

Clinical & Translational Research Outputs: An Introduction to the Translational Sciences Benefits Model (TSBM)

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Objectives

- Understand ways to demonstrate real-world impact of research with the Translational Sciences Benefits Model (TSBM)
- Recognize the available toolkits to help apply the TSBM to research projects
- Identify the role of implementation outcomes as translational outcomes that are upstream of TSBM outputs

How do we measure research impact?

- Publications
 - High-quality journals
 - Citations by others
- Grant funding



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Problem:

How do we quantify the real-world impact of our research?

How do we measure research impact?

- Publications
 - High-quality journals
 - Citations by others
- Grant funding

Solution?

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ARTICLE

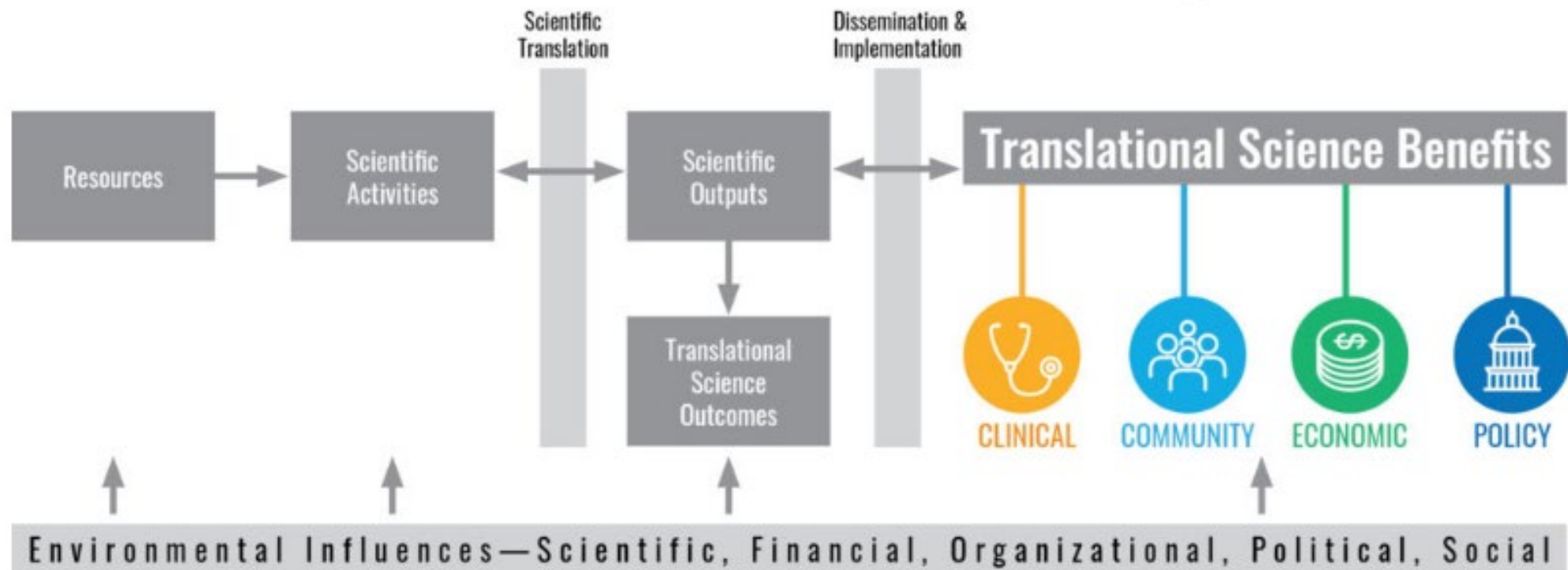
The Translational Science Benefits Model: A New Framework for Assessing the Health and Societal Benefits of Clinical and Translational Sciences

Douglas A. Luke^{1,*}, Cathy C. Sarli², Amy M. Suiter², Bobbi J. Carothers¹, Todd B. Combs¹, Jae L. Allen³, Courtney E. Beers³ and Bradley A. Evanoff⁴

Classic TSBM

[Translational Science Benefits Model](#): a framework that public health and clinical scientists can use to demonstrate the impact of their work in the real world

Translational Science Benefits Conceptual Model



Overview of TSBM outputs



New clinical innovations: tools, guidelines and/or procedures

OR

Improved adoption and/or implementation in clinical settings



New community innovations: activities and/or products

OR

Improved adoption and/or implementation enhances healthcare delivery and/or community well-being



New commercial product innovations

OR

Improved financial savings/benefits



Involvement with the policy process

OR

Formal adoption of innovations into policies, legislation or governmental standards

