



Network for Studies on Pensions, Aging and Retirement

Supporting pension participants:

Three lessons learned from the medical domain for better pension decisions

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DESIGN PAPER 167

NETSPAR INDUSTRY SERIES

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Netspar Design Paper 167, February 2021

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Acknowledgments

This activity is (partly) financed with the PPP allowance from the Dutch Ministry of Economic Affairs and Climate from CLICKNL. CLICKNL is the top consortium for Knowledge and Innovation (TKI) of the Creative Industry.

We thank Wändi Bruine de Bruin, Netspar's Editorial Board and Netspar's Partner Research Council for their helpful feedback on previous versions of this paper.

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Abstract

Pension participants face complex decisions. These decisions require them to choose between multiple alternatives that have different positive and negative consequences that vary in likelihood of occurrence, and that may relate to different values. In the medical domain, ample research has been conducted on how to support patients in making such decisions. We argue that medical decisions are comparable to pension decisions and that we can therefore learn from this research to support pension participants in an effective manner. In this paper we describe problems encountered in the pension domain, solutions to overcome these problems, the evidence from the medical domain that these solutions are based on, and examples of how these could be applied in the pension domain. This leads to three lessons. First, we should help participants to derive the proper meaning of decisions by emphasizing the gist of information and to clarify what it means to them. Second, we should help participants determine what matters to them and how this aligns with the pros and cons of the alternatives they can choose from. Third, we should use simple static visual aids to help participants better comprehend statistics and the likelihood that a consequence will actually occur.

Samenvatting

Pensioendeelnemers staan voor complexe keuzes waarbij ze de voor- en nadelen van verschillende alternatieven moeten vergelijken. Deze voor- en nadelen kunnen verschillen in waarschijnlijkheid en zijn mogelijk gerelateerd aan verschillende waarden. Binnen het medisch domein is veel onderzoek gedaan naar het begeleiden van patiënten bij het maken van dit soort keuzes. Wij betogen dat medische keuzes in veel opzichten vergelijkbaar zijn met pensioenkeuzes en dat we daarom kunnen leren van onderzoek binnen het medisch domein hoe we pensioendeelnemers op een effectieve manier kunnen begeleiden bij het maken van keuzes. In dit paper beschrijven we problemen die deelnemers tegenkomen binnen het pensioendomein, oplossingen voor deze problemen, evidentie uit het medisch domein waarop deze oplossingen zijn gebaseerd en voorbeelden van toepassingen binnen het pensioendomein. Dit leidt tot drie empirisch ondersteunde lessen uit het medisch domein die we kunnen gebruiken voor het begeleiden van pensioenkeuzes. Ten eerste moeten we deelnemers helpen om de juiste betekenis van keuzes af te leiden door de kern van informatie te benadrukken en duidelijk te maken wat dit voor hen betekent. Ten tweede moeten we deelnemers helpen bepalen wat ze belangrijk vinden en hoe dit aansluit bij de voor- en nadelen van de alternatieven. Ten derde moeten we eenvoudige, visuele hulpmiddelen gebruiken om statistieken en de kans dat een bepaald gevolg optreedt begrijpelijker te maken.

1. Introduction

Based on behavioral science research, the Dutch Authority for the Financial Markets (Autoriteit Financiële Markten, 2016) claims that consumers find it very difficult to understand risks and to choose between multiple alternatives that involve different pros and cons. As a result, consumers make infelicitous financial decisions or reach no decision at all. This could lead to loss of wealth, which is detrimental to both consumers and society as a whole. Therefore, it is important to help consumers to understand the risks associated with the alternatives of a decision and to weigh the different pros and cons of multiple alternatives, thus enabling consumers to make better financial decisions. One financial domain in which consumers need such support is that of pensions.

Participants in a pension scheme face complex decisions between multiple alternatives that involve different pros and cons that may or may not occur, and that can be weighted differently, depending on people's preferences (Hoeken et al., 2011). For example, pension participants can choose between a monthly benefit that remains fixed for their entire retirement period, or one that varies per year. The latter option will in many cases lead to higher benefits, but there is also a chance that the benefit will be lower than the fixed option. People differ on several dimensions, for instance, on how important they consider the extra benefit, whether they can make ends meet and enjoy retirement as envisioned with a lower benefit, how likely they think it is that the variable option will lead to worse outcomes than the fixed one, and how capable they are in dealing with the uncertainty associated with the variable option. As a result of these differences, which option is best may differ from one person to the next. These kinds of decisions are especially difficult for less-literate and less-numerate pension participants.

In the medical domain, patients face comparable decisions: when choosing between different possible treatments, it is not uncommon that "there is more than one option and neither is clearly better, or (...) options have benefits and harms that people value differently" (Stacey et al., 2017, p. 2). For example, for many medical decisions patients choose "between some functionality with impairment and a procedure or operation that offers improvement but with some risk of death or even worse disability" (Reyna, 2008, p. 855). Medical decisions and decisions in the pension domain are comparable in other respects as well. Medical decisions can be about different prevention methods, different treatments, or disease detection. Likewise, some pension decisions can be perceived as prevention decisions (e.g., to prevent a future lack of money), as treatment decisions (e.g., choosing between

different pension plans), or (to a lesser extent) as detection decisions (e.g., finding out whether one is saving enough for retirement).

Ample research has been conducted on how to support patients to make these kinds of decisions. Often, the focus is on decision tools. These tools are interventions that people can use for complex decisions. Stacey et al. (2017) conducted a review (including 105 studies involving 31,043 participants) to assess the effects of decision tools for people who face treatment or screening decisions. Their results indicate that decision tools, compared to usual care, improve medical decision making in a number of ways. For example, decision tools increase the knowledge of options and outcomes (based on higher scores on knowledge tests), lead to more accurate perceptions of outcome probabilities, help people to feel more informed about options and more comfortable with their decisions, and help them to have a better view of their relevant personal values.

Because of the comparability between pension decisions and medical decisions, we argue that knowledge from the medical domain is relevant to support decisions in the pension domain. Therefore, in this paper we will describe three lessons from the medical domain that have received empirical support. We will not discuss advice on the use of simple direct language and the avoidance of jargon and abbreviations because this is already well-known (e.g., Fagerlin, Zikmund-Fisher & Ubel, 2011 or Meppelink, Smit, Buurman & Van Weert, 2015). The lessons we describe do not aim to guide participants towards a specific option, but to support different steps in the participant's decision process: comparing risks and benefits of multiple alternatives, determining what matters to the participant and how this aligns with the pros and cons of the alternatives, and estimating the probabilities of each alternative. We will also discuss which of these lessons are especially beneficial to less-literate and less-numerate participants. The central question of this paper is: what can we learn from research in the medical domain in order to effectively support participants in making better pension decisions?

