The Effects of Local Market Conditions on Provincial Labor Mobility in Canada: An Evidence from Survey of Labor and Income Dynamics (SLID)

Presented by: Jamil, Gazi Mohammad Hasan

Co-Authors: Lkhagvasuren, Damba and Huq, Iftekharul
Concordia University, Montreal, Quebec

Introduction

- Diverse Economic activities and Local Market condition across different provinces in Canada.

- Inter-Provincial mobility as a function of **Local Market condition (LMC)**: Weighted Employment Growth (Bartik) and Unemployment Rate (UR)

- In this paper, our main objective is to understand how LMC affect provincial mobility based on the following aspects:
  - ✓ Across different **educational groups**
  - ✓ Across different **age groups**
  - ✓ **Wage Impact** of mover vs stayers across different educational groups.

Regions in Canada

Why Move?
Why LMC?
Why Different Education and Age Groups?

Rationale behind the Study

- In the existing literature in Canada, local market conditions have not been studied widely. Moreover, local market conditions coupled with different education groups and age groups is narrowly addressed in Canadian context.

- While studying the existing literature I have realized that very little attention has been given to explore the relationship between labor mobility and different educational and age groups based on their wage gaps in Canada.

Literature Review

Canada

- Literature on inter-provincial labor mobility in Canada is based on mostly three longitudinal database, LAD (longitudinal Administrative database), LMAS (Labor Market Activity Survey) and SLID (Survey of labor and income dynamics).

- **Finnie (1999)**: Use LAD and applied descriptive methods for analyzing interprovincial mobility. Mentioned that inter provincial migration being the route to better labor market opportunities.

- **Coulombe (2006), Amirault et al., (2013), Finnie (2000) and Courchene (1974)**-all these empirical investigations find that regional differential in unemployment rate or employment rate affect the mobility.

USA

- **Blanchard and Katz (1992)** provide the most extensive studies on the impact of labor market condition on mobility and conclude that growth eventually returns to normal though that regions are different in their growth in economy,.

- **Davies et al. (2001)** found that migrants are significantly less likely to move to destination with relatively higher unemployment rate.

- **Greenwood (1975, 1997)** finds that the unemployment rate is insignificant and inconsistent for explaining the regional migration.

- **Topel (1986) and Bound and Hozler (2000) Wozniak (2010):** The mobility decision based on Labor market condition affect different educational groups and age groups heterogeneously.

Provincial Unemployment Rate, Employment Rate and Mobility: 1992-2011

	Average UR	Unemployment Rate	Employment Rare
CV of Cross-Industrial		**48.86%**	
CV of Cross-Provincial	8%	**34.11%**	7.36%
CV of Cross Provincial by Education			
Some High School	14.45%	27.42%	**11.84%**
High School Graduate	8.07%	**42.03%**	7.71%
Post Secondary Diploma	6.45%	36.44%	4.90%
University	4.79%	18.33%	2.83%
CV of Cross-Provincial by Age			
20-24	11.44%	32.21%	12.75%
25-44	7.25%	40.88%	10.15%
45-64	6.25%	**42.36%**	**17.84%**

- Industrial and Provincial variability of unemployment rate is very high.

- High Variability of cross provincial unemployment and employment rate different education and age groups.

$$CV_{crossprovincial} = \sqrt{\sum_p (u_p/u_c - 1)^2}$$

Research questions

Our research addresses several questions:

- First, How local market condition affect labor mobility?

- Second, if so, how different age and education group take mobility decision based on local market condition?

- Third, is provincial mobility affected by local market condition of the original or destination province?

- Finally, is there any wage gap between movers and stayers across different education and age groups?

Dataset: Survey of Labor and Income Dynamics (SLID)

- The Survey of Labor and Income Dynamics (SLID) is a longitudinal survey introduced in 1993 and ended in 2011.
- SLID interviews the same people for six consecutive years.
- SLID consists of seven panels. Each panel includes about 15,000 households, including about 30,000 adults. A new panel is rotated in every three years.

year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
P1	1	1	1	1	1	1													
P2				2	2	2	2	2	2										
P3							3	3	3	3	3	3							
P4										4	4	4	4	4	4				
P5													5	5	5	5	5	5	
P6																6	6	6	6
P7																			7

Sample Selection

- Age between 20 to 55

- Lower constraint of age to avoid pre-university or college students or other individuals whose decision to move is not self-directed or somehow depends on some adults.

- The ceiling from higher age level is due to avoid the individuals who are close to retirement.

Defining Mobility and Frequency of Mobility from SLID

Move Status: Change of Province compare to previous year.

Why One to Five Year Frequency? Compare with census data and More Accurate results

	Panel Length	5 years frequency	4 years Frequency	3 years frequency	2 years frequency	1 year frequency
Panel 1	1993-1998	1993-1998	1993-1997	1993-1996	1993-1995	1993-1994
			1994-1998	1994-1997	1994-1996	1994-1995
				1995-1998	1995-1997	1995-1996
				1996-1998	1996-1998	1996-1997
						1997-1998
Panel 2	1996-2001	1996-2001	1996-2000	1996-1999	1996-1998	1996-1997
			1997-2001	1997-2000	1997-1999	1997-1998
				1998-2001	1998-2000	1998-1999
					1999-2001	1999-2000
						2000-2001
Panel 3	1999-2004	1999-2004	1999-2003	1999-2002	1999-2001	1999-2000
			2000-2004	2000-2003	2000-2002	2000-2001
				2001-2004	2001-2003	2001-2002
					2002-2004	2002-2003
						2003-2004
Panel 4	2002-2007	2002-2007	2002-2006	2002-2005	2002-2004	2002-2003
			2003-2007	2003-2006	2003-2005	2003-2004
				2004-2007	2004-2006	2004-2005
					2005-2007	2005-2006
						2006-2007
Panel 5	2005-2010	2005-2010	2005-2009	2005-2008	2005-2007	2005-2006
			2006-2010	2006-2009	2006-2008	2006-2007
				2007-2010	2007-2009	2007-2008
					2008-2010	2008-2009
						2009-2010
Panel 6	2008-2011			2008-2011	2008-2010	2008-2009
					2009-2011	2009-2010
						2010-2011
Panel 7	2011					

Labor Market Condition and It`s Importance

- Bartik index developed by Bartik (1991) and represent weighted employment growth for each industry from labor demand point of view.

- Provincial employment rate without considering industry weight is not strong as a weighted one (Bartik).

