# Applying Behavioural Science to Improve Risk Management for Sustained Profitability

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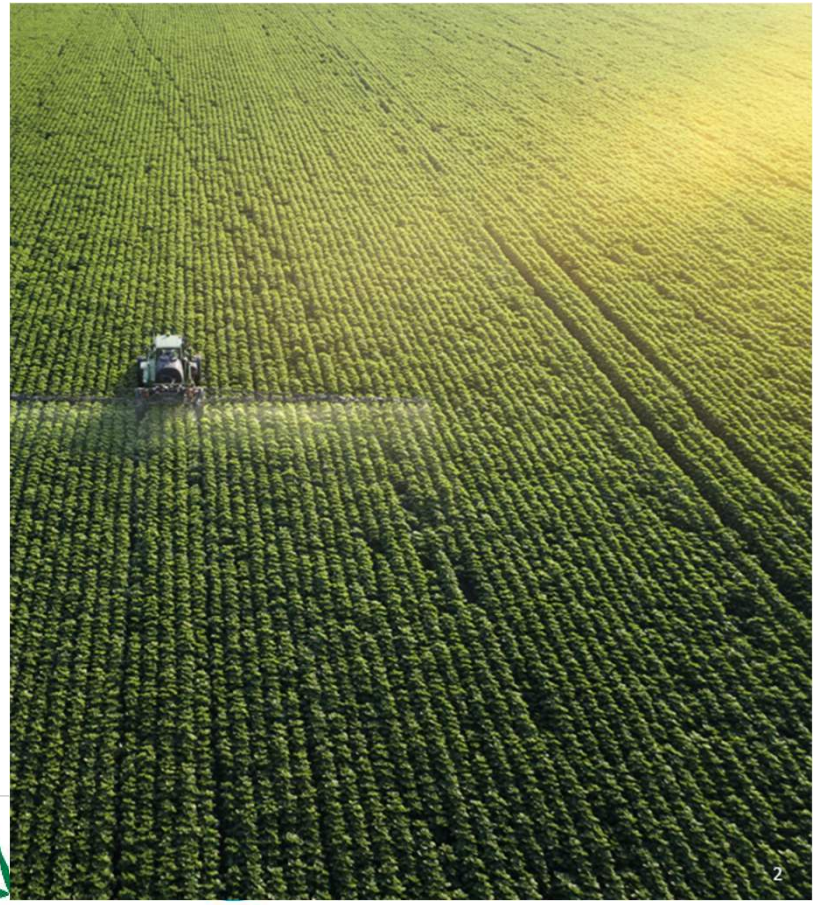
# Introduction

- Australian agriculture – billion $ industry
- Challenges – climate change, productivity growth slowing down, face many risks
- Farmer decision-making on farm management and dealing with risks central to profitability and long-term sustainability of farms



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# Coping with risks

- Not all risks are equal
- Risk is not easy
- Failures in risk analysis or management are cognitive failures – not thinking clearly or not thinking at all
- Economics teaches that profit is the reward for risk taking.
- But some risks can have serious consequences – they are the ones to worry about
- So understanding risk and risk decision making is important

# Risk & risk management and decision-making

- Important questions:
  - What are the most important risks and are we doing enough to manage them (e.g., input purchase decisions, machinery purchase decisions, labour access at critical times, potential insurance options) - Risk profile
  - To what extent are biases affecting decision-making
  - What types of risk do farmers prioritise in decision-making
  - In what circumstances are farmers making poor decisions
  - What things/ tools/ decision-making frameworks do farmers use to evaluate risk
    - Intuitive – heuristics/ biases
    - Rational – probabilistic (@Risk)
  - Risk-Reward


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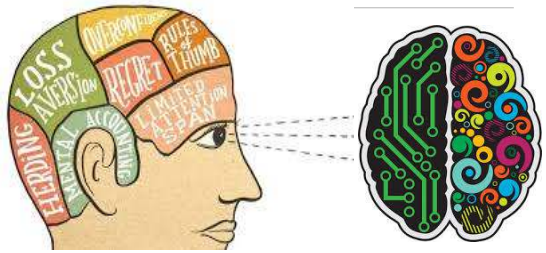
# Decision making and behavioural economics

