



Marketing versus Science

Who's really winning in the free range egg debate?

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**Companies
pledging to
source
cage-free
eggs**



19

North American companies announced during the final six months of 2015 plans to transition to using only eggs from cage-free hens.





Egg Farmers of Canada pledges to stop using battery cages by 2036

ANN HUI - NATIONAL FOOD REPORTER

The Globe and Mail

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Companies in 2016 pledging to switch to cage-free eggs

44  Retailers / Grocers

36  Restaurant Chains

13  Food Processors

3  Travel 

7  Foodservice

300 Million laying hens in USA
26 Million laying hens in Canada
18 Million laying hens in Australia

**New housing will be needed for over
175 Million North American hens in
the next 10 years**

Why battery cages developed in the first place

- Steady supply of eggs
- Clean, safe product
- Health benefits for hens
- Efficiencies – cheap.....

THE REGIMENTED HEN SUCCUMBS TO EFFICIENCY: In a Mechanized World She ...

By HARLAND MANCHESTER

New York Times (1923-Current file); Jan 9, 1938; ProQuest Historical Newspapers: The New York Times pg. SM12

THE REGIMENTED HEN SUCCUMBS TO EFFICIENCY

In a Mechanized World She Becomes Merely An Egg-Layer, Working in Her Factory Cell



Keystone

Gathering the eggs in a modern "battery system."

sion is current among battery men concerning what length of work day will result in the greatest yield. Thirteen hours is widely recommended.

When the hen gets old-fashioned ideas about raising a family they take her from her cell and put her in an apartment on a different floor and facing a different street. Moving disturbs her so much that she forgets about retting and resumes work.

AS the hen may no longer act upon her individual likes and dislikes in matters of diet and rest, heavy responsibility rests upon the battery attendant. His charges often react unfavorably to the slightest change in their conditions of employment and offer

identify and cull out the laggards, filling the cages with new recruits from another essential department of his plant, where day-old chicks are raised to pullethood for replacement. The operator who is a keen business man determines the number of eggs each hen must average monthly in order to bring him the desired profit. This key number is based upon cost of feed, the selling price of eggs and the overhead.

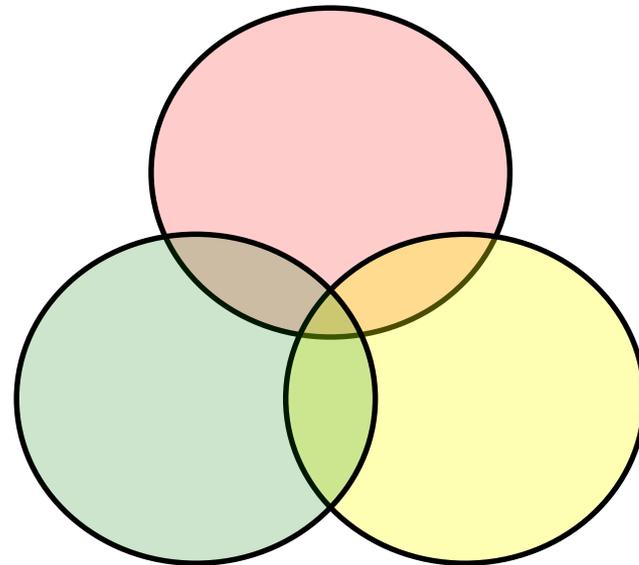
Thus he may decide that each hen, to stay in the running, must produce eleven eggs a month—a number which would be considered low by some battery men. Each month an attendant walks down the ranks and removes those who have not fulfilled the quota. They appear somewhere

Animal Welfare Science

- Using objective biological measures to assess how agricultural production methods affect an animal's welfare

- *Different viewpoints for defining **quality of life** for animals*

- ***Biological functioning***
- ***Affective states***
- ***Natural living***



- ***Biological Functioning – What is it?***
 - Healthy, growing, reproducing well
 - Few physiological or behavioural disruptions
- Basic provisions - food, water, comfortable temperatures, good air quality, veterinary care
- Traditionally this viewpoint predominates for farmers and veterinarians



- ***Biological Functioning – How do we measure it?***
 - Health
 - Body condition
 - Mortality, Productivity
 - Physiological measures of stress, immune function
 - **Are they healthy and thriving?**



