

# Why Do Disability Insurance Claims Increase During Recessions?

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## Abstract

Applications for federal Disability Insurance rise in recessions, and recent research suggests that the type of individual who applies may vary with the business cycle as well. While the rise in disability applicants in the Great Recession was larger in volume than in any prior recess, disability application rates rose considerably, roughly 30%, although this increase was smaller than would have been predicted based on prior recessions. Using multiple waves of the Health and Retirement Study, we examine the characteristics of individuals applying for disability benefits and trends in disability and labor market outcomes among older adults from 2000 through 2012. We find that reports of a functional limitation, rather than diagnoses, were the biggest predictor of disability applications during the Great Recession among the older working age adults examined. Application rates for those with functional limitations were higher when the onset occurred during the Great Recession. Disability insurance is a more important, and more often exercised choice for workers during recessions, even though their patterns of work and earnings look remarkably similar across cohorts.

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Applications for federal Disability Insurance (DI) rise in recessions. This fact has been known for some time (e.g., Autor and Duggan, 2003), and has driven a large literature on the link between economic outcomes and disability. Many authors have posited that this countercyclical nature of applications occurs as unemployed workers exhaust unemployment insurance (Rutledge 2011). Mueller, Rothstein, and von Wachter (2013) studied this conjecture explicitly, estimating whether extended unemployment insurance benefits granted during recessions reduced the probability of applying for DI, but they found no evidence that extended unemployment insurance benefits had an impact on DI application. More recently Maestas, Mullen, and Strand (2015) use SSA administrative data to show that although the rise in DI applications was lower in the Great Recession than in earlier recessions, allowed claims did not fall with the influx of new applications, which is what one would expect if the additional, or marginal, applicants during the Great Recession were healthier than individuals receiving disability benefits before the recession, and thus less likely to meet disability eligibility criteria. Given the five percentage point rise in unemployment rates, the volume of new applications was larger than in any earlier recession. They found that the increased applications were virtually all denied at the initial determination, suggesting these marginal claimants are healthier than those applying outside of recessions. Maestas et al. (2015) show an increase in the months between alleged onset of disability and established onset (incentives to claim onset at the earliest date possible are stronger during recessions). This perspective gives some sense that the nature of disability of those applying during recessions differs from those applying outside of recessions.

However, much less is known about the period leading up to application for DI in recessions and what would happen to those individuals in the absence of recessions. Are the new applicants people who are basically healthy and who would otherwise remain in the labor force

but for the poor economy? Or would the marginal applicants have applied in future years even without the recession, so the recession is just speeding up DI application? These questions are central to the welfare analysis of DI as well as for the fiscal finances of DI. We address them in this paper.

Our primary data source is the Health and Retirement Study (2014). We consider people aged 55-61 in each year from 1998 through 2012. The lower bound at age 55 accounts for the fact that HRS enrollment between ages 50 and 54 is variable across years and we want a relatively consistent panel. The cutoff at 61 is because people increasingly retire rather than go on disability as they reach the Social Security early retirement age. Our sample has about 3,000 people in each wave.

We use the HRS data to address two central questions. First, we consider what types of individuals apply for DI in recessions but not in expansions. To do this, we take account of the fact that our data span the period before and during the Great Recession. We look at the increase in DI applications for people differentiated by demographics (gender, education) and medical conditions (new reports of major health conditions and new onsets of functional limitations). We group the years from 2003-2008 into the pre-Great Recession period and the years from 2009-2012 into the Great Recession period. Our strongest finding, among the older workers we studied, is that the increase in DI applications in the Great Recession is entirely due to people with some functional limitations. The rate of DI applications is much higher for people with functional limitations than for those without, and it rises much more in the Great Recession. Comparing those with and without a major health shock, the relationship to recessions is less clear. By demographics, the increase in DI applications is greater among the better educated.

The obvious follow-up question is what people with functional limitations did when the economy was not in recession. We examine this by sampling the universe of respondents aged 55 to 61 newly observed with one or more functional limitation over the 2000-2012 period.<sup>1</sup> We take this pool of individuals and assign them to cohorts based on the HRS wave in which they first reported one or more functional limitations. We then trace out the cumulative distribution of work and DI application for these different cohorts as time passes. Our results show that DI application increased more rapidly for cohorts during recessions. The Great Recession sped up DI applications and led to more people cumulatively applying for DI within 4 years of reporting functional limitations.

There is no matching trend in greater workforce withdrawal for people who experience functional limitations just prior to or during the Great Recession. The share of respondents working full time, working for pay, or in the labor force showed similar trends for all cohorts newly reporting functional limitations. There is little evidence that earnings, at the median, fall more rapidly for the group with functional limitations during the Great Recession compared with other cohorts. Economic conditions and the rise in DI applications are thus temporally related, though labor market outcomes for these older workers are not.

## **I. Recessions and DI Applications**

We start by showing the relationship between recessions and disability insurance rates using national time series data. The Social Security Administration tabulates annual data on DI applications and award rates per 1,000 insured workers. We utilize these data from 1965-2014.

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<sup>1</sup> We define new onset to include those newly observed in this age range, so including respondents first interviewed at age 55 to 61 who report one or more functional limitation in the baseline interview.

Figure 1 shows the trend in application and award rates, with recession years shaded. DI applications and awards were both high in the early 1970s, during the first oil price shock. Both rose in each subsequent recession with the exception of the recession in the early 1980s. This was also around the time of the retrenchment in DI rolls beginning late in the Carter Administration and extending into the Reagan Administration, when eligibility rules were tightened and many people were removed from disability.

Applications and awards both rose markedly in the Great Recession, far more than in previous recessions. However, the Great Recession was also deeper than past recessions. Further, the working age population was older in 2010 than in previous years, and older people are more likely to experience the onset of new conditions and limitations, and more likely to apply for DI. Thus, there are reasons to think the increase in DI applications would be greater in the Great Recession.

To understand the increase in DI in the Great Recession, we start with an analysis of these aggregate data. We relate DI applications and awards to the national unemployment rate using data extending from the start of the program through 2005, and use those data to predict DI applications and awards over the next decade. We then compare that to actual realizations. Our equations are of the form:

$$(1) \quad \text{App Rate}_t = \beta_0 + \beta_1 * \text{UR}_t + \beta_2 * \text{Dummy 1980-84}_t + \beta_4 * \% \text{Over 50}_t + \varepsilon_t$$

$$(2) \quad \text{Award Rate}_t = \beta_0 + \beta_1 * \text{UR}_t + \beta_2 * \text{Dummy 1980-84}_t + \varepsilon_t$$

We relate both applications and awards to the contemporaneous unemployment rate ( $\text{UR}_t$ ) and a dummy variable for the years 1980-84 to account for the more stringent eligibility rules in place

during that period. The award rate data we use are age and gender standardized. The application rate data are not. For this reason, we also include %Over 50, the share of the insured workforce that is over 50 as an independent variable. We have experimented with alternative specifications of the equation, including various unemployment lags. Generally, the results are similar across specifications.

Figures 2 and 3 show the predicted and actual application and award rates. Consistent with the evidence cited earlier, both application and award rates are slightly lower in the Great Recession than would be predicted based on past relationships. While each rose, the magnitude of the Great Recession was such that even greater increases were predicted based upon unemployment rates during and following the recession.

Our micro-level analysis is based on older workers. Thus, it is helpful to look at the time series for older and younger workers in the Great Recession. Figure 4 shows increases in DI awards for both groups. The increase was relatively similar in both cases – 14 percent for the older population and 22 percent for the younger population.

## **II. Who Applies for Disability Insurance in Recessions?**

The aggregate data indicate how many people applied for DI in the Great Recession, but not who they are. Maestas and colleagues suggest that applicants during the Great Recession were, at the margin, healthier than applicants during economic expansions (Maestas, Mullen, and Strand 2015), though this snapshot raises questions about the trajectory of these applicants both in and out of recessions. To examine the characteristics of the population that applies for DI, we turn to individual level data from the Health and Retirement Study (HRS). The HRS is a

biennial survey of the near aged and aged. Applicants have been surveyed since 1992 and are followed over time, with new cohorts added as older cohorts age.

We focus our attention to years 2000 and later for several reasons. Because of welfare reform in 1996, many older individuals caring for children and individuals qualifying for disability due to drug or alcohol disorders terminated from Supplemental Security Income (SSI) and DI programs, applied (or re-applied) for disability insurance after that year. As a result, trends in DI applications in the 1990s are hard to discern. We thus restrict our analysis to disability applications in the years 2000-2012.

For our descriptive analysis, we consider only the population aged 55-61. The omission of the population aged 51-54 is because people of those ages are not present in every year and thus trends for the entire over 50 population would change because of sampling issues.<sup>2</sup> Above age 61, people often take early retirement rather than apply for disability. To avoid having to model this choice, we restrict attention to the population aged 61 and younger. Even with these restrictions, our sample size is about 3,000 individuals in each wave.

Disability application is measured using a series of variables documenting application for or receipt of federal disability benefits. In practice, respondents have difficulty distinguishing applications for SSI versus DI, as many have concurrent applications for both programs. We include reports of application for either program, but in this age range, the DI program dominates disability application behavior; only 7.5 percent of the sample reports applying for sole SSI benefits. We consider disability applications to be new if the person reported applying for or receiving disability benefits in a current interview wave,  $t$ , but not in the prior, wave,  $t-1$ . We censor waves if a person reported applying for or receiving disability benefits in wave  $t-1$ .

