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INFORMATION

Rural Hospital Financial Performance: Tools for Data-Driven Decision Making

1

Housekeeping

- Slides are available at ruralhealthinfo.org/webinars
- Technical difficulties please visit the Zoom Help Center at support.zoom.us

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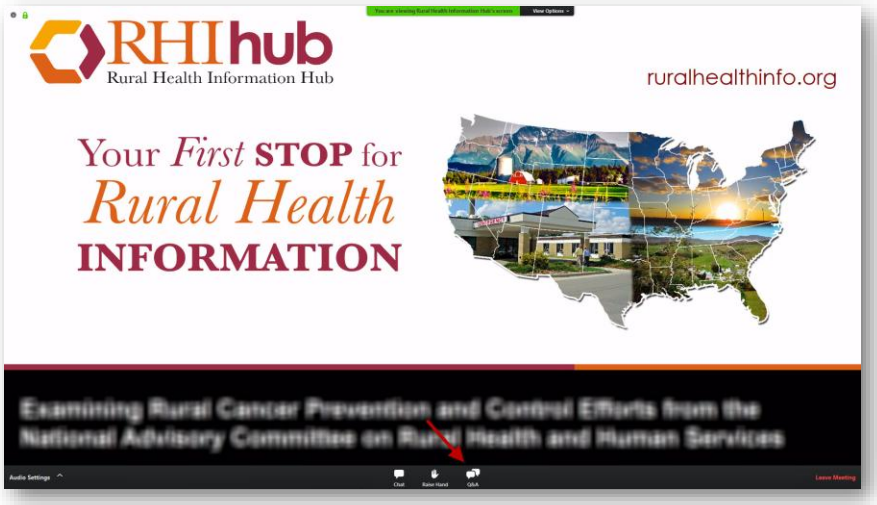
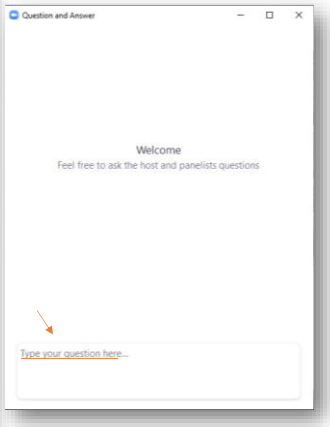
If you have questions…





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Featured Speakers

Sara J. Couture, MPH, Social Science Analyst, Division of Healthcare Quality and Outcomes, Office of Health Policy at the Office of the Assistant Secretary for Planning and Evaluation

Mark Holmes, PhD, Director, North Carolina Rural Health Research Center

4

The State of Rural Hospitals in the U.S, 2012-2023

Steven Sheingold, PhD
Sara J. Couture, MPH

July 21, 2026
U.S. Department of Health and Human Services

ASPE ASSISTANT SECRETARY FOR PLANNING AND EVALUATION | OFFICE OF HEALTH POLICY

OS PCOR TF | OFFICE OF THE SECRETARY PATIENT-CENTERED OUTCOMES RESEARCH TRUST FUND

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Disclaimer

The findings and conclusions in this presentation are those of the authors and do not necessarily represent the official position of the U.S. Department of Health and Human Services.

6

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Acknowledgement & Thanks

- Fredo Louis
- Kaushik Ghosh
- Eden Volkov
- Ge Bai
- Scott Smith

7

7

ASPE Rural Hospital Projects

Objective

- Provide internal policymakers hospital level data to understand financial and environmental factors that influence financial status and closure risk
- Provide a model to predict risk of closure
- Understand where rural residents get their care and the impact of hospital closures on those patterns

8

8

ASPE Rural Hospital Projects

- Combined database
  - Medicare cost reports
  - AHA annual survey
  - Area health resource file
  - County health rankings
- Dashboard to make the data accessible
- Cox model to predict closures
- Medicare and Medicaid claims level analysis of care patterns in rural areas
- Literature review

9

9

Dashboard Overview

Goal

Provide the Public with Comprehensive information on rural hospitals both open and closed, spanning 2012 to 2023.

Key Features

- **National Level Map of Open and Closed Rural Hospitals by Year**
  - Users can filter by hospital name, closer status, occupancy rate quartiles, ownership type, and system affiliation
- **Detailed Hospital Level Information**
  - Users can select a hospital and see longitudinal data including occupancy rates, number of beds, Medicare and Medicaid share of discharges, liability-to-asset ratios, and annual profit margins.
- **County Level Context**
  - Users can explore the context of the hospitals' county including the healthcare workforce, other health care facilitates and demographic information

10

10

Key Findings

- The dashboard variable align with the ASPE's model that identifies the key determinants of rural hospital closures or conversions to outpatient-only facilities.
- The analysis shows that low occupancy rates, for-profit ownership, and proximity to an urban county are key predictors of closure or conversion.

Volkov, E., Ghosh, K., Sheingold, S., and Bai, G. Determinants of Rural Hospital Closures or Conversions in the United States. Office of the Assistant Secretary for Planning and Evaluation, U.S. Department of Health and Human Services. May 2026. https://aspe.hhs.gov/reports/rural-hospitals-report