- ***Affective state– What is it?***
 - Feeling well
 - Based on ‘affective’ or ‘emotional’ states such as pain, fear, frustration, pleasure or contentment
- Housed and handled in ways that prevent negative affective states and promote positive ones
- Traditionally this view predominates for applied ethologists



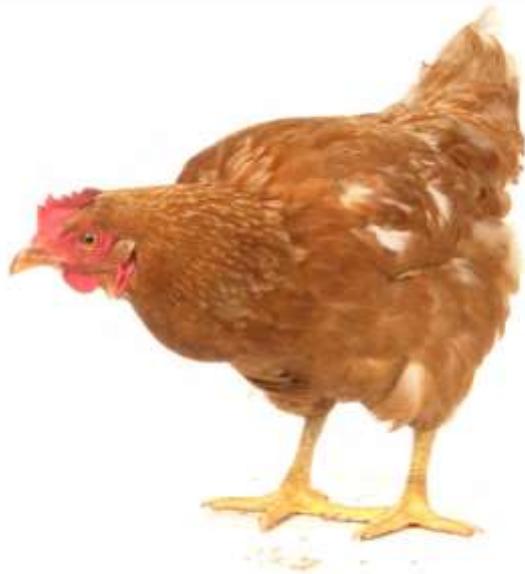
- ***Feeling Well- How do we measure it?***
 - Behaviour
 - Objective measures of pain, fear, frustration, 'pleasure'
 - Preference tests
 - Sometimes measures of stress response
 - **What do animals want? How much do they want it? And what happens when they don't have it?**



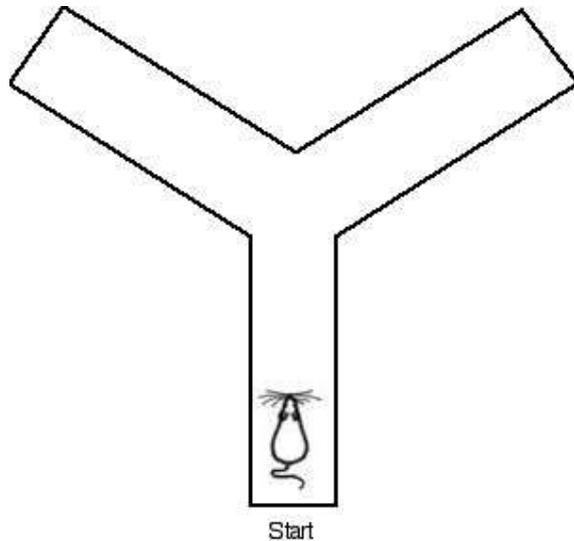
- ***Natural living***
 - *Based on behaviour in the natural environment*
- Able to lead relatively natural lives and behave in ways that are consistent with the nature of the species
- Measured simply by provision of opportunities to perform natural behaviour
- This view often predominates for members of the general public



So What **Do** Hens Want?



Measuring Preference & Motivation



A Nest

- Every time a hen lays an egg, it is preceded by searching, nest building and sitting on the nest
 - Most hens prefer to lay in a nest box
 - Hens will perform a variety of ‘costly’ tasks to get to the nest box



A Perch

- Hens perch in high places to avoid predators
- Hens prefer to rest on perches
- Hens may 'work' for access to perch
- It is well established that perching increases the strength of leg bones



