Measuring corruption risks in public contracting

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Outline

I. What to measure

II. An approach to indicator building

III. Corruption risk indicators

IV. Use case

I. What to measure

Corruption is VERY diverse

- Low level vs high level corruption
- Corruption ≠ Collusion ≠ Rule adherence
- Sanctionable or not?

Corruption definition – in public contracting

The aim of corruption is to steer a contract to a favoured bidder without detection. This is done in a number of ways, including:

- ***Avoiding competition*** through, *e.g.*, unjustified sole sourcing or direct contract awards.
- ***Favouring a certain bidder*** by tailoring specifications, sharing inside information, *etc*.

See: World Bank Integrity Presidency (2009) Fraud and Corruption. Awareness Handbook, World Bank, Washington DC. pp. 7.

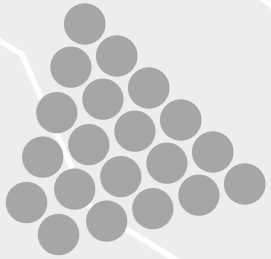
II. An approach to indicator building

Why do we need indicators?

- We want to measure something that is not directly observable
- Corruption/Good governance etc.

Calibrating an indicator

- Hypothetical example: let’s consider the task of distinguishing clean vs. corrupt contracts – e.g. for further investigation/understand its extent/inform policy
- Take a small sample of contracts to analyse thoroughly

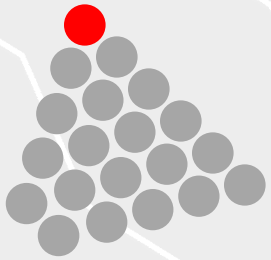


Calibrating an indicator

- We can go one-by-one analysing them qualitatively
- „Easy” to find 1 corrupt contract from 20

clean

corrupt

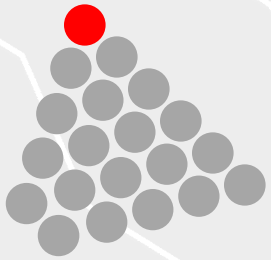


Calibrating an indicator

- You find the 1 truly corrupt contract
- You also spent time on 19 clean contracts
- 95% of your effort is ‚unnecessary'

clean

corrupt

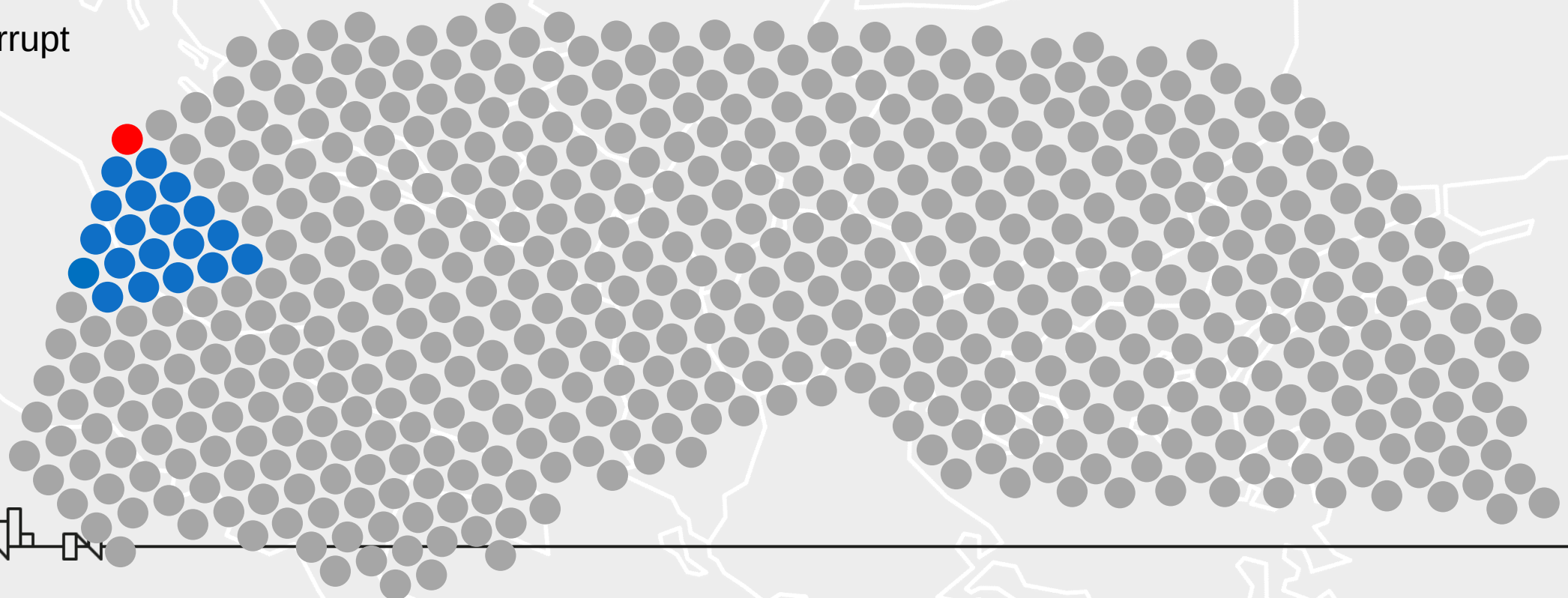


Calibrating an indicator

- But the whole universe of contracts is much bigger, let’s say 400 conracts

clean

corrupt

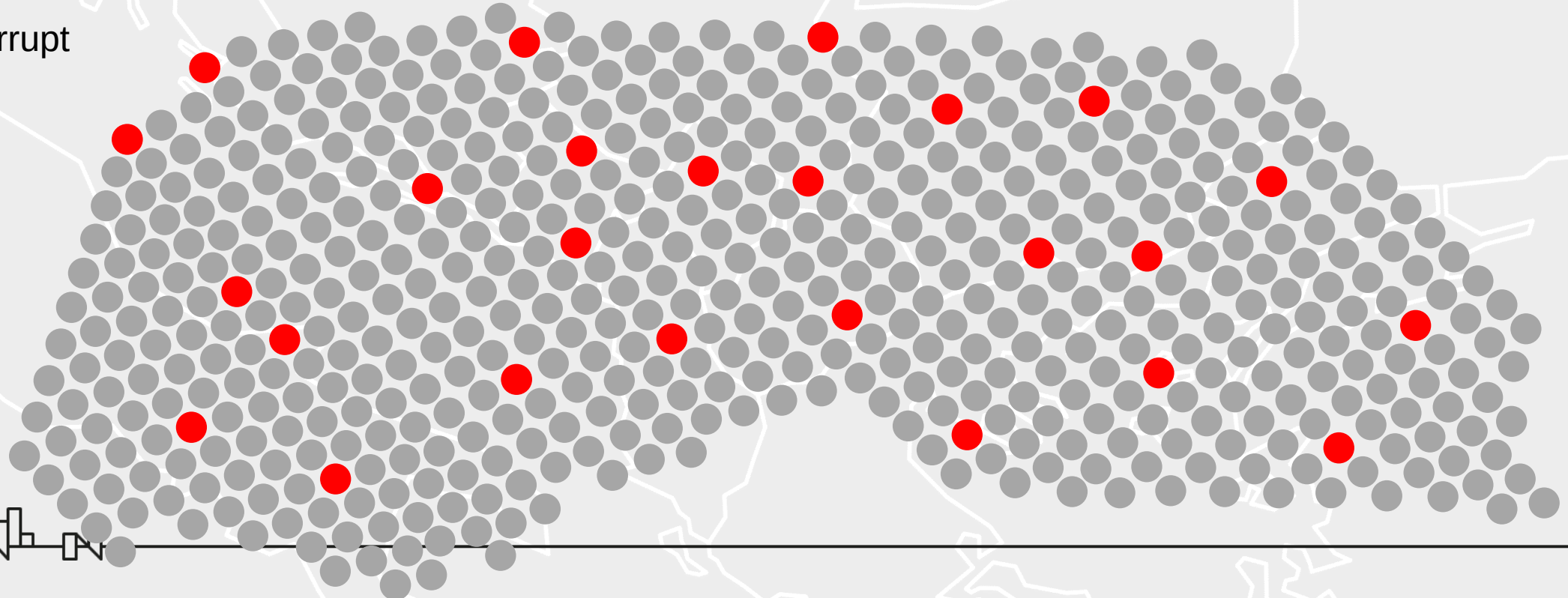


Calibrating an indicator

- And in reality, you have 20 corrupt contracts – not 1!
- You found 5% of the problematic contracts

clean

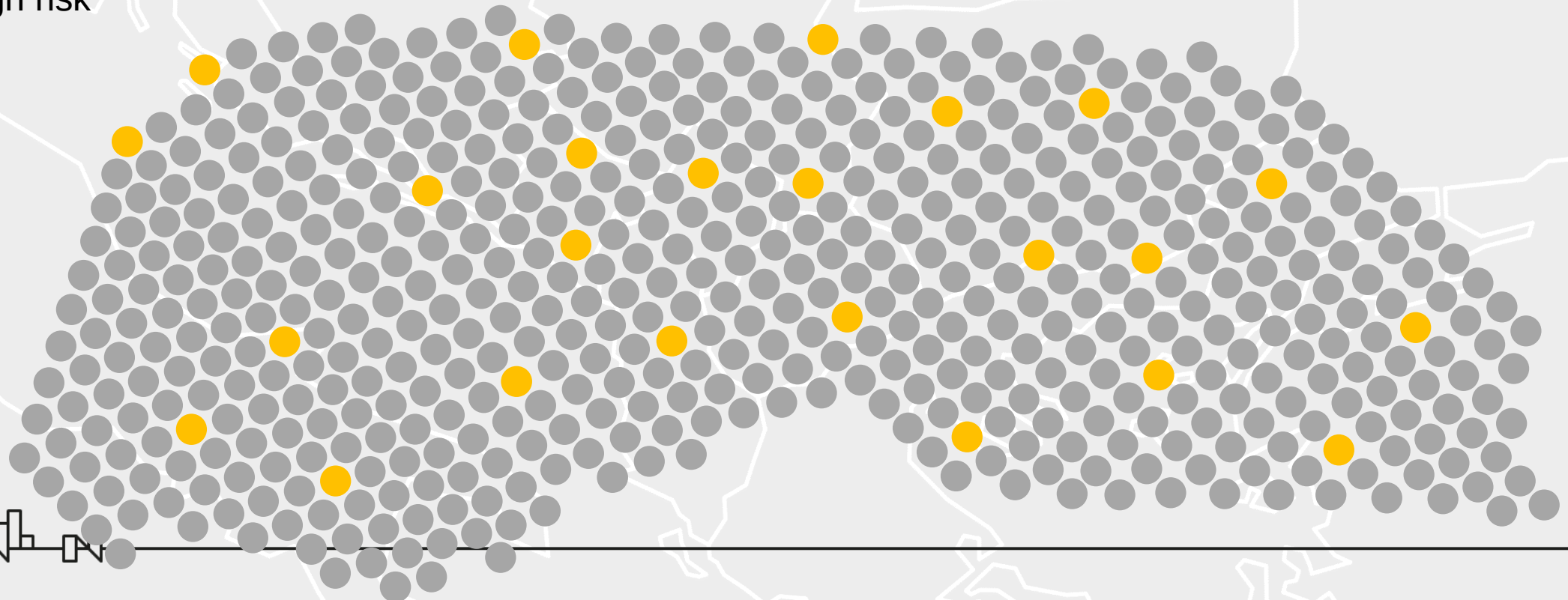
corrupt



Calibrating an indicator

- Alternatively, we could find (potentially) corrupt contracts based on **risk indicators**