11

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Demonstration

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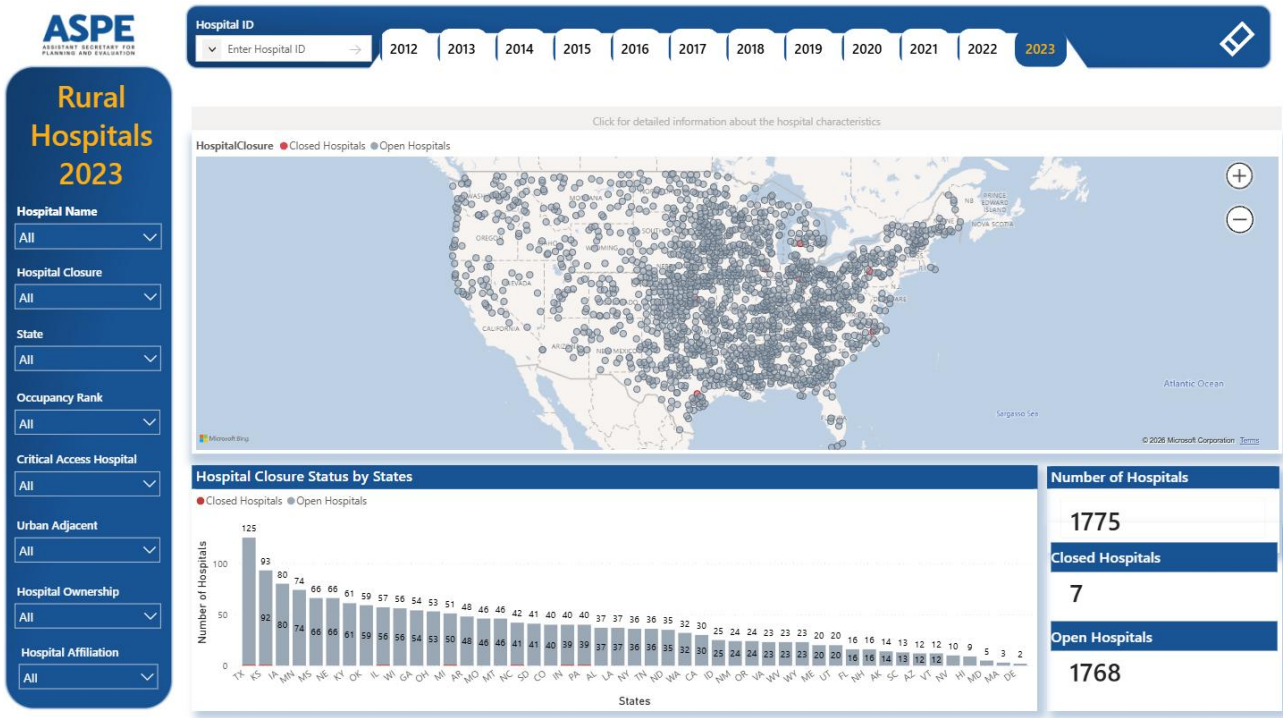
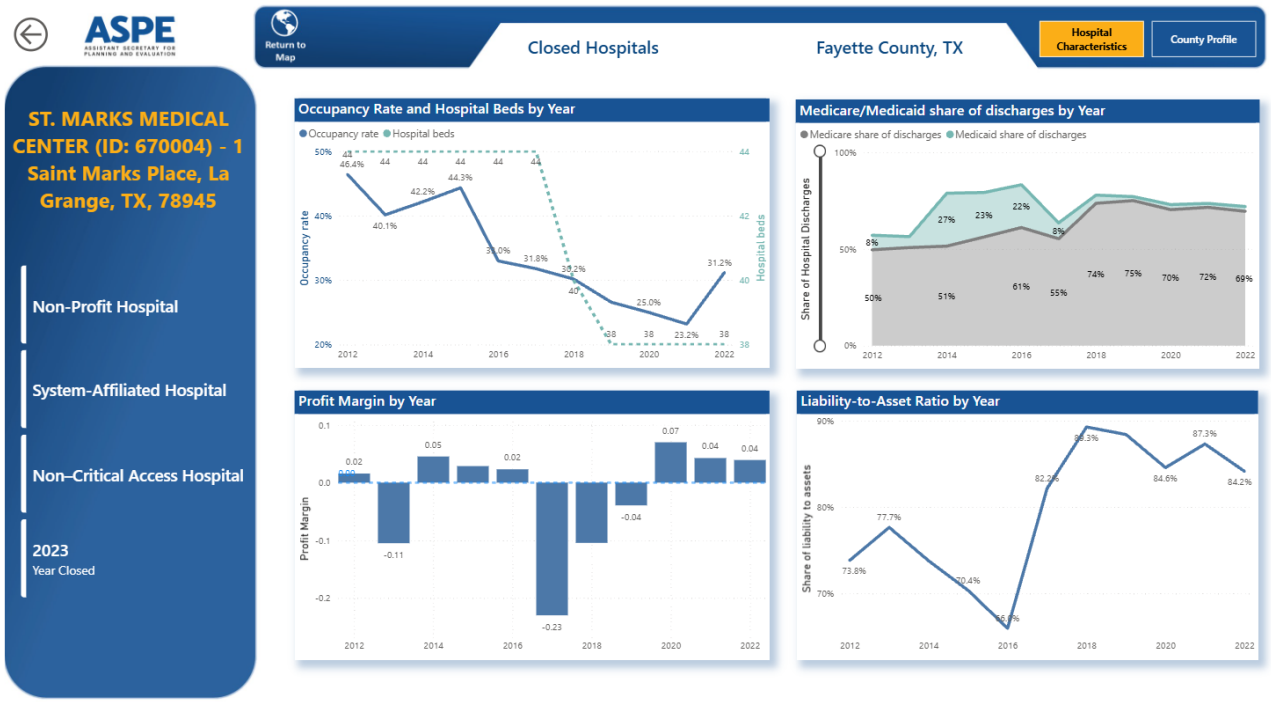
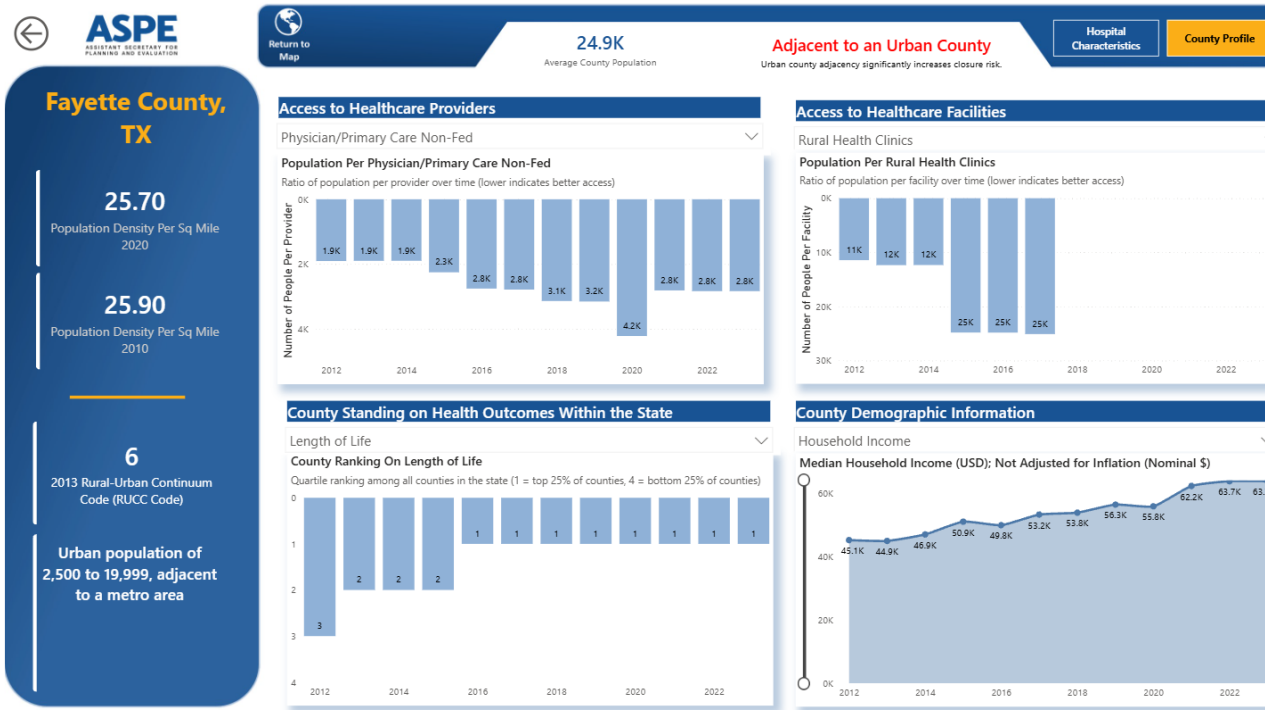

