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Article

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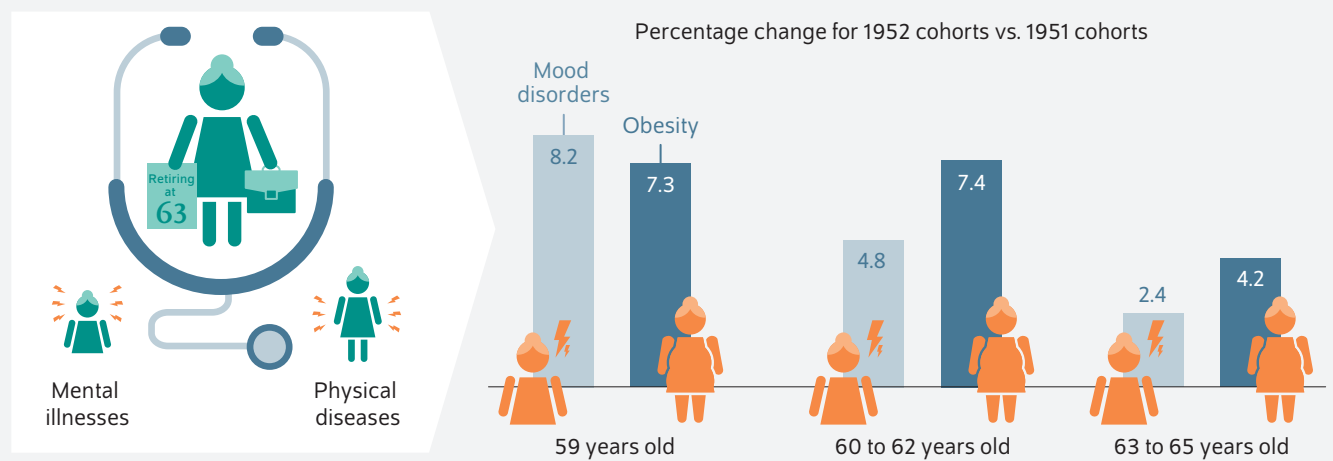
AT A GLANCE

A higher retirement age has negative health effects

By Mara Barschkett, Johannes Geyer, and Peter Haan

- A reform raising the retirement age for women from 60 to 63 has negative health effects
- Differentiated view of mental illnesses and physical diseases necessary
- Mental illnesses, obesity, and musculoskeletal diseases increase with a prolonged working life
- Raising the retirement age should be accompanied by preventive health investments
- Further reforms to the reduced earning capacity pension are needed to better safeguard the effects of health risks

Pension reform of 1999: Raising the retirement age for women from 60 to 63 leads to more mental illnesses and physical diseases



Source: Authors' depiction based on KBV data.

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FROM THE AUTHORS

“Increasing retirement age for women by three years has worsened their health in some dimensions: mental health, obesity, and musculoskeletal diseases. Health did not improve in any dimension.”

— Mara Barschkett —

MEDIA



Audio Interview with Mara Barschkett (in German)
www.diw.de/mediathek

A higher retirement age has negative health effects

By Mara Barschkett, Johannes Geyer, and Peter Haan

ABSTRACT

In the policy debate, there are regular demands to further increase the retirement age to address the financial challenges for the pension system. However, a prolonged working life impacts a person's health. Detailed data from the statutory health insurance companies shows that abolishing the "Rente für Frauen" (women's pension) in 1999, which allowed women to retire at 60, resulted in negative health effects. Women who were affected by the reform and could not retire until age 63 are more likely to have mental illnesses, to be obese, or to suffer from musculoskeletal diseases (arthrosis and other dorsopathies). The results show that increasing the retirement age further should be accompanied by preventive health and education investments. At the same time, further reforms of the disability pension are needed to better safeguard against health risks.

Increasing the retirement age is a frequent topic in the current debate on the future of the statutory pension insurance system. Such a reform would stabilize the system's financing¹ and combat the skilled labor shortage.

Critics often counter the increase with the fact that many people are unable to work to a higher retirement age due to health reasons and therefore must expect lower pensions. Thus, such a reform would increase the risk of old-age poverty and lead to more inequality in retirement incomes.