- Unemployment Rate is well spoken and most wide indicator of LMC

$$\text{Bartik}_{pt} \equiv \sum_{j=1}^{21} e_{pjt-1}(\ln E_{jt} - \ln E_{jt-1})$$

j indexes industry, p province and t year.

e_{pjt-1} : The share of industry j employment in province p in year t-1 and this part is the weight to the log national employment growth term.

$(\ln E_{jt} - \ln E_{jt-1})$: represents the national employment growth industry *j* excluding the employment in industry *j* of the province *p*

The sum of the employment growth from each industry (twenty one industry), represents the proxy for labor market condition for year *t* for province *p*.

Bartik Values: (18 x 10)180 Bartik Values, from 1993-2011 for each province:

Matching: Based on year and province for each workers whether move or not.

Inustry weight in QC in 2009
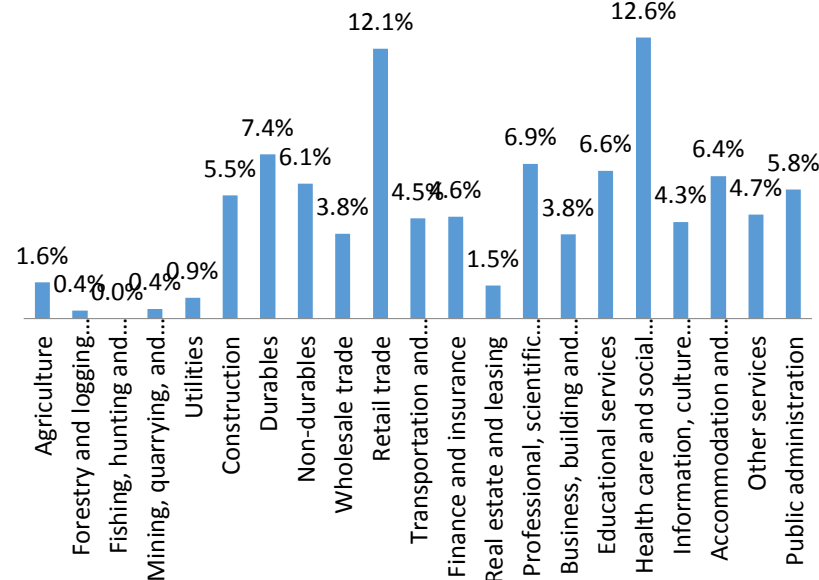
Bartik Instrument: Sample Calculation

	Canada	QC	Canada Except QC (2005) Ejt	Canada Except QC (2004)Ejt-1	ln (Ejt/Ejt-1)	Weight of Industrin QC (2004)ejt-e	ejt * ln (Ejt/Ejt-1)
Agriculture	342.1	60.8	281.3	270.7	3.84%	1.4%	0.001
Forestry	70.1	20.4	49.7	51	-2.58%	0.6%	0.000
Fishing, Hunting	26.1	2.1	24	25	-4.08%	0.0%	0.000
Mining	213.3	17.2	196.1	172.6	12.76%	0.4%	0.000
Utilities	123.5	31.5	92	99.9	-8.24%	0.9%	-0.001
Construction	1022.1	178.2	843.9	789.9	6.61%	4.5%	0.003
Durables	1310	332.6	977.4	1027.5	-5.00%	9.0%	-0.005
Non-durables	893.4	283	610.4	639	-4.58%	8.1%	-0.004
Wholesale Trade	604.7	140.5	464.2	436.5	6.15%	3.9%	0.002
Retail Trade	1964.6	476.9	1487.7	1450.7	2.52%	12.8%	0.003
Transportation	796	164.6	631.4	626.7	0.75%	4.9%	0.000
Finance	702.8	148.7	554.1	528.2	4.79%	4.0%	0.002
Real Estate	280.8	55.2	225.6	224.1	0.67%	1.4%	0.000
Professional	1041.1	223.8	817.3	790.9	3.28%	6.0%	0.002
Bus bldg	650.1	128.6	521.5	511.9	1.86%	3.1%	0.001
Educational Services	1102.4	244.1	858.3	797.1	7.40%	6.4%	0.005
Health and SA	1723.4	440.6	1282.8	1285	-0.17%	11.9%	0.000
Info Cul	728	163.2	564.8	569	-0.74%	4.5%	0.000
Accom Food	1001.2	216.4	784.8	799.2	-1.82%	5.7%	-0.001
Other	692	161.3	530.7	530.9	-0.04%	4.6%	0.000
PubAdm	835.7	215.9	619.8	613.8	0.97%	5.9%	0.001
						LMC (QC, 2005)	**0.00918**

# Inter-provincial Mobility Patterns Over the Years

Inter-Provincial Mobility rates in Canada, 1994-2011
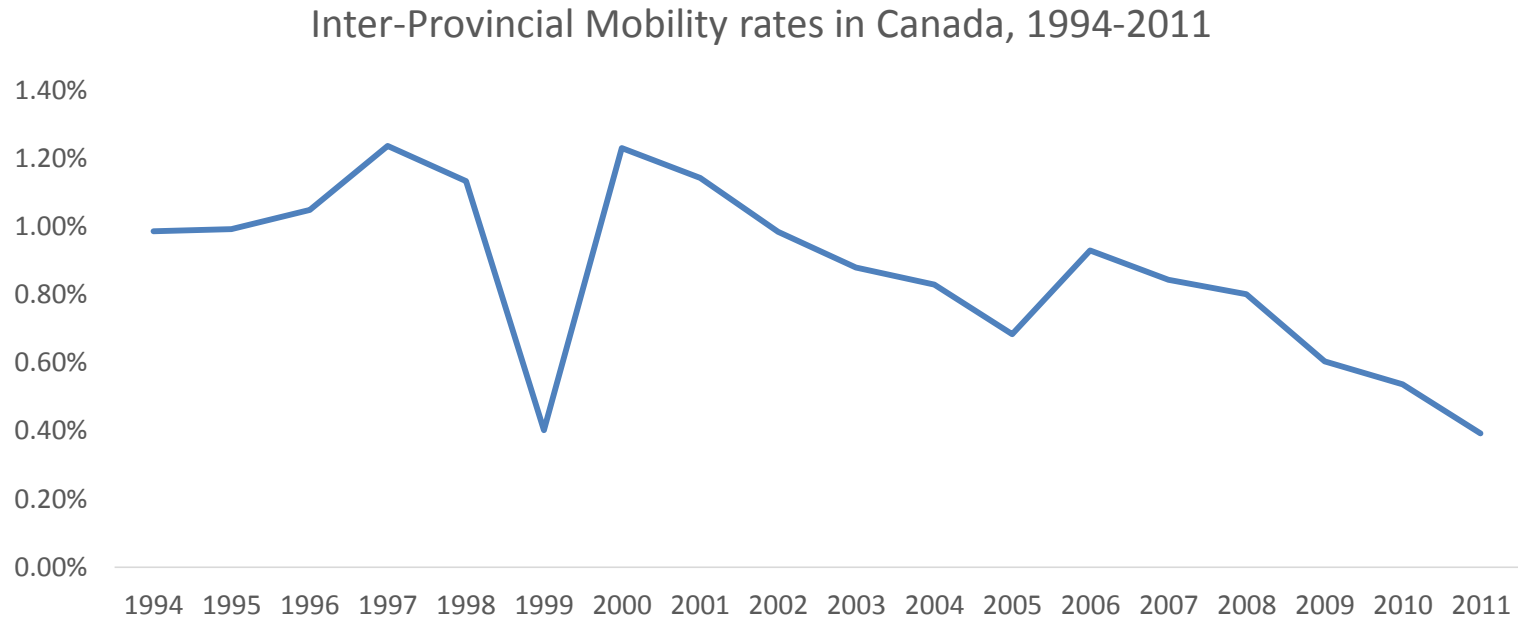
- Within the years 1994-2011, provincial mobility rates were fairly low and stable, except in 1999.