2. Lessons learned for the pension domain

In this section we describe the three lessons learned for the support of pension decisions (see Box 1). For each lesson, we describe a problem encountered in the pension domain and a solution for this problem derived from research in the medical domain. We substantiate why this could be a solution by reviewing the research it is based on. And we give examples of how this lesson is already applied in the pension domain and possible ways to apply this lesson even better.

Box 1. Three lessons learned from the medical domain for better pension decisions.

1. Emphasize the gist of information to help clarify to participants what it means to them.
2. Use value clarification methods to help participants determine what matters to them and how this aligns with the pros and cons of the alternatives.
3. Use simple static visual aids for better comprehension of statistics and probabilities.

1. Emphasize the gist of information to help clarify to participants what it means to them

A key problem in the pension domain is that pension information is often poorly understood. Participants may get the facts right but fail to derive their proper meaning. And this proper meaning is key to informed decision making (Reyna, 2008). In this paragraph we highlight two causes.

First, as Nell (2017, p. 38) states, pension providers face “the paradox of meeting the legal obligations of complete communication on the one hand and creating clear and understandable communication on the other”. Because of these legal obligations, an excessive amount of (recurring or non-relevant) information is provided to participants, “which may come at the expense of the findability of the information, feelings of self-efficacy, and motivation” (Nell, 2017, p. 182). In order to support participants to make better pension decisions, we should help them to derive the gist of information and to clarify what it means to them.

Second, and related to the previous point, pension statements often convey correct and factual information, but without this information being meaningful to participants. For example, pension providers focus on communicating how much pension income a participant can expect at retirement age. However, insight into the amount is not enough. More important is that participants understand to what extent this amount is likely to be sufficient. A recent evaluation of the 2015 Pension Act (Van Waveren, Kuin & Duysak, 2019) shows that half of the participants indicate that they know how much pension income they can expect (one-third does not), whereas only

one-third indicate that they know whether their expected pension income will be sufficient (almost half do not).

In the medical domain, Reyna (2008) suggested a new way to make health information more accessible to people, because information intended to support medical decisions was also often poorly understood. The underlying assumption of that new way is that, in judgment and decision making, people rely on the gist of information as opposed to verbatim details. When presented with any meaningful stimulus (e.g., health information on a website), they can represent this information mentally in more or less detail, ranging from gist to verbatim representations. After the information is represented, people retrieve their values, principles, and knowledge and apply them to the representations. When making a decision, people first rely on the representation with the lowest (least precise) level of gist and move up in precision if they feel that this is needed in order to make a good decision (Reyna, 2008). Rather than providing more (detailed) information, decision support should strive to capture the essential bottom line of options, resolving trade-offs to the degree that is possible (Reyna, Nelson, Han & Pignone, 2015).

Blalock and Reyna (2016) conducted a literature review to identify studies that applied these principles to investigate health judgments and decisions. They concluded that interventions designed to facilitate gist-based reasoning often resulted in better decisions and in a better decision-making process. For instance, Fraenkel et al. (2012) developed a web-based tool to support decision making for rheumatoid arthritis patients. The first step was to survey thirteen experts and to classify risks into those that are extremely important and must therefore be disclosed to all patients, risks that are less important and should be provided as additional information (via links for patients who are interested in this information), and risks that are deemed not important at all and therefore could be excluded from the tool (Fraenkel et al., 2012, p. 978): "This flexible approach addresses the needs of patients desiring additional information without overwhelming others". Furthermore, the tool promoted accurate gist representations by using qualitative terms concerning treatment risks and benefits in addition to numerical information (e.g., 'a very rare chance' in addition to '3 in 1000') and by using visual aids. Fraenkel et al. (2012) showed, among others, that the tool significantly increased the clarity of values (based on three items such as 'I am clear about which risks and side effects matter most to me') and, most importantly, that it increased the number of patients who made an informed value-concordant choice (i.e., a choice that is based on accurate knowledge and that matches one's values) by more than 80%, both compared to the pretest *before* viewing the tool.

Smith et al. (2014) examined the effectiveness of a gist-based leaflet about

colorectal cancer. The leaflet presented numerical information categorically or by means of verbal quantifiers that provide an evaluative label of the number (e.g., 'most people' instead of '98 out of 100'). Furthermore, gist-based processing was encouraged by removing information deemed ambiguous or non-essential in some of their previous studies. Individuals who received the leaflet were more likely to exhibit adequate gist knowledge (i.e., whether they understood the gist of the information).

Wolfe et al. (2015) designed an intelligent tutor, BRCA Gist, that applied artificial intelligence, grounded in the same principles. BRCA Gist encouraged people to form gist representations, rather than verbatim ones, by presenting verbal explanations that highlight the essential decision-relevant meaning of information and presenting figures and videos that convey the gist of core concepts, stripping away details. They determined the effectiveness of the intelligent tutor, and their results show that people who used the tutor performed better on measures of gist comprehension and made objectively better judgments and decisions about genetic testing. They therefore concluded that gist-based interventions can improve gist comprehension and decision making over and above that which is achievable with detailed materials.

Research by Peters, Dieckmann, Dixon, Hibbard and Mertz (2007) suggested that emphasizing the gist may be especially beneficial to less-numerate people. They conducted three studies on the presentation and formatting of numerical hospital quality information and found that people (particularly those lower in numeracy) tended to have higher comprehension and made objectively better decisions when the presentation format made the most important information easier to evaluate (e.g., by deleting non-quality information and highlighting quality information).

