

**SYMPOSIUM**

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to Prosperity'**

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# **Developing Immigrants' Literacy and Essential Skills**

Research results—A cost-benefit model  
of LES training for Francophone  
immigrants



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# Organization of the presentation

- Methodology for estimating benefits
- Estimation of costs
- Cost-benefit models
- The data
- Results—Estimation of the tangible benefits of providing LES training
- Results—Estimations of costs
- Cost-benefit of providing LES training to immigrants—Selected examples
- Conclusion, lessons learned, and research avenues

# Methodology for estimating benefits

# Tangible benefits for employed participants

- For employed participants, the tangible benefit for pursuing training is the impact on wages.
- To measure this effect: *Mincer Equation(modified)*

$$w_i^{PE} = \alpha^{PE} + \sum_{j=1}^k \beta_j^{PE} X_{ij}^{PE,w} + \varepsilon_i^{PE} \quad (1)$$

- Coefficients estimated using the least squares method.
- If we suppose that  $X_{i1}^{PE,w} = 1$  if individual  $i$  has pursued training and  $X_{i1}^{PE,w} = 0$  otherwise, then the expected benefit of pursuing training is:

$$A_i^{PE} = \hat{\beta}_1^{PE} \quad (2)$$

# Tangible benefit for unemployed participants

- For unemployed participants, the tangible benefit depends on the impact of training on the duration of unemployment and on wages.

## *Impact on the duration of unemployment*

- To estimate this effect: *Survival model*
- Expected duration of unemployment for individual  $i$  having characteristics  $(X_{1i}, X_{2i}, X_{3i} \dots X_{ki})$  is

$$E(T_i | X_{1i}, X_{2i}, X_{3i} \dots X_{ki}) = \lambda_i^{-1/p} \Gamma \left( 1 + \frac{1}{p} \right) \quad (5)$$

where

$$\lambda_i = \exp(\alpha + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \dots + \beta_k X_{ki})$$

$$\Gamma(y) = \int_0^{\infty} u^{y-1} e^{-u} du$$

$p$ ,  $\alpha$  and the  $\beta$  coefficients are estimated using statistical methods.

- If we suppose that  $X_{1i}=1$  if individual  $i$  has pursued training and  $X_{1i}=0$  otherwise, then having pursued training reduces the expected value of  $T_i$  by

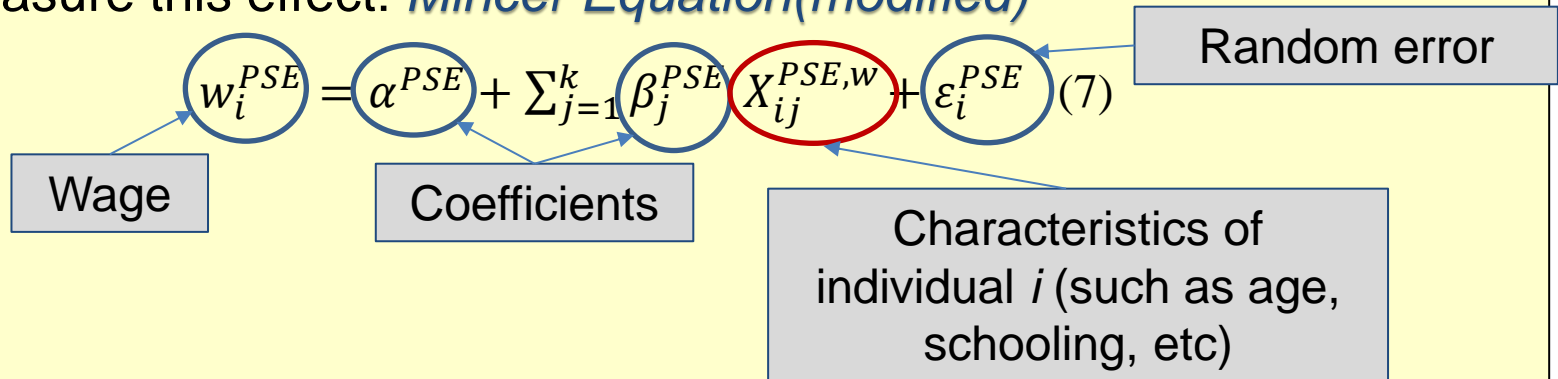
$$100 \times \left[ 1 - \exp \left( -\frac{\beta_1}{p} \right) \right] \quad (6)$$

# Tangible benefit for unemployed participants (continued)

- For unemployed participants, the tangible benefit depends on the impact of pursuing training on the duration of unemployment and on wages.

## Impact on wages

- To measure this effect: *Mincer Equation(modified)*



- Coefficients estimated using the least squares method.
- If we suppose that  $X_{i1}^{PSE,w} = 1$  if individual  $i$  pursued training and  $X_{i1}^{PSE,w} = 0$  otherwise, then the expected benefit of pursuing training is

$$A_i^{PSE} = \hat{\beta}_1^{PSE} \quad (8)$$

# Other benefits (that are generally ignored)

- *Intangible benefits*
  - Examples : self confidence, cooperation, reliability
  - Ignored because they are intermediate benefits that eventually lead to improvements in salary
- *External benefits*
  - Examples : improvements in public health, a reduction in the crime rate, better social integration
  - Very difficult to measure
- *Impact on fiscal transfers*
  - Examples : A reduction in employment insurance and social assistance
  - Should not be included as they do not result in a net increase in the economic well-being of society as a whole.

# Methodology for estimating costs



# Costs incurred by training centres

Elements Comprising the Cost of Training	
Hourly wage of instructors	
Calculations of the costs of premises	
Premises	Costs
Total annual cost of renting the premises used by your centre	
Total annual electricity cost of the premises used by your centre	
Total annual cost of heating the premises used by your centre (if using heating sources other than electricity)	
Total annual maintenance cost of the premises used by your centre	
Annual cost of municipal taxes	
Approximate number of square metres of all the premises used by your centre	
Approximate number of square metres of the premises used for training purposes	
Information to calculate other costs	Answers
Approximate total cost of the supplies used by your training centre (e.g., books)	
Total cost of using computers (spread the cost of purchasing computers over six years)	
Approximate total administrative costs of your centre (managers, receptionist, secretary, telephone, etc.)	
Total number of training hours delivered by your centre on average per year	
Average class size	
Cost of promoting training sessions	
Costs related to the registration and assessment of participants	
<b>*Note: Try to be as accurate as possible when providing this information, but absolute accuracy is not necessary.</b>	

# Costs incurred by participants in training

- All extra expenses incurred by participants:
  - transportation costs;
  - child care expenses; and,
  - value of wages forgone during the training.