- Inter-provincial mobility rates decreased over time. There is a sharp fall of the mobility rates in year 1999. Chen et.al (2009) acknowledged that the sharp drop of the inter-provincial mobility rate in 1999 may be caused by the small sample size problem.

Stylized Facts: Educational Group

Mobility of Different Education Groups: 1994-2011

Mobility of Different Age Groups: 1994-2011
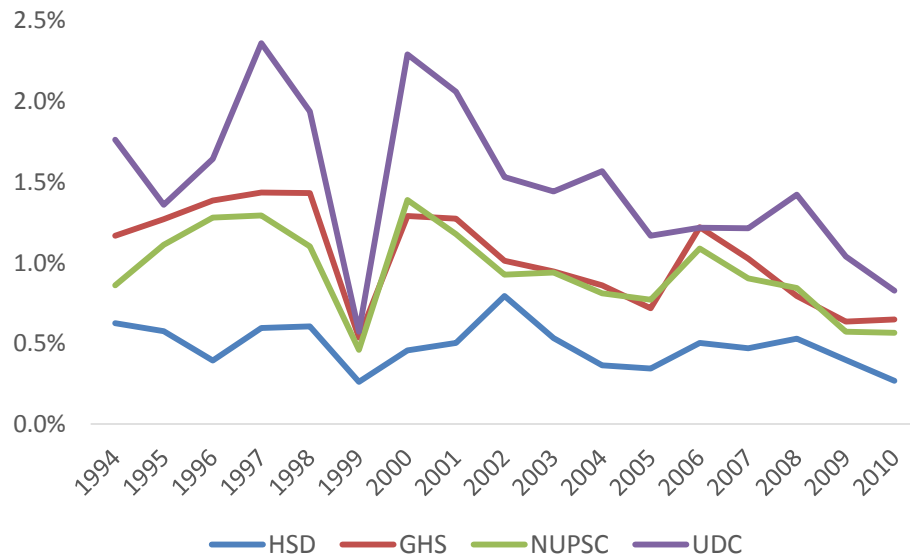
- Over the years from 1994 to 2010, mobility has decreasing trend for all education group.
- High school dropout <u>individual's</u> has the lowest mobility rate among other education group. Probable Reason:
 - less skill and competitiveness in the job market.
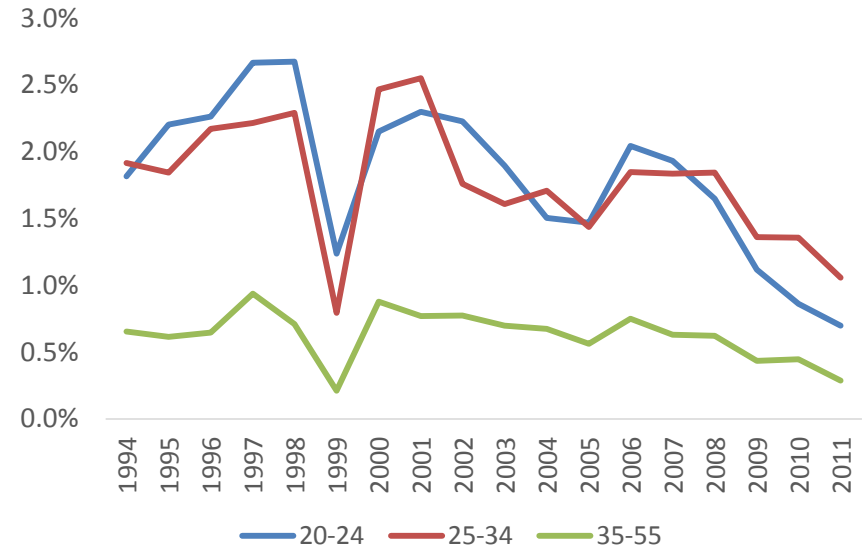
- The Age group 20-24 and 25-34 has the highest mobility rate, because
  - less family attachment
  - Motivate to explore opportunities and develop their skills.

- The age group 35-55 has lowest mobility rates, because
  - As the age increases, family attachment, moving costs, and other socioeconomic factors decrease the propensity to move.
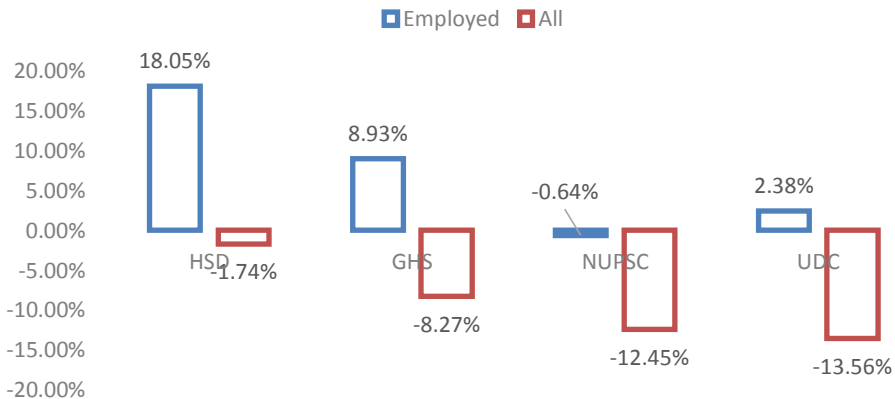
Wage Gap between Movers and Stayers