The medical research discussed above can help design pension information that helps pension participants to derive the gist of information and clarifies what this means to them, thereby supporting participants to make better pension decisions. The research discussed shows that this can be done in several ways. First of all, numerical information could be presented categorically or ordinally (e.g., sufficient/insufficient). Numerical information could also be presented by using verbal quantifiers. In the pension domain, this is already being done. For example, pension fund Zorg en Welzijn informs its participants about their expected pension income, but, instead of communicating the exact amount, it uses a percentage, a verbal quantifier, and an interpretation of that percentage in conjunction with the verbal quantifier: "In this letter I want to inform you about the pension income that you can expect. In the Netherlands, we deem a pension income of 70% of your average salary sufficient for the future. You are expected to be **well above** that. With your pension income, you can reach an income that is more than 70% of your current gross salary",

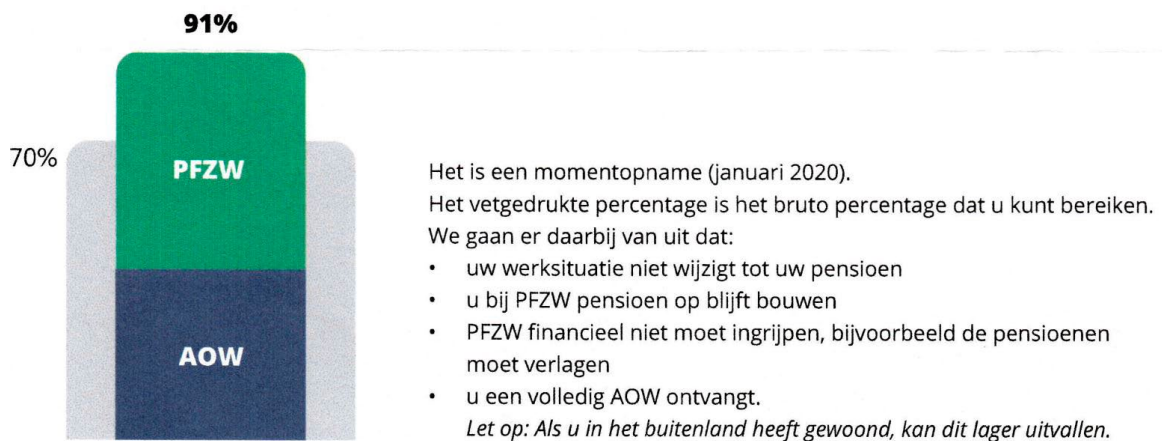


Figure 1. Screenshot from the Zorg en Welzijn letter.

accompanied by Figure 1. Here, the use of percentages and verbal quantifiers has meaning to the participants, as it provides clarity and certainty and can encourage them to take any action.

Another example of the use of verbal quantifiers in the pension domain is found in the standard legally required model for communication about the decision between a fixed or a variable pension benefit (Verbond van Verzekeraars, 2018). According to this model, pension providers must communicate the possible yearly fluctuations for the variable option (which varies by pension scheme and by provider). The magnitude of these possible fluctuations must be communicated on a 7-point scale (to enable comparison of schemes and providers). A higher number indicates a greater chance of strong fluctuation. In addition, pension providers must use a verbal quantifier to provide an evaluative label of the number (e.g., considerably). Figure 2 shows what information must be communicated to the participant. The text under the fixed option says 'The number 1 means that the amount of pension income is fixed. The benefit does not decrease or increase'; the text under the variable options says 'The number 5 means that the amount of pension income can change

Vast pensioen



Het getal 1 betekent dat de hoogte van het pensioen vaststaat. De uitkering daalt of stijgt niet.

Variabel pensioen



Het getal 5 betekent dat het pensioen jaarlijks behoorlijk kan veranderen. Het pensioen kan stijgen, maar ook dalen.

Figure 2. The fluctuations for the fixed and variable option on a 7-point scale (Verbond van Verzekeraars, 2018, p. 18).

Nummer	Betekenis	Gemiddelde jaarlijkse schommeling
1	De hoogte van het pensioen staat vast	Vast
2	Het pensioen kan jaarlijks <i>nauwelijks</i> veranderen	0 – 1,25%
3	Het pensioen kan jaarlijks <i>een beetje</i> veranderen	1,25 – 2,85%
4	Het pensioen kan jaarlijks <i>aardig</i> veranderen	2,85% - 4,85%
5	Het pensioen kan jaarlijks <i>behoorlijk</i> veranderen	4,85% - 7,65%
6	Het pensioen kan jaarlijks <i>sterk</i> veranderen	7,65% - 12,50%
7	Het pensioen kan jaarlijks <i>heel sterk</i> veranderen	Meer dan 12,50%

Figure 3. The calculation method used to determine the number on the 7-point scale (Verbond van Verzekeraars, 2018, p. 19).

considerably every year. The benefit can increase, but also decrease'. Figure 3 shows the calculation method used to determine the number on the 7-point scale, and the current verbal quantifiers used. The question is whether these are meaningful verbal quantifiers to participants. Cox (2020) shows that a person's interpretation of verbal quantifiers can differ from those intended by the sender. In addition, Cox shows that the interpretation of verbal quantifiers may be influenced by a person's pre-existing attitudes. These two results indicate that verbal quantifiers (and possibly also numbers on a 7-point scale) should always be tested for interpretation by participants.

Other ways to communicate the bottom-line gist are by using simple static visual aids (which will be discussed in more detail later) or by resolving trade-offs to the degree that is possible (e.g., resolving the decision between a fixed or a variable pension benefit to choosing between a certain fixed amount that is probably somewhat lower, and an uncertain variable amount that is probably higher, but could also be lower than the fixed amount). Furthermore, key decision-relevant information could be highlighted, less essential or additional information could be de-emphasized (e.g., behind hyperlinks or drop-down menus), and redundant or ambiguous information could be removed. This addresses the needs of participants who desire additional information without overwhelming others. Therefore, key information that should be conveyed to participants should be identified (Reyna et al., 2015). This could be done in consultation with experts and participants, for example by asking questions such as "What information about the options is relevant and important to make this particular decision?", "What is the essence of this decision (what is it really about)?", and "What do the options boil down to?" (Reyna, 2018, p. 2).

In the pension domain, some information is already structured to meet the different information needs of different participants. In Pension 1-2-3, the specifics of the pension scheme are described, including the options a participant has. The information in Pension 1-2-3 is presented in three layers. In the first layer, the most important

information is presented. If participants want to know more, they can proceed to the second layer, which provides additional information. If this information is still insufficient, the third layer can be accessed, which contains very detailed information such as legal documents. According to Nell (2017, p. 12), "the idea behind this design is that readers who have to be informed about their pension are not immediately overloaded with information, but are provided only with the basics – making the information easier to process." In the abovementioned standard model for communication about the decision between a fixed or a variable pension benefit, layered communication is also suggested by the Dutch Association of Insurers (Verbond van Verzekeraars, 2018). The first layer should contain the gist of information about the fixed and variable option. In the second layer, parts of the first layer are described in more detail, giving the participant more insight into the decision between a fixed and a variable pension benefit. The third layer provides in-depth information and a complete overview.

Whereas Pension 1-2-3 is currently provided, evaluation of the 2015 Pension Act shows that some improvements are needed (Van Waveren et al., 2019). Although pension providers appreciate the substantive qualities of Pension 1-2-3, they state that the information does not sufficiently match the needs and characteristics of all participants. Therefore, Pension 1-2-3 – and mainly layers 2 and 3 – is hardly used by participants. According to the pension providers, layers 2 and 3 contain a multitude of documents with general information, which are too detailed and too complex and do not match personal information needs. However, more empirical research is needed to gain insight into the effectiveness of Pension 1-2-3.

