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REIM, SWUFE

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June 8, 2012

(with assistance from Ken Kline)

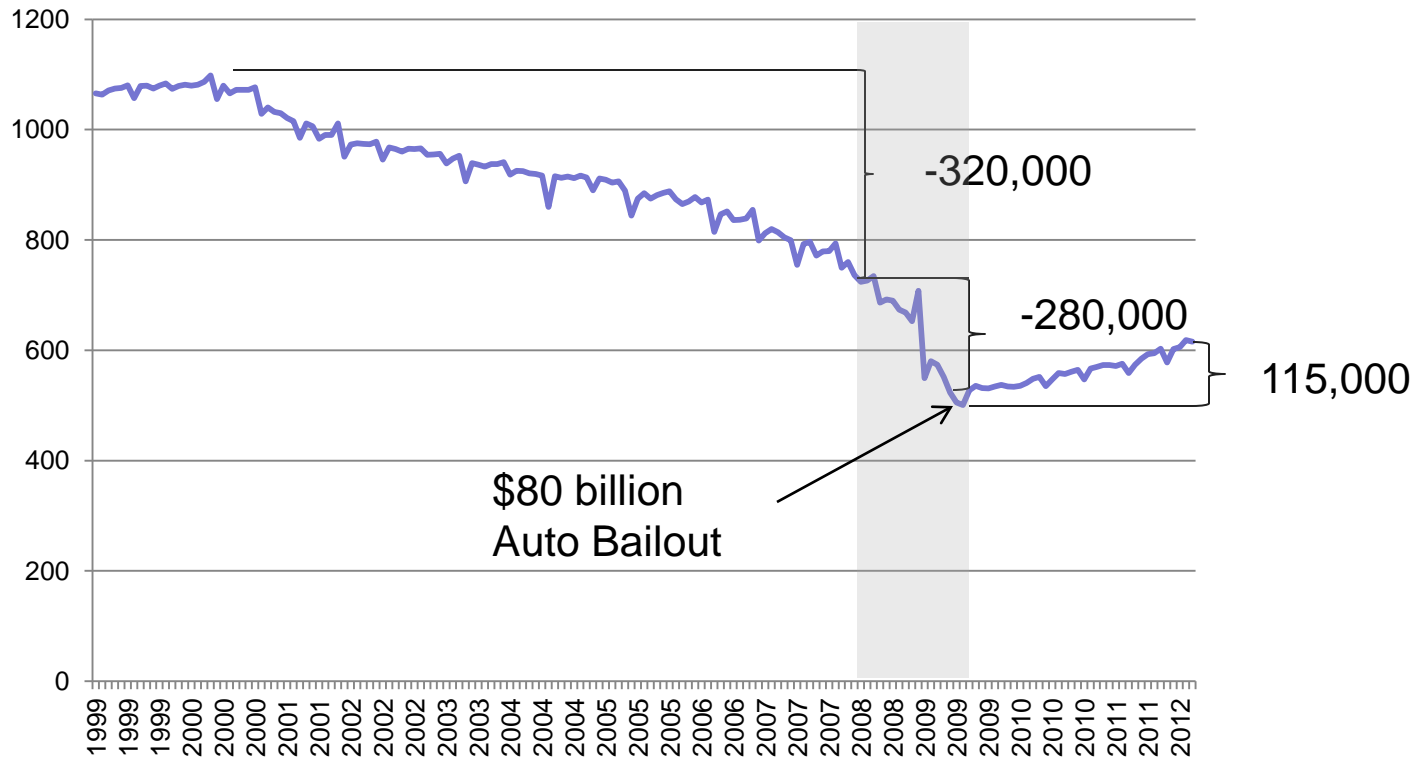
Auto Industry Restructuring

- The Michigan and US auto industry experienced unprecedented restructuring and job loss during past decade
 - The US industry (NAICS 3361 and 3363) lost more than 600,000 jobs from peak to trough
 - Michigan's auto industry claimed 30% of US industry employment, making up 28% of the state's manufacturing employment
 - During the past decade Michigan's auto industry accounted for 40% of the nation's job loss, shedding 230,000 workers or 68%
- This job loss has had a significant effect on the nation and the state before and during the recession
 - Michigan went from boasting the lowest unemployment rate in the US to suffering from one of the highest, within a 10 year period
 - The Obama administration committed \$80 billion to shore up the industry through loans and stock purchases of GM and Chrysler in order to save jobs and reduce expenses on UI benefits

Questions

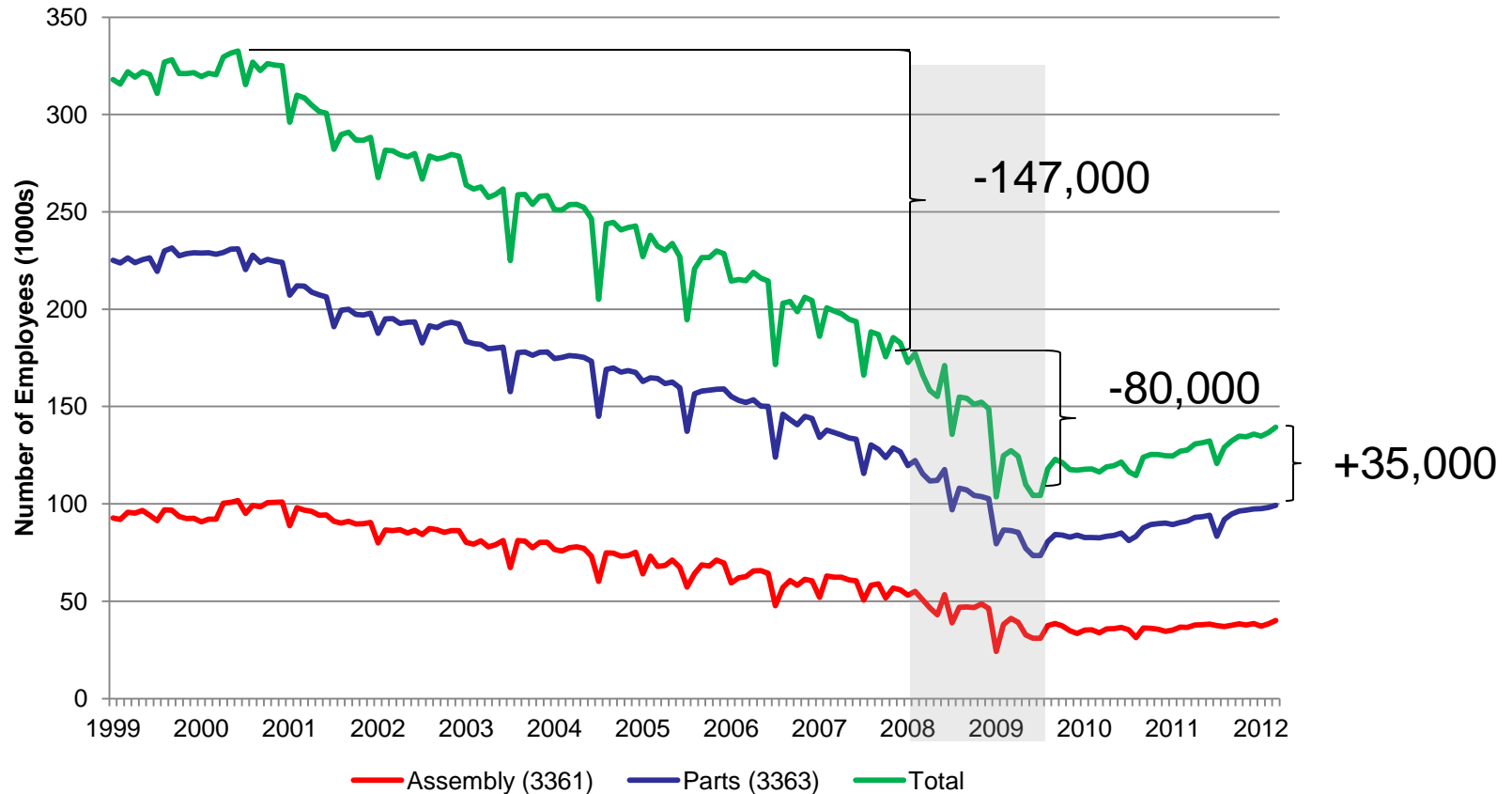
- Where have all the Michigan auto *jobs* gone?
 - Examine employment patterns from 2000
 - Examine establishment structure
 - Examine hiring/separation patterns
- Where have displaced Michigan auto *workers* gone?
 - Use individual UI wage records to examine reemployment and earnings trends and transitions
 - How many return to the auto industry?
 - In what other industries do they find employment?
 - What factors affect reemployment?
- How has the unemployment insurance system helped this transition?

US Auto Industry (NAICS 3361 and 3363)



The U.S auto industry has gone through unprecedented restructuring in the past decade, losing nearly 600,000 jobs from peak to trough. It has recouped some of the job losses and has even increased market share during the recovery.

Michigan's Auto Industry



Michigan's economy was hit the hardest—at the peak it claimed 30 percent of nation's jobs but experienced 40 percent of the total job loss. Even before the recession began, Michigan lost 147,000 jobs as Michigan's unemployment rose from 5.1 to 7.2 percent.

