Cost-benefit analysis for labour market programs

Analytical framework and an example from a recent evaluation

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ESDC Evaluation Directorate

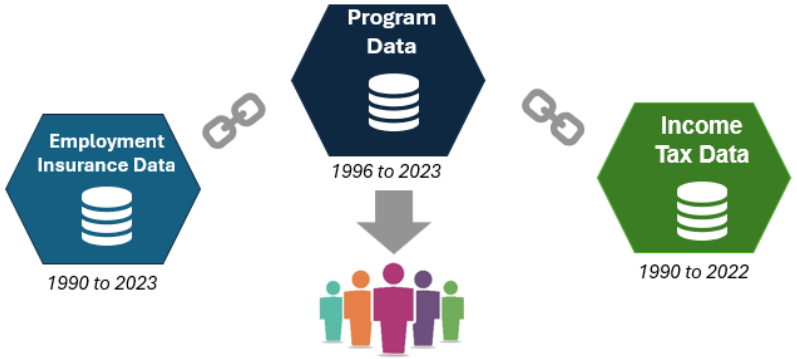
Background and context

- ESDC delivers a range of labour market programs designed to support Canadians in improving their employment outcomes and addressing barriers to workforce participation. For example:
  - **Employment Assistance Services:** Job search support, career counseling, other individualized employment strategies.
  - **Skills for Employment:** Training and skill development to improve employability.
  - **Wage Subsidies:** Financial incentives for employers to hire unemployed or underrepresented groups.
- Assessing the impact of these programs is important to ensure they achieve intended objectives and contribute to evidence-based policy and program improvements.
- We can leverage rich integrated administrative data available at ESDC to conduct robust incremental impact analysis allowing us to estimate the incremental effect of programs on participants compared to similar non-participants.
- While net impact analysis is important, it does not assess whether benefits outweigh costs. To do so, we conduct a cost-benefit analysis, which helps inform whether the Program delivers value for money and supports efficient allocation of limited public funds.

Data and methodology

- We use rich integrated administrative data from program participation data, Employment Insurance (EI) data (EI part I data on EI claims and EI part II data on program participation) and income tax data from the Canada Revenue Agency.
- We select a reference period, for example all participants who began participating in a program from April 2015 to March 2017 and their outcomes followed up to 2022.
- Control groups include similar individuals who did not participate in the program.

DATA SOURCES:



- Previous methodology used propensity score matching along with difference-in-difference method. More recently, we have started using the Modified Causal Forest, a causal machine learning approach designed for estimating heterogeneous treatment effects.

List of variables

- Labour market attachment is informed via the following set of indicators :
  - Employment earnings
  - Incidence of employment
  - Social Assistance (SA) benefits
  - Employment Insurance (EI) benefits

- Over 75 additional variables were used:

Socio-Demographics

- Age
- Gender
- Indigenous status
- person with disability
- Immigrant
- Visible minority
- Marital status
- Education level
- Province of Residence
- Urban/Rural indicator

Labour Market Characteristics

- Reason for job separation
- Industry (NAICS)
- New entrant to labour force
- Past interventions taken
- Past Earnings up to 5 years
- Past EI Benefit usage up to 5 years
- Past social assistance income up to 5 years
- Past tuition amounts up to 5 years

Example from the evaluation of OFPD: net impact results

- An evaluation of the OFPD program was completed in December 2025, which for the second time included both net impact analysis and cost benefit analysis.
- Introduced in 1997 to address gaps in labour market participation of persons with disabilities, the OFPD program funds projects through third-party organizations that deliver various employment supports and services to job seekers with disability or employers.
- Incremental impacts were estimated for a cohort of participants who started an intervention between April 2015 to March 2017.

Indicators	OFPD overall	Enhanced Employment Assistance Services	Skills for Employment	Wage Subsidy
Employment income ($)	1,180	196	2,262**	2,489***
Incidence of employment (pp)	3.7***	2.6	7.8***	13.3***
EI benefits ($)	60	-248**	314*	299**
SA benefits ($)	-376	157	-1,295***	-587***

