Rethinking Resources and Results

Insights from 20 Years of IBME Data

IBME, Zurich

11.12.2025

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Institute of Biomedical Ethics and History of Medicine

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Introduction

Introduction | Methods | Results (d) | Results (i) | Discussion

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What Does Academia Stand For? (today's metrics)

What *we say* academia stands for:

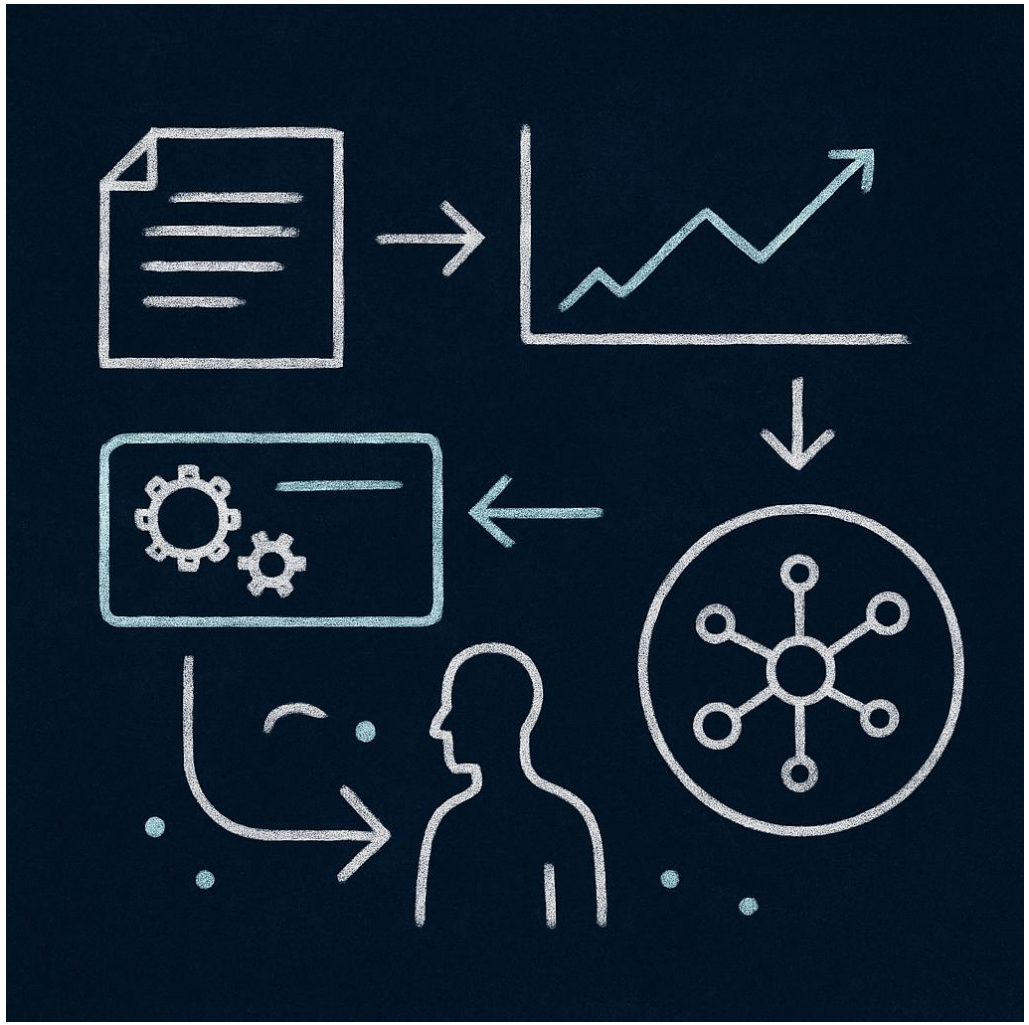
- Curiosity
- Knowledge
- Discovery
- Social benefit
- Truth-seeking
- Intellectual freedom

What our metrics *actually* reward:

- Volume over value
- Speed over depth
- Grants over ideas
- Safe projects over bold ones
- Outputs over people
- Compliance over creativity
- Visibility over substance

Why this little study

- **20 years of institutional data** available
- Common belief: **more money + more people = more output**
- Wanted to **test what actually predicts** productivity, staff growth, impact ...
- **Rare:** long-term internal dataset enabling temporal analysis



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Research Questions

What drives:

- Publications?
- Citation impact?
- Grant acquisition?
- Financial inflow?
- Staff growth?

