Cartographic uncertainty

SIADS 542: Presenting uncertainty – Week 3, Lecture 3

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Today

This week we've talked about spaghetti plots and hypothetical outcome plots (HOPs)

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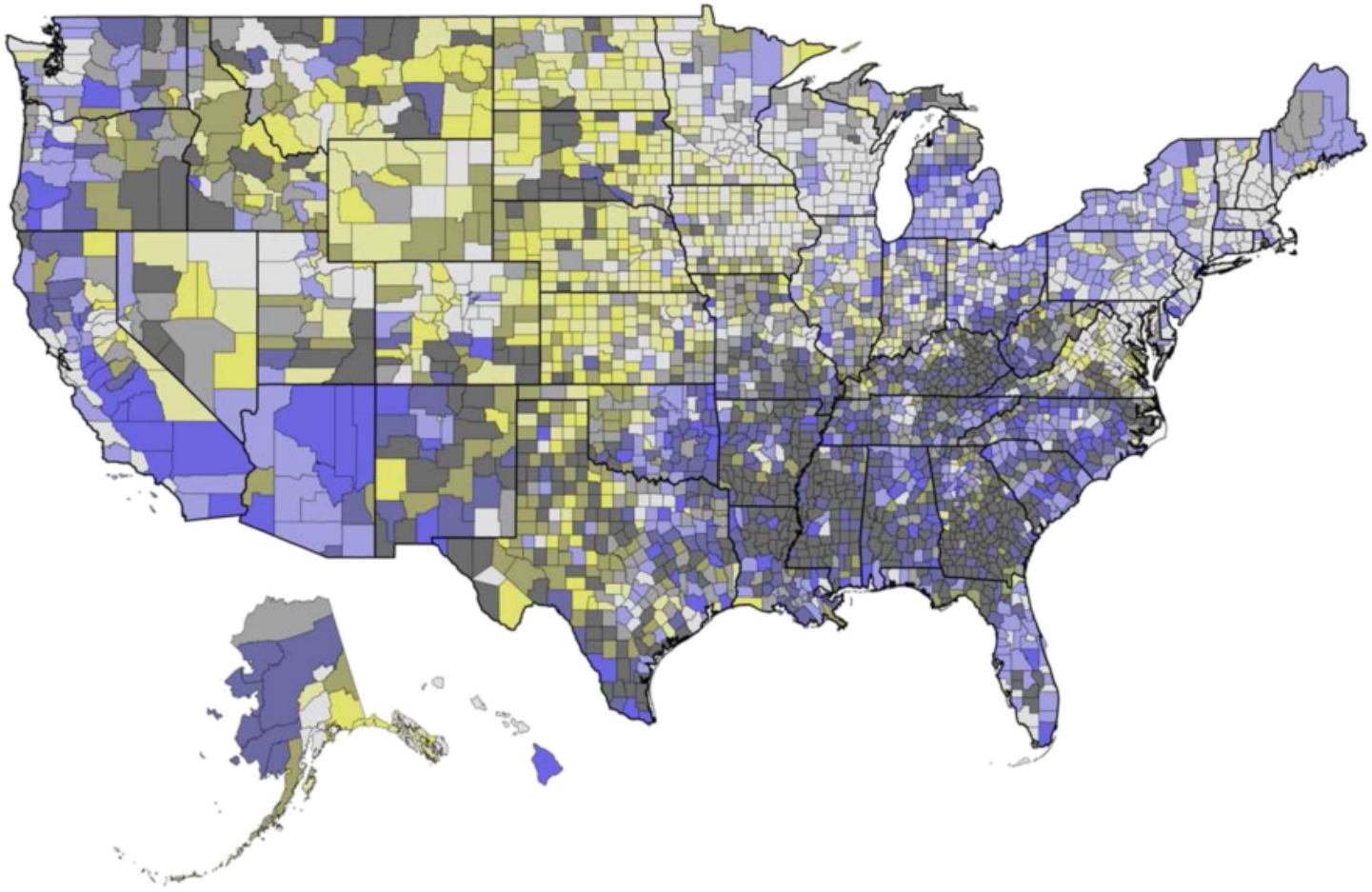
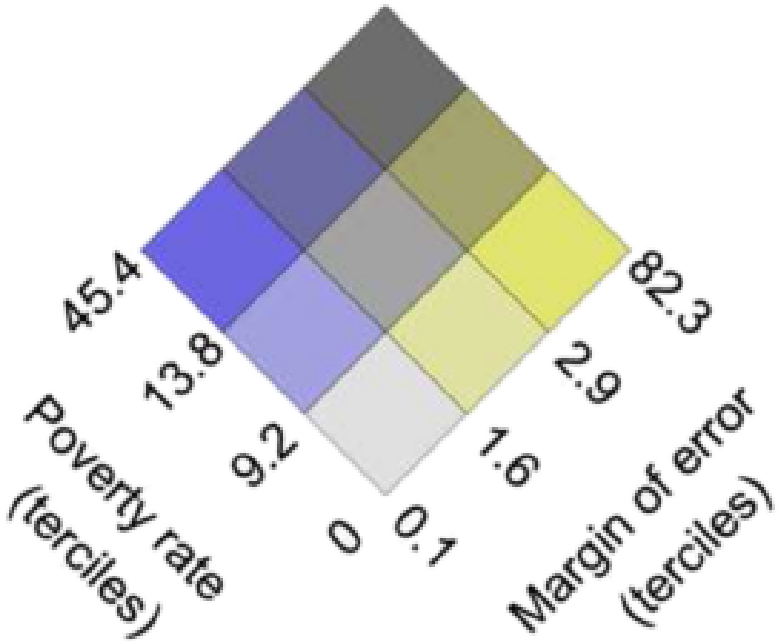
Let's take a brief detour into uncertainty in maps

Cartographic uncertainty

Just map SD to another visual channel...

[Lucchesi & Wikle. Visualizing uncertainty in areal data with bivariate choropleth maps, map pixelation and glyph rotation. Stat, 292–302, 2017]





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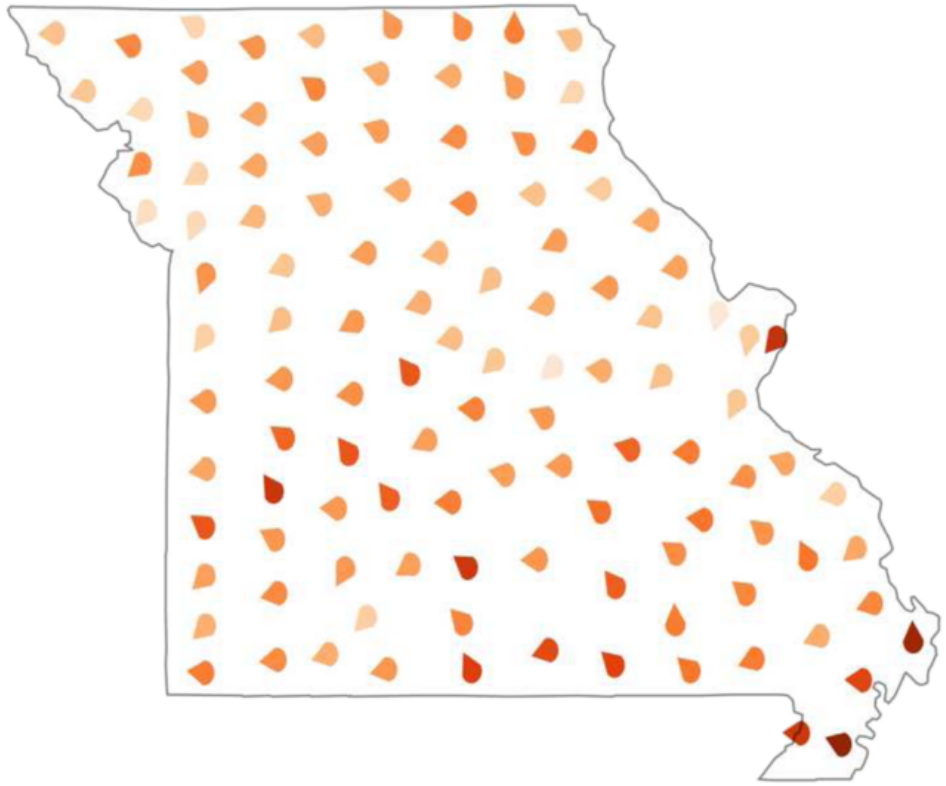