However, the fact that an increase in the retirement age directly affects the health of those affected and thus the health system is rarely addressed. Raising the retirement age and extending working lives can have both positive and negative effects on people's health. For example, a longer working life may increase social contact and reduces the risk of loneliness in old age post-retirement. At the same time, however, work is often associated with physical and mental stress, which can be associated with negative health effects, especially for older people.²

Empirical analyses based on past pension reforms are needed to quantify the magnitude and direction of these health effects. It is important to consider detailed and objectively measured diagnoses in different health dimensions, since general measures of health consider opposing positive and negative aspects.

¹ See, for example, the expert report of the Scientific Advisory Council of the Federal Ministry for Economic Affairs and Climate Action, *Vorschläge für eine Reform der gesetzlichen Rentenversicherung* (2021) (in German; available online. Accessed on September 12, 2022. This applies to all other online sources in this report unless stated otherwise).

² Raising the retirement age also affects people who are unemployed. For this group, raising the retirement age means increasing how long they are unemployed. The re-employment probability of older unemployed persons is very low. This can have a negative impact on mental health, as being unemployed is often perceived more negatively than being retired. Clemens Hetschko et al., "Changing identity: retiring from unemployment," *The Economic Journal* 124, no. 575 (2014): 149–166 (available online).

This Weekly Report analyzes the effects of the abolishment of the women's pension in 1999 (Box 1),³ which increased the effective early retirement age for women from 60 to 63, on the health of the affected women.⁴

Increasing retirement age has negative effects on mental illness

Administrative data of the National Association of Statutory Health Insurance Physicians (*Kassenärztliche Bundesvereinigung*, KBV) was used for the analysis (Box 2). The data include information on all mental and physical health diagnoses made by registered physicians for individuals in the statutory health insurance system (*gesetzliche Krankenversicherung*, GKV) and the frequency of health care use for 2009 to 2018. In addition, the direct costs to the health care system resulting from the reform are observed.

By comparing age-specific diagnoses of women affected by the increase in the retirement age (women born in 1952) with those of women not affected by the reform and who could still retire at 60 (women born in 1951), the estimated effects can be interpreted as causal effects of pension reform (Box 3).⁵

This Weekly Report differentiates between three health dimensions: mental health, physical health, and health care consumption. To capture direct and indirect effects of the reform, the comparison between the two cohorts is shown for different age groups and thus for different years: For women aged 60 to 62, who (if they belong to the 1952 cohort) were directly affected by the reform and could not retire between 2012 to 2014; for 59-year-old women; and for women aged 63 to 65. Women born in 1952 were not directly affected by the reform at age 59. Instead, they were indirectly affected, as they know they are only able to retire later. Thus, the results for this group are interpreted as anticipation effects. The results for women 63 and older can also be interpreted as indirect reform effects. These women were affected by the reform and were unable to retire until age 63, as long as they were born in 1952. The effects therefore reflect the medium-run.

3 The labor market and distribution effects of this pension reform have already been investigated in earlier DIW Berlin Weekly Reports. Johannes Geyer et al., "Erhöhung des Renteneintrittsalters für Frauen: Mehr Beschäftigung, aber höheres sozialpolitisches Risiko," *DIW Wochenbericht*, no. 14 (2019): 239–247 (in German; available online).

4 Mara Barschkett et al., "The Effects of an Increase in the Retirement Age on Health—Evidence from Administrative Data," *The Journal of the Economics of Ageing* 23 (2022): 100403 (available online). The authors would like to thank the National Association of Statutory Health Insurance Physicians for the data and their excellent support. They would also like to thank the German Research Foundation for its funding under CRC/TRR190 (project number 280092119) and project HA5526/4-2, as well as financial aid under the PENSINEQ project (JPI More Years Better Lives). Mara Barschkett's research work was supported by a grant from the *Forschungsnetzwerk Alterssicherung*.

5 Most women who qualified for the women's pension also qualified for the long-term insured pension, which is accessible from age 63, due to their long insurance periods in the statutory pension insurance system. A small share of women was able to retire at the age of 60 if they had a severe disability and fulfilled the waiting period of 35 years. Women who did not qualify for these pensions could not retire until they reached the standard retirement age, which was 65.5 for those born in 1952.

