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From Reactivity to Proactivity: The Use of Behavioural Data in Life and Health Insurance

Abstract

Traditional life and health insurance compensates after the fact, acting reactively in response to adverse events. Today, the rise of digital technologies enables insurers to intervene proactively, monitoring policyholders' behaviour and incentivizing lifestyle changes intended to reduce risks before they materialize. This article argues that the shift from reactivity to proactivity marks a profound transformation in the temporal logic and social role of insurance. Based on empirical research, we examine the actuarial, normative, and societal implications of proactivity in life and health insurance. We situate these developments within broader debates on quantification and the quantified self, showing how individual self-tracking practices are embedded into institutional feedback loops that make unprecedented surveillance possible, but also create new forms of personalisation, solidarity, and responsibility. Proactivity, we contend, is not simply prevention by other means, but an innovative reconfiguration of uncertainty management that both disciplines and empowers policyholders through data-driven incentives and recommendations.

Keywords: Life and Health Insurance; Proactivity; Self-Tracking; Behaviour Change; Personalisation; Data Solidarity.

Introduction

WHAT KIND OF ASSURANCE does insurance provide? Life insurance does not make policyholders live longer, and health insurance does not make them healthier than the uninsured. Unlike vaccines, insurance does not directly affect possible future outcomes. Insurance has traditionally

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been a paradigmatic reactive institution, grounded in a logic of collective uncertainty and mutual solidarity: it does not primarily prevent illness or accidents but promises financial compensation afterwards, should adverse events occur.

Recent developments in digitalisation, however, may be disrupting this model. Insurers now track, analyse, and feed back behavioural and biometric information in real time, encouraging single policyholders to change their lifestyles in ways that might reshape their future risk profile. What emerges is not simply prevention, but a new *proactive* logic [Afrank *et al.* 2023; Miller 2025]: instead of waiting for damages to occur or trying to mitigate them in general, insurance now acts in a personalised way on individual policyholders, prompting them to adopt behaviours that should reduce the probability and severity of their specific damages. This article examines how proactivity is implementing an unprecedented feedback loop between organisations and their customers, thereby redefining the role of insurance in a move from compensating losses to governing behaviour [Cultu *et al.* 2019: 5; Generali Vitality 2023: 15; see also Anchen *et al.* 2020: 19].

Prevention has always played a key role in the actuarial discussion and has always been a desideratum for companies across all branches of private insurance. In the mid-20th century, for example, US life and health insurance companies promoted the neoliberal idea of “self-made” security through systematic prevention campaigns [Horan 2021]. These campaigns were primarily based on advertising and educational material (textbooks, brochures, pamphlets, along with articles in national and local newspapers and magazines) [Horan 2021: 45ff.]. Sending health-related notices to policyholders (e.g. “Remember to relax!”) was also meant to encourage them to *self-monitor* their own physical and psychological health. The Visiting Nurse Service programme introduced by the Metropolitan Life Insurance Company constituted an early form of insurance *surveillance* [44] aimed at collecting data—nurses kept detailed records of their patient visits—which were subsequently used by statistical departments to refine risk classification [48].

In the 1990s, North American companies selling third-party liability motor insurance policies argued that the insurance industry should strive to become a “loss prevention” institution [Ericson *et al.* 2003: 271]. To implement this change, they planned campaigns aimed at “stopping claims before they happen” [271], which also implied making drivers “responsible for preventing [road accidents] through education about risks to be avoided and taken” [272]. The stated goal of these campaigns was the “behaviour modification of insured persons” [285], but the

means available at that time proved so inefficient that in the end the industry more pragmatically went back to the traditional actuarial mechanism of subsidisation: good risks offset bad risks, and everyone is covered independently from their personal behaviour.

Current proactivity programmes sensibly differ from this traditional prevention. Through digital technologies, the insurance industry can now continuously track and monitor the behaviour of policyholders, collecting individual-related information that makes it possible to implement proactive initiatives. In life and health insurance, in the last twenty years insurance companies have been offering policies that use app-based recommendations and financial incentives to encourage single policyholders to engage in personalised preventive actions [John Hancock and Vitality 2023].¹ In this understanding, proactivity is an innovative form of personalised prevention for at least three main reasons:

- 1- Proactive programmes do not target the entire population or segments of it, but the *individual*.² In life and health insurance, proactivity does not merely involve informing policyholders about general risk factors associated with certain lifestyles, but establishes a targeted strategic interaction with the purpose of prompting single policyholders to adopt the specific behaviour that is most beneficial for them.
- 2- Proactivity is based on the use of digital technologies, unavailable in previous insurance preventative initiatives, that track and monitor individual behaviour producing a new type of data—*behavioural data*—which are processed through advanced algorithmic and computer-based actuarial techniques.
- 3- Proactivity is based on a circular exchange of information—a *feedback loop*—between insurance companies and their policyholders. This app-mediated feedback loop is crucial, as we will see, to engage policyholders into behavioural changes aimed at improving their lifestyle. The weekly personalised recommendations policyholders receive on their app, the setting of hyper-personalised thresholds, and the respective financial rewards are very different from health-related pamphlets and general advice like “Remember to relax!”

¹ In the 2010s, the European health insurance industry began promoting the transformation of insurance policies into “prevention policies” intentionally designed to promote healthy behaviours and lifestyles [DUBOIS 2011].

² With many similarities to the current debate surrounding a proactive approach in precision medicine [HOOD and FLORES 2012; IMURA 2013; DOHERTY *et al.* 2020].

Our empirical research highlights how wearables, apps, financial incentives, and ultra-personalised thresholds and recommendations translate actuarial practices into everyday self-tracking and self-monitoring strategies. The “pro” in proactivity can thus be understood in the Latin sense of “*promotion*”: not an intervention that directly achieves a result, but one that promotes or enables (*pro*) an individual activity (*motus*) that can probably lead to it.

The disruptive character of this promotion is that it is based on a continuous monitoring and a daily interaction³ between the insurance company and its policyholders, marking a turning point in risk classification, behavioural governance, and the role of insurance as a social institution. We understand this disruptive change in dialogue with sociological debates on quantification and the quantified self. In this context, insurance appropriates techniques of self-measurement initially tied to personal empowerment and reorients them toward collective risk management and behavioural governance. The result is a novel articulation of surveillance and solidarity that blends data-based feedback loops with financial incentives. Besides complex issues of privacy and self-discipline, this raises questions about responsibility, inequality, and the future of risk pooling and spreading.

The next section summarizes previous sociological research regarding insurance coverage, personalisation, and the use of self-tracking technologies in life and health insurance. In the subsequent section, we outline the data and methods used in our empirical research. In the fourth section, we describe in detail the structure of proactive life and health insurance policies. The subsequent sections present the complex system of personalisation currently being experimented in insurance, and the consequences of these practices at the actuarial level and for society as a whole. After a general discussion of the results of our investigation, we conclude with some observations on the effects of proactive insurance on prevention, as well as on insurer–policyholder relations and the forms of social solidarity.

