Evaluation of animal welfare outcomes of Rural Development Programme (RDP) measures for Dairy Cows

An Analysis for the Federal State of North-Rhine-Westphalia for the Programming Period 2007-2014

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Animal Welfare

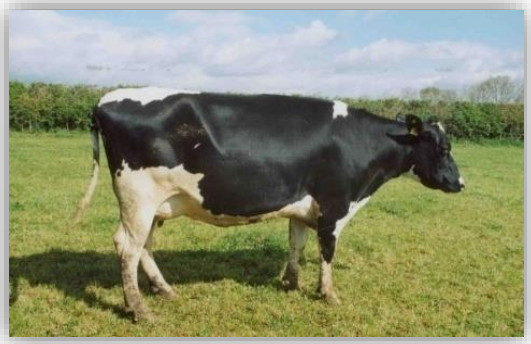
“Input”

Management

Housing

Animal (e.g. breed)

ANIMAL WELFARE



“Output”

Health

Behaviour

Emotional state

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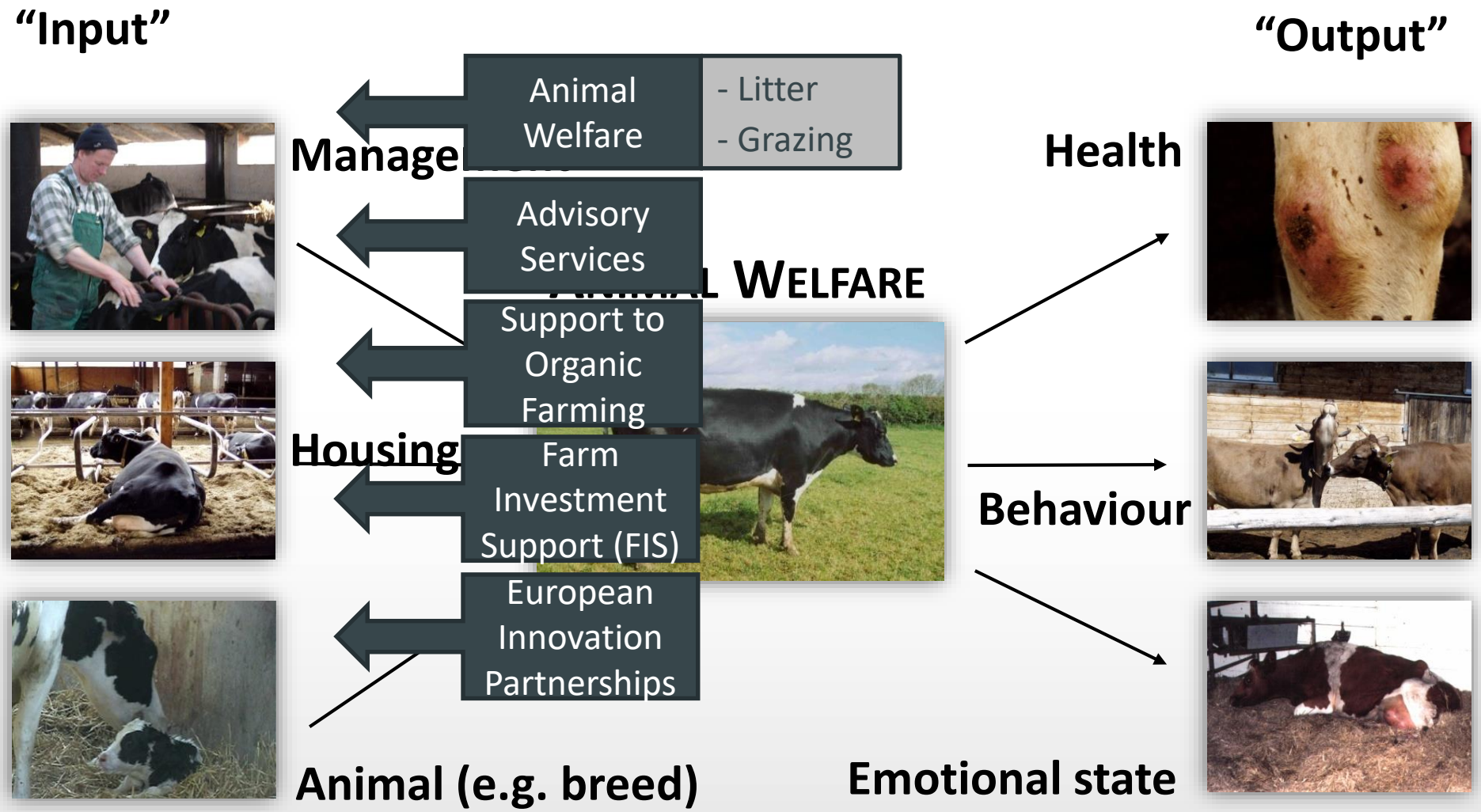
Animal Welfare – RDP-measures



