

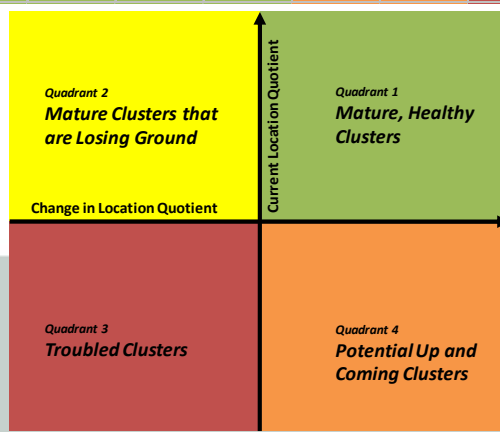
County Location Quotient Tables

County Cluster tables display the same data used in the cluster graphs by county. Each county's location quotient (2008) and change in location quotient (2002 - 2008) is displayed in the table. For each county, the table cells are shaded with the same coloring used in the cluster graphs based on the quadrant the cluster falls within.



Cluster LQ Summary

Region	County	Advanced Transportation Manufacturing		Advanced Waste Management		Energy		Environmental Technology		Fisheries and Freshwater Industries		Food Innovation		Forestry and Wood Products	
		LQ	ΔLQ	LQ	ΔLQ	LQ	ΔLQ	LQ	ΔLQ	LQ	ΔLQ	LQ	ΔLQ	LQ	ΔLQ
1	LIVINGSTON	0.30	0.02	1.27	-0.10	1.14	0.00	0.86	0.01	0.64	0.04	0.69	0.12	1.04	0.01
	MACOMB	1.99	0.96	1.57	-0.14	1.63	0.00	1.70	-0.26	0.70	-0.01	0.44	0.09	0.79	0.05
	MONROE	0.03	0.00	1.08	-0.21	0.71	-0.04	0.66	0.00	0.43	-0.03	0.66	0.08	1.54	0.15
	OAKLAND	1.93	0.06	1.13	-0.09	1.11	-0.02	1.42	0.03	0.46	0.03	0.57	0.08	0.71	0.06
	ST. CLAIR	0.10	0.03	1.35	-0.10	0.96	0.03	0.52	-0.03	1.41	0.35	1.03	-0.14	1.24	0.00
	WASHTENAW	0.19	-0.01	0.65	0.00	0.70	-0.02	1.36	-0.01	1.05	-0.04	0.73	0.06	0.79	0.00
	WAYNE	1.51	-0.09	0.80	0.02	0.78	0.07	0.84	-0.08	2.16	0.18	0.82	0.20	0.65	0.07
2	HILLSDALE	0.13	0.07	1.05	-0.05	1.54	0.01	1.26	-0.10	5.60	-0.47	0.79	0.35	0.81	0.13
	JACKSON	0.10	-0.05	0.58	0.05	0.94	-0.13	0.80	0.07	0.42	0.11	2.15	0.39	0.75	0.03
	LENAWEE	0.05	0.01	1.25	-0.18	1.46	-0.22	0.84	-0.19	0.23	0.15	1.01	0.10	2.46	0.26
3	BARRY	0.03	0.02	0.32	0.03	0.84	0.16	0.60	-0.08	0.24	0.02	0.38	0.07	0.94	0.13
	BRANCH	0.03	0.00	0.51	-0.02	0.90	0.16	0.54	-0.18	0.28	0.14	2.49	0.91	0.82	-0.05
	CALHOUN	0.76	0.29	0.62	0.04	0.70	0.07	0.50	0.13	0.14	0.00	4.46	-5.15	0.85	-0.02
	KALAMAZOO	0.18	-0.11	1.06	0.12	1.28	-0.05	0.64	0.00	0.07	-0.01	1.11	0.15	1.26	0.13
	ST. JOSEPH	1.96	1.08	1.67	-0.32	1.45	-0.21	0.57	-0.10	1.55	-0.97	1.86	-0.22	1.30	0.02
4	BERRIEN	0.13	-0.01	1.08	-0.01	1.20	0.08	0.95	0.14	0.50	0.14	1.13	0.41	0.87	0.14
	CASS	0.89	-0.74	1.93	0.28	1.76	0.18	0.58	0.02	0.12	-0.20	1.96	0.99	2.44	-0.18
	VAN BUREN	0.11	0.00	1.09	0.07	0.88	-0.01	0.77	0.00	0.62	-0.34	3.89	-0.60	0.73	0.27
5	GENESEE	1.46	0.11	1.24	0.77	0.95	0.51	1.47	0.90	0.44	-0.13	0.69	0.06	0.53	0.12
	LAPEER	1.01	0.35	0.91	-0.40	1.31	-0.16	0.86	0.30	0.16	-0.02	2.13	-0.27	0.67	0.03
	SHIAWASSEE	0.60	0.13	1.04	0.14	1.08	0.17	0.53	-0.02	1.74	-0.15	0.95	0.05	0.75	0.08
6	CLINTON	0.30	0.26	0.67	0.07	0.76	0.23	0.73	-0.01	0.20	0.09	2.08	0.16	1.51	0.39
	EATON	0.91	0.32	0.67	-0.10	0.83	0.09	0.69	-0.16	0.35	0.05	1.31	-0.23	0.58	0.01
	INGHAM	0.51	-2.55	0.55	0.15	0.52	-0.26	0.73	0.09	0.32	-0.03	0.43	0.01	0.51	0.06
7	ARENAC	0.04	0.00	0.28	-0.02	0.66	-0.16	0.36	0.00	0.56	-0.06	0.90	-1.35	0.55	-0.06
	BAY	0.21	0.04	0.50	0.01	0.59	-0.06	0.55	-0.03	0.21	0.04	1.41	-0.32	0.91	-0.10
	CLARE	0.03	0.01	0.54	-0.14	0.43	0.00	0.32	-0.06	0.02	0.01	0.56	0.00	2.85	0.89
	GLADWIN	0.14	-0.03	0.82	-0.22	1.02	-0.17	0.34	-0.04	0.41	-0.08	5.76	-0.70	3.12	-0.23
	GRATIOT	0.58	0.27	0.66	-0.13	0.71	-0.04	0.84	0.12	1.13	1.04	1.28	-0.44	0.74	-0.14
	HURON	0.12	-0.01	2.11	0.57	1.73	0.35	0.53	-0.09	0.12	-0.03	2.04	0.04	0.29	0.04
	IOSCO	0.43	0.42	0.77	0.17	1.28	-0.16	0.38	-0.06	3.30	-4.53	0.30	0.15	0.35	0.04
	ISABELLA	0.47	0.04	0.37	-0.04	0.98	-0.33	0.86	-0.46	0.32	-0.02	0.54	0.03	0.84	0.32
	MIDLAND	0.02	0.01	1.68	-0.26	1.44	-0.23	0.67	-0.08	0.09	0.03	5.93	-0.68	1.70	-0.19
	OGEMAW	0.02	0.00	0.43	-0.04	0.64	-0.04	0.38	-0.14	0.10	0.07	0.34	0.01	0.59	-0.04
	ROSCOMMON	0.02	0.02	0.30	0.06	0.37	0.03	0.43	-0.04	0.41	-0.46	0.28	0.05	0.45	-0.04
	SAGINAW	0.18	-0.02	0.76	-0.04	0.77	0.00	0.65	-0.02	0.72	0.17	0.75	0.15	0.94	0.30
	SANILAC	0.39	0.00	1.26	0.17	1.18	-0.04	0.59	0.16	0.17	0.01	1.69	0.44	0.63	0.03
TUSCOLA	0.05	0.03	1.30	0.04	1.18	0.03	0.97	0.13	0.12	-0.01	1.49	0.06	0.70	0.26	