Box 1

Pension reform

Over the course of the Pensions Reform Act of 1999, the pension for women born after 1952 was abolished in the statutory pension insurance scheme. This special pension had allowed women who met certain criteria under insurance law to begin receiving a pension at age 60. To be eligible for this pension, women had to have been insured in the statutory pension insurance scheme for at least 15 years during their lifetime and had to have paid compulsory contributions for over ten years after their 40th birthday. Between 2000 and 2004, deductions of 0.3 percent per month before reaching the standard retirement age were introduced for this type of pension. Accordingly, retiring at age 60 was associated with an 18 percent permanent deduction from the pension. For those born in later years, the only remaining option was an early retirement pension for the long-term insured from the age of 63 or, for a small share, a pension for severe disabilities, which could be drawn from the age of 62. In total, the retirement age for women was raised by three years from one cohort to the next.

Box 2

Data

The analyses are based on administrative health insurance data of all statutory health insurance companies in Germany that are collected by the National Association of Statutory Health Insurance Physicians (*Kassenärztliche Bundesvereinigung*, KBV). The data encompass around 90 percent of the population (all statutorily insured people in Germany). The dataset covers the period of 2009 to 2018 and includes all confirmed diagnoses (as ICD-10 codes¹) at the patient level made by outpatient physicians, billed charges, the number of treatment cases, and the patients' birth year, birth month, sex, and the county in which they live. The analyses are limited to women born between 1950 and 1952.²

1 The International Classification of Diseases, 10th edition, German Modification is the official classification for coding diagnoses in outpatient and inpatient care in Germany (in German; available online)

2 More information on the data can be found in Mara Barschkett et al., "The Effects of an Increase in the Retirement Age on Health—Evidence from Administrative Data," *The Journal of the Economics of Ageing* 23 (2022): 100403 (available online).

The results show that ending the women's pension led to an increase in stress-related diseases as well as mood disorders in 60-to-62-year-old women (Figure 1). There was an 0.8-percentage-point increase in stress-related diseases, which is a 3.6 percent increase compared to the average incidence for the 1951 cohort (22.2 percent of women in the 1951 cohort have such a diagnosis at least once a year).

Box 3

Methods

The central methodological problem in studying the effect of retirement on health is the following: It is not clear whether health changes as a result of retirement or whether health status influences the retirement decision. The connection is plausible in both directions and shown by the literature. However, to evaluate the effect of retirement on health, it is important to distinguish this effect from other effects. This is the only way to causally assess whether changes in the pension system have an impact on health. This requires an empirical strategy using exogenous variation.¹

In this analysis, the estimated effects can be interpreted as causal effects of raising the retirement age because age-specific diagnoses of different groups who were born during a similar period are compared. A differences-in-differences approach is used.²

First, it is differentiated between women born between October and December 1951 who could retire at age 60 and women born between January and March 1952 who were affected by the pension reform. For the most part, these women could not draw a pension until age 63. Birth months can have long-term health effects due to seasonal influences. To account for these differences between the two groups, the age-specific diagnoses from two other comparable groups, neither of which was affected by

pension reform, are compared: Women born between October and December 1950 and women born between January and March 1951. The difference-in-differences between these groups can then be used to determine the reform effect for different ages. The calculation of the differences is based on the observations of different cohorts in various calendar years (Table).

Table

Comparison years for the 1951 and 1952 cohorts at the same age
Age in years

	Reform effects		Monthly effects	
	1951 cohorts	1952 cohorts	1950 cohorts	1951 cohorts
2009			59	
2010	59		60	59
2011	60	59	61	60
2012	61	60	62	61
2013	62	61	63	62
2014	63	62	64	63
2015	64	63	65	64
2016	65	64		65
2017		65		

Legend: For reform effects among 60-year-old women, diagnoses made in 2011 of women born in 1951 are compared with diagnoses in 2012 of women born in 1952. Monthly effects between women born in 1950 in 2010 and women born in 1951 in 2011 were also considered.

Source: Authors' depiction.

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1 An example of exogenous variation is political reform. This cannot be decided by the individual themselves, but is imposed on them from outside.
2 Mara Barschkett et al., "The Effects of an Increase in the Retirement Age on Health—Evidence from Administrative Data," *The Journal of the Economics of Ageing* 23 (2022): 100403 (available online).