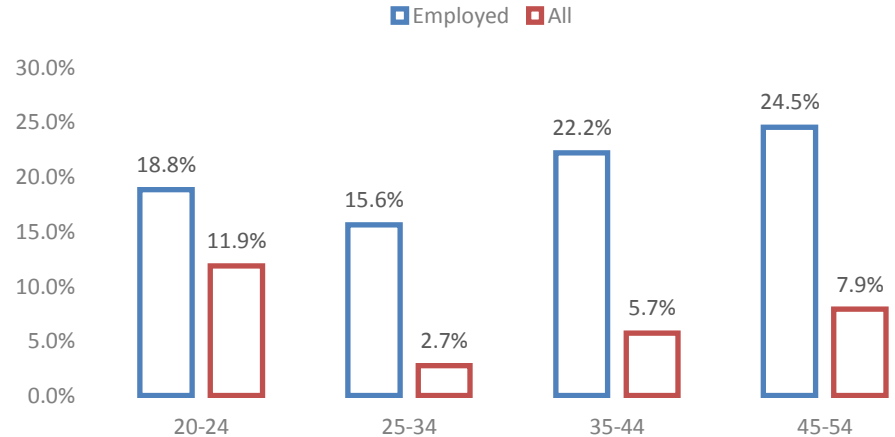Wage Rate of Movers and Stayers by education for Employed and All
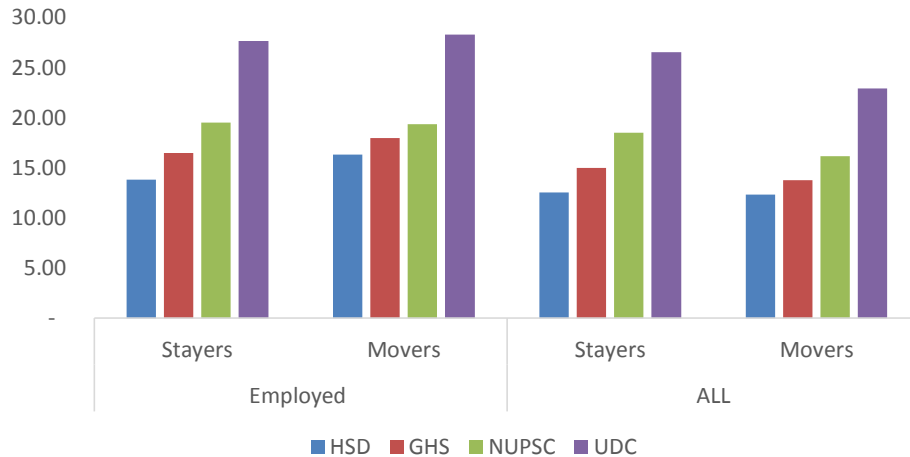
Wage Rate of Movers and Stayers by Age Group for Employed and All
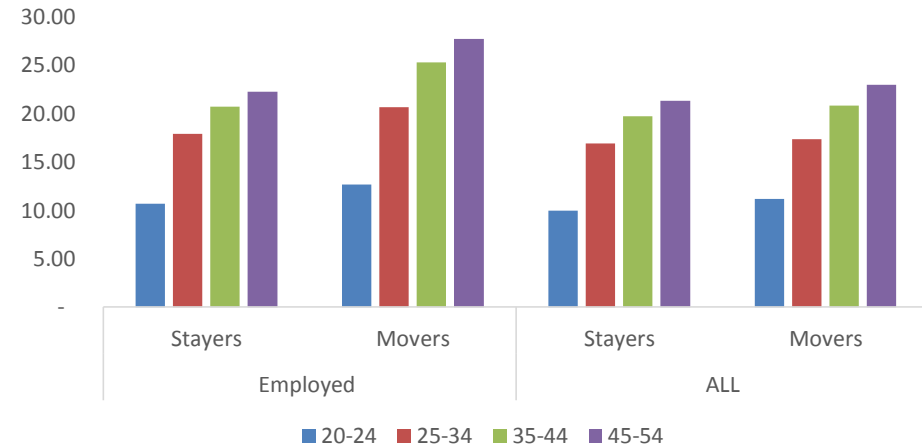
Wage Differnce between movers vs Stayers across Education Group

Wage Differnce between movers vs Stayers across Age Group

Probability Transition Matrices of Inter-Provincial Mobility

Probability Transitions Matrices of Provincial Mobility, Panel 5 (2003-2009)

	NFL	PIE	NS	NB	QC	ON	MN	SK	AL	BC
NFL	98.91	0.04	0.13	0.04	0.05	0.25	0.04	0.04	0.40	0.11
PIE	0.12	99.05	0.34	0.21	0.00	0.03	0.00	0.00	0.12	0.12
NS	0.07	0.04	98.69	0.17	0.03	0.40	0.08	0.03	0.40	0.09
NB	0.01	0.10	0.16	99.02	0.16	0.17	0.01	0.11	0.21	0.04
QC	0.00	0.00	0.02	0.03	99.79	0.11	0.00	0.00	0.04	0.01
ON	0.03	0.00	0.06	0.03	0.05	99.63	0.03	0.01	0.11	0.06
MN	0.04	0.00	0.05	0.04	0.04	0.31	98.77	0.32	0.20	0.25
SK	0.00	0.01	0.00	0.02	0.01	0.16	0.16	98.79	0.73	0.11
AL	0.10	0.02	0.18	0.03	0.06	0.21	0.02	0.20	98.81	0.36
BC	0.02	0.01	0.01	0.00	0.04	0.19	0.07	0.09	0.25	99.32

- The **diagonal elements** show the probability that an individual will stay in the same province next year. The **off diagonal** elements shows the probability cross-provincial mobility.

- **Quebec** has the highest and Nova Scotia has the lowest probability to keep it's resident.

- The probability of receiving in-migrants from other provinces in Canada is utmost for **Ontario** and **Alberta** is the second choice.

- Higher inter-provincial mobility across provinces **sharing their borders**.

Econometric Model

- Probit Model for measuring LMC effect on Inter-provincial mobility.