# Cost-benefit models

## Costs and benefits of pursuing training for unemployed immigrants—Gabarit

### Legend:

$t_F$  Duration of training

:

$t_F^*$ : Expected time when the individual pursuing training will find employment (it should be noted that  $t_F^* - t_F =$  expected duration of the job search of the individual pursuing training)

$T$ : Observation period

$t_T^*$ : Expected duration of the job search of the individual in the control group who has the same characteristics as the individual pursuing training

<b>Type of training</b>		
Duration of training in weeks ( $t_F$ )		(1)
Hours of training per week		(2)
Expected duration (in weeks) of the job search for the individual pursuing training ( $t_F^*$ ) using equation (5).		(3)
Expected duration of the job search in weeks for the reference individual who is not pursuing training ( $t_T^*$ ) using equation (5) with $\hat{\beta}_1^{PE} = 0$		(4)
Expected weekly salary — Participant pursuing training (using equation (7))		(5)
Expected weekly salary — Participant in the control group (using equation (7) with $\hat{\beta}_1^{SE} = 0$ )		(6)
Cost of delivering training (per student hour)		(7)
Additional cost of pursuing training (per month)		(8)
Assessment period ( $T$ in weeks)		(9)
<b>Training costs</b>		
Cost of delivering training	$(1) \times (2) \times (7)$	(10)
Additional cost of pursuing training	$(8) \times (1) \div 4.3$	(11)
<i>Scenario 1: <math>t_T^* &lt; t_F</math></i>		
<b>Benefit</b>		
Impact on wages once employed	$[(9) - (3)] \times [(5) - (6)]$	(12)
<b>Other costs</b>		
Lost wages for the duration of the training	$[(1) - (4)] \times (6)$	(13)
Lost wages during job search	$0.6 \times [(3) - (4)] \times (6)$	(14)
<b>Net benefit</b>	$(12) - [(10) + (11) + (13) + (14)]$	(15)
<i>Scenario 2: <math>t_F &lt; t_T^* &lt; t_F^*</math></i>		
<b>Benefit</b>		
Impact on wages once employed	$[(9) - (3)] \times [(5) - (6)]$	(16)
<b>Other costs</b>		
Lost wages during job search	$0.6 \times [(3) - (4)] \times (6)$	(17)
<b>Tangible net benefit</b>	$(16) - [(10) + (11) + (17)]$	(18)
<i>Scenario 3: <math>t_T^* &gt; t_F^*</math></i>		
<b>Benefit</b>		
Impact on wages once employed	$[(4) - (3)] \times (6) + [(9) - (4)] \times [(5) - (6)]$	(19)
<b>Tangible net benefit</b>	$(19) - [(10) + (11)]$	(20)

# Costs and benefits of pursuing training for employed immigrants— Gabarit

<b>Type of training</b>		
<b>Duration of training in weeks (<math>t_F</math>)</b>		(1)
<b>Hours of training per week</b>		(2)
<b>Average salary before training</b>		(3)
<b>Impact of pursuing training on weekly salary (using equation 2)</b>		(4)
<b>Cost of delivering training (per student hour)</b>		(5)
<b>Additional cost of pursuing training (per month)</b>		(6)
<b>Duration of follow-up (<math>T</math> in weeks)</b>		(7)
<b>Benefit</b>		
Impact on earnings after completing the training	$[(7) - (1)] \times (4)$	(8)
<b>Training costs</b>		
Cost of delivering this training	$(1) \times (2) \times (5)$	(9)
Additional cost of pursuing this training	$(6) \times (1) \div 4.3$	(10)
Loss of leisure time	$0.4 \times (1) \times (2) \times (3)$	(11)
<b>Total costs</b>	$(9) + (10) + (11)$	(12)
<b>Net benefit</b>	$(12) - (8)$	

# The data

# High response rate

## Completed questionnaires

	Q1	Q2	Q3	Q4	Q5	Q final	Total
Unemployed – Pursued training	515	515	509	411	375	264	2,589
Unemployed – Control group	153	153	151	144	126	76	803
Employed – Pursued training	257	257	255	219	212	138	1,338
Employed – Control group	103	103	103	103	98	52	562
<b>Total</b>	<b>1,028</b>	<b>1,028</b>	<b>1,018</b>	<b>877</b>	<b>811</b>	<b>530</b>	<b>5,292</b>
Employer	137	137	131	128	107	3	643

## Response rate

	Percentage of respondents whose last completed questionnaire was...					
	Q1	Q2	Q3	Q4	Q5	Q final
Unemployed – Pursued training	0.0	1.2	19.0	7.0	21.6	51.2
Unemployed – Control group	0.0	1.3	4.6	11.8	32.7	49.7
Employed – Pursued training	0.0	0.8	14.0	2.7	28.8	53.7
Employed – Control group	0.0	0.0	0.0	4.9	44.7	50.4
Employer	0.0	4.4	2.2	15.3	75.9	2.2

five questionnaires or plus : 72.8%

# Statistics on the participants who were initially unemployed—Number of quarters monitored

Number of quarters	Group pursuing training				Control group	
	Including training		Excluding training			
	Frequency	%	Frequency	%	Frequency	%
0	0	0.0	9	1.7	0	0.0
1	1	0.2	99	19.2	2	1.3
2	84	16.3	62	12.0	7	4.5
3	59	11.5	52	10.1	18	11.7
4	63	12.2	52	10.1	42	27.3
5	56	10.9	33	6.4	8	5.2
6	25	4.9	21	4.1	10	6.5
7	6	1.2	42	8.2	1	0.6
8	15	2.9	63	12.2	6	3.9
9	101	19.6	68	13.2	14	9.1
10	86	16.7	14	2.7	35	22.7
11	18	3.5			10	6.5
12	1	0.2			1	0.6
<b>Total</b>	515	100.0	515	100	154	100
<b>Average</b>	6.2		4.7		6.4	



# Statistics on participants who were initially unemployed—Pursued training vs Control group (1)

	Initial Group				Those Who Found Employment					
	Unemployed – Pursued training		Unemployed – Control group		Unemployed – Pursued training		Unemployed – Control group		Difference between the Pursued training group and the Control group (%)	
	#	%	#	%	#	% of original group	#	% of original group		
<b>n</b>	475	75.8	152	24.2	143	30.1	71	46.7	-16.6	
<b>Average age (a)</b>										
	<b>18-25</b>	67	14.1	31	20.4	22	32.8	18	58.1	-25.2
	<b>26-35</b>	172	36.2	53	34.9	50	29.1	22	41.5	-12.4
	<b>36-45</b>	149	31.4	43	28.3	49	32.9	21	48.8	-16.0
	<b>46-55</b>	56	11.8	17	11.2	16	28.6	8	47.1	-18.5
	<b>56-65</b>	31	6.5	8	5.3	6	19.4	2	25.0	-5.6
	<b>Women (Woman)</b>	318	66.9	73	48.0	81	25.5	32	43.8	-18.4
	<b>With children under 5 years of age (c_u5)</b>	129	27.2	32	21.1	38	29.5	19	59.4	-29.9
<b>Province (prov.)</b>										
	<b>N.S.</b>	5	1.1	10	6.6	2	40.0	3	30.0	10.0
	<b>N.B.</b>	18	3.8	4	2.6	6	33.3	2	50.0	-16.7
	<b>Quebec</b>	254	53.5	80	52.6	78	30.7	42	52.5	-21.8
	<b>Ontario</b>	178	37.5	36	23.7	47	26.4	19	52.8	-26.4
	<b>Manitoba</b>	9	1.9	6	3.9	4	44.4	3	50.0	-5.6
	<b>B.C.</b>	11	2.3	16	10.5	6	54.5	2	12.5	42.0

