to program impact are outlined in Table 2.

Table 2: ITWorks Metrics and Quantifiable Objectives

Program Metrics	Quantifiable Objectives
1} Successful recruitment of ethnic and religious minorities, classified "at-risk" individuals, women, and disabled persons among ITWorks program participant class (relative to national figures).	Ensure that ITWorks program participants and graduates are comprised of more than: 40% ethnic and religious minorities, 50% classified "at-risk" individuals, 50% women and 10% disabled persons.
2} (i) Sector and quality appropriate job placement rates.  (ii) Job sustainability rates (defined as minimally six months of continuous employment).	(i) Achieve greater than 70% appropriate job placement for ITWorks program graduates.  (ii) Achieve greater than 80% job sustainability for ITWorks program graduates.

Table 3 outlines ITWorks' progress toward program objectives as of 2013.

Table 3: ITWorks Progress Toward Objectives To Date

Quantifiable Objectives	Status
1} Ensure that ITWorks program participants and graduates are comprised of more than: 40% ethnic and religious minorities, 50% classified "at-risk" individuals, 50% women and 10% disabled persons.	Program diversity metrics achieved for all diversity classifications except for gender: 40% ethnic minority, 50% classified "at-risk", 10% disabled, 41% women.
2} (i) Achieve greater than 70% job placement for ITWorks program graduates.  (ii) Achieve greater than 80% job sustainability for ITWorks program graduates.	<p>✓ Objective met: All 2010+ (graduating class year) cohorts have had job placements rates greater than 70% and trending upwards;</p> <p>✓ Objective met: Annual sustainability rates for 2011+ (graduating class year) cohorts range are 80% or higher.</p>

Data for impact assessment was last collected in April of 2013. Table 4 and figure 2 present job placement rates for ITWorks’ graduating classes of 2006 through 2013.

Figure 2: Job Placement Rates per ITWorks Cohort

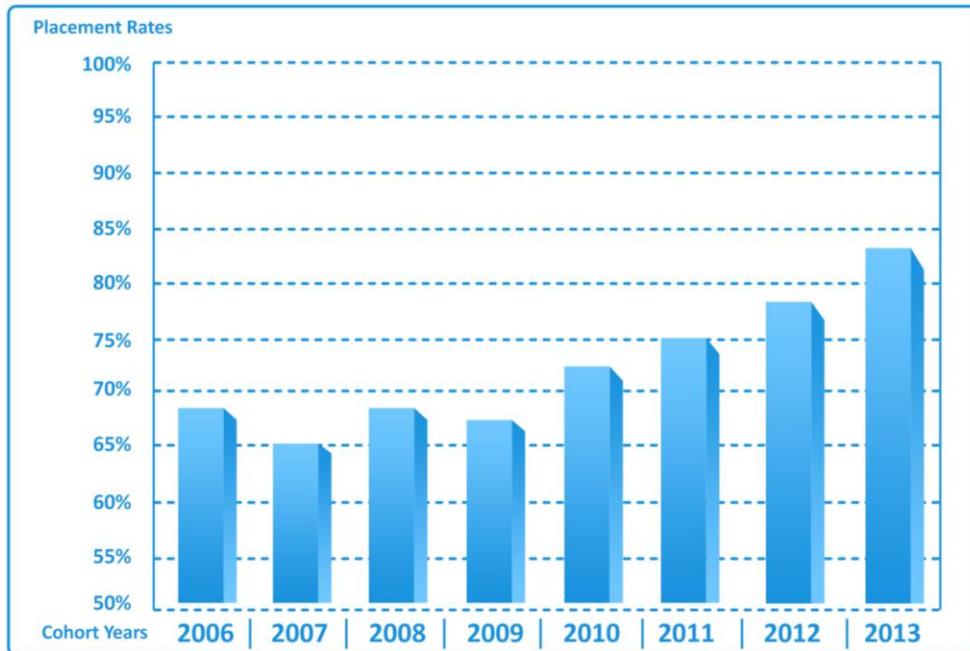


Table 4: Job Placement and Sustainability Rates for Cohorts 2006-2013

Cohort Year	Participants	Job Placement Rate	Sustainability Rate
2006	150	68%	73%
2007	200	65%	70%
2008	200	68%	75%
2009	250	67%	75%
2010	350	72%	78%
2011	350	75%	80%
2012	350	78%	83%
2013	400	83%	83%

Since 2007, ITWorks job placement has seen an upward trend from 65% to 83%.