Previous research

Over the past decade, sociological research into the personalisation strategies implemented by insurance companies—and specifically into life and health insurance based on the use of self-tracking technologies

³ Insurance companies speak of “touchpoints”.

and behavioural data processing techniques—has intensified. In this section, we engage with the relevant literature and briefly outline its main findings.

The personalisation of insurance coverage has been the subject of extensive research from both a technical–actuarial and a sociological viewpoint. The use of predictive algorithms to process behavioural data generated by self-tracking technologies has led many observers to predict a *disruptive* change in the insurance industry, bringing with it both opportunities and significant risks [Braun and Schreiber 2017]. Sociological research shows that the aspiration to personalise insurance products on the basis of increasingly granular risk profiles is by no means new within the sector [Krippner and Hirschman 2022; Krippner 2023]. At the same time, scholars have acknowledged that the potential inherent in digital technologies—and the corresponding access to biometric and behavioural data that can be processed through sophisticated computer-based actuarial procedures—represents a genuine novelty that cannot be overlooked, and whose possible consequences remain largely unexplored [Corlosquet-Habart and Janssen 2018; Frary 2019; Cevolini and Esposito 2022; Charpentier and Vamparys 2025].

Important studies have focused on the relationship between the personalisation of premiums and the role of financial mutuality that constitutes the crucial solidarity function of insurance [Braun and Nürnberg 2015; Cevolini and Esposito 2020]. This issue is closely related to a lively and complex discussion regarding the problem of fairness in behavioural insurance policies [Meyers and Van Hoyweghen 2018; Barry 2020]. Personalisation, in fact, entails discrimination, and a premium that may be fair from a behavioural perspective is not necessarily fair from an actuarial standpoint. The findings of this increasing body of research have not led to a shared consensus.

On one side, many sociologists and actuarial mathematicians have argued that the promise of personalising insurance policies has not been fulfilled. Rate-making techniques remain largely based on traditional actuarial procedures, and the much-anticipated “revolution” in the insurance field has never materialised [Meyers 2018; Barry and Charpentier 2020; François and Voldoire 2022; Charpentier and Vamparys 2025]. On the other side, other researchers have pointed out that insurance companies may in fact be less interested in the personalisation of premiums—and therefore in actuarial procedures producing discriminatory outcomes—than is commonly assumed. The real novelty, they suggest, may lie in the personalisation of the relationship between insurers and insured persons for preventive purposes, and in the resulting

difficulty to balance insurance protection and the responsabilisation of policyholders [Guillén and Cevoli [2021](#); Presset and Tanninen [2025](#); Cevoli and Esposito [2026](#)].

With regard to the use of self-tracking technologies in behavioural life and health insurance, the research conducted by Hugo Jeanningros and Liz McFall was particularly instructive in the early stages of our work. These studies take as their empirical reference model the behavioural insurance programme developed by the South African insurance company, Discovery Limited, with its Vitality policy. The structure of this programme and its penetration into the French insurance market were investigated in depth by Hugo Jeanningros [[2020](#)]. His analysis shows that one of the crucial problems still concerns the level of engagement among policyholders, which is clearly disappointing compared with the company's expectations, and does not exceed the threshold of 30% of eligible customers [see also Jeanningros [2021](#)].

The same insurance programme was analysed in collaboration with Liz McFall in a comparative perspective with the UK market, also taking into account the different regulatory constraints across countries. The central thesis advanced by Jeanningros and McFall [[2020](#), esp.: 68 and 70] is that insurance companies' investments in behavioural programmes are explained less by an effective improvement in the lifestyle—and thus the health—of their policyholders than by an alternative form of brand promotion in an increasingly competitive insurance market.

This thesis is also endorsed by Jathan Sadowski *et al.* [[2024](#)]. Like Jeanningros and McFall, Sadowski *et al.* [[2024](#), esp.: 230ff.] focus on the Vitality policy. Their empirical research is based on ten formal interviews and more than one hundred informal conversations conducted between 2022 and 2023 at major industry conferences during ethnographic fieldwork. The authors' analysis is rather critical: Sadowski *et al.* [[2024](#): 233] share the view that practices of personalisation and incentive programmes contingent on policyholders' behavioural change are “primarily branding tactics”, while the supposed hyper-personalisation and actuarial discrimination “is still more aspirational than actual”. The entire prevention programme might therefore be “an ideological façade” designed to increase the company's market share, although this does not rule out the possibility that behavioural interventions and tracking technologies may become more effective in the future [Sadowski *et al.* [2024](#): 246; see also Sadowski [2024](#)].

Particularly relevant to our topic is the research conducted by Tanninen *et al.* [[2021](#)] on two Finnish insurance companies offering self-tracking technologies and coaching programmes within life insurance policies.

Their analysis largely deflates the narrative of the “digital disruption” of the insurance sector and instead points to the technologically mediated relationship between insurance companies and their policyholders. Self-tracking initiatives and access to behavioural data, they argue, may lead to discriminatory practices in rate-making technologies and to a form of “dataveillance” (i.e. surveillance based on data) to the detriment of personal autonomy and self-determination [see also Tanninen *et al.* 2022a]. That this risk does not yet appear particularly alarming depends largely on the limited success of the behavioural life and health insurance policies offered by the companies examined.

Our work connects this strand of research on insurance with recent work in organisation studies and science and technology studies that analyse the organisational effects of digital technologies as ongoing processes of adaptation, negotiation, and situated use [Barley 1986; Orlikowski 1992; 2000]. Digital technologies reshape organisational routines, but they are simultaneously reshaped by the practices, expectations, and heterogeneous responses of their users.

Our findings extend this perspective in an important direction. Rather than simply analysing the implementation of digital technologies within insurance, we focus on proactivity by examining the implementation of an algorithmic feedback loop between organisations and their customers. Insurance companies know that meaningful behavioural change requires sustained long-term engagement. At the same time, they are aware that such engagement depends on users’ familiarity with the app and their motivation to continuously use the self-tracking devices associated with it. As a substantial body of research has shown [Ledger and McCaffrey 2017; Kangovi and Asch 2018; Spender *et al.* 2019; Hovard 2023; Cevolini *et al.* 2025], the main challenge is to counteract the high rate of customer drop-off in the use of self-tracking devices and the consequent decline in engagement with the app. The challenge, in other terms, is to achieve sustained long-term engagement in behavioural improvement by fostering both in-app engagement and the regular use of self-tracking devices.

Because different users interact differently with the same app and have a different degree of familiarity with self-tracking devices, the effective implementation of these technologies depends on a continuous recalibration of the interaction between predictive algorithms and policyholders. As our empirical research shows, insurance companies do not merely deploy proactive technologies; they continually redesign thresholds, incentives, communication strategies, and recommendations in response to the behaviour generated by the very systems they have introduced.