- Conventional view is that humans are (economically) rational and will seek to maximise profit (*Homo economicus)*
- But humans **do not always** act rationally
- Humans are **emotional** and **easily distracted** beings, they make decisions that may not be in their self-interest
- Have biases (affected by experience of bad/ good events (e.g., Recency biases – e.g., Ascochyta blight in chickpeas)

- Role of behavioural economics (BE)





Source: BETA (2018)

# What is behavioral economics?

- Method of economic analysis that applies psychological insights into human behaviour to explain decision-making
- Behavioural economics seeks to explain why an individual decides to go for Choice A, instead of Choice B, even if, Choice B does not appear to be the economically rational choice
- Because humans are emotional and easily distracted beings, they make decisions that appear not in their self-interest



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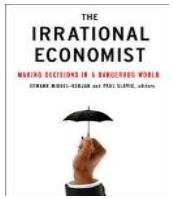
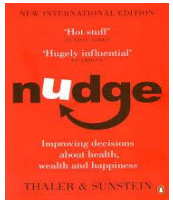
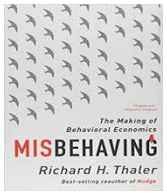
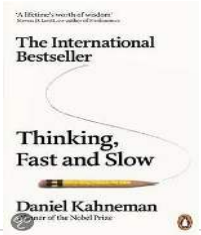
# Why BE?

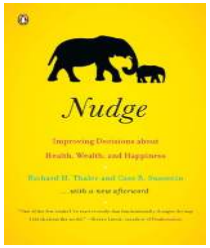
- Neo-classical economy assumes **profit maximisation** and that stakeholders behave accordingly.
- But behaviour might be hampered by **psychological biases (**e.g.: biases, bounded self-control or non-standard preference, cognitive limitations, loss aversion, risk aversion, imperfect optimisation, social norms, etc.
- Behavioural economics studies the effects of contextual, social, cognitive, and emotional factors on the economic decisions of agents.

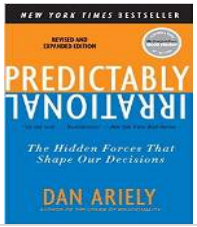


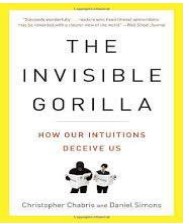










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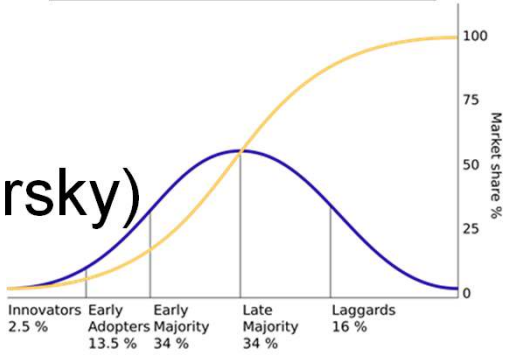
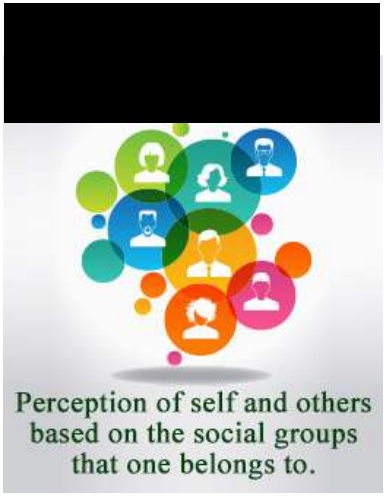
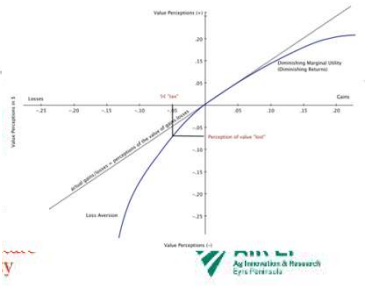
# Theories about human decision making

