Introducing…

Modeling to Learn

Test don't guess.

@LZPhD

Lindsey Zimmerman, PhD

National Center for PTSD, Dissemination & Training Division

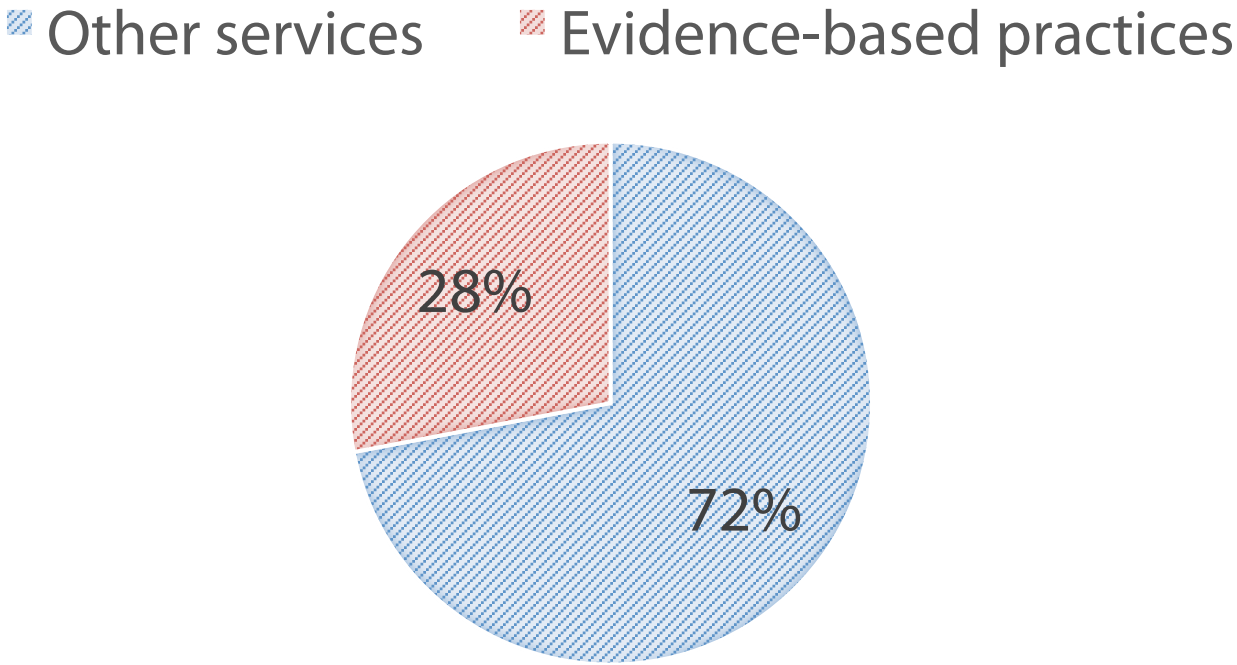
December 4, 2018

Lindsey.zimmerman@va.gov

Slides at mtl.how/discience18

Created by VA Team PSD

The problem of EBP reach in teams: How can we reach more patients with our highest quality care?



Source: VA Strategic Analytics for Improvement and Learning, FY 2017

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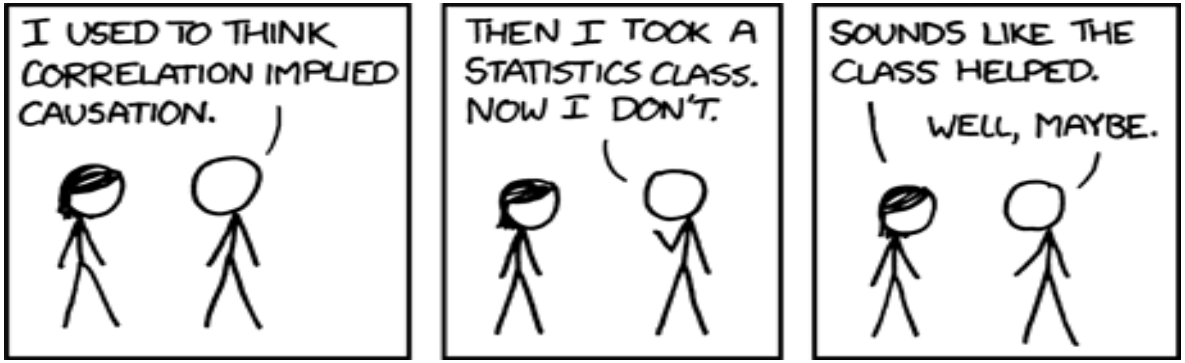
Veterans Health Administration

Model of a US National Health Care System

American J. Public Health 97, 2007

1. VA innovates with national dissemination efforts to train providers in evidence-based mental health practices
2. Enterprise-wide quality measures
3. Clinical practice guidelines and mandates for evidence-based care
4. National electronic health information system
5. Mental health care coordinated in multidisciplinary teams

What works to improve EBP reach, why, and under what conditions?



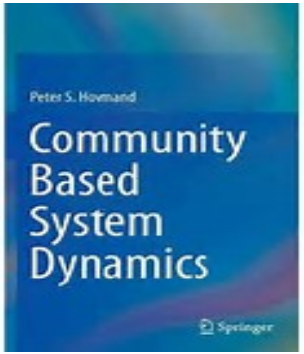
xkcd.com

Understanding causes of EBP reach in local context, is critical to our stakeholders.

OUR STAKEHOLDERS

VA policy-makers, patients, and providers from psychiatry, psychology, social work, nursing & certified peer support specialists

Our PSD approach – Participatory Research:



A partnership approach to research that equitably involves stakeholders in all aspects of the research process and in which all partners contribute expertise and share decision-making and ownership.

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Hovmand, 2014; Israel, Eng, Schulz & Parker, 2013

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Participatory Research is an epistemology.

- Scientific inquiry that that actively considers the scope of current knowledge, its limits and validity.
- Participatory research asks, what knowledge is privileged or absent?

We focus on learning among frontline teams making EBP-related care decisions.

Scientific Model	Problem	*Drawn from Hovmand (2014)* Why problems persist
General Capacity	Learning	Stakeholders cannot or do not learn and adapt to their situation.
	Coordination	Conflict or lack of stakeholder consensus.
EBP-Specific Capacity	Analysis	Policies are inconsistent with the real system constraints.
	Restructuring	The underlying structure of the system prevents workable solutions.

