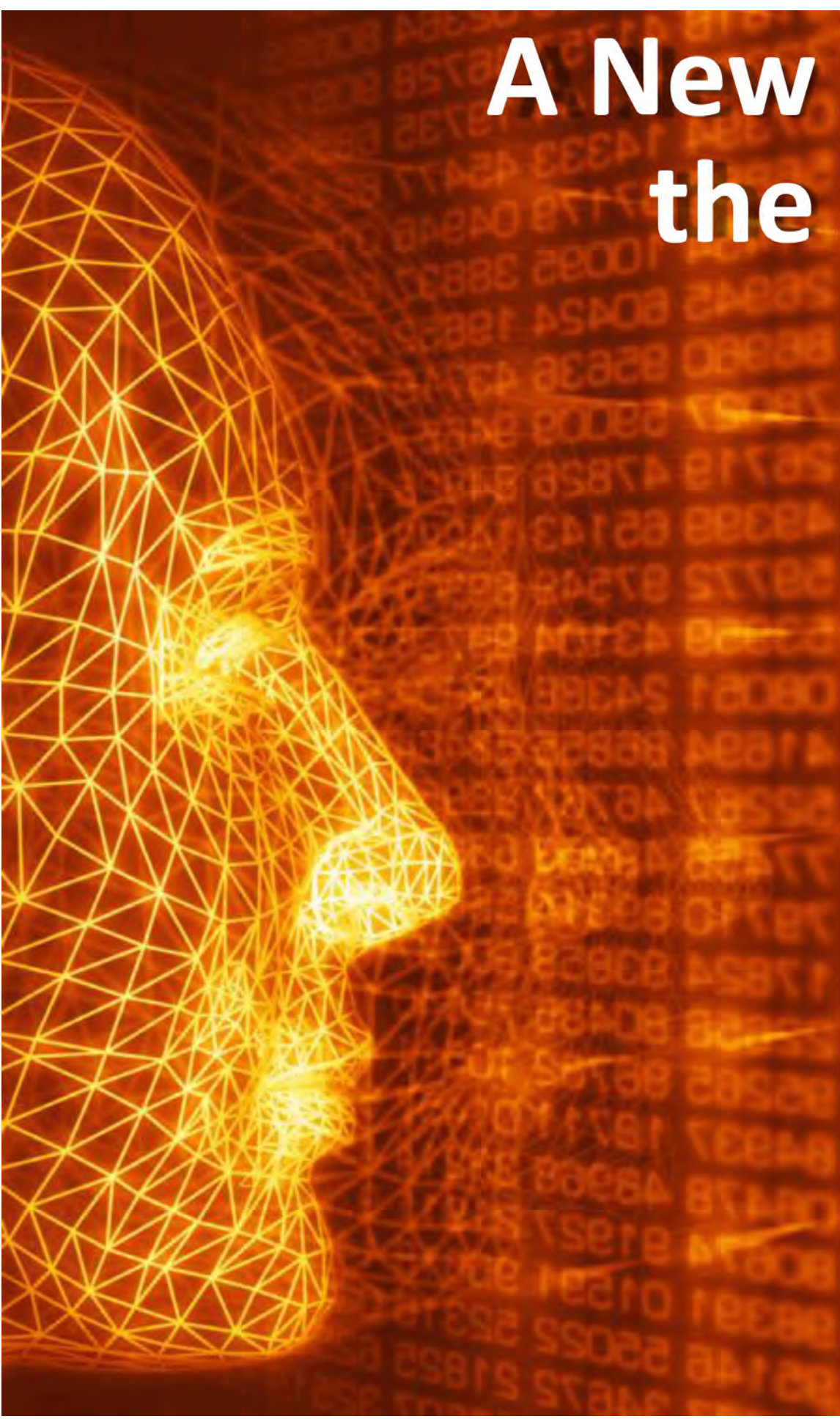


# Using Metrics to Guide Research Development Investments

University of Tennessee, Knoxville, Office of Research & Engagement



## A New Look at What the Data Can Tell Us