# Statistics on participants who were initially unemployed— Pursued training vs Control group (2)

	Initial Group				Those Who Found Employment				Difference between the Pursued training group and the Control group (%)	
	Unemployed - Pursued training		Unemployed - Control group		Unemployed - Pursued training		Unemployed - Control group			
	#	%	#	%	#	% of original group	#	% of original group		
<b>Knowledge of spoken French (sf)</b>										
None (sf_n)	0	0.0	0	0,0	0	n.a.	0	n.a	n.a	
Beginner (sf_d)	162	34.1	22	14.5	50	30.9	8	36.4	-5.5	
Intermediate (sf_i)	168	35.4	65	42.8	52	31.0	33	50.8	-19.8	
Advanced (sf_a)	145	30.5	65	42.8	41	28.3	30	46.2	-17.9	
<b>Knowledge of written French (wf)</b>										
None (wf_n)	31	6.5	1	0.7	11	35.5	1	100.0	-64.5	
Beginner (wf_d)	156	32.8	28	18.4	43	27.6	11	39.3	-11.7	
Intermediate (wf_i)	166	34.9	68	44.7	54	32.5	34	50.0	-17.5	
Advanced (wf_a)	122	25.7	55	36.2	35	28.7	25	45.5	-16.8	
<b>Knowledge of spoken English (se)</b>										
None (se_n)	62	13.1	10	6.6	8	12.9	3	30.0	-17.1	
Beginner (se_d)	123	25.9	44	28.9	33	26.8	17	38.6	-11.8	
Intermediate (se_i)	149	31.4	57	37.5	52	34.9	28	49.1	-14.2	
Advanced (se_a)	141	29.7	41	27.0	50	35.5	23	56.1	-20.6	
<b>Knowledge of written English (we)</b>										
None (we_n)	92	19.4	14	9.2	16	17.4	6	42.9	-25.5	
Beginner (we_d)	86	18.1	36	23.7	23	26.7	9	25.0	1.7	
Intermediate (we_i)	157	33.1	58	38.2	51	32.5	35	60.3	-27.9	
Advanced (we_a)	140	29.5	44	28.9	53	37.9	21	47.7	-9.9	

# Statistics on the participants who were initially unemployed—Pursued training vs Control group (3)

	Initial Group				Those Who Found Employment					
	Unemployed – Pursued training		Unemployed – Control group		Unemployed – Pursued training		Unemployed – Control group		Difference between Pursued training and Control (%)	
	#	%	#	%	#	% of original	#	% of original		
<b>Education (scol)</b>										
Elementary (scol_e)	138	29.1	39	25.7	28	20.3	16	41.0	-20.7	
High school (scol_hs)	63	13.3	20	13.2	18	28.6	10	50.0	-21.4	
College (scol_c)	66	13.9	22	14.5	24	36.4	10	45.5	-9.1	
Undergraduate (scol_u1)	125	26.3	41	27.0	44	35.2	18	43.9	-8.7	
Graduate (scol_u2)	83	17.5	30	19.7	29	34.9	17	56.7	-21.7	
<b>Continent of origin (co)</b>										
S. America + Mexico	85	17.9	27	17.8	38	44.7	12	44.4	0.3	
Europe (co_eur)	29	6.1	12	7.9	14	48.3	7	58.3	-10.1	
Africa (co_af)	137	28.8	65	42.8	27	19.7	23	35.4	-15.7	
Asia (co_as)	68	14.3	16	10.5	22	32.4	11	68.8	-36.4	
Middle East + N. Africa	156	32.8	31	20.4	42	26.9	18	58.1	-31.1	
# of years since arrival (ysa)	3.6	n.a.	3.7	n.a.	2.9	n.a.	3.0	n.a.	n.a.	
<b>Category</b>										
Economic – principal	102	21.5	38	25.0	42	41.2	20	52.6	-11.5	
Economic – dependent	58	12.2	18	11.8	14	24.1	7	38.9	-14.8	
Refugee	169	35.6	51	33.6	35	20.7	20	39.2	-18.5	
Family reunification	112	23.6	28	18.4	42	37.5	19	67.9	-30.4	
Other	34	7.2	17	11.2	10	29.4	5	29.4	0.0	
<b>Current status (status)</b>										
Canadian citizen	57	12.0	27	17.8	11	19.3	11	40.7	-21.4	
Permanent resident	373	78.5	115	75.7	117	31.4	57	49.6	-18.2	
Other	45	9.5	10	6.6	15	33.3	3	30.0	3.3	

# Statistics on the participants who were initially unemployed—Pursued training vs Control group (4)

	Initial Group				Those Who Found Employment				
	Unemployed- Pursued training		Unemployed- Control group		Unemployed – Pursued training		Unemployed – Control group		Difference between the Pursued training group and the Control group (%)
	#	%	#	%	#	% of original group	#	% of original group	
Experience prior to arrival	362	76.2	116	76.3	120	33.1	55	47.4	-14.3
Average # of years of experience	8.9	n.a.	7,0	n.a.	7.3	n.a.	5.4	n.a.	n.a.
Employment support	208	43.8	87	57.2	66	31.7	45	51.7	-20.0
Months unemployed before Q1 (mu)	22.9	n.a.	19.0	n.a.	15.5	n.a.	13.3	n.a.	n.a.
Average # of training weeks (t_duration)	17.3	n.a.	n.a.	n.a.	15.6	n.a.	n.a.	n.a.	n.a.

## Summary:

- The majority of the participants are from Quebec.
- The group pursuing training is significantly different from the control group in regard to certain characteristics.
  - This seems to suggest that the non-random assignment of participants between the Unemployed-Pursued training group and the Unemployed-Control group may also have resulted in an uneven distribution of the participants' unobservable characteristics.

