Expert Views

Towards a Better Understanding of Insurance Purchase Behavior through a Discrete Choice Experiment

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Executive Summary

Imagine you are a consumer who just started your life insurance purchasing journey. During the process, you will most likely face questions such as:

- Which product types and benefit features are you looking for?
- For which features would you be willing to pay more or less?
- What aspects of the coverage are you indifferent to? Which ones are essential?

The life insurance purchasing journey can be lengthy and complex. You will often be asked to make many decisions among dozens of options. Which factors influence you to select one over others? Why does one person pick one option while another person in an apparently similar situation chooses the other? Is there a scientific reason behind it?

To address these questions, SCOR's Behavioral Science team in partnership with the Université Paris Nanterre launched a research initiative to look deeper into the mechanism of how and why people make specific decisions when it comes to purchasing life insurance.

Introducing Discrete Choice Experiment

To gain insights into which life insurance product features are perceived to be most important to customers, the study applied the Discrete Choice Experiment (DCE) methodology. The DCE is an experimental method that allows researchers to quantify the value respondents place on the attributes of goods and services relative to other attributes. The DCE further enables researchers to explore whether and to what extent they are willing to trade off less of one attribute for more of another. Over 1,000 people were surveyed, with a diverse pool of participants representing the general French population, self-employed individuals, and current and prospective customers of a SCOR client.

Benefits of the study

Innovation is a key priority of many insurers. This study's findings are valuable to insurers who want to gain new and deeper insights into consumers' life insurance purchase behavior, especially for those who are involved in the life insurance product development and marketing lifecycle.

Examples of the benefits include:

- **Product design**: The analysis identifies socio-demographic and behavioral variables that influence the preferences observed for different life insurance features, facilitating tailored customer-centric product design.
- **Target market segmentation**: Understanding different preferences of specific sub-groups will enable initiatives to be effectively targeted at appropriate segments of the population.
- **New market expansion**: The study offers insights into purchasing behavior of the underinsured population, such as self-employed. This could lead to market expansion, which could also contribute to narrowing the insurance protection gap.
- **Insurance sector crossover application**: While the focus of the study was life insurance, this methodology can also be applied to property and casualty (P&C) businesses.

Initial findings

The initial high-level analysis of the results for the general population panel shows many interesting findings. Examples include:

- People prefer the lump sum benefit payment over multiple income payments.
- Individuals are fine with filling in a health questionnaire but prefer to opt-out of medical examinations and tests.
- Many people value the addition of accident benefit and survival benefits, with a 50% reimbursement of premiums and funeral expenses tested.
- Consumers are willing to pay more for an insurance product that includes a free annual medical check-up.
- Individuals might expect a reduction in premium to choose a policy with an application that delivers a personalized prevention program.

More granular-level analysis is currently in progress, which will explore further the preferences of different panel segments and their willingness to pay for different product features. The final report is expected to be released later in 2023.

SCOR's Behavioral Science team looks forward to sharing more learnings from this exciting experiment.

Introduction and background of the study

Discrete Choice Experiment (DCE) is a survey method that allows researchers to quantify the value respondents place on the attributes of goods and services relative to other attributes and to explore whether and to what extent they are willing to trade off less of one attribute for more of another. The survey elicits preferences by requesting survey respondents to state their choices across several alternatives in a series of so-called choice tasks.

SCOR partnered with the Université Paris Nanterre to conduct a DCE on understanding insurance demand. One of SCOR's client companies in France also partnered in the experiment, contributing a panel of their existing and prospective policyholders to study their appetite for different features of life insurance products.

Benefits of using a DCE

Studying consumer life insurance purchasing behavior through a DCE can support providing customer-centric product design and effective marketing strategy. The results of the DCE help us to better understand what features and attributes of a life insurance policy are most influential in their decision-making process.

A DCE, for example, can test the appetite for new product features as it allows the estimation of the propensity of individuals to pay an insurance premium for the different features and to trade-off between them. It also can enhance an insurer's target market segmentation strategy as it provides better insights into the different preferences of specific sub-groups.

This experiment can support reducing the protection gap by gaining insights into which life insurance features might compel underinsured consumers to buy insurance. Tackling the issue from this angle differs from the usual context where the protection gap is often discussed in terms of understanding why people who could benefit from insurance coverage do not buy insurance products. The self-employed individuals included in this study are an example of an underinsured group, and this research helps to understand their preferences to support the design of a product tailored to be attractive to them.

