

WHAT HAPPENS TO THE EMPLOYEES WHEN A BUSINESS CLOSES?¹

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INTRODUCTION

A national recession began in December 2007 and ended in June 2009. In this report we describe what happened after employees involuntarily lost their jobs because Maryland businesses closed between January 2004 and June 2009—including both pre-recession and recession closures. This focus avoids many interpretive pitfalls about employee and employer motives, options and decisions.

Four questions are answered here about impacts of the recent recession on employees that lost a job because of a business closure in Maryland:

- Were job losers during the recession less likely than their pre-recession counterparts to reappear as an employee of a Maryland business following the involuntary end of their former business affiliation?
- For those who did reappear, did it take longer for those that lost a job during the recession to return to work than the time taken for their pre-recession counterparts to return to work?
- Were those that lost a job after the recession began, and then reappeared, more likely than their pre-recession counterparts to now be affiliated with an employer in a different industry?
- What are the comparative pre-post earnings profiles for those losing their previous job because of a business closure during the recession or pre-recession time spans?

The policy relevance of our findings is enhanced by the comparison of business closure consequences during the recession and pre-recession years. We seek to learn practical lessons for future actions from what happened in Maryland during these different phases of the most recent business cycle.

We begin in the next section by describing the data used, the interpretive challenges faced and how we responded to these challenges. Findings are presented in a third section, and policy relevancy implications follow in a concluding section.

THE DATA

This report is based on two confidential administrative data sources covered by an Interagency Agreement between the Maryland Department of Labor, Licensing and Regulation (DLLR) and the University of Baltimore's Jacob France Institute (JFI)—an extract from the Quarterly Census of Employment and Wages (QCEW) file, and the State's Unemployment Insurance Wage Record file.

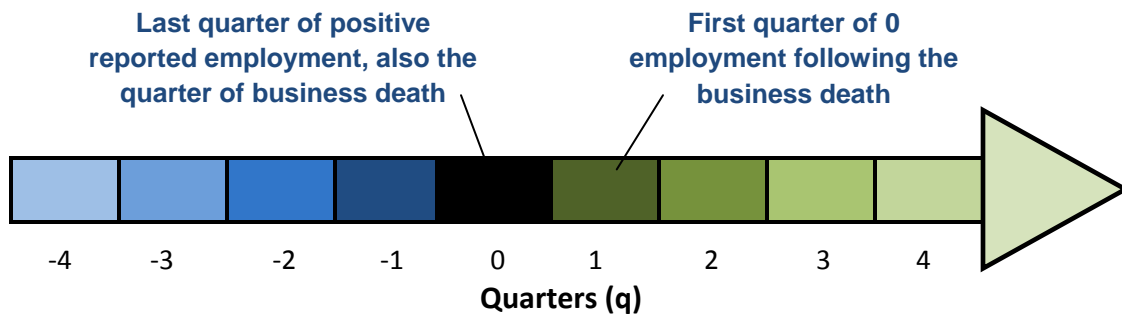
DLLR has maintained a principal-agent working relationship with JFI since 1991. DLLR retains sole and continuous ownership of all confidential administrative records provided to JFI for authorized research and evaluation studies. An annual scope of work under the continuing DLLR-JFI Interagency Agreement is negotiated each year, defining the approved studies that are to be conducted. The research underlying this report was authorized in the 2010-2011 Interagency Agreement.

Our goal in selecting among data sources and fields within each source was to begin with a subpopulation of all employees in Maryland that we could describe with confidence as including only employees that lost a job because of a business death. A Maryland business death is defined next. The affected employees are an important segment of all Maryland employees that involuntarily lost their livelihood during these years, but not all such circumstances are included.

A technical definition of a business death

Some business operations in Maryland are seasonal. We do not want to include these as having closed or ceased doing business in the State. So, following the official definition adopted by the Bureau of Labor Statistics, we define a business death as four consecutive quarters of no reported employees. The timing of the cessation of business operations (i.e., $q=0$, as shown in *Figure 1*) is then recorded as the last quarter of positive reported employment before the four consecutive quarters of no reported employees in the third month of each reference quarter. In this report, the "business death" therefore refers to the quarter when the business death occurred, i.e., the quarter labeled "0" in *Figure 1*. The quarter labeled "1" in turn refers to the first quarter following the business death. Adoption of this definition means that the most recent recorded business deaths in our analysis occurred in 2009 qtr 2. We had to look forward through 2010 qtr 2 to confirm that no employment was reported in the third month of four consecutive quarters.

FIGURE 1
Illustration of quarters before and after business death



The QCEW data source

Most employers conducting business in Maryland are required by the State's unemployment insurance law to transmit quarterly employment and employee earnings information to DLLR. The QCEW data series is derived from these quarterly employer reports.

We do not think it necessary to burden you, the reader, with the many legal nuances of business ownership as these affect whether and how employment and earnings information is reported to DLLR. However, a basic introduction is needed to provide a context for understanding the practical relevance of the findings presented in the next section.

Most Maryland businesses are single establishment enterprises, meaning that there is only one base of operations. In most cases employees of these businesses work at a single location. However, in some cases, including many sales representatives and trades people, some employees can best be described as working from the central location.

Whether working at or from a central worksite, each individual defined for DLLR reporting purposes as an employee working in Maryland for a single establishment business will be reported under one Maryland Employer UI Tax Account number. Therefore, if such a business ceases operations in Maryland the employees at that time can be described as having involuntarily lost their job because of a business death. We can then proceed to look for information about these terminated employees' next employment affiliation in Maryland.

A second type of business has been included in our analysis with similar confidence that employees at the time of a business death have involuntarily lost their job. These businesses had multiple locations in Maryland, but each establishment was

reported in a way that enabled us to conclude that all had ceased operations in the same year/quarter.

The UI Wage Record data source

Employers that are required to deliver quarterly employment and earnings information to DLLR include in their report the dollar amount paid to each covered employee during the three-month reference period. Pairings of business and employee identifiers in these reports allowed us to determine whether each former employee of a business that had ceased operations in Maryland between 2004 qtr 1 and 2009 qtr 2 subsequently reappeared in the Maryland UI Wage Record file by the end of 2010 qtr 2.

Coverage that is deferred for future research

We noted earlier that not all Maryland businesses that submit quarterly reports to DLLR are included in our analysis. The most important policy relevant omission is the large multi-establishment businesses that may periodically close one or more, but not all, of their locations in Maryland. While the employees of closed establishments have involuntarily lost their employment at this location, we do not know whether they have transfer rights or privileges to move to another Maryland establishment owned by the same business. Examples of such circumstances may include some grocery store chains, retail operations and franchises.

The DLLR QCEW data file includes information about Maryland businesses that change ownership but continue to conduct business operations. This transfer of ownership is referred to as a predecessor-successor relationship.

When a change of ownership occurs we do not know whether employees at the time of transfer have an opportunity to retain their jobs. Therefore, known predecessor-successor changes of ownership between 2004 qtr 1 and 2010 qtr 2 were omitted from our analysis and only employees who lost jobs due to their previous employer/business deaths without reported successors are included in this report.