In the absence of existing randomized control trials (RCTs)<sup>6</sup>, we partially rely on extrapolation from scientific literature to assess the impacts to date. First, per Moretti (2010), ITWorks has very likely had local multiplicative effects, including **generation of jobs in the non-tradable sector**. Related calculations are provided in Appendix B: Impact Estimates.

**ITWorks' program helps save the unemployment and disability-related transfers that the government would have made to placed individuals**, and these resources (net of any transfers that the government made to people placed by ITWorks) may be instead used for government expenditures that might be more productive for the economy.<sup>7</sup>

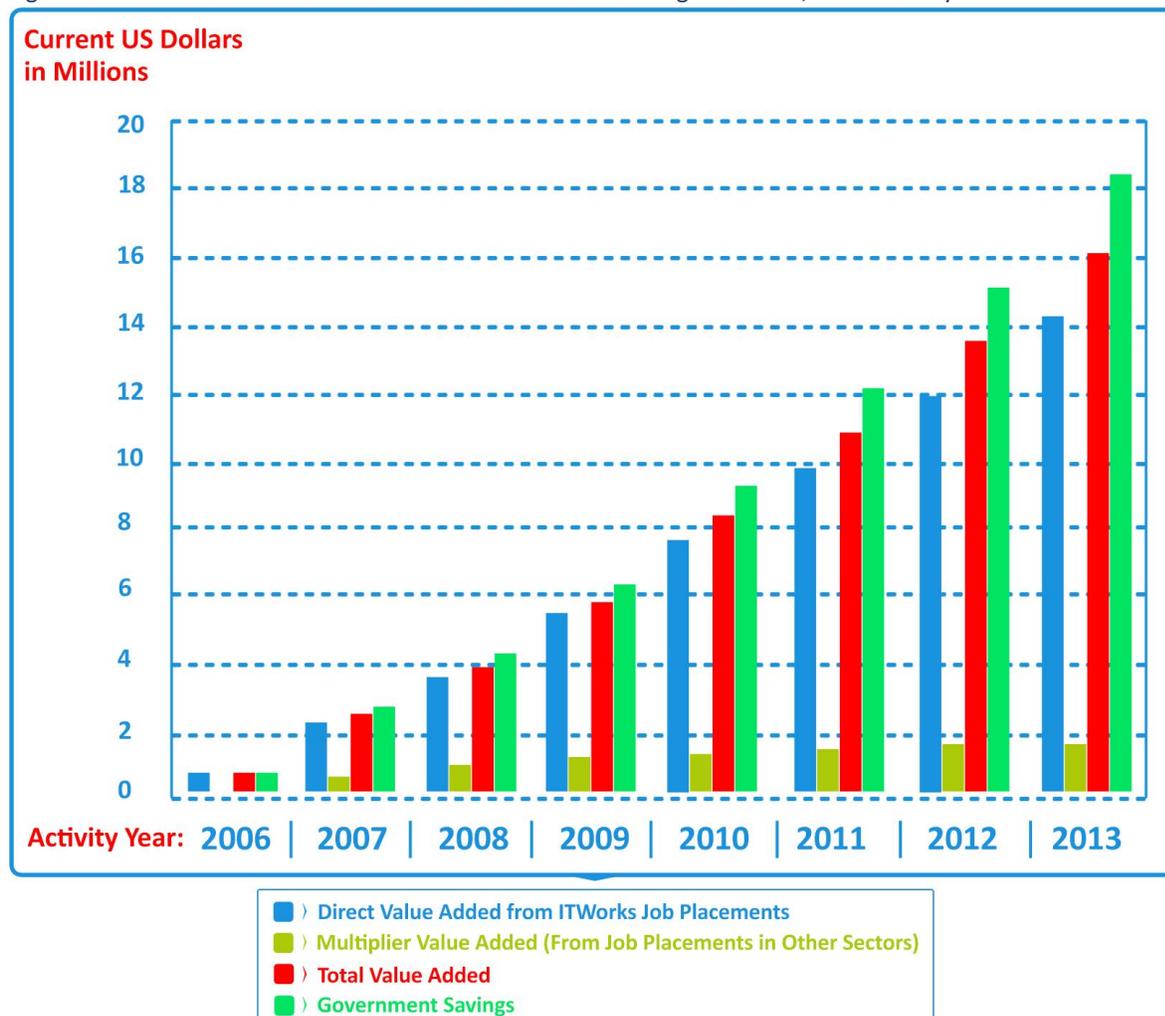
Figure 3 presents estimates of value added directly (through hi-tech wages) and indirectly (through new jobs likely to be created in other sectors, per Moretti (2010)) as well as government savings. Results are presented per activity year (i.e., calendar year of ITWorks operation).

