

The Economics of a Healthy workforce

The Case for Investing in Innovative Healthcare

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Executive summary

The Danish economy - measured by the real gross domestic product (GDP) - is no larger today than it was in 2005. In the second quarter of 2012, GDP shrunk by ½ per cent. At the same time, a significant number of people are outside the workforce receiving public support rather than creating economic wealth. For instance, in 2011, 245,000 persons received early retirement benefit ('førtidspension') and 86,000 received sickness benefit ('sygedagpenge').

In this study, we find that if we can just reduce the future influx (not the stock) of people into early retirement and instead keep them in the workforce, we can boost GDP and reduce public expenditure significantly.

More specifically, we find that faster use of innovative health care has the potential to reduce the yearly influx into early retirement with 12 per cent and instead keep these 12 per cent in the workforce. This would reduce public expenditure by DKK 2.7 billion in 2020 while increasing GDP by DKK 2.3 billion in 2020. We find:

- In 2011, 15,969 persons were granted early retirement ('førtidspension').
- Of those, 5,650 came from sickness benefit ('sygedagpenge'), which means that they, up until the time of illness, held a job or had recently held a job. In other words, they were able to work.
- Of the 5,650, 1,996 were granted early retirement due to a single health reason and nothing more. For that reason, we believe that this group of people would benefit greatly from innovative health care treatments. The group of 1,996 persons corresponds to 12 per cent of all early retirements granted in 2011.
- We find evidence to suggest that better and faster health care treatment for this group would have improved the health of some of them such that they would have been able to return to their jobs after treatment; instead of ending up in early retirement.
- If we assume that innovative health care has the potential to reduce the future influx into early retirement by 12 per cent starting in 2015, public budgets would be improved by DKK 2.7 billion in 2020.
- The resulting increase in the workforce would result in an increase in GDP by DKK 2.3 billion in 2020.
- Any costs of investing in innovative health care should be measured up against the return of DKK 2.7 billion in public savings in 2020.

Chapter 1

Health care as part of the solution

In this chapter, we seek to identify the number of people with a high probability of staying in the workforce if they receive innovative health; people that would otherwise have gone into early retirement (Førtidspension).

1.1 Faster access to innovative treatments makes a difference

Today, absenteeism in the workforce due to illness corresponds to 116,400 full time persons or 4 per cent of the workforce. This is directly costing businesses DKK 41 billion a year in wages and sickness benefit ('sygedagpenge')¹. A significant number of the full time persons - 86,174² - also receive sickness benefit from municipalities and state, costing DKK 14.7 billion every year.³

Of those who are absent due to illness, 40 per cent are so for only 1-3 weeks over a year.⁴ Such short term absenteeism is likely to be driven by the influenza season or work place related phenomena such as poor management, working environment and work ethics rather than serious health reasons.⁵

For a number of people, poor health – physical or mental – is the reason they are absent from their jobs. If they receive the right treatment in a timely fashion, they stand a good chance of returning to work. On the other hand, if they do not receive the right treatment fast enough, they face a high risk of not returning to the workforce at all.

A study by The Economic Council of the Labour Movement (Arbejderbevægelsens Erhvervsråd) finds that after one year of absence from employment due to sickness, only 25 per cent returns to work, cf. Figure 1.

¹All are 2008 numbers from <http://www.da.dk/bilag/AMR%20kap.%204.pdf>, page 132 and 138 and www.statistikbanken.dk for workforce used to calculate the percentage.

² See www.jobindsats.dk by Arbejdsmarkedsstyrelsen.

³ These are 2011 numbers from www.statistikbanken.dk, table REGK31 and REGK54

⁴ 2008 numbers from <http://www.da.dk/bilag/AMR%20kap.%204.pdf>, page 133

⁵ See e.g. recent studies by Cepos and Confederation of Danish industries (DA) looking at differences in absenteeism in municipalities.

Figure 1 Return to employment after sickness benefit (sygedagpenge)



Source: AE Rådet (2007), Længevarende sygefravær øger risikoen for udstødning.

This implies that time is of the essence when the goal is to keep people in their jobs once they become ill. This also means that health care interventions that focus on speedy and innovative treatments can turn out to be a good business case as it increases chances of people returning to employment instead of ending up on e.g. early retirement ('førtidspension'). This may also be the case even where cheaper treatments exist if the cheaper treatments are less effective.