Note: Significance level: ***1%, **5%, *10%

CBA methodology

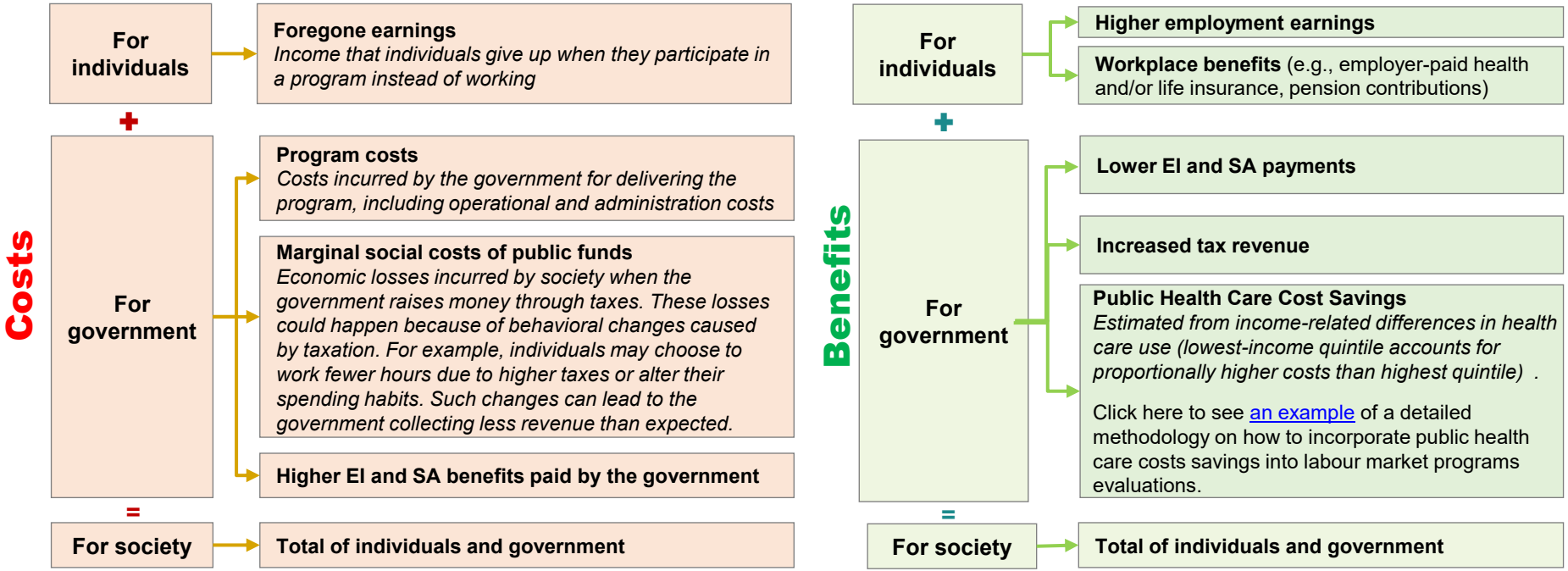
What is cost-benefit analysis?

- The cost-benefit analysis uses all quantifiable costs and benefits directly attributable to the program that could be estimated using the available administrative data.
- It compares the costs incurred by the government in delivering the program with the longer-term direct benefits associated with program participation (for example, increases in employment earnings of participants, increased tax revenues, decreases in social assistance use).
- Costs and benefits are calculated from three perspectives:

PARTICIPANT PERSPECTIVE		GOVERNMENT PERSPECTIVE		SOCIAL PERSPECTIVE
Compares the costs and benefits accruing to individuals as a result of their participation in the program.	+	Examines government direct program costs and the associated longer-term impacts on tax revenues as well as public expenditures.	=	Represents a combined view of both individual and government perspectives, capturing the overall societal impact of participation in the program.

Cost-benefit analysis conceptual framework

- The cost-benefit analysis framework used in OFPD evaluation is based on calculating the difference between benefits and costs, a benefit-cost ratio is determined (see Annex A for estimation methods used for each variable).