To conclude this paragraph, we believe it is important to help pension participants to derive the gist of pension information and to clarify what this means to them. In that way it will convey meaningful, clear and understandable information, thereby supporting participants to make better pension decisions. We have discussed a number of ways to do this, some of which are already used in the pension domain. More research is needed to gain insight into the effectiveness of, for example, the use of verbal quantifiers and layering in pension communication. As discussed, these ways to emphasize the gist of information could be especially beneficial to less-literate and less-numerate participants.

2. Use value clarification methods to help participants determine what matters to them and how this aligns with the pros and cons of the alternatives

Participants in a pension scheme face novel decisions with alternatives the outcomes of which are complex to imagine. Therefore, it is challenging for them to take their values into account when evaluating an alternative to the extent that it suits their

preferences and circumstances. To help participants determine what matters to them and how this aligns with the decision alternatives, value clarification methods (VCMs) could be used. These methods are intended to help people “evaluate the desirability of options or attributes of options within a specific decision context” in order to identify which option they prefer (Fagerlin et al., 2013, p. 2). The thinking is that, by clarifying people’s values, their decisions will be more in line with their personal preferences and circumstances (Fagerlin et al., 2013).

Research in the medical domain has shown that VCMs can support decision making. VCMs are often included in decision tools and are generally placed after the information section (Fagerlin et al., 2013). Feldman–Stewart et al. (2012), for example, tried to determine if adding a VCM had an additional benefit over well–structured information that presents attribute information on the options offered to the patient. The VCM they used was a bar–setting exercise, with one bar for each attribute and a summary bar (see Figure 4). In the example in Figure 4, the effect of the two treatments on bladder functioning pushes the patient to choose radiotherapy, while the effect of the treatments on bowel functioning pushes the patient to choose surgery. Because the push from the patient’s concerns about bladder functioning is stronger than the push from the concerns about bowel functioning, the summary bar – which shows the arithmetic average of the two pushes – tends toward radiotherapy. Feldman–Stewart et al. used decisional conflict, preparation for decision making, and regret as outcome measures; they assessed these after the decision tool was used (i.e., before making an actual decision), after the decision was made, three months after completing the treatment, and twelve to eighteen months after the decision was made. While decisional conflict decreased for both decision tools immediately after

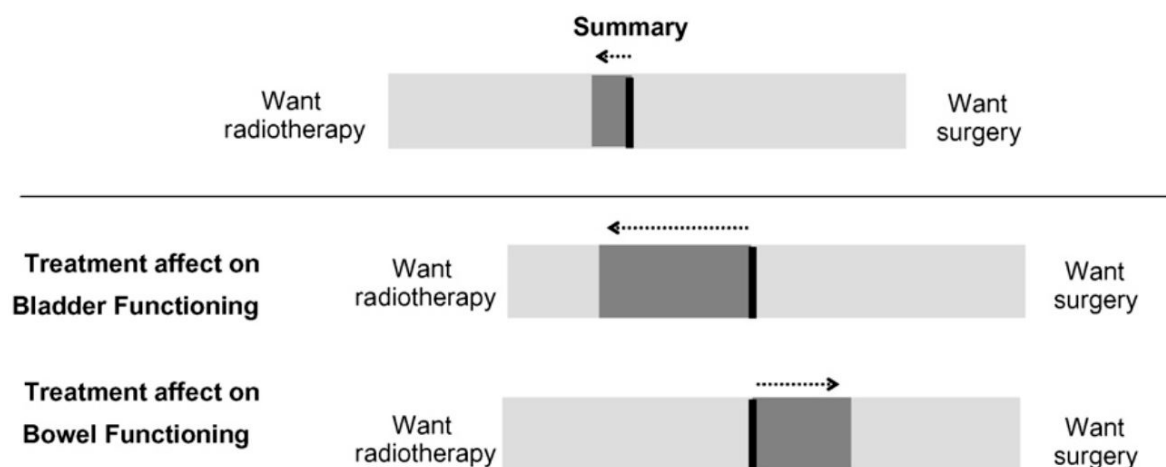


Figure 4. Example from the value clarification method used by Feldman–Stewart et al. (2012).

usage, using the decision tool with the VCM led to patients feeling better prepared for decision making and to less regret. However, this impact only emerged after the decision had been made.

Fagerlin et al. (2013) reviewed thirteen studies that compared the effects of decision tools with and without VCMs. These methods differed in terms of decision context (e.g., treatment, prevention, screening), medium (e.g., paper, computer, face to face), type (e.g., considering pros versus cons, prioritization, rating scales) and dependent variables (e.g., knowledge, decision-making processes, decisional conflict). In general, Fagerlin et al. conclude that inclusion of some, but not all, VCMs led to improved decisions, whereas inclusion led in none of the cases to worse outcomes.

Witteman et al. (2020) noted that, while VCMs are intended to support value-congruent decisions, evaluation as to whether they reach that goal is seldom conducted. Therefore, Witteman et al. identified eleven VCMs and tested their effects on value congruence and decisional conflict across six experiments for the same hypothetical decision – a decision between two different surgical treatments for colon cancer. One treatment had a lower mortality rate, but, compared to the other, also carried an additional risk of a serious complication: a colostomy. In all studies, participants first got explanation of what a colostomy is; subsequently they were offered one of the eleven VCMs (or assigned to a control group) and had to answer one or more questions. The results of Witteman et al. show that commonly used VCMs such as pros and cons lists and rating scales reduced decisional conflict, but did not lead to more value-congruent decisions. Methods that explicitly showed people how well or how

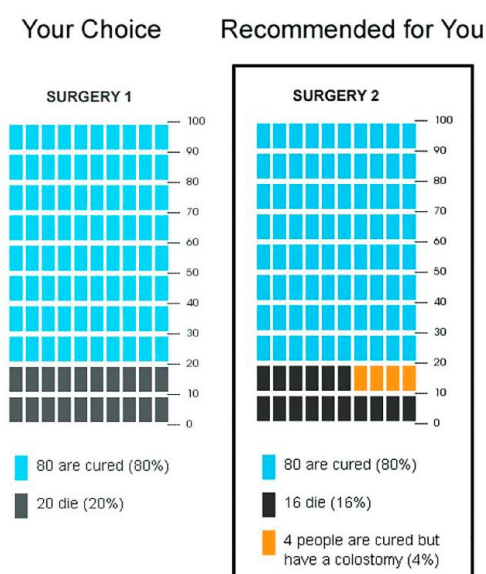


Figure 5. Static display shown after an incongruent choice (Witteman et al., 2020, p. 269).