1.2 Preventing influx into early retirement

Once you are on early retirement benefit, there is very little chance of ever returning to the workforce. In 2011, 15,969 people were granted early retirement, while only 6 had their decision reversed.⁶ Hence, preventing people from entering into early retirement is key.

We are looking to estimate the share of people granted early retirement each year who realistically could be prevented from going on early retirement and staying in the workforce if they had better access to innovative health care at the time they needed it.

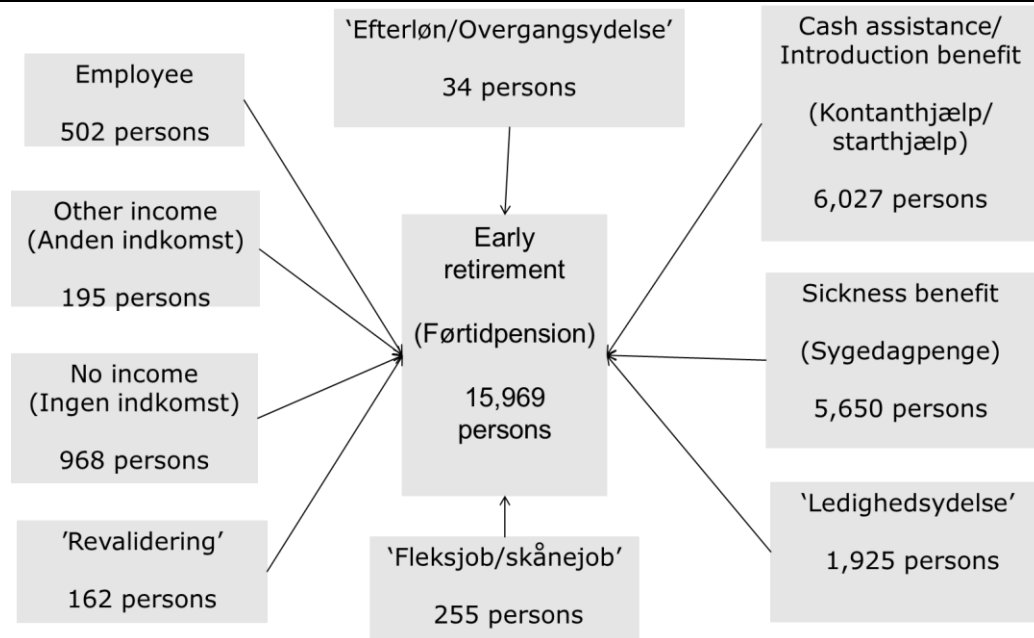
We start by looking at the latest number of people on early retirement, which are 15,969 in 2011. We then focus on the persons who came from sickness benefit. We do that for two reasons. First, because it implies that they are indeed able to work (otherwise they would not have been able to receive sickness benefit as it requires a person to either come from employment or unemployment but with recent employment). Second, because of the learning from above: if you receive sickness benefit, faster and better health care matters a great deal for your chances of staying in the workforce.

⁶ Source: Ankestyrelsen database

Consequently, by focusing on the group that received sickness benefit prior to entering into early retirement, we believe we have narrowed down a realistic group who could have benefitted from innovative better and faster health care treatment.

We find that of the 15,969 persons who were granted early retirement in 2011, 5,650 had sickness benefit as their main source of income, cf. Figure 2.

