MIT Mobility Forum (Spring 2023): Joan Walker - “Moving from Citations to Collective Wisdom in Travel Behavior Research”

Ao Qu

Part I: Literature (for further reading on industrial policy and innovation)
Chu JSG, Evans JA. Slowed canonical progress in large fields of science. Proc Natl Acad Sci U S A. 2021 Oct 12;118(41):e2021636118. [https://doi.org/10.1073/pnas.2021636118](https://doi.org/10.1073/pnas.2021636118) [Links to an external site.]


Muhammad Abdullah, Charitha Dias, Deepti Muley, Md. Shahin, Exploring the impacts of COVID-19 on travel behavior and mode preferences, Transportation Research Interdisciplinary Perspectives, 2020, [https://doi.org/10.1016/j.trip.2020.100255](https://doi.org/10.1016/j.trip.2020.100255) [Links to an external site.]

Part II: Recent News


Part III: Question and Answer Session

**Hani Mahmassani:** I didn't think I would have much to say because I usually agree with Joan. However, I think one issue we need to address is the problem we are trying to solve, which you alluded to earlier. In the past, concerted efforts in travel behavior and demand modeling occurred when there were specific questions to answer. I believe that our disconnection from practical applications and use of research results contributes to a proliferation of papers that lack a fundamental body of knowledge. Instead, we have scattered results without a coherent framework for understanding them. To address this, we need to re-engage with the motivating questions that drive research.

Another issue we need to address is the creation of a fundamental body of knowledge. We seem to be focusing more on finding exceptions rather than identifying rules. While it's essential to examine outliers and differences, we also need to focus on building a collective understanding of the rules that govern travel behavior. We need to strive for the same level of rigor and systematic investigation found in fields like physics.

Regarding data sharing, I see it as a double-edged sword. While it's desirable to have data available for others to analyze and build upon, I'm wary of potential negative consequences. In other areas, making data available has led to a glut of research that lacks value. Moreover, when researchers download and crunch data without a meaningful analysis, it can lead to inconsistencies and confusion. Instead, the added value will come from someone who can analyze and synthesize the data in a meaningful way. Therefore, we need to be deliberate and intentional in our approach to data sharing.

**Jinhua Zhao:** Thank you Hani. Then, I will invite Horng.
Der-Horning Lee: Thank you very much for the interesting talk. I was attracted to the topic, which is why I stayed up, even though it's midnight in China. In my opinion, there's a significant disconnect between research and policy implementation, especially in travel behavior or behavior modeling. The ultimate goal of behavior studies is to drive positive change that can be adopted by government agencies or transportation operators, making our research useful to society. However, based on my experience in transportation projects and planning in Singapore, China, and Southeast Asia, I believe that the disconnect is growing wider. The government agencies or policy implementers often don't see the value in our work, while as researchers, we may have our own agendas, making it difficult to reconcile. Someone in the chat mentioned that government agencies may already have their own ideas before implementation, and I agree with that.

As a research community, we need to focus on impactful research that can lead to real change, even if it's a small change. We need to carefully consider whether our research is generating citations or actually making a difference. There are many examples of both, but I don't want to waste anyone's time going into them.

Thank you again for the talk.

Kara Kockelman: expresses disappointment in not finding appropriate imaging technology for speed enforcement in computer science. She suggests waiting 2 years before sharing data but encourages pre-print sharing on personal websites.

Kay Axhausen: emphasizes the importance of sharing data and code and enforcing a benchmark model to produce comparable results. He also suggests publishing fewer long papers and presenting results in a concise form to build common knowledge and turn towards new policy intentions.

Jinhua Zhao: asks Joan if she has any reactions to what they’ve heard

Joan Walker: No, no, I think they are fabulous comments. I love the discussion. I will start building on the comment submitted by Chris Cherry.

John Moavenzadeh: interested in papers that ask the "so what" question and focuses on their impact. He raises the issue of academic papers that emphasize the methodology rather than the
findings. He then asks Joan if she has any thoughts on incentivizing greater relevancy and impact in papers?

**Joan Walker:** supports the idea of sharing data and code, but acknowledges the potential problem of more papers being produced. She believes that science fundamentally requires sharing and suggests additional policies and procedures to deal with proliferation. In terms of incentivizing greater relevancy, she proposes the idea of an oath or standards for papers, including benchmarking and clear impact statements. She also supports the idea of industry and government playing a stronger role in defining research questions and partnering with academics.