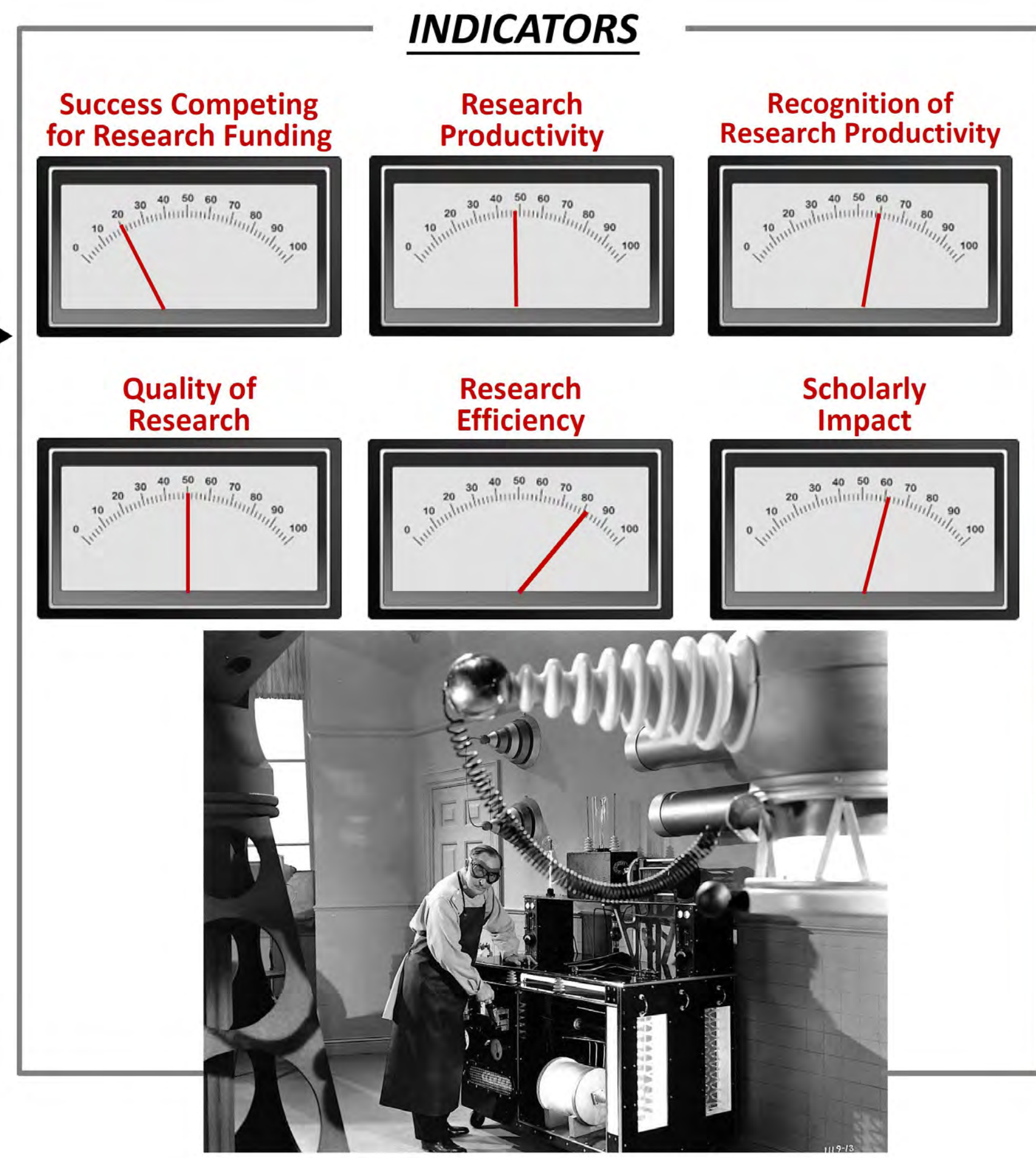
### Data Collection

- Federal and Total Expenditures
- Proposals Submitted
- Awards Received
- Publications
- Citations
- H-indexes
- Faculty Headcount
- Faculty Awards
- Patents

