The Arts and Local Economic Development

An Analysis of the Relationship over time between Arts-related Employment and Knowledge-Intensive Industries for Large and Small Urban Places in Canada

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Preliminary Considerations

- Definitions of what constitutes *Creative* employment abound in the literature.
- It is doubtful that a universally agreed-upon operational definition will ever exist. In the end, a futile search.
- Much conflation with *the Arts* and with *Cultural Industries*, for which no generally agreed-upon definitions exist either.
- No matter how defined, the evidence of a positive relationship between the Arts, Culture, or 'Creative' occupations and subsequent growth is mixed at best.
- Casual observation and history suggest that there is no systematic relationship: Atlanta, Manchester.

Preliminary Considerations – Continued

- The literature suggests that Artistic / Cultural / Creative employment, however defined, is overwhelmingly concentrated in the very largest cities: evidence for the US.
- There is little evidence that this is about to change. Patterns are remarkably stable.
- However, 'Creative' concentrations are present in smaller places. These are basically of two kinds:
  - Places with attractive natural attributes (sun, sea, mountains). Which raises analytical issues with respect to causality in explaining growth;
  - Places within the long-distance commuting shed – encompassing secondary homes and weekend tourism – of large metropolitan areas.

  Both are likely to grow as a result of the growth in retired populations, changing preferences, and long-distance Internet-facilitated commuting.

In This Study

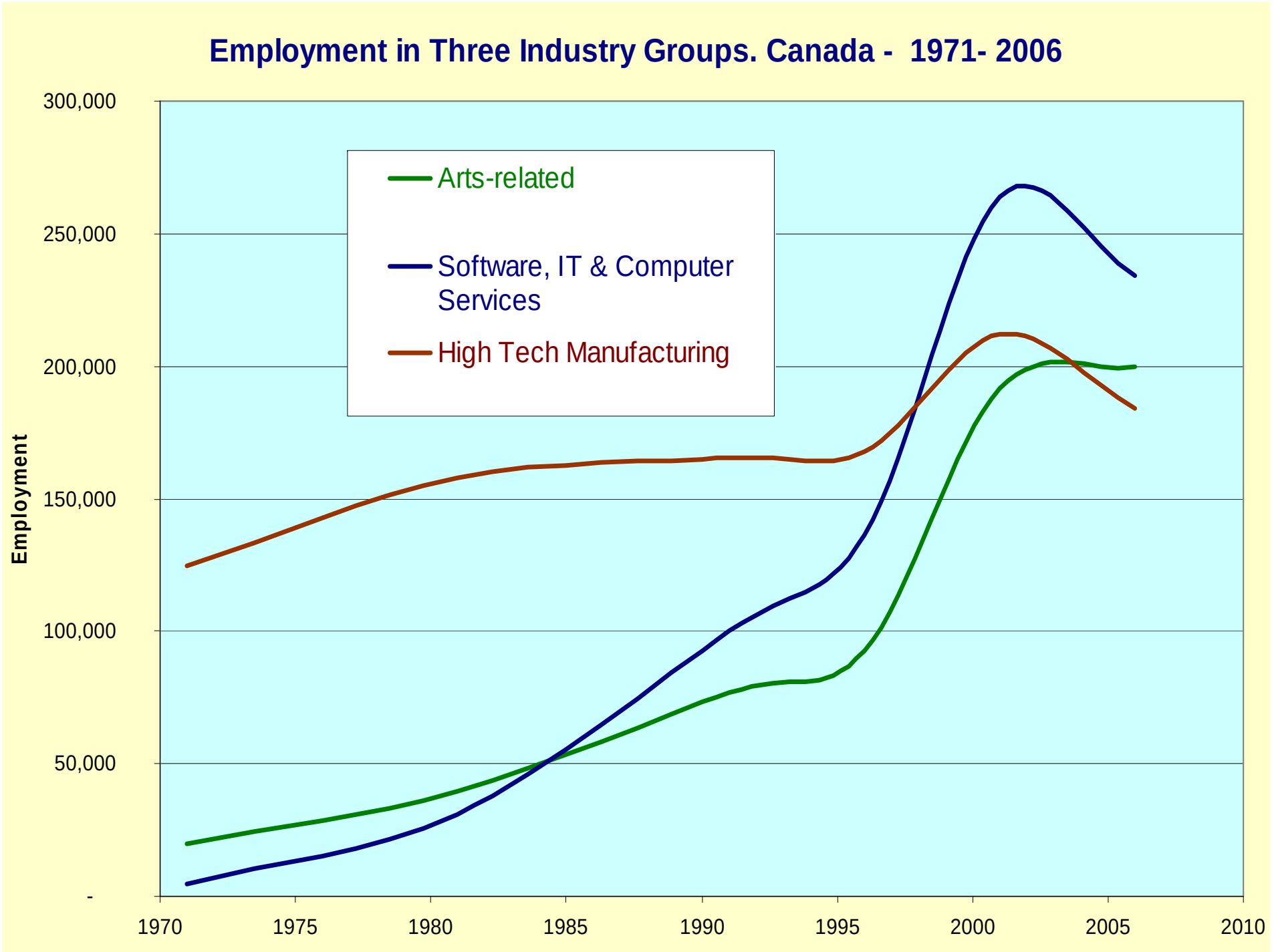
- We examine a more constrained class: *Arts-related Employment.* The operational definition is given below.
  - The definition aims to capture the relative presence of both producers and consumers of artistic output, *The Arts Crowd.*
- We examine 135 Canadian urban areas (populations 10,000+) over a thirty-five period (1971-2006), covering six census years.
- Industry classes and geographies are standardized over time.
- We focus on the following relationships:
  - **Location,** notably the relationship with urban size. Is there evidence that Arts-related Employment is moving to smaller cities, and if so which?
  - **Co-location,** specifically with two broad classes of knowledge-rich industries. The operational definitions are also given below.
  - **Growth**; that is, between the relative presence of Arts-related Employment and subsequent employment growth, both in general and for knowledge-rich industries.