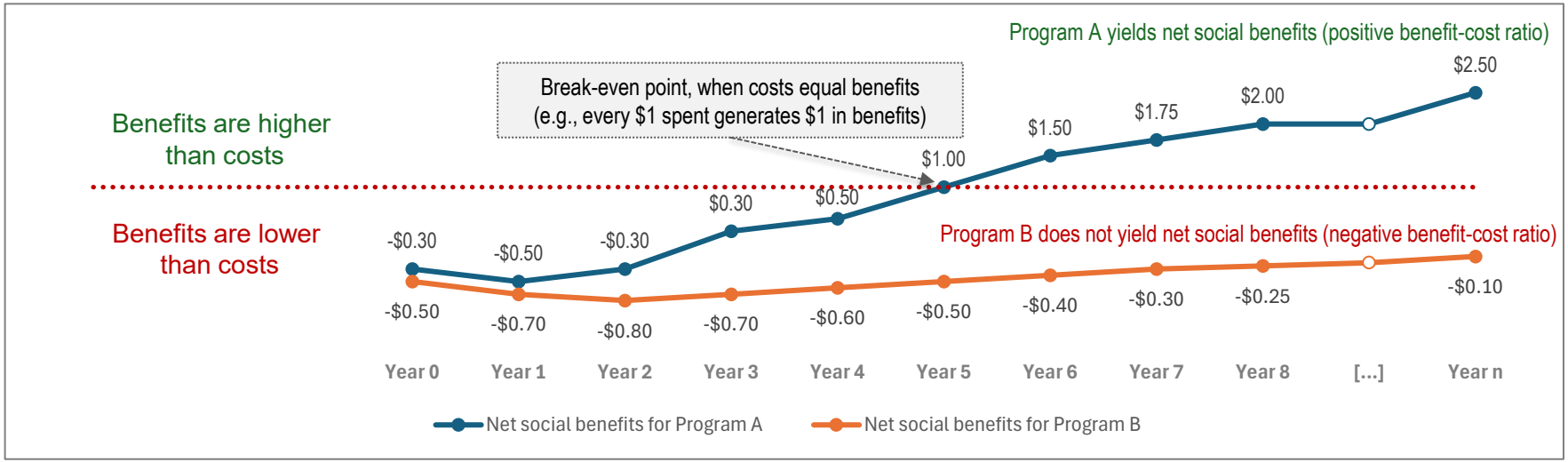
What questions does cost-benefit analysis answer?

- The cost-benefit analysis includes the following indicators, each answering a specific question:

Indicator	Question	How is it calculated?
Net present value	By how much do the benefits exceed the costs after participation?	Total discounted benefits – Total discounted costs measured over the participation period.
Benefit-cost ratio	How much is the benefit for society, if the government spends $1 for the program?	The sum of discounted benefits measured over the participation period and at the 10-year post program period divided by program costs.
Payback period	How many years after participation would it take for the benefits to recover the costs?	Payback period is measured by the amount of time required for the discounted benefits to equal the discounted costs.
Social return	What is the dollar value of the net social benefit generated when the government spends $1 on a program, accounting for discounted benefits and costs to society?	Discounted net benefit to the society divided by direct program cost to the government.

Illustrative examples of positive and negative benefit-cost ratio

- Program A starts below the break-even point (when benefits equal costs) but surpasses it by Year 5 and continues to increase, reaching $2.50 in later years. This indicates positive net social benefits.
- In contrast, Program B remains below the break-even point throughout, with values ranging from -$0.50 to -$0.10. This means its costs consistently outweigh its benefits.
- Overall, Program A becomes cost-effective in the fifth year after participation begins, while Program B does not yield net social benefits.

