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Alternative Realities: The Impact of Extreme Changes in Defined Contribution Plans on Retirement Income Adequacy in America

By Jack VanDerhei, Ph.D., Employee Benefit Research Institute

AT A GLANCE

- In recent years there have been a number of policy proposals that call into question the value of existing defined contribution plans. However, the suggested alternatives do not provide a detailed analysis of the impact of terminating defined contribution plans on retirement income adequacy for American households. Previous research by the Employee Benefit Research Institute (EBRI) has provided some tangential evidence with respect to the potential impact. In 2014 EBRI provided simulation analysis of the serious error introduced by models that ignored future contribution activity from defined contribution plans. In 2017 EBRI produced simulation results showing that, if there were no employer-sponsored retirement plans (defined benefit as well as defined contribution) and individuals were assumed to behave in the manner observed for those with no access to such plans, the aggregate retirement deficits would jump from $4.13 trillion to $7.05 trillion (an increase of 71 percent).

- In contrast, this *Issue Brief* provides a comprehensive exploration of the impact on retirement income adequacy for various cohorts of American households if defined contribution retirement plans were completely eliminated. As expected, the results are significantly greater for younger cohorts, since they would lose potential access to defined contribution plans for a longer period. The youngest age cohort (those currently ages 35–39) would suffer the most, with average retirement deficits increasing 23 percent from $49,182 to $60,253. Older cohorts would experience less of an impact: those ages 40–44 would have an increase of 18 percent, while those ages 45–49 would have a 13 percent increase. The average deficits for households above age 50 would increase but by less than 10 percent.

- The results are also analyzed by preretirement income quartile and breakouts into the following categories: single male, single female, widow, and widower. We find that elimination of defined contribution plans would have the most negative impact on single females.

- The *Issue Brief* then analyzes the opposite end of the defined contribution access spectrum by exploring the impact of a universal defined contribution scenario where every employer (with the exception of those that already sponsor a defined benefit plan) is assumed to sponsor a defined contribution plan. Again in this scenario, the youngest age cohort and single females would experience the largest change in retirement income adequacy.

- The youngest age cohort would benefit the most from this scenario, with average retirement deficits decreasing 24 percent from $49,182 to $37,506. Older cohorts would experience less of an impact: those ages 40–44 would have a decrease of 19 percent, while those ages 45–49 would have a 16 percent decrease and those ages 50–54 would have a 12 percent decrease. The average deficit for households above age 55 would decrease but by less than 10 percent.

Jack VanDerhei is Director of Research at the Employee Benefit Research Institute (EBRI). This *Issue Brief* was written with assistance from the Institute's research and editorial staffs. Any views expressed in this report are those of the author and should not be ascribed to the officers, trustees, or other sponsors of EBRI, Employee Benefit Research Institute-Education and Research Fund (EBRI-ERF), or their staffs. Neither EBRI nor EBRI-ERF lobbies or takes positions on specific policy proposals. EBRI invites comment on this research.

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Alternative Realities: The Impact of Extreme Changes in Defined Contribution Plans on Retirement Income Adequacy in America

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Introduction

In recent years there have been a number of policy proposals that call into question the value of existing defined contribution plans. However, the suggested alternatives do not provide a detailed analysis of the impact of terminating defined contribution plans on retirement income adequacy for American households. Previous research by EBRI has provided some tangential evidence with respect to the potential impact. In 2014[1] EBRI provided simulation analysis of the serious error introduced by models that ignored future contribution activity from defined contribution plans. In 2017 EBRI produced simulation results showing that, if there were no employer-sponsored retirement plans (defined benefit as well as defined contribution) and individuals were assumed to behave in the manner observed for those with no access to such plans, the aggregate retirement deficits would jump from $4.13 trillion to $7.05 trillion (an increase of 71 percent).[2]

In contrast, this Issue Brief provides a comprehensive exploration of the impact on retirement income adequacy for various cohorts of American households if defined contribution retirement plans were completely eliminated. As expected, the results are significantly greater for younger cohorts, since they would lose potential access to defined contribution plans for a longer period. The results are also analyzed by pre-retirement income quartile and breakouts into the following categories: single male, single female, widow, and widower. We find that elimination of defined contribution plans would have the most negative impact on single females.

The Issue Brief then analyzes the opposite end of the defined contribution access spectrum by exploring the impact of a universal defined contribution scenario where every employer (with the exception of those that already sponsor a defined benefit plan) is assumed to sponsor a defined contribution plan. Again in this scenario, the youngest age cohort and single females would experience the largest change in retirement income adequacy.

Background: EBRI's Retirement Security Projection Model®

EBRI's analysis uses the Retirement Security Project Model® (RSPM), which was derived from efforts in the late 1990s on behalf of certain states to determine whether their residents would have sufficient income when they reached retirement age. After conducting studies for Oregon, Kansas, and Massachusetts, a national model — RSPM® — was developed in 2003. It was updated in 2010 to incorporate several significant changes, including the impacts of defined benefit (DB) plan freezes, automatic enrollment provisions for 401(k) plans, and the recent crises in the financial and housing markets. New versions of the model have been generated on a periodic basis since then to include updates for financial and real estate market performance, employee demographics, and real-world behavior of 401(k) participants (based on a database of 27 million 401(k) participants) and those holding individual retirement accounts (IRAs) (based on a database of 20 million unique individuals).

RSPM® produces two important metrics for evaluating retirement income adequacy:

- The EBRI Retirement Readiness Ratings™ (RRRs) show the probability that households will NOT run short of money in retirement.
- Retirement Savings Shortfalls (RSS) give the size of the deficits that households are simulated to generate in retirement.

EBRI Retirement Security Projection Model® Methodology

One of the basic objectives of RSPM® is to simulate the percentage of the population at risk of not having retirement income adequate to cover average expenses and uninsured health care costs (including long-term-care costs) at ages 65 or older throughout retirement in specific income and age groupings. RSPM® also provides information on the distribution of the likely number of years before those at risk run short of money as well as the percentage of preretirement compensation they will need in terms of additional savings in order to have a 50, 70, or 90 percent probability of retirement income adequacy.

VanDerhei and Copeland (2010) describe how households are tracked through retirement age and how their retirement income/wealth is simulated for the following components:

- Social Security.
- DC balances.
- IRA balances.
- DB annuities and/or lump-sum distributions.
- Net housing equity.

