

The Impact of Decreasing Defined Benefit Plans on Employee Turnover

Melissa Claire Gregory¹

The University of Tennessee, Knoxville

April 2019

¹ The author would like to thank Dr. Deborah Harrell, who served as Thesis Advisor, and the Masters Investment Learning Center for the use of Bloomberg terminals to obtain proprietary data.

Abstract

The gradual adoption of defined contribution retirement plans has been a significant change in the occupational pension system in the United States over the last few decades. By transitioning from defined benefit plans to defined contribution plans, companies are shifting the financial risk associated with saving for retirement onto the employee. Though the shift of this financial risk is the primary concern for many, there are other side effects that this transition may bring about. The principal side effect observed in this research is the potential of defined contribution plans to dis-incentivize employee loyalty and contribute to increased employee turnover in a company. This is explored through univariate analysis of access to and participation in defined benefit and defined contribution plans across various categories including worker characteristics, establishment characteristics, and geographic areas. Analysis of quit rates across the categories is conducted as well in an attempt to understand the shifts in access, participation and take-up rates in defined benefit and defined contribution plans offered by employers, returns on the S&P500 Index are analyzed. The data analysis produced three key findings: 1) year over year market returns have little impact on access, participation, and take-up rates; 2) take-up rates of all retirement benefits decreased from 2008 until 2018 among all workers while quits levels increased among all workers; and 3) the exact impact of benefit plans on employee turnover is still unclear, even when surveying the data in specific industries and geographic regions.

Keywords: defined benefit, defined contribution, employee turnover

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Introduction

History of Defined Benefit and Defined Contribution Plans

The first public pension plan in the United States was established in 1857 for police officers injured in the line of duty (Bond, 2017). From this time until 1980, the defined contribution pension plan grew to a point where it became an absolutely essential part of the lives of the American middle class. Defined contribution plans existed prior to 1980, but the Revenue Act of 1978 was the piece of legislation that instigated its prominence in the private sector. This legislation contained a provision creating Section 401(k) of the U. S. tax code. For the first few years of its existence, the 401(k) provision went unnoticed. However, following Ronald Reagan's election as president, the IRS changed the regulations regarding 401(k) plans and dramatically increased their popularity in the private sector (Bond, 2017). According to the United States Department of Labor, the number of participants enrolled in defined contribution plans grew 65.2% from 19.924 million in 1980 to 32.915 million in 1984. On the other hand, the number of participants enrolled in defined benefit plans only increased 7.9% in the same five-year period from 37.979 million in 1980 to 40.980 million in 1984 (Employee Benefits Security Administration, 2018).

Since 1985, the number of participants enrolled in defined contribution plans has seen steady, positive growth. In 1975, there were 34.973 million participants, and, in 2016, there were 100.152 million participants, an increase of 186.4%. However, the number of participants in the defined benefit plan has not seen the same robust growth. Rather, participants in defined benefit plans have remained relatively constant at 39 to 41 million from 1985 through 2010 (growth of 5.1%). The most recent data indicates, though, that the number of participants in defined benefit plans is steadily decreasing year over year. The number of participants in these plans have

declined 13.0% from 41.423 million in 2010 to 36.028 million in 2016 (Employee Benefits Security Administration, 2018).

Characteristics of Defined Benefit and Defined Contribution Plans

In traditional defined benefit plans, more commonly known as pension plans, workers are promised a regular monthly payment from the date of their retirement until their death, or, in some cases, until the death of their spouse. The promised life annuity is commonly based on a formula linked to an employee's wages or salary and years of tenure at the sponsoring firm. In a typical defined benefit plan the member earns a unit of pension, usually expressed as a percentage of nominal earnings, for each year of credited service (Broadbent, Palumbo, & Woodman, 2006). Like defined benefit plans, defined contribution plans also allow an employee to obtain income after retirement; however, this is where the similarities begin and end. In a defined contribution plan, workers accrue funds in individual accounts administered by the plan sponsor. The contributions of employees are typically deducted directly from their pay and frequently some portion of these contributions is matched by the employer (Broadbent, Palumbo, & Woodman, 2006). Another distinguishing characteristic of the defined contribution plan is an employee's ability to roll his or her contributions across employers or to other retirement savings vehicles such as an IRA or Roth IRA, deeming saving for retirement a minute issue when considering switching to a new job.

Generational Differences in Company Loyalty

As time passes, Baby Boomers continue to retire while Millennials continue to saturate the workforce. This continual shift has significantly changed the makeup of what drives a happy, productive employee. Baby Boomers started the workaholic trend and believe in paying their dues. They also like teamwork, collaboration and group decision-making, are competitive and

believe in loyalty toward their employers. Millennials, on the other hand, have more of a free spirit. They value team work and collective action, embrace diversity, and are optimistic and adaptable to change. They also seek flexibility, are independent, and desire a more balanced life (Tolbize, 2008).

A sense of loyalty to a company drives retention while a free spirit may lead to higher job mobility. In their article, “Generational Difference in Workplace Behavior,” Becton, et. al. (2014) outline a hypothesis for generational differences in job mobility behavior. The hypothesis states that Boomers will exhibit less job mobility than GenXers and Millennials. This hypothesis is driven by the common assumptions that Baby Boomers entered the workforce in an era where the path to success entailed a series of jobs within one organization, whereas Millennials are entering the workforce in an era of layoffs and downsizing where company loyalty does not necessarily translate to job security; thus, their path to success involves multiple jobs across multiple organizations. Though many would believe this is a valid hypothesis, the results of the study did not necessarily support it. The authors concluded, “While results indicated some generational differences in workplace behavior exist, the effect sizes for these relationships were small” (Becton, Walker, & Jones-Farmer, 2014, p. 186). Though it is commonly believed that there are significant differences in workforce generations, this study suggests that the difference may not be as large as they seem.

Employee Turnover Trends

The recession of the early 1980’s upset the paternalistic relationship companies traditionally had with their salaried workers. Intensified competition, the shifting power relationship between senior management and shareholders, and downsizing are all major responses to this recession that still impacts the employment culture today. Today, there is a seemingly lack of company loyalty among employees, especially among younger generations as

previously discussed, which has greatly affected employee retention and turnover (Goldberg, 2018). Employee turnover is the rate at which employees leave a company and are replaced by new employees (Cambridge Dictionary). Employee turnover has been a major cause for concern for employers in recent years. In the 2018 National Employee Retention Report, it was predicted that one in four employees will leave their jobs in 2018, resulting in \$600 billion in turnover costs. It is also concluded that 77 percent of that turnover could be prevented by employers (Fox 2018).

Summary

Retirement plans have been a part of the American workforce for more than a century now. Originally, an employee relied almost solely on his or her employer to provide a steady flow of income when he or she retired through the form of a defined benefit plan—otherwise known as a pension plan—as a severance for the employee’s service and loyalty throughout his or her career. In 1984, a defined contribution plan—also known as a 401(k)—became a popular choice among employers because it shifted the financial risk of an employee’s retirement from the firm to the individual. In other words, the cost of offering a pension plan became seemingly too great for the firm to bear, and the number of participants in defined contribution plans has grown ever since. All while firms were transitioning to defined contribution plans, there was a recession in the 1980s that introduced elements such as increased competition, power shifts, and downsizing to the workforce that greatly impacted the employment culture across all generations. This impact led to a faltering company loyalty among many which is still evident in the workforce today through increasing employee turnover. If companies had continued to assume the financial risk associated with defined benefit plans in order to give their employees a secure financial future, would there be a different story being told today employee turnover?

Literature Review

As time passes, more thorough research is continually being conducted to determine the differences of defined contribution and defined benefit plans and how these differences are affecting employee decisions as well as the future of retirement benefits. In a study published in 2004, DeGennaro and Murphy examined the expanding role of defined contribution plans in the U. S. was examined. The research foresaw that defined contribution retirement plans, such as the 401(k), 403(b), 457 and Roth IRAs, would be the preferred structure of retirement benefits moving forward into the twenty-first century. DeGennaro and Murphy attributed this shift to the fact that companies could no longer afford guaranteed retirement for their employees and thus are unable to bear the risk associated with a pension plan. They also recognized that a second reason for the shift from defined benefit to defined contribution was due to the questions surrounding the sustainability of social security (DeGennaro and Murphy, 2004).

Broadbent, Palumbo, and Woodman (2006) took a different approach to examining the shift from defined benefit to defined contribution plans. In this study, they observed the implications for asset allocation and risk management and concluded that the gradual shift toward defined contribution favors labor market mobility which alleviates the accrual risk associated with defined benefit plans. The study states that “Defined contribution plans can also provide employees with much more control, choice and flexibility in terms of how they manage their retirement savings and investment, and indeed how they manage their financial assets over their lifecycle” (Broadbent, Palumbo, and Woodman, 2006, p. 48). However, with this newfound financial freedom, individuals also face greater financial risk. Employees who once counted on their employer to bare inflation risk as well as market, longevity and market timing risk are now having to handle these problems themselves, and, as a result, employees are choosing not to participate in their company’s defined contribution plan.

Jump forward almost 10 years and research is still being conducted about the defined benefit and defined contribution retirement plans of the future. Ezra (2015) examines the fall of defined benefit plans was seen as a precautionary tale and the measures needed to be taken in order to prevent the failure of defined contribution plan were examined. Ezra concluded the research with three final thoughts. First, defined benefits failed due to abuse such as “allowing promises to run far ahead of funding and then putting a ceiling on contributions when the market did perform well” (Ezra, 2015, p. 59). Second, defined contribution is not a cost-saving plan and to be considered as such would be self-deception. The paper states, “If cost reduction is the goal, one could as easily save money by reducing the [defined benefit] benefit level for future accruals and removing the early-retirement subsidies” (Ezra, 2015, p. 59). And third, retirement income guarantees are expensive, and in order to achieve the post-retirement lifestyle one desires, he or she must make some sacrifices along the way.

Another more recent study analyzes the effects of pension plan type on employee mobility. Goda, Jones and Manchester (2013) conclude that the findings of this study were complicated by the varying mobility tendencies of employees as well as the multidimensional differences of each plan type. However, through an empirical model and experimentation of a single employer context of a university, it was stated there are reasons to believe that the findings of this study could hold true across a larger scale. Goda, Jones, and Manchester found evidence of positive selection into defined contribution plans over defined benefit plans based on mobility tendencies, though the paper was also clear in stating that this only shows a partial cause of the relationship between the transition and increased job mobility. They also found evidence that, despite what might have previously been thought, defined contribution plans may reduce mobility relative to defined benefit plans due to favorable attributes such as individual control, liquidity, and transparency

Goldhaber, Grout, and Holden (2016) researched a similar topic, specifically, the relationship between pension structure and employee turnover in a large public pension system. This study was conducted through teachers at the University of Washington, Bothell. In this research, teachers' turnover behaviors were observed in addition to their pension structure of choice, and similar to one of the findings of the previously mentioned research on pension plan type and employee mobility, this study concluded that despite conventional wisdom, they found that the empirical evidence on the relationship between pension structure and employee turnover is mixed. The research suggested that employee turnover may be related more to individual employee behaviors rather than the structured of their pension plan. In other words, Goldhaber, Grout, and Holden found that their analysis raises questions about if the pension structure is a significant driver of employee turnover at all.

As existing literature is analyzed, one can see that studies have evolved over time from defining the differences between pension types and which one is favored under certain market conditions to research that has branched out to analyze how the shift from defined benefit to defined contribution plans are impacting business and individual employee decisions. Similar to the purpose of this research, more recent research has defined a relationship between pension types and employee turnover and mobility. However, this exploratory study expands on existing research by analyzing data gathered on a national level, rather than data gathered from a singular institution. Regional and industry level data is analyzed to gain insights into specific criteria that has a greater effect on the relationship between decreasing defined benefit plans and increasing employee turnover.

Data and Methodology

For this research, annual data has been collected from the National Compensation Survey—released annually—and the Job Openings and Labor Turnover report—released monthly—both of which are written and released by the U.S. Bureau of Labor Statistics. “The National Compensation Survey”, as described by the U.S. Bureau of Labor Statistics in the first publication of this report in 2008, “provides comprehensive measures of occupational earnings, compensation cost trends, the incidence of benefits, and detailed benefit provisions. This bulletin presents estimates of the incidence of benefits for the Nation. The estimates include benefits for workers by ownership within the U.S. economy in 2008—civilian, private, and State and local government—and by various occupational and establishment characteristics” (Chao & Hall, 2008, p. 2). Each report from its first issue in 2008 through the its most current issue in 2018 begins with this same sentiment save the year of publication. The Job Opening and Labor Turnover report measures multiple ways in which the job market has fluctuated over a specified time periods. These measures include job openings levels and rates, hires levels and rates, total separations levels and rates, quits levels and rates, layoffs and discharges levels and rates, as well as other separations levels and rates, all of which are subdivided by industry and region. The Job Opening and Labor Turnover report is released monthly, and thus published monthly data. However, in January issue each year, the report publishes additional annual data for the previous year as well as several years prior. The January issue of 2014 and 2019 is where annual data from 2008 to 2018 has been retrieved for this research.

Before diving directly into the data, one must gain perspective and ask the question—how important are retirement benefits to employees? There are a multitude of factors that influence an employee’s job satisfaction. These factors include but are not limited to salary and wages, paid and unpaid time off, professional and career development benefits, wellness

benefits, as well as various insurances such as health, life and/or disability, dental and vision.

Retirement benefits—which is the factor being observed in this research—is just one aspect of a multifaceted decision to quit one’s job. In short, it is not possible to draw a direct connection between a decreasing number of defined benefit plans and an increasing employee turnover rate in recent years; the data simply is not there, and because of this, research of this kind must be viewed with caution in terms of reaching conclusions regarding the drivers of employee decisions to quit their jobs.

Upon this realization, the research took a turn to ask a new question. What *could* the data tell us about a *possible* link between decreasing defined benefit plans and increasing employee turnover? With this new approach, the research adopts a more exploratory element in which the goal is to gain insights about specific criteria that has a greater effect on the relationship between decreasing defined benefit plans and increasing employee turnover. Because of this, the retirement plan and employee data will be analyzed by means of univariate analysis as well as compared and contrasted to identify a potential relationship. Data will also be collected from S&P 500 returns through Bloomberg in an attempt to understand the shifts in access, participation and take-up rates in defined benefit and defined contribution plans offered by employers.

Analysis

Benefit trends from 2008 to 2018 will be analyzed through access and participation rates as well as take-up rates and categorized by all workers, industry characteristics, and geographic regions. These rates are defined as follows:

- *Access rate*: Employees are considered to have access to a benefit plan if it is available for their use (Acosta & Wiatrowski, 2018, p. 569).
- *Participation rates*: Employees in contributory plans are considered participants in an insurance or retirement plan if they have paid required contributions and fulfilled any applicable service requirements. Employees in noncontributory plans are counted as participating regardless of whether they have fulfilled the service requirements (Acosta & Wiatrowski, 2018, p. 569).
- *Take-up rate*: The take-up rate is an estimate of the percentage of workers with access to a plan who participate in the plan (Acosta & Wiatrowski, 2018, p. 569).

Next, employee turnover trends from 2008 to 2018 will be analyzed through annual total separations levels and annual quits levels (defined below) categorized by all workers, industry characteristics, and geographic regions provided by the Job Openings and Labor Turnover.

- *Total separations*: Total separations includes quits, layoffs and discharges, and other separations and is referred to as turnover (Bureau of Labor Statistics, 2014, p. 2).
- *Quits*: Quits are generally voluntary separations initiated by the employee. Therefore, the quits rate can serve as a measure of workers' willingness or ability to leave jobs (Bureau of Labor Statistics, 2014, p. 2).

All data will be compared and contrasted with one another and overlaid with S&P 500 returns in order to draw possible conclusions about the relationship between defined benefit retirement plans and employee turnover.