Examples of TSBM outputs



Procedures & guidelines

- Diagnostic procedures
- Therapeutic procedures
- Guidelines

Tools & products

- Biomedical technology
- Pharmaceuticals
- Software technologies



Health activities & products

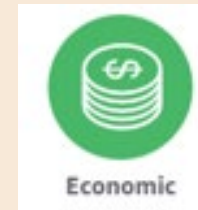
- Consumer software
- Health education resources

Health care characteristics

- Accessibility
- Quality

Health promotion

- Disease prevention
- Quality of life



Commercial products

- License agreements
- Non-profit or commercial entities
- Patents

Financial savings & benefits

- Cost effectiveness
- Cost savings
- Societal & financial cost of illness



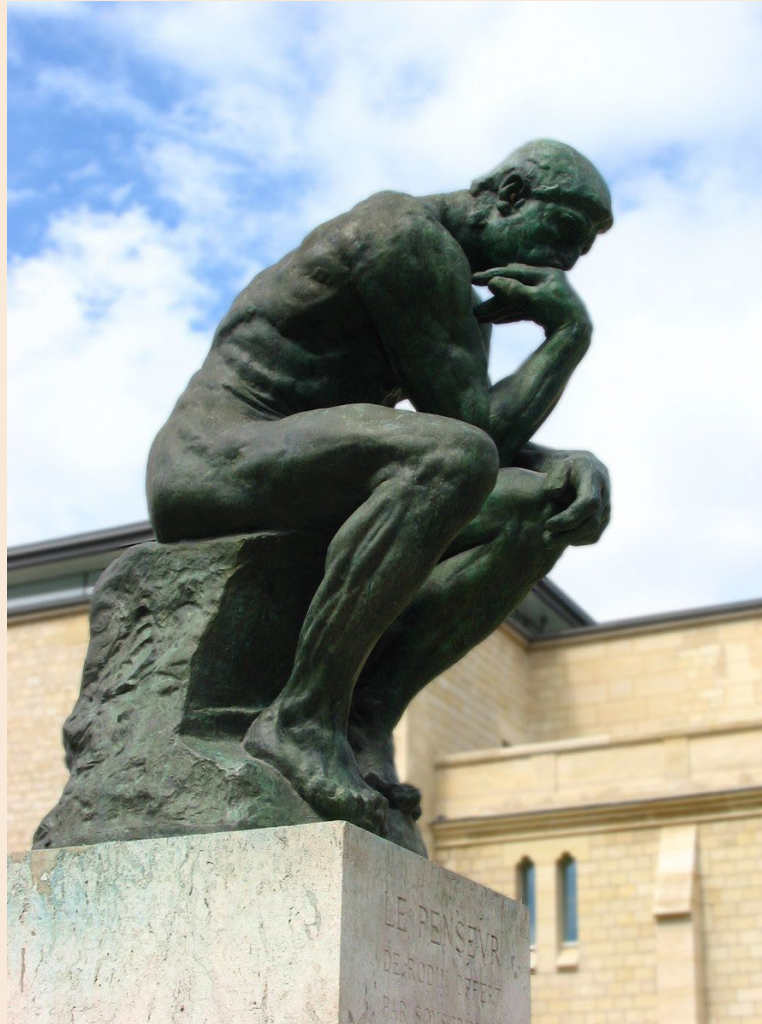
Advisory activities

- Committee participation
- Expert testimony
- Scientific research reports

Policies & legislation

- Legislation
- Policies
- Standards

How can I use the TSBM for my work?



Toolkit to show TSBM impact

[Tools - Translational Science Benefits
Model \(wustl.edu\)](http://wustl.edu)

