CHAPTER 1
INTRODUCTION

The Division of Policy Evaluation (DPE) of the Social Security Administration (SSA) has entered into two contracts with the Urban Institute to help it develop a new tool for analyzing the distributional consequences of Social Security reform proposals. The first, awarded in 1998, led to the development of Modeling Income in the Near Term (MINT), a tool for simulating the retirement incomes of members of the Baby Boom and neighboring cohorts. The second, awarded in 2000, was to expand and improve on the first version of MINT. In all phases of the project, members of the research staff at SSA/DPE collaborated closely with the contractors. The Brookings Institution served as a subcontractor to the Urban Institute under both contracts and the RAND Corporation participated in the development of the initial version of MINT under a separate contract. This report describes the work of the researchers at Urban and Brookings under the second contract.

The MINT data system begins with household data from the 1990 through 1993 panels of the Survey of Income and Program Participation (SIPP) that have been matched to the administrative records of the Social Security Administration pertaining to earnings, benefit receipt, and date of death. MINT’s core population consists of individuals from the 1931 to 1960 birth cohorts.

The version of MINT described in this report extends the earlier version of MINT by incorporating a more sophisticated representation of retirement, more elaborate models of pension and non-pension wealth accruals, and detailed earnings and retirement behavior of recipients of Disability Insurance (DI) benefits. It also adds new modules simulating health and work limitations, living arrangements, and eligibility and participation in the Supplemental Security Income (SSI) program. The new version is also more interactive than the first version of the model, with retirement and wealth depending recursively upon one another. The version described in this report is called MINT3, and the initial version is called MINT1.1

The primary purpose of the MINT effort is to develop a tool for projecting the distribution of income in retirement for the 1931 to 1960 birth cohorts. MINT3 can produce projections of economic and demographic characteristics in the year 2020, at the time of retirement, and for other years (from 1999 through 2032) and ages (between age 50 and death, or 2032, whichever comes first). It can be used both to construct a baseline using alternative economic and demographic assumptions and to analyze the distributional consequences of a variety of Social Security policy changes. The types of policy changes that MINT3 can help to analyze are discussed in greater detail in Chapter 11.

1 As will be noted shortly, an intermediate step in the process of improving MINT was called MINT2. The changes introduced in MINT2 are also in MINT3.
I. SEQUENCING OF TASKS

The various forecasts that comprise MINT3 proceed sequentially. As in other dynamic microsimulation modeling efforts, outcomes in each stage depend on outcomes in previous stages. Further, time-varying predictors (for example, earnings or marital status) are limited to those elements that are themselves predicted elsewhere in MINT. Fixed (i.e., unchanging) parameters, like place of birth, must be available on the SIPP or the administrative records, or else must be imputed to the starting file.

The structure of MINT1 consisted of a number of blocks that were almost completely recursive. Figure 1-1 illustrates the MINT1 processing sequence. In MINT1, many life events such as marriage transitions, earnings through age 67, and death were projected for the entire lifetime at one time for each individual in the sample. The first step was marriage and mortality, followed by a spouse imputation for those marrying or remarrying after the last SIPP interview, followed by earnings, and a Disability Insurance receipt hazard. Next, several important outcomes, such as pensions and the size of non-pension wealth, were projected as of ages 62, the early eligibility age for Social Security, and 67, the age for full benefits (the “normal retirement age”). MINT1 then predicted the age at which each person would take-up Social Security benefits, the rate at which the person would spend down his or her assets during Social Security benefit receipt, and any earnings the individual would have after first receipt of benefits.

MINT2 extended MINT1 to incorporate a new method of projecting earnings (see Chapter 2), but otherwise retained the overall structure and parameter estimates of MINT1. This version of the model was used to produce several conference papers (Cohen and Steuerle 2001; Smith, Toder, and Iams 2001).

MINT3 is better classified as having a dynamically recursive block structure. Instead of processing each outcome for an individual’s entire lifetime, the model now processes a significant fraction of outcomes for one year at a time. While the modules of marriage and mortality and earnings to age 50 retain the block recursive features, the retirement, wealth, and earnings have become dynamically recursive. An advantage of this approach is that it allows additional feedbacks between processes. For example, earnings choices influence wealth accumulation, and subsequent shocks to wealth influence retirement decisions.

Figure 1-2 presents the overall structure of MINT3. The first step in the projection process is the generation of the estimates of earnings to age 67. As described in Chapter 2, this step implements a fundamentally different methodology than was employed in MINT1 and one that appears to produce much greater individual variation in lifetime earnings patterns. The process also produces revised estimates of mortality through age 67 and selects the records that will be projected to claim disability benefits.

The next steps involve applying the modules to generate demographic projections of mortality and changes in marital status for each record. Following this, spouses are found from other individuals in the SIPP panels for those who reported previous marriages or who are projected to marry subsequently.