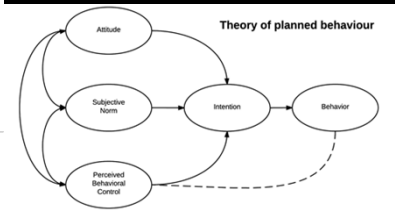
- Roger's theory on diffusion of innovation
- Social identity theory
- Theory on habitual behaviours
- Prospect theory (Kahneman & Tversky)
- Theory of planned behaviour
- Nudge theory

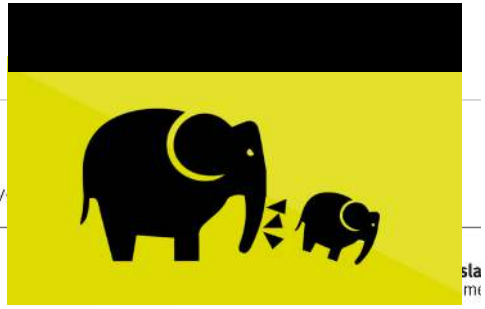








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# BE can be used to improve decision-making and intervention design

*"A lot of our policy models traditionally are based on a rather naïve understanding of what drives behaviour. But if you have a more intelligent, nuanced account of how people make decisions, you can design policy that is more effective, less costly, and makes life easier for most citizens."*

*David Halpern, Director of the UK Behavioural Insights Team quoted in (Bell 2013)*

- BE can be used to design interventions based on a better understanding of human behaviour
- Built on understanding of what works
- **Target:** adoption, interventions and services that reflect real decision-making and achieve the best possible outcomes

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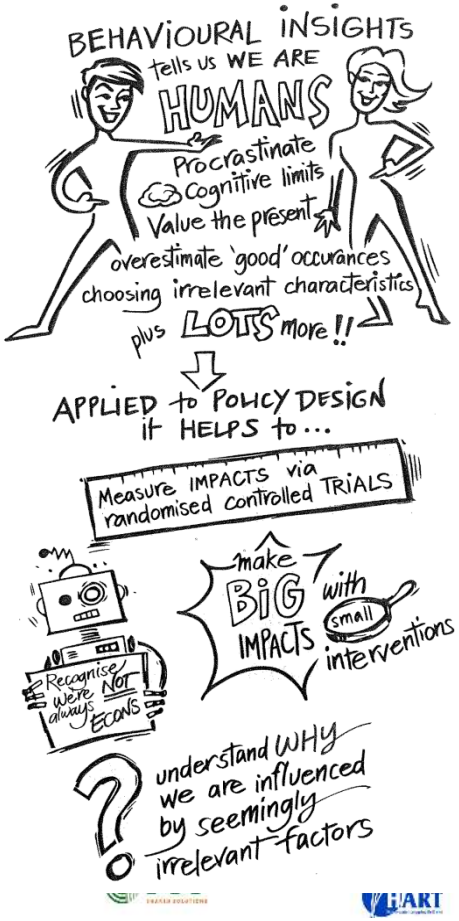
# Influencers of behaviour and change