A household is considered to run short of money in this model if aggregate resources in retirement are not sufficient to meet average retirement expenditures, defined as a combination of deterministic expenses from the Consumer Expenditure Survey (as a function of age and income) and some health insurance and out-of-pocket, health-related expenses, plus stochastic expenses from nursing-home and home-health care (at least until the point such expenses are covered by Medicaid). This version of the model is constructed to simulate retirement income adequacy, as noted above. Alternative versions of the model allow similar analysis for replacement rates, standard-of-living calculations, and other ad hoc thresholds.

The baseline version of the model used for this analysis assumes all workers retire at age 65; that they immediately begin drawing benefits from Social Security and defined benefit plans (if any); and, to the extent that the sum of their expenses and uninsured medical expenses exceed the projected, after-tax annual income from those sources, immediately begin to withdraw money from their individual accounts (defined contribution and cash balance plans as well as IRAs). If there is sufficient money to pay expenses without tapping into the tax-qualified individual accounts, those balances are assumed to be invested in a non-tax-advantaged account where the investment income is taxed as ordinary income. Individual accounts are tracked until the point at which they are depleted. At that point, any net housing equity is assumed to be added to retirement savings in the form of a lump-sum distribution (not a reverse annuity mortgage (RAM)). If all the retirement savings are exhausted and the Social Security and defined benefit payments are not sufficient to pay expenses, the individual is designated as having run short of money at that point.

Earlier this year, EBRI provided the initial results from the 2019 version of RSPM.® Overall, the average RRR for 2014 was 57.7 percent. In other words, it projected that 57.7 percent of U.S. households will NOT run short of money in retirement. This value increased by 1.7 percentage points to 59.4 percent in 2019. In other words, the new version of the EBRI simulation model estimates that 4 percent fewer households will run short of money in retirement than was the case with the 2014 version of the model.

The baseline version of RSPM® assumes that future Social Security retirement benefits under current law will not be modified. However, the current Social Security Trustees Report projects that the funds for Old-Age and Survivors Insurance (OASI) will be exhausted by 2034. While this would not result in Social Security retirement benefits being eliminated, left unaddressed it might well require a reduction in benefits for at least some cohorts of retirees. Figure 1 of VanDerhei (2019) provides the average 2019 Retirement Readiness Ratings if Social Security retirement benefits are assumed to have a pro-rata reduction of 23 percent once the OASI Trust Fund reserves become depleted in 2034. Such a reduction would obviously impact the youngest age cohort the most and their average RRR would decrease by 5.9 percentage points, from 57.9 percent to 52.0 percent.3 Older cohorts would experience less of an impact: those ages 40–44 would have a decrease of 3.5 percentage points from the 2019 baseline values, while those ages 45–49 would have a 1.7 percentage point decrease. The average RRR for households above age 50 would decrease but by less than 1 percentage point.

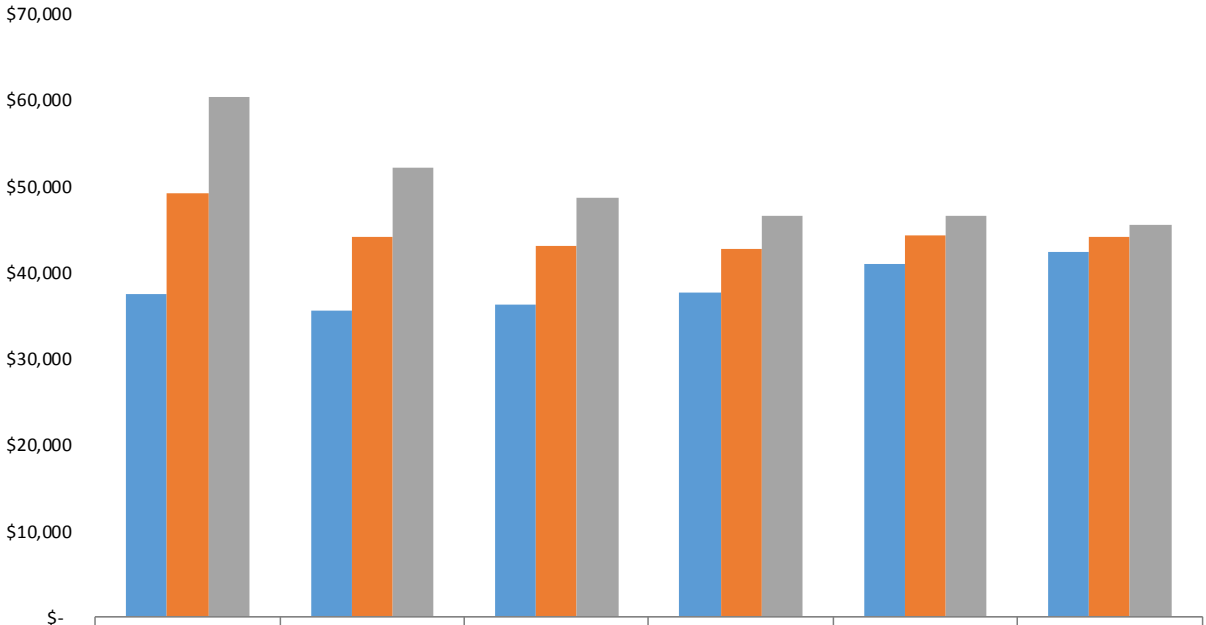
The baseline scenarios in RSPM® assume that access to defined contribution and defined benefit plans remains constant. In other words, employers will have the same probability of offering a plan (as a function of the number of employees), although the percentage of employees actually participating will vary as a function of various demographics (age, salary, tenure with the employer) as well as plan type offered (e.g., voluntary enrollment vs. automatic enrollment 401(k) plans).

Retirement Savings Shortfalls

The baseline values in Figure 1 depict Retirement Savings Shortfalls by age cohort for households between the ages of 35 and 64. The RSS values provide information on average individual retirement income deficits. These numbers are present values (in 2019 dollars) at age 65 and represent the additional amount that individuals will have to save by age 65 to eliminate their expected deficits in retirement (which, depending on the simulated life-path, could be a relatively short period or could last decades).

While the deficits in Figure 1 may appear to be relatively small considering they represent the sum of present values that may include decades of deficits, it is important to remember that a significant percentage of the simulated life-paths modeled are considered NOT to run short of money in retirement. In other words, the average deficits represented in the baseline values for Figure 1 are reduced by the inclusion of simulated retirement life-paths that will not run short of money. Looking only at those situations where shortfalls are projected, Figure 2 shows that the values for the conditional deficits range from $117,739 for households ages 35–39 to $105,093 for those ages 60–64.