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Target State: Lean SMART Goal

By April 2015, 40% of patients newly seen in outpatient mental health for depression, PTSD, or anxiety disorders will have two psychotherapy visits completed within 28 days from time of intake assessment.

Specific.
Measurable.
***Actionable*:** if never achieved morale may suffer.
***Realistic*:** with the available resources.
***Time frame*:** A due date.

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Local clinic strategies are needed to address local differences.

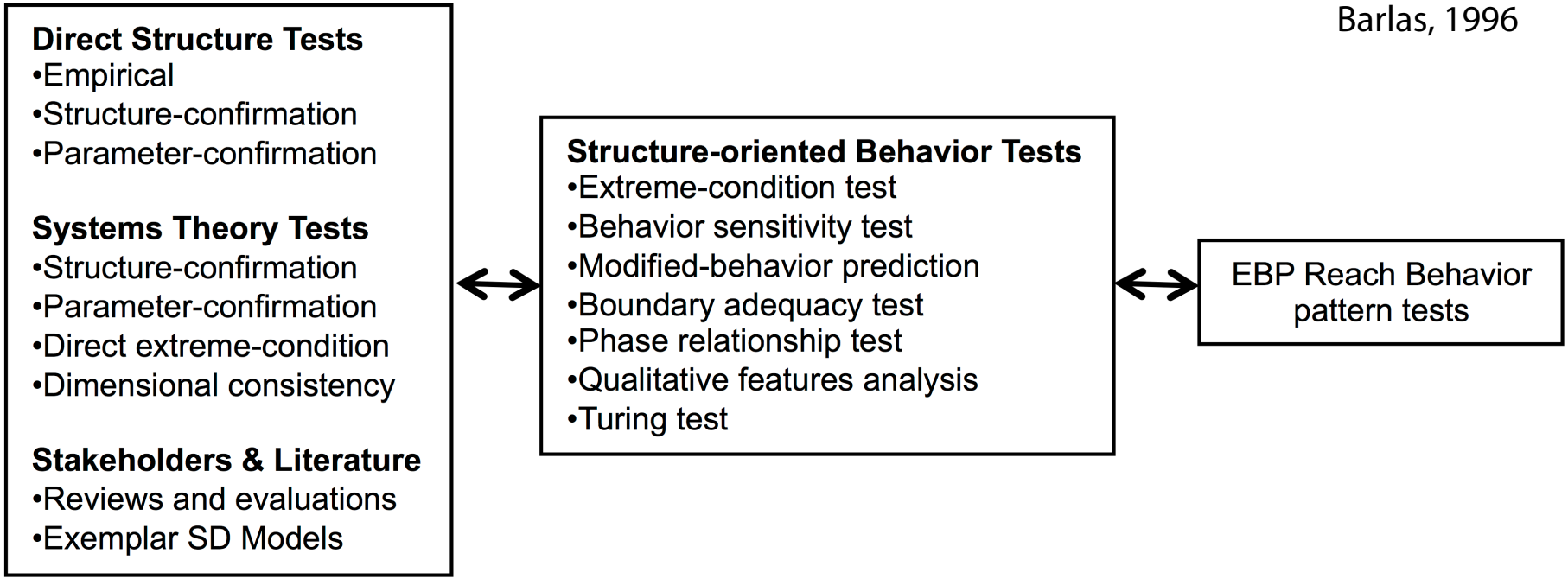
High Resource/High Complexity	Low Resource/Low Complexity/High Demand
3548 unique patients/year	**2043 unique patients/year**
Lower caseload per provider	Higher caseload per provider
Rare wait for initial appointment	Occasional waitlist to get into clinic
5.2 psychiatrists per 9 EBPsy providers	**3.0 psychiatrists per 4 EBPsy providers**
Higher EBPsy providers/MD ratio	Lower EBPsy provider/MD ratio
Higher EBPsy base rate	Higher EBPharm base rate
Providers often self refer for EBPs	**Referrals to other providers by necessity**
Multiple on-site specialty programs	**Only telehealth specialty care**
Training program site multiple disciplines	**No trainees providing care**
Most groups "open" (ongoing enrollment)	**Most groups "closed" (infrequent opening)**
Shorter time to next available appointment	Longer time to next available appointment

Our R21 aims.

- develop a systems understanding of VA addiction and mental health services and the limited reach of evidence-based care.
- empower frontline provider stakeholders to make locally optimized quality improvement decisions.

Saturation achieved during structural behavioral validity testing.

Barlas, 1996



Modeling to Learn

Test don't guess.

Adm Policy Ment Health
DOI 10.1007/s10488-016-0754-1

ORIGINAL PAPER

Participatory System Dynamics Modeling: Increasing Stakeholder Engagement and Precision to Improve Implementation Planning in Systems

Lindsey Zimmerman[1,2] · David W. Lounsbury[3] · Craig S. Rosen[1,4] · Rachel Kimerling[1] · Jodie A. Trafton[4,5] · Steven E. Lindley[4,6]

Administration and Policy in Mental Health AND Mental Health Services Research
Volume 43 • Number 5 • September 2016
Springer

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Our R21 approach used participatory system dynamics. Our developed program is *Modeling to Learn.*