Methodology and experimental design

The DCE methodology is based on the premise that the choices people make are influenced by their preferences for the alternatives available to them. Often those alternatives comprise multiple attributes, and a person's ultimate choice will be guided by the value they place on each attribute relative to the others.

In a DCE, survey respondents state their preferences across several alternatives in a series of choice tasks. A choice task is composed of a set of alternatives (options) characterized by various attributes. By varying the levels of the attributes across the alternatives in the choice tasks, the responses collected through a DCE allow researchers to determine what shapes the preferences of individuals and the relative importance of attributes. The inclusion of premium as one of these attributes enables additional analysis of willingness to pay for each of the features of the life insurance policy.

The experiment was based on 20-year term life insurance contracts. The attributes and levels used to describe the insurance policies in the SCOR/ Nanterre study are shown in Figure 1.1.

Figure 1.1 – Attributes & levels

Attribute	Levels
Benefit payment method	Specifies how benefits are paid. Two cases are possible: • Lump sum: the beneficiary receives a single payment of €100,000 at the time of death • Income: the beneficiary receives a payment of €10,000 plus interest each year following the death for 10 years
Health information	Indicates the health information that is requested when subscribing to the contract. Three cases are possible: • No information • Declarative questionnaire: You must give information about your state of health, your family history, your chronic conditions and diseases, your consumption behaviours (tobacco, alcohol, ...) • Medical examinations and medical tests: You need to do blood tests, urine tests and an electrocardiogram
Prevention Program	Specifies the type of prevention program included in the contract. Three cases are possible: • No prevention program • Annual medical check-up: offered every year for the duration of the contract • Personalized prevention program: This program is accessible through a health and wellness application that offers personalized information and recommendations.
Additional Benefits	Indicates the additional benefits that you or your beneficiary can receive during the 20 years of the contract. Three cases are possible: • No additional benefits • Payment of a daily fee for hospitalization (€50) if you are hospitalized for more than 3 days • In case of death by accident, payment of an additional €100,000 to the beneficiary. This amount is paid in addition to the amount provided for in the contract.
Survivors' Benefits	Indicates the additional benefits that you or your beneficiary can receive after the end of the contract (20 years) if you are alive. Three cases are possible: • No benefits • Reimbursement of 50% of the premiums paid: They are reimbursed to you if you are alive once the 20 years have elapsed. • Financing funeral expenses: €5,000 will be paid to your family at the time of your death to finance the funeral expenses
Monthly Premium	Gives the amount you need to pay to the insurance company every month. Three cases are possible: • €26 • €37 • €48

During the experiment, participants were presented with 12 choice pairs, with each choice pair describing two different policies. Participants were free to select "neither policy" instead of one of the options if neither policy appealed to them.

Figure 1.2 shows an example of a choice pair included in the experiment.

Figure 1.2 Example choice

Q. Which of these two contracts do you prefer?
A. ( ) Policy A ( ) PolicyB ( ) Neither

Insurance Policy Features	Policy A	Policy B
Benefit payment	Lump sum	Income
Health information	No information	Declarative questionnaire
Prevention Program	No prevention program	Personalized prevention program
Additional Benefits	No additional benefits	Payment of a daily fee for hospitalization (€50)
Survivors' Benefits	Financing of funeral expenses	No benefits
Monthly Premium	€48	€37

Data collection

The experiment was conducted in late 2021 with 1,109 participants comprised of:

- 900 participants broadly representative of the French population
- 100 self-employed participants to provide additional information for this often under-insured sub-group
- 109 policyholders and prospective customers of the French insurance company partnering with SCOR for this study.

In addition, participants were asked questions about demographic characteristics, existing insurance contracts, attitudes to risk, and perception of their health.

The questionnaire was structured as follows:

1. Socio-demographic questions
2. Discrete Choice Experiment (DCE): 12 rounds of choices between two insurance contracts each time
3. Questions on insurance contracts: potential beneficiaries, contracts to be taken out, preference between fixed and variable premiums
4. Preferences - self-reporting and a game:
    a. Risk attitude: self-reporting and choice between 5 lotteries
    a. Impatience: self-reporting and the choice between immediate and deferred gains
    a. Altruism: self-declaration and choice of an amount to give
5. Health Questions: Perceived health status, smoking, and perceived probability of survival

Modeling

The initial completed analysis was based on McFadden's random utility theory, using K.E. Train's methodology[1] to estimate a conditional logit model from the choices of contracts.