Benefit Trends

Table 1.1. All Workers: All retirement benefits, defined benefit, and defined contribution access, participation, and take-up rates

All Workers	ALL RETIREMENT BENEFITS			DEFINED BENEFIT			DEFINED CONTRIBUTION		
	Access	Participation	Take-up rate	Access	Participation	Take-up rate	Access	Participation	Take-up rate
2008	66	56	86	31	29	96	52	39	76
2009	71	57	80	31	29	94	56	39	69
2010	69	55	80	31	28	92	54	37	69
2011	68	54	79	29	26	91	55	37	68
2012	68	54	79	29	26	91	55	37	68
2013	68	54	80	28	26	90	55	38	69
2014	68	53	78	28	25	88	56	38	68
2015	69	53	77	28	24	86	57	39	68
2016	69	54	78	27	23	85	58	40	69
2017	70	54	77	28	23	83	59	40	69
2018	71	55	78	26	22	83	60	42	71

Figure 1.1

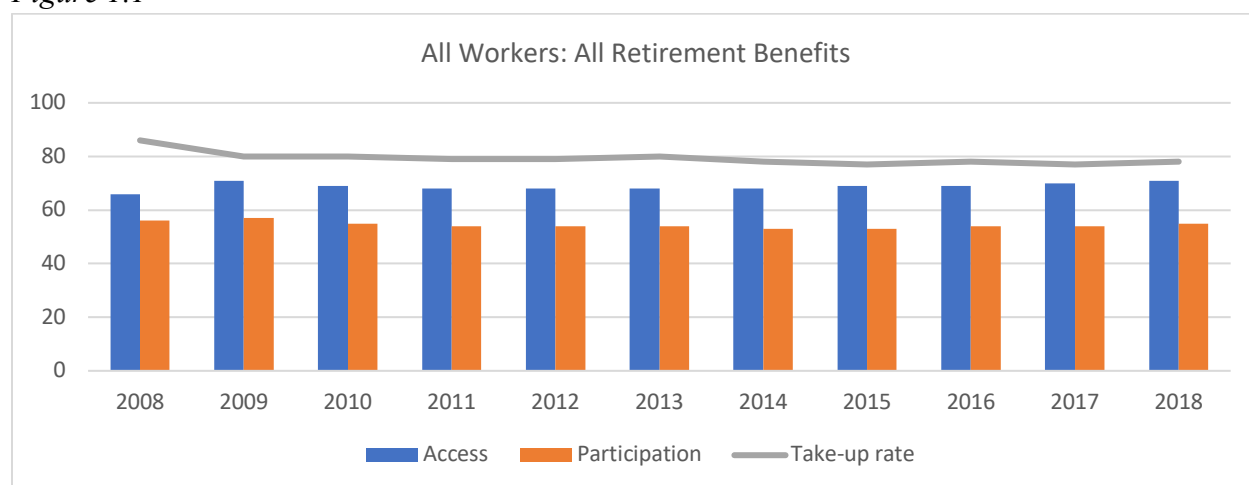


Figure 1.2

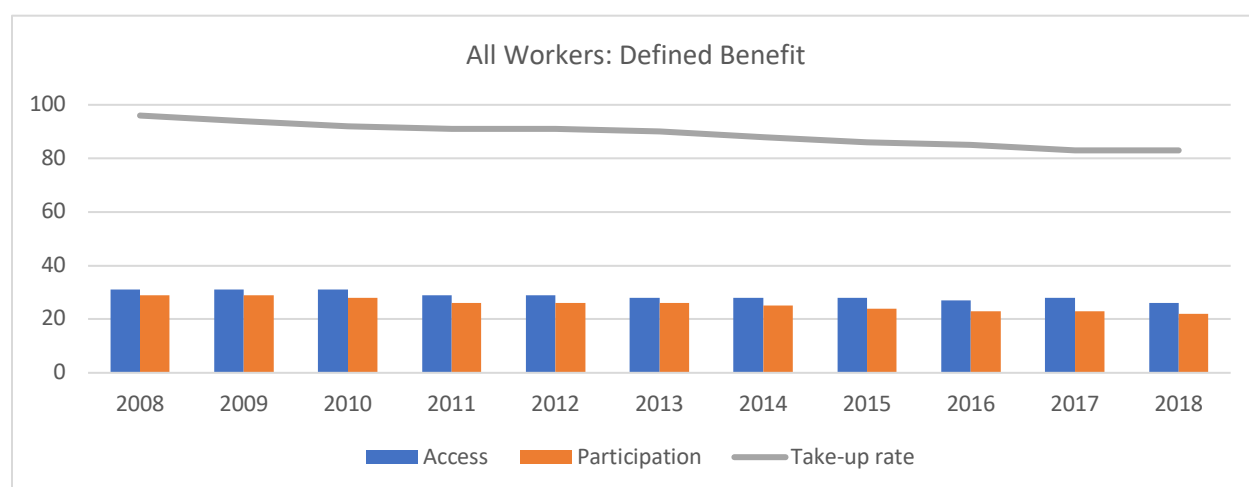


Figure 1.3

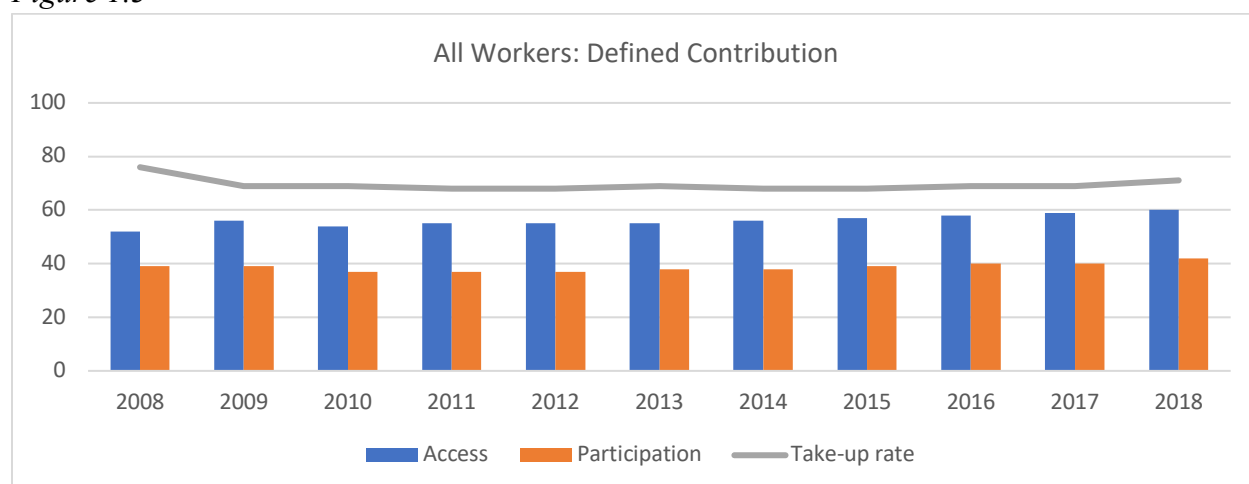


Table 1.2. All Workers: Annual rate of change of all retirement benefits, defined benefit, and defined contribution access, participation, and take-up rates

All Workers	ALL RETIREMENT BENEFITS			DEFINED BENEFIT			DEFINED CONTRIBUTION		
	Access	Participation	Take-up rate	Access	Participation	Take-up rate	Access	Participation	Take-up rate
2008	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2009	7.58%	1.79%	-6.98%	0.00%	0.00%	-2.08%	7.69%	0.00%	-9.21%
2010	-2.82%	-3.51%	0.00%	0.00%	-3.45%	-2.13%	-3.57%	-5.13%	0.00%
2011	-1.45%	-1.82%	-1.25%	-6.45%	-7.14%	-1.09%	1.85%	0.00%	-1.45%
2012	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2013	0.00%	0.00%	1.27%	-3.45%	0.00%	-1.10%	0.00%	2.70%	1.47%
2014	0.00%	-1.85%	-2.50%	0.00%	-3.85%	-2.22%	1.82%	0.00%	-1.45%
2015	1.47%	0.00%	-1.28%	0.00%	-4.00%	-2.27%	1.79%	2.63%	0.00%
2016	0.00%	1.89%	1.30%	-3.57%	-4.17%	-1.16%	1.75%	2.56%	1.47%
2017	1.45%	0.00%	-1.28%	3.70%	0.00%	-2.35%	1.72%	0.00%	0.00%
2018	1.43%	1.85%	1.30%	-7.14%	-4.35%	0.00%	1.69%	5.00%	2.90%

All workers, also known as workers in the civilian economy, is defined by the National Compensation Survey as those employed in the private industry as well as those in state and local government (Acosta & Wiatrowski, 2018, p. 569). Over the past 10 years, all workers experienced a slight increase in access to retirement benefits, specifically defined contribution, following 2008. Since the initial incline from 2008 to 2009, overall access has remained relatively steady due to the juxtaposition of declining access to defined benefit plans and increasing access to defined contribution plans. However, though access is increasing, take-up rates have seen a steady decline across all benefit plans.

Table 2.1. Management, professional, and related: All retirement benefits, defined benefit, and defined contribution access, participation, and take-up rates

Management, professional, and related	ALL RETIREMENT BENEFITS			DEFINED BENEFIT			DEFINED CONTRIBUTION		
	Access	Participation	Take-up rate	Access	Participation	Take-up rate	Access	Participation	Take-up rate
2008	81	74	92	46	44	96	59	47	80
2009	83	75	89	47	44	94	62	47	76
2010	83	74	89	46	43	93	61	46	76
2011	83	74	88	45	42	93	62	48	75
2012	83	74	89	43	40	92	63	48	76
2013	83	73	88	43	39	92	64	48	75
2014	83	71	86	43	37	88	65	49	75
2015	83	71	85	42	36	86	66	50	75
2016	84	72	86	41	35	85	66	51	77
2017	85	73	86	42	35	83	68	52	76
2018	86	75	87	41	34	83	70	54	78

Figure 2.1

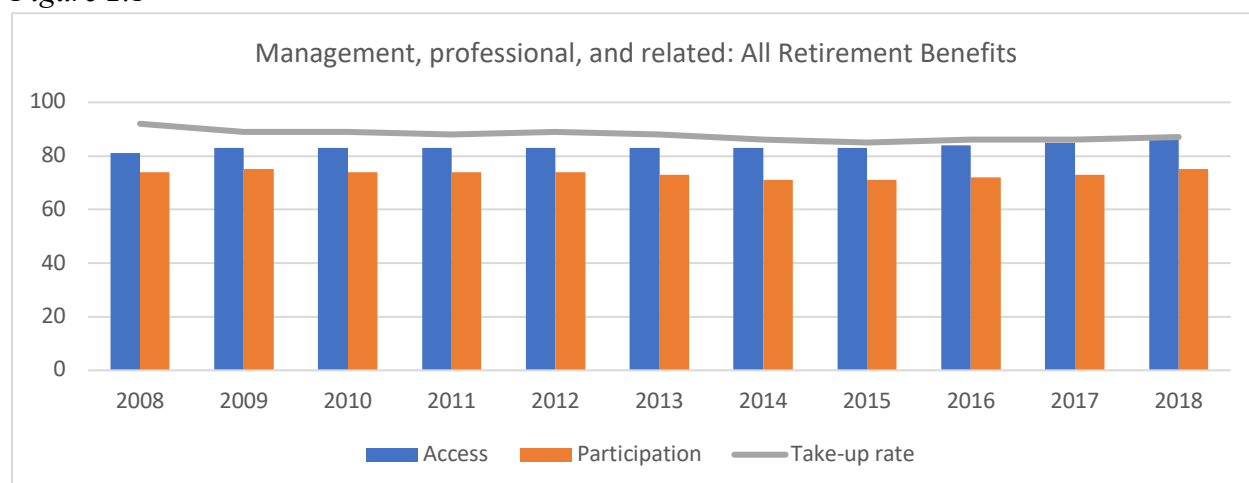


Figure 2.2

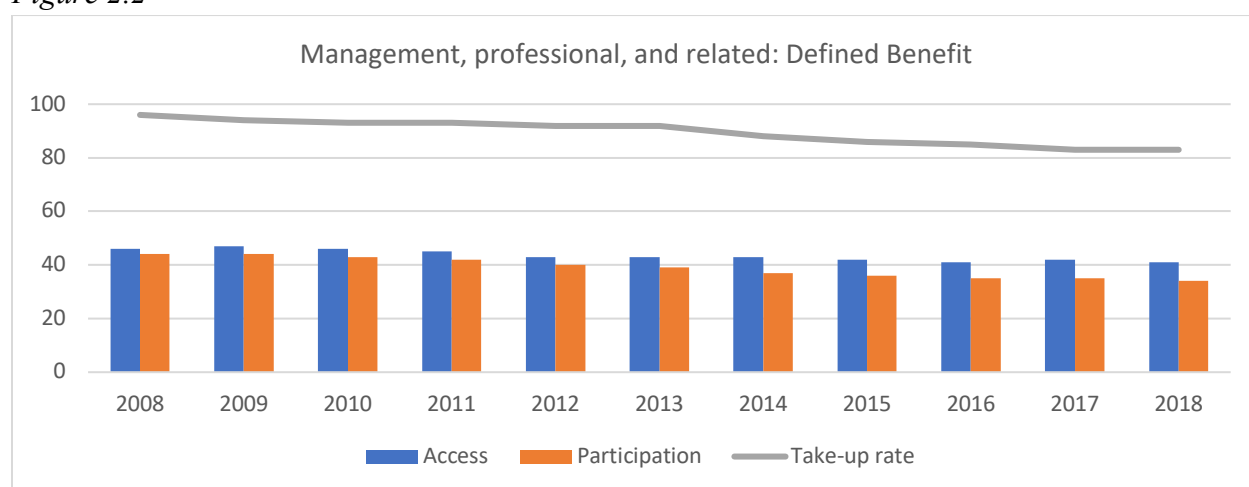


Figure 2.3

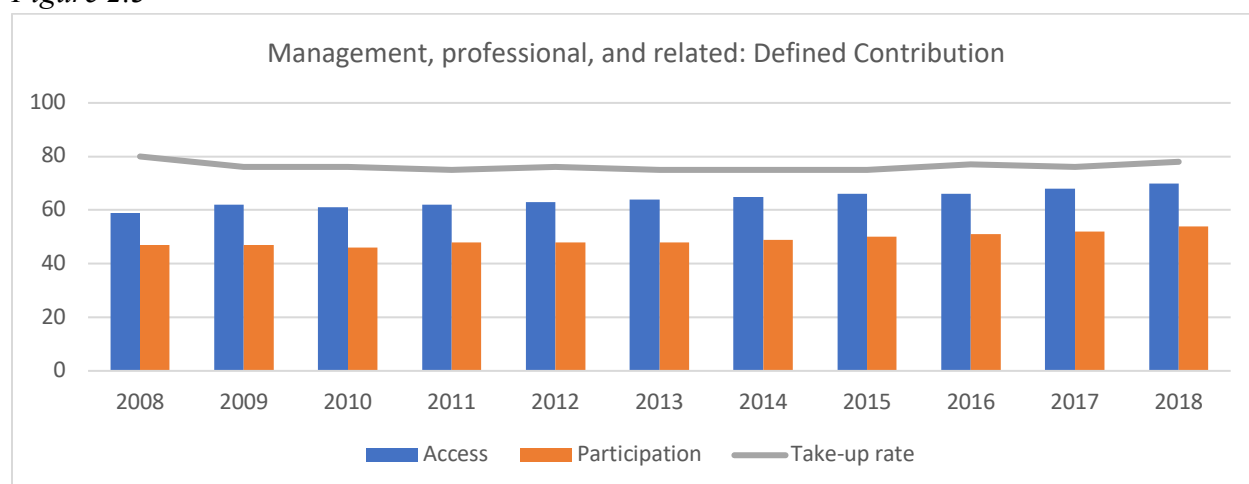


Table 2.2. Management, professional, and related: Annual rate of change of all retirement benefits, defined benefit, and defined contribution access, participation, and take-up rates

Management, professional, and related	ALL RETIREMENT BENEFITS			DEFINED BENEFIT			DEFINED CONTRIBUTION		
	Access	Participation	Take-up rate	Access	Participation	Take-up rate	Access	Participation	Take-up rate
2008	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2009	2.47%	1.35%	-3.26%	2.17%	0.00%	-2.08%	5.08%	0.00%	-5.00%
2010	0.00%	-1.33%	0.00%	-2.13%	-2.27%	-1.06%	-1.61%	-2.13%	0.00%
2011	0.00%	0.00%	-1.12%	-2.17%	-2.33%	0.00%	1.64%	4.35%	-1.32%
2012	0.00%	0.00%	1.14%	-4.44%	-4.76%	-1.08%	1.61%	0.00%	1.33%
2013	0.00%	-1.35%	-1.12%	0.00%	-2.50%	0.00%	1.59%	0.00%	-1.32%
2014	0.00%	-2.74%	-2.27%	0.00%	-5.13%	-4.35%	1.56%	2.08%	0.00%
2015	0.00%	0.00%	-1.16%	-2.33%	-2.70%	-2.27%	1.54%	2.04%	0.00%
2016	1.20%	1.41%	1.18%	-2.38%	-2.78%	-1.16%	0.00%	2.00%	2.67%
2017	1.19%	1.39%	0.00%	2.44%	0.00%	-2.35%	3.03%	1.96%	-1.30%
2018	1.18%	2.74%	1.16%	-2.38%	-2.86%	0.00%	2.94%	3.85%	2.63%

Management, professional, and related includes professions such as management professionals, finance professionals, teachers, and registered nurses. While access to defined benefit plans in these industries have drastically declined, access to defined contribution plans has increased even more so, creating an overall increase in access to all retirement benefits from 2008 - 2018.

