

# Realised Exits from the Labour Force by Detailed Occupation in the United States: A Measure, with Three Applications

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First draft November 2025, this version October 2026.

*Working paper, not peer reviewed. The author works in workforce analytics in the private sector. The paper uses only public data and received no funding.*

## Abstract

A workforce plan has to assume how many of an occupation's people will leave work each year, and why. For the United States the published figure is a rate modelled on broad groups by the Bureau of Labor Statistics, and across detailed occupations no realised rate or reason for leaving exists. I build one for 93 detailed occupations from the monthly files of the Current Population Survey, on the Bureau's own definition of an exit and with the reason for each exit. On that definition 3.0 in a hundred people in the labour force exit, or 3.6 to 4.0 on the Bureau's annual scaling, close to the published 4.2, and across occupations the measure has a correlation of 0.90 with the published rates. I then put three questions to the measure. Realised rates run from 1.4 per hundred for software developers to 9.5 for cashiers, and the ninetieth percentile is three times the tenth. Half of exits are retirements, while teachers, childcare workers and care aides exit at 37 to 51 per cent above the rate their workforce implies. Notably, the ageing of the generation born from 1946 to 1964 implied a rise in the exit rate from 3.9 to 4.3 per hundred by the mid 2020s, yet the realised rate fell slightly, as exits at given ages fell under fifty five in roughly the same proportion as at fifty five to sixty four, a fall these data cannot assign to cohorts or to the labour market. On current rates the national rate is at or near its peak, and an occupation's own recent rate forecasts its exits at least as well as its age structure.

## 1. Introduction

A hospital, a school district or a state agency that plans for an occupation has to assume how many of its people will leave work each year, and why. In the United States the figure most often used is the occupational separation rate of the Bureau of Labor Statistics, which combines a rate of exit from the labour force with a rate of transfer to another occupational group (Wolf and Lockard, 2018). Its exit rate comes from a model estimated on broad groups of workers and then applied to the current demographic structure of each occupation, and the most recent projections put it at 4.2 per cent a year for all occupations (US Bureau of Labor Statistics, 2026a, 2026b).

A planner who wants the realised rate for a detailed occupation, or wants to know whether its people leave to retire, to study or to care for a family, finds no published figure across detailed occupations. To fill that gap, which Section 2 describes, I build a measure from the monthly files of the Current Population Survey, where a person can be followed through eight interviews that pair off a year apart. It applies the Bureau's

own definition of an exit, gives a realised rate for each of 93 detailed occupations with its standard error, and divides exits by reason, and the validation in Section 3 shows that it agrees with the published rate where both exist and with the annual supplement of the survey.

I then use the measure on three questions that a planner or an economist would ask of it: which occupations lose the most people and how much they differ (Section 4), why people leave and which occupations lose people faster than their workforce would imply (Section 5), and whether the ageing of the generation born from 1946 to 1964 raised exits and what follows for the next decade (Section 6). That generation's retirement has long been expected to drain the labour force, and how much it actually does so depends on how long older people go on working (Maestas and Zissimopoulos, 2010).

Song, Brand, Yang and Lachanski (2026) use the supplement to study moves between occupations and report a rate of leaving the labour force well below the figures here, but their rate is defined in a supplementary table that was not available to me, so I do not reconcile the two. On retirement, Coile and Levine (2007, 2011a, 2011b) show that weak labour markets push older workers into retirement, and Mason, Mason, Winsborough and Poole (1973) set out why the effects of age, period and cohort cannot all be identified. I have not found a study that gives realised rates for detailed occupations beside the official ones, or that projects exits by detailed occupation from its age structure and tests the projection on past data, although my search was not systematic. This paper began with a companion paper I wrote on occupational flows (Conway, 2026), where I found that people not employed at the interview outnumber movers to other occupations in each of the eight occupations of its Table 2 and could say nothing further about them.

Nothing here is causal, and none of the differences between occupations should be read as an effect of the occupation. Section 7 sets out the limits and Section 8 concludes.

## **2. The gap**

The Bureau estimates its exit rate on people who were in the labour force in four consecutive months and out of it in the same four months a year later. Occupation enters the model as one of twenty two major groups beside age, sex, education and other characteristics, and the coefficients are then applied to the current demographic structure of each occupation (US Bureau of Labor Statistics, 2026a). According to the Bureau, the rate its model generates is the share of workers who exit over a nine-month period, which it divides by nine and multiplies by twelve to publish an annual rate, although its section on exits gives no reason for the nine months. On that definition the unemployed are in the labour force, and the rate is not divided by reason.

For each detailed occupation, then, the published tables give the rate that its major group and the characteristics of its workers imply. They do not give the rate at which its own people leave, or the reasons they leave, and no other source gives either across detailed occupations. Nor do the survey's readier measures fill the gap. The annual supplement, described in Section 3.4, gives a stock of last year's holders not employed in a reference week, mixing the unemployed with people who have left the labour force, while a single pair of interviews a year apart counts every absence in one month, so neither is on the Bureau's definition. As such, I built a realised rate on that definition for every detailed occupation with enough people in the survey, 93 in all, and then went deeper into why people leave and how ageing has changed their leaving.

### **3. The measure**

#### **3.1 Exits on the official definition**

A household in the survey is interviewed in four consecutive months, leaves the sample for eight and returns for four. On that design the Bureau estimates its model on people who were in the labour force in each of the first four months, counting as an exit those out of it in each of the last four and as a stayer those in it in all four, and excluding every other pattern (Wolf and Lockard, 2018). I apply that rule to people followed through all eight months with the validated identifier that IPUMS constructs (Flood et al., 2025; Rodgers and Flood, 2023), for fourth months from April 2009 to September 2024, weighting by the final weight of the fourth month. There are 775,735 such people in the labour force in the fourth month, 54.6 per cent of those in the monthly files, and they are older than labour force members as a whole, a point taken up in Section 7.

Of these people, 7.75 per hundred (0.04) are out of the labour force in the eighth month, twelve months after the fourth. Requiring four months in the labour force at the start removes 7 per cent, and of those who remain, 90.5 per cent are in the labour force in all four of the later months, 2.8 per cent are out in all four and 6.7 per cent are out in one, two or three of them. Counting the first group as stayers and the second as exits, and dropping the third, the rule gives a rate of 2.97 per hundred (0.02), so most people out of the labour force in a given month a year later are out of it for only part of the four months. Each age band shows the same pattern: under the rule the rate is 1.4 against 4.5 for a single pair at ages twenty five to fifty four, and 4.4 against 9.2 at fifty five to sixty four.

