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Human-Centred Systems and Ethical Nudging for Worker Wellbeing

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Research conducted in partnership between Swivel, Impart Advisory and Economic Evaluation Australia

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Executive Summary

This whitepaper examines how the integration of human-centred systems design and ethical positive nudging can reshape organisational approaches to system effectiveness and user satisfaction, with a specific focus on worker health and wellbeing. Human-centred design (HCD) places the user at the heart of the design process, ensuring that systems meet the needs and preferences of the people interacting with them. This is particularly important in workplace environments, where user engagement is critical to both individual and organisational success.

Ethical nudging, on the other hand, involves subtly influencing user decisions towards healthier, more productive outcomes without infringing on their ability to make free choices. Nudges can range from reminders to stretch or take breaks, to encouraging participation in health programs. What distinguishes ethical nudging from manipulative behaviour is the focus on transparency, non-controllability, and respect for user autonomy. Workers are aware of the nudges in place and can always choose alternative actions if desired.

When these two approaches are combined, organisations can build systems that not only function optimally but also create meaningful, positive changes in worker behaviours and attitudes. This is especially relevant in today's work environment, where employee health is increasingly viewed as a crucial determinant of productivity and long-term organisational success.

By adopting this integrated framework, organisations can expect improved health outcomes for their workers, increased participation in wellness programmes, reduced healthcare costs, and enhanced worker satisfaction. However, it is essential to maintain ethical standards, ensuring that the nudges are transparent, culturally sensitive, and designed with the wellbeing of workers in mind.

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Introduction

Purpose and Scope

The purpose of this whitepaper is to present a strategic framework that integrates human-centred systems design with ethical nudging to address critical issues around worker health and wellbeing. Human-centred design (HCD) originated as an approach to the design and development of interactive systems that applies ergonomics principles to make these systems more usable (Bazzano et al., 2017; Giacomin, 2014). For computer-based interactive systems, this strategy is best described in the ISO 9241-210, a best practices international standard that guides HCD for systems, products, and services to enhance efficiency, effectiveness, accessibility, and user satisfaction (International Organization for Standardization [ISO], 2019).

The ISO 9241-210 defines these interactive systems as a combination of hardware and/or software and/or services and/or people that users can interact with to achieve their goals. This definition can be broadly applied to many contexts, and for the purposes of this whitepaper will be applied to a workplace environment, where the use of digital platforms such as websites and applications are helpful in promoting positive health outcomes for workers. In many organisations, improving worker health has become a key concern, particularly as it is linked to broader objectives such as enhancing productivity, reducing absenteeism, and fostering a more engaged workforce.

Moreover, the drastic changes in the work environment caused by the COVID-19 pandemic led to a shift to remote and hybrid models, with remote work participation still at higher rates in 2022 compared to 2019 for most industries (Pabilonia & Redmond, 2024). These new work arrangements provide many benefits for both workers and employers, such as added flexibility and job satisfaction leading to higher productivity (Tsipursky, 2023) but also come with their own challenges for the workers' health that organisations need to consider.

Ethical nudging as applied to interactive systems is a practice that involves strategically designing interactions based on behavioural science principles to encourage users to make healthier choices while respecting their autonomy. For example, health programmes or wellness apps may utilise techniques such as reminders or personalised feedback to assist and encourage the user in accomplishing their health goals. The ethical considerations ensure that these interventions are transparent, non-manipulative, and respect the user's preferences, so that they can make informed choices when interacting with the system.

This whitepaper will explore how the combination of these two approaches can create interactive systems that promote healthier behaviours without undermining worker autonomy. The scope of the framework will focus primarily on workplace settings, where the influence of system design and behavioural nudging can have a direct and measurable impact on wellbeing. The emphasis will be on creating systems that are not only effective but also ethically sound, prioritising transparency, autonomy, non-controllability, and the needs of the individual worker.

The value of this approach lies in its potential to transform workplace systems into tools that actively promote health, wellbeing, and productivity, while ensuring that the users of those systems—workers—are respected and empowered.

Defining Key Concepts

Human-Centred Design

HCD as a design paradigm is driven by empathy with the userbase: it focuses on creating systems, products, and services that align with the actual needs, preferences, and experiences of the people who use them (Norman, 2023; ISO, 2019; Bazzano et al., 2017). This information provides valuable insights for the ideation phase and allows for a more personalised experience for the users of the system (University of Minnesota, 2024). Good human-centred systems design should also examine the root causes of the problem that the designer is trying to solve and consider all the factors that may affect the system to design a good solution (Norman, 2023).

The ISO 9241-210 indicates six principles for the human-centred design of interactive systems (Väänänen, 2022; ISO, 2019). Firstly, that the design must be based on an explicit understanding of the users and their needs. Because the users and stakeholders are affected by the design decisions, these factors must be considered so they obtain the proper support from the system or service (Ibid., 2019). An example of effective design that understands its userbase is GE Healthcare's Adventure Series™ program for pediatric patients (Kelley & Kelley, 2013). A designer of medical imaging systems, Doug Dietz observed that many of the patients found MRIs to be frightening, with as many as 80% needing sedation simply to complete the procedure.

Applying HCD principles, Dietz spoke to children, child life specialists, and hospital staff to learn from their perspectives, and the Adventure Series program was launched which redesigned the experience. The MRI experience was transformed into an adventure story for the children, with the machine and suite decorated to suit the story. This innovative solution led to a dramatic reduction in the number of patients that needed sedation, and increased patient satisfaction by about 90% (Ibid., 2013).

This example also illustrates three more principles: that the users be involved throughout the design and development process, that the design be driven and refined by user-centred evaluation, and that the designs be revised based on continuous feedback (Ibid., 2019). Users are a source of information vis-à-vis surveys or focus group discussions and can provide feedback for tests or prototype evaluation. Observing how users interact with the prototype when unguided can also reveal valuable insights, such as interaction patterns or behaviours that the designers did not anticipate. This data can help reveal potential blind spots or unexpected consequences of the design and minimise the risk that the system does not meet user or stakeholder needs. The data is then used to improve and refine the protoypes. This iterative process is especially important for human-computer interfaces (HCI) due to their complexity, as not all aspects of HCI interactions can be predicted from the beginning of the development process.

Moreover, human-centred design should address the whole user experience (UX); usability, functionality, system performance, presentation, interactivity, and support capabilities[1].

1 **Peter Morville's (2004)** user experience honeycomb describes these facets of UX. First, is the system usable – is it easy to use and understand? Is it useful – does the system fill a need? Is it desirable – is the system visually appealing? Is it findable – can users easily find what they need? Is it accessible – can those with disabilities have the same user experience? Is it credible – is the system trustworthy? Lastly, is it valuable – does the user experience improve customer satisfaction and advance the mission?

These aspects can serve as guidelines for creating meaningful user interactions with the system that help the users achieve their goals. Finally, the design team should include multidisciplinary skills and perspectives. A team with diverse perspectives can conceive of myriad creative solutions to complex problems.