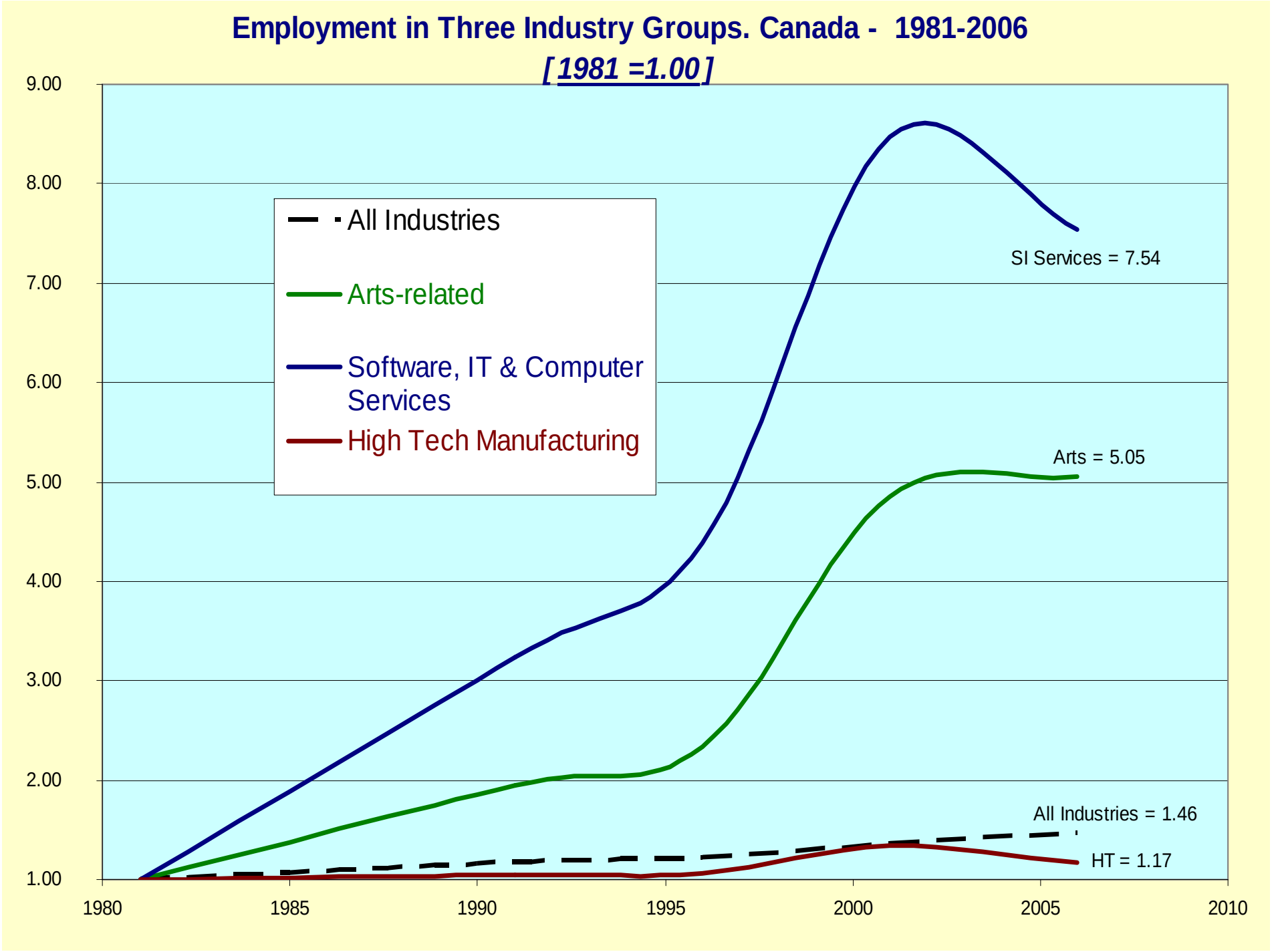
Definition of Industry Groupings

NAICS Codes	Industry Classes
	Arts-Related (Arts)
512 7111 7115 4512, 4532	Motion picture and sound recording industries Performing arts companies Independent artists, writers, and performers Book, periodical, music, stationery, and gift stores
	Software, IT & Computer Services (SI Services)
5112 5114 5415	Software publishers Information services and data processing services Computer systems design and related services
	High Tech Manufacturing (HT Industries)
3341 3364 3342-4 3254 3345-6, 3391	Computer and peripheral equipment manufacturing Aerospace product and parts manufacturing Communications equipment manufacturing; audio and video equipment manufacturing; Semiconductor and other electronic component manufacturing Pharmaceutical and medicine manufacturing Navigational measuring medical and control instruments manufacturing; magnetic and optical media; medical equipment and supplies manufacturing

Growth 1971-2006

- Employment in Canada doubled over this period.
- In the Arts and SI Services, employment literally exploded, the latter the fastest growing sector of the Canadian economy.
- Employment growth in HT Manufacturing was more modest, the combined result of rising productivity and outsourcing.
- All three grew rapidly during the dot com boom of the1990s, but then fell when the bubble burst.
- But, the Arts were less affected, a sign that its evolution is independent, at least in part, of the other two sectors.


Employment in Three Industry Groups. Canada - 1971- 2006
Employment
300,000
250,000
200,000
150,000
100,000
50,000
-
1970
1975
1980
1985
1990
1995
2000
2005
2010
Arts-related
Software, IT & Computer Services
High Tech Manufacturing


Employment in Three Industry Groups. Canada - 1981-2006
[1981 =1.00]
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
1980
1985
1990
1995
2000
2005
2010
All Industries
Arts-related
Software, IT & Computer Services
High Tech Manufacturing
SI Services = 7.54
Arts = 5.05
All Industries = 1.46
HT = 1.17

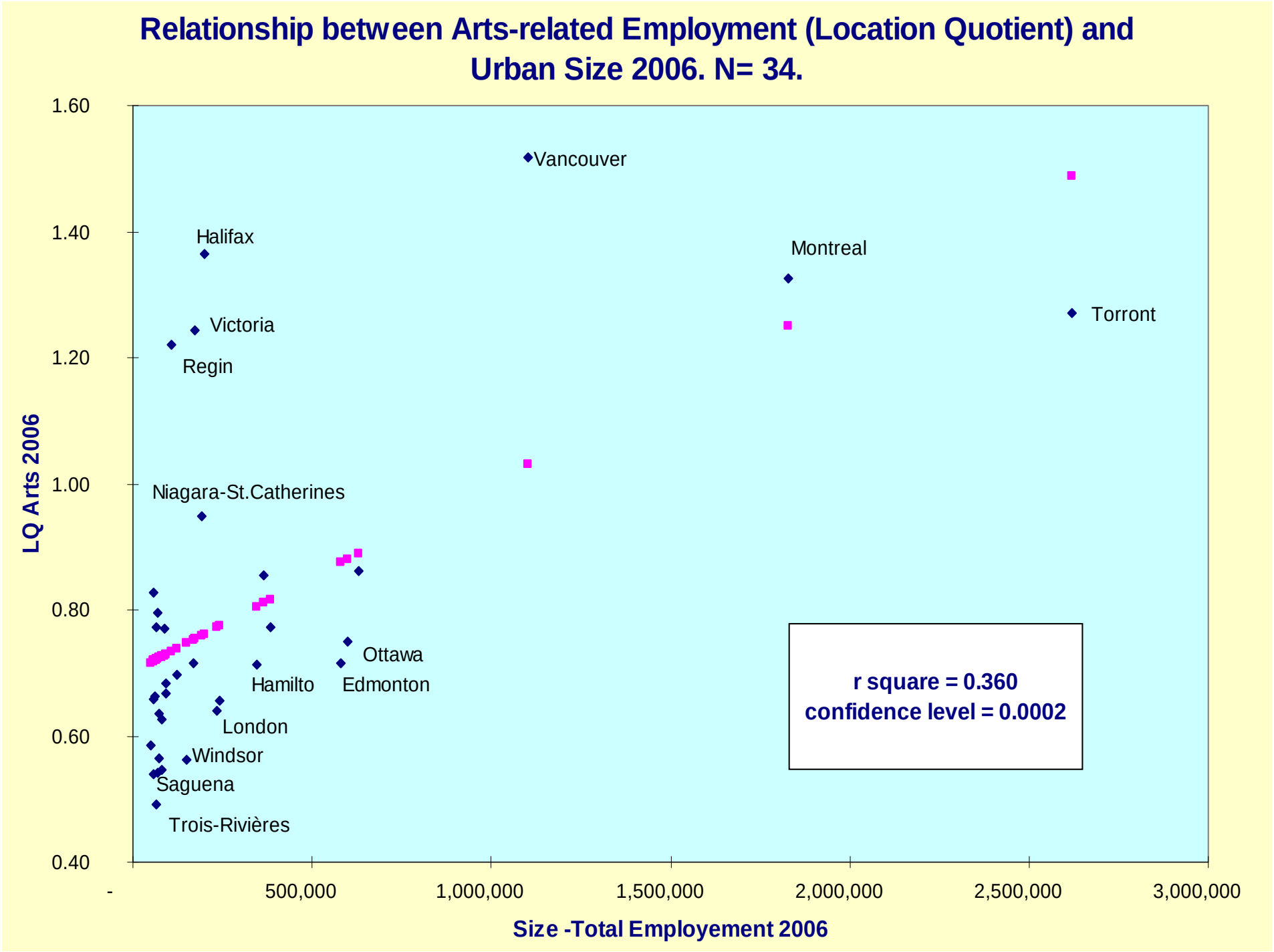
Location of Arts-related Employment

- **Only** the three largest centres - Toronto, Montréal, Vancouver – exhibit **consistently** high concentrations (LQ above 1.0). Stratford is the sole exception.
- The positive relationship with size is consistently stronger for larger urban places (100k +). LQs over time are remarkably stable.
- Factors that favour above average concentrations are: natural setting; capital city status; the absence of a blue-collar legacy.
- For smaller places, concentrations are more volatile, as would be expected, and the relationship with size weak.
- A marked trend towards the dispersion of Arts-related employment towards smaller places since the late 1990s.
- Consistent with findings elsewhere, the principal beneficiaries of are:
  - Recreation and retirement sheds around large urban centres
  - Places blessed by nature, notably Canada's temperate Pacific Coast and The Rockies.

Location Quotient (LQ)-based Indicators of Spatial Distribution 1971- 2006. Arts-related

	n= 135					
	1971	1981	1991	1996	2001	2006
Standard Deviation	0.60	0.46	0.51	0.41	0.36	0.36
Maximum LQ	5.27	4.23	5.67	3.99	3.12	2.83
Correlation with 2006 LQ	0.37	0.61	0.61	0.60	0.67	1.00
Correlation with Urban Size	0.19	0.28	0.23	0.23	0.33	0.29
	n= 34					
	1971	1981	1991	1996	2001	2006
Standard Deviation	0.32	0.29	0.24	0.30	0.27	0.27
Maximum LQ	1.50	1.63	1.42	1.58	1.54	1.52
Correlation with 2006	0.59	0.71	0.77	0.80	0.91	1.00
Correlation with Size	0.70	0.77	0.87	0.84	0.59	0.60