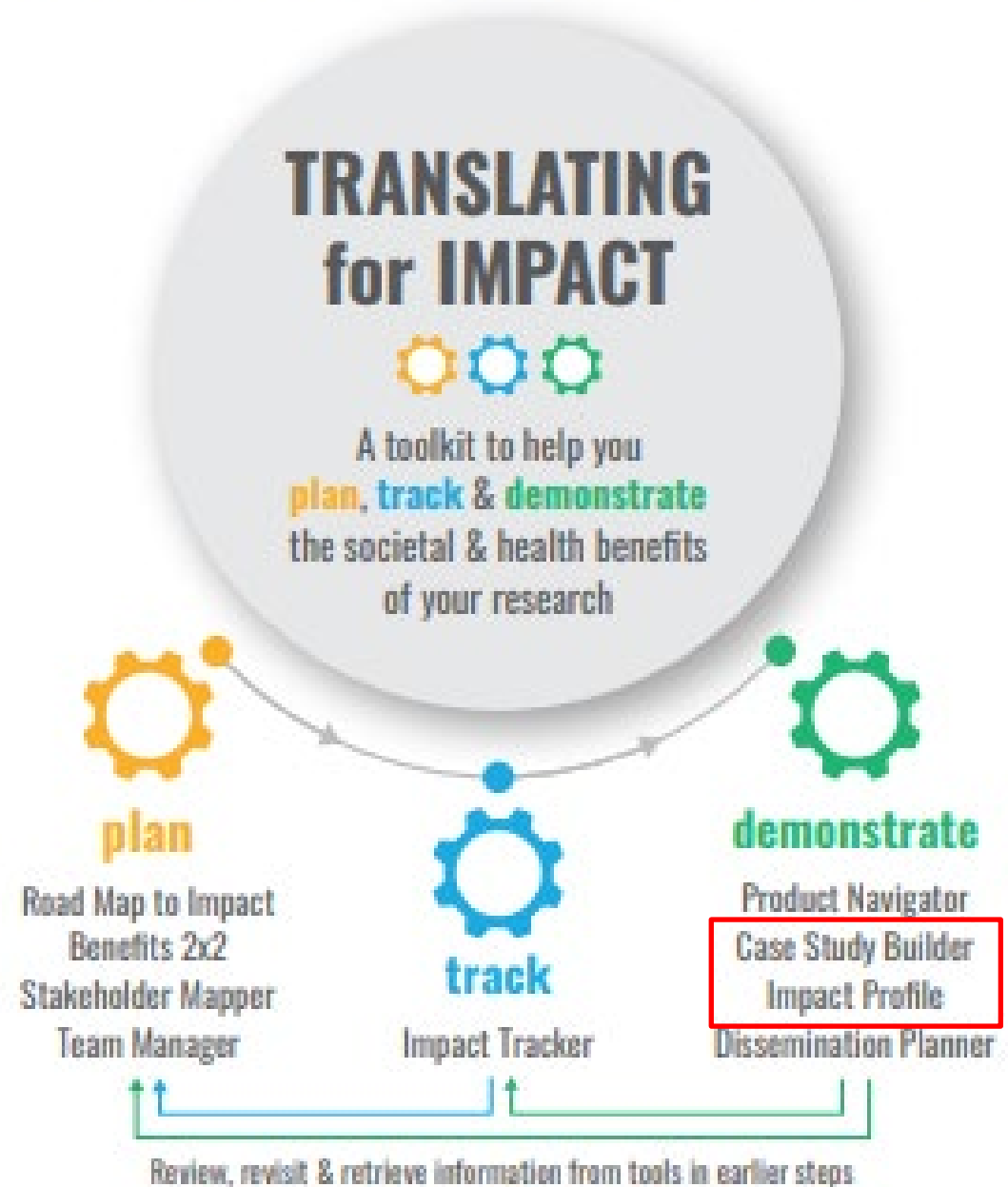
TRANSLATING FOR IMPACT TOOLKIT SCHEMATIC



Toolkit to show TSBM impact

[Tools - Translational Science Benefits
Model \(wustl.edu\)](http://wustl.edu)