- Mover-Stayer Wage gap

Econometric Model: Effect of LMC

Model 1: Simple Model (for All)

$$move_{itp} = \beta_0 + \beta_1 LMC_{pj}^{t-f} + \beta_2 educ_i + \beta_3 age_i + X_i + \delta_p + \delta_t + \epsilon_{itp}$$

Move (Binary Decision): 0: Nonmover, 1: Mover

LMC: Local Market Condition of Province *p*

J: denotes province of origin or province of destination or the difference between destination and origin.

f: denotes the frequency of mobility. So, *t-f* define the timing of <u>LMC</u>. If we observe the person move status in in year 1994, then for one year frequency (*f* =1) of mobility we assign the <u>LMC</u> from year 1993. if the frequency of mobility is five and we are observing the individual move status in year 1998, so the assignment of <u>LMC</u> will be from the year 1993.

age$_i$: <u>quartic</u> polynomial of the <u>individual's</u> yearly age

Xi: includes sex, marital status, Canadian Background, living with children and immigration status.

δ_p *and* δ_t and denote the provincial and year dummy respectively

Econometric Model: Effect of LMC (Continued)

Model 2: For Each Education Group

$$move_{itp} = \beta_0 + \beta_1 LMC_{pj}^{t-j} + \beta_2 age_i + X_i + \delta_p + \delta_t + \epsilon_{itp}$$

Model 3: For Each Age Group

$$move_{itp} = \beta_0 + \beta_1 LMC_{pj}^{t-j} + \beta_2 educ_i + X_i + \delta_p + \delta_t + \epsilon_{itp}$$

Econometric Model: Wage Gap between Movers and Stayers

Across Education Group

$$wage_{itp} = \beta_0 + \beta_1 mov_{itp} + \beta_2 educ_i^g + \beta_3 age_i + \beta_4 educ_i^g * mov_{itp} + X_i + \delta_p + \delta_t + \epsilon_{itp}$$

Across Age Group

$$wage_{itp} = \beta_0 + \beta_1 mov_{itp} + \beta_2 educ_i + \beta_3 age_i^g + \beta_4 age_i^g * mov_{itp} + X_i + \delta_p + \delta_t + \epsilon_{itp}$$

Each Education Group

$$wage_{itp} = \beta_0 + \beta_1 mov_{itp} + \beta_2 age_i + X_i + \delta_p + \delta_t + \epsilon_{itp}$$

Each Age Group

$$wage_{itp} = \beta_0 + \beta_1 mov_{itp} + \beta_2 educ_i + X_i + \delta_p + \delta_t + \epsilon_{itp}$$

$educ_i^g * move_{itp}$: the interaction is used for comparing wage across education group and high school graduate is the omitted category.

$age_i^g * move_{itp}$: The interaction term is used for comparing wage across age group and 30-34 is the omitted category.

LMC Effect for All (Origin)

	1-Year Frequency		2-Year Frequency		3-Year Frequency		4-Year Frequency		5-Year Frequency	
	Bartik	UR	Bartik	UR	Bartik	UR	Bartik	UR	Bartik	UR
LMC Main effect (ALL)	**-15.364***	**0.110***	**-16.122***	**0.114***	**-20.679***	**0.122***	**-15.365***	**0.134***	**-2.434***	**0.155***
	(1.62)	(0.01)	(1.48)	(0.01)	(1.61)	(0.01)	(1.69)	(0.01)	(2.57)	(0.01)
Education	0.119***	0.118***	0.127***	0.127***	0.133***	0.133***	0.134***	0.133***	0.135***	0.133***
	(0.007)	(0.007)	(0.006)	(0.006)	(0.006)	(0.007)	(0.007)	(0.008)	(0.010)	(0.010)
Female	-0.024***	-0.023***	-0.025***	-0.023***	-0.025***	-0.021***	-0.026***	-0.021***	-0.022***	-0.017***
	(0.012)	(0.012)	(0.011)	(0.011)	(0.011)	(0.011)	(0.013)	(0.013)	(0.017)	(0.018)
Unmarried	0.041***	0.043***	0.022***	0.024***	0.005***	0.007***	0.001***	0.005***	-0.007***	-0.003***
	(0.010)	(0.010)	(0.009)	(0.010)	(0.010)	(0.010)	(0.012)	(0.012)	(0.015)	(0.016)
Non Canadian Background	0.086***	0.082***	0.092***	0.091***	0.096***	0.096***	0.101***	0.102***	0.098***	0.095***
	(0.016)	(0.016)	(0.014)	(0.014)	(0.015)	(0.015)	(0.017)	(0.017)	(0.023)	(0.023)
Living Without Children	0.138***	0.136***	0.149***	0.143***	0.150***	0.144***	0.147***	0.142***	0.142***	0.132***
	(0.015)	(0.015)	(0.013)	(0.013)	(0.014)	(0.014)	(0.016)	(0.016)	(0.022)	(0.022)
non-immigrant	0.150***	0.132***	0.158***	0.139***	0.160***	0.137***	0.177***	0.149***	0.192***	0.159***
	(0.023)	(0.023)	(0.020)	(0.021)	(0.021)	(0.022)	(0.025)	(0.025)	(0.034)	(0.034)

- Growth in employment opportunities- Individuals are less likely to move out

- Increase in Unemployment Rate-Individuals are more likely to move out

- The effect of Bartik and employment Growth and provincial unemployment rates at origin is gradually increasing from one-year frequency to five-year frequency. Cumulative effect of mobility can be responsible for such trend.