Figure 2 Flow diagram to Early retirement 2011



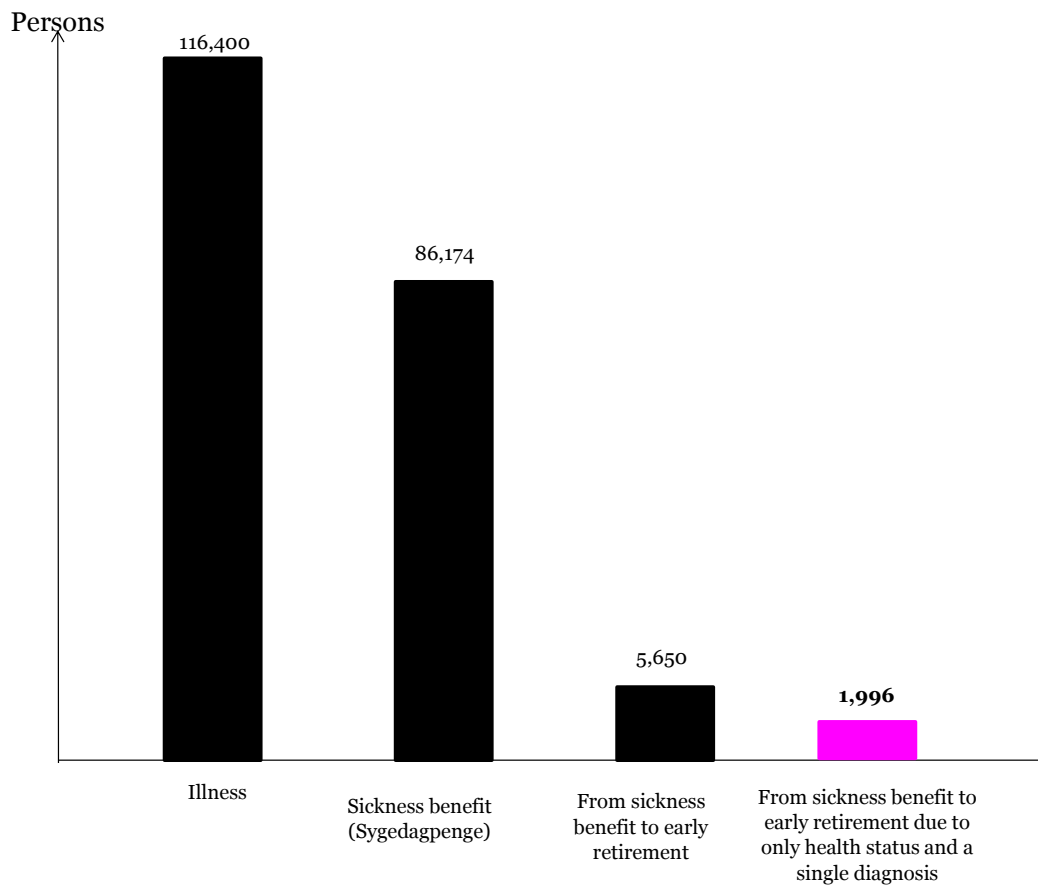
Note: 'Ledighedsydelse': Paid to people who are able to work in a 'fleksjob', but not able to find a 'fleksjob'.
The categories sum up to 15,969 but for 251 persons, whose former income is unknown. We have omitted this category from the figure.

Source: National Social Appeals Board (Ankestyrelsen)

However, we further narrow down this group in order to identify a group, which we believe is most receptive to innovative treatments in terms of maintaining attachment to the labour market. This would be a group with only one diagnosis and with health as the only factor. There may be other reasons than pure health reasons why a person receiving sickness benefit is granted early retirement; for example, a lack of social skills, ability to adapt and learn new things, and social network.

Using data from the National Social Appeals Board (Ankestyrelsen), we identified 1,996 persons out of the 5,650 who were granted early retirement due to health only and with a single diagnosis, cf. Figure 3.

Figure 3 Treatment potential, 2011



Note: All numbers are from 2011 except the 116,400 full time equivalent persons who are absent from the workforce due to illness, which is from 2008.

Source: Special data base search in Ankestyrelsens database, jobindsats.dk and DA.

Hence, this number of 1,996, we interpret as a group of people where faster and proper treatment could have made the difference between entering into early retirement and getting back into the workforce.

The number 1,996 equals 12 per cent of the total influx into early retirement of 15,969 in 2011. In the next chapter, we calculate the economic impact of reducing the yearly influx to early retirement with 12 per cent.

Chapter 2

Investing in innovative health care

In this chapter we calculate the improvement in public budgets and Gross Domestic Product (GDP) from reducing yearly influx into early retirement.

We use the estimate from the previous chapter where we found that 12 per cent of the persons being granted early retirement (which was 1,996 out of 15,969 in 2011) would have stood a strong chance of staying in the workforce had they received better access to innovative health care.

Hence, we calculate the economic impacts of a 12 per cent smaller yearly influx into early retirement starting in 2015 and continuing into the future. In this way, we identify the investment potential for better access to innovative health care that prevents people from dropping out of the workforce and receiving early retirement benefit.