ASPE
Rural Hospitals 2023
Hospital Name
All
Hospital Closure
All
State
All
Occupancy Rank
All
Critical Access Hospital
All
Urban Adjacent
All
Hospital Ownership
All
Hospital Affiliation
All
Hospital ID
Enter Hospital ID
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Click for detailed information about the hospital characteristics
HospitalClosure Closed Hospitals Open Hospitals
Hospital Closure Status by States
Closed Hospitals Open Hospitals
Number of Hospitals
States
Number of Hospitals
1775
Closed Hospitals
7
Open Hospitals
1768

13


ASPE
Return to Map
Closed Hospitals
Fayette County, TX
Hospital Characteristics
County Profile
ST. MARKS MEDICAL CENTER (ID: 670004) - 1 Saint Marks Place, La Grange, TX, 78945
Non-Profit Hospital
System-Affiliated Hospital
Non–Critical Access Hospital
2023
Year Closed
Occupancy Rate and Hospital Beds by Year
Occupancy rate
Hospital beds
Medicare/Medicaid share of discharges by Year
Medicare share of discharges
Medicaid share of discharges
Share of Hospital Discharges
Profit Margin by Year
Profit Margin
Liability-to-Asset Ratio by Year
Share of liability to assets

14



15

July 21 2026

Rural Hospital Financial Performance: Tools for Data-Driven Decision Making

The Financial Distress Index

Mark Holmes, PhD
Thomas W. Lambeth Distinguished Chair in Public Policy, UNC Gillings & Director, Sheps Center
University of North Carolina at Chapel Hill

The University of North Carolina at Chapel Hill

The Cecil G. Sheps Center for Health Services Research

16

Talk in one slide

- Rural hospital closures make headlines — but the smarter question is upstream: how healthy is a hospital financially before it closes?
- The Sheps Center built the Financial Distress Index (FDI): one simple, plain-language measure of a rural hospital's financial health.
- Built for rural hospitals — open-source, forward-looking, and based on public data (Medicare cost reports), updated annually.
- It works: predicted risk closely tracks observed outcomes — higher FDI risk means higher rates of closure, negative equity, and negative cash flow.
- Use it as a screen, not a diagnosis — strong across populations, less precise for any single hospital, and always with a human in the loop.