Auto employment loss was concentrated in metro areas

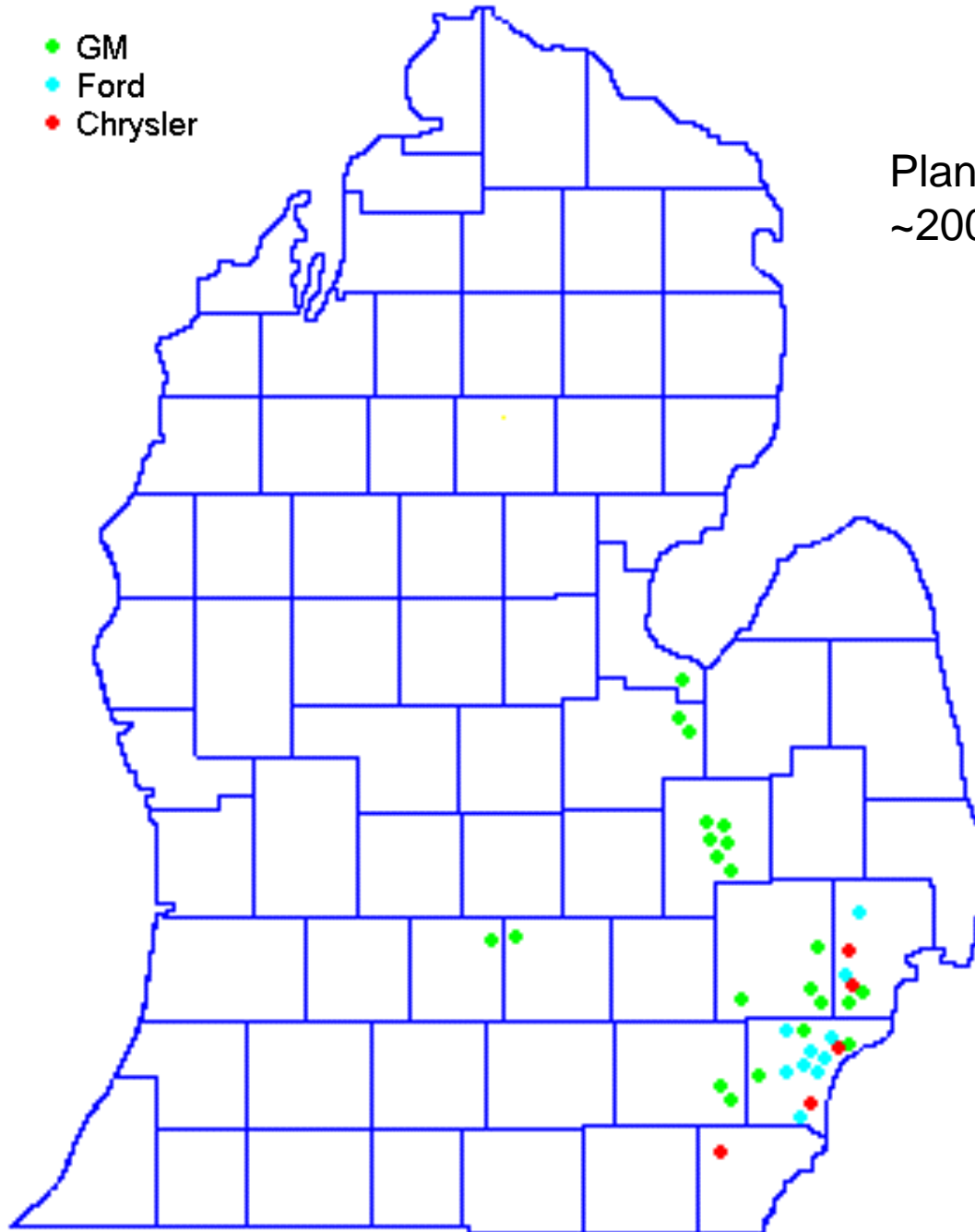
	Emp 2000	mp 2006	% chg	Change
Detroit-Warren-Livonia, MI	136773	89621	-34%	-47152
Dayton, OH	19909	8960	-55%	-10949
Los Angeles-Long Beach-Santa Ana, CA	21530	14512	-33%	-7018
Cleveland-Elyria-Mentor, OH	20778	14169	-32%	-6609
Buffalo-Niagara Falls, NY	16134	9584	-41%	-6550
Kokomo, IN	17550	11192	-36%	-6358
Oklahoma City, OK	8843	2536	-71%	-6307
Youngstown-Warren-Boardman, OH-PA	17017	10743	-37%	-6274
New York-Northern New Jersey-Long Island, NY-NJ-PA	8783	2869	-67%	-5914
Flint, MI	15790	10498	-34%	-5292
Lansing-East Lansing, MI	13133	7986	-39%	-5147
Ann Arbor, MI	11634	6566	-44%	-5068
St. Louis, MO-IL	16981	12150	-28%	-4831
Holland-Grand Haven, MI	10556	5936	-44%	-4620
Indianapolis-Carmel, IN	17286	12819	-26%	-4467
Saginaw-Saginaw Township North, MI	10671	6369	-40%	-4302
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	13626	9422	-31%	-4204
Springfield, OH	6403	2210	-65%	-4193
Milwaukee-Waukesha-West Allis, WI	6917	2899	-58%	-4018

Between 2000 and 2006, 11 metro areas Accounted for 50% of employment loss and 43% of initial 2000 jobs

Source: Whole Data (an analysis by Isserman and Westervelt of the County Business Pattern data base that uses algorithms to fill in suppressed county/industry cells).