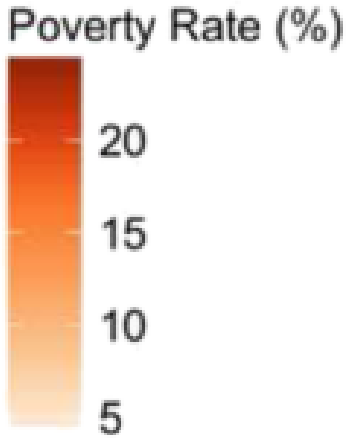

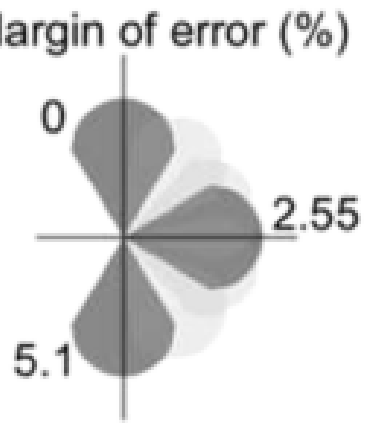

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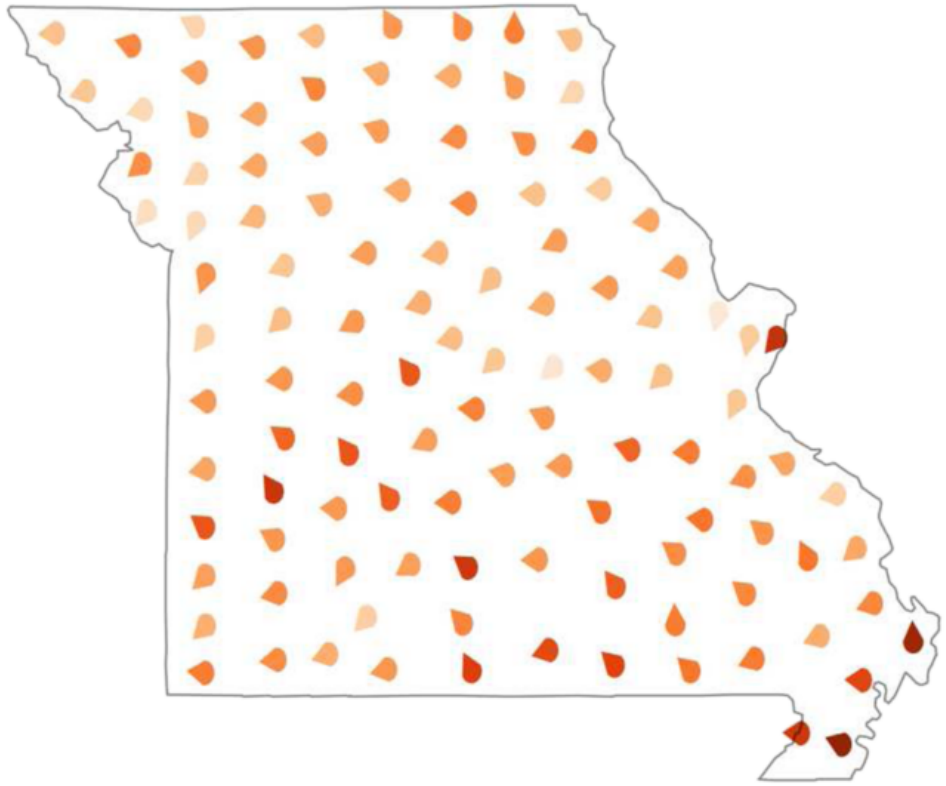

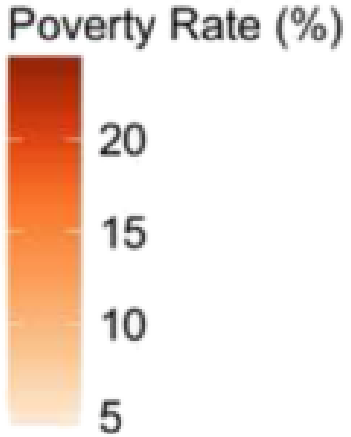

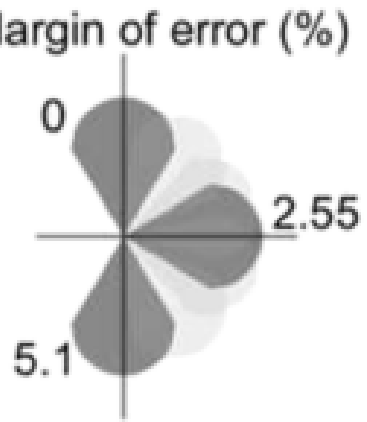

Can be very abstract…

Glyph-based uncertainty

[MacEachren, Robinson, Hopper, Gardner, Murray, Gahegan, Hetzler. Visualizing geospatial information uncertainty: What we know and what we need to know. Cartography and Geographic Information Science, 32(3), 139-160, 2005]

Color saturation

Blur

Opacity

Glyph-based uncertainty

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Color saturation

Blur

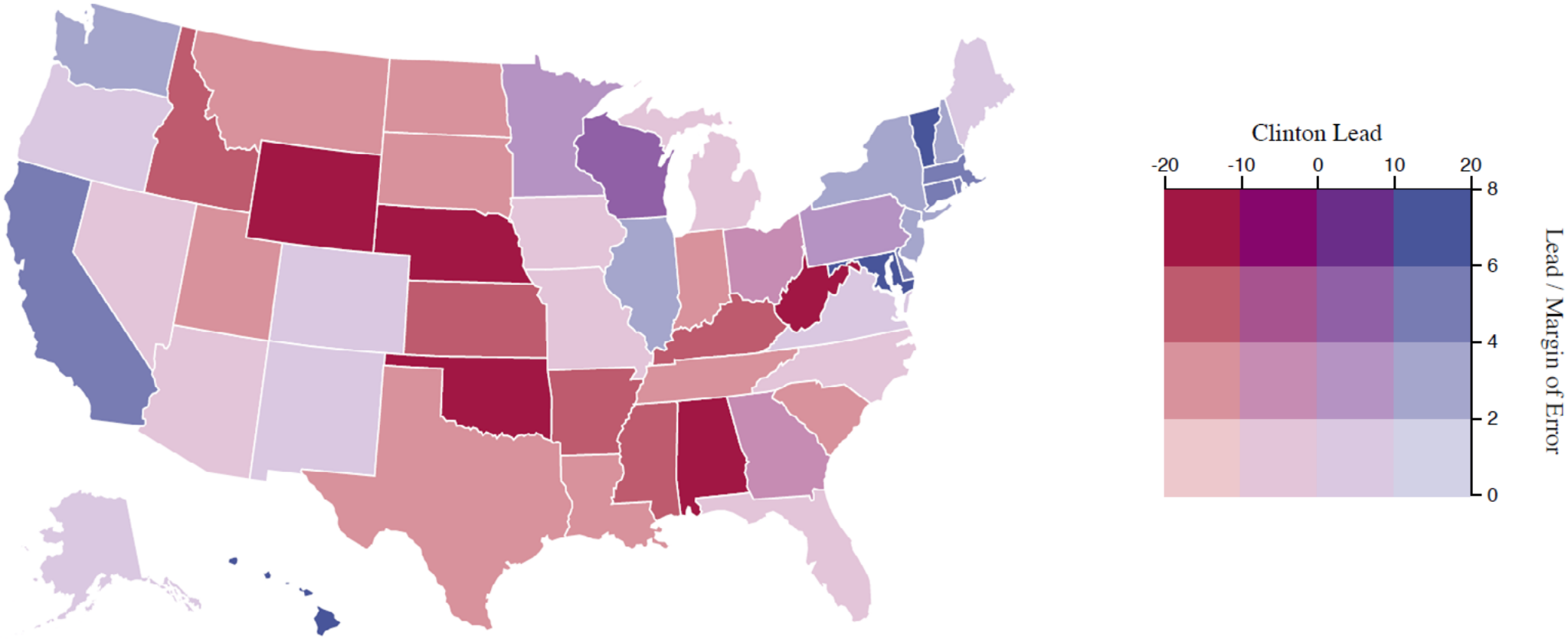
Opacity

More intuitive?