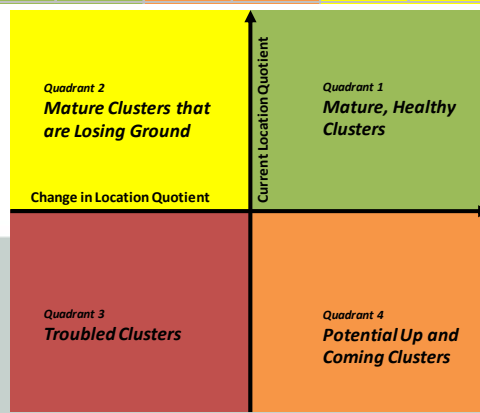
Cluster LQ Summary

Region	County	Advanced Transportation Manufacturing		Advanced Waste Management		Energy		Environmental Technology		Fisheries and Freshwater Industries		Food Innovation		Forestry and Wood Products	
		LQ	ΔLQ	LQ	ΔLQ	LQ	ΔLQ	LQ	ΔLQ	LQ	ΔLQ	LQ	ΔLQ	LQ	ΔLQ
8	ALLEGAN	0.09	-0.01	1.31	0.19	1.67	-0.12	0.67	-0.05	0.93	0.05	1.66	-0.17	1.60	-0.17
	IONIA	0.01	0.00	0.31	-0.26	0.72	-0.26	0.63	-0.26	0.07	0.02	1.77	-0.75	0.69	0.02
	KENT	0.20	0.01	1.11	-0.08	1.04	-0.08	0.83	-0.02	1.36	-0.16	1.16	0.08	1.63	-0.76
	MECOSTA	0.01	0.00	0.63	-0.11	0.71	0.00	0.34	-0.06	0.30	0.20	0.60	-0.02	1.38	-0.22
	MONTCALM	0.23	0.10	0.58	0.02	0.62	-0.01	0.42	0.05	0.16	0.06	1.07	0.49	1.05	0.49
	OSCEOLA	0.95	0.15	0.39	-0.03	1.95	-0.50	1.32	-0.05	0.02	-0.03	2.13	0.34	1.60	0.52
	OTTAWA	0.35	-0.02	0.94	-0.25	1.10	-0.27	0.71	-0.19	2.21	-0.78	1.41	0.09	3.29	-0.67
9	ALCONA	0.00	0.00	0.53	0.07	0.42	0.05	0.45	0.00	0.12	-0.01	1.06	0.11	1.66	0.15
	ALPENA	0.02	0.00	0.42	0.01	0.47	-0.08	0.53	-0.11	0.66	-0.68	2.02	-0.30	1.72	0.05
	CHEBOYGAN	0.02	0.00	0.62	-0.08	0.75	0.00	0.65	0.03	1.31	-0.23	0.45	0.09	0.99	0.06
	CRAWFORD	0.09	0.09	1.00	-0.18	0.34	0.00	0.33	-0.08	0.08	-0.02	0.57	0.02	3.09	-0.08
	MONTMORENCY	0.02	0.00	0.30	-0.02	0.86	-0.11	0.28	0.03	0.00	0.00	0.16	0.10	1.29	-0.03
	OSCODA	0.00	0.00	0.64	0.02	0.27	0.02	0.54	-0.05	0.00	0.00	0.27	0.20	1.25	0.07
	OTSEGO	0.01	0.00	0.78	-0.30	1.26	-0.22	0.80	-0.53	0.95	0.34	0.52	-0.02	1.38	0.05
	PRESQUE ISLE	0.06	0.04	0.72	-0.13	1.24	-0.17	0.67	-0.11	0.24	-0.05	0.43	-0.05	1.83	-0.03
10	ANTRIM	0.62	-0.07	0.74	0.11	0.73	-0.05	0.39	-0.05	0.57	-0.05	1.62	-0.01	1.30	0.05
	BENZIE	0.03	0.00	0.40	0.03	0.56	0.03	0.59	-0.12	0.98	0.01	6.21	0.34	1.00	-0.03
	CHARLEVOIX	0.96	-0.72	1.67	-0.37	1.48	-0.57	0.49	0.01	1.10	-0.20	0.46	0.06	0.66	0.00
	EMMET	0.51	-0.03	0.73	-0.08	0.80	0.00	0.61	-0.02	0.14	0.05	0.54	0.00	1.26	0.04
	GRAND TRAVERSE	0.05	0.04	0.64	-0.09	0.76	-0.06	0.87	-0.08	1.47	-0.29	1.09	0.37	0.85	0.05
	KALKASKA	0.00	0.00	0.62	0.05	1.22	-0.02	0.78	-0.17	0.11	-0.03	0.24	0.14	1.08	-0.02
	LEELANAU	0.02	0.01	0.37	0.03	0.40	0.05	0.48	0.03	0.48	-0.03	1.63	0.85	0.83	0.02
	MANISTEE	0.09	0.05	1.29	0.40	0.49	-0.22	0.44	-0.07	0.49	0.07	1.72	-0.06	2.49	1.03
	MISSAUKEE	0.07	-0.01	0.80	-0.03	0.79	-0.16	0.47	-0.04	0.00	0.00	1.11	-0.05	2.92	0.05
	WEXFORD	2.34	0.76	1.31	-0.40	0.59	-0.08	0.71	-0.25	6.75	1.74	0.55	0.01	0.81	-0.49
11	CHIPPEWA	0.12	0.06	0.54	0.11	0.48	0.11	0.48	-0.11	0.83	-0.13	0.23	0.11	0.23	-0.07
	LUCE	0.00	0.00	0.29	0.13	0.16	-0.01	0.55	0.04	0.00	0.00	0.25	-0.08	2.51	0.05
	MACKINAC	0.03	0.00	0.20	0.02	0.38	-0.07	0.38	0.06	0.85	-0.05	0.22	0.10	0.78	0.12
12	ALGER	0.02	0.02	1.42	-0.05	0.20	0.01	0.39	0.05	2.14	0.00	0.53	0.20	5.56	0.07
	DELTA	0.07	-0.01	2.62	0.57	0.61	0.07	1.06	-0.02	4.55	-0.59	0.36	-0.08	5.25	1.07
	DICKINSON	0.29	0.08	1.29	0.56	1.02	0.10	0.89	0.18	0.02	-0.01	0.38	0.13	2.03	1.03
	MARQUETTE	0.10	0.09	0.37	-0.08	0.40	-0.02	0.55	-0.12	0.09	-0.01	1.23	-0.27	0.65	-0.06
	MENOMINEE	0.33	0.08	1.00	0.14	0.37	0.02	0.28	-0.04	0.79	0.26	1.91	0.49	5.36	0.26
	SCHOOLCRAFT	0.01	0.01	0.83	-0.22	0.62	-0.09	0.72	-0.22	0.18	-0.06	0.38	0.14	2.81	-0.81
13	BARAGA	0.16	0.02	0.60	-0.06	0.76	-0.07	0.32	-0.06	0.28	-0.05	1.54	-0.48	2.48	-1.01
	GOGEBIC	0.04	0.02	0.95	0.02	0.42	-0.02	0.44	0.15	0.20	0.07	0.64	0.02	0.81	0.13
	HOUGHTON	0.05	-0.06	0.45	-0.09	0.41	0.07	0.76	0.05	0.32	0.02	0.66	0.02	1.18	-0.26
	IRON	0.06	0.03	0.53	0.36	0.45	0.20	0.85	0.31	0.09	0.09	3.92	2.80	1.45	0.04
	KEWEENAW	0.00	0.00	0.25	0.08	0.72	0.06	0.23	0.09	0.00	0.00	0.00	0.00	0.83	0.48
	ONTONAGON	0.03	0.00	1.88	-0.55	0.55	-0.08	0.69	-0.17	0.27	-0.07	0.30	0.01	3.86	-0.10
14	LAKE	0.35	0.29	0.48	-0.15	0.44	0.00	0.37	-0.15	0.19	-0.21	0.14	-0.04	1.33	-0.24
	MASON	0.84	0.01	0.68	-0.20	0.99	-0.16	0.48	-0.13	1.00	-0.04	3.84	-1.11	1.20	0.05
	MUSKEGON	0.43	-0.01	1.05	0.04	1.14	0.01	0.66	0.13	2.15	1.14	0.95	0.01	1.26	-0.15
	NEWAYGO	1.42	1.33	0.72	-0.01	0.83	0.26	0.46	-0.05	0.07	0.05	0.82	-3.82	0.88	0.12
	OCEANA	0.05	0.00	1.37	-0.11	1.11	-0.10	0.34	-0.01	0.08	0.02	9.05	2.63	0.68	-0.20