- **Do traditional inputs** (money, people) **matter?**
- **Does time/sequence of events matter?**

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Methods and nerdy details

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Dataset

Years: **2005–2024**

Annual institutional metrics:
- Publications (ZORA)
- Total citation impact (ZORA)
- Employees (internal data)
- Grants (internal data)
- Total funding (internal data)

20 time-points → small but unique longitudinal dataset

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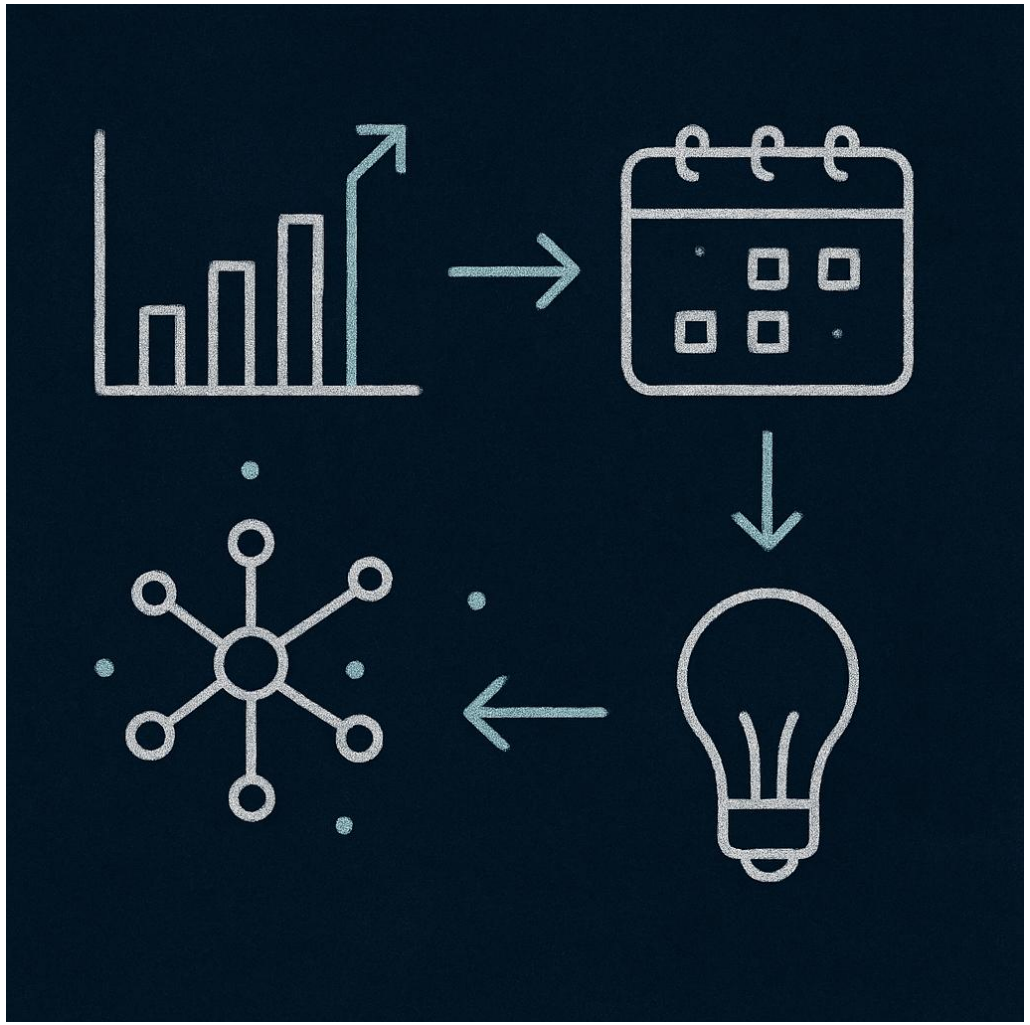
Methods overview

- Descriptive statistics
- Correlation analyses
  - **Pearson** (linear, normality assumption)
  - **Spearman** (monotonic , no normality assumption)
- Multiple regressions
  - **OLS** (check overlapping predictors)
- Granger causality
  - temporal precedence to **test what leads where** (after x lags)
  - focus: **directionality and lags**



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Results (descriptive)