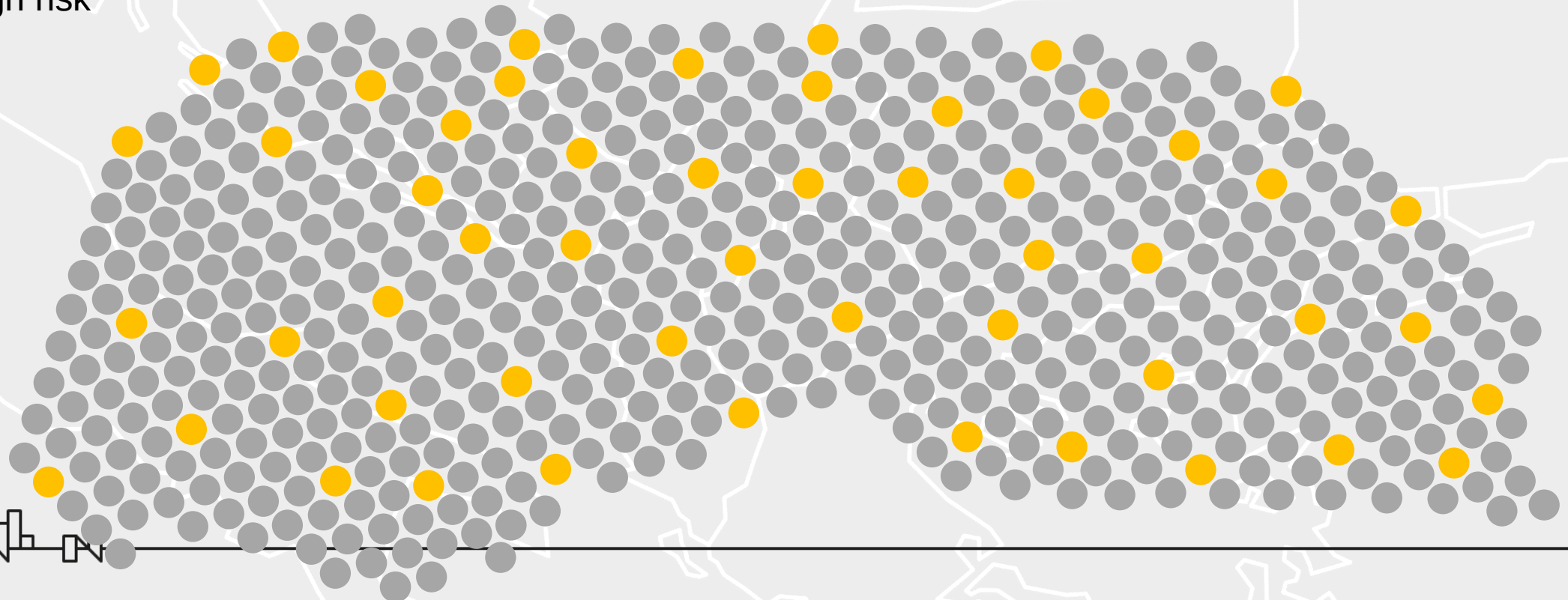
clean
high risk



Calibrating an indicator

- In reality, we often find many contracts that seem high risk but actually ok – i.e. More contracts are high risk (YELLOW) than the actual corrupt (RED)

clean
high risk



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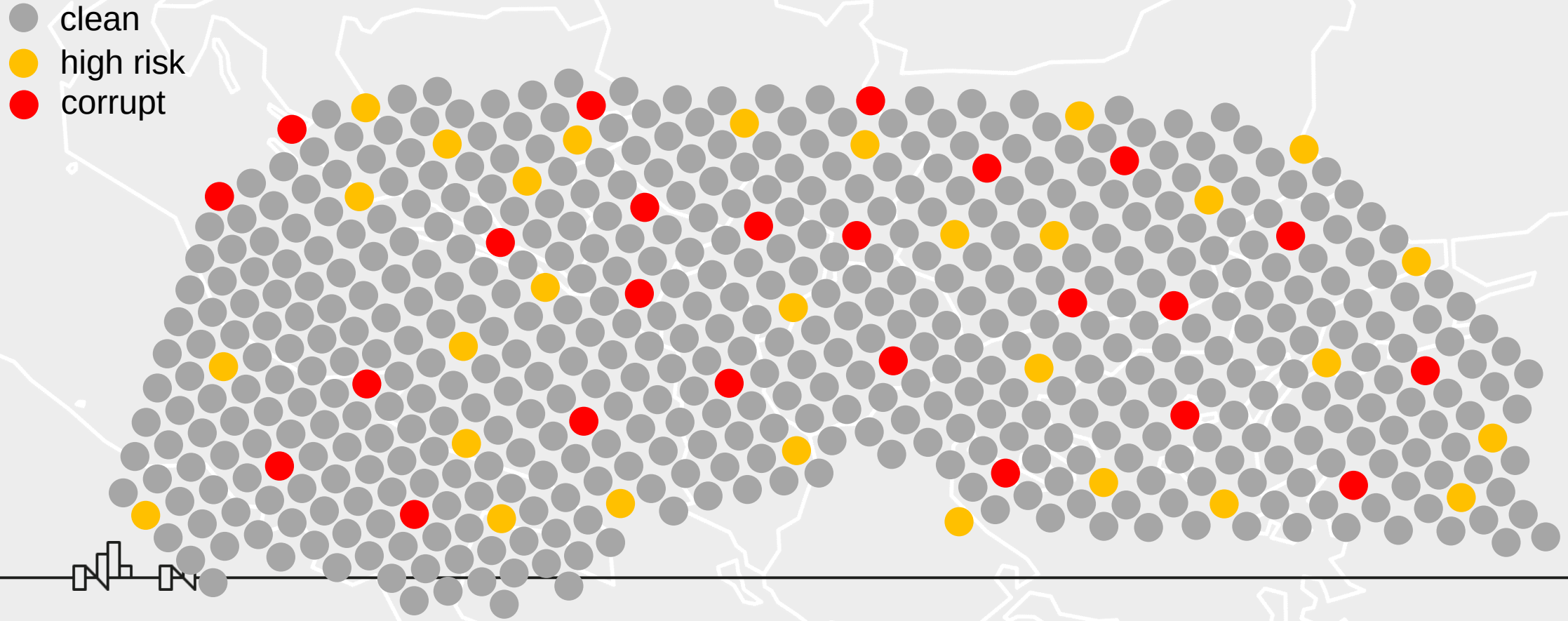
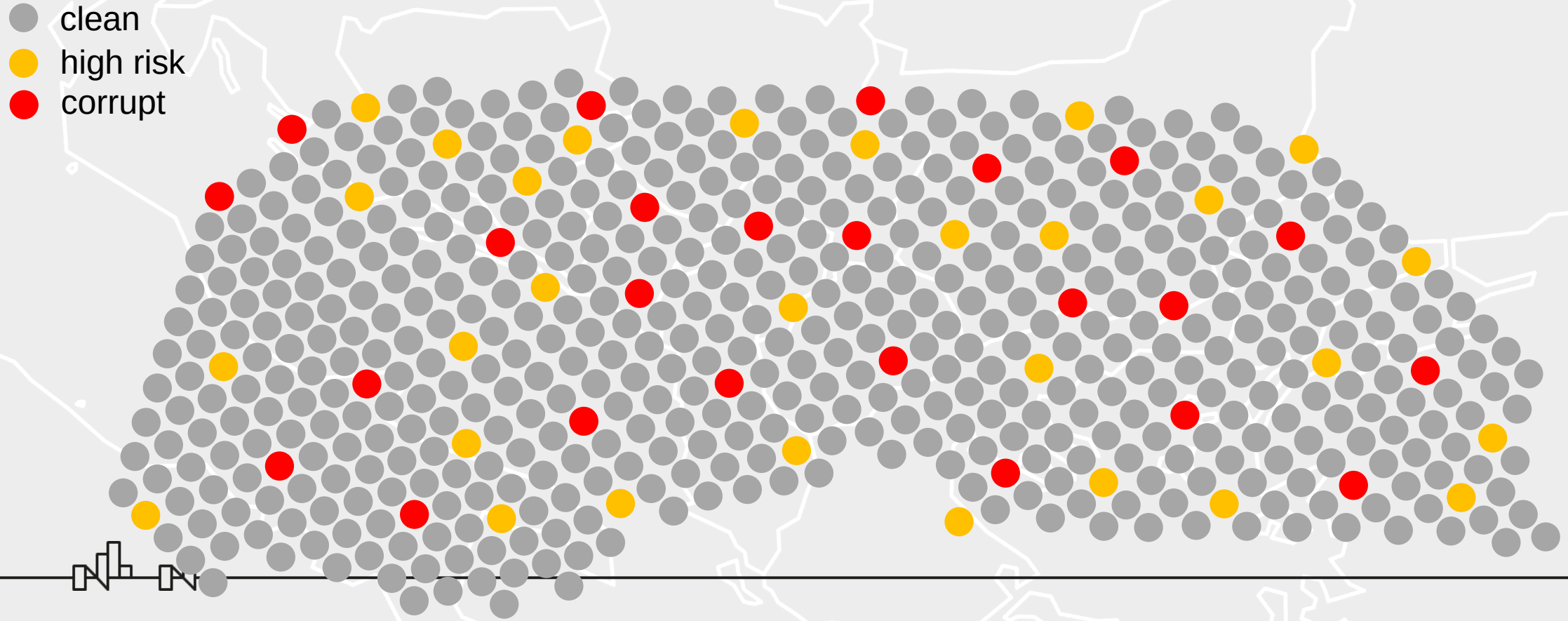