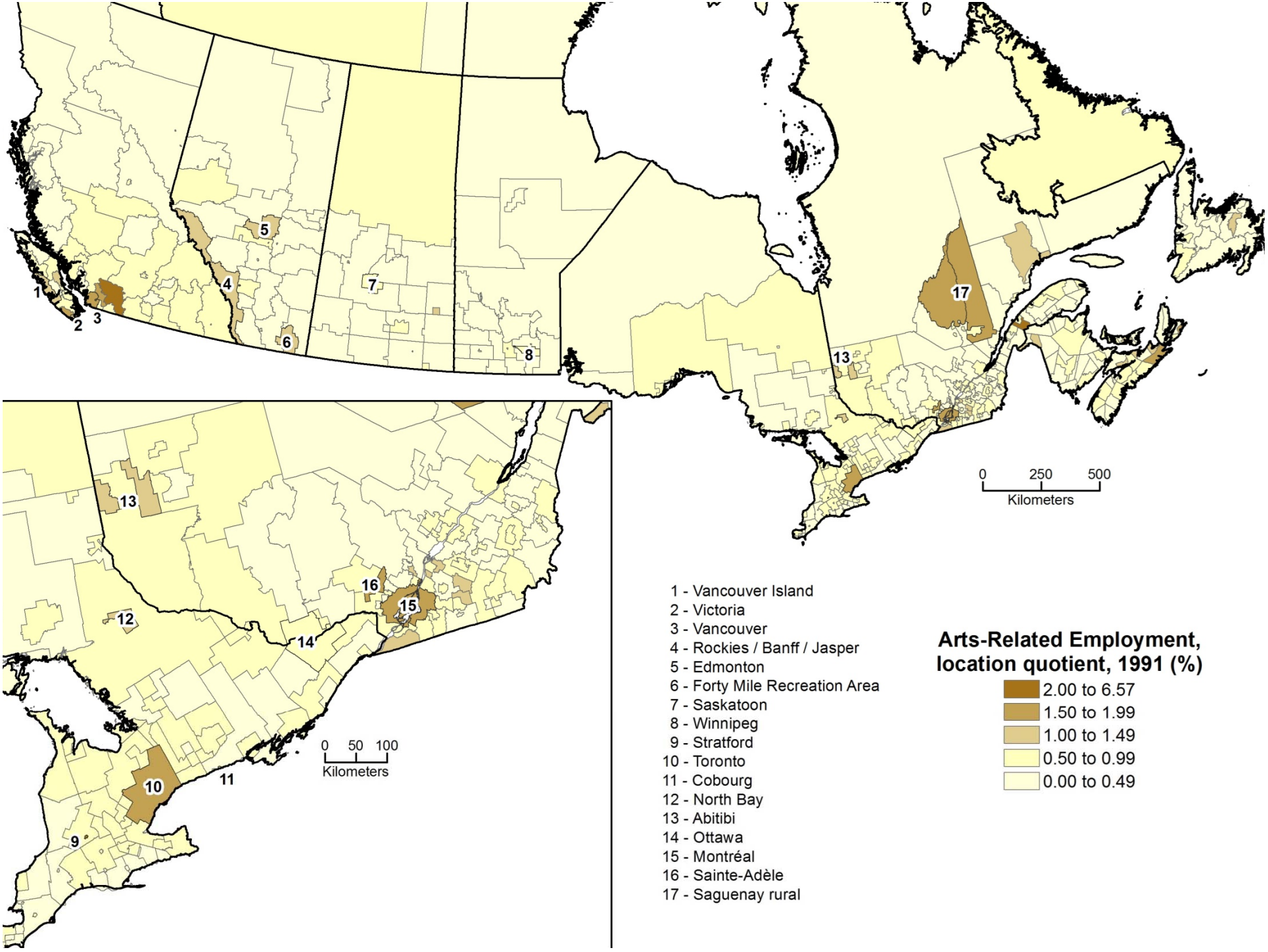
All signifcant at 0.05


Relationship between Arts-related Employment (Location Quotient) and Urban Size 2006. N= 34.
LQ Arts 2006
1.60
1.40
1.20
1.00
0.80
0.60
0.40
Vancouver
Halifax
Montreal
Torront
Victoria
Regin
Niagara-St.Catherines
Ottawa
Hamilto
Edmonton
London
Windsor
Saguena
Trois-Rivières
r square = 0.360
confidence level = 0.0002
-
500,000
1,000,000
1,500,000
2,000,000
2,500,000
3,000,000
Size -Total Employement 2006

Twenty Urban Places with Highest Location Quotients

1981		1991		2006	
Stratford	4.23	**Stratford**	5.67	**Stratford**	2.83
Dolbeau	1.73	**Toronto**	1.42	Kentville	1.77
Toronto	1.63	**Montréal**	1.40	Elliot Lake	1.76
Tillsonburg	1.63	**Vancouver**	1.34	**Vancouver**	1.52
Port Hope	1.51	Courtenay	1.28	*Halifax*	1.36
Montréal	1.28	North Battleford	1.25	Whitehorse	1.35
Ottawa	1.18	Yorkton	1.22	**Montréal**	1.33
Courtenay	1.15	Cobourg	1.16	**Toronto**	1.27
Valleyfield	1.12	Joliette	0.98	Huntsville	1.25
Halifax	1.10	North Bay	0.95	Victoria	1.24
Vancouver	1.07	*Charlottetown*	0.93	Bracebridge	1.23
Whitehorse	1.07	Victoria	0.92	Regina	1.22
Fredericton	1.05	Duncan	0.92	Yellowknife	1.21
Drummondville	0.99	Edmonton	0.87	Nanaimo	1.10
Kentville	0.99	Sept-Îles	0.86	Owen Sound	1.10
Cranbrook	0.97	Rimouski	0.85	Camrose	1.06
Charlottetown	0.95	Cranbrook	0.85	Port Hope	1.03
St. John's	0.92	*Halifax*	0.85	Duncan	1.02
Joliette	0.89	Ottawa	0.84	Prince Rupert	1.00
Guelph	0.89	Calgary	0.84	*Charlottetown*	0.96

Bold = LQ < 1.00 for all three years; *Italics* = in top 20 for all three years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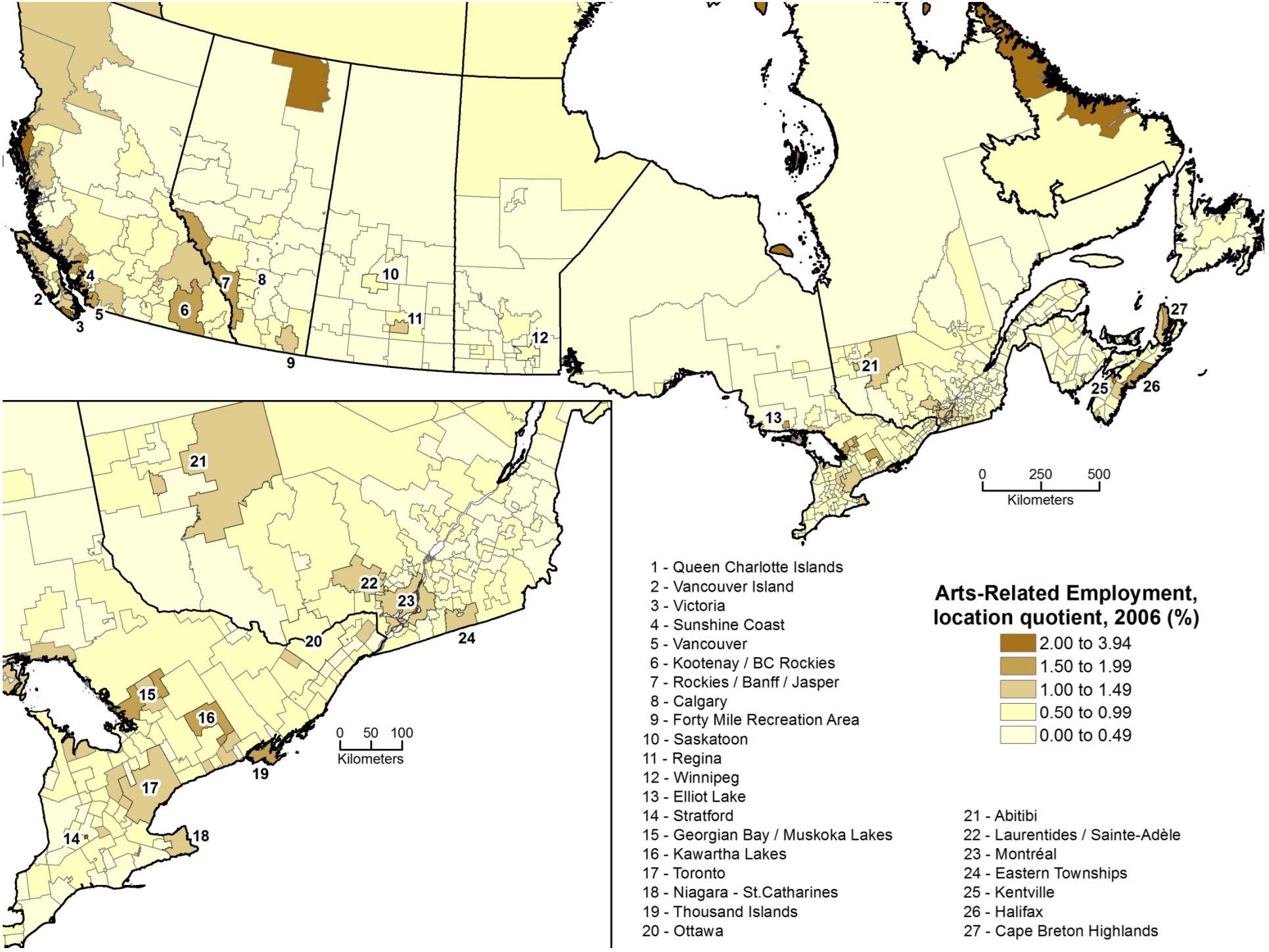
14
15
16
17
0 250 500
Kilometers
0 50 100
Kilometers
1 - Vancouver Island
2 - Victoria
3 - Vancouver
4 - Rockies / Banff / Jasper
5 - Edmonton
6 - Forty Mile Recreation Area
7 - Saskatoon
8 - Winnipeg
9 - Stratford
10 - Toronto
11 - Cobourg
12 - North Bay
13 - Abitibi
14 - Ottawa
15 - Montréal
16 - Sainte-Adèle
17 - Saguenay rural
Arts-Related Employment, location quotient, 1991 (%)
2.00 to 6.57
1.50 to 1.99
1.00 to 1.49
0.50 to 0.99
0.00 to 0.49