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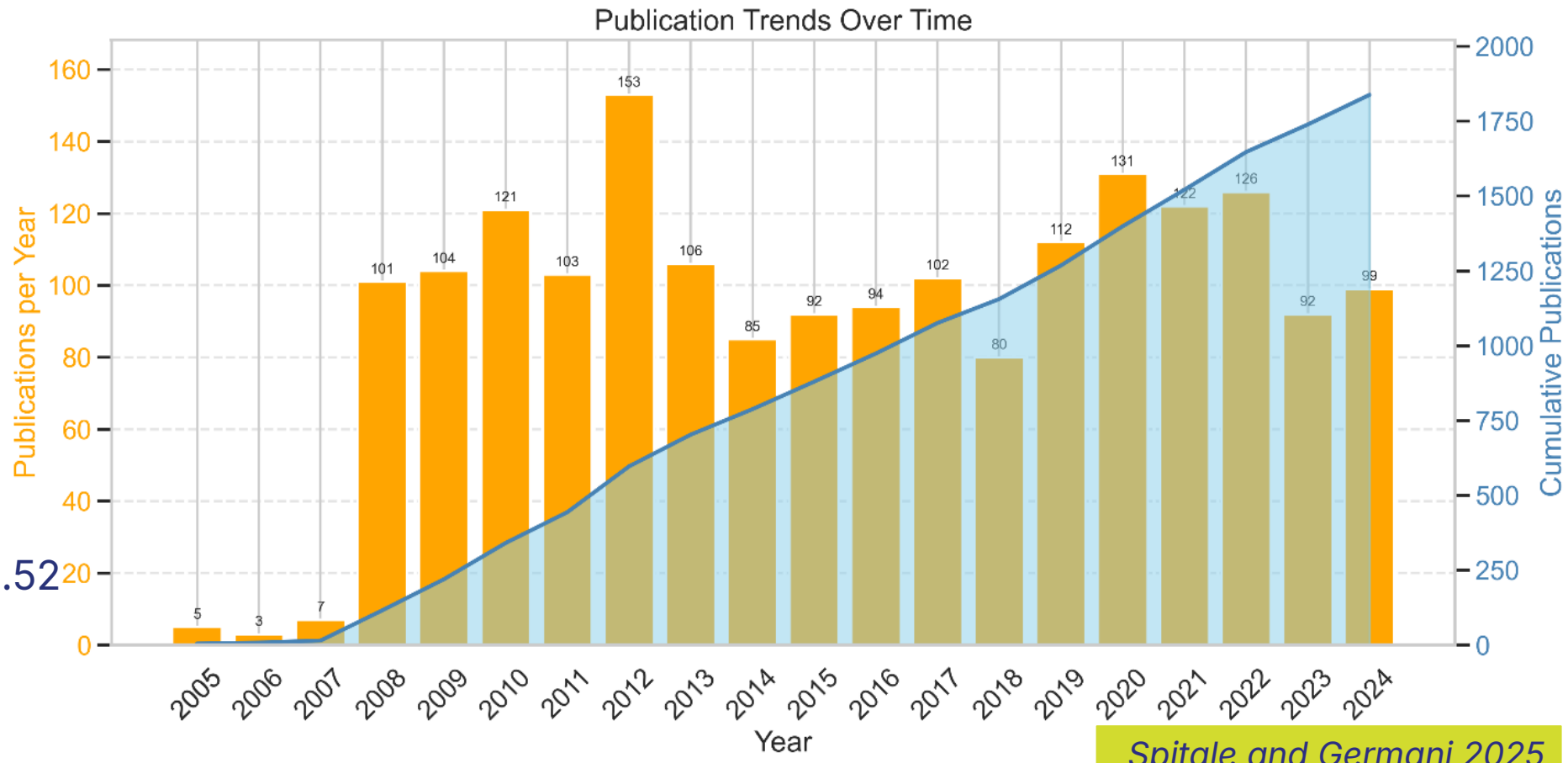
Publications