A summary of the DLLR data sources used for our analysis

We used only confidential administrative data sources—the QCEW extract and UI Wage Records—made available through the 2010-2011 DLLR-JFI Interagency Agreement that authorized this study. No disclosure of an individual business or employee is permitted.

To ensure that only former employees that involuntarily lost their job because of a Maryland business death would be included in our analysis we restricted the pool of closed businesses to single establishment enterprises and those multi-establishment businesses that were known to have closed all operations in Maryland.

The definition of a business death requires four consecutive quarters with no reported employees in the third month of the quarter. Known cases of a predecessor-successor change of ownership are excluded from our analysis.

We turn next to our findings, presented in the following figures with accompanying interpretive narrative. Policy relevant conclusions that we draw from these findings then appear in a concluding section.

FINDINGS

We begin our presentation of findings in *Figure 2* with a ‘tree’ showing the recorded employment destinations of employees that involuntarily lost their job through a Maryland business death between 2004 qtr 1 and 2009 qtr 2.

A total of 55,340 Maryland business deaths were recorded during the combined five and a half pre-recession and recession years covered (see Appendix 2 tabulation). A total of 238,389 employees involuntarily lost their job when these businesses closed. Of these 238,389 involuntary job losers, 126,023 (52.9 percent) had reappeared in the Maryland UI Wage Record database within one year following their defined involuntary job loss.

The one year cut-off following each former employee’s reference year/quarter of involuntary job loss is an artifact of data availability—job losses in 2009 qtr 2 required UI Wage Record availability through 2010 qtr 2. While longer time coverage is available for earlier job losses, we chose to adopt a common timeframe for answering the questions posed. Future updates are planned.

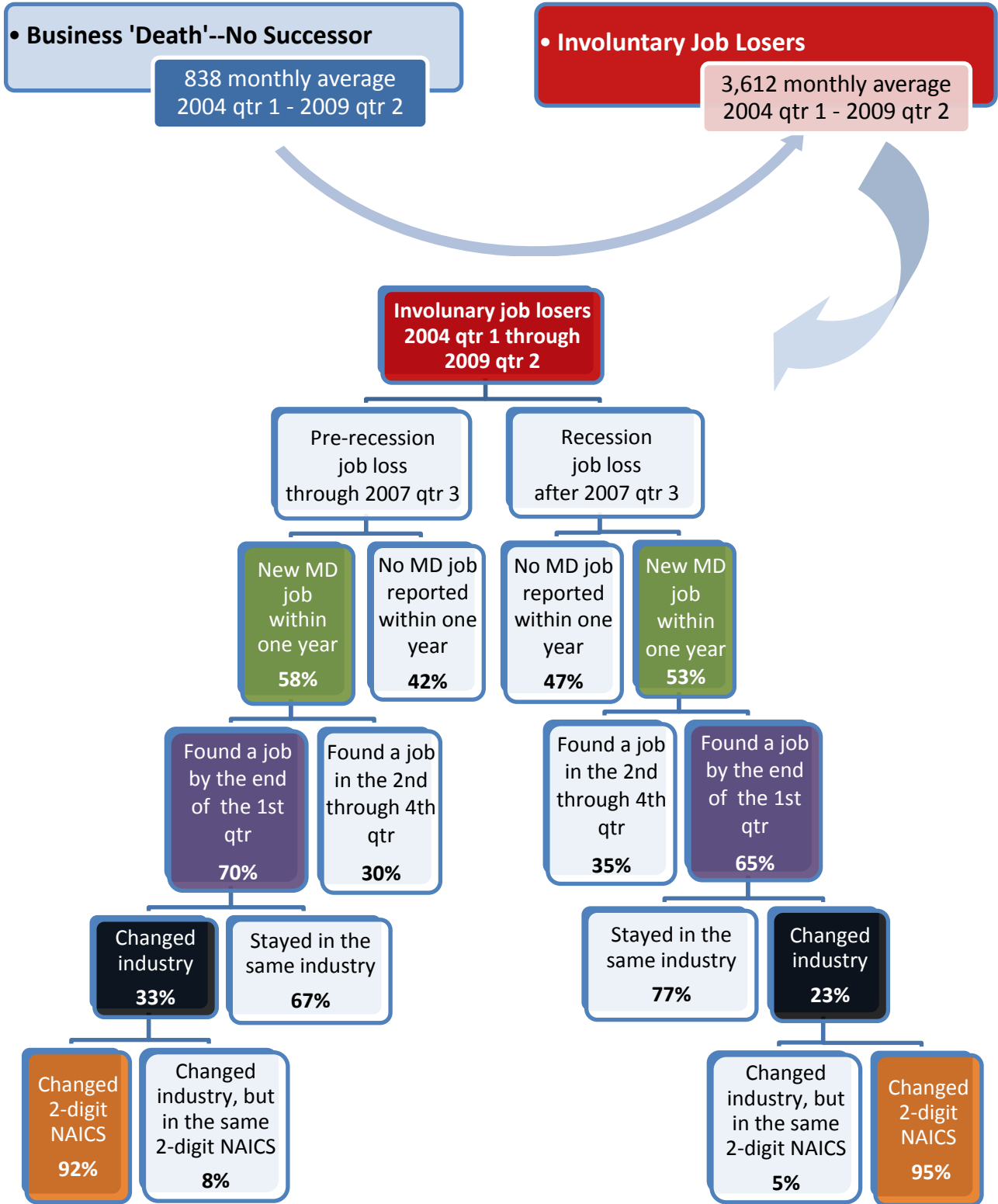
The remainder of this report concentrates on the 52.9 percent of involuntary job losers that are known to have accepted a new job in Maryland within one year. We will report findings about known destinations of the other 47.1 percent of involuntary job losers, and updates about the 52.9 percent subgroup, in future reports.

The ‘tree’ shown in *Figure 2* separates the pre-recession and recession time spans. Pre-recession includes 2004 qtr 1 through 2007 qtr 3 and the recession time coverage is 2007 qtr 4 through 2009 qtr 2.

A monthly average of 838 Maryland business deaths, defined as no reported employees over four consecutive quarters, appear in the DLLR QCEW extract database over the full 2004-2009 time span. During these years a monthly average of 3,612 employees involuntarily lost their job because a Maryland business establishment ceased operations. The quarterly business death and employee job loss figures appear in Appendix 2.

FIGURE 2

Flow of employees affected by business death before and during the Recession



We turn next to our answers for three of the four questions posed in the introduction to this report. The comparative earnings profiles appear in *Figure 6*, so discussion of this topic is deferred until *Figures 3* through *5* have been presented and discussed.

A pre-recession recession comparison of reappearance in the Maryland UI wage record database

Figure 2 shows that 58 percent of involuntary job losers because of a Maryland business death during the pre-recession time span reappeared as a covered employee of a Maryland business within the next year, while 53 percent of their counterparts that lost their job because of a business death after the recession began in 2007 qtr 4 were reported as employed by a Maryland business within the next year.

A pre-recession recession comparison of the timing of reported reemployment

Figure 2 shows that 70 percent of the pre-recession involuntary job losers that had found jobs within one year of the defined reference business death quarter—41 percent of all defined involuntary job losers in this cohort—reappeared in the Maryland UI Wage Record database within one quarter, while only 65 percent of the recession job losers that had reappeared within one year—34 percent of those defined as involuntary job losers in this cohort—did so this soon.