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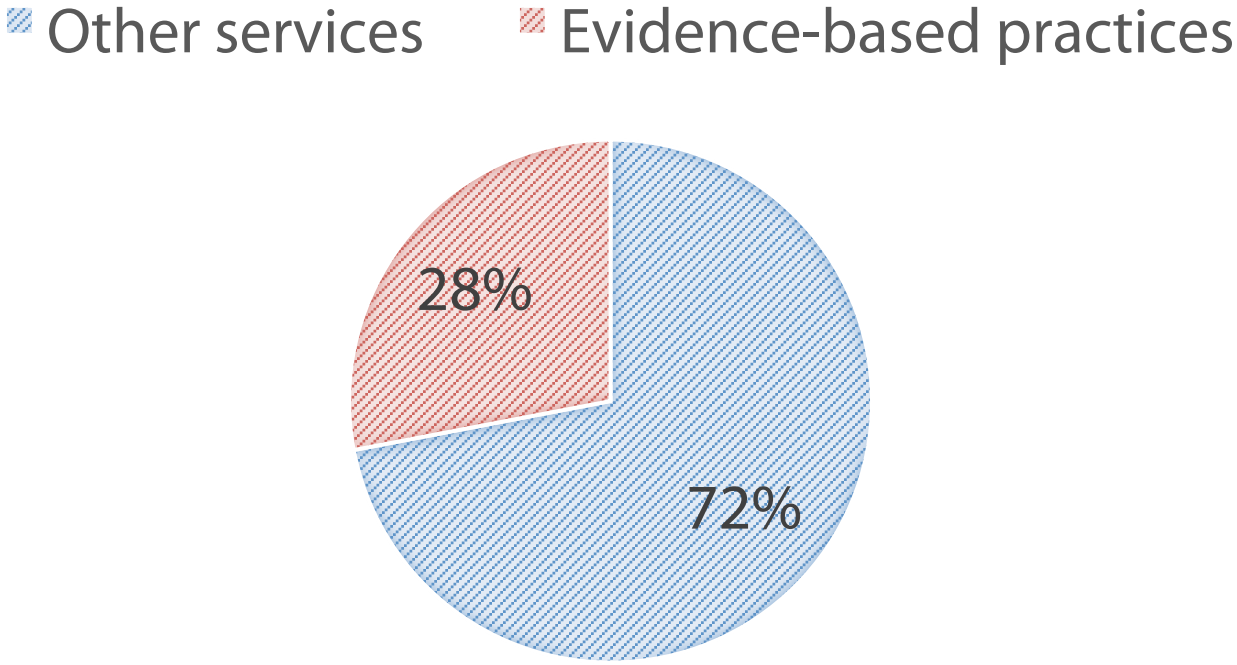
Systems Science: interdisciplinary theory and methods for understanding complexity.

We define limited EBP reach among our patient population as a system behavior.



Source: VA Strategic Analytics for Improvement and Learning, FY 2017

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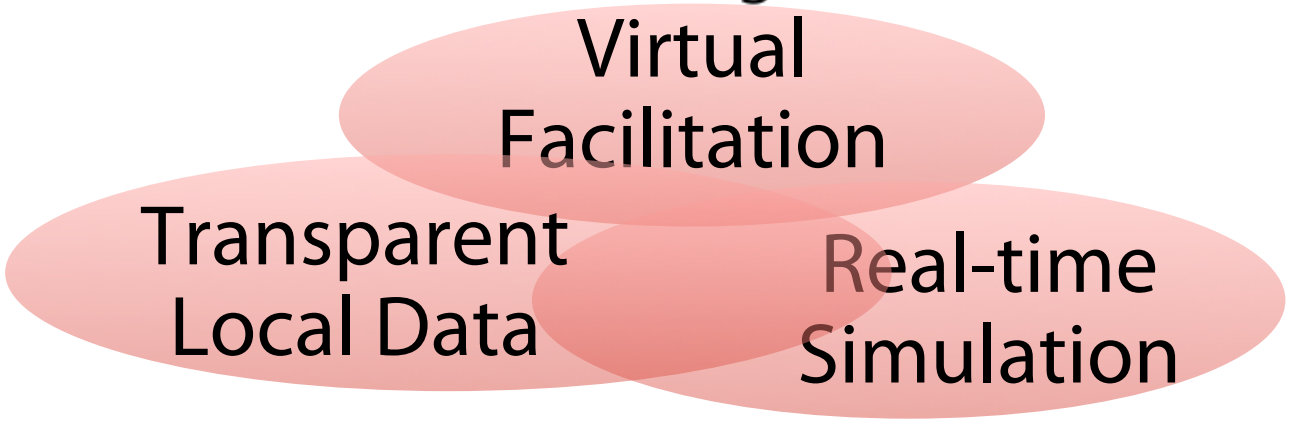


1. Equitable access to resources.
2. Mutual learning.
3. Shared decision-making.

We developed a secure website for reviewing team trends over time & patient detailed reports.

BISL | CDW | VISNs

BISL

PTSD_OMHO | Drill Down To Your Team | Request New Team Folder | Request Team Membership Change

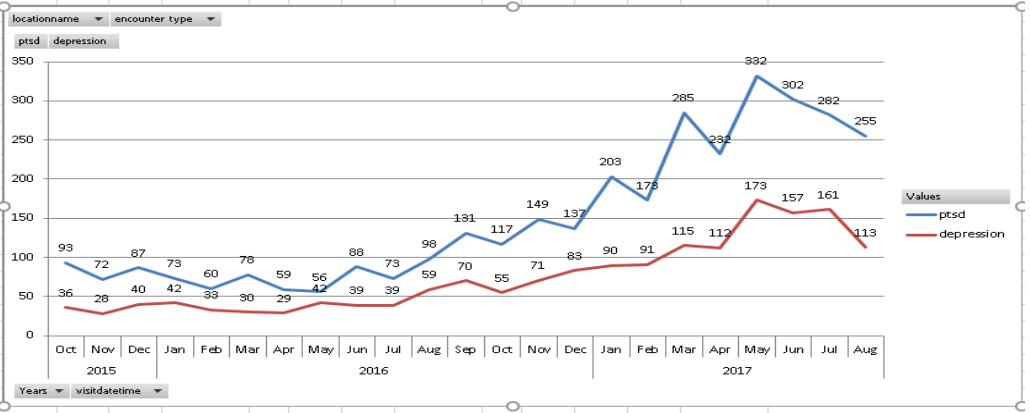
PTSD_OMHO

Pages
Administrative
User Guide
Contact Us
Site Contents

Select Your VISN

VISN 1	VISN 2	VISN 4	VISN 5	VISN 6
VISN 8	VISN 9	VISN 10	VISN 12	VISN 15
VISN 17	VISN 19	VISN 20	VISN 21	VISN 22

Row Labels	ptsd	depression
2015		
Oct	93	36
Nov	72	28
Dec	87	40
2016		
Jan	73	42
Feb	60	33
Mar	78	30
Apr	59	29
May	56	42
Jun	88	39
Jul	73	39
Aug	98	59
Sep	131	70
Oct	117	55
Nov	149	71
Dec	137	83
2017		
Jan	203	90
Feb	173	91
Mar	285	115
Apr	232	112
May	332	173
Jun	302	157
Jul	282	161
Aug	255	113
Grand Total	3435	1708