Cluster LQ Summary

Region	County	Construction/ Deconstruction (Rightsizing)		Engineering, Technology and Design		Mining		Supply Chain and Logistics	
		LQ	ΔLQ	LQ	ΔLQ	LQ	ΔLQ	LQ	ΔLQ
1	LIVINGSTON	1.89	-0.15	0.83	0.06	0.61	0.03	1.00	0.14
	MACOMB	1.70	-0.27	1.64	-0.27	0.12	-0.09	0.85	0.18
	MONROE	0.95	0.01	0.39	0.05	1.76	0.81	0.84	0.09
	OAKLAND	1.15	-0.06	1.73	-0.10	0.40	-0.03	1.24	-0.01
	ST. CLAIR	1.05	-0.04	0.42	0.04	1.49	-0.44	0.99	-0.01
	WASHTENAW	0.81	-0.05	1.88	0.18	0.14	-0.01	1.18	-0.04
	WAYNE	0.75	0.02	0.91	-0.11	0.69	0.01	1.38	-0.13
2	HILLSDALE	0.68	0.08	0.40	0.09	2.16	-0.10	0.73	0.09
	JACKSON	0.78	-0.02	0.45	0.03	1.75	-0.52	0.61	0.12
	LENAWEE	0.77	0.03	0.27	0.00	0.49	0.26	0.50	0.15
3	BARRY	0.93	0.05	0.38	0.06	0.18	-0.09	0.66	0.15
	BRANCH	0.57	-0.06	0.22	0.01	0.81	0.22	1.27	0.79
	CALHOUN	0.53	0.03	0.38	0.11	4.89	-0.57	0.94	-0.05
	KALAMAZOO	0.85	0.04	0.73	0.00	0.27	0.02	0.75	0.10
	ST. JOSEPH	0.59	0.08	0.24	0.05	0.08	-0.02	0.49	0.09
4	BERRIEN	0.82	0.06	0.59	0.05	0.16	0.10	0.71	0.08
	CASS	0.89	-0.03	0.37	0.06	0.95	-0.13	0.52	0.13
	VAN BUREN	0.75	-0.01	0.61	0.10	0.11	0.00	0.64	-0.05
5	GENESEE	1.56	0.82	1.30	0.91	0.33	0.24	1.16	0.14
	LAPEER	1.12	-0.02	0.48	0.00	0.77	-0.19	0.63	0.08
	SHIAWASSEE	0.83	0.18	0.42	0.15	1.44	-0.03	0.74	0.08
6	CLINTON	1.41	0.05	0.84	0.15	0.18	-0.02	1.29	0.14
	EATON	0.95	-0.13	0.57	0.03	0.12	-0.16	1.04	-0.21
	INGHAM	0.67	0.10	0.80	0.08	0.29	-0.03	0.61	0.07
7	ARENAC	0.59	-0.07	0.22	0.07	2.64	2.06	0.63	-0.10
	BAY	0.75	-0.11	0.34	0.03	0.95	-0.07	0.71	-0.08
	CLARE	1.04	-0.06	0.29	-0.02	1.66	-0.21	0.67	0.05
	GLADWIN	1.30	-0.09	0.25	0.08	0.30	-0.10	0.69	0.11
	GRATIOT	0.52	-0.05	0.22	-0.11	0.24	-0.13	0.52	0.06
	HURON	0.58	-0.06	0.27	0.08	1.22	-0.23	0.63	0.04
	IOSCO	0.73	0.07	0.25	0.04	6.77	-1.10	0.76	0.29
	ISABELLA	0.85	-0.28	0.35	0.00	6.61	0.08	0.64	0.06
	MIDLAND	1.22	-0.24	1.26	-0.34	0.53	0.11	0.55	0.00
	OGEMAW	0.87	0.03	0.30	0.00	1.84	-1.09	0.63	0.11
	ROSCOMMON	1.13	-0.06	0.24	0.06	2.87	0.51	0.49	0.10
	SAGINAW	0.72	0.03	0.58	0.03	1.08	0.92	0.98	0.03
	SANILAC	0.86	0.12	0.37	0.05	1.50	-0.20	0.54	0.16
TUSCOLA	1.05	0.22	0.89	0.23	2.10	-0.02	1.04	-0.16	