Foraging Material

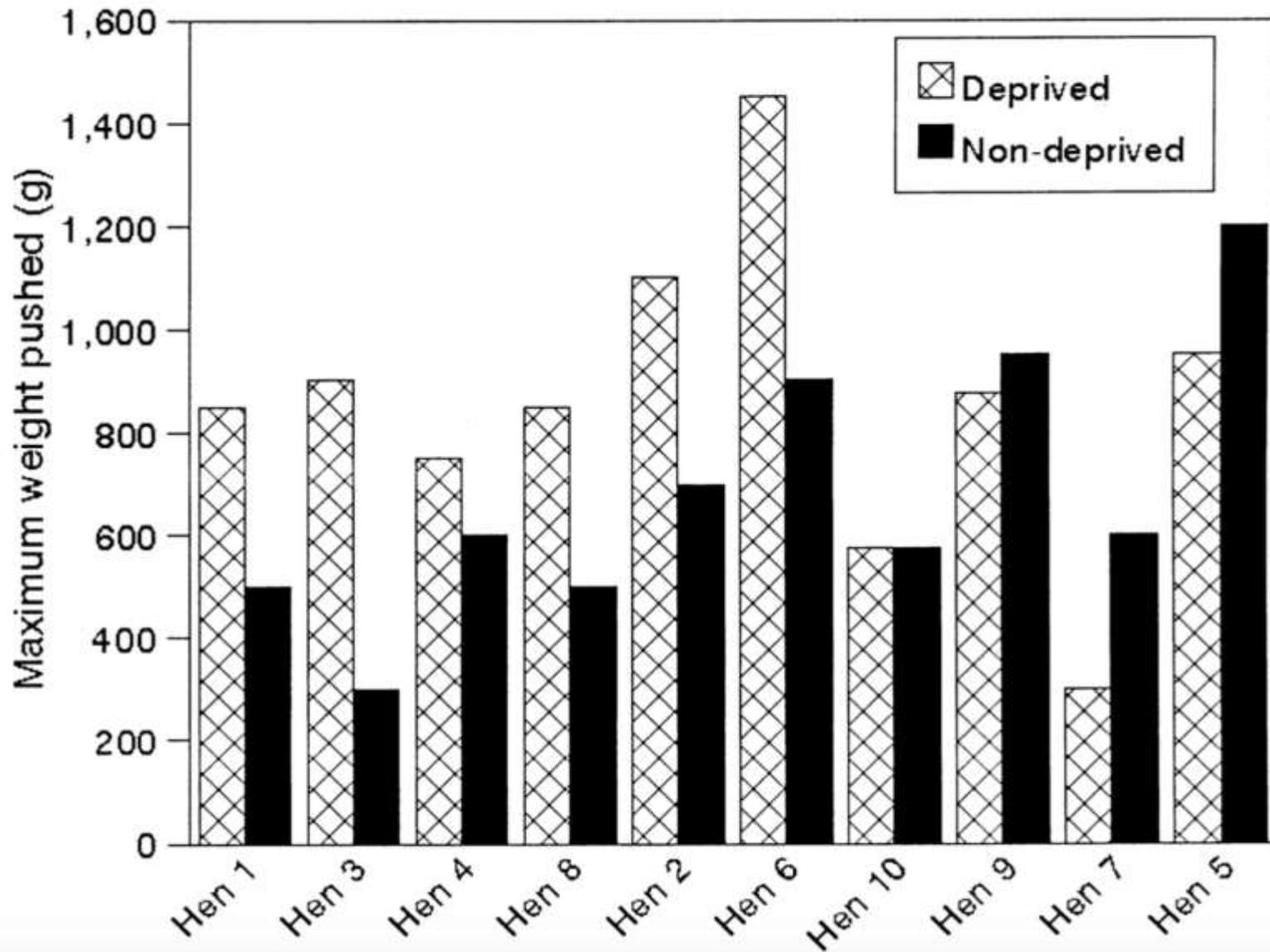
- Foraging behaviour dominates the time budget
- Hens 'contrafreeload'
- Hens won't work very hard for substrate
- Providing foraging substrate reduces the risk of feather pecking



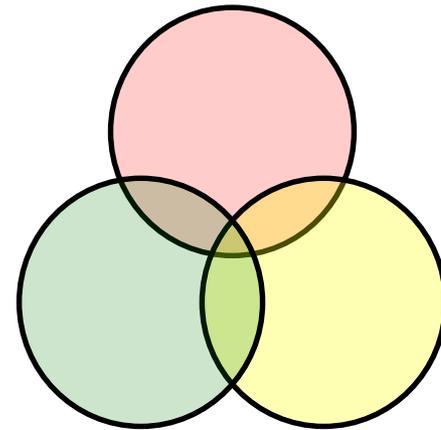
A Dust Bath

- On litter, hens dust bathe every 2-3 days
- Hens ‘sham’ dust bathe on wire floors
- After deprivation hens dust bath more quickly and for a longer period of time suggesting internal ‘build-up’ of motivation
- Will they work for a dust bath?





How Do Laying Hens Fare in Different Housing Systems?