A similar effect can be observed for mood disorders: The reform increased the incidence by 0.9 percentage points, which corresponds to a percentage increase of 4.8 percent (average for mood disorders: 18.6 percent). For 59-year-old women, there is also a statistically significant increase: 1.5 percentage points (7.3 percent compared to the average) for stress-related diseases and 1.4 percentage points (8.2 percent compared to the average) for mood disorders. The increases for 59-year-old women are even larger than the effects for 60 to 62-year-olds, which highlights the importance of anticipation effects. In the medium term, the effects are weaker: For 63 to 65-year-old women, there is no statistically significant change in stress-related diseases and only a small increase in mood disorders (0.5 percentage points and 2.4 percent compared to the average). There may be many underlying mechanisms explaining why mental health declines due to a prolonged working life. One possible explanation is that work—especially for older people—involves stress and overburdens some workers. The weakening of the effects at ages 63 to 65 may indicate that this stress slowly declines after retirement.

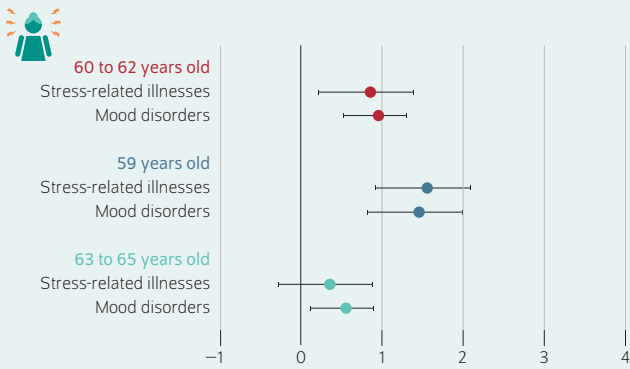
Physical health only partially affected

The effects on physical health are less clear and depend on the specific diagnosis. However, it can be seen that increasing the retirement age does not improve health for any of the diagnoses (Figure 2).

The pension reform results in increases in diabetes and obesity. The effect for diabetes is 0.3 percentage points for 60 to 62-year-olds (2.4 percent compared to the average) and 0.5 percentage points (5.2 percent compared to the average) for 59-year-olds. However, these effects are not shown to be stable in robustness checks and should therefore be interpreted with caution. For 63 to 65-year-olds, there are no statistically significant changes. For obesity, there is an increase of one percentage point (7.4 percent) for 60 to 62-year-olds, an increase of 0.9 percentage points (7.3 percent) for 59-year-olds, and an increase of 0.7 percentage points (4.2 percent) for 63 to 65-year-olds. Possible reasons for the increase in the incidence of obesity due to the reform could be less time for exercise and eating healthy as

Figure 1

Change in the incidence of mental illnesses in women following the increase in the retirement age
Difference in percentage points



Notes: The left and right limits, respectively, indicate the 95 percent confidence band. Point estimators are statistically significant if the confidence band does not include the zero line.

Legend: The incidence of stress-related illnesses increases by 0.8 percentage points for 60 to 62-year-old women as a result of abolishing the women's pension. The effect is statistically significant.

Source: Authors' calculations based on KBV data.

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The incidence of mental illness increases following the increase in the retirement age from 60 to 63, especially for 59-year-old women and 60 to 62-year-old women.

well as a positive correlation between the increase in psychological stress and weight gain.

