

Does the dominance hierarchy in a large group of horses influence locomotor activity and area utilization?

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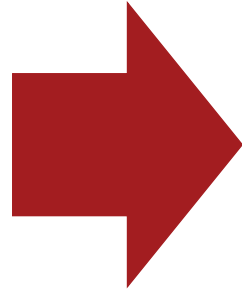


75th EAAP conference, Florence, Italy
session 74; abstract nb 2213099

Group housing in horses



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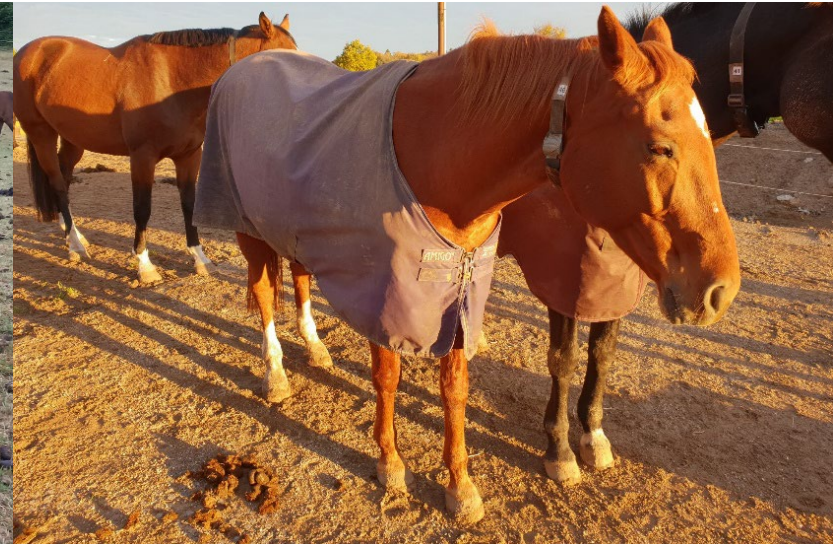


How are large groups organized?

Often: large (dynamic) groups >20 horses

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Journal of Equine Veterinary Science

journal homepage: www.j-evs.com

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Article

Area and Resource Utilization of Group-Housed Horses in an Active Stable

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Original Research

Distances Walked by Long Established and Newcomer Horses in an Open Stable System in Northern Germany

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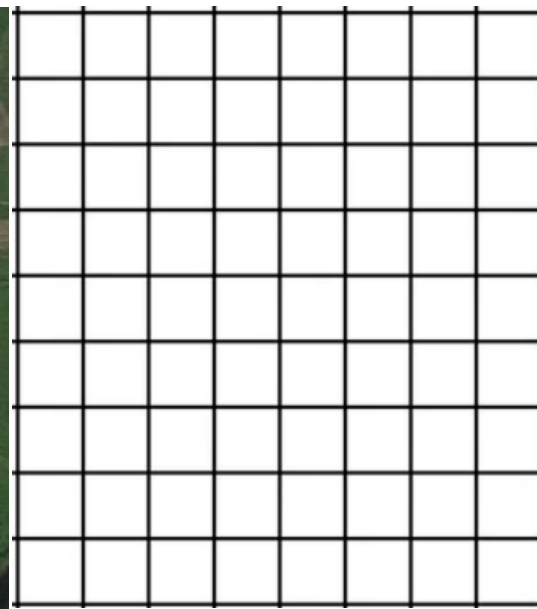
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Animals **2021**, *11*(10), 2777; <https://doi.org/10.3390/ani11102777>

Does the rank order have an influence? – Experimental setup

- Other large group of horses (40 ponies)
- GPS collars to monitor walked distances and location over 30 days
- Pair-wise feeding tests in test arena to monitor dominance relationships



Statistical analysis

$$y_{ijk} = \mu + R_i + D_j + A_k + b_{\text{age}} + e_{ijk}$$

with:

y_{ijk} = daily distances or the number of quadrants used per hour

μ = overall mean

R_i = fixed effect of the i^{th} rank class ($i = 1, 2, 3$)

D_j = fixed effect of the j^{th} observation day ($k = 1, \dots, 24$)