Figure 1
2019 Retirement Savings Shortfalls,* by Age Cohort

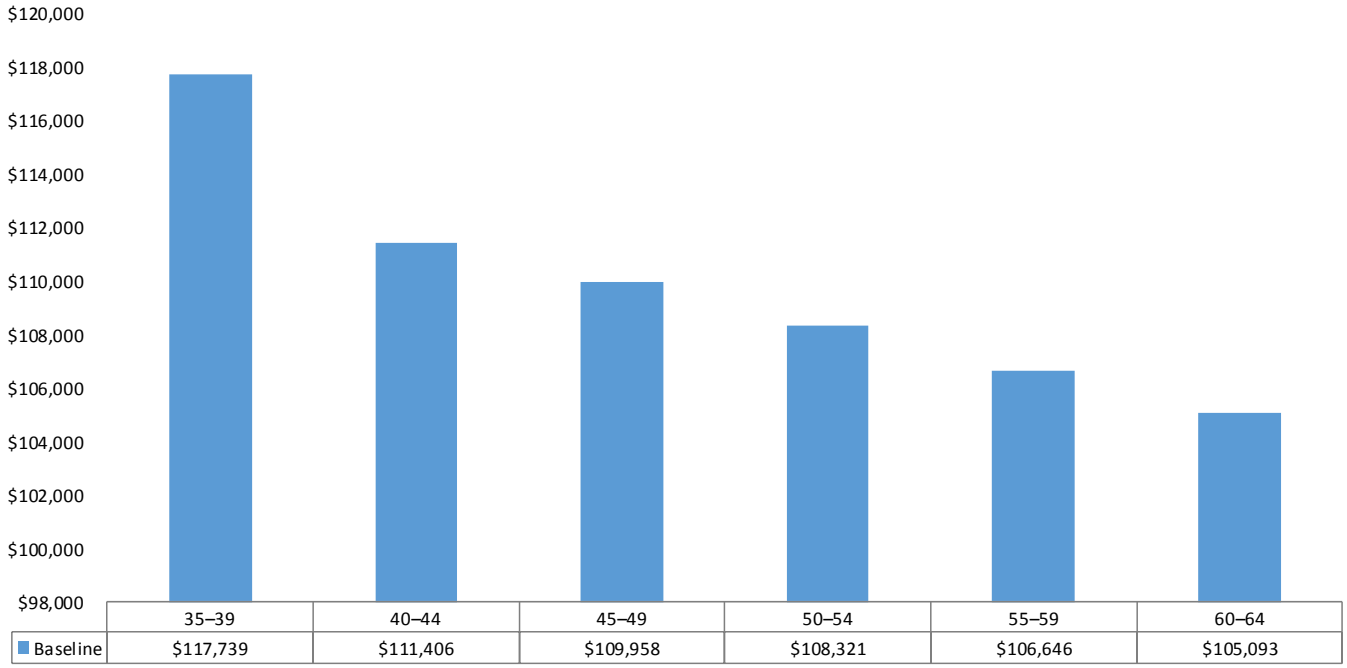


	35–39	40–44	45–49	50–54	55–59	60–64
Universal DC Coverage	$37,506	$35,519	$36,299	$37,698	$40,852	$42,304
Baseline	$49,182	$44,052	$43,004	$42,681	$44,186	$44,055
Complete DC Elimination	$60,253	$52,085	$48,606	$46,573	$46,534	$45,446

Source: EBRI Retirement Security Projection Model® versions 3459, 3507, and 3512.
* The Retirement Savings Shortfalls (RSS) are determined as a present value of retirement deficits at age 65.

Figure 2

Average 2019 Retirement Savings Shortfalls* for Those Households With a Deficit, by Age Cohort



	35–39	40–44	45–49	50–54	55–59	60–64
Baseline	$117,739	$111,406	$109,958	$108,321	$106,646	$105,093

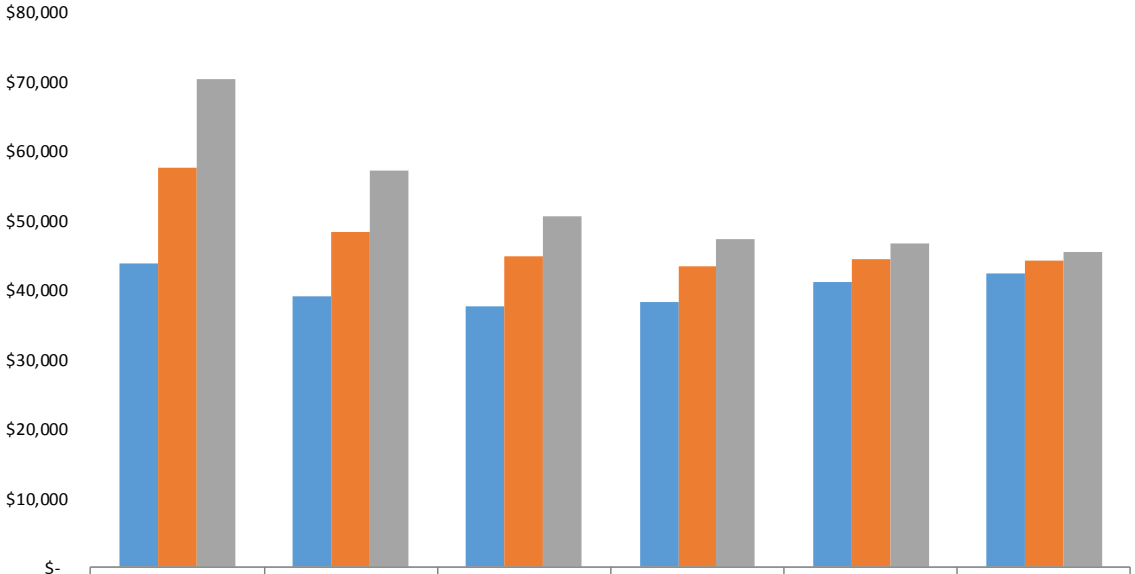
Source: EBRI Retirement Security Projection Model® version 3459.
* The Retirement Savings Shortfalls (RSS) are determined as a present value of retirement deficits at age 65.