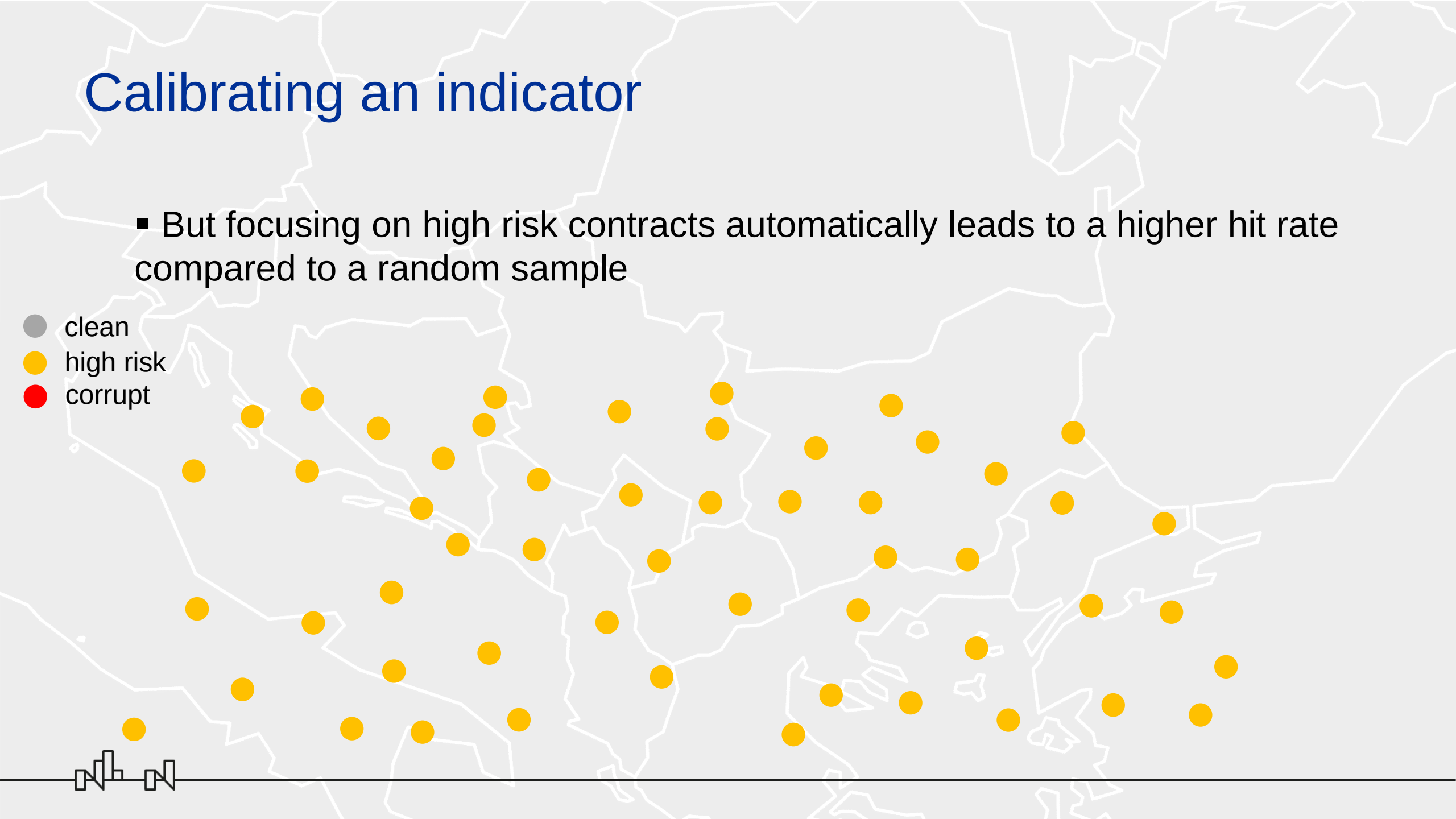
Calibrating an indicator

- If you analyse contracts at random, the hit rate would be 5% (20 ground truth cases out of the 400 total)



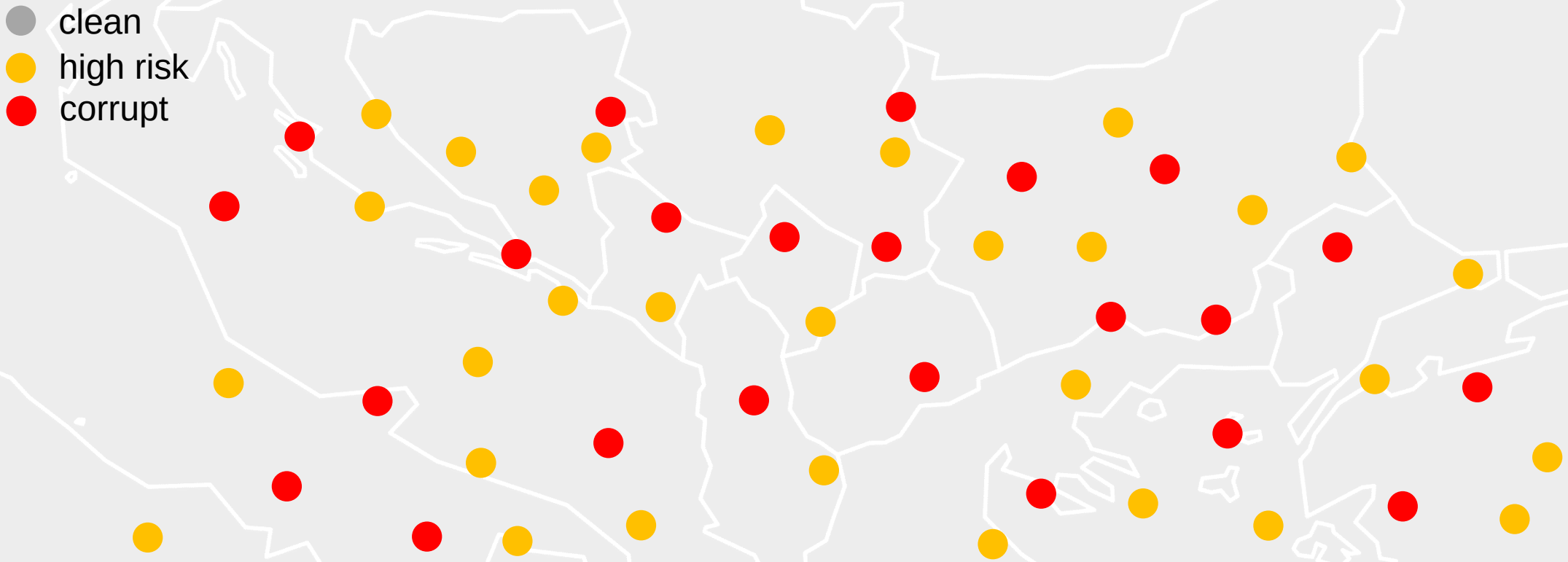
Calibrating an indicator

- But focusing on high risk contracts automatically leads to a higher hit rate compared to a random sample



Calibrating an indicator

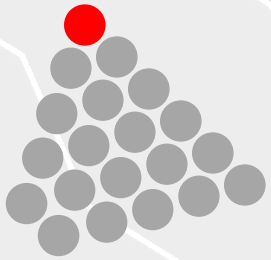
- 50% of the high-risk contracts are truly corrupt VS 5% of random checks



Calibrating an indicator

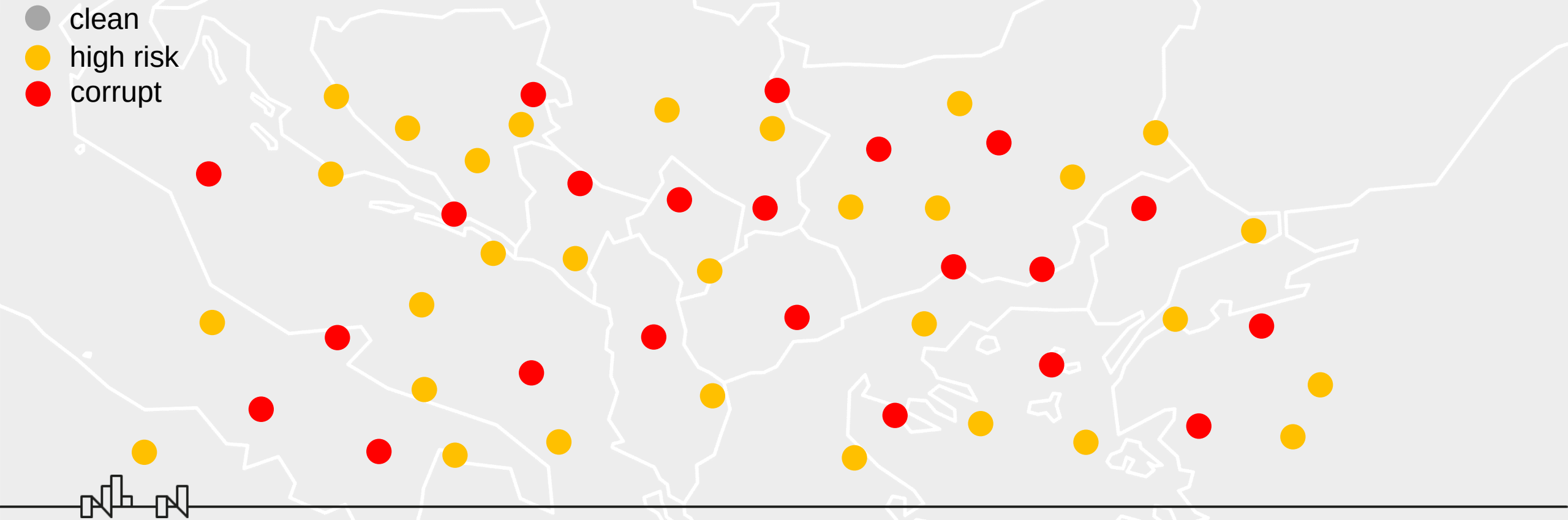
- Remember: Our initial effort was 95% unnecessary (1 corrupt vs. 19 clean)

clean
high risk
corrupt



Calibrating an indicator

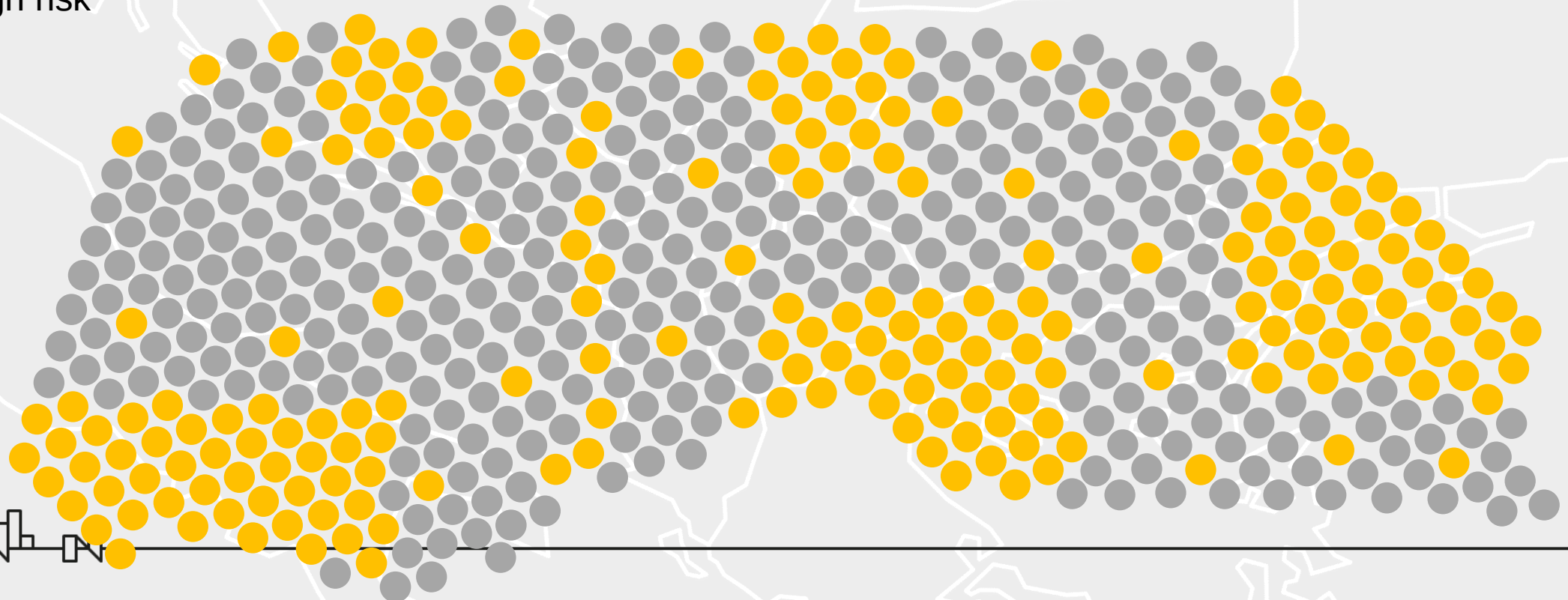
- Main goal of indicator building: increase the overlap betwee YELLOW and RED - **Validity/Reliability**