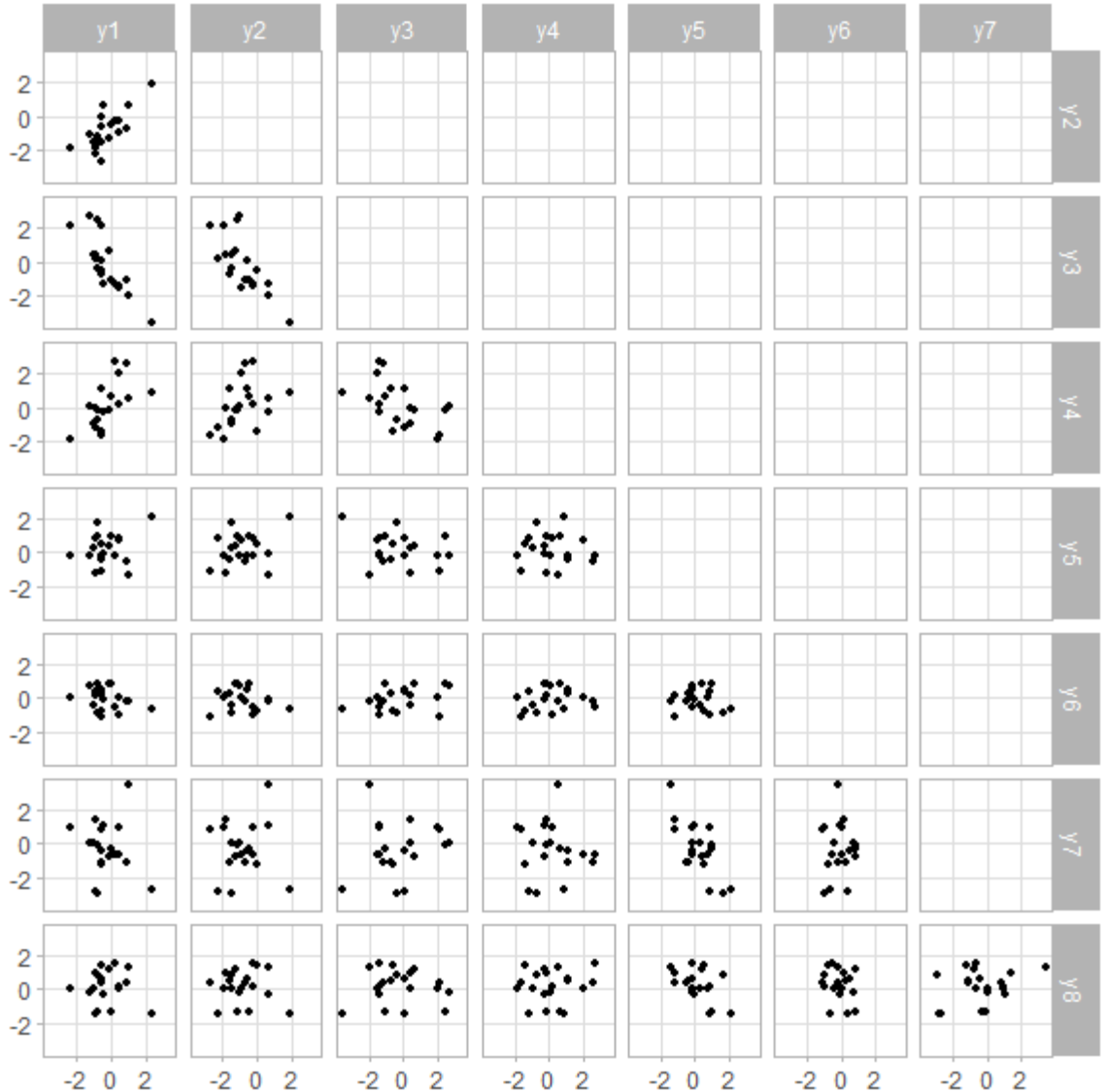
But how accurate?

Value-suppressing uncertainty palettes

[Correll, Moritz, Heer. Value-Suppressing Uncertainty Palettes. CHI 2018]