2.1 The impact on public budgets and GDP

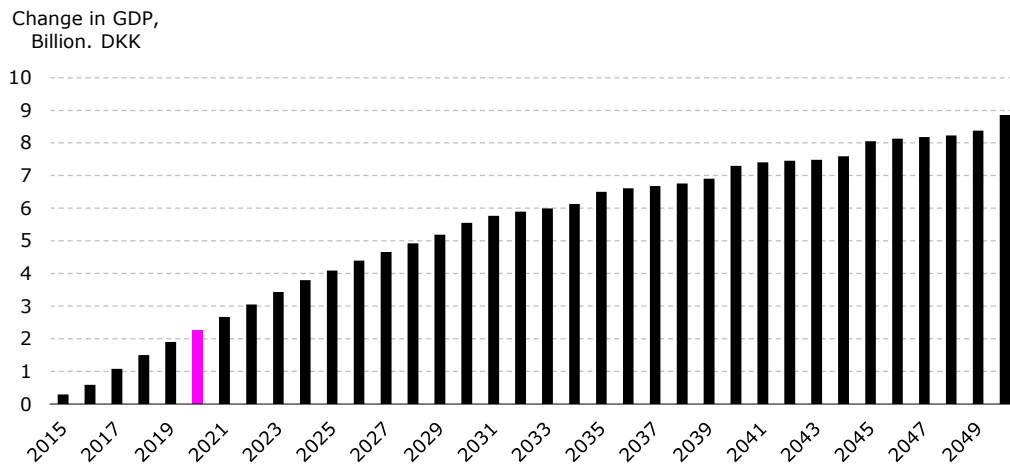
The total economic loss of a person entering early retirement cannot be measured in one single year's public budget or in one year's GDP. Instead it is measured by the accumulated cost of every year where entitlements are paid. To evaluate the potential economic gains from investing in innovative health care, we estimate the short and long term effects on the Danish economy from lowering the number of early retirement grants by 12 per cent from 2015 and onwards using the dynamic general equilibrium model DREAM.⁷

We find that the effect of less people leaving the labour force accumulates year by year, but already by 2020 the number of people in the labour force is raised by 7,000 persons, GDP is raised by DKK 2.3 billion,⁸ cf. Figure 4. In the long term however, the effects are much stronger. In 2050 GDP is raised by DKK 8.9 billion.

⁷ See section 2 of Chapter 3 for further introduction to DREAM.

⁸ GDP and budget impacts are measured throughout in inflation and growth corrected terms with base level 2011.

Figure 4 The effect on the Gross Domestic Products (GDP)

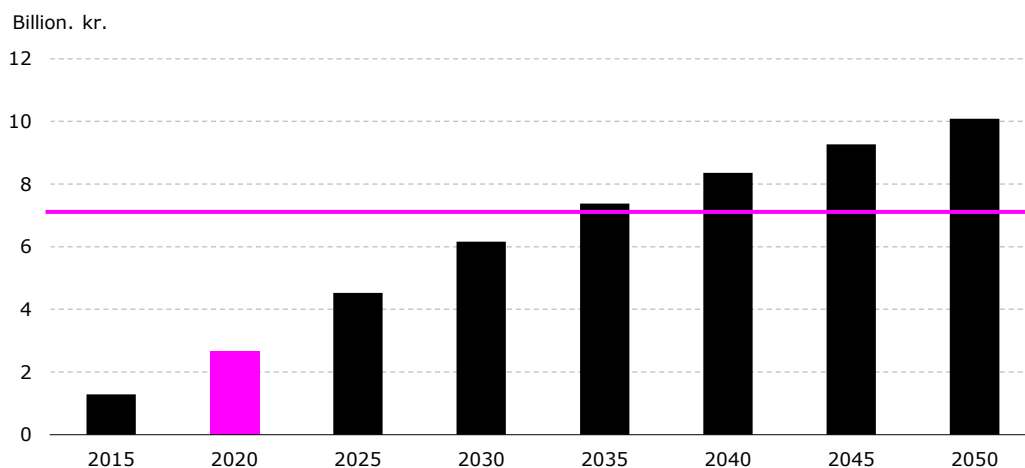


Note: 2011 prices

Source: Simulation on DREAM model

Government budget is improved by DKK 2.7 billion in 2020, cf. Figure 5. The average long term effect on the public budget can be measured in terms of the so called fiscal sustainability indicator. This indicator is improved by DKK 7.1 billion.