Likewise, participation in defined benefit plans has decreased while participation in defined contribution plans has increase, causing an overall increase participation in the management, professional, and related fields. Take-up rate has seen a slight decline throughout.

Table 3.1. Sales and office: All retirement benefits, defined benefit, and defined contribution access, participation, and take-up rates

Sales and office	ALL RETIREMENT BENEFITS			DEFINED BENEFIT			DEFINED CONTRIBUTION		
	Access	Participation	Take-up rate	Access	Participation	Take-up rate	Access	Participation	Take-up rate
2008	67	57	85	25	23	94	59	46	77
2009	73	57	78	26	23	90	64	44	70
2010	71	56	78	25	22	86	62	44	71
2011	71	55	78	24	21	88	61	43	71
2012	71	54	76	23	19	84	62	43	70
2013	70	45	77	23	19	84	62	44	71
2014	71	52	74	22	18	83	63	43	68
2015	72	52	72	22	18	80	64	43	67
2016	71	52	74	21	17	79	63	44	69
2017	72	53	74	21	16	75	64	44	69
2018	73	54	75	20	15	75	66	46	70

Figure 3.1

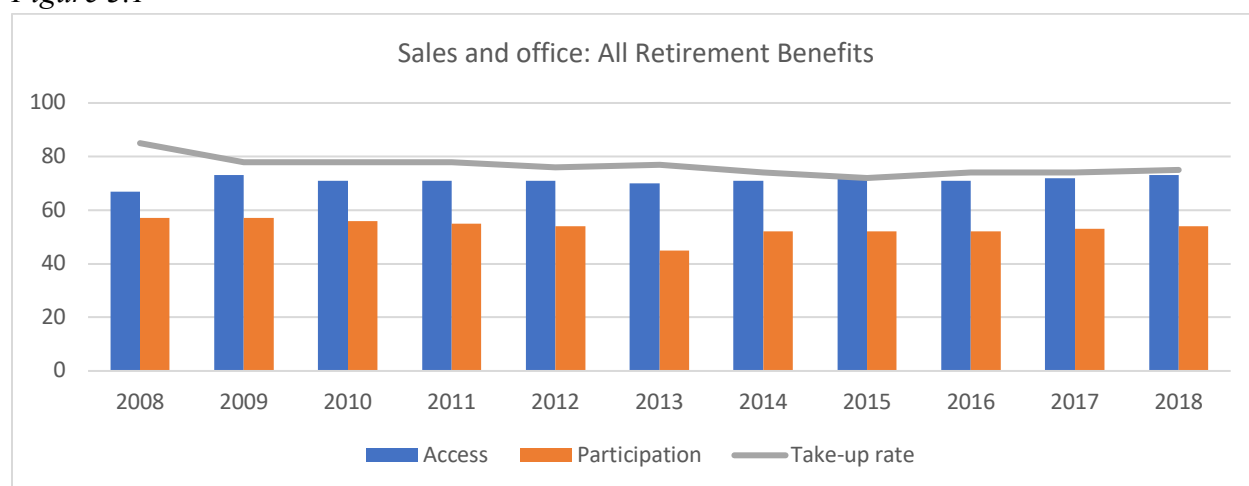


Figure 3.2

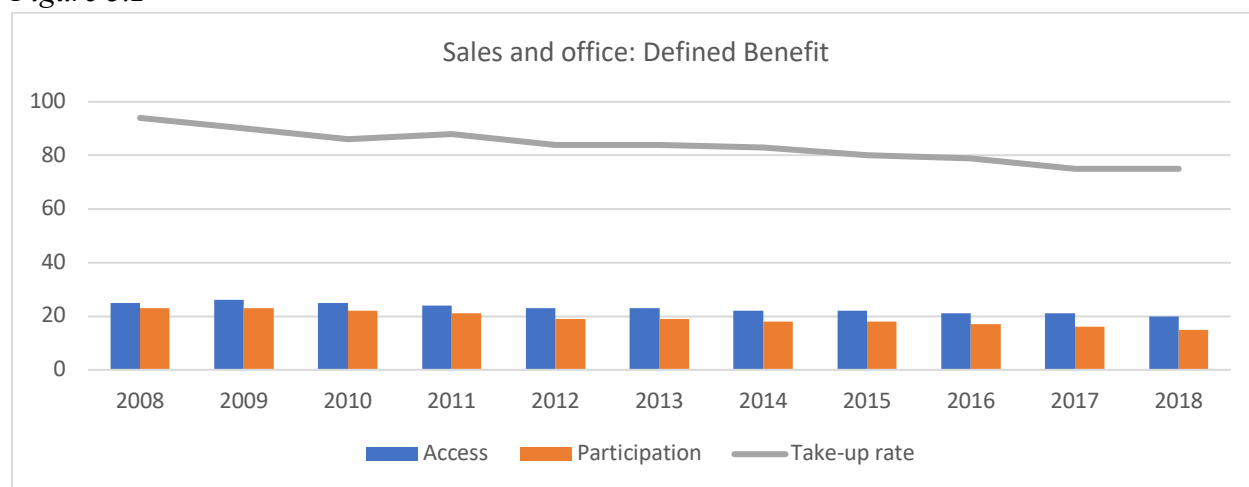


Figure 3.3

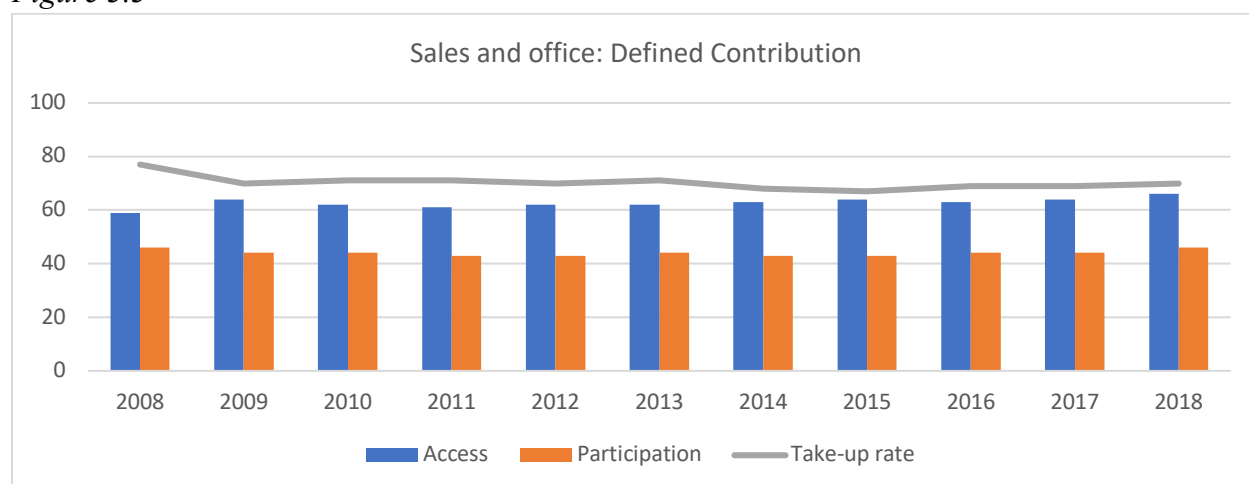


Table 3.2. Sales and office: Annual rate of change retirement benefits, defined benefit, and defined contribution access, participation, and take-up rates

Sales and office	ALL RETIREMENT BENEFITS			DEFINED BENEFIT			DEFINED CONTRIBUTION		
	Access	Participation	Take-up rate	Access	Participation	Take-up rate	Access	Participation	Take-up rate
2008	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2009	8.96%	0.00%	-8.24%	4.00%	0.00%	-4.26%	8.47%	-4.35%	-9.09%
2010	-2.74%	-1.75%	0.00%	-3.85%	-4.35%	-4.44%	-3.13%	0.00%	1.43%
2011	0.00%	-1.79%	0.00%	-4.00%	-4.55%	2.33%	-1.61%	-2.27%	0.00%
2012	0.00%	-1.82%	-2.56%	-4.17%	-9.52%	-4.55%	1.64%	0.00%	-1.41%
2013	-1.41%	-16.67%	1.32%	0.00%	0.00%	0.00%	0.00%	2.33%	1.43%
2014	1.43%	15.56%	-3.90%	-4.35%	-5.26%	-1.19%	1.61%	-2.27%	-4.23%
2015	1.41%	0.00%	-2.70%	0.00%	0.00%	-3.61%	1.59%	0.00%	-1.47%
2016	-1.39%	0.00%	2.78%	-4.55%	-5.56%	-1.25%	-1.56%	2.33%	2.99%
2017	1.41%	1.92%	0.00%	0.00%	-5.88%	-5.06%	1.59%	0.00%	0.00%
2018	1.39%	1.89%	1.35%	-4.76%	-6.25%	0.00%	3.13%	4.55%	1.45%

Sales and office establishments have seen an overall increase in access to all retirement benefits from 2008 to 2018 due to a slight decrease in access to defined benefit plans combined with a significant increase in access to defined contribution plans. Though overall access has steadily increased, overall participation sharply decreased from 2008 to 2013 and has risen since. Overall take-up rate has seen rigid movement with sudden declines followed by inclines and vice versa.

Table 4.1. Natural Resources, construction, and maintenance: All retirement benefits, defined benefit, and defined contribution access, participation, and take-up rates

Natural resources, construction, and maintenance	ALL RETIREMENT BENEFITS			DEFINED BENEFIT			DEFINED CONTRIBUTION		
	Access	Participation	Take-up rate	Access	Participation	Take-up rate	Access	Participation	Take-up rate
2008	65	56	86	31	30	98	51	39	77
2009	70	57	81	32	31	97	56	39	71
2010	67	55	81	32	31	97	54	38	70
2011	65	53	81	31	30	97	52	37	71
2012	68	55	81	30	29	96	56	40	72
2013	69	56	82	30	29	96	57	41	73
2014	70	56	81	30	28	93	57	42	73
2015	69	56	81	31	29	95	56	41	73
2016	65	53	81	28	27	95	54	39	72
2017	66	52	79	27	26	94	56	39	71
2018	64	50	78	25	23	94	55	38	69

Figure 4.1

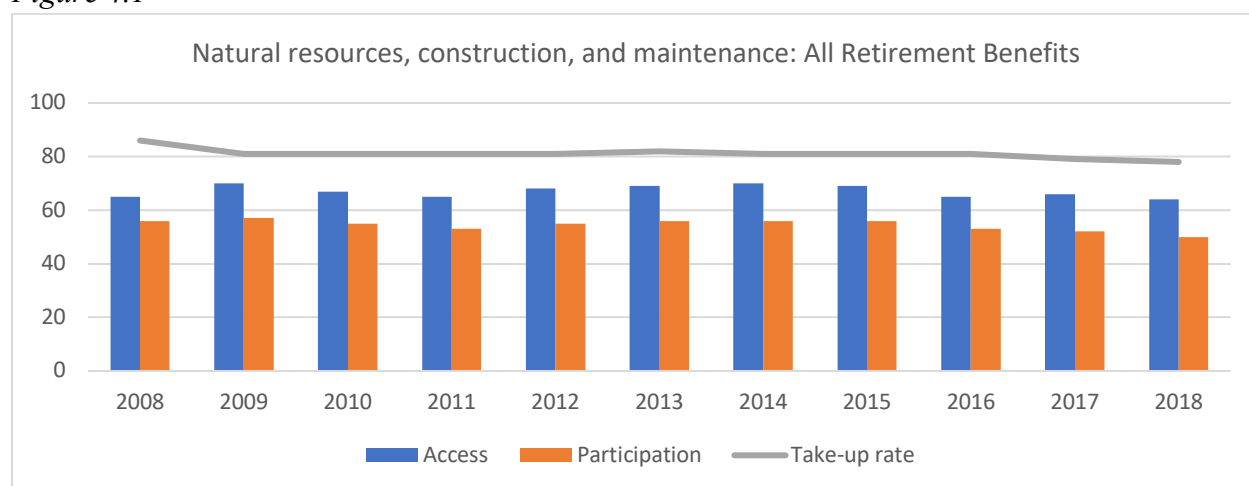


Figure 4.2

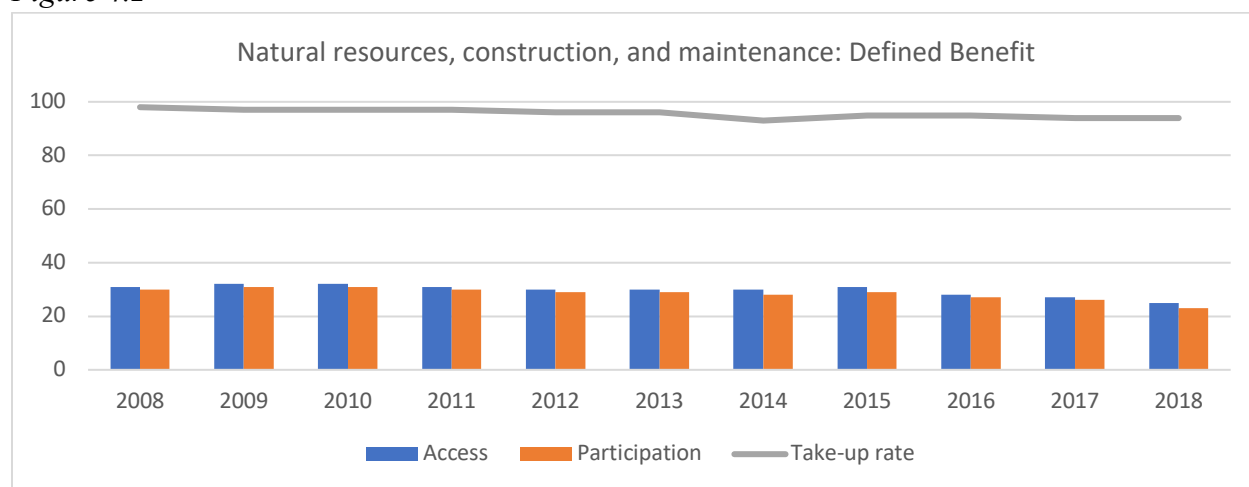


Figure 4.3

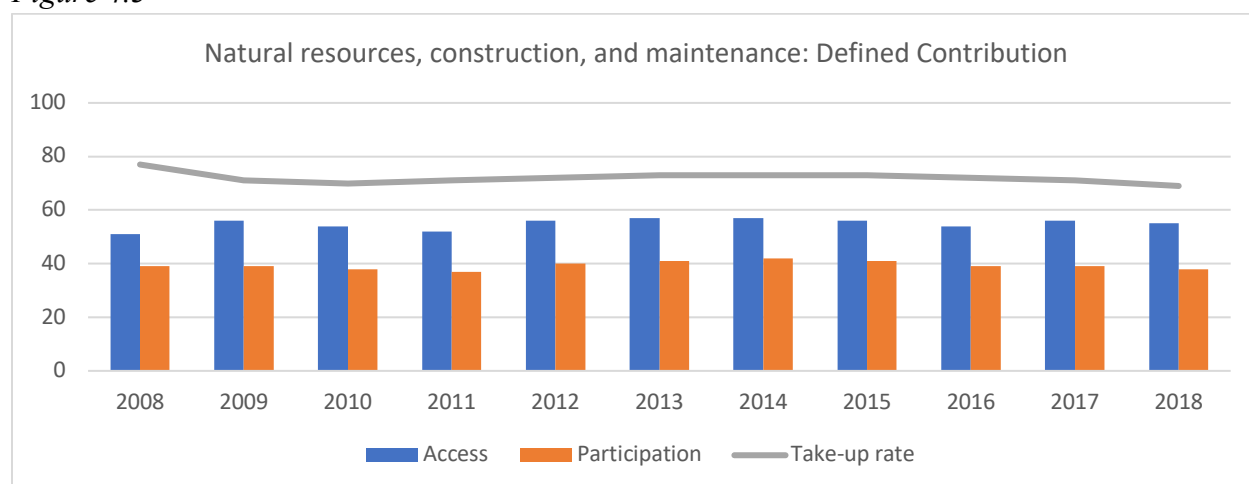


Table 4.2. Natural Resources, construction, and maintenance: Annual rate of change of all retirement benefits, defined benefit, and defined contribution access, participation, and take-up rates