- 1838 publications
- mean per year: 87.52
- range: 0–153



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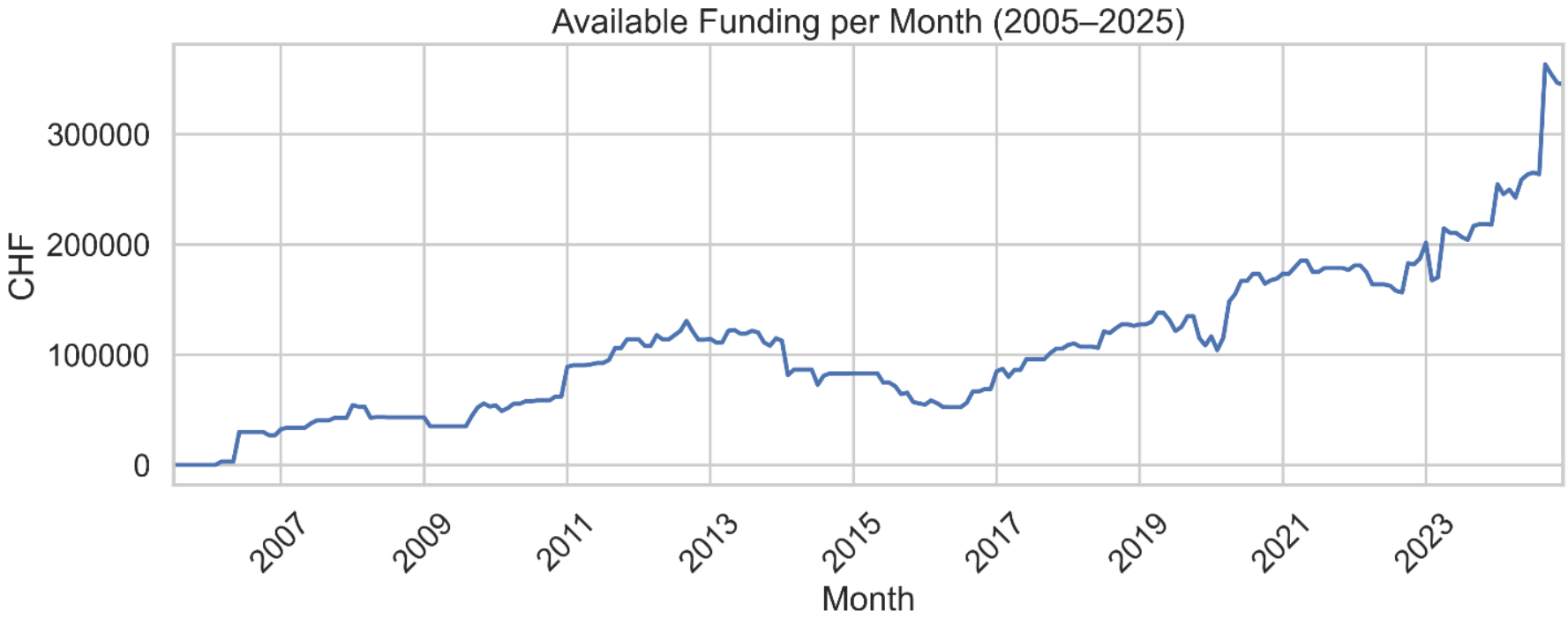
Funding