A pre-recession recession comparison of change-of-industry affiliation

Figure 2 shows that 33 percent of the pre-recession involuntary job losers reappeared within one quarter of the defined reference business ‘death’ with a Maryland business affiliation classified in a different industry than the classification of the former business death affiliation, while 23 percent of the job losers after the recession began reappeared with a Maryland business classified in a different industry.

Beyond the *Figure 2* ‘tree’

Figure 3 shows the full 2004 qtr 1 through 2009 qtr 2 detail of Maryland business deaths and the employees that involuntarily lost their jobs because of these closures. *Figure 4* shows the incidence (in percentages) of reported reemployment in Maryland within one year of the defined reference business death, the share that reported reemployment in Maryland within one quarter of the defined reference business death, and the share of change-of-industry affiliations found.

The vertical dotted line between 2007 qtr 3 and qtr 4 in *Figure 3* and *Figure 4* defines the boundary between pre-recession and recession time coverage. The light blue line shows the number of quarterly Maryland business deaths, as previously defined, using the right axis numbers.

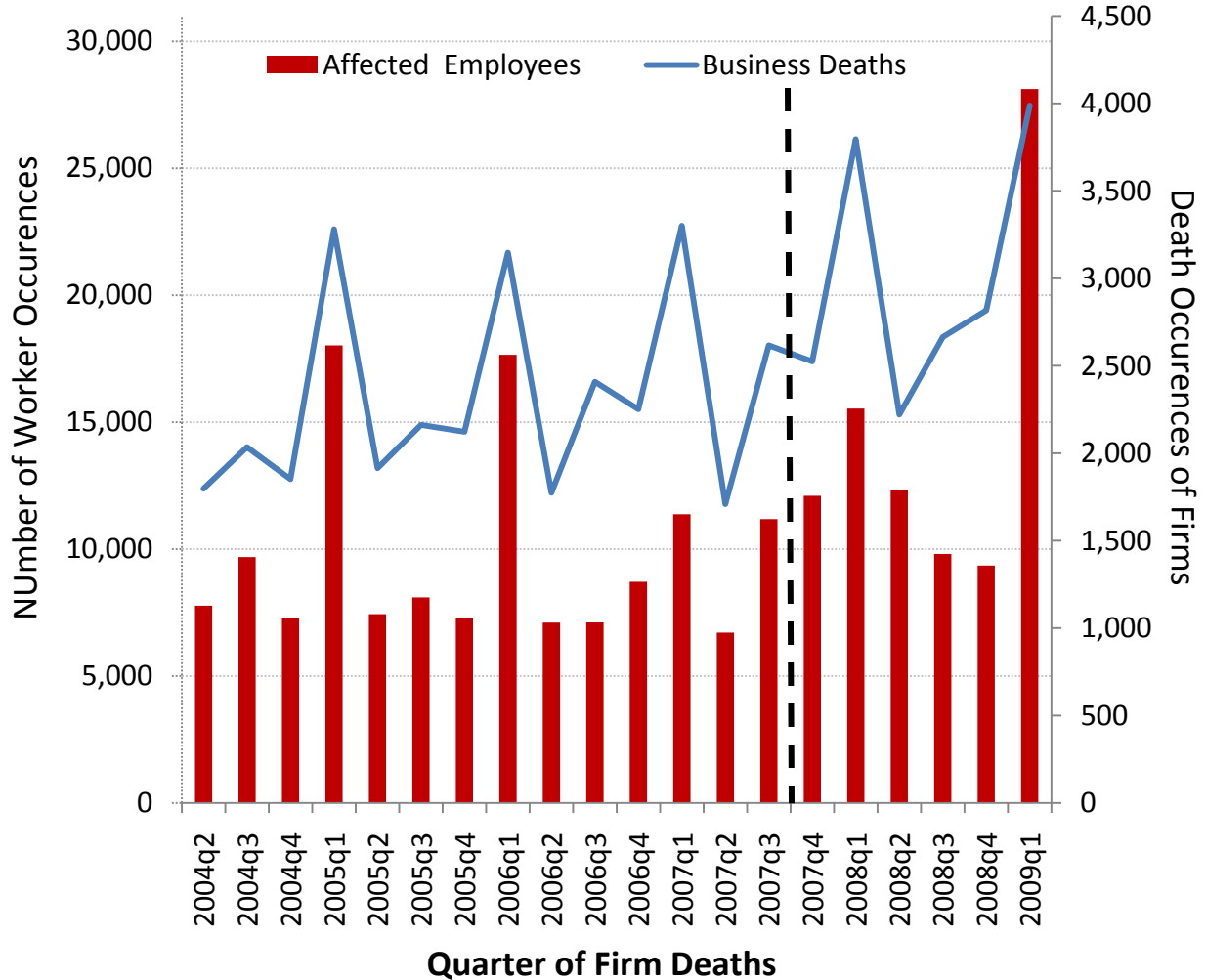
Each point of the six recession year/qtr on the **light blue** line is higher than any of its pre-recession counterparts—there were more Maryland business deaths beginning in 2007 qtr 4 than in any of the year/qtr observations between 2004 qtr 1 and 2007 qtr 3.

Each of the **red** vertical bars in *Figure 3* shows the number of reported employees impacted by the business deaths that occurred in each year/qtr during the observation time span. Here, the left axis numbers show the count of quarterly involuntary job losers.

The quarter-to-quarter pattern of involuntary job losses is not as consistent as the pattern of business deaths during either the pre-recession or recession time spans. This difference in patterns signals the complexity of the business death phenomenon and the challenge policy decision-makers face in deciding whether, when and how to respond.

FIGURE 3

Maryland business death events and affected employees within one year following job loss by year/quarter of business death



Note to Figure 3:

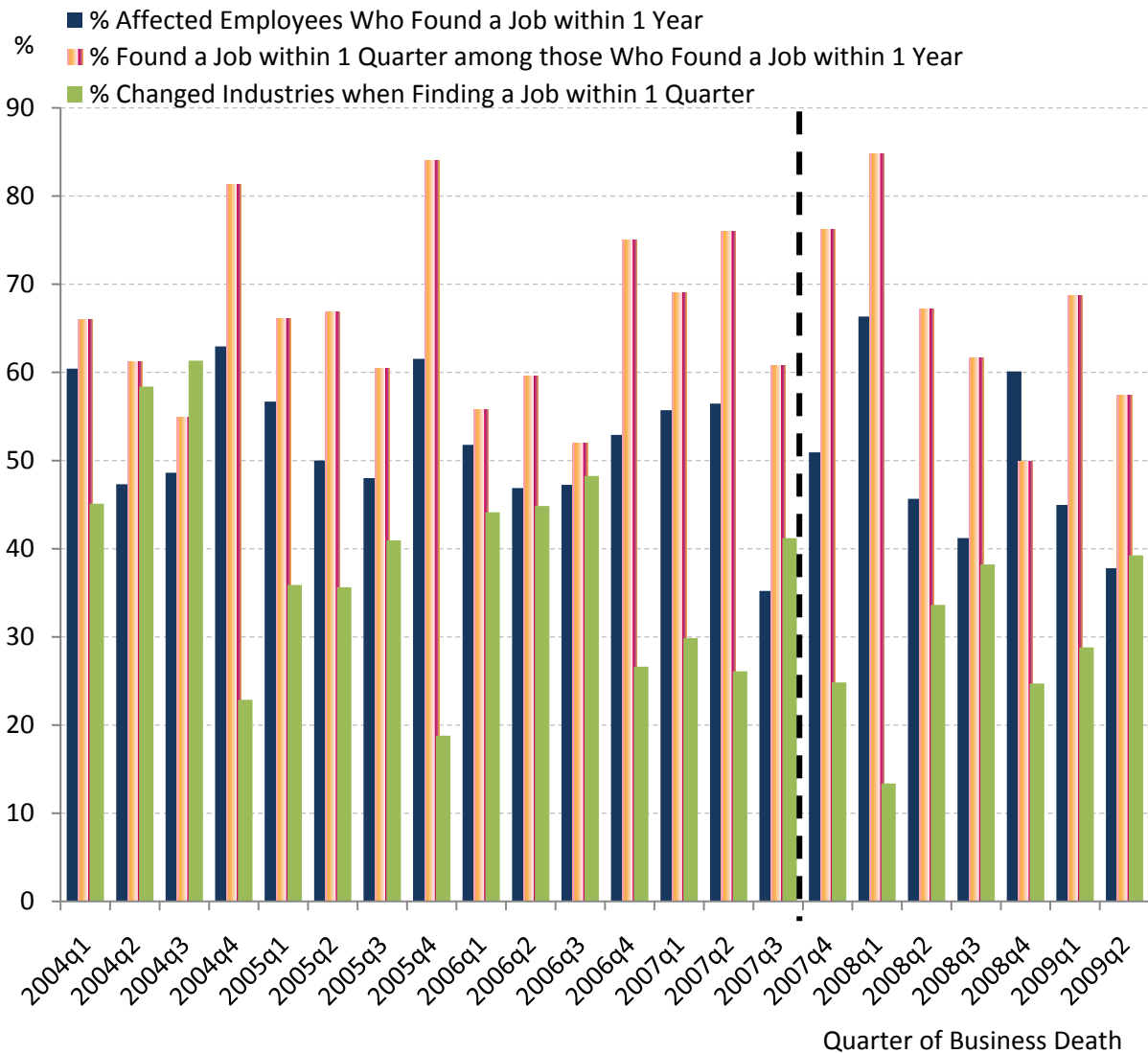
All defined counts (vertical bars) are assigned to the appropriate quarter of business 'death'.

Consistent with *Figure 2*, *Figure 4* shows that an overall lower share of affected involuntary job losers found a job within a year of the defined reference business death in the recession, compared to that of the business death before the recession. For the quarter-to-quarter pattern before the recession, business deaths in the fourth quarter and then the first quarter of a year have the largest share of those involuntary job losers who found a job within one year. This quarter-to-quarter pattern changed for business death in the recession.

Among those who found a job within one year of defined business death, the percentage that found a job within one quarter does not necessarily drop for after the recession started. However, among those who found a job within one quarter, the percentage that changed industries declined for business death in the recession.

FIGURE 4

Percentages of Maryland involuntary job losers that found a job within one quarter and one year, and changed industry affiliation within one quarter of a defined business death, by year/quarter of business death

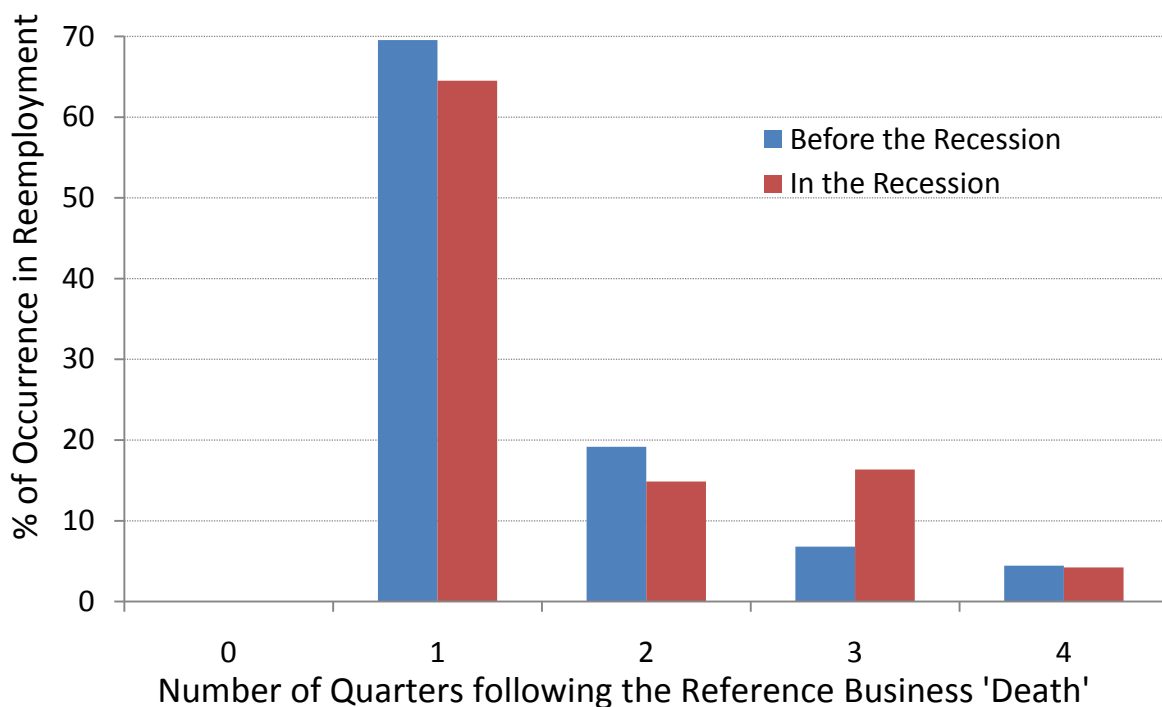


A comparison of pre-recession and recession length of time for involuntary job losers to reappear as an employee of a Maryland business

Figure 5 graphs the percentages of pre-recession and recession involuntary job losers that reappeared in the Maryland UI Wage Record database within a defined number of quarters following their former employer's business death—the blue bars are for the pre-recession job losers and the red bars are for the recession job losers.

There is little difference in the overall trend for the length of time it took members of the two subgroups to reestablish themselves as an employee of a Maryland business; but some policy relevant differences were found. Overall, most reemployment occurred within two quarters of both pre-recession and recession defined business death. However, involuntary job losers tended to reestablish themselves faster during the first two quarters following before the recession than during the recession. It is not until the third quarter after business death that the reemployment for the recession cohort caught up with the pre-recession cohort. Please note that our administrative data sources do not contain data fields needed to address such topics as full- or part-time employment or job duties.

FIGURE 5
Timing for former employees to find a new job
within one year of their previous business affiliation death



Note for Figure 5:

At $q=0$, the quarter of business death, minimal reemployment also occurred that is not very evident in Figure 5.