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<sup>2</sup> In our planned regression analyses, this group will be included.

Figure 5 shows the trend in disability applications for this sample of HRS respondents age 55 to 61. The figure generally matches the aggregate data in figure 4 – even with the difference between application rates in figure 5 and award rates for the population shown in figure 4, disability applications were relatively high in the recession of 2000, fell in the mid-2000s, and rose in the Great Recession. As a measure of disability application increase, we average the application rate in 2010 and 2012, 2.94 percent and compare that to the average in 2004, 2006, and 2008, 2.5 percent. Given the biennial nature of the survey and the distribution during the survey year, this is effectively a ratio of applications in 2009-2012 to applications in 2005-2008. Figure 5 shows that applications rose 20 percent between the earlier and later time periods.

To understand who is applying for disability in the Great Recession, we divide the population along demographic and health dimensions and plot trends in the disability application rate in each group. We use two demographic divisions of the population: gender and education (high school/GED or less; vs. some college or more). Figure 6 shows the trend in disability applications by gender. The disability application rate among older men and women is relatively similar on average. The female application rate rose by more than the male application rate in the Great Recession, but the differential is not particularly large. Figure 7 shows a comparable figure displaying application rates by education. On average, application rates are higher for the less educated. However, application rates rose more for the better educated in the Great Recession. Thus, the Great Recession is not simply a story of less educated workers applying for disability.

We also divide the population by two measures of health status. The first is whether the person has any functional limitations. These are defined in the HRS as difficulties with walking



several blocks; getting up from a chair; lifting or carrying 10 pounds; pulling or pushing large objects; sitting for two hours; stooping, kneeling, or crouching; and reaching or extending arms upward. On average, half of people in this age group report difficulties. Our second delineation is by whether the person has had a major health shock, defined as a new diagnosis since the prior wave of cancer, stroke, heart or lung disease, or a psychiatric problem.

Figure 8 shows the trend in disability applications by the presence of functional limitations. There is a clear delineation of applications, both levels and trends, for respondents with versus without functional limitations. Those without any functional limitations generally do not apply for disability, so in absolute terms, application rates grew little during the Great Recession. In contrast, people with one or more functional limitations were much more likely to apply during the Great Recession. Application rates grew 30 percent for the population with one or more function limitations. This increase in conditional application rates explains the entire increase in disability applications. As figure 8 shows, the share of people with a functional limitation does not increase in the Great Recession. Rather, the conditional probability of application rises.

Figure 9 shows the trends in disability application according to whether respondents report receiving a new diagnosis of a major health condition. Disability application rates are higher for those with health shocks, but in contrast to the functional limitations, the application rates of respondents reporting a new health condition do not appear to change much in response to recessions. The growth in disability application is about 15 percent for those reporting a new major health condition.

Figure 10 traces out the cumulative percent of respondents applying for disability beginning with the wave (year) in which they report a new limitation. The disability application

rate of 4.6 percent in the first wave reporting any functional limitation is markedly higher than the 0.3% baseline rate for individuals without functional limitations. The cumulative application rate rises steadily through four years after reporting a first limitation, at which point 9.7 percent of those with new functional limitations have applied for disability. Application rates continue to increase, though more modestly, through 8 years from the first report of a limitation, showing the large, and sustained impact of functional limitations on application rates. From these descriptive figures, we conclude that functional limitation predicts large increases in disability application.

Next we ask whether applications during recessions could occur because health deteriorates during recessions as Ruhm (2013) and many others have demonstrated in recent work. Figure 11 plots the percent of individuals reporting any functional limitations by year of interview. There is no evidence that functional limitations rise during recessions, a finding consistent with evidence that additional disability applicants during the great recession are largely likely to be denied in the initial disability determination (Maestas et al. 2015). Functional limitations affect nearly half of the sample throughout 2000 to 2012, and, if anything they have fallen over the period.

The final section of the paper examines how onset of functional limitations changes disability application and labor market outcomes (labor force participation, working for pay, working fulltime, and earnings). Figures 12-16 ask broadly, do cohorts with onset of new limitations during strong economic conditions fare differently than those acquiring new functional limitations in recessions? We can follow these outcomes for several waves before individuals age into Medicare or Social Security, effectively leaving our sample. For Figure 13, we created cohorts based on the first time an individual was observed with any functional

limitation while age 55-61 in waves from 2000 through 2012. As a comparison, we created cohorts of individuals aged 55-61 who had not reported any functional limitations through the wave corresponding to the cohort with the functional limitations. For example, the comparison for the 2000 functional limitation cohort is composed of individuals aged 55-61 who had not reported having any functional limitations through the 2000 wave. Labor market outcomes are further limited to those working in the wave before this report. Then, for each cohort, we trace out the cumulative percent having applied for disability at the wave when the limitation was reported for up to four waves (8 years) later. Figure 12a displays a main result of our analysis; that is, during stronger economic conditions, workers with new functional limitations do experience a rise in application rates, but this seems to level out a bit. That is true for the cohorts until 2008 and 2010. For them, the rise in DI application is large and immediate. The percent applying for DI one wave after a functional limitation, 9 percent, is higher than the rate of application for the cohorts of the early 2000s. The figure suggests a broad pattern where, in good times, workers handle functional limitations and hang on, but as the economy sours, they resort to DI much more quickly. In contrast, figure 12b shows trends in disability application that look very similar across cohorts. Figures 13 through 16 trace out trends by cohort much like figure 12, but for work (percent working for pay among those working in wave before functional limitations were first reported), full time work, labor force participation, and median earnings, expressed in constant 2010 dollars.

In contrast to the disability results, figures 13 through 16 suggest that patterns of work and leaving work are remarkably similar by cohort. If anything, workers reporting functional limitations in the Great Recession are slower to leave the labor force than similar respondents in earlier waves. Workers seem to be able to maintain work participation even after new functional

limitations, although with time they exit work. This ability to hold on for a couple waves does not vary with recessions. Broadly we see a pattern where workers develop new limitations and they continue to work for several years (mostly), but the largest difference across cohorts is not in work or earnings, but the rate of DI application. In all cases, reductions in earnings, labor force participation, and full time work were larger in magnitude for workers with functional limitations.

We conclude with our two main findings, which begin to fill in some details regarding the nature of DI application around the Great Recession. First, applications and awards are not remarkable during the recession, in the sense that they are lower than what one would predict from unemployment rates only. The massive rise in DI reflects the historic rise in unemployment rates. We found an extraordinary difference in application rates for those with new functional limitations according to whether this onset occurred during the Great Recession or not. DI is clearly a more important, and more often exercised choice for workers during recessions, even though their patterns of work look remarkably similar across cohorts. As we explore these workers further, we will explore the nature of work (hours and weeks worked), social factors (changes in household composition or marital status) and we will ask what factors, if any, mitigate or amplify the tendency to apply for DI after new limitations in recessions versus expansions (health insurance, pensions, occupation, industry).

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Figure 1 - DI Applications and Awards, 1965-2014, [Rate per 1,000 insured workers]

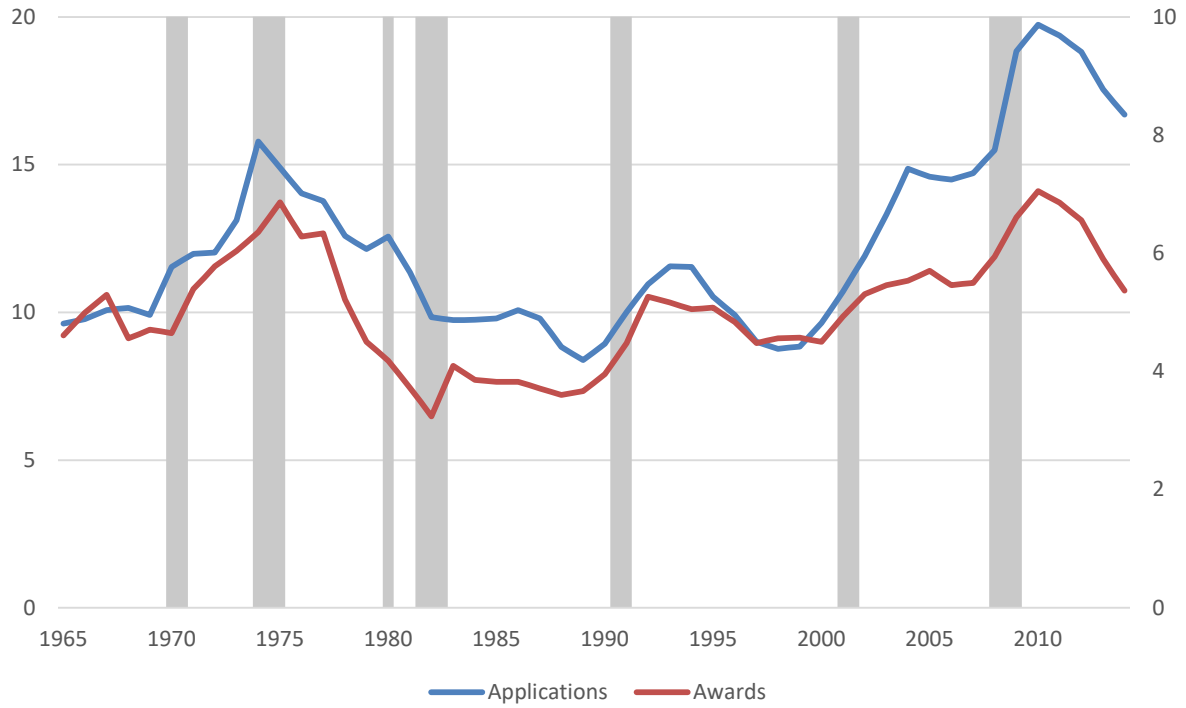


Figure 2 - Actual and Predicted Application Rate, 1965-2014 [Rate per 1,000 insured workers]

