Trust in Prediction Models: a Mixed-Methods Pilot Study on the Impact of Domain Expertise

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Workshop on TRust and EXpertise in Visual Analytics

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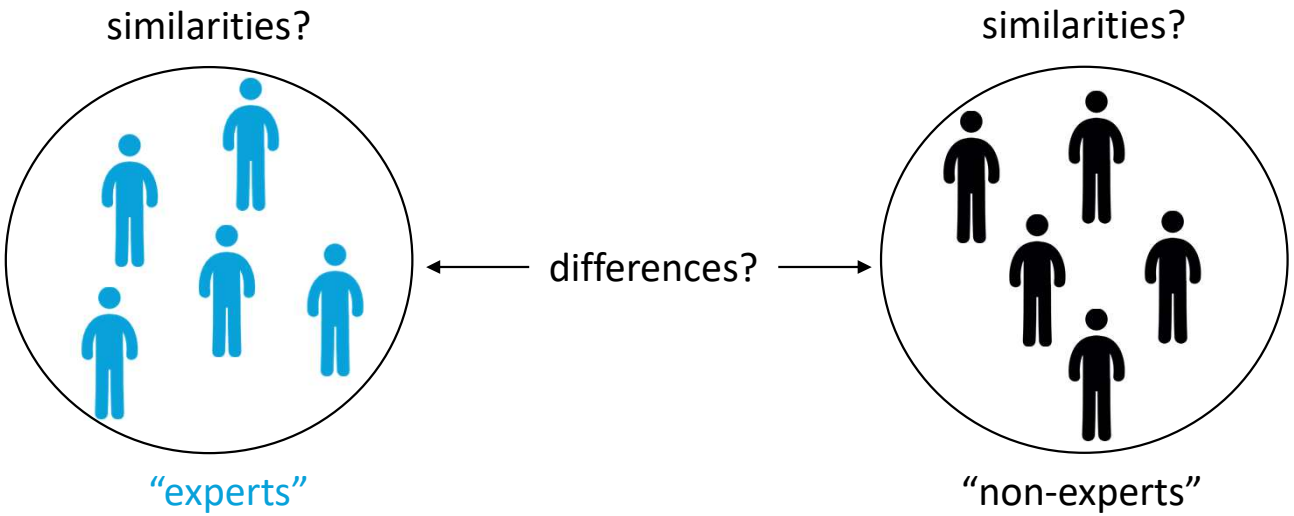
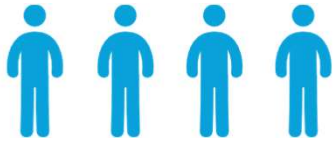
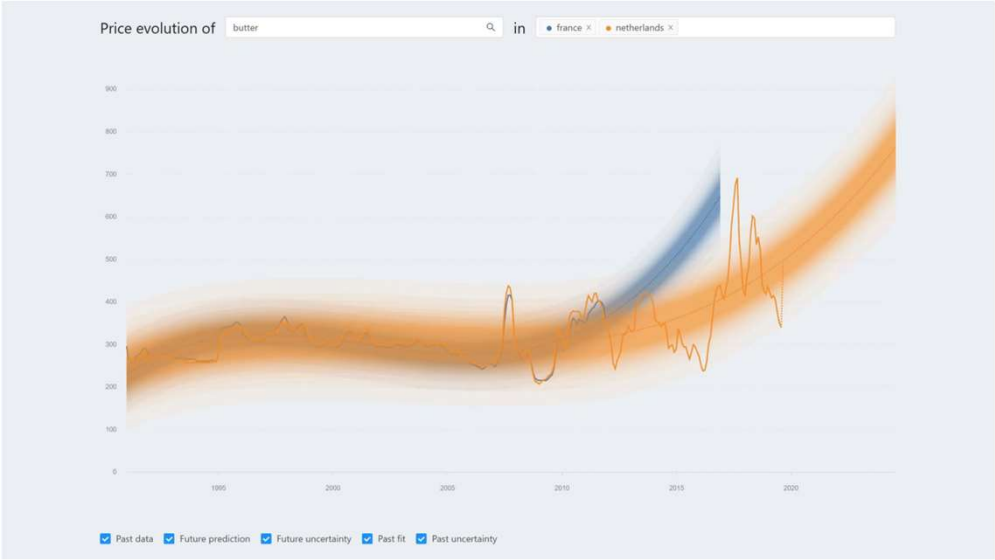
Trust and XAI research often dichotomise the population