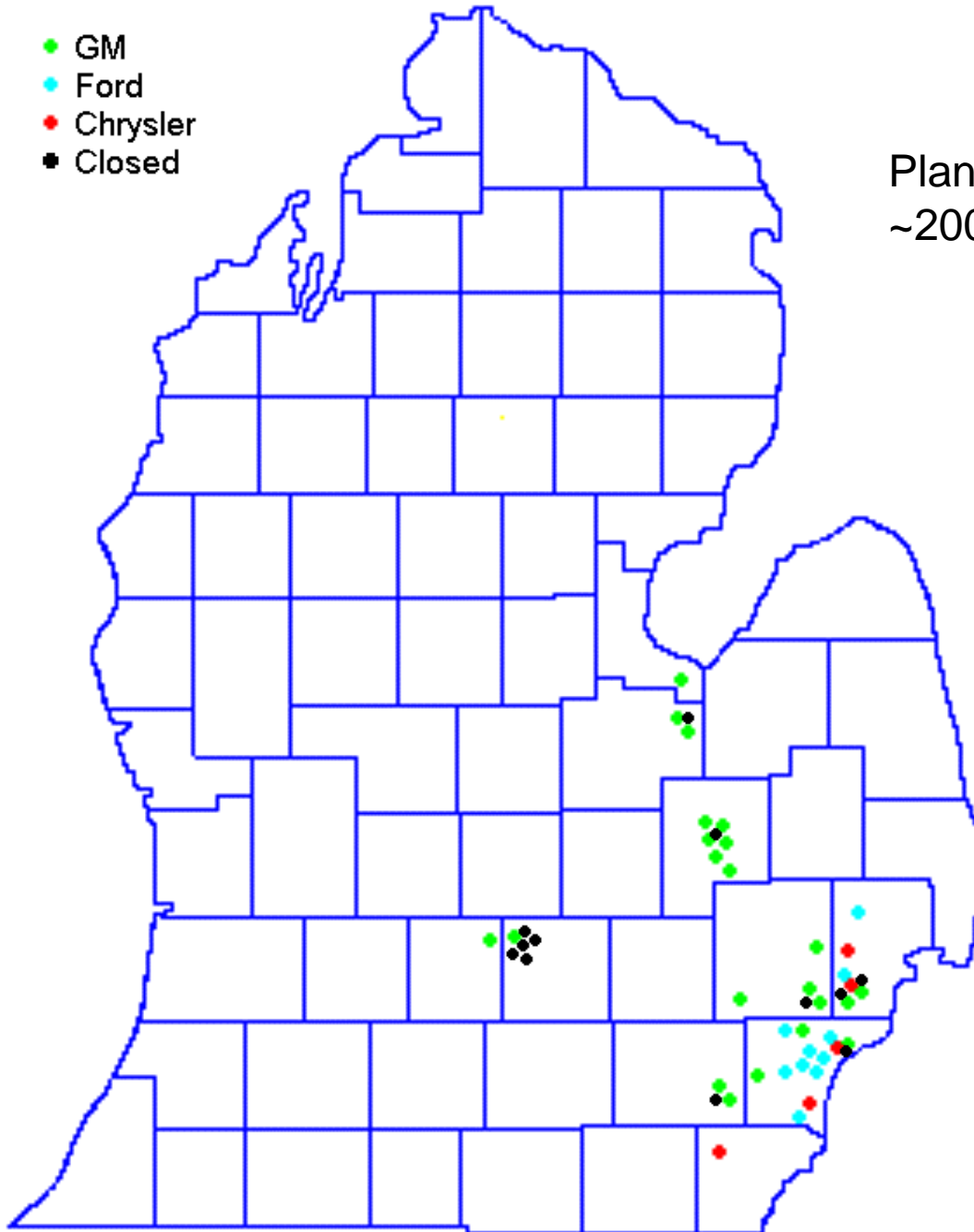
- GM
- Ford
- Chrysler

Plant Location
~2007-2008



- GM
- Ford
- Chrysler
- Closed

Plant Location
~2007-2008

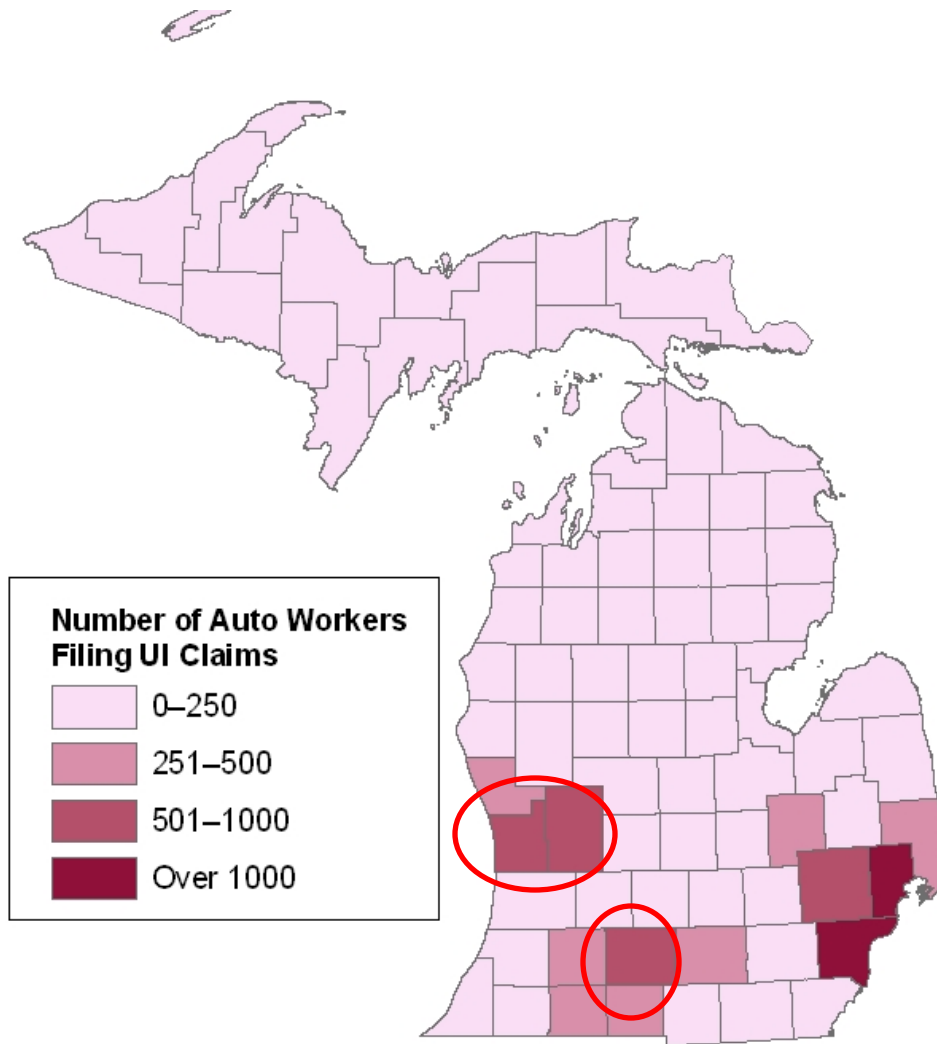


Half the nation's parts plant closings occurred in Michigan; Assembly plants operate with half the number of workers

3361	US			MI			Rest of US		
	Establ.	Employment	Emp/est	Establ.	Employment	Emp/est	Establ.	Employment	Emp/est
2001	461	277853	603	88	90361	1026	373	187492	503
2002	476	266633	560	100	81572	815	376	185061	492
2003	480	258055	538	100	75378	754	380	182677	480
2004	480	256490	534	99	70844	715	381	185646	487
2005	474	248055	523	98	65509	668	376	182546	485
2006	472	240410	509	95	59006	621	377	181404	481
2007	474	222226	469	97	58574	604	377	163652	434
2008	491	195622	398	93	48821	525	398	146801	368

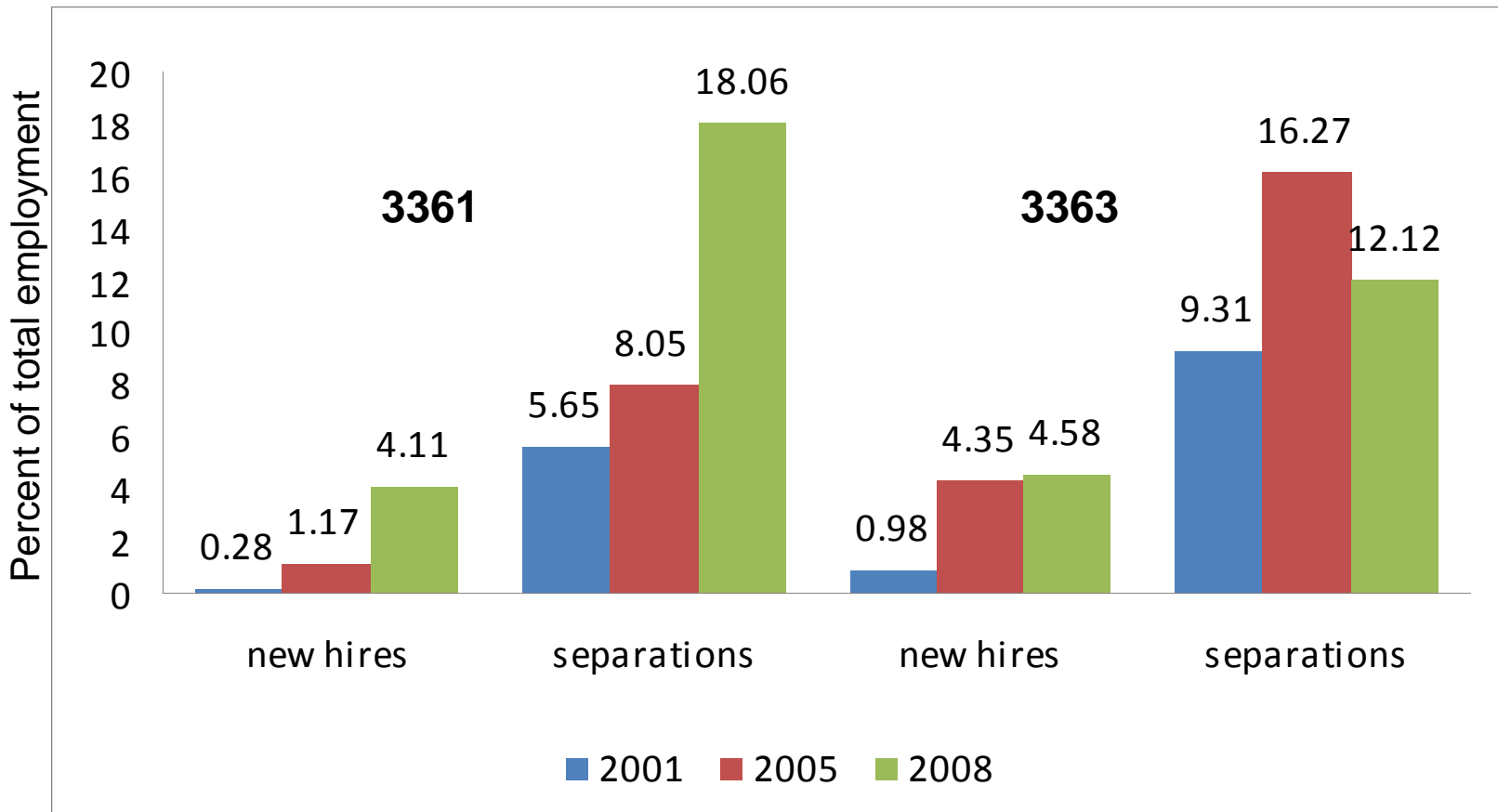
3363	US			MI			Rest of US		
	Establ.	Employment	Emp/est	Establ.	Employment	Emp/est	Establ.	Employment	Emp/est
2001	6842	767897	112	1234	203833	165	5608	564064	101
2002	6765	728766	108	1183	191518	162	5582	537248	96
2003	6605	699659	106	1089	177191	163	5516	522468	95
2004	6476	690527	107	1032	168955	164	5444	521572	96
2005	6394	679143	106	1002	157602	157	5392	521541	97
2006	6316	648293	103	989	145983	148	5327	502310	94
2007	6296	604870	96	942	130657	139	5354	474213	89
2008	6237	541124	87	932	110764	119	5305	430360	81

Source: Survey of Manufacturers, selected years



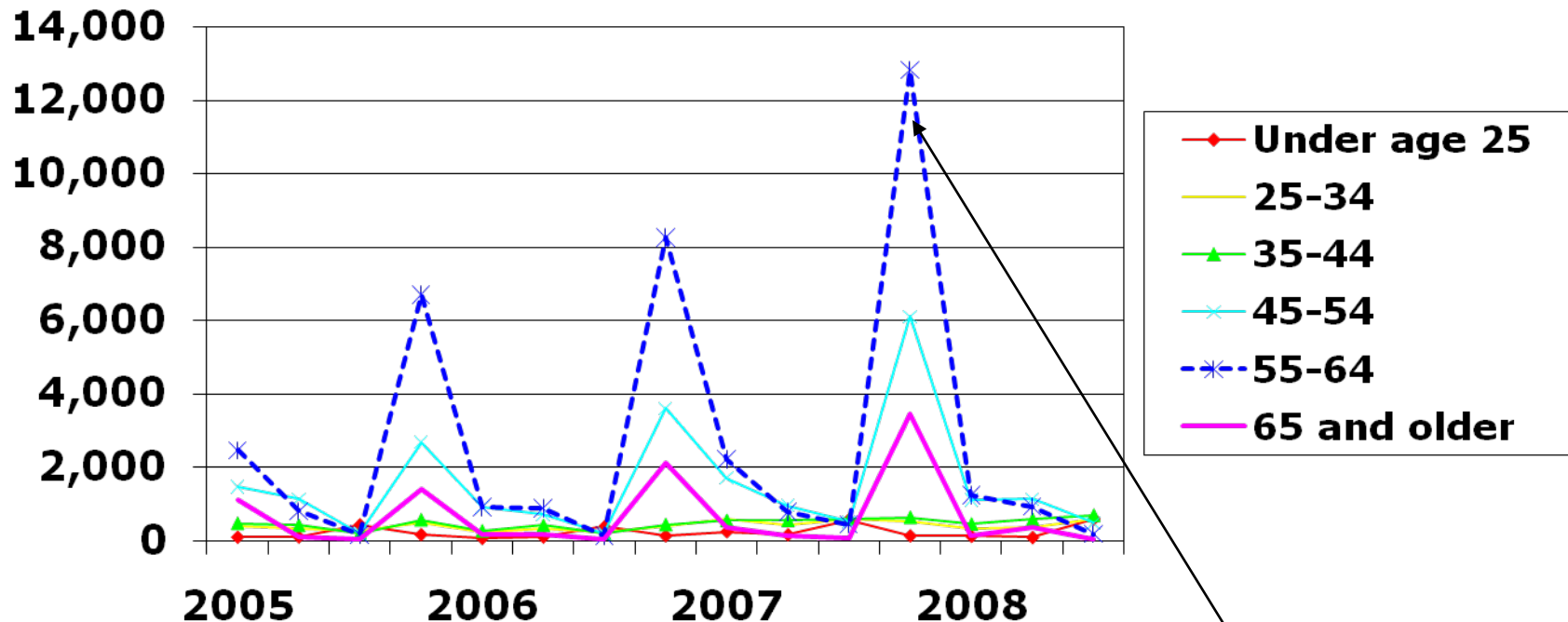
Displaced workers filing UI claims follow the geographical pattern of plant closings, but they also follow the location of parts suppliers, specifically in the western part of the state.