Calibrating an indicator

- A not very well designed indicator

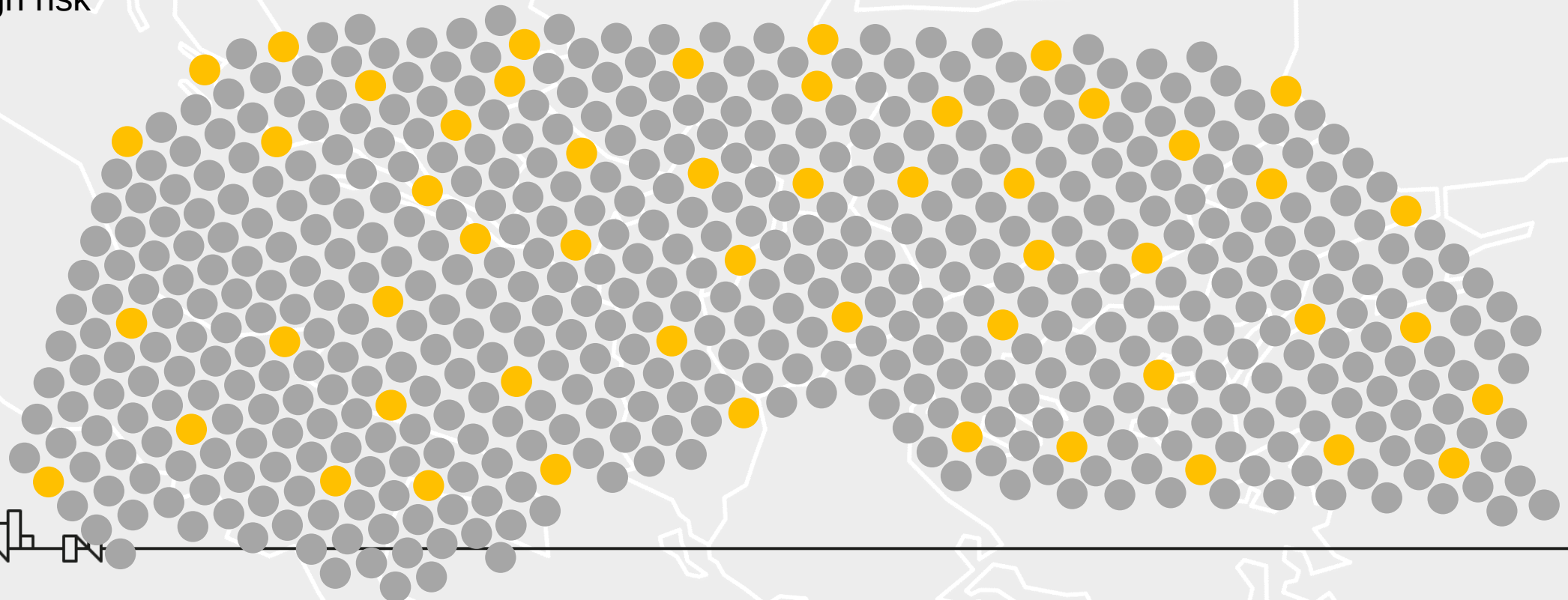
clean
high risk



Calibrating an indicator

- A relatively well designed indicator

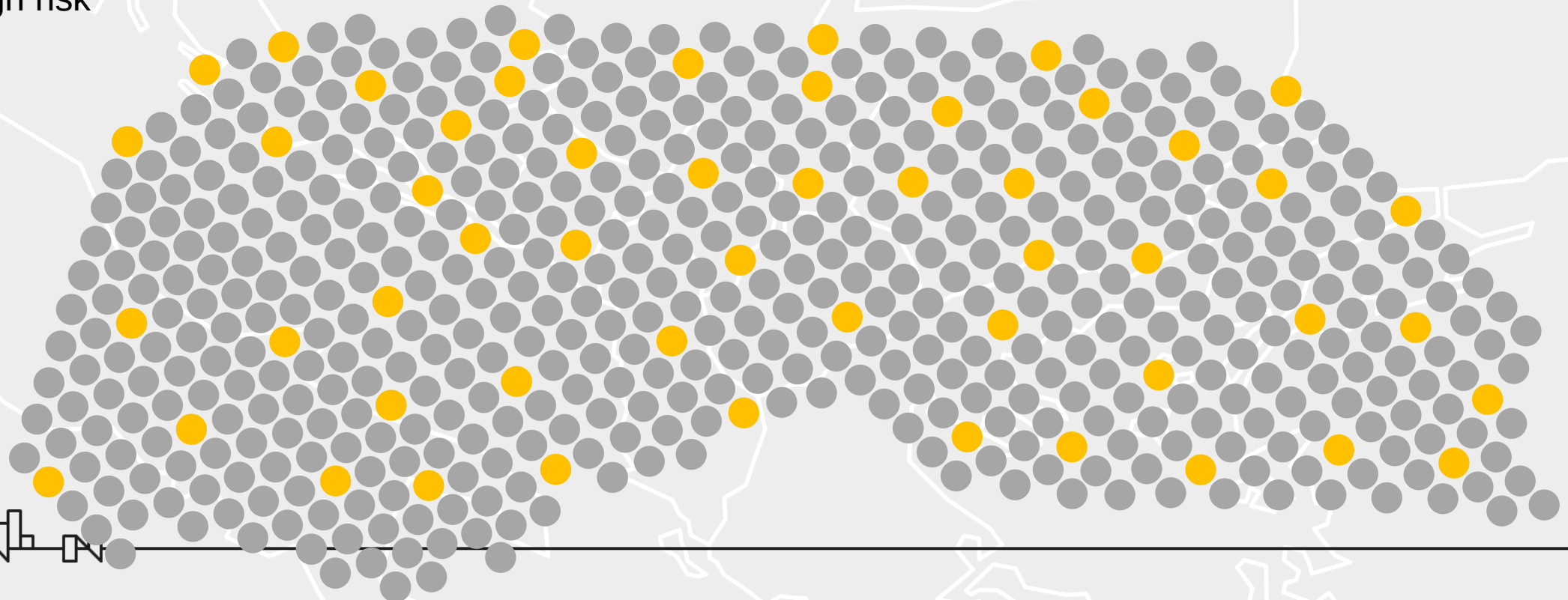
clean
high risk



Calibrating an indicator

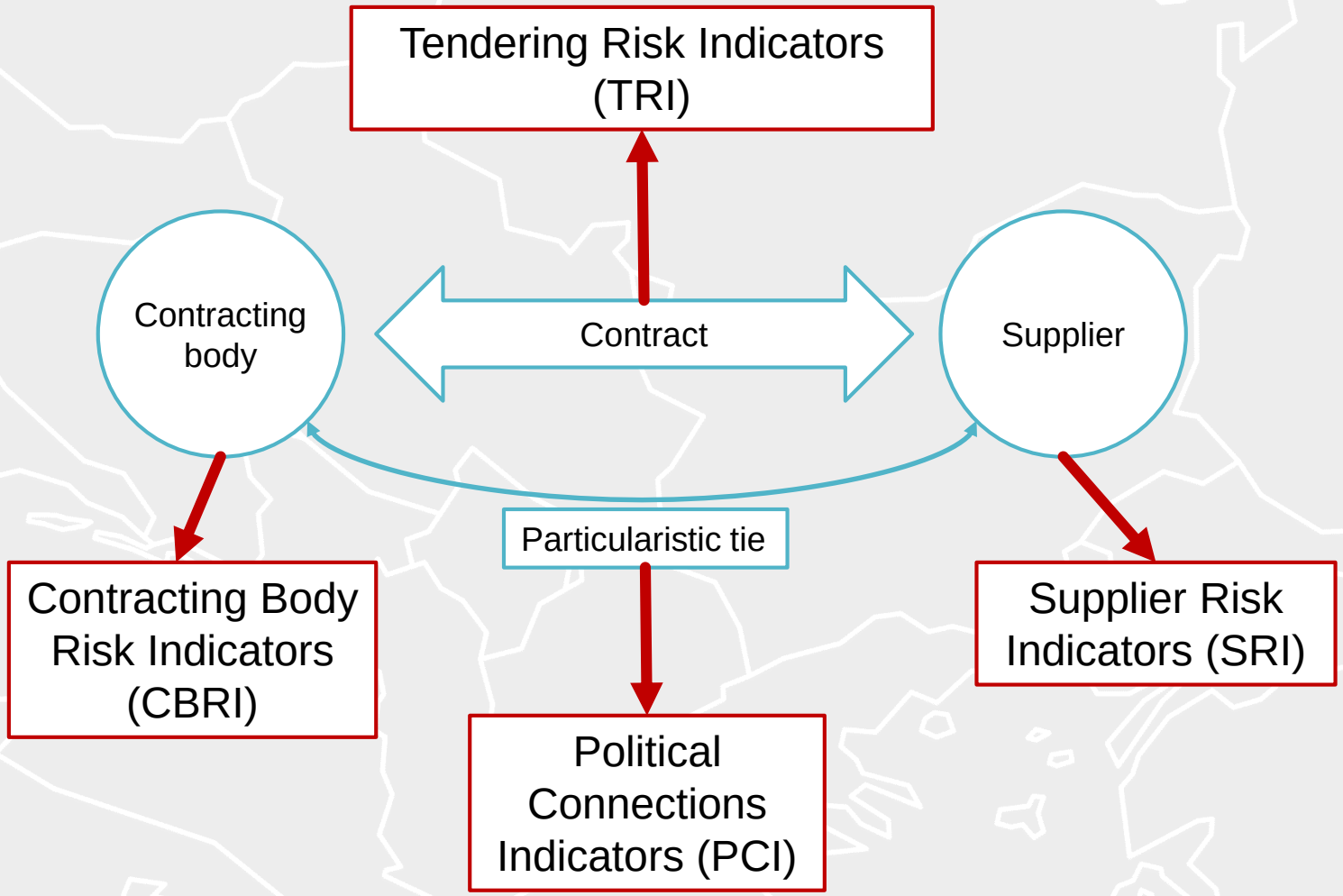
- Beyond finding high risk contracts: compare risks between sectors/regions countries