I'm not a map vis person...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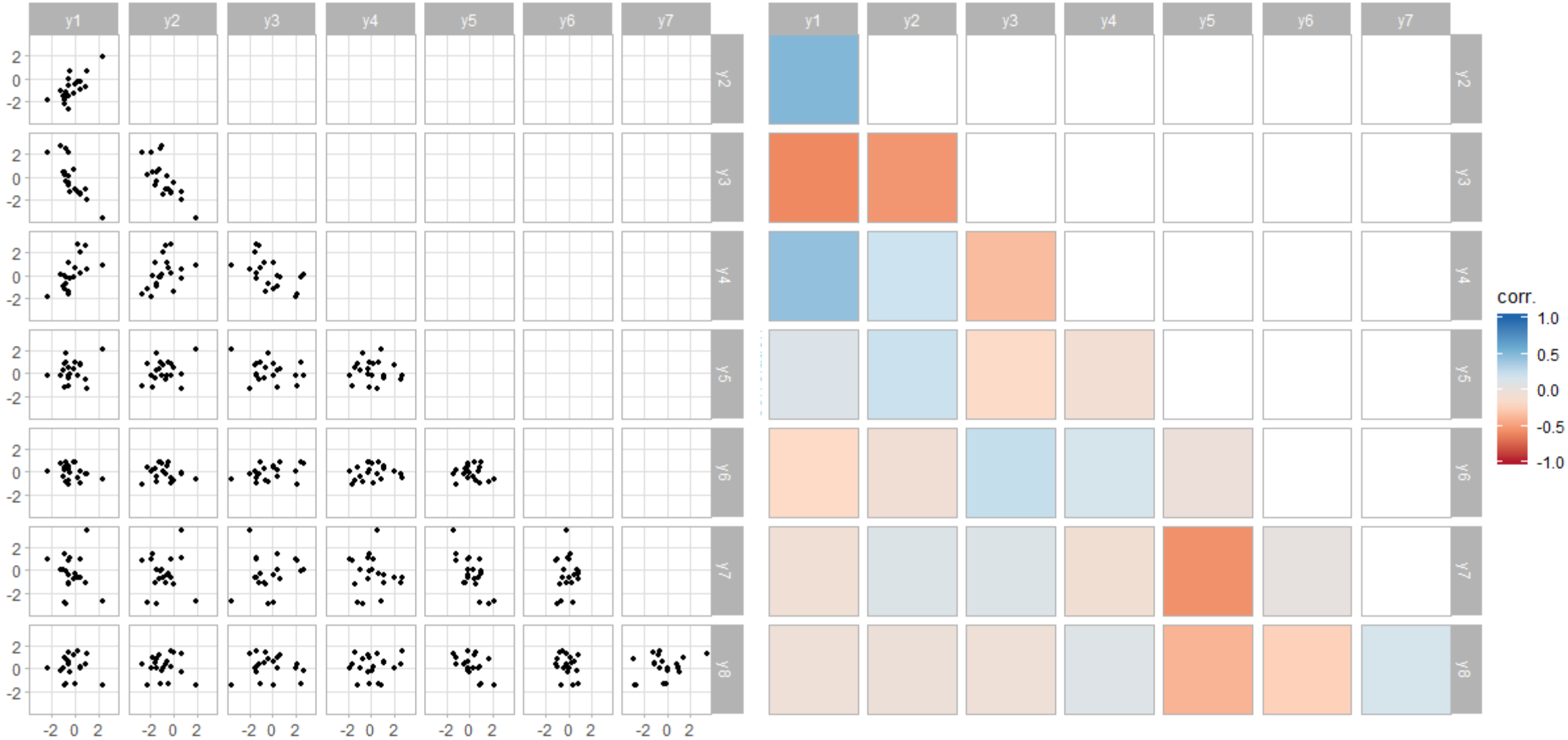
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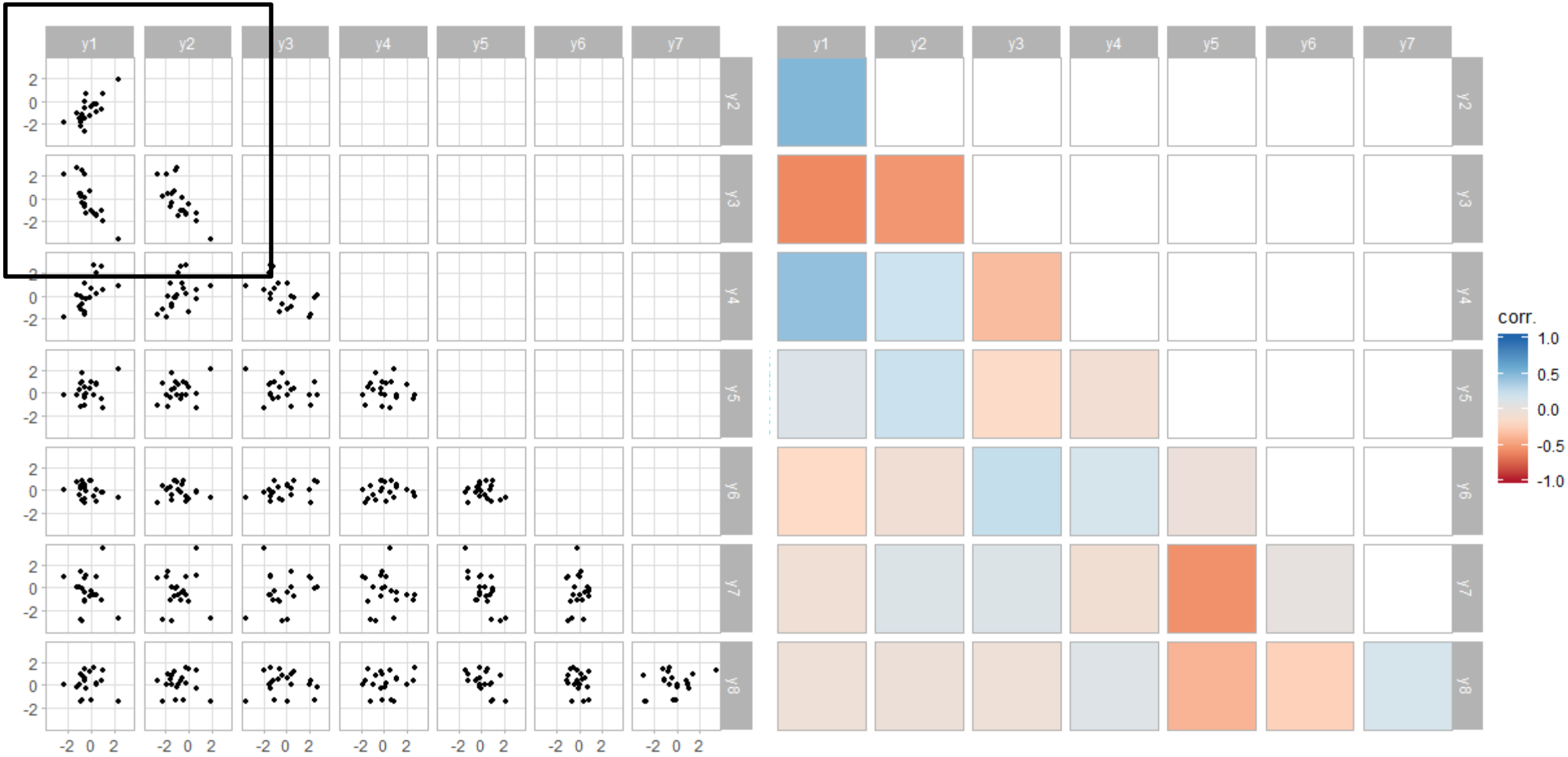
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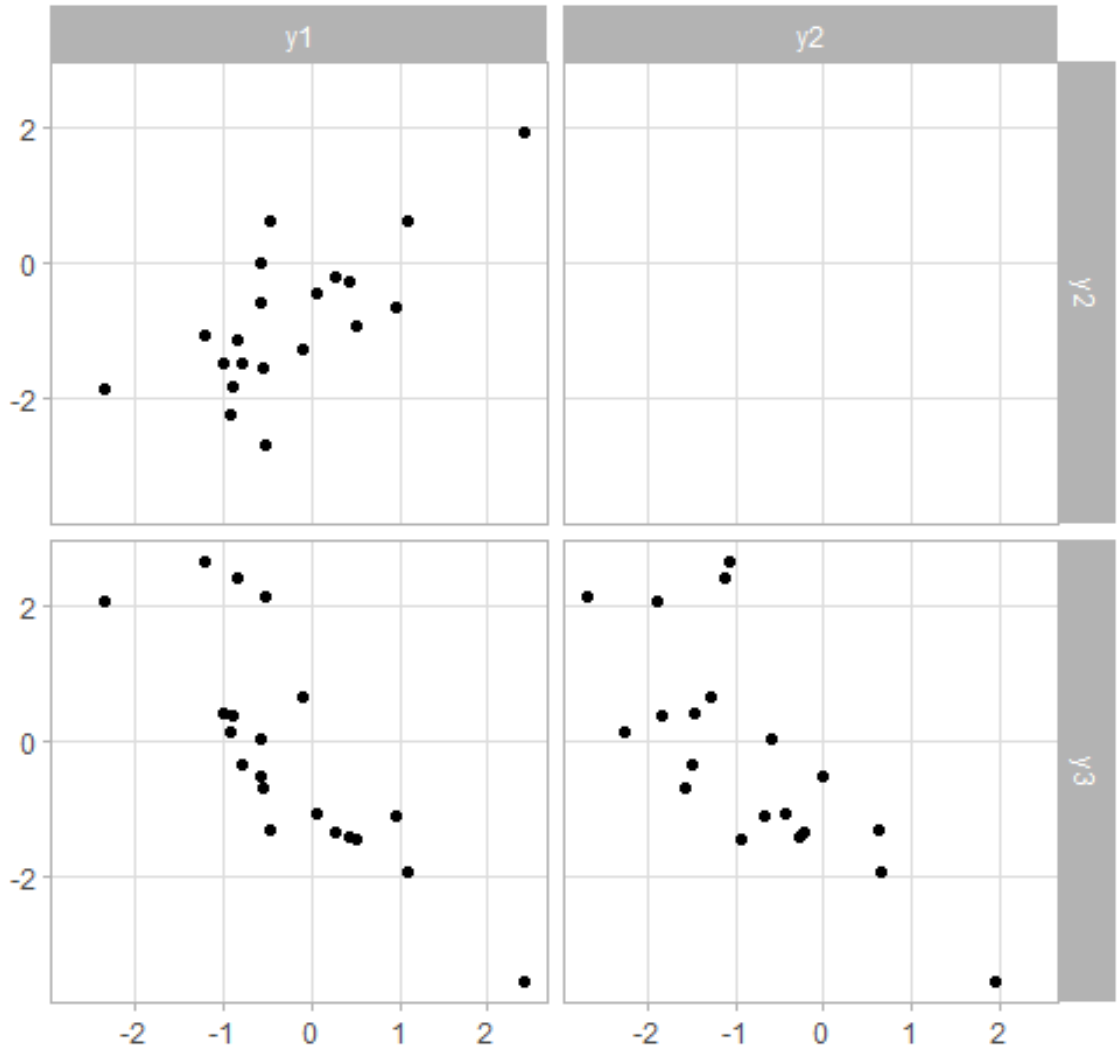
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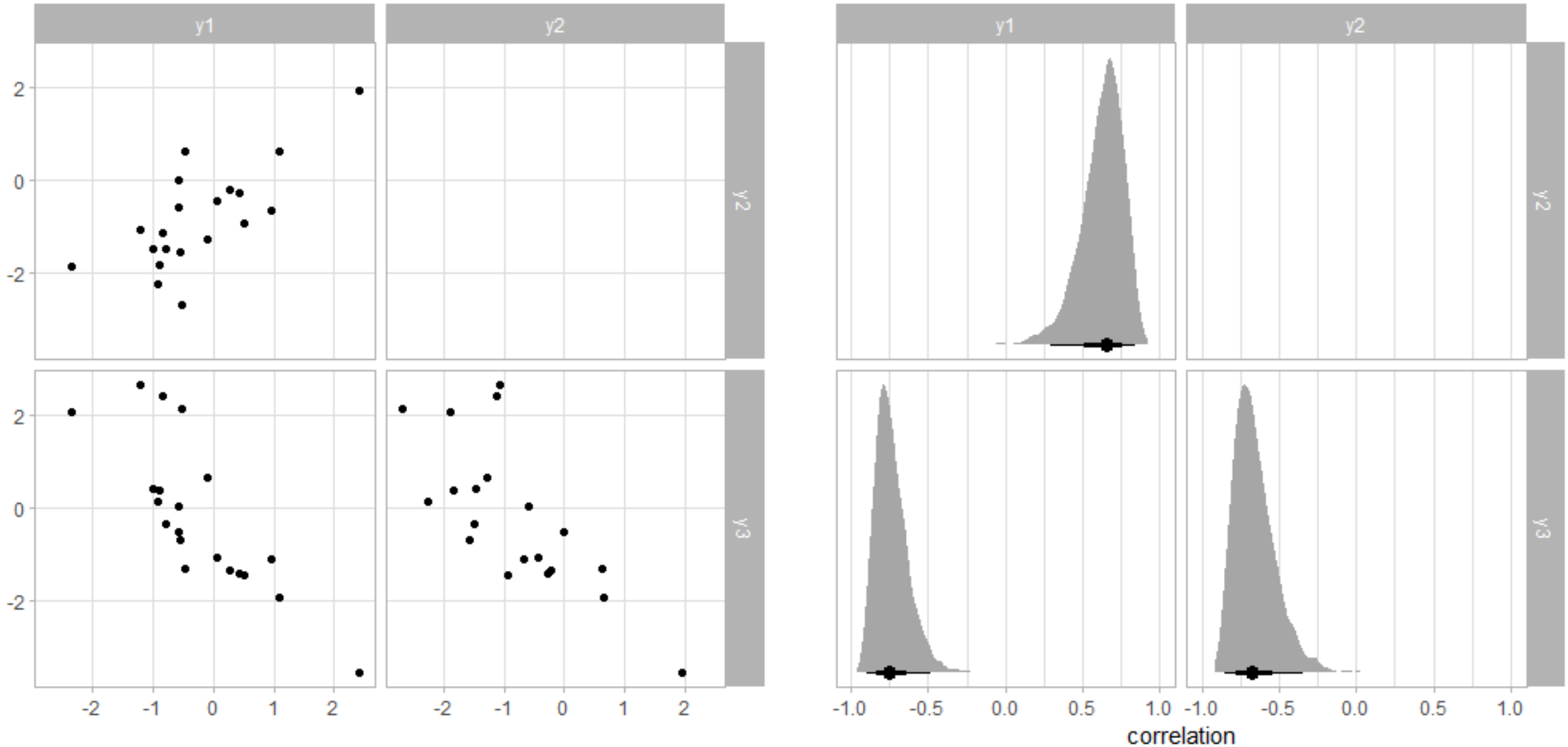
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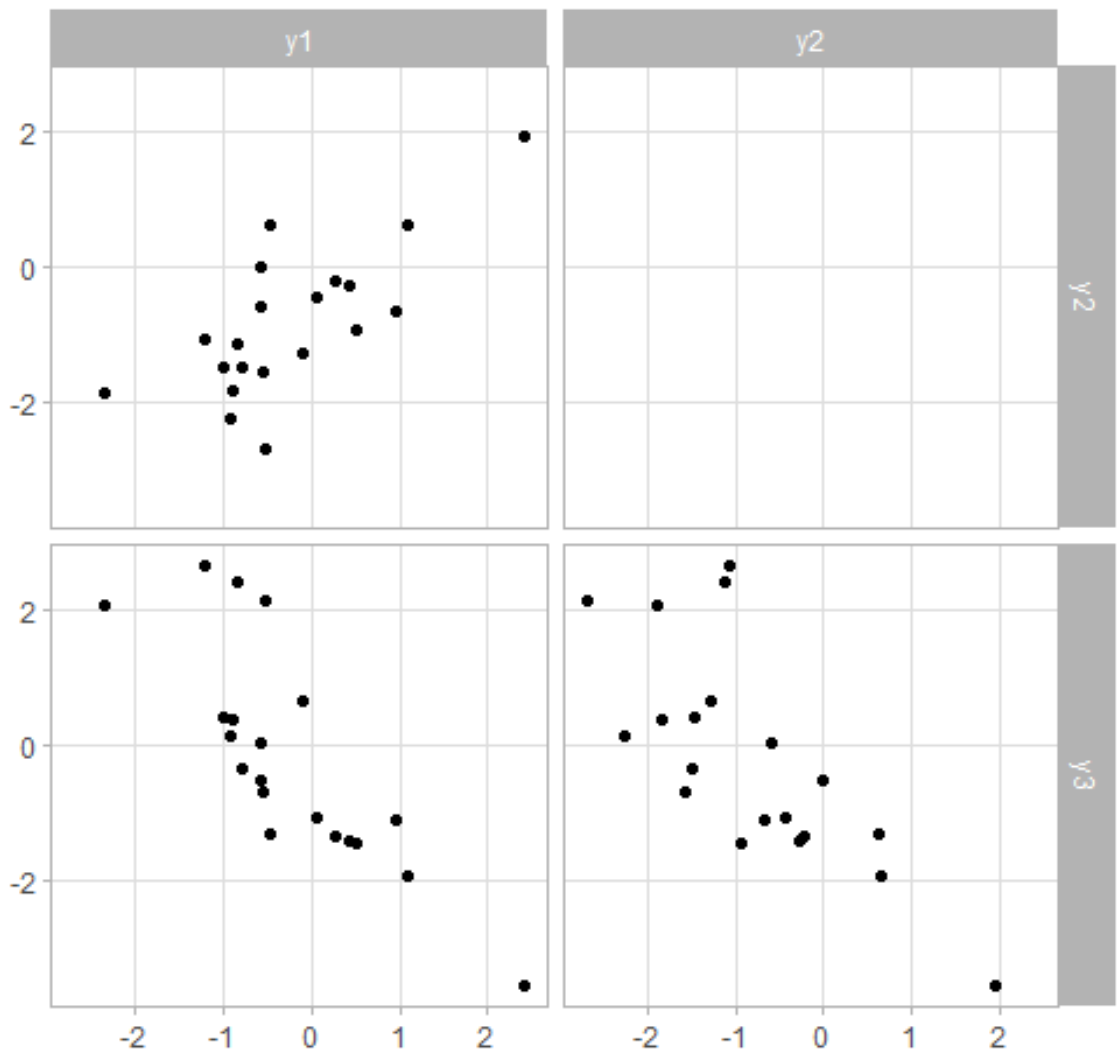