The baseline values in Figure 3 show the impact on average deficits by age of a pro-rata reduction of 23 percent once the OASI Trust Fund reserves become depleted in 2034. Such a reduction would obviously impact the youngest age cohort the most and their average Retirement Savings Shortfall would increase by 17 percent (cf. Figure 1 with Figure 3). Older cohorts would experience less of an impact: those ages 40–44 would have an increase of 10 percent from the baseline values, while those ages 45–49 would have a 4 percent increase and those ages 50–54 would have a 1 percent increase. The average deficit for households above age 55 would increase but by less than 1 percent.

Eligibility for participation in a defined contribution plan can have a significant impact on reducing these savings shortfalls. Figure 4 considers all workers (both eligible and ineligible) and gives the average individual retirement income deficits by the number of future years of eligibility for coverage in a defined contribution retirement plan. The deficit value for those in the youngest cohort (ages 35–39) assumed to have no future years of eligibility (as if they were never simulated to be employed in the future by an organization that provides access to those plans) is $78,046 per individual. That shortfall decreases substantially to $44,546 for those with one to nine years of future eligibility and even further to $27,830 for those with 10–19 years of future eligibility. Households in this age cohort fortunate enough to have at least 20 years of future eligibility in those programs have their average shortfall at retirement reduced to only $14,638. In other words, workers ages 35–39 with no future eligibility in a DC plan have a deficit more than five times higher than those with at least 20 years of future eligibility.

Figure 3

2019 Retirement Savings Shortfalls,* by Age Cohort: Assumes Pro-Rata Reduction in Social Security Retirement Benefits (Starting in 2034)

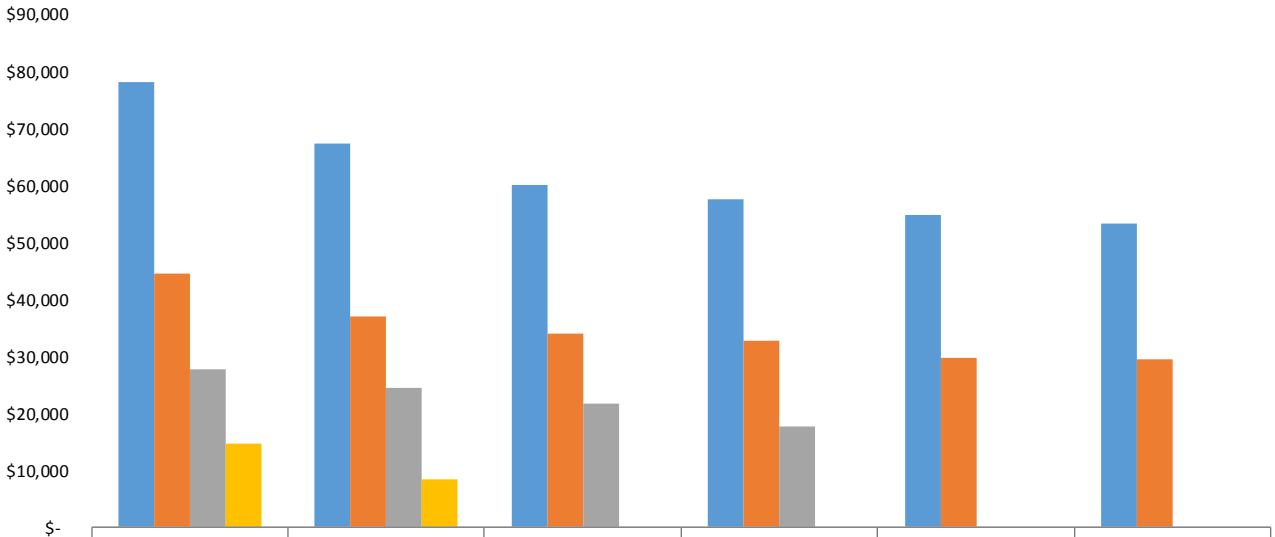


	35–39	40–44	45–49	50–54	55–59	60–64
Universal DC Coverage	$43,869	$38,946	$37,702	$38,241	$41,017	$42,379
Baseline	$57,586	$48,402	$44,719	$43,315	$44,352	$44,123
Complete DC Elimination	$70,353	$57,223	$50,537	$47,284	$46,732	$45,511

Source: EBRI Retirement Security Projection Model® versions 3459, 3507, and 3512.
* The Retirement Savings Shortfalls (RSS) are determined as a present value of retirement deficits at age 65.

Figure 4

2019 Retirement Savings Shortfalls,* by Age Cohort and Years of Future Eligibility in Defined Contribution Plans



	35–39	40–44	45–49	50–54	55–59	60–64
0	$78,046	$67,365	$60,164	$57,500	$54,909	$53,270
1–9	$44,546	$36,943	$33,961	$32,690	$29,650	$29,478
10–19	$27,830	$24,412	$21,757	$17,807		
20+	$14,638	$8,479				

Source: EBRI Retirement Security Projection Model® versions 3459, 3507, and 3512.
* The Retirement Savings Shortfalls (RSS) are determined as a present value of retirement deficits at age 65.

Alternative Reality 1: No Future Defined Contribution Coverage

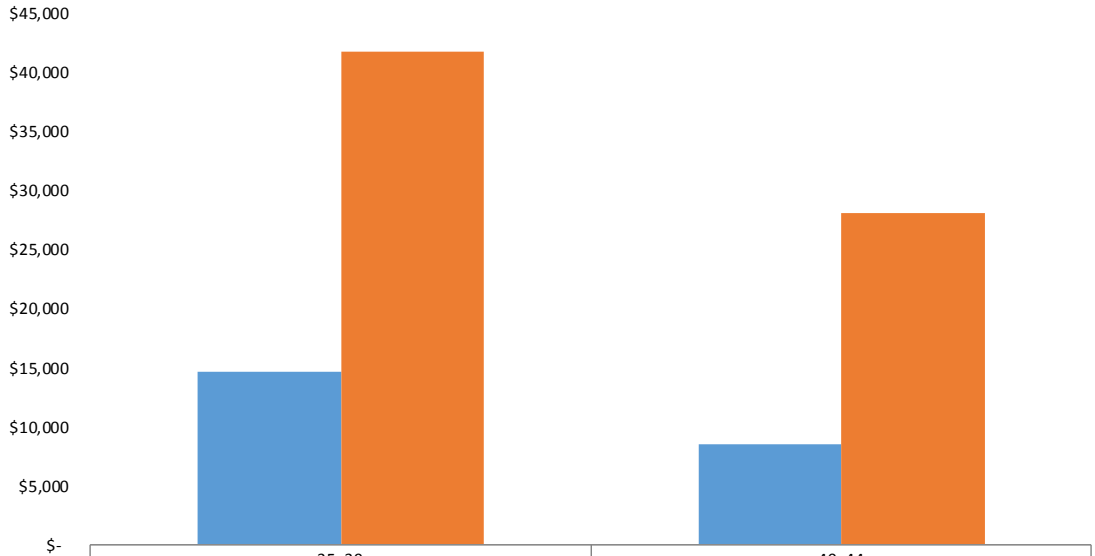
Figure 5 focuses on those workers who are currently eligible for at least 20 years of future defined contribution coverage and then provides the simulated retirement deficits assuming that coverage goes away. In this no-coverage scenario, for the youngest cohort (ages 35–39), the average retirement deficit would increase by 185 percent from $14,638 to $41,684. For those ages 40–44, the average retirement deficit would increase 231 percent from $8,479 to $28,065.