The rule drops the 6.73 per hundred of people in the labour force in each of the first four months who are out of it in one, two or three of the last four, or 2.43 for every exit it counts. Of these, 54 per cent are back in the labour force by the eighth month, while 39 per cent leave after the fifth, which may be the start of lasting exits.

On the Bureau's convention of nine months, the realised rate of the 673,053 people under the rule, who form the base of the measure, becomes 3.95, or 3.64 among people employed in the fourth month, the group to which the published rates apply. As the two sets of four months are already a year apart, I apply the scaling only because the published rates contain it, and every rate set beside a published one below is scaled by twelve ninths.

#### **3.2 The reason for an exit**

The monthly survey records people out of the labour force as retired, unable to work or neither, and asks those in the third group for their main activity, which divides them into people caring for a house or family, students, people ill or disabled, and others. I take the reason for an exit from the status and main activity recorded in the eighth month, from a second extract of the monthly files merged on the validated identifier and the month. People whose main activity is left blank are counted with the others.

#### **3.3 Occupations and uncertainty**

The survey's occupations are matched to the line items of the official table for 2025 to 2035 through the official crosswalk between the 2010 and 2018 occupational classifications, averaging by employment where a survey occupation corresponds to several. I report the measure for the 93 occupations with at least 1,000 linked holders in the labour force in the supplements, each with at least 1,700 people under the rule. Standard errors of the monthly rates are clustered on the household.

### 3.4 The year-apart view from the supplements

A second view of the same population comes from the seventeen March supplements of 2009 to 2025, on the occupation classification that IPUMS harmonises across them. A holder of an occupation is a person aged sixteen or over whose longest job in the previous calendar year was in a civilian occupation and who is not serving in the armed forces at the interview. I call a holder a leaver if not employed in the reference week. Leavers are divided by the labour force status recorded in the monthly survey into the unemployed, the retired, those unable to work and others out of the labour force, a group that includes students and people caring for a home or family and that the supplement extract used here does not divide further. The definition compares a year with a week, and the date is in late winter, when construction employment is seasonally low: payroll employment in construction in March 2024 was 6 per cent below its August level (US Bureau of Labor Statistics, 2026c).

Roughly a fifth of the people in a recent supplement did not answer it and have their whole supplement filled in from a donor, as I showed in the companion paper. I drop those records, and the smaller number whose occupation last year alone was allocated, and scale the weights of respondents to the totals of all records within year, age band, sex and labour force status. This leaves 1,228,244 holders, of whom 121,448 are leavers, and 9.87 of every hundred holders are not employed in the reference week, as Table 1 shows. Of the holders of 2009 to 2024, 31.9 per cent are found a year later on the validated identifier, 373,442 people, and I scale their weights to the totals of all holders within year, three age bands, sex and status at the first interview. Peracchi and Welch (1995) found no major bias in transitions between labour force states in matched files of this survey once sex, age and status are controlled. Standard errors use the 160 replicate weights of the supplement.

Table 1. Holders of an occupation last year who are not employed in the reference week, per 100 holders

| Status                         | 2009 to 2025 | 2022 to 2025 | Share of leavers, 2009 to 2025 |
|--------------------------------|--------------|--------------|--------------------------------|
| Unemployed                     | 3.83 (0.02)  | 2.58 (0.04)  | 39%                            |
| Out of the labour force, other | 3.88 (0.02)  | 3.54 (0.05)  | 39%                            |
| Retired                        | 1.68 (0.02)  | 1.77 (0.03)  | 17%                            |
| Unable to work                 | 0.48 (0.01)  | 0.45 (0.02)  | 5%                             |
| All not employed               | 9.87 (0.04)  | 8.34 (0.07)  | 100%                           |

Standard errors are in parentheses.

### 3.5 Validation

First, the measure agrees with the supplements: among holders in the labour force at one supplement interview, the share out of it at the next is 6.92 per hundred (standard error 0.06) over 2009 to 2024, close to the 7.75 per hundred out of the labour force in the eighth month of the panels, and 6.30 for those who were employed at the first. Across the 93 occupations the two measures have a correlation of 0.97, and over time the ordering of occupations is also stable: the rates of 2009 to 2016 and 2017 to 2024 have a correlation of 0.88, or 0.99 once sampling error is allowed for, although the mean rose from 3.79 to 4.10. As forecasts of the second half, the first-half rate, the published rate and their average cannot be told apart.

The measure also agrees with the official figure where both exist. At 6.92, the supplement rate is 1.6 times the official 4.2 per cent, but the difference in level is largely one of definition: on the official definition the realised counterpart of the published 4.2 lies between 3.6 and 4.0, a difference of a quarter to a half of a point. Scaled as the Bureau scales it, the realised rate on the official definition has a correlation of 0.90 with the published rate across the 93 occupations, a slope of 0.91 and an intercept of 0.44, and it differs from the published rate by 0.5 of a point on average, against 2.8 points for the rate from the supplements. Sixteen of the 93 differ from their published rate by more than twice a standard error, ten above and six below. Bus drivers, for instance, have a scaled rate of 4.8 (0.5) against a published 9.0, and childcare workers 9.2 (0.6) against 7.1. As the published rate comes from a model where occupation enters as a major group, differences of this kind are to be expected.

On a wider measure the supplements show the same agreement. Their realised flow out of the labour force runs from 2.0 to 15.0 per hundred with a median standard error of 0.6, against 1.4 to 9.2 for the official rate, and the two have a correlation of 0.90, as high as their rank correlation (Figure 1), with the official rate accounting for 81 per cent of the variance of the realised rate, of which sampling error is about 5 per cent. In level the realised rate averages 1.73 times the official one, the ratio for individual occupations has quartiles of 1.57, 1.72 and 1.96, and a fitted line has a slope of 1.58 and an intercept of 0.6. Under each of ten variants of the threshold, weighting, years, sample and population, the correlation is between 0.85 and 0.95. But the ratio of levels depends on who is counted: it is about 1.7 to 1.8 for all holders, 1.6 for those employed at the first interview, and 1.3 for holders aged twenty five to sixty four and for those in year-round work. Twenty of the 93 lie further from the fitted line than twice their standard error, where five would be expected by chance, among them construction labourers (9.1 against an official 2.8), hand packers (13.0 against 5.3), childcare workers (14.7 against 7.1) and bus drivers (8.4 against 9.0).