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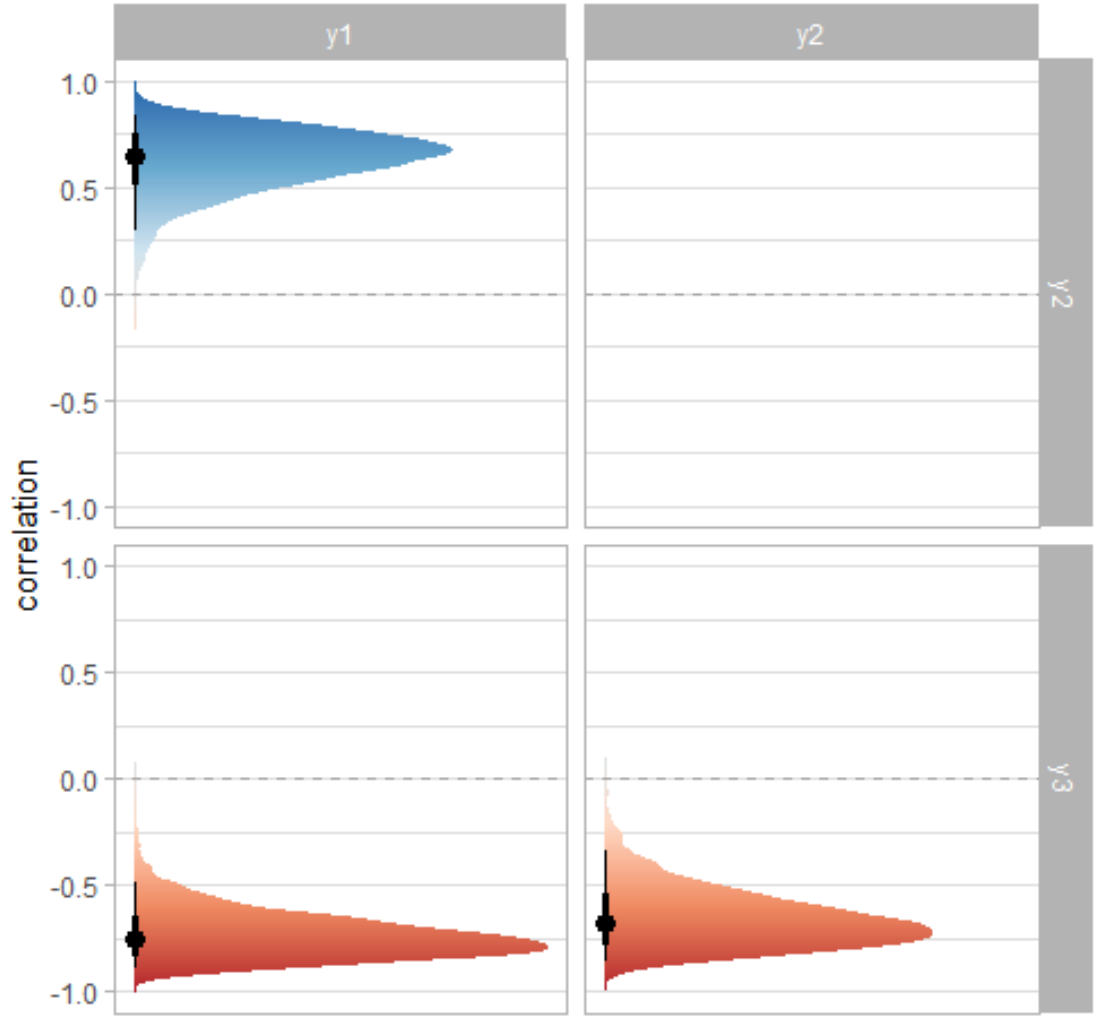
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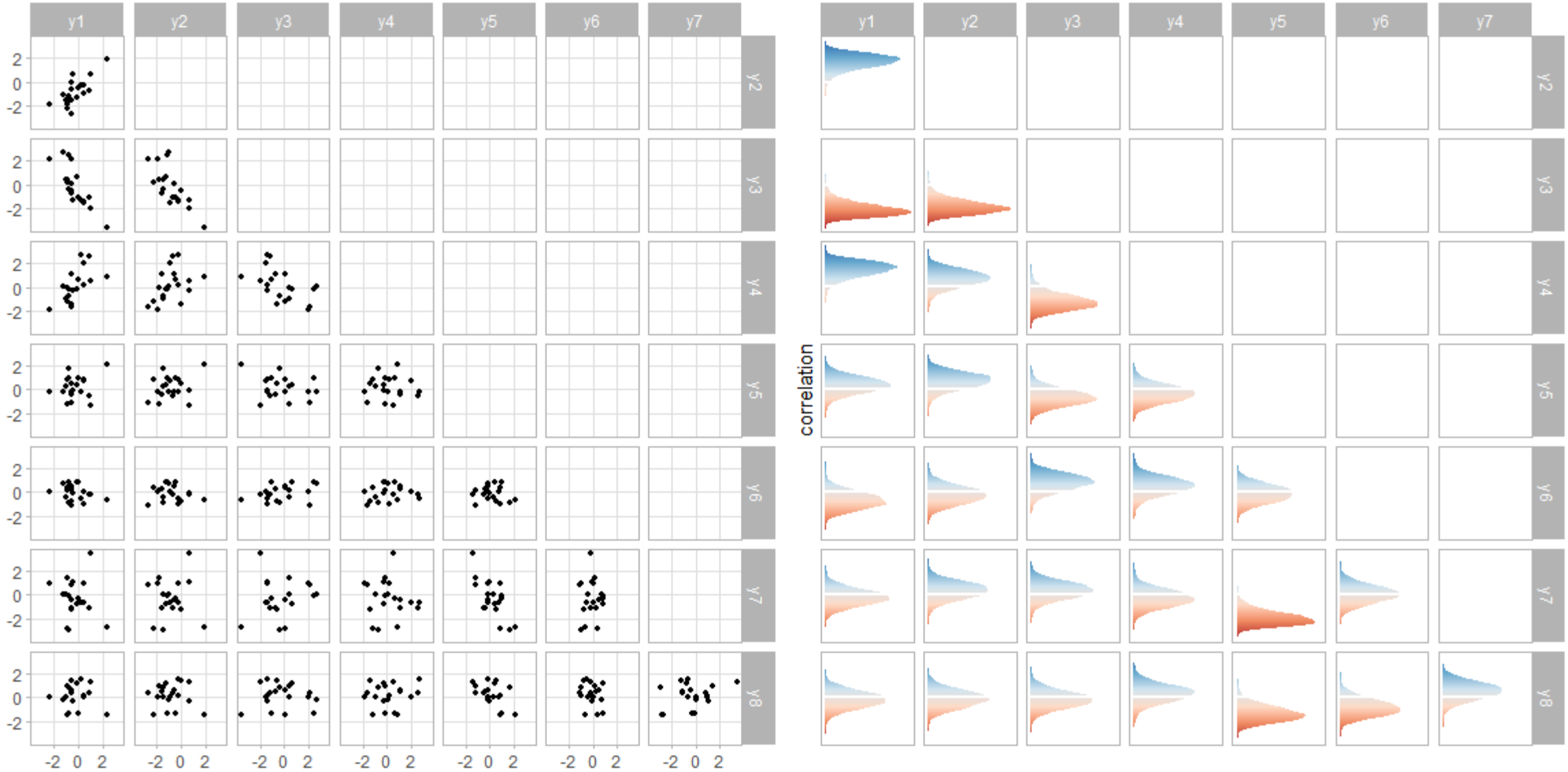
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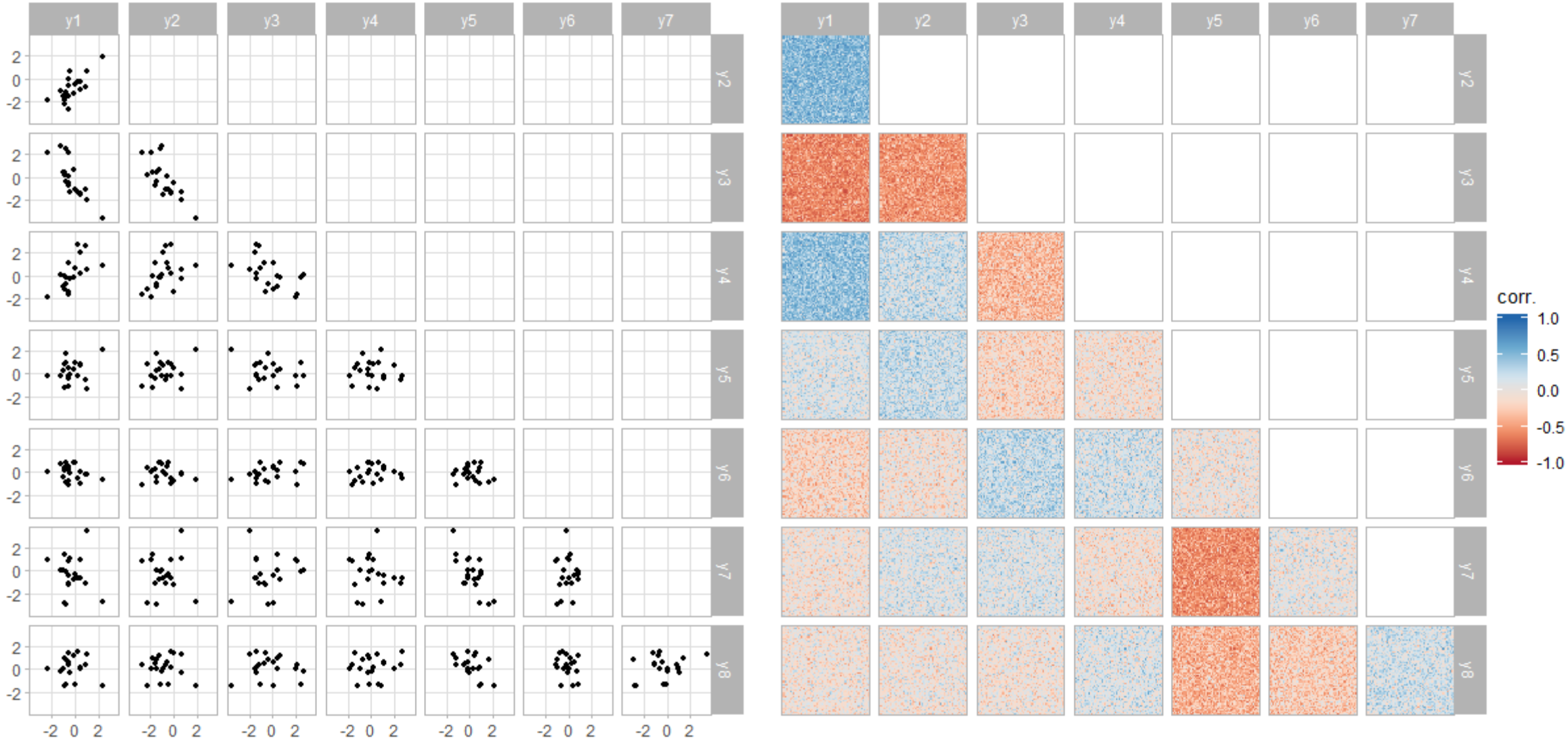
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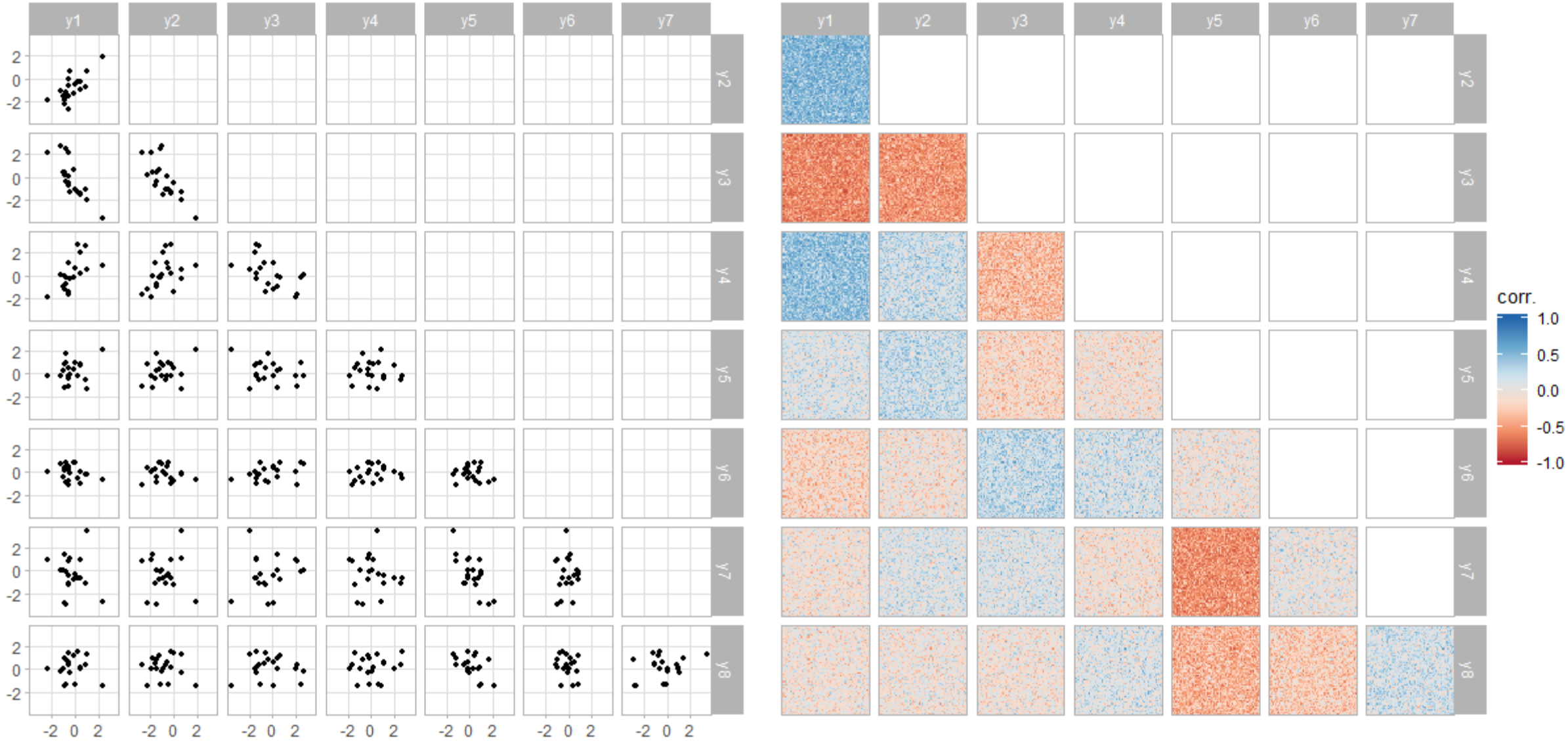
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and back to map-land...