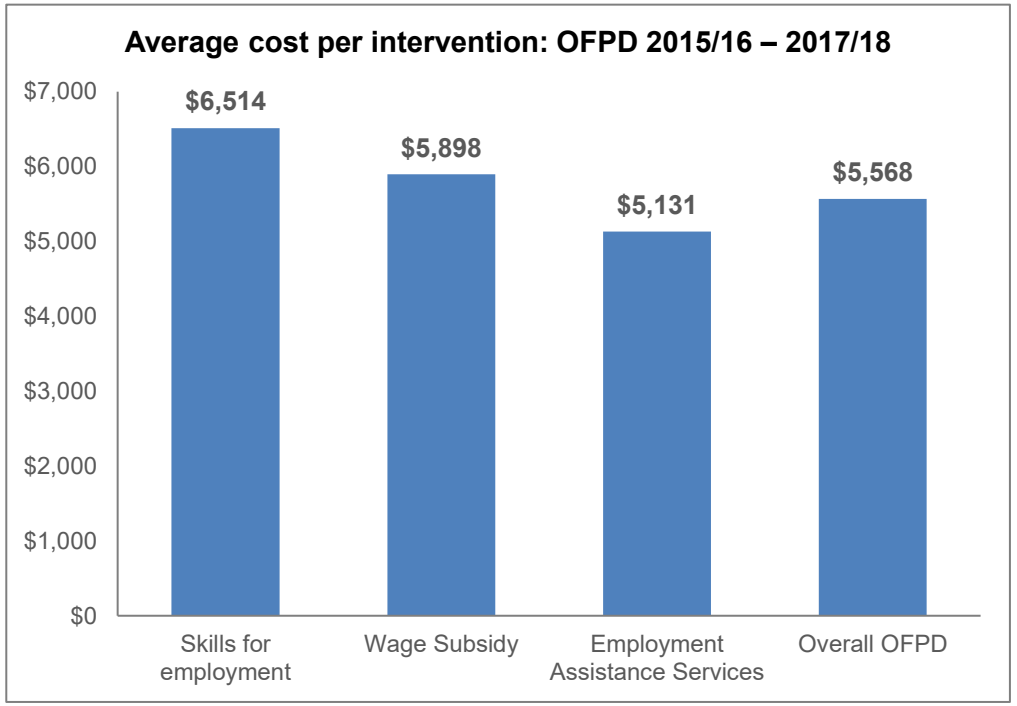


* Net long-term benefits are estimated by comparing the outcomes of participants to those of similar non-participants to determine what would have happened in the absence of the program.

Average cost per intervention – OFPD 2015/16 – 2017/18

Skills for Employment (SFE) has the highest average cost per intervention ($6,514), followed by:

- Wage Subsidy (WS) – $5,898
- OFPD overall – $5,568
- Enhanced Employment Assistance Services (EEAS) – $5,131



Results

Payback period associated with Program interventions

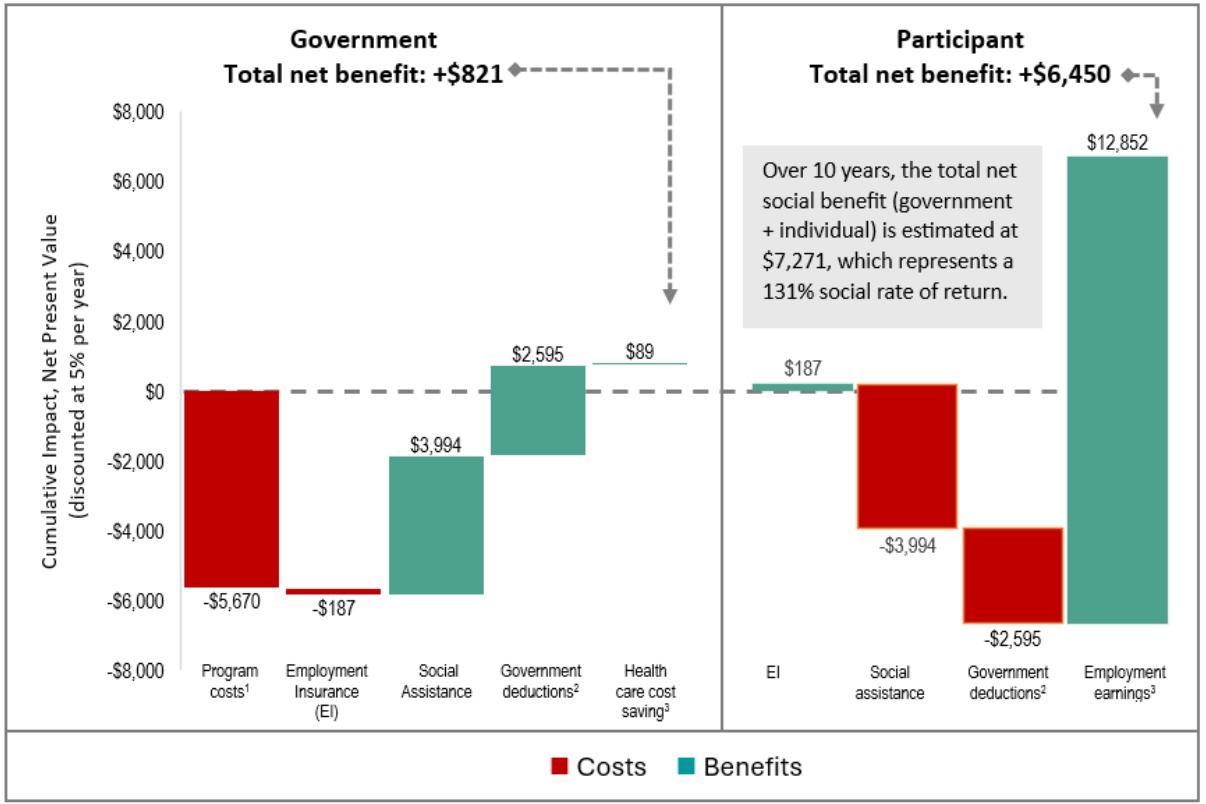
- Except for EEAS, the payback period – the number of years required for benefits to exceed costs – is less than 10 years after the program end.
- The shortest payback period is reported in WS (1.3 years), while the longest payback period is reported in EEAS (15.5 years).