Conventional Cages

- Promote good health and hygiene
- But space and behaviour are greatly restricted
- And lack of exercise leads to weaker bones



Source: OFAC Photo Library

Non-Cage Systems

















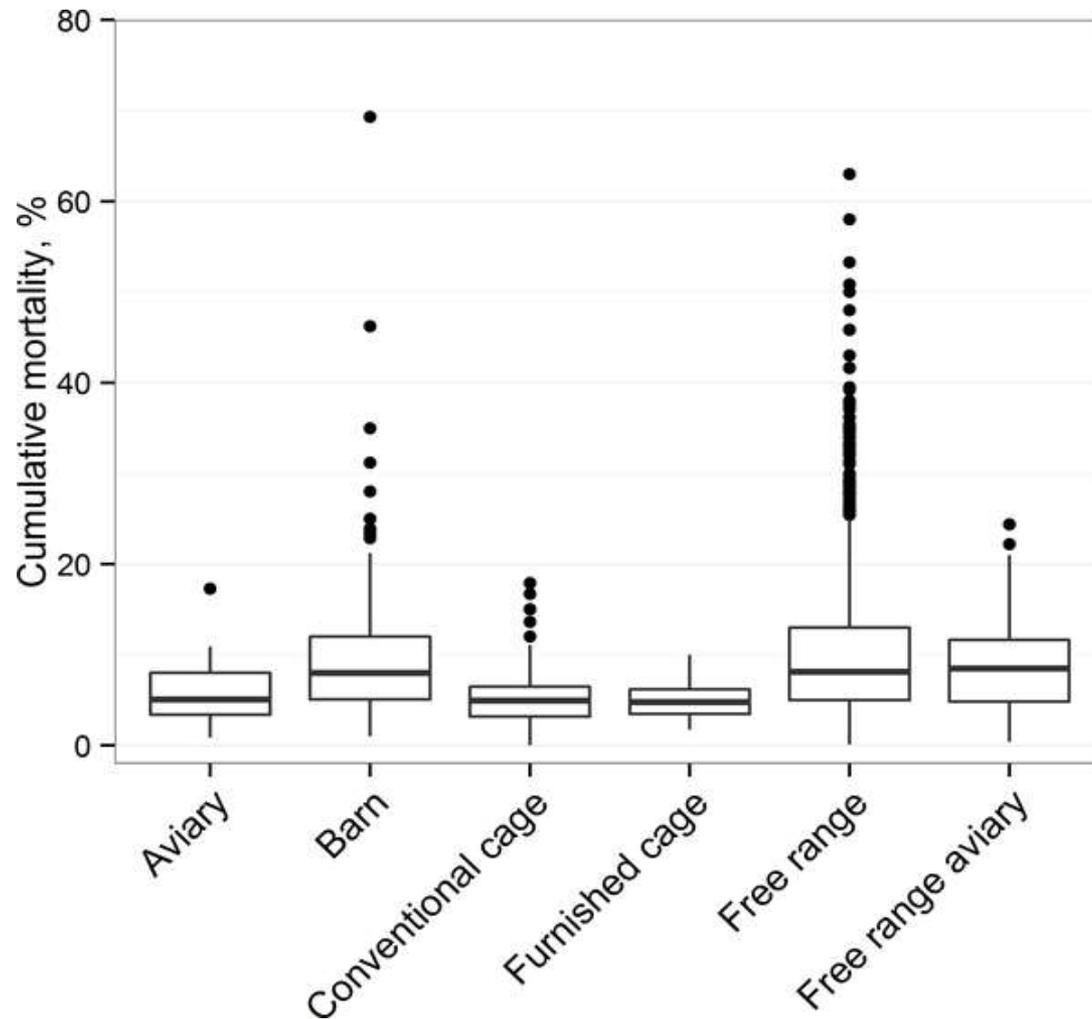
Source: Big Dutchman

Non-Cage and Free Range Systems



- Provide more space and opportunities to engage in a full range of behavior
- But increased risk of poor hygiene, disease and broken bones from collisions
- And increased risk of problems such emaciation, feather pecking and cannibalism

Fig 1. Box plots for mortality in each housing system between 60 and 80 weeks of age using the full data set from 10 studies (3,851 flocks).