TRANSLATING FOR IMPACT TOOLKIT SCHEMATIC



Example TSBM “Case Study”: Proyecto EVAT



Improving Childhood Cancer Outcomes in Latin America

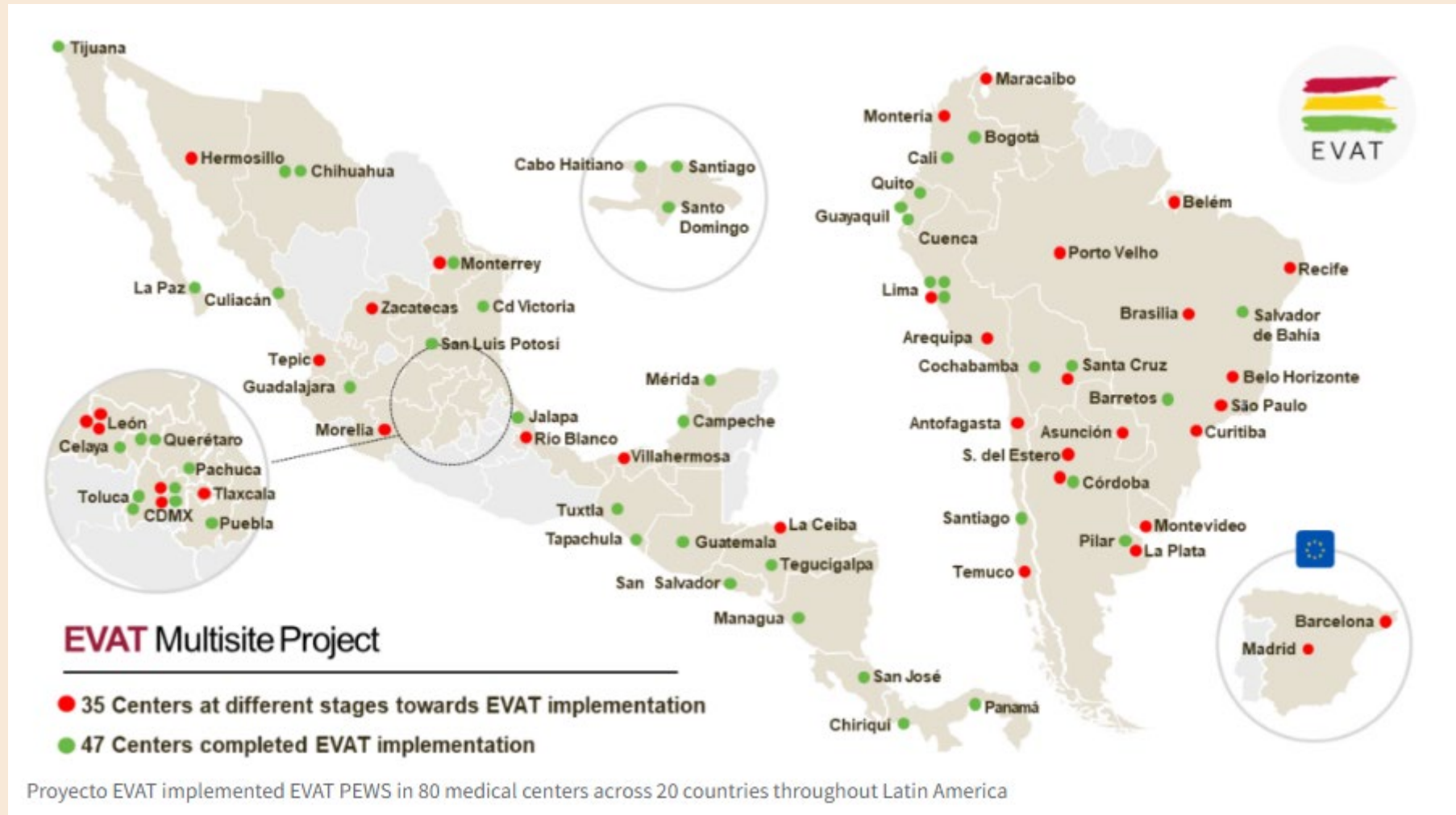
By [ICTS](#) and [St. Jude Global](#)
July 27, 2023

Proyecto EVAT: A multicenter implementation of pediatric early warning scores (PEWS) in resource-limited settings



[Improving Childhood Cancer Outcomes in Latin America – Translational Science Benefits Model \(wustl.edu\)](#)

Example TSBM “Case Study”: Proyecto EVAT



Proyecto EVAT “Case Study”

Benefits

Demonstrated benefits are those that have been observed and are verifiable.

Potential benefits are those logically expected with moderate to high confidence.

EVAT PEWS is a diagnostic system to predict deteriorating health in hospitalized pediatric cancer patients.¹⁵ **Demonstrated.**



Clinical

Diagnostic
procedures

EVAT PEWS was implemented in 80 low-resource hospitals, allowing for earlier detection of deteriorating health in hospitalized children who would not otherwise have access to such care. **Demonstrated.**



Community

Health care
accessibility

Proyecto EVAT “Case Study”

Implementing EVAT PEWS resulted in yearly savings of up to 350,000 dollars.¹² ***Demonstrated.***



Economic

Cost savings

By improving pediatric cancer outcomes, Proyecto EVAT could reduce the substantial economic cost of pediatric cancer on low- and middle-income countries. ***Potential.***



Economic

Societal &
financial cost of
illness

The Instituto Mexicano del Seguro Social, a public health system in Mexico, is integrating EVAT PEWS into their national health policies. ***Potential.***



Policy

Policies

Problems with TSBM

Identifying TSBM outputs during a 1-year or 5-year grant cycle is often difficult

NIH institutes are increasingly requesting reports on TSBM outputs from grantees

- National Cancer Institute (NCI)
 - Reporting on TSBM requested of Implementation Science Centers for Cancer Control and Prevention (ISC₃) - 2022
- National Institute for Digestive, Diabetes, and Kidney Diseases (NIDDK)
 - Annual reporting on TSBM requested for Centers for Diabetes Translational Research – beginning in 2023

How to address this?