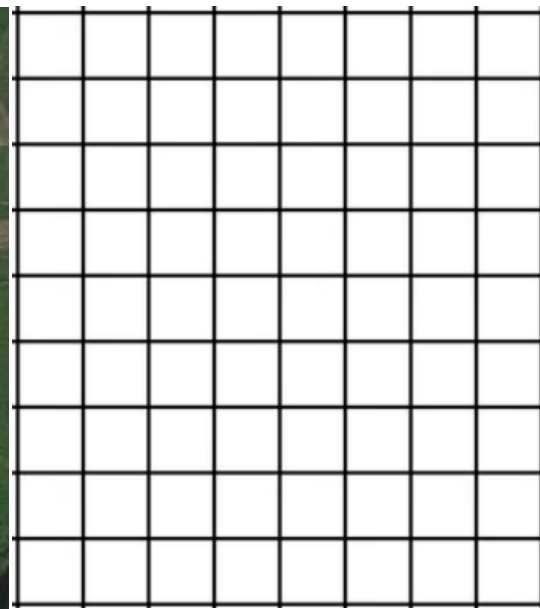
A_k = random effect of the k^{th} animal ($l = 1, \dots, 40$)

b_{age} = covariate age class

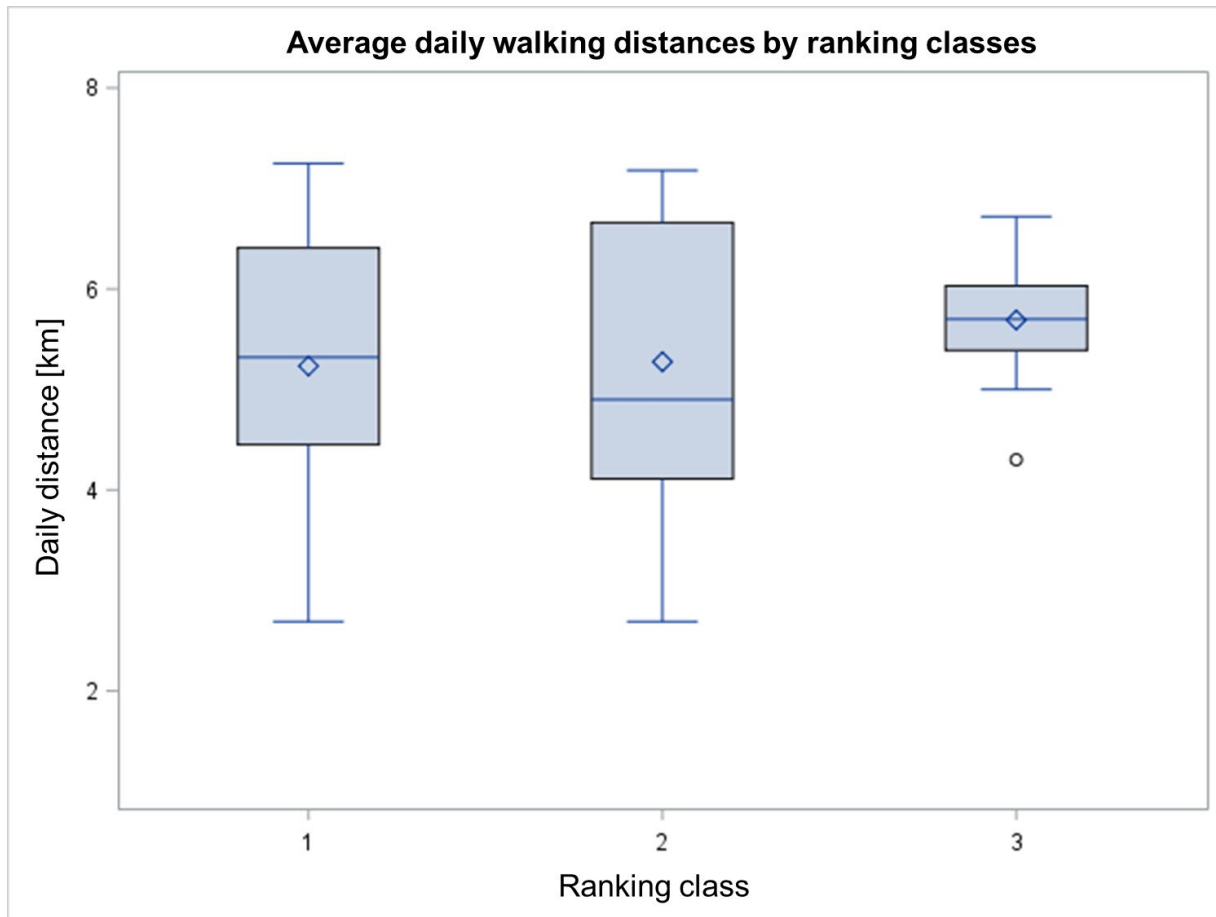
e_{ijk} = random residual error

Results: walked distances

- Average walking distance: 5.4 (± 1.2) km/day
- Minimum: 1.0 km/day; maximum: 12.8 km/day
- Wide individual variety

