

How to measure pig environmental enrichment adequacy

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Aims:

- To determine whether pig farm inspections provide a good snapshot of how content the pigs are
- To test the quality of alternative forms of enrichment for commercial pigs on semi-slatted flooring
- To analyse the differences in pig behaviour when provided with differing enrichment

Introduction

Pigs have an inbuilt need to explore and forage. If this requirement is not catered for maladaptive behaviours are seen, reducing the welfare of the animals². In order to satisfy this need, pigs must be provided with enrichment materials. Current EU legislation only describes the minimum requirements for environmental enrichment, and does not give guidance on how to measure the suitability of materials given. Farm inspections of limited duration could alter the pigs behaviour to give an inaccurate measure of welfare¹.

Method

Four groups of ten grower pigs were kept in semi-slatted pens. Food and water were provided *ad libitum*. Prior to the study, the pigs were housed in commercial groups of twenty on slatted floor pens, with a hanging plastic tube as enrichment.

Four types of enrichment were rotated around the pens. Each pen used each type of enrichment for one week. All enrichment complied with DEFRA guidelines. The types used were (1) Plastic pipe hanging from a chain; (2) Wall-mounted feeder with lid filled with chopped straw; (3) Wall-mounted wire rack filled with chopped straw; (4) Loose chopped straw scattered on the ground.

Results

Type of environment enrichment significantly affected the percentage of enrichment-directed behaviours ($P = <0.001$). Loose chopped straw yielded the most enrichment-directed behaviour; plastic pipe yielded the least (See figure 1).

Direct observation is an accurate method of assessing the use of enrichment, but not as useful for measuring other aspects of pig behaviour. Video analysis correlates with direct

Results (contd.)

observation in relation to enrichment manipulation (see figure 2).

Direct observation did not show the significant difference in pen-directed behaviour between enrichment type ($P = 0.18$) when compared with video surveillance analysis ($P = 0.004$).

There was no apparent correlation between positive or negative pig- and pen-directed behaviours and enrichment type (% positive $P = 0.193$ video analysis, $P = 0.116$ direct observation; % negative $P = 0.941$ video analysis; $P = 0.743$ direct observation).

Discussion

The significant correlation between direct observation and video surveillance for enrichment-directed manipulation suggests quick farm inspections could be suitable for measuring the adequacy of the enrichment provided. This provides an animal-based assessment of quality, rather than a resource-based assessment. However, the direct observations failed to provide an accurate snapshot of the other behaviours pigs display: further research is needed to determine whether enrichment manipulation provides evidence of good welfare.

Discussion (contd.)

Loose chopped straw is the best quality enrichment, but it is not possible for use on slatted flooring – the most common floor type in commercial pig farms in the UK. Boxes and racks as used in this study may be more adequate than the common plastic tubing, and are suitable for slatted flooring. Further study using video surveillance could provide suggestions for good quality enrichment, which in turn could be used to refine the current DEFRA guidelines.

Conclusions:

- Pig farm inspections provide a good snapshot of enrichment quality, but not necessarily of pig welfare
- Loose chopped straw is the best enrichment. The wall-mounted feeder and the wire rack filled with chopped straw are better alternatives to a suspended plastic pipe
- Pig-directed and pen-directed behaviour did not significantly alter with different enrichment types – only the enrichment-directed behaviour was changed.