- 142 grants
- mean per year: 7.10
- range: 1 – 14

- CHF 24.96 mio
- mean per year: 1.25 mio
- range: 0.01 - 6.02 million



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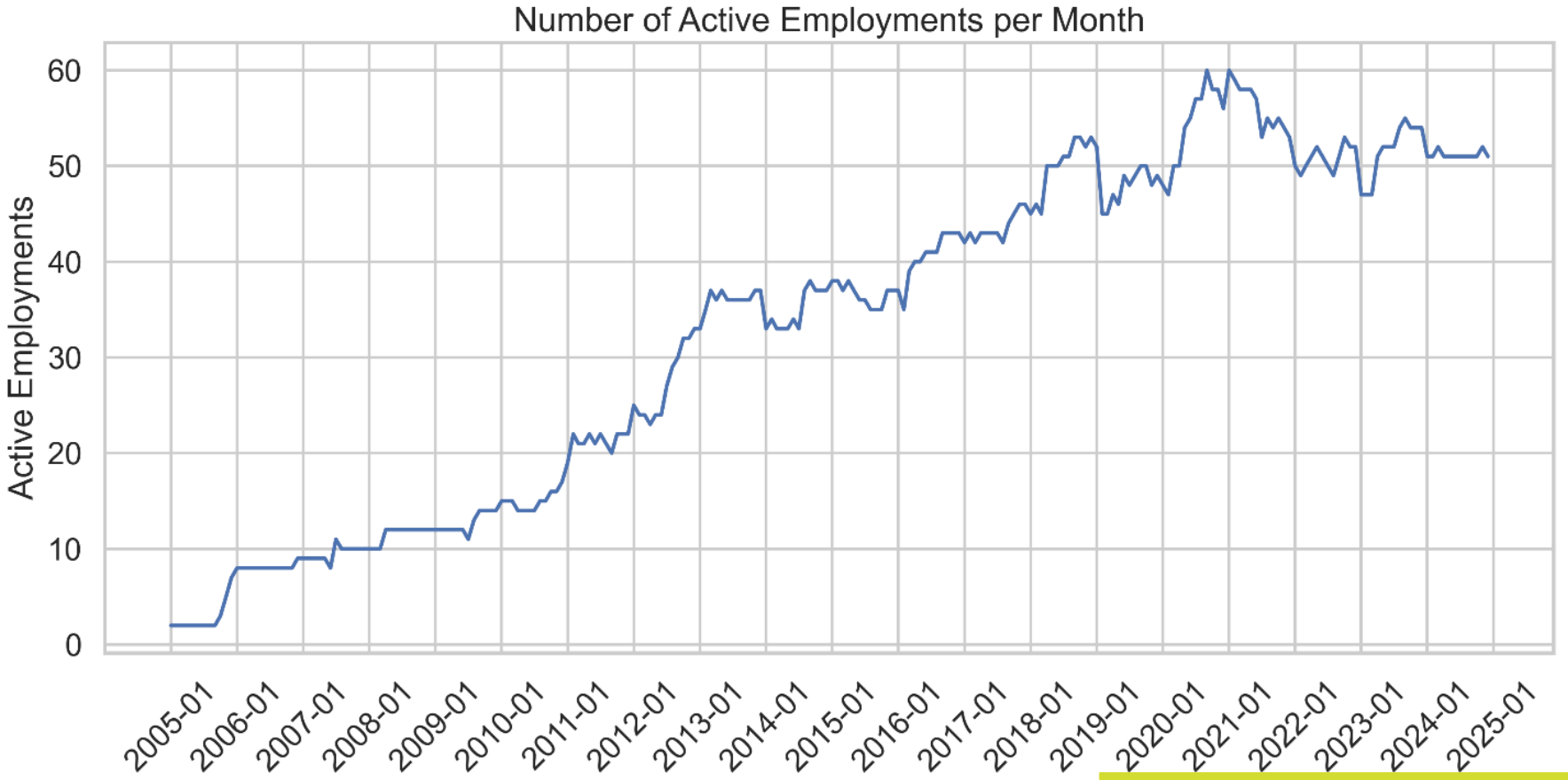
Staff

- 113 unique employees
- mean per year: 39,47
- range: 7-69



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Results (inferential)

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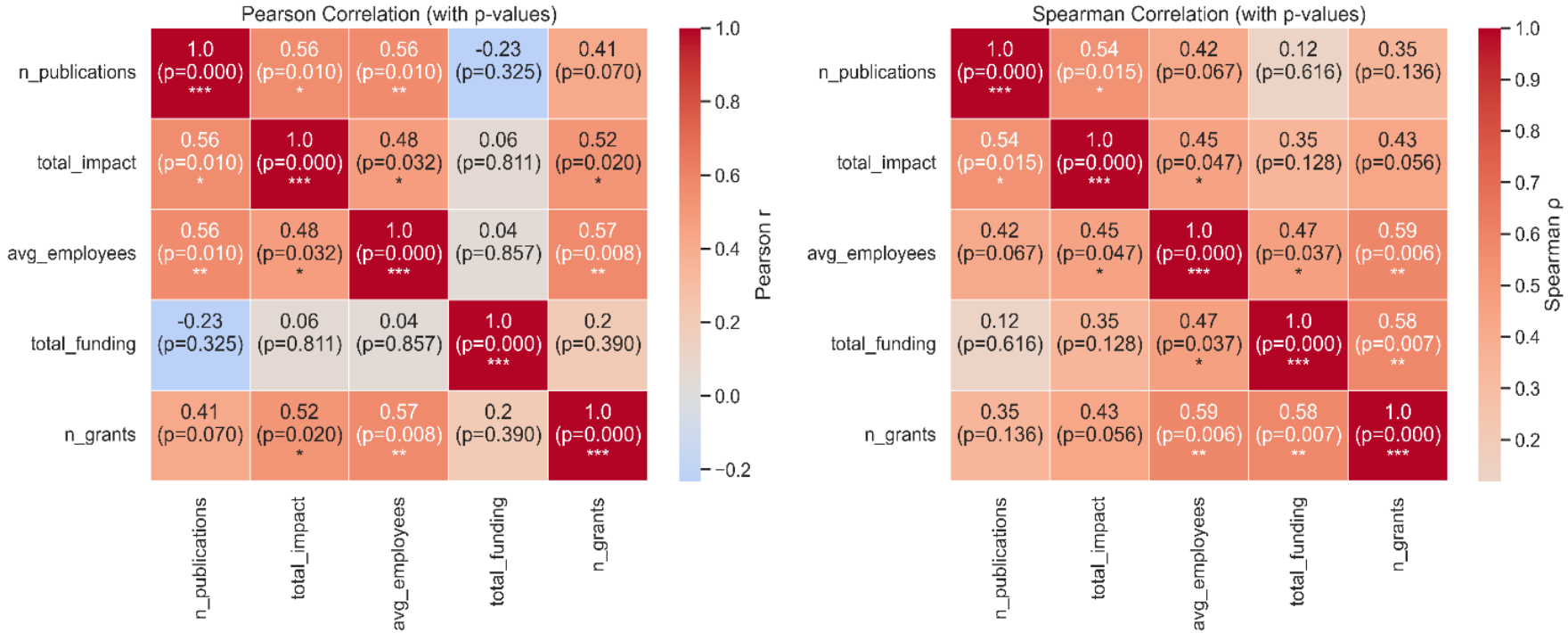
Initial correlations