Intervention type	Payback period
Skills for Employment (SFE)	2.6 years
Wage Subsidy (WS)	1.3 years
Enhanced Employment Assistance Services (EEAS)	15.6 years
Overall OFPD	3.4 years

Cost-benefit analysis and Social rate of return

OFPD Overall

- The net social benefit (government + participant) is $7,271, yielding an average rate of social return of 131%. This represents 8% per annum over 10 years post participation.
  - For participants, the total net benefit is $6,450.
  - The total net benefit for the government is $821.
  - Health care cost savings to government are estimated to $89 per participant.



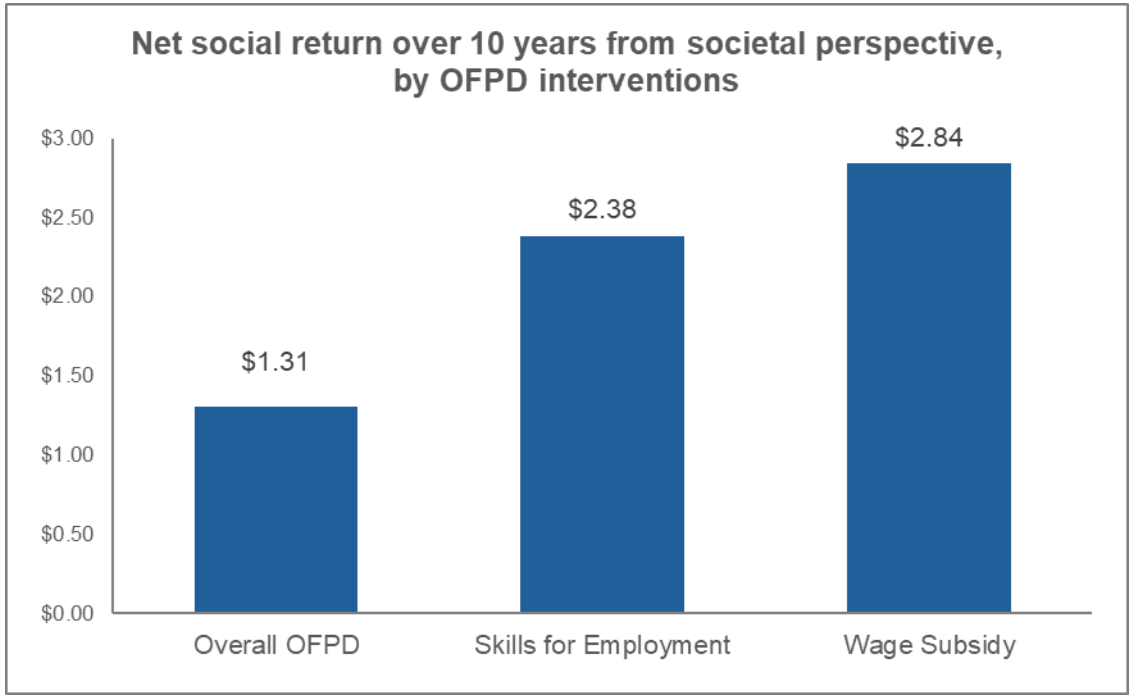
[1] Program costs include the program expenditure and the loss incurred by society when raising additional revenues, such as taxes to fund government spending.

[2] Government Deductions include EI premium, CPP/QPP contributions and income and sales tax.

[3] Employment Earnings include fringe benefits (e.g., employer paid health insurance, pension contributions) and earnings lost during time spent in the program.

Social return on investment

- Overall, an investment of $1 in the Program yields $1.31 in net social return over a 10-year period following the intervention.
- The highest net social return is reported for the intervention Wage Subsidy ($2.84).



Conclusion

- Cost-benefit analysis can provide evidence to inform the value for money of programs. For example, it showed how the Opportunities Fund for Persons with Disabilities Program yielded a positive net social return on investment over 10 years, and that from a societal perspective, benefits outweigh costs within 3.4 years.
- Recent innovation included health-related cost savings into the cost-benefit analysis framework, offering a more comprehensive view of societal benefits.
- These results are conservative, and sensitivity analysis shows that varying assumptions has minimal impact on overall conclusions, reinforcing robustness.
- The conduct of cost-benefit analysis is possible when Program benefits can be attributed it (net impact analysis), and when program costs are available.