Utility is an economic term referring to the total satisfaction received from consuming a good or service. The McFadden approach follows that the utility an individual gets from an alternative is given by not only observed factors that determine choices but also unobserved factors, also referred to as random components. As all components are not deterministic, it is through the analysis of the probability of each alternative being chosen over another that researchers can estimate the utility placed on different characteristics.

Results

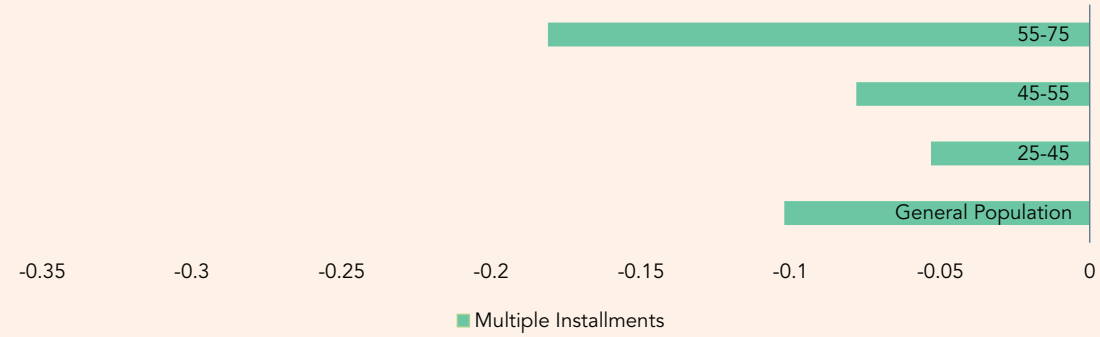
The results are discussed and illustrated below, showing charts with the coefficients observed for the considered attribute level relative to a reference that is always given a coefficient of 0. Negative coefficients reflect negative utility for the considered attribute, i.e., less valued than the reference attribute, and vice versa for a positive coefficient. Non-significant results are represented in the charts with lighter shaded bars.

The initial analysis of the survey results for the general population panel on the primary attributes yielded the following observations on consumer preferences:

1. Benefit payment method

Figure 2.1 shows the coefficients observed for multiple installments relative to a lump sum. The coefficient for the lump sum payment is 0 as this is the reference in this analysis. The multiple installment coefficients are negative as survey participants showed a strong preference to receive benefits in the form of a lump sum payment. This preference is observed across all age groups, with older ages more strongly averse to multiple installments.

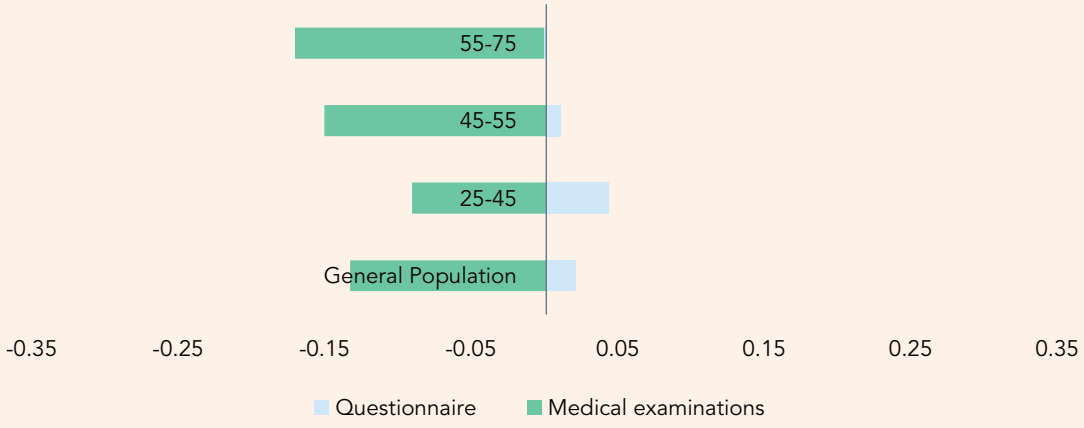
Figure 2.1: Benefit payment method (installment vs. lump sum) by age



2. Level of medical underwriting

Figure 2.2 shows that individuals were indifferent between not having to provide any health information and having to complete a questionnaire. However, they did not like the idea of having to perform medical tests, with this dislike stronger for the older group surveyed.