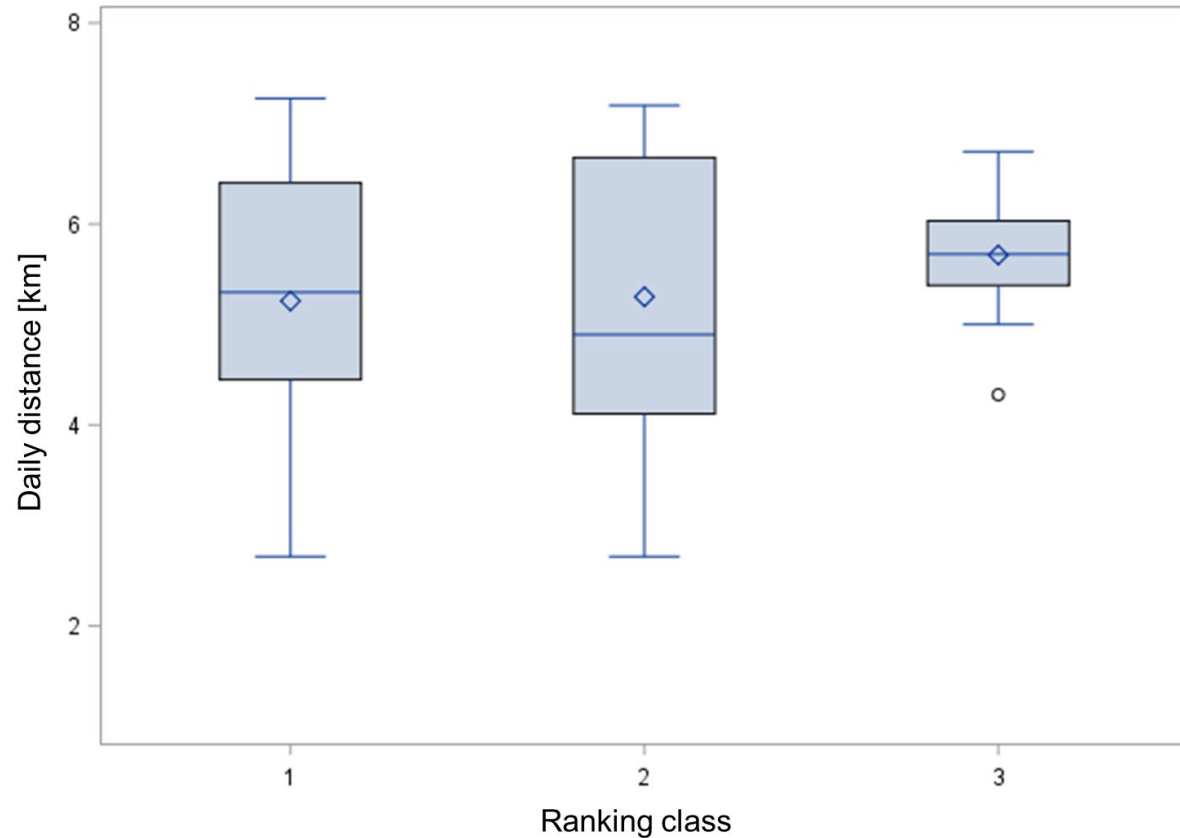


Results: influence of rank order

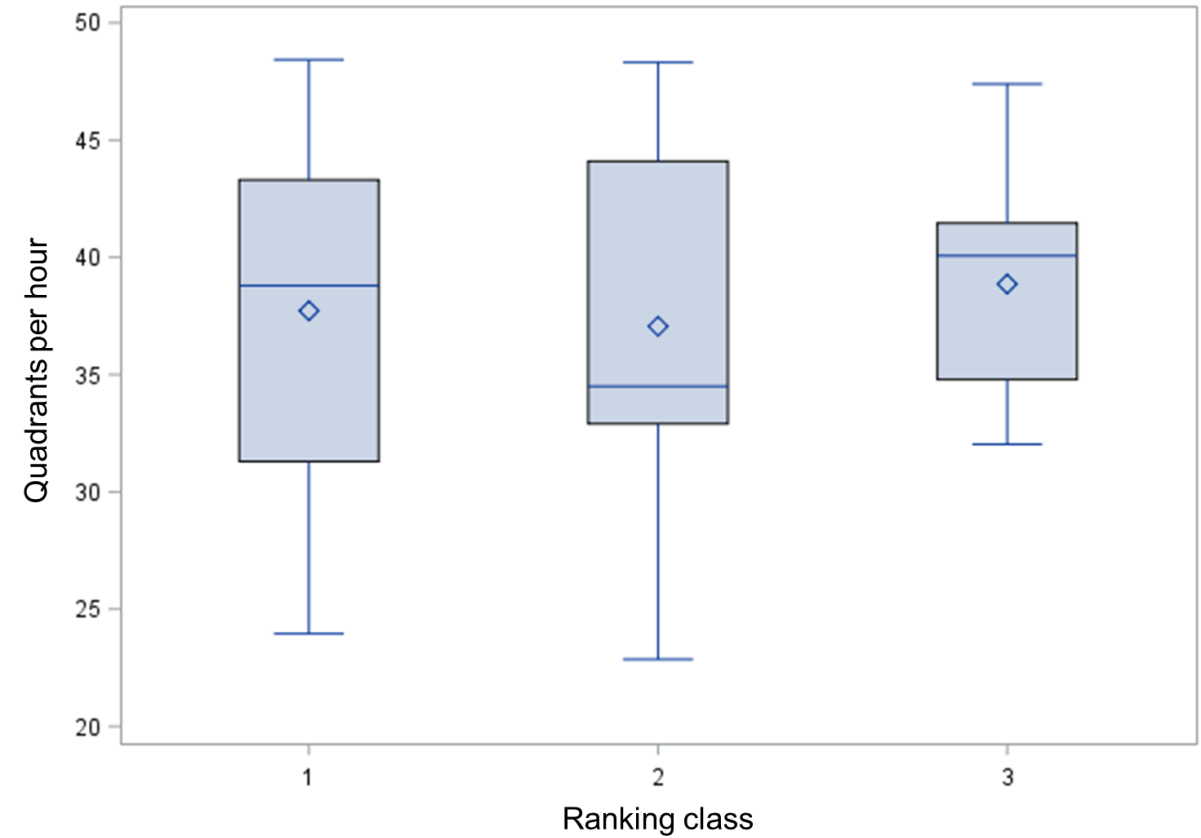