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<sup>6</sup> To obtain accurate measures of the isolated effects of ITworks' job placement program, it would be necessary to compare outcomes of individuals in the program with outcomes of very similar individuals in a control group, where selection into the program would need to be done randomly (as in Crepon et al, 2013). For example, to determine the impact on income generated, it would be necessary to compare the average income of individuals in the control group to the average earned by all placed individuals from the program.

<sup>7</sup> Note that the transfer that the government makes to ITworks to support its program is significantly less (in fact, more than 8 times less) than the amount it would have had to spend in the form of benefits. For instance, benefits for 100 individuals for one year would be approximately  $\$1160 \times 12 \times 100 = \$1,392,000$ , whereas the amount that the government would provide to ITworks for these 100 people =  $100 \times 60\% \times 2800 = 168,000$ .

Figure 3: Estimated Value Added and Government Savings To Date, Per Activity Year



Since 2006 and through 2013, more than 2,250 people have participated in ITWorks programs, out of which 1655 have been successfully placed have enjoyed gross earnings of more than \$112.1 million and a total direct value-added, defined as gross earnings beyond what their unemployment benefits would have been, of approximately \$56.3 million.

Among other impacts, for every 1,000 ITWorks graduates placed in hi-tech jobs, 335 new jobs are created in the tradable, unskilled sector. This equates to almost \$18.8 million in additional gross earnings and a total multiplier value-added (that is, gross earnings less government benefits that would have been realized) of almost \$5.7 million. As such, **total value-added to date is approximately \$61.9 million.** With a cost per participant of \$2,800, this equates to a **return on investment (from direct and indirect value-added by ITWorks programs) thus far of approximately 983%.** 9% of this value-added is attributable to multiplicative factors.

As a result of employment realized by individuals previously unemployed, the Israeli **government is estimated to have realized \$70 million saved on social benefits spending.**

Methodological assumptions and caveats are listed in Appendix A.

At current levels of operation and job placements, it is unlikely that ITWorks has yet achieved macroeconomic effects in the national economy.

ESTIMATED IMPACTS TO DATE	
➤	<b>Value Added:</b>
○	<b>Direct Value Added of \$56.3 million</b>
○	<b>Multiplier Value Added of \$5.7 million</b>
○	<b>Total Value Added of \$61.9 million</b>
➤	<b>Return on investment (ROI): 983%</b>
➤	<b>Government Savings on Benefits Spending:</b>
○	<b>\$70.0 million</b>

### NON-QUANTIFIED IMPACTS TO DATE

**ITWorks' programs are expected to have generated individual and community outcomes (pertaining to poverty, psychological well-being, crime, intergenerational effects, inequality, crime, etc.) similar to those discussed in the literature. In virtue of employing the MIM strategy, these effects are not expected to be mitigated by offsetting crowding out impacts.**

Apart from providing counseling and placement services, ITWorks' programs specifically provide training to individuals who may not have the complete background necessary for the jobs to which they might aspire. Many other programs that have been implemented by other country governments do not have this feature<sup>8</sup> and may partially attribute program outcome shortcomings to this deficiency (Crepon et al, 2013). Presence of this educational feature also suggests that ITWorks' programs have a greater likelihood (than do other job placement programs) of economically empowering less educated individuals.

ITWorks' **focus on recruiting from more economically and socially vulnerable groups** also makes the program more likely to make a relatively strong marginal impact in the empowerment of individuals and communities. Specifically, ITWorks targets Israel's social, economic, and geographic periphery, include women, Arabs, Druze, Circassians, Ethiopians, new immigrants, adults with intellectual and sensory disabilities, and the Ultra-Orthodox community. An increase in employment rates among these populations will contribute towards increasing well-being and **decreasing the inequality** that exists between them and the rest of the population. Apart from the direct benefit to these individuals, there are likely to be certain **positive spillover effects among members of their families or communities**. For example, there is ample evidence to suggest that as a woman's

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<sup>8</sup> For instance, the New Deal for the Young Unemployed in the UK is also a well-known program (Blundell et al, 2004) and has the feature of providing counseling services for job placement, without the additional training.

income increases, household expenditure is affected in a way that benefits the wellbeing of the family.<sup>9</sup>

## ITWorks' Projected Future Impact

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If scaled across more cities and regions in Israel, ITWorks' programs have the potential to increase employment and demand for goods and services nationally. Specifically, given relatively modest entry-level salaries in Israel (including in Israel's hi-tech industry<sup>10</sup>), scaling ITWorks' programs will likely cause demand for low-cost services and consumer goods (such as food at economical restaurants, affordable clothing, children's education tools, and other consumer goods) to rise and wages and employment in these sectors to increase. This, in turn, will increase demand for other goods and services by the new hires in these secondary sectors, and so forth. This type of local multiplier effect could continue to significantly improve economic welfare in regional economies even if the magnitudes are not large enough to affect the national economy as a whole, as illustrated in Moretti (2010). Furthermore, because the high-tech sector is constantly growing disproportionately to other sectors and presents new job vacancies rather than competing opportunities (Nathanson, 2011), ITWorks is expected to produce an increase in net employment at least until there are no vacancies (out of 7,000) remaining in the information and communication sector. However, several future projection scenarios are considered in order to account for uncertainty of hi-tech industry growth.