## How?

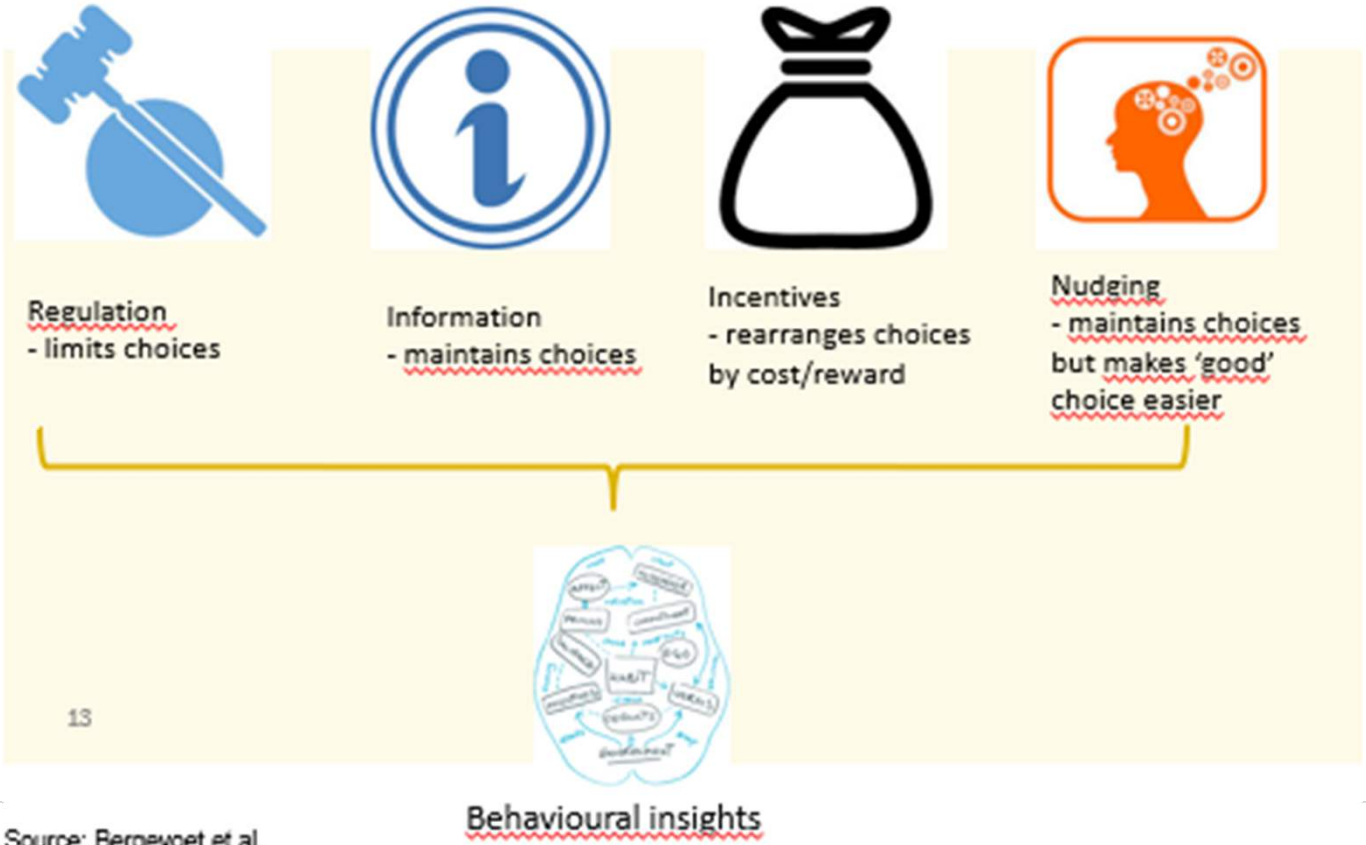



### Influencers of behaviour and change

| | |
|---|---|
| **Messenger** | we are heavily influenced by who communicates information |
| **Incentives** | our responses to incentives are shaped by predictable mental shortcuts such as strongly avoiding losses |
| **Norms** | we are strongly influenced by what others do |
| **Defaults** | we 'go with the flow' of pre-set options |
| **Salience** | our attention is drawn to what is novel and seems relevant to us |
| **Priming** | our acts are often influenced by sub-conscious cues |
| **Affect** | our emotional associations can powerfully shape our actions |
| **Commitments** | we seek to be consistent with our public promises, and reciprocate acts |
| **Ego** | we act in ways that make us feel better about ourselves |