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Measuring animal welfare

- Animal welfare is assessed using indicators, which address specific animal welfare issues such as lameness, mortality etc.
- Some of these indicators need to be surveyed on-farm, for others existing data sources can be used
- For dairy cows such sources are:
  - Milk control data (mastitis, metabolic disorders)
  - **Cattle register data (mortality, longevity)**
- Indicators:
  - Mortality rate = # of unassisted deaths and euthanasia / cow years
  - Longevity = # of days from first calving until death

Identification of the effect

The flexible conditional difference in differences (DID) approach

- Availability of pre- and posttreatment data

=> DID (removes confounders, which do not change over time)

- But: Treatment and control group could be so different before treatment that the parallel trend assumption seems implausible

=> Conditional DID (combines matching and DID)

- Variables for matching: herd size, breeds, location, area of agricultural land and area of meadows/pastures
- But: staggered implementation (support was received in different years) might lead to a bias due to changes in the economic environment

=> Flexible conditional DID (Dettmann et al. 2018)

Treatment and Control Groups

Treatment groups

1. FIS (farm investment support): all dairy farmers, who built a stable supported by FIS between 2007 and 2013
2. Litter: all dairy farmers, who participated in the animal welfare measure Litter
3. Grazing: all dairy farmers, who participated in the animal welfare measure Grazing
4. Organic: all dairy farmers, who switched to organic farming between 2007 and 2013