Job separations outpaced new hires during each of the three years spanning the past decade, although the gap generally decreased even as the recession began in 2008.



At assembly plants, reductions occurred in waves—primarily as a result of workers taking early retirement incentives. Detroit automakers have cut 100,000 jobs through buyouts and early retirement options valued at as much as \$140,000 per person.

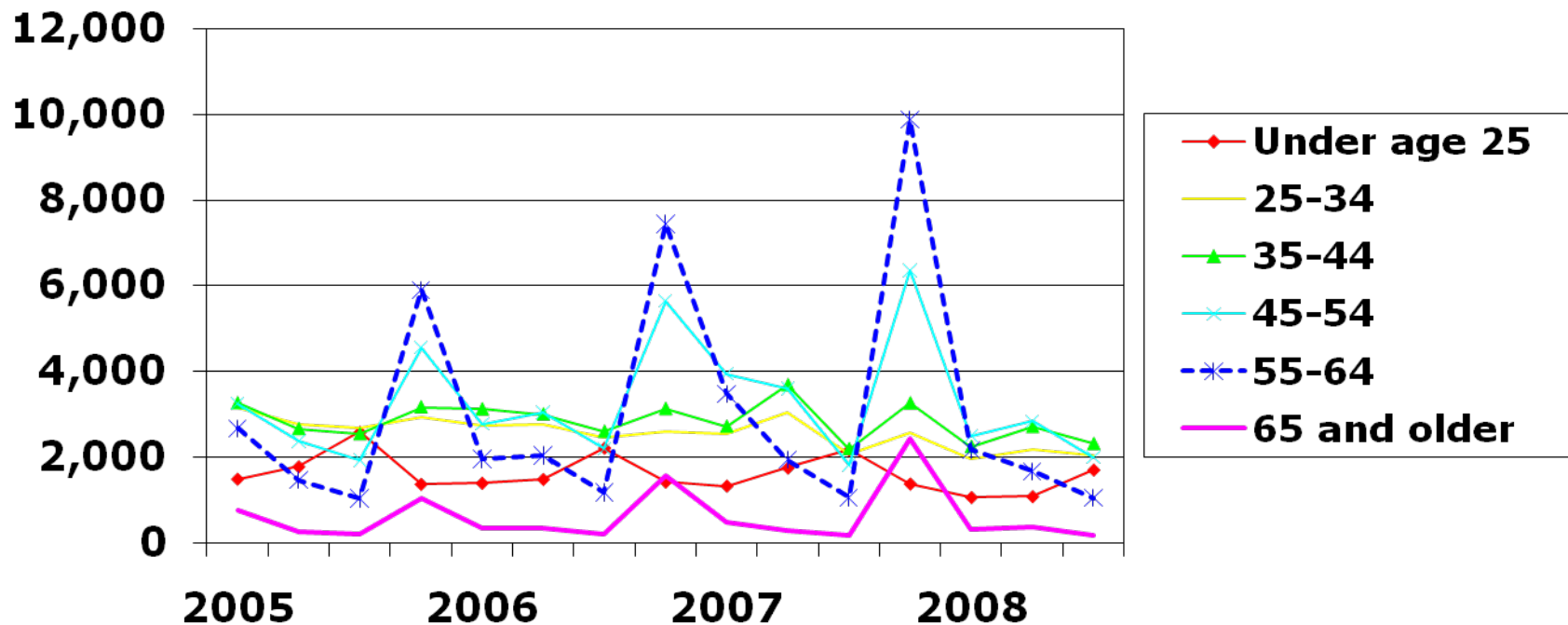
Michigan Motor Vehicle Manufacturing Separations by Quarter



By far, the most separations have occurred among workers age 55 to 64. These individuals are near retirement and may not need to re-enter the workforce.

The story is different at the auto parts suppliers: despite retirement waves, younger workers are also being displaced at a steady pace.

Michigan Motor Vehicle Parts Manufacturing Separations by Quarter

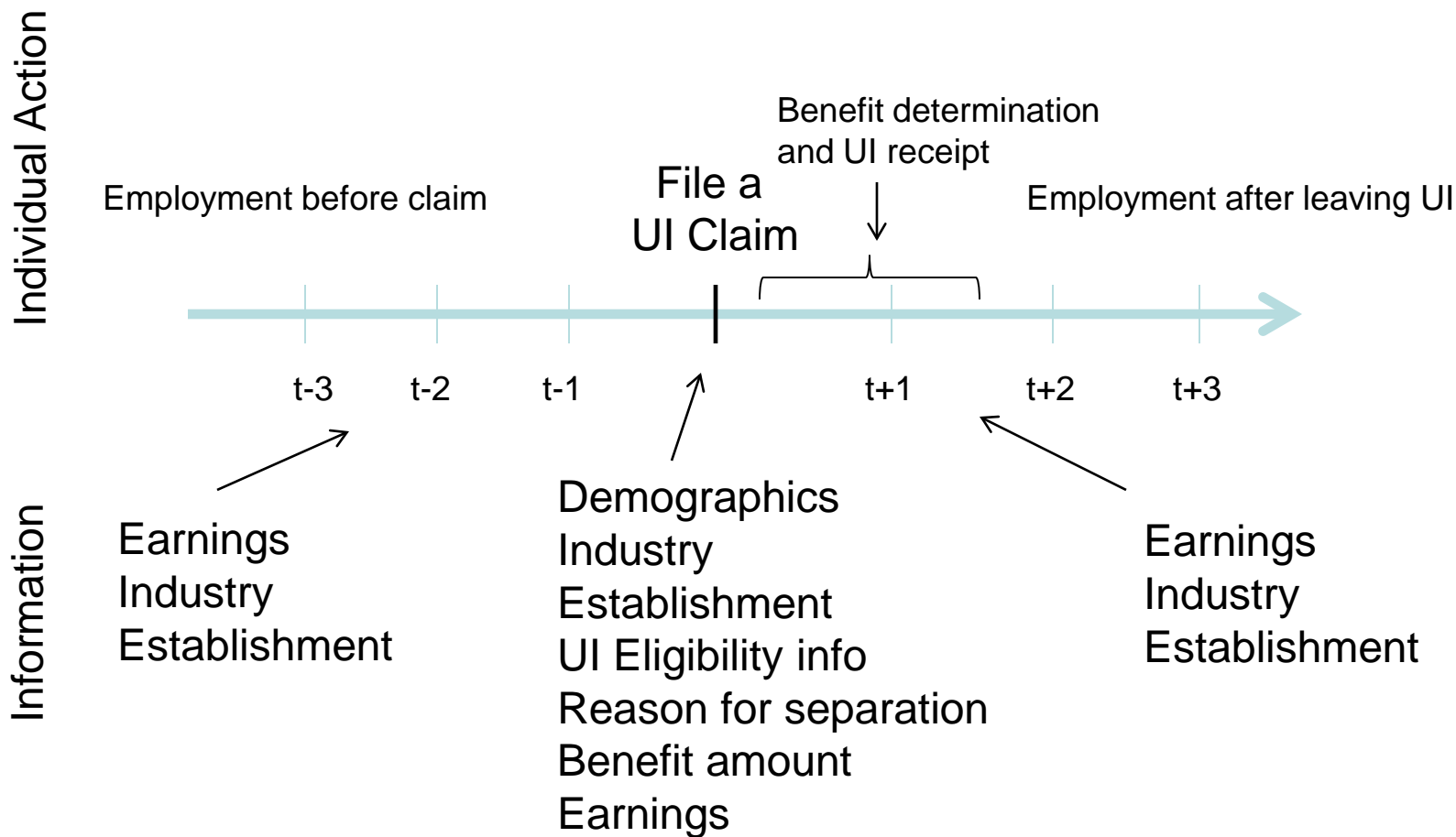


The average number of separations per quarter during 2005 to 2008 was 6,846 for workers over age 45 and 7,020 for workers under age 45.

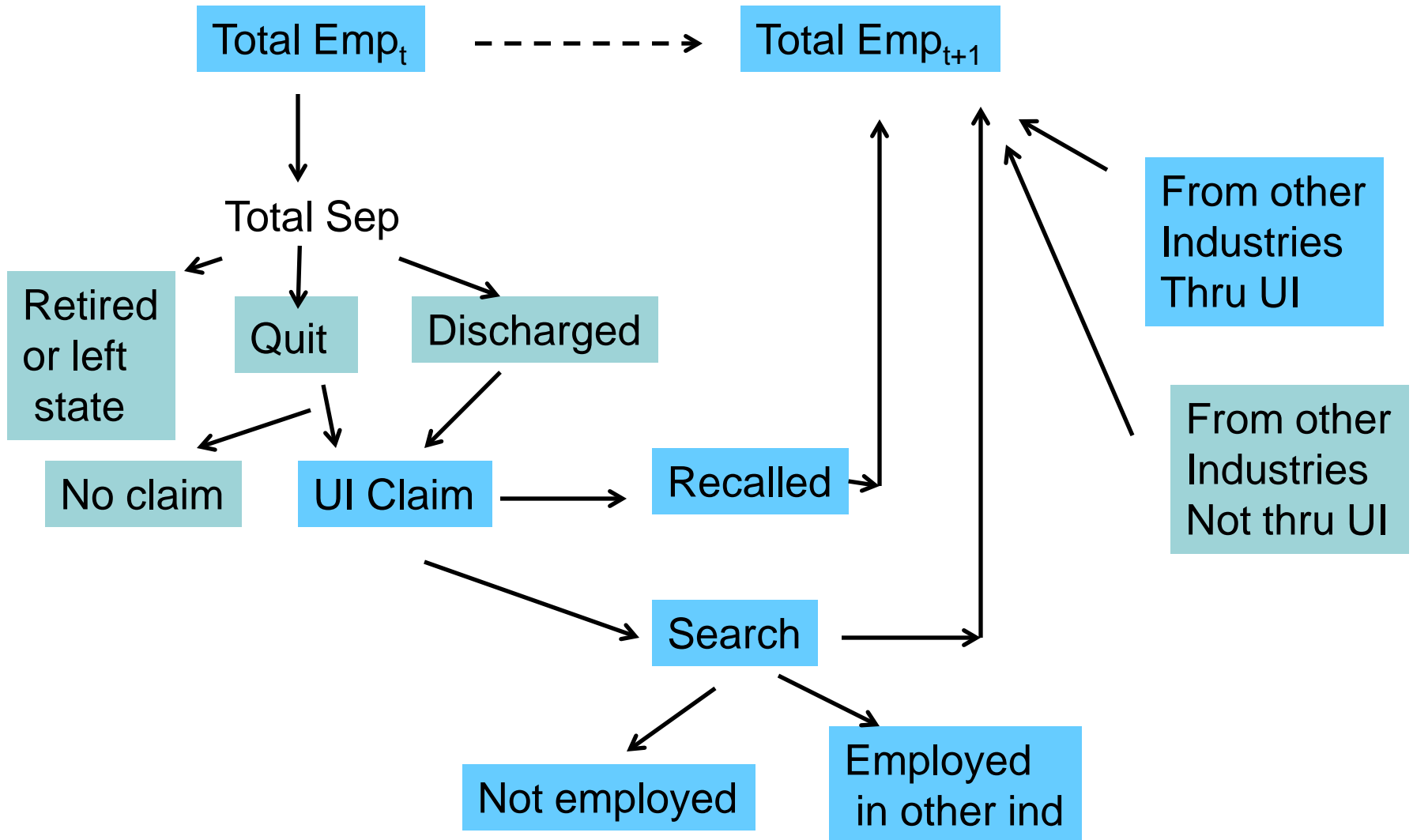
Where have displaced auto workers gone?