### SCENARIO A: STAGNATION IN HI-TECH JOB VACANCIES

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In Scenario A, the substantially conservative assumption is made that this figure (of 7,000) will not grow, so that ITWorks would reach full scale upon filling a cumulative sum of up to 7,000 entry-level hi-tech jobs with future program cohorts. Beyond this level, it is conservatively assumed that there would be a risk of crowding out.

ITWorks provides projections/target numbers of program participants for cohorts 2014 through 2022. We use these figures, but the number of program participants is capped when the sum of those participants projected to find relevant jobs reaches 7,000. This threshold is crossed after the 2019 cohort graduates (that is, after 7,760 people from cohorts 2014 through 2019 participate in ITWorks programs).

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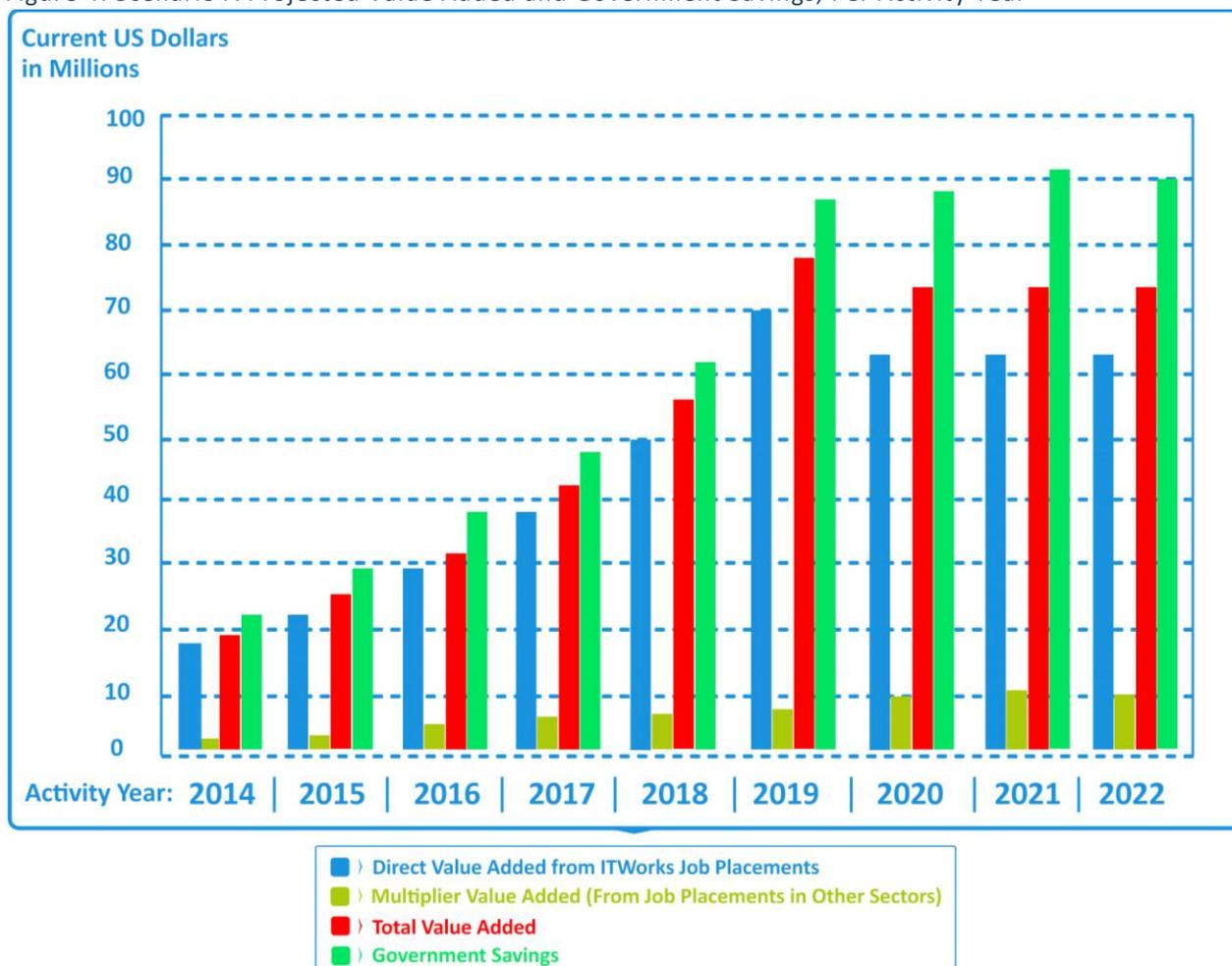
<sup>9</sup> For example, in a study in rural Mexico, Bobonis (2009) finds that an increase in a woman's income has a significant positive effect on food expenditures and expenditures on children's goods