- Publications ↔ Impact
- Publications ↔ Staff
- Grants ↔ Staff
- Grants ↔ Funding: monotonic, non-linear

- **Funding ↔ Publications/Impact : none**



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One word on Granger causality

Granger causality = predictive precedence, not true causation.

- Idea:
  If past values of X improve the prediction of future values of Y, X "Granger-causes" Y.

- It tests temporal ordering:
  Does X come before Y in a statistically meaningful way?

  Does adding past X make predictions of Y better than using past Y alone?

- **What it DOES NOT mean:**
  It does not claim **X is the real-world cause of Y.** It only shows that X contains useful predictive information.

- Why it matters here:
  Allows us to see **whether publications precede grants, whether grants precede impact, whether impact precedes staffing, and whether funding is connected to anything** (spoiler: it's not).

- Useful metaphor:
  "If the rooster always crows before sunrise, the rooster Granger-causes the sunrise."

Granger causality in our data

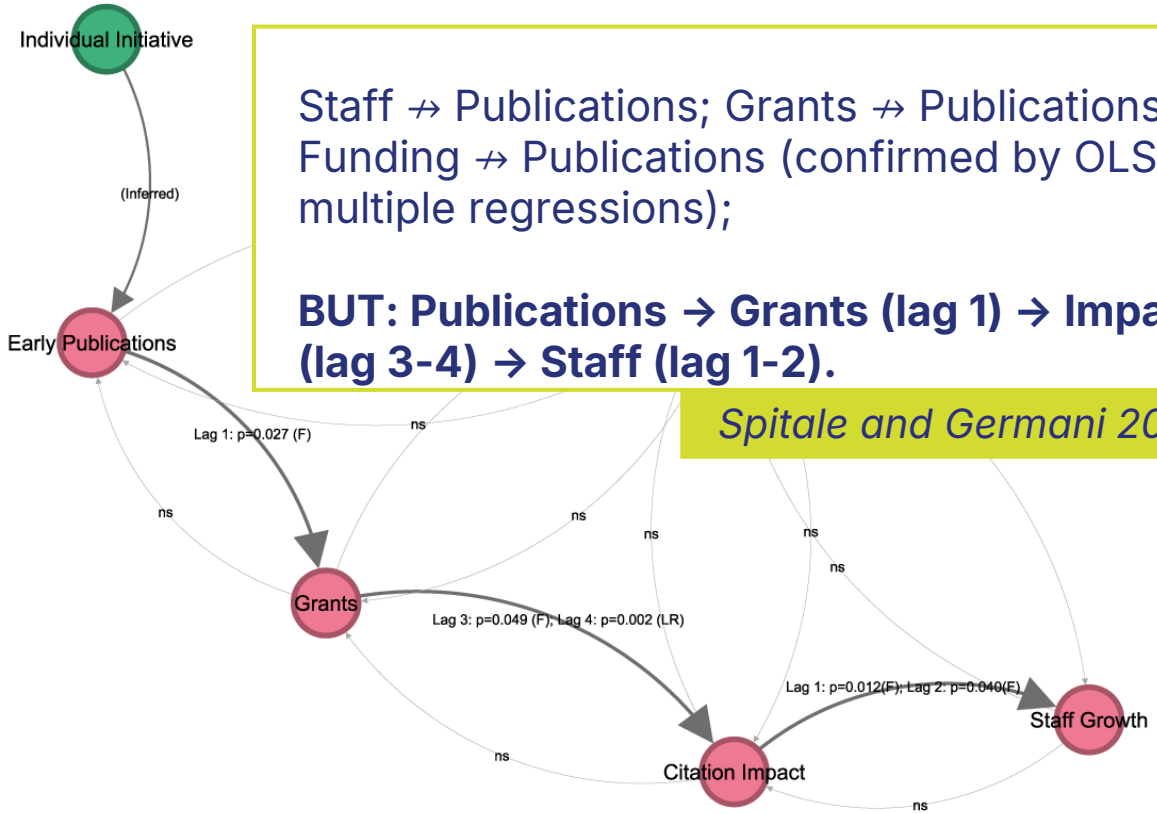
Thick arrows represent statistically significant Granger-causal relationships ($p < 0.05$ unless noted),