Cluster LQ Summary

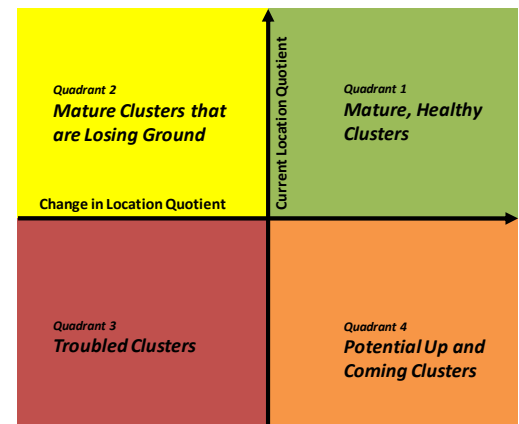
Region	County	Construction/ Deconstruction (Rightsizing)		Engineering, Technology and Design		Mining		Supply Chain and Logistics	
		LQ	ΔLQ	LQ	ΔLQ	LQ	ΔLQ	LQ	ΔLQ
8	ALLEGAN	1.38	-0.08	0.46	0.07	0.99	-0.61	0.82	0.10
	IONIA	0.84	-0.09	0.23	-0.21	0.06	-0.02	0.52	-0.23
	KENT	0.81	0.00	0.65	0.05	0.27	0.07	0.89	0.00
	MECOSTA	0.85	-0.05	0.35	0.05	0.91	-0.39	0.72	-0.02
	MONTCALM	0.73	0.05	0.32	0.08	0.20	0.03	0.73	0.17
	OSCEOLA	0.94	0.00	0.19	0.05	2.67	-0.54	0.75	-0.05
	OTTAWA	0.83	-0.14	0.50	-0.06	0.23	0.02	0.99	-0.25
9	ALCONA	1.27	0.15	0.42	0.07	0.40	0.25	0.60	0.22
	ALPENA	0.85	-0.11	0.75	-0.17	2.20	1.50	0.69	-0.16
	CHEBOYGAN	1.44	-0.09	0.23	0.08	0.00	0.00	0.59	0.04
	CRAWFORD	0.80	0.14	0.28	-0.08	0.27	0.11	0.73	0.17
	MONTMORENCY	1.15	-0.05	0.20	-0.01	9.76	0.92	0.47	0.05
	OSCODA	0.49	-0.12	0.32	0.04	0.30	0.30	1.04	-0.05
	OTSEGO	1.24	-0.17	0.35	0.03	19.82	6.25	0.74	-0.04
PRESQUE ISLE	0.93	0.10	0.32	-0.03	37.98	-9.09	0.57	-0.04	
10	ANTRIM	1.22	-0.11	0.35	0.03	1.76	-0.53	0.49	0.05
	BENZIE	1.44	-0.11	0.46	0.08	0.12	-0.05	0.78	0.03
	CHARLEVOIX	1.11	-0.17	0.40	0.10	0.32	0.24	0.54	0.14
	EMMET	1.54	-0.18	0.59	-0.14	0.13	0.13	0.60	0.08
	GRAND TRAVERSE	1.26	-0.16	0.67	-0.02	2.54	0.72	0.76	0.01
	KALKASKA	1.13	-0.04	0.46	0.09	37.45	0.61	1.36	-0.38
	LEELANAU	1.64	0.15	0.52	0.08	2.23	0.61	0.53	0.14
	MANISTEE	0.79	0.02	0.28	0.04	1.55	-0.02	0.59	0.07
	MISSAUKEE	1.12	-0.35	0.40	0.05	4.97	0.43	0.71	0.25
	WEXFORD	0.68	-0.30	0.45	-0.24	1.28	-0.53	0.70	-0.11
11	CHIPPEWA	0.62	-0.12	0.30	-0.09	1.00	0.90	0.43	-0.13
	LUCE	0.42	-0.04	0.09	-0.06	0.00	0.00	0.62	-0.33
	MACKINAC	1.02	-0.11	0.22	0.03	8.88	-2.47	0.73	-0.05
12	ALGER	1.05	0.00	0.33	0.13	0.13	-0.02	0.34	0.08
	DELTA	0.77	0.02	0.32	0.09	0.31	-0.05	0.96	-0.41
	DICKINSON	0.83	0.11	0.37	0.08	0.78	-0.03	0.72	-0.03
	MARQUETTE	0.74	-0.13	0.39	-0.10	31.81	-7.06	0.58	-0.13
	MENOMINEE	0.47	-0.04	0.16	0.02	0.15	0.10	0.94	-0.24
	SCHOOLCRAFT	0.64	0.02	0.21	0.06	20.49	-5.38	0.61	0.00
13	BARAGA	0.56	-0.33	0.22	0.00	0.47	0.04	0.45	-0.04
	GOGEBIC	0.58	0.05	0.27	0.03	1.28	-2.01	0.32	0.03
	HOUGHTON	0.95	-0.09	0.52	0.12	0.06	0.02	0.36	0.06
	IRON	0.73	-0.32	0.56	0.36	2.85	-0.20	0.89	0.52
	KEWEENAW	0.73	0.14	0.36	0.21	0.00	0.00	0.47	0.17
	ONTONAGON	0.61	-0.11	0.17	0.00	0.61	-0.17	0.74	0.13
14	LAKE	1.02	-0.16	0.31	0.17	0.16	0.16	0.57	0.24
	MASON	0.71	0.08	0.37	-0.01	0.44	-0.31	0.79	-0.04
	MUSKEGON	0.83	0.06	0.29	0.05	0.37	-0.07	0.53	0.05
	NEWAYGO	0.86	-0.13	0.35	0.04	0.28	0.12	0.91	0.21
	OCEANA	0.95	0.09	0.20	0.04	1.73	-0.17	0.51	0.03

Cluster LQ Summary

Region	County	Arts and Culture		Film		Tourism	
		LQ	ΔLQ	LQ	ΔLQ	LQ	ΔLQ
1	LIVINGSTON	0.69	0.15	0.99	-0.18	0.96	0.00
	MACOMB	0.75	0.10	1.05	-0.01	0.82	-0.05
	MONROE	0.65	-0.06	0.41	0.06	1.12	0.00
	OAKLAND	1.03	0.03	1.75	0.13	0.77	0.01
	ST. CLAIR	0.84	-0.08	0.60	-0.03	1.15	0.02
	WASHTENAW	1.60	0.06	1.21	0.05	1.14	0.04
	WAYNE	1.26	0.24	0.99	-0.09	1.00	0.07
2	HILLSDALE	0.92	0.48	0.41	0.08	0.88	-0.17
	JACKSON	0.57	0.07	0.58	0.16	1.01	-0.03
	LENAWEE	0.37	0.02	0.38	-0.01	1.00	0.04
3	BARRY	1.10	0.23	0.47	0.03	1.14	0.05
	BRANCH	0.64	-0.28	0.47	-0.20	0.93	-0.16
	CALHOUN	1.23	0.21	0.56	0.02	1.27	0.05
	KALAMAZOO	1.09	-0.05	0.94	-0.07	1.01	-0.01
	ST. JOSEPH	0.52	0.07	0.55	0.15	1.10	0.08
4	BERRIEN	0.93	0.20	0.77	-0.81	1.04	0.06
	CASS	0.37	0.06	0.29	0.03	0.82	0.05
	VAN BUREN	1.25	-0.50	0.38	-0.10	1.06	-0.10
5	GENESEE	1.09	0.30	0.96	-0.09	1.07	0.07
	LAPEER	0.80	-1.09	0.53	-0.02	1.02	-0.07
	SHIAWASSEE	0.80	0.19	0.35	0.03	1.11	0.01
6	CLINTON	0.76	-3.81	0.81	-0.26	1.00	0.02
	EATON	1.00	-0.48	0.65	0.03	1.26	-0.11
	INGHAM	0.71	-0.49	0.76	-0.07	0.98	0.08
7	ARENAC	0.67	0.28	1.23	-0.46	1.20	-0.07
	BAY	0.75	0.10	0.40	0.08	1.22	0.05
	CLARE	0.73	-0.10	0.45	-0.15	1.58	-0.28
	GLADWIN	0.38	0.04	0.34	-0.02	1.07	-0.03
	GRATIOT	0.77	0.56	0.38	0.02	1.04	-0.02
	HURON	0.46	-0.04	0.21	-0.02	1.06	-0.09
	IOSCO	0.70	0.25	0.30	0.14	1.40	0.05
	ISABELLA	0.63	0.14	0.36	-0.06	1.46	-0.35
	MIDLAND	1.55	-0.16	1.50	-0.36	1.01	-0.13
	OGEMAW	1.30	-0.23	0.34	-0.13	1.51	-0.12
	ROSCOMMON	0.65	-0.01	0.51	-0.11	1.76	-0.14
	SAGINAW	0.95	-0.26	0.78	-0.01	1.29	0.08
	SANILAC	1.07	0.66	0.35	0.08	0.93	0.02
TUSCOLA	0.68	0.05	0.88	-0.03	0.99	-0.12	