Results: influence of rank order

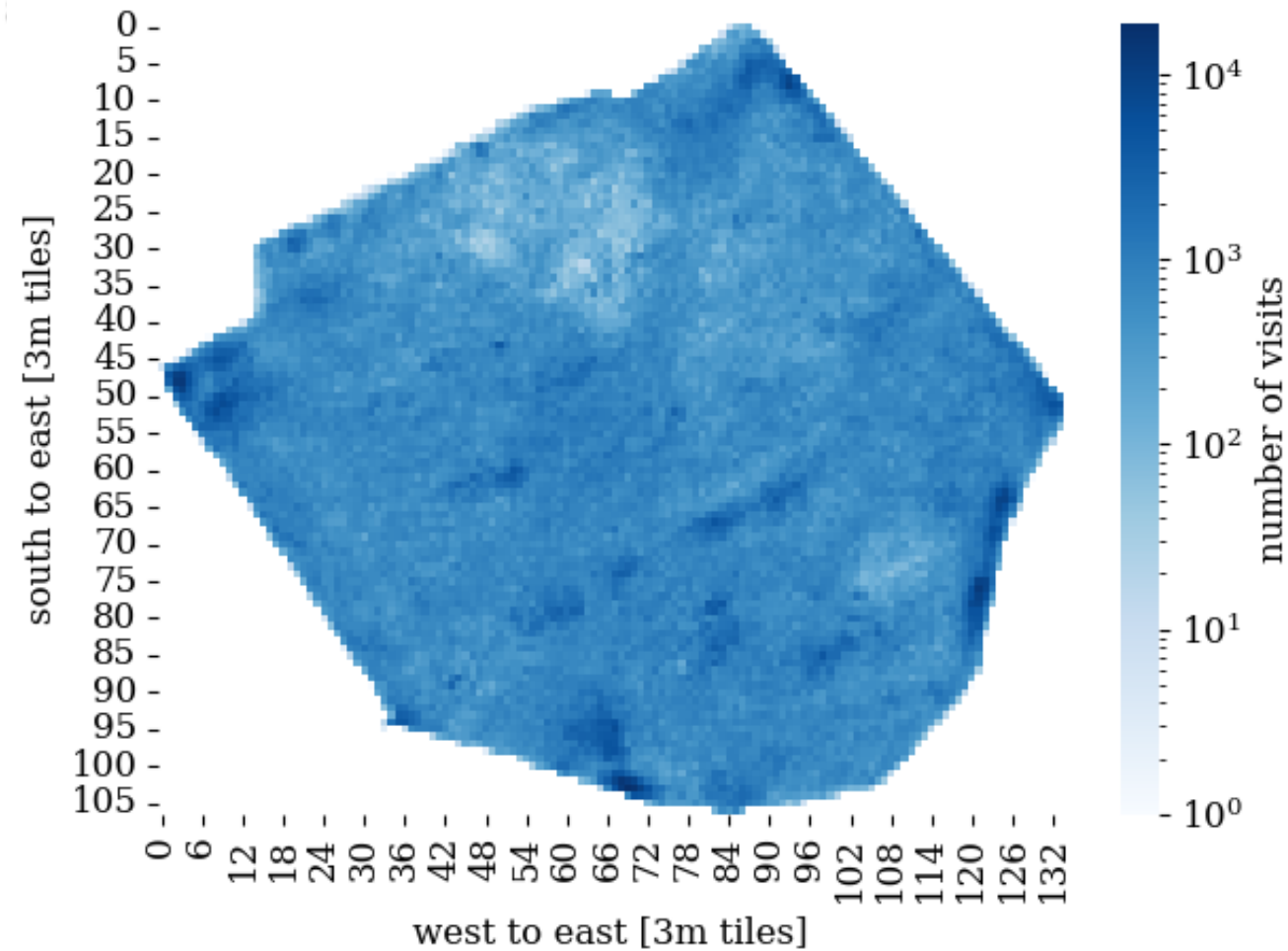
Average daily walking distances by ranking classes