# Statistics on the participants who were initially employed—Number of quarters monitored

Number of quarters	Group Pursuing Training				Control Group	
	Including training		Excluding training			
	Frequency	%	Frequency	%	Frequency	%
0	0	0.0	4	1.6	0	0.0
1	1	0.4	36	14.0	0	0.0
2	38	14.8	21	8.2	0	0.0
3	18	7.0	49	19.1	5	4.9
4	52	20.2	17	6.6	42	40.8
5	15	5.8	45	17.5	6	5.8
6	47	18.3	3	1.2	11	10.7
7	2	0.8	33	12.8	6	5.8
8	29	11.3	37	14.4	15	14.6
9	43	16.7	10	3.9	6	5.8
10	10	3.9	2	0.8	11	10.7
11	2	0.8			1	1.0
12					5	4.9
<b>Total</b>	257	100.0	257	100.0	103	100.0
<b>Average</b>	5.6		4.6		6.4	

# Statistics on the participants who were initially employed— Pursued training vs Control group (1)

		Employed – Pursued training		Employed – Control group		Difference	
		#	%	#	%	#	%
<b>n</b>		191	69.0	86	31.1	105	37.9
<b>Average duration of training (in weeks)</b>		13.0	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Average age</b>							
	<b>18-25</b>	13	6.8	8	9.3	5	-2.5
	<b>26-35</b>	60	31.4	38	44.2	22	-12.8
	<b>36-45</b>	70	36.6	28	32.6	42	4.1
	<b>46-55</b>	36	18.8	9	10.5	27	8.4
	<b>56-65</b>	12	6.3	3	3.5	9	2.8
<b>Women</b>		107	56.0	42	48.8	65	7.2
<b>With children under 5 years of age</b>		16	8.4	13	15.1	3	-6.7
<b>Province</b>							
	<b>Nova Scotia</b>	5	2.6	3	3.5	2	-0.9
	<b>New Brunswick</b>	5	2.6	6	7.0	-1	-4.4
	<b>Quebec</b>	125	65.4	45	52.3	80	13.1
	<b>Ontario</b>	26	13.6	16	18.6	10	-5.0
	<b>Manitoba</b>	30	15.7	12	14.0	18	1.8
	<b>British Columbia</b>	0	0.0	4	4.7	-4	-4.7

# Statistics on the participants who were initially employed—Pursued training vs Control group(2)

		Employed – Pursued training		Employed – Control group		Difference	
		#	%	#	%	#	%
<b>Knowledge of spoken French</b>							
	None	0	0.0	0	0.0	0	0.0
	Beginner	58	30.4	22	25.6	36	4.8
	Intermediate	90	47.1	21	24.4	69	22.7
	Advanced	43	22.5	43	50.0	0	-27.5
<b>Knowledge of written French</b>							
	None	6	3.1	0	0.0	6	3.1
	Beginner	78	40.8	23	26.7	55	14.1
	Intermediate	81	42.4	27	31.4	54	11.0
	Advanced	26	13.6	36	41.9	-10	-28.2
<b>Knowledge of spoken English</b>							
	None	11	5.8	5	5.8	6	-0.1
	Beginner	38	19.9	22	25.6	16	-5.7
	Intermediate	47	24.6	32	37.2	15	-12.6
	Advanced	95	49.7	27	31.4	68	18.3
<b>Knowledge of written English</b>							
	None	14	7.3	5	5.8	9	1.5
	Beginner	36	18.8	19	22.1	17	-3.2
	Intermediate	52	27.2	36	41.9	16	-14.6
	Advanced	89	46.6	26	30.2	63	16.4

# Statistics on participants who were initially employed— Pursued training vs Control group (3)

		Employed – Pursued training		Employed – Control group		Difference	
		#	%	#	%	#	%
<b>Education</b>							
	<b>Elementary</b>	38	19.9	11	12.8	27	7.1
	<b>High school</b>	12	6.3	10	11.6	2	-5.3
	<b>College</b>	35	18.3	10	11.6	25	6.7
	<b>Undergraduate</b>	60	31.4	29	33.7	31	-2.3
	<b>Graduate</b>	46	24.1	26	30.2	20	-6.1
<b>Continent of origin</b>							
	<b>South America + Mexico</b>	80	41.9	24	27.9	56	14.0
	<b>Europe</b>	27	14.1	7	8.1	20	6.0
	<b>Africa</b>	11	5.8	31	36.0	-20	-30.3
	<b>Asia</b>	29	15.2	13	15.1	16	0.1
	<b>Middle East + North Africa</b>	44	23.0	11	12.8	33	10.2
	<b>Number of years since arrival</b>	6.4	n.a.	4.5	n.a.	n.a.	n.a.
<b>Category</b>							
	<b>Economic (principal)</b>	64	33.5	22	25.6	42	7.9
	<b>Economic (dependent)</b>	20	10.5	18	20.9	2	-10.5
	<b>Refugee</b>	20	10.5	19	22.1	1	-11.6
	<b>Family reunification</b>	57	29.8	22	25.6	35	4.3
	<b>Other</b>	30	15.7	5	5.8	25	9.9



# Statistics on participants who were initially employed— Pursued training vs Control group (4)

		Employed – Pursued training		Employed – Control group		Difference	
		#	%	#	%	#	%
<b>Current status</b>							
	<b>Canadian citizen</b>	56	29.3	24	27.9	32	1.4
	<b>Permanent resident</b>	117	61.3	61	70.9	56	-9.7
	<b>Other</b>	18	9.4	1	1.2	17	8.3
<b>Experience prior to arrival</b>		173	90.6	70	81.4	103	9.2
<b>Average # of years of experience prior to arrival (for those with experience)</b>		7.8	n.a.	6.5	n.a.	1.3	-3.5

## **Summary:**

- As in the case of the groups that were initially unemployed,
  - the majority of the participants are from Quebec; and
  - the group Pursued training is significantly different from the Control group, in regard to a number of characteristics, which suggests that the non-random assignment of participants between the two groups may also have resulted in an uneven distribution of the participants' unobservable characteristics.

# Statistics on the type training followed

## Number of participants by type of training

	N.S.	N.B.	Que.	Ont.	Man.	B.C.	Total
Francization (Beginner)	0	11	105	63	26	0	206
Francization (Intermediate)	0	6	147	6	8	0	167
Francization (Advanced)	0	3	106	94	5	0	208
English as a Second Language (Beginner)	0	1	0	3	0	7	11
English as a Second Language (Intermediate)	10	2	0	14	0	4	30
English as a Second Language (Advanced)	0	0	0	23	0	0	23
Computing (Beginner)	0	0	21	0	0	0	21
<b>Total</b>	10	23	379	203	39	11	666

- Except for Manitoba, the breakdown of the types of training reflects the main working language in the provinces
- The most significant categories of training are those in Francization, which reflects in part the over-representation of Quebec in the action research.

# Statistics on the participants whose employers were followed

	Unemployed — Pursued training	Unemployed — Control group	Employed — Pursued training	Employed — Control group	Total
# of employers followed	16	18	68	29	131
# of employees followed by their employer	16	20	69	33	138
<b>Province</b>					
Nova Scotia	1	2	4	1	8
New Brunswick	2	0	4	1	7
Quebec	9	11	52	24	96
Ontario	2	4	2	5	13
Manitoba	1	2	7	1	11
British Columbia	1	1	0	1	3
<b>Sectors</b>					
Manufacturing	3	8	12	7	30
Catering/Hotel	3	2	2	3	10
Community service	2	1	5	3	11
Retail	3	4	2	3	12
Health/Childcare	2	1	6	5	14
Construction			4	1	5
Other	3	4	21	2	30
<b>Number of employees</b>					
1-10	4	5	16	3	28
11-25	5	1	11	14	31
26-50	2	3	12	6	23
51-100	2	3	11	2	18
More than 100	3	8	18	8	37
% of immigrants	41.4%	33.0%	45.9%	36.1%	n.a.