Cluster LQ Summary

Region	County	Arts and Culture		Film		Tourism	
		LQ	ΔLQ	LQ	ΔLQ	LQ	ΔLQ
8	ALLEGAN	0.84	0.45	0.44	0.09	0.93	-0.05
	IONIA	0.57	0.16	0.35	-0.16	0.86	-0.08
	KENT	1.01	-0.14	1.15	0.28	0.89	0.04
	MECOSTA	0.75	0.06	0.31	0.04	1.35	-0.10
	MONTCALM	1.20	0.06	0.33	0.06	0.92	0.10
	OSCEOLA	1.30	0.86	0.38	0.06	0.83	0.07
	OTTAWA	0.61	0.04	0.58	-0.03	0.85	-0.12
9	ALCONA	0.54	0.07	0.28	0.06	1.25	0.15
	ALPENA	1.64	-3.31	1.20	-0.63	1.17	-1.03
	CHEBOYGAN	0.55	0.15	0.32	0.01	1.76	-0.10
	CRAWFORD	0.88	-0.18	0.46	0.03	1.60	0.02
	MONTMORENCY	0.43	0.13	0.13	-0.04	1.45	-0.16
	OSCODA	2.69	-1.18	0.36	0.00	1.61	-0.10
	OTSEGO	0.45	-0.10	0.35	0.01	1.58	-0.12
PRESQUE ISLE	1.20	0.30	0.22	0.00	0.99	-0.08	
10	ANTRIM	0.81	0.11	0.33	-0.03	1.46	-0.18
	BENZIE	0.65	-0.15	0.47	-0.07	1.60	-0.37
	CHARLEVOIX	0.96	-0.19	0.52	0.03	1.79	-0.18
	EMMET	0.80	-1.50	0.69	-0.23	1.52	-0.19
	GRAND TRAVERSE	0.78	0.04	0.71	-0.01	1.44	-0.05
	KALKASKA	0.69	-0.25	0.38	0.05	0.84	-0.03
	LEELANAU	1.17	-0.10	0.70	0.28	1.73	-0.78
	MANISTEE	1.07	-0.08	0.42	0.12	1.40	0.10
	MISSAUKEE	1.31	-0.32	0.27	0.03	1.05	0.07
WEXFORD	0.56	0.06	0.45	-0.03	1.22	-0.05	
11	CHIPPEWA	0.40	0.03	0.31	-0.12	2.02	-0.52
	LUCE	0.10	0.10	0.11	0.01	1.35	-0.29
	MACKINAC	0.99	0.15	0.55	0.30	2.68	-0.84
12	ALGER	0.84	0.16	0.14	0.02	1.85	0.00
	DELTA	0.68	0.03	0.42	0.11	1.35	-0.33
	DICKINSON	0.65	0.01	0.55	0.09	1.27	0.22
	MARQUETTE	1.05	0.36	0.60	-0.14	1.34	-0.14
	MENOMINEE	1.00	-0.16	0.25	0.03	1.47	-0.20
	SCHOOLCRAFT	1.20	-0.18	0.18	0.07	1.57	-0.42
13	BARAGA	0.20	0.10	0.23	0.03	0.99	-0.09
	GOGEBIC	3.76	-1.23	0.51	-0.17	1.79	-0.25
	HOUGHTON	0.94	-0.01	0.55	-0.16	1.41	-0.11
	IRON	1.04	0.53	0.62	-0.11	1.58	0.02
	KEWEENAW	1.25	1.25	0.14	0.10	2.41	-0.10
	ONTONAGON	0.41	0.00	0.18	0.04	1.38	-0.24
14	LAKE	1.45	1.37	0.88	-0.13	1.42	0.08
	MASON	0.59	0.09	0.51	-0.10	1.34	-0.03
	MUSKEGON	1.53	-0.47	0.47	0.02	1.15	0.08
	NEWAYGO	0.75	-0.03	0.31	0.08	1.21	0.02
	OCEANA	0.56	0.38	0.33	0.04	1.15	-0.02

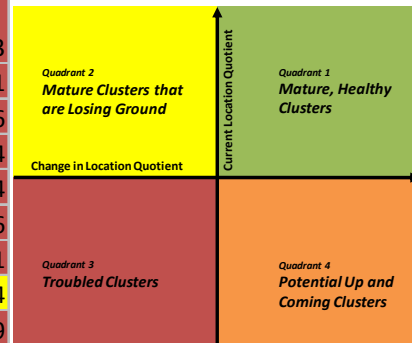


Cluster LQ Summary

Region	County	Defense and Security		Finance and Insurance		Education and Knowledge Creation		Health Care		Life Sciences	
		LQ	ΔLQ	LQ	ΔLQ	LQ	ΔLQ	LQ	ΔLQ	LQ	ΔLQ
1	LIVINGSTON	0.81	-0.06	0.98	0.08	0.36	0.05	0.59	-0.02	0.64	-0.06
	MACOMB	1.37	-0.30	0.72	0.15	0.49	-0.30	0.77	-0.01	1.13	-0.14
	MONROE	0.45	0.07	0.57	0.00	0.62	0.07	0.77	0.10	0.66	0.07
	OAKLAND	1.07	0.06	1.52	0.08	0.59	0.07	1.02	0.13	1.15	0.10
	ST. CLAIR	0.66	0.21	0.77	-0.10	0.80	0.04	1.05	0.07	0.83	0.04
	WASHTENAW	1.23	-0.04	0.72	0.00	4.17	0.45	1.33	-0.37	1.24	-0.30
	WAYNE	0.97	-0.02	1.01	-0.11	0.83	0.01	0.93	-0.01	0.86	-0.03
2	HILLSDALE	1.52	0.05	0.63	0.10	1.52	0.39	1.02	-0.01	0.82	0.00
	JACKSON	1.15	-0.22	0.95	-0.05	1.02	-0.02	1.08	-0.07	0.90	-0.07
	LENAWEE	0.92	-0.14	0.87	-0.06	0.62	-0.07	0.87	0.01	0.77	-0.02
3	BARRY	1.22	0.32	1.23	-0.18	0.46	0.10	1.23	-0.11	1.01	-0.08
	BRANCH	0.90	-0.40	0.69	-0.18	0.91	-0.14	0.99	-0.05	0.79	-0.03
	CALHOUN	0.65	0.02	0.56	0.11	0.80	0.09	1.34	0.16	1.07	0.09
	KALAMAZOO	0.72	-0.09	0.93	-0.04	1.21	0.23	1.65	-0.20	1.44	-0.17
	ST. JOSEPH	0.99	-0.07	0.58	0.10	0.44	-0.46	0.67	-0.11	0.56	-0.09
4	BERRIEN	0.64	-0.07	0.79	0.00	1.71	0.16	1.03	0.00	0.90	0.01
	CASS	0.67	0.06	0.71	0.02	0.45	-1.75	0.68	-0.04	0.61	-0.04
	VAN BUREN	0.92	0.16	0.43	-0.07	0.34	-0.09	1.10	0.15	0.86	0.16
5	GENESEE	0.56	-0.04	0.93	0.11	0.83	0.03	0.99	0.01	1.25	0.39
	LAPEER	0.75	-0.10	0.59	0.07	0.71	0.23	0.87	-0.15	0.74	-0.12
	SHIAWASSEE	0.66	0.09	0.78	0.14	0.64	-0.09	1.11	-0.04	0.92	-0.03
6	CLINTON	0.74	-0.06	0.58	0.00	0.48	-0.01	0.51	0.01	0.42	0.03
	EATON	0.64	-0.01	2.48	-0.21	0.62	-0.04	1.06	-0.08	0.94	-0.07
	INGHAM	1.80	0.80	1.08	0.00	3.27	0.18	0.90	-0.06	0.87	-0.02
7	ARENAC	1.87	-0.56	0.49	-0.03	0.20	-0.02	1.55	0.35	1.22	0.30
	BAY	0.57	0.00	0.84	0.02	2.47	-0.22	1.06	-0.01	0.93	-0.04
	CLARE	0.36	0.10	0.52	-0.05	0.85	-0.12	0.86	-0.20	0.69	-0.18
	GLADWIN	0.67	0.14	0.52	0.03	0.22	0.03	0.86	-0.14	0.77	-0.11
	GRATIOT	1.29	0.28	0.83	-0.04	0.94	-0.01	1.34	-0.36	1.08	-0.43
	HURON	0.40	-0.09	0.92	-0.11	0.67	0.01	0.73	-0.07	0.57	-0.08
	IOSCO	1.03	0.14	0.62	0.00	0.23	0.07	1.52	0.15	1.22	0.12
	ISABELLA	0.99	-0.12	0.56	0.02	3.29	-0.36	1.00	-0.10	0.71	-0.10
	MIDLAND	0.52	-0.06	0.71	0.01	0.80	0.02	1.24	-0.15	1.63	0.10
	OGEMAW	0.67	0.01	0.53	-0.11	0.39	0.12	1.49	-0.05	1.27	-0.07
	ROSCOMMON	0.39	0.07	0.93	0.11	1.67	0.61	0.66	-0.05	0.52	-0.06
	SAGINAW	0.71	-0.41	0.86	-0.01	0.68	0.10	1.00	0.05	0.91	0.07
	SANILAC	0.89	0.14	0.82	0.11	0.30	-0.03	0.94	-0.09	0.81	0.01
TUSCOLA	0.47	-0.22	0.59	0.01	0.59	0.02	0.93	-0.21	0.67	-0.03	