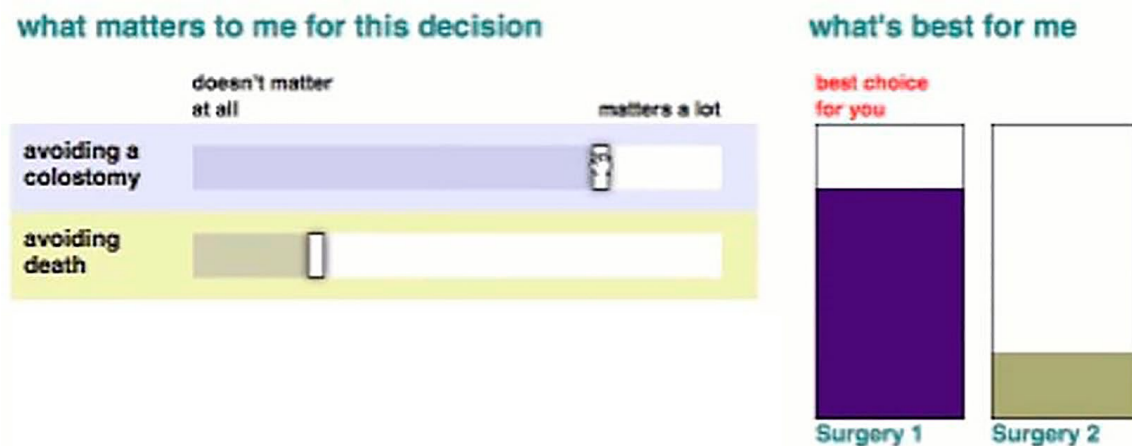


Figure 6. Interactive interface showing the fit between values and options along with the trade-offs inherent in the decision (Witteman et al., 2020).

poorly different options aligned with their values both supported them in making more value-congruent decisions and reduced decisional conflict. Examples of these kinds of methods include a static display shown after making an incongruent choice, which provided people with feedback after their choice did not align with their values (see Figure 5), or an interactive interface showing the fit between values and options along with the trade-offs inherent in the decision (see Figure 6). The static display is better suited for relatively simple decisions the outcomes of which can be depicted in a single pictograph, whereas the dynamic, interactive interface can be applied in more complex decision contexts.

Summarizing, research has shown that VCMs can have beneficial effects in medical decision making. They can improve decision processes, reduce decisional conflict and regret, lead to better prepared decision making and, most importantly, to more value-congruent decisions. However, different VCMs have different beneficial effects. So far, no single method has proven to lead to all beneficial outcomes. Therefore, we need to decide which outcome is desired in order to determine which method is suitable and, subsequently, whether this method could be applied in the particular decision context (e.g., static displays are less suitable to be applied in more complex decision contexts). In addition, it is important to note that VCMs are usually not applied as standalone tools but are included in decision tools (after the information section) or are at least preceded by information about the options or attributes of options.

In the pension domain, some methods that could be labelled as VCMs are already being used. For example, pension fund ABP offers a decision tool for the decision to keep working or retire early, in which participants are asked to rate the importance

of each decision attribute (see Figure 7). And for the decision between a fixed or a variable pension benefit, pension fund APF suggests that participants ask themselves to seriously weigh different attributes of the options (see Figure 8). So far, we did not encounter more dynamic, interactive VCMs. Based on Figure 6, a simplified version of a VCM for the decision between a fixed or a variable pension benefit could look like that in Figure 9; that explicitly shows participants how well or how poorly different options align with their values, and which potentially support participants in making value-congruent decisions and reduce decisional conflict. Because the use of VCMs in the pension domain is still limited, we recommend future research on the use and effectiveness of VCMs for pension decisions.

Mijn pensioengevoel

Ik kijk uit naar mijn pensioen

Niet belangrijk Neutraal Belangrijk

Ik wil meer tijd voor leuke dingen, zoals studie, mijn hobby's, reizen, familie en vrienden.

Mijn geld

Ik kan beter doorwerken, vanwege het geld

Niet belangrijk Neutraal Belangrijk

Ik heb hoge vaste lasten, of wil geld kunnen besteden aan vakanties en andere leuke dingen.

Figure 7. Decision tool offered by ABP for the decision to keep working or retire early.¹


	<p>TIP De beste keuze maken voor uw situatie? Stel uzelf eens de volgende vragen:</p> <ul style="list-style-type: none"> • Vind ik het belangrijk om te weten hoeveel pensioen ik de rest van mijn leven per maand krijg? • Vind ik het belangrijk om te weten hoeveel pensioen mijn partner krijgt als ik kom te overlijden? • Hoe belangrijk is het voor mij dat mijn pensioen meestijgt met de stijgende prijzen? • Kan ik rondkomen als mijn pensioen niet meestijgt met de stijgende prijzen? • Kan ik mijn vaste uitgaven betalen als mijn pensioen omlaag gaat door tegenvallende beleggingen? • Wil ik meer beleggingsrisico lopen in ruil voor een verwacht hoger pensioen? • Maakt het voor mijn totale inkomsten en uitgaven veel uit als ik meer of minder pensioen krijg?
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Figure 8. Questions suggested by APF to encourage participants to consider different attributes of the decision between a fixed or a variable pension benefit.²

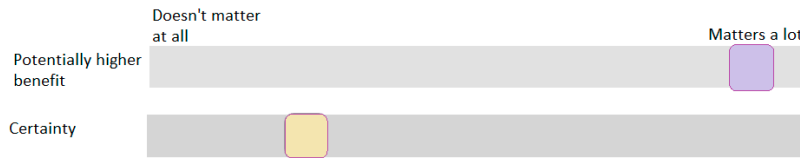
1 <https://werknemer.keuzehulppensioen.nl/>

2 <https://www.pensioenfondsapf.nl/-/media/sites/pensioenfondsapf/downloads-pensioenfondsapf/formulieren/apf-beschikbare-premiereregeling-keuzehulp-stabiele-of-variabele-uitkering.pdf>

What is important to you

Before you make the decision between a fixed or a variable pension benefit, please take a moment to consider what is important to you. Play with the sliders below while you consider your feelings. Remember that there are no wrong answers. Please stay on this page for at least 20 seconds.