The aggregate impact by age across all years of future defined contribution eligibility can be seen by comparing the baseline values in Figure 1 with those from the complete defined contribution elimination scenario. As expected, the youngest age cohort would suffer the most, with average retirement deficits increasing 23 percent from $49,182 to $60,253. Older cohorts would experience less of an impact: those ages 40–44 would have an increase of 18 percent, while those ages 45–49 would have a 13 percent increase. The average deficits for households above age 50 would increase but by less than 10 percent. Factoring in a pro-rata reduction in Social Security benefits starting in 2034 provides similar results (Figure 3). For those ages 35–39, the average retirement deficits increase 22 percent from $57,586 to $70,353.

Figure 6 shows the average deficits by preretirement income quartile for each of the age cohorts from Figure 1. The additional savings required for those in the youngest cohort (ages 35–39) range from $13,852 for households in the highest preretirement income quartile to $104,805 for those in the lowest quartile. Figure 7 shows the change in average retirement deficits by age cohort and preretirement income quartile for the scenario in which defined contribution plans were completely eliminated. For the youngest age cohort, the increase in average deficits exceeds $10,000 for all but the lowest quartile (reflecting the lower rates of coverage in the baseline scenario for individuals in this quartile). The increase in average deficits is largest for the third and second quartiles ($17,084 and $15,271 respectively). The increase in average deficits decreases by age but remains in excess of $1,000 for all but the lowest preretirement income quartile.

Figure 5

2019 Retirement Savings Shortfalls* for Those With 20+ Years of DC Plan Future Eligibility, by Age Cohort**

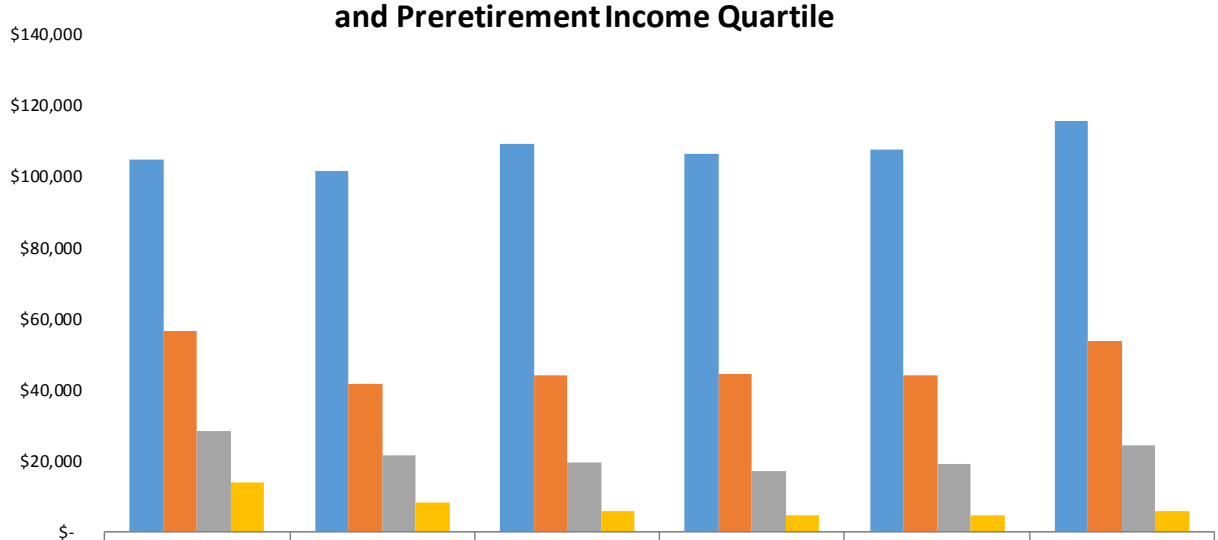


	35–39	40–44
Baseline	$14,638	$8,479
Complete DC Elimination	$41,684	$28,065

Source: EBRI Retirement Security Projection Model® versions 3459, 3507, and 3512.
* The Retirement Savings Shortfalls (RSS) are determined as a present value of retirement deficits at age 65.
** Eligibility as defined under the baseline.