<sup>10</sup> ITWorks uses a conservative assumption of \$21,000, taken from 2006, in entry-level hi-tech annual salaries.

Under Scenario A, projected future impact is thus the sum of projected impact for activity years 2014 through 2022 of (i) the existing 2006 through 2013 cohorts, plus (ii) projected 2014 through 2019 cohorts.

Figure 4 presents Scenario A projections of value added directly (through hi-tech wages) and indirectly (through new jobs likely to be created in other sectors, per Moretti (2010)) as well as government savings. Results are presented per activity year (i.e., calendar year of ITWorks operation).

Figure 4: Scenario A Projected Value Added and Government Savings, Per Activity Year



Under Scenario A, during the period between activity years 2014 and 2022, existing (2006 through 2013) and future (2014 through 2019) program cohorts are projected to enjoy gross hi-tech wage earnings of more than \$834.9 million and a total direct value-added (again defined as gross earnings beyond what their unemployment benefits would be) of approximately \$418.9 million. \$121.1 million, or 29%, of the projected direct value added is attributable to existing (2006 through 2013) cohorts.

Among other impacts, for every 1,000 ITWorks graduates placed in hi-tech jobs, 335 new jobs are created in the non-tradable, unskilled sector. This equates to almost \$200.2 million in additional gross earnings between activity years 2014 and 2022 and a total multiplier value-added (that is, gross earnings less government benefits that would be realized) of almost \$60.6 million.

As such, total projected value-added under Scenario A for activity years 2014 through 2022 is approximately \$479.5 million. Projected 2014-2019 cohorts have a total return on investment of 1,546%. 2006-2013 cohorts during activity years 2006-2022 (that is, past and future projected years) have a total projected return on investment of 3,261%.

As a result of employment realized by individuals previously unemployed, the Israeli government is estimated to have realized \$555.7 million saved on social benefits spending.

<b>PROJECT IMPACT UNDER SCENARIO A</b>	
➤	<b>Value Added Across Activity Years 2014-2022:</b>
	• <b>Direct Value Added of \$418.9 million</b>
	• <b>Multiplier Value Added of \$60.6 million</b>
	• <b>Total Value Added of \$479.5 million</b>
➤	<b>Return on investment (ROI) of 2014-2019 cohorts: 1,546%</b>
➤	<b>ROI of 2006-2013 cohorts for activity years 2006-2022: 3,461%</b>
➤	<b>Government Savings on Benefits Spending:</b>
	• <b>\$555.7 million</b>

Again, In virtue of employing the MIM strategy, these effects are not expected to be mitigated by offsetting crowding out impacts.

Additional methodological assumptions and caveats are listed in Appendix A.