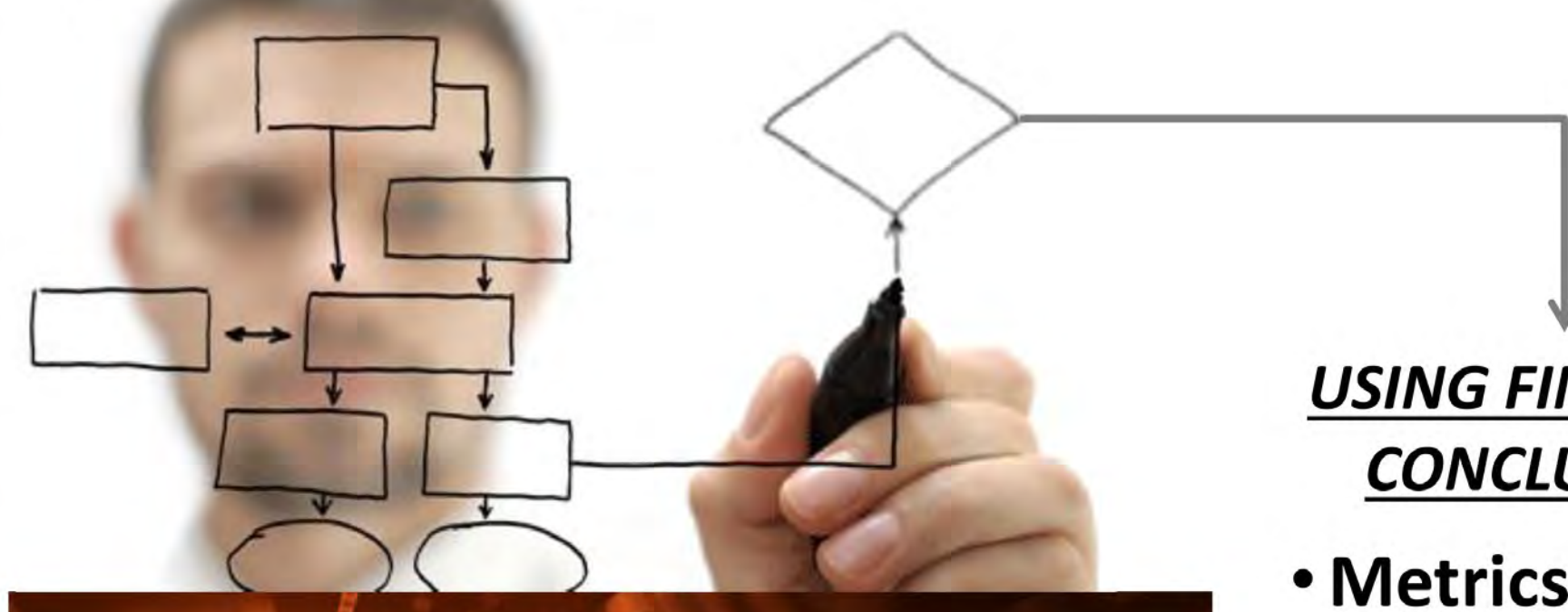


### Data Diving

- Measuring
- Normalizing
- Benchmarking Against Peers
- Charting
- Raw vs Normalized
- Ratio of Citations per Publication
- Ratio of Expenditures per Allocated Faculty Member
- Publications / Citations per Allocated Faculty Member
- Ratio of Publications / Citations per Dollars Spent



### DECISION MAKING



### USING FINDINGS / CONCLUSIONS

- Metrics
- Data-driven Investment
- Data-driven Decision Making
- Data-driven Strategic Goals
- Key Performance Indicators
- Metrics-driven Reporting and Reevaluation



*“If you can measure that of which you speak, and can express it by a number, you know something of your subject; but if you cannot measure it, your knowledge is meager and unsatisfactory.”*

Lord Kelvin (William Thomson, 1824-1907) British scientist

## OBJECTIVE

We set out to explore existing data sets to determine how UT compares to pre-selected peer and exemplar institutions regarding research productivity and efficiency.