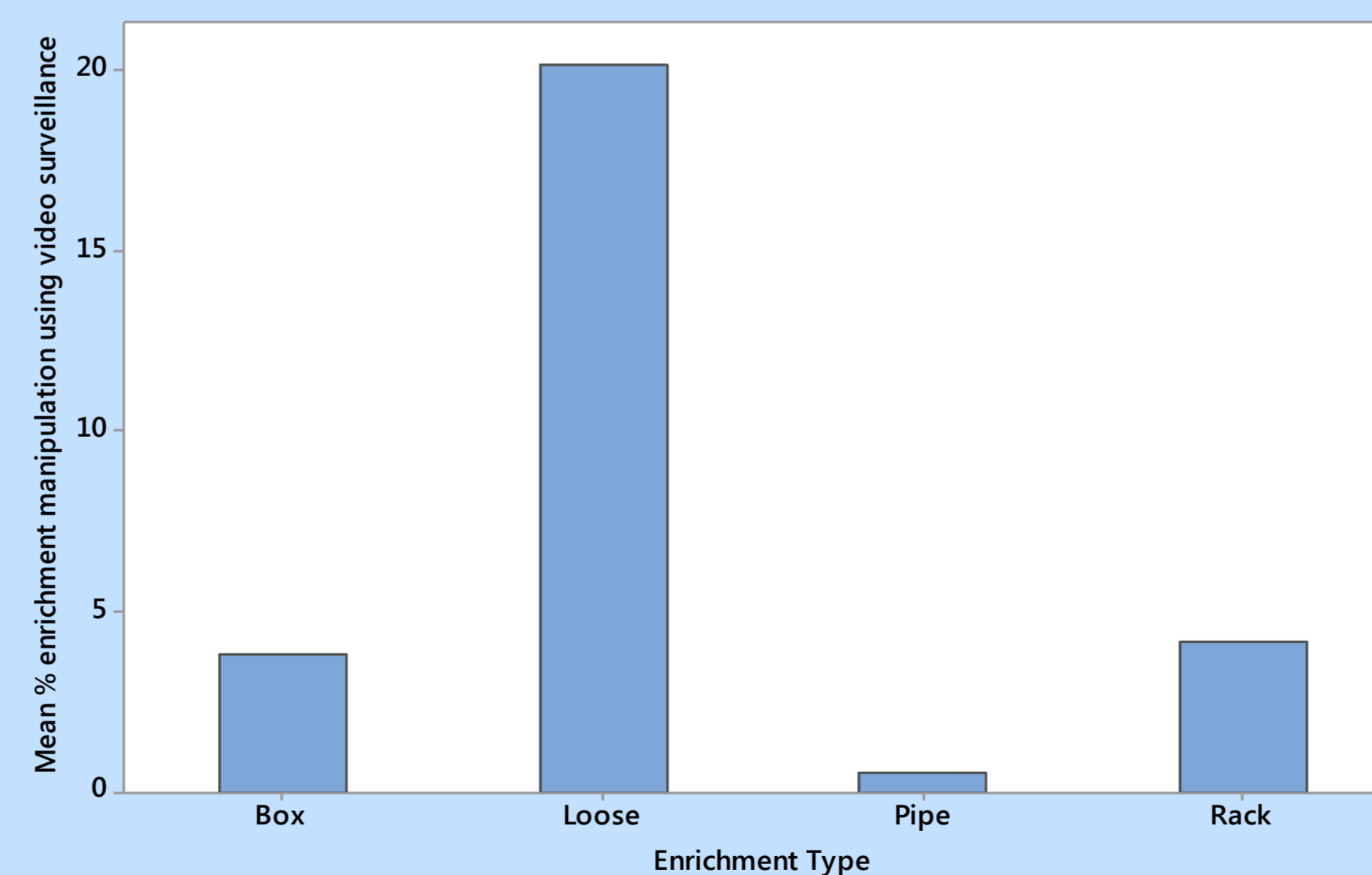


Figure 1. Bar chart displaying enrichment type against mean percentage of enrichment manipulation using video surveillance analysis. Loose chopped straw was most favourable ($\bar{x} = 20.16$), plastic pipe is the least favourable ($\bar{x} = 0.55$)