LMC Effect for ALL (Destination)
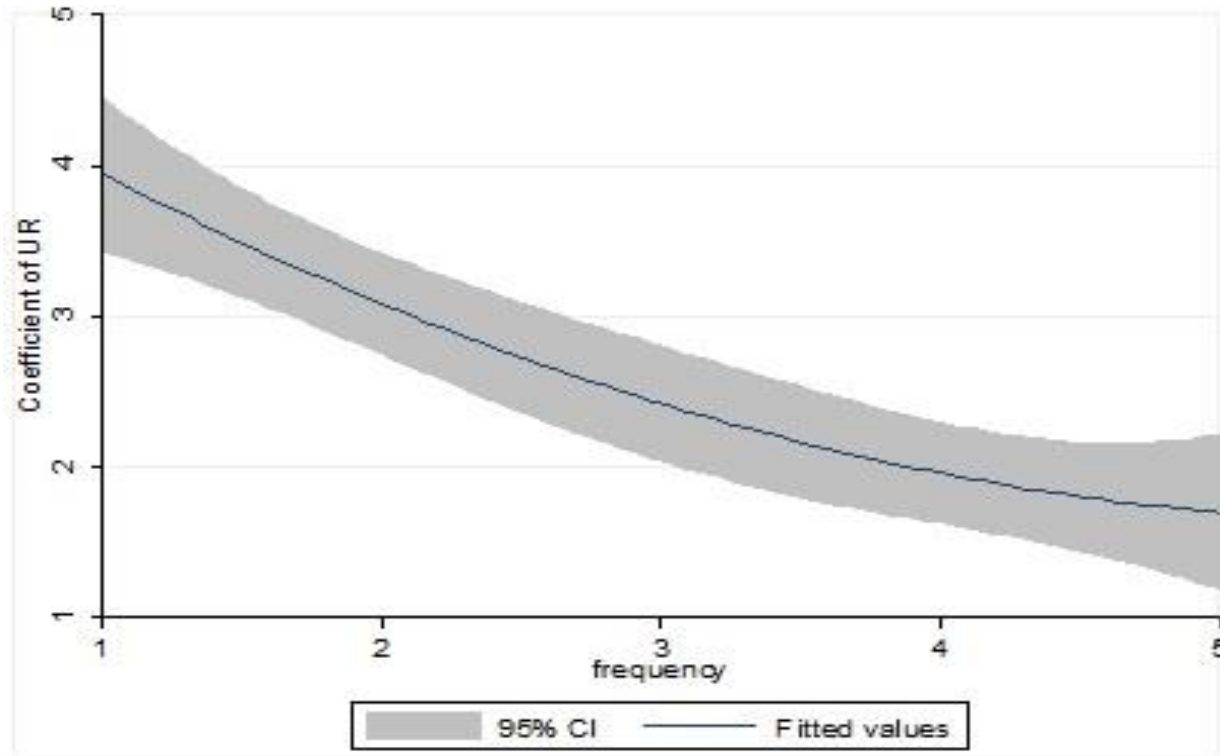
The Effect of LMC of Destination

	1-Year Frequency		2-Year Frequency		3-Year Frequency		4-Year Frequency		5-Year Frequency	
	Bartik	UR	Bartik	UR	Bartik	UR	Bartik	UR	Bartik	UR
LMC Main effect (ALL)	2.236	-0.039***	1.405	-0.032***	1.616	-0.023***	2.515	-0.021*	0.453	-0.017
	(1.548)	(0.009)	(1.414)	(0.009)	(1.520)	(0.010)	(1.660)	(0.011)	(2.427)	(0.016)

The Effect of LMC Difference Between Destination and Origin

	1-Year Frequency		2-Year Frequency		3-Year Frequency		4-Year Frequency		5-Year Frequency	
	Bartik	UR	Bartik	UR	Bartik	UR	Bartik	UR	Bartik	UR
LMC Main effect (ALL)	55.009***	-0.129***	47.649***	-0.129***	54.213***	-0.134***	44.767***	-0.146***	6.682	-0.166***
	(6.864)	(0.009)	(5.381)	(0.007)	(5.144)	(0.007)	(5.731)	(0.008)	(7.618)	(0.010)

- There is desired sign of the coefficient for both LMC Destination and LMC difference between Destination and Origin

- Individuals are responsive to the LMC of Origin and LMC difference between Destination and Origin rather than Destination LMC alone.

- Decaying Effect at Destination

Decaying Effect at Destination

- Based on Destination Province the effect of unemployment rate decreased from one-year frequency to five-year frequency.
- This explains decaying effect of unemployment rate on mobility of the province of destination.
- This findings is supported by Blanchard and Katz (1992) where they mentioned that the effects of unemployment steadily decline and disappear after five to seven years.

LMC Effect for Each Education Group (Origin)

	1-Year Frequency		2-Year Frequency		3-Year Frequency		4-Year Frequency		5-Year Frequency	
	Bartik	UR	Bartik	UR	Bartik	UR	Bartik	UR	Bartik	UR
School Drop out	**-21.577***	**0.062****	-13.840***	0.065***	-21.307***	0.077***	-12.963***	0.091***	2.600	0.100**
	(5.690)	(0.027)	(5.169)	(0.023)	(5.611)	(0.023)	(5.923)	(0.024)	(9.485)	(0.031)
High School Graduate	-14.999***	**0.124***	-17.059***	0.140***	-25.273***	0.157***	-15.009***	0.171***	1.047***	0.197***
	(2.858)	(0.014)	(2.613)	(0.012)	(2.923)	(0.012)	(2.993)	(0.013)	(4.612)	(0.018)
College	**-13.930***	0.110***	-15.296***	0.107***	-17.861***	0.108***	-12.926***	0.116***	0.525***	0.140***
	(2.770)	(0.014)	(2.500)	(0.011)	(2.698)	(0.011)	(2.835)	(0.011)	(4.240)	(0.015)
University	-16.251***	0.115***	-18.104***	0.112***	-20.101***	0.118***	-20.878***	0.141***	-12.986***	0.158***
	(3.284)	(0.017)	(3.019)	(0.014)	(3.216)	(0.014)	(3.447)	(0.015)	(5.202)	(0.019)

- Each education group is less likely to move out from the province of origin in response to Bartik. Across education group high school drop has the highest probability and college educated has the lowest probability not to move out from the province of origin.

- Each education group is more likely to move out from the province of origin in response to unemployment rate. Across education group high school graduate has the highest probability and High School Drop out has the lowest probability to move out from the province of origin.

- Higher education, added completive advantage in the job market and more responsive the to the LMC of province. Increase in Bartik more educated are less likely to stay than less educated and increase in UR less educated is less likely to move compare to more educated as they fear about fierce competition due to lack competitive advantage.

LMC Effect on Each Age Group (Origin)

	1-Year Frequency		2-Year Frequency		3-Year Frequency		4-Year Frequency		5-Year Frequency	
	Bartik	UR	Bartik	UR	Bartik	UR	Bartik	UR	Bartik	UR
20-24	-18.522***	**0.187*****	-22.162***	0.213***	-16.821***	0.24***	-22.489***	0.263***	-2.632	0.275***
	(3.720)	(0.017)	(3.565)	(0.016)	(4.960)	(0.018)	(4.426)	(0.022)	(6.833)	(0.029)
25-34	**-20.034***	0.095***	-18.733***	0.096***	-13.116***	0.112***	-22.209***	0.127***	-3.542	0.166***
	(3.965)	(0.017)	(3.704)	(0.013)	(4.331)	(0.013)	(4.238)	(0.014)	(6.177)	(0.020)
35-44	**-8.133***	**0.069***	-12.648***	0.063***	-26.466***	0.059***	-2.872	0.063***	8.987	0.087***
	(4.488)	(0.027)	(4.064)	(0.022)	(3.955)	(0.021)	(4.474)	(0.022)	(6.890)	(0.028)
45-55	-16.738***	0.082***	-16.129***	0.112***	-30.752***	0.129***	-14.918***	0.135***	-7.171	0.112***
	(5.764)	(0.035)	(4.689)	(0.027)	(4.069)	(0.026)	(5.072)	(0.027)	(8.340)	(0.037)

- Each Age group is less likely to move out from the province of origin in response to Bartik. Across age group, **25-34 age group** has the highest probability and **35-44 age group** has the lowest probability not to move out from the province of origin.

