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Farmer compliance with environmental regulation: A preliminary look at the drivers and barriers for Canterbury dairy farmers

Lincoln University
Te Whare Wānaka o Aoraki
CHRISTCHURCH•NEW ZEALAND

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Presenter and author: Marin MacNamara
Co-authors: Kevin Old, Suzanne Trafford and Katie Bicknell
Lincoln University, Faculty of Agribusiness and Commerce

AgriOne

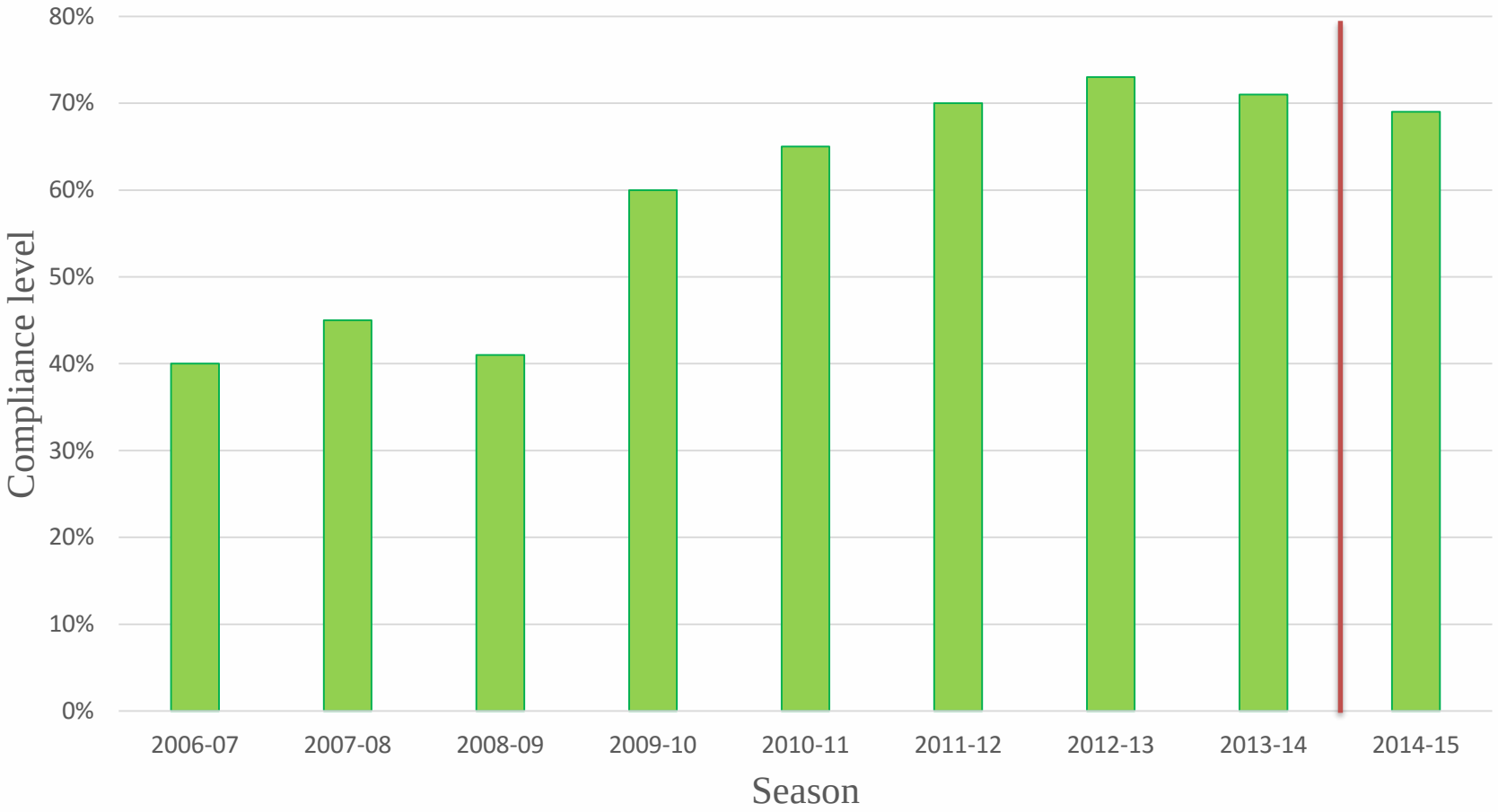
Overview

- Introduction
- Literature review
- Research objectives and design
- Compliance model
- Preliminary results
- Next steps

Introduction

- Increasing scale and intensification of dairy nationally has caused concern over the consumption and **deterioration in quality of fresh water**
- Dairy is one of the biggest export earners in NZ
- Debates ensue over the need and use of regulation
- Environment Canterbury (ECAN) has developed a water and land management strategy to limit nutrient leaching and run-off
- Farmer uncertainty over future regulation
- Measures have been taken to increase compliance
  - Matrix of Good Management
  - Portal

Canterbury effluent consent compliance rates



Source: Environment Canterbury, 2015

Literature review

- Intention expressed as behaviour if under volitional control (Ajzen & Fishbein, 2011)
  - Performance of most behaviours relies on opportunities and resources available
- Few if any variables universally significant (Knowler & Bradshaw, 2007)
- Researchers advocate policy mechanisms be geared to those of the locale or to individuals (Stonehouse, 1996; Knowler & Bradshaw, 2007)

Research objectives and design

- Research objectives:
  - Identify the factors influencing full ECAN effluent consent compliance by regulatees
  - Determine the impact of the identified factors on full ECAN compliance
  - Make recommendations to inform policy and industry stakeholders
- Research design
  - Data was collected via electronic questionnaire delivered to participants (dairy effluent discharge consent holders) via email
  - Compliance model developed from Reasoned Action Approach (Ajzen & Fishbein, 2011)
  - Descriptive statistics and regression analysis