- Use UI wage records to follow auto workers and non-auto workers several years after they file a UI claim
 - Examine employment and earnings trends
- Employment: positive earnings in a quarter
 - Recall: Firm gives notice that worker will be rehired (actually reported by worker)
 - Reemployment: Employment in second quarter after filing ($t+2$)
 - Retention: employment in third and fourth quarters after filing conditional on being employed the second quarter after filing

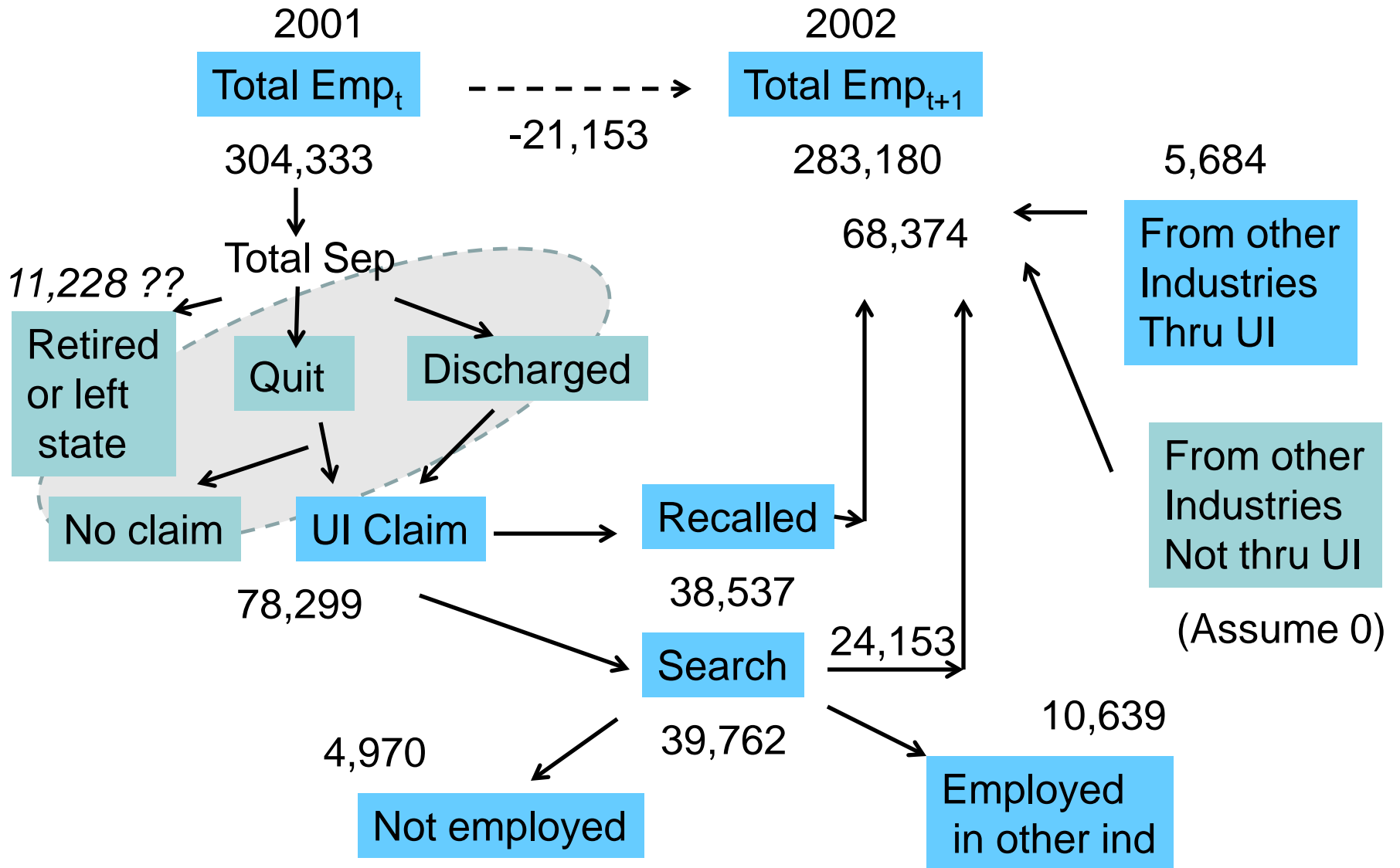
Construct a longitudinal record of each person in Michigan who files a UI claim



Transition Model of Employment



Large dynamics in the auto industry: 21,000 net jobs lost but at least 90,000 in flux.