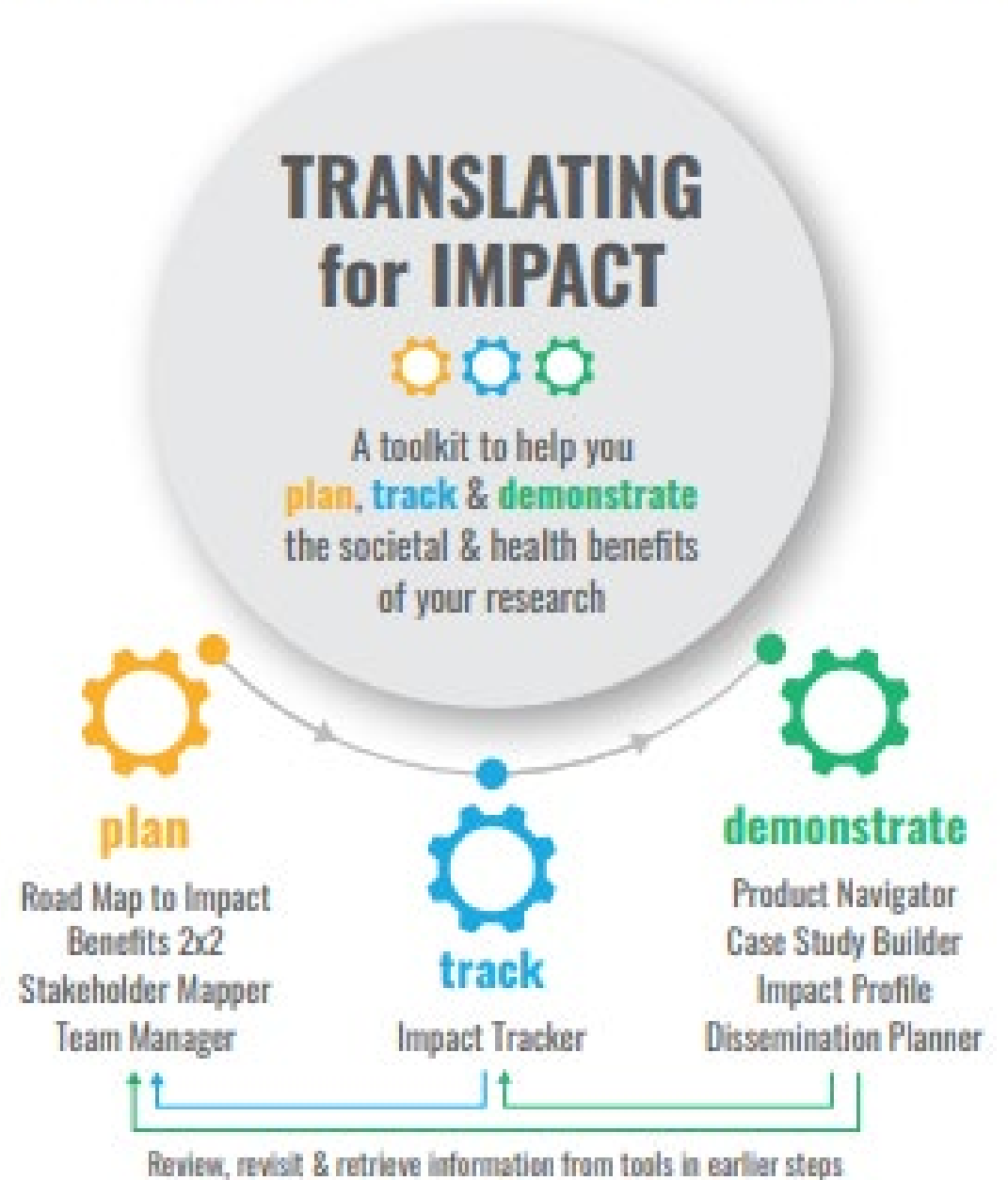
Use the TSBM toolkit

Begin with the end in mind – consider up-front the TSBM outputs you want to assess

Consider both:

- Demonstrated impact
- Potential impact

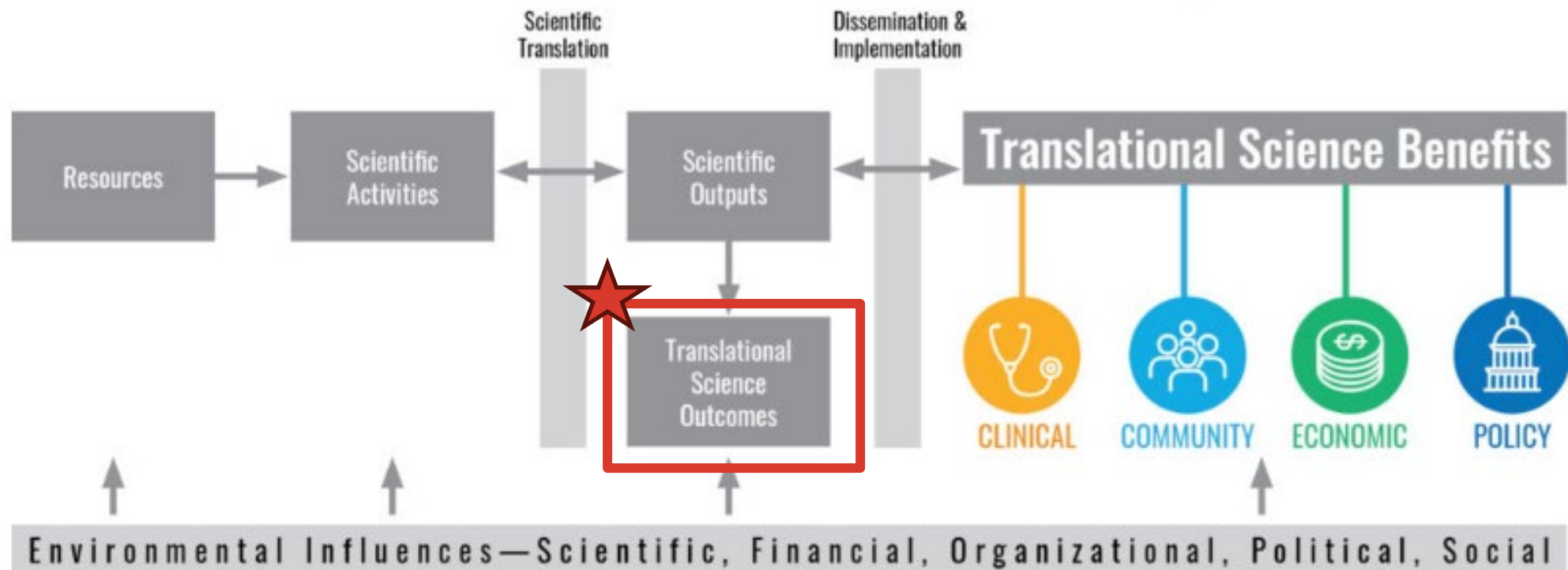
TRANSLATING FOR IMPACT TOOLKIT SCHEMATIC



How to address this?

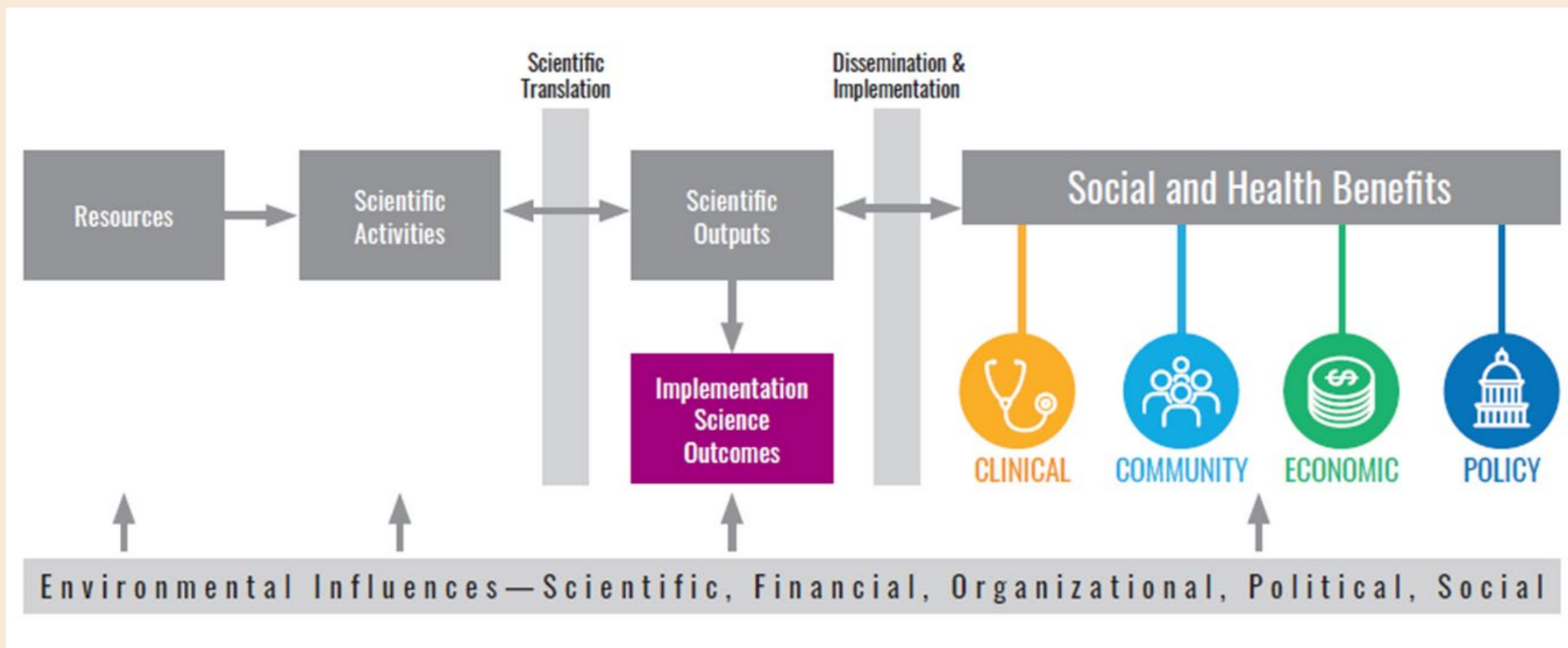
Include reporting on the **upstream Translational Science Outcomes** that predict potential downstream TSBM impact

Translational Science Benefits Conceptual Model



Revised TSBM

The ISC₃ alliance updated the classic TSBM framework to add implementation science outcomes to the other dimensions of benefit that public health and clinical scientists can use to demonstrate the impact of their work



What are Implementation Science outcomes?