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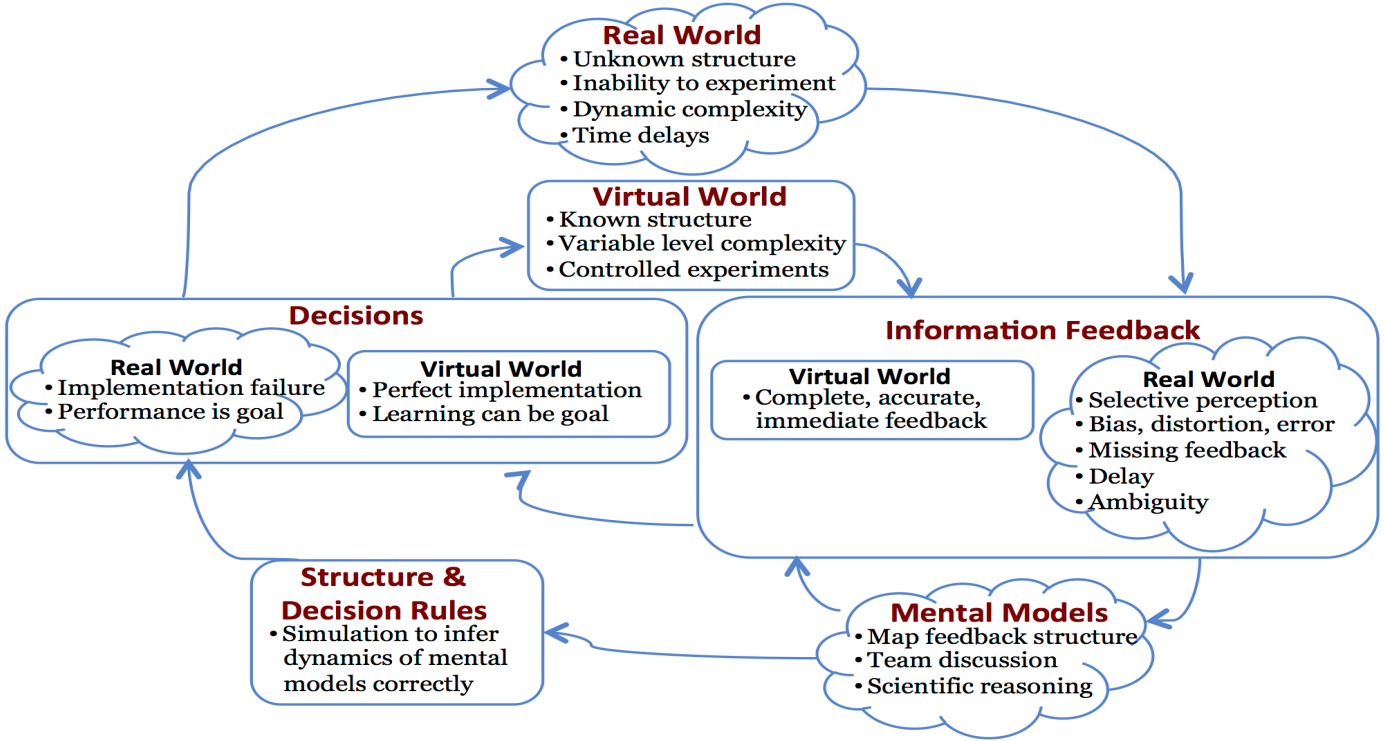
Why is PSD effective?
Two Causal Theories: Systems and Decision Science



Sterman, 2000; Sterman 2006

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MTL resources help teams look back two years and look ahead two years.

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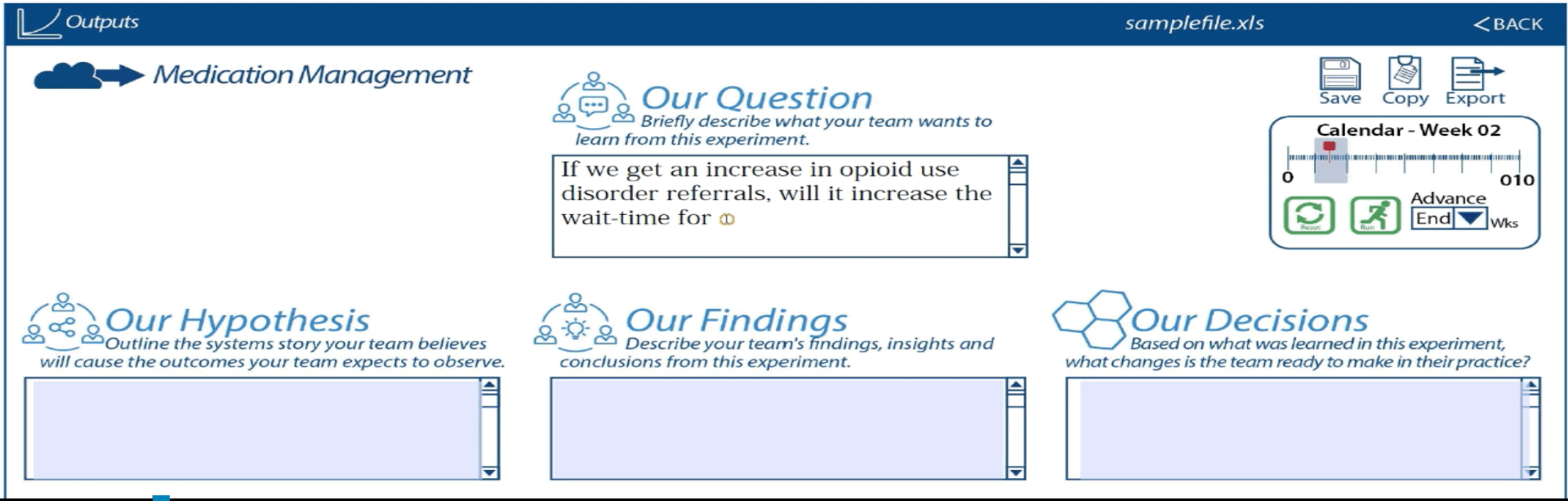
Why is PSD effective?
Participatory Learning to develop *Systems Thinking*.



mtl Facilitate

Fidelity to *Participatory Learning* to develop *Systems Thinking.*

MTL Fidelity Checklist for 12-session Plan

Sesson Summaries across *MTL* Modules

session 01. Today we're *modeling to learn* how to align our **team vision**.

session 02. Today we're *modeling to learn* how to check our **patient data** and **team trends**.

session 03. Today we're *modeling to learn* how to produce **team data** for simulation.

tt session 04. Today we're *modeling to learn* how to prioritize **team needs**.

session 05. Today we're *modeling to learn* how to log-in to our **team world**.

session 06. Today we're *modeling to learn* how to tell a **systems story**.

session 07. Today we're *modeling to learn* how to evaluate our **base case** of no new decisions.

tt session 08. Today we're *modeling to learn* how to test a **dynamic hypothesis**.

session 09. Today we're *modeling to learn* how to **compare alternatives**.

session 10. Today we're *modeling to learn* how to use **systems thinking**.

session 11. Today we're *modeling to learn* how to make future **team decisions**.

tt session 12. Today we're *modeling to learn* how to turn **team learning** into a **team plan**.