Proactivity thus emerges as an ongoing process of (re)calibration, in which the programs of insurance companies and the practices of policy-holders recursively reshape one another. The key concept underpinning this process of continuous recalibration is “personalisation”.

Data and methods

Our analysis draws on scholarship in the sociology of insurance and of quantification, STS, actuarial studies, on close reading of scientific publications and insurance industry reports, and on semi-structured interviews with selected representatives of our field of inquiry. After a thorough investigation of the sector and several preliminary meetings, we contacted a diverse range of stakeholders, who provided information on various relevant aspects of insurance innovation.

Between June 2023 and April 2024, we conducted 12 interviews with leading figures in the field. In more detail, we were able to meet 1 CEO and co-founder of a North American software provider, 1 head of digital innovation at a European software provider, 1 chartered insurance practitioner, 2 insurance business researchers, 1 academic scholar, 1 co-CEO of a world-leading private insurance company, 1 actuary of the same world-leading private insurance company, 2 heads of digital innovation from European public sickness funds,⁴ and 2 heads of digital innovation from European private insurance companies. Only two software providers declined to be interviewed. Examining our transcripts, we judged the material to be sufficiently comprehensive to capture the breadth of perspectives on the phenomenon. Additional interviews would likely have resulted in redundancy rather than novel insights.

We used two different questionnaires, one more exploratory, the other more detailed, which we adapted to the professional profile of the person interviewed (for example, the questions we asked software providers were significantly different from the questions we asked insurance companies). Each questionnaire contained four or five questions, and the interview was scheduled to last 60 minutes. The interviews were

⁴ In some European countries (e.g. Germany), health insurance is compulsory but can be provided either through statutory health insurance or through private insurance companies. In the former case, public sickness funds act as third-party

payers and are strictly bound to a subsidising premium-setting system. Only employees and the self-employed above a certain income threshold can opt for private health and life insurance coverage.

recorded with the consent of the interviewees, then transcribed and thoroughly scrutinised by the authors of this article.

We opted for a qualitative methodology without relying on dedicated software. Our analysis followed a thematic and comparative logic, enabling a systematic and rigorous approach to the interpretation of the data. The first stage consisted of in-depth reading of the interviewees' responses, aimed at familiarising ourselves with the content of the transcripts and identifying recurring themes and concepts. In the second stage, we developed a set of analytical categories (e.g. "lifestyle", "behavioural change", "engagement") that were both grounded in the empirical material and connected to the theoretical framework developed in this study. The third stage involved linking these categories to the identification of recurring thematic patterns (e.g. "engagement" is closely connected to "behavioural change") and comparing these patterns across the different interviewees, in order to identify convergences and divergences among the perspectives that emerged during the interviews. In the final stage, we synthesised the results of our thematic and comparative exploration, considering not only the internal coherence of the arguments advanced by the interviewees, but also their external coherence with the current state of the market for proactive life and health insurance policies. The project received ethics approval from the Bielefeld University Ethics Committee and the European Research Council.

Our empirical investigation takes the insurers' standpoint as a reference and is focused on the main players engaged in proactive life and health insurance today: software providers, public sickness funds, and private insurance companies. We did not examine the complementary perspective of policyholders. While such research would be highly informative, it requires a substantially different design, both in scale and in methodological approach. We hope that in the near future our findings can be set alongside those of empirical studies that focus specifically on the standpoint of policyholders.

The structure of proactive life and health insurance policies

Our interviewees provided us with a wealth of information on the complex structure of proactive life and health insurance policies, which, combined with the data available in the literature and public insurance reports and white papers, gave us a comprehensive picture of how

healthcare engagement programmes work.⁵ In this section, we describe in detail the tools adopted, the data collected and their use, the feedback loop between insurers and policyholders, the various types of incentives, and the regulatory framework.⁶

The policyholder is supposed to download an app and, in some cases, pay a monthly fee for it. The app performs several functions: it tracks the policyholders' biometric values and daily behaviour (e.g. how many steps they walk, how many calories they consume, how many hours they sleep), and records important aspects of their lifestyle (e.g. gym membership, shopping in healthy grocery stores) and the health checks they undergo throughout the year (e.g. dental health check, mammogram, flu vaccine, etc.). For each of these elements, policyholders earn points which are added up to generate a score. The score defines the status of the insured, from four to five depending on the software providers: the higher the score, the healthier the customer's lifestyle is assumed to be. The app also notifies policyholders as to how many and what rewards they may enjoy based on their actions, their score and status, and sends recommendations to improve their lifestyle (more on this later).

A kind of *feedback loop* is thus established between policyholders and the insurer: policyholders consensually disclose their data to the insurance company, the insurance company in turn extracts information from these data and feeds it back to the policyholders to prompt them to improve their lifestyle (and possibly extend their life expectancy). The feedback loop, in other words, is used to build "actionable insights" [Tanninen *et al.* 2022b: 195] that are crucial for making proactivity effective.

However, this feedback loop only works if policyholders are *engaged*. Engagement can be understood in a broad sense or in a narrow sense [Cevolini *et al.* 2025]. In the first case, it refers to the policyholders' willingness to participate in the well-being programme, for example by attending a gym or carrying out regular health checks. In the second case, engagement concerns the regular interaction of the insured with the app. This is referred to as *in-app engagement*. As we will see below, both of these forms of engagement are difficult to achieve: they require significant resource investment and the application of behavioural science by insurance companies.

⁵ A valuable literature review is offered by TANNINEN [2020]. See also BRAUN and NÜRNBERG [2015]; RALPH [2017]; FALKOUS and CALLAWAY [2018]; TANNINEN *et al.* [2022b].

⁶ We outline the applications investigated in our empirical research in a comparative

manner, so as to find the common logic and the general features embedded in these applications despite their dissimilarities. For NDA reasons, we are not able to specify which applications we are dealing with, nor go too deep into detail.

Within the insurance industry there is also consensus that rewards, particularly financial incentives, are a “vital mechanism for driving programme participation and ongoing engagement” [Vitality 2022: 10]. Among the rewards, many insurance companies include the offer of a fitness device (e.g. Apple watch, FitBit watch, Garmin watch, etc.) that must be paired with the app. The fitness device is usually offered free of charge as long as the insured meet certain monthly targets (e.g. taking a certain number of steps each day). The pairing of the tracking device with the app is crucial for generating behavioural and biometric data that help insurance companies improve the policyholders’ risk profile.