Products and systems that are designed based on HCD principles are more intuitive, compatible with human characteristics and tendencies, and allow for more possibilities for interaction with the technology and the meanings people may assign to it (Giacomin, 2014). In the context of worker health, these systems aim to make health-related processes more intuitive, accessible, and emotionally engaging. This could involve the design of wellness apps that are easy to use and motivational, or the integration of mental health resources directly into everyday work tools. Human-centred design is not only about usability but also about creating emotional and psychological connections with users, thereby improving overall satisfaction and health outcomes.

Ethical Positive Nudging

Nudge theory is based on the premise that decision-making is influenced by two ways of thinking: the automatic system (also known as System 1 thinking), and the reflective system (System 2 thinking) (Kahneman, 2011; Thaler & Sunstein, 2008). System 1 processes refer to thoughts, feelings, and actions that tend to occur automatically, such as intuition and emotional reactions, and require limited time or cognitive power (Wolf et al., 2022). System 2 processes are slower, more deliberate, and require effort, such as rational thought or deductive reasoning. However, systems 2 thinking can be cognitively tiring due to the effort required; thus, people often resort to mental shortcuts that save time and energy in making repetitive decisions (Guath et al., 2022; Mertens et al., 2021).

This also means that people possess bounded rationality—we cannot truly optimise our decisions, as we don't always make our decisions based on all relevant information. Instead, we focus on information that is directly available to us at that moment, and we tend to discount information that may be irrelevant or too complex. We also tend to use context clues regarding our choices to inform our decisions (Mertens et al., 2021). These mental shortcuts are called heuristics: useful rules of thumb that help us to make quick decisions and ease our cognitive load (Thaler & Sunstein, 2008). While heuristics are often useful for many situations such as simple, recurring decisions, these mental shortcuts can also leave people vulnerable to cognitive biases when they are applied to more complex situations (Sunstein, 2016). Examples of common heuristics are shown in Table 1.

Nudges describe a choice configuration presented to a consumer that encourages a certain outcome while preserving the person's autonomy, and without significantly changing the economic incentives (Bergram et al., 2022; Guath et al., 2022; Thaler & Sunstein, 2008). Nudges accomplish this by either modifying the choice architecture, or how the choices and/or information are presented (Lim and Lee, 2022; Weinmann et al., 2016).

Choice architecture refers to how choices are presented to the decision-maker, such as the context, number, order, or description of those choices (Johnson et al., 2012). For example, too few options presented limit the freedom of the decision-maker and make them more likely to choose a second-best or third-best option, while too many can overwhelm.

TABLE 1. Examples of heuristics

Heuristic	Description
Affect[1]	Decisions are influenced by emotional state, or the positive or negative feelings associated with a stimulus
Anchoring and Adjustment[2]	The tendency to 'anchor' a piece of information that becomes a reference point for decisions
Availability[2]	An estimate based on how easily an example comes to mind
Base Rate[3]	When the base rate probability or general prevalence is underweighted in favor of a specific case
Commitment Escalation[4]	People justify increased investment in a decision based on prior cumulative investment. Also known as the *Sunk Cost Fallacy*
Common Sense[5]	When the outcome of a decision appears obvious based on principles that seem to need no additional evidence
Contagion[6]	People believe that properties of a person or object can be transferred through another, by 'contamination'
Default[7]	The default option tends to be selected regardless of preference
Effort[8]	The worth of an object is determined by how much effort was invested into its production
Loss Aversion[9]	People hate losses more than they like equivalent gains
Diversification[10]	People tend to seek variety in their choices especially if they are uncertain about their preferences
Peak-End Rule[11]	A person's judgment of an experience tends to be based on their perceptions during the most intense points rather than on the average
Representativeness[2]	Conclusion is based on how much a hypothesis resembles available data
Scarcity[12]	The scarcer an object, the more valuable it is perceived
Social Proof[9]	People want to conform, so their decisions in uncertain situations are shaped by how others tend to behave

Sources: Adapted from [1]Slovic et al. (2007), [2]Seal et al. (2010), [3]Stengård et al. (2022), [4]Stew (1997), [5]Ross (2012), [6]Mukherjee & Mukherjee (2023), [7]Sunstein (2014), [8]Kruger et al. (2004), [9]Thaler & Sunstein (2008), [10]Simonson (1990), [11]Fredrickson & Kahneman (1993), and [12]Cialdini (2007)

Thus, there is no neutral choice architecture—any way a choice is presented can influence the decision-maker (Johnson et al., 2012). This naturally raises the question of how nudges can be used and designed ethically. Nudges have historically been used to encourage socially responsible behaviours such as promoting healthy living, environmental consciousness, or financial responsibility (Ibid., 2016).

For example, corporations that sell calorie-rich, nutrient-poor foods may use advertising or pricing strategies that encourage the consumption of their products in larger quantities, with public health consequences (Marks, 2019). Delivery and ride-hailing apps like Uber use prompts or push notifications to encourage their workers to work faster or for longer hours (Scheiber, 2017). Other concerns raised by Engelen (2019) include the goals of the nudging strategy, how nudges are implemented, and the identity of the nudging agent, or how trustworthy they are.

Firstly, a nudge may fail to account for the users' plurality of preferences, infringing upon their freedom to choose. A nudge strategy may be perfectly viable for some and be opposed by others. A one-size-fits-all nudge would therefore be a less optimal choice, even if well-intentioned. A second consideration is the means: are the users informed of the use of a nudge, such that they can properly consent to its use? Do the users know why a nudge is being implemented, and how it works? In addition, can the users resist the nudge, such that they are not coerced into a decision? Or does opting out of the nudge require significant effort, potentially even punishing the user?

From these examples, we can see three principles that are violated by unethical nudges: autonomy, transparency, and consent. Users value transparency and information so that they can make good decisions, the freedom to make decisions aligned with their preferences and goals, and the ability to say no to a decision or situation they do not want to participate in. It is thus imperative that the application of nudges in systems design be conducted ethically and responsibly, in line with these values.

These principles are highlighted by ethical positive nudging, which influences users' decisions towards healthier or more beneficial behaviours without undermining their ability to choose freely (Meske and Amojo, 2020). Examples include nudges that provide information and emphasise active choice, as they engage the human capacity for reflection and self-awareness (Sunstein, 2016). For instance, reminders, information labels, and disclosure statements provide more information to the user and thereby increase their agency.

Examples in the workplace include gentle prompts to take breaks or reminders to engage in wellness activities. Crucially, the user gains information and retains their autonomy, as they can select nudges that align with their goals, and they can ignore or opt out of these nudges if they choose. In the next section, the paper provides a framework by which nudge design can be evaluated on ethical grounds.

Ethical Considerations in Design and Implementation

While the potential benefits of nudging in the workplace are significant, organisations must remain mindful of the ethical implications surrounding the design and implementation of these strategies. Ensuring that ethical principles are upheld is crucial for maintaining trust and for avoiding the unintended consequences of poorly designed nudges.