A comparison of pre-job loss and subsequent earnings for involuntary job losers before and after the recession began in 2007 qtr 4

Figure 6 shows the job losers' real quarterly earnings (2010 dollar value) profiles over two years—a year before the involuntary loss of job and a year following the business death that caused the job loss.

The left panel of *Figure 6* is for the pre-recession time span, and the right panel is for business deaths between 2007 qtr 4 and 2009 qtr 2—the recession period. We plan to update beyond 2009 qtr 2 to cover the economic recovery period in a future report in this series.

The vertical line in each panel defines the reference quarter of each business death event. So, for each involuntary job loss event represented in *Figure 6* we extracted two years of Maryland UI Wage Record earnings data, including only those that did reappear at some time after the reference job loss.

Only former employees with reported earnings in the fourth quarter before and fourth quarter after each business death reference year/quarter are included. We wanted to ensure that all former employees included in *Figure 6* are known to have been reported as employed in Maryland at the beginning and end of our chosen observation span—one year prior to and one year following a reference business death.

We transformed the nominal earnings amounts into a common real value because the reference time spans differ. The pre-recession and recession cohort earnings path shapes appear similar at first—spanning the two years that bracket the reference business death year/quarter. The median reported earnings amount trough occurred in the quarter of business death for both the pre-recession and recession cohorts. It took at least two quarters after the business death event to recover the earnings.

However, one important difference is seen in the timing of the observed peak median earnings level; this occurred in the second quarter following the reference business death year/quarter for the pre-recession cohort, but a quarter later for the recession cohort. The post-death median earnings were recovered more slowly for the recession cohort than for the pre-recession cohort.

The median level of reported earnings for the recession cohort is higher than that for the pre-recession cohort. Industry composition changes over time contributed to this median earnings level difference. Also, since the calculations for *Figure 6* only include former employees with reported earnings in the fourth quarter both before and after each business death reference year/quarter, job losers who did not find a job by the fourth quarter following business death event were not included. A recession often delays reemployment, which could contribute to the median earning difference.

FIGURE 6

Job losers' quarterly real earnings before and after causal business death events



Notes for Figure 6:

1. All reported quarterly earnings values were converted to 2010 constant dollar value following the BLS CPI inflation calculator retrievable at the World Wide Web <http://data.bls.gov/cgi-bin/cpicalc.pl>.
2. Employees with reported earnings after the referenced business death from the same business were excluded, but employees that had reported earnings by other businesses before the referenced business death were included.
3. Only former employees with reported earnings in the fourth quarter before and the fourth quarter after each business death reference year/quarter (i.e., $q=-4$ and $q=4$) are included.

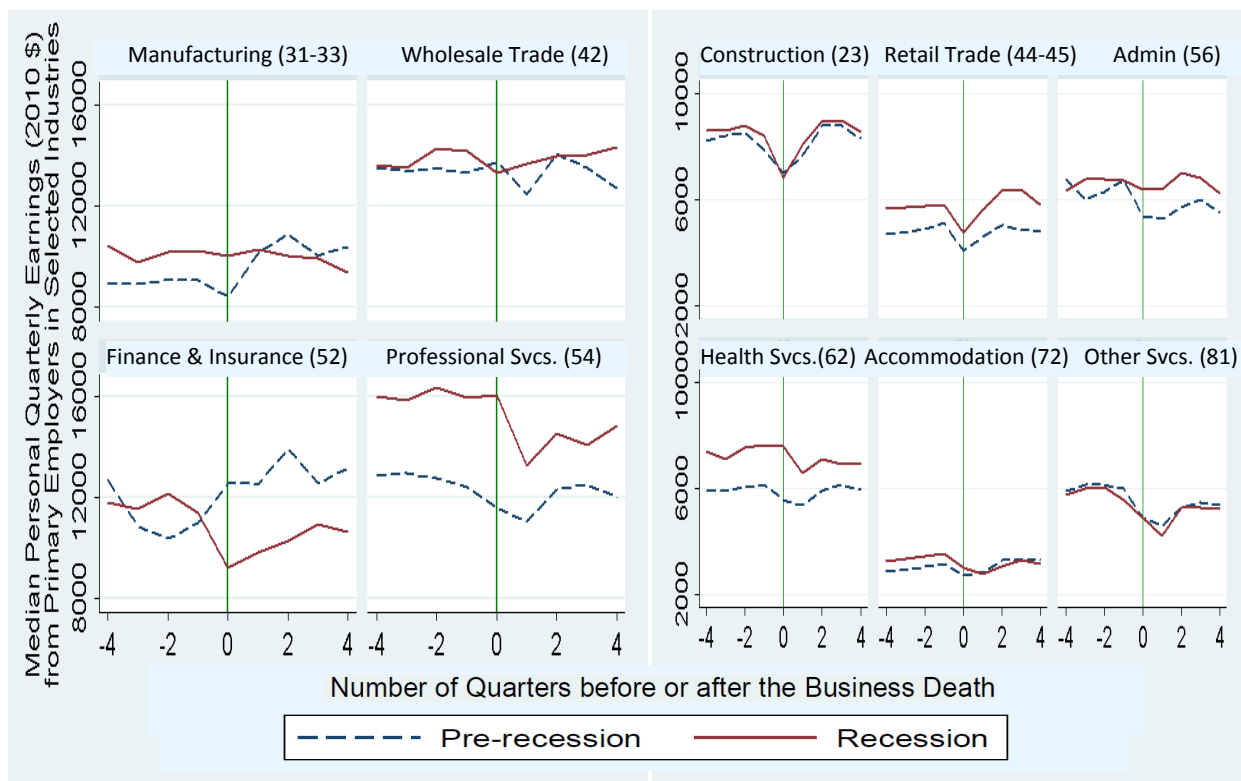
Figure 7 contrasts the pre-recession and recession cohort earnings in selected industries. Those industries shown in the left four panels are the major industries that have relatively higher earnings levels; major industries that have relatively lower earnings levels are shown in the right six panels, with a different scale from those in the left four panels.

The median earnings for the recession cohort are clearly higher than that for the pre-recession cohort in *Professional Services (54)*, *Health Services (62)*, *Retail Trade (44-45)*, and *Administrative Services (56)*. Median earnings in *Construction (23)* and *Accommodation (72)* are slightly higher for the recession cohort; median earnings in *Other Services (81)* are slightly lower for the recession cohort.

This figure also shows the impact of the recession. While the pre-recession cohorts in those industries had a clear earnings recovery after the business death event, the cohorts had either a much slower earnings recovery or an unclear earnings recovery for all the four major higher-earning industries and for *Health Services (62)* and *Accommodation (72)*. Earnings recovery for the rest four major industries—*Construction (23)*, *Retail Trade (44-45)*, *Administrative Services (56)*, and *Other Services (81)*—did not show the recession impact.

FIGURE 7

Job losers' quarterly real earnings before and after causal business death events by selected industries



Notes for Figure 7:

1. This figure follows the format of Figure 6, but breaks down into 2-digit NAICS coded industry level.
2. Only those industries with close to or above 1000 businesses or have the highest shares of workers are graphed.