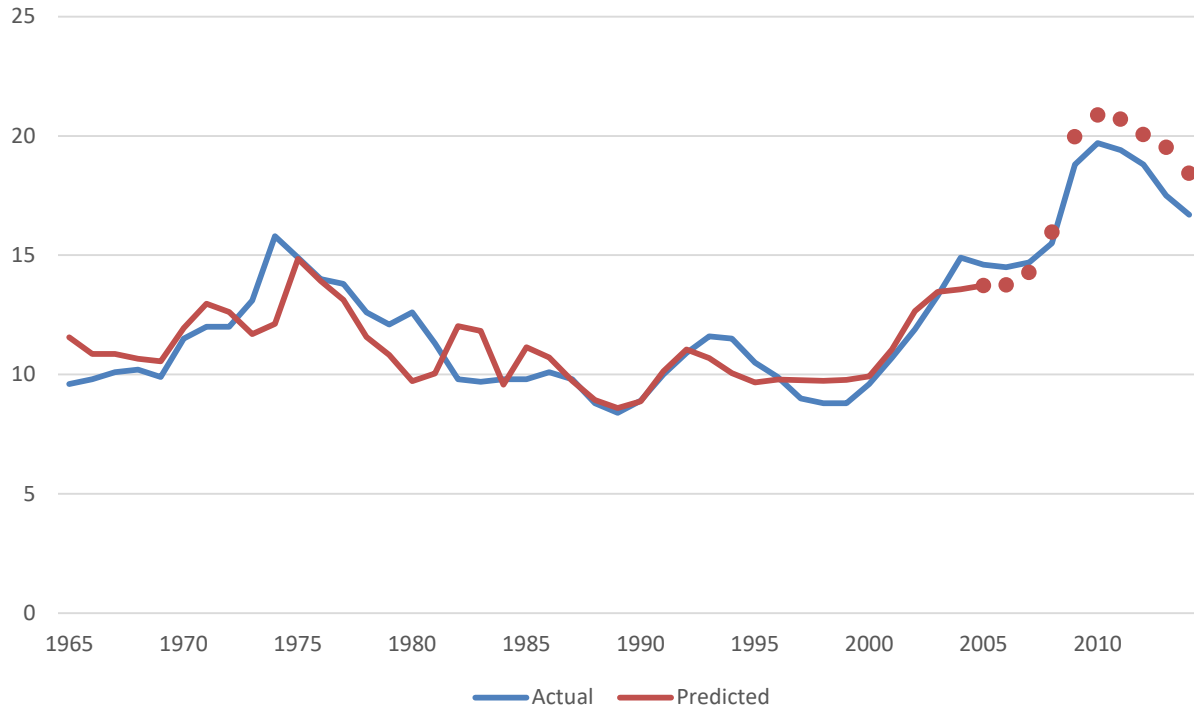


Figure 3 – Actual and Predicted Award Rate, 1965-2014 [Rate per 1,000 insured workers]

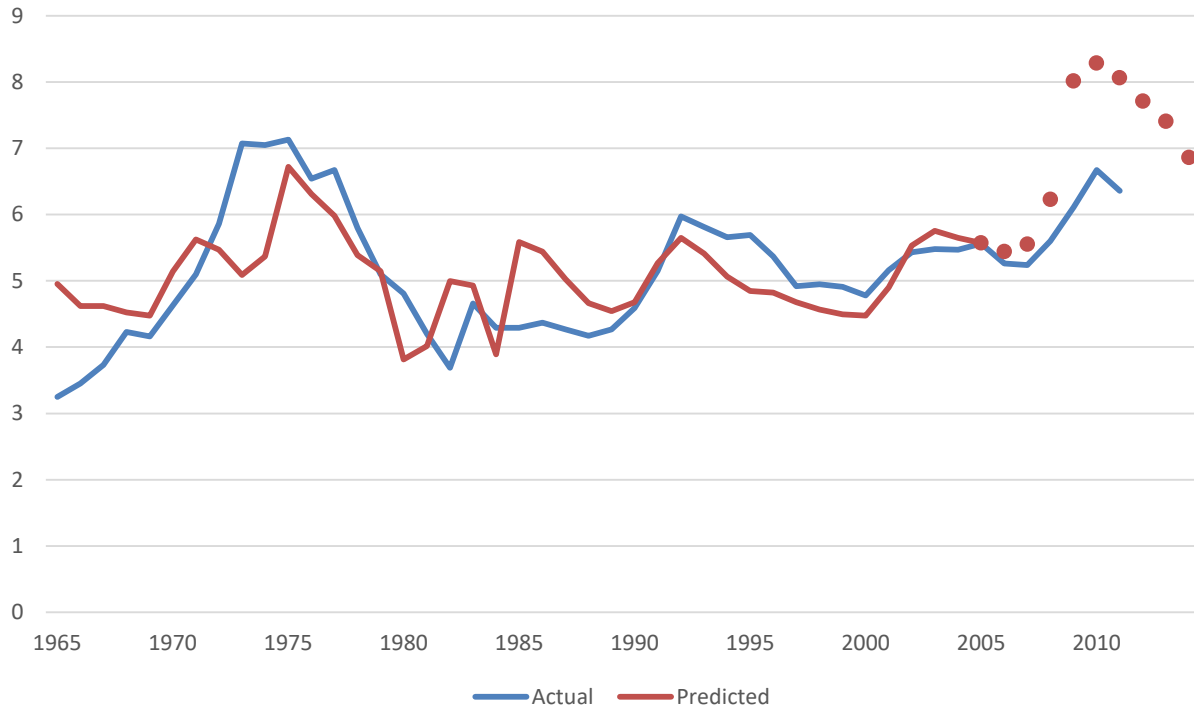


Figure 4 – Award Rate by Age, 1965-2011 [Rate per 1,000 insured workers]