**John Moavenzadeh:** There's been a lot of discussion about data sharing in the chat. Some are hesitant due to the time and cost invested in data collection, while others suggest waiting a couple of years after publication before sharing the data. There's also a suggestion to value quality data collection as a culture. What are your thoughts on this?

**Joan Walker:** Quality data collection is as important as turning out papers. Kai's journal recognizes collecting great data as a contribution in itself. Embargoing data for a few years after publication makes sense to avoid being scooped. Sharing the whole data is important, including mistakes found in the process. The researcher should be able to milk the data as much as possible without being scooped. We need to embrace the mistakes that we may find in the data and code, as it is part of the process.

**John Moavenzadeh:** What does Federal policy require for data availability for federally supported research problems?

**Joan Walker:** discusses the issue of confidentiality in sharing data and notes that the devil is in the details of how confidentiality is handled. She mentions that most people are making statements about data sharing and notes that there is always a clause regarding confidentiality in federal contracts. However, she is not sure about the details of how the clause works.

**Kay Axhausen:** My comment on data sharing is that nobody can do all the possible analyses with a rich data set. So it's better to share it early while it's still interesting, even if there's a risk of being scooped. The data collected before Covid may be irrelevant now because it doesn't include working from home. So sharing data fully and early is important, and if someone else writes a paper with it, that's okay because there are likely many other papers that can be written with a rich data set.
**John Moavenzadeh**: Two questions related to Chat Gpt. Claude Marelli asked about the potential for AI models like Gpt to reduce the burden of synthesizing knowledge. Mackenzie Human asked if Gpt could play a role in evaluating the reproducibility of research when code and data are provided. Reproducibility is a key driver for releasing code and data in fields like economics. So, any thoughts on the role of AI in this?

**Joan Walker**: The role of AI in reducing the burden of synthesizing knowledge and evaluating reproducibility of research are interesting topics. Chat Gpt could be relevant in summarizing academic literature, which could potentially be a solution to the craziness. However, it may not be suitable for conducting research.

**John Moavenzadeh**: Yes, many of us are exploring the potential of ChatGPT for literature summarization and editing. It could be useful in reducing the workload in these areas.

**Jinhua Zhao**: concludes the conversation and thanks everyone for joining.

**Part IV: Summary of Reflection Memos**

In reflections,

James mentioned the need for public-facing reviews that help individuals navigate complexity of fields without confirming their own biases. Also, difficulty in direct comparisons may lead to more advocacy and confirmation bias, resulting in less science.

Nineveh was surprised by the resistance of some academics to share their data and code, citing concerns about the effort put into compiling and cleaning data and the fear of being called out for errors. He questioned the validity of these concerns.

Jay also mentioned that it might be helpful to ensure the public access to transportation research.

Spencer echoed with Joan on the importance of interdisciplinary collaboration in addressing complex transportation problems.
Yunhan raised that a good policy brief is only as effective as the research that informs it. Therefore, collaboration between researchers, policymakers, and practitioners is critical in identifying policy-relevant research questions and delivering high-quality policy briefs.

Sam and Yan-chu also mentioned that sharing data might not be that easy, especially when they are confidential or when others can simply take the data and produce more papers.

Michael talked about the standard required for academic publications. He thought additional groundbreaking insight should be required for local surveys to be accepted as publication material. This would reduce the number of papers while maintaining quality.

My reflection:

I fully agree with Prof. Walker’s insights on the six pillars she proposed because I’ve actually encountered the need for many of them in my daily research. A couple of days ago, I had a conversation with Prof. Henry Liu from UMich. He mentioned that as a field, transportation is sometimes seen as a purely empirical study where researchers only borrow methodology from other subjects. However, we are in fact trying to address some of the most pressing challenges faced by humanity and innovations on both empirical studies and methodologies are required. I think Prof. Walker really pointed out some directions that transportation researchers should be aware of and put some collective efforts.

**Part V: Other Resources**

Prof. Joan Walker used this website to find the trend in research topics: Dimensions AI: The Most Advanced Scientific Research Database. Dimensions. Retrieved April 26, 2023, from [https://www.dimensions.ai/](https://www.dimensions.ai/)

Moving from Citations to Collective Wisdom in Travel Behavior Research

Joan Walker

MIT Mobility Forum
April 7 2023
What words come to mind when you think about the Travel Behavior Research in regards to Future Mobility, Automation, and Transit?