# **Results—Estimation of the tangible benefits of delivering literacy and essential skills training**

# Impact of training on the initially unemployed participants—Overview

	Initial group				Those who found employment			
	Unemployed-Pursued Training		Unemployed-Control		Unemployed-Pursued Training		Unemployed-Control	
	#	%	#	%	#	% of original group	#	% of original group
n	475	75.8	152	24.2	143	30.1	71	46.7
Hours worked (weekly average)	n.a.	n.a.	n.a.	n.a.	36.0	n.a.	37.9	n.a.
Average hourly wage	n.a.	n.a.	n.a.	n.a.	17.1	n.a.	16.8	n.a.
Average duration of unemployment (quarters)	n.a.	n.a.	n.a.	n.a.	3.4	n.a.	1.9	n.a.
Average # of quarters to find employment after completing training	n.a.	n.a.	n.a.	n.a.	2.1	n.a.	n.a.	n.a.
Average duration of training in quarters	2.4	n.a.	n.a.	n.a.	2.2	n.a.	n.a.	n.a.

## *Participants pursuing training have:*

- less of chance of finding employment;
- a longer average duration of unemployment (even when taking into account the time spent in training); and,
- on average, slightly fewer hours worked and slightly higher hourly salaries.

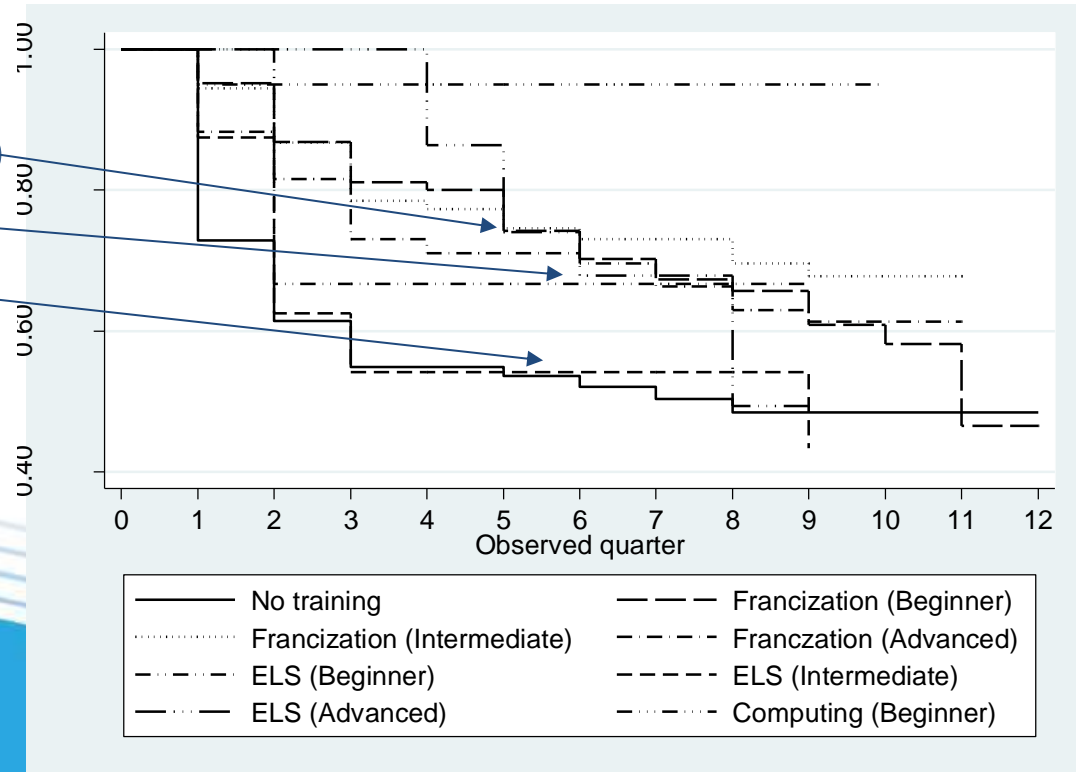
# Impact of training on the initially unemployed participants— Unemployment duration spells

Except for individuals who pursued training in English as a Second Language (Intermediate) or Francization (Advanced), individuals who did not pursue training had a higher probability of finding employment during the observation period than individuals who pursued training.

**Survival Functions of Unemployment Duration Spells**

**Example :** Probability of being unemployed after 5 quarters:

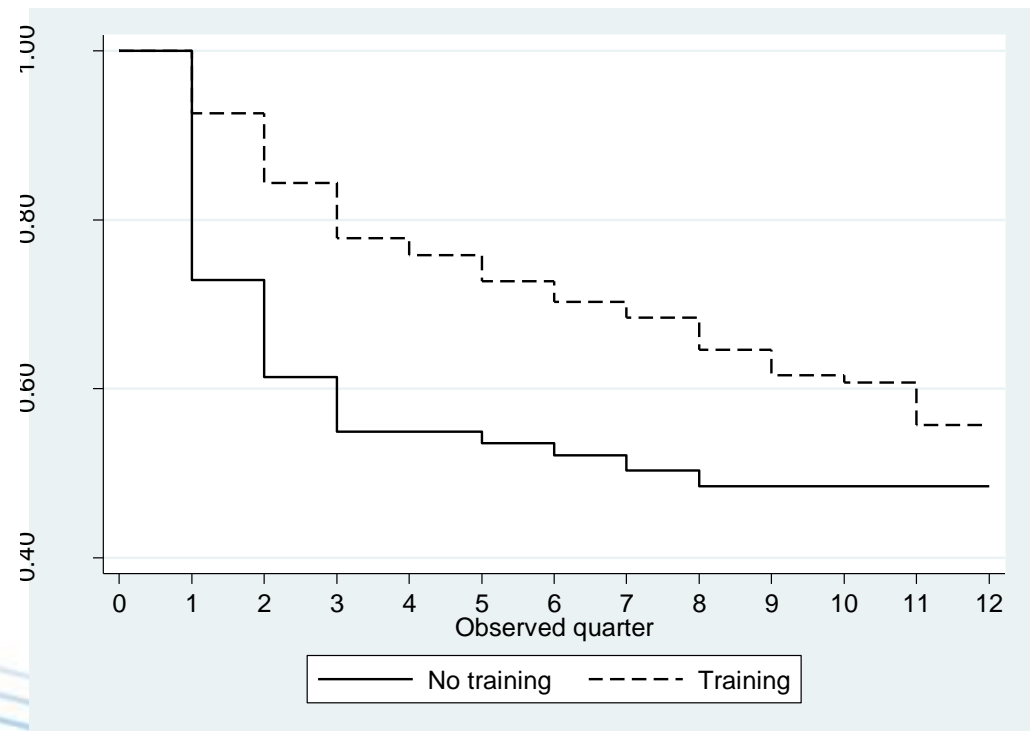
- Francization (Beginner) = 0.75
- ESL (Beginner) = 0.67
- No training = 0.53