Weeks CA, Lambton SL, Williams AG (2016) Implications for Welfare, Productivity and Sustainability of the Variation in Reported Levels of Mortality for Laying Hen Flocks Kept in Different Housing Systems: A Meta-Analysis of Ten Studies. *PLoS ONE* 11(1): e0146394.

doi:10.1371/journal.pone.0146394

<http://journals.plos.org/plosone/article?id=info:doi/10.1371/journal.pone.0146394>

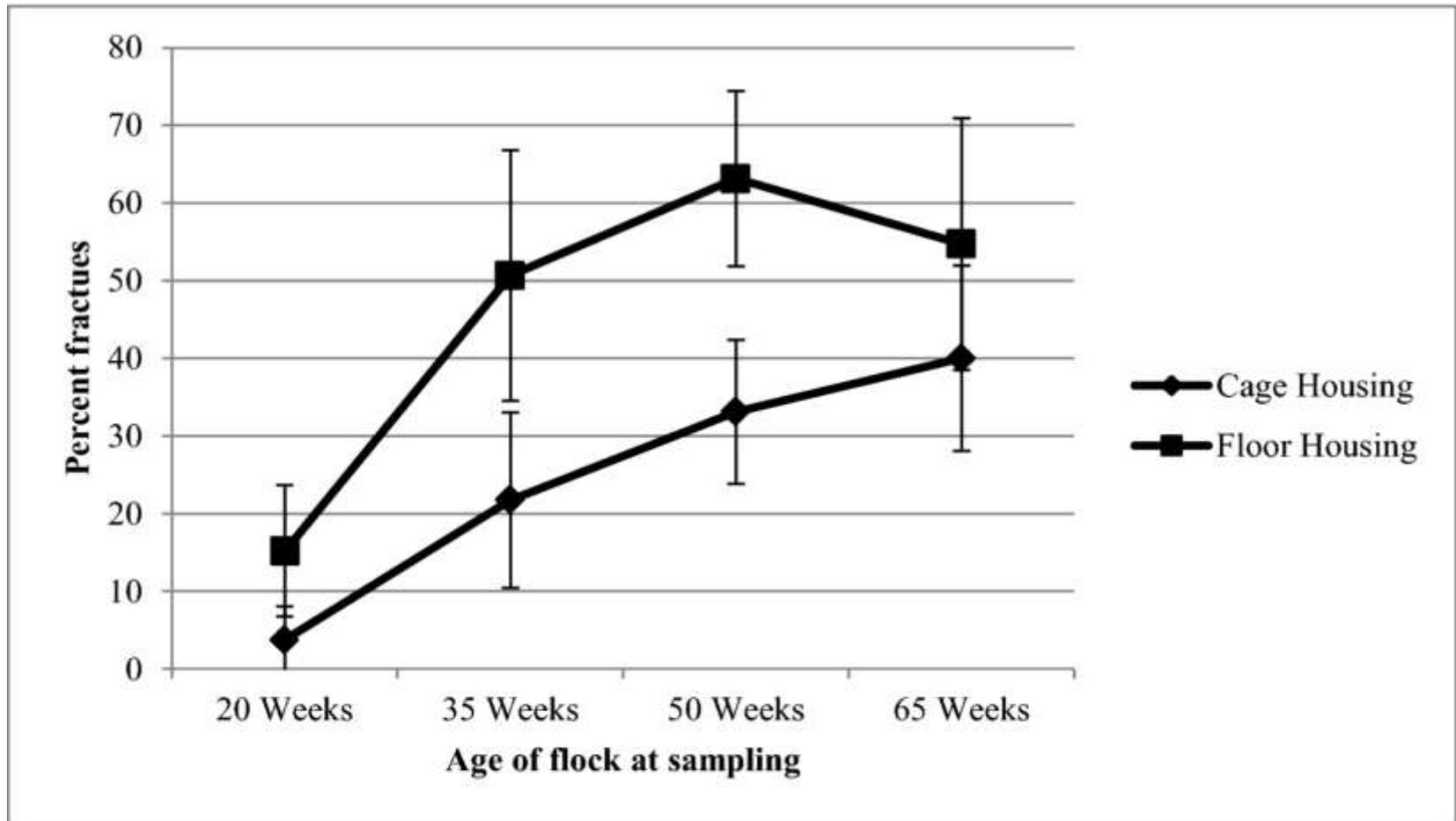
Keel Bone Fractures

- Sternum- site of muscle attachment for wings
- Incidence rates range from 5 to over 85%
- Shown to be painful for hens
- Injury from falls and collisions



From Wilkins et al 2004

Flock-level keel fracture prevalence (proportion of hens sampled) of commercial brown laying hen flocks in Ontario housed in conventional cage or single-tier floor housing systems, stratified by age of flock at sampling.