clean
high risk



III. Corruption risk indicators

Conceptualizing public procurement corruption indicators



Key (desired) features of corruption risk indicators

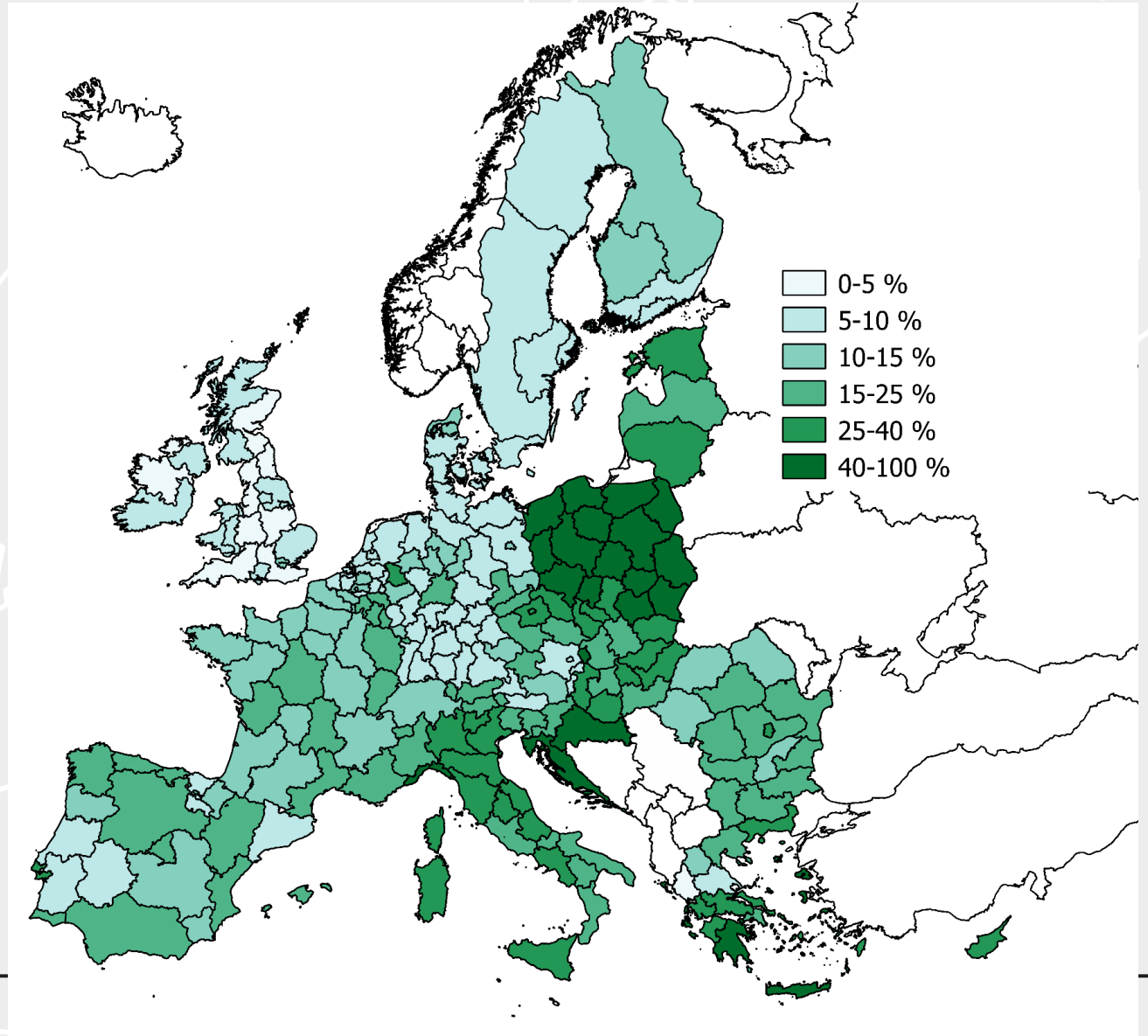
- **objective**: they are based on factual data non-mediated by stakeholder's perceptions, judgements or self-reported experiences;
- **de facto**: Indicators describe actual behaviour or events in contrast to legal prescriptions or expectations;
- **micro-level**: they are defined on the level of actors of corrupt exchanges (e.g. companies) or the transactions among them (i.e. contracts). They can nevertheless be aggregated at higher levels.
- **internationally comparable**: while defined on the micro-level, indicators should be comparable across countries or regions, due the same underlying theoretical concepts and measurement approach, as long as the same corrupt behaviour exists across countries;
- **comprehensive**: they adequately capture corruption risks in a wide set of organizations performing comparable tasks; and
- **timeseries**: indicators are ideally measured and can be compared over time for at least 5-10 years.

Steps for building corruption risk indicators

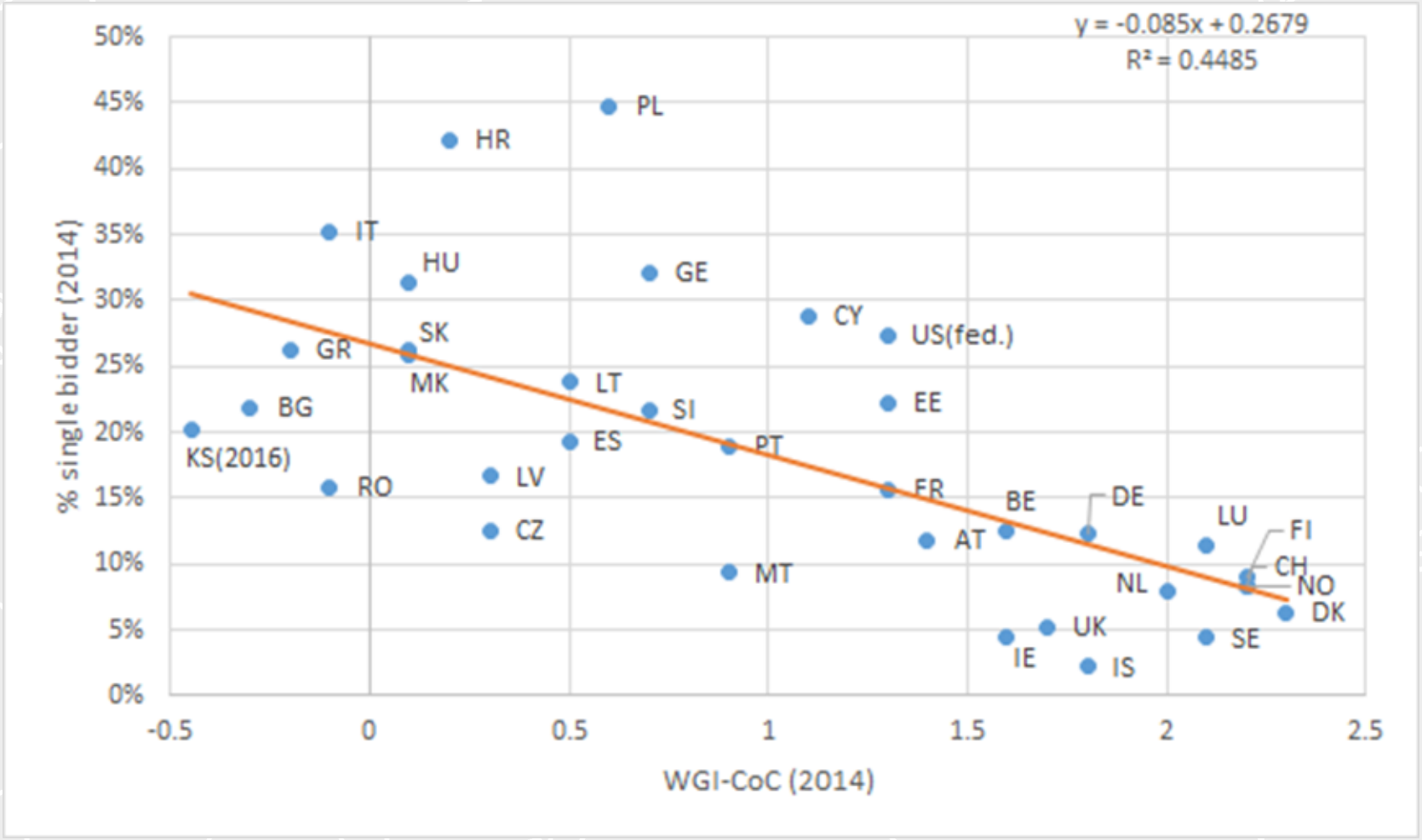
- Clear definition of corruption/fraud/etc.
- Dictionary of corruption technologies
- Modelling corrupt contracting
- Indicator validation

Share of single bidder public contracts across Europe

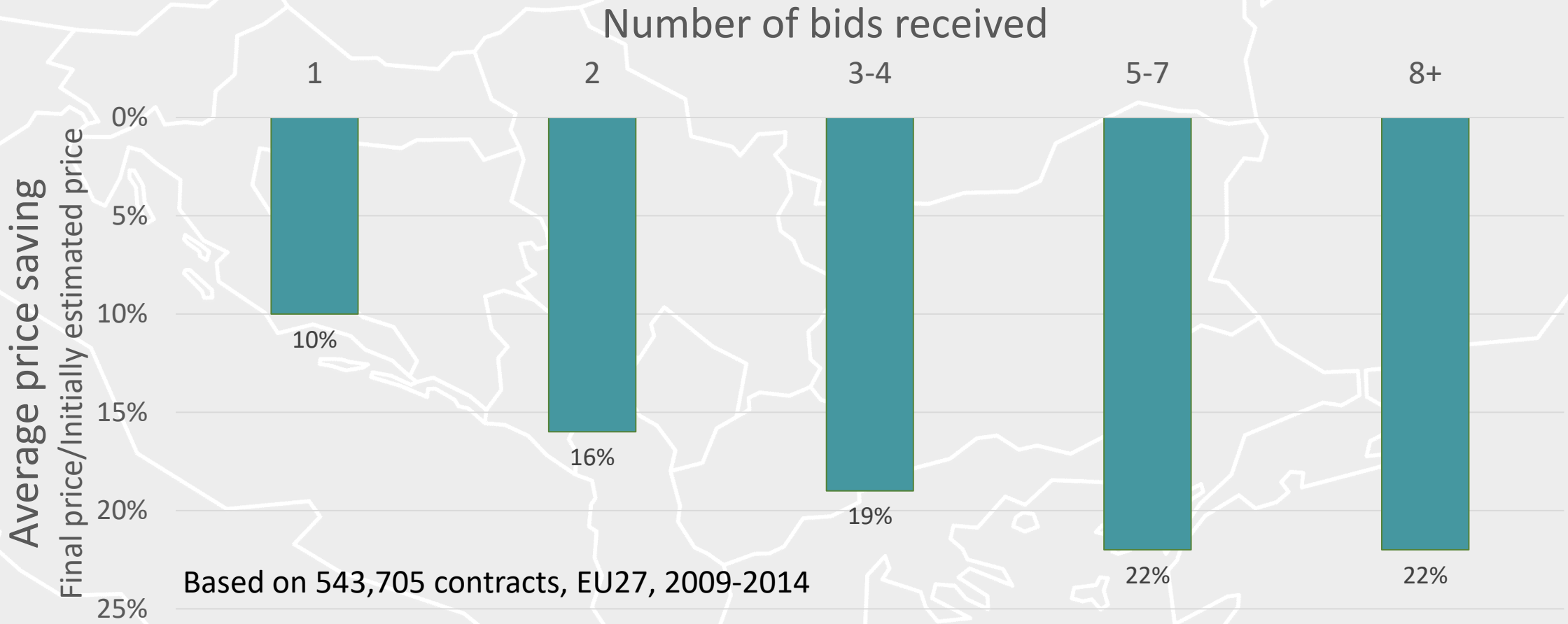
Based on high-value contracts (TED data)
2009-2015
N=2.36m