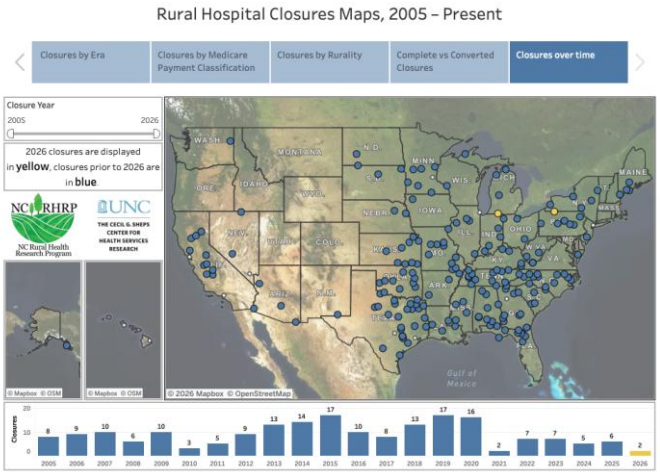
17

Background: The Why

18

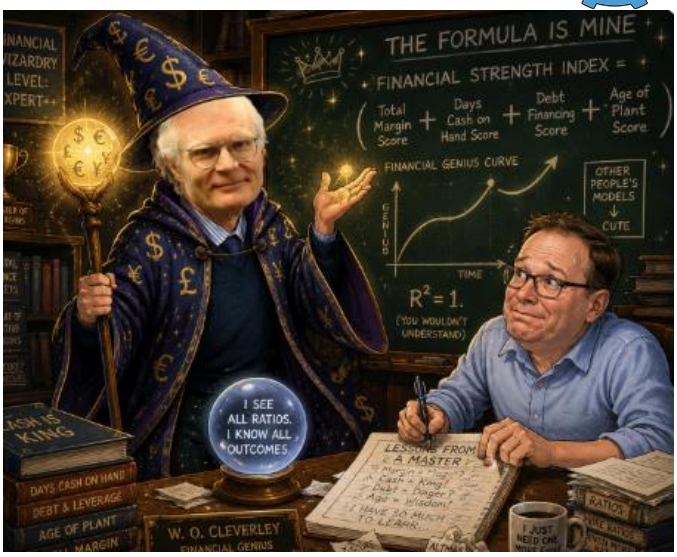
Managing Rural Hospital Closures

- Rural hospital closures get the headlines, but we should be thinking upstream – how can we assess the financial health of rural hospitals before they close?
- This allows “us” – governments, healthcare leaders, communities, etc. – to be better prepared to prevent closures -- or prepare for a more orderly transition.



Financial Analysis is Hard

- We want to be able to assess the financial health of rural hospitals, but most of us are not wizards who can think across multiple financial indicators.
- A comprehensive, simple measure enables us to more quickly assess a hospital’s financial position – even if it is a rough estimate



Why we built the Financial Distress Index (FDI)

- Long history of financial indexes to capture financial distress.
- Notable examples:
  - Altman Z-score (1968)
    - Designed for publicly traded companies, esp. manufacturing
  - Cleverley (and Associates): Financial Stress Index
    - Designed for hospitals
- We wanted something that worked better for rural hospitals
- Concept: hospitals have a level of "financial distress" that is not directly observed – we see markers of it (e.g. closure, negative profit, etc.)

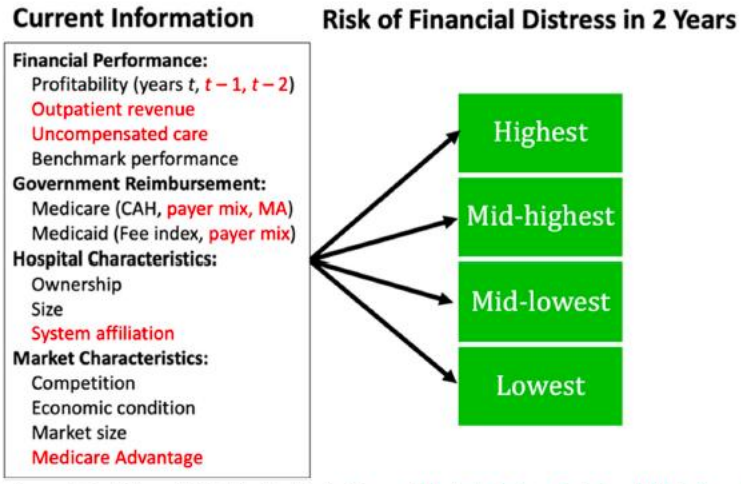
Principles

- **Non-proprietary / open source formula:** formulas and instructions available to public
- **Designed for rural hospitals:** calibrated among "rural hospitals", defined semi-broadly
- **Forward-looking:** should predict "future" outcomes
- **Use public data:** largely HCRIS (Medicare Cost reports)
- **Useful for simulation**: index should be able to simulate policy initiatives e.g. *What if Medicare revenue were to fall 20 percent?*
- **Face validity:** predictors are commonly thought to drive distress
- **Update annually, revise regularly:** the index will be updated with current data annually, and revised for current drivers regularly – roughly every 3-5 years (orig. 2017 – current 2024)
- **Results (n.b.) easy to understand:** plain-language, uni-dimensional, gradient-based assessments

The FDI: The What

The FDI: A two-part story

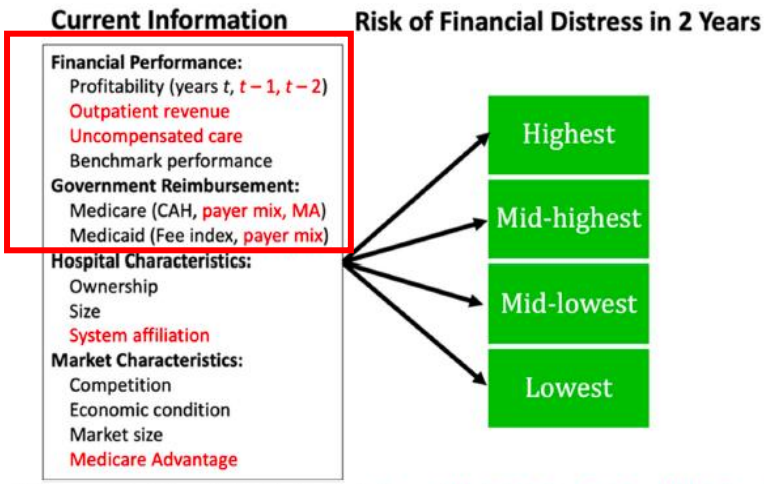
Current FDI Structure



Variables from original FDI model listed in black text. New variables included in updated model listed in red text.