Notably, the official rate and the realised rate alike largely reflect who works in each occupation, which I show by computing the rate each occupation would have if every cell of its labour force, defined by fourteen age bands, sex and five levels of education, left at the national rate of that cell, with the occupation itself left out of the national rate. The implied rate accounts for 81 per cent of the variance of the realised rate from the supplements, the same as the official rate, with which its correlation is 0.94, and each has a coefficient of 0.77 beside the other. As both series are measures from one survey, the agreement is a check of the model against the survey's own outcomes and is no external validation.

#### **4. Application: which occupations lose the most people, and how much do they differ?**

On the official definition, scaled to the published basis, the realised rate across the 93 occupations runs from 1.4 to 9.5 per hundred, with quartiles of 2.8, 3.3 and 4.8 and a median standard error of 0.40. With tenth and ninetieth percentiles of 2.2 and 6.7, an occupation near the top loses people at three times the rate of one near the bottom.

At the top are cashiers (9.5, standard error 0.4), childcare workers (9.2, 0.6), personal care aides (8.7, 0.5), food preparation workers (8.0, 0.7) and maids and housekeeping cleaners (7.1, 0.5), and at the bottom software developers (1.4, 0.2), physicians and surgeons (1.6, 0.2), other engineers (1.8, 0.3), marketing and sales managers (1.8, 0.2) and general and operations managers (1.9, 0.2). In other words, service occupations make up the top of the range and professional and managerial ones the bottom.

In the supplements the same range appears in the share of last year's holders who are not employed at the interview, as Table 2 shows for nine occupations. That share runs from 4.0 per hundred for software developers to 20.2 for cashiers, and its make-up differs: unemployment is more than half of it for electricians,

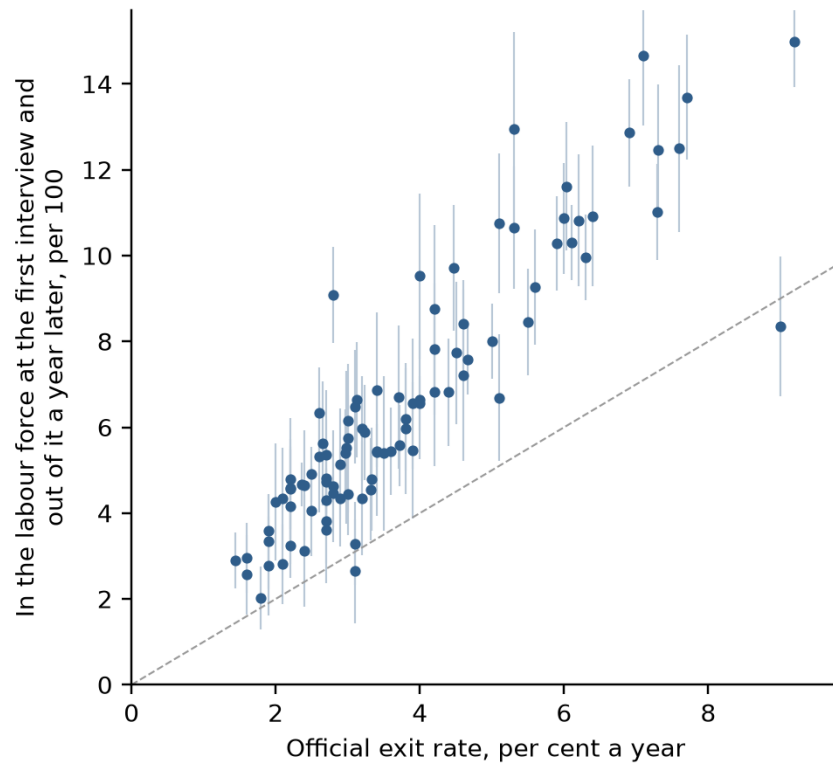


Figure 1: Figure 1. Realised flow out of the labour force between interviews against the official exit rate, 93 occupations, with 95 per cent intervals

retirement the largest part for secondary teachers, and those unable to work or otherwise out of the labour force the largest part for cashiers and nursing aides.

Table 2. Nine occupations: holders not employed at the interview, and holders in the labour force who are out of it a year later

| Occupation last year          | Not employed, per 100 | of which unemployed | retired | other | Out of the labour force a year later, per 100 in it | Official exit rate |
|-------------------------------|-----------------------|---------------------|---------|-------|-----------------------------------------------------|--------------------|
| Software developers           | 4.0 (0.2)             | 1.7                 | 0.5     | 1.7   | 2.9 (0.3)                                           | 1.4                |
| Registered nurses             | 4.7 (0.2)             | 1.2                 | 1.6     | 1.9   | 4.9 (0.3)                                           | 2.5                |
| Secondary teachers            | 5.6 (0.3)             | 0.9                 | 2.8     | 2.0   | 4.5 (0.4)                                           | 2.8                |
| Elementary teachers           | 6.6 (0.2)             | 1.2                 | 2.9     | 2.5   | 6.2 (0.3)                                           | 3.0                |
| Licensed practical nurses     | 7.2 (0.5)             | 2.2                 | 1.4     | 3.6   | 6.7 (0.9)                                           | 3.7                |
| Electricians                  | 10.2 (0.5)            | 6.1                 | 1.4     | 2.6   | 5.3 (0.7)                                           | 2.6                |
| Truck drivers                 | 10.8 (0.3)            | 4.9                 | 2.2     | 3.7   | 6.6 (0.3)                                           | 4.0                |
| Nursing and home health aides | 11.3 (0.3)            | 3.9                 | 1.3     | 6.1   | 11.0 (0.6)                                          | 7.3                |
| Cashiers                      | 20.2 (0.3)            | 6.5                 | 1.1     | 12.6  | 15.0 (0.5)                                          | 9.2                |

Standard errors are in parentheses. The first four columns are for 2009 to 2025 and the fifth for holders of 2009 to 2024. “Other” combines those unable to work with those otherwise out of the labour force. The official rate is from the projections for 2025 to 2035, averaged over the line items that correspond to the survey’s occupation.