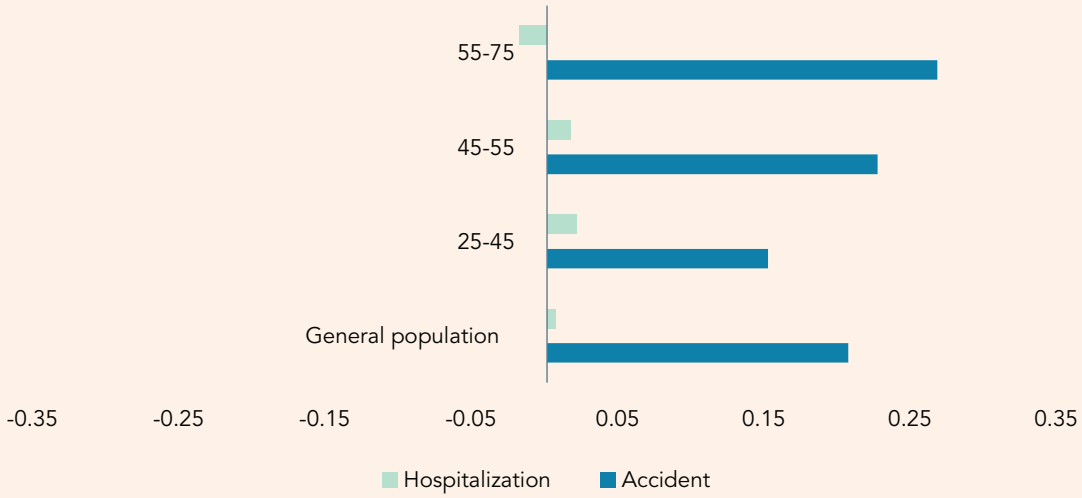
Figure 2.2: Level of medical underwriting (Questionnaire and Medical Exams vs none required) by age



3. Additional benefits

The inclusion of an additional accident benefit was very positively valued (Figure 2.3). The availability bias may be able to explain the high utility placed on this benefit. This bias leads us to disproportionately rely on information which most easily comes to mind. As tragic accidents are often in the news, individuals may perceive the risk of an accident to be greater than it actually is. This would lead them to more positively value accident benefits and be willing to pay more for them.

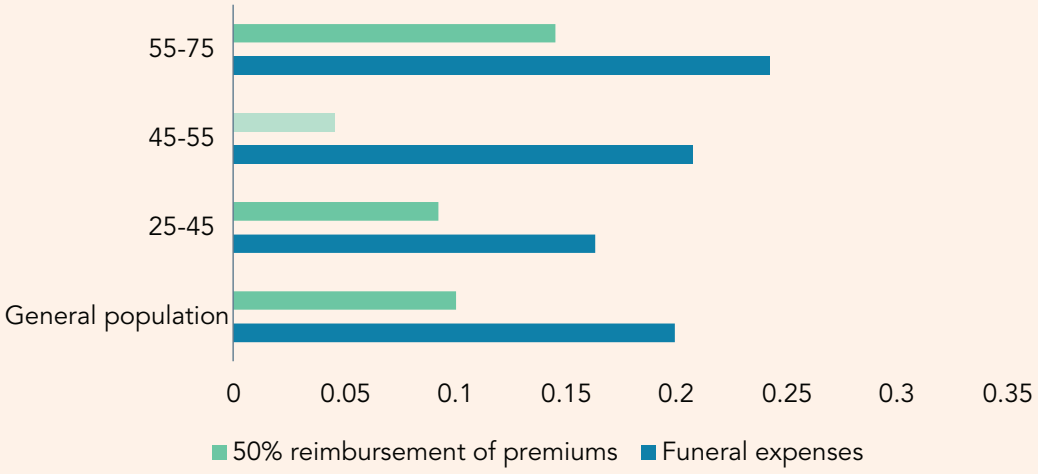
Figure 2.3: Additional benefits (accident and hospitalization vs. none) by age



4. Survival benefits

Survey participants displayed a strong appetite for survival benefits (Figure 2.4). Both financing of funeral expenses and a 50% reimbursement of premiums displayed strong positively significant utility, highlighting that survival benefits such as these are desirable features. Individuals find the reward of getting something back should they survive the term of the policy very attractive.