Current FDI Structure

Finances – both observed and drivers – play a major role



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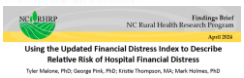
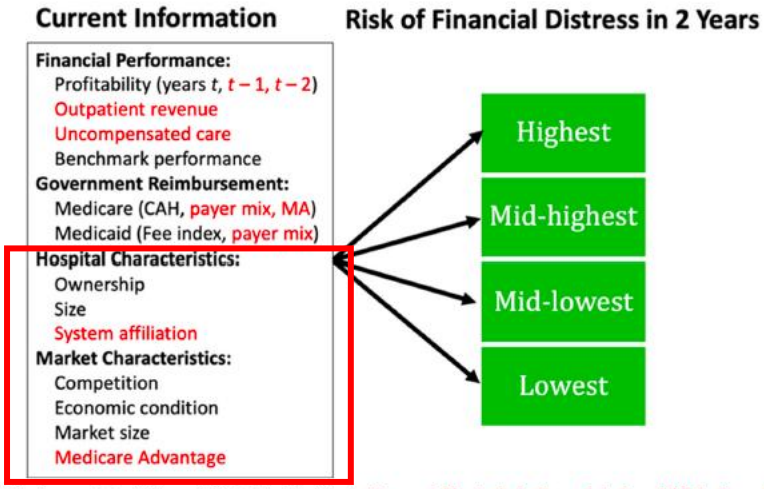


Current FDI Structure

Hospital and community characteristics address fixed elements of the hospital as well the patient population



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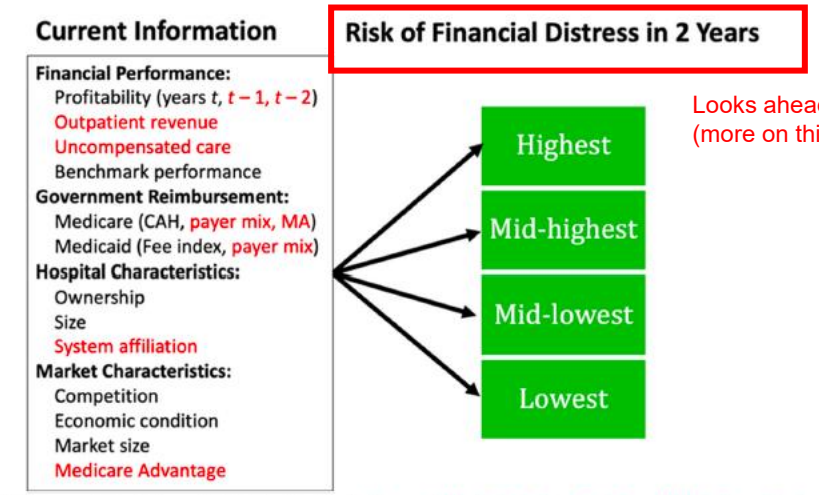
Current FDI Structure

Looks ahead. Kind of. (more on this later)



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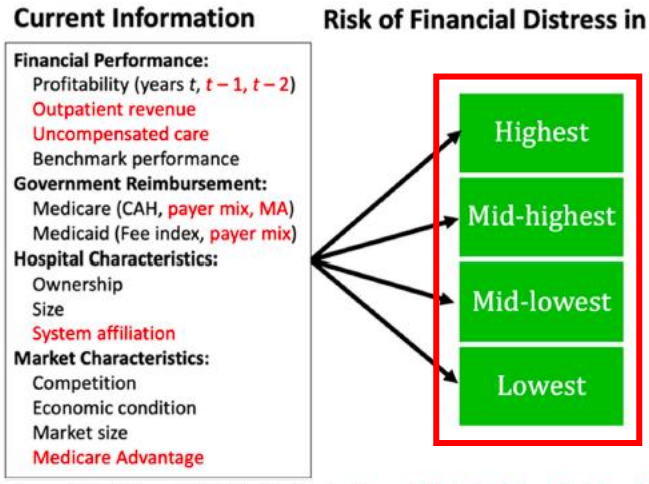
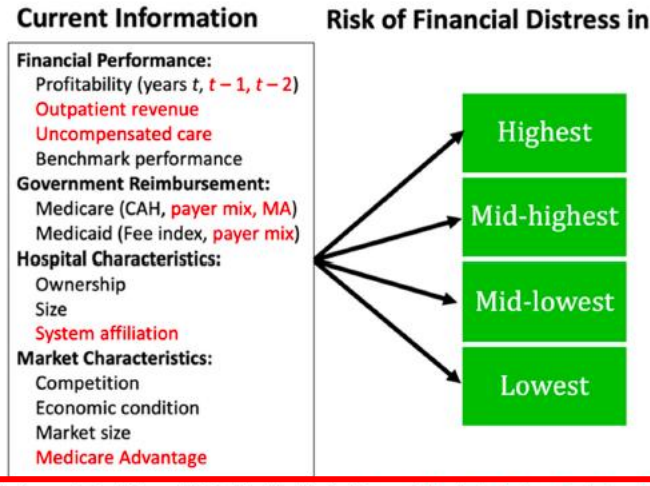


Straightforward categorization – with a gradient

Variables from original FDI model listed in black text. New variables included in updated model listed in red text.

Current FDI Structure

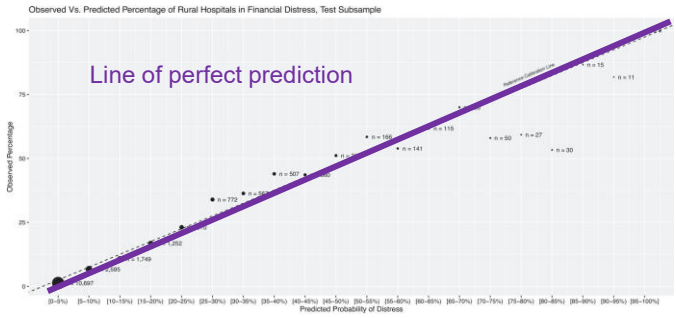


Regular revisions

Variables from original FDI model listed in black text. New variables included in updated model listed in red text.

How well does it work?

- Skipping most of the nerdy details with Greek letters (although would love to discuss!)
- Training sample/test sample approach: build it with a random set of rural hospitals, test it on a separate sample.