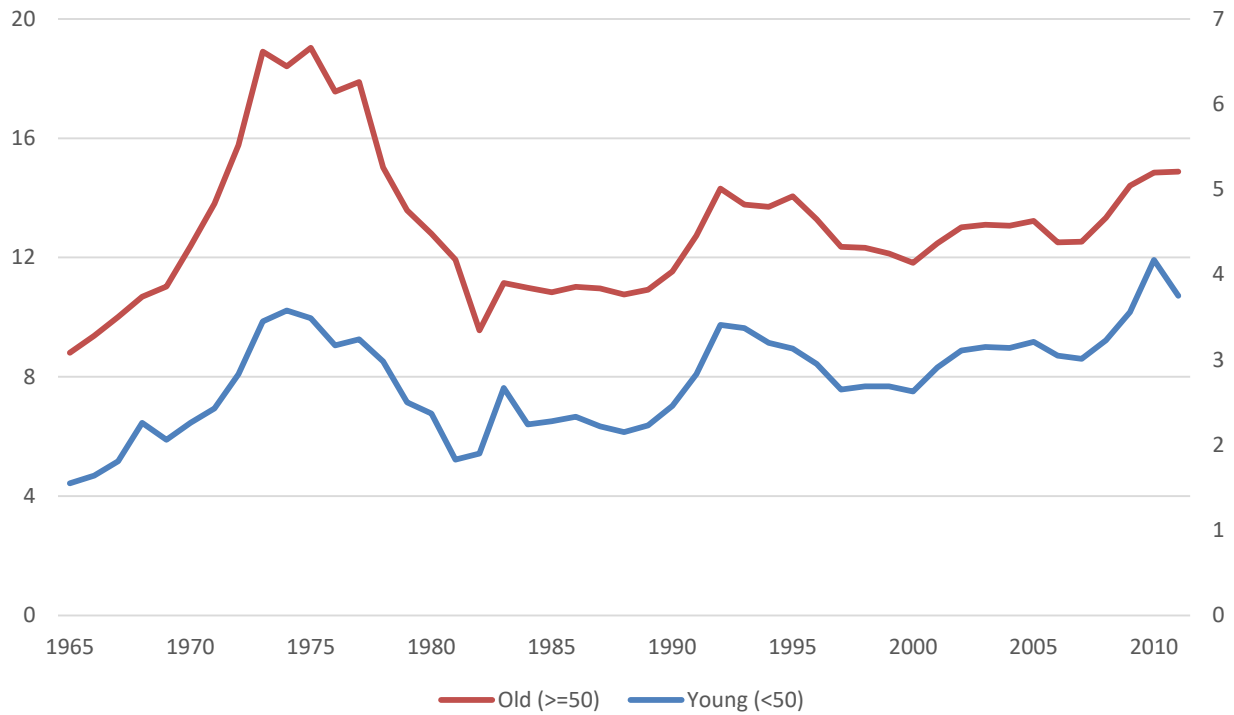


Figure 5 - Trend in Disability Application, Ages 55-61

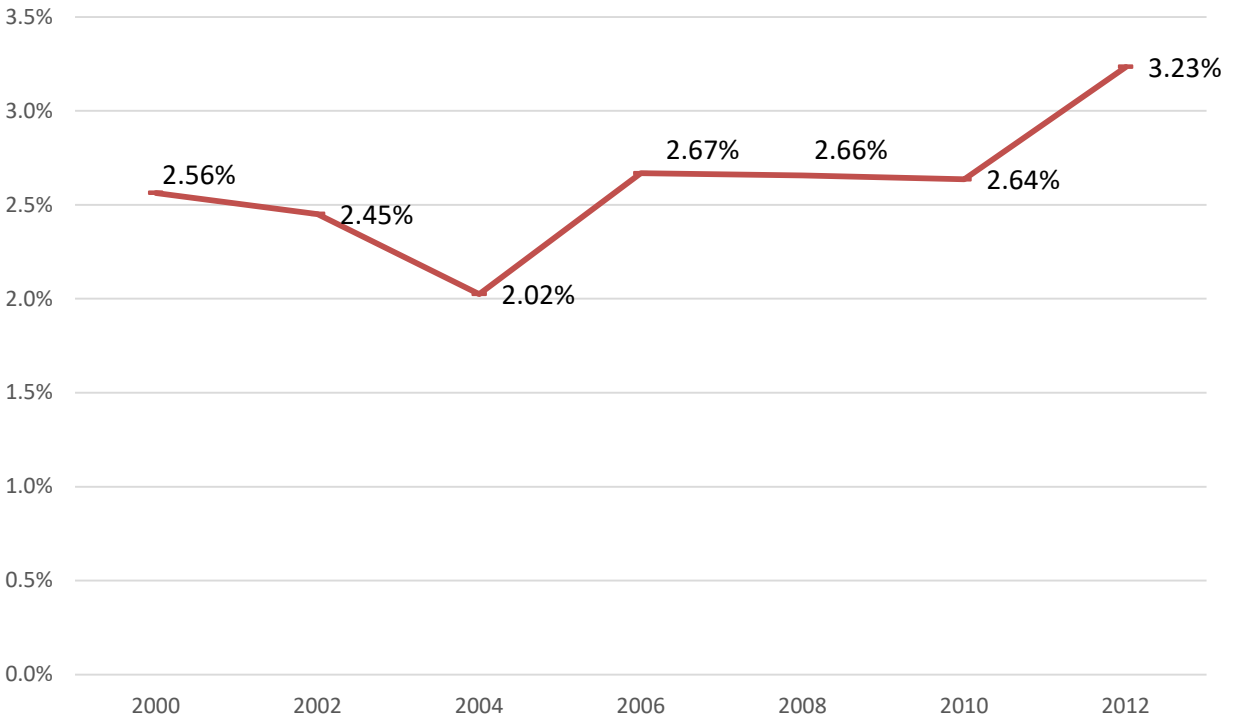


Figure 6 – Disability Application by Gender, Ages 55-61

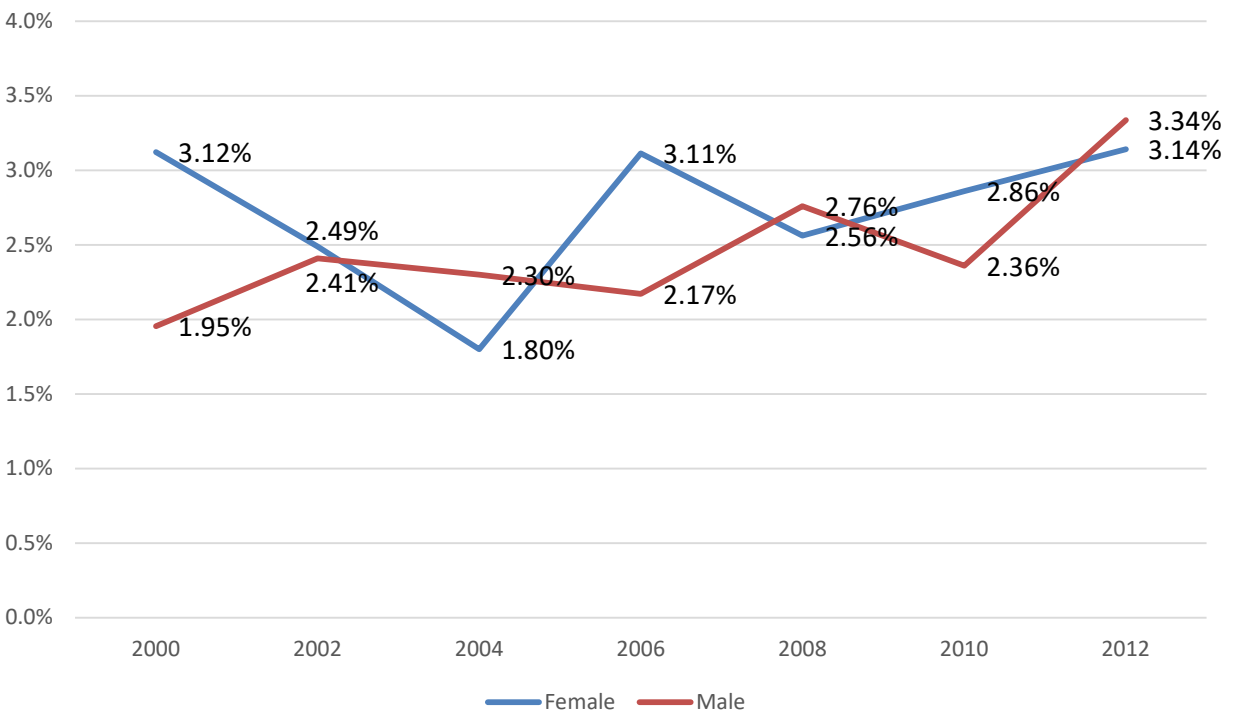




Figure 7 – Disability Application by Education, Ages 55-61

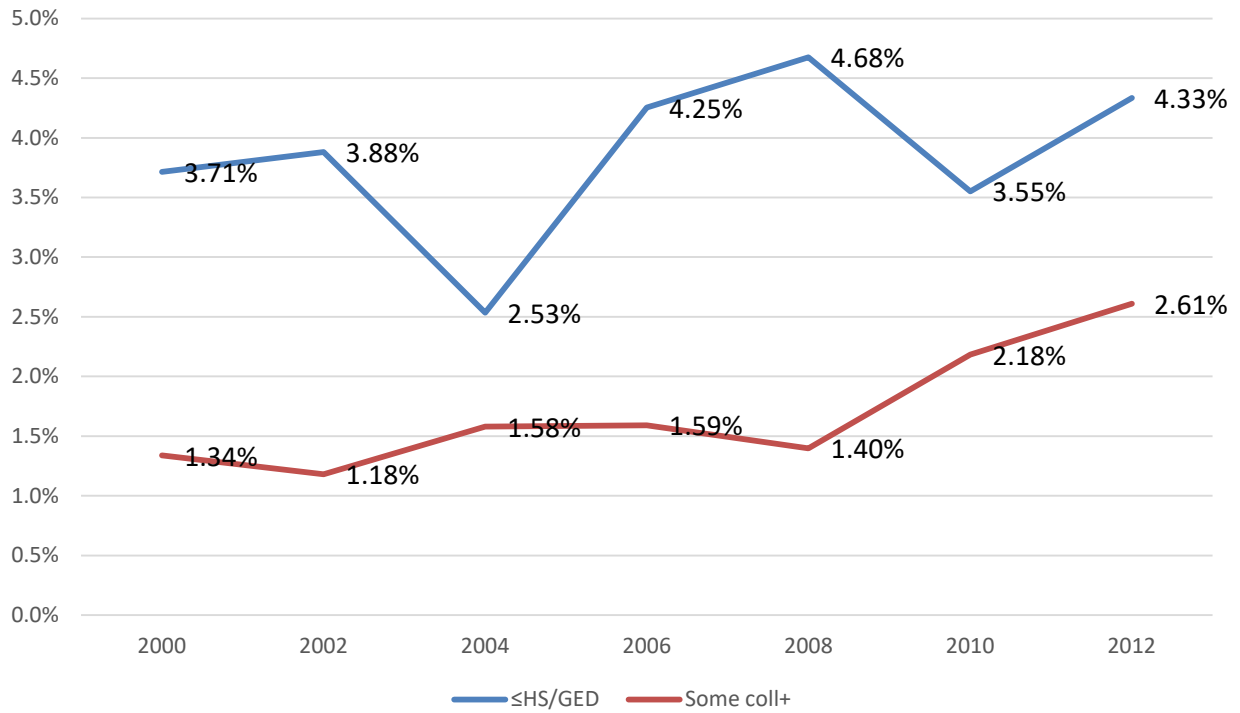