Results
Word association results (73 participants)
Tremendous growth in number of publications on “Travel behavior” as a whole →

https://www.dimensions.ai/
EXAMPLE of the literature

40 published papers by November 2022 addressing the impact of the Pandemic on behavioral aspects related to Electrification, Automation, and Shared Mobility.
Electric Vehicles (15 papers)

Key takeaways

● Rise in global EV sales despite decrease in overall vehicle sales and travel restrictions (Ajanovic, 2022; Augurio et al., 2022; Lieven & Hügler, 2021; Sun et al., 2022)

● In US, EV sales increased ~200% from 2020 to 2021 (Fischer et al., 2021)

● Fiscal incentives and supportive regulatory environment key factors in continued growth of EVs through pandemic (Ajanovic, 2022; Fischer et al., 2021; Lieven & Hügler, 2021)

Key questions

● Impact of the pandemic on consumer habits

● Changes in charging demand and implications for charging infrastructure

● Resiliency of EV supply chain
Autonomous Vehicles (15 papers)

Key takeaways

- Pandemic halted many AV pilot studies
- Overall positive influence on the acceptance of AVs, particularly in growing awareness and interest in the use of AVs in contactless delivery (Chen et al., 2021; Mantouka et al., 2022; Othman, 2021; Said et al., 2022)
- One study showed that the pandemic did little to push potential autonomous vehicle users to support adoption (Horowitz et al., 2022)

Key questions

- Factors influencing AV adoption
- Development of AV technology, and deployment in new applications
Shared Mobility (17 papers)

Key takeaways

● Demand for taxis and ride-sharing have decreased by as much as 80% (Andersson et al., 2020; Said et al., 2021; Zhang et al., 2022)

● However, the pandemic had a positive influence on car-sharing and bike-sharing (Hu & Creutzig, 2022; Zhang et al., 2022)

● Demand is unlikely to return to pre-pandemic levels (Kiriazes & Edison Watkins, 2022; Loa et al., 2022)

Key questions

● Impact of COVID on mode choice and intention to use shared mobility modes in post-pandemic future

● Speculation about the future of shared mobility: challenges and opportunities
Literature added in the last 4 months

- 20 additional papers published (40 originally)
- A few broad review papers on travel behavior and the pandemic, with short sections on the trends in automation, sharing, electrification.
Reflection...
Are the results satisfying?

As a BODY OF WORK, lack of coordination

1. Too many papers, difficult to synthesize
2. Lack of clear, compelling set of research questions
3. Lack of convergence on findings
4. Lack of guidance about implications for the future, such as optimal/desirable policies
Academic Impact

# Papers
each makes a unique contribution to knowledge

# Citations

Societal Impact

Doing good for the world
Tremendous growth in number of publications on “Travel behavior” as a whole →

https://www.dimensions.ai/
Tremendous growth in number of publications

on “Travel behavior” as a whole

on “Travel behavior” AND “COVID” →

https://www.dimensions.ai/
Tremendous growth in number of publications on “Travel behavior” as a whole on “Travel behavior” AND “COVID” on “Travel behavior” AND topics of future mobility. →

Number of Publications on “Travel Behavior” AND Topics of Future Mobility

Dimensions
https://www.dimensions.ai/
Objective

Overwhelming amount of amazing research.

Can we increase the amount of collective wisdom?
NOTE ON SCOPE

Great directions, but **outside the scope:**

- Dissemination via conferences and workshops.
- Leadership by public agencies to solicit and support research in the public interest.
- Translation of academic work via Policy Briefs and other mainstream outlets.
- Change academic merit case process
IN SCOPE

How to harness this to produce more collective wisdom?

Number of Publications on “Travel Behavior” AND Topics of Future Mobility

https://www.dimensions.ai/
“If too many papers are published in short order, new ideas cannot be carefully considered against old, and processes of cumulative advantage cannot work to select valuable innovations. The more-is-better, quantity metric-driven nature of today’s scientific enterprise may ironically retard fundamental progress in the largest scientific fields.”

(2021)
Pillar 1:

More review papers in academic journals
"The aim of this paper is to summarize and analyze literature that focuses on travel-related behavior impacts of AVs, namely levels 4 and 5, as well as highlight important directions of research."

78 papers reviewed.
Academic Impact

# Papers
each makes a unique contribution to knowledge

# Citations

Societal Impact

Doing good for the world
“Uniqueness” Paramount makes comparison difficult.

Need to do something to facilitate comparison.
Pillar 2:
Better benchmarking infrastructure & process
Short-term Transit Ridership Prediction from SmartCard Data

100+ papers on new models.