Uncertainty -> ~dither (samples from dist)

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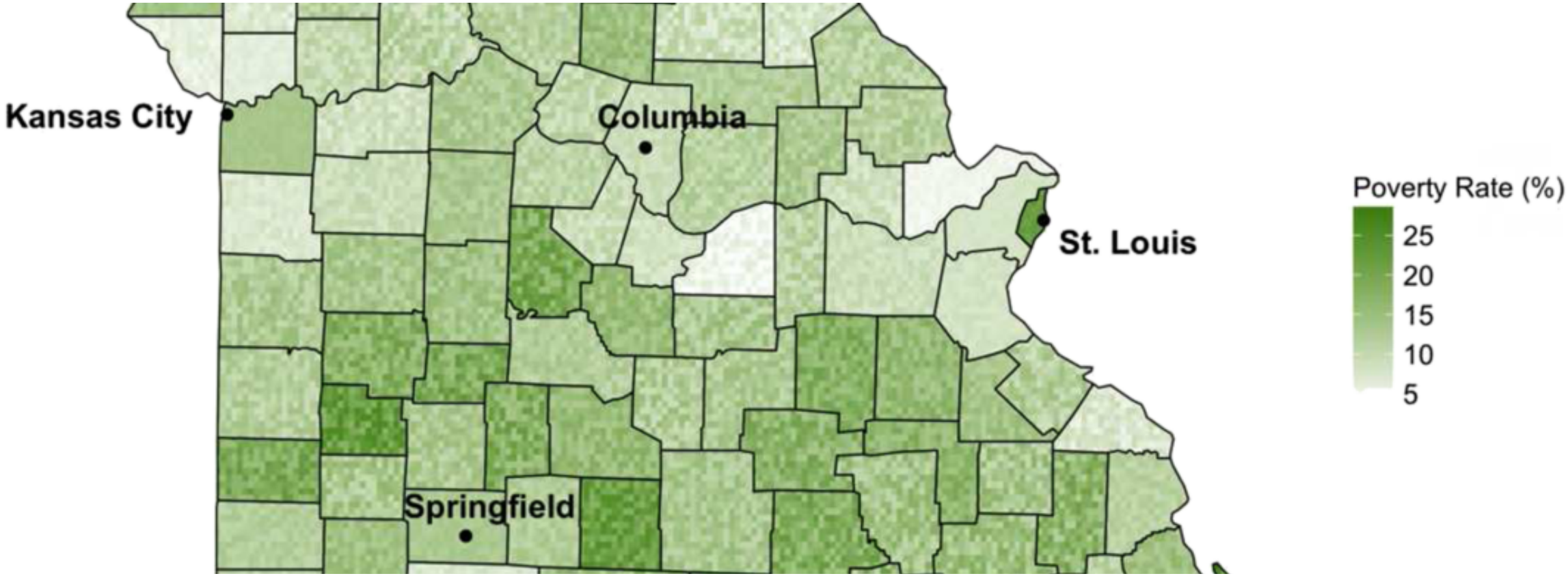