These principles are based on the framework by Meske and Amojo (2020) for digital nudges, and are discussed as follows:

- **Transparency:** A foundational ethical principle of positive nudging is transparency; workers should be fully aware of the nudges being used and understand their purpose. Choice architects should not try to hide these strategies or resort to trickery. For instance, if personal data is collected to inform the system, then this must be clearly indicated to the user before they make the choice to opt in. As Meske and Amojo (2020) emphasise, transparency is vital for maintaining trust between workers and their employers. Workers need to be informed when and how nudging techniques are being employed, ensuring that they are aware of their choices and feel in control of them.

- **Autonomy and Resistibility:** Transparency is strongly tied to the concept of autonomy. The user must not only be aware of their options, but they must also be given the freedom to choose other relevant alternative options, and to opt out anytime without incurring a cost. Meske and Amojo (2020) describe this latter concept as resistibility: the nudgee must have the freedom to resist, ignore, or avoid the nudge. To illustrate, if a wellness system automatically schedules reminders for physical activities, workers should be clearly notified and allowed to opt-out or modify the schedule to suit their preferences.

- **Non-Controllability:** Nudging must be supportive rather than coercive or manipulative. Manipulation can include the use of external incentives, whether they are positive or negative (Meske and Amojo, 2020). For instance, users should not face barriers or high costs if they move away from a default setting, as this disincentivises them from doing so (Johnson et al., 2012). Whether a nudge is manipulative can be discerned based on the following questions: Does the nudge try to shape people's beliefs, rather than simply provide information? Do the nudges exploit weaknesses in reasoning, so the user has less agency or control, or do they promote learning and overcome reasoning gaps? Are the nudges aligned with the user's goals, or is an outcome being forced upon them? As an example, a system prompting workers to take breaks should be framed as a suggestion rather than a mandatory action, leaving the worker with the ultimate choice to comply or ignore the nudge (Borenstein and Arkin, 2017).

- **Cultural Sensitivity:** Effective nudging must account for the diverse cultural backgrounds of workers. Hukkinen (2016) points out that nudging strategies must be adaptable to ensure they do not inadvertently conflict with cultural norms or preferences. For example, nudges around food choices should be designed with cultural and dietary preferences in mind. A well-designed system will offer flexible nudging options that align with the values and habits of various cultural groups within the workforce, ensuring that all employees feel respected and included.

- **Continuous Monitoring and Feedback:** Ethical nudging requires oversight and a feedback loop that allows workers to express their experiences with the system. Grundy (2020) suggests that organisations regularly monitor the impact of their nudges and gather feedback to refine and adjust the system as needed. This continuous improvement process helps ensure that nudges remain aligned with worker preferences and ethical standards. If workers express discomfort with certain elements of the system, the organisation should be prepared to modify or eliminate those elements to maintain a supportive and respectful environment.

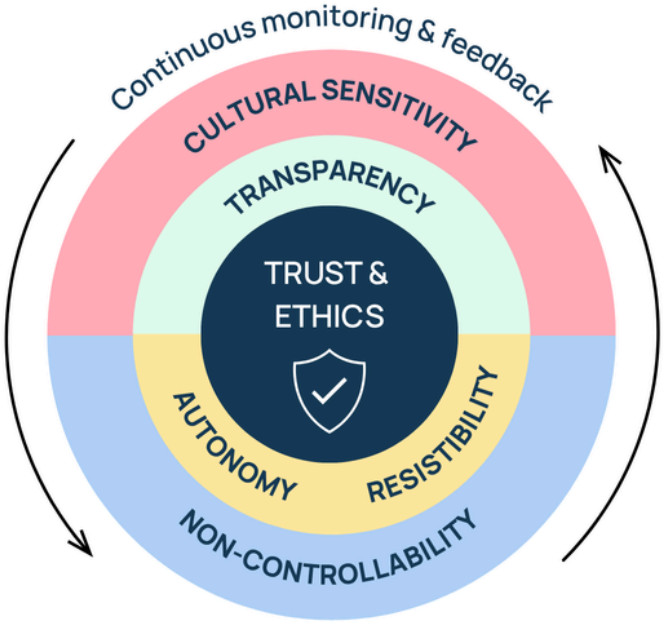

Figure 1. The principles of the ethical nudging framework

The principles of the ethical digital nudging framework are summarised in Figure 1. At its center lies the fundamental goal: maintaining trust and integrity throughout all nudging practices. The first layer features the following principles: transparency, which demands openness in nudging initiatives, and autonomy and resistibility, which ensures workers retain the freedom to make independent choices and decline nudges when desired.

The second layer extends these concepts, with a commitment to non-coercive and non-manipulative practices that reinforce worker autonomy, and cultural sensitivity, which embodies adaptability and respect for diverse cultural perspectives. Finally, the outermost layer encompasses continuous monitoring and feedback, representing the ongoing oversight required to ensure the nudging system remains aligned with its ethical core.

Strategic Context

The Rationale for Human-Centred Systems Design in Worker Health

The increasing focus on worker health as a critical component of organisational success highlights the need for systems that are designed with workers at the centre. Human-centred systems design offers a framework for creating environments that not only support health and wellbeing but also ensure high levels of engagement and satisfaction.

These principles create well-designed systems that are easy to understand and use, have clear functions and features, are compatible with the workers' goals, and account for ambiguity or anticipate that its users may make mistakes (Norman, 2023; University of Minnesota, 2024; Giacomin, 2014). This is especially salient for a healthcare context, as the design needs to be sensitive to the workers' specific needs and constraints. By creating systems that align with these needs, organisations can increase participation in health-related initiatives, such as wellness programmes or access to mental health resources.

A range of options can be offered that are tailored to individual preferences—some workers might respond better to digital tools, while others prefer in-person wellness sessions. The key is flexibility and responsiveness to the worker's experience, ensuring that the system promotes health without becoming an additional burden. Human-centred systems can leverage technology to improve health outcomes, in the form of digital health and wellness apps (Bazzano et al., 2017).

For instance, workplace apps could integrate features like step counters, hydration reminders, or mental health check-ins, all of which contribute to a holistic approach to worker health. The challenge for organisations is to design these systems in ways that are intuitive and responsive to the diverse needs of workers.

Ethical Positive Nudging: A Tool for Promoting Worker Health

The Empirical Evidence on Nudges

Much research has been conducted on the effectiveness of nudges as applied to a wide variety of contexts, such as health and nutrition, financial literacy, cybersecurity, learning, and conservation. This may be because nudge interventions are generally non-invasive, low-cost, and relatively easy to implement.

In Hummel & Maedche's (2019) systematic review of empirical nudge studies, 62% of the effects were found to be statistically significant, with a median relative effect size of 21%. Default setting nudges tend to have the largest median and average effect size and may be commonly used since they only require a single step compared to multi-step nudge strategies like pre-commitment[2].

In another systematic review of over 200 studies, Mertens et al. (2021) observed that choice architecture interventions promote behaviour change with a small-to-medium effect size (Cohen's d = 0.43)[3], comparable to traditional interventions like education campaigns and financial incentives, but that the effectiveness depends on nudge techniques used and domain. Nudge interventions that were designed to target the structure of choice alternatives consistently performed better than those that focused on the description of alternative options or the reinforcement of behavioural intentions. These interventions also had a stronger effect with respect to food choices, with an average effect size up to 2.5 times larger than other domains.