Natural resources, construction, and maintenance	ALL RETIREMENT BENEFITS			DEFINED BENEFIT			DEFINED CONTRIBUTION		
	Access	Participation	Take-up rate	Access	Participation	Take-up rate	Access	Participation	Take-up rate
2008	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2009	7.69%	1.79%	-5.81%	3.23%	3.33%	-1.02%	9.80%	0.00%	-7.79%
2010	-4.29%	-3.51%	0.00%	0.00%	0.00%	0.00%	-3.57%	-2.56%	-1.41%
2011	-2.99%	-3.64%	0.00%	-3.13%	-3.23%	0.00%	-3.70%	-2.63%	1.43%
2012	4.62%	3.77%	0.00%	-3.23%	-3.33%	-1.03%	7.69%	8.11%	1.41%
2013	1.47%	1.82%	1.23%	0.00%	0.00%	0.00%	1.79%	2.50%	1.39%
2014	1.45%	0.00%	-1.22%	0.00%	-3.45%	-3.13%	0.00%	2.44%	0.00%
2015	-1.43%	0.00%	0.00%	3.33%	3.57%	2.15%	-1.75%	-2.38%	0.00%
2016	-5.80%	-5.36%	0.00%	-9.68%	-6.90%	0.00%	-3.57%	-4.88%	-1.37%
2017	1.54%	-1.89%	-2.47%	-3.57%	-3.70%	-1.05%	3.70%	0.00%	-1.39%
2018	-3.03%	-3.85%	-1.27%	-7.41%	-11.54%	0.00%	-1.79%	-2.56%	-2.82%

Natural resources, construction, and maintenance includes industries such as extraction, farming, fishing, forestry, installation, and repair. Unlike other industries, this one has experienced an access trend line that curves for all retirement benefits in which it increases, shortly plateaus, and then decreases. While access to defined benefit plans has quickly decreased, access to defined contribution plans has experienced a more fluid trend line similar to that of access to all retirement benefits. All retirement benefits participation and defined contribution participation has seen peaks and troughs from 2008 to 2018 while defined benefit has declined. Take-up rates have decreased across all accounts, though defined benefit take-up rates have proven to be the highest among all industries for both defined contribution and defined benefit retirement plans.

Table 5.1. Production, transportation, and material moving: All retirement benefits, defined benefit, and defined contribution access, participation, and take-up rates

Production, transportation, and material moving	ALL RETIREMENT BENEFITS			DEFINED BENEFIT			DEFINED CONTRIBUTION		
	Access	Participation	Take-up rate	Access	Participation	Take-up rate	Access	Participation	Take-up rate
2008	64	55	86	33	32	96	47	37	78
2009	68	55	82	33	32	96	51	37	72
2010	66	54	82	32	31	95	49	36	72
2011	65	53	82	31	29	85	49	35	72
2012	64	53	83	30	28	94	48	35	74
2013	65	53	82	30	28	93	48	36	74
2014	71	56	78	30	26	88	61	41	67
2015	71	56	78	28	24	86	61	42	68
2016	72	56	78	27	23	87	63	43	69
2017	72	55	76	27	23	84	64	43	68
2018	72	58	80	25	21	82	64	47	73

Figure 5.1

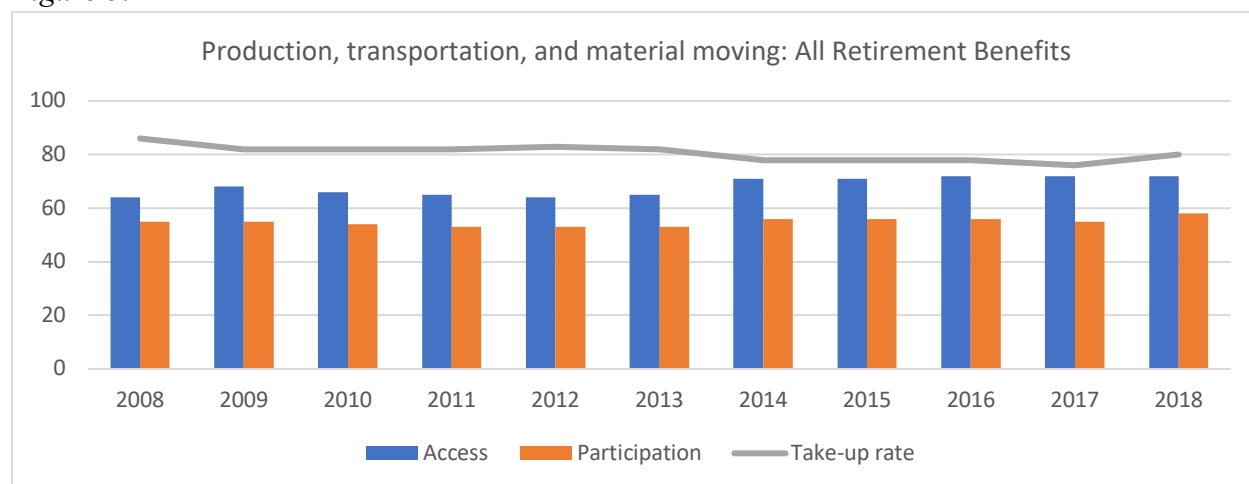


Figure 5.2

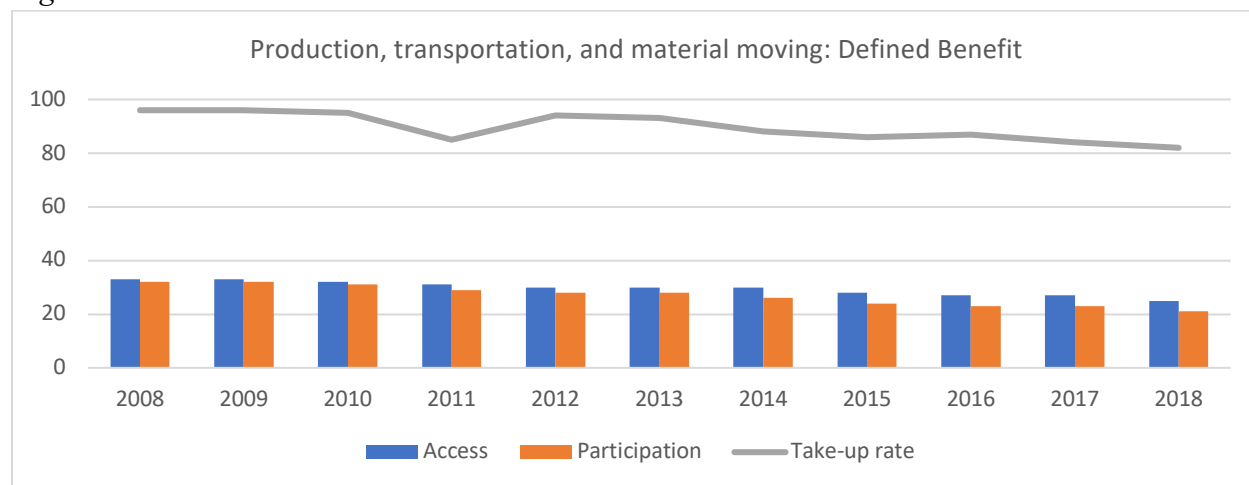


Figure 5.3

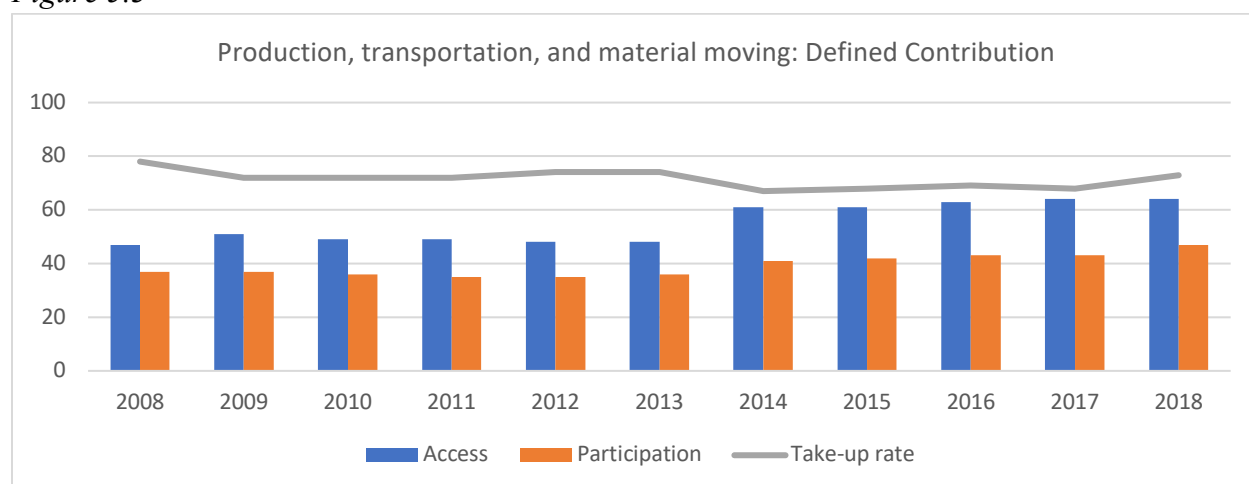


Table 5.2. Production, transportation, and material moving: Annual rate of change of retirement benefits, defined benefit, and defined contribution access, participation, and take-up rates

Production, transportation, and material moving	ALL RETIREMENT BENEFITS			DEFINED BENEFIT			DEFINED CONTRIBUTION		
	Access	Participation	Take-up rate	Access	Participation	Take-up rate	Access	Participation	Take-up rate
2008	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2009	6.25%	0.00%	-4.65%	0.00%	0.00%	0.00%	8.51%	0.00%	-7.69%
2010	-2.94%	-1.82%	0.00%	-3.03%	-3.13%	-1.04%	-3.92%	-2.70%	0.00%
2011	-1.52%	-1.85%	0.00%	-3.13%	-6.45%	-10.53%	0.00%	-2.78%	0.00%
2012	-1.54%	0.00%	1.22%	-3.23%	-3.45%	10.59%	-2.04%	0.00%	2.78%
2013	1.56%	0.00%	-1.20%	0.00%	0.00%	-1.06%	0.00%	2.86%	0.00%
2014	9.23%	5.66%	-4.88%	0.00%	-7.14%	-5.38%	27.08%	13.89%	-9.46%
2015	0.00%	0.00%	0.00%	-6.67%	-7.69%	-2.27%	0.00%	2.44%	1.49%
2016	1.41%	0.00%	0.00%	-3.57%	-4.17%	1.16%	3.28%	2.38%	1.47%
2017	0.00%	-1.79%	-2.56%	0.00%	0.00%	-3.45%	1.59%	0.00%	-1.45%
2018	0.00%	5.45%	5.26%	-7.41%	-8.70%	-2.38%	0.00%	9.30%	7.35%

Production, transportation, and material moving has experienced huge growth in overall access to retirement benefits due to rapid growth in access to defined contribution retirement plans. However, though overall participation rates have seen small growth, overall take-up rates have declined until the most recent data in 2018. Though access to defined contribution retirement plans is growing, participation is growing at a much slower rate, causing the take-up rate to steadily decline.

Table 6.1. Middle Atlantic: All retirement benefits, defined benefit, and defined contribution access, participation, and take-up rates

Middle Atlantic	ALL RETIREMENT BENEFITS			DEFINED BENEFIT			DEFINED CONTRIBUTION		
	Access	Participation	Take-up rate	Access	Participation	Take-up rate	Access	Participation	Take-up rate
2008	66	60	91	35	34	96	48	40	82
2009	72	62	86	36	34	94	54	41	76
2010	72	60	84	36	33	91	53	39	74
2011	70	58	83	34	31	92	52	38	72
2012	69	56	82	33	30	91	54	37	69
2013	67	55	83	33	30	91	52	36	70
2014	68	56	82	34	30	90	53	37	70
2015	70	57	81	34	30	88	56	39	70
2016	71	58	82	32	27	85	57	42	73
2017	71	59	83	33	28	86	57	42	73
2018	71	59	83	31	27	86	58	43	73