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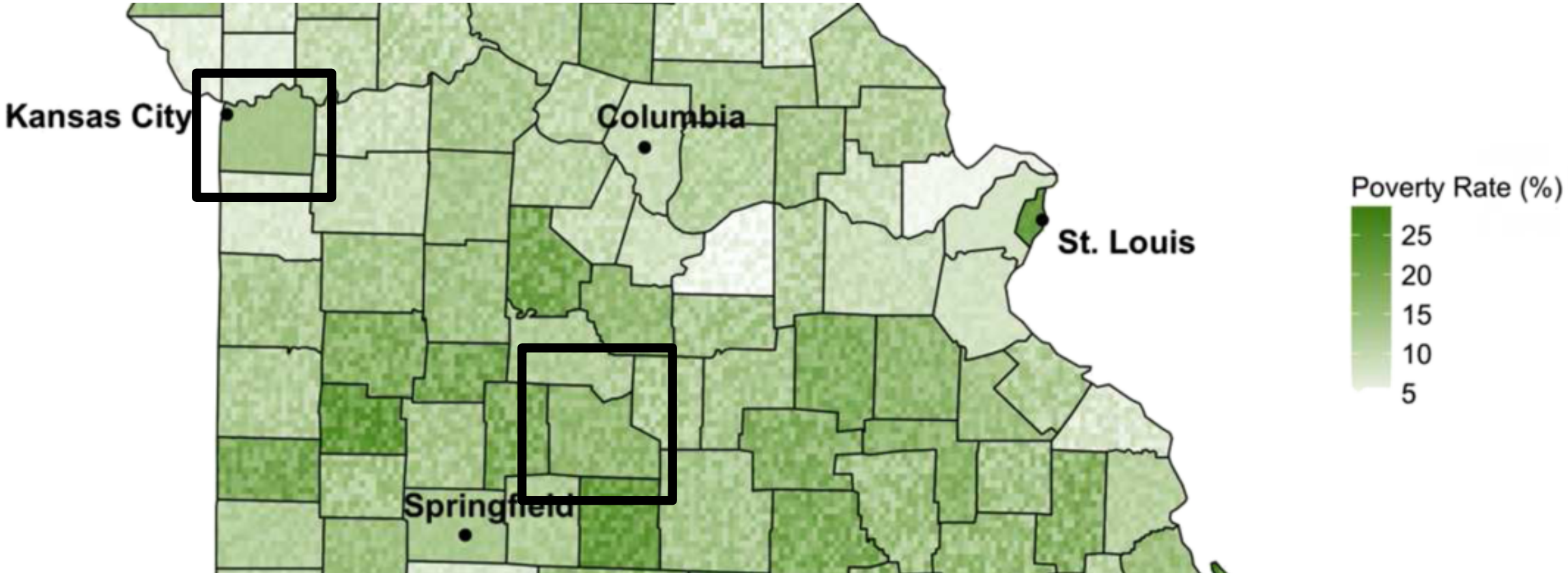