2 A pre-commitment nudge occurs when the decision-maker willingly restricts their future options to overcome impulsivity (**Pedersen et al., 2024**).

3 Cohen's d is a statistical method used to assess effect size when comparing two groups (**National University Academic Success Center [NUASC], n.d.**).

According to Szaszi et al. (2017), 42% of the nudge interventions in their review involved the promotion of healthy behaviours, and 93% of the studies had at least one successful intervention[4]. A systematic review by Heng Kwan et al. (2020) examined studies that used various nudge strategies for self-managing diabetes. First, they noted that the mode of delivery had an impact on changing behaviour. Interventions done through group meeting sessions were more effective than those from video screening. Nudging through social influence was also effective, along with reminders for taking medications, and gamification (the application of game elements) for encouraging physical activity levels.

Charry & Tessitore (2021) focused on the use of social nudges to promote healthy eating patterns. Cleverly, they note that the food industry often emphasises the social dimension of food, and programmes that promote healthy eating should do the same. Healthy food ads tend to evoke reactance, a negative reaction to a message where a consumer feels that their freedom is being limited. This reaction can lead to the individual consuming less healthy food as a result, even if they understand its value. The relationship of social media to social identity and social values is also a key factor. The authors found that social media influencers with a vast reach can thus increase the social value of healthy food and stimulate healthy choices.

Nudge strategies have been applied to healthcare settings in various ways, such as the use of text-based reminders for vaccination, or the placement of hand sanitizers with posters promoting hand hygiene upon entry to a hospital (Wolf et al., 2022). The evidence therefore suggests that the ethical use of nudges can serve as a highly effective tool in fostering healthier behaviours in settings such as the workplace. When designed transparently and deployed responsibly, nudges can encourage workers to adopt healthier lifestyles, make better choices, and participate more fully in health programmes without feeling coerced. Workers should understand the nature and purpose of the nudges, which helps build trust and ensures that they feel in control of their decisions (Borenstein and Arkin, 2017).

For example, a system might nudge workers towards choosing healthier snacks in the breakroom by positioning fruits and water more prominently than sugary snacks, but without restricting access to the latter. Workplace examples of ethical nudges might also include automated prompts to stand and stretch after prolonged sitting, reminders to book health checks, or notifications encouraging participation in fitness challenges. These nudges can help workers integrate healthier habits into their daily routines without diminishing personal agency.

Digital Nudges

Nudges are increasingly used in online interfaces or environments. Known as digital nudges (Guath et al., 2022), these nudges employ user-interface design elements to guide people's choices in a digital choice environment (Weinmann et al., 2016). People make decisions daily in such online choice environments, such as websites or mobile apps. A digital nudge can be an element of the design, an interaction with the interface, or how the information is presented within the choice environment that can possibly influence someone's decision (Bergram et al., 2022).

Designers of interactive systems therefore need to understand how interface design elements can affect decision-making so that nudges can be used effectively and ethically. Some examples of common digital nudges are text reminders, default settings in consumer technology such as

4 However, one limitation is that many studies covered in their paper did not aim for a deeper understanding of causal processes or boundary conditions. Theoretical frameworks would be useful to develop predictions for the use of nudge techniques (**Szaszi et al., 2017**).

video games, e-learning platforms that remind you to engage with the course material, apps that indicate how many steps you've walked or calories you've burned, cybersecurity notifications that indicate the strength of your password, or personalised recommendations in streaming or e-commerce websites (Sobolev, 2021; Weinmann et al., 2016). Fitbit is an example of a popular digital choice environment that uses nudges, by reminding you to exercise or providing feedback on your physical activity (Ibid., 2016).

Just like traditional nudges, empirical studies have been conducted on the effectiveness of their digital equivalents. O'Connell and Lang (2018) conducted an experiment on 300 undergraduate students who were randomised into receiving personalised e-mail nudges to remind them to access their course content. They found that when the students were sent reminders thrice a week, their exam performance increased by 0.2 standard deviations, and they noted a marked increase in the students' study time on non-class days and a shift in the allocation of study time during weekdays.

Digital nudges have also been applied to healthcare. In an RCT by Dobson et al. (2018), a text-message-based system (SMS4BG) was applied to help patients manage their diabetes. Participants either self-referred or were referred to the study by their physicians, and with the eligible participants' informed consent, they were randomised to either a control or an intervention group. While all participants continued to receive diabetes care, the intervention group received the SMS4BG program.

Tailored to the preferences of the individual and offering cultural versions for Māori and Pacific Islander patients, the intervention group received text messages with information, support, and reminders related to healthy behaviours. For instance, the participant can opt to receive a blood sugar monitoring reminder to which they can view their results graphically on a website. Participants can also choose the timing of their reminders, stop the messages or put them on hold, and at the three-month and six-month mark, they receive a message asking whether they would like to continue the programme (Dobson et al., 2018). At the 9-month mark, the paper reported a significant improvement in glycaemic control for the intervention group, along with improvements for foot care behaviour and overall diabetes support. 95% of the participants found the messaging system to be useful.

Nundy et al. (2014) also used an automated, interactive text-messaging system for diabetes management in their study. The messages provided information, reminders, encouragement, positive feedback, and self-assessments, and the additional remote nursing modality provided support through telephone-based coaching and assistance with medication refills. The intervention improved their blood sugar monitoring, nutrition, medication taking, and provided them with social support.

These studies indicate how digital nudge strategies can provide several benefits for user health, while respecting the values of autonomy, transparency, non-controllability, and cultural sensitivity. Additionally, mobile apps are portable, accessible, and allow for real-time feedback and dynamic interaction between the user and the system (Wiederhold, 2022). Digital nudges can also be adapted to the worker's specific needs; this is important because a one-size-fits-all nudge strategy may be inappropriate for a workforce with diverse backgrounds (Sobolev, 2021). Workers with mobility issues or chronic conditions may require different prompts than their able-bodied colleagues, or cultural differences may influence how health-related nudges are perceived and acted upon.

In light of the adaptability and accessibility of digital platforms, the strategic use of digital nudges presents considerable promise for promoting health-related behaviours in ways that are

responsive to individual and contextual differences. However, this potential must be situated within a broader discourse of design responsibility and ethical accountability.

Designers of digital systems, including health applications and workplace interfaces, are not neutral actors; they play a decisive role in structuring the digital environments within which users make choices. As such, they must attend to the ethical dimensions of influence, including transparency, autonomy, fairness, and cultural sensitivity. Poorly designed or poorly governed digital nudges, especially those that obscure their influence or exploit behavioural biases without user awareness, may erode trust and diminish the legitimacy of digital interventions.

To facilitate clearer analysis and promote responsible design practices, it is useful to classify the diverse types of digital nudges currently in operation. These vary not only in their mode of delivery and perceptibility to the user, but also in their associated ethical risk. Some nudges are overt, engaging users through explicit prompts or reminders, while others are embedded deeply within the architecture of digital platforms, operating in ways that are effectively invisible. The latter—ephemeral nudges delivered through predictive search, algorithmic curation, or default interfaces—often present the highest risk, as their banality and familiarity render them less likely to trigger scrutiny or reflection.