Figure 6.1

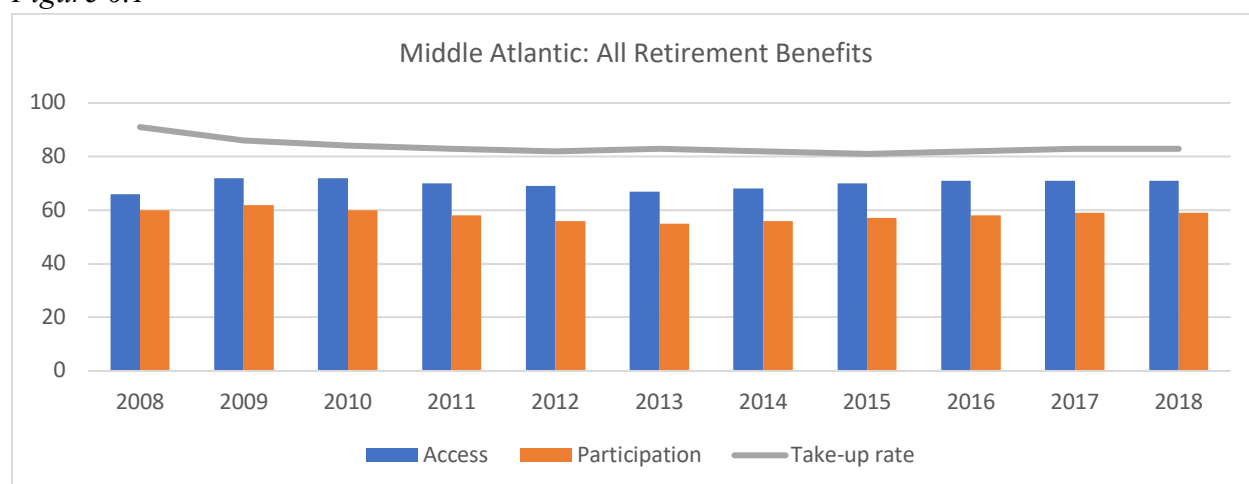


Figure 6.2

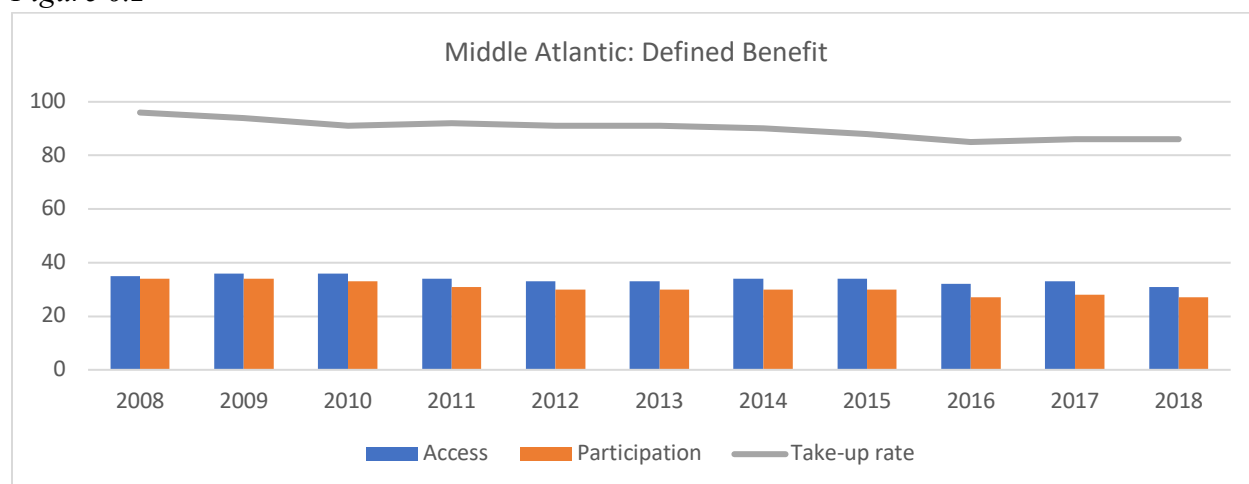


Figure 6.3

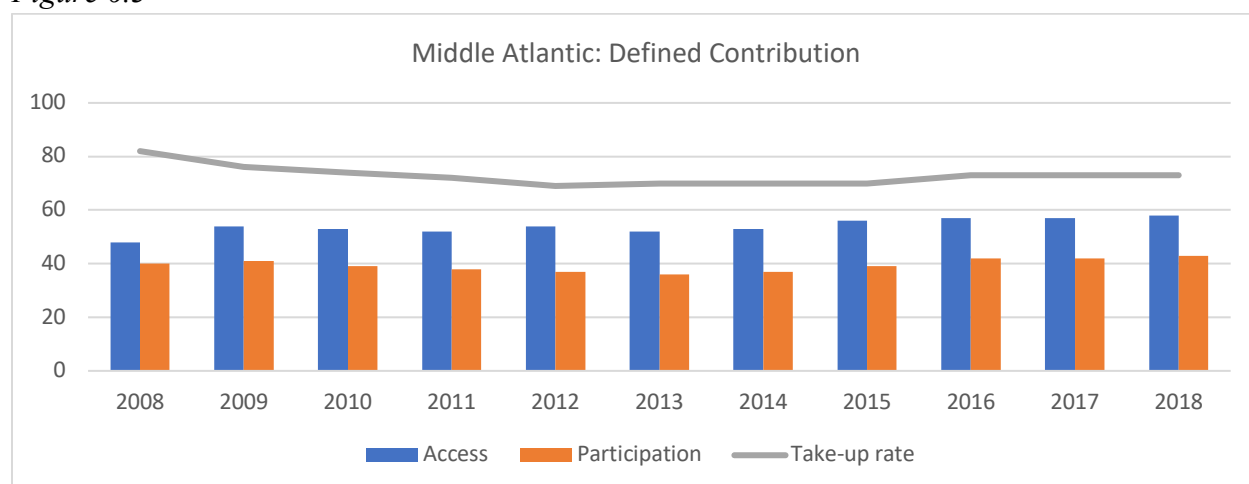


Table 6.2. Middle Atlantic: Annual rate of change of retirement benefits, defined benefit, and defined contribution access, participation, and take-up rates

Middle Atlantic	ALL RETIREMENT BENEFITS			DEFINED BENEFIT			DEFINED CONTRIBUTION		
	Access	Participation	Take-up rate	Access	Participation	Take-up rate	Access	Participation	Take-up rate
2008	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2009	9.09%	3.33%	-5.49%	2.86%	0.00%	-2.08%	12.50%	2.50%	-7.32%
2010	0.00%	-3.23%	-2.33%	0.00%	-2.94%	-3.19%	-1.85%	-4.88%	-2.63%
2011	-2.78%	-3.33%	-1.19%	-5.56%	-6.06%	1.10%	-1.89%	-2.56%	-2.70%
2012	-1.43%	-3.45%	-1.20%	-2.94%	-3.23%	-1.09%	3.85%	-2.63%	-4.17%
2013	-2.90%	-1.79%	1.22%	0.00%	0.00%	0.00%	-3.70%	-2.70%	1.45%
2014	1.49%	1.82%	-1.20%	3.03%	0.00%	-1.10%	1.92%	2.78%	0.00%
2015	2.94%	1.79%	-1.22%	0.00%	0.00%	-2.22%	5.66%	5.41%	0.00%
2016	1.43%	1.75%	1.23%	-5.88%	-10.00%	-3.41%	1.79%	7.69%	4.29%
2017	0.00%	1.72%	1.22%	3.13%	3.70%	1.18%	0.00%	0.00%	0.00%
2018	0.00%	0.00%	0.00%	-6.06%	-3.57%	0.00%	1.75%	2.38%	0.00%

Middle Atlantic states, such as Maryland, Pennsylvania, Delaware, and parts of Virginia, have seen inconsistent growth in access to all retirement benefits. One can attribute this to a similar inconsistent growth in access to defined contribution retirement plans in addition to a somewhat decline in access to defined benefit retirement plans. Participation rates have also experienced inconsistencies. Participation in all retirement benefits and defined contribution plans dipped from 2008 to 2013 but is now on the rise whereas participation in defined benefit plans has experienced a steady decline. Take-up rates have also declined and seen a recent recovery except for that of defined benefit plans.

Table 7.1. East North Central: All retirement benefits, defined benefit, and defined contribution access, participation, and take-up rates

East North Central	ALL RETIREMENT BENEFITS			DEFINED BENEFIT			DEFINED CONTRIBUTION		
	Access	Participation	Take-up rate	Access	Participation	Take-up rate	Access	Participation	Take-up rate
2008	67	59	89	33	32	96	54	41	76
2009	72	59	81	33	31	93	58	40	68
2010	69	56	81	33	30	91	53	38	68
2011	70	57	82	34	31	91	57	39	67
2012	71	57	81	32	29	90	59	40	67
2013	70	56	81	31	28	91	58	40	68
2014	71	56	78	30	26	88	61	41	67
2015	71	56	78	28	24	86	61	42	68
2016	72	56	78	27	23	87	63	43	69
2017	72	55	76	27	23	84	64	43	68
2018	72	58	80	25	21	82	64	47	73

Figure 7.1

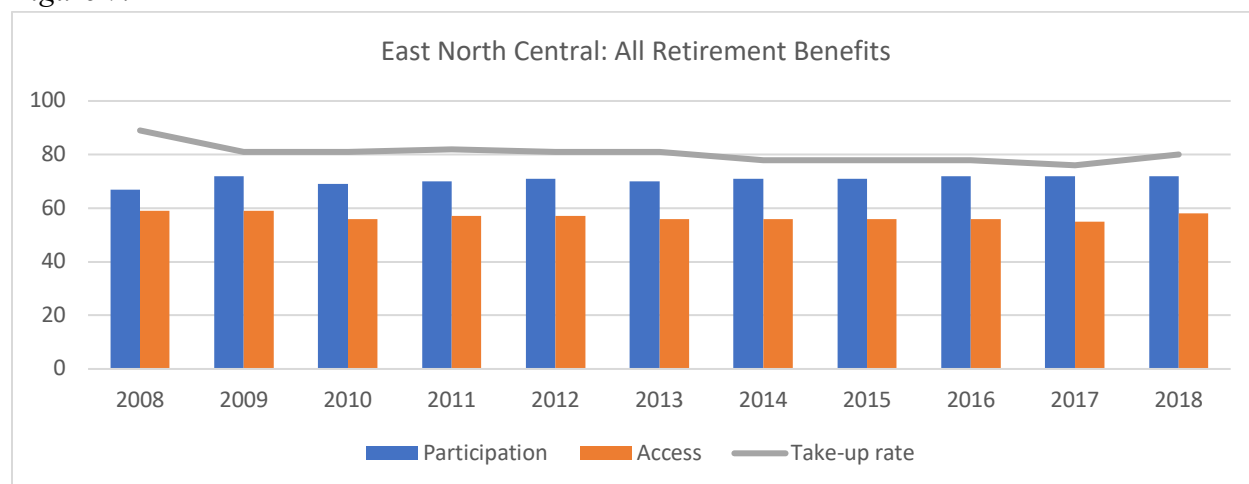


Figure 7.2

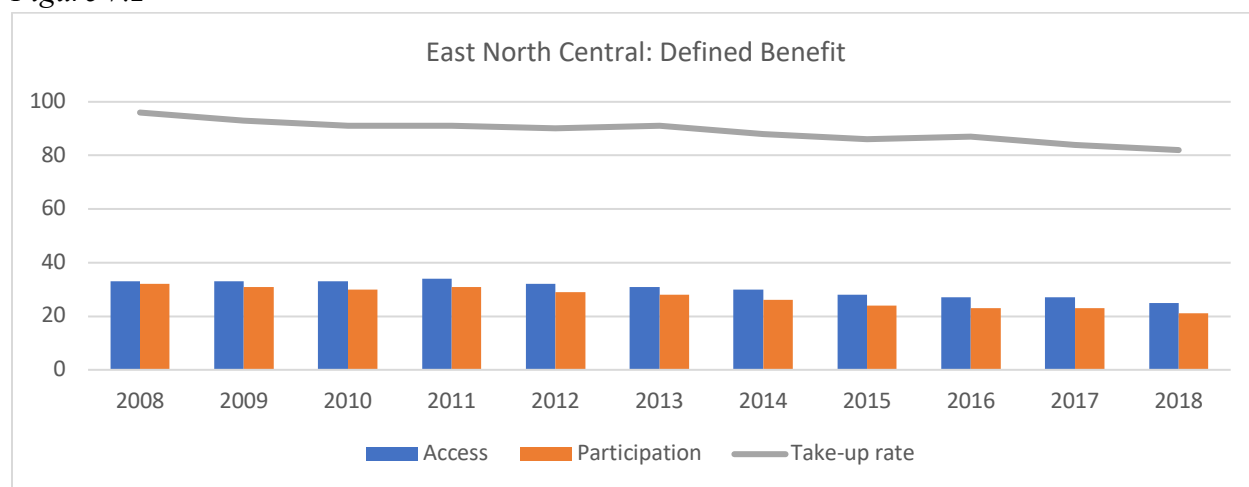


Figure 7.3

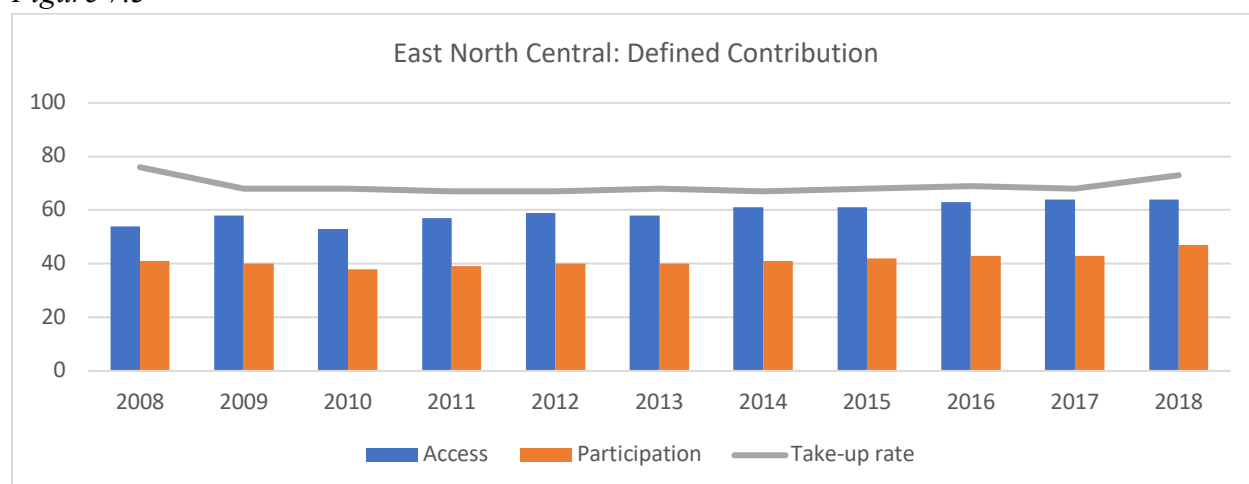


Table 7.2. East North Central: All retirement benefits, defined benefit, and defined contribution access, participation, and take-up rates

East North Central	ALL RETIREMENT BENEFITS			DEFINED BENEFIT			DEFINED CONTRIBUTION		
	Access	Participation	Take-up rate	Access	Participation	Take-up rate	Access	Participation	Take-up rate
2008	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2009	7.46%	0.00%	-8.99%	0.00%	-3.13%	-3.13%	7.41%	-2.44%	-10.53%
2010	-4.17%	-5.08%	0.00%	0.00%	-3.23%	-2.15%	-8.62%	-5.00%	0.00%
2011	1.45%	1.79%	1.23%	3.03%	3.33%	0.00%	7.55%	2.63%	-1.47%
2012	1.43%	0.00%	-1.22%	-5.88%	-6.45%	-1.10%	3.51%	2.56%	0.00%
2013	-1.41%	-1.75%	0.00%	-3.13%	-3.45%	1.11%	-1.69%	0.00%	1.49%
2014	1.43%	0.00%	-3.70%	-3.23%	-7.14%	-3.30%	5.17%	2.50%	-1.47%
2015	0.00%	0.00%	0.00%	-6.67%	-7.69%	-2.27%	0.00%	2.44%	1.49%
2016	1.41%	0.00%	0.00%	-3.57%	-4.17%	1.16%	3.28%	2.38%	1.47%
2017	0.00%	-1.79%	-2.56%	0.00%	0.00%	-3.45%	1.59%	0.00%	-1.45%
2018	0.00%	5.45%	5.26%	-7.41%	-8.70%	-2.38%	0.00%	9.30%	7.35%

East North Central states consist of Illinois, Indiana, Michigan, Ohio, and Wisconsin. In this region of the United States, access to all retirement benefits has remained fairly steady from 2008 to 2018 due to the fact that defined benefit access and decreased while defined contribution access has increased. Participation in all retirement benefits shares a similar story. Overall participation has remained fairly steady due to declining defined benefit participation and increasing defined contribution participation. Take-up rates have decreased for defined benefit, dipped then recovered for defined contribution, and remained relatively steady for all retirement benefits.