For a discussion of the distinction between completely and dynamically recursive blocks, see Sabelhaus, 1999.
Figure 1-1.
Original Mint Structure

Marriage and mortality

Spouse match

Earnings to age 67

Disability hazard

For non-disabled

Pensions at age 62 and 67

Nonpension wealth at age 62 and 67

From age 62 to 67

Social Security hazard

From Social Security take-up to death

Work status at age i

Earnings at age i

Pensions at age i

Wealth at age i

Social Security income at age i

Poverty at age i

For ever disabled

Zero out earnings after disability age to death

Do not take Social Security at age i
Figure 1-2. MINT 3 Program Structure

- Earnings to age 67
- Marriage and mortality
- Spouse match
- Update Health Status
- Institution and Mortality Hazard
- Institutionalized or Dead
  - End
- Not Institutionalized
  - Ever Disabled
    - Yes
    - No
      - Project Earnings Assuming Not Retired
      - Calculate Social Security and DB Pension Wealth Assuming Not Retired
      - Retirement decision at ages 51 to death
        - Yes
          - Get Social Security
            - Partial/Full without SSB
          - Partial/Full with SSB
            - Update Earnings
              - Update Pension Balance and Retirement Savings
                - Calculate Home Equity, Home Ownership and Nonpension Wealth
                - Calculate Social Security Benefits SSAGE to death
                - SSI and living arrangements age 62 until death
                - Poverty SSAGE until death
        - No
          - Get Social Security
            - Partial/Full without SSB
            - Partial/Full with SSB
            - Update Earnings
            - Update Pension Balance and Retirement Savings
            - Calculate Home Equity, Home Ownership and Nonpension Wealth
            - Calculate Social Security Benefits SSAGE to death
            - SSI and living arrangements age 62 until death
            - Poverty SSAGE until death
The next step is to update the health status. Health status influences the retirement decision prior to age 67 and the probability of institutionalization after age 62. The simulation stops for individuals at death or institutionalization. For survivors, the record is then checked to see if the individual has claimed disability benefits. Ever-disabled beneficiaries bypass the retirement loop retaining their step one earnings, while never-disabled individuals move into the retirement model where earnings may be updated.

The next two steps in the process provide the never-disabled, working population information that will be used to project retirement behavior from age 51 on. One involves projecting the individual's earnings should the individual not retire. The other involves projecting the Social Security and defined benefit pension wealth to which the individual would be entitled if he or she continued to work one more year. Each year, separate determinations are made as to whether non-disabled workers retire and whether they file for Social Security benefits. Once their retirement and beneficiary status has been determined, their earnings are updated for an additional year.

After the retirement and benefit status has been determined, all individuals are then exposed to a hazard function to update their home ownership status. After that, their home equity value is updated, and their pension wealth, non-pension wealth, and Social Security benefits (if any) are calculated. The last step in the cycle is to check for eligibility for SSI benefits. Those ages 62 to 64 may be eligible for disability benefits if their health status limits their ability to work, while those 65 and over are potentially eligible for SSI aged benefits. For those found to be eligible for benefits, the model simulates whether any SSI benefit is taken, and calculates the SSI benefit they receive. It then sums up the total income of the household and establishes whether the family income is above or below the poverty line. When this sequence has been completed, the program loops back to repeat the process for another year, beginning with update to health status.

II. ORGANIZATION OF THE CHAPTERS

The next six chapters of this report detail the specifications of each of the MINT3 modules. Chapter 2 discusses the method for projecting earnings through age 50, prevalence of Disability Insurance receipt, and earnings of the disabled through age 67. Because the Social Security Administration requested that MINT users have the capacity to calibrate disability prevalence rates to rates produced by the Office of the Chief Actuary (OCACT), these projections interact with the mortality forecasts originally produced by the RAND Corporation.

Chapter 3 describes the model’s treatment of job demands, work limitations, and health status. In Chapter 4, we discuss the models of retirement, Social Security take-up, and earnings after age 50 for the non-disabled. Chapter 5 focuses on forecasts for retirement income from both defined benefit and defined contribution pensions. Chapter 6 outlines the models of asset accumulation and spend down. Chapter 7 describes the models of Supplemental Security Income program eligibility and participation and living arrangements.3

3 These processes are considered together because of regulations that reduce SSI benefits for certain recipients who are living in another’s household.
Many of the individual chapters report the results of analyses to test the sensitivity of the baseline projections to changes in projection methodologies. One such test focused on the impact of substituting the mortality rates used in the Trustees' Report projections for those developed by RAND and used in the baseline projections. These results are reported in Chapter 8.

The final chapters pull together results from the preceding chapters to provide an overview of MINT3 projections. Chapter 9 traces the patterns in outcomes that the interacting MINT modules produce, focusing on the cohorts as they reach age 62 and age 67, respectively, and on the entire model population still alive in 2020. These patterns are disaggregated along many different dimensions, with specific consideration given to outcomes by sex and cohort. Separate tables examine labor force participation rates, retirement and Social Security take-up ages, earnings, living arrangements, and housing and non-housing wealth. Summary tables aggregate these sources of income (and SSI) to show total family incomes. Chapter 10 focuses on the MINT3 projections of poverty in 2020 and on the changes in family income and poverty between the 1990 and 2020 retirement populations. Chapter 11 discusses the policy changes that MINT3 can help analyze and contains some concluding observations.
References