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tt team time

Session

Join Current Session

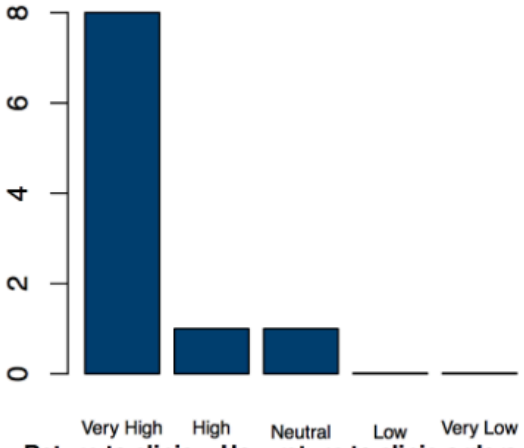
Suicide Prevention -- Week 0 100a1_abc_teama_2018_11_01.xlsx

Play

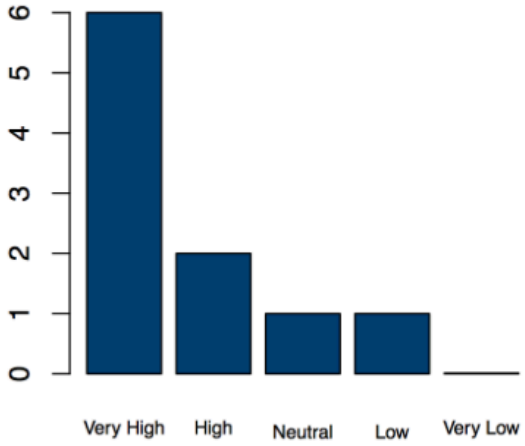
Start a New Session

- Care Coordination
- Medication Management
- Psychotherapy
- Aggregate
- Suicide Prevention

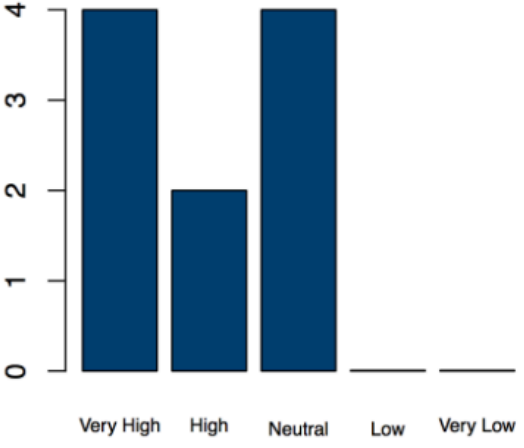
Schedule – How to manage team schedules (i.e. clinics/grids) to meet patients needs.



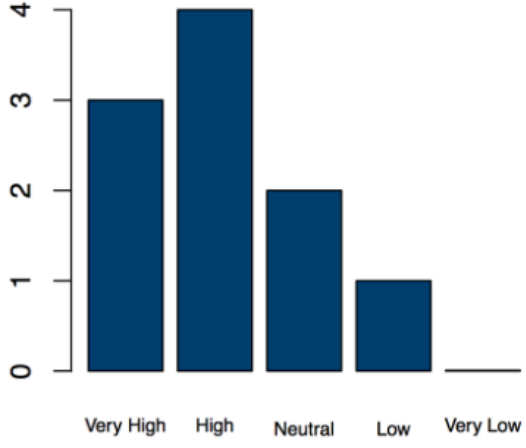
New patients – How to get new patients in care, while meeting existing patients needs.



Return to clinic – How return to clinic orders free free us to get patients to the right treatment at the right time.



Overwork – How overbooking or overworking increases patient no shows.



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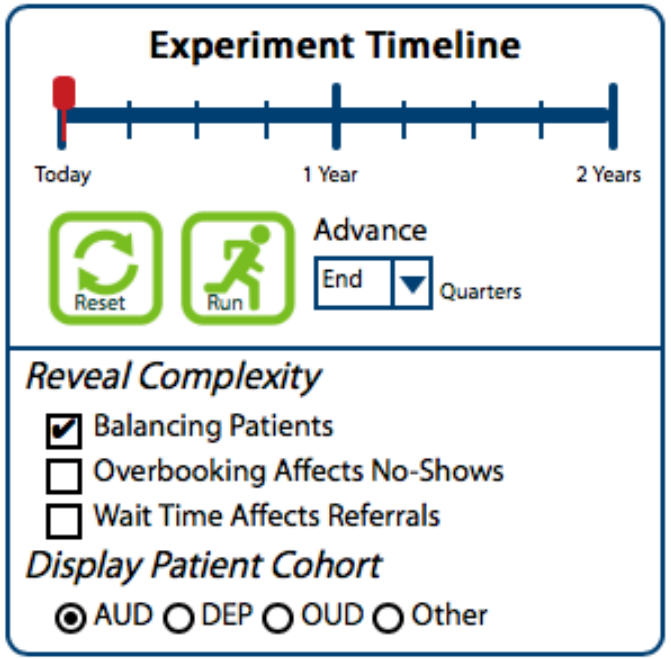
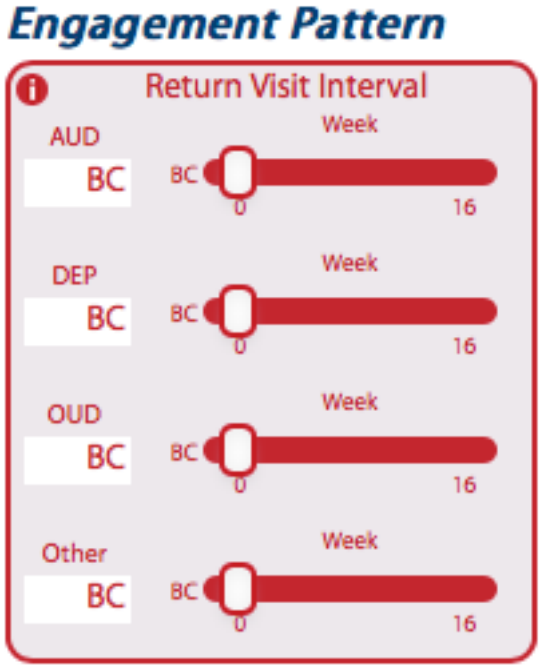
“Staff” & “Time” barriers/determinants as dynamics.