**SCENARIO B: GROWTH IN HI-TECH JOB VACANCIES**

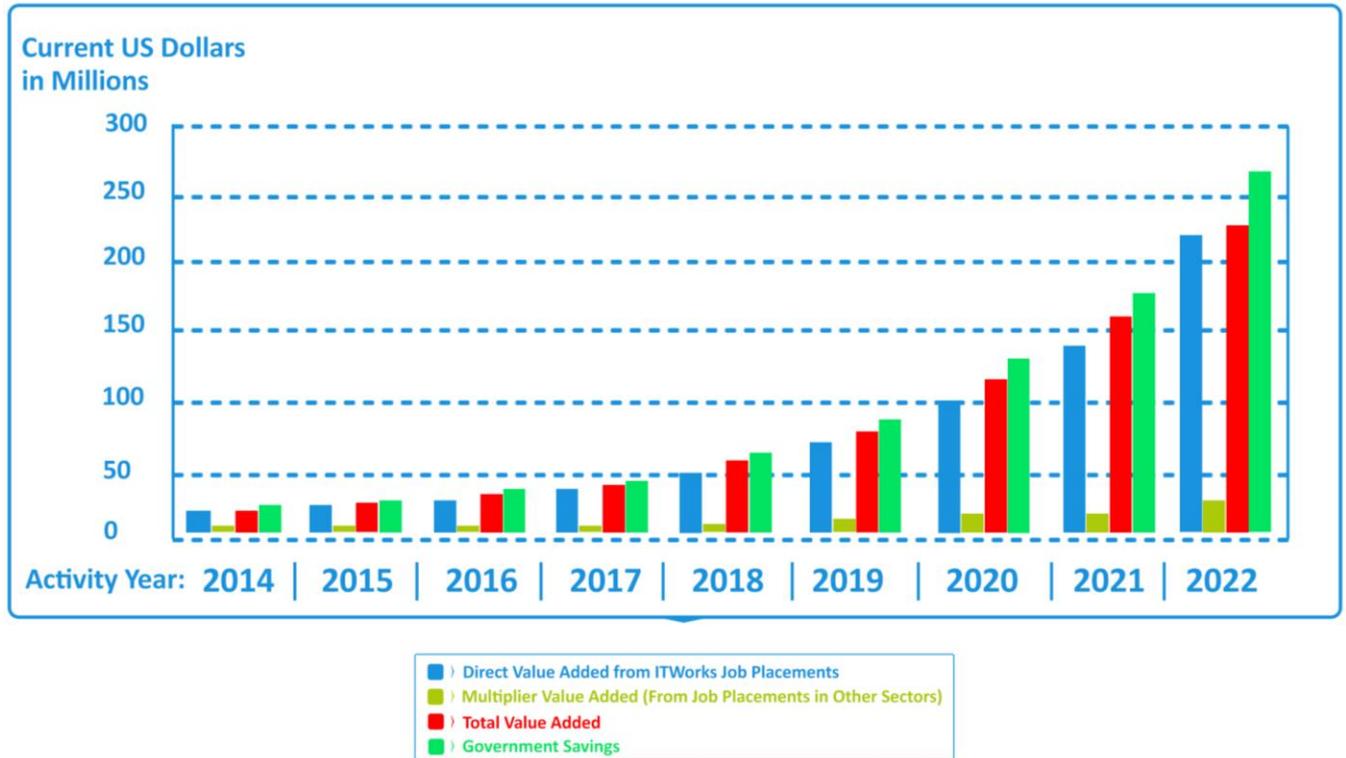
In Scenario B, ITWorks projections/target numbers of program participants for cohorts 2014 through 2022 are used without regard to potential for crowding out beyond a threshold of 7,000 entry-level hi-tech jobs filled.

Under Scenario B, projected future impact is thus the sum of projected impact for activity years 2014 through 2022 of (i) the existing 2006 through 2013 cohorts, plus (ii) projected 2014 through 2022 cohorts.

Figure 5 presents projections of value added directly (through hi-tech wages) and indirectly (through new jobs likely to be created in other sectors, per Moretti (2010)) as well as government

savings upon full-scale<sup>11</sup> operation. Results are presented per activity year (i.e., calendar year of ITWorks operation).

Figure 5: Scenario B Projected Value Added and Government Savings, Per Activity Year



Under Scenario B, during the period between activity years 2014 and 2022, existing (2006 through 2013) and future (2014 through 2019) program cohorts are projected to enjoy gross hi-tech wage earnings of more than \$1,367.1 million and a total direct value-added (again defined as gross earnings beyond what their unemployment benefits would be) of approximately \$685.9 million. \$121.1 million, or 18%, of the projected direct value added is attributable to existing (2006 through 2013) cohorts.

Among other impacts, for every 1,000 ITWorks graduates placed in hi-tech jobs, 335 new jobs are created in the non-tradable, unskilled sector. This equates to almost \$236.9 million in additional gross earnings between activity years 2014 and 2022 and a total multiplier value-added (that is, gross earnings less government benefits that would be realized) of almost \$71.6 million.

<sup>11</sup> The information and communications sector in Israel has about 7,000 vacancies annually (Central Bureau of Statistics, 2014), but this number could grow under this scenario.

As such, total projected value-added under Scenario B for activity years 2014 through 2022 is approximately \$757.5 million. Projected 2014-2019 cohorts have a total return on investment of 789%. As in Scenario A, 2006-2013 cohorts during activity years 2006-2022 (that is, past and future projected years) have a total projected return on investment of 3,261%.

As a result of employment realized by individuals previously unemployed, the Israeli government is estimated to have realized \$846.4 million saved on social benefits spending.