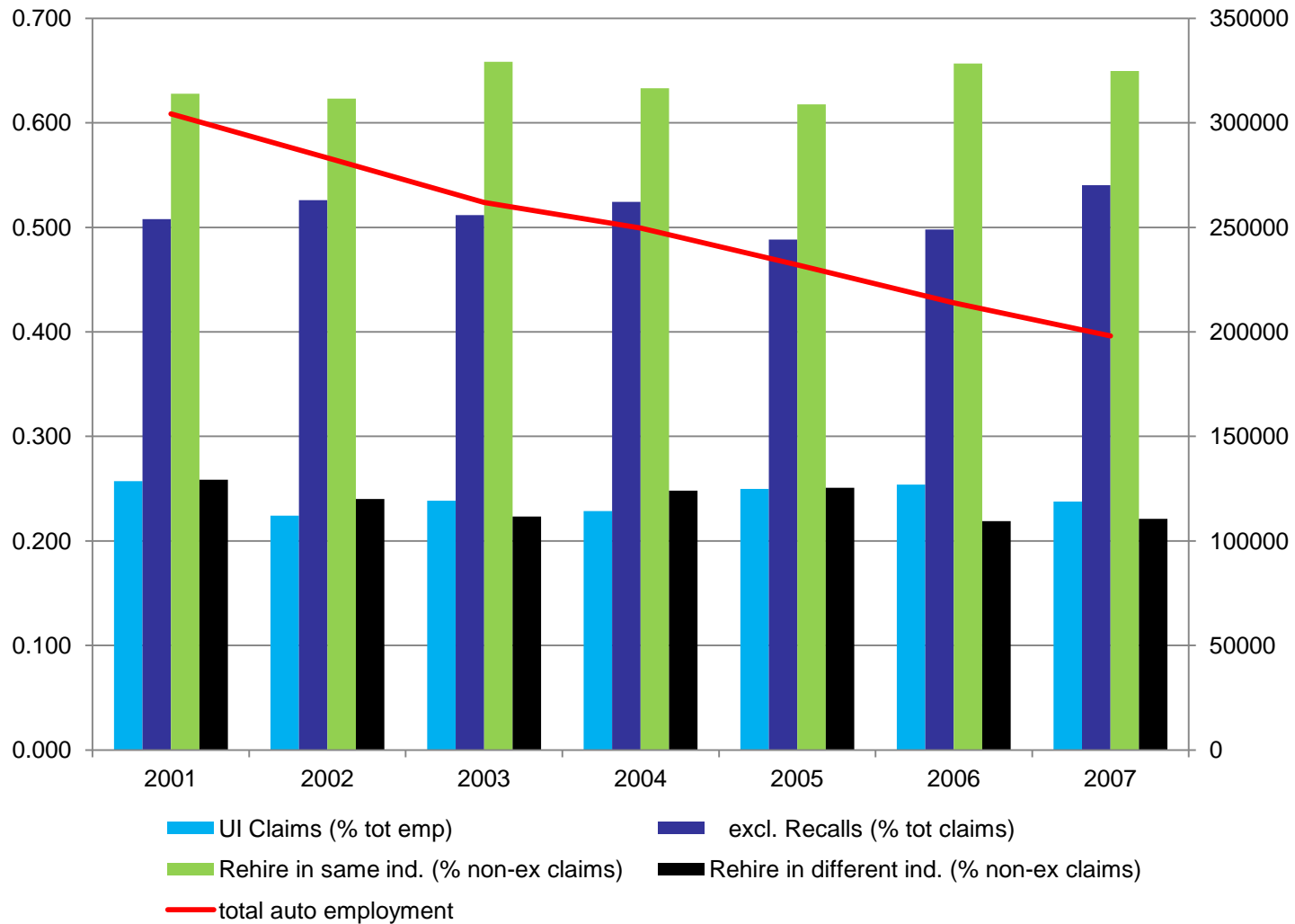


Michigan Auto Industry

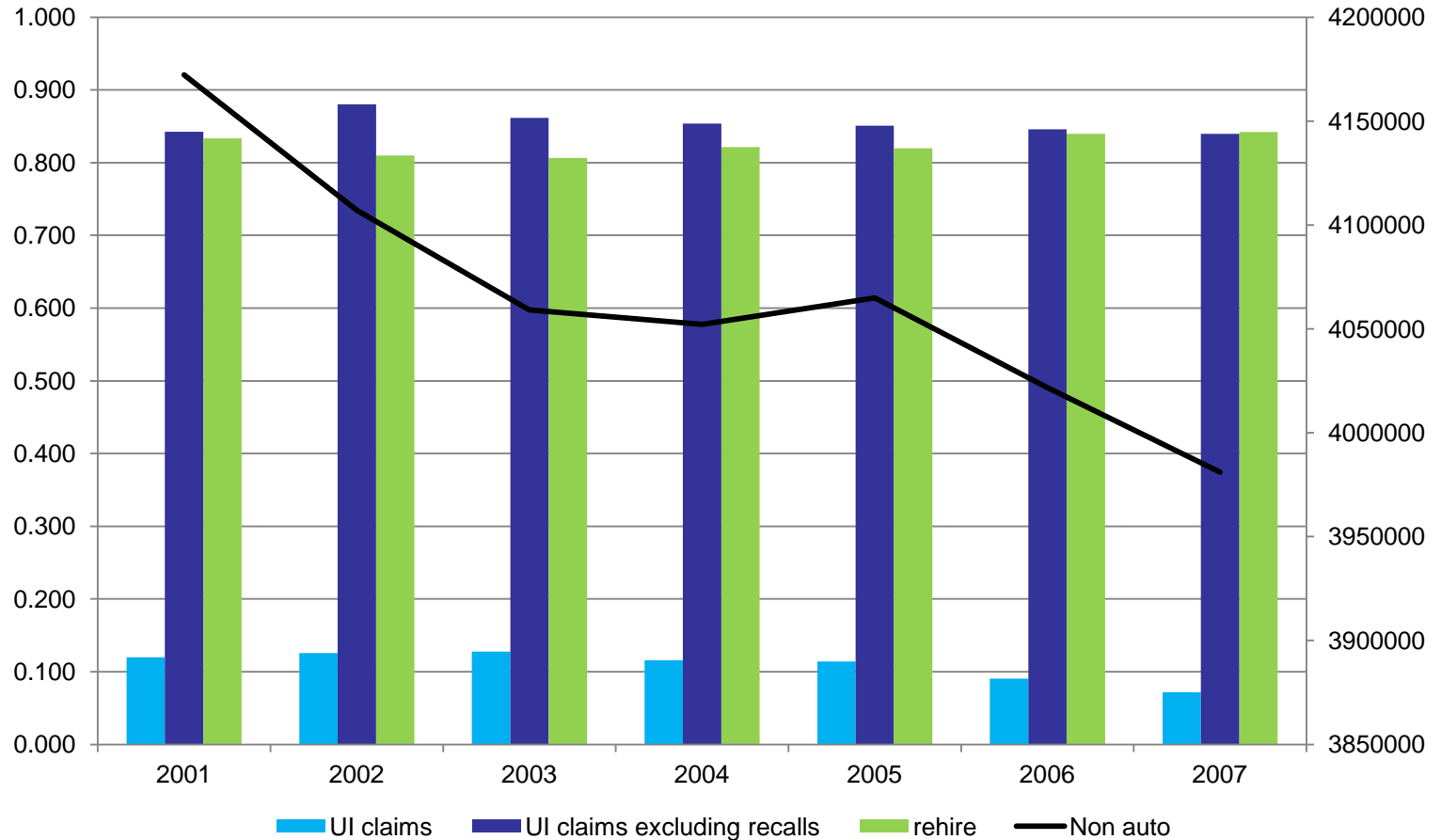
	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>
Total Employment	304333	283180	261958	249612	232083	213893	198068
UI Claims	78299	63494	62484	57057	57948	54328	47044
Search	39762	33396	31975	29916	28294	27045	25420
Rehire in same ind.	24967	20808	21047	18941	17473	17757	16510
recalled	38537	30098	30509	27141	29654	27283	21624
Rehire in different ind.	10281	8017	7138	7425	7096	5918	5621
come from other ind	5684	6538	5813	4904	4447	4415	2547
Total Return to Auto Industry	73785	58923	58694	53507	54223	50958	43755
UI Claims (% tot emp)	0.257	0.224	0.239	0.229	0.250	0.254	0.238
excl. Recalls (% tot claims)	0.508	0.526	0.512	0.524	0.488	0.498	0.540
Rehire in same ind. (% non-ex claims)	0.628	0.623	0.658	0.633	0.618	0.657	0.649
Rehire in different ind. (% non-ex claims)	0.259	0.240	0.223	0.248	0.251	0.219	0.221
Total Return/UI Claims	0.942	0.928	0.939	0.938	0.936	0.938	0.930

The UI system performs as it is intended—it provides a ready supply of workers as the industry worked through restructuring and its annual retooling. 18

Michigan Auto Employment, UI Claims, and Reemployment



Michigan Non-Auto Employment, UI Claims, and Reemployment



Seasonal Claims reflect Auto Industry Retooling

	Auto UI Claims			Non-auto UI Claims	
	Beta	t-stat		Beta	t-stat
Quarter 2	-302	-0.13		-37134	-2.85
Quarter 3	14581	6.21		-32211	-2.47
Quarter 4	2848	1.21		25842	1.98
Constant	10349	6.23		118428	12.84
R-sq	0.65			0.52	

	Auto Exempt Rate			Non-auto Exempt Rate	
	Beta	t-stat		Beta	t-stat
Quarter 2	-0.008	-0.13		-0.037	-0.43
Quarter 3	0.135	2.33		-0.038	-0.43
Quarter 4	0.059	1.02		0.088	0.97
Constant	0.71	17.34		0.516	8.27
R-sq	0.22			0.086	

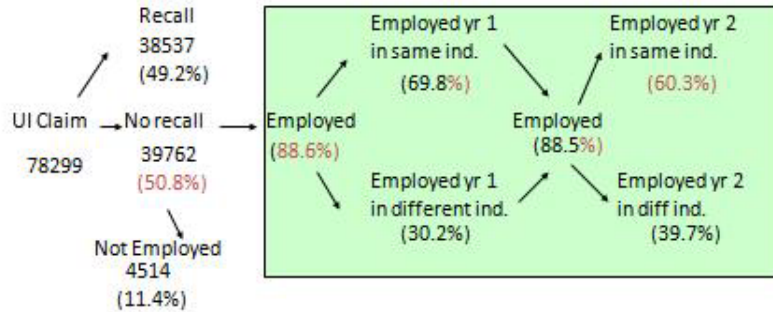
Where can displaced auto workers go?

What are the options for a worker displaced from motor vehicle or parts assembly jobs?

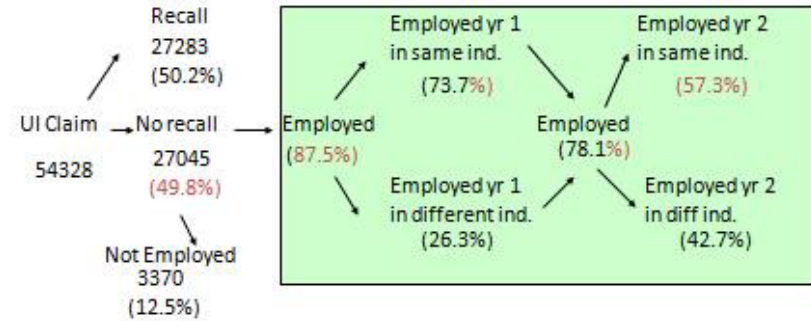
- Find the same job elsewhere in manufacturing.
- Look for a different job that utilizes existing skills.
- Upgrade skills to qualify for a different manufacturing job
- Upgrade skills to transition to a new occupation perhaps in a new industry—health care?
- Retire from the labor force.
- Most options require accepting a cut in pay, upgrading skills through additional training or formal education, or striking out on an entirely different career path

Michigan Auto

2001

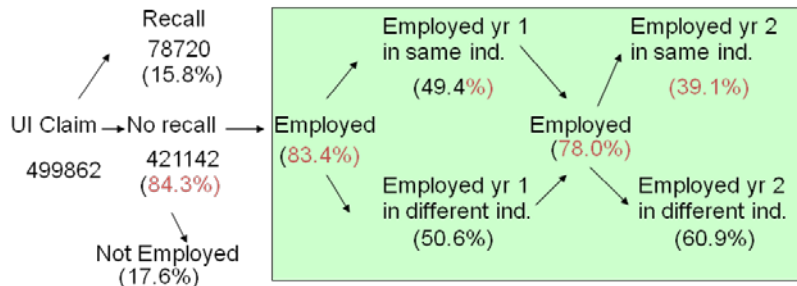


2006

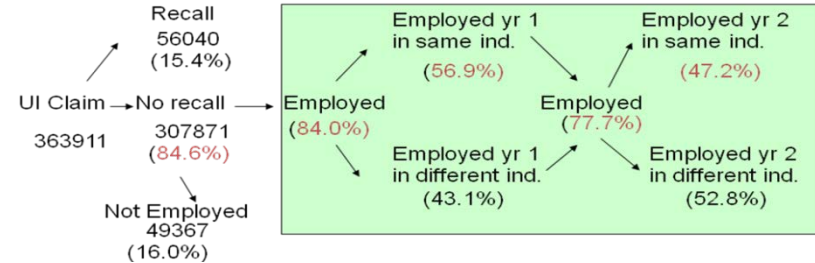


Michigan Non-Auto

2001



2006



Sectors where Displaced Auto Workers found Employment

71% return to auto sectors in 2001 and 76% in 2006

	NAICS	2001		2006	
		# UI Claims	# Remployed	# UI Claims	# Remployed
		39,762	35,248	27,045	23,675
Auto Parts manufacturers	3363	29,320	16,839	19,491	11,587
Auto Assembly manufacturers	3361	8,880	7,180	5,870	5,284
Motor Vehicle Body and Trailer Manufacturing	3362	1,562	948	1,684	886
Temporary employment agencies	5613		2,156		1,747
Plastics Product Manufacturing	3261		382		319
Architectural, Engineering, and Related Services	5413		375		275
Machine Shops; Turned Product	3327		274		116
Metalworking Machinery Manufacturing	3335		213		116
Limited-Service Eating Places	7222		207		75
Services to Buildings and Dwellings	5617		193		
Elementary and Secondary Schools	6111		160		
Department Stores	4521		156		96
Coating, Engraving, Heat Treating, and Allied Activities	3328		141		
Full-Service Restaurants	7221		137		87
Grocery Stores	4451		126		49
Motor Vehicle and Parts and Supplies Wholesalers	4231		110		
Foundation, Structure, and Building Contractors	2381		107		