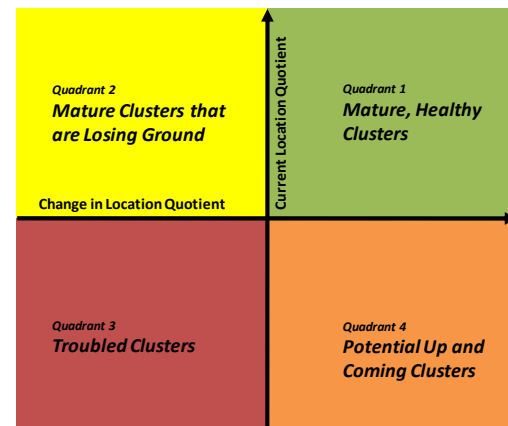
Cluster LQ Summary

Region	County	Defense and Security		Finance and Insurance		Education and Knowledge Creation		Health Care		Life Sciences	
		LQ	ΔLQ	LQ	ΔLQ	LQ	ΔLQ	LQ	ΔLQ	LQ	ΔLQ
8	ALLEGAN	0.77	-0.02	0.46	0.00	0.51	0.03	1.09	-0.27	0.90	-0.23
	IONIA	2.10	-0.24	0.93	-0.10	0.37	0.01	0.55	-0.10	0.45	-0.09
	KENT	0.95	-0.03	1.29	-0.09	0.81	0.06	1.05	0.16	1.13	0.13
	MECOSTA	0.29	0.07	0.52	-0.10	2.81	-0.53	0.84	-0.05	0.67	-0.05
	MONTCALM	1.30	-0.28	0.62	0.03	0.57	-0.07	1.03	-0.07	0.85	-0.06
	OSCEOLA	1.07	-0.15	0.51	0.06	0.16	0.02	0.85	0.07	0.49	0.07
	OTTAWA	1.15	0.23	0.55	-0.08	0.55	-0.04	0.79	-0.13	0.67	-0.12
9	ALCONA	0.91	0.15	0.32	0.02	0.33	0.09	1.17	0.33	0.96	0.29
	ALPENA	0.64	0.01	0.77	-0.06	0.60	0.07	1.74	0.28	1.41	0.22
	CHEBOYGAN	1.18	-0.07	0.89	0.27	0.26	-1.84	0.97	-0.12	0.78	-0.12
	CRAWFORD	0.87	-0.02	0.50	-0.03	0.12	-0.02	1.81	1.25	1.48	1.02
	MONTMORENCY	0.70	0.07	0.49	-0.08	0.50	0.21	0.83	-0.05	0.63	-0.03
	OSCODA	0.81	0.01	0.49	-0.06	0.33	0.08	0.81	0.07	0.66	0.07
	OTSEGO	0.98	0.32	0.85	-0.16	0.36	0.09	0.51	-0.02	0.46	-0.03
	PRESQUE ISLE	0.65	0.04	0.95	-0.18	0.33	-0.01	0.79	-0.03	0.62	-0.04
10	ANTRIM	0.59	0.05	0.46	0.06	0.36	0.01	0.69	0.12	0.54	0.09
	BENZIE	0.56	-0.04	0.71	-0.03	0.36	-0.06	0.79	0.02	0.65	-0.01
	CHARLEVOIX	0.85	-0.30	0.51	0.07	0.29	-0.02	0.79	0.07	0.63	0.07
	EMMET	0.59	0.02	0.82	0.09	0.59	0.05	1.18	-0.06	1.03	-0.07
	GRAND TRAVERSE	0.69	-0.09	1.19	0.25	1.07	-0.35	1.13	-0.14	0.98	-0.13
	KALKASKA	0.91	-0.04	0.53	-0.01	0.11	0.06	0.69	-0.16	0.61	-0.11
	LEELANAU	0.38	0.16	0.76	0.01	0.53	0.05	0.54	-0.05	0.51	-0.06
	MANISTEE	1.49	0.51	0.55	0.00	0.41	-0.06	0.90	-0.12	0.91	-0.14
	MISSAUKEE	0.75	0.01	0.56	-0.11	0.20	0.08	0.26	-0.08	0.21	-0.04
	WEXFORD	1.33	0.32	0.93	0.01	0.65	-0.13	0.81	-0.17	0.73	-0.26
11	CHIPPEWA	1.40	-0.36	0.54	-0.01	0.90	-0.82	0.83	-0.10	0.69	-0.11
	LUCE	1.55	-0.50	1.02	0.17	0.23	-0.05	1.36	-0.17	1.07	-0.14
	MACKINAC	0.84	-0.01	0.62	0.14	0.21	0.05	0.55	-0.11	0.46	-0.09
12	ALGER	0.60	0.09	0.60	0.05	0.27	0.04	0.56	0.00	0.44	0.01
	DELTA	0.56	-0.07	0.76	-0.25	0.74	-0.06	0.76	0.03	0.66	0.07
	DICKINSON	0.88	0.15	0.80	0.17	0.25	0.07	1.06	0.08	0.89	0.08
	MARQUETTE	1.71	-0.40	0.75	-0.04	1.62	-1.68	1.53	-0.04	1.28	-0.05
	MENOMINEE	0.49	-0.07	0.48	0.07	0.12	0.01	0.73	-0.18	0.51	-0.19
	SCHOOLCRAFT	0.81	0.26	1.04	-0.32	0.52	0.00	1.45	-0.37	1.17	-0.31
13	BARAGA	2.03	-0.30	0.57	0.10	0.45	0.31	1.23	-0.20	0.95	-0.17
	GOGEBIC	0.95	0.07	0.69	0.25	1.40	0.34	1.38	0.20	1.13	0.16
	HOUGHTON	0.68	0.17	0.87	-0.07	4.91	-0.49	1.32	-0.46	1.15	-0.37
	IRON	0.64	-0.16	0.76	0.14	0.33	0.10	1.31	0.06	1.03	0.06
	KEWEENAW	1.08	1.04	0.15	0.15	0.00	0.00	0.02	0.02	0.09	0.03
	ONTONAGON	0.79	-0.13	0.88	-0.28	0.37	-0.04	1.07	-0.09	0.86	-0.07
14	LAKE	1.41	0.37	0.43	-0.13	0.33	-0.02	1.16	0.02	0.94	0.02
	MASON	0.46	0.10	0.49	-0.01	0.78	-0.09	0.89	0.02	0.72	0.02
	MUSKEGON	0.83	-0.02	0.67	-0.02	0.50	0.03	1.54	0.16	1.29	0.11
	NEWAYGO	0.48	0.07	0.60	-0.03	0.56	0.32	1.01	-0.12	0.81	-0.11
	OCEANA	0.56	0.05	0.53	-0.04	0.34	0.13	0.55	0.01	0.43	0.02