1 - Queen Charlotte Islands
2 - Vancouver Island
3 - Victoria
4 - Sunshine Coast
5 - Vancouver
6 - Kootenay / BC Rockies
7 - Rockies / Banff / Jasper
8 - Calgary
9 - Forty Mile Recreation Area
10 - Saskatoon
11 - Regina
12 - Winnipeg
13 - Elliot Lake
14 - Stratford
15 - Georgian Bay / Muskoka Lakes
16 - Kawartha Lakes
17 - Toronto
18 - Niagara - St.Catharines
19 - Thousand Islands
20 - Ottawa
21 - Abitibi
22 - Laurentides / Sainte-Adèle
23 - Montréal
24 - Eastern Townships
25 - Kentville
26 - Halifax
27 - Cape Breton Highlands
0 250 500
Kilometers
0 50 100
Kilometers
Arts-Related Employment, location quotient, 2006 (%)
2.00 to 3.94
1.50 to 1.99
1.00 to 1.49
0.50 to 0.99
0.00 to 0.49

Co-Location with Knowledge-rich Industries

- For the entire urban system (n=135), the relationship is consistently positive **but weak** with SI Services and non-existent for HT Manufacturing.
- The Arts and HT Manufacturing exhibit a similar weak relationship with size, but this does not mean that they co-locate, The latter is drawn to HT clusters around Canada's two largest cities for reasons that visibly have little to do with The Arts.
- SI Services are in a class of their own in terms of their relationship to size, which remains largely consistent over time.
- For larger cities (n=34) the relationship with SI Services is strengthened but remains non-significant (or close) for HT Manufacturing.
- The relationships are improved if consistent strength in the Arts (mean LQ 1971-2006) is considered, but raises circularity issues with size.

Co-Location with Knowledge-rich Industries -2

- Cities with high relative concentrations of SI Services (above what Arts LQs would predict) have particular economic bases (Calgary, Ottawa).
- Vancouver stands out as an example that a strong Arts presence does not necessarily translate into proportionally strong knowledge-rich sectors.
- At the other end of the spectrum, the mid-sized city of Kitchener-Waterloo (of RIM fame) stands out as an example of a comparatively weak Arts presence but strong knowledge-rich sectors

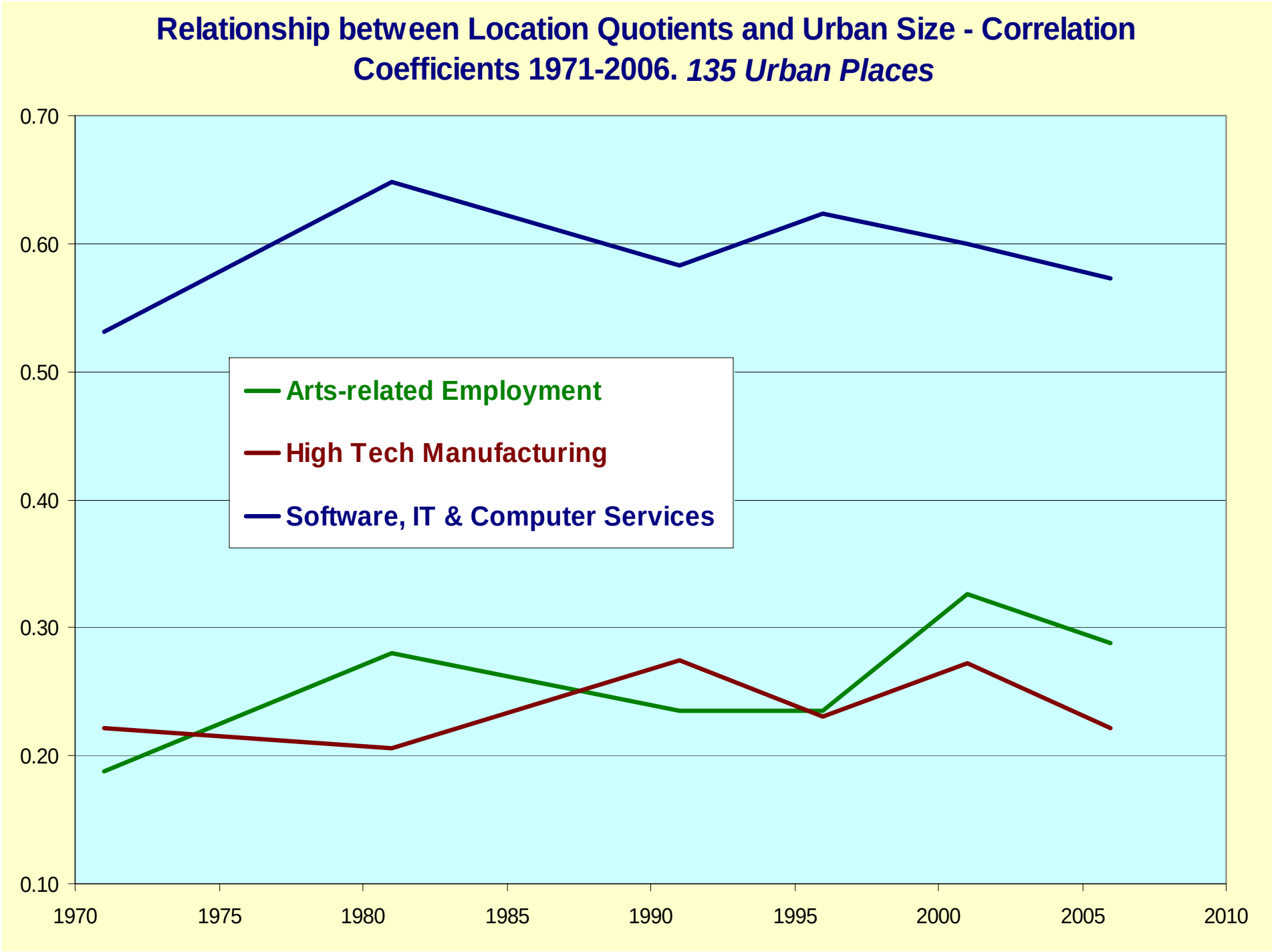
Relationship Between LQ in 2 Industry Groupings and in Arts-related Employment 1971-2006. Correlation coefficients