Single bidding vs World Governance Indicators' Control of Corruption



Number of bids and price savings



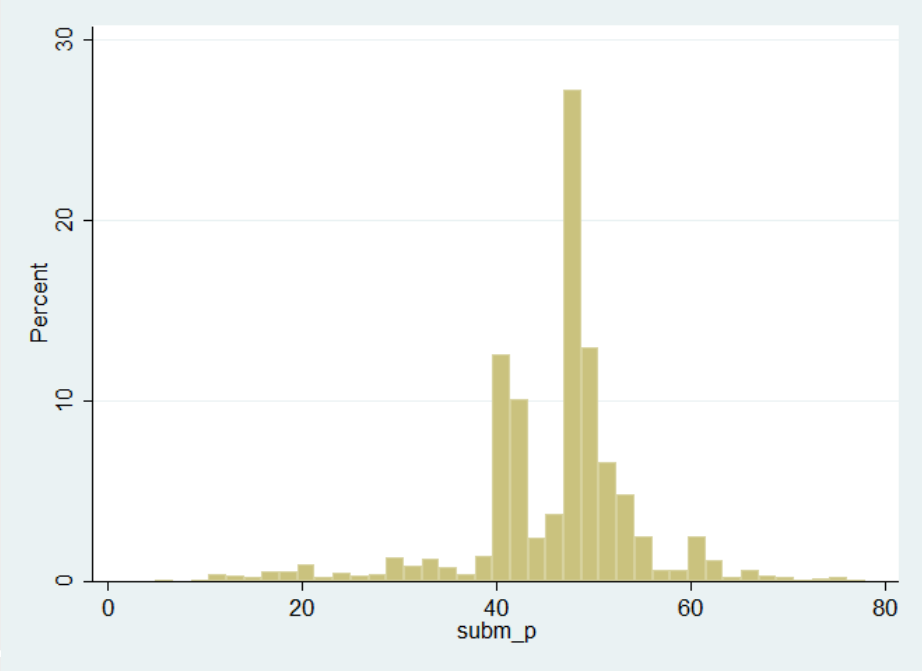
Based on 543,705 contracts, EU27, 2009-2014

But: false positives/false negatives?

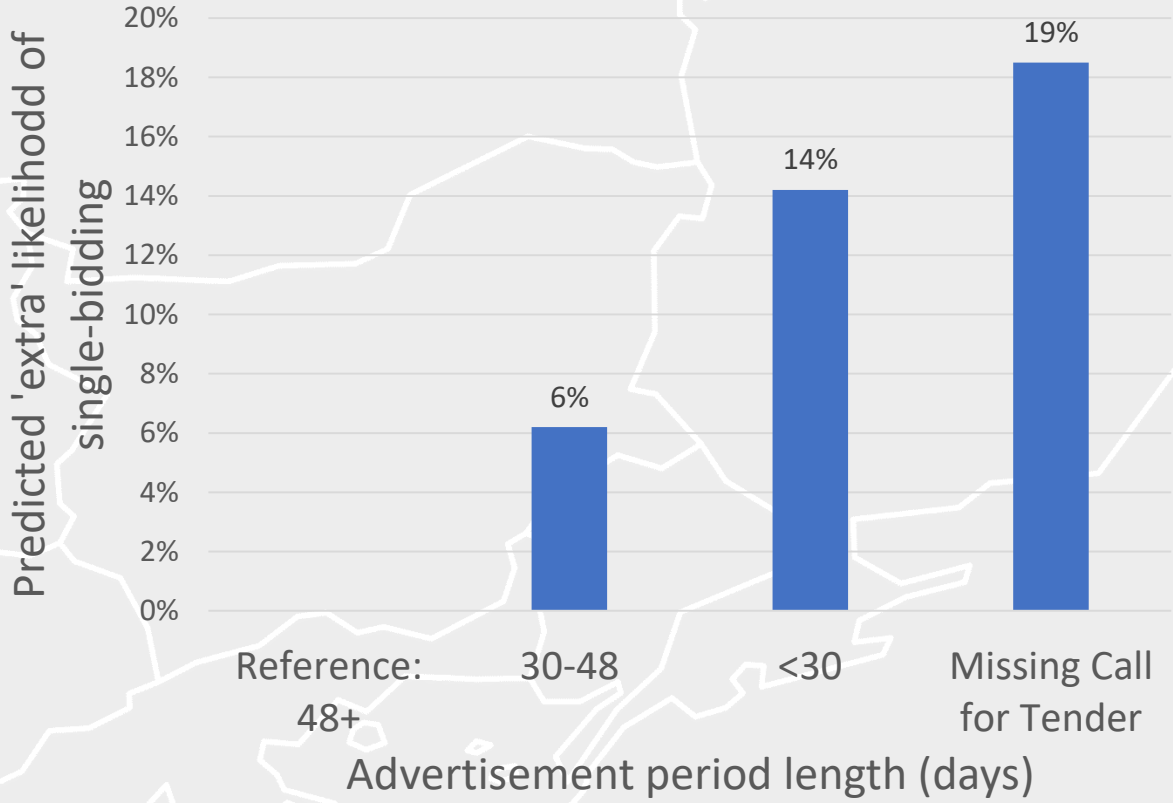
- Single bidding can overestimate risks – i.e. produce false positives:
  - Maybe there are just not enough companies? There is an sudden increase in government spending (i.e. demand shock)
- Other elementary indicators might also over/under estimate risks
  - E.g. political connections can be hard to establish between government suppliers and politicians
- Solution: combine indicators that measure the same

Short deadlines

Distribution of contracts by advertisement period length



Likelihood of single-bidding



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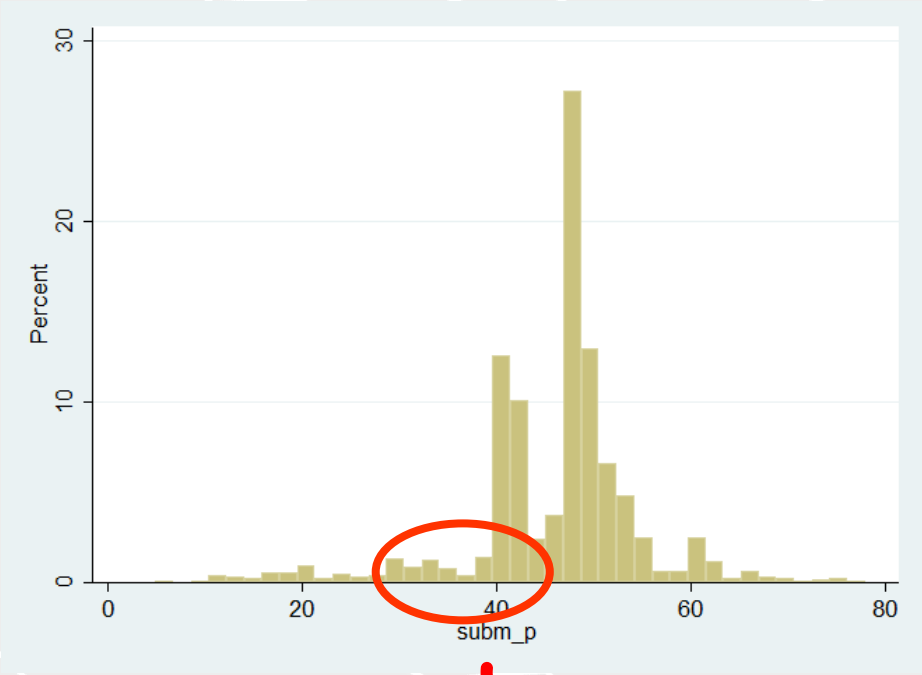

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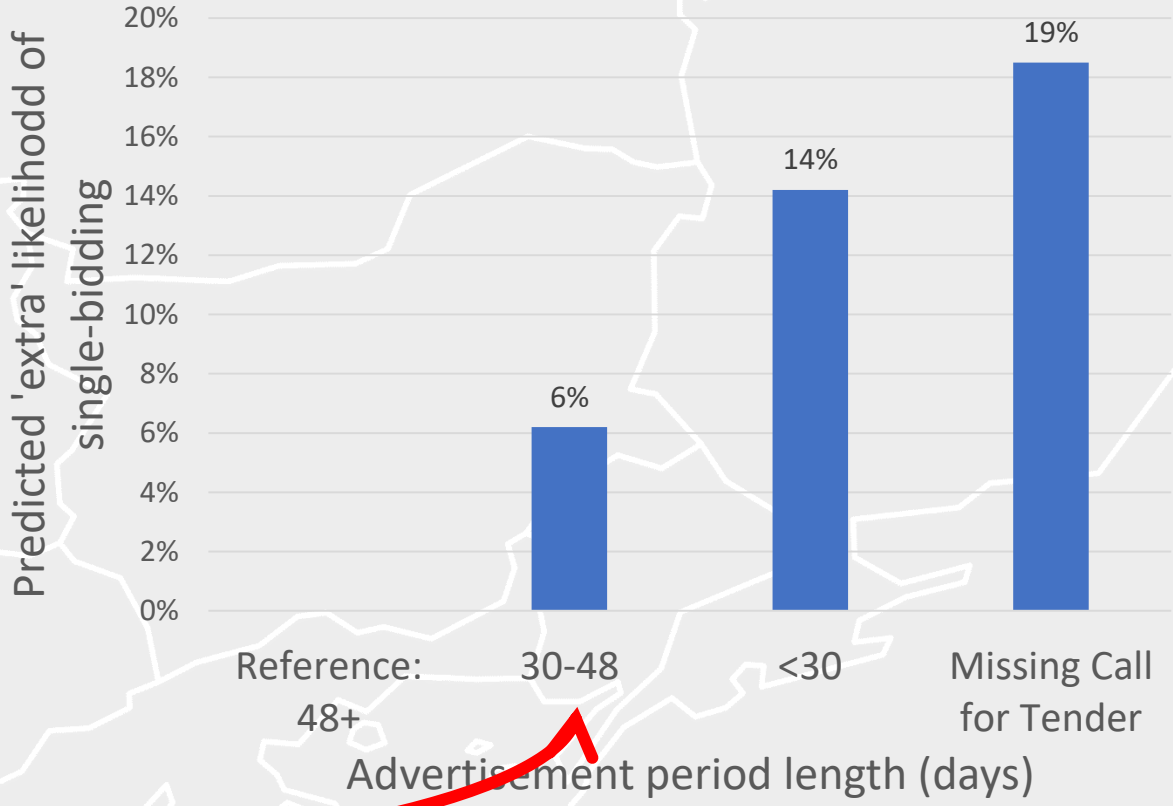