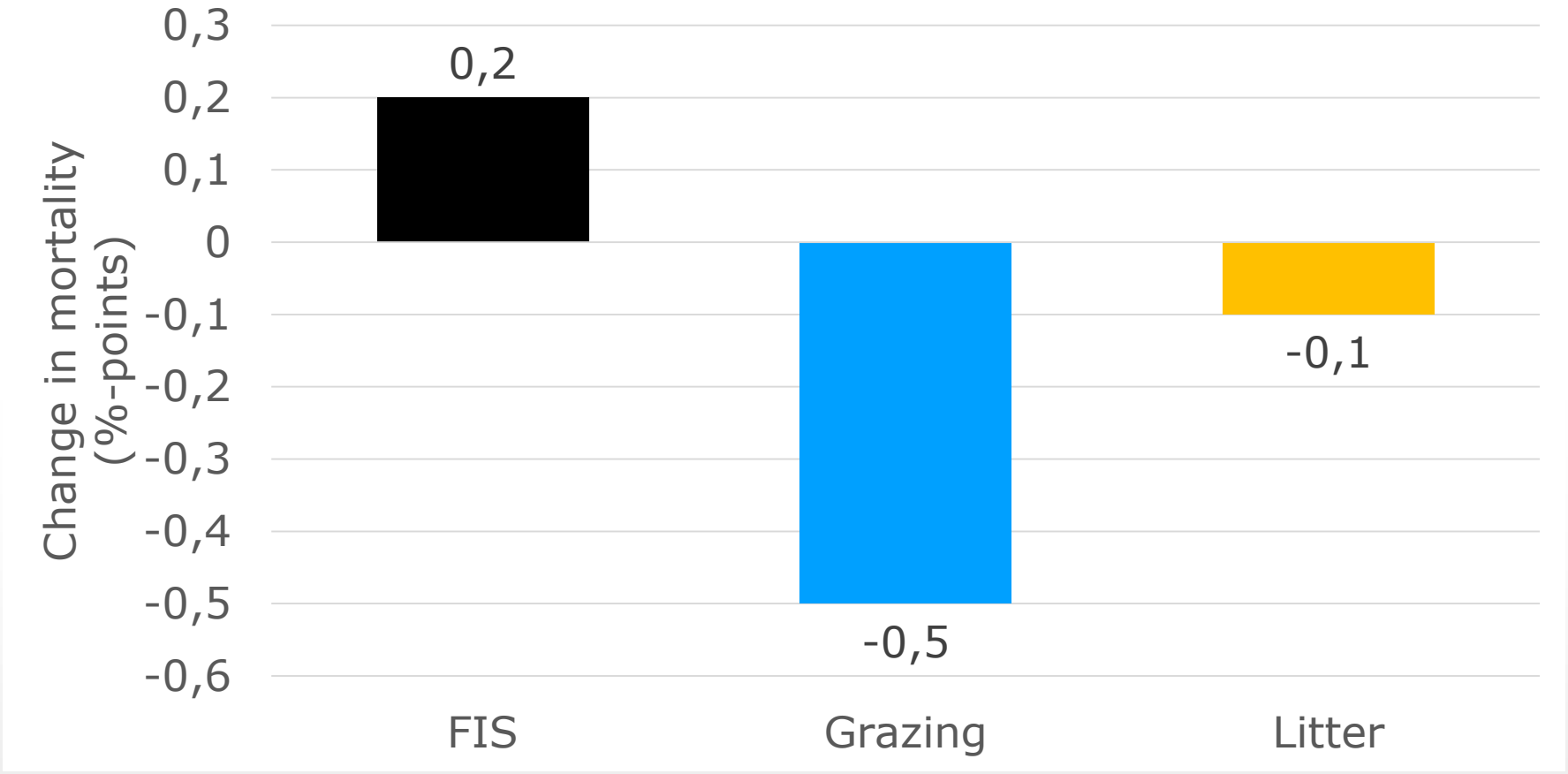
The **control group** contains all dairy farms, which did not participate in any of the above mentioned support measures.

Processing the register data

- The cattle register (HIT) contains data for every cattle in Germany concerning (among others) date of birth and death, sex, breed, calving status, date of entering and exiting the farm as well as the cause of death.

1. Identification of milking cows based on sex, breed and calving status.
2. Aggregation on farm level
3. Calculation of the animal welfare indicators mortality and longevity
4. Combination with support data and data on land use