The structure of incentives is relatively complex. Insurance companies distinguish between *enabling rewards* (e.g. the fitness device we mentioned, or a substantial discount on gym membership) and *contingent rewards* (those which depend on the achievement of goals and, consequently, on the policyholders’ score). They also distinguish between *short-term* and *long-term* benefits. Policyholders may receive a small reward (e.g. a Caffè Nero coupon by Vitality) if they meet their weekly goals [Hajat *et al.* 2019]. At the end of the month or the end of the year, they may also receive more substantial financial rewards if they achieve or maintain a high score.⁷

In addition to these technical and financial factors, which are shared with some variation by the majority of proactive policies, there is a multiplicity of regulatory and operational issues that make the global landscape highly differentiated. First of all, a distinction must be made between public sickness funds and private insurance companies. The former are embedded in national social security systems and must consequently meet much more stringent regulatory constraints. This translates concretely into the absence of underwriting freedom.⁸ Private insurance companies doing business in community rated environments⁹ face similar regulatory constraints, but in countries such as the UK, where there is no subsidizing mutuality requirement, these companies are allowed to underwrite. In these cases, behavioural data can be used to adjust the insurance rate to the individual risk profile.

⁷ In some programmes, policyholders can get up to 50% of their premium back every five years.

⁸ Insurance companies can underwrite when they are allowed to adjust the policy premium to the risk profile of their policyholders (and, in the worst case, to deny insurance coverage).

⁹ As an interviewee explained, a community-based rate-making system implies that everyone (be they 20 years old or 65 years old) is entitled to take out insurance at the same price. Policyholders pay the *same* premium even if their risk exposure is *different* (Interview B.11, 23 April 2024).

It is also important to consider the regulatory framework, which varies significantly regarding the use of personal data. Whereas in European countries, since 2018, the General Data Protection Regulation (GDPR) has become effective and enforceable by law, in non-European countries such as the US the use of personal data is more liberalised, making a huge difference for companies that can access and use these data. Another crucial factor is the cultural attitude of individuals, who may be more or less reluctant to share their personal data, even when doing so could be to their benefit.

A further important distinction, again with regard to data, is that between *clinical* data and *claims* data. The availability of clinical data plays a key role in predictive practices, but not all clinical data are immediately and preemptively accessible. Insurance companies usually only access clinical data when the insured files a claim, to ensure that it is not fraudulent, and must confine themselves to drawing retrospective inferences from that data. Despite their high predictive value, clinical data remain difficult to access and do not directly impact proactive programmes.¹⁰

Personalisation, personalisation everywhere

What is going on in the insurance industry selling proactive life and health insurance policies? The increasing use of tracking devices and access to behavioural data have sparked enormous enthusiasm in the insurance industry, primarily because they suggest the possibility of using personalised predictions to trigger positive behaviour change and make people healthier. Rather than simply calculating the loss probability of pools based on statistical variables such as gender and age, insurance companies with access to biometric and behavioural data can gain insight into the lifestyle of policyholders to profile them and thus better assess their risk exposure.

One interviewee illustrates this profiling practice by comparing actuaries to someone aiming an arrow at a target. The target has many rings, and when shooting, you can be “on-target” or “off-target”. The largest ring represents mortality, which is easy to hit because everyone dies. Smaller rings represent causes of death (e.g. diabetes, cardio-vascular

¹⁰ An interviewee pointed out that this is an issue especially for life insurers. It is less of an issue for private health insurance and public

sickness funds, which usually have access to clinical data (Interview B.11, 23 April 2024).

diseases, stroke, etc.), which are much harder to hit.¹¹ In this context, profiling helps actuaries “get the directionality” (Interview B.6, 1 March 2024).

Our research shows that personalisation takes place on multiple levels, significantly complexifying the structure of the interaction between insurer and policyholders. In addition to risk assessment, the proactive prevention programme is also implemented differently for individual policyholders. The persons we interviewed told us that prevention programmes are not merely personalised, but *ultra-personalised*. Whereas the first era of prevention programmes could be described as “one size fits all” (Interview B.9, 12 April 2024), now insurance companies claim to be really

addressing every individual because they are able to “predict their [personal] risk” (Interview B.9, 12 April 2024).

Based on that, insurance companies can offer ultra-personalised proactive coaching programmes and rewards:

If, for example, we are predicting that you are at high risk of type 2 diabetes, we are going to say to [you], you need to get your blood sugar checked four times a year, not once, and you should visit your GP and you should also do your blood pressure and your blood sugar and we will reward you for those visits to a GP (Interview B.9, 12 April 2024).

Prevention thus becomes doubly personalised, because the insurance company not only targets the insured who are most at risk but also customizes the recommended health checks according to individual profiles.

Personalised recommendations also concern fitness. A case in point is the number of steps policyholders are supposed to walk every day. In this case, the frequency of interactions (touchpoints) between insurer and insured changes: while health-related recommendations can be sent monthly or even quarterly, those concerning physical activity are sent weekly or even daily. Here, the personalisation of prevention becomes extremely complex.

Even if there is strong evidence that exercise, particularly walking, has a beneficial effect on individual health [WHO 2018; McCrea and Farrell 2018], there is no solid evidence on the recommended number of daily steps for each individual [Banach *et al.* 2023]. One of our interviewees referred to the “10,000 steps paradox” (Interview B.4, 7 February 2024).

¹¹ This description corresponds to the classic distinction between “accuracy” and “precision” [e.g. TAYLOR 1999: 128f.].

This figure was a marketing stunt launched by a Japanese firm selling a pedometer during the 1964 Tokyo Olympic Games [Lee *et al.* 2019]. It was later adopted by insurance companies as a standard benchmark for many years. Recently, however, scholars have discovered that optimal mortality benefits are achieved with an average of 7,500 to 8,000 daily steps [Vitality and London School of Economics 2024]. Beyond that point, benefits diminish. In the segment of over 65 years old, for example, 6,400 average daily steps suffice to reduce mortality by 63%.

As a consequence, insurance companies are experimenting with forms of “dynamic step goal”, “re-adjusted” based on individual characteristics and individual behaviour (Interview B.6, 1 March 2024). This dynamic implies incremental improvements, leading policyholders to gradually reach 7,000 steps—which is regarded as the optimal number for mortality improvement, provided the behaviour is habitual and consistent. This progression could occur, for example, from 2,000 to 5,000 steps, then from 5,000 to 6,000, and finally to 7,000 steps.

An actuary explains, in this respect, that if a person’s average daily steps count increases by more than 800 steps a day in any week (e.g. if they are currently at 3,000, their target becomes 4,000 each day in the following week every), that is too much of an increase, and the drop-off rate is too high (Interview B.11, 23 April 2024). For this reason, their company decided to keep the increment below 800 steps. There is evidence that a 200-increment works very well, and the company had more people responding (Interview B.11, 23 April 2024).

Insurance companies are therefore testing *personalised thresholds*. Threshold-values have been investigated in risk sociology [Beck 1986; 1994] as distinctions (e.g. above/below 7,000 average daily steps) that are used not so much to indicate real-world data, but rather to self-produce information that enables observers to guide their decisions [Luhmann 1991: 177; 1997: 197ff.]. Thresholds inevitably need to be set as contingent decisions, because one can never know with certainty which value really makes the difference (7,000 steps, 6,780 steps or 7,400?). By referring to the threshold-value, however, policyholders may know, for example, that they are walking too little and decide to make an effort to walk more. With the threshold-value, the insured can observe themselves—and the more personalised the value, the more effective the observation is.