## 5. Application: why do people leave, and which occupations lose people faster than their workforce implies?

Do people leave an occupation mainly to retire, and which occupations lose people faster than the age, sex and education of their workforce would imply? Throughout this section the rates are for the 673,053 people under the rule of Section 3.1, scaled by twelve ninths where a rate is set beside the published one, and the occupations are the same 93.

### 5.1 Why people exit

Of the 2.97 exits per hundred under the rule, 1.46 are retirements, 0.39 people unable to work, 0.56 people caring for a house or family, 0.41 students and 0.16 people ill or disabled or with another activity. Half

of all exits are therefore retirements, against 2.77 of the 7.75 absences that a single pair of months counts. Under twenty five, 73 per cent of exits are into school and 15 per cent into care of a house or family, whereas between twenty five and fifty four 46 per cent are into care of a house or family, 24 per cent are people unable to work and 11 per cent each are retirements and students. At fifty five to sixty four retirements are 77 per cent of exits, and at sixty five and over 95 per cent.

Across the 93 occupations retirement is between 14 and 90 per cent of exits, with quartiles of 40, 55 and 69. It is lowest for waiters (14 per cent), cashiers and food preparation workers, whose exits are chiefly into school and into care of a house or family, and highest for police officers (90 per cent), engineers and bus drivers. Care of a house or family accounts for 35 per cent of the exits of childcare workers and 31 per cent of those of personal care aides.

## 5.2 Occupations that lose people faster than their workforce implies

As in Section 3.5, I compute the rate each occupation would have if every cell of its labour force, defined by fourteen age bands, sex and five levels of education, exited at the national rate of that cell, with the occupation's own people left out of the national rate. Under the official definition that implied rate accounts for 75 per cent of the variance of the realised rate across occupations, against 81 per cent for the published rate, and age and sex alone account for 48 per cent. With sampling error at 6 per cent of the variance, most of what the implied rate leaves is specific to the occupation. Dividing the realised by the implied rate gives quartiles of 0.80, 0.95 and 1.13, and 36 of the 93 occupations differ from their implied rate by more than twice the standard error, 25 below it and 11 above.

Elementary and middle school teachers and secondary school teachers exit at 1.37 and 1.46 times the rate their workforce implies, mostly into retirement, as Table 3 shows for ten occupations. Childcare workers and personal care aides exit at about 1.4 to 1.5 times it, chiefly into retirement and care of a house or family. Registered nurses, by contrast, exit at 0.79 times the implied rate, and physicians, lawyers, chief executives and real estate agents at 0.53 to 0.66 times. For a planner, these ratios are the part of an occupation's exit rate that a projection from the composition of its workforce would miss.

Table 3. Exits on the official rule against the rate implied by age, sex and education, per 100 a year, fourth months of 2009 to 2024

| Occupation                            | Realised, times<br>12/9 | Implied | Ratio | Retired, share<br>of exits | Published rate |
|---------------------------------------|-------------------------|---------|-------|----------------------------|----------------|
| Registered nurses                     | 3.0 (0.2)               | 3.8     | 0.79  | 65%                        | 2.5            |
| Elementary and middle school teachers | 3.7 (0.2)               | 2.7     | 1.37  | 65%                        | 3.0            |
| Secondary school teachers             | 3.5 (0.3)               | 2.4     | 1.46  | 78%                        | 2.8            |
| Truck drivers                         | 3.6 (0.2)               | 3.9     | 0.94  | 55%                        | 4.0            |
| Electricians                          | 2.7 (0.3)               | 2.9     | 0.95  | 56%                        | 2.6            |
| Software developers                   | 1.4 (0.2)               | 1.7     | 0.82  | 65%                        | 1.4            |
| Childcare workers                     | 9.2 (0.6)               | 6.1     | 1.51  | 30%                        | 7.1            |

| Occupation             | Realised, times<br>12/9 | Implied | Ratio | Retired, share<br>of exits | Published rate |
|------------------------|-------------------------|---------|-------|----------------------------|----------------|
| Personal care<br>aides | 8.7 (0.5)               | 6.1     | 1.43  | 40%                        | 7.7            |
| Cashiers               | 9.5 (0.4)               | 7.6     | 1.26  | 19%                        | 9.2            |
| Bus drivers            | 4.8 (0.5)               | 6.2     | 0.77  | 82%                        | 9.0            |

Standard errors, clustered on the household, are in parentheses. The implied rate leaves the occupation's own people out of the national rate of each cell. The published rate is from the projections for 2025 to 2035.

## 6. Application: did the ageing of the baby boom raise exits, and what follows for the next decade?

The generation born from 1946 to 1964 has long been expected to drain the labour force as it retires, and in this section I take the labour force to be everyone in it with an occupation in the monthly files, with every rate an exit on the official definition scaled by twelve ninths and the supporting detail in the Appendix.

### 6.1 Ageing implied rising exits, and exits fell

By now the generation has largely left the labour force: it was 37.5 to 39.1 per cent of the labour force with an occupation in 2009 and 10.8 to 12.3 per cent in the first nine months of 2026, as Figure 2 shows, while the share aged fifty five and over rose from 19.0 per cent in 2009 to 23.8 per cent in 2020 and has been flat since. If the rate of exit for each five-year age group and sex had stayed at its average over the period, the changing structure alone would have raised the national rate from 3.94 per hundred in 2010 to 2014 to 4.29 in 2023 to 2025, as the dotted line of Figure 3 shows. But the realised rate fell, from 4.09 to 3.98, and at the fixed structure of 2014 it fell from 4.19 to 3.73.

### 6.2 A broad fall in leaving work at given ages

The fall at the fixed structure was broad: of the 0.46 points, 0.32 came from people under fifty five and 0.19 from those aged fifty five to sixty four, while rates at sixty five and over added 0.05. With single years of age held fixed, the rate at fifty five to sixty four falls by 1.02 per hundred for each decade of birth (standard error 0.21) on a mean of 5.78, and the same model gives a fall of 0.29 (0.07) at twenty five to fifty four on a mean of 1.91, proportionately as large. Thus the ageing of the baby boom was offset by a fall in leaving work at given ages that reached people under fifty five in roughly the same proportion as those approaching retirement, so the offset was not confined to retirement. In levels the fall was larger at the older ages, by  $-0.72$  (0.22) per decade of birth with calendar years held fixed. Notably, the rise in the normal retirement age would not move exits at fifty five to fifty nine, where the fall is as clear as at sixty to sixty four.