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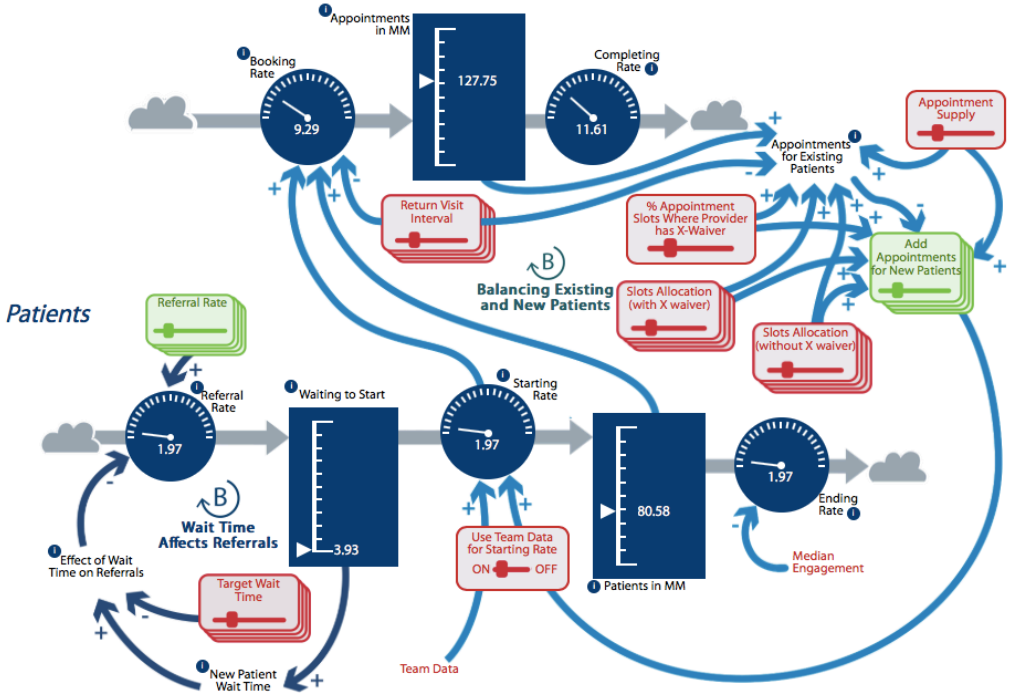
Causal mechanisms (dynamics) of EBP reach are made transparent for local learning.



Red =
- Read in
From existing team data
- Standardized

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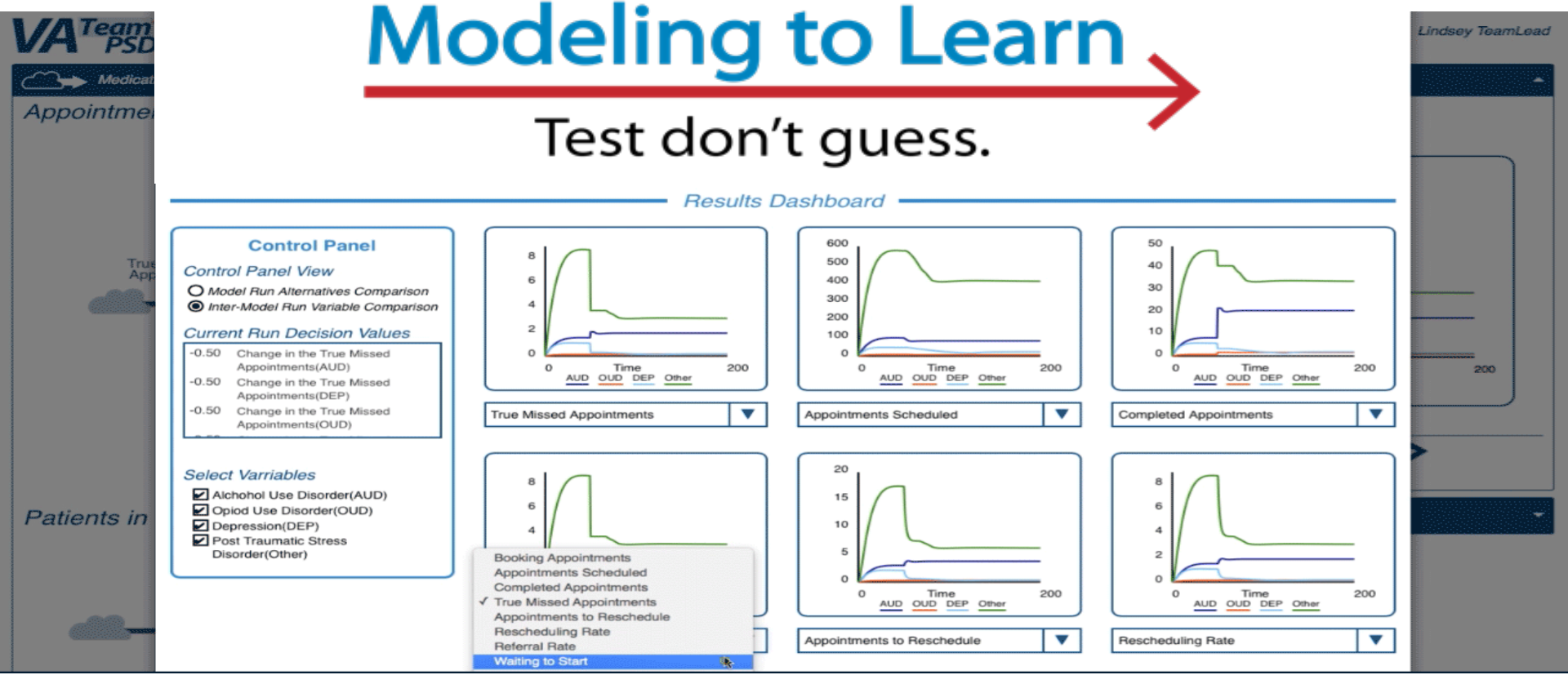

MTL tools helps frontline staff find the best local changes faster.