Figure 5 Change in the public sector's primary balance and improvement in the Fiscal sustainability indicator



Note: We have chosen to highlight 2020 as this is a focal point for the government's economic policy. 2011 prices

Source: Simulation on DREAM model

When the government decides on how much to spend and how to prioritise the health care budget, long term effects on growth and public finances should be taken into account as part of the equation. Thus, from a pure public finance perspective, an investment in innovative health care by which the influx into the early retirement scheme can be reduced by 12 per cent, will be a net profitable investment, if it can be carried out at a cost of less than DKK 7.1 billion a year.

If such investment opportunities exist, there is really only one excuse for not reaping the gains. That is the evolution of public debt. It will take time before an investment like this turns profitable. It is after all what makes it an investment. However, in the light of today's economic crisis, the "long term" might be viewed as a much too long and uncertain investment horizon. The effect on the government budget in 2020 of DKK 2.7 billion is therefore likely to be a more relevant benchmark for evaluating such investments.

It is unlikely that a single innovation in public health care can reduce the influx into early retirement by 12 per cent. That is not what we are suggesting. The illnesses that they suffer from vary between anything from social anxiety to life threatening cancer. We do believe that some can be treated through innovate health care at a low extra cost, but we must accept that some will be impossible to treat to an extent that they can be prevented from leaving the workforce. When evaluating actual investment opportunities it is therefore better to think in terms of economic gains per person prevented from leaving the workforce in a given year.

The simulations on which we have based our estimates takes into account expected effects of the latest reform of the early retirement scheme which also has an effect of lowering the influx into the scheme. Due to this reform, and coupled with demographic effects, the effect on the workforce of 12 per cent lower influx is 1,050 in the first year of impact (2015).

2.2 Comparing the impacts with the early retirement reform

Comparing with the recent early retirement reform ('Førtidspensionsreformen'), which were expected to yield an increase in the workforce by 2,300 persons in 2020, we find a three times greater potential, cf. Table 1.

Table 1 The potential is significant

Initiative	Public budget savings, 2020	Workforce in 2020 (FTE)
Førtidspensionsreform	1.9 billion DKK	2,300
Healthy workforce	2.7 (minus cost of effort) billion DK	6,925

Note: FTE = Full time equivalent

Source: DREAM model and KRAKA:
http://www.kraka.org/sites/default/files/foertidspensionsreformen_er_et_skridt_frem_men_betydelige_risici_lurer_forude.pdf.

Chapter 3

Data and economic modelling

In this chapter we describe 1) our approach to collect data about persons going from sickness benefits to early retirement, and 2) the model simulations computed by the DREAM-model.

3.1 Data from the National Social Appeals Board

We seek out a realistic number of people that can be kept in the workforce by receiving innovative health care, which would otherwise have gone into early retirement (Førtidspension).

The National Social Appeals Board (Ankestyrelsen) collects data and makes statistics on early retirements and on the reasons for granting early retirement. To find a realistic estimate of the number of people going on early retirements that could have been prevented from doing so with innovative health care, we have asked Ankestyrelsen to carry out a special database extractions, which allows us to get very detailed information on the people who were granted early retirement benefit in 2011.

In order to identify this group, we set up three criteria:

- They should have received sickness benefit prior to being granted early retirement (this implies a general ability to work and be part of the workforce)
- They should have been granted early retirement only due to health reasons (this implies that health care interventions is what would make the difference)
- They should have a single diagnosis only (so as not to complicate the necessary health interventions necessary for the individual)

In chapter 1.2, we showed how out of the 15,969 person who were granted early retirement in 2011, 5,650 came from sickness benefit (bullet #1). And out of those, 1,996 were granted it purely due to health reasons (bullet #2) and with a single diagnosis (bullet #3).

We now describe in more detail the process of reaching the 1,996 persons in 2011, but starting backwards with bullet #3 and ending with bullet #1. This provides a different angle to the same information.

Bullet #3

The special data extractions show that of the 15,969 granted early retirement in 2011, 7,121 were due to a single diagnosis alone. Table 2 also shows the distribution of overall diagnoses.