The typology presented in Table 2 aims to synthesise the most salient forms of digital nudge interaction, drawing attention to their mechanisms, visibility, and ethical considerations. By providing this structured overview, the framework supports both theoretical inquiry and applied design work. It enables practitioners, scholars, and policymakers to reflect critically on the environments they help shape, and to harness the behavioural potential of digital nudges in ways that are equitable, evidence-informed, and aligned with broader public interest goals.

Taken as a whole, the typology illustrates the wide spectrum of digital nudge (and nudge-like) strategies currently deployed across various technological environments, ranging from overt prompts to deeply embedded, algorithmically mediated interactions. It highlights how these mechanisms can be structured with varying degrees of user visibility and ethical sensitivity, thereby offering both opportunities and risks. Many of the examples presented, such as reminders to engage in healthy routines, accessible interface cues, or personalised content delivered through text or in-app messaging, demonstrate considerable promise in promoting health-enhancing behaviours, increasing user engagement, and fostering digital inclusivity.

These applications are particularly effective when designed with respect for users' cognitive and cultural diversity, aligning with principles of transparency, voluntariness, and contextual appropriateness. Indeed, when carefully crafted, digital nudges can serve as a low-burden, high-impact means of supporting users in making decisions that are in their long-term interest, without compromising their autonomy or sense of control.

Nevertheless, the existence of positive applications does not negate the potential for digital nudges to be misapplied. Nudges that are poorly designed, insufficiently tested across diverse populations, or implemented without regard to cultural or health-related variation can result in confusion, reduced trust, or disengagement. More problematically, when nudging strategies are driven by opaque commercial imperatives or fail to disclose their persuasive intent, they risk undermining ethical standards and violating user expectations. This is particularly concerning in settings where users may not have the capacity or opportunity to critically evaluate the cues they receive. The subtlety and ubiquity of many digital nudges mean that harm may not be readily apparent, even as cumulative effects influence decision-making, emotional wellbeing, and perceptions of agency.

It is within this dual context, of potential benefit and possible harm, that the next section turns to a more focused examination of nudging within the domain of workplace health. Specifically, the following segment explores how the integration of ethical positive nudging with human-centred design (HCD) principles can generate tangible improvements in employee wellbeing, program engagement, and organisational outcomes. Rather than presenting nudging as a panacea, this approach advocates for the strategic, evidence-informed use of nudges that are adaptable to the needs of diverse worker populations. When thoughtfully implemented, such interventions can support not only physical health but also psychosocial wellbeing, workplace satisfaction, and sustained productivity. In this way, nudging becomes not just a tool of influence, but a design philosophy grounded in respect, responsiveness, and care.

TABLE 2. Typology of digital nudges (and nudge-like design): Combined framework of traditional and emerging interactions

Interaction Type	Mechanism	User Visibility	Ethical Risk Profile	Example
Interface Design Nudges	Visual salience, placement, default settings	Low	High	Cancel button minimised, purchase button bolded
Choice Architecture Nudges	Number, order, or grouping of options	Medium	Moderate to High	Subscription options pre-selected or obscured free version
Timing-Based Nudges	Temporal delivery of cues	Low	Moderate to High	"Remind me later" loops, strategic delay of prompts
Ephemeral Interactions	Predictive or transient displays influencing attention	Very Low	High	Google predictive search affecting perceptions during election cycles
Reminder Nudges	Push notifications, system prompts	High	Low to Moderate	"It's time to complete your task" notifications
Text-Based Nudges	Direct SMS, email, or app messages	High	Low	Appointment reminders, behaviour prompts
Algorithmic Feed Curation	Ranked content based on engagement prediction	Very Low	High	News feed filtered by algorithmic preference
Framing Nudges via AI/LLMs	Content suggestions or summaries shaping perception	Medium	High	LLMs selectively emphasising positive product features
Auto-Completion or Predictive Text	Suggestive phrasing in input	Low	High	Gmail auto-suggested positive or deferential responses

TABLE 2. Typology of digital nudges (and nudge-like design): Combined framework of traditional and emerging interactions, continued

Interaction Type	Mechanism	User Visibility	Ethical Risk Profile	Example
Sentiment Steering Nudges	Tone or affect cues to shape emotional response	Low	Moderate	Emoji reactions, positive reinforcement in interface
Peer Comparison Nudges	Social ranking and norming feedback	High	Moderate to High	"Top 10% of Users" badges, comparative feedback in apps
Gamification Nudges	Points, levels, achievements to drive behaviour	High	Moderate	Snap streaks, Duolingo progress rewards
Conversational Interface Nudges	LLM or chatbot interactions directing paths subtly	Low to Medium	High	LLM suggesting follow-ups or upsells that appear user-driven
Contextual Personalisation Nudges	Prompts based on time, behaviour, or location	Low	High	Notifications triggered by user habits ("It's lunch time - hungry?")
Content Withholding Nudges	Obscuring options or paths unless specific action taken	Very Low	High	Hiding unsubscribe or account deletion behind multiple steps

Benefits and Strategic Recommendations

Anticipated Benefits of Nudging in Worker Health

The integration of ethical positive nudging and HCD principles into workplace health initiatives offers several benefits, including:

- **Improved Health Outcomes:** One of the primary benefits of ethical positive nudging is its ability to encourage workers to adopt healthier behaviours. Simple nudges, such as reminders to take regular breaks or stretch, or prompts to drink more water, can have a profound impact on reducing sedentary behaviour and promoting physical activity. Over time, these small behavioural shifts can lead to improvements in overall wellbeing.

- **Increased Engagement with Health Programmes:** Human-centred design ensures that health systems are intuitive and user-friendly, making it easier for workers to participate in wellness initiatives. Nudging further supports this by offering gentle reminders or motivational prompts, which can encourage workers to engage with these programmes more consistently. Recalling the SMS4BG intervention by Dobson et al. (2018), the participants could adjust the messaging system to their preferences in terms of content and timing. Similarly, workplace wellness apps or programmes can be catered to the worker's health goals and preferences; employees who prefer a more involved program should be free to opt in to more activities, while those who prefer a more relaxed intervention should be free to opt out if they wish.

- **Reduced Health-Related Costs:** As workers begin to adopt healthier behaviours, organisations can expect to see a decrease in health-related costs. Reduced absenteeism, lower healthcare claims, and less reliance on medical interventions for chronic issues can translate into significant cost savings. Meske and Amojo (2020) show that workplace health program, when combined with effective nudging strategies, can reduce long-term healthcare expenditures by preventing the development of costly health conditions.

- **Enhanced Worker Satisfaction and Productivity:** Workers are more likely to feel satisfied and supported in environments that prioritise their wellbeing. Human-centred design elements, such as wellness platforms that are accessible and easy to navigate, combined with positive nudging, help workers feel empowered to make healthier decisions. Employees who feel that their health and wellbeing are being prioritised are likely to be more committed to their work and contribute positively to the organisational culture.