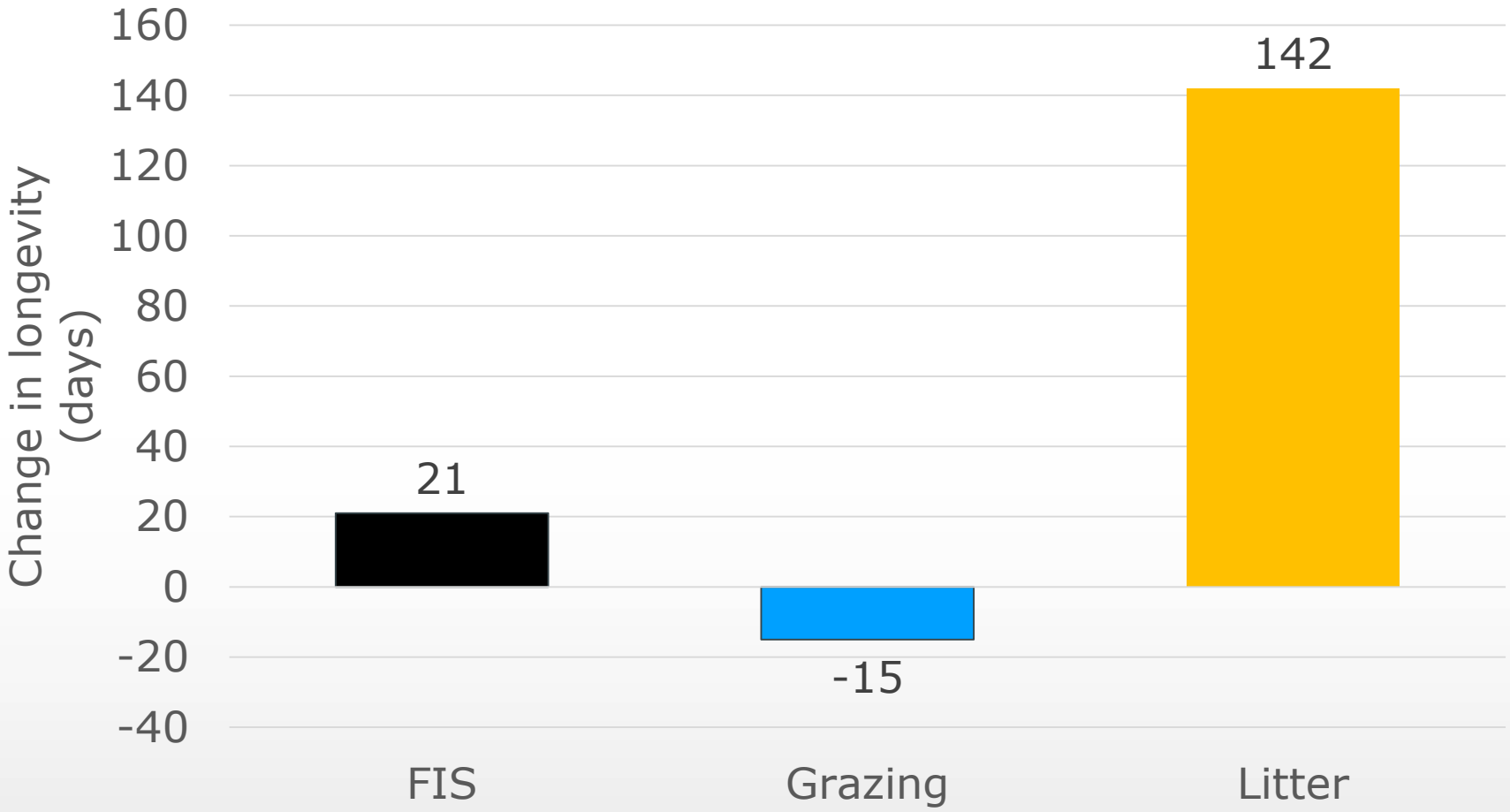
Effect of Support Measures on Mortality



Source: own calculations

THÜNEN

Effect of Support Measures on Longevity



Source: own calculations

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Discussion | Conclusions (1)

- Due to the low animal welfare requirements of **FIS**, it is not surprising that no substantial effects were found.
- The effects of **grazing** on mortality have been documented in other studies (Burow et al. 2011)
- The positive effect of **litter** on longevity can be attributed to softer lying conditions, but more empirical evidence is needed.
- Due to the low number of beginners a quantitative analysis of **organic farming** was not possible.
- Descriptive results suggest that organic farming reduces mortality and increases longevity.

Discussion | Conclusions (2)

- Cattle register data is in principle suitable to analyse mortality and longevity in dairy herds
- But:
  - Data handling is time consuming and complex.
  - The data set only contains two indicators, which limits the analysis.
  - Due to the legal framework in Germany data access is difficult

=> Due to these limitations we will use data from milk recording schemes instead for the evaluation of the programming period 2014-2020.

Thank you very much!

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