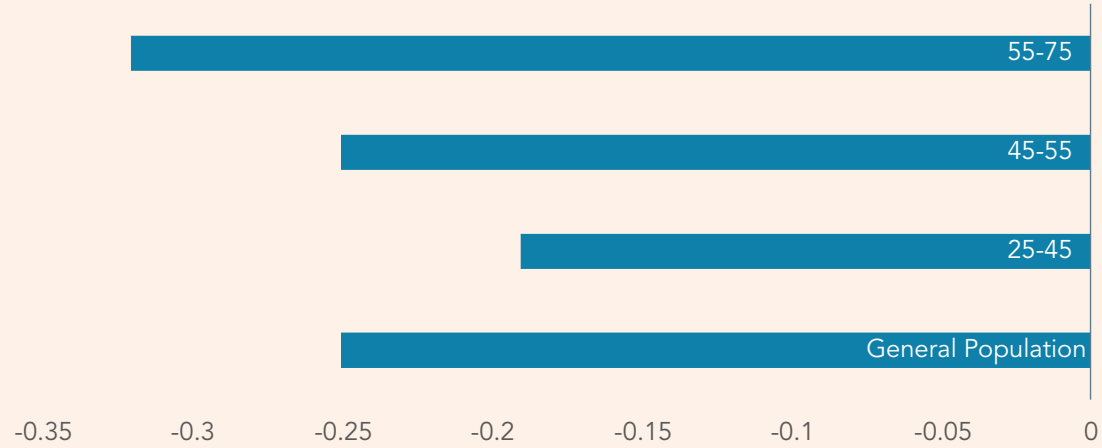
Figure 2.4: Survival benefits (50% reimbursment of premiums and funeral expenses vs. none) by age



5. Amount of monthly premium

Figure 2.5 shows for the range of premiums tested the effect on utility per €10 increase in monthly premium. Higher premium amounts were observed to have a negative effect on individuals' utility. This negative effect is higher for the older group.

Figure 2.5 : Effect of higher premiums on individual's utility by age

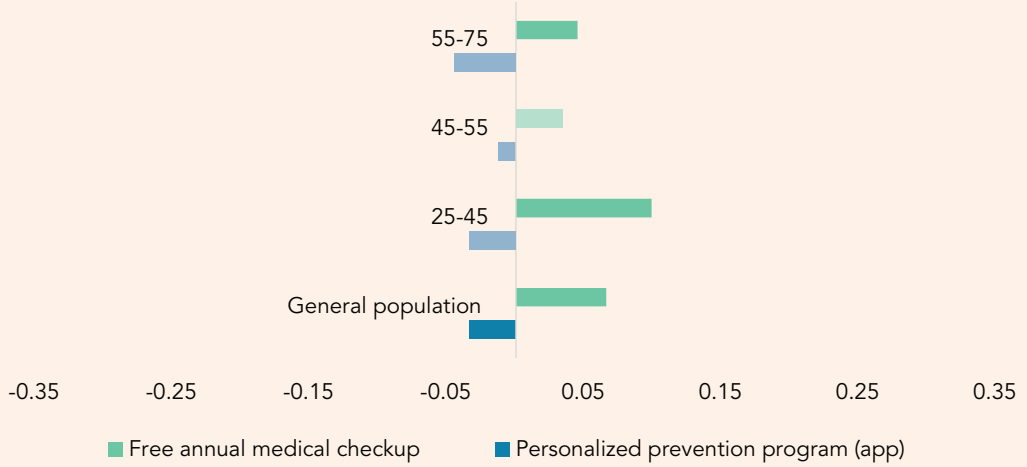


6. Prevention programs

Testing the attitude to prevention programs revealed a strong interest in receiving a free medical check-up annually for the duration of the contract. The interest in a free medical check-up was seen most strongly among the youngest ages (25-45), with a positive utility also observed at older ages. However, this significant interest was not shared by those in the 45-55 age range. This interest was also only observed for those individuals who have not received medical treatment in the last five years.

Individuals did not show the same appetite for a prevention program in the form of a personalized prevention app that offers personalized information and recommendations, indicating a discount in premium might be expected for participating in a well-being app (Figure 2.6). The coefficient was negatively significant, although not at an extreme level. As can be seen in the chart below, no particular age group age displayed significant negative utility towards the app. However, stratification of the results by other features suggested that the coefficient was significantly negative for individuals who have not received any medical treatment in the last five years and for "active" individuals, particularly those in the private sector.

Figure 2.6: Prevention programs (free medical check - up and personalized prevention app vs. none) by age



7. Summary

Individuals in the oldest age group tended to show some of the strongest preferences. They were observed to have the most negative utility towards income, having to undergo medical exams, and higher premium amounts. The strongest positive utility was observed by these individuals towards a funeral expense survival benefit and an additional accident benefit.