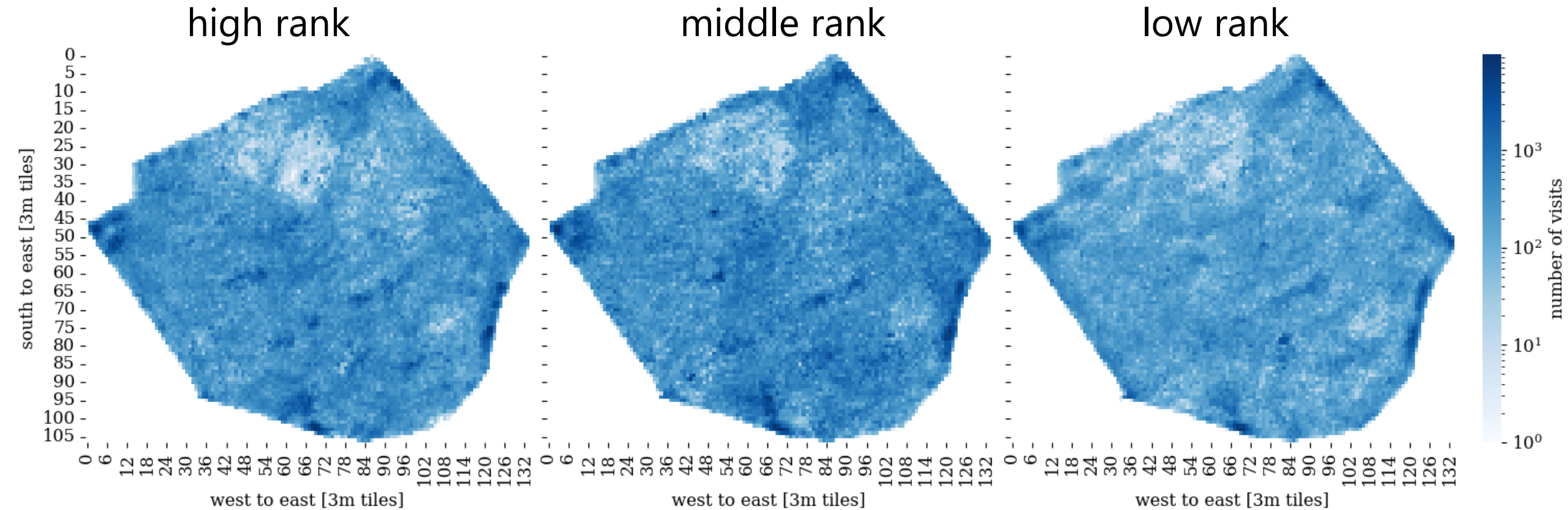
Average quadrants used per hour by ranking classes



Results: area utilization



Results: area utilization – influence of rank order



Key results

- Rank order does not affect walked distances/area utilization
- Lower ranked horses use less attractive areas more often
- Lower ranked horses spend less time at essential resources

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 - Ponies
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Funded by the European Union.

Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Research Executive Agency. Neither the European Union nor the granting authority can be held responsible for them.

Project 101136346

Thank you! Questions?
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