Figure 8 – Disability Application by Functional Limitations, Ages 55-61

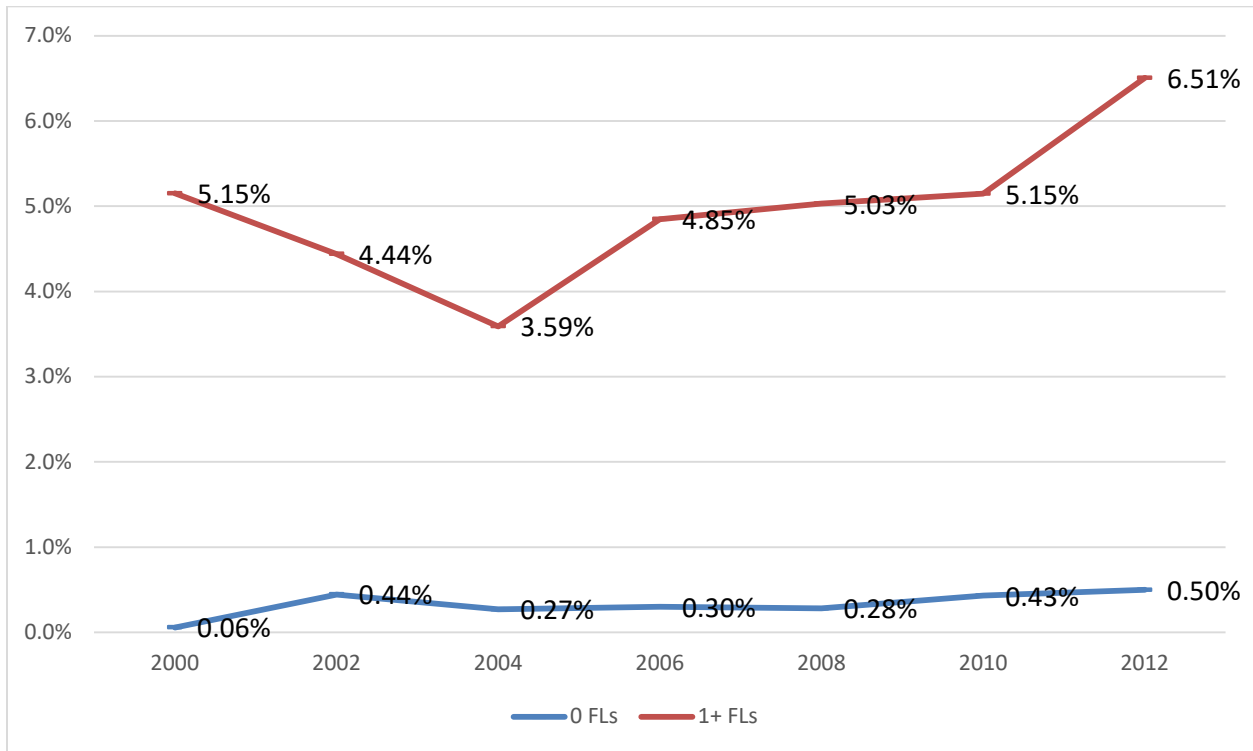


Figure 9 – Disability Application by Health Shock, Ages 55-61

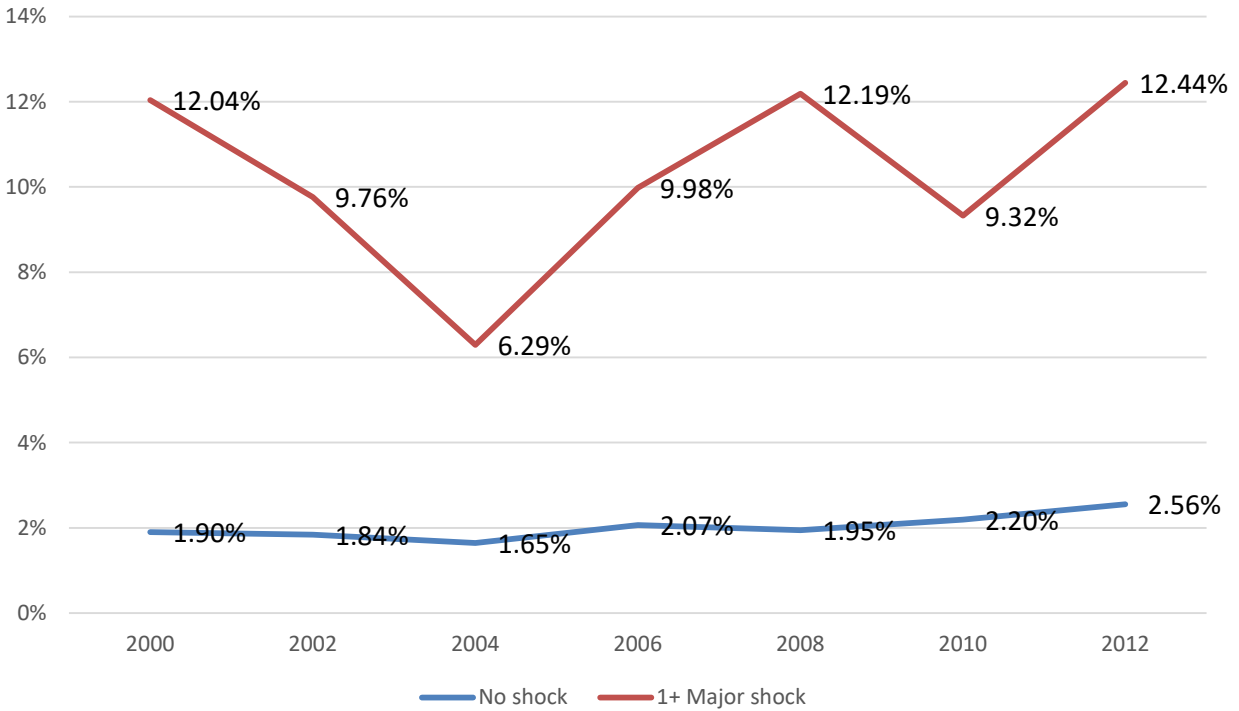


Figure 10 – Cumulative Increase in Disability Application Probability for those with Functional Limitations, Ages 55-61