# Impact of training on the initially unemployed participants— Unemployment duration spells (2)

*However,* one cannot reject the hypothesis that, statistically speaking, all types of training have the same impact on the duration of unemployment spells (p-value of 26.5%)

Survival Functions of Unemployment Duration Spells —  
All Types of Training



# Impact of training on the initially unemployed participants— Unemployment duration spells (3)

Explanatory variables	$\hat{\beta}$	% $\Delta$	Reference individual† (1)		Reference individual / man cb (2)		Reference individual / Female (3)	
			No training	Training	No training	Training	No training	Training
Ontario	0.79***	-50					0.00	0.00
Women	-0.42**	45					1 -0.42	1 -0.42
NS or NB (ns_nb)	0.00	0						
Man. or BC (m_bc)	0.00	0			1 0.00	1 0.00		
Some knowledge of written English	0.59*	-41						
mu	-0.01***	1						
co_af	-0.73***	90						
co_mena	-0.52**	58						
t_duration	-0.03***	3		12 -0.41		12 -0.41	0.00	12 -0.41
t_duration × (ns_nb)	0.03*	-2		0.00		0.00		
t_duration × m_bc	0.06**	-6				12 0.78		
Constant term	-2.33***		1 -2.33	1 -2.33	1 -2.33	1 -2.33	1 -2.33	1 -2.33
1/p	0.13*							
$\lambda$			0.10	0.06	0.10	0.14	0.06	0.04
Expected duration of unemployment (in quarters)			7.4	10.7	7.4	5.4	10.8	15.6
Expected duration of unemployment (in weeks)			96.8	139.1	96.8	70.2	140.8	202.2
Expected duration of unemployment after of training (in quarters)				9.8		4.5		14.6

†Reference: Man living in Quebec, with no knowledge of written English, and whose continent of origin is either America, Europe or Asia.



# Impact of training on the initially unemployed participants—Wages (2)

Equation for Predicting the Salary of Initially Unemployed Individuals who Eventually Found a Job

Explanatory Variables	Coefficients (in \$ per week)	
<i>ESL (Intermediate) training</i>	281	**
<i>Nova Scotia or New Brunswick</i>	-228	*
<i>Manitoba or British Columbia</i>	364	**
<i>Female</i>	-96	*
<i>High school or college education</i>	147	*
<i>Undergraduate degree</i>	231	**
<i>Graduate degree</i>	333	***
<i>Constant term</i>	468	***
<i>N</i>	214	
<i>R<sup>2</sup></i>	0.15	***
*value p < 10 percent; **value p < 5 percent; ***value p < 1 percent.		

Pursuing literacy and essential skills training does not impact wages unless it is intermediate ESL training: a positive impact of \$281 per week.

# Impact of training on the initially employed participants— Overview

## Statistics on the initially employed group

		Employed – Pursued training		Employed – Control group		Difference	
		#	%	#	%	#	%
<b>n</b>		191	69.0	86	31.1	105	37.9
<b>Employment retention</b>							
	<b>9 months</b>	14	7.3	7	8.1	7	-0.8
	<b>12 months</b>	24	12.6	13	15.1	11	-2.6
	<b>15 months</b>	153	80.1	66	76.7	87	3.4
<b>Hours worked on average*</b>		27.9	n.a.	29.8	n.a.	-1.9	n.a.
<b>Average salary (\$/hour)*</b>		17.2	n.a.	18.5	n.a.	-1.3	n.a.
<b>Change in number of hours worked**</b>		4.1	n.a.	2.4	n.a.	1.7	n.a.
<b>Change in salary (\$/hour)**</b>		0.1	n.a.	0.6	n.a.	-0.5	n.a.
*Calculated over the first quarter observed.							
**Difference between the average of the first two quarters and the last two quarters observed.							

### *Participants pursuing training saw*

- An increase in hours worked per week
- A decrease in average wages

# Impact of training on the initially employed participants— Wages

Equation for Predicting Changes in the Salaries of  
Individuals Already Employed

Explanatory variables	Coefficients (in \$ per week)	
<i>Pursued training</i>	9	
<i>Manitoba or British Columbia</i>	52	*
<i>Continent of origin_Europe</i>	-60	*
<i>Continent of origin_Africa</i>	-58	*
<i>Continent of origin_Asia</i>	-73	**
<i>Constant term</i>	82	***
<i>N</i>	266	
<i>R<sup>2</sup></i>	0.04	**
*p-value < 10%; ** p-value < 5%; *** p-value < 1%.		

Pursuing training does not increase the weekly salary of employed individuals by a statistically significant amount.

# Impact of training on the participants according to the questionnaires filled out by the employers

## Statistics on the participants whose employers were followed

	Unemployed-Pursued training	Unemployed-Control group	Employed-Pursued training	Employed-Control group	Total
Number of employers followed	16	18	68	29	131
Number of employees followed by their employers	16	20	69	33	138
% whose employer observed an improvement in general performance in the first six months of follow-up	68.8%	55.0%	59.4%	60.6%	n.a.
% whose employer observed an increase in productivity in the first six months of follow-up	62.5%	65.0%	52.2%	33.3%	n.a.
% of increase in productivity among those whose employer has observed an increase in productivity in the first six months of follow-up	38.9%	30.4%	17.5%	28.0%	n.a.
% whose employer observed that the situation had improved in the first six months of follow-up (e.g., increase in hours of work, increased responsibilities)	31.3%	40.0%	18.8%	27.3%	n.a.
<b>*In the first six months of observation.</b>					

From the employer questionnaires, it is difficult to conclude that taking literacy and essential skills training improves the overall performance and productivity of immigrants.

# Estimation of the tangible benefits of providing literacy and essential skills training— Summary and Conclusion

- Literacy and essential skills training has mixed impacts on the integration of immigrants into the labour market:
  - it does not shorten the duration of unemployment (except for training provided in British Columbia);
  - it does not increase income after finding employment (with the exception of English as a Second Language (Intermediate) training; and,
  - it has no impact on the salaries of individuals already employed.
- These results go against the consensus that the primary determinants of labour market performance of immigrants is their knowledge of English or French and their level of education.
- Possible explanations:
  - the non-random assignment of participants in the groups pursuing training and the control groups (the groups could be fundamentally different); and
  - the period of observation of the participants in our action research was too short.