The intent is to use these findings to inform institutional decision-making at all levels of the research enterprise.

## METHODS

UT previously identified 35 peer and exemplar institutions as part of its “Vol Vision” strategic planning process.

We used the following existing data sets to benchmark against these 35 institutions for the FY 2013:

- **NSF Higher Education Research and Development (HERD)** federal and total research expenditures to reflect **institutional success in competing for research funding**.
- Publications and Citations count from **Thomson and Reuters’ Web of Science** and **Elsevier’s Scopus** as indicators of **research productivity and recognition of that productivity**. Institutional h-indexes from the same data sources were used to reveal the **quality of the research**.
- **IPEDS (Integrated Postsecondary Education Data System)** full-time tenure and tenure track faculty headcount to adjust the above data to a common scale.

UT’s rank was determined based on the expenditures, publications, citations, and h-indexes. These data were then normalized by the number of full-time tenure and tenure track faculty to measure **research productivity per capita**.

Finally, research productivity was further normalized by the federal and total research expenditures to reveal **research efficiency**.

## CONCLUSION

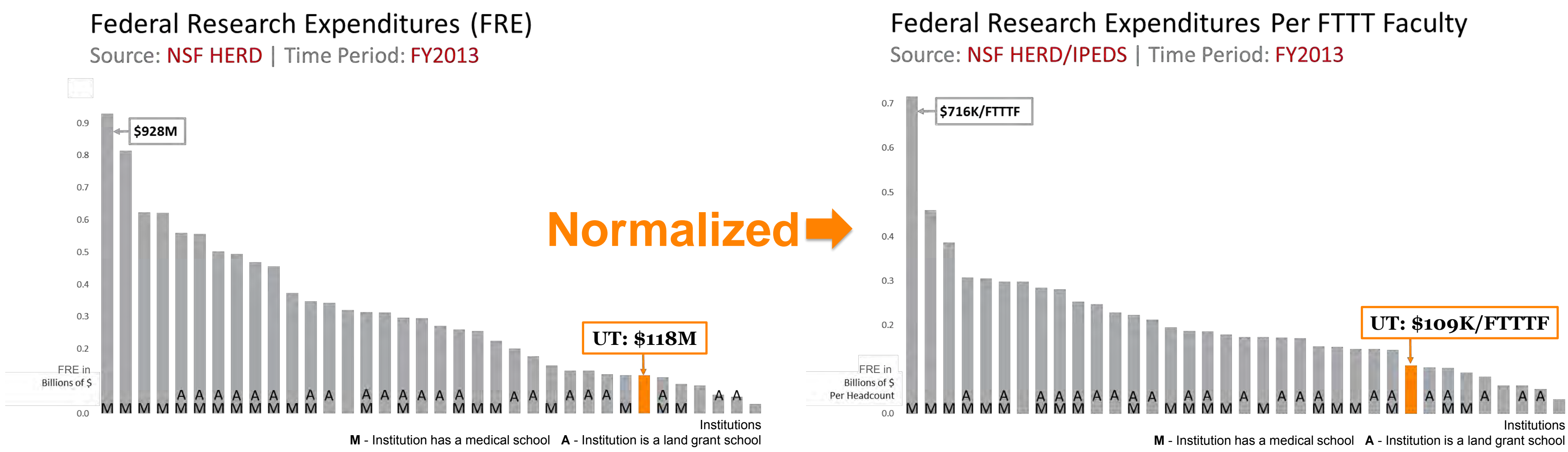
While UT’s standing among these selected universities based on institutional measures is informative, normalization revealed that UT surpasses many of its aspirational peers in the efficiency of its faculty to produce research results per research dollars expended.