Compliance model

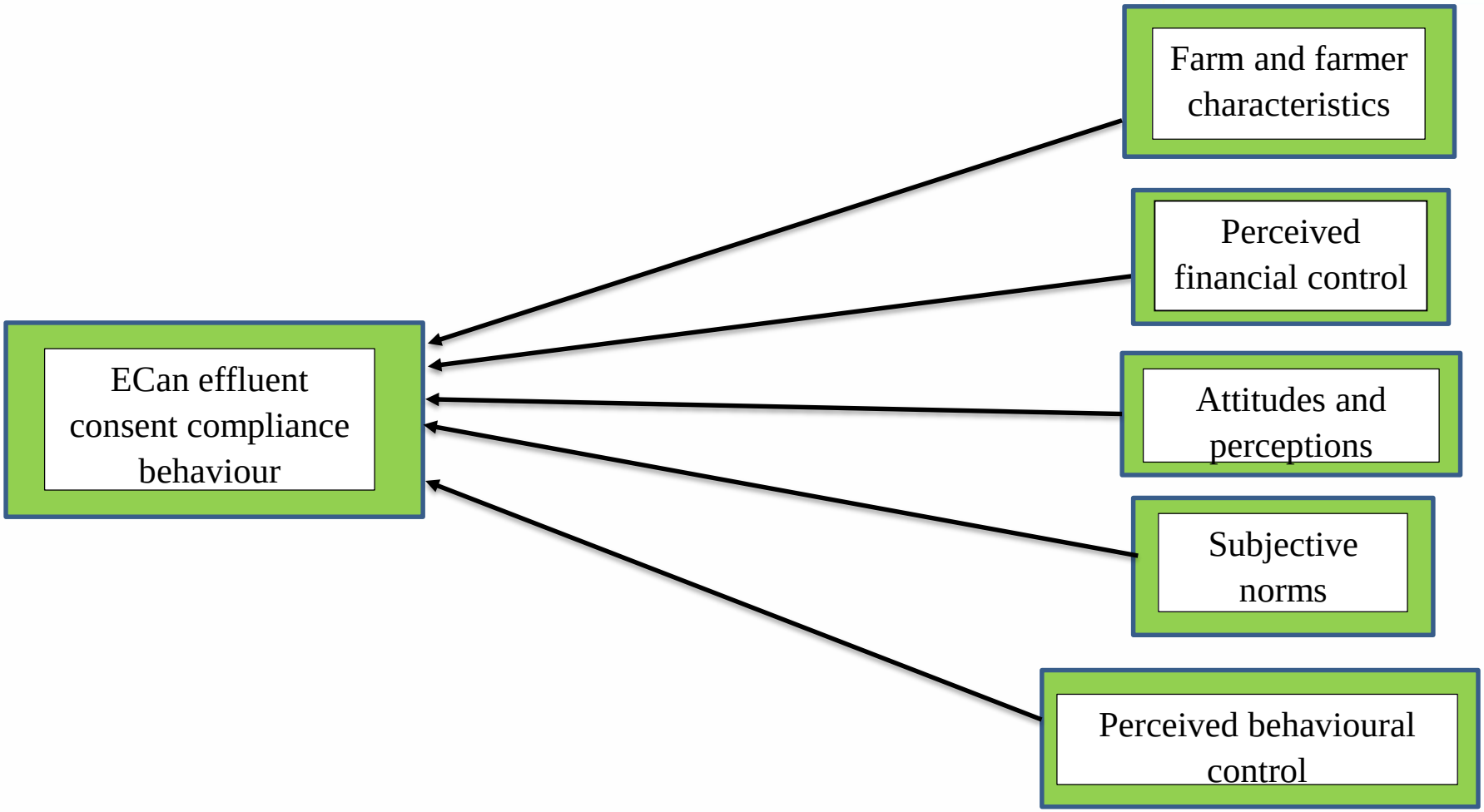


Figure 1. ECan effluent consent compliance model (adapted from Ajzen & Fishbein, 2011)

Sample profile

- Demographics
  - Largely male; 46-65 years old; some secondary education; 26+ years in the industry
- Operational Characteristics
  - Over 750 cows; less than 500 ha.; company structure; other parties on farm making decisions; 3/5 years positive dairy operating profit
- Problem Awareness
  - Most believe water quality affects human, animal and crop health
- Attribution
  - Most agree regulation was necessary, but divided that they personally were part of the issue

Sample profile

- Equity perceptions
  - Regulatory limits are inequitable; cost of protection not spread fairly across society
- Environment perceptions
  - Risks are threatening; general concern for the environment
- Regulation perceptions
  - Easy access to information; generally informed on regulation; uncertain over the future of restrictions; compliance costs time and money