Cluster LQ Summary

Region	County	Advanced and Flexible Manufacturing		Aerospace		Information Technology		Robotics	
		LQ	ΔLQ	LQ	ΔLQ	LQ	ΔLQ	LQ	ΔLQ
1	LIVINGSTON	1.08	0.02	0.80	0.21	1.02	-0.08	0.77	0.02
	MACOMB	1.26	0.17	0.60	0.06	1.08	0.49	1.91	-0.31
	MONROE	1.00	0.01	0.29	0.06	0.46	0.10	0.35	0.02
	OAKLAND	0.94	-0.01	1.80	0.27	1.63	-0.03	1.85	0.05
	ST. CLAIR	1.07	0.13	0.27	0.06	0.43	-0.08	0.38	0.03
	WASHTENAW	0.76	-0.05	2.05	0.14	1.58	-0.04	1.80	-0.03
	WAYNE	0.85	-0.01	1.15	-0.28	1.10	-0.11	0.79	-0.26
2	HILLSDALE	1.62	0.00	3.34	-0.21	1.36	-0.07	0.30	0.04
	JACKSON	1.19	0.02	0.37	0.05	0.47	-0.04	0.37	-0.02
	LENAWEE	1.75	-0.30	0.62	0.00	0.42	0.02	0.24	-0.01
3	BARRY	0.47	-0.05	0.14	-0.02	0.50	0.10	0.28	0.02
	BRANCH	0.65	0.24	0.13	-0.01	0.30	0.00	0.17	0.01
	CALHOUN	0.63	0.13	0.86	0.14	0.66	0.08	0.36	0.13
	KALAMAZOO	1.29	0.00	0.64	-0.26	0.75	-0.05	0.58	0.05
	ST. JOSEPH	1.79	-0.07	0.99	-0.35	0.59	-0.10	0.21	0.03
4	BERRIEN	1.24	-0.04	0.44	0.01	0.44	-0.06	0.54	0.05
	CASS	1.61	0.36	0.12	0.00	0.35	-0.05	0.37	0.08
	VAN BUREN	1.06	-0.06	0.17	-0.02	0.40	-0.14	0.63	0.13
5	GENESEE	0.37	0.01	0.31	-0.08	0.59	0.03	1.52	1.15
	LAPEER	1.48	-0.31	0.45	0.04	0.72	0.07	0.43	-0.03
	SHIAWASSEE	0.71	0.24	0.57	-0.08	0.78	-0.30	0.23	0.03
6	CLINTON	0.36	0.19	1.45	0.05	0.59	0.14	0.78	0.21
	EATON	0.52	0.17	0.40	0.07	0.62	0.25	0.52	-0.01
	INGHAM	0.79	-0.38	0.70	-0.01	0.84	-0.06	0.81	0.15
7	ARENAC	0.87	-0.25	0.43	-0.12	0.31	-0.09	0.20	0.04
	BAY	0.77	-0.06	0.19	0.04	0.52	0.05	0.29	0.02
	CLARE	0.73	0.34	0.15	0.03	0.25	0.06	0.18	-0.02
	GLADWIN	1.96	-0.23	0.08	0.04	0.25	0.01	0.16	0.02
	GRATIOT	0.76	-0.01	0.59	-0.16	0.65	-0.02	0.20	-0.17
	HURON	1.73	0.60	0.09	0.02	0.34	-0.06	0.12	-0.03
	IOSCO	0.61	0.34	1.37	1.20	0.22	0.09	0.20	0.03
	ISABELLA	0.60	-0.08	0.20	0.10	0.96	0.05	0.33	0.00
	MIDLAND	1.79	0.39	0.45	-0.06	0.54	-0.07	0.69	-0.15
	OGEMAW	0.70	0.10	0.17	0.09	0.47	0.22	0.25	-0.02
	ROSCOMMON	0.17	-0.04	0.09	0.02	0.34	0.06	0.20	0.09
	SAGINAW	0.92	-0.03	0.83	-0.04	1.00	-0.05	0.56	-0.01
SANILAC	1.30	0.17	0.07	0.04	0.31	-0.09	0.24	0.13	
TUSCOLA	0.86	-0.06	0.16	0.07	0.40	0.08	0.97	0.23	



Cluster LQ Summary

Region	County	Advanced and Flexible Manufacturing		Aerospace		Information Technology		Robotics	
		LQ	ΔLQ	LQ	ΔLQ	LQ	ΔLQ	LQ	ΔLQ
8	ALLEGAN	1.69	0.07	0.20	0.00	0.43	0.00	0.36	0.02
	IONIA	0.94	-0.21	0.12	0.03	0.29	0.02	0.16	-0.26
	KENT	1.67	0.00	1.16	0.10	1.05	-0.06	0.60	0.05
	MECOSTA	0.73	0.08	0.22	0.05	0.42	-0.01	0.28	0.06
	MONTCALM	0.59	0.11	0.17	0.02	0.44	0.11	0.22	0.07
	OSCEOLA	1.54	0.25	0.16	0.04	2.82	-1.46	0.16	0.04
	OTTAWA	1.51	-0.18	1.52	-0.31	0.90	-0.16	0.47	-0.08
9	ALCONA	0.73	-0.04	0.13	0.01	0.43	0.20	0.42	0.06
	ALPENA	0.65	-0.05	0.05	0.00	0.46	0.15	0.30	-0.04
	CHEBOYGAN	0.15	-0.01	0.37	-0.05	0.31	0.04	0.16	0.03
	CRAWFORD	0.28	-0.04	0.07	-0.01	0.20	-0.02	0.24	-0.10
	MONTMORENCY	1.39	-0.33	0.13	0.07	0.18	0.00	0.10	0.04
	OSCODA	0.70	-0.06	0.03	0.03	0.13	0.04	0.39	0.03
	OTSEGO	1.22	-0.47	0.77	0.22	0.81	-0.52	0.25	0.02
	PRESQUE ISLE	0.08	0.01	0.27	0.00	0.29	0.06	0.23	-0.03
	10	ANTRIM	0.88	-0.13	0.24	-0.05	0.63	-0.16	0.26
BENZIE		0.31	-0.01	0.30	0.04	0.45	-0.03	0.31	-0.02
CHARLEVOIX		2.03	-0.51	1.57	-1.86	0.59	0.00	0.37	0.11
EMMET		0.70	0.05	1.21	0.30	0.70	-0.05	0.59	0.06
GRAND TRAVERSE		0.64	-0.08	0.79	0.03	0.66	0.03	0.68	-0.05
KALKASKA		0.25	0.01	0.30	0.13	0.34	0.11	0.40	0.08
LEELANAU		0.12	0.02	0.27	0.03	0.39	0.04	0.48	0.04
MANISTEE		0.81	-0.31	0.10	0.01	0.29	0.03	0.24	-0.01
MISSAUKEE		0.95	-0.14	0.17	0.10	0.33	0.10	0.25	0.08
WEXFORD		1.25	-0.09	0.07	0.00	0.80	-0.22	0.42	-0.34
11		CHIPPEWA	0.19	0.22	0.23	0.02	0.17	-0.03	0.27
	LUCE	0.01	0.07	0.08	0.00	0.13	-0.01	0.09	-0.05
	MACKINAC	0.06	-0.01	0.13	0.00	0.12	0.02	0.15	0.03
12	ALGER	0.03	0.03	0.17	0.10	0.53	0.04	0.23	0.06
	DELTA	0.39	0.04	0.05	-0.01	0.22	-0.11	0.29	0.11
	DICKINSON	0.68	0.08	0.30	-0.12	0.67	0.02	0.35	0.05
	MARQUETTE	0.15	0.06	0.32	-0.15	0.54	-0.06	0.34	-0.11
	MENOMINEE	0.50	0.20	0.72	0.04	0.29	-0.04	0.13	0.04
	SCHOOLCRAFT	0.04	0.02	0.14	-0.02	0.14	0.05	0.15	0.04
13	BARAGA	1.32	-0.36	0.06	0.06	0.47	0.06	0.20	-0.01
	GOGEBIC	0.40	0.09	0.11	0.05	0.38	0.04	0.18	0.05
	HOUGHTON	0.23	0.03	0.47	0.08	0.52	-0.36	0.56	0.13
	IRON	0.21	0.09	0.05	0.00	0.37	0.19	0.64	0.44
	KEWEENAW	0.68	0.05	0.00	0.00	0.10	0.05	0.34	0.15
	ONTONAGON	0.04	-0.01	0.05	0.05	0.40	0.02	0.15	-0.02
14	LAKE	0.13	-0.01	0.00	0.00	0.26	0.08	0.09	0.04
	MASON	1.14	-0.22	0.14	-0.02	0.59	-0.09	0.22	0.02
	MUSKEGON	1.24	0.09	0.65	-0.03	0.40	0.02	0.23	0.04
	NEWAYGO	0.70	0.40	0.27	0.11	1.36	0.98	0.31	0.03
	OCEANA	1.38	-0.27	0.04	-0.02	0.22	0.07	0.16	-0.02

Shift Share Analysis



Shift Share Analysis

Shift-share analysis decomposes regional change in employment over time into separate and unique factors influencing the growth and prosperity of regions as compared to national growth. These unique factors include: (1) the National Growth Effect; (2) the Industry Mix Effect; and, (3) the Competitive Effect. The sum of the shift-share components add up to the total change in sector/cluster employment over the reference years. Shift-share components are defined as follows¹:

National Growth Effect

- Captures the amount the region would have grown or declined if it had changed at the same rate as the national economy.