Wide variability of benchmark and performance metrics.

Most papers limited to one geography and a handful of stations.

Data and code are rarely shared.
“Even if I spend time carefully reading these 100+ papers, I wouldn't know what is the best model. ”
– Juan Caicedo
Infrastructure for Benchmarking Transit Prediction Models

GitHub open-source software

Five state-of-the-art models

Performance metrics

Bogotá Colombia

Processed SmartCard data

Caicedo, Gonzalez, Walker (2023)
Calls for Proper and Comprehensive Assessment of Models

The overreliance on statistical goodness-of-fit and under-reliance on model validation in discrete choice models: A review of validation practices in the transportation academic literature

Giancarlos Parady a,*, David Ory b, Joan Walker c

a Department of Urban Engineering, The University of Tokyo, Japan
b HPF, USA
c Department of Civil and Environmental Engineering, University of California, Berkeley, USA

Size Matters: The Use and Misuse of Statistical Significance in Discrete Choice Models in the Transportation Academic Literature

Giancarlos Parady, Kay W. Axhausen
One-off efforts.

How to normalize and make a part of our DNA?
Pillar 3: Develop best practice and align (and enforce) it in publication process.
“An inherent principle of publication is that others should be able to replicate and build upon the authors' published claims.” - *Nature*

“Otherwise, it’s journalism.” - Joan Walker
authors are expected to make available a complete set of the data used as well as any specialised computer programs.

generally require all data underlying the results in published papers to be publicly and immediately available.

authors are required to make materials, data, code, ... promptly available to readers without undue qualifications.
Data Sharing Policies from the top 13 Transportation Journals

# JOURNALS
1 no data sharing policy
7 encourage, enable
1 encourage, enable, require data availability statement
4 require (and enable) where appropriate
ONE DATA POINT
Recent issue of transport journal that requires (and enables) where appropriate

# Papers
1  no data used
1  data linked to article
12  available on request
6  can’t share/confidential
4  no statement
ONE DATA POINT
Recent issue of transport journal that requires (and enables) *where appropriate*

# Papers
1  no data used
1  data linked to article
12 available on request
6  can’t share/confidential
4  no statement

Email request led to:
1  can’t share/confidential
4  provided data
7  no response after 6 days
Do as I say, not as I do

As much as I believe, the incentives aren’t there to carry through to make data and software available and to follow best practice.

Community needs to step up with clear best practice.

Journals need to participate and enforce.
An OATH for the field?

With clear guidelines that journals enforce.
Pillar 4:

Develop a Moonshot...
or at least North Star(s)
HFIP "successfully attained its initial goal of reducing the error in track and intensity forecast guidance by 20% within the program’s first five years, on its way toward meeting its even more challenging goal of a 50% reduction of error within 10 years."
Values of travel time in Europe: Review and meta-analysis
Mark Wardman\textsuperscript{a,b,\ast}, V. Phani K. Chintakayala\textsuperscript{c}, Gerard de Jong\textsuperscript{b,d}

“The value of travel time is one of the most important parameters of transport planning”

389 European studies (1963 - 2011); National studies from Denmark, Germany, Netherlands, Norway, Sweden, Switzerland, and the United Kingdom.
What could be our Moonshot or North Star in travel behavior research?
Moonshots/North Stars (55 participants)

Create standardized datasets to share
Sharing
Finding FEASIBLE paths to net zero transportation
Community ownership
Establish common definitions for operationalized measures and require reference to these in published data
Policy and infrastructure alignment to Net negative Carbon emissions
Zero deaths in transportation.
Reducing people's travel time
What incentives are most impactful for mode shift to public transit?
We should be working toward carbonization. Teamwork will be key
Better incentives at the grad or young scholar level for publishing review papers
Focus in customer, pollution and business model
Energy efficiency
Whoa. Tough question. Need time to think.
Data sharing, nd standart results, e.g. vot
Refined NHTS that incorporates big data and new modes
Integrate practitioners in research process
Social welfare and policy implications
Accessibility
What are actually effective incentives/disincentives for decreasing individual vehicle use?
Understanding key trends to improve safety, mobility and equitable outcomes.
Make more realistic models that account for true behavior
Awarding papers that have an impact — implemented by government or industry
Lower GHG emissions
Improve vkt forecasting for a 5-year time horizon
Constrain the number of papers that are published annually to some reasonable number to enhance the quality of work.
Improve public transit ridership
To have a common platform to understand the developments around the world
Require data and script to be shared *and findings to be reproduced (by gpt?)* before publishing
How much investment per person is required for successful public transit at different levels of density?