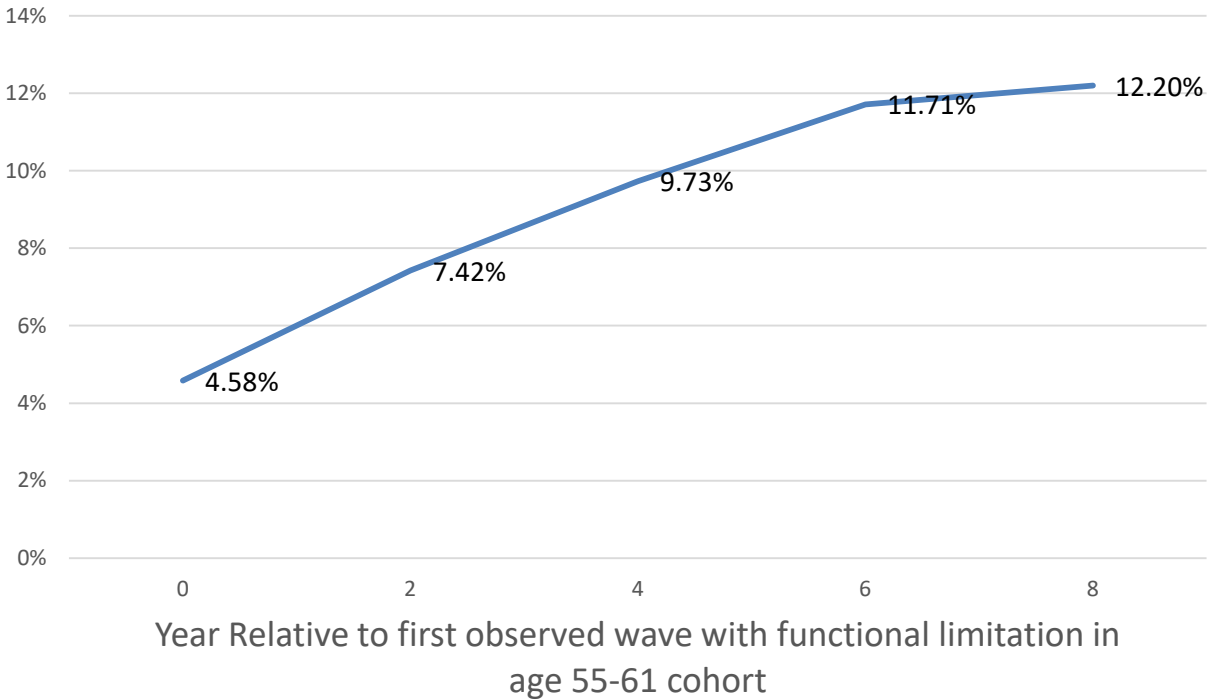


Figure 11 – % with 1+ Functional Limitations in Indicated Year, Ages 55-61

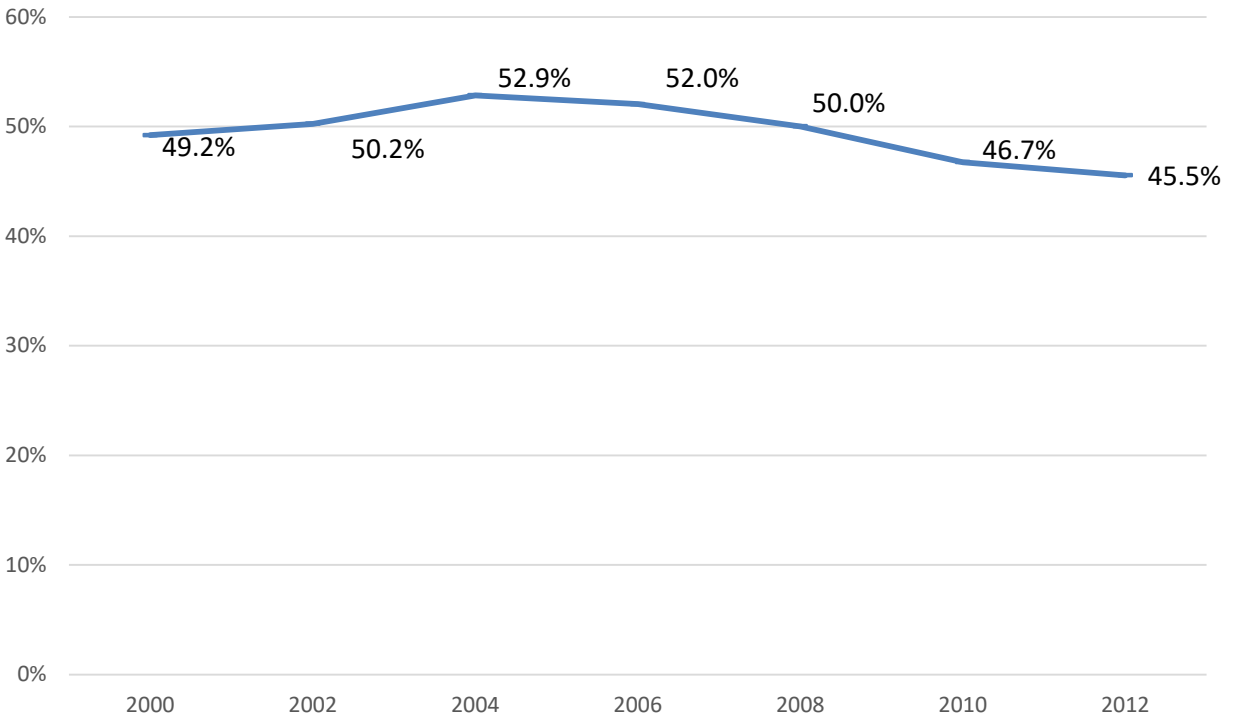


Figure 12a – Cumulative Increase in DI Application Probability for those with First observed Functional Limitation in Indicated Year, Ages 55-61 at Onset

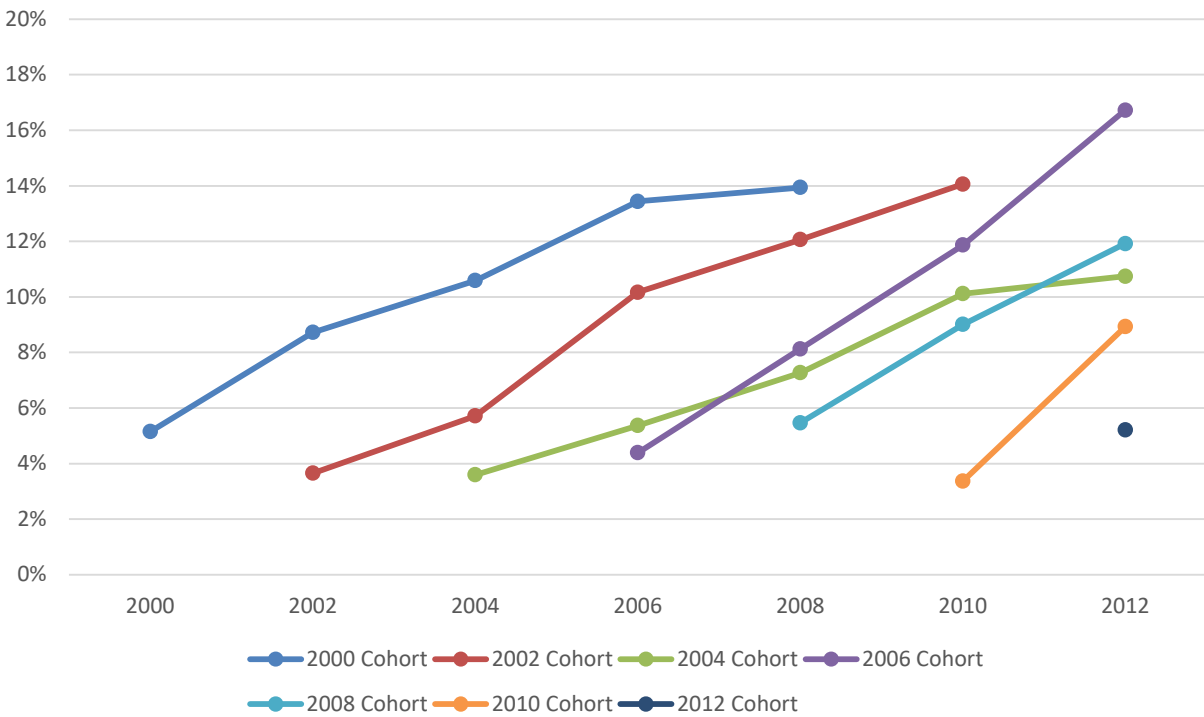


Figure 12b – Cumulative Increase in DI Application Probability for those no Functional Limitation as of Indicated Year, Ages 55-61

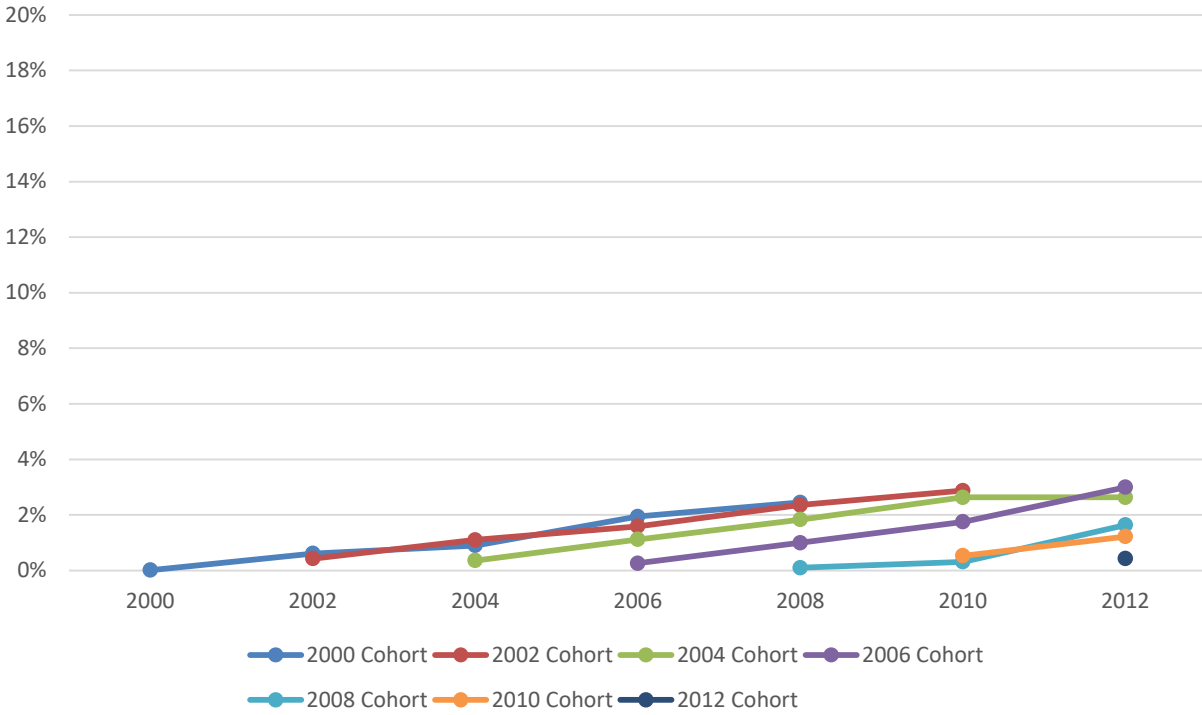


Figure 13a – Percent Working for Pay for Those with First Functional Limitation in Indicated Year, Workers in Wave Before Cohort Year

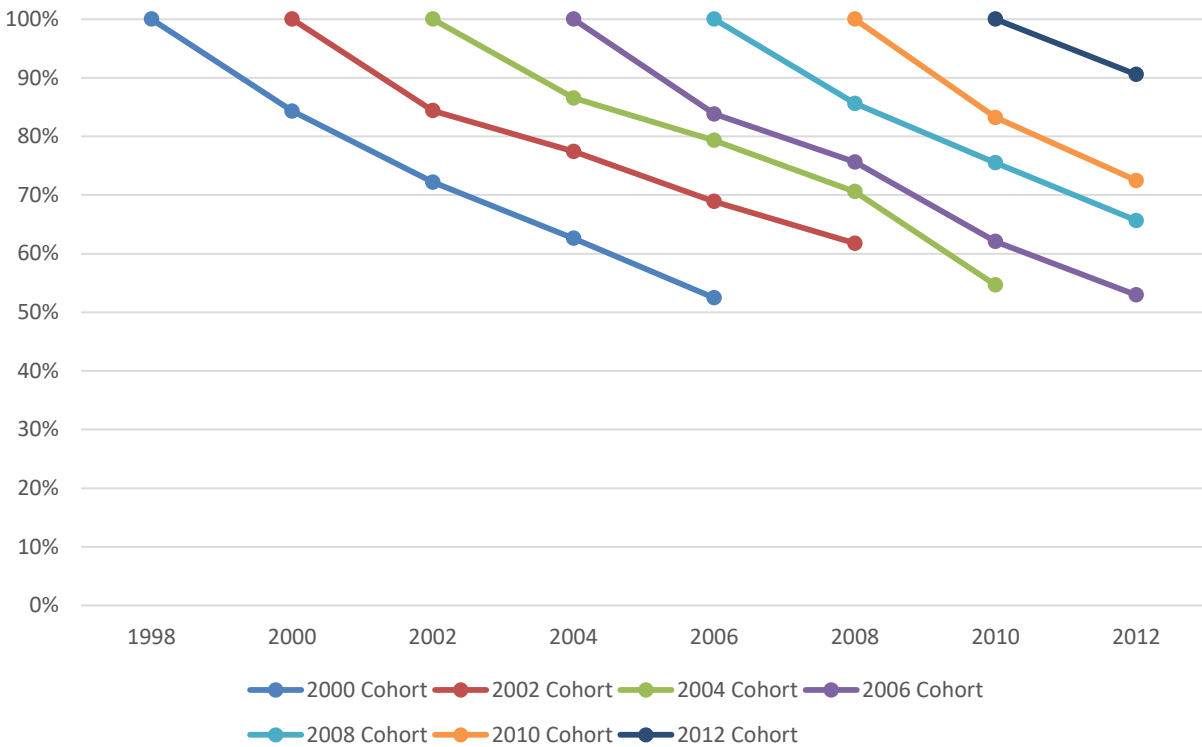


Figure 13b – Percent Working for Pay for Those Without Functional Limitations as of Indicated Year, Workers in Wave Before Cohort Year