The Journal of Rural Health, Volume: 41, Issue: 2, First published: 03 October 2024, DOI: (10.1111/jrh.12882)

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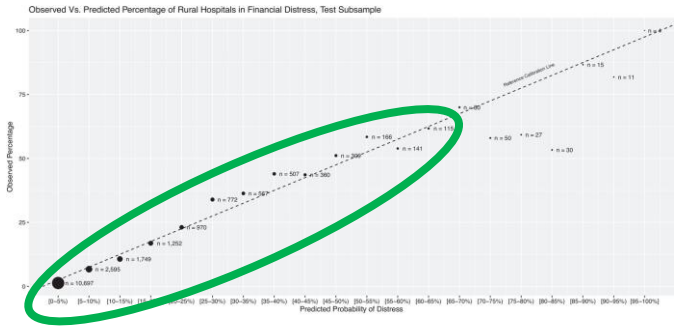

Our predicted level of distress and observed levels are really close for most levels of distress….

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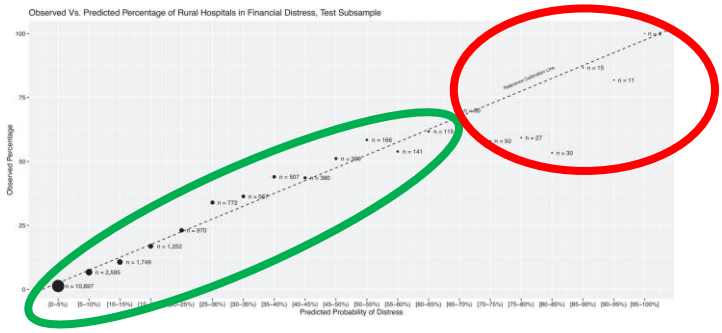

Our predicted level of distress and observed levels are really close for most levels of distress….

….although we underpredict distress at higher distress levels.

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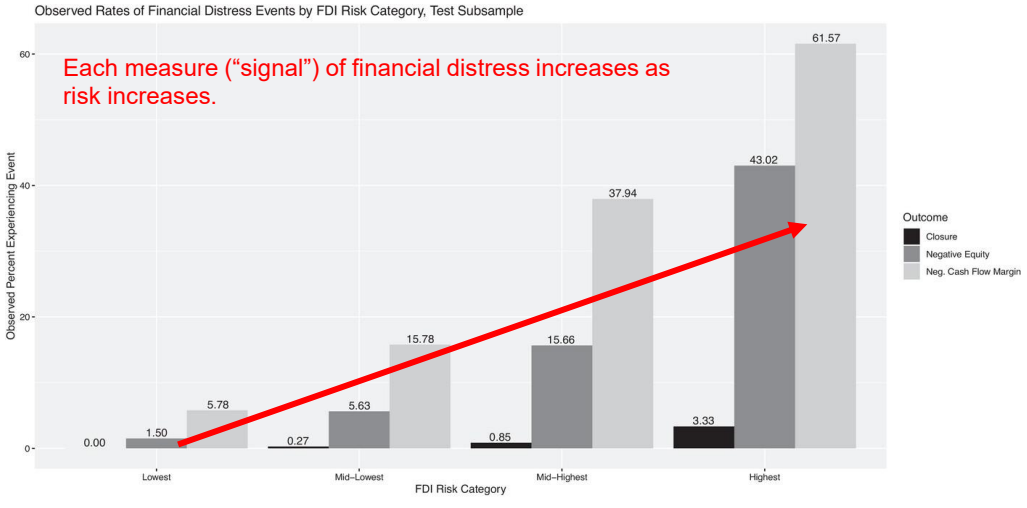
What are the implications?



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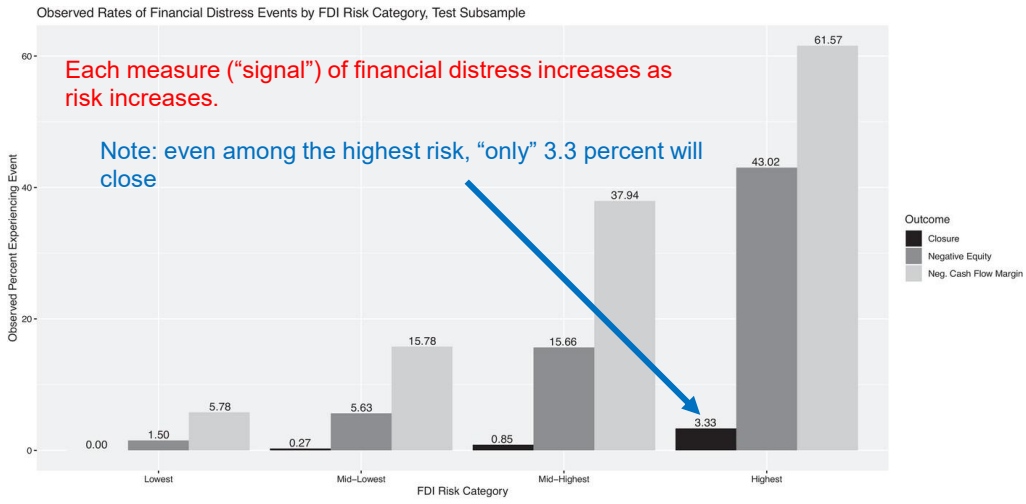

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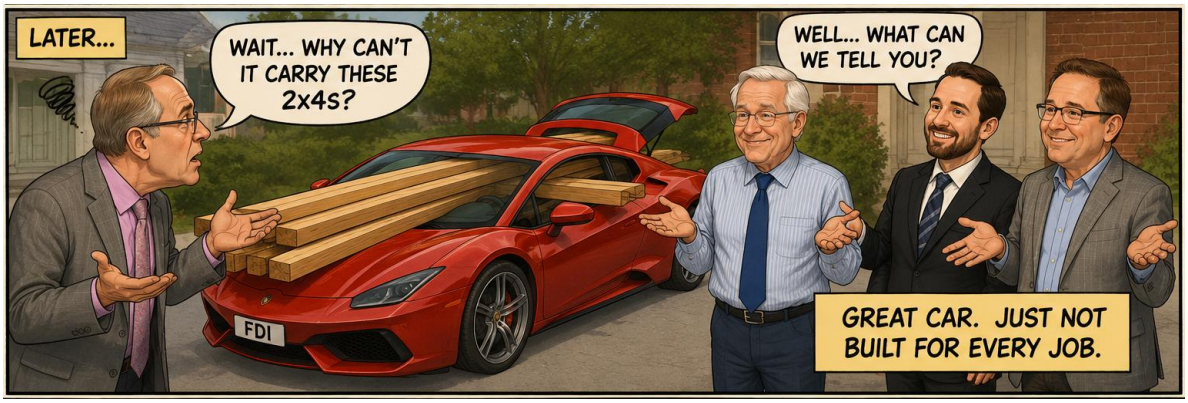
Limitations / How to Use Responsibly