Annexes

Annex A: Accounting framework

Costs and Benefits	Perspectives			Estimation Methods
	Individual	Government	Social	
Program cost	0	-	-	Cost estimates based on expenditures reported in the EI Monitoring and Assessment Report.
Marginal Social Cost of Public Funds (MSCPF)	0	-	-	20% of the program cost, sales taxes, income taxes, impacts on EI and impacts on SA.
Foregone earnings	-	0	-	In-program Incremental impacts on earnings
Employment earnings	+	0	+	Incremental impacts on earnings during participation and over six years post-program. This indicator captures the earnings foregone during participation and the program benefits on earnings post-participation
Fringe benefits	+	0	+	15% of incremental impacts on employment earnings
Federal and provincial income taxes	-	+	0	Incremental impacts on federal and provincial income tax rates
Federal and provincial sales taxes	-	+	0	Incremental impacts on earnings multiplied by the propensity to consume (95%), proportion of household spending on taxable goods and service (52%) and by the total average federal and provincial sales tax rate (11%)
Employment Insurance	-/+	+/-	0	Incremental impacts on EI use during and after participation
Social Assistance	-/+	+/-	0	Incremental impacts on SA during and after participation
Canada Pension Plan and Quebec Pension Plan contributions	-/+	+/-	0	Incremental impacts
EI premiums	-/+	+/-	0	Incremental impacts
Public Health Care Cost Savings	0	+	+	Incremental impacts (*Annex B*)

Annex B: Incorporating Public Health Care Costs Savings in the Cost Benefit Analysis

- Labour market participation can have a positive impact on the health status of participants which can lead to a decline in public health care spending

Better Outcomes	Better Health	Reduction in Public Health Care Spending
▪ Increase in labour market attachment after program participation ▪ Increase in income	▪ Reduction in depression*, increase in self-confidence and social interaction ▪ Reduction in financial stress ▪ Access to higher quality of living** ▪ All these factors contribute to better mental and physical health***	▪ Decline in public health care utilization due to better health condition ▪ Reduction in public health care spending

*Vinokur, A. D., Schul, Y., Vuori, J., & Price, R. H. (2000). Two years after a job loss: long-term impact of the JOBS program on reemployment and mental health. *Journal of occupational health psychology*, *5*(1), 32–47.

** Puig-Barrachina, V., Giró, P., Artazcoz, L., Bartoll, X., Cortés-Franch, I., Fernández, A., González-Marín, P., & Borrell, C. (2020). The impact of Active Labour Market Policies on health outcomes: a Scoping review. *European journal of public health*, *30*(1), 36–42.

*** Vuori, J., & Vesalainen, J. (1999). Labour market interventions as predictors of re-employment, job seeking activity and psychological distress among the unemployed. *Journal of Occupational and Organizational Psychology, 72*(4), 523–538.

Annex C: Key considerations

- Cost and benefits were discounted by 5% per year. This discount rate applies to the period 2015-2025 and reflects the sum of an average inflation rate of 3% and an average real interest rate of 2%.
- A period of 10 years after program participation was examined for all interventions. Results were produced for four indicators: Net present value; Benefit-Cost ratio; Payback period; and Social return.
- A sensitivity analysis (Annex D) was conducted to examine by how much the net present value, the social return and the payback period from the social perspective changed when a 20% increase in average costs per intervention type is introduced.
- The analysis accounts for all costs and benefits that could be measured using available data. It does not account for non-quantifiable benefits such as improvement in participant's wellbeing, reduction in crime, and benefits to organizations, employers and communities.

Annex D: Sensitivity analysis

Introducing a 20% increase in average costs per intervention type:

- Reduces the net present value for all intervention types. However, the overall direction of the NPV (negative or positive) remains unchanged.
- Lowers the benefit-cost ratio for nearly all interventions and extends the payback period across all interventions. However, both variables show relatively low sensitivity to the increase of average cost per intervention.

Intervention	Net present value		Benefit-cost ratio		Payback period	
	Baseline	With 20% increase	Baseline	With 20% increase	Baseline	With 20% increase
Overall	$7,271	$5,935	2.31	1.89	3.4	4.4
SFE	$15,528	$13,965	3.38	2.79	2.6	3.3
WS	$16,753	$15,338	3.84	3.17	1.3	1.9
EAS	-$2,252	-$3,483	0.56	0.43	15.6	19.5