The threshold-value is thus a fundamental tool for the self-tracking and self-monitoring practice of policyholders, and serves to produce a “safety equivalent” [Luhmann 1997: 209]: even if those who walk a lot are not sure of eradicating all cardio-vascular risks, they nevertheless

know that they took care to at least mitigate these risks. The threshold-value, then, has a kind of “self-calming effect” [Luhmann 1997: 202].

In this respect, the ultra-personalisation that insurance companies talk about could be described as a form of *third-order personalisation*: not only is the prediction adjusted to the individual risk profile (1st order), but the types of recommendations (2nd order) and the timing of communications (3rd order) are also tailored to individual policyholders and their personal behaviour.

A further crucial personalisation factor is *incentives*. Here, too, one can speak of ultra-personalisation because the right to receive a reward depends on achieving a goal, and the goal itself depends on the threshold set for each policyholder. This means that two policyholders starting from *different* thresholds can receive the *same* reward if they achieve the goal set by the insurance company. One person we interviewed told us that a well-known Japanese company is experimenting with the segmentation of prevention programmes, distinguishing policyholders into age groups (e.g. under 35, 35-65, over 65). For each of these groups, both goals and rewards are tailor-made (Interview A.1, 16 June 2023). Another interviewee pointed out that the way people react to incentives is not consistent across countries. In some markets, some incentives work; in others they do not. For insurance companies, this means they have to customize the reward system to fit the local environment (Interview B.11, 23 April 2024).

In addition to all these structural levels, the customisation of goals and rewards is also crucial for personalising policyholders’ *engagement*. Engagement is one of the main challenges in proactive prevention programmes. Many scholars show that the engagement rate is rather low, in any case lower than the level sought by insurance companies [Hajat 2016; Ledger and McCaffrey 2017; Spender *et al.* 2019; Jeanningros 2021]. The challenge for companies therefore lies in “routinizing [policyholders’ engagement] practices” [Jeanningros 2021: 59] so that they become a new healthy habit [Spender *et al.* 2019: 21].

An interviewee told us that a crucial advancement of their company was implementing

cycles of engagement and rewards and using [those cycles] to drive engagement (Interview B.9, 12 April 2024).

In particular, the same interviewee explained that

one of our biggest breakthroughs some years ago was moving from, you know, monthly or yearly cycles of points and rewards to much more frequent, so to weekly, so this idea that will give you a goal for the week and it will be more and

more personalised now, as I said, but if you hit your goal for the week you get a small reward [...], and this has been a huge game changer (Interview B.9, 12 April 2024).

To be more precise, one must distinguish *dis-engagement* from *not-engagement*. In the first case, we are talking about people who start to engage but then, for whatever reason, drop out. In the second case, we refer to people who do not even start the programme, even though they pay the monthly fee and the rewards are available to them. According to one interviewee, the latter category (i.e. people who never become engaged in the first place) is even bigger than the former and is

the key target for the hyper-personalisation (Interview B.9, 12 April 2024).

Another interviewee confirmed this challenge by pointing out that

our focus for the moment is on the unengaged, people who do not exercise (Interview B.11, 23 April 2024).

It is difficult, on the other hand, to understand why people do not engage. The assumption is that these people face barriers. For example, for someone who is very overweight, exercising may be difficult and even embarrassing (Interview B.11, 23 April 2024). To solve this problem, companies are experimenting with strategies based on gradually increasing rewarded challenges for not-engaged policyholders. The company sets lower thresholds (e.g. not abruptly from 0 to 10,000 steps, but more softly from 0 to 2,000 steps) and then gradually raises the bar by rewarding policyholders each time they achieve the target.¹² As one interviewee explains, the assumption is that it

could be a big breakthrough with the unengaged that you start with much lower targets, and then slowly move people up [...] based on their own propensity to change their behaviour (Interview B.9, 12 April 2024).

Communication between insurers and policyholders is also important and is being personalised, including by experimenting with the use of AI for targeted preventative notifications (Interview B.1, 19 June 2023). The head of digital innovation of one insurance company told us that

to increase engagement, we send personalised messages and notifications (Interview B.2, 21 September 2023).

Another interviewee told us that

we are also very attentive to how we communicate that. So, we are going to do a lot of analysis on what works for this population. How do you speak to

¹² Underlying this experimentation is the idea of “habit laddering”, which is a pillar of behavioural science [VITALITY and LONDON SCHOOL OF ECONOMICS 2024: 46].

older people versus younger people, what sort of rewards appeal to them? (Interview B.11, 23 April 2024).

The ultra-personalisation insurance companies speak of should be understood as the combination of all these forms of personalisation—personalisation of threshold-values, personalisation of challenges and goals, personalisation of recommendations, personalisation of rewards and financial incentives, personalisation of communication. None of these personalising initiatives is in itself hyper-personal—that comes from the way they are systematically integrated. This also means that the interactions between the insurance company and policyholders, and the app itself which makes this interaction possible, look somewhat different for each policyholder. In the words of an interviewee, “all of that gets personalised over time” (Interview B.11, 23 April 2024). Another interviewee speaks of a “dynamic app”: the latter is different for different policyholders and, for the same policyholder, different every month and every week (Interview B.9, 12 April 2024). Proactive life and health policies are based on this practice of *personalising predictions*—in the twofold sense that predictions are tailored to individuals and that predictions are used to personalise prevention programmes.

Consequences of proactive insurance for insurance companies

What do our data show about the way insurance companies use this complex technical-actuarial personalisation of health policies? What consequences do proactive prevention programmes have on insurance companies and their business models?

Like all technical innovations that have a broad social impact, digital technologies employed for insurance purposes have elicited both enthusiasm and scepticism. In the specific case of self-tracking technologies embedded within life and health insurance policies, many sociologists have argued that their use is driven more by a form of brand promotion¹³ than by a genuine commitment to helping policyholders improve their lifestyles (to live *longer* and *healthier lives*, as the insurance rhetoric claims). Since the insurance industry is profit-driven, and profit depends on maintaining a sufficiently large pool of policyholders to offset losses (bad cases) with gains (good cases), it is understandable that insurance

¹³ BRODESS *et al.* [2022: 4] speak of “improved brand image”.

companies are interested in promoting their brand. We, on the other hand, are interested in understanding why, despite all these socio-technical challenges, insurance companies invest substantial capital in digital technologies. What kind of *rationale* underlies these investments (commonly referred to as *InsurTech*)? How might this rationale affect the social role of insurance as a fundamental institution of mutuality in modern society?