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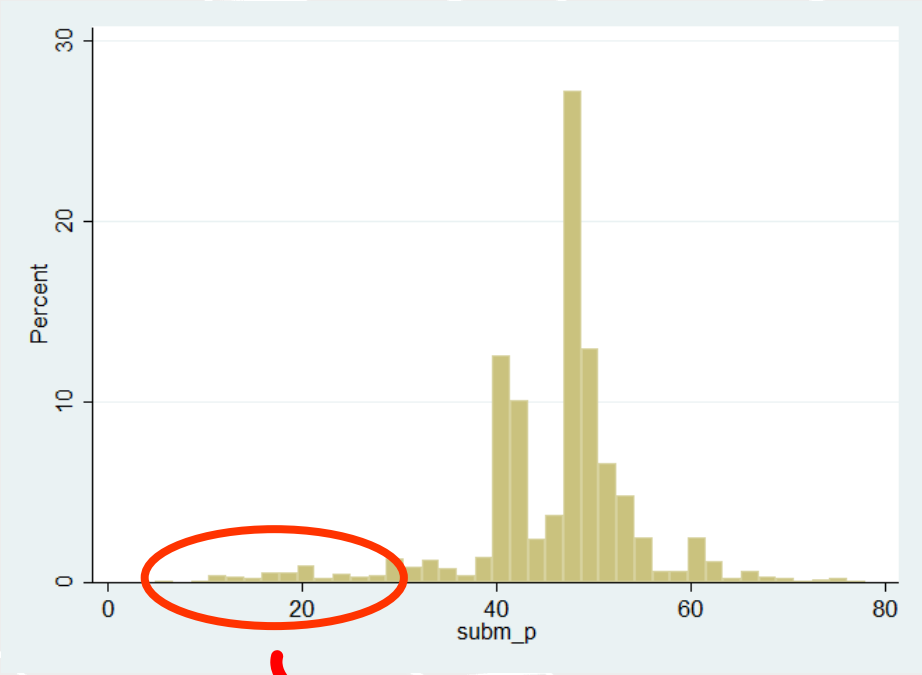

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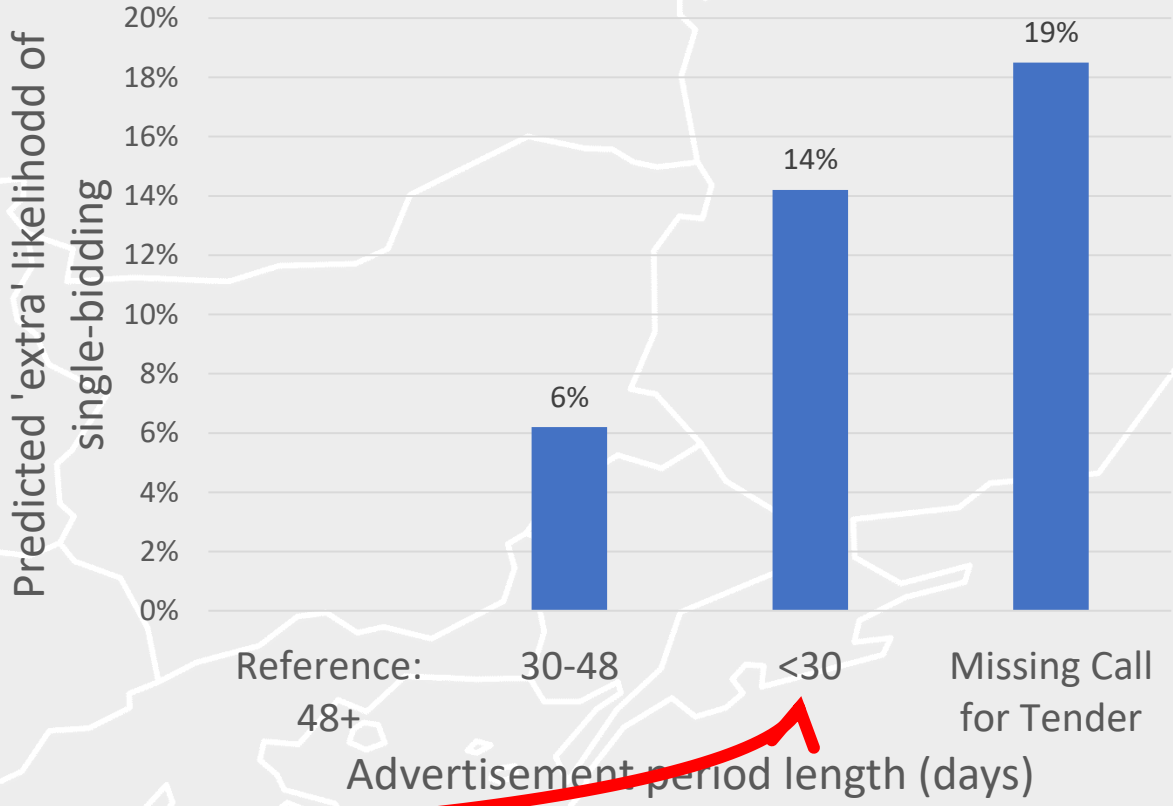
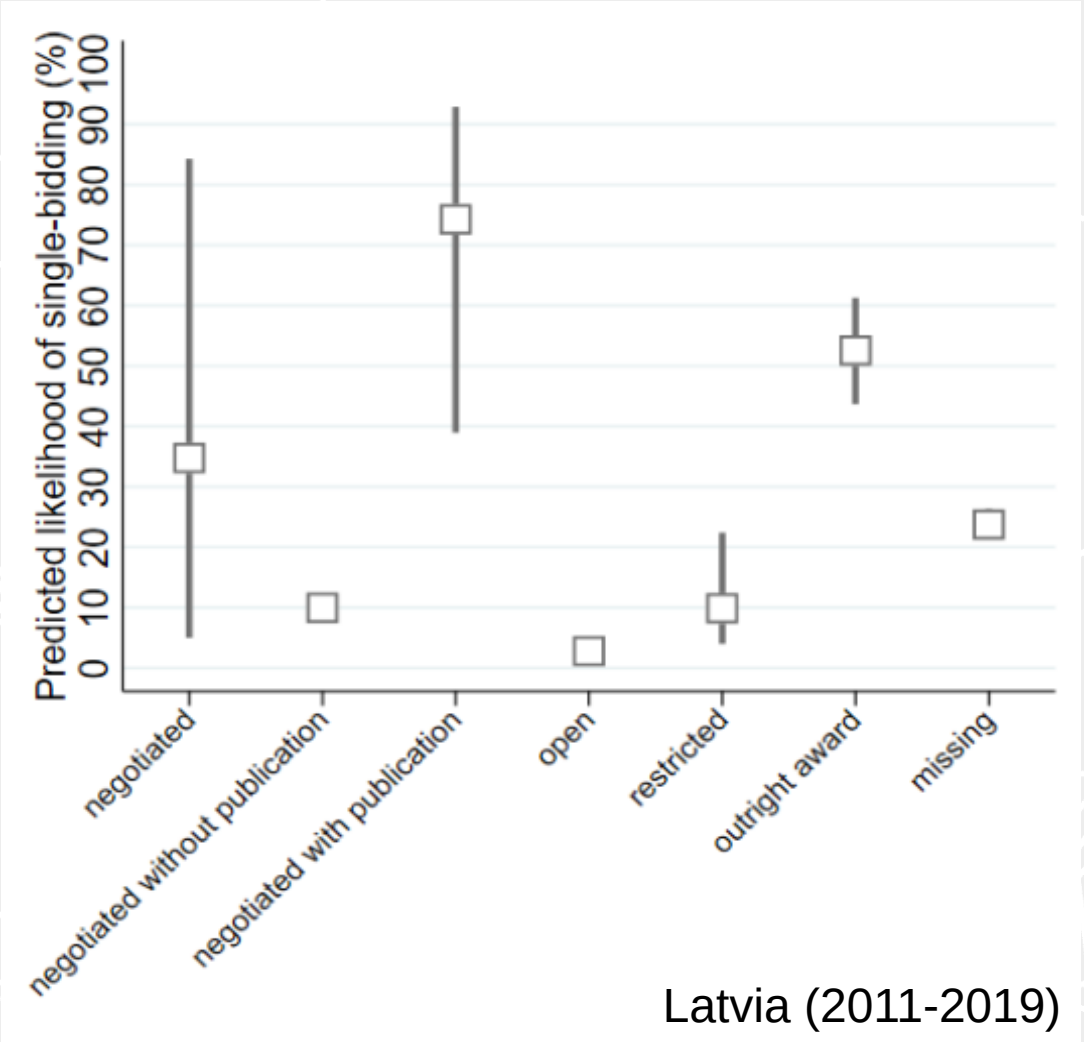


Procedure types



Latvia (2011-2019)

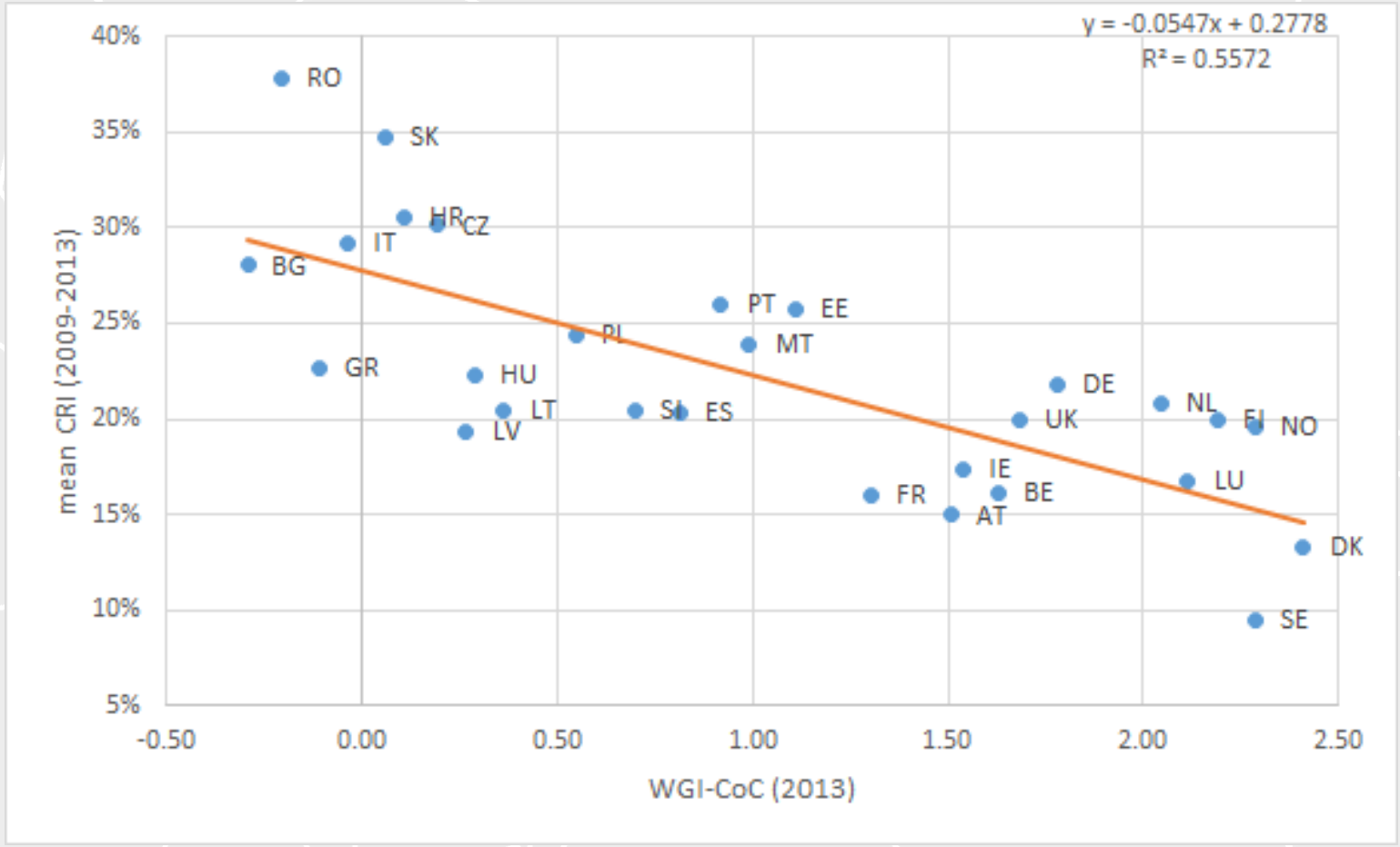
Pulling the pieces together: composite scoring