Table 8.1. South Atlantic: All retirement benefits, defined benefit, and defined contribution access, participation, and take-up rates

South Atlantic	ALL RETIREMENT BENEFITS			DEFINED BENEFIT			DEFINED CONTRIBUTION		
	Access	Participation	Take-up rate	Access	Participation	Take-up rate	Access	Participation	Take-up rate
2008	68	56	83	29	28	94	58	41	70
2009	72	56	77	30	27	91	63	40	64
2010	70	54	76	29	26	90	60	38	63
2011	69	52	76	27	25	91	58	37	63
2012	68	51	75	26	23	88	59	36	62
2013	67	52	77	26	22	88	59	38	64
2014	69	52	75	27	23	85	61	39	64
2015	70	53	75	28	23	84	62	40	65
2016	70	54	76	29	25	84	61	40	65
2017	71	54	76	29	24	81	62	41	66
2018	70	53	76	27	22	79	62	41	66

Figure 8.1

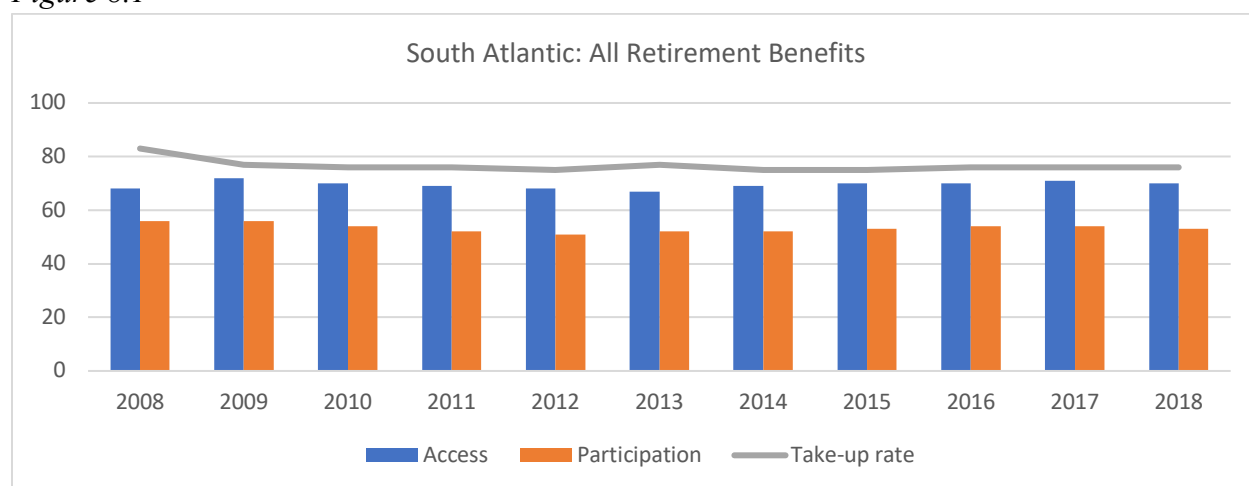


Figure 8.2

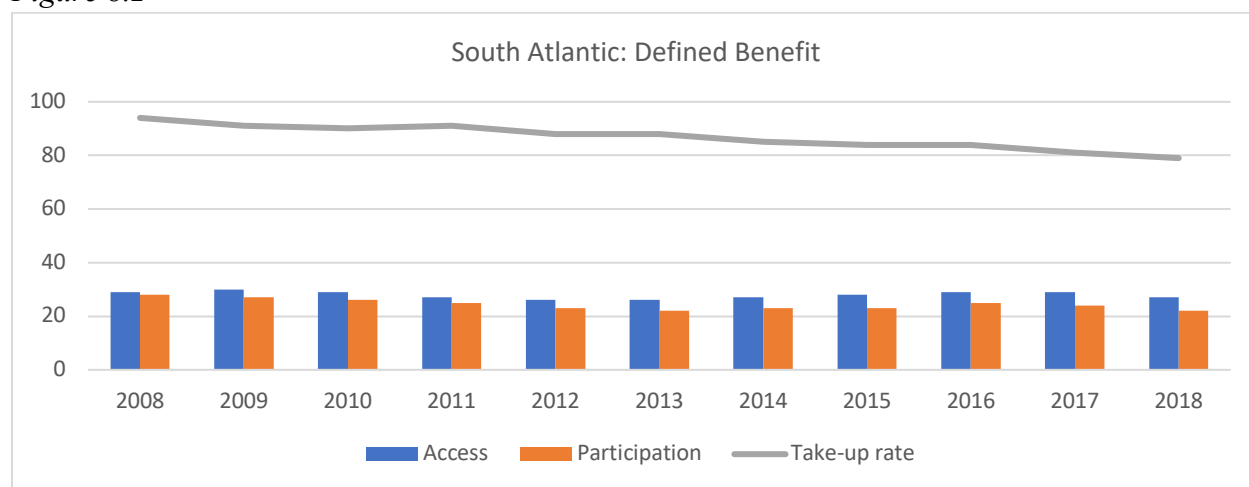


Figure 8.3

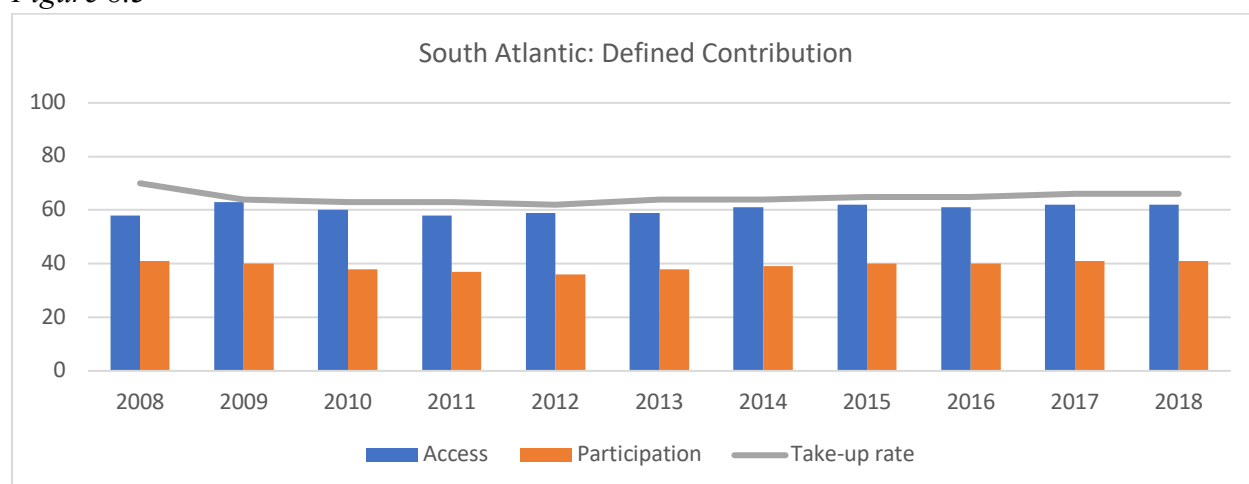


Table 8.2. South Atlantic: Annual rate of change of retirement benefits, defined benefit, and defined contribution access, participation, and take-up rates

South Atlantic	ALL RETIREMENT BENEFITS			DEFINED BENEFIT			DEFINED CONTRIBUTION		
	Access	Participation	Take-up rate	Access	Participation	Take-up rate	Access	Participation	Take-up rate
2008	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2009	5.88%	0.00%	-7.23%	3.45%	-3.57%	-3.19%	8.62%	-2.44%	-8.57%
2010	-2.78%	-3.57%	-1.30%	-3.33%	-3.70%	-1.10%	-4.76%	-5.00%	-1.56%
2011	-1.43%	-3.70%	0.00%	-6.90%	-3.85%	1.11%	-3.33%	-2.63%	0.00%
2012	-1.45%	-1.92%	-1.32%	-3.70%	-8.00%	-3.30%	1.72%	-2.70%	-1.59%
2013	-1.47%	1.96%	2.67%	0.00%	-4.35%	0.00%	0.00%	5.56%	3.23%
2014	2.99%	0.00%	-2.60%	3.85%	4.55%	-3.41%	3.39%	2.63%	0.00%
2015	1.45%	1.92%	0.00%	3.70%	0.00%	-1.18%	1.64%	2.56%	1.56%
2016	0.00%	1.89%	1.33%	3.57%	8.70%	0.00%	-1.61%	0.00%	0.00%
2017	1.43%	0.00%	0.00%	0.00%	-4.00%	-3.57%	1.64%	2.50%	1.54%
2018	-1.41%	-1.85%	0.00%	-6.90%	-8.33%	-2.47%	0.00%	0.00%	0.00%

The South Atlantic states are comprised of West Virginia, Virginia, North Carolina, South Carolina, Georgia, and Florida. All retirement benefits as well as defined benefit and defined contribution plans separately in this region have seen slight fluctuation in both access and participation. However, the take-up rate of all retirement benefits has decreased due to declining defined benefit take-up rates and fairly constant defined contribution take-up rates.

Table 9.1. East South Central: All retirement benefits, defined benefit, and defined contribution access, participation, and take-up rates

East South Central	ALL RETIREMENT BENEFITS			DEFINED BENEFIT			DEFINED CONTRIBUTION		
	Access	Participation	Take-up rate	Access	Participation	Take-up rate	Access	Participation	Take-up rate
2008	70	53	76	26	25	96	55	35	64
2009	73	56	77	28	26	94	57	37	66
2010	68	54	79	31	29	93	49	33	68
2011	71	56	80	32	30	94	51	34	67
2012	72	57	79	33	31	94	51	34	67
2013	72	57	80	31	29	92	53	36	69
2014	70	52	74	28	24	84	53	35	66
2015	72	52	72	26	22	84	56	36	63
2016	73	51	70	27	23	84	58	36	61
2017	72	50	70	26	22	85	62	37	60
2018	74	53	71	26	22	84	64	40	63

Figure 9.1

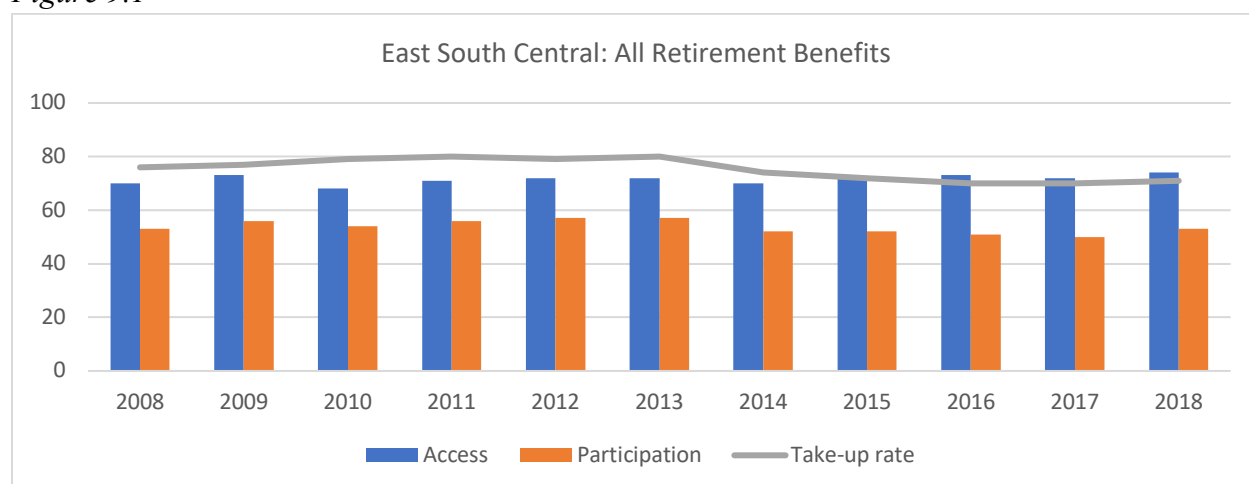


Figure 9.2

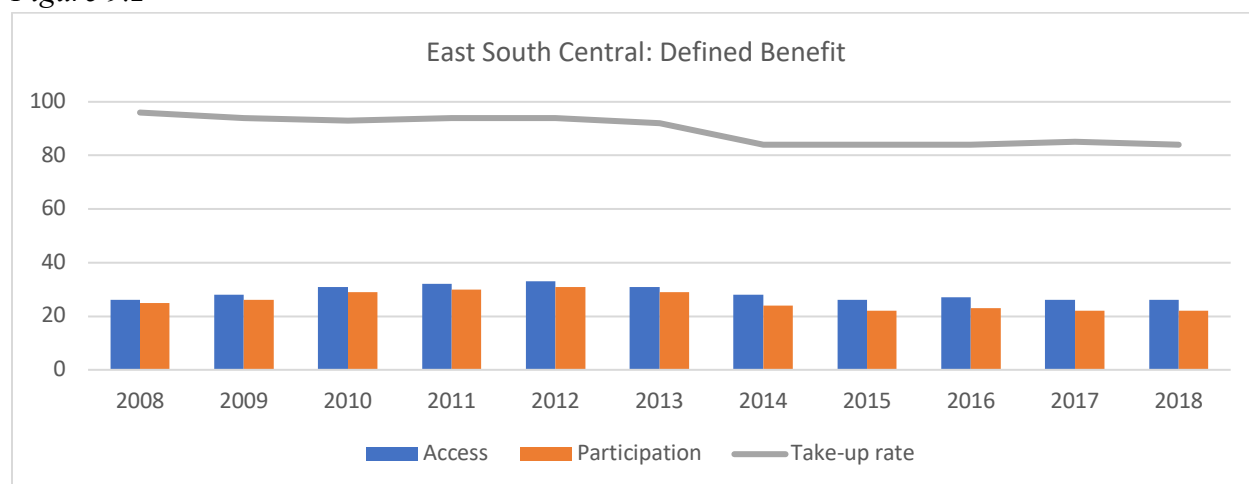


Figure 9.3

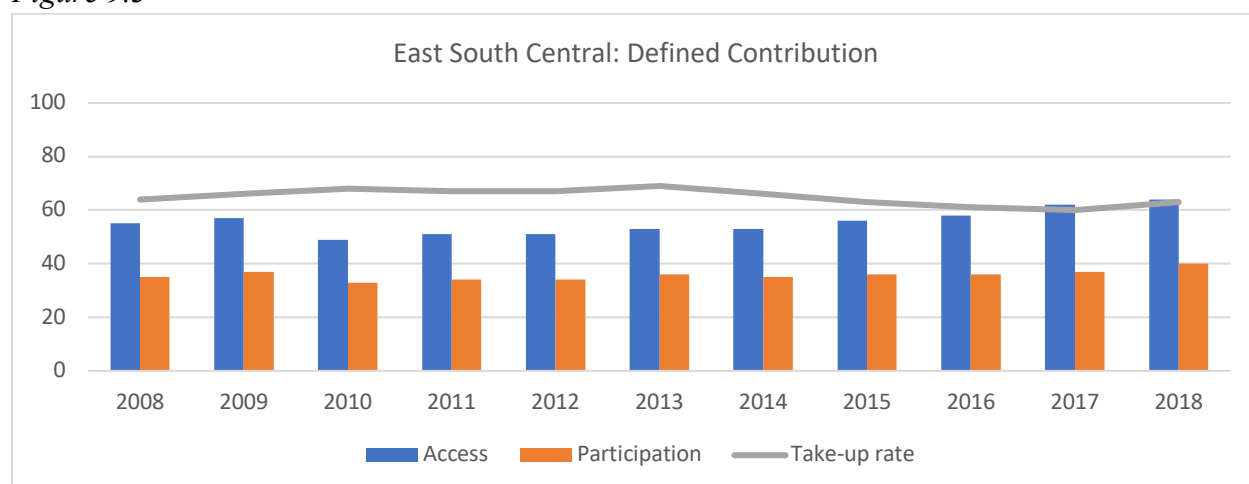


Table 9.2. East South Central: Annual rate of change of retirement benefits, defined benefit, and defined contribution access, participation, and take-up rates

East South Central	ALL RETIREMENT BENEFITS			DEFINED BENEFIT			DEFINED CONTRIBUTION		
	Access	Participation	Take-up rate	Access	Participation	Take-up rate	Access	Participation	Take-up rate
2008	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2009	4.29%	5.66%	1.32%	7.69%	4.00%	-2.08%	3.64%	5.71%	3.13%
2010	-6.85%	-3.57%	2.60%	10.71%	11.54%	-1.06%	-14.04%	-10.81%	3.03%
2011	4.41%	3.70%	1.27%	3.23%	3.45%	1.08%	4.08%	3.03%	-1.47%
2012	1.41%	1.79%	-1.25%	3.13%	3.33%	0.00%	0.00%	0.00%	0.00%
2013	0.00%	0.00%	1.27%	-6.06%	-6.45%	-2.13%	3.92%	5.88%	2.99%
2014	-2.78%	-8.77%	-7.50%	-9.68%	-17.24%	-8.70%	0.00%	-2.78%	-4.35%
2015	2.86%	0.00%	-2.70%	-7.14%	-8.33%	0.00%	5.66%	2.86%	-4.55%
2016	1.39%	-1.92%	-2.78%	3.85%	4.55%	0.00%	3.57%	0.00%	-3.17%
2017	-1.37%	-1.96%	0.00%	-3.70%	-4.35%	1.19%	6.90%	2.78%	-1.64%
2018	2.78%	6.00%	1.43%	0.00%	0.00%	-1.18%	3.23%	8.11%	5.00%

East South Central states including Alabama, Kentucky, Mississippi, and Tennessee show very different trends and consistency across the board. All retirement benefits, defined benefit plans, and defined contribution plans access rates signal an initial increase from 2008 to 2013 followed quickly by a decline from 2013 to 2017. Participation and take-up rates follow suit as they are similar in manner.