Whether the fall belongs to successive cohorts or to the labour market of the period cannot be settled here. With age held fixed the two are the same trend (Mason, Mason, Winsborough and Poole, 1973), and differences in unemployment between states in the same year, which a cohort does not share, are too imprecise to separate them. On one measure the fall in slack accounts for  $-0.68$  (0.51) of the fall of  $-1.25$  per hundred at fifty five to sixty four and leaves  $-0.56$ , and with the rate lagged a year it accounts for  $-0.25$  (0.53). But the test has limited power, and the Appendix and Section 7 give its design and assumption.

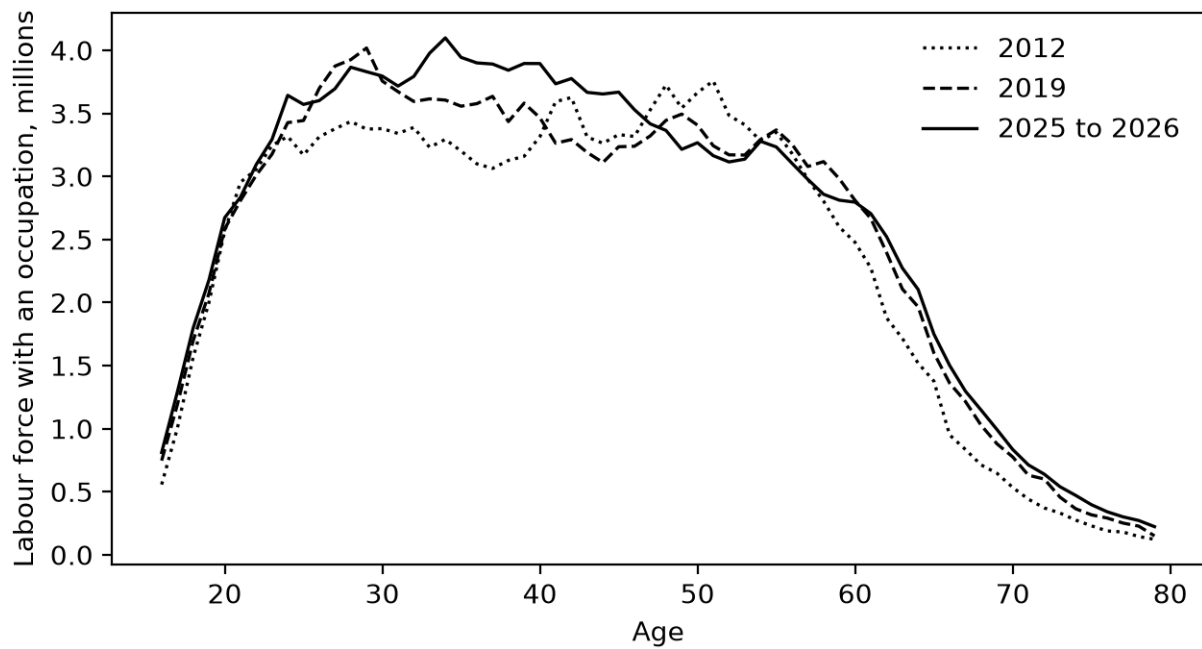


Figure 2: Figure 2. Labour force with an occupation by single year of age, monthly average, 2012, 2019 and January 2025 to September 2026 (80 and over not shown)

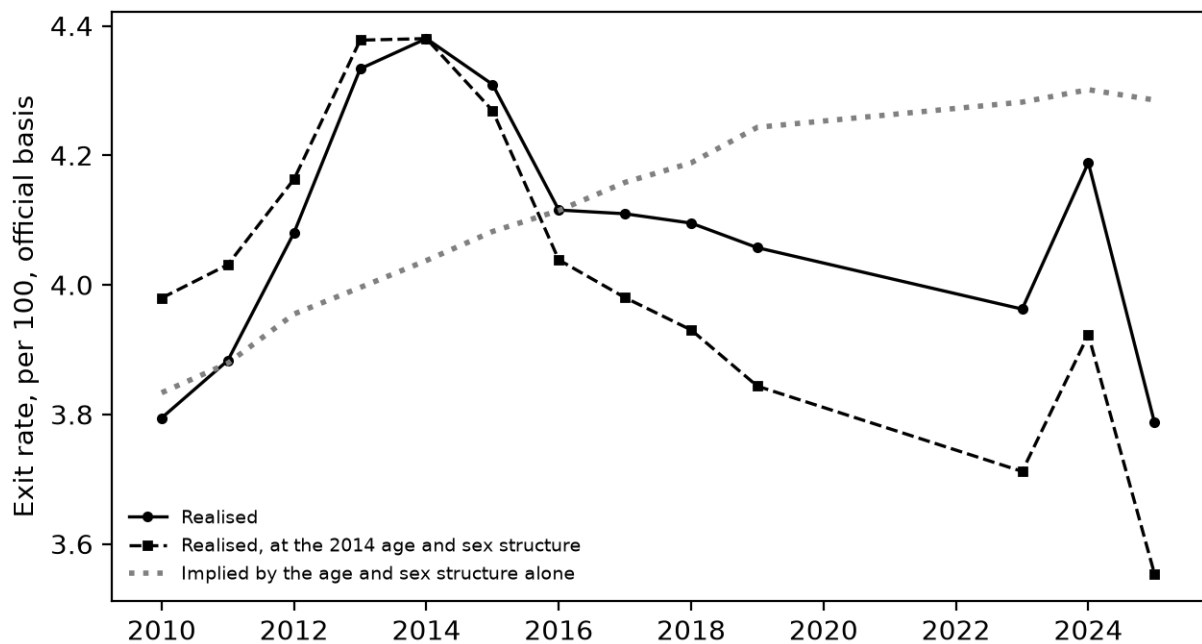


Figure 3: Figure 3. Exits on the official rule per 100 a year, scaled by 12/9, by year of the later interview: realised, realised at the 2014 age and sex structure, and implied by the age and sex structure alone at rates pooled over the period. 2020 to 2022 are omitted from the lines

### 6.3 The next decade

On current rates of exit at each age, the age structure moves the national rate little and leaves it at or near its peak. I project each occupation's structure forward by cohort-change ratios (Hamilton and Perry, 1962; Swanson, Schlottmann and Schmidt, 2010) and apply hazards estimated on 2016 to 2025, as Section 7 describes. As the ratios also move the sizes of occupations, and those sizes are noisy, with projected growth over ten years from  $-33$  to  $+161$  per cent, I report the national rate at the base sizes, where it goes from 4.20 per hundred in the base to 4.21 five years on and 4.13 ten years on, a change of  $-0.07$  (jackknife standard error 0.01). Letting the sizes move gives 3.98, which I do not regard as a forecast.