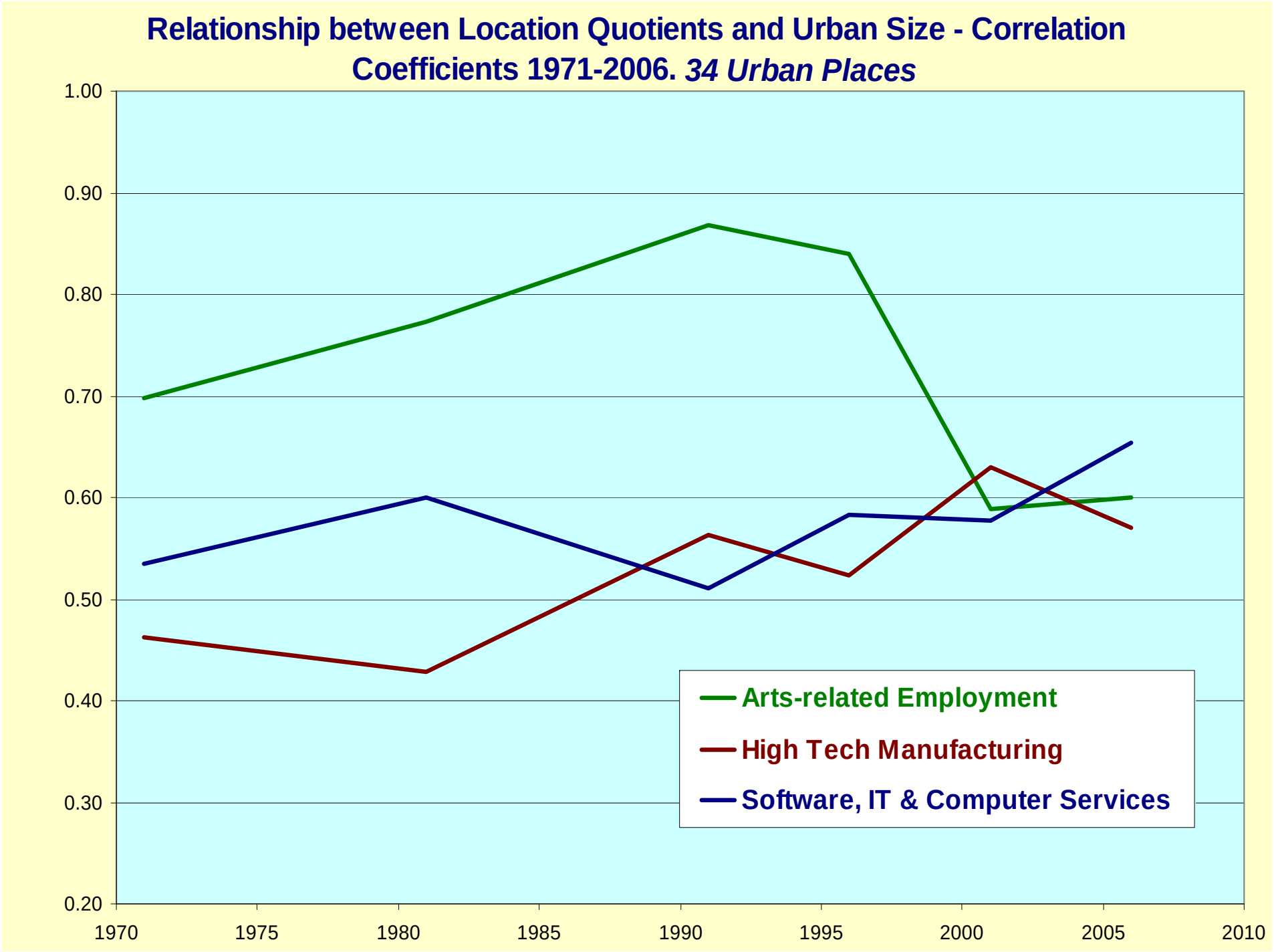
	n	1971	1981	1991	1996	2001	2006
Software, IT & Computer	135	0.25	0.25	*0.13*	0.34	0.37	0.31
	34	0.74	0.73	0.56	0.63	0.50	0.59
High Tech Manufacturing	135	*0.04*	*0.10*	*0.07*	*0.13*	*0.02*	*0.16*
	34	*0.16*	0.34	0.41	0.42	*0.32*	*0.32*

Indicates not significant (confidence level < 0.05)

Relationship between LQ 2006 for 2 Industry Groupings and **mean** LQ for Arts-related Employment. Correlation

	n	mean LQ 71-06	mean LQ 81-06
Software, IT & Computer	135	0.29	0.32
Services (LQ 2006)	34	**0.71**	0.69
High Tech Manufacturing	135	0.26	0.25
(LQ 2006)	34	**0.48**	0.46


Relationship between Location Quotients and Urban Size - Correlation Coefficients 1971-2006. 135 Urban Places
0.70
0.60
0.50
0.40
0.30
0.20
0.10
1970
1975
1980
1985
1990
1995
2000
2005
2010
Arts-related Employment
High Tech Manufacturing
Software, IT & Computer Services


Relationship between Location Quotients and Urban Size - Correlation Coefficients 1971-2006. 34 Urban Places
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
1970
1975
1980
1985
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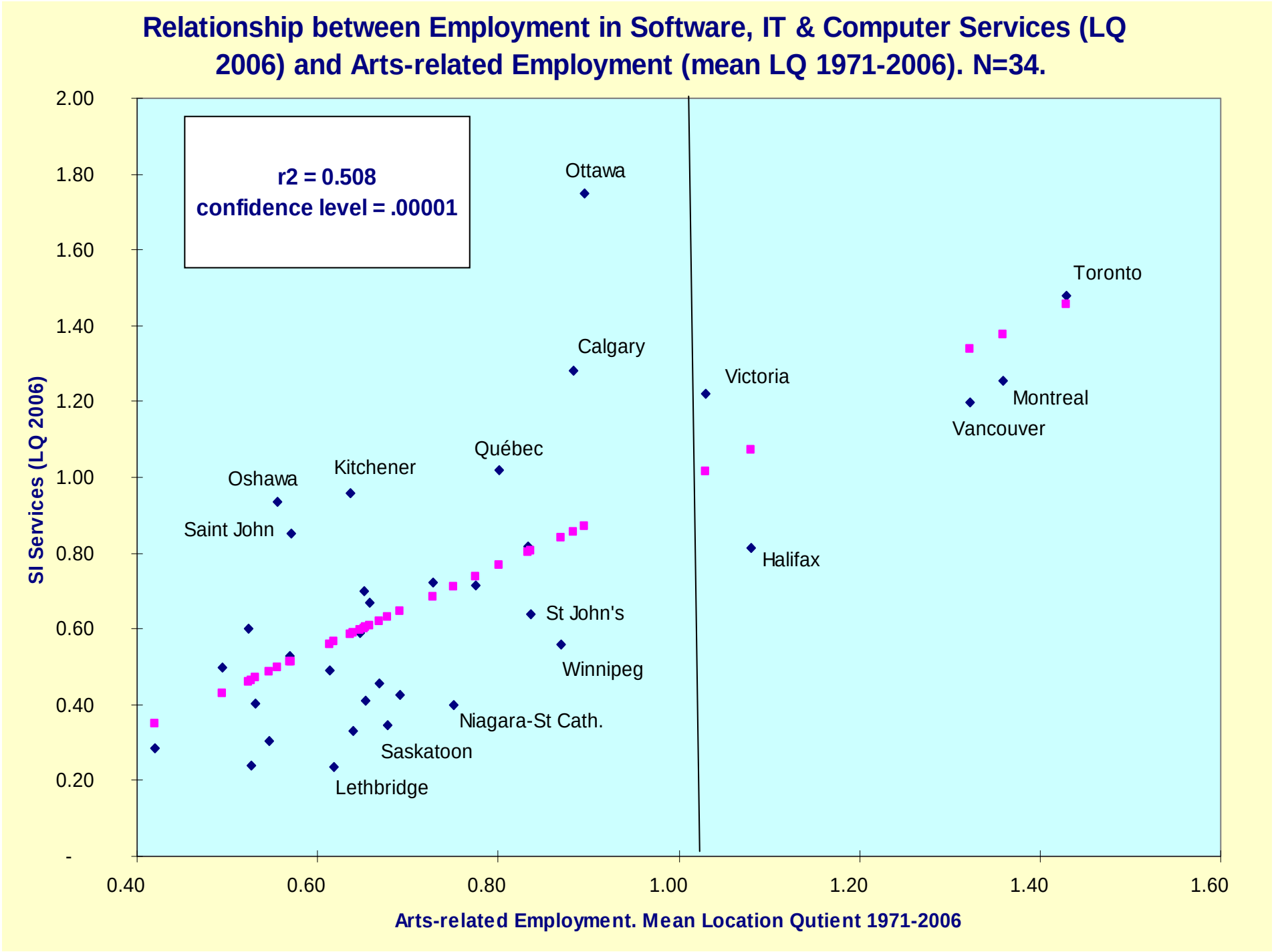
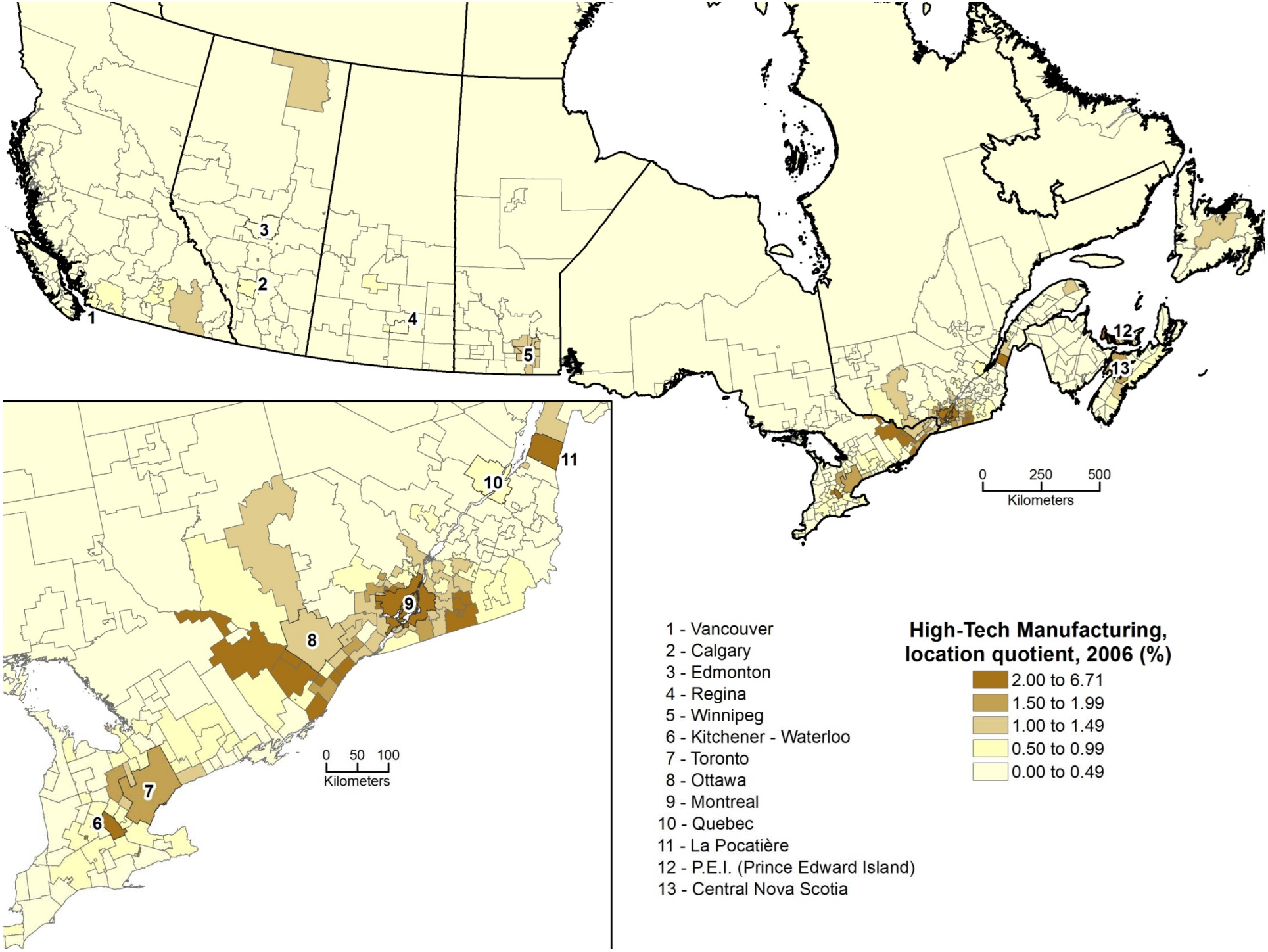
1995
2000
2005
2010
Arts-related Employment
High Tech Manufacturing
Software, IT & Computer Services


