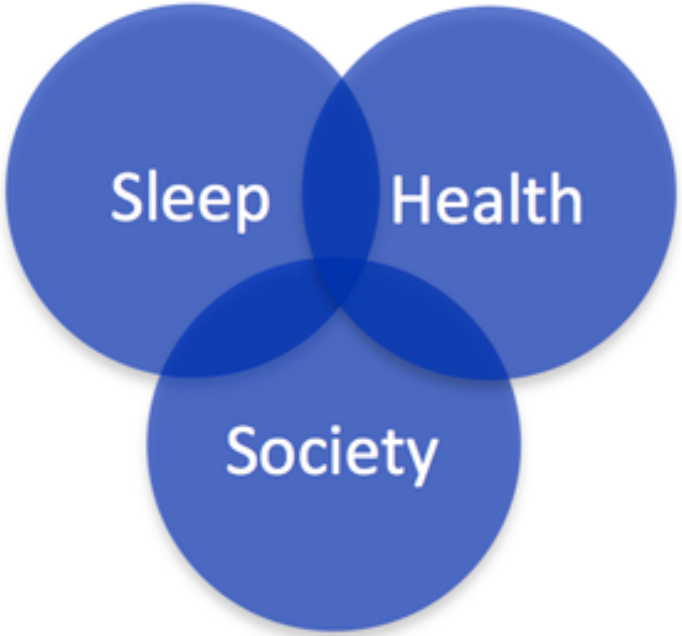
Data Reproducibility as a Social System of Trust

Orfeu M. Buxton, PhD
Professor, Biobehavioral Health

Data Reproducibility Boot Camp 2019-06-03
(4 Shashi)

Sleep, Health & Society Collaboratory

Biopsychosocial model



- **Collaboratory research topics:**
  - **causes of sleep deficiency in the workplace, home, and society**
  - **health consequences of sleep deficiency, especially cardiometabolic outcomes, and the mechanisms by which these outcomes arise**

Lifecourse Context of Health Behaviors

- this matters for health and well-being
- can influence health disparities
- *bias for action (intervention)*

The Myth of Sisyphus

Why are you here?

Pipeline

Idea > funding > collect data. >. manage > analyze > interpret

The time is past where you can do it all yourself

data entry and double-checking

1990	Alone or in pairs, analog to digital
2000	Merging across systems, narrow queries
2010	Merge/query complex databases
2020	

Harmonizing

1990	Consistency of measurement
2000	Consistency across studies
2010	Consistency across studies, teams, time
2020	

That Jerk at my Talk

Firing a Cheater

Poison to a social system

Unblinding

A social contract

Harmonizing again

1990 Consistency of measurement

2000 Consistency across studies

2010 Consistency across studies, teams, time

2020

Ars Longica

Life is short
and the art long,
Occasion instant
Experiment perilous
Decision difficult