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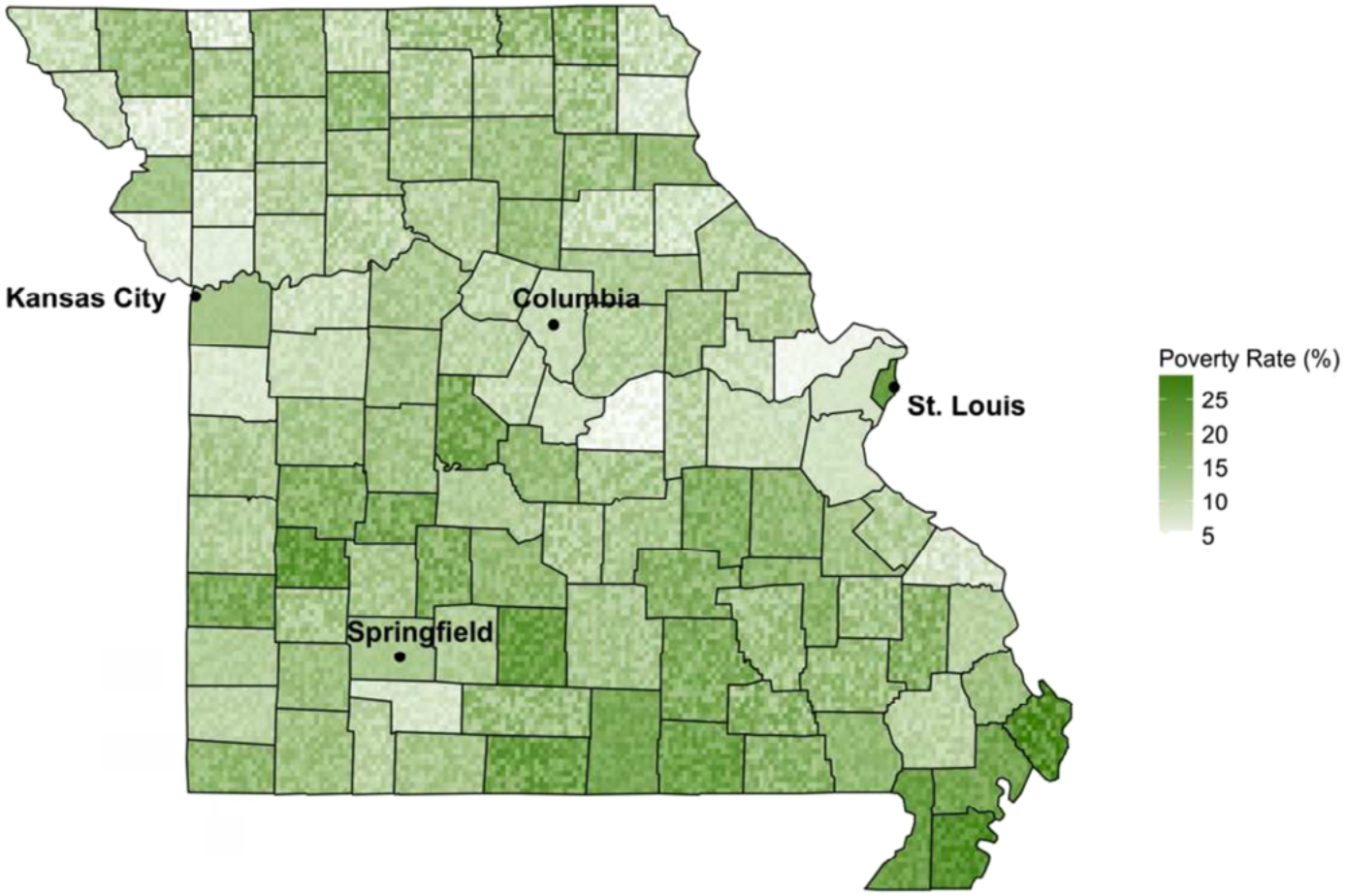

Discrete outcomes

Maybe more intuitive, maybe less?

Possible deterministic construal errors

Summing up

Cartographic uncertainty

Very hard!

Cartographic uncertainty

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Intuitive encodings might be hard to read,
Easy to read encodings might not be intuitive...

Cartographic uncertainty

Very hard!

Intuitive encodings might be hard to read,
Easy to read encodings might not be intuitive...

Life is hard when position is otherwise meaningful

Roadmap

Week 1: Introduction to uncertainty visualization
Types of uncertainty; small vs large world

Week 2 & 3: Small world uncertainty
Continuous uncertainty encodings
Frequency-framing uncertainty encodings

Week 4: Large world uncertainty

Cartographic uncertainty

SIADS 542: Presenting uncertainty – Week 3, Lecture 3

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