Figure 6

2019 Retirement Savings Shortfalls,* by Age Cohort and Preretirement Income Quartile

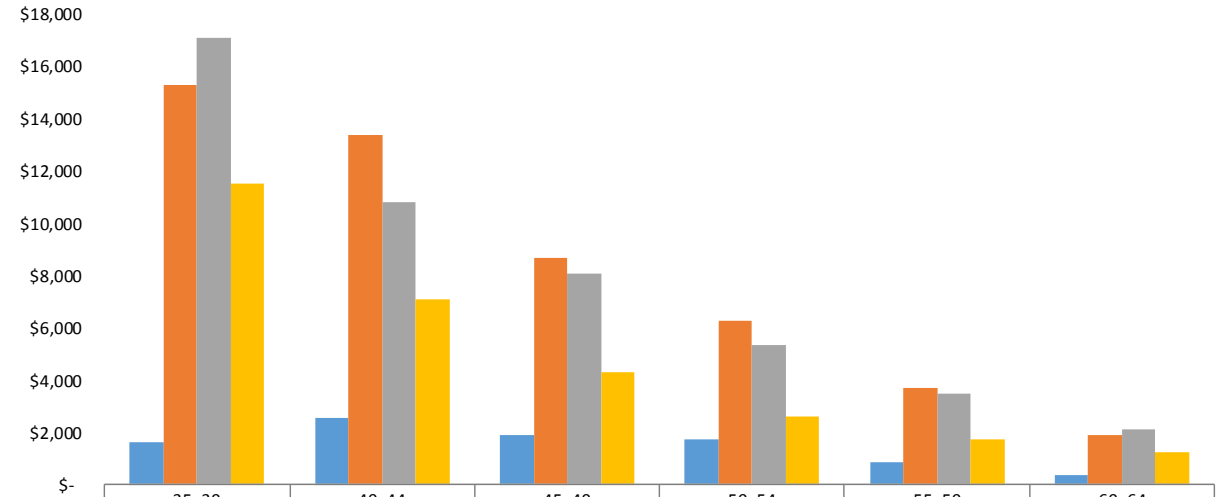


	35–39	40–44	45–49	50–54	55–59	60–64
Lowest Quartile	$104,805	$101,578	$108,914	$106,036	$107,328	$115,410
Second Quartile	$56,276	$41,506	$44,123	$44,203	$44,047	$53,724
Third Quartile	$28,316	$21,533	$19,429	$17,029	$18,934	$24,182
Highest Quartile	$13,852	$8,176	$5,641	$4,465	$4,667	$5,570

Source: EBRI Retirement Security Projection Model® versions 3459, 3507, and 3512.
* The Retirement Savings Shortfalls (RSS) are determined as a present value of retirement deficits at age 65.

Figure 7

Change in 2019 Retirement Savings Shortfalls,* by Age Cohort and Preretirement Income Quartile Under the Complete Elimination of Defined Contribution Plans Scenario



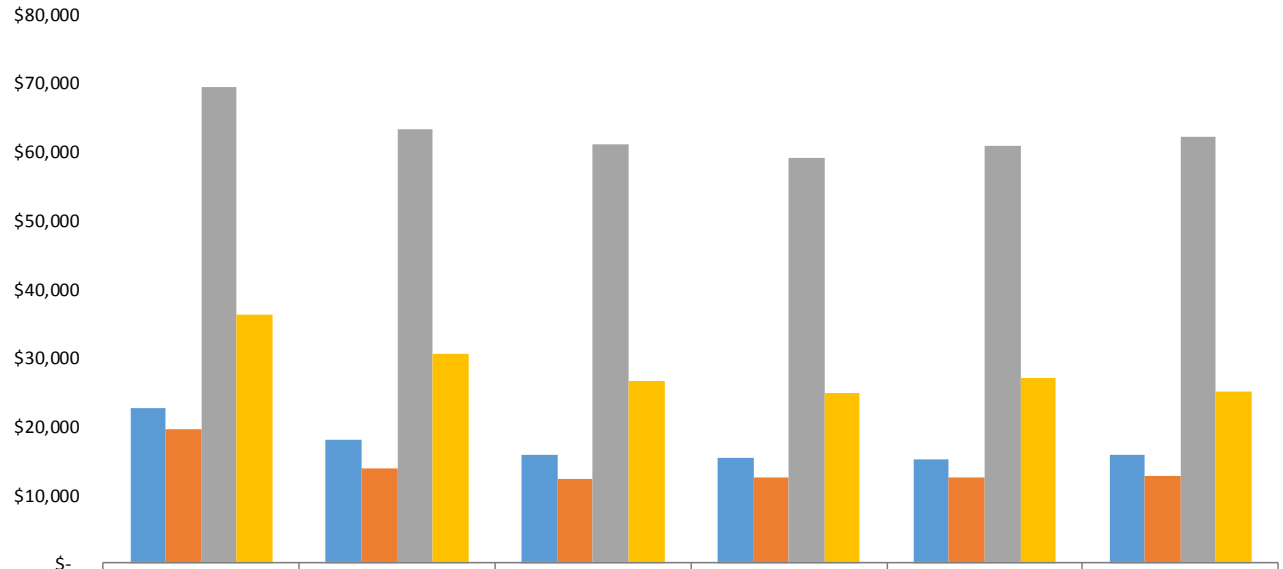
	35–39	40–44	45–49	50–54	55–59	60–64
Lowest Quartile	$1,598	$2,536	$1,868	$1,741	$839	$340
Second Quartile	$15,271	$13,367	$8,644	$6,236	$3,699	$1,877
Third Quartile	$17,084	$10,785	$8,071	$5,329	$3,468	$2,111
Highest Quartile	$11,527	$7,059	$4,303	$2,590	$1,721	$1,227

Source: EBRI Retirement Security Projection Model® versions 3459, 3507, and 3512.
* The Retirement Savings Shortfalls (RSS) are determined as a present value of retirement deficits at age 65.

Figure 8 shows the average deficits by marital status and gender for each of the age cohorts from Figure 1. The additional savings required for those on the verge of retirement (ages 60–64) range from $12,640 (per individual) for married households where the female dies first (widower) to $15,782 (per individual) for married households where the husband dies first (widow), increasing to $24,905 for single males and $62,127 for single females. Even though the present values are defined in constant dollars, the deficits are largest for the youngest cohort (ages 35–39), largely due to the assumption that health-care-related costs will increase faster than the general inflation rate.

Figure 9 shows the change in 2019 Retirement Savings Shortfalls by age cohort, marital status, and gender under the complete elimination of defined contribution plans scenario. For those in the youngest cohort (ages 35–39), the increase in average deficits is roughly the same for all four groups, with all increases being approximately $11,000 to $13,000. Starting with the next youngest age cohort (ages 40–44) and continuing throughout those on the verge of retirement (ages 60–64), the impact of eliminating defined contribution plans in the future would be most detrimental to the single females: compared with single males, they are simulated to have an increase in average retirement deficits anywhere from $839 to $1,489 larger depending on age.