# Results—Estimating costs

# Estimation of the costs of providing training

## Costs of Providing Training (\$ per student hour)

Training	Median cost
Francization (Beginner)	7.55
Francization (Intermediate)	6.88
Francization (Advanced)	5.80
English as a Second Language (Beginner)	5.09
English as a Second Language (Intermediate)	2.06
English as a Second Language (Advanced)	1.80
Computing (Beginner)	1.13

- Costs vary significantly between types of training.
- Costs vary according to:
  - whether the teachers are volunteers or unionized; and
  - the number of students in the class

# Estimation of the costs of pursuing training

## Average cost of pursuing training (in \$ per month)

Category of cost	Participants pursuing training...		Average cost
	Unemployed	Employed	
Child care	146	44	111
Transportation	83	89	85
Average total	229	133	196

- On average, the average expense incurred by unemployed participants pursuing training are 72% higher than those incurred by employed participants pursuing training:
  - This is because the average cost of child care per child is, on average, almost three times higher for unemployed participants than for employed participants, mainly because a greater proportion of unemployed participants have children less than five years of age: 27.2% vs. 8.4%.



# **Cost-benefit of providing literacy and essential skills training to immigrants— Selected examples**

# Cost-benefit of providing LES training to unemployed immigrants — Example (1)

	Reference individual */ Francization (Beginner)	
Duration of training in weeks ( $t_F$ )	12	(1)
Hours of training per week	10	(2)
Expected duration (in weeks) of the job search for the individual pursuing training ( $t_T^*$ ) using equation (5) and Table 15	139.1	(3)
Expected duration of the job search in weeks for the reference individual who did not pursued training ( $t_T^*$ ) using equation (5) with $\hat{\beta}_1^{PE} = 0$ and Table 15	96.8	(4)
Expected weekly salary — Participant pursuing training (using equation (7))	468	(5)
Expected weekly salary — Participant in the control group (using equation (7) with $\hat{\beta}_1^{PSE} = 0$ )	468	(6)
Cost of delivering training based on Table 19 (per student hour)	7.55	(7)
Additional cost of pursuing training based on Table 20 (per month)	229	(8)
Assessment period (T in weeks)	260	(9)
<b>Training costs</b>		
Cost of delivering training	$(1) \times (2) \times (7)$	\$906 (10)
Additional cost of pursuing training	$(8) \times (1) \div 4.3$	\$639 (11)
<b>Scenario 1 : <math>t_T^* &lt; t_F</math></b>		
Benefit: Impact on wages once employed	$[(9) - (3)] \times [(5) - (6)]$	(12)
Other cost: Lost weeks of salary for the duration of the training	$[(1) - (4)] \times (6)$	(13)
Other cost: Lost wages during job search	$0.6 \times [(3) - (4)] \times (6)$	(14)
Tangible net benefit	$(12) - [(10) + (11) + (13) + (14)]$	(15)
<b>Scenario 2 : <math>t_F &lt; t_T^* &lt; t_F^*</math></b>		
Benefit: Impact on wages once employed	$[(9) - (3)] \times [(5) - (6)]$	0 (16)
Other cost: Lost wages during job search	$0,6 \times [(3) - (4)] \times (6)$	\$11,878 (17)
Tangible net benefit	$(16) - [(10) + (11) + (17)]$	\$-13,423 (18)
<b>Scenario 3 : <math>t_T^* &gt; t_F^*</math></b>		
Benefit: Impact on wages once employed	$[(4) - (3)] \times (6) + [(9) - (4)] \times [(5) - (6)]$	(19)
Tangible net benefit	$(19) - [(10) + (11)]$	(20)

\* Reference individual: a male living in Quebec, with no knowledge of written English, less than a high-school diploma and continent of origin is either the Am., Eur. or Asia

# Cost-benefit of providing literacy and essential skills training to unemployed immigrants—Example (2)

	Reference individual / ns_nb, Grad_Degree, ESL (Intermediate)	
Duration of training in weeks ( $t_F$ )	12	(1)
Hours of training per week	10	(2)
Expected duration (in weeks) of the job search for the individual pursuing training ( $t_F^*$ ) using equation (5) and Table 15	105.8	(3)
Expected duration of the job search in weeks for the reference individual who did not pursued training ( $t_T^*$ ) using equation (5) with $\hat{\beta}_1^{PE} = 0$ and Table 15	96.8	(4)
Expected weekly salary — Participant pursuing training (using equation (7))	854	(5)
Expected weekly salary — Participant in the control group (using equation (7) )	593	(6)
Cost of delivering training based on Table 19 (per student hour)	2.06	(7)
Additional cost of pursuing training based on Table 20 (per month)	229	(8)
Assessment period (T in weeks)	260	(9)
<b>Training costs</b>		
Cost of delivering training	(1) × (2) × (7)	\$826 (10)
Additional cost of pursuing training	(8) × (1) ÷ 4.3	\$639 (11)
<b>Scenario 1 : <math>t_T^* &lt; t_F</math></b>		
Benefit: Impact on wages once employed	[(9) – (3)] × [(5) – (6)]	(12)
Other cost: Lost weeks of salary for the duration of the training	[(1) – (4)] × (6)	(13)
Other cost: Lost wages during job search	0.6 × [(3) – (4)] × (6)	(14)
Tangible net benefit	(12) – [(10) + (11) + (13) + (14)]	(15)
<b>Scenario 2 : <math>t_F &lt; t_T^* &lt; t_F^*</math></b>		
Benefit: Impact on wages once employed	[(9) – (3)] × [(5) – (6)]	\$40,246 (16)
Other cost: Lost wages during job search	0,6 × [(3) – (4)] × (6)	\$3,202 (17)
Tangible net benefit	(16) – [(10) + (11) + (17)]	\$36,158 (18)
<b>Scenario 3 : <math>t_T^* &gt; t_F^*</math></b>		
Benefit: Impact on wages once employed	[(4) – (3)] × (6) + [(9) – (4)] × [(5) – (6)]	(19)
Tangible net benefit	(19) – [(10) + (11)]	(20)