Examples of Implementation Science outcomes

R

REACH

Proportion of the target population that participated in the programme



E

EFFICACY

Success rate defined by positive outcomes minus negative outcomes



A

ADOPTION

Proportion of settings that plan to adopt the programme



I

IMPLEMENTATION

Extent to which the programme is implemented as intended



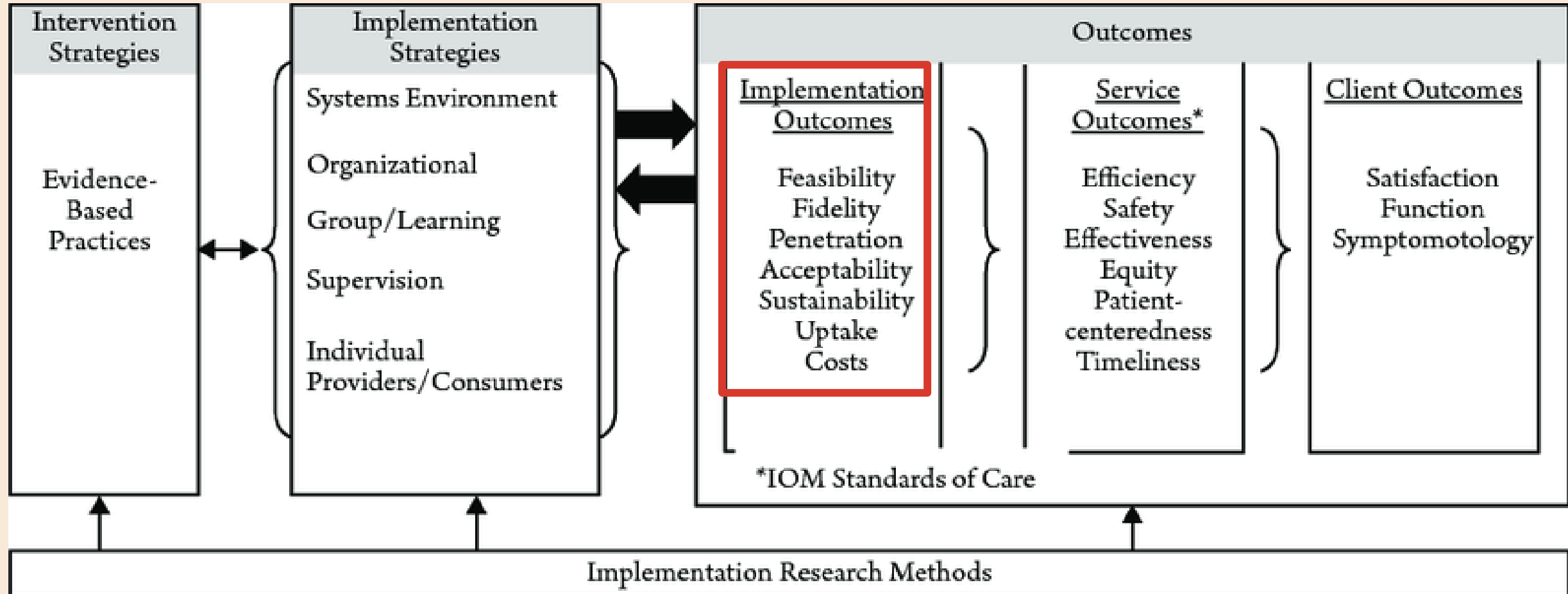
M

MAINTENANCE

Extent to which a programme is sustained over time



Examples of Implementation Science outcomes



UNIVERSITY OF COLORADO GRADUATE CERTIFICATE FOR D&I SCIENCE (2019-PRESENT)

OVERVIEW

The mission of the D&I Graduate Certificate Program is to equip our graduates with the D&I research skills needed to design rigorous and innovative translational research, and to successfully compete for federal funding to carry out their proposed work.