SCALING

PennState.Pure

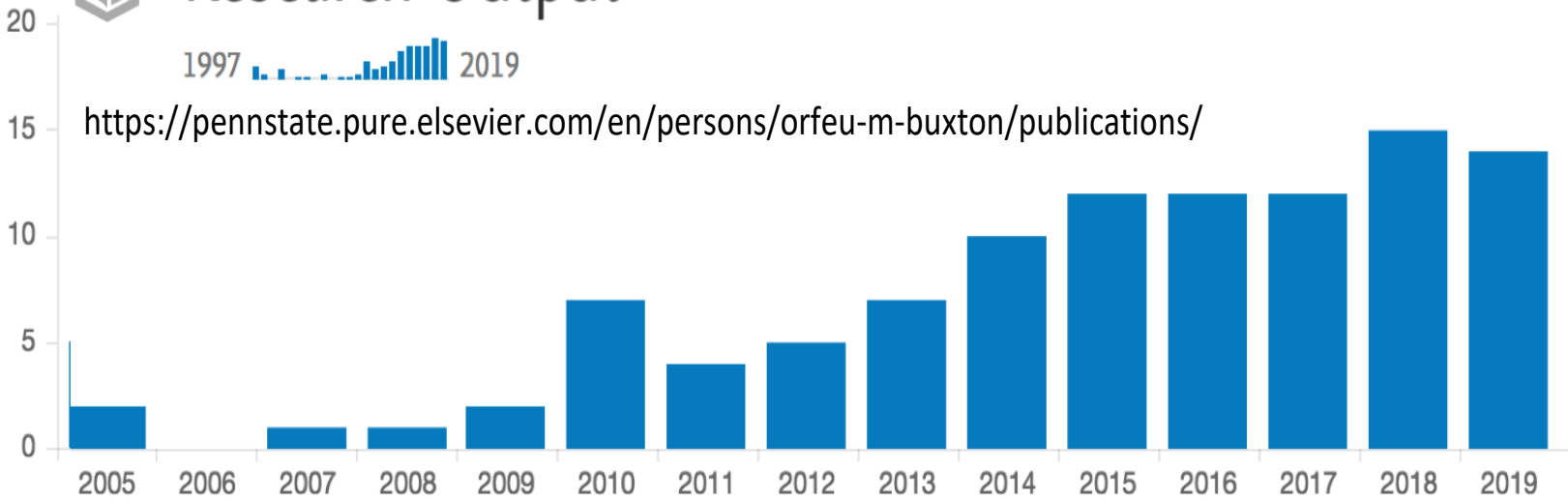
4359	33	98	6	4	4	5
Citations	h-Index	Article	Review article	Chapter	Conference contribution	More

Research Output

Accessed 2019-05-15

1997 2019

https://pennstate.pure.elsevier.com/en/persons/orfeu-m-buxton/publications/



Network

- [x] Researchers
- [x] External persons
- [ ] Research Units
- [ ] External research units