Industry Mix Effect

- Captures the amount of change attributable to differences in the cluster makeup regionally vs. the nation. A positive industry effect indicates a cluster is growing faster than the rest of the nation.

Competitive Effect

- Captures changes that are not attributable to national or industrial effects. It is a measure of how a region has shifted away from expectations of growth based on the other two effects.

Shift-Share Formal Identity²:

$$e_i^{t'} - e_i^t = N + M + S$$

$N = R_T^{t-t'} e_i^t$	National share
$M = (R_i^{t-t'} - R_T^{t-t'}) e_i^t$	Mix effect
$S = (r_i^{t-t'} - R_i^{t-t'}) e_i^t$	Competitive effect

$e_i^t =$	Regional employment in industry i at time t
$e_i^{t'} - e_i^t =$	Regional employment change in i from time t to time t'
$R_T^{t-t'} =$	National growth rate for all industries
$R_i^{t-t'} =$	National growth rate for industry i
$r_i^{t-t'} =$	Regional growth rate for industry i

On the following tables, black is good and red is bad. The larger the number the greater the effect (positive or negative).

¹Loveridge, S., and Selting. "A Review and Comparison of Shift-Share Identities." *International Regional Science Review* 21 (1998): 37-58.

²Urban Regional Planning Program. "Shift Share Analysis." *Powerpoint Presentation* (2007)

Michigan Shift Share by Sector 2003-2007

Sector	Employment Change	=	Shift-Share Components		
			National Share +	Industry Mix +	Competitive Effect
Accommodation and food services	9,479		29,606	5,373	-25,500
Administrative and waste services	26,133		27,805	17,326	-18,998
Arts, entertainment, and recreation	6,657		8,425	4,591	-6,359
Construction	-14,624		24,386	20,945	-59,956
Educational services	14,448		6,858	4,681	2,909
Farm employment	190		5,779	-10,172	4,583
Finance and insurance	7,278		18,012	5,175	-15,909
Forestry, fishing, and related activities	1,737		1,054	46	637
Government Enterprises - Federal, civilian	-2,548		4,681	-5,544	-1,685
Health care and social assistance	58,252		47,499	16,587	-5,834
Information	-4,112		6,783	-7,434	-3,460
Local government	-25,344		37,662	-20,318	-42,689
Management of companies and enterprises	-6,806		5,516	1,197	-13,519
Manufacturing	-91,879		61,362	-86,541	-66,700
Military	-1,716		1,883	-2,622	-977
Mining	559		1,143	2,496	-3,080
Other services, except public administration	7,629		23,566	-4,384	-11,554
Professional and technical services	12,502		28,763	27,500	-43,761
Real estate and rental and leasing	21,860		16,622	41,539	-36,301
Retail Trade	-27,494		52,062	-24,956	-54,600
State government	5,431		13,808	-9,443	1,066
Transportation and warehousing	13,698		10,873	4,600	-1,775
Utilities	117		1,748	-1,843	212
Wholesale trade	-1,883		15,550	379	-17,812

Note: This table reports all the standard employment sectors, NOT the 23 clusters otherwise presented in this report. It is presented for additional context when interpreting the cluster table on the next page.

Michigan Shift Share by Cluster 2003-2007

Cluster	Employment Change	=	Shift-Share Components		
			National Share +	Industry Mix +	Competitive Effect
Advanced Manufacturing	-19,821		18,722	-15,159	-23,385
Advanced Transportation	-5,341		3,533	8,603	-17,476
Advanced Waste	-43,112		17,061	12,797	-72,970
Aerospace	6,170		2,512	2,072	1,586
Arts	519		973	3,020	-3,474
Construction	-36,567		15,217	18,536	-70,320
Defense	-12,848		12,031	120	-25,000
Education	1,463		3,967	1,750	-4,255
Energy	-58,756		26,816	15,596	-101,168
Engineering Tech	-32,229		22,037	22,829	-77,095
Environmental Tech	-32,455		17,269	2,927	-52,651
Film	-2,054		30,287	51,156	-83,497
Finance	21,291		12,244	-10,292	19,339
Fisheries	1,791		1,346	-649	1,094
Food	1,317		2,361	-54	-990
Forestry	-10,713		7,027	-4,129	-13,610
Health Care	20,607		37,709	-9,481	-7,622
IT	-3,771		9,020	-8,726	-4,064
Life Sciences	10,935		40,768	-9,365	-20,468
Mining	1,869		105	1,259	505
Robotics	-35,909		12,288	21,561	-69,758
Supply Chain Mgmt	-23,820		10,883	12,928	-47,631
Tourism	-59,733		44,830	-16,641	-87,922

Shift Share Analysis

Cluster	National Share	Industry Mix	Competitive Effect	2003 Employment	2007 Employment	Employment Growth	Net Employment Change
Tourism	44830.46	-16641.07	-87922.40	294615.00	274794.00	-7%	-59,733
Energy	26816.44	15595.99	-101168.43	55593.00	50252.00	-10%	-58,756
Advanced Waste	17061.31	12796.67	-72969.98	268479.00	225367.00	-16%	-43,112
Construction	15217.08	18536.25	-70320.33	39533.00	45703.00	16%	-36,567
Robotics	12288.16	21560.98	-69758.13	15308.00	15827.00	3%	-35,909
Environmental Tech	17269.43	2926.53	-52650.96	239458.00	202891.00	-15%	-32,455
Engineering Tech	22037.25	22828.72	-77094.97	189328.00	176480.00	-7%	-32,229
Supply Chain Mgmt	10883.24	12927.72	-47630.96	62433.00	63896.00	2%	-23,820
Advanced Manufacturing	18722.20	-15158.64	-23384.57	421987.00	363231.00	-14%	-19,821
Defense	12031.42	120.17	-24999.59	346781.00	314552.00	-9%	-12,848
Forestry	7026.63	-4129.19	-13610.44	271754.00	239299.00	-12%	-10,713
Advanced Transportation	3532.83	8602.52	-17476.34	476594.00	474540.00	0%	-5,341
IT	9019.56	-8726.40	-4064.16	192674.00	213965.00	11%	-3,771
Film	30286.61	51156.13	-83496.74	21177.00	22968.00	8%	-2,054
Arts	972.79	3020.13	-3473.92	37159.00	38476.00	4%	519
Food	2361.38	-54.29	-990.09	110572.00	99859.00	-10%	1,317
Education	3967.49	1750.28	-4254.77	593401.00	614008.00	3%	1,463
Fisheries	1345.76	-648.55	1093.80	141933.00	138162.00	-3%	1,791
Mining	104.79	1259.22	504.98	641532.00	652467.00	2%	1,869
Aerospace	2512.24	2072.16	1585.60	1649.00	3518.00	113%	6,170
Life Sciences	40768.09	-9365.05	-20468.04	193368.00	157459.00	-19%	10,935
Health Care	37709.46	-9480.75	-7621.71	171260.00	147440.00	-14%	20,607
Finance	12244.05	-10291.94	19338.88	705458.00	645725.00	-8%	21,291