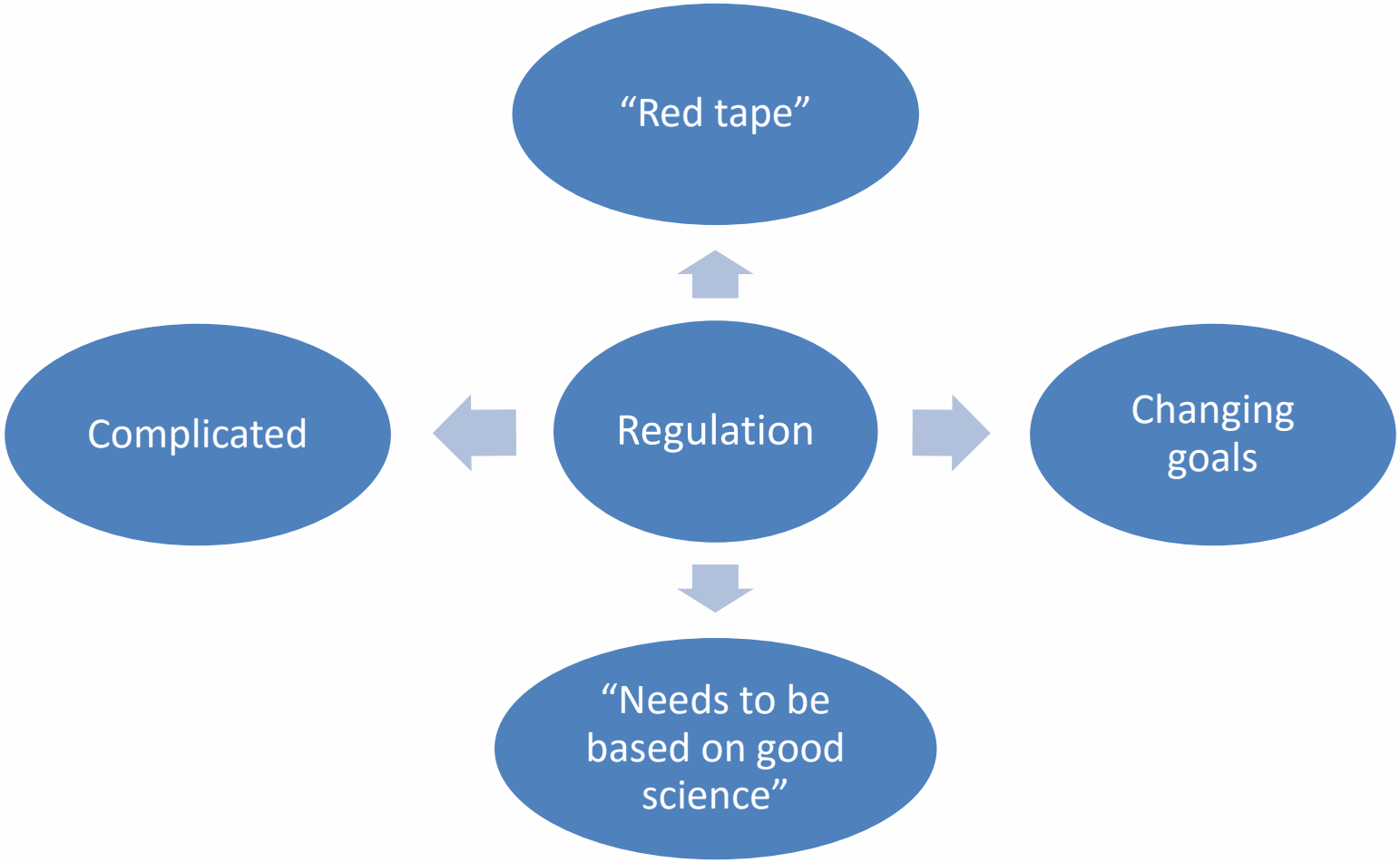
Sample profile

- Subjective norms
  - Reputation tied to compliance and public opinion important
- Perceived behavioural control
  - All intend to be compliant and are confident they will be; neutral on locus of control
- Perceived financial control
  - Compliance not perceived to be reliant on payout and financial situations