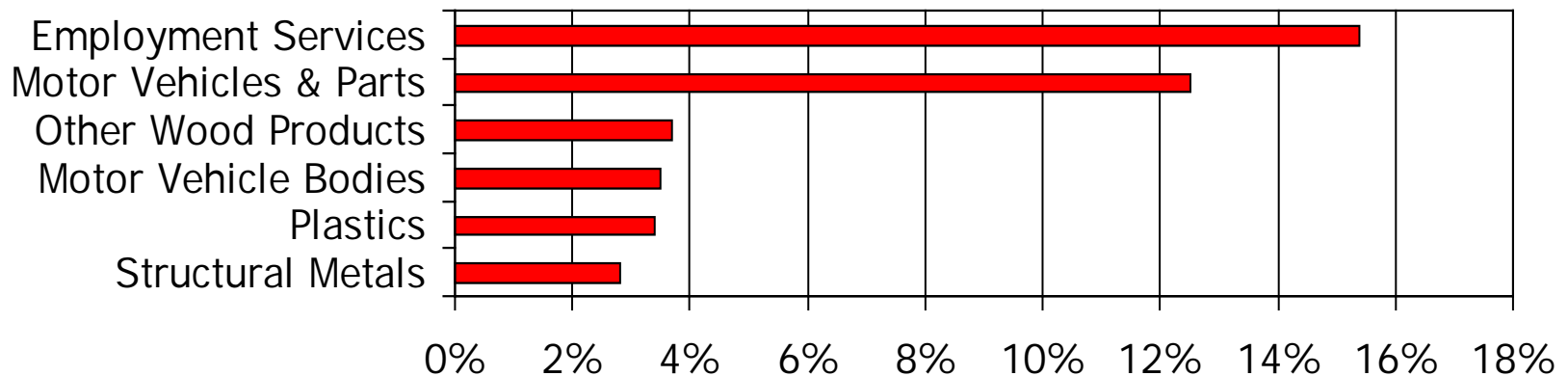
Sectors where Displaced Non-Auto Workers found Employment, 2001

	NAICS	UI Claims	Remployed	Ratio
Temporary Employment Agencies	5613	32,719	33,678	1.029
Building Equipment Contractors	2382	13,341	11,315	0.848
Metalworking Machinery Manufacturing	3335	11,516	6,406	0.556
Architectural, Engineering, and Related Services	5413	11,179	7,539	0.674
Services to Buildings and Dwellings	5617	10,513	10,126	0.963
Other Specialty Trade Contractors	2389	10,445	9,852	0.943
Plastics Product Manufacturing	3261	10,432	6,997	0.671
Foundation, Structure, and Building Contractors	2381	10,140	9,703	0.957
Limited-Service Eating Places	7222	6,654	6,308	0.948
Other Amusement and Recreation Industries	7139	6,520	6,358	0.975
Nonresidential Building Construction	2362	6,270	5,535	0.883
Building Finishing Contractors	2383	6,249	5,660	0.906
Full-Service Restaurants	7221	6,048	5,874	0.971
Office Furniture (including Fixtures) Manufacturing	3372	6,034	3,523	0.584

Temporary employment agencies employ more assembly workers than any other industry.

- Temporary employment services (5613) offer the most opportunities and can be an entre into new industries.

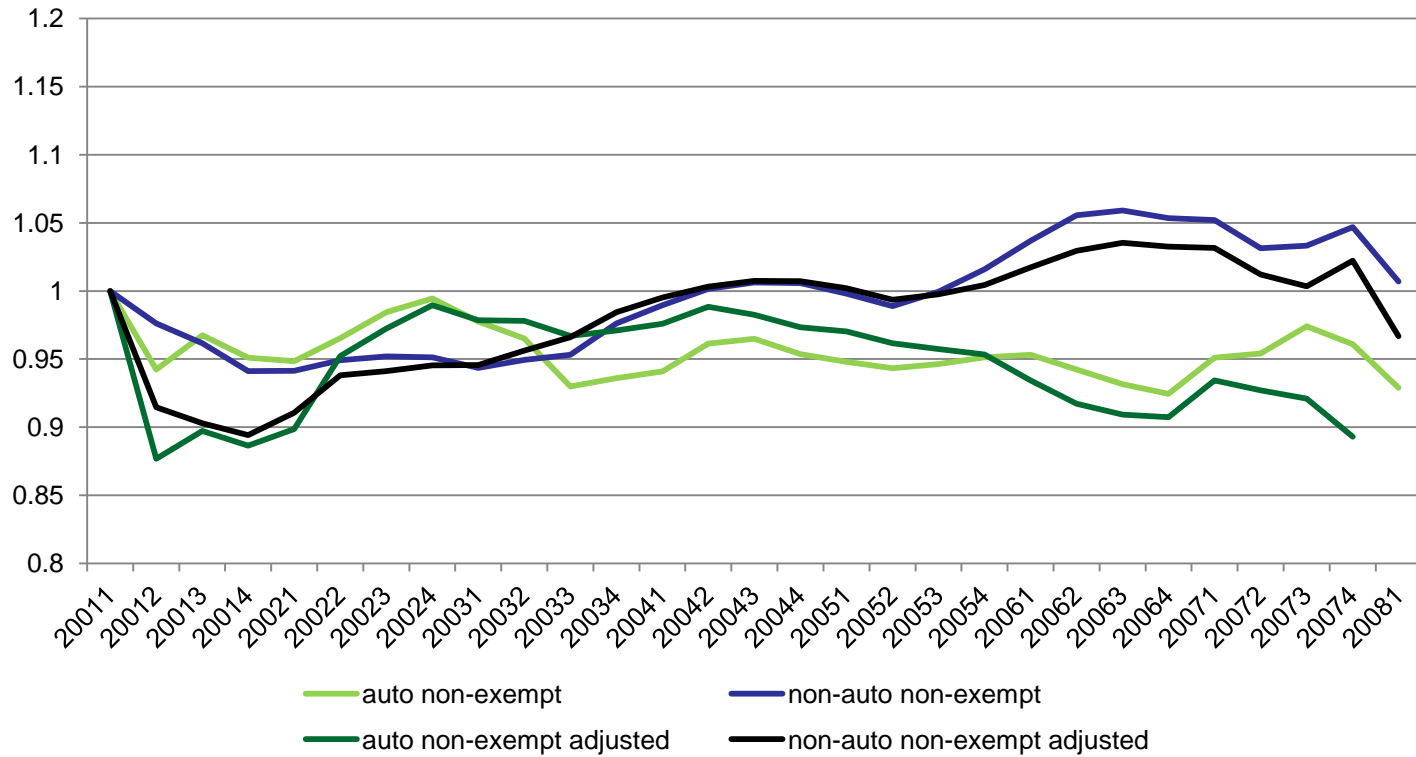
Industries by Share of Total Team Assembler Occupation Employment



Reemployment in Quarter 2 after Filing

Description	Auto		Non-Auto			Auto		Non-Auto	
	Est.	T-stat	Est.	T-stat		Est.	T-stat	Est.	T-stat
Intercept	0.426	52.03	0.437	140.79	Registered Alien	-0.018	-6.10	0.015	8.88
Age 24 or Less	0.007	3.05	0.044	54.28	Requested Tax Withholding (Provided Dependents info)	-0.041	-26.70	-0.018	-28.85
Age 45 or Older	-0.030	-26.24	-0.051	-89.87					
Gender, Male	-0.001	-0.68	-0.004	-6.27	Separation, Quit	-0.244	118.05	-0.159	224.61
Education, None	-0.040	-4.51	-0.114	-19.64					
Education, Less than High School	-0.022	-12.94	-0.028	-36.48	Separation, Fired/Discharged	-0.194	-63.51	-0.121	127.36
Education, Some College	-0.010	-8.04	-0.008	-11.97	Separation, Other	-0.306	-34.36	-0.168	-56.00
Education, Bachelor Degree	-0.049	-16.87	-0.037	-33.53	Job Tenure, 1-5 Years	-0.006	-3.58	-0.039	-62.60
Education, Advanced	-0.055	-14.89	-0.034	-25.34	Job Tenure, 5 Years or More	-0.004	-2.46	-0.019	-25.53
Race, Black	0.012	7.65	-0.006	-6.86	Employed at Filing	0.072	11.43	0.104	29.00
Race, Asian	0.018	4.89	-0.008	-3.11					
Race, Native Amer	-0.042	-5.25	-0.014	-5.05					
Race, Unknown	0.019	13.98	0.035	55.32					

Employment Rates



Factors Affecting Reemployment Rates of Non-Auto Workers

	Standardized Beta	T-statistic
Wages	-0.691	-5.23
% HS grads	0.089	0.61
% BA	0.483	3.51
Employment Change 2000-2006	0.029	0.30

Note: Unit of analysis is four-digit industry in Michigan in which the non-auto worker found employment