Mike T. Petrik et al. Poultry Science 2015;94:579-585

Furnished Cages and Enriched Colonies

- Earliest models for small groups of hens provided nest box, perches, litter area for scratching and dustbathing
- More recent trend is to increase group size and replace litter box with a mat sprinkled with litter



Source: LayWel Report



Source: Manitoba Egg Farmers

Nesting Area



Source: University of Manitoba

Perches



Source: University of Manitoba

Scratch Areas



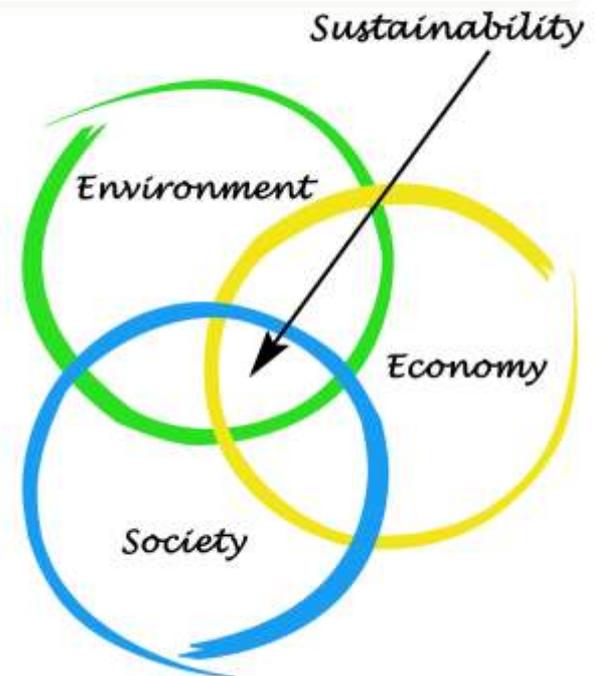
Source: University of Manitoba

Furnished Cages and Colonies

- Provide the hygiene and health benefits of conventional cages- low mortality
- Perches and more space increase bone strength
- Furnishings support some of the behaviour patterns shown to be important to hens



Other Trade-Offs?