Digital technologies are often regarded as a tool that could potentially reverse *information asymmetry*, the situation where one party in an insurance transaction has more or better information than the other. Typically, this occurs when the insured have more knowledge about their own risk profiles than the insurer [Rothschild and Stiglitz 1976]. Techniques for tracking individual behaviour could lead to a situation where the insurer knows more about the insured than the insured know about themselves [Siegelman 2014; Lasry 2015; Interview B.5, 1 March 2024].

Our findings, however, show that this description overlooks the complexity of the structure of proactive policies, where insurers return to their policyholders the information extracted from their data. Rather than a flip of information asymmetry, what emerges is a feedback loop that circulates information in an unprecedented manner, significantly transforming the relationship underlying the insurance agreement. The issue of engagement, for example, acquires unprecedented relevance, as we have seen above.

Another crucial issue is *adverse selection*, which occurs when individuals who are at higher risk of making claims are more likely to purchase insurance [Rothschild and Stiglitz 1976; Albrecher 2016]. The lack of information of insurance companies on prospective policyholders leads them to offer coverage also to individuals who are more at risk than actuarially estimated [Baker 2003]. As a result, the company's loss ratio worsens and policyholders in the same pool have to pay higher premiums.¹⁴ Companies try to mitigate adverse selection. In the case of life and health insurance, this means attracting the healthiest individuals. What impact do proactive programmes have on adverse selection? Do behavioural policies mainly attract low-risk individuals, or do they actually help policyholders lower their risk? In other words: is it the healthiest who participate in the programme, or do individuals become healthier by participating in the programme?

It is not easy to provide a definitive answer to these questions. Many interviewees confirm that proactive policies have a positive *self-selection*

¹⁴ Underlying the problem of adverse selection is, in a sense, a paradox. In their ideal world, insurance companies would only want to insure those who do not need insurance (that is, those who will never make a claim).

effect (Interview B.2, 21 September 2023; Interview B.8, 27 March 2024; Interview B.9, 12 April 2024). One interviewee even speaks of “double [positive] self-selection”: proactive policies are more attractive to young people, and also more appealing to those who take care of their health and are already inclined towards a healthy lifestyle (Interview A.1, 16 June 2023). The result could be merely a cherry-picking effect [Cather 2018; Hovard 2023], and one of our interviewees asks whether insurance companies really want healthier people or rather healthier portfolios: is it philanthropic interest that leads them to offer products with rewards or simply a marketing strategy to attract healthy people (Interview B.5, 1 March 2024)?

Insurance companies themselves are interested in understanding whether their proactivity programmes succeed in incentivising behavioural change. An interviewee reports that there is statistical evidence that

the programme itself improves behaviour independent of selection (Interview B.9, 12 April 2024).

Is this true? What evidence do we have to support this? Here we must distinguish between countries such as the UK that allow underwriting [Jeanningros and McFall 2020], and community rated environments, where everyone is entitled to life and health insurance at the same price regardless of their individual risk profile. In the first case, the mechanism of risk pooling and spreading follows the principle of risk transfer: the premium paid by policyholders is proportional to the risk they transfer to the insurance company. Under these conditions, where good cases offset bad cases, the removal of the bad cases would only benefit the good ones, which have little need for insurance protection and can in fact buy it cheaply. The bad cases would be left to their own means. However, that would lead to a considerable shrinking of the insurance business as insurance profits are generated by the sound actuarial management of risks not from their exclusion.

In the second case of community rated environments, bad cases and good cases have equal access to insurance protection. Proactivity programmes based on tracking devices, then, do not have a “depooling effect” [Baker 2003: 263], even though they may be more attractive to young sportspeople in good health.¹⁵ Companies rather observe a kind of *reverse selection*. Since there is more room for improvement in negative

¹⁵ This does not rule out the fact that proactive programmes can also be attractive to people who are not healthy but are making some attempts to improve their lifestyle. As

an actuary points out, there is strong evidence that proactive programmes no longer appeal only to the young and healthy (Interview B.11, 23 April 2024).

cases, proactivity aims not to *remove* but to *improve* the offset mechanism. A healthier portfolio leads to more competitive rates; more competitive rates attract more customers, including less healthy ones, who can receive the coverage they need at a lower price while also participating in a programme designed to improve their lifestyle. Under these conditions, healthier people and healthier portfolios are not mutually exclusive goals. If anything, they are mutually reinforcing.

Our research also reveals that the innovative aspects of the logic of proactivity appear to encourage the voicing of an unexpected moral impetus by insurance company representatives. Several interviewees claimed that the goal of insurance was no longer only to select people in good health; it was also to motivate people to take care of their own health, and reward them if they did so. As an actuary told us,

if we have this knowledge how important exercise is for people, how much it can influence their life, the joy of life basically, or enjoyment of life and their longevity, *it would be criminal not to talk about it*, not to try influencing and so, you know how, to save people's lives [...]. So, we should actually do everything that we can to encourage people to change their lifestyle (Interview B.11, 23 April 2024 italics added).

Another interviewee expressed the same concept in similar terms:

I'm not as interested in [using prediction for pricing]. I'm interested in helping the population be the best version of what they are (Interview B.6, 1 March 2024).

The companies we interviewed were also aware of a further ethical issue related to the assessment of risks arising from the behaviour of policyholders. Although risks often depend on individual behaviour, behaviour does not always depend on the individual. Extensive empirical research shows that, underlying unhealthy lifestyles, there are socio-economic and cultural determinants that cannot be directly blamed on individuals. Low income and a low level of education can be just as fatal risk factors for mortality as smoking and hypertension [Stringhini *et al.* 2017]. Brute luck can thus deprive individuals of their ability to make reasonable decisions and pursue a healthy lifestyle [Steinberg 2022].

This is why some insurance companies offer so-called *enabling* rewards. If an individual has a low income, they propose a substantial discount for gym membership, so as to encourage the person to exercise. If an individual cannot afford an Apple watch, these insurance companies offer it for free as long as that person meets the goals. If an individual cannot spend a lot on healthy food, which is notoriously expensive, the insurance company offers discounts for shopping in partner stores. In this perspective, the use of behavioural data might counter the argument

that “having a lower income is likely to result in lacking enough resources to invest in equipment, gyms, or healthier foods” [Steinberg 2022: 675].

Social consequences of proactive insurance

What are the consequences of proactive practices for the function of insurance within society as a whole? The insurance industry, it has been observed, has always had a “voracious appetite for data” [Swedloff 2014: 341]. This is the “raw material” [Picard 2018: 89] from which insurance firms extract information used in assessing risk and providing collective protection against future contingencies. How has that been impacted by the spread of tracking devices and the use of sophisticated digital data processing techniques?