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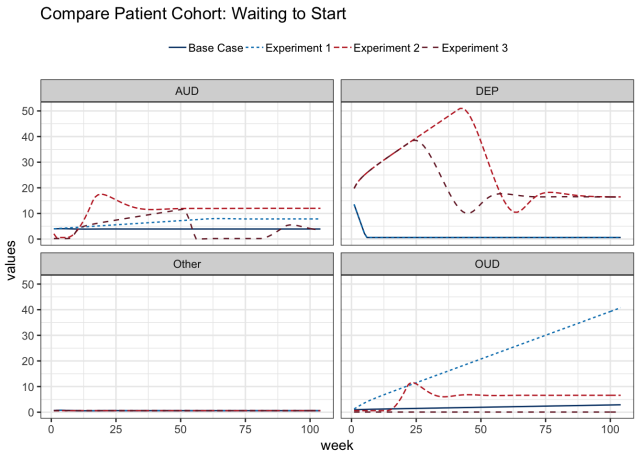
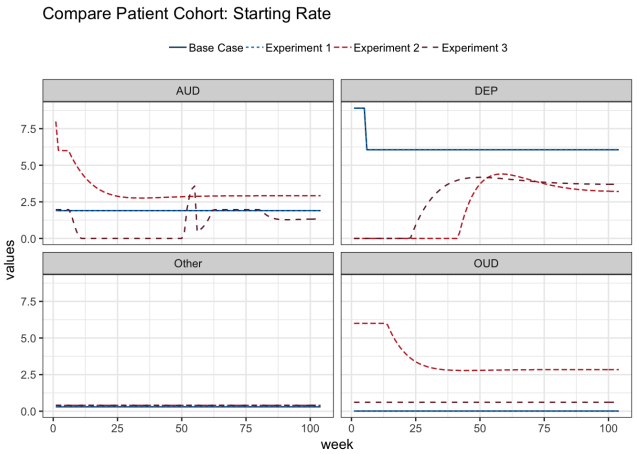
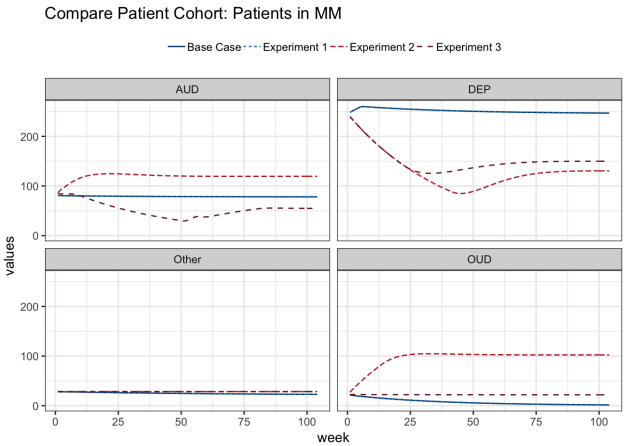
tt team time







MTL separates states & flows and shows system behaviors that may get better before worse or worse before better.

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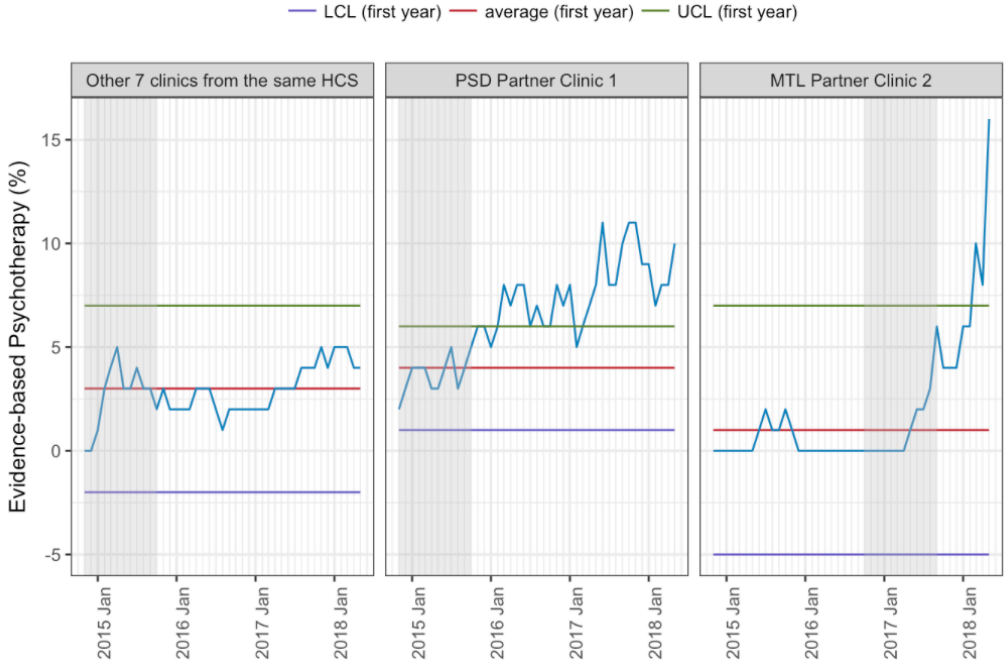
Is PSD/MTL effective for improving EBP reach? Strong signal in R21 pilot clinics.

OBSERVED FINDINGS

HCS = Regional health care system



12 mos. sustained sig. improvement + 3 *SD* (α = .003)

8 mos. sustained sig. improvement + 3 *SD* (α = .003)

Key:

Green = Upper control limit (UCL)

Red = 12-month pre-PSD EBP proportion

Purple = Lower control limit (LCL)

SD = standard deviations

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We submitted two *Modeling to Learn* multisite implementation research trials.

R01 mtl vs audit & feedback

1. Effective
2. Systems Thinking Mechanism
3. Generalizable

IIR mtl vs usual QI

1. Effective
2. Participatory Mechanism
3. Affordable

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Principles of the open science movement:

- collaborative
- free and open
- transparent and reproducible science.