- Each age group is more likely to move out from the province of origin in response to increase in unemployment rate. Across age group **20-24 age group** has the highest probability and **35-44** out has the lowest probability to move out from the province of origin.

- As the age increase, increase in Bartik older individuals (35-55) are less likely to stay than younger individuals and increase in UR younger individuals (20-34) are more likely to move than older individuals.

- Job experience and human capital bring competitive advantage for prime age group and older individuals. However, young individuals have less family attachment and more opportunities to explore.

Wage Difference Between Movers and Stayers

- Disparity of earnings between movers and stayers even after controlling for age, education and individual characteristics.

- Sample: all-year-employed male workers, age between 25 and 55 and control for personal characteristics.

- Bernard et al (2008) by using Canadian data found that movers had better earnings growth than stayers and younger individuals migrating from low earning province have more positive impact on their earnings growth.

- To estimate the wage difference between movers and stayers I consider the following aspects
  - Wage Difference based on Education Group
  - Wage Difference based on Age Group
  - A special Case: Common Age and Education Profile

Wage Gap Between Movers and Stayers (Two Education Group)

Wage Difference between movers and Stayers for all and across Two Education Group

	1	2	3	4	5
Main Effect (HSD & HSG)	**0.155*****	0.140***	0.158***	0.165***	0.154***
	(0.020)	(0.017)	(0.017)	(0.019)	(0.026)
College and University (More Educated)	0.230***	0.232***	0.233***	0.234***	0.234**
	(0.002)	(0.002)	(0.003)	(0.004)	(0.006)
College and University X move	**-0.083*****	-0.086***	-0.110***	-0.116***	-0.118***
	(0.027)	(0.021)	(0.021)	(0.024)	(0.032)

- less educated in-migrants on average 15% higher than the stayers of the receiving localities.

- However, more educated (college and University) movers earn on average 8% less than the less educated (high school drop and high school graduate) workers when they move out of the province.

- For 5-year frequency the wage gap is wider than the shorter term frequency of mobility. At the same time without considering the mobility of the individual, the composite hourly wage rate for more educated individuals is approximately 23% higher than the less educated individuals. University graduates usually enjoy higher composite hourly wage rate compare to less educated individuals

Wage Gap Between Movers and Stayers (Four Education Group)

Wage Difference between movers and Stayers for all and across Four Education Group

	1	2	3	4	5
Main Effect (HSG)	**0.130*****	0.131***	0.146***	0.144***	0.140***
	(0.022)	(0.018)	(0.018)	(0.021)	(0.028)
School Drop out	-0.136****	-0.133***	-0.133***	-0.129***	-0.121***
	(0.003)	0.004	0.005	0.006	0.009
College	0.095***	0.098***	0.099***	0.100***	0.101***
	(0.002)	0.003	0.003	0.004	0.007
University	0.357***	0.363***	0.368***	0.376***	0.384***
	(0.003)	0.004	0.004	0.006	0.008
HSD X move	**0.039**	-0.042	-0.028	0.016	-0.031
	(0.057)	0.042	0.043	0.05	0.077
College X move	**-0.123*****	-0.130***	-0.150***	-0.134***	-0.128***
	(0.034)	(0.026)	(0.026)	(0.028)	(0.035)
University X move	**-0.069****	-0.095***	-0.122***	-0.129***	-0.159***
	(0.031)	(0.025)	(0.025)	(0.029)	(0.039)

- HSG is the omitted category and in-migrants earn on average 13% more than the stayers.
- In-migrants from college and university graduates earn less than the HSG on average by 13% and 11% respectively.
- Four and two education groups reveals two scenarios:
    - in-migrants from school drop out workers earn more than the HSG.
    - compare to HSG, it is the college graduates in-migrants earn the least compare to any other educational group.
- Two education group suppress the findings of HSD and magnitude of the wage difference of college and university graduates compare to HSG.

Wage Gap Between Movers and Stayers: Each Education Group

Wage Difference between movers and Stayers Each Education Group

		1	2	3	4	5
Four Education Group	High School Drop	**0.131***	0.032	0.071*	0.108***	0.038
		(0.054)	(0.039)	(0.038)	(0.046)	0.000
	High School Grad	0.128***	0.128***	0.145***	0.144***	0.136***
		(0.022)	(0.018)	(0.019)	(0.021)	0.000
	College	**-0.002**	-0.015	-0.016	-0.002	0.002
		(0.025)	(0.018)	(0.018)	(0.019)	0.000
	University	0.106***	0.087***	0.072***	0.061***	0.022
		(0.021)	(0.016)	(0.017)	(0.020)	0.000
Two Education Group	High School Drop and Graduates	0.137***	0.118***	0.137***	0.147***	0.130***
		(0.021)	(0.017)	(0.017)	(0.020)	0.000
	College and University Graduates	0.086***	0.070***	0.062***	0.063***	0.051***
		(0.017)	(0.013)	(0.013)	(0.014)	0.000

- Two education group: both less and more educated workers earn more than the stayers.

- Four education group: in-migrants from high school drop and university graduates earn more than the stayers of the receiving localities.

- However, in-migrants from college graduates receive 0.02% less than the stayers.

- Two education group analysis suppress or hide the effect of college educated people.

Reasons Why HSG earn more than College

The study by Frenette et al. (2014) examine the factors underlie the narrowing of wage differences observed between bachelors degree holders and high school graduates from the 2000-to-2002 period to the 2010-to-2012 period. The potential reasons are:

- Oil boom seen during much of the 2000s tended to reduce wage differences across education levels.

- Rising real minimum wages and rising relative supply of bachelors degree holders tended to reduce the education wage premium.

- Movements in unionization rates and the relative importance of temporary jobs reduced the education wage premium.