# Cost-benefit of providing literacy and essential skills training to unemployed immigrants— Example (3)

	Reference individual / m_bc, Undergrad, Francization (Inter.)	
Duration of training in weeks ( $t_F$ )	12	(1)
Hours of training per week	10	(2)
Expected duration (in weeks) of the job search for the individual pursuing training ( $t_F^*$ )	70.2	(3)
Expected duration of the job search in weeks for the reference individual who did not pursued training ( $t_T^*$ ) using equation (5) with $\widehat{\beta}_1^{PE} = 0$ and Table 15	96.8	(4)
Expected weekly salary — Participant pursuing training (using equation (7))	1,063	(5)
Expected weekly salary — Participant in the control group (using equation (7))	1,063	(6)
Cost of delivering training based on Table 19 (per student hour)	6.88	(7)
Additional cost of pursuing training based on Table 20 (per month)	229	(8)
Assessment period (T in weeks)	260	(9)
<b>Training costs</b>		
Cost of delivering training <span style="float: right;">(1) × (2) × (7)</span>	\$826	(10)
Additional cost of pursuing training <span style="float: right;">(8) × (1) ÷ 4.3</span>	\$639	(11)
<b>Scenario 1 : <math>t_T^* &lt; t_F</math></b>		
Benefit: Impact on wages once employed <span style="float: right;">[(9) – (3)] × [(5) – (6)]</span>		(12)
Other cost: Lost weeks of salary for the duration of the training <span style="float: right;">[(1) – (4)] × (6)</span>		(13)
Other cost: Lost wages during job search <span style="float: right;">0.6 × [(3) – (4)] × (6)</span>		(14)
Tangible net benefit <span style="float: right;">(12) – [(10) + (11) + (13) + (14)]</span>		(15)
<b>Scenario 2 : <math>t_F &lt; t_T^* &lt; t_F^*</math></b>		
Benefit: Impact on wages once employed <span style="float: right;">[(9) – (3)] × [(5) – (6)]</span>		(16)
Other cost: Lost wages during job search <span style="float: right;">0,6 × [(3) – (4)] × (6)</span>		(17)
Tangible net benefit <span style="float: right;">(16) – [(10) + (11) + (17)]</span>		(18)
<b>Scenario 3 : <math>t_T^* &gt; t_F^*</math></b>		
Benefit: Impact on wages once employed <span style="float: right;">[(4) – (3)] × (6) + [(9) – (4)] × [(5) – (6)]</span>	\$28,276	(19)
Tangible net benefit <span style="float: right;">(19) – [(10) + (11)]</span>	\$26,811	(20)

# Cost-benefit of providing LES training to employed immigrants— Example (1)

	Reference individual* / Francization (Beginner)	
Duration of training in weeks ( $t_F$ )	12	(1)
Hours of training per week	10	(2)
Average hourly wage during training (based on Table 18)	18.11	(3)
Impact of pursuing training on weekly salary (based on Table 17)	9	(4)
Cost of delivering training (per student hour) (based on Table 19)	9.1	(5)
Additional cost of pursuing training (per month) (based on Table 20)	133	(6)
Assessment period (T in weeks)	260	(7)
<b>Benefit</b>		
Impact on income after completing training	$[(7) - (1)] \times (4)$	\$2,232 (8)
<b>Training costs</b>		
Cost of delivering training	$(1) \times (2) \times (5)$	\$109 (9)
Additional cost of pursuing training	$(6) \times (1) \div 4.3$	\$371 (10)
Loss of leisure	$0.4 \times (1) \times (2) \times (3)$	\$869 (11)
<b>Total costs</b>	$(9) + (10) + (11)$	\$1,350 (12)
<b>Tangible net benefit</b>	$(8) - (12)$	<b>\$882</b>

\* Reference individual: a male employed immigrant living in Nova Scotia, New Brunswick or Quebec, who is a Canadian citizen, with less than an undergraduate degree and whose continent of origin is either the Americas, the Middle-east or North Africa.

## Cost-benefit of providing literacy and essential skills training to employed immigrants—Example (2)

	Reference individual / Grad_Degree, ESL (Inter.)	
Duration of training in weeks ( $t_F$ )	12	(1)
Hours of training per week	10	(2)
Average hourly wage during training (based on Table 18)	25.03	(3)
Impact of pursuing training on weekly salary (based on Table 17)	9	(4)
Cost of delivering training (per student hour) (based on Table 19)	3.75	(5)
Additional cost of pursuing training (per month) (based on Table 20)	133	(6)
Assessment period (T in weeks)	260	(7)
<b>Benefit</b>		
Impact on income after completing training	$[(7) - (1)] \times (4)$	\$2,232 (8)
<b>Training costs</b>		
Cost of delivering training	$(1) \times (2) \times (5)$	\$45 (9)
Additional cost of pursuing training	$(6) \times (1) \div 4.3$	\$371 (10)
Loss of leisure	$0.4 \times (1) \times (2) \times (3)$	\$1,201 (11)
Total costs	$(9) + (10) + (11)$	\$1,618 (12)
<b>Tangible net benefit</b>	<b><math>(8) - (12)</math></b>	<b>\$614</b>

\* Reference individual: a male employed immigrant living in Nova Scotia, New Brunswick or Quebec, who is a Canadian citizen, with less than an undergraduate degree and whose continent of origin is either the Americas, the Middle-east or North Africa.

# Cost-benefit of providing literacy and essential skills training to employed immigrants—Example (3)

	Reference individual / m_bc, Undergrad_Degree, Francization (Intermediate)	
Duration of training in weeks ( $t_F$ )	12	(1)
Hours of training per week	10	(2)
Average hourly wage during training (based on Table 18)	25.79	(3)
Impact of pursuing training on weekly salary (based on Table 17)	9	(4)
Cost of delivering training (per student hour) (based on Table 19)	12.5	(5)
Additional cost of pursuing training (per month) (based on Table 20)	133	(6)
Assessment period (T in weeks)	260	(7)
<b>Benefit</b>		
Impact on income after completing training	$[(7) - (1)] \times (4)$	\$2,232 (8)
<b>Training costs</b>		
Cost of delivering training	$(1) \times (2) \times (5)$	\$150 (9)
Additional cost of pursuing training	$(6) \times (1) \div 4.3$	\$371 (10)
Loss of leisure	$0.4 \times (1) \times (2) \times (3)$	\$1,238 (11)
Total costs	$(9) + (10) + (11)$	\$1,759 (12)
<b>Tangible net benefit</b>	<b>(8) - (12)</b>	<b>\$423</b>

\* Reference individual: a male employed immigrant living in Nova Scotia, New Brunswick or Quebec, who is a Canadian citizen, with less than an undergraduate degree and whose continent of origin is either the Americas, the Middle-east or North Africa.

# **Conclusion, lessons learned and research avenues worth exploring**



# Conclusion

Pursuing training in essential skills has *mixed impacts* on the integration of immigrants into the labour market :

- there is no decrease in the duration of unemployment (except for training pursued in British Columbia);
- it does not lead to a higher salary once the trainee finds employment (except if the training is in English as a second language at the intermediate level); and,
- it has no significant impact on the salary of already employed individuals.

# Lessons learned

- Two methodological reasons for mixed results:
  - not assigning participants randomly between the groups that pursue training and the control groups (the groups could be fundamentally different); and
  - the period of observation for our action research was too short.
- The intangible benefits are not quantified.
- Observed literacy and essential skills training programs may not be very efficient at preparing immigrants for the labour market.

# Research avenues

- Repeat this action research:
  - Random assignment(?)
  - Include intangible benefits (?)
  - Longer observation period
  - Focus on fewer provinces and fewer types of training.
- Compare the cost-benefits of literacy and essential skills training formally provided by training centres with those of literacy and essential skills training provided in the workplace.
- Compare the cost-benefits of literacy and essential skills training delivered in part by training centres and in part in the workplace, with those entirely delivered by training centres and those entirely delivered in the workplace

# Actions interculturelles

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*We are at your disposal should you need addition information.*  
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