Best Practices for Ethical Nudging in Worker Health

To ensure that the integration of nudging into workplace health systems is both effective and ethically sound, organisations must follow best practices. These guidelines aligned with human-centred design principles will help balance the benefits of nudging with the need to maintain worker trust, autonomy, and engagement.

Design

- **Center and Anticipate Workers' Needs:** A well-designed system and choice architecture needs to reflect how people think and behave (Lee et al., 2017; Thaler and Sunstein, 2008). This starts with comprehensive user research—understand the diverse needs and preferences of the users to inform the design process and understand how the nudges may potentially impact the workers.

  This stage includes integrating ethical considerations into the design. Anticipate that users may make mistakes or need guidance when interacting with the system. Make the system easy to use and navigate to minimise errors.

Implementation

Be Transparent: Organisations should clearly communicate to workers when nudges are being used and explain their intended purpose. For example, if a workplace app encourages workers to participate in wellness challenges, it should clearly state that the app utilises nudges and explain the health benefits without pressuring participation. If the workers participate in a wellness programme, provide a clear example or template for how they can achieve their goals, and provide guidance for the process (Marz et al., 2017). Empower the user's self-efficacy beliefs and show a clear link between their choices in the programme and the positive health-related outcomes (Morrison, 2015).

Ensure Autonomy: When setting goals for the wellness programme, allow the workers to choose from a list of goals. Ensure they have autonomy throughout the intervention and provide them personalisation options based on their preferences. The goals should be challenging but achievable.

Cultural Awareness: Nudges must be culturally sensitive and adaptable to the diverse needs of the workforce. Organisations should avoid one-size-fits-all solutions and instead tailor nudges to reflect the cultural backgrounds and preferences of their employees. For instance, nudges around food choices should offer culturally relevant options, and wellness initiatives should be inclusive of all workers, regardless of their cultural or religious beliefs. Hukkinen (2016) argues that culturally aware nudging is essential for maintaining inclusivity and respect in the workplace.

Refinement

Continuous Improvement: Positive feedback should be given to the workers when they progress in their goals; this feedback should emphasise their capability to adopt healthy behaviours and encourage them to continue. In turn, regular feedback from the user is essential to assess the effectiveness of nudging strategies and ensure that they remain ethical, supportive, and aligned with user preferences (Grundy, 2020). Adjust the design and nudges as necessary to improve outcomes and address any ethical concerns.

By following these best practices and ethical guidelines, organisations can harness the power of ethical positive nudging to create healthier, more productive workplace environments. The goal is to enhance worker health and wellbeing while upholding the principles of transparency, autonomy, non-controllability, and cultural sensitivity.

Conclusion

The integration of ethical positive nudging within human-centered workplace systems holds substantial potential to improve worker health, satisfaction, and productivity. By focusing on systems that prioritise user needs and offering subtle, transparent prompts that guide behaviour towards healthier choices, organisations can create environments that are both supportive and empowering for workers.

However, the success of this approach depends on maintaining strong ethical standards throughout the design and implementation process. Workers must always be aware of the nudges they encounter and should retain full control over their decisions. Transparency, cultural sensitivity, and respect for autonomy are key to ensuring that nudges enhance rather than diminish worker wellbeing.

Adhering to the best practices indicated in this paper can allow organisations to harness the benefits of nudging—such as improved health outcomes, higher engagement in wellness programmes, and reduced healthcare costs—while ensuring that their systems remain aligned with the values and needs of the workforce.

In conclusion, the strategic combination of human-centered design and ethical positive nudging offers a powerful tool for organisations looking to promote a healthier, more engaged, and productive workforce. By fostering environments that support worker wellbeing while respecting personal autonomy, organisations can create long-lasting positive impacts that benefit both their employees and their broader operational goals.

References

Bazzano, A.N., Martin, J., Hicks, E., Faughnan, M., & Murphy, L. (2017). Human-centred design in global health: A scoping review of applications and contexts. PLoS ONE, 12(11), e0186744. doi: 10.1371/journal.pone.0186744

Bergram, K., Djokovic, M., Bezençon, V., & Holzer, A. (2022). The digital landscape of nudging: A systematic literature review of empirical research on digital nudges. Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems. doi: 10.1145/3491102.3517638

Borenstein, J. & Arkin, R.C. (2017). Nudging for good: Robots and the ethical appropriateness of nurturing empathy and charitable behavior. AI & Society, 32(4). doi: 10.1007/s00146-016-0684-1

Charry, K., & Tessitore, T. (2021). I tweet, they follow, you eat: Number of followers as nudge on social media to eat more healthily. Social Science and Medicine, 269, 113595. doi: j.socscimed.2020.113595

Cialdini, R.B. (2007). Influence: The Psychology of Persuasion. Collins Business Essentials.

Dobson, R., Whittaker, R., Jiang, Y., Maddison, R., Shepherd, M., McNamara, C., Cutfield, R., Khanolkar, M., & Murphy, R. (2018). Effectiveness of text message based, diabetes self management support programme (SMS4BG): Two arm, parallel randomised controlled trial. BMJ, 361:k1959. doi: 10.1136/bmj.k1959

Fredrickson, B. L., & Kahneman, D. (1993). Duration neglect in retrospective evaluations of affective episodes. Journal of Personality and Social Psychology, 65(1), 45–55. doi: 10.1037/0022-3514.65.1.45

Giacomin, J. (2014). What is human centred design? The Design Journal, 17(4), 606–623. doi: 10.2752/175630614x14056185480186

Grundy, J., Khalajzadeh, H., & Mcintosh, J. (2020). Workplace psychosocial factors and their association with musculoskeletal disorders: a systematic review of longitudinal studies. Workplace Health Saf, 71(12), 578-588. doi: 10.1177/21650799231193578.

Guath, M., Stikvoort, B., & Justlin, P. (2022). Nudging for eco-friendly online shopping – Attraction effect curbs price sensitivity. Journal of Environmental Psychology, 81, 101821. doi: 10.1016/j.jenvp.2022.101821

Heng Kwan, Y., Cheng, T. Y., Yoon, S., Ho, L. Y.-C., Huang, C., Chew, E. H., Thumboo, J., Østbye, T., & Low, L. L. (2020). A systematic review of nudge theories and strategies used to influence adult health behaviour and outcome in diabetes management. Diabetes & Metabolism. doi: /j.diabet.2020.04.002

Hummel, D., & Maedche, A. (2019). How effective is nudging? A quantitative review on the effect sizes and limits of empirical nudging studies. Journal of Behavioral and Experimental Economics, 80, 47-58. doi: 10.1016/j.socec.2019.03.005

Hukkinen, J. (2016). Addressing the practical and ethical issues of nudging in environmental policy. Environmental Values, 25(3), 329-351. doi: 10.3197/096327116X14598445991501

International Organization for Standardization. (2019). Ergonomics of human-system interaction—Part 210: Human-centred design for interactive systems. (ISO Standard 9241-210). https://www.iso.org/standard/77520.html

Johnson, E. J., Shu, S. B., Dellaert, B. G. C., Fox, C., Goldstein, D. G., Häubl, G., Larrick, R.P., Payne, J.W., Peters, E., Schkade, D., Wansink, B., & Weber, E. U. (2012). Beyond nudges: Tools of a choice architecture. Marketing Letters, 23(2), 487–504. doi: 10.1007/s11002-012-9186-1

Kahneman, D. (2011). Thinking, Fast and Slow. Farrar, Straus and Giroux.