Within occupations the projected change over ten years has quartiles of  $-0.22$  and  $0.15$  and a range from  $-0.85$  to  $0.98$ , rising by more than two standard errors in 11 occupations and falling in 14, as Table 4 shows for thirteen. For instance, the rate rises for secondary school teachers by 0.65 (0.27) and for computer and information systems managers by 0.77 (0.31), while it falls for registered nurses by 0.45 (0.10) and for construction managers by 0.64 (0.22). Another measure, one that requires no projection of sizes, asks what share of today's workers would leave the labour force within eleven years if each stayed in the occupation at its current rates: 35.0 per cent nationally, with a range from 16.6 for marketing and sales managers to 59.6 for personal care aides.

Table 4. Exit rates implied by the projected age structure on current hazards, per 100 a year, official basis, thirteen occupations

| Occupation                                              | Aged 55<br>and over,<br>2012 | Aged 55<br>and over,<br>base | Rate, base | Five years<br>on | Ten years<br>on | Change            | Leaving<br>within<br>eleven<br>years if<br>they stay,<br>per cent |
|---------------------------------------------------------|------------------------------|------------------------------|------------|------------------|-----------------|-------------------|-------------------------------------------------------------------|
| Secondary<br>school<br>teachers                         | 20.3                         | 20.6                         | 2.48       | 2.79             | 3.13            | 0.65 (0.27)       | 27.2                                                              |
| Elementary<br>and<br>middle<br>school<br>teachers       | 21.7                         | 20.7                         | 3.67       | 3.81             | 4.02            | 0.34 (0.17)       | 35.4                                                              |
| Postsecondary<br>teachers                               | 30.7                         | 36.1                         | 4.10       | 4.28             | 4.54            | 0.44 (0.21)       | 38.6                                                              |
| Computer<br>and infor-<br>mation<br>systems<br>managers | 17.6                         | 22.7                         | 2.42       | 2.70             | 3.18            | 0.77 (0.31)       | 29.3                                                              |
| Registered<br>nurses                                    | 25.4                         | 21.5                         | 2.56       | 2.36             | 2.11            | $-0.45$<br>(0.10) | 26.8                                                              |
| Construction<br>managers                                | 25.8                         | 28.1                         | 2.01       | 1.78             | 1.38            | $-0.64$<br>(0.22) | 23.6                                                              |
| Teacher<br>assistants                                   | 22.2                         | 20.0                         | 4.72       | 4.37             | 3.98            | $-0.74$<br>(0.17) | 38.7                                                              |

| Occupation                 | Aged 55<br>and over,<br>2012 | Aged 55<br>and over,<br>base | Rate, base | Five years<br>on | Ten years<br>on | Change          | Leaving<br>within<br>eleven<br>years if<br>they stay,<br>per cent |
|----------------------------|------------------------------|------------------------------|------------|------------------|-----------------|-----------------|-------------------------------------------------------------------|
| Farmers<br>and<br>ranchers | 52.8                         | 54.7                         | 7.78       | 7.36             | 6.92            | −0.85<br>(0.34) | 54.2                                                              |
| Truck<br>drivers           | 24.9                         | 29.3                         | 3.72       | 3.73             | 3.63            | −0.09<br>(0.09) | 35.4                                                              |
| Electricians               | 18.5                         | 18.1                         | 1.98       | 1.98             | 1.82            | −0.15<br>(0.10) | 21.1                                                              |
| Software<br>developers     | 11.3                         | 12.7                         | 1.48       | 1.47             | 1.45            | −0.03<br>(0.09) | 17.3                                                              |
| Personal<br>care aides     | 25.8                         | 32.6                         | 8.74       | 8.91             | 8.86            | 0.12 (0.17)     | 59.6                                                              |
| Childcare<br>workers       | 17.6                         | 20.5                         | 9.29       | 9.47             | 9.58            | 0.30 (0.23)     | 56.8                                                              |

Jackknife standard errors, which reflect sampling alone, are in parentheses. The base is January 2025 to September 2026. The last column applies current hazards to today's workers as if none left the occupation for another.

## 6.4 Forecasting from age structure

A projection of this kind, tested on the past, would have forecast rising exits for a decade when they did not rise. Hazards from 2010 to 2014 applied to the projected structures give national rates of 4.53 per hundred five years on and 4.95 ten years on, and applied to the structures that occurred they still give 4.46 and 4.51, while the realised rates were 3.85 and 3.82. Measured as changes, the projected structures implied rises of 0.23 and 0.65, whereas the realised rates rose by only 0.05 and 0.02. Across occupations, no forecast that uses age structure does better than the occupation's own past rate, even when the structure is the one that occurred (Table A2). Ageing within occupations changes my ten-year mean by 0.00 on average, so for projections that hold structure at its base level, as the Bureau's do, a further fall in exits at given ages would matter more than ageing.

## 7. Limits

Only 54.6 per cent of labour force members in a fourth month are followed through all eight, and they are older, with a mean age of 45 against 43 and 9 per cent aged under twenty five against 12, which is why hazards estimated on them give a higher rate when applied to the whole labour force, as Appendix A.4 shows. My rates under the official definition are raw rates on people followed through eight months, whereas the Bureau publishes the fitted rates of a model applied to the employed, and I do not exclude unpaid family workers, as the Bureau does, because the extract carries no class of worker. Furthermore, the official rates are those projected for 2025 to 2035, estimated by the Bureau on ten recent years, while the realised rates cover 2009

to 2024. Standard errors of the monthly rates are clustered on the household and do not use the survey's replicate weights, and the reason for an exit is the status and main activity recorded in the eighth month.

In the supplements nobody who moves house is followed. Scaling the people found to all holders by age, sex and status reflects the composition of those found and carries no information about movers who share those characteristics, and I do not sign the bias. For seasonal occupations a follow-up at the same time of year cannot tell a worker laid off every winter from one who has left the trade, so the measures defined on the labour force are the safer ones to use. For figures pooled over years, the replicate errors treat the years as independent although many households are in two successive supplements, so they are somewhat understated.

The hazards of Section 6.3, one for retirement and one for every other exit, are logits on cells of occupation, single year of age (eighty and over pooled) and sex, with an age profile for each sex and a shift for each of the 93 occupations, estimated on eighth months from 2016 to 2025 without 2020 to 2022. For the base structure I average the monthly files from January 2025 to September 2026 (twenty files, as October 2025 has none), and the cohort-change ratios are the size of a cohort in the occupation five years on over its size at the start, pooled over the pairs 2013 and 2018, 2014 and 2019, 2018 and 2023, and 2019 and 2024. These ratios carry forward each age's net movement into and out of the occupation by entry, by moving between occupations and by exit, as demographers do for small areas where those flows cannot be measured separately, and the youngest group is held at its size. Two of the four pairs straddle the change in the survey's occupational coding in 2020, which the harmonised classification bridges imperfectly, and the ratios are noisy for small occupations, so the national rate is reported at base sizes. In addition, the projection holds the hazards at each age at their recent level, which Section 6.2 suggests may overstate exits if the fall at given ages continues, and it leaves out death. A jackknife drops each of twenty random groups of households in turn and re-estimates the hazards and the ratios, giving standard errors that reflect sampling alone and not the choice of model, and as it groups households without regard to the survey's sampling units its standard errors are probably understated.

For the state test of Section 6.2, the state of residence comes from a third extract of the monthly files, merged on the validated identifier and the month. Slack is the state's unemployment rate in a calendar year among all respondents in the labour force, either in the year of the eighth month with the person's own records left out, or in the year before the fourth month. Exits and retirements are regressed on single years of age, state effects and slack, with calendar-year effects, which slack can sit beside because it varies within years, and standard errors are clustered by the 51 states. Using a response estimated across states to account for a national fall assumes that exits respond to national unemployment as they do to local unemployment, which leaves out national channels such as the rules of Social Security or the stock market. With the lagged rate the coefficient is 0.055 (0.113), leaving  $-0.99$  of the fall. The lagged measure has no value for eighth months in 2010, so 43,066 people across all ages drop out and its change in slack compares 2011 to 2014 with 2023 to 2025 against a fall measured from 2010 to 2014. For retirement alone slack accounts for  $-0.17$  and  $-0.14$  of a fall of  $-0.76$  (0.21), and at twenty five to fifty four slack has the opposite sign,  $-0.063$  (0.035), against a fall of  $-0.35$  (0.09). With a slope in year of birth in place of year effects, slack has no detectable association (0.018, standard error 0.073) and the slope is  $-0.95$  per decade (0.37). Within a year the unemployment rate varies across states by a standard deviation of only 1.23 points, which limits what the models can detect, and they do not identify the effect of slack, of the reform to the retirement age or of any other cause.

## 8. Conclusion

No published figure gives the realised rate at which each detailed occupation's workers leave the labour force, or why they leave. The measure I built here applies the Bureau's own definition to people followed through eight monthly interviews, records the reason for each exit, and gives a rate for each of 93 occupations with its standard error, which agrees with the published rate where both exist.

An occupation near the top of the range loses people at three times the rate of one near the bottom, with software developers and physicians at the bottom and cashiers, childcare workers and personal care aides at the top. Half of all exits are retirements, nearly half of the exits of people aged twenty five to fifty four are into care of a house or family, and teachers, childcare workers and care aides exit at 37 to 51 per cent above the rate their composition implies. The ageing of the baby boom should, on the rates of each age, have raised the rate of exit from 3.9 to 4.3 per hundred between the early 2010s and the mid 2020s. Instead the realised rate fell slightly, as exits at given ages fell under fifty five as well as at fifty five to sixty four, faster at the older ages in levels and in roughly the same proportion. Differences in unemployment between states do not settle whether the fall belongs to the cohorts or to the labour market of the period: the tightening of the 2020s accounts for  $-0.68$  of a fall of  $-1.25$  per hundred at fifty five to sixty four on one measure of slack and  $-0.25$  on another, with standard errors of about half a point.

For the next decade, the age structure leaves the national rate at or near its peak on current rates, with rises for teachers and computer and information systems managers and falls for registered nurses. Of today's personal care aides, 59.6 per cent would leave the labour force within eleven years if they stayed in the occupation, against 35.0 per cent nationally. An occupation's own recent rate was at least as good a guide to its later exits as its age structure, even one known in advance. For these reasons, it is my view that a planner should treat retirement-cliff projections built on age structure with scepticism and start from an occupation's own recent rate.

## Appendix. Supporting detail for Section 6

### A.1 The age structure and the endpoints

Birth year is approximate, as the survey gives age and not date of birth, and the shares of the generation born from 1946 to 1964 depend on whether birth year is taken as the year less age or the year less age less one. In 2012 the single year of age with the most workers was fifty one, the late baby boom, and in 2025 and 2026 it was thirty four. In 2026 the share aged fifty five and over was 23.2 per cent, while the share aged sixty five and over has gone on rising, from 4.3 to 7.3 per cent. On the structure alone, the implied rate goes from 3.83 per hundred in 2010 to 4.28 in 2023 and 4.29 in 2025. The realised rate, by contrast, applies each year's rates by age and sex among the people followed to that year's structure. This comparison depends on its endpoints, as the rate at the 2014 structure rose from 3.98 in 2010 to 4.38 in 2014 before falling to 3.84 in 2019 and 3.71 in 2023, in a period that included a recovery from recession, two tight labour markets and a pandemic, which raised it to 4.47 in 2021.

### A.2 Successive cohorts at the same ages

Table A1 sets successive birth cohorts side by side at the same ages, leaving out the eighth months of 2020 to 2022. Its raw differences overstate the change, because later cohorts are observed at younger ages within each band: at sixty to sixty four the mean age is 62.5 for people born from 1945 to 1949 and 61.4 for those

born from 1960 to 1964. With single years of age held fixed, retirement at fifty five to sixty four falls by 0.64 (0.19) per decade of birth, and at sixty five to sixty nine the change in exits is 0.88 (0.77), which cannot be told apart from zero. With calendar years also held fixed, the change per decade of birth at fifty five to sixty four exceeds that at twenty five to fifty four by  $-0.72$  (0.22) for exits and  $-0.63$  (0.19) for retirement. All the cohorts here faced normal retirement ages under Social Security of sixty six to sixty seven. The rise in that age, which Mastrobuoni (2009) finds delayed the retirement of the first cohorts affected, would not move exits at fifty five to fifty nine, so I do not attribute the decline to it.

Table A1. Exits and retirements on the official rule at the same ages in successive birth cohorts, per 100 a year, scaled by 12/9, eighth months of 2010 to 2025 without 2020 to 2022

| Ages     | Born         | Observed     | People | Mean age | Exit         | Retirement   |
|----------|--------------|--------------|--------|----------|--------------|--------------|
| 55 to 59 | 1950 to 1954 | 2010 to 2014 | 17,694 | 57.6     | 4.17 (0.20)  | 2.54 (0.16)  |
| 55 to 59 | 1955 to 1959 | 2011 to 2019 | 31,200 | 56.9     | 3.78 (0.14)  | 2.26 (0.11)  |
| 55 to 59 | 1960 to 1964 | 2016 to 2024 | 13,633 | 56.5     | 3.00 (0.19)  | 1.67 (0.14)  |
| 55 to 59 | 1965 to 1969 | 2023 to 2025 | 7,453  | 56.5     | 2.69 (0.24)  | 1.72 (0.20)  |
| 60 to 64 | 1945 to 1949 | 2010 to 2014 | 10,468 | 62.5     | 10.86 (0.42) | 9.53 (0.39)  |
| 60 to 64 | 1950 to 1954 | 2011 to 2019 | 20,856 | 61.8     | 9.38 (0.27)  | 8.09 (0.25)  |
| 60 to 64 | 1955 to 1959 | 2016 to 2024 | 11,269 | 61.4     | 8.04 (0.35)  | 6.82 (0.32)  |
| 60 to 64 | 1960 to 1964 | 2023 to 2025 | 6,676  | 61.4     | 7.41 (0.43)  | 6.21 (0.40)  |
| 65 to 69 | 1940 to 1944 | 2010 to 2014 | 3,590  | 67.5     | 14.05 (0.80) | 13.39 (0.78) |
| 65 to 69 | 1945 to 1949 | 2011 to 2019 | 9,180  | 66.7     | 15.46 (0.51) | 14.55 (0.50) |
| 65 to 69 | 1950 to 1954 | 2016 to 2024 | 5,286  | 66.3     | 16.40 (0.70) | 15.68 (0.68) |
| 65 to 69 | 1955 to 1959 | 2023 to 2025 | 3,591  | 66.3     | 15.11 (0.82) | 14.17 (0.80) |

Standard errors, clustered on the household, are in parentheses. Birth year is the year of the fourth month less age. “Observed” gives the years of the eighth month.

### A.3 The state test

At fifty five to sixty four, the change in exits at given ages between 2010 to 2014 and 2023 to 2025, with state effects, is  $-1.25$  per hundred (0.25), and the unemployment rate fell by 3.96 points. With state and year effects, a point of unemployment goes with 0.173 more exits per hundred (0.130). With the lagged rate the coefficient is 0.055 (0.113), and slack accounts for  $-0.25$  (0.53) and leaves  $-0.99$ . A slack coefficient

large enough to explain the whole fall, 0.315 per point, would be detected at the five per cent level with a probability of 0.68, and 0.66 for the lagged measure. The weak response is in line with Coile and Levine (2011b), who find on three decades of supplement data that unemployment moves retirement at sixty two to sixty nine and not at fifty five to sixty one. Here the band of fifty five to sixty four straddles their two groups, and my estimate for retirement at sixty two to sixty nine, 0.153 (0.262), can neither confirm nor reject their result.

#### A.4 The projection, the backtest and the Bureau's rates

In the projection of Section 6.3, the change in an occupation's rate depends on where its largest cohorts now sit more than on the current share of older workers, with which its correlation is  $-0.28$ . The backtest estimates the hazards on eighth months of 2010 to 2014, takes the structure of 2014 and the cohort-change ratios of 2009 to 2014, the only pair the files allow, and projects to 2019 and 2024. Its realised rates are those under the rule in eighth months of 2018 and 2019 and of 2023 to 2025, and sampling error is 29 and 32 per cent of their variance across the 93 occupations. Part of the national gap arises because hazards estimated on the people followed are applied to the whole labour force, which is younger, so the same hazards on the 2014 structure give 4.30 against an own rate of 3.80. Measured as changes, ageing alone implied rises of 0.16 and 0.21. Table A2 compares six forecasts across occupations after removing the common level, and on that basis the change in rates that the realised structure implies has a correlation of  $-0.10$  with the change that occurred over five years and  $-0.03$  over ten. Over ten years the own rate multiplied by the projected change in structure does worse than the own rate alone, by 0.28 points of mean absolute error (95 per cent interval over occupations 0.07 to 0.55).

Table A2. Forecasts of exit rates by occupation five and ten years ahead from 2010 to 2014, 93 occupations

| Forecast                                         | Five years: share of variance, net of sampling error | Five years: mean absolute error | Ten years: share of variance, net of sampling error | Ten years: mean absolute error |
|--------------------------------------------------|------------------------------------------------------|---------------------------------|-----------------------------------------------------|--------------------------------|
| Own rate, 2010 to 2014                           | 0.76                                                 | 1.04                            | 0.73                                                | 1.04                           |
| Model on the 2014 structure                      | 0.73                                                 | 1.06                            | 0.69                                                | 1.09                           |
| Own rate times the projected change in structure | 0.72                                                 | 1.08                            | 0.02                                                | 1.31                           |
| Own rate times the realised change in structure  | 0.73                                                 | 1.06                            | 0.69                                                | 1.10                           |
| Model on the projected structure                 | 0.67                                                 | 1.13                            | $-0.17$                                             | 1.38                           |
| Model on the realised structure                  | 0.70                                                 | 1.09                            | 0.64                                                | 1.14                           |

Mean absolute errors are in points per hundred after the common level is removed.

Across the 93 occupations the published rates have a correlation of 0.89 with my rate in the base and with my mean over the ten years. Ageing within occupations changes my ten-year mean by 0.00 on average, with

quartiles of  $-0.10$  and  $0.11$  and a range from  $-0.42$  for farmers to  $0.48$  for agricultural workers. A further fall in exits at given ages would matter more, as Section 6.4 notes, because the Bureau estimates its model on ten years of data where the higher rates of the early 2010s carry weight.

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