Small class size & synchronously meet online

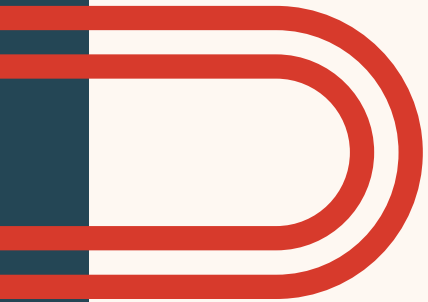
12 credits completed over ~2-3 years

Courses mapped to core D&I competencies
(Padek et al., Impl Sci, 2015; Tabak et al., Am J Prev Med, 2017)

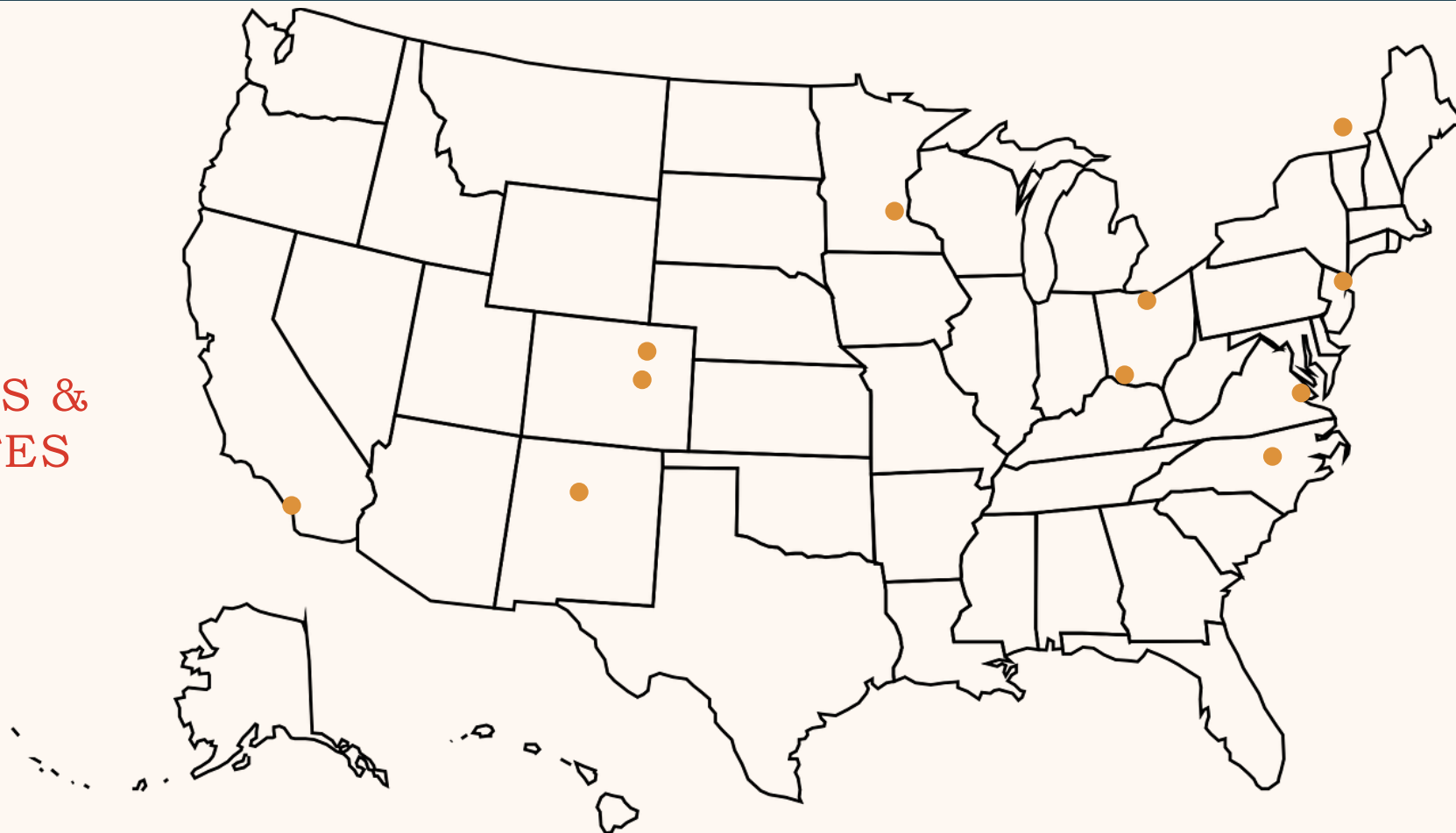
Impact to date

- International **Reach**: 51 scholars from USA and Canada enrolled since 2019; 15 graduates
- Building partnerships across ISC₃ centers and NIH
 - Includes guest lecturers from these organizations:
 - National Cancer Institute
 - Harvard ISC₃
 - Penn ISC₃ guest lecture
 - Washington University in St. Louis ISC₃
- Multi-center partnerships for research/training led by Certificate students/faculty
 - Example: University of Minnesota trainee (Monden) and CU faculty (Studts) led a D&I Capacity-building workshop for Physical Medicine & Rehab researchers





SCHOLARS & GRADUATES



- Scholars represent multiple agencies and universities across the United States and Canada: see map