Non motorized travel
That we're looking at humans
Define metrics, such as travel time, energy consumption, and optimize towards those.
eliminating the irrelevant data as we drive along
Public good
A model to do everything. Location and land development, household formation and vehicle ownership, mode and destination and day of year and time of day, etc.
Transit
Improving well-being of individuals
focus on fundamental results, collective effects, transferable principles
Reproducibility
Library of functions as well as papers — so we can search code with citations to leverage processes just as easily as searching papers to leverage insights
Central processing of new research in a big data / AI tool that is managed by a quorum-defined set of principles & rules from an elected panel of experts :)
Real time IA based research on behavior.
Improving human life
Easy application in policy development
Evolution of TDM to better intake behavioral economics principles
Clear methodology which can be replicated
We should focus less on uniqueness of paper and more on the social contributions especially for each local community
Studies that contribute to broad themes instead of individual purposes, data and methods can be shared on broad themes. Studies can expand things like sample size/geographies.
Relevance
Quality paper, good review paper
Open data and analysis along with best practice and documentation of representative data collection. Establish norm for multi-site collaboration to verify results.
Optimization of individual behavior with effective policy
Ghg. at least for now
Decarbonize transportation
How do we measure equity in transport ion policy impact?
Predicting behaviors with 80% accuracy
Why collective forms of transport are almost always an inferior good compared to personal forms of transport
Good papers and good open source data initiatives.
Pillar 5:
Lean in to Existing Literature
Instead of pivoting away from ideas that have already been done, LEAN IN to strengthen knowledge.

Reach out to collaborate/build directly on existing work (and accept those who reach out).

Reproduce and verify existing work.

Crowdsourcing North Stars: Flag key results in papers and call explicitly for additional estimates.
60% Increase in VMT from Fully Autonomous Vehicles

Method: Chauffeur field experiment.
Harb et al. (2021)

1.0 Induced trip for each telecommute day

Method: Causal model using longitudinal smartphone data throughout pandemic.
Obeid et al. (2022)
When direct comparisons are difficult,

more room for advocacy and confirmation bias,

less science.
Pillar 6:

Lean on both methods and findings
A Cautionary Tale of Taking Causality for Granted

- Does a shift to telework result in induced non-commute trips?
- Hook et al. (2020) found only 5 of 15 studies found YES → evidence suggests that telework does NOT result in induced non-commute trips.
- BUT, most studies relied on cross-sectional data and regression adjustments to compare telecommuters’ and non-telecommuters’ travel behavior, which is prone to selection bias and unobserved confounding.
- Obeid et al. (2022) using longitudinal data and explicit causal approaches, points strongly to 1 induced trip for every 2 reduced commute trips.
- Critical to focus on methods, not just emphasize findings.
Time to vote, add, and commit.

How best to increase collective wisdom of our academic publications???
VOTE
What pillars would be most impactful?

SUGGEST
What other pillars do you suggest?

Results

Results
Most impactful pillars? (96 participants)
Other pillars? (29 participants)

Require meaningful engagement with practitioners and civic partners. Summarize findings to be widely understood by the public.

More split papers: standard and new models

Focus on causality, but not dogmatically.

Clear methodology which can be replicated

Collaboration

Cross discipline sharing data and methods.

Focus on critical applications

Move editorial agencies to universities

Integration of practitioners in research process

Increasing public awareness and knowledge about what is most important and needed to improve the field

People get credit for any papers published from their data

ENGAGE WITH PRACTICE

Make key findings of reviewers public to show from an independent source what weaknesses the papers may have.

Reform the academic review process which influences the publication ecosystem

Encourage less strict paper formatting

Streamline IRB review processes to facilitate data sharing. Make data sharing an explicit expectation in the IRB review process.

Reward collaboration by separate research teams

Encourage collaboration

Change the reward system for authors away from increasing paper bean-counts. Change the reward system for editors away from increasing impact factors.

Connect with researchers with practitioners

1- Not base academic merit on the number of citations

2- More rigorous plagiarism checks.

Focus on practical research that can be implemented by with non-academic transportation practitioners

reduce subjectivity

Develop model problems and data representing them

Getting rid of peer review or at least not the way it’s done now

Diffusion

reduce noise

Higher standards for publications to encourage more collaboration and larger studies, and less papers

Make direct connections with practice

Stronger editors and more guidance to reviewers.