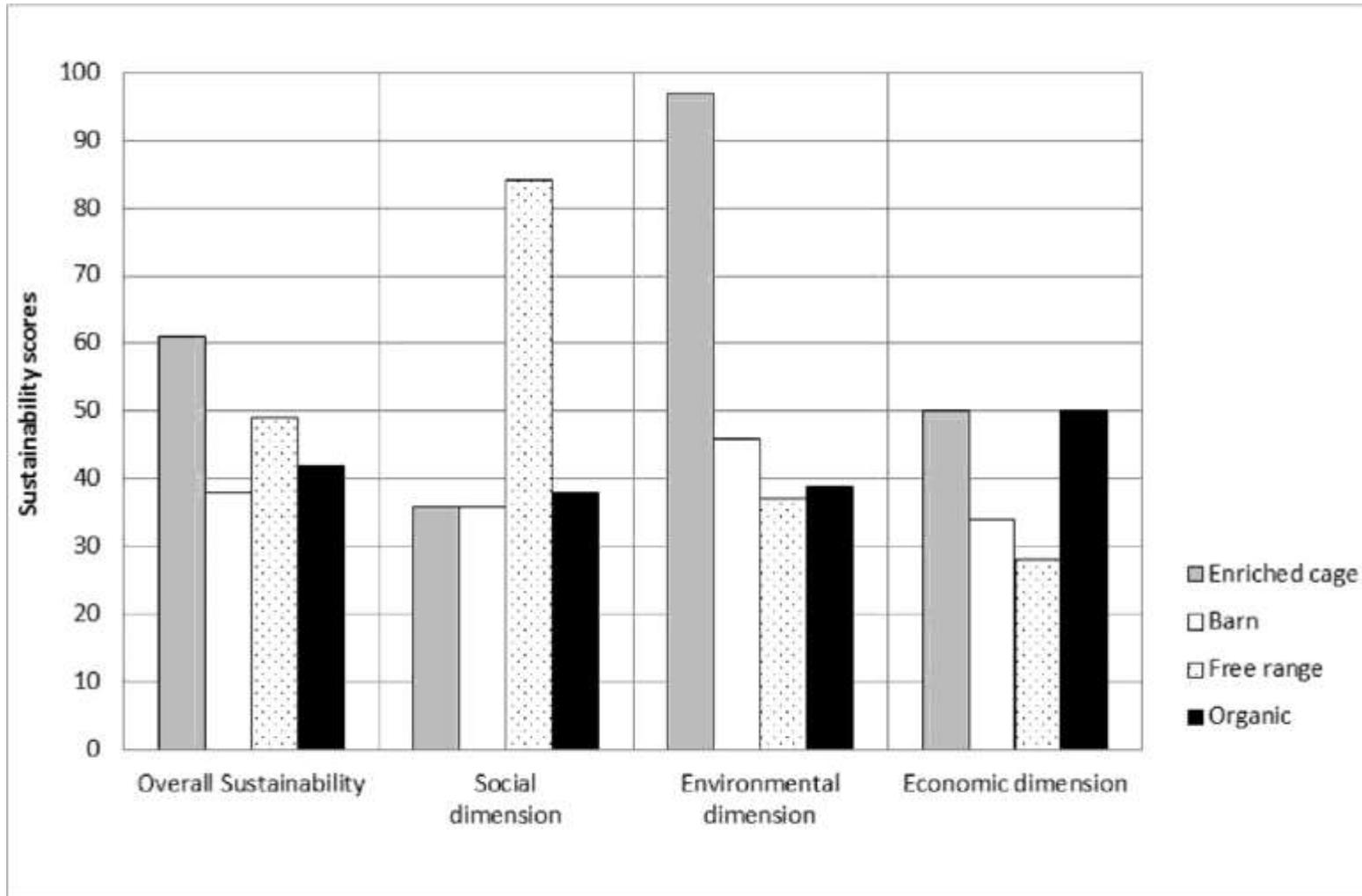
Laying Hen Housing Research Project

**Summary Research
Results Report, March 2015**



Coalition for Sustainable Egg Supply

Overall sustainability scores and scores in the social, environmental and economic dimension for enriched cage egg production (grey bars), barn egg production (white bars), free-range egg production (dotted bars), and organic egg production (black bars).



E. D. van Asselt et al. Poultry Science 2015;94:1742-1750



Australian Government

The Treasury

Consultation Regulation Impact Statement

Free Range Egg Labelling

- Do hens *want* to range?
- What do they want to do on the range?
- What features of the range are important to them?
- How does access to range affect other aspects of their welfare?





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🏠 Pursuit / Putting the chicken before the eggs

Putting the chicken before the eggs

The free range eggs debate misses a crucial point: that the definition should stem from what hens want, not what we want

Ranging behaviours in free-range hens

J.-L. Rault, H. Larsen, G. Cronin and P. Hemsworth
Animal Welfare Science Centre, University of Melbourne



Fly the coop! Vertical structures influence the distribution and behaviour of laying hens in an outdoor range

J-L Rault,^{a*} A van de Wouw^b and P Hemsworth^a

Outdoor stocking density in free-range laying hens: radio-frequency identification of impacts on range use

D. L. M. Campbell^{1,2†}, G. N. Hinch¹, T. R. Dyll², L. Warin^{2,3}, B. A. Little⁴ and C. Lee^{1,2}

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What the Science Can Do

- Provide objective evidence on the various criteria for good animal welfare
- Identify refinements and alternatives to current practices that can improve animal welfare
- Inform practical animal welfare assessments and audits that are valid, reliable and feasible



What the Science Cannot Do

- Identify practices that satisfy all stakeholders
- Every change in practice involves trade-offs
 - Different criteria for animal welfare
 - Economic impact
 - Environmental impact
- But should science inform the decisions?