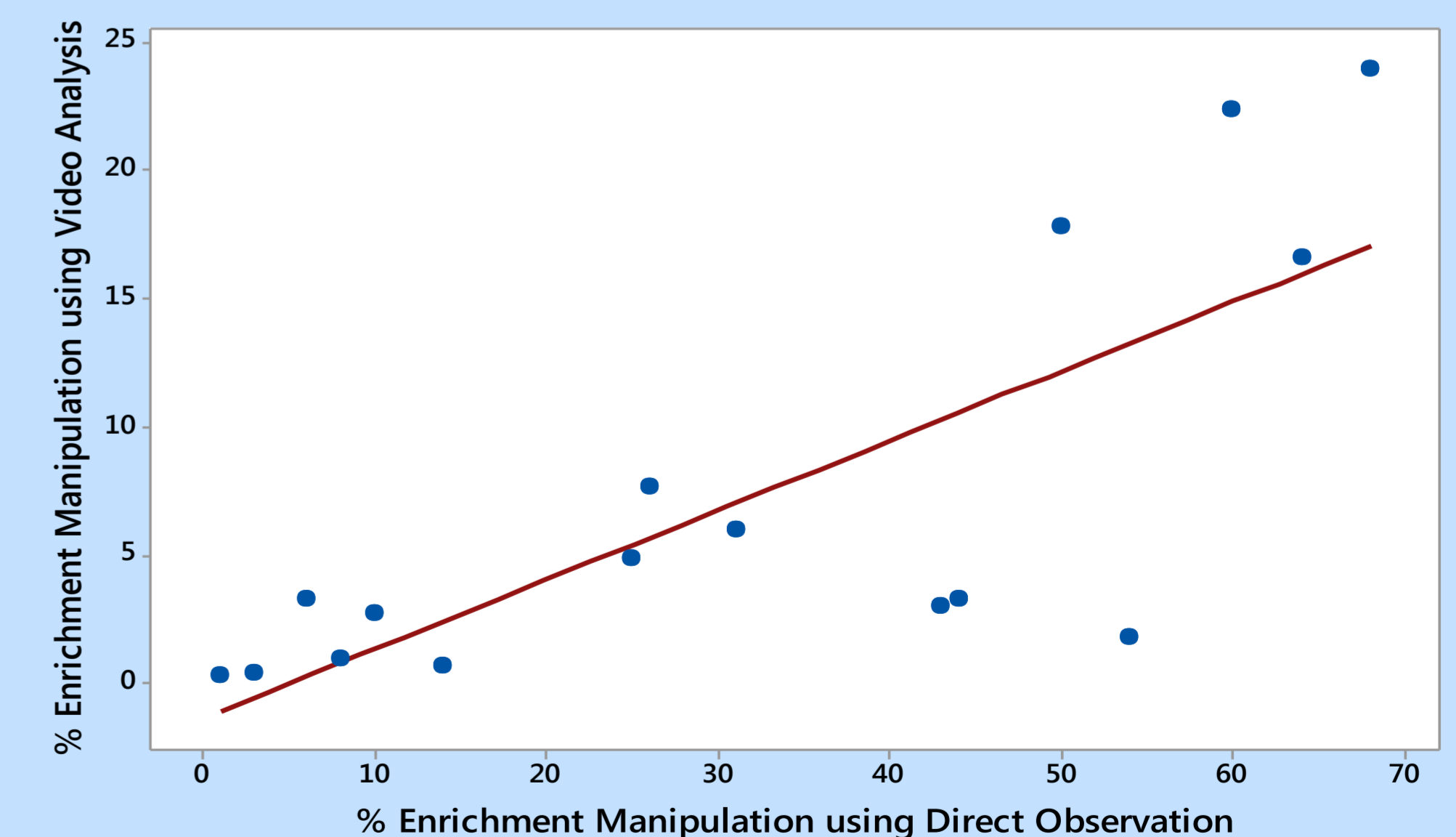


Figure 2. Regression plot of % enrichment manipulation seen in video analysis against percentage of enrichment manipulation seen during direct observations. Video analysis and direct observation are correlated ($R\text{-Sq} = 60.1\%$; $P = <0.001$);