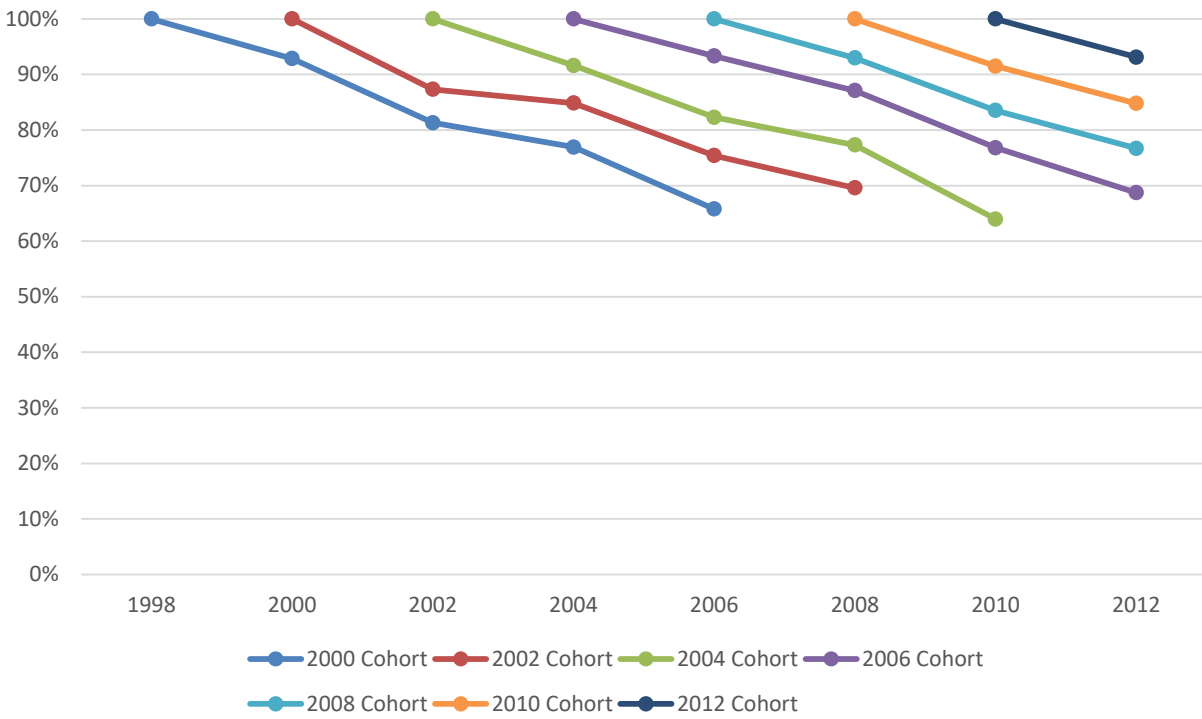


Figure 14a – Percent Working Full Time for those with First observed Functional Limitation in 55-61 age cohort in Indicated Year, Workers in Wave Before Cohort Year

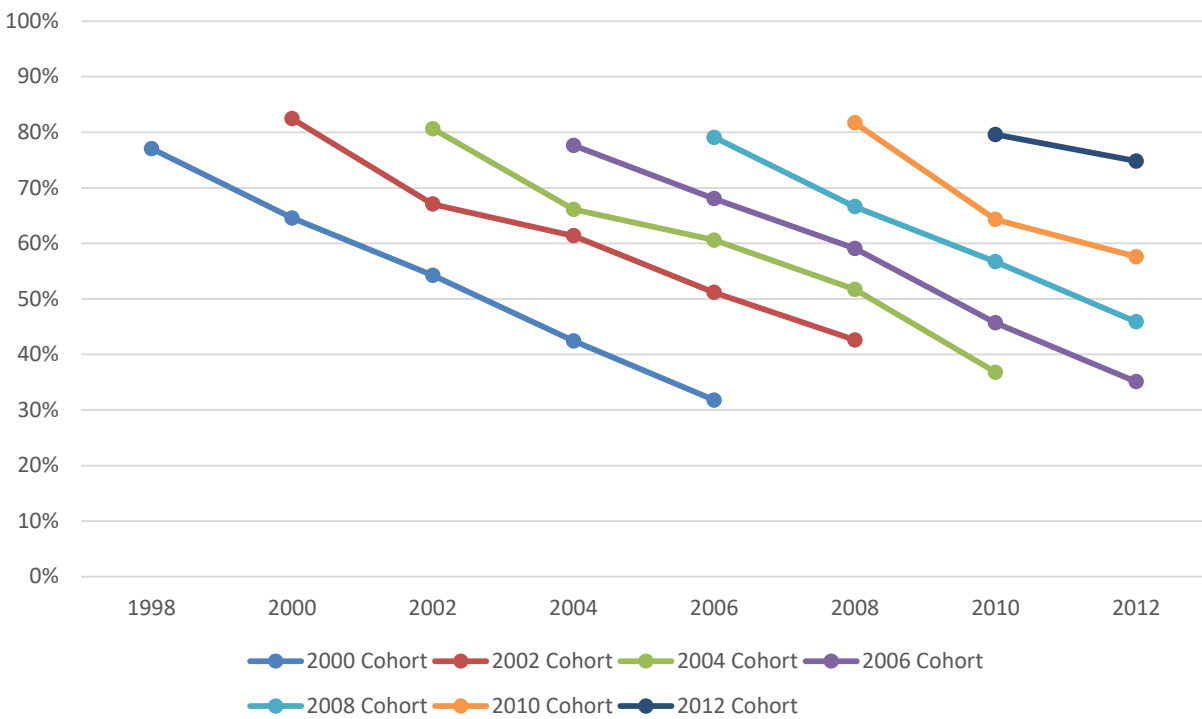


Figure 14b – Percent Working Full Time for those with no observed Functional Limitation in 55-61 age cohort as of Indicated Year, Workers in Wave Before Cohort Year

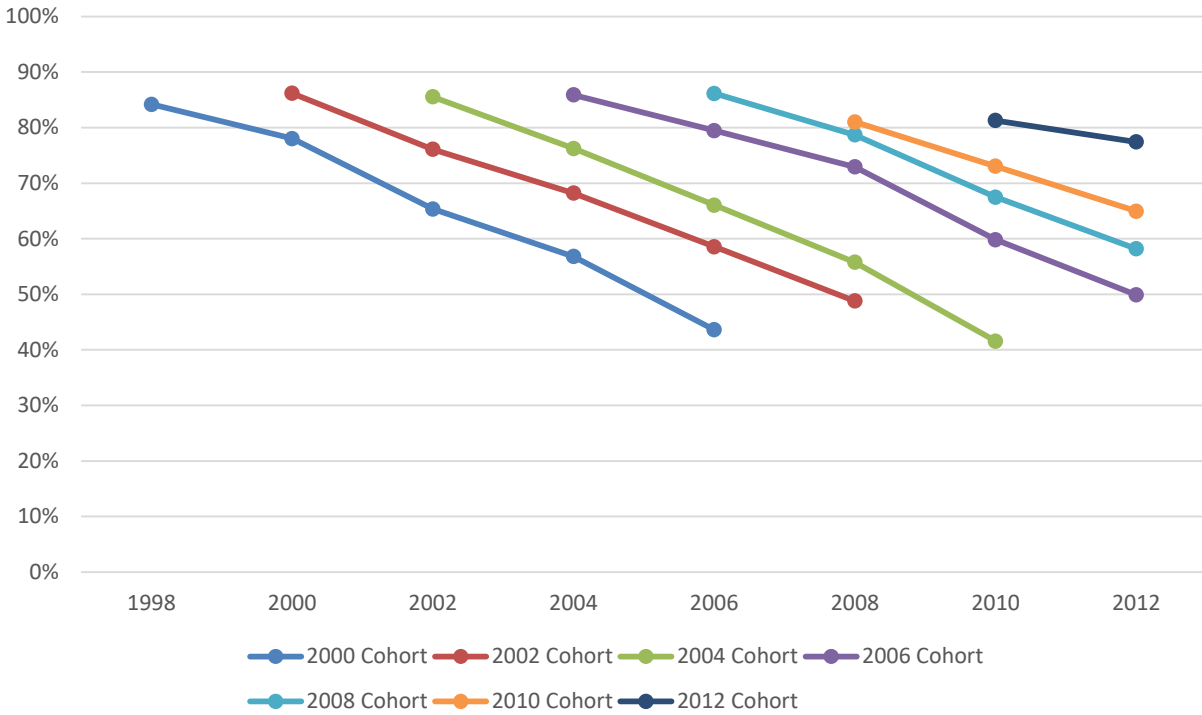


Figure 15a – Median Real Earnings for Those with First Functional Limitation in age 55-61 cohort in Indicated Year, Workers in Wave before First Functional Limitation