Figure 8
2019 Retirement Savings Shortfalls,* by Age Cohort, Marital Status, and Gender

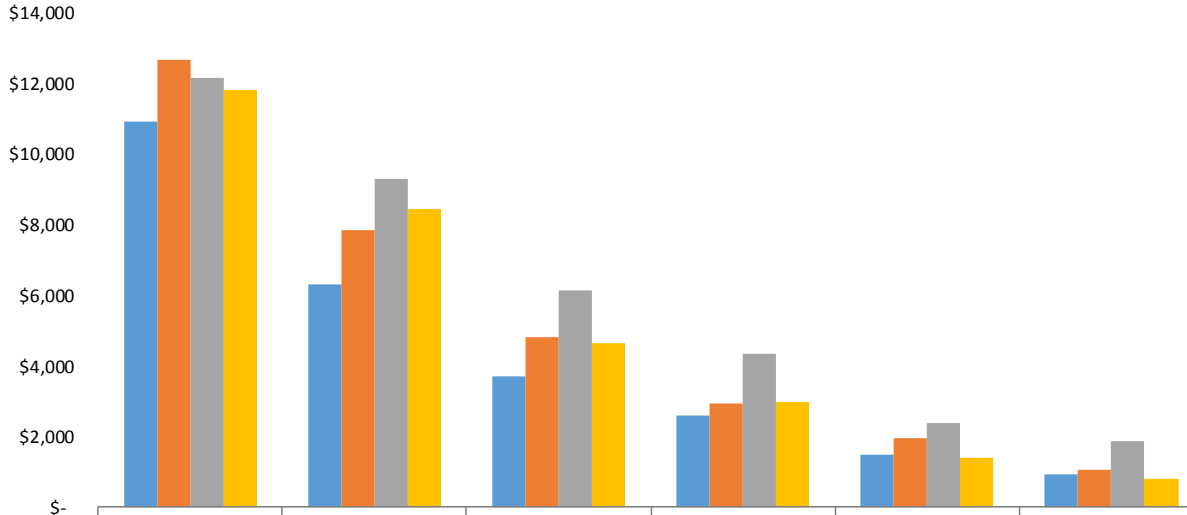


	35–39	40–44	45–49	50–54	55–59	60–64
Widow	$22,692	$17,964	$15,703	$15,356	$15,083	$15,782
Widower	$19,413	$13,745	$12,268	$12,591	$12,416	$12,640
Single Female	$69,484	$63,251	$61,042	$58,964	$60,830	$62,127
Single Male	$36,266	$30,471	$26,452	$24,827	$27,002	$24,905

Source: EBRI Retirement Security Projection Model® versions 3459, 3507, and 3512.
* The Retirement Savings Shortfalls (RSS) are determined as a present value of retirement deficits at age 65.

Figure 9

Change in 2019 Retirement Savings Shortfalls,* by Age Cohort, Marital Status, and Gender Under the Complete Elimination of Defined Contribution Plans Scenario



	35–39	40–44	45–49	50–54	55–59	60–64
Married, Female Dies First	$10,928	$6,314	$3,703	$2,579	$1,498	$921
Married, Male Dies First	$12,671	$7,854	$4,794	$2,940	$1,927	$1,042
Single Female	$12,146	$9,273	$6,117	$4,338	$2,358	$1,849
Single Male	$11,809	$8,434	$4,628	$2,984	$1,398	$797

Source: EBRI Retirement Security Projection Model® versions 3459, 3507, and 3512.
* The Retirement Savings Shortfalls (RSS) are determined as a present value of retirement deficits at age 65.

Alternative Reality 2: Universal Defined Contribution Coverage

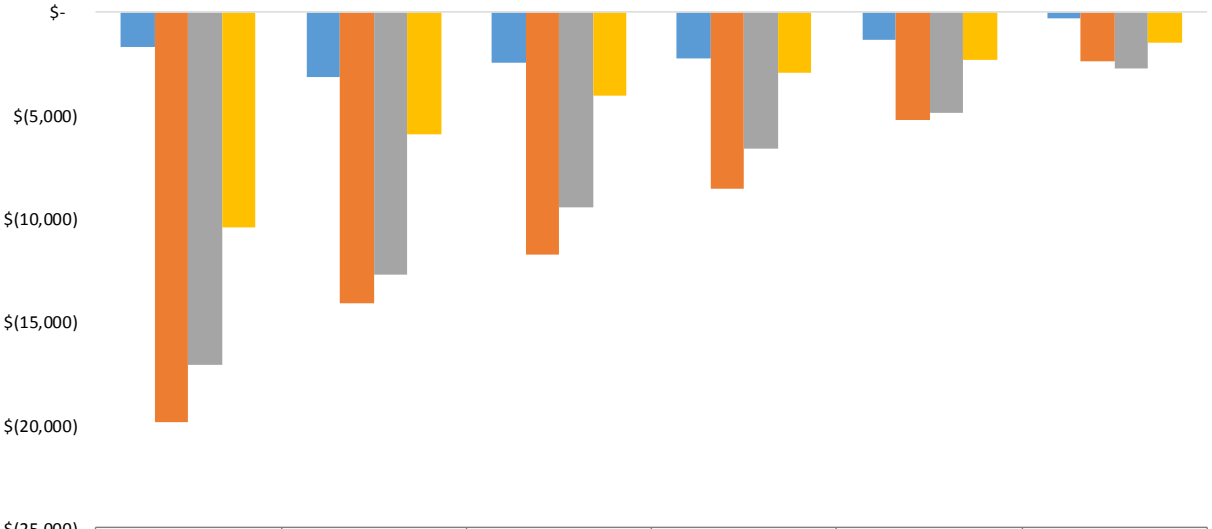
In the universal defined contribution coverage scenario, it is assumed that all employers who do not currently offer their employees either a defined contribution or a defined benefit plan would adopt a defined contribution plan immediately. However, rather than simplistically presuming a single, stylized defined contribution plan for employers regardless of size, this analysis assumes employers will choose a type of plan and a set of generosity parameters similar to employers in their size range. The universal defined contribution scenario is based on observed contribution rates and demonstrated opt-out behavior when simulating employee behavior.[4]

The "universal defined contribution coverage" values in Figure 1 show the impact of this scenario as a function of age. As expected, the youngest age cohort would benefit the most from this scenario, with average retirement deficits decreasing 24 percent from $49,182 to $37,506. Older cohorts would experience less of an impact: those ages 40–44 would have a decrease of 19 percent, while those ages 45–49 would have a 16 percent decrease and those ages 50–54 would have a 12 percent decrease. The average deficit for households above age 55 would decrease but by less than 10 percent. Factoring in a pro-rata reduction in Social Security benefits starting in 2034 provides similar results (Figure 3). For those ages 35–39, the average retirement deficits decrease 24 percent from $57,586 to $43,869.

Figure 10 shows the change in average retirement deficits by age cohort and preretirement income quartile for the universal defined contribution coverage scenario. For the youngest age cohort, the decrease in average deficits exceeds $10,000 for all but the lowest quartile (reflecting the lower rates of coverage in the baseline scenario for individuals in this quartile). The decrease in average deficits is largest for the second and third quartiles ($19,881 and $17,082 respectively). The decreases in average deficits decrease by age but remain in excess of $1,000 for all but the oldest age cohort (ages 60–64) in the lowest pre-retirement income quartile.