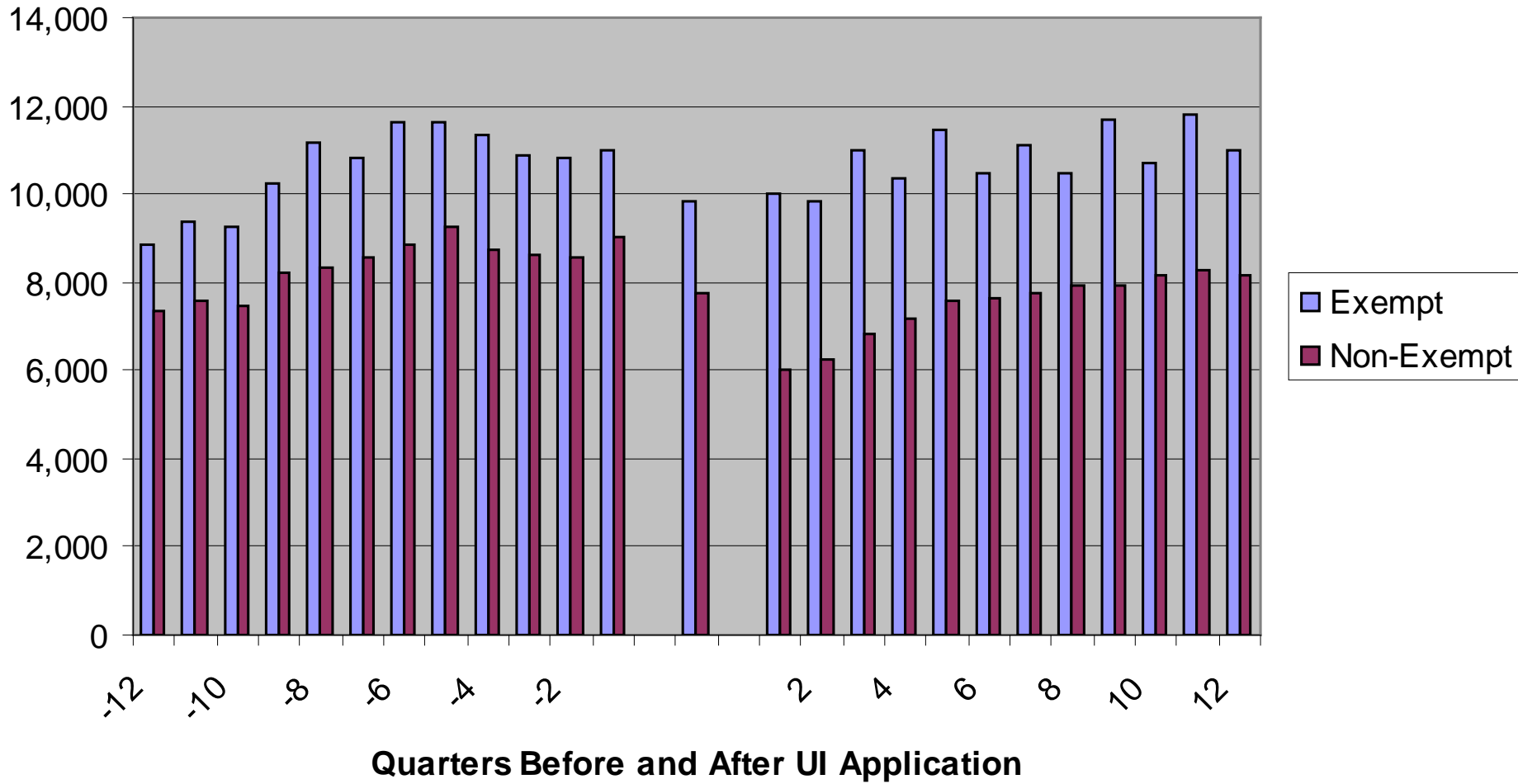
Share of UI Filers Returning to Same Industry

	Auto Exempt		Auto Non-exempt	
	Beta	t-stat	Beta	t-stat
Avg Earnings	0.00003	0.44	-0.00007	-0.86
Unemp Rate	0.021	1.70	-0.0067	-0.42
Labor Force	0.0005	0.32	0.002	0.85
Constant	0.64	2.80	0.63	2.10
R-sq	0.05		0.012	

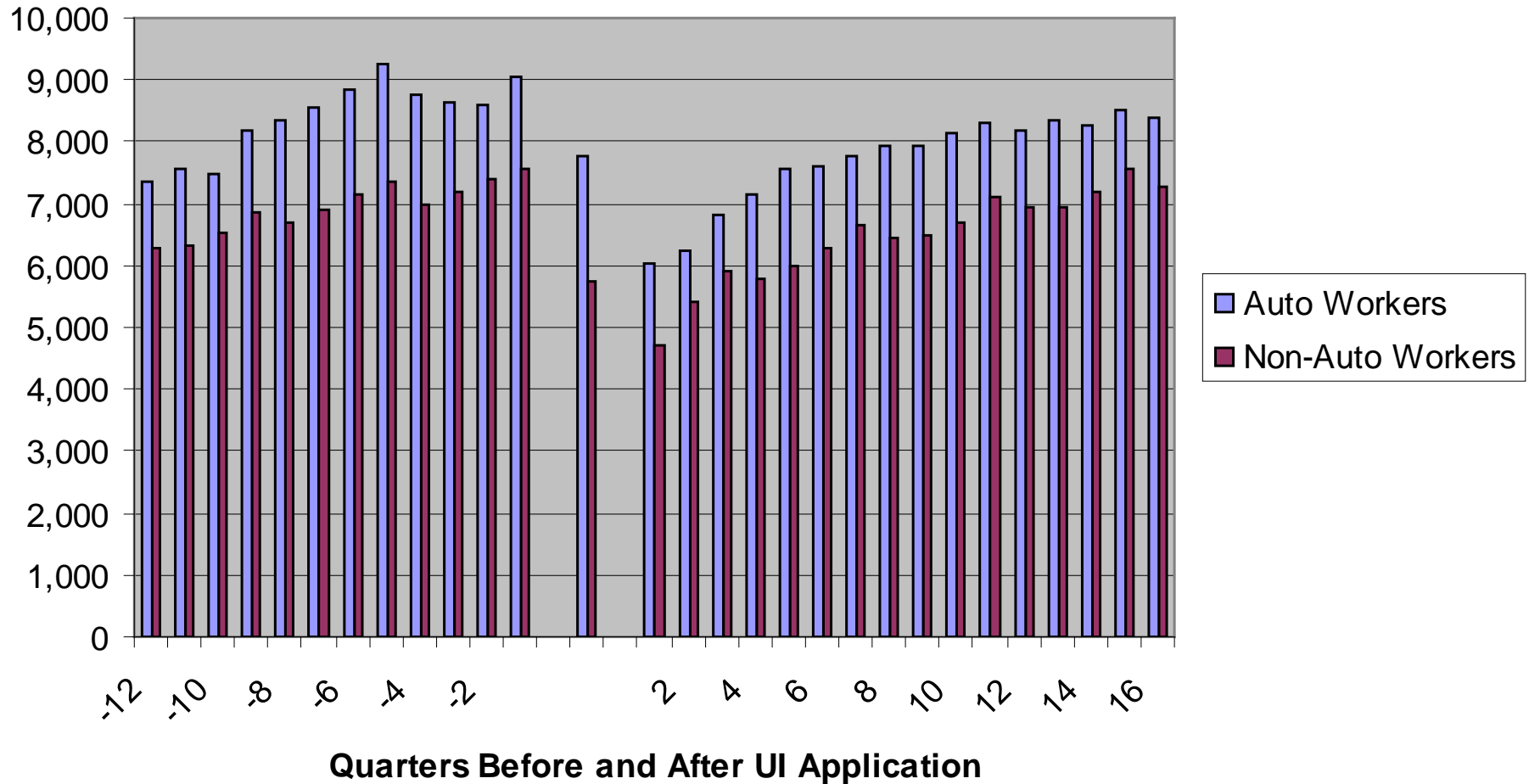
	Non-Auto Exempt		Non-Auto Non-exempt	
	Beta	t-stat	Beta	t-stat
Avg Earnings	-0.0006	-3.56	-0.0001	-4.94
Unemp Rate	-0.00002	-0.01	0.014	3.13
Labor Force	-0.0003	-0.61	0.0006	0.96
Constant	0.89	15.40	0.62	7.54
R-sq	0.32		0.51	

Note: Labor Force entered as number/10,000.

Quarterly Earnings of UI Applicants of Exempt and Non-Exempt Auto Workers



Quarterly Earnings of UI Applicants Not Exempt from Job Search



Pre and Post Filing Earnings

Pre-Post
Earnings Ratio
(full sample)

		Auto		Row Avg
		0	1	
Recall	0	0.811	0.834	0.823
	1	0.861	0.942	0.902
Col. Avg.		0.836	0.888	0.862

Pre-Post
Earnings Ratio
(if retain job=1)

		Auto		Row Avg
		0	1	
Recall	0	0.954	0.953	0.953
	1	0.986	1.01	0.998
Col. Avg.		0.970	0.982	0.976

Pre-Post
Earnings Ratio
(if retain job=0)

		Auto		Row Avg
		0	1	
Recall	0	0.667	0.715	0.691
	1	0.737	0.873	0.804
Col. Avg.		0.702	0.794	0.748

Summary

- Michigan has lost substantial auto jobs in past 12 years
- The loss reflects a structural change in the industry with downsizing and closing of establishments, e.g., in auto parts
- Still it is a dynamic industry with many workers being temporarily displaced and then rehired in the auto industry or in other industries
- The UI system by providing partial wage replacement provides a ready pool of workers for the auto industry
- The model suggests that annually at least 10,000 dropped out of the Michigan workforce due to retirement or leaving the state
 - Detroit offered early retirement options to 100,000 workers at up to \$140,000 per retiree

Summary

- Auto workers, particularly those in 3361, have higher reemployment and recall rates than non-auto workers
- Non-auto workers return to employment in sectors that offer lower than average salaries and higher than average percentage with BAs
- Earnings for auto workers nearly return to pre-layoff levels after a year or so if remain employed and auto workers regain wages after displaced more than non-auto workers, although retaining a job remains the most important factor.