Arrows indicate directionality

Labels indicate the lag and associated p-values.

Thin arrows denote absence of statistical support.

Granger-Causal Relationships Among Institutional Performance Indicators



Staff ↛ Publications; Grants ↛ Publications; Funding ↛ Publications (confirmed by OLS multiple regressions);

BUT: Publications → Grants (lag 1) → Impact (lag 3-4) → Staff (lag 1-2).

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Limitations

20 data points → **cautious inference**

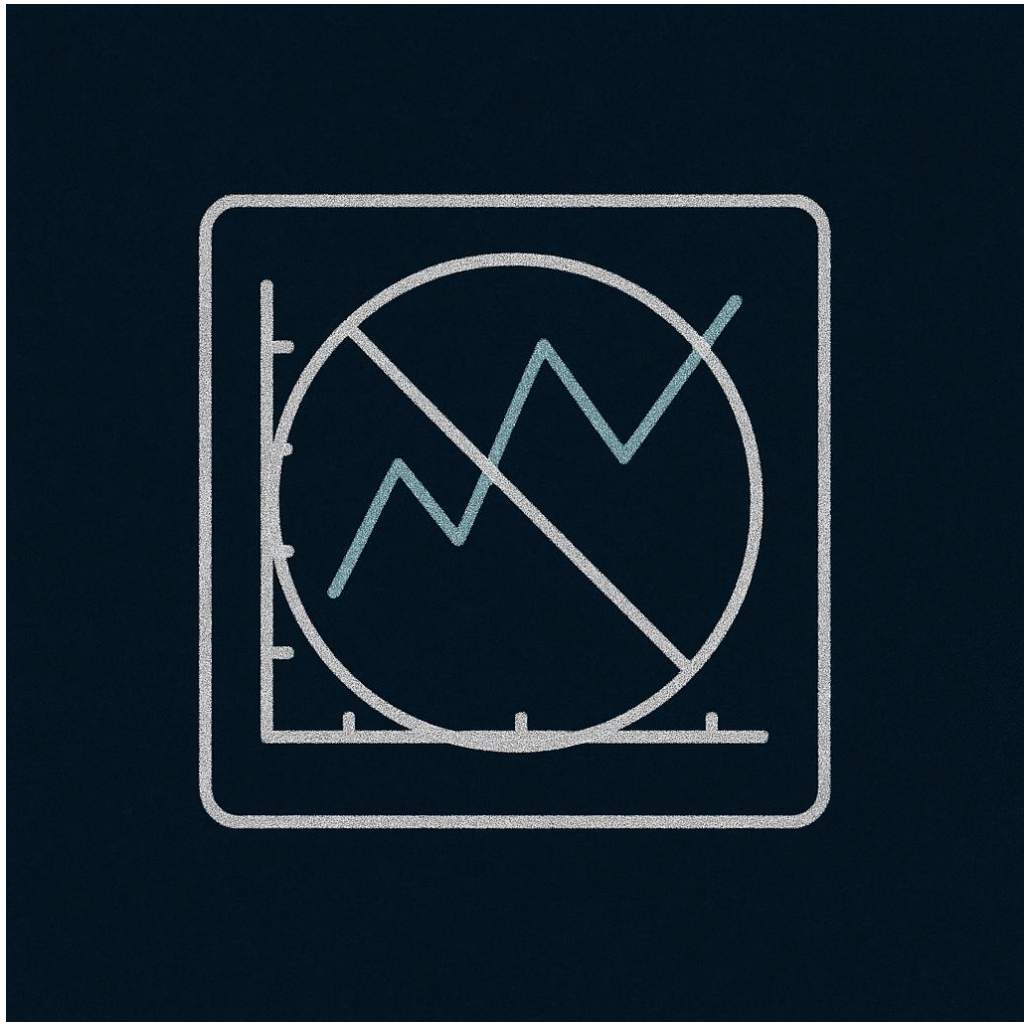
Aggregated institutional-level data

Some possibly **meaningful metrics** are **not collected/hard to collect**

No qualitative variables included

Granger ≠ true causation

ZORA **excludes non-traditional outputs**



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Discussion

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What the IBME System Looks Like