What matters to me for this decision



What's best for me

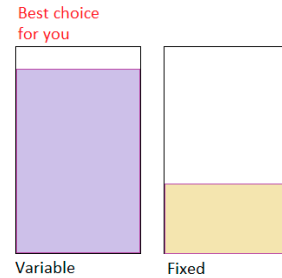


Figure 9. Possible (simplified) interactive VCM showing the fit between values and a fixed or variable pension benefit.

3. Use simple static visual aids for better comprehension of statistics and probabilities

Information intended to support pension decision making often involves statistics and probabilities. This could be problematic, because most individuals find it difficult to process and accurately evaluate statistics and probabilities (Barratt et al., 2005). Research in the medical domain has shown that visual aids could be used to effectively communicate statistical information and probabilities. These aids could be beneficial for decision making in a number of ways, although research indicates that some forms are more beneficial than others.

First of all, Fagerlin et al. (2011) recommend using pictographs (see Figure 10) to communicate risk and benefit information, because a growing body of research suggests that these are better and more quickly understood than other graphical formats.

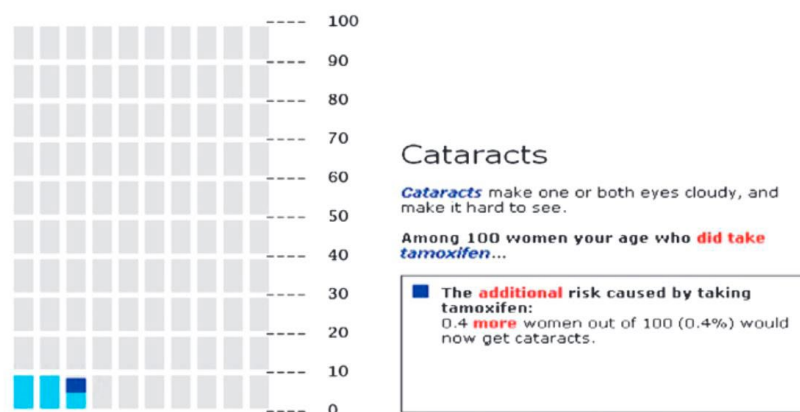


Figure 10. Pictograph to communicate risk information (Fagerlin et al., 2011, p. 1438). This highlights the additional risk of cataracts faced by women taking tamoxifen compared with the baseline risk for women of the same age. Each rectangle represents 1 out of 100 individuals.

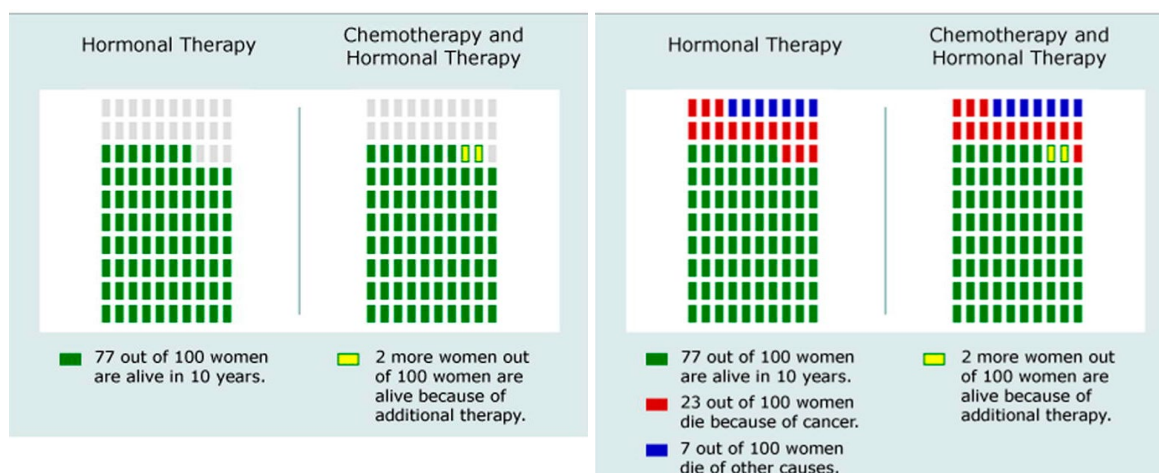


Figure 11. Simpler and more complete pictograph (Zikmund-Fisher et al., 2010, pp. 662, 665).

Second, studies on visual aids show that simpler formats of pictographs (see Figure 11) lead to greater accuracy in reporting chance of survival and are evaluated better (based on three questions such as how well the graph describes the benefits of different additional treatments) than more complete pictographs (Zikmund-Fisher, Fagerlin & Ubel, 2010). Interactive risk graphics can create worse outcomes (respondent burden, distraction from understanding) than static risk graphics (Zikmund-Fisher, Dickson & Witteman, 2011), and animated forms of pictographs do not lead to higher accuracy in terms of knowledge and choice. In fact, most types of animations even lead to worse outcomes compared to static pictographs of the same risks (Zikmund-Fisher et al., 2012).³

Third, visual aids may be especially beneficial to less-numerate and less-literate people. Tait, Voepel-Lewis, Zikmund-Fisher and Fagerlin (2010) examined the understanding of graphical presentations of risks and benefits. Their results show that pictographs are superior to text in promoting understanding (both gist and verbatim), especially for less-numerate and less-literate people. Furthermore, Hawley et al. (2008) evaluated the ability of six graph formats to impart knowledge about treatment risks and benefits and found that pictographs were the best format for communicating probabilistic information, because these led to adequate levels of both gist and verbatim knowledge (based on correct answers on knowledge questions), especially for less-numerate individuals. Finally, Garcia-Retamero and Galesic (2010) investigated whether less-numerate people were more susceptible to framing

³ The beneficial effects of simple visualizations have been shown in other domains as well, for instance the climate domain (Kause, Bruine de Bruin, Fung, Taylor, and Lowe, 2020).