Comparison

Reform of the academic personnel review system which bears heavily on publication behavior (no pun)

Fix peer review
COMMIT

Collective wisdom takes collective action.

What are you going to DO?
What are you going to do? (22 participants)

Continue sharing code and data
As an editor, I am trying to use reviewers as advisors rather than vetoes.
Promote tools that ease publishing well-described data
Share and dissemination of data
Publish survey data after submitting first results to a conference.
Sharing data
Definitely collaboration
Conduct statewide survey and update models to deal with current and expected critical applications like ghg modeling
Discuss it with my colleagues. Set incentives in my area of influence
Focus on practical implications of the results I find in my research
Stay informed and contribute ideas whenever possible
Talk about it on social media
Publish books
Review more literature to create benchmarks
Lean into research studies
I have decided to publish my work outside of journals. Just a webpage.
Share data, code, and conclusions. Focus on conducting research that leads to practical interventions. Keep research basic and ask simple questions. It doesn’t have to be complicated to be important.
Help develop benchmarks, share data and tools, and write about issues
objective analysis
Working on projects that have a clear implementation plan.
Finish
In my MSc dissertation, lean more into the available literature
Share data and code
Academic Impact

# Papers
each makes a unique contribution to knowledge

# Citations

Societal Impact

Doing good for the world
Sociademic Impact

Rigorous papers developed with a collective focus to do good for the world
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The Zephyr Foundation whose mission is to Advance Travel Analysis to Improve Society.
Moving from Citations to Collective Wisdom in Travel Behavior Research

Joan Walker
joanwalker@berkeley.edu
Can’t a good comparative or synthesis paper contribute unique insights? Is this truly an either/or situation?

I would tend to trust my gut, and if the number doesn’t make sense, why put it out? I don’t see the issue with playing around with numbers.

Is there a role for GPT or other AI models to reduce the burden of synthesizing knowledge?

The data and code no one else wants to share data, agencies don’t want to pay to anonymize it, nor do journals. Strong policies would have to be backed by funding!

What responsibility should fall on universities/research institutions to set up best practices to normalize code and data releases?

Leaning in is especially difficult for doctorate students who have to make one or more unique contributions in order to graduate.

What responsibility should fall on universities/research institutions to set up best practices to normalize code and data releases?

I'd suggest the research would be better focused if the academic world was not so disconnected from practitioners. As

I’m not sold on data reuse. But if we don’t encourage practitioners to share data, they will continue to collect the same data over and over.

Can we get a feel for how the incentives are being reset with the federal government's encouragement of EVs, rather than AVs or shared mobility? It has a large influence.

Better integration of transportation and urban planning and policy?

To the extent that modelers in government may want to publish from a good dataset for years and don't need to be scooped by other's doing research with my data. Though

Better integration of transportation and urban planning and policy?

I think the ideal model for research funding is a large institution (e.g., NSF) that supports a network of smaller projects.

Those don’t affect results.) At the same time, it takes about 2000 person

What is the role of industry in encouraging openness across research topics? I'm interested in hearing from those who’ve been doing research in the area, where they think the most

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Chat log from the talk

12:41:41 From Arati Shah to Everyone: What are your thoughts on the fundamental problem of the reward systems. Both the reward system that drives authors to publish. But the critics say to me, how can you replicate those findings with so little info?

12:29:37 From Chris Cherry (UTK) to Everyone: What if we built a central repository for data. What if we built a central repository for data?

12:48:54 From Rabi Mishalani to Everyone: I’m not sold on data sharing. I’m not sold on data sharing.

12:48:33 From Lynn Hulse to Everyone: I’m not sold on data sharing.

12:48:30 From Matthew Gibbs to Everyone: I’m not sold on data sharing.

12:48:28 From Kara Kockelman to Everyone: I’m not sold on data sharing.

12:47:49 From Chris Cherry (UTK) to Everyone: I’m not sold on data sharing.

12:47:42 From Don MacKenzie to Everyone: I’m not sold on data sharing.

12:47:38 From Mohammad Noaeen to Everyone: I’m not sold on data sharing.

12:47:35 From Suryakant Buchunde to Everyone: I’m not sold on data sharing.

12:47:32 From Dr. Kang Ping Lee to Everyone: I’m not sold on data sharing.

12:47:31 From Korawich Kavee to Everyone: I’m not sold on data sharing.

12:47:49 From Kara Kockelman to Everyone: I’m not sold on data sharing.

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12:47:32 From Dr. Kang Ping Lee to Everyone: I’m not sold on data sharing.

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