The least number of significant results were observed for individuals in the middle age group. They were the only age group which did not display a significant positive utility towards free annual medical check-ups and 50% reimbursement of premium if they are still alive at the end of the 20-year term.

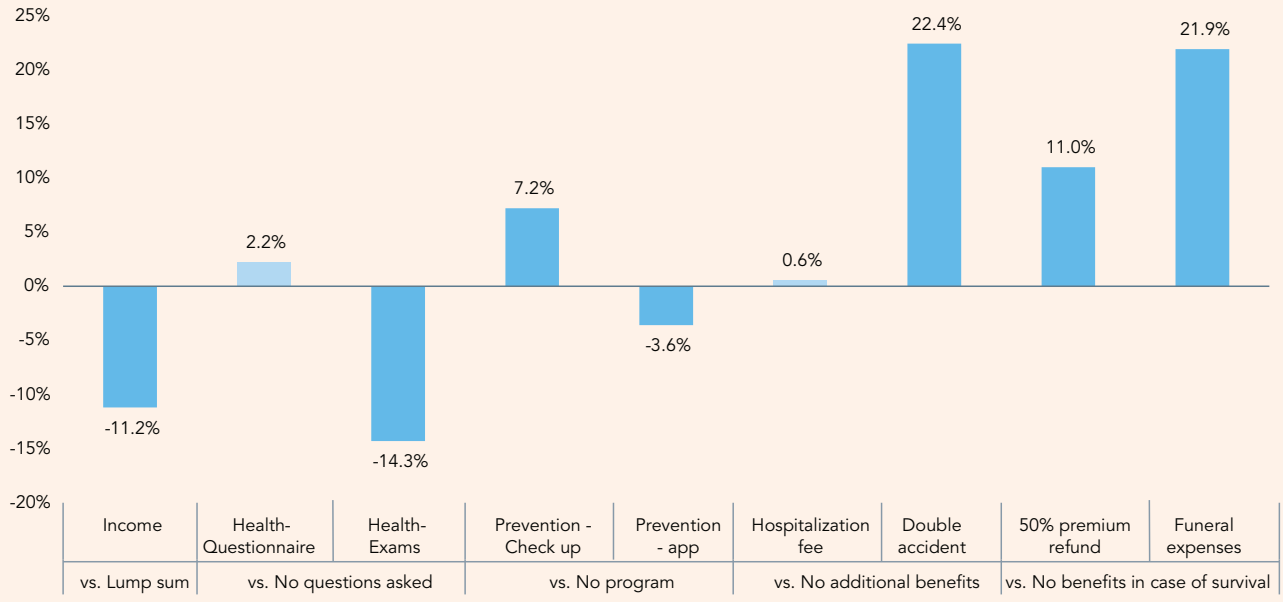
Those in the youngest age group valued a prevention program in the form of free annual medical check-ups more than any other age group. While the youngest individuals also do have significant preferences towards the benefit payment method, having to complete medical tests, an additional accident benefit, and higher premium amounts, these preferences are not as strong as those observed for individuals in both older age groups.

Marginal willingness to pay (MWTP)

Figure 3.1 displays the marginal willingness to pay (MWTP) calculated for different levels of attributes. These attribute levels are shown at the bottom of the chart along with the reference attribute level. The percentages displayed below are the estimated increase or decrease in monthly premium that individuals would be willing to pay for the inclusion of the feature in a policy when compared to the reference level, or the amount less that would have to be paid for them to accept the feature. Non-significant results are represented in the chart with lighter shaded bars.

The estimations of MWTP could be compared with the cost required to include such features, allowing an assessment to be made on whether the feature is practically viable during product development.

Figure 3.1 – Marginal willingness to pay vs reference level (% change in monthly premium)



Conclusion

Studying and understanding consumer life insurance purchasing behavior through a DCE method delivers unique and valuable insights into consumer behavior and preferences, leading to a customer-centric product design and an alternative marketing strategy to reach target market segments more effectively. Such insights can greatly benefit the life insurance industry in an environment where innovation ranks as a top priority of many insurers.

This report covers only the initial study findings. Further analysis is in progress, which the Behavioral Science team look forward to sharing later in 2023.

References

1. K. E. Train, Discrete choice methods with simulation, Cambridge University Press (2009, sec. edition)

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