Relationship between Employment in Software, IT & Computer Services (LQ 2006) and Arts-related Employment (mean LQ 1971-2006). N=34.
r2 = 0.508
confidence level = .00001
Ottawa
Toronto
Calgary
Victoria
Montreal
Vancouver
Québec
Kitchener
Oshawa
Saint John
Halifax
St John's
Winnipeg
Niagara-St Cath.
Saskatoon
Lethbridge
SI Services (LQ 2006)
2.00
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
-
0.40
0.60
0.80
1.00
1.20
1.40
1.60
Arts-related Employment. Mean Location Qutient 1971-2006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Kilometers
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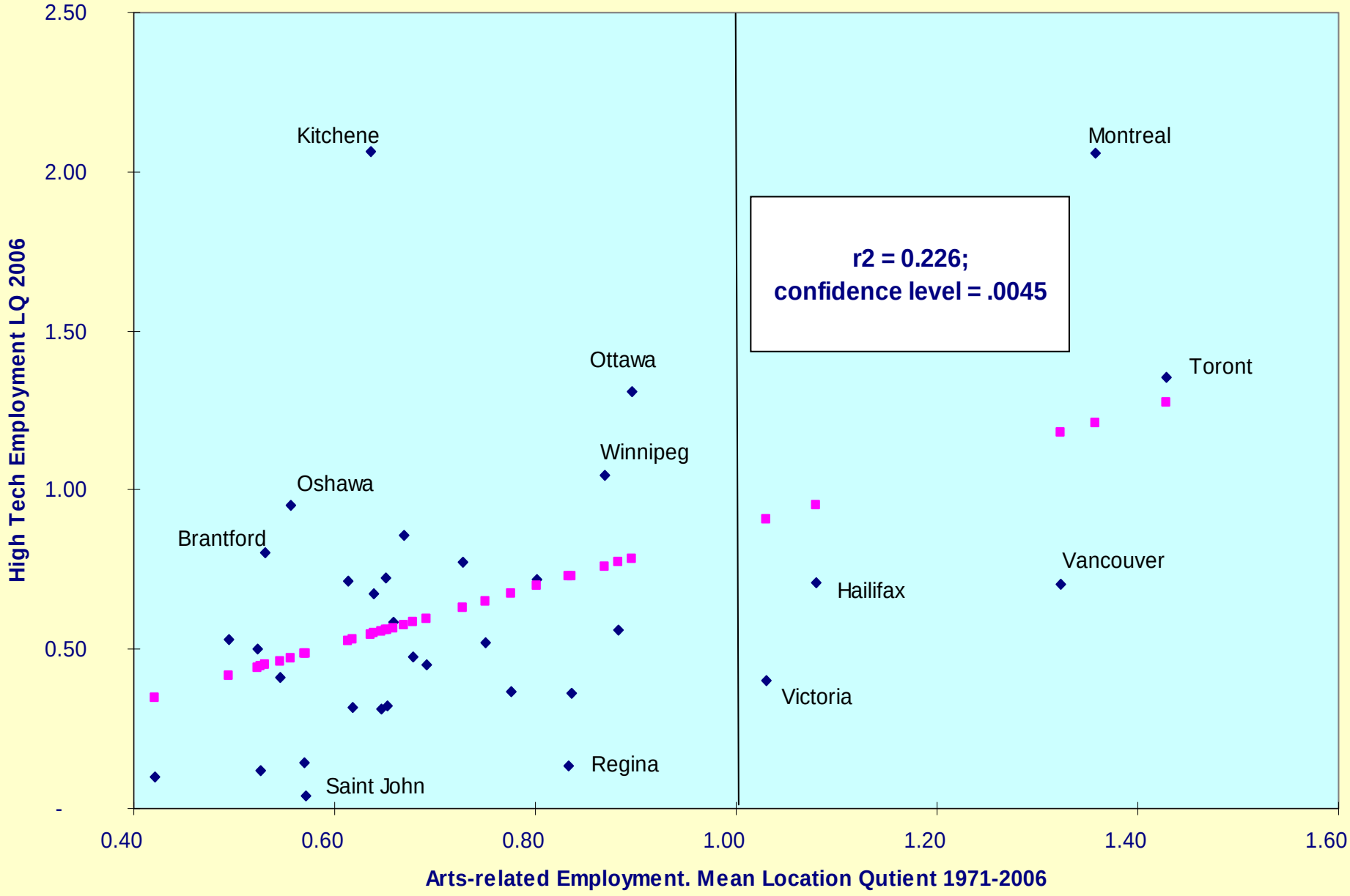
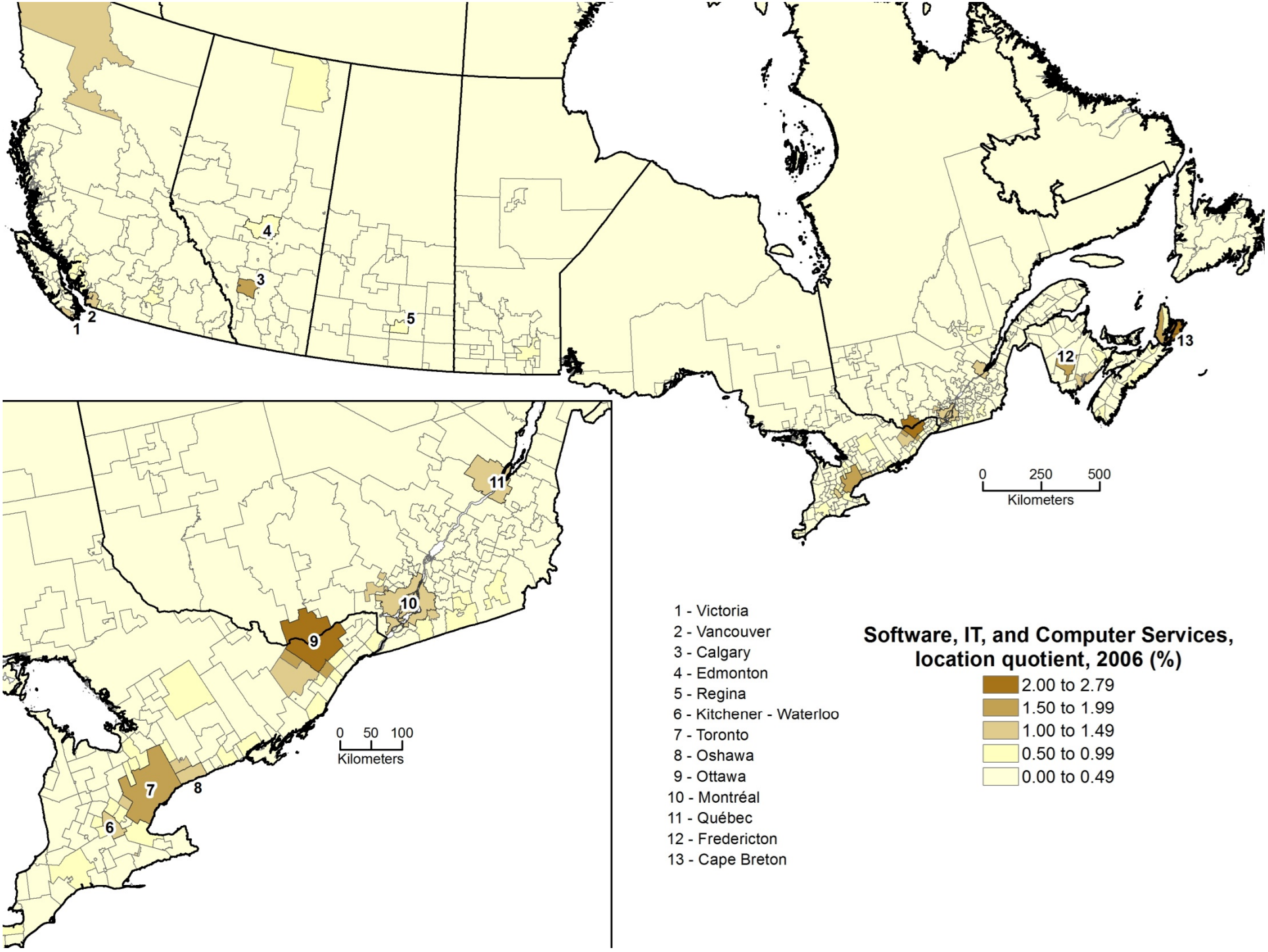
0 50 100
Kilometers
1 - Vancouver
2 - Calgary
3 - Edmonton
4 - Regina
5 - Winnipeg
6 - Kitchener - Waterloo
7 - Toronto
8 - Ottawa
9 - Montreal
10 - Quebec
11 - La Pocatière
12 - P.E.I. (Prince Edward Island)
13 - Central Nova Scotia
High-Tech Manufacturing, location quotient, 2006 (%)
2.00 to 6.71
1.50 to 1.99
1.00 to 1.49
0.50 to 0.99
0.00 to 0.49