Kelley, T., & Kelley, D. (2013). Creative Confidence: Unleashing the Creative Potential Within Us All. Crown Business.

Kruger, J., Wirtz, D., Van Boven, L., & Altermatt, T. W. (2004). The effort heuristic. Journal of Experimental Social Psychology, 40(1), 91–98. doi: 10.1016/s0022-1031(03)00065-9

Lee, J.D., Wickens, C.D., Liu, Y., & Boyle, L.N. (2017). Designing for People: An Introduction to Human Factors Engineering. 3rd ed. CreateSpace.

Lim, K. K. & Lee, C. S. (2022). Nudging learning behaviour: A systematic review. Proceedings of the Association for Information Science and Technology, 59(1), 744-746. doi: 10.1002/pra2.712

Marks, J. H. (2019). Are corporations nudging the nudgers? The American Journal of Bioethics, 19(5), 70–72. doi: 10.1080/15265161.2019.1588414

Matz, S.C., Kosinski, M., Nave, G., & Stillwell, D.J. (2017). Psychological targeting as an effective approach to digital mass persuasion. PNAS, 114(48), 12714-12719. doi: 10.1073/pnas.1710966114

Mertens, S., Herberz, M., Hahnel, U.J.J., & Brosch, T. (2021). The effectiveness of nudging: A meta-analysis of choice architecture interventions across behavioral domains. PNAS, 119(1), e2107346118. doi: 10.1073/pnas.2107346118

Meske, C. & Amojo, I. (2020). Ethical guidelines for the construction of digital nudges. 53rd Hawaii International Conference on Systems Sciences (HICSS), 3928-3937. doi: 10.48550/arXiv.2003.05249

Morrison, L.G. (2015). Theory-based strategies for enhancing the impact and usage of digital health behaviour change interventions: A review. Digital Health, 1, 1-10. doi: 10.1177/2055207615595335

Morville, P. (2004, June 21). User experience design. https://semanticstudios.com/user_experience_design/

Mukherjee, S. & Mukherjee, P.C. (2022). Scientific contagion heuristic: Judgments about the acceptability of water for religious use after potential scientific treatment. Judgment and Decision Making, 17(6), 1335-1352. doi: 10.1017/S193029750000944X.

National University Academic Success Center. (n.d.). Statistics Resources: Cohen's d. https://resources.nu.edu/statsresources/cohensd

Norman, D.A. (2023). Design for a Better World: Meaningful, Sustainable, Humanity Centered. The MIT Press.

Nundy, S., Mishra, A., Hogan, P., Lee, S. M., Solomon, M. C., & Peek, M. E. (2014). How do mobile phone diabetes programs drive behavior change? The Diabetes Educator, 40(6), 806–819. doi: 10.1177/0145721714551992

O'Connell, S. D., & Lang, G. (2018). Can personalized nudges improve learning in hybrid classes? Experimental evidence from an introductory undergraduate course. Journal of Research on Technology in Education, 50(2), 105–119. doi: 10.1080/15391523.2017.1408438

Pabilonia, S.W., & Redmond, J.J. (2024). The rise in remote work since the pandemic and its impact on productivity. Beyond the Numbers: Productivity, 13(8). https://www.bls.gov/opub/btn/volume-13/remote-work-productivity.htm

Pedersen, V.M.L., Thaysen, J.D., & Albertsen, A. (2024). Nudging voters and encouraging pre-commitment: Beyond mandatory turnout. Res Publica, 30, 267-283. doi: 10.1007/s11158-023-09616-0

Ross, D. G. (2012). Ambiguous weighting and nonsensical sense: The problems of "balance" and "common sense" as commonplace concepts and decision-making heuristics in environmental rhetoric. Social Epistemology, 26(1), 115–144. doi: 10.1080/02691728.2011.634530

Scheiber, N. (2017, April 2). How Uber uses psychological tricks to push its drivers' buttons. https://www.nytimes.com/interactive/2017/04/02/technology/uber-drivers-psychological-tricks.html

Seal, M.M., Borgi, L., & Chemali, Z. (2010). It is time to talk about people: A human-centered healthcare system. Health Research Policy and Systems, 8(35). doi: 10.1002/hfm.20777

Simonson, I. (1990). The effect of purchase quantity and timing on variety-seeking behavior. Journal of Marketing Research, 27(2), 150. doi: 10.2307/3172842

Slovic, P., Finucane, M.L., Peters, E., & MacGregor, D.G. (2007). The affect heuristic. European Journal of Operational Research, 177, 1333-1352. doi: 10.1016/j.ejor.2005.04.006

Sobolev, M. (2021). Digital nudging: Using technology to nudge for good. In D. Soman & N. Mazar (Eds.), Behavioral Science in the Wild, (pp. 292-299). University of Toronto Press. doi: 10.2139/ssrn.3889831

Stengård, E., Juslin, P., Hahn, U., & van den Berg, R. (2022). On the generality and cognitive basis of base-rate neglect. Cognition, 226, 105160. doi: 10.1016/j.cognition.2022.105160

Stew, B.M. (1997). The escalation of commitment: An update and appraisal. In Z. Shapira (Ed.), Organizational Decision Making (pp. 191-215). Cambridge University Press.

Sunstein, C. R. (2014). Nudging: A very short guide. Journal of Consumer Policy, 37(4), 583–588. doi: 10.1007/s10603-014-9273-1

Szaszi, B., Palinkas, A., Palfi, B., Szollosi, A., & Aczel, B. (2017). A systematic scoping review of the choice architecture movement: Toward understanding when and why nudges work. Behavioral Decision Making, 31(3), 355-366. doi:10.1002/bdm.2035

Thaler, R.H., & Sunstein, C.R. (2008). Nudge: Improving Decisions About Health, Wealth, and Happiness. Yale University Press.

Tsipursky, G. (2023, May 10). The surprising rise of hybrid work. https://www.forbes.com/sites/glebtsipursky/2023/05/10/the-surprising-rise-of-hybrid-work/

University of Minnesota. (2024, January 8). The power of human-centered design: Why empathy is a must for organizational change management. https://ccaps.umn.edu/story/power-human-centered-design-why-empathy-must-organizational-change-management

Väänänen, T. (2022, March 8). How a 20-year-old standard is still relevant today. https://digital.nhs.uk/blog/design-matters/2022/how-a-20-year-old-standard-is-still-relevant-today

Weinmann, M., Schneider, C. & Brocke, J.v. (2016). Digital nudging. Business & Information Systems Engineering, 58, 433–436. doi: 10.1007/s12599-016-0453-1

Wiederhold, B.K. (2022). A gentle nudge: The new push in digital healthcare. Cyberpsychology, Behavior, and Social Networking, 25(11). doi: 10.1089/cyber.2022.29259.editorial

Wolf, A., Sant'Anna, A., & Vilhelmsson, A. (2022). Using nudges to promote clinical decision making of healthcare professionals: A scoping review. Preventive Medicine, 164, 107320. doi: 10.1016/j.ypmed.2022.107320

About the Authors

Will Mckenzie

Will McKenzie is an experienced and multi award-winning designer with a strong focus on crafting purposeful, human-centred digital tools and communications. As Senior Designer at Trout Creative Thinking and Co-Founder of Swivel, he brings a strategic, concept-driven approach to solving complex problems through design. His work spans brand, product, and digital environments, with a consistent emphasis on clarity, usability, and thoughtful interaction.