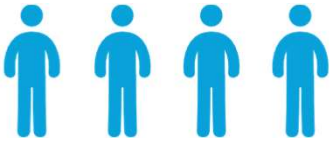


4 participants = “experts” in predictive modelling



RQ1. Do “experts” have similar trust levels and evolutions for an unknown prediction model?

RQ2. What influences “experts’” trust in an unknown prediction model?



homogeneous group of **4** “experts” in predictive modelling

agrifood background **sufficient expertise**

ID	Profession	Age	Country	Expertise (S_1, S_2, S_3)
P1	Quality manager, analyst (industry)	45–54	Greece	4.58 (3.75, 5, 5)
P2	Agrifood engineer (academia)	45–54	Italy	4.17 (4, 4, 4.5)
P3	Agricultural economist (academia)	35–44	Italy	3.67 (2, 4.5, 4.5)
P4	Agricultural researcher (industry, academia)	35–44	Greece	4.25 (2.75, 5, 5)

All participants identified as male. Expertise scores: S_1 = self-reported, S_2 = background, S_3 = jargon use.

Participants go through **8** scenarios

In each scenario, measure trust …

… qualitatively: **semi-structured interview**

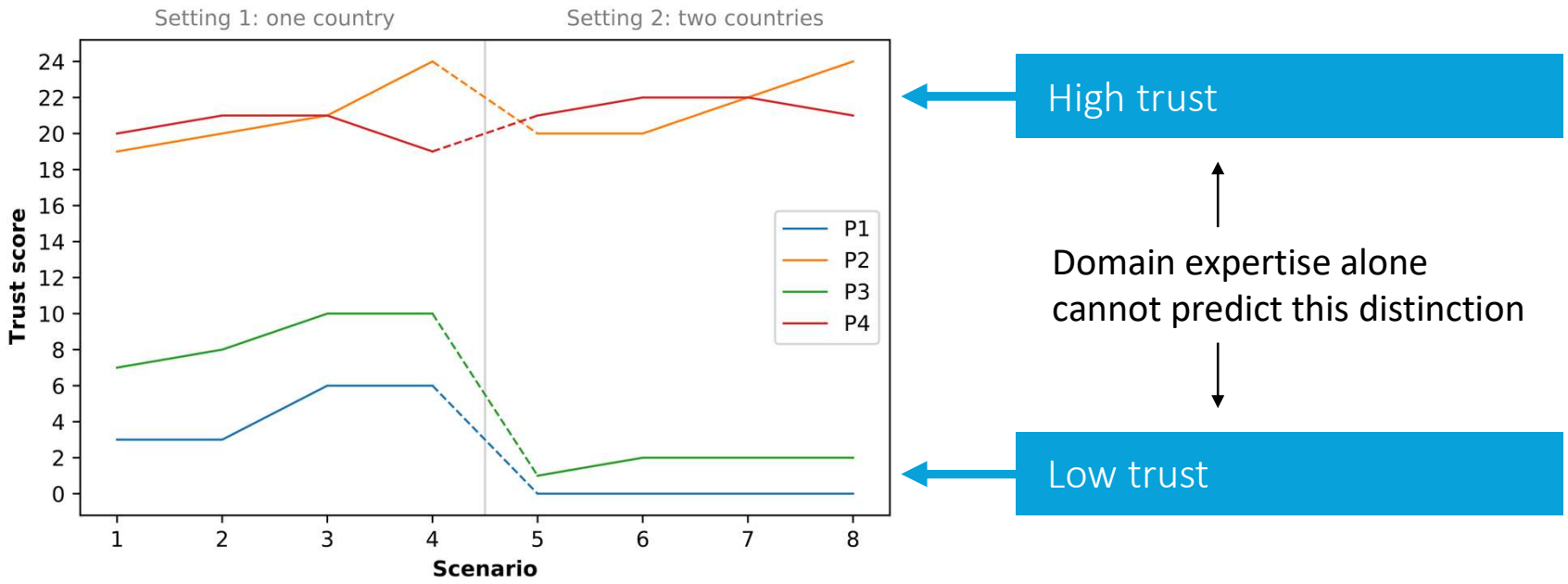
Explore the new component in the visualisation. Explain what you see. What grabs your attention?