1. ***Single bidder***
2. ***Winner's contract share***
3. *Call for tender not published in official journal*
4. *Procedure type*
5. *Length of eligibility criteria*
6. *Length of submission period*
7. *Relative price of tender documentation*
8. *Call for tenders modification*
9. *Weight of non-price evaluation criteria*
10. *Annulled procedure re-launched subsequently*
11. *Length of decision period*
12. Contract modification
13. Contract value/duration increase

Pulling the pieces together: composite scoring

Advertisement period length (country specific)	100 = length of advertisement period is unrelated to corruption risks 50 = length of advertisement period has intermediate relationship with corruption risks 0 = length of advertisement period or missing advertisement period has a strong relationship with corruption risks
Decision period length (country specific)	100 = length of decision period is unrelated to corruption risks 50 = length of decision period is somewhat related to corruption risks 0 = length of decision period OR missing decision period is related to corruption risks
Single bid	100 = more than 1 bid received 0 = 1 bid received
Call for tender	100 = call for tender/prior information notice published in official journal 0 = NO call for tender/prior information notice published in official journal
Procedure type (country specific)	100 = open, or does not have significant effect on single bidding 50 = negotiated 0 = non-open + has significant effect on single bidding
Tax haven	100 = winning bidder is not registered in a tax haven country, and is a foreign bidder 0 = company is registered in a tax haven country
(New company) – many missing	100 = if company is older than 1 year when winning a public contract 0 = if company is younger than 1 year when winning a public contract

Composite risk score vs World Governance Indicators' Control of Corruption



III. Use case

Use case: Assessing organization level risks

The case of the European Investment Bank

- European Investment Bank (EIB) finances projects across the European Union of over EUR 50 billion annually
- Traditional methods – like whistle-blowers reporting on wrongdoing - are not efficient for risk management at this scale
- **Selecting entities for Proactive Integrity Reviews** is a complex process that includes **quantitative insights**
- **Red flags,** such as single-bidding, no advertisement, use of non-open procedures, **can inform more in-depth qualitative analyses that eventually leads to on-site audits**

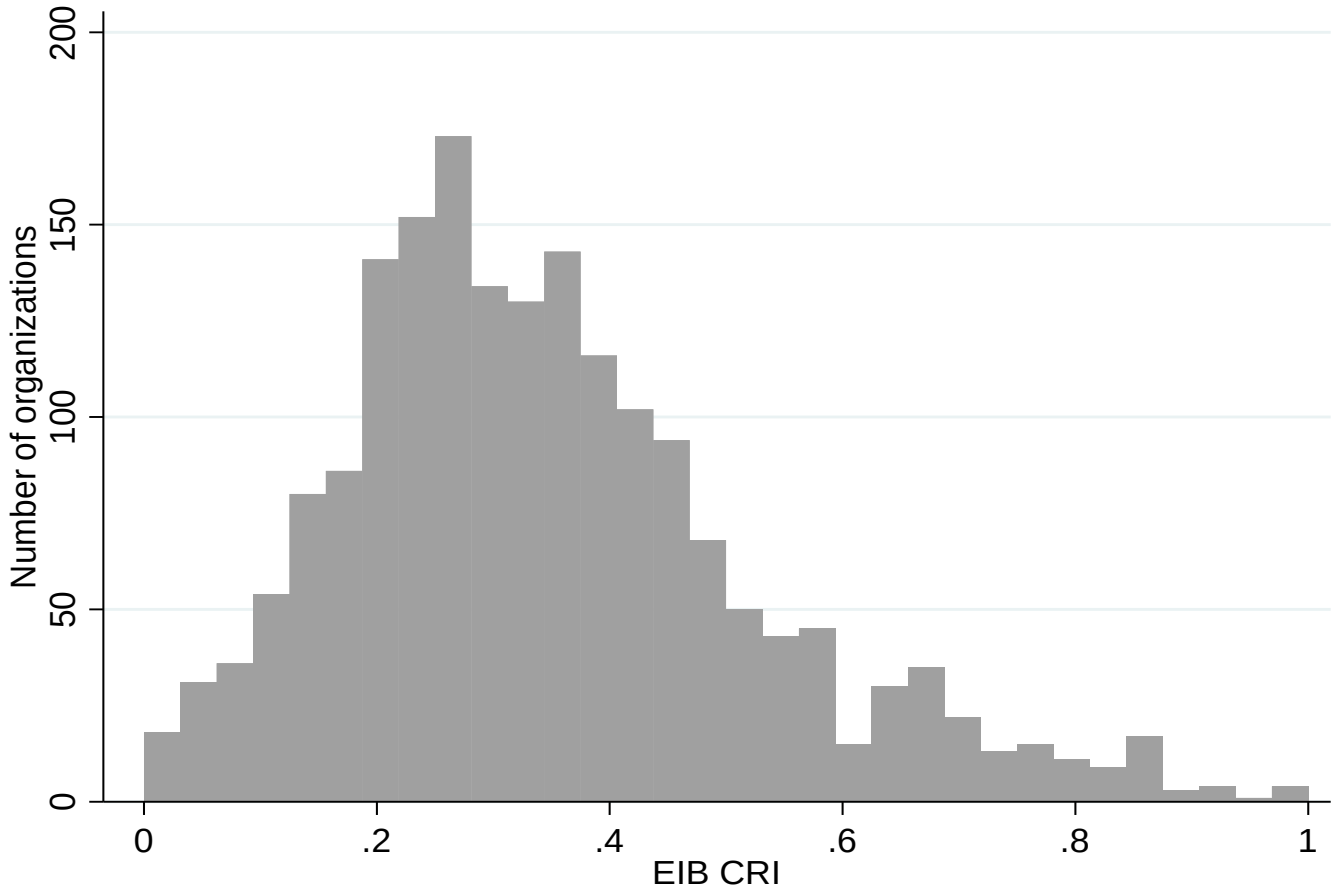
Source: OECD (2019): Analytics for Integrity
http://www.govtransparency.eu/wp-content/uploads/2019/04/analytics-for-integrity.pdf

Use case: Assessing organization level risks

The case of the European Investment Bank

Distribution of EIB-financed organizations by their composite red flag scores (EIB CRI)

This composite is the combination of red flags such as single-bidding, non-open procedures, short deadlines, extreme spending concentration etc.



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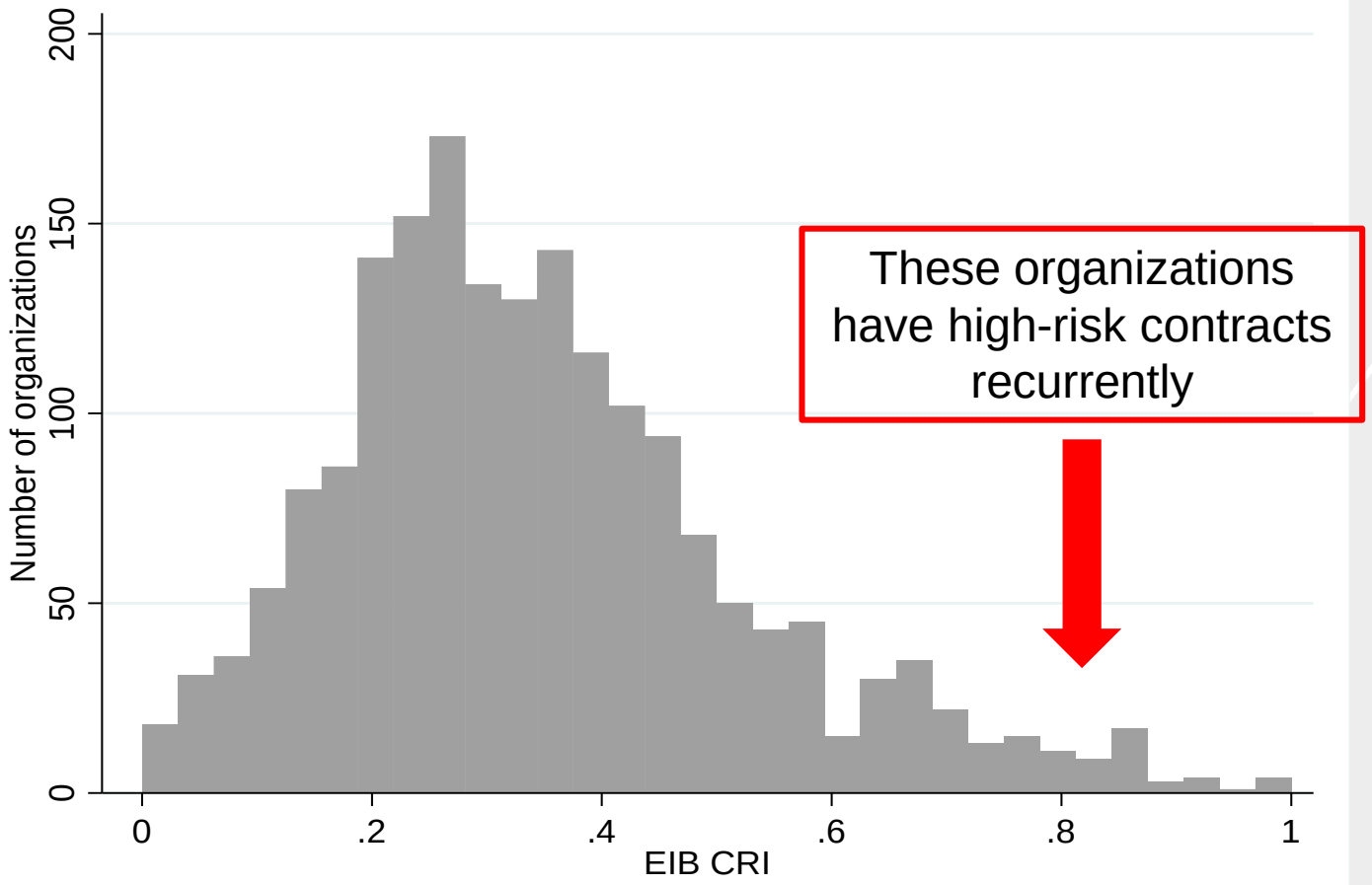

Take-aways

Clear definition of what you want to measure

Curating redflags well - minimizing ‘false positives/negatives’

Risk indicators should be validated and combined together so that they give a robust estimation of true risks