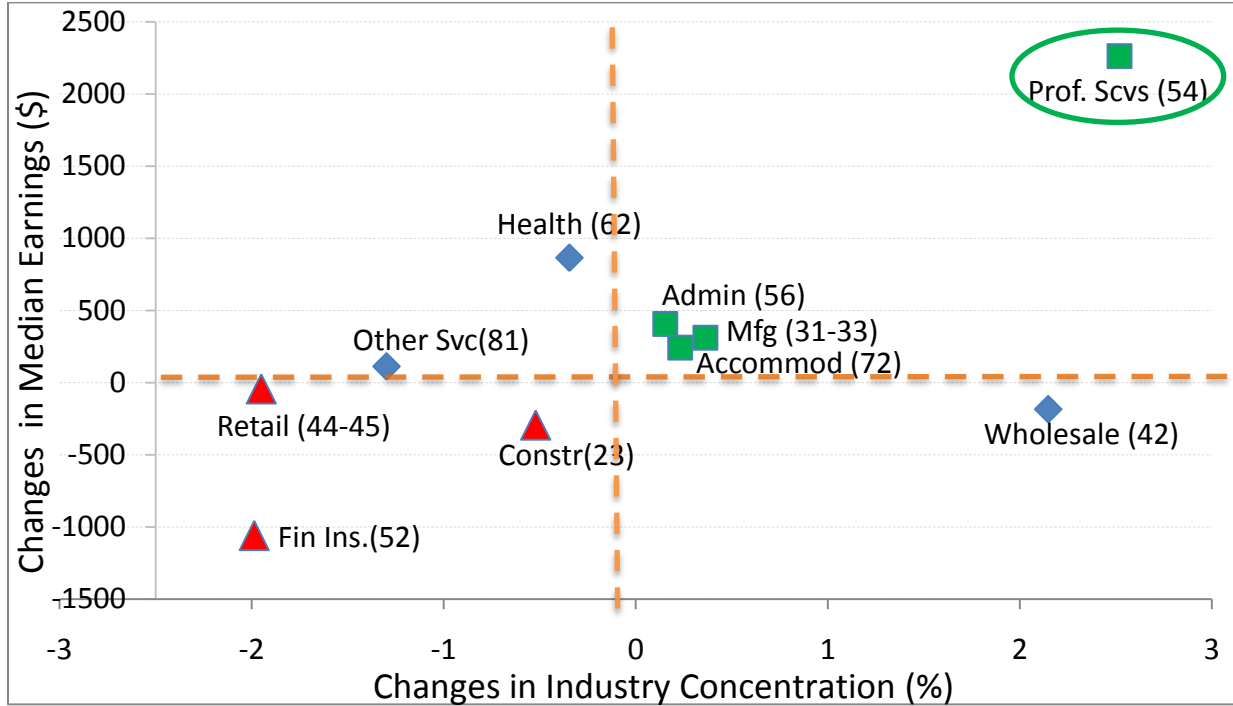
Further industry-level earnings complexity is shown in *Figures 8 through 10*. *Figure 8* shows the changes in employment share and earnings level from the pre-recession cohort to the recession cohort for selected major industries.

Figure 8 shows that some industries experienced both a rising earnings level and a rising employment share—particularly Professional Services (54) and to a lesser extent *Administrative Services (56)*, *Accommodation (72)*, and *Manufacturing (31-33)*.

Professional Services (54) not only had the largest earnings increase (by almost \$2300 quarterly), but also the largest employment share increase (by 2.5 percentage points). From the pre-recession cohort to the recession cohort this sector has grown from the third largest employment and the second highest median earnings to the largest employment share and the highest median earnings. The growth in *Professional Services (54)* largely explains the higher earnings level for the recession cohort than for the pre-recession cohort that was observed in *Figure 6*.

FIGURE 8

Changes in job losers' quarterly real earnings and industry shares for the pre-recession and recession business deaths



Notes for Figure 8:

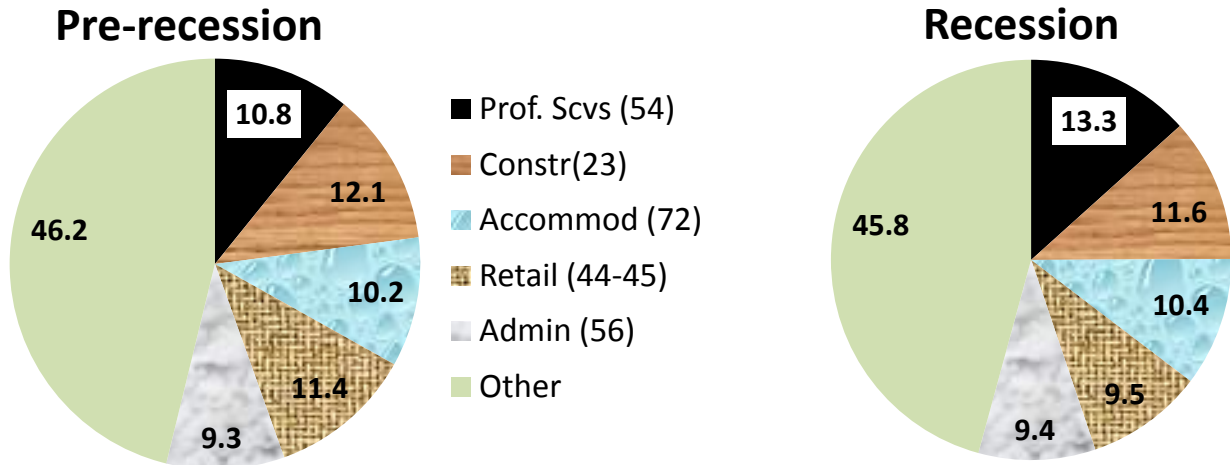
1. Only those industries with close to or above 1000 businesses or have the highest share of workers are shown.
2. All reported quarterly earnings values were converted to 2010 constant dollar value following the BLS CPI inflation calculator retrievable at the World Wide Web <http://data.bls.gov/cgi-bin/cpicalc.pl>.
3. Employees with reported earnings after the referenced business death from the same business were excluded, but employees that had reported earnings by other businesses before the referenced business death were included.
4. Only former employees with reported earnings in the fourth quarter before and the fourth quarter after each business death reference year/quarter (i.e., q=-4 and q=4) are included.
5. Data table for this figure is shown in Appendix 3.
6. Appendix 4 illustrates this figure in a different format.

Some industries experienced both declining earnings levels and declining employment shares, such as *Finance and Insurance (52)*, *Retail Trade (44-45)* and *Construction (23)*. While these industries had declining earnings in the recession, the shrinking employment shares reduced the ultimate impact of the earnings decline.

Wholesale Trade (42), though experiencing a slight earnings decline, actually increased its employment share in the recession. Since this sector had the highest median earnings for the pre-recession cohort and the second highest median earnings for the recession cohort (shown in *Figure 10*), its increasing employment share raised the overall median earnings level. This effect overwhelmed the minor earnings decline of this sector. *Health Services (62)* and *Other Services (81)* had an earnings increase from the pre-recession cohort to the recession cohort.