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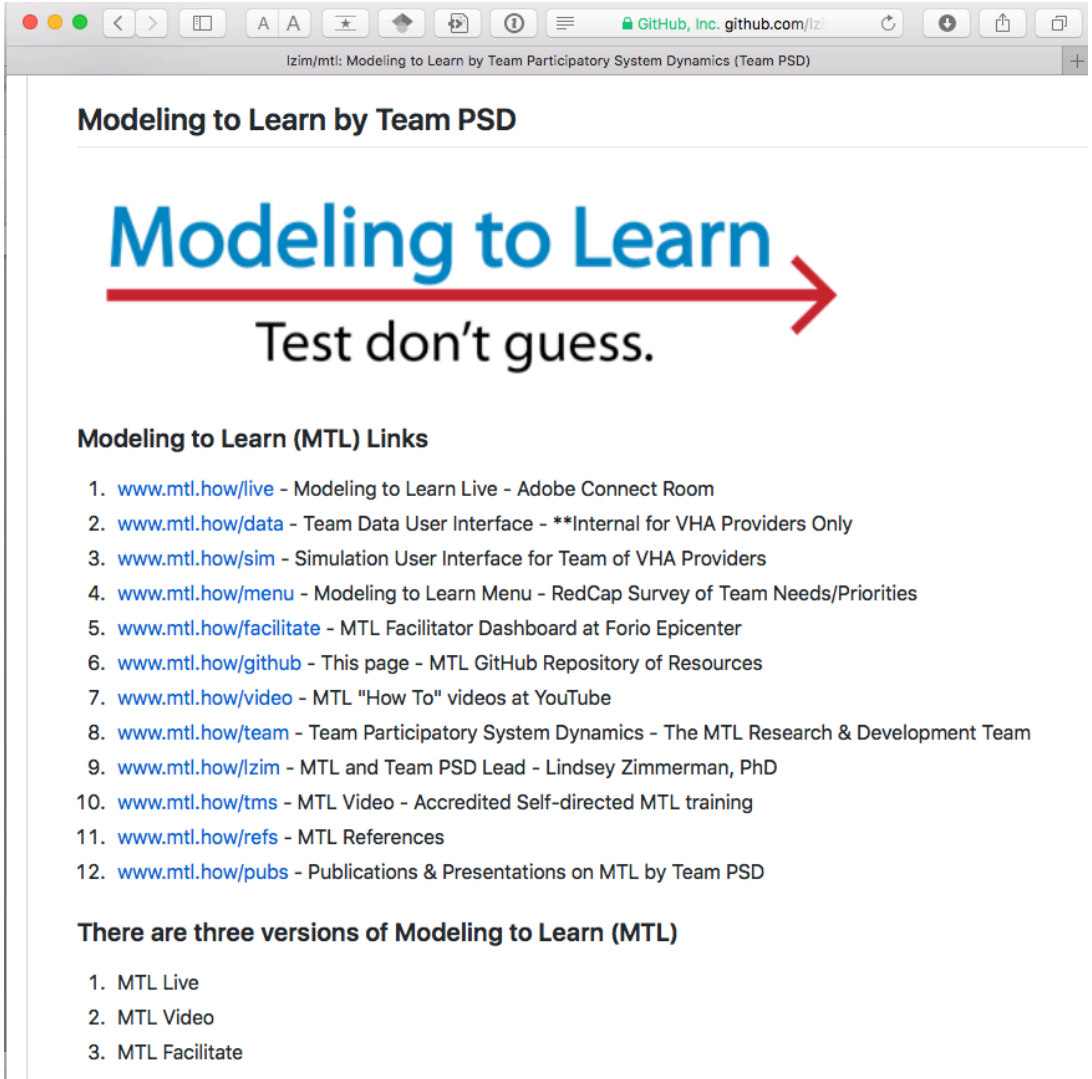

Modeling to Learn on GitHub

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Modeling to Learn

Test don't guess.

Look before you leap.

Measure twice cut once.

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Questions?

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Co-Investigators
David Lounsbury, PhD, Craig Rosen, PhD, Craig Rosen, PhD, Jodie Trafton, PhD, Steven Lindley, MD, PhD,

Project Support
Stacey Park, McKenzie Javorka, Dan Wang, PhD, Savet Hong, PhD, Kathryn Azevedo, PhD, Savet Hong, PhD

Team PSD Mentees
Cora Bernard, MS, Swap Mushiana, MS, Alexandra Ballinger, Joyce Yang, PhD, Melissa London, PhD, Dominique Malebranche, PhD, Myra Altman, PhD

VAPOR (Veteran VA Consumer) Board
DC Barlow, Ren Kramer & Erik Ontiveros

Georgia Health Policy Center
Jane Branscomb, MPH Debra Kibbe, MS Ursula Davis, MA, Amanda Martinez, MPH

Takouba LLC
James Rollins, MEd & Howard Park, MSE, MBA

VA Partners
VA Palo Alto Mental Health Staff Ann LeFevre, LCSW, Maya Kopell, MD, Trisha Vinatieri, PsyD, Bruce Linenberg, PhD, Pompa Malakar, RN, Rosemarie Geiser, RN, Sarah Walls, LCSW, Gigi Fernandez, LCSW, Emily Hugo, PhD, Martha Losch, MD Jessica Cuellar, PhD, Alka Mathur, MD, Erin Sakai, PhD, Kesha Diodato, LCSW, Nathaniel Mendelssohn, MD, Nina Yi, MD, Lisa Giovanetti, LMFT, Joan Smith, LCSW, Darryl Silva, LCSW, Karen Wall, RN, EdD, and Smita Das, MD.

Office of Mental Health and Suicide Prevention/Program Evaluation Resource Center and Psychotropic Drug Safety Initiative (OMHSP/PERC/PSDI)
Matthew Neuman, PhD, Matthew Boden, PhD, Hugo Solares, PhD, Shalini Gupta, PhD, David Wright, PhD, Susanna Martins, PhD, Eric Schmidt, PhD, Amy Robinson, PharmD, Ilse Wiechers, PhD,

Office of Strategic Integration/Veterans Engineering Resource Center (OSI/VERC)
Tom Rust, PhD, Andrew Holbrook, BS, Liz May, BS

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Elizabeth Bowling, Fawn Powell, Ed Caldwell, Amy Jones, Julie Sydow, Cate Wright, and Lara Dolin

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