Relationship between Employment in High-Tech Industries (LQ 2006) and in Arts-related Activities (mean LQ 1971-2006). N=34.

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0 250 500
Kilometers
0 50 100
Kilometers
1 - Victoria
2 - Vancouver
3 - Calgary
4 - Edmonton
5 - Regina
6 - Kitchener - Waterloo
7 - Toronto
8 - Oshawa
9 - Ottawa
10 - Montréal
11 - Québec
12 - Fredericton
13 - Cape Breton
Software, IT, and Computer Services, location quotient, 2006 (%)
2.00 to 2.79
1.50 to 1.99
1.00 to 1.49
0.50 to 0.99
0.00 to 0.49

Relationship with Growth

- The relationship (of a strong Arts presence in T1) with subsequent employment growth is weak at best, and generally non significant.
- This holds for all periods, urban size classes, and industry groupings.
- Among urban centres with consistently high concentrations in the Arts, only Toronto and Montreal, Canada's two largest cities, exhibit above-average concentrations in both knowledge-rich sectors.
- No small city with a (proportionally) high Arts presence exhibits high scores on both knowledge-rich sectors.
- Most small 'artsy' places do very poorly on both knowledge-rich industry groupings.

Relationship with Growth -2

- In short, the relationship (if there is one) between a strong local arts community and the development of knowledge-rich sectors **generally** only seems to work in the context of big cities.
- Regression analysis further supports the idea of a circular relationship between the Arts as a 'creative' motor (if it is one) and size, making it impossible to rigorously attribute causality.
- What then are we really observing?
- Perhaps a lively arts scene is simply one element among others of the larger, complex, fabric of agglomeration economies.

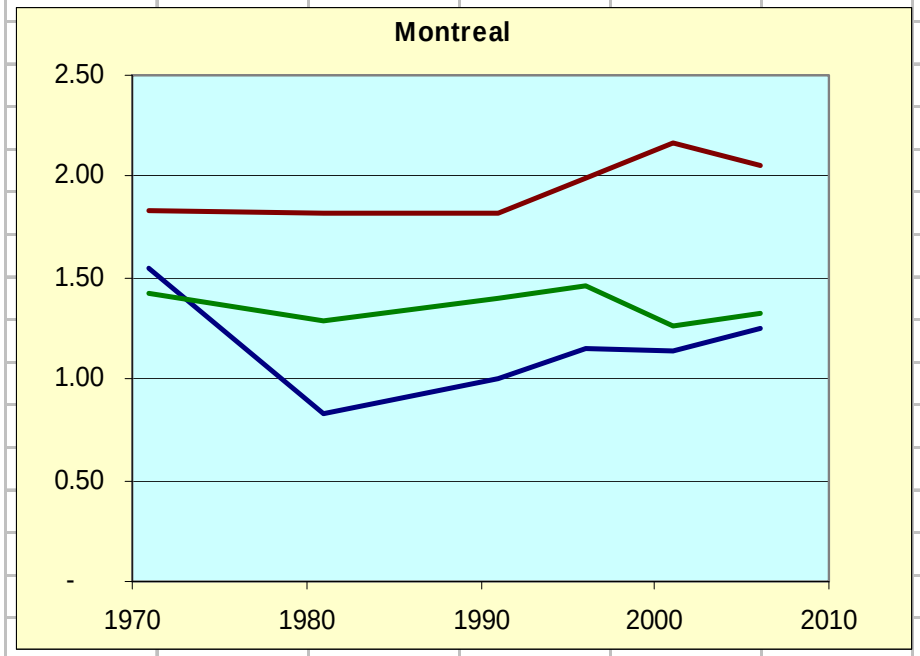
Relationship between LQ in Arts-related Employment in t1 and % Employment Growth in Subsequent Time Period

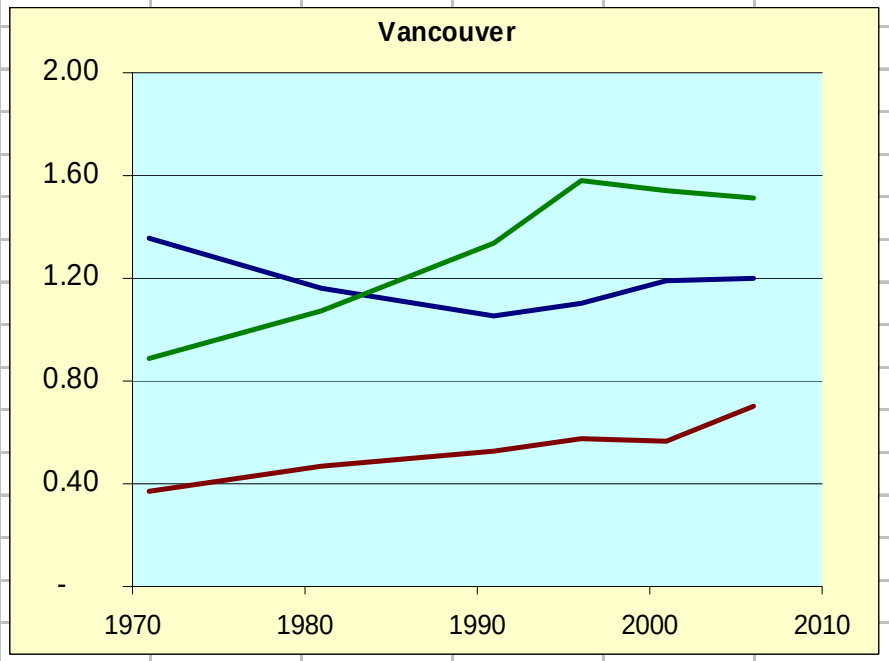
	n	1971-81	1981-91	1991-001	2001-006	1991-96	1996-001
All Employment (minus Arts)	135	*-0.027*	*0.112*	*0.014*	0.221	*0.068*	*-0.034*
	34	0.384	0.410	*-0.028*	*0.131*	*-0.123*	*0.016*
		1971-81	1981-91	1991-001	2001-006	1991-96	1996-001
Software IT & Computer Services	135	*0.070*	*0.010*	0.282	*-0.032*	0.350	*-0.044*
	34	*0.082*	*-0.225*	*-0.303*	*-0.153*	*0.036*	*-0.294*
		1971-81	1981-91	1991-001	2001-006	1991-96	1996-001
High Tech Manufacturing	135	*0.128*	*-0.048*	*-0.1011*	0.28227	*0.0855*	*-0.008*
	34	*0.291*	*-0.19*	*0.0037*	*-0.024*	*0.0665*	*-0.092*