The widespread opinion in life and health insurance is that the processing of data obtained through wearables is not a substitute for the statistical calculation of risk underlying actuarial procedures. Rather, the former can supplement the latter and provide insights for enhanced risk segmentation [Quah 2018; Corlosquet-Habart and Janssen 2018]. By improving their risk assessment techniques, insurance companies can also improve their loss ratios. But a virtually perfect prediction would undermine the specific form of solidarity that underlies the institution of insurance [Cevolini and Esposito 2020]. Its mechanism, in fact, is based on the fact that it is not possible to know which individuals in a pool will suffer which injury and when. That is why it makes sense for everyone to pay an insurance premium, so that everybody is financially covered when adverse events occur [Wilkie 1997: 1039]. Complete information, by contrast, would identify exactly which individuals in a pool will suffer which injury and when. But, then, insurance companies would charge a premium tailored to the individual’s predicted lifetime, and insurance would turn into a saving plan for those who can afford it. All others would be left without any financial support.

If digital data management techniques were to remove the opacity surrounding individual fates, the mutuality mechanism would collapse [Ewald 2012: 8], with dysfunctional effects on insurance and society as a whole. Good cases (who knew they are good) would no longer be willing to pay to subsidise bad cases [Picard 2018: 98; Eling and Lehmann 2020: 374]. The only form of solidarity still possible would be a paradoxical “personalising solidarity” [McFall 2019; Krüger and Ni Bhroin 2020] incompatible with mutuality.

Such extreme scenarios, however, still seem a long way from becoming reality.¹⁶ Except in cases where insurance companies are allowed to underwrite, as we have seen, rates cannot be adapted to a policyholder's risk profile. An interviewee told us that, for reasons of strict regulatory constraints, there was a complete segregation in their company between the office responsible for the actuarial calculation of insurance rates and the office with access to behavioural scores. Employees of the same company did not even have a badge to access the other office (Interview B.2, 21 September 2023).

Another interviewee explained that companies with well-established risk assessment systems are very reluctant to touch their actuarial logic (Interview B.1, 19 June 2023), especially when this has been working well for a long time. For these reasons, the expression pay-as-you-live (PAYL) often used in the insurance literature [Ernst and Young 2015] should only refer to the possible financial incentives that the insured person receives if he or she has a healthy lifestyle, and not to the alleged behavioural tarification that according to some scholars would generate "behavioural tribes" composed of individuals who act the same way and pay a price corresponding to their risk profile [O'Neil 2016: Ch. 9].

If there is no price reduction, then, why should individuals be willing to provide their data to insurance companies? Why should they give up their privacy, and for what benefits? Companies are well aware of this dilemma. The head of healthcare innovation of a public sickness fund told us that the main challenge was to encourage people to "share their data" (Interview B.7, 15 March 2024). Another person in the same position confirmed that when required to provide more data, people ask:

What have I got from the insurance? They have already data, what they are doing with the data? And if I give them more data, what advantage will I have? Do I experience any advantage for data sharing? (Interview B.10, 19 April 2024).

The insurance industry knows how difficult it is to convince policyholders to share their data. One interviewee told us that people tend to be reluctant because they fear that "the sickness fund might abuse it", and policyholders believe that "patients should be in control of [their] data" (Interview B.7, 15 March 2024). The resistance encountered by companies is very high and the willingness to adopt wearables for insurance purposes remains low [Wiegard *et al.* 2019; Talonen *et al.* 2021; Neumann *et al.* 2022].¹⁷

¹⁶ Actuaries argue that this unintended effect does not represent a real risk in the vast majority of insurance applications. See ALBRECHT [2017a; 2017b]; PICARD [2018]; (Interview B.11, 23 April 2024).

¹⁷ An interviewee told us that, because "it is sensitive data, sensitive personal data", there is "a lot of fear of disclosure, and this gets around to consent" (Interview B.5, 1 March 2024). On the other hand, another interviewee

Some surveys suggest that policyholders are more willing to give companies access to their behavioural data if these data are used for loss prevention rather than personalised premiums [Avramakis *et al.* 2020: 22]. In this case, companies focus on another aspect of data sharing in order to motivate policyholders to give up data. Without data no accurate prediction is possible, and without prediction no targeted prevention initiatives can be launched. It is only on the basis of data, they argue, that insurance companies can understand what really works for people and “how [the fund] can incentivise people to have a healthier life” (Interview B.7, 15 March 2024). They regard prevention as a shared value that affects all policyholders. Therefore, those who share their data should do so not only for themselves but for the entire community, on the basis of an unprecedented form of responsibility.¹⁸ This responsibility, in their view, would aim at a *societal benefit* and not simply at a *corporate profit*,¹⁹ and would imply a new form of solidarity—*data solidarity* [Prainsack *et al.* 2022; Braun and Hummel 2022; El-Sayed *et al.* 2025].

This argument goes back to a long-standing debate surrounding the mutualistic mechanism underlying insurance, that has often been described as a specific form of social solidarity: damages are suffered by individuals, but the compensation mechanism is collective [Ewald 2020]. This traditional form of solidarity, however, is only financial: expected losses are shared by policyholders belonging to the same pool and paying a premium in advance. Today, by contrast, the claim of insurance companies is that the use of digital technologies and access to behavioural data are introducing another form of data-based insurance solidarity, which is indispensable for the effective implementation of personalised proactive programmes. Companies, which have an interest in mitigating the costs of public healthcare systems,²⁰ argue that sharing individual data is also expected to contribute to improving the health of all customers.

The people we interviewed are also aware that policyholders’ willingness to share their data could increase if insurance companies and sickness funds were able to better explain the purpose for which they collect data

pointed out that take-up rates are significant if meaningful rewards are on offer (Interview B.11, 23 April 2024).

¹⁸ LUPTON [2016b: 136] speaks of a form of “personal data philanthropy” which could enact a kind of “self-tracking citizenship”.

¹⁹ There is a similar trend in precision medicine [VAN HOYWEGHEN and AARDEN 2022] and in public healthcare systems

[PRAINSACK *et al.* 2022; BRAUN and HUMMEL 2022; PRAINSACK and KICKBUSCH 2024], where individuals are invited to share their data for the benefit of a collectivity (including themselves).

²⁰ Which is, too, “a legitimate interest of a public sickness fund”, as a person we interviewed pointed out (Interview B.7, 15 March 2024).

and the use they intend to make of them. Insurance organisations should clarify

how much of the data that you have [...] is your personal data and how much of it should you share with the community in a solidaristic way (Interview B.7, 15 March 2024).

To this purpose, they argue that one of the pillars of data solidarity is that a portion of profits resulting from data usage is transferred back to those individuals who shared their data [Prainsack and El-Sayed 2023: 36; Prainsack and Kickbusch 2024: 1]. In proactive insurance, as we have seen, this happens primarily through financial incentives that reward those who achieve the set targets. More generally, they claim, proactive prevention benefits all policyholders in the pool, because the improvement of the loss ratio implies a decrease in premium rates. There would be a *circular relationship* between data solidarity and financial solidarity that could, in principle, lead to reciprocal benefit.