Table 10.1. Pacific: All retirement benefits, defined benefit, and defined contribution access, participation, and take-up rates

Pacific	ALL RETIREMENT BENEFITS			DEFINED BENEFIT			DEFINED CONTRIBUTION		
	Access	Participation	Take-up rate	Access	Participation	Take-up rate	Access	Participation	Take-up rate
2008	64	55	86	33	32	96	47	37	78
2009	68	55	82	33	32	96	51	37	72
2010	66	54	82	32	31	95	49	36	72
2011	65	53	82	31	29	85	49	35	72
2012	64	53	83	30	28	94	48	35	74
2013	65	53	82	30	28	93	48	36	74
2014	65	53	81	30	27	90	49	36	74
2015	64	51	80	29	25	88	49	36	74
2016	62	51	81	27	24	87	48	36	75
2017	63	50	80	28	23	81	50	37	74
2018	67	53	79	26	22	93	55	39	72

Figure 10.1

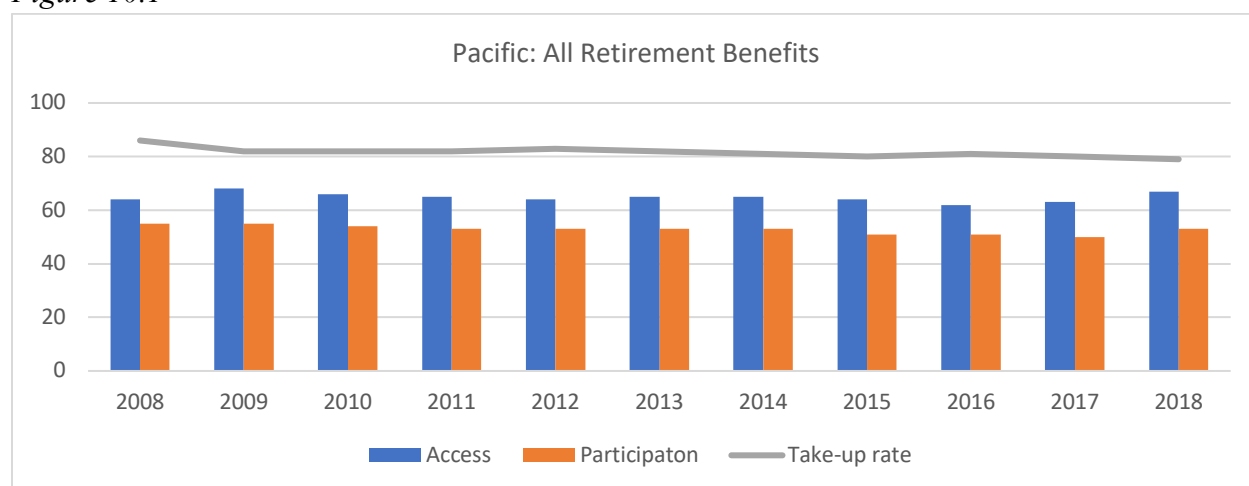


Figure 10.2

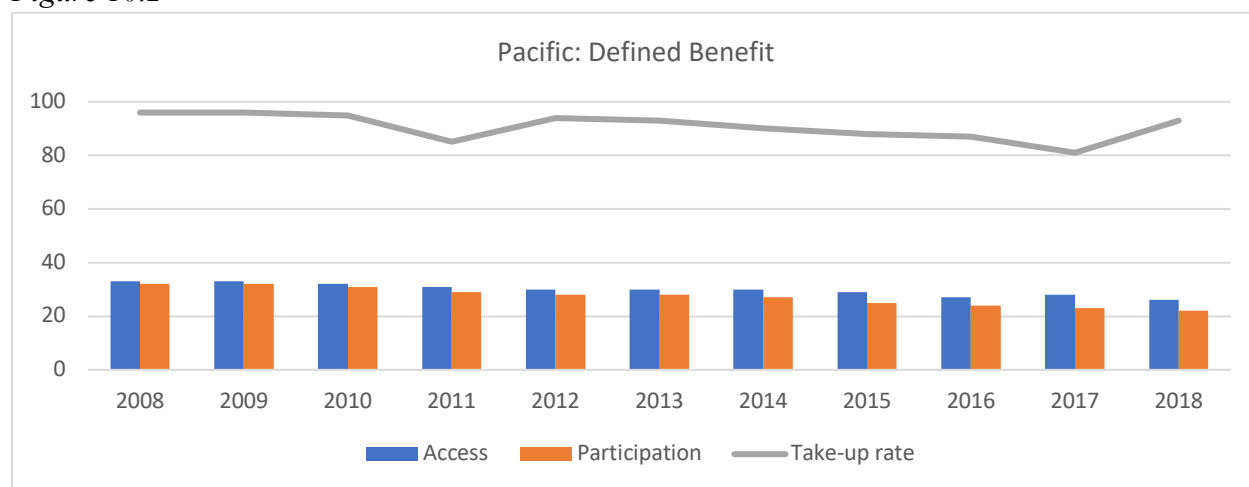


Figure 10.3

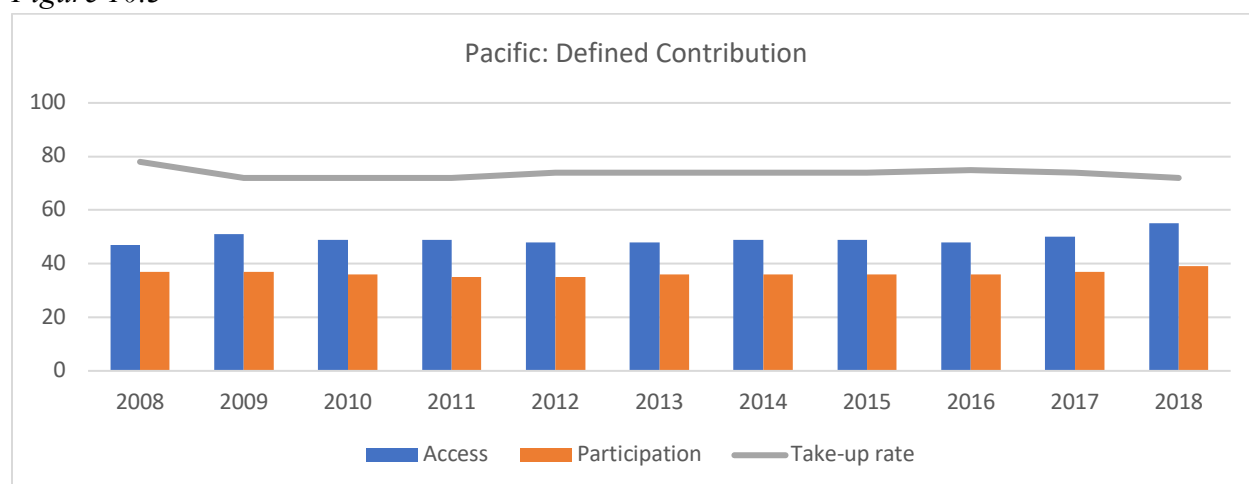


Table 10.2. Pacific: Annual rate of change of retirement benefits, defined benefit, and defined contribution access, participation, and take-up rates

Pacific	ALL RETIREMENT BENEFITS			DEFINED BENEFIT			DEFINED CONTRIBUTION		
	Access	Participation	Take-up rate	Access	Participation	Take-up rate	Access	Participation	Take-up rate
2008	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2009	6.25%	0.00%	-4.65%	0.00%	0.00%	0.00%	8.51%	0.00%	-7.89%
2010	-2.94%	-1.82%	0.00%	-3.03%	-3.13%	-1.04%	-3.92%	-2.70%	-2.86%
2011	-1.52%	-1.85%	0.00%	-3.13%	-6.45%	-10.53%	0.00%	-2.78%	1.47%
2012	-1.54%	0.00%	1.22%	-3.23%	-3.45%	10.59%	-2.04%	0.00%	-1.45%
2013	1.56%	0.00%	-1.20%	0.00%	0.00%	-1.06%	0.00%	2.86%	1.47%
2014	0.00%	0.00%	-1.22%	0.00%	-3.57%	-3.23%	2.08%	0.00%	0.00%
2015	-1.54%	-3.77%	-1.23%	-3.33%	-7.41%	-2.22%	0.00%	0.00%	-4.35%
2016	-3.13%	0.00%	1.25%	-6.90%	-4.00%	-1.14%	-2.04%	0.00%	9.09%
2017	1.61%	-1.96%	-1.23%	3.70%	-4.17%	-6.90%	4.17%	2.78%	1.39%
2018	6.35%	6.00%	-1.25%	-7.14%	-4.35%	14.81%	10.00%	5.41%	5.48%

Pacific states include Alaska, California, Hawaii, Oregon, and Washington. The data provided by the National Compensation Survey in this region is unlike most because it has a level of overall consistency that is unmatched by any other geographic region. Access, participation, and take-up rate have all stayed within three or four percentage points save the initial decline of take-up rate from 2008 to 2009. Despite its overall consistency, there has been great shifts in defined benefit and defined contribution access. As quickly as defined benefit access declines, defined contribution access rises. Furthermore, defined contribution participation and take-up rate as well as defined benefit take-up rate have remained steady, though the defined benefit participation has declined.

Employee Turnover Trends

Table 11. Annual quits levels by industry and region

	INDUSTRY AND REGION	Annual quits levels by industry and region, not seasonally adjusted [in thousands]											Sparklines
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	
Total		30,355	21,030	22,057	23,533	25,081	27,619	30,145	33,654	35,879	37,692	40,073	
Total Private	INDUSTRY												
	Mining and logging	28,774	19,853	20,748	22,149	23,535	26,052	28,726	31,786	33,836	35,673	37,913	
	Construction	181	85	89	141	194	168	180	177	162	173	243	
	Manufacturing	1,604	888	901	947	975	1,180	1,294	1,356	1,490	1,853	2,055	
	Trade, transportation and utilities	1,883	1,038	1,135	1,252	1,296	1,338	1,429	1,614	1,779	2,294	2,498	
	Information	6,726	4,679	4,921	5,215	5,562	6,018	6,999	7,458	7,701	7,880	8,548	
	Financial activities	446	382	349	406	442	446	445	496	479	519	575	
	Professional and business services	1,421	879	1,010	981	1,086	1,181	1,159	1,218	1,217	1,366	1,391	
	Education and health services	5,211	3,393	3,987	4,438	4,388	5,295	5,775	6,470	7,140	7,454	7,595	
	Leisure and hospitality	3,498	2,977	2,987	2,998	3,302	3,594	3,877	4,488	4,642	4,917	5,042	
Government	Other services	6,582	4,519	4,415	4,796	5,224	5,678	6,292	7,143	7,921	7,749	8,470	
	Federal	1,223	1,017	952	976	1,068	1,159	1,270	1,369	1,308	1,469	1,501	
	State and local	1,581	1,175	1,308	1,385	1,545	1,569	1,698	1,868	2,043	2,021	2,159	
		102	83	144	111	131	136	122	140	149	175	189	
Northeast	REGION	1,480	1,093	1,165	1,276	1,415	1,433	1,569	1,728	1,892	1,842	1,974	
	South	4,446	3,138	3,477	3,377	3,689	3,896	4,247	4,804	5,130	5,421	5,375	
	Midwest	12,298	8,471	8,888	9,533	10,507	11,417	12,551	13,766	14,394	15,313	16,312	
	West	6,615	4,541	5,000	5,485	5,651	6,245	6,760	7,477	8,383	8,112	9,008	
		6,996	4,877	4,690	5,137	5,231	6,064	6,859	7,607	8,383	8,850	9,377	

Table 12. Annual quits levels as percent of annual total separations by industry and region

INDUSTRY AND REGION		Annual quits levels / Annual total separations levels [%]											Sparklines	
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018		
Total	INDUSTRY	52%	41%	46%	49%	50%	53%	54%	56%	58%	59%	61%		
Total Private														
	Mining and logging	52%	42%	48%	49%	51%	54%	55%	57%	59%	60%	61%		
	Construction	57%	29%	42%	59%	54%	52%	50%	39%	41%	53%	60%		
	Manufacturing	31%	19%	21%	24%	25%	32%	38%	37%	38%	43%	49%		
	Trade, transportation and utilities	42%	25%	37%	44%	46%	48%	49%	51%	53%	60%	60%		
	Information	54%	45%	52%	55%	55%	57%	58%	59%	62%	63%	63%		
	Financial activities	51%	46%	49%	55%	57%	54%	45%	52%	52%	51%	53%		
Government														
	Professional and business services	52%	37%	49%	53%	52%	51%	53%	55%	55%	57%	58%		
	Education and health services	49%	38%	45%	45%	44%	51%	50%	52%	55%	57%	57%		
	Leisure and hospitality	59%	52%	54%	55%	57%	59%	60%	65%	65%	65%	66%		
	Other services	66%	56%	58%	59%	60%	62%	62%	64%	67%	65%	68%		
	Federal	54%	45%	49%	45%	49%	53%	59%	56%	58%	56%	59%		
	State and local	48%	35%	32%	40%	44%	45%	49%	48%	50%	50%	52%		
REGION														
	Northeast	33%	20%	14%	30%	34%	30%	37%	37%	40%	44%	46%		
	South	50%	38%	37%	41%	45%	47%	50%	49%	51%	50%	52%		
	Midwest	47%	35%	40%	42%	45%	46%	48%	51%	52%	53%	53%		
West														
	West	56%	45%	46%	49%	50%	56%	55%	56%	36%	59%	61%		

According to Table 1, the total annual quits levels dramatically decreased from 2008 to 2009, but from 2009 to 2018, they have continued to rise and even surpassed the base year of 2008 by ten million. State and local governments and private industries including but not limited to, manufacturing, professional and business services, as well as education and health services have followed suit in a similar manner. The federal government and other private industries such as mining and logging, information, financial activities, and other services, also experienced a stark decline in their quits level from 2008 to 2009; however, their incline to higher levels has not been a steady one. Though rising quits levels ensued for mining and logging from 2009 to 2012, its levels once again took a dip in 2013, 2015 and 2016. Information as well as financial activities experience similar turbulence.

Table 1 also explains that annual quits levels in various regions of the country including the Northeast, South, and West experienced a sharp decline from 2008 to 2009 and consistent incline from 2009 until the most recent data in 2018. The Midwest, however, followed this trend line until 2016 when quits level sharply decreased once again. Though the following year, its level doubled that of the previous and rose again in 2018.

By dividing the annual quits levels by the annual total separations levels, one can observe the portion of annual total separations levels that annual quits levels consume. According to Table 2, this measure has increased nine percentage points overall from 52% in 2008 to 61% in 2018. Though not all industries experience a jump this large, it can be stated that annual quits levels in every single industry account for a greater percentage of annual total separations level in 2018 than in 2008. Likewise, every region of the United States has experienced greater annual quits levels per annual total separations levels. These observations indicate two things: 1) there has been a possible shift in employee behavior regarding job mobility and 2) it is a movement that is affecting the entire U.S., not just regional pockets.