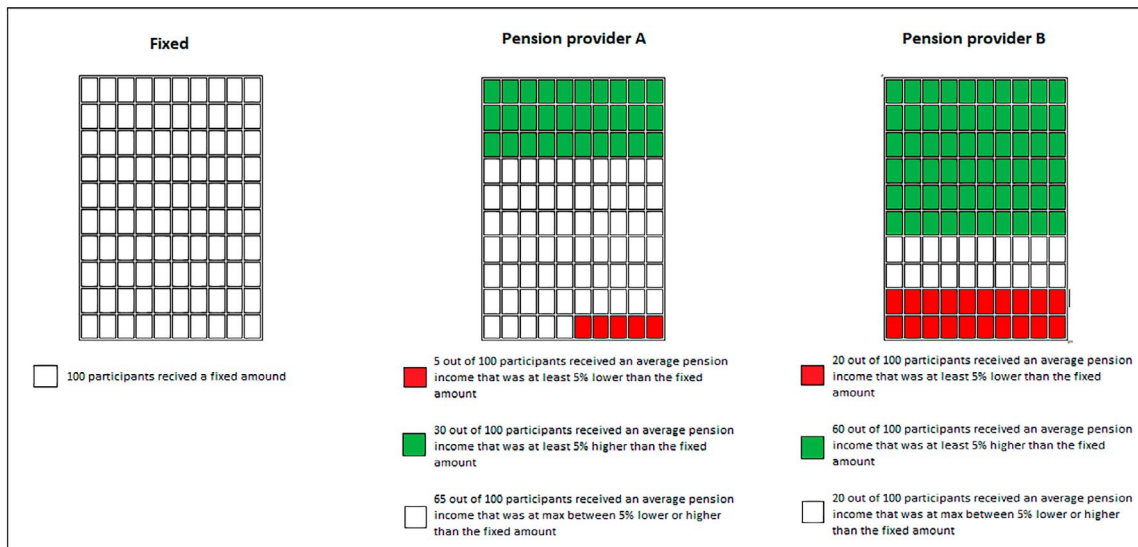


Figure 12. Visual aid to convey statistics for the decision between a fixed or a variable pension benefit, between two providers

and to what extent framing effects could be countered or eliminated by visual aids. Their results showed that less-numerate people were indeed more sensitive to the way choices were presented to them (i.e., framed). Although all visual aids that they investigated (pictograph, horizontal bar graph, vertical bar graph, and pie chart) were helpful, not all were equally effective. They saw larger reductions in framing effects when less-numerate people were provided with pie charts or bar graphs than when these participants received pictographs. However, as we discussed, pictographs offer other advantages (e.g., on understanding and knowledge).

In the pension domain, visual aids are also being used. However, as far as we know, research that examines the effectiveness of visual aids in the pension domain is still limited (e.g., Cox & De Goeij, 2020, on the positive effect of infographics on better investor decisions). In line with what we know from the medical domain, we consider Figure 12 a good example of how statistics could be conveyed. The possible yearly fluctuations (and therefore, risks) for a variable pension benefit vary between pension providers. To compare providers for this decision, a visual aid like the one in Figure 12 could be used. Here we see that 5 out of 100 participants who have a variable pension from provider A received an average pension income that was at least 5% lower than the fixed amount (compared to 20 participants from provider B), 30 out of 100 received an average pension income that was at least 5% higher (compared to 60 participants from provider B), and 65 out of 100 received an average pension income that was only slightly (max. 5%) lower or higher (compared to 20 participants from provider B). However, this visual aid is created in line with knowledge about

visual aids from the medical domain only. We recommend that more research be conducted in the pension domain on the effectiveness of simple static visual aids, because these could have a positive effect on the comprehension of statistics and probabilities, especially for less-numerate and less-literate participants.

3. Discussion

In this paper we have described three lessons learned from the medical domain to effectively support participants in making better pension decisions. First of all, we should help participants to derive the proper meaning of decisions by emphasizing the gist of information to help them clarify what it means to them. Second, we should help participants to determine what matters to them and how this aligns with the alternatives presented. Third, we should use simple static visual aids to help participants better comprehend statistics and probabilities. Emphasizing the gist of information and using simple static visual aids in pension information intended to support decision making could be especially beneficial to less-literate and less-numerate participants.

Limitations

Based on the comparability between pension decisions and medical decisions, we argued that knowledge from the medical domain is relevant for the pension domain. However, we acknowledge that there are differences between decisions in the medical domain and in the pension domain. For instance, decisions in the medical domain are often more urgent than decisions in the pension domain, and they less often include the option of not acting at all. In addition, decisions in the medical domain often evoke stronger emotional reactions, because they have to do with threatening events (e.g., events that affect life expectancy). These differences, however, pertain more to the urgency of the context in which people need to take a decision. Given the long-term financial consequences that pension decisions have, enablement of better pension decisions may be as important – and in some cases even more important – than those made in the health context.

Future

This paper offers new, evidence-based perspectives on the presentation of pension information that is intended to support decision making. A next step could be to conduct interviews with both pension consultants and participants about the considerations, values, and information that are important for pension decisions. These interviews may help identify the gist of different pension decisions. In addition, these interviews can enable identification of which values should be included in a value clarification method. Together with the results from those interviews, the lessons in this paper are well suited for incorporation in pension decision tools. As stated above, research in the medical domain has already shown the beneficial effects of decision

tools on decision making. Different variations of the three lessons and their implementation in decision tools need to be tested, for example the effectiveness of verbal quantifiers and layering in pension communication, the effectiveness of different VCMs, and the effectiveness of different visual aids. This may be done in isolation or in conjunction (e.g., conveying the gist by using visual aids, using a visual aid in a VCM). Together, this will contribute to the further improvement of pension decisions, which is beneficial to both participants and society as a whole.