Wage difference (Based on Age Group)

Wage Difference between movers and Stayers for all and across Age group

		1	2	3	4	5
Four Age Group	Move	0.047***	0.023	0.027*	0.039**	0.025
		(0.021)	(0.015)	(0.015)	(0.017)	(0.022)
	20-24	-0.205***	-0.205***	-0.203***	-0.204***	-0.224***
		(0.005)	(0.006)	(0.007)	(0.009)	(0.013)
	35-44	0.023***	0.019***	0.019***	0.026***	0.025**
		(0.005)	(0.005)	(0.006)	(0.008)	(0.012)
	45-55	-0.026***	-0.033***	-0.028**	-0.013	-0.006
		(0.008)	(0.009)	(0.011)	(0.014)	(0.021)
	16-24 X LMC	-0.004	0.062**	0.053**	0.055**	0.054**
		(0.035)	(0.027)	(0.028)	(0.032)	(0.042)
	35-44 X LMC	**0.084***	0.070***	0.062**	0.037**	0.049**
		(0.032)	(0.025)	(0.025)	(0.028)	(0.037)
	45-55 X LMC	0.065	0.048	0.053	0.044	0.037
		(0.045)	(0.034)	(0.032)	(0.035)	(0.043)
Two Age Group	Move	0.110***	0.077***	0.069***	0.060***	0.045***
		(0.019)	(0.015)	(0.015)	(0.017)	(0.022)
	45-55	0	-0.003	0	0.012	0.024
		(0.007)	(0.008)	(0.009)	(0.011)	(0.016)
	45-55 X move	**-0.002**	-0.009	0.007	0.018	0.011
		(0.044)	(0.034)	(0.032)	(0.035)	(0.043)

- Four age group: the prime age group (35-44) movers earn 8.4% more than the age group 25-34 (base age group).

- Two age group: in-migrants from older workers (45-55) earn less than the movers from the age group (30-44).

- So, the prime age group (35-44) movers wage increase is the highest across the movers from age groups.

Wage difference: Each Age Group

Wage Difference between movers and Stayers across for each Age group

		1	2	3	4	5
Four Education	20-24	0.038*	0.081***	0.082***	0.084***	0.071**
		(0.024)	(0.020)	(0.022)	(0.024)	(0.032)
	25-34	0.061**	0.041***	0.043***	0.050***	0.034
		(0.020)	(0.015)	(0.015)	(0.017)	(0.023)
	35-44	**0.131*****	0.093***	0.088***	0.075	0.071
		(0.024)	(0.019)	(0.020)	(0.022)	(0.030)
	45-55	0.106***	0.068**	0.078***	0.083***	0.057
		(0.040)	(0.030)	(0.028)	(0.031)	(0.037)
Two Education	30-44	0.110***	0.077***	0.067***	0.058***	0.043***
		(0.019)	(0.015)	(0.015)	(0.017)	(0.022)
	45-55	0.106***	0.068**	0.078***	0.083***	0.057
		(0.040)	(0.030)	(0.028)	(0.031)	(0.037)

- Based on both four and two age group specifications in-migrants from each age earn more than the incumbent workers of receiving localities.

- The wage difference between movers and stayers are highly significant for each age group.

- The Wage gap between movers and stayers is highest for prime age group.

A special case of Education and Age group

Wage Difference between movers and Stayers for two age and education groups (A Special Case)

Education Level/Age	1		2		3		4		5	
	30-44	45-55	30-44	45-55	30-44	45-55	30-44	45-55	30-44	45-55
HSD & HSG (Less Educated)	0.185***	0.200***	0.147***	0.153***	0.148***	0.193***	0.142***	0.169***	0.121***	0.123***
	(0.036)	(0.054)	(0.029)	(0.046)	(0.029)	(0.043)	(0.032)	(0.050)	(0.044)	(0.069)
College and University (More Educated)	0.110***	0.099*	0.079***	0.072**	0.066***	0.068**	0.057***	0.087**	0.054**	0.067
	(0.023)	(0.057)	(0.019)	(0.040)	(0.019)	(0.037)	(0.021)	(0.040)	(0.026)	(0.047)

1. Both young (30-44) and old (45-55) workers with less (HSD and HSG) and more (College and University) education, in-migrants earn more than the stayers.

2. The positive mover-stayer wage gap among less educated workers increase with age

3. The positive mover-stayer wage gap among more educated workers decrease with age for one and two year frequency of mobility but for other frequency of mobility positive mover stayers wage gap for among more educated increase with age.

4. However, other frequencies are opposite: The positive mover-stayer wage gap among more educated workers increase with age. The study by Lkhagvasuren (2013) based on U.S, census data found the similar picture, which we find in our analysis of five-year-frequency of mobility.

Contribution to The Literature

- In the existing literature, local market conditions have not been studied widely. Moreover, local market conditions coupled with different education and age groups has not been explored in Canada. Therefore this research will contribute to the labor mobility research in the Canadian context.

- Most of the previous studies have been conducted on local market condition of the origin. In my research we use LMC not only of the original province but extended to LMC of the destination and the difference between the LMC of the destination and origin.

- Previous studies consider the year of LMC assignment is the year individuals move. In our research, we assign the local market condition at the beginning of frequency of mobility that means for one year frequency of mobility, we assign LMC for 1993, instead of 1994. Because I move in 1994, definitely my decision is based on the LMC of 1993.

- Previous studies generated Bartik instruments based on U.S. data. We construct Bartik instruments for *the first time for Canadian market* which add my contribution to the literature as well.

- Most of the studies focus on one year or five year frequency of Mobility. In SLID, I create five different frequency of mobility, from one, two, three, four and five year frequency of mobility, which allow me to compare with other studies, especially with census data.

Conclusion

- Education Group: compare to less educated more educated are more likely to move if increase in UR and less probability to stay if increase in Bartik.

- Age Group: compare to young, older individuals are less likely to move if increase in UR and less probability to stay if increase in Bartik.

Third, is provincial mobility affected by local market condition of the original or destination province?

- Individuals are more likely to stay in original province rather than move to the destination province. However, if the local market condition measures are more favorable in the destination province compare to the origin, individuals are more likely to move to destination.

Finally, is there any wage gap between movers and stayers across different education and age groups?

- Education Group:
  - Except College graduate, positive wage gap between movers and stayers
  - High School Graduate gains the most.

- Age Group:
  - Positive wage gap between movers and stayers for all age group
  - Prime Age Group (35-44) gains the most.

Thank You