Do you trust the prediction model? Which parts of the visualisation made you say that?

… quantitatively: **Likert-type questions**

	Not at all	No	Rather no	Neither no, nor yes	Rather yes	Yes	Extremely
I am suspicious of the prediction model's outputs	○	○	○	○	○	○	○
I am confident in the prediction model	○	○	○	○	○	○	○
I can trust the prediction model	○	○	○	○	○	○	○
The prediction model is deceptive	○	○	○	○	○	○	○

RQ1. Do “experts” have similar trust levels and evolutions for an unknown prediction model?



RQ2. What influences “experts’” trust in an unknown prediction model?

6 trust themes

1. Expectations about model outcomes	Expectations violation/agreement
2. Understanding the prediction model	How does the model work?
3. Predictions need uncertainty	Uncertainty is a natural requirement
4. Developers of the prediction model	Who developed the model?
5. Data provenance	Is the data accurate? What is its origin?
6. Past performance of the prediction model	Did the model perform well in the past?

Take-aways

1. An “expert” label does not say it all
2. Trust is multi-faceted
3. Dominant trust themes can evolve
4. Trust themes are interconnected

Measure **expertise** in different ways

Expertise (S_1, S_2, S_3)

S_1 = self-reported, S_2 = background, S_3 = jargon use

A **mixed-methods approach** seems desirable

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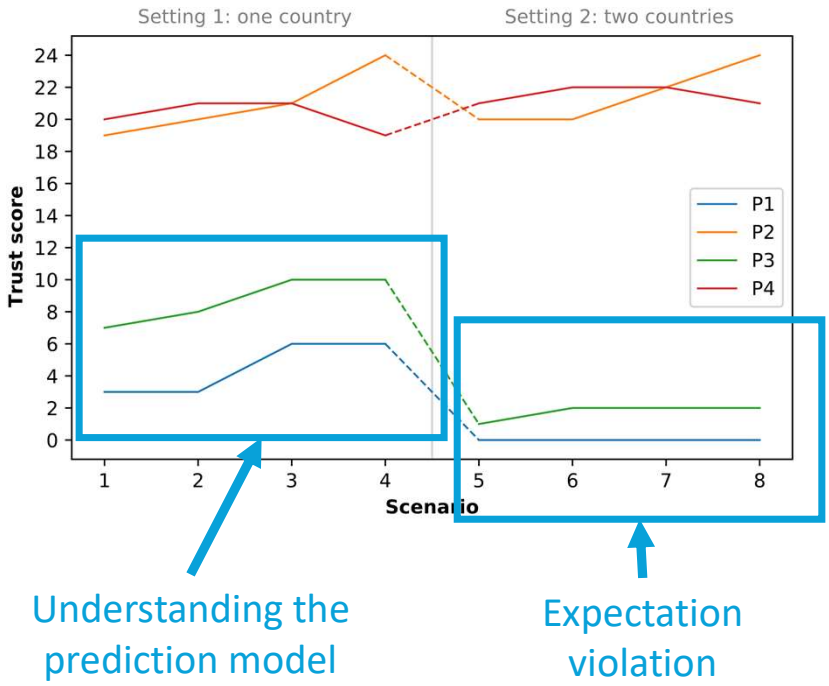

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transparency

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