References

- Autoriteit Financiële Markten. (2016). *Leidraad Wet verbeterde premieregeling*.
- Barratt, A., Edwards, A., Trevena, L., McCaffery, K., Woloshin, S., Bekker, H., ... Charvet, A. (2005). Section C: Presenting probabilities. In A. O'Connor, H. Llewellyn-Thomas and D. Stacey (Eds.), *IPDAS Collaboration Background Document* (pp. 11-16).
- Blalock, S. J. & Reyna, V. F. (2016). Using fuzzy-trace theory to understand and improve health judgments, decisions, and behaviors: A literature review. *Health Psychology, 35*(8), 781-792. <https://doi.org/10.1037/hea0000384>
- Cox, J. G. (2020). Verbal quantifiers and communicating painkiller side effect risk. *Health Communication, 35*(11), 1349-1358. <https://doi.org/10.1080/10410236.2019.1632402>
- Cox, R. & de Goeij, P. (2020). Infographics and financial decisions. *Netspar Design Paper, 148*.
- Fagerlin, A., Pignone, M., Abhyankar, P., Col, N., Feldman-Stewart, D., Gavaruzzi, T., ... Witteman, H. O. (2013). Clarifying values: an updated review. *BMC Medical Informatics and Decision Making, 13*(2), S8. <https://doi.org/10.1186/1472-6947-13-S2-S8>
- Fagerlin, A., Zikmund-Fisher, B. J., & Ubel, P. A. (2011). Helping patients decide: ten steps to better risk communication. *Journal of the National Cancer Institute, 103*(19), 1436-1443. <https://doi.org/10.1093/jnci/djr318>
- Feldman-Stewart, D., Tong, C., Siemens, R., Alibhai, S., Pickles, T., Robinson, J., & Brundage, M. D. (2012). The impact of explicit values clarification exercises in a patient decision aid emerges after the decision is actually made: Evidence from a randomized controlled trial. *Medical Decision Making, 32*(4), 616-626. <https://doi.org/10.1177/0272989X11434601>
- Fraenkel, L., Peters, E., Charpentier, P., Olsen, B., Errante, L., Schoen, R. T., & Reyna, V. (2012). Decision tool to improve the quality of care in rheumatoid arthritis. *Arthritis Care & Research, 64*(7), 977-985. <https://doi.org/10.1002/acr.21657>
- Garcia-Retamero, R. & Galesic, M. (2010). How to reduce the effect of framing on messages about health. *Journal of General Internal Medicine, 25*(12), 1323-1329. <https://doi.org/10.1007/s11606-010-1484-9>
- Hawley, S. T., Zikmund-Fisher, B., Ubel, P., Jancovic, A., Lucas, T., & Fagerlin, A. (2008). The impact of the format of graphical presentation on health-related knowledge and treatment choices. *Patient Education and Counseling, 73*(3), 448-455. <https://doi.org/10.1016/j.pec.2008.07.023>
- Hoeken, H., van der Geest, T., van der Goot, M., Hornikx, J., Jongenelen, M., & Kruikemeier, S. (2011). De rol van begrijpelijke taal in een digitale context: Ontwikkelingen op de domeinen Leven Lang Leren, complexe financiële producten, bestuur en politiek, en gezondheid. *Tijdschrift voor Taalbeheersing, 33*(3), 266-286. https://doi.org/10.5117/TVT2011.3.DE_R410
- Kause, A., Bruine de Bruin, W., Fung, F., Taylor, A., & Lowe, J. (2020). Visualizations of projected rainfall change in the United Kingdom: An interview study about user perceptions. *Sustainability, 12*(7), 2955. <https://doi.org/10.3390/su12072955>
- Meppelink, C. S., Smit, E. G., Buurman, B. M., & van Weert, J. C. (2015). Should we be afraid of simple messages? The effects of text difficulty and illustrations in people with low or high health literacy. *Health Communication, 30*(12), 1181-1189. <https://doi.org/10.1080/10410236.2015.1037425>
- Nell, M. L. (2017). *Multichannel pension communication: An integrated perspective on policies, practices, and literacy demands* (Doctoral dissertation, Utrecht University).
- Peters, E., Dieckmann, N., Dixon, A., Hibbard, J. H., & Mertz, C. K. (2007). Less is more in presenting quality information to consumers. *Medical Care Research and Review, 64*(2), 169-190. <https://doi.org/10.1177/10775587070640020301>

- Reyna, V. F. (2008). A theory of medical decision making and health: Fuzzy Trace Theory. *Medical Decision Making*, 28(6), 850–865. <https://doi.org/10.1177/0272989X08327066>
- Reyna, V. (2018). When irrational biases are smart: A fuzzy-trace theory of complex decision making. *Journal of Intelligence*, 6(2), 29. <https://doi.org/10.3390/jintelligence6020029>
- Smith, S. G., Raine, R., Obichere, A., Wolf, M. S., Wardle, J., & von Wagner, C. (2015). The effect of a supplementary ('gist-based') information leaflet on colorectal cancer knowledge and screening intention: a randomized controlled trial. *Journal of Behavioral Medicine*, 38(2), 261–272. <https://doi.org/10.1007/s10865-014-9596-z>
- Stacey, D., Légaré, F., Lewis, K., Barry, M. J., Bennett, C. L., Eden, K. B., ... Trevena, L. (2017). Decision aids for people facing health treatment or screening decisions. *Cochrane Database of Systematic Reviews*, (4). <https://doi.org/10.1002/14651858.CD001431.pub5>
- Tait, A. R., Voepel-Lewis, T., Zikmund-Fisher, B. J., & Fagerlin, A. (2010). Presenting research risks and benefits to parents: Does format matter?. *Anesthesia & Analgesia*, 111(3), 718–723. <https://doi.org/10.1213/ANE.0b013e3181e8570a>
- Van Waveren, B., Kuin, M., & Duysak, S. (2019). *Evaluatie Wet Pensioencommunicatie*. Regioplan. <https://www.regioplan.nl/wp-content/uploads/2020/01/19020-Eindrapport-Evaluatie-Wet-pensioencommunicatie-Regioplan-11okt2019.pdf>
- Verbond van Verzekeraars. (2018). *Handleiding Standaardmodel 'vast-variabel pensioen' voor pensioenverzekeraars en PPI's*. <https://www.verzekeraars.nl/media/5586/handleiding-standaardmodel-december-2018.pdf>
- Witteman, H. O., Julien, A.-S., Ndjaboue, R., Exe, N. L., Kahn, V. C., Fagerlin, A., & Zikmund-Fisher, B. J. (2020). What Helps People Make Values-Congruent Medical Decisions? Eleven Strategies Tested across 6 Studies. *Medical Decision Making*, 40(3), 266–278. <https://doi.org/10.1177/0272989X20904955>
- Wolfe, C. R., Reyna, V. F., Widmer, C. L., Cedillos, E. M., Fisher, C. R., Brust-Renck, P. G., Weil, A. M. (2015). Efficacy of a web-based intelligent tutoring system for communicating genetic risk of breast cancer: A fuzzy-trace theory approach. *Medical Decision Making*, 35(1), 46–59. <https://doi.org/10.1177/0272989X14535983>
- Zikmund-Fisher, B. J., Dickson, M., & Witteman, H. O. (2011). Cool but counterproductive: Interactive, web-based risk communications can backfire. *Journal of Medical Internet Research*, 13(3), e60. <https://doi.org/10.2196/jmir.1665>
- Zikmund-Fisher, B. J., Fagerlin, A., & Ubel, P. A. (2010). A demonstration of "less can be more" in risk graphics. *Medical Decision Making*, 30(6), 661–671. <https://doi.org/10.1177/0272989X10364244>
- Zikmund-Fisher, B. J., Witteman, H. O., Fuhrel-Forbis, A., Exe, N. L., Kahn, V. C., & Dickson, M. (2012). Animated graphics for comparing two risks: A cautionary tale. *Journal of Medical Internet Research*, 14(4), e106. <https://doi.org/10.2196/jmir.2030>

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Network for Studies on Pensions, Aging and Retirement

This is a publication of:
Netspar

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www.netspar.nl

February 2021