A cumulative-advantage feedback loop:

- Early productivity drives access to resources **(assumption!)**
- Resources increase long-lag influence
- Influence attracts people
- People indirectly support future capacity

What the System Is NOT:

- NOT a machine that turns money into papers
- NOT an input-output pipeline
- NOT predictable via annual KPIs

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Core Messages

#1: Publications come first. Not money. Not staff. **Output → grants,** not vice versa.

#2 : Influence is delayed; **impact attracts people,** not vice versa.

 # 3: Grants increase impact, but **only after 3–4 years.** Impact attracts staff, not the opposite.

 # 4: Grants reward capacity and past productivity, **not recent outputs.**

#5: Cash inflow is decoupled from academic performance. **Nothing predicts funding and funding predicts nothing.**

#6: Traditional input–output models don't work. Academic institutions behave as ecosystems, not factories. **Performance emerges from path dependence, cumulative advantage, and timing,** not from inputs

#7: We do have severe blind spots in the data. Many meaningful contributions (data, code, preregistrations, public engagement, policy impact, teaching) are not measured. **ZORA excludes them by design.**

#8: Institutional evaluation must reflect on what impact we should care about and shift from counting papers to **recognizing value, openness, and societal relevance.**

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What *Should* Academia Stand For?

What the data *actually* show:

- Inputs ↛ outputs
- Funding ↛ performance
- Staff size ↛ productivity
- Impact follows lags
- Early initiative and curiosity (possibly) drive future success
- Ecosystems outperform pipelines

What academia should stand for:

- Real impact (beyond citations and H indexes)
- Initiative
- Long-term capacity
- Collaboration, not competition for visibility
- Meaningful contributions, not tokenistic counting exercises
- People who dare to try, not people who optimize for KPIs

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Implications for Research Assessment

- Current input metrics are poor predictors
- Bibliometrics are temporally complex
- Need to consider “soft” factors (H: happy people tend to have better ideas)
- Lag effects matter more than annual indicators
- Institutional size ≠ productivity
- Financial inflow ≠ quality or influence

→ Aligns with Leiden Manifesto and DORA.

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Recommendations for Funders

- Avoid short-term bibliometrics
- Manage expectations!
- Consider delays between funding → outputs
- Support distributed funding models
- Reward potential, not just track record

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Recommendations for Nikola

- Focus on people's initiative (see: happy people hypothesis – should be tested)
- Enable early publications (mentoring, teaching, journal clubs, peer review)
- Hire for independence and long-term potential
- Interpret cash flow cautiously
- Value smaller, stable, diverse grants > big volatile ones

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Recommendations for Researchers

- Focus on early, visible publications
- Don’t wait for perfect conditions (perfect is the worst enemy of done – good is good enough)
- Outputs create opportunities (not the opposite)
- Collaborate and disseminate strategically
- Think long-term (lags are real)

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Recommendations for PhD students

- Initiative matters more than resources
- Start publishing early
- Follow your curiosity, again: follow your curiosity!
- A single good paper can change your trajectory
- Academic success = cumulative

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Metrics are Wrong

Important **outputs** NOT captured:

- Datasets
- Preregistrations
- Code
- Policy impact
- Teaching material
- Public engagement

→ Need broader indicators (in line with DORA)

And what about **inputs?**
- We assumed “individual initiative” as a possible predictor for early publications, but we have no evidence (yet) to support this hypothesis.

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The next 20 years

Open questions for our future:

- **What kind of institution do we want to become?** Ecosystem? Factory? Something radically different?
- **Which signals will matter in 2045?** Creativity? Initiative? Collaboration? Societal relevance? **How can we measure them?**
- **How do we support the people who make early outputs possible?** Students, postdocs, young PIs, invisible labor.
- **What is the impact about which we care?** And what is the impact about which we should care?
- **Can we redesign our incentives?** To reward curiosity, depth, openness, community impact?
- **What will be our long-lag investments today?** What should we start now so it pays off in 3, 5, or 10 years?

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Let’s keep talking

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