## FUTURE DIRECTION

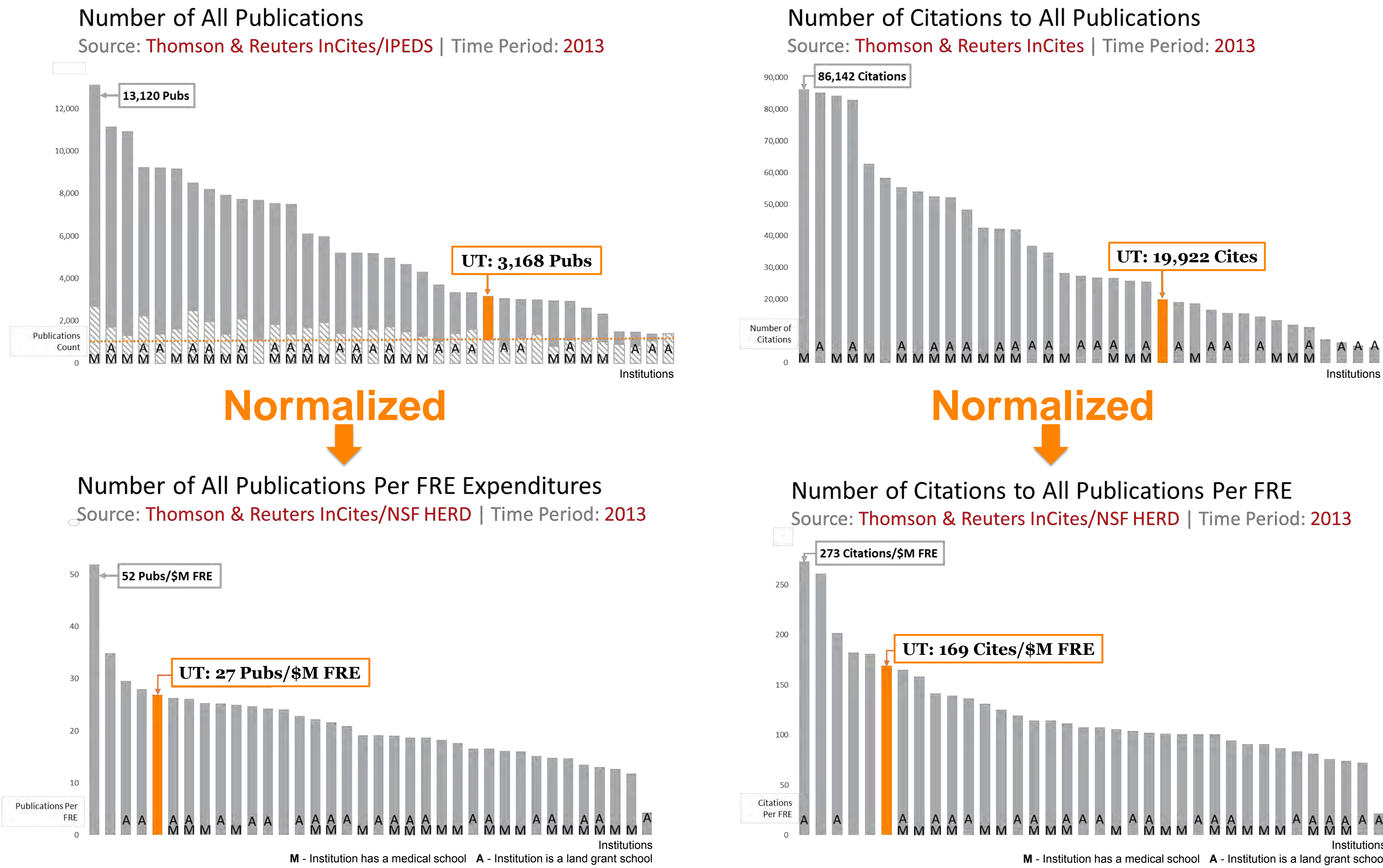
These analyses can be used to inform the research enterprise and drive decisions regarding strategic goals and investments.

## BENCHMARKING RESEARCH DATA

How productive is our research enterprise compared to our peers?



How efficient is our research workforce compared to the same group of institutions?



THE UNIVERSITY OF  
TENNESSEE  
KNOXVILLE

Anna S. Banks, Dr. Janet E. Nelson