At Swivel, Will led the design of a digital ergonomic assessment platform, combining his interest in workplace wellbeing with his strength in building intuitive, impactful tools. His contributions have helped shape practical, scalable solutions that promote healthier work habits and better user outcomes.

Earlier in his career, Will contributed to the education sector at Swinburne Online, where he supported the development of design curriculum and guided students through applied learning experiences.

Will graduated with first-class honours from Swinburne University of Technology, where he was recognised as the top student in the Faculty of Health, Arts and Design. On account of his academic excellence, he was awarded a fully funded, invitation-only scholarship to Aalto University in Finland, where he participated in an elite international product development program. These achievements reflect not only his creative strength but also his disciplined, high-performing approach to design—one grounded in insight, precision, and a deep respect for the people his work serves.

Byron Kwong

Byron Kwong is a respected professional in health, safety, and wellbeing. He is the most recent member of the team joining Impart in June 2024, but he brings with him a comprehensive background in occupational therapy and ergonomics. Byron has consistently demonstrated his expertise in the development and maintenance of health and safety systems, earning him recognition in his field.

Byron's career is marked by significant achievements, including leading roles in establishing health and safety frameworks at EnergyAustralia and his instrumental involvement in the development of Swivel's ergonomic assessment platform. His work has not only improved operational health and safety standards but has also introduced innovative digital solutions to address ergonomic risks in the workplace.

His professional accolades, such as the Employee of the Year and the Managing Director's Safety Merit Award, underscore his commitment to excellence in workplace health and safety management. Byron's educational qualifications, including a Bachelor's degree in Ergonomics Safety and Health and in Occupational Therapy from La Trobe University, further cement his authority in the field.

Byron's strategic leadership and deep industry knowledge continue to drive the advancement of health and safety practices, positioning the organisation as a leader in workplace wellbeing solutions. His approach is characterised by a methodical and evidence-based methodology, ensuring that health and safety protocols not only comply with current standards but also anticipate future workplace needs.

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Mary Catherine Mercado

Mary Catherine A. Mercado is a seasoned research analyst and writer with a strong background in econometrics, statistical analysis, and economic research. With expertise in both life sciences and economics, she is well-versed in using econometric tools and methods for data analysis and modelling.

Her recent work as a Lead Researcher with Impart Advisory focuses on projects in wellbeing, and digital innovation. In addition, she has contributed to numerous projects as an economic analyst with EEA, where her work spans various topics at the intersection of policy, sustainability, and technology.

She holds an MS in Economics from De La Salle University-Manila, where she developed robust skills in econometrics and macroeconomic analysis.

Her academic work includes a master's thesis exploring the impact of political freedom on economic growth, using sophisticated statistical methods to assess regional and resource-related variables.

Her previous experience also includes roles in science education, notably with the Bonifacio Art Foundation, where she led educational programmes and collaborated on international science exhibitions. These roles have demonstrated her ability to communicate complex information to a wide audience and manage large-scale projects with diverse stakeholders.

Dr. Michael D'Rosario

Michael D'Rosario serves as a Principal at Impart, where his expertise in evidence-based policy, AI/data science, and econometrics is integral to the organisation's strategic initiatives. His professional journey encompasses significant roles in policy analysis, research, and education, underscoring his deep-rooted knowledge and experience in these domains.

In his role at Impart, Michael's focus on econometric analysis and model design plays a crucial role in advancing the company's research and policy evaluation efforts. His work is characterised by a methodical approach to data and policy analysis, contributing to the development of informed and actionable strategies for the organisation and its clients.

With a strong academic background, including a PhD in Econometrics, and multiple graduate degrees, Michael's credentials are a testament to his expertise and commitment to his field of work. His scholarly and professional achievements reflect a career dedicated to the advancement of economic and policy research.

Michael has consulted to a number of business and NFPs. His business advisory work has involved consulting to Linfox, Ron Finemore Transport, Lincraft, Becton, and ERG, amongst others. His NFP work, an area of genuine passion has involved consulting work with BCCM, Per Capita, Deaf Connect, NDS, AMBA, Twins Trust, the University of Oxford and the Australian Hygiene Poverty Project.

About the Authors

Michael's distinguished career has seen him lead research and educational programs at renowned institutions, where he has been responsible for the development of courses in Artificial Intelligence, ModelOps, and Algorithm design, among others. This experience has honed his skills in both theoretical and applied aspects of his field, making him a valuable asset to Impart.

Michael has lectured and chaired courses at the University of Melbourne, CQUniversity, and the University of Adelaide. At Impart, Michael's contributions are pivotal to the organisation's research and policy initiatives. He leads the economic modelling program and Economic Evaluation Australia, a dedicated evaluation team. His analytical skills and comprehensive understanding of economic and data science principles guide Impart's approach to research, ensuring that projects are both innovative and grounded in solid empirical analysis. Michael's presence at Impart significantly enhances the company's capacity to deliver research and policy insights that are both relevant and impactful.

IMPART

About Impart Advisory

Impart is a purpose-driven management consulting group that specialises in delivering comprehensive, high-impact solutions through its distinct divisions: Economics, Research Services, AI Strategy, and Data Science. Each division is dedicated to offering strategic insights and innovative approaches tailored to meet the unique needs of their clients, with a focus on driving sustainable business outcomes. Impart's multifaceted approach allows them to provide expert guidance across sectors, integrating economic analysis with cutting-edge technologies such as artificial intelligence and data-driven solutions to solve complex challenges.

At the heart of Impart's commitment to rigorous analysis and effective decision-making is Economic Evaluation Australia (EEA), the group's specialised evaluation practice. EEA is dedicated to conducting thorough evaluations of programmes and policies, using sophisticated econometric and analytical methods. EEA's work is pivotal in helping organisations understand the social, economic, and environmental impacts of their initiatives, providing clients with robust evaluations that support evidence-based decision-making and policy development.

About Swivel Research

Swivel Research, a division of Swivel, is dedicated to research focused on ergonomics and wellbeing, particularly for sedentary workers. Swivel is an innovative solution provider in digital ergonomics, offering state-of-the-art comfort and health solutions to leading Australian businesses.

Swivel's research arm is committed to enhancing workplace environments by focusing on the physical and mental health of employees, ensuring that ergonomic solutions are backed by rigorous scientific research. By leveraging digital technology, Swivel helps businesses improve the productivity and wellbeing of their workforce through optimised, data-informed ergonomic practices.