FIGURE 9

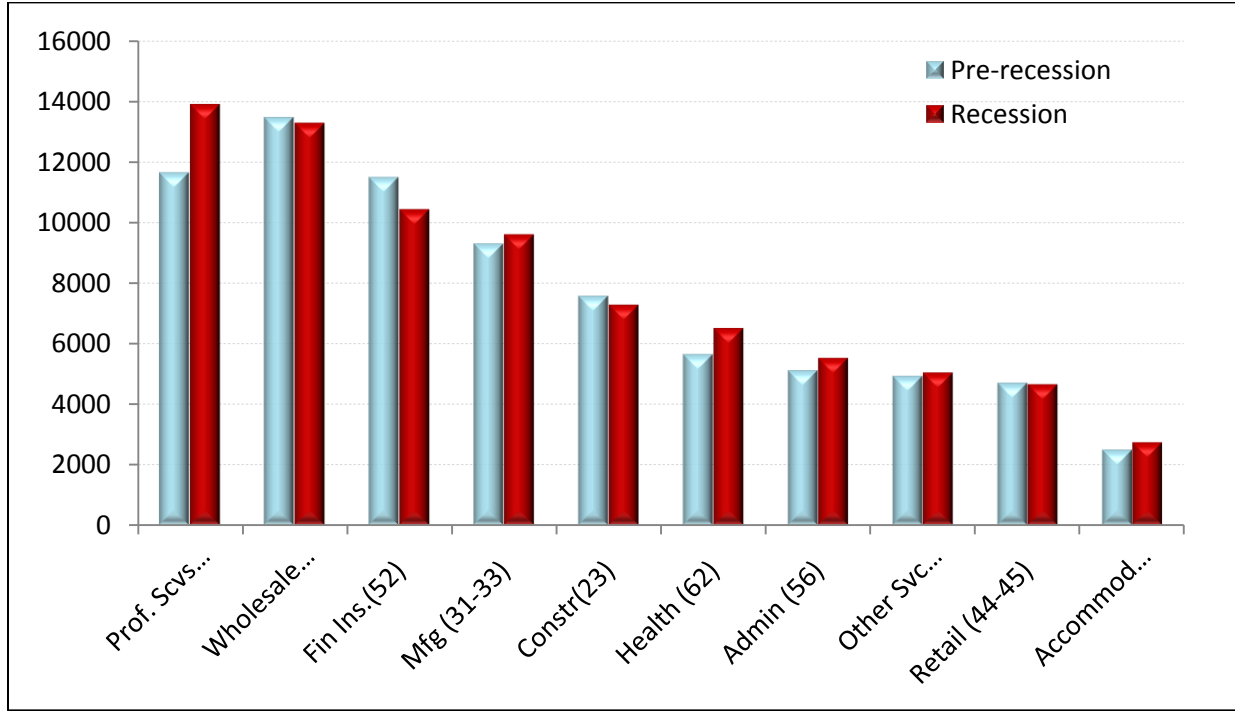
Employment shares by industry sectors, for pre-recession and recession business deaths



1. Only those industries with close to or above 1000 businesses or have the highest share of workers are shown.
2. All reported quarterly earnings values were converted to 2010 constant dollar value following the BLS CPI inflation calculator retrievable at the World Wide Web <http://data.bls.gov/cgi-bin/cpicalc.pl>.
3. Employees with reported earnings after the referenced business death from the same business were excluded, but employees that had reported earnings by other businesses before the referenced business death were included.
4. Only former employees with reported earnings in the fourth quarter before and the fourth quarter after each business death reference year/quarter (i.e., q=-4 and q=4) are included.

FIGURE 10

Median earnings for pre-recession and recession business deaths by industry sectors



Notes for Figure 10:

1. Only those industries with close to or above 1000 businesses or have the highest share of workers are shown.
2. All reported quarterly earnings values were converted to 2010 constant dollar value following the BLS CPI inflation calculator retrievable at the World Wide Web <http://data.bls.gov/cgi-bin/cpicalc.pl>.
3. Employees with reported earnings after the referenced business death from the same business were excluded, but employees that had reported earnings by other businesses before the referenced business death were included.
4. Only former employees with reported earnings in the fourth quarter before and the fourth quarter after each business death reference year/quarter (i.e., q=-4 and q=4) are included.

SUMMARY OF FINDINGS AND POLICY RELEVANCY CONCLUSIONS

Summary of findings

Four questions were posed at the beginning of this report. We now repeat and answer each of these questions. We then conclude with brief commentary about the policy relevance of these findings.

- **Question:** Are job losers during a recession less likely than their pre-recession counterparts to reappear as an employee of a Maryland business following the involuntary end of their former business affiliation?

Answer: Yes; but our measure of Maryland employment reappearance rate difference—five percentage points—may be less than some expected.

Our analysis for this report included only defined *involuntary* job losses caused by a Maryland business death, as defined earlier. During one full year following each defined business death quarter, 58 percent of pre-recession job losers had returned to covered employment in Maryland, while 53 percent of job losers after the recession began had returned to covered employment in Maryland within one year. This stage of business cycle difference in reappearance fades in importance when we realize that more than 40 percent of each cohort of involuntary job losers had not returned to Maryland covered employment within one year after the defined business death quarter.

- **Question:** For involuntary job losers that do reappear, does it take longer for those that lost their job during the recession to return to work than the time taken by their pre-recession counterparts to return to covered employment in Maryland?

Answer: Yes; among the subgroup of recession cohort job losers that had returned within one year, 65 percent had returned by the end of the second quarter following their job loss; while for the pre-recession cohort, 70 percent of those that had returned to work within one year had done so this quickly.

These calculations translate into 34 percent and 41 percent of all the defined involuntary job losers in the respective cohorts having returned to new covered employment in Maryland by the end of the first quarter following the corresponding business death. Again, this means that about one-half of the involuntary job losers at either stage of the business cycle had been reabsorbed into Maryland covered employment within a year after the defined business death. The rest, also about one-half of the involuntary job losers, had not yet reappeared.

- **Question:** Are those that lost a job after the recession began, and then reappeared, more likely than their pre-recession counterparts to now be affiliated with an employer in a different industry?

Answer: No; in fact, fewer recession cohort reappearances were with a Maryland business in a different industry than was the case for the pre-recession cohort members that had reappeared within one quarter after the defined business death. *Figure 2* shows the respective industry change calculations to be 23 percent for the recession cohort versus 33 percent for the pre-recession cohort. This means that a smaller percentage of recession cohort reappearances than the pre-recession counterparts ended up in a different industry within the time frame as short as one quarter after the defined business death.

- **Question:** What are the comparative pre-post earnings profiles for those losing their previous job because of a business closure during the recession or pre-recession time spans?

Answer: For those that had positive reported earnings in both the fourth quarter before the business death event and the fourth quarter following this event, it took slightly longer for the involuntary job losers during the recession to recover the previous baseline earnings level than those that lost their job before the recession. The median earnings level for the recession cohort is higher than that for the pre-recession cohort—this largely resulted from industry mix changes, particularly the growth in *Professional Services (54)*. The recession cohort experienced both earnings and employment share increases in *Professional Services (54)* and this sector is the largest and highest median-earning sector for the recession cohort.