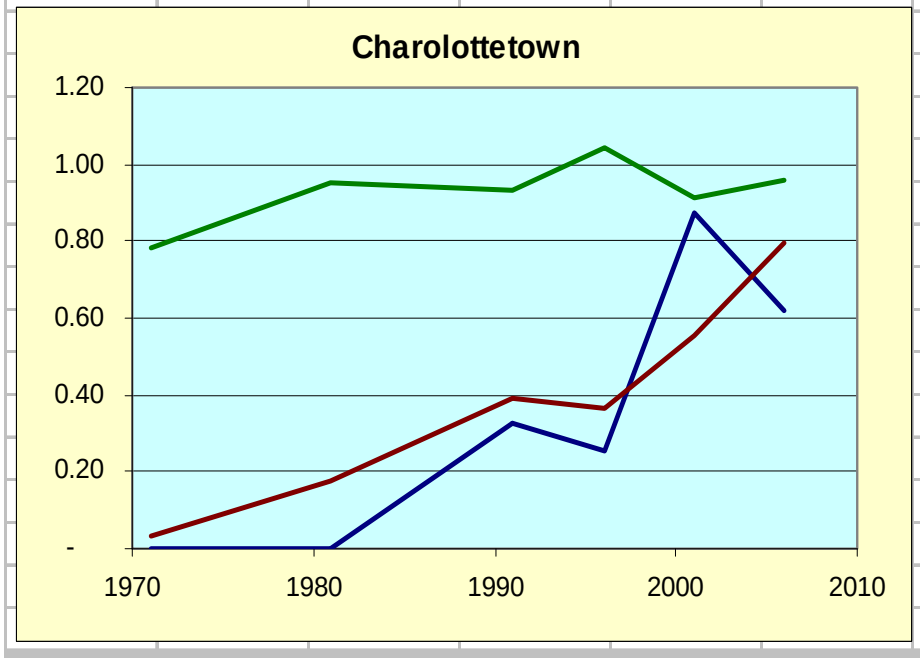
t1 = base year for each period

Twenty Urban Areas with highest mean Location Quotients (1971-2006)							
		Arts-related Employment	High Tech Manuf.	Software, IT & Computer Services	Employement Growth compared to 135 City Average		
Urban Area	Population 2006	Mean LQ 1971-2006	LQ 2006	LQ 2006	1971-81	1981-91	1991-2006
Stratford	30,025	**4.18**	2.60	0.36	0.52	0.29	0.65
Toronto	5,072,075	**1.43**	1.35	1.48	0.97	1.20	1.09
Montréal	3,588,520	**1.36**	2.06	1.25	0.79	0.75	0.90
Vancouver	2,097,965	**1.32**	0.71	1.20	**1.14**	**1.50**	**1.31**
Halifax	369,455	**1.08**	0.71	0.81	0.86	1.27	0.81
Victoria	325,060	**1.03**	0.40	1.22	1.14	1.31	0.96
Whitehorse, Yukon	22,730	**1.01**	-	0.18	**1.80**	**1.19**	**1.28**
Dolbeau, QC	14,390	**0.96**	-	-	1.63	0.45	0.33
Charlottetown, PEI	57,715	**0.93**	0.80	0.62	0.88	1.42	0.38
Camrose, AB	15,165	**0.90**	0.25	0.07	1.77	0.45	1.07
Ottawa	1,117,125	**0.90**	1.31	1.75	1.03	1.85	0.83
Wetaskiwin, AB	11,275	**0.89**	0.14	-	1.88	0.60	0.73
Courtenay, BC	48,880	**0.88**	0.12	0.39	1.64	1.76	0.57
Calgary	1,070,295	**0.88**	0.56	1.28	2.83	0.85	2.01
Penticton, BC	42,800	**0.87**	0.24	0.27	1.38	1.01	0.26
Winnipeg	686,040	**0.87**	1.05	0.56	0.65	0.52	0.52
St. John's, NFLD	179,270	**0.84**	0.36	0.64	0.95	1.14	0.64
Regina, SK	192,435	**0.83**	0.14	0.82	1.09	0.66	0.36
North Battleford, SK	17,310	**0.83**	-	-	1.20	0.21	0.06
Kentville, NS	25,800	**0.83**	0.06	0.26	0.78	1.52	0.53

Evolution of Employment (Location Quotients). 3 Industries. 4Cities.







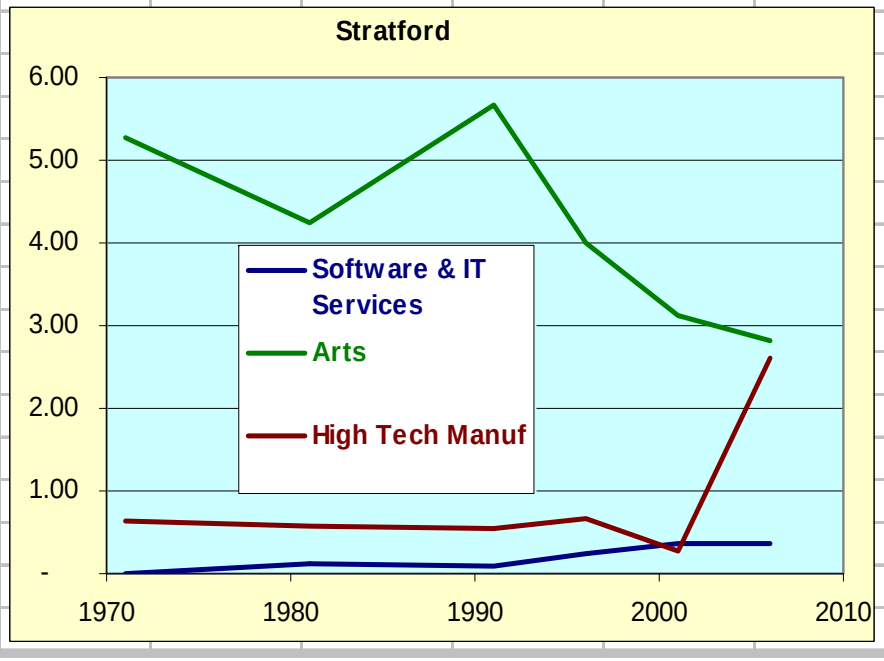


		Table 6 - Regression Results		
Regresion 1 a - LQ SI Services 06 = (f) LQ-Arts 06, Urban Size 06				
Regresion 1 b - LQ SI Services 06 = (f) Mean LQ-Arts 71-06, Urban Size 06				
Observations : N = 135				
	R2	*Ajusted R2*	*F. Value*	*Confidence Level (Pr > F)*
1a) with LQ 06	0.352	0.342	35.5	0.0001
1b) with Mean LQ	0.341	0.331	34.1	0.0001
	Variable	*Beta Coefficients*	*t Value*	*Confidence Level (Pr > F)*
1a) with LQ 06	LQ-Arts 06	0.16	2.22	0.0279
	Urban Size 2006	0.53	7.20	0.0001
1b) with Mean LQ	LQ Mean 71-06	0.12	1.50	*0.1182*
	Urban Size 2006	0.53	7.15	0.0001
Regresion 2 a - LQ SI Services 06 = (f) LQ-Arts 06, Urban Size 06				
Regresion 2 b - LQ SI Services 06 = (f) Mean LQ-Arts 71-06, Urban Size 06				
Observations : N = 34				
	R2	*Ajusted R2*	*F. Value*	*Confidence Level (Pr > F)*
2 a) with LQ 06	0.489	0.456	14.85	0.0001
2 b) with Mean LQ	0. 524	0.493	17. 06	0.0001
	Variable	*Beta Coefficients*	*t Value*	*Confidence Level (Pr > F)*
2 a) with LQ 06	LQ-Arts 06	0.31	1.94	*0.062*
	Urban Size 2006	0.47	2.91	0.006
2 b) with Mean LQ	LQ Mean 71-06	0.54	2.55	0.018
	Urban Size 2006	0.21	0.99	*0.329*
Regresion 3 a - LQ HT Manufacturing 06 = (f) LQ-Arts 06, Urban Size 06				
Regresion 3 b - LQ HT Manufacturing 06 = (f) Mean LQ-Arts 71-06, Urban Size 06				
Observations : N = 135				
	R2	*Ajusted R2*	*F. Value*	*Confidence Level (Pr > F)*
3 a) with LQ 06	0.06	0.05	4.18	0.017
3 b) with Mean LQ	0.09	0.08	6.54	0.002
	Variable	*Beta Coefficients*	*t Value*	*Confidence Level (Pr > F)*
3 a) with LQ 06	LQ-Arts 06	0.11	1.22	*0.224*
	Urban Size 2006	0.19	2.16	0.033
3 b) with Mean LQ	LQ Mean 71-06	0.21	2.44	0.015
	Urban Size 2006	0.15	1.72	*0.087*
Regresion 4 a - LQ HT Manufacturing 06 = (f) LQ-Arts 06, Urban Size 06				
Regresion 4 b - LQ HT Manufacturing 06 = (f) Mean LQ-Arts 71-06, Urban Size 06				
Observations : N = 34				
	R2	*Ajusted R2*	*F. Value*	*Confidence Level (Pr > F)*
4a) with LQ 06	0.33	0.28	7.51	0.002
4 b) with Mean LQ	0.33	0.28	7.51	0.002
	Variable	*Beta Coefficients*	*t Value*	*Confidence Level (Pr > F)*
4 a) with LQ 06	LQ-Arts 06	-0.04	-0.20	*0.841*
	Urban Size 2006	0.59	3.22	0.003
4 b) with Mean LQ	LQ Mean 71-06	0.03	0.11	*0.913*
	Urban Size 2006	0.55	2.14	0.040

Thank You – Merci