The FDI is great – but doesn't work for all applications



37

37

1. FDI is not a perfect predictor: Consider it a *screen*, not *diagnosis*

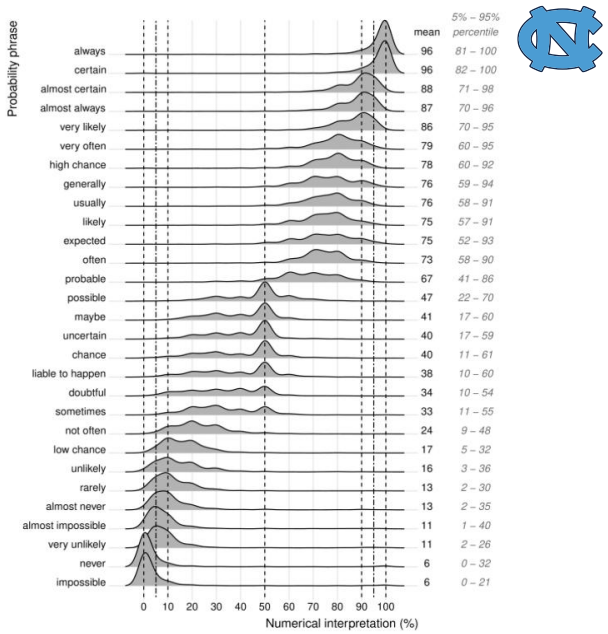
- The FDI is uni-dimensional based on cost reports and other public data – has no private information
- Pretty good in populations, but less accurate (n.b. – not *in*accurate) for individuals
- Analogy: Body Mass Index
  - Generally, people with a lower BMI have lower risk for CVD and other outcomes.
  - But omits important data – e.g. age, smoking status, cholesterol levels, etc.
  - Saquon Barkley and I have similar BMI – although one of us is in much better shape
  - Is a smoker with high cholesterol and BP and lower BMI healthier than me?

38

2. What does “at risk for distress” mean?

- What does it mean to be “at risk” for something?
  - Non-zero? 5 percent? More than 50 percent?
  - Other rural hospital “distress indexes” use different thresholds. None of us are right – and none of us are wrong.

Willems, S., Albers, C., & Smeets, I. (2020). Variability in the interpretation of probability phrases used in Dutch news articles — a risk for miscommunication. *JCOM* 19(02), A03. https://doi.org/10.22323/2.19020203



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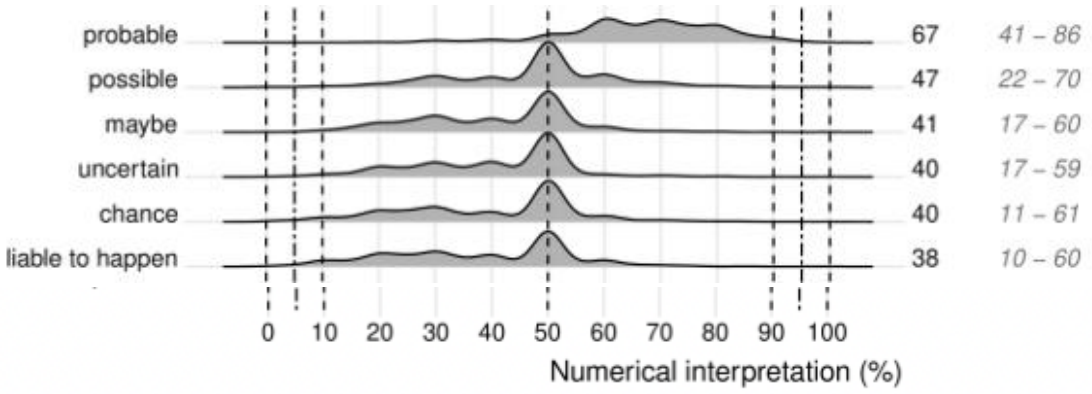

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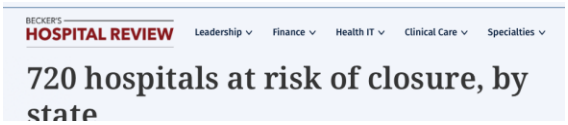
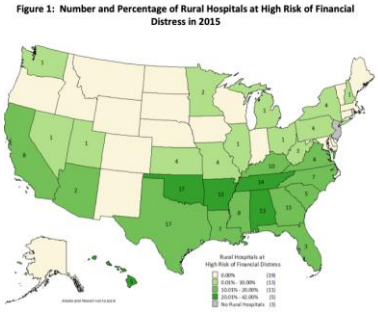
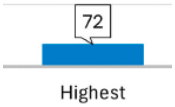




432 rural hospitals are vulnerable to closure

Report: A Third of Rural Hospitals at Risk of Closing



3. FDI is not a statement about management quality or system commitment or or or….

- Hospitals at high risk may survive for years
  - Atypical financial model
  - Supported by system - e.g. for strategic purposes
  - Supported by local government
  - Inaccurate cost report (or other) data
  - Imperfection of the model’s predictive power
- Generally, we are more concerned with hospitals that are on a trend of increasing risk than those that are perpetually high risk

4. Need a human-in-the-loop

- Current recommendations for most AI applications is to have a human-in-the-loop – AI is good for a great first draft but you need to go behind and verify it.
- Similar idea for these distress indexes – might work as a first sort, but need to bring other sources of information and knowledge.