<b>PROJECT IMPACT UNDER SCENARIO B</b>	
➤	<b>Value Added Across Activity Years 2014-2022:</b> <ul style="list-style-type: none"><li>• <b>Direct Value Added of \$685.9 million</b></li><li>• <b>Multiplier Value Added of \$71.6 million</b></li><li>• <b>Total Value Added of \$757.5 million</b></li></ul>
➤	<b>Return on investment (ROI) of 2014-2019 cohorts: 789%</b>
➤	<b>ROI of 2006-2013 cohorts for activity years 2006-2022: 3,461%</b>
➤	<b>Government Savings on Benefits Spending:</b> <ul style="list-style-type: none"><li>• <b>\$846.4 million</b></li></ul>

Additional methodological assumptions and caveats are listed in Appendix A.

## MACROECONOMIC IMPACT

Israel's current poverty rate is approximately 20%, meaning that approximately 1.6 million individuals are classified as poor. Thus, while stimuli in local economies through job placements could lead to detectable reductions in local poverty rates, an increase in job placements would likely have to number at at least several thousand in order to be able to produce any significant national effects. For example, to see a 1% decline in the national poverty rate, 16,000 individuals (or 4,000 households) would need to rise out of poverty. This would require the filling of at least<sup>12</sup> 4,000 jobs to be created as a result of the scaling up of ITWorks' program through the multiplier effect, implying that ITWorks would need (according to Moretti (2010)) to place approximately 11,900 workers in jobs in order for Israel to reduce its national poverty rate by 1%.

## Conclusion

Based on this assessment, we estimate that ITWorks' activities to date have generated a total value added in additional income of \$61.9 million, and a total saving in government expenditure on social benefits of \$70 million. With a cost per participant of \$2,800, this equates to a 983% return on investment.

<sup>12</sup> This is a lower bound since it is unlikely that all of the newly created jobs will go to an individual whose household lies below the poverty line.

The projected impact of ITWorks planned activities for cohorts 2014-2019 (assuming conservative scenario A) is projected at \$479.5 million in additional income and \$555.7 million in government savings on social benefits. This equates to a 1,546% return on investment.

The most significant quantifiable multiplier effects identified are the generation of new jobs in the non-tradable sector and government savings on benefits.

However, we estimate that upon scaling up the projected impact would also include the following multiplier effects at the regional level: decreased poverty rates, decreased inequality rates between demographic groups, reduced crime rates, intergenerational improvements in educational levels, improved individual and family psychological well-being and household debt relief.

Our review of the scientific literature supports the claim that ITWorks' Multiplier Impacts Model is an effective method to generate net multiplier impact effects that are not counteracted by offsetting factors resulting from crowding-out effects.

Finally, we have identified four main recommendations regarding future ITWorks' activities:

1. If ITWorks' programs are scaled up beyond the number of unfilled hi-tech jobs, we recommend that additional scaling up should be based on identifying additional sectors where there is a significant number of unfilled positions.
2. We recommend the introduction of safeguard monitoring mechanisms to ensure that future job placement activities do not crowd out opportunities for other disadvantaged individuals not participating in ITWorks' programs.
3. We recommend the introduction of additional graduate status monitoring mechanisms, in particular regarding the employment status of participants post-placement, their annual income, and their job category and position.
4. We recommend that future impact assessments should include randomized control trials (RCTs) in order to isolate and thereby best evaluate program versus non-program effects on success metrics.

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## Appendix A: Assumptions and Methodological Qualifications

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Calculations of estimated impact to date and future projected impact hinge on the following assumptions:

- The average wage of ITWorks graduates securing entry-level, hi-tech employment is \$21,000 per year. This is considered a conservative assumption, as \$21,000 is approximately equivalent to median income in Israel as well as average entry-level high tech earnings in 2006.
- Secondary jobs created as a result of multiplier effects (per Moretti, 2010) are in the unskilled sector, paying comparatively lower average wages of \$15,000 per year, approximately reflective of Israeli minimum wage.
- In the absence of ITWorks employment (direct and multiplier) assistance, new hires would have received and/or will receive government (unemployment, disability, etc.) benefits of \$872 per month. Value added is defined as gross earnings beyond the sum of government benefits that would have otherwise been realized.
- It takes a full two years for multiplier effects to be realized. For example, if 1,000 hi-tech jobs are filled, then in activity year 1 (where the cohort year equals the activity year), there are 0 multiplier jobs created; in activity year 2 there are  $1,000 \cdot .335$  [per Moletti]  $\cdot 50\% = 168$  multiplier jobs created; and in activity year 3 there are  $1,000 \cdot .335 \cdot 100\% = 335$  multiplier jobs created cumulatively. Thereafter, the cumulative figure remains 335.
- ITWorks measured job sustainability rates in 2013 for cohorts 2006 through 2013, with sustainability rate being defined as the proportion of ITWorks graduates initially placed who were still employed during measurement in 2013. To assess impact to date, past annual sustainability rates are extrapolated geometrically from the 2013 sustainability rate figures. After activity year 2013, sustainability rates for existing cohorts (for future impact calculations) remain unchanged.
- Sustainability rates for future projected cohorts are assumed as follows: 100% in activity year 1; 83% in activity year 2; 80% in activity year 3; 78% in activity year 4; 75% in activity year 5; and 73% thereafter. These projections are reflective of past average sustainability rates across activity years.
- Figures of the number of program participants for cohorts 2006 through 2013 are taken from "Thank you letter \_ITWorks\_Explanation.docx," provided by ITWorks in June of 2014.
- Monetized values are in nominal U.S. dollar units. Over the considered time horizon, figures are not adjusted for inflation. This is due to the instability and relatively low levels of recent historical Israeli inflation as well as due to difficulty in producing robust predictions of NIS-to-USD exchange rates.
- For all future cohorts, job placement is assumed to be 80%.
- Future projected impact relies on general assumptions of future economic stability and continued hi-tech sector growth.

## Appendix B: Impact Estimates

Table 5: Estimated Value Added and Government Savings To Date (for Cohorts 2006-2013)

Activity Year	Direct Value Added	Multiplier Value Added	Total Value Added	Government Savings
2006	\$1,074,672	\$0	\$1,074,672	\$1,067,328
2007	\$2,397,106	\$77,498	\$2,474,604	\$2,559,502
2008	\$3,705,785	\$253,767	\$3,959,551	\$4,265,869
2009	\$5,272,778	\$455,868	\$5,728,646	\$6,288,377
2010	\$7,618,273	\$686,461	\$8,304,734	\$9,149,795
2011	\$9,881,955	\$1,005,189	\$10,887,144	\$12,133,273
2012	\$11,998,510	\$1,396,096	\$13,394,606	\$15,137,139
2013	\$14,310,364	\$1,802,958	\$16,113,322	\$18,371,776
<b>Total</b>	<b>\$56,259,443</b>	<b>\$5,677,836</b>	<b>\$61,937,279</b>	<b>\$68,973,059</b>

Table 6: Estimated Future Value Added and Government Savings in Scenario A

Activity Year	Direct Value Added	Multiplier Value Added	Total Value Added	Government Savings
2014	\$17,592,960	\$2,262,625	\$19,855,585	\$22,692,335
2015	\$22,729,049	\$2,794,471	\$25,523,520	\$29,020,230
2016	\$29,125,666	\$3,499,547	\$32,625,212	\$36,999,658
2017	\$37,591,131	\$4,472,065	\$42,063,196	\$47,650,754
2018	\$50,511,639	\$5,748,495	\$56,260,134	\$63,427,536
2019	\$69,980,481	\$7,571,967	\$77,552,448	\$86,969,862
2020	\$65,108,634	\$10,307,175	\$75,415,810	\$88,441,100
2021	\$63,667,310	\$11,948,300	\$75,615,610	\$90,795,500
2022	\$62,554,708	\$11,948,300	\$74,503,008	\$89,690,502
<b>Total</b>	<b>\$418,861,577</b>	<b>\$60,552,946</b>	<b>\$479,414,524</b>	<b>\$555,687,476</b>

Table 7: Estimated Future Value Added and Government Savings in Scenario B

Cohort Year	Direct Value Added	Multiplier Value Added	Total Value Added	Government Savings
2014	\$17,592,960	\$2,262,625	\$19,855,585	\$22,692,335
2015	\$22,729,049	\$2,794,471	\$25,523,520	\$29,020,230
2016	\$29,125,666	\$3,499,547	\$32,625,212	\$36,999,658
2017	\$37,591,131	\$4,472,065	\$42,063,196	\$47,650,754
2018	\$50,511,639	\$5,748,495	\$56,260,134	\$63,427,536
2019	\$69,980,481	\$7,571,967	\$77,552,448	\$86,969,862
2020	\$99,245,274	\$10,307,175	\$109,552,450	\$122,344,460
2021	\$143,205,681	\$14,409,987	\$157,615,668	\$175,469,142
2022	\$215,910,402	\$20,564,205	\$236,474,608	\$261,874,052
<b>Total</b>	<b>\$685,892,283</b>	<b>\$71,630,539</b>	<b>\$757,522,822</b>	<b>\$846,448,028</b>