Source: Mindspace

# Instruments to encourage behavioural change




RiskWi$e Source: Bergevoet et al.
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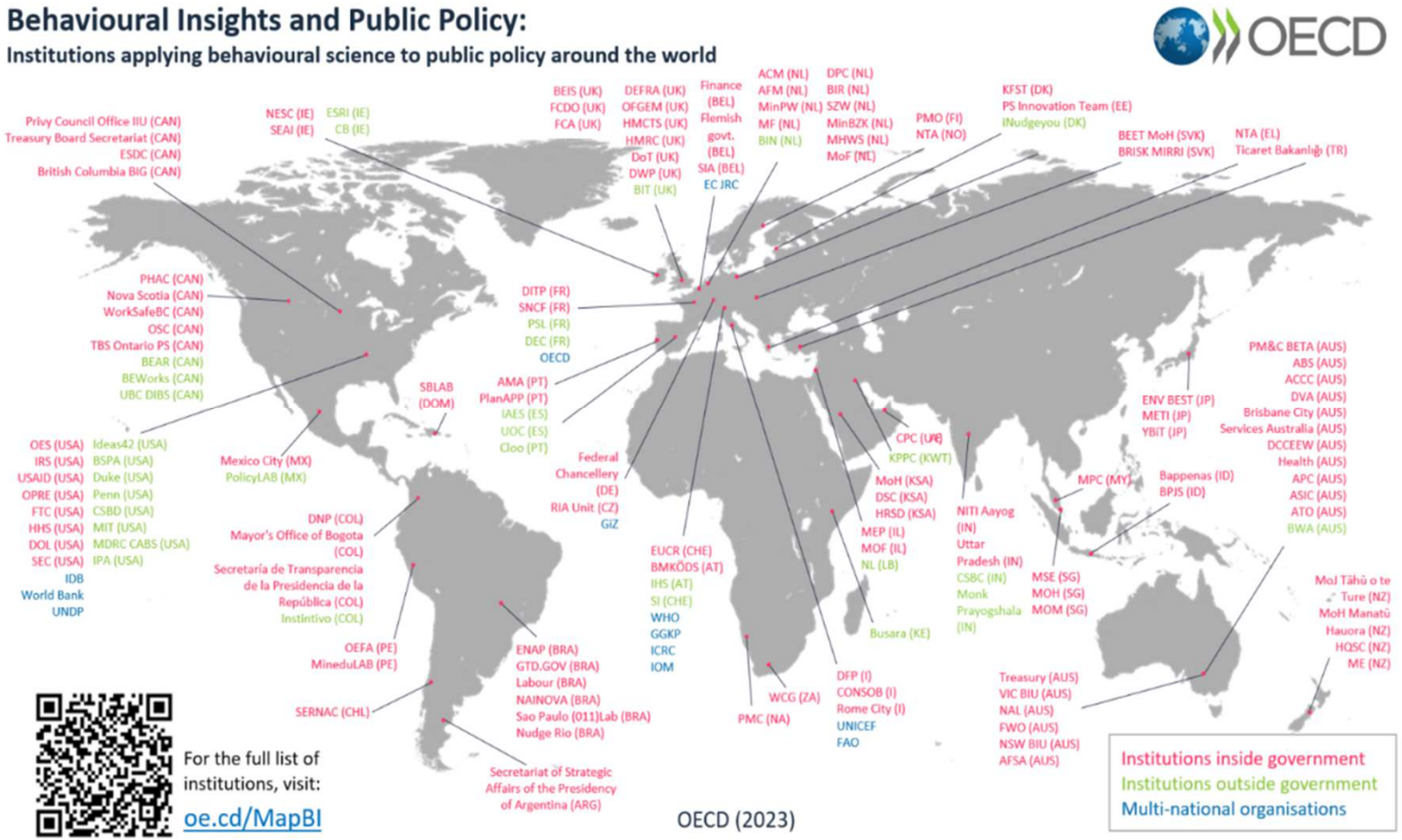


- Increasing number of countries with behavioural insights teams
  - Provide advice to government policy makers in incorporating behavioural insights into government policy
  - Apply evidence-based understanding of human behaviour to find out what works, for whom, and when
  - Create and apply behavioural insights into programs to drive positive change and help people

Source: https://oecd-opsi.org/blog/mapping-behavioural-insights/

# In Australia…

- BETA – Behavioural Economics Team of the Australian Government
- 34 Government and NGOs

**Top 10 countries pioneering the use of behavioural insights**

- Australia
- Canada
- Denmark
- France
- Germany
- Netherlands
- Peru
- Singapore
- UK
- US