- [ ] Show counts on lines

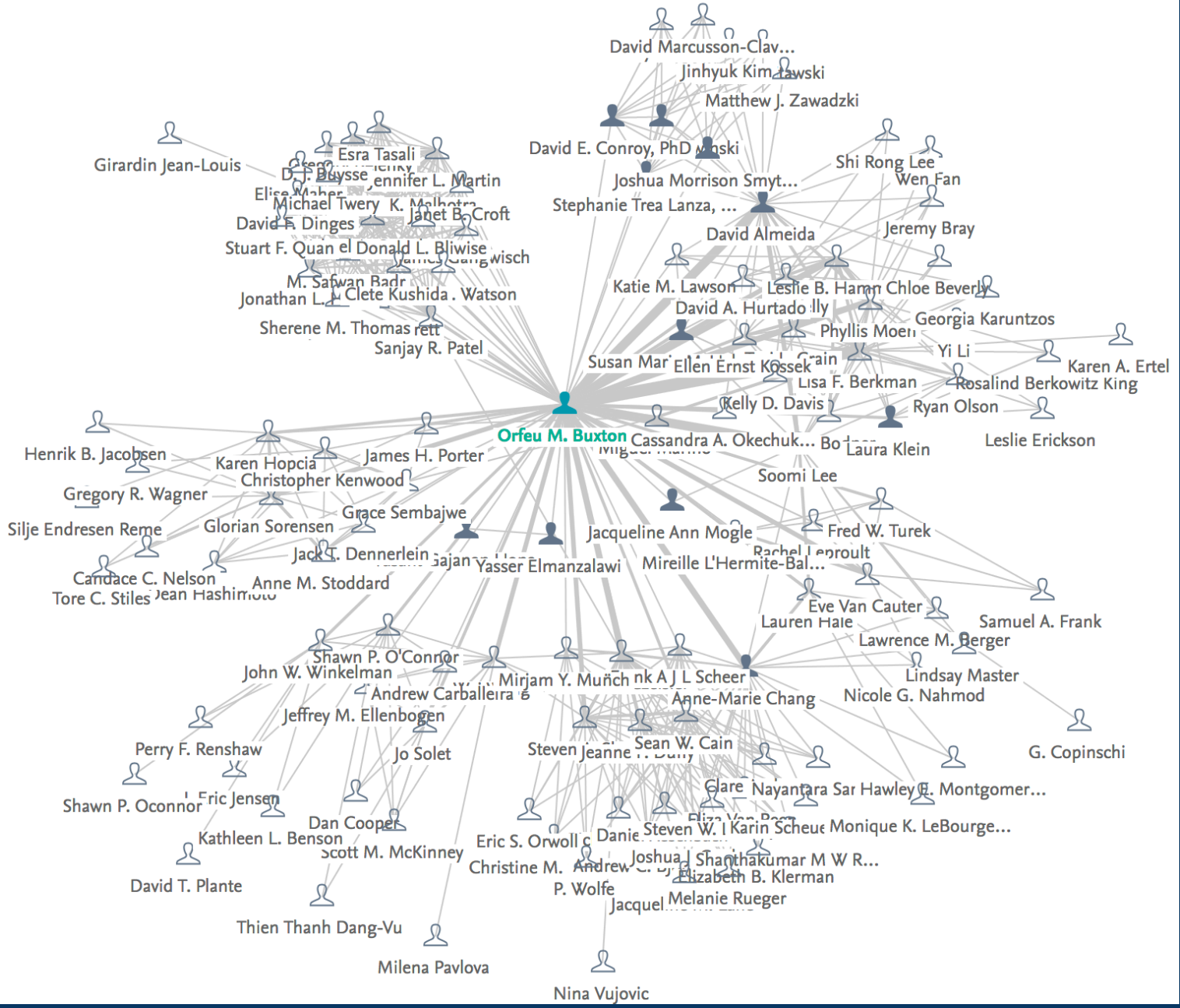
Years

to 2019

Collabo minimum

2

Force Circle



- [x] Researchers
- [x] External persons
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- [ ] Show counts on lines