Finally, insurance industry professionals are aware of the importance of reassuring people that data are never associated with the individuals who produced and shared them. One interviewee explained that, in order to produce the ultra-personalised proactive coaching programmes we described above, the personal data collected are first depersonalised, then processed, and finally re-individualised to address the single policyholder. More specifically, the interviewee told us that in recent years their company has made large investments in

data engineering so that you can take personal data, anonymize it, put it into a pool so you can analyse it, build the algorithms and then bring it out and link it to the individuals to give them a [personalised] recommendation (Interview B.9, 12 April 2024).

Another interviewee confirmed that

obviously we depersonalise everything. But when we take the prediction back into the operational environment, we have to say, hey [John], you are fit and here is the rewards, or you are not fit and then need to get higher step levels, and then it obviously does get personalised again (Interview B.11, 23 April 2024).

In proactive insurance, as in other fields that rely on predictive algorithms (e.g. precision medicine)²¹ hyper-personalised actionable insights depend paradoxically on the collection of a huge mass of community data. These data are first depersonalised, then processed, to ultimately draw inferences that no longer concern an average person but specific

²¹ The literature on this point is very large. See only HOFMANN and ESPOSITO [2025], with further references.

individuals with their own peculiarities and idiosyncrasies. Personal data are the prerequisite for depersonalised individualization.

Discussion

Proactive insurance illustrates a paradigmatic shift in how modern society deals with uncertainty. Underlying proactivity is the crucial role of behavioural data. If these data represent, as Guillén *et al.* [2019: 662] argue, a “remarkable advance” in motor insurance, that is even more so the case in health and life insurance. Indeed, not everyone drives a car but everyone is to some extent concerned about their life and health. Being able to observe individual behaviour and draw from this observation useful inferences for implementing proactive prevention programmes is in itself a striking novelty—especially because changing policyholders’ behaviour has never been the *primary function* of insurance, and “insurers have limited skills in changing behaviours” [Spender *et al.* 2019: 25], as many of our interviewees also admit (e.g. Interview B.2, 21 September 2023).

The ultra-personalised proactivity programmes we have analysed represent a kind of “strategic interaction” between insurers and their policyholders [Heimer 1985: 8ff.], which serves to motivate the latter to engage in loss prevention activities. In the past, that goal could only be realised in a presumptive manner. Now, it can be directly steered by insurers. In self-tracking practices, on the other hand, the insurer does not directly control the behaviour of the insured.

Seen through the lens of the sociology of quantification [Espeland and Stevens 2008; Desrosières 2010; Mau 2019], apps, wearables, and behavioural scores serve as tools for individual self-knowledge within insurer-policyholder feedback loops designed to adjust and manage lifestyles. Practices such as step counts, risk scores, and lifestyle indices not only provide information that reshapes insurance programmes, but also construct new realities of health and responsibility by defining what counts as “enough” movement, “healthy” behaviour, or “acceptable” engagement. In this sense, proactive insurance programmes reconfigure the quantified self [Lupton 2016a; 2016b; Sharon 2017; Ajana 2017]. Ultra-personalisation of thresholds, incentives, and communications embodies this transformation: each policyholder’s body and behaviour are continuously translated into numerical targets that are adjustable, comparable, and actionable.

Evidence of this self-control includes all those dysfunctional (and, from the vantage point of insurers, unintended) forms of practice in which

policyholders, instead of keeping their own behaviour under control, keep their tracking device under control. Instead of learning to improve their lifestyle, they creatively learn how to improve their relationship with the tracking system.²² In this case, the score itself, instead of being a medium for self-observation, becomes the goal. This also occurs because tracking and monitoring practices, besides being intrusive, can quickly become annoying.²³ The unintended effect is that the insurance policy, which should relieve policyholders of anxiety about future contingencies and provide a way to deal with uncertainty, burdens policyholders with new anxieties and worries [Crawford 2014; Pink *et al.* 2018]. Individuals do not know what inferences might be drawn from their data, feel responsible for the consequences of their behaviour, and live weekly, if not daily, with the uncertainty of whether they will achieve their goals. If they fail, out of frustration they drop out. Instead of being constructive, feedback ends up being destructive [Abraham 2016: 4].

The strategy of insurance companies to cope with these problems is to use money, yet always as a reward, never as a punishment. As all interviewees tell us, the entire system of financial incentives can be seen as a form of bonus without malus (Interview B.2, 21 September 2023; Interview B.6, 1 March 2024; Interview B.10, 19 April 2024; Interview B.11, 23 April 2024). Companies claim that they only want to convey “nudges and joy and positive emotions” (Interview B.6, 1 March 2024). As a result of behavioural monitoring, they argue, the policy price can only go down, never go up. In short,

we are all carrot, no stick (Interview B.6, 1 March 2024).

Conclusion

Ongoing experiments with proactivity in the insurance industry show strikingly the challenges and opportunities associated with attempting to work with individualised forecasts. The individualisation of prediction—addressing a specific individual rather than a pool [Cevolini and Esposito 2020]—makes it possible to engage in coaching and nudging practices, but is confronted with many difficulties, including the fact that

²² GORM and SHKLOVSKI [2019] distinguish, in this respect, a “logic of choice” from a “logic of care”.

²³ This is the case even when tracking devices are used without being coupled to a life and health insurance policy, as a growing

body of literature on mHealth and eHealth (i.e. practices of datafication of health based on mobile phone and other digital devices) shows. See LUPTON [2013]; PATEL *et al.* [2015]; LUPTON [2016a]; RUCKENSTEIN and SCHÜLL [2017]; LEHRER *et al.* [2021].

individuals not only have different characteristics, but also different ways of accepting, using or rejecting communications about them.

At the same time, these practices rely on continuous data collection and monitoring, introducing novel forms of control that are embedded in everyday interactions. Proactivity programmes deeply affect the relationship between insurers and policyholders, transforming what was once a sporadic contact based on two touchpoints (policy agreement and, in the case of accident, claim) into an almost daily interaction based on potentially infinite touchpoints. It is on this interaction, with all the opportunities but also the challenges it implies, that the future of insurance will be played out.

From a sociological perspective, proactive insurance shows how quantification might reconfigure solidarity. Traditional mutuality rested on shared uncertainty within risk pools. Proactive programmes, instead, intend to mobilise a new form of “data solidarity”, where policyholders are encouraged to share their personal data for the collective benefit of prevention and risk reduction. This raises critical questions: Does proactivity enhance or erode solidarity? Does it reduce inequality or reinforce it by rewarding those already able to engage in self-tracking?

Our findings suggest that while proactivity offers opportunities for healthier lifestyles and potentially lower coverage costs, it also imposes new responsibilities and anxieties on policyholders, reconfiguring the relationship between individuals, institutions, and the management of future uncertainty. In this way, proactive insurance provides a striking case of how algorithmic quantification reshapes not only markets but also the very forms of social cooperation on which they depend.

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