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# Examples of using BE to improve outcomes

- Using behavioural nudges to steer people into making rational choices
  - Healthy choice campaigns
  - Exercise campaigns
- Using insights gained from research to mediate
  - Interventions to prevent decision-making bias (e.g., pass legislation to insist that there is a time delay between being able to sign the contract or having a ‘cooling-off period after the signing of an agreement)
- Using insights for consumer protection
  - Mandating stores to hide cigarettes at the back
  - Mandating companies to put warnings in products
  - Mandating stores to check IDs

# Examples of using in policy design cont.

- Improving health outcomes
  - Mandates to wear masks
  - Campaigns to apply sunscreen
- Taxation
  - Nudges to improve compliance
- Environment outcome
  - Info nudges to reduce electricity use
  - Incentives to go solar
  - Charging for or banning unsustainable plastic bags

# Some agricultural examples

- Nitrogen management (e.g., reducing N rates)
  - Cheap and effective
  - Over-application – win-win
  - Misperceptions about risk
  - Flat payoff functions
  - Easy - Potential for high adoption

# Some agricultural examples cont.

- Opportunities to reduce water pollution from nitrogen fertiliser
  - Are there discrepancies between evidence and farmers' perceptions
  - Opportunities to nudge?
- Farming options to reduce N losses
  - Possible misconceptions about shape of profit function
  - Nudges to reduce biases? – Info nudge? Norm nudge?

# Some agricultural examples cont.

- Some BE options:
  - Extension - Extension about flat pay-off functions or importance of long-term lens (dynamics)
  - Norm nudges - Nudges to foster public spiritedness
  - Information nudges - Nudges to correct biases/ perceptions – Address gap between evidence & perceptions
  - Incentives – payments

# An agricultural example

| Attribute | Description | Level |
|---|---|---|
| Program | BMP Program, Scenario | 1. Soil health monitoring<br>2. Water quality monitoring |
| Messenger | Lead organization | 1. AB Ministry of Agriculture<br>2. Soil Conservation org. or Applied Research org.<br>3. Conservation org. |
| Incentive | Producer cost-share incentive | 25%, 50%, 75% of comparable commercial testing services |
| Privacy | Program data sharing / privacy | 1. Leading organization only<br>2. Aggregate data added to new AB/SK database. Webtool only available to participating producers<br>3. All data & web-tool available publicly |
| Norms | Social norms nudge | 1. None<br>2. Producers in your area already singed up<br>3. Program endorsed by rural municipality<br>4. Program endorsed by local producer org. |
| Ego | Importance of recognition? | 1. None<br>2. Stewardship award<br>3. Certificate grants access to premium insurance/bank rates |
| Priming | Information affecting BMP adoption? | 1. Information highlighting private productivity benefits of BMPs<br>2. Information highlighting public conservation benefits of BMPs |

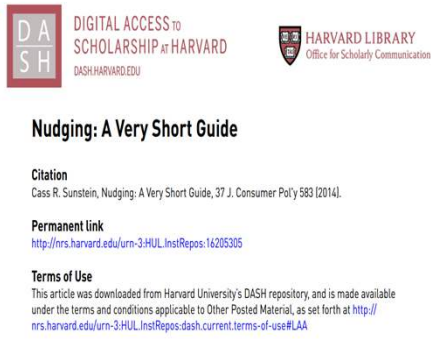
Anders, S. et al. (2022). Canadian farmer adoption of agri-environmental & climate mitigative BMPs: Behavioural insights for agri-environmental program & policy design

# Examples of BE techniques

- Default choice
- Framing
- Mandated and restricted choice
- Nudges

**10 Common nudges:**

- Default rules
- Simplification
- Uses of social norms
- Increases in ease and convenience
- Disclosure
- Warnings, graphic or otherwise
- Pre-commitment strategies
- Reminders
- Eliciting implementation intentions
- Informing people of the nature and consequences of their own past choices



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**Nudging: A Very Short Guide**

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# RiskWi$e: How can we use BE to improve farm risk management?

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