Policy relevancy conclusions

This report completes the third phase of our continuing research about Maryland employment dynamics, all conducted in partnership with the Office of Workforce Information and Performance in the Maryland Department of Labor, Licensing and Regulation.

- In 2009-2010 we completed a series of *Employment and Business Dynamics: 2004-2009* reports for the State's 12 local workforce investment boards. Several updates and disaggregation of multi-county local workforce investment areas have been completed.
- In February 2011 we released a report titled *Job Creation in Maryland 2004-2009: An Overview*. That report highlights statewide changes in pre-recession (pre 2007 qtr 4) and recession (2007 qtr 4 through 2009 qtr 2) net job gains.

- The current report, titled *What Happens to the Employees When a Business Closes?*, compares business closure impacts on terminated employees in the pre-recession and recession time spans.

An important interim conclusion from our series of research studies completed to date is that statistics reported at a high level of geographic, industry and time coverage aggregation should be used with extreme caution as strategic decision-making inputs. Recent and projected *directions* of movement from the current point in the business cycle matter. The *speed* of recent and projected changes matters. And, of course, the *magnitude* of recent and projected changes matter. Each of these contributes more valuable insight when the statistic is defined using geographic and industry specifications that align well with the decision to be made.

Together, our findings to date send a clear signal that:

- Statewide, businesses open, expand, contract and close concurrently throughout each year, including during recessions.
- Caution is needed when assessing the decision relevance of a single measure of economic activity. *Gross* job creation statistics send a different signal than the *net* difference (+ or –) of job gains minus job losses.
- The industry mix of employment change, and resulting earnings consequences, differs over time and intrastate space.
- When employees involuntarily lose their job because a Maryland business closes many return to work in Maryland within a few months, but others do not. We will soon begin an attempt to determine whether those that have not returned to work in Maryland are working elsewhere in the mid-Atlantic region, including for the federal government, or appear in one or more safety-net programs (Workforce Exchange, TANF, SNAP, UI).

Our selection of future research study priorities, in partnership with the DLLR Office of Workforce Information and Performance, will be guided by anticipation of the important policy and program management decisions that can benefit from new analyses grounded in reliable statistical evidence.

APPENDIX

1. Technical Notes

Some Maryland businesses have more than one defined death during the five years covered. Our count of business deaths includes only the most recent business death. Some individuals experienced more than one involuntary job loss because of a business death. The employee counts in Figures 2 through 4 include all such job losses and subsequent reappearances.

For employees that worked for more than one business in a quarter, a single *primary* business affiliation was needed to define an industry code. The *primary* employer is defined as the one reporting the largest earnings amount for the designated person during the reference quarter.

To include those workers who transitioned to a new job during the same quarter when the previous business they worked for died, we assumed those reported more earnings from a new business than the dead business during the quarter as the new business the employee was transitioned to.

DLLR UI Wage Records include each reporting employer's unique Maryland UI Tax Account Number. This does not distinguish among individual establishment work sites. When a multi-establishment business did not report headquarter information, but only subunit records, or when a multi-establishment business has subunits in another state, we converted the reported Maryland subunit records into a single master or headquarter record. When this was done, some assumptions were made:

- a. The newly created master record's employment is the sum of all Maryland subunits' employment.
- b. If the subunits had different NAICS codes, in order to assign only one NAICS code to the created master-level record the NAICS code of the subunit that had the largest reported employment level was used. In order to generate one set of business dynamic dates for the created master-record, the earliest setup and initial liability dates, and latest end of liability and reactivation dates, among all the subunits were used.
- c. Any subunit differences in economic change code were ignored.

We used the Maryland UI Wage Record file to calculate the number of employees that involuntarily lost jobs due to Maryland business deaths.

Although using the UI Wage Record file to count employees could potentially over count the employment due to job turnovers, using the UI Wage Record is the only way that the job losses and reemployments can be tracked. To make the employee counts consistent and to make the relative percentages calculated in the report correct, we used the UI Wage Record file, instead of the QCEW data, to calculate the number of affected employees from business deaths. The issue to avoid is use of UI Wage Record counts to talk about quarter-to-quarter changes in a business' employment **level**, or to compare cross-section differences of employment **level** between or among businesses. We do not do either in this report.

2. DLLR administrative data fields used to prepare *Figure 2* and *Figure 3*

Quarter of Business death	Business deaths	Affected Employees	Found a Job within 1 Year	Found a Job within 1 Quarter	Changed Industries when Finding a Job within 1 Quarter	Changed 2-digit NAICS Coded Industries for Jobs Found within 1 Quarter
2004q1	1,797	7,770	4,695	3,099	1,398	1,302
2004q2	2,035	9,689	4,585	2,805	1,638	1,476
2004q3	1,852	7,279	3,539	1,942	1,191	1,115
2004q4	3,281	18,024	11,347	9,223	2,108	1,935
2005q1	1,914	7,442	4,219	2,787	1,000	917
2005q2	2,162	8,099	4,050	2,709	965	890
2005q3	2,123	7,283	3,496	2,112	865	785
2005q4	3,147	17,657	10,867	9,127	1,715	1,565
2006q1	1,774	7,109	3,681	2,055	907	831
2006q2	2,409	7,114	3,335	1,987	891	828
2006q3	2,251	8,715	4,117	2,139	1,032	947
2006q4	3,301	11,376	6,020	4,514	1,202	1,102
2007q1	1,709	6,712	3,740	2,583	771	708
2007q2	2,617	11,184	6,314	4,801	1,253	1,172
2007q3	2,525	12,099	4,260	2,590	1,067	997
2007q4	3,796	15,538	7,913	6,026	1,496	1,424
2008q1	2,221	12,313	8,169	6,931	926	869
2008q2	2,664	9,808	4,478	3,007	1,011	957
2008q3	2,817	9,354	3,855	2,376	908	853
2008q4	3,988	28,122	16,905	8,438	2,085	1,995
2009q1	2,255	7,039	3,165	2,173	626	577
2009q2	2,702	8,663	3,273	1,878	737	689
Total	55,340	238,389	126,023	85,302	25,792	23,934

3. DLLR administrative data fields used to prepare *Figures 8 through 10*

Industry	Pre-recession		Recession		Changes	
	Earnings	# of Workers	Earnings	# of Workers	Earnings	# of Workers
Construction(23)	7565.85	12.11265	7272	11.59176	-293.85	-0.52089
Manufacturing (31-33)	9287.04	5.823456	9598	6.186071	311.01	0.362615
Wholesale (42)	13455.72	6.039903	13271	8.187717	-184.32	2.147814
Retail (44-45)	4693.99	11.40782	4651	9.457851	-42.94	-1.94997
Finance & Insurance(52)	11480.35	7.4057	10421	5.419288	-1059.64	-1.98641
Prof. Services (54)	11632.5	10.81499	13895	13.33402	2262.45	2.519029
Administration (56)	5107.2	9.282319	5514	9.435806	407.16	0.153487
Health (62)	5636.52	6.977907	6502	6.632841	865.08	-0.34507
Accommodation (72)	2488.64	10.19258	2731	10.42377	242.68	0.231192
Other Svc (81)	4924.8	7.067464	5037	5.770163	112.07	-1.2973

4. Pre-recession to recession employment share and earnings changes