Years

2019

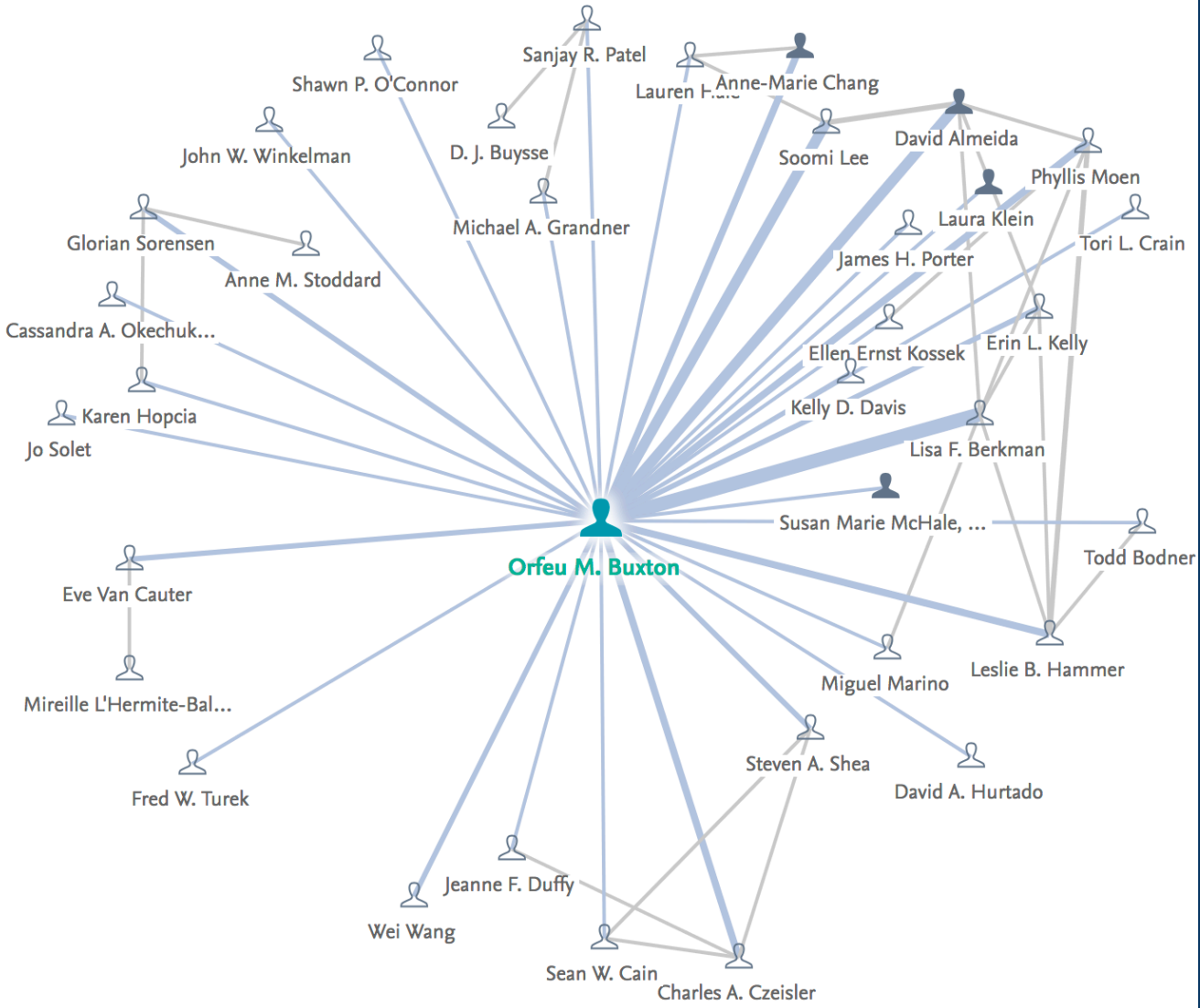
Collabora inimum

5

Orfeu M. Buxton

Biobehavioral Health - Professor
Penn State Clinical and Translational Science Institute (CTSI)
Huck Institutes of the Life Sciences
Social Science Research Institute (SSRI)

Force | Circle



Researchers

External persons

Research Units

External research units

Show counts on lines

Years

to 2019

minimum

8

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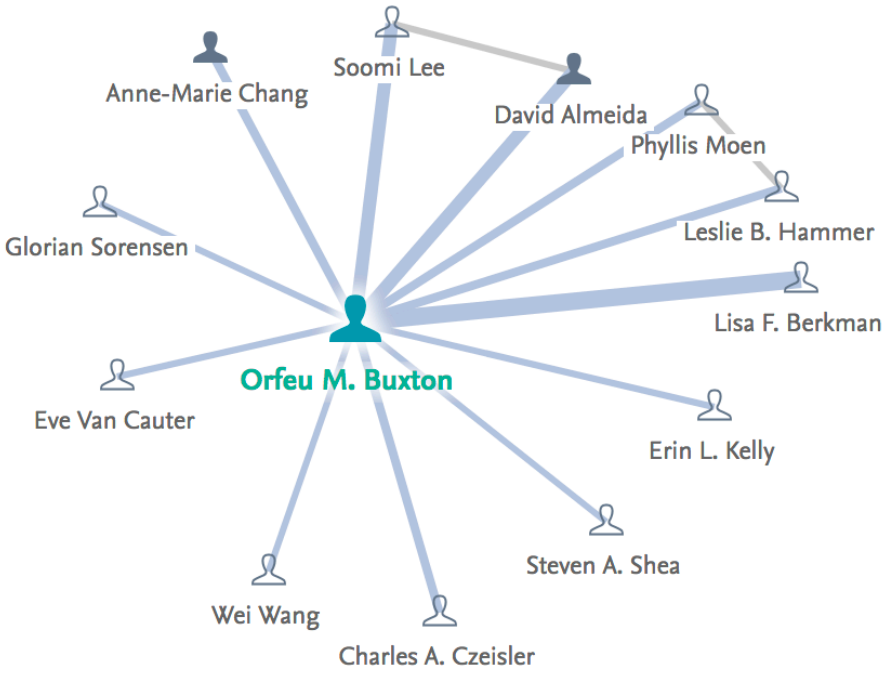
Force Circle



Worst thing you can call a scientist?

Sloppy

Sausage-making

unfundable

Irreproducible

P-hacking

Wasting time

Flop at review

Jerky

Open Science Framework

https://osf.io/

Productivity & citations

Efficiency (Jupyter.org)

Developing lines of research

Trust of peers

Attention to Purpose

Pre-specification, documentation

Scaling a data pipeline

Science, a social system

The Myth of Sisyphus

“One must imagine Sisyphus happy.” - *Albert Camus*

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