Table 2 Number of Early retirements with only one diagnosis

Diagnosis	Persons
Mental disorders	3,276
Other diagnoses	2,543
Musculoskeletal disease	1,216
Unknown	86
Total	7,121

Source: Ankestyrelsen. Special database extraction

Bullet #2

However, we want to rule out other reasons for early retirement than health reasons. In order to do this, we identify the share of the 7,121 persons, which were granted early retirement due to health reasons alone. This amounted to 4,603 persons. Table 3 shows the elements that a caseworker is using, among others, to decide whether or not a person is eligible for early retirement.

Table 3 Elements in the 'Resource profile'

Resource profile (ressourceprofil)	
Education (Uddannelse)	
Work related experience (Arbejdsmarkedserfaring)	
Interests (Interesser)	
Social skills, and ability to deal with conflicts (Sociale kompetencer, herunder konfliktberedskab)	
Ability to adapt (Omstillingsevne)	
Ability to learn and intelligence (Indlæringsevne, herunder intelligens)	
Work related preferences (Arbejdsrelevante ønsker)	
Performing expectations (Præstationsforventninger)	
Work identity (Arbejdsidentitet)	
Living situation and finance (Bolig og økonomi)	
Social networks (Sociale netværk)	
Health (Helbred)	4,603

Source: Ankestyrelsen

Bullet #1

Finally, we sorted the 4,603 persons into their prior source of income. This left us with 1,996 persons whose prior income was sickness benefit, cf. Table 4.

Table 4 One diagnosis combined with exclusively focus on health – previous source of income

Income	Persons	Percentage
Other income (Anden indkomst)	64	1
Efterløn/overgangsydelse	15	0
Fleksjob/skånejob	113	2
No income (Ingen indkomst)	259	6
Cash assistance/Introduction benefit (Kontanthjælp/starthjælp)	1,324	29
Ledighedsydelse	456	10
Employee (Lønmodtager)	255	6
Revalidering	38	1
Sickness benefit (Sygedagpenge)	1,996	43
Unknown (Uoplyst)	83	2
Total	4,603	100

Source: Special data extract, Ankestyrelsen

Our focus has been on the people who received sickness benefit prior to getting early retirement as these people came from a job or recently held a job. We expect that these people would be highly susceptible to innovative health care treatments and continued working, had they been able to. Hence, we interpret this number of 1,996 as a group of people where proper treatment could have made the difference between them entering into early retirement or re-joining the workforce. This group corresponds to 12 per cent of the people being granted early retirement in 2011.

3.2 DREAM: Danish Rational Economic Agents Model

DREAM is a dynamic computable general equilibrium (CGE) model of the Danish economy. The model is used for long term projections of the Danish economy and it is particularly useful for studying demographic and public finance related issues.

Along with forecasts of wages, employment and GDP, the so called Fiscal sustainability indicator is one of the core output parameters of the model. It comprises into one number the long term public balance of the public sector. The indicator is exactly zero if current policy leads to a balanced public budget with a controlled debt in the long term. A negative number indicates how much the budget must be improved to reinstate that balance, and vice versa for a positive number. It is therefore possible to evaluate if a certain policy will lead to an improvement or a deterioration of public finances, by looking at the changes in the fiscal sustainability indicator.

We have made use of DREAM to evaluate the consequences on the Danish economy of investing in better health care treatment and thereby reducing the number of early retirements from 2015 and into the future.

As a model input to the alternative projection in DREAM, we have reduced the number of people who is granted early retirement (førtidspension) each year with 12 per cent from 2015 and onwards. Every year this effect accumulates, reducing the total number on early retirement benefit and increasing the total number of people on the labour market. This allows us to evaluate the long run effects on GDP, employment, the public sector's primary balance and the improvement in the Fiscal sustainability indicator. The fiscal sustainability indicator is improved with 0.4 per cent measured in relation to GDP. The conclusion that we draw from this is that 12 per cent less entrants to the early retirement scheme will finance an increase of public spending of 0.4 per cent of GDP. As the total GDP in 2011 is DKK 1,782 billion, this corresponds to an increased public spending of DKK 7.1 billion. All reported nominal effects on GDP and the public budget are measured in relation to 2011 in a similar fashion.

Interviews

During the study, we have interviewed a number of people. They have all provided valuable input to our understanding of the complexity of health and treatment possibilities in respect to preventing people to exit the workforce. We thank:

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