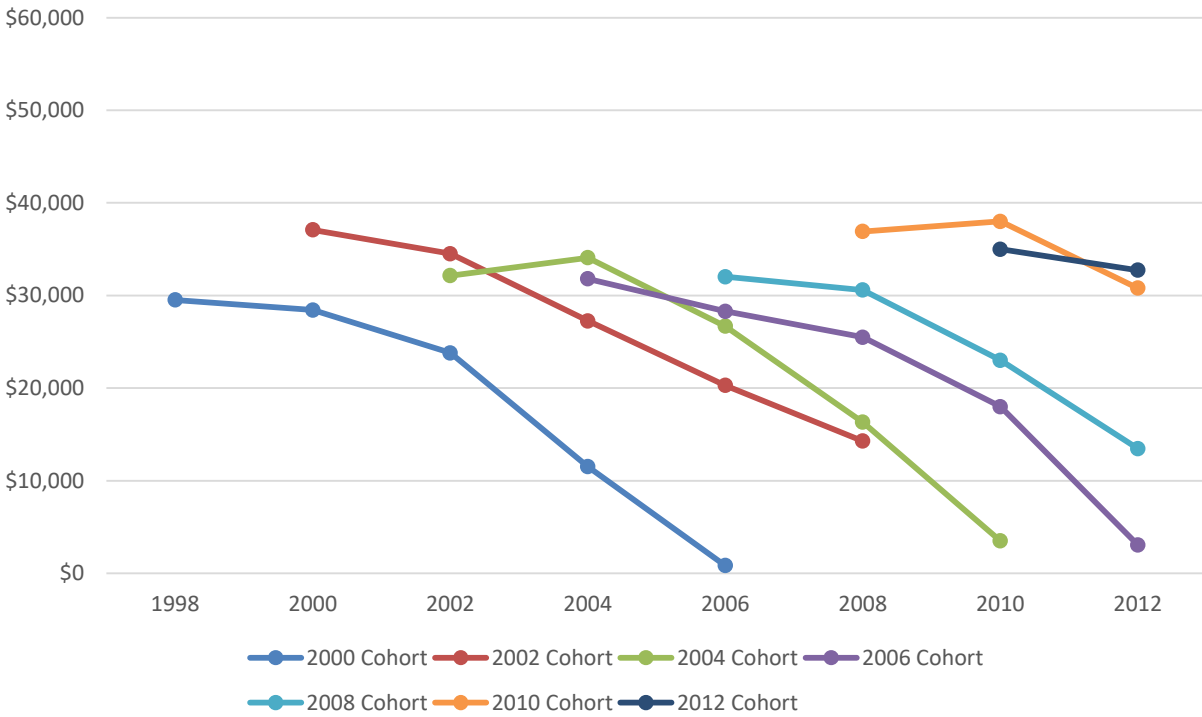


Figure 15b – Median Real Earnings for Those Without Functional Limitation in Age 55-61 Cohort as of Indicated Year, Workers in Wave before Cohort Year

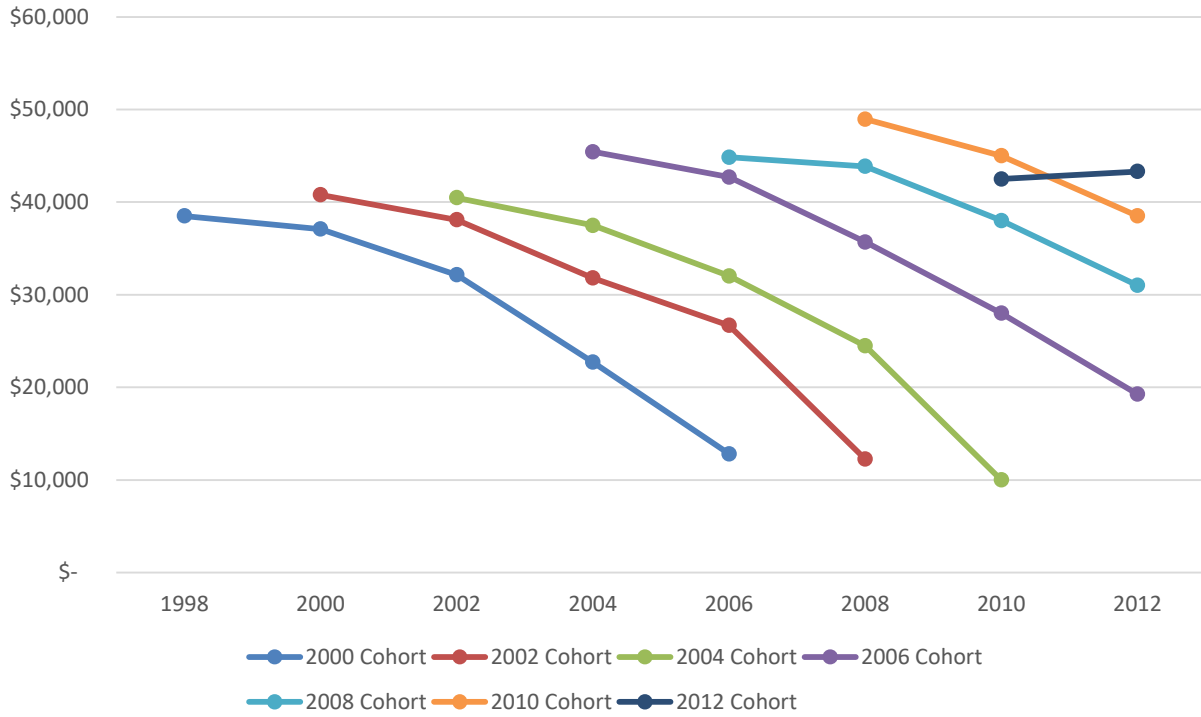


Figure 16a – % in Labor Force for Those with First Functional Limitation in Age 55-61 Cohort in Indicated Year, Workers in Wave before First Functional Limitation

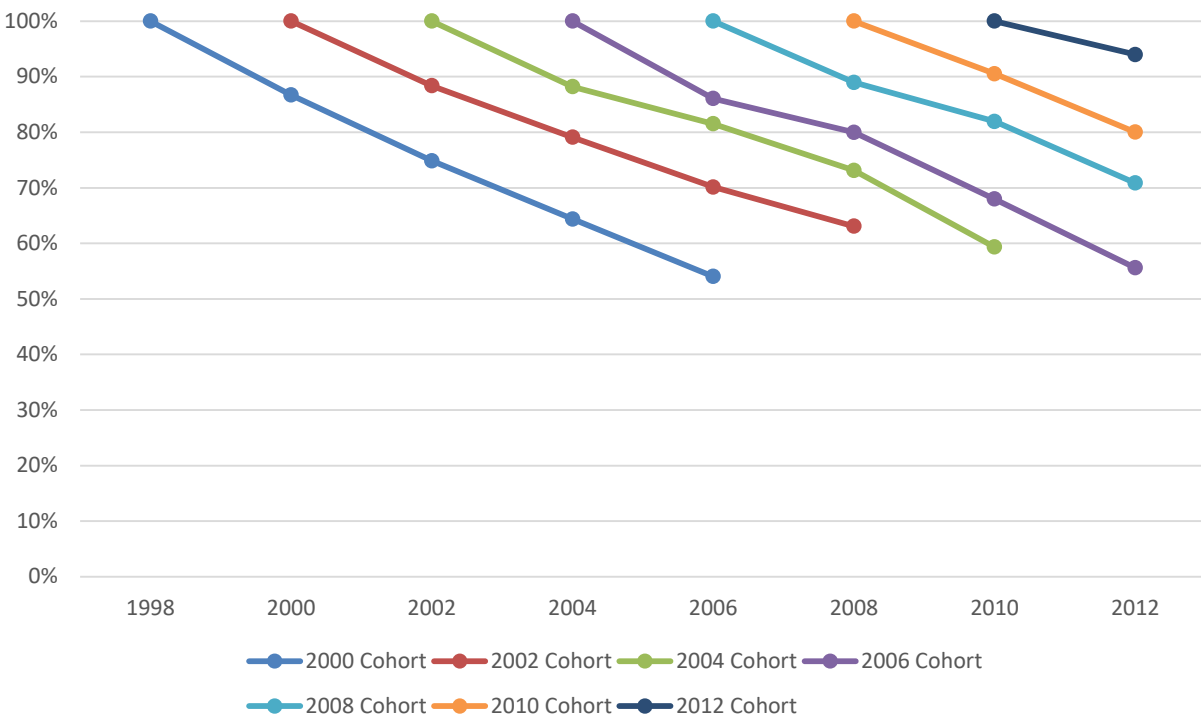


Figure 16b – % in Labor Force for Those without Functional Limitation in Age 55-61 Cohort as of Indicated Year, Workers in Wave Before Cohort Year