5. Need to use responsibly

- Risk measures should be used very carefully. Given the limitations above, we know that they are not definitive.
- But a community may react strongly to perceptions its hospital is in financial trouble – and avoid seeking care there, leading to a self-fulfilling cycle.

Conclusion

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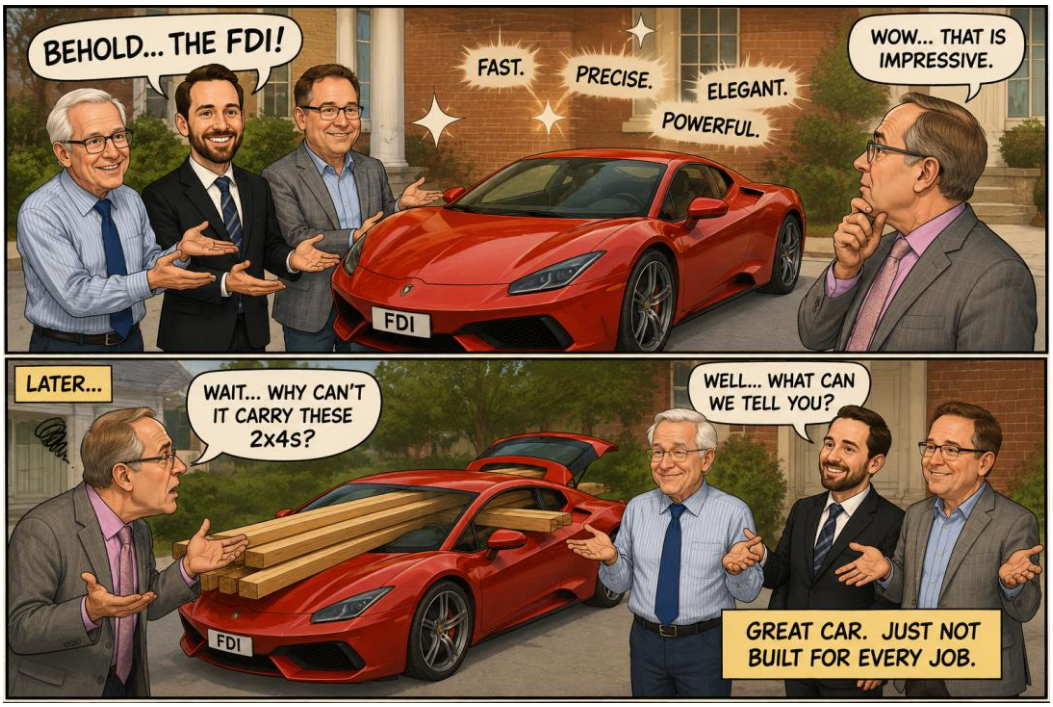

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46

Key Takeaways

- The real shift is from reacting to closures to anticipating them — moving the point of intervention earlier, while options still exist.
- The FDI's power is legibility, not precision: one open, public number lets non-experts read a rural hospital's financial health and act sooner.
- Its simplicity is both the strength and the ceiling — it belongs upstream of decisions, flagging where to look rather than judging any single hospital.
- Trajectory matters more than level: a hospital drifting toward distress deserves more attention than one that has been stably high-risk for years.
- It is as much a communication challenge as a financial one — how we frame "at risk" shapes how communities respond, and a misread signal can become self-fulfilling.

Contact

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- **FDI Contributors (2017-current):** H. Ann Howard, Mark Holmes, Brystana Kaufman, Tyler Malone, Julie Perry, George Pink, Randy Randolph, Kristin Reiter, Erica Richman, Kristie Thompson, Sharita Thomas, Ruoyu Zhang

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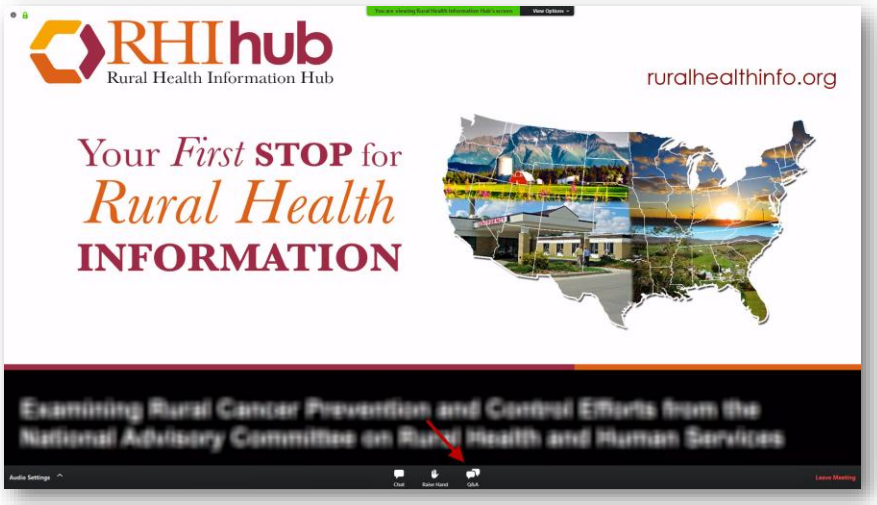
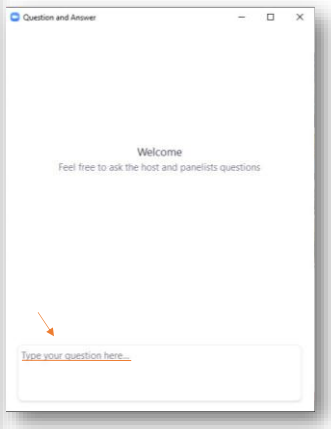
51

Questions?





52

Thank you!

- Contact us at ruralhealthinfo.org with any questions
- Please complete webinar survey
- Recording and transcript will be available on RHIhub website

53