Further Analysis Using S&P 500 Data

The data in Figures 11 and 12 is proprietary data gathered by the use of a Bloomberg terminal in the Masters Investment Learning Center at The University of Tennessee, Knoxville.²

Figure 11

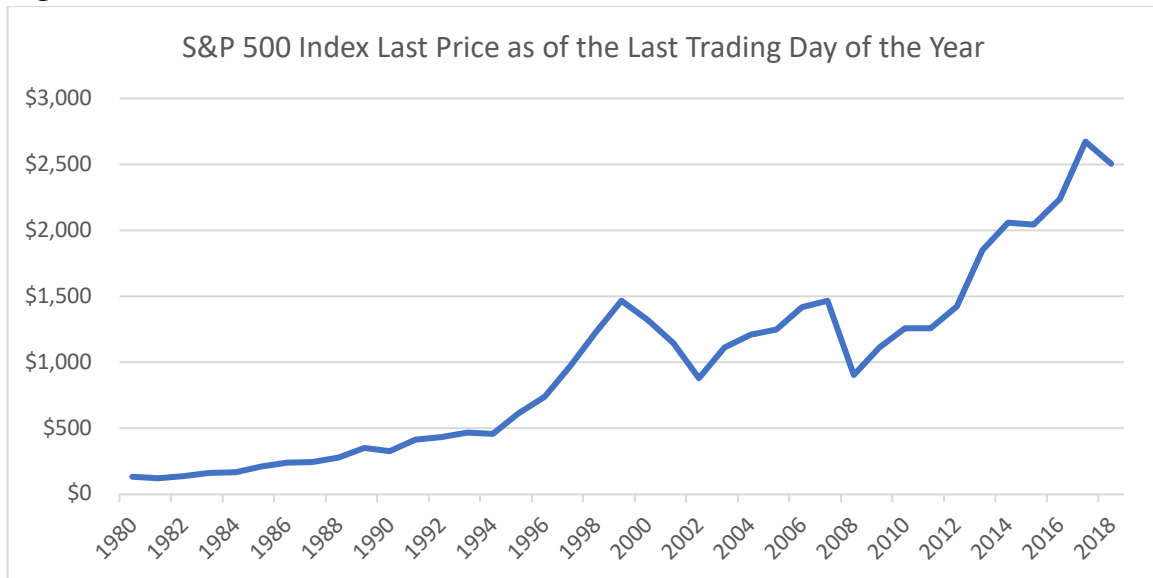
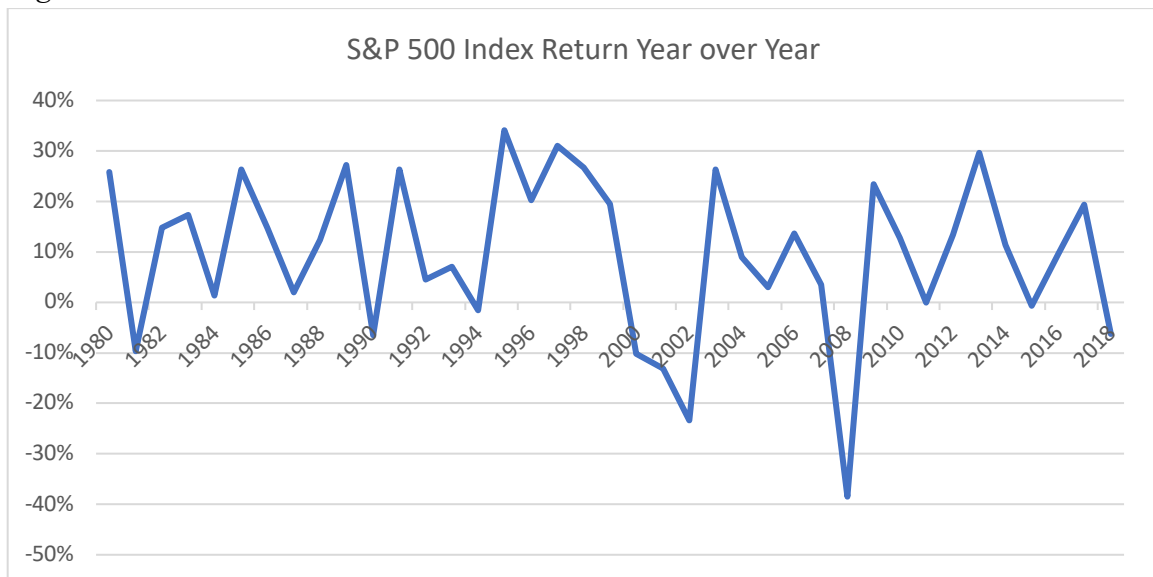


Figure 12



² Table 15 on page 47 displays the data presented on Figures 11 and 12 in tabular form.

Table 13. S&P 500 Index YoY returns and employee retirement benefits correlation

All Workers	ALL RETIREMENT BENEFITS			DEFINED BENEFIT			DEFINED CONTRIBUTION		
	Access	Participation	Take-up rate	Access	Participation	Take-up rate	Access	Participation	Take-up rate
Correlation to S&P 500 YoY Returns	0.2648	0.0056	-0.2702	0.5003	0.8063	-0.2899	0.0988	-0.2980	-0.3669
Management, professional, and related	ALL RETIREMENT BENEFITS			DEFINED BENEFIT			DEFINED CONTRIBUTION		
	Access	Participation	Take-up rate	Access	Participation	Take-up rate	Access	Participation	Take-up rate
Correlation to S&P 500 YoY Returns	0.1963	-0.3000	-0.3517	0.5900	0.3166	-0.1426	0.1585	-0.6615	-0.5658
Sales and office	ALL RETIREMENT BENEFITS			DEFINED BENEFIT			DEFINED CONTRIBUTION		
	Access	Participation	Take-up rate	Access	Participation	Take-up rate	Access	Participation	Take-up rate
Correlation to S&P 500 YoY Returns	0.1615	-0.3936	-0.2396	0.5642	0.2930	-0.3553	0.1918	-0.2610	-0.2773
Natural resources, construction, and maintenance	ALL RETIREMENT BENEFITS			DEFINED BENEFIT			DEFINED CONTRIBUTION		
	Access	Participation	Take-up rate	Access	Participation	Take-up rate	Access	Participation	Take-up rate
Correlation to S&P 500 YoY Returns	0.5889	0.5252	-0.2310	0.3382	0.4544	-0.3669	0.6003	0.4499	-0.1582
Production, transportation, and material moving	ALL RETIREMENT BENEFITS			DEFINED BENEFIT			DEFINED CONTRIBUTION		
	Access	Participation	Take-up rate	Access	Participation	Take-up rate	Access	Participation	Take-up rate
Correlation to S&P 500 YoY Returns	0.2976	-0.3266	-0.6371	0.8581	0.9196	0.2923	0.1151	-0.2153	-0.5066
Middle Atlantic	ALL RETIREMENT BENEFITS			DEFINED BENEFIT			DEFINED CONTRIBUTION		
	Access	Participation	Take-up rate	Access	Participation	Take-up rate	Access	Participation	Take-up rate
Correlation to S&P 500 YoY Returns	0.1382	0.0880	-0.0725	0.6185	0.4282	-0.0179	0.0208	-0.3006	-0.1611
East North Central	ALL RETIREMENT BENEFITS			DEFINED BENEFIT			DEFINED CONTRIBUTION		
	Access	Participation	Take-up rate	Access	Participation	Take-up rate	Access	Participation	Take-up rate
Correlation to S&P 500 YoY Returns	0.1459	-0.6258	-0.6434	0.3235	0.2487	0.0844	-0.0481	-0.6736	-0.5471
South Atlantic	ALL RETIREMENT BENEFITS			DEFINED BENEFIT			DEFINED CONTRIBUTION		
	Access	Participation	Take-up rate	Access	Participation	Take-up rate	Access	Participation	Take-up rate
Correlation to S&P 500 YoY Returns	0.2727	0.3398	-0.1726	0.4041	-0.0074	-0.1881	0.3604	0.2374	-0.1783
East South Central	ALL RETIREMENT BENEFITS			DEFINED BENEFIT			DEFINED CONTRIBUTION		
	Access	Participation	Take-up rate	Access	Participation	Take-up rate	Access	Participation	Take-up rate
Correlation to S&P 500 YoY Returns	-0.2868	-0.2045	0.1224	0.0248	-0.0352	-0.1699	-0.0421	-0.0493	0.2077
Pacific	ALL RETIREMENT BENEFITS			DEFINED BENEFIT			DEFINED CONTRIBUTION		
	Access	Participation	Take-up rate	Access	Participation	Take-up rate	Access	Participation	Take-up rate
Correlation to S&P 500 YoY Returns	0.1146	-0.2212	-0.3058	0.6852	0.8311	-0.2197	-0.0942	0.0300	-0.2894

Table 14. S&P 500 Index YoY returns and percent change of annual quits levels as percent of annual total separations correlation

INDUSTRY AND REGION		Percent change of annual quits levels as a percent of annual total separations levels											2018	Correlation to S&P 500 YoY Returns
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018		
Total		n/a	-21.10%	12.30%	5.65%	2.64%	6.37%	1.16%	4.20%	3.87%	1.83%	2.07%		-0.2928
Total Private	INDUSTRY													
	Mining and logging	n/a	-20.73%	14.53%	4.05%	2.13%	6.67%	1.63%	3.59%	3.80%	1.95%	1.98%		-0.2427
	Construction	n/a	-49.70%	45.70%	39.94%	-8.02%	-4.05%	-3.03%	-22.12%	4.73%	28.60%	13.48%		-0.2810
	Manufacturing	n/a	-39.41%	13.89%	12.04%	6.21%	28.44%	17.03%	-1.94%	2.07%	13.96%	12.32%		-0.0762
	Trade, transportation and utilities	n/a	-40.62%	47.87%	19.17%	4.25%	3.61%	1.81%	4.90%	3.44%	13.86%	0.34%		-0.2372
	Information	n/a	-17.48%	17.12%	5.04%	0.36%	3.09%	1.56%	1.99%	4.72%	2.16%	-0.02%		-0.2361
	Financial activities	n/a	-10.53%	7.26%	11.29%	2.88%	-5.16%	-16.23%	16.27%	-1.24%	-0.24%	2.93%		-0.5878
	Professional and business services	n/a	-28.14%	30.01%	9.28%	-2.17%	-1.40%	2.92%	3.67%	0.32%	4.34%	1.19%		-0.3240
	Education and health services	n/a	-21.79%	18.09%	0.28%	-2.50%	15.35%	-1.41%	4.41%	5.41%	4.36%	-0.28%		0.0115
	Leisure and hospitality	n/a	-10.94%	3.27%	2.57%	3.82%	2.78%	2.21%	8.16%	0.11%	-0.36%	0.62%		-0.4229
	Other services	n/a	-14.98%	3.90%	0.48%	3.25%	3.09%	-0.48%	3.36%	5.11%	-3.31%	3.68%		-0.4291
Government														
		n/a	-17.57%	10.93%	-8.60%	7.73%	9.32%	10.24%	-5.22%	4.65%	-3.35%	4.62%		0.0355
		n/a	-26.06%	-10.43%	26.00%	10.31%	1.32%	8.56%	-1.79%	5.15%	-0.66%	3.44%		-0.4595
Federal		n/a	-38.72%	-29.31%	107.08%	13.42%	-10.38%	21.24%	-0.87%	9.29%	8.68%	5.89%		-0.4806
State and local		n/a	-24.06%	-0.82%	10.73%	9.97%	3.06%	5.86%	-1.28%	4.52%	-1.42%	3.57%		-0.4070
REGION														
Northeast		n/a	-24.43%	13.88%	3.37%	7.61%	2.13%	4.26%	6.48%	2.08%	1.57%	1.00%		-0.3408
South		n/a	-20.40%	12.36%	2.40%	3.13%	6.42%	1.52%	2.38%	3.54%	0.19%	2.19%		-0.2403
Midwest		n/a	-22.51%	12.61%	7.63%	1.67%	11.31%	-2.03%	2.21%	-35.69%	62.94%	4.39%		0.1312
West		n/a	-18.35%	11.08%	10.08%	-1.04%	4.80%	5.48%	3.90%	6.60%	5.07%	-0.23%		-0.2926

The money an employee puts into his or her retirement account—whether it be a 401(k), 403(b), traditional pension plan, etc.—is more than likely invested in a mutual fund, market index, or some other form of a market investment vehicle, and because of this retirement benefits are innately affected by the market. By observing an expanded view of S&P 500 Index prices and returns from 1980, which is when defined contribution plans started to gain tractions as a viable way to save for retirement, through the most recent data in 2018, we might gain a better insight as to how access, participation, and take-up rates of retirement plans have been affected by the market in recent years.

From 1980 to 2018, the market has shown major swings in returns, especially as of late. The S&P 500 Index last price steadily grew from 2003 to 2008, producing consistent positive returns for investors, after experiencing an extreme decline beginning in 2000. However, prices plummeted immediately following four-year period of positive growth. After the initial crash from 2008 to 2009, positive growth proved soon to follow with only a few minor downturns in 2011, 2015, and 2018.

Conventional wisdom would suggest that when the market experiences a downturn, a downturn in participation and take-up rates of retirement plans, especially defined contribution retirement plans, might follow. Likewise, when the market experiences an upturn, an upturn in participation and take-up rates of retirement plans, especially defined contribution retirement plans, might follow. When taking a step back and looking at the retirement benefits data in conjunction with the market returns, there seems to be little to no correlation between conventional wisdom and evidence presented by the data. Tables 13 and 14 display correlation coefficients which depict the relationship between S&P 500 Index market returns year over year and the rate of change of retirement benefits plans access, participation, and take-up rates (Table 13) and the relationship between S&P 500 Index market returns year over year and the rate of

change of annual quits levels as percent of annual total separations (Table 14). At this time, I would like to note that because this research is limited to ten years of data, the correlation coefficients listed have no statistical reliability. The purpose of finding the correlation coefficient is to demonstrate the directional relationship. For example, if the rate of change in participation is directionally consistent with the rate of change in the S&P 500, one would wonder if the participation might be due to individuals seeing the growth and wanting to not miss the upturn. If the market was down during the period, they may not be as inclined to participate in any pension plan.

When analyzing the results of this function, one can see that there is virtually no correlation between S&P 500 Index market returns year over year and the rate of change of retirement benefits plans access, participation, and take-up rates nor between S&P 500 Index market returns year over year and the rate of change of annual quits levels as percent of annual total separations. Significant correlations (i.e. a correlation coefficient greater than 0.8 or less than -0.8) are found only four times throughout the entire data set. Though it is interesting to note that all four of these occurrences are positively correlated relationships under defined benefit plans. This may suggest that all workers tended to seek out security in a time of a highly volatile market, specifically in the production, transportation, and materials moving industry and the Pacific states. In summary, the market's volatility seems to have little impact on an individual's choice of retirement plan and employee turnover.

Final Discussion

Retirement benefits have historically given employees an incentive to remain loyal to a company, especially through the use of defined benefit plans, and when employees are incentivized to stay at a company, employee turnover naturally decreases. However, retirement benefits, or lack thereof, are not the only factor contributing to employee turnover. With this being said, some of the data analyzed throughout this research suggests that there is a relationship and that it should be explored more. First, we learned that year over year market returns have little to no impact on access, participation, and take-up rates as well as employee turnover regardless of geographic regions and industries. The correlation coefficients were too weak to infer a connection with the high volatility of the market in recent years. Second, an interesting observation was made in which take-up rates of all retirement benefits decreased from 2008 until 2018 among all workers while quits levels increased among all workers in the same period of time. The take-up rates decreased due to rising overall access to these benefits and a constant rate of participation. The interesting aspect about this though, is that overall access increased due to rising access to defined contribution plans and declining access to defined benefit plans. Finally, though quits levels are rising across the country while the overall take-up rate of employee benefits are declining, the exact impact of benefit plans on employee turnover is still unclear, even when surveying specific industries and geographic regions. Although there is still much more to learn about the impact of benefit plans, especially defined benefit plans, on employee turnover on a national scale, let this research serve as a layer to the foundation of what is yet to come.

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Appendix

Table 15. S&P 500 Index last price and YoY returns

S&P 500 Index		
Date	Last Price	YoY Return
12/31/79	107.94	
12/31/80	135.76	25.77%
12/31/81	122.55	-9.73%
12/31/82	140.64	14.76%
12/30/83	164.93	17.27%
12/31/84	167.24	1.40%
12/31/85	211.28	26.33%
12/31/86	242.17	14.62%
12/31/87	247.08	2.03%
12/30/88	277.72	12.40%
12/29/89	353.4	27.25%
12/31/90	330.22	-6.56%
12/31/91	417.09	26.31%
12/31/92	435.71	4.46%
12/31/93	466.45	7.06%
12/30/94	459.27	-1.54%
12/29/95	615.93	34.11%
12/31/96	740.74	20.26%
12/31/97	970.43	31.01%
12/31/98	1229.23	26.67%
12/31/99	1469.25	19.53%
12/29/00	1320.28	-10.14%
12/31/01	1148.08	-13.04%
12/31/02	879.82	-23.37%
12/31/03	1111.92	26.38%
12/31/04	1211.92	8.99%
12/30/05	1248.29	3.00%
12/29/06	1418.3	13.62%
12/31/07	1468.36	3.53%
12/31/08	903.25	-38.49%
12/31/09	1115.1	23.45%
12/31/10	1257.64	12.78%
12/30/11	1257.61	0.00%
12/31/12	1426.19	13.40%
12/31/13	1848.36	29.60%
12/31/14	2058.9	11.39%
12/31/15	2043.94	-0.73%
12/30/16	2238.83	9.54%
12/29/17	2673.61	19.42%
12/31/18	2506.85	-6.24%