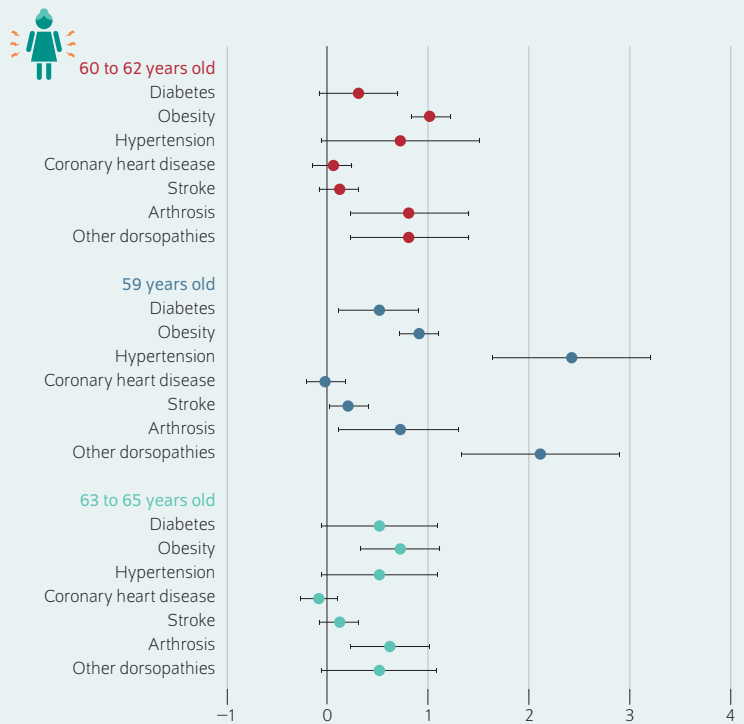
The incidence of cardiovascular diseases (hypertension, coronary heart disease, strokes) has not changed significantly as a result of the reform. This could be because these diagnoses are more likely to have long-term effects. The incidence of musculoskeletal diseases (arthrosis, other dorsopathies), on the other hand, increased significantly: The effects for arthrosis are 0.8 percentage points (3.4 percent) for 60 to 62-year-olds, 0.7 percentage points (3.5 percent) for 59-year-olds, and 0.6 percentage points (2.0 percent) for 63 to 65-year-olds. The situation is similar for other dorsopathies: 0.8 percentage points for 60 to 62-year-olds (2.1 percent), 21 percentage points for 59-year-olds (6.0 percent), and 0.5 percentage points for 63 to 65-year-olds (1.0 percent). Reasons for an increase in arthrosis and back problems could be a lack of movement and exercise as well as additional psychological stress. In addition, physically demanding jobs (such as nursing) can cause these problems, especially in older age.

More treatment cases

Raising the retirement age affects health services demand as well as diagnoses (Figure 3). As a result of the reform, treatment cases for 60 to 62-year-old women increase by nearly 0.2 cases per person and year (a 1.9-percent increase) and by nearly 0.5 cases per person and year for 59-year-olds

Figure 2

Change in the incidence of physical diseases in women following the increase in the retirement age
Difference in percentage points



Notes: The left and right limits, respectively, indicate the 95 percent confidence band. Point estimators are statistically significant if the confidence band does not include the zero line.

Legend: The incidence of obesity for 60 to 62-year-old women increases by one percentage point as a result of abolishing the women's pension. The effect is statistically significant.

Source: Authors' calculations based on KBV data.

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The incidence of obesity, arthrosis, and other dorsopathies increases following the increase in the retirement age from 60 to 63, especially for 59-year-old women and 60 to 62-year-old women.

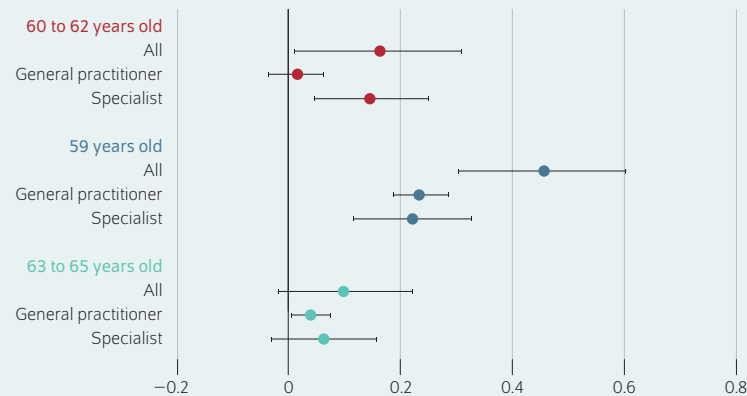
(5.9 percent). There is no statistically significant change observable for the 63 to 65-year-olds. When differentiating between treatment cases at general practitioners vs. specialists, it can be seen that there is no statistically significant increase of treatment cases at GPs for 60 to 62-year-olds, but there is an increase of a good 0.2 cases per person and year (9.7 percent) for 59-year-olds and of 0.04 per person and year (2.5 percent) for 63 to 65-year-olds. Specialist visits increase by nearly 0.2 per person and year (2.5 percent) at 60 to 62, and by a good 0.2 per person and year (4.1 percent) at 59. For the 63 to 65-year-olds, there is no significant change in specialist visits due to the reform.

The reasons for the observable effect for 59-year-olds are manifold. One possibility is that women who were born in 1952 could attempt early retirement via the reduced earning capacity pension since there is no early pension option. The reduced earning capacity pension is only granted when said

Figure 3

Change in the frequency of treatment cases in women following the increase in the retirement age

Difference per person and year



Notes: The left and right limits, respectively, indicate the 95 percent confidence band. Point estimators are statistically significant if the confidence band does not include the zero line.