Figure 10

Change in 2019 Retirement Savings Shortfalls,* by Age Cohort and Preretirement Income Quartile Under the Universal Defined Contribution Plan Scenario

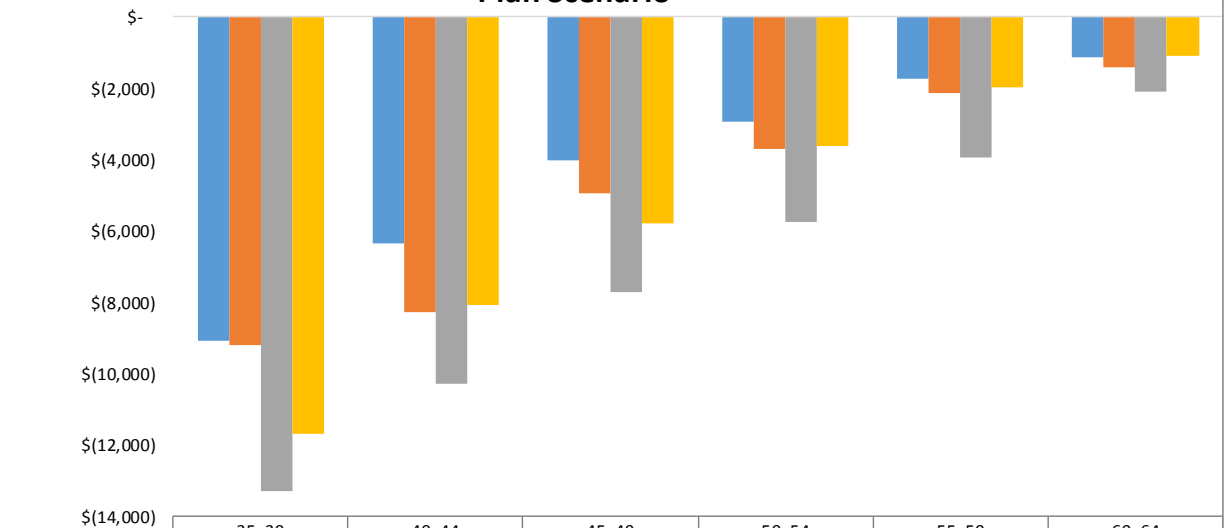


	35–39	40–44	45–49	50–54	55–59	60–64
Lowest Quartile	$(1,708)	$(3,186)	$(2,450)	$(2,265)	$(1,375)	$(320)
Second Quartile	$(19,881)	$(14,140)	$(11,745)	$(8,574)	$(5,201)	$(2,416)
Third Quartile	$(17,082)	$(12,759)	$(9,454)	$(6,635)	$(4,920)	$(2,756)
Highest Quartile	$(10,451)	$(5,907)	$(4,068)	$(2,940)	$(2,306)	$(1,500)

Source: EBRI Retirement Security Projection Model® versions 3459, 3507, and 3512.
* The Retirement Savings Shortfalls (RSS) are determined as a present value of retirement deficits at age 65.

Figure 11

Change in 2019 Retirement Savings Shortfalls,* by Age Cohort and Marital Status and Gender Under the Universal Defined Contribution Plan Scenario



	35–39	40–44	45–49	50–54	55–59	60–64
Married, Female Dies First	$(9,077)	$(6,337)	$(4,010)	$(2,946)	$(1,723)	$(1,148)
Married, Male Dies First	$(9,207)	$(8,274)	$(4,933)	$(3,715)	$(2,148)	$(1,397)
Single Female	$(13,285)	$(10,287)	$(7,718)	$(5,734)	$(3,959)	$(2,106)
Single Male	$(11,690)	$(8,077)	$(5,797)	$(3,624)	$(1,979)	$(1,071)

Source: EBRI Retirement Security Projection Model® versions 3459, 3507, and 3512.
* The Retirement Savings Shortfalls (RSS) are determined as a present value of retirement deficits at age 65.

Figure 11 shows the change in 2019 Retirement Savings Shortfalls by age cohort, marital status, and gender under the universal defined contribution plan scenario. For those in the youngest cohort (ages 35–39), the decrease in average deficits is significantly larger for single females ($13,285) and single males ($11,690). Starting with the next youngest age cohort (ages 40–44) and continuing throughout those on the verge of retirement (ages 60–64), the impact of universal defined contribution plans for single males is similar to that found for widows, but a universal defined contribution plan scenario would be most beneficial to the single females.

Conclusion and Future Research

The EBRI Retirement Security Projection Model® was developed to provide an assessment of national retirement income prospects. Over the years it has been enhanced to be able to model the impacts of defined benefit plan freezes and automatic enrollment provisions for 401(k) plans as well as the crises in the financial and housing markets from 2007–2009. The model reflects retirement readiness and average individual retirement deficits as well as aggregate deficits. It is able to project retirement savings by various age, tenure, gender, and marital status cohorts. And it is flexible enough to examine changes to the system running the gamut from incremental changes to extreme modifications.

This *Issue Brief* explored two extreme changes to the defined contribution system. In the first case, we assumed that all future access to defined contribution plans was eliminated. We find that the most extreme impact of this scenario would fall upon the young, the second and third income quartiles, and single females. In the second case, we assumed that every employer who does not currently have a defined benefit or defined contribution plan would adopt a defined contribution plan similar to those adopted by other employers of a similar size. In this case we again find that those who would benefit most are the young, the second and third income quartiles, and single females.

It should be noted that this analysis was devoted specifically to analyzing the present values of retirement deficits. While this output metric may be preferred for public policy analysis focusing on retirement income adequacy, it actually masks much of the impact of the two scenarios analyzed in this *Issue Brief*. For example, when analyzing the impact of a universal defined contribution system, to the extent that a household was NOT simulated to run short of money in retirement under the baseline, increasing their access to an employer-sponsored defined contribution plan did not change their simulated RSS (it was still zero).

EBRI has developed alternative output metrics (Retirement Savings Surplus and Net Retirement Savings Surplus) during its analysis of the Rothification proposals in 2017 and will apply them to these scenarios in a future *Issue Brief*.

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Endnotes

[1] VanDerhei (August 2014).

[2] American Benefits Council (2017).

[3] Figure 1 of VanDerhei (2019).

[4] This simulation analysis has been primarily used as an upper bound to measure the likely impact of various legislative reforms and/or plan design modifications. See VanDerhei (2018) for additional detail.

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