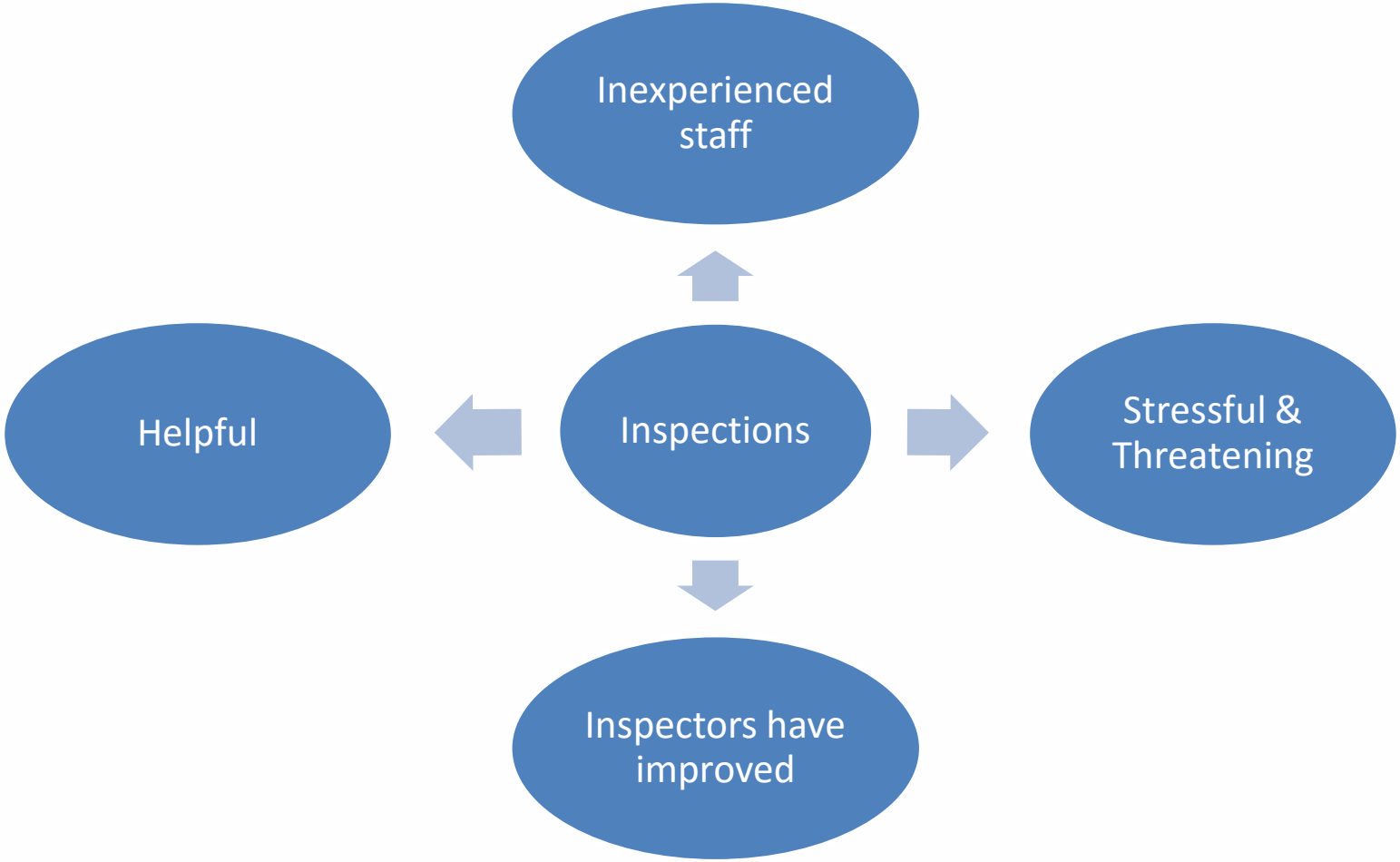
Preliminary findings: What is the difference?

- Number of cows being milked
- Farm size
- Training/workshop attendance
- Who in society is responsible for environmental management
- Experience with the regulatory process

Viewpoints: Regulatory process



Viewpoints: Inspections



The road ahead

- Multivariate analysis: regressions commonly used in behavioural sciences
  - Model:

Where: $rc_i^s =$
$effluent\ consent\ compliance\ in\ Canterbury\ consent\ holder\ (i)$
and $\varepsilon_i = idiosyncratic\ measurement\ error$

$$rc_i^s = \beta i + \beta_1(AGE_i)+\beta_2(GENDER_i)+\beta_3(YRSFARM_i)+ \ldots + \beta_{20}\,(PBC_i) + \varepsilon_i$$

THANK YOU

COMMENTS & QUESTIONS?