Legend: The number of treatment cases for 60 to 62-year-old women increases by nearly 0.2 cases per person and year as a result of abolishing the women's pension. The effect is statistically significant.

Source: Authors' calculations based on KBV data.

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The number of treatment cases increased following the increase in the retirement age from 60 to 63.

reduction is medically confirmed. Treatment cases could thus indicate that women born in 1952 are attempting to prove a reduced earning capacity. However, previous studies of the labor market effects of the 1999 reform show that it has had no impact on actual entries into the reduced earning capacity pension.⁶ Thus, despite a possible increase in applications and associated treatment cases, actual entry to the reduced earning capacity pension does not differ between the 1951 and 1952 cohorts.

Another possible reason for differences in health care use could be differences in available time and how women decide to use their time in response to the reform. Eligible women born in 1951 knew that they could retire at 60. Therefore, they could have put off time-consuming activities such as (non-essential) doctor's visits by a year following retirement. In contrast, women born in 1952 know that they will be able to retire a few years after 60, which means they cannot necessarily put off time-consuming activities like the 1951 cohorts. Therefore, women born in 1952 could have more doctor's visits at age 59 than women born in 1951.

Health costs are rising, but fiscal relief effects are dominating

The higher demand for health services directly impacts health costs. On average, health costs per 59-to-65-year-old patient increase by around 14 euros.⁷ It is important to compare this amount to the overall fiscal effects when interpreting the results. From a fiscal policy perspective, increasing the retirement age was very positive:⁸ The decline in retirements resulted primarily in an increase in employment, and, to a lesser extent, unemployment and other non-employment also rose. This affected income tax revenues, transfer payments, and the social security system. Focusing only on the 1952 cohort and ages 60 to 62, the short-term effects of the reform amount to about four billion euros in additional revenue from 2012 to 2014. Compared to the fiscal effects, the additional aggregate health care costs are relatively low. The health care costs of the reform amount to approximately 7.7 million euros per year in the short run, or less than two percent of the fiscal impact. However, this cost estimate should be interpreted more as a lower bound, as the data cover outpatient care only. Thus, the total cost should be higher, but it is still only a small part of the fiscal effects. At the same time, potential indirect macroeconomic effects, such as a decline in productivity due to poorer health, are not captured. The relatively low health care costs can be explained by the fact that only a few people are directly affected, especially compared to the large number of people who work longer as a result of the reform.

Conclusion: Raising the retirement age for women has negative health effects; accompanying reforms needed

The results of the analysis show that a higher retirement age has predominately negative health effects: Increasing the effective early retirement age for women from 60 to 63 has led to an increase in psychological stress and the incidence of stress-related diseases and mood disorders has increased markedly. In contrast, the impact on physical health is less clear cut. While the reform led to a marked increase in the frequency of arthrosis, back pain, and obesity, it had no clear effect on diabetes, hypertension, coronary heart disease, or strokes. However, the results clearly show that health care consumption increased as a result of the reform. The effects on the overall health care system are small relative to the fiscal effects. Thus, the negative health effects are primarily directly on the individuals affected.

The results of the study have important implications for the discussion on raising the retirement age. Preventative measures are needed. Investments in health, especially in younger years, can increase resilience at the workplace. At

⁶ Johannes Geyer and Clara Welteke, "Closing Routes to Retirement for Women: How do they respond?" *The Journal of Human Resources* 56, no. 1 (2021): 311-341 (online verfügbar).

⁷ Price increases compared to 2009 were considered when calculating the cost increase.

⁸ Johannes Geyer et al., "Labor market and distributional effects of an increase in the retirement age," *Labour Economics* 65 (2020): 101817 (available online)

the same time, investments in education and further training throughout the working life are necessary to make career changes at older ages possible.⁹ Similarly, working conditions must be adjusted as workers age so that work strain, which increases with age, can be managed. However, policymakers

must also ensure that the reduced earning capacity pension safeguards health risks for people who can no longer work. A further increase in the retirement age must therefore be accompanied by additional reforms to the reduced earning capacity pension.

⁹ Health and education are strongly correlated. See, for example, Cutler and Lleras-Muney, "Understanding differences in health behaviors by education," *Journal of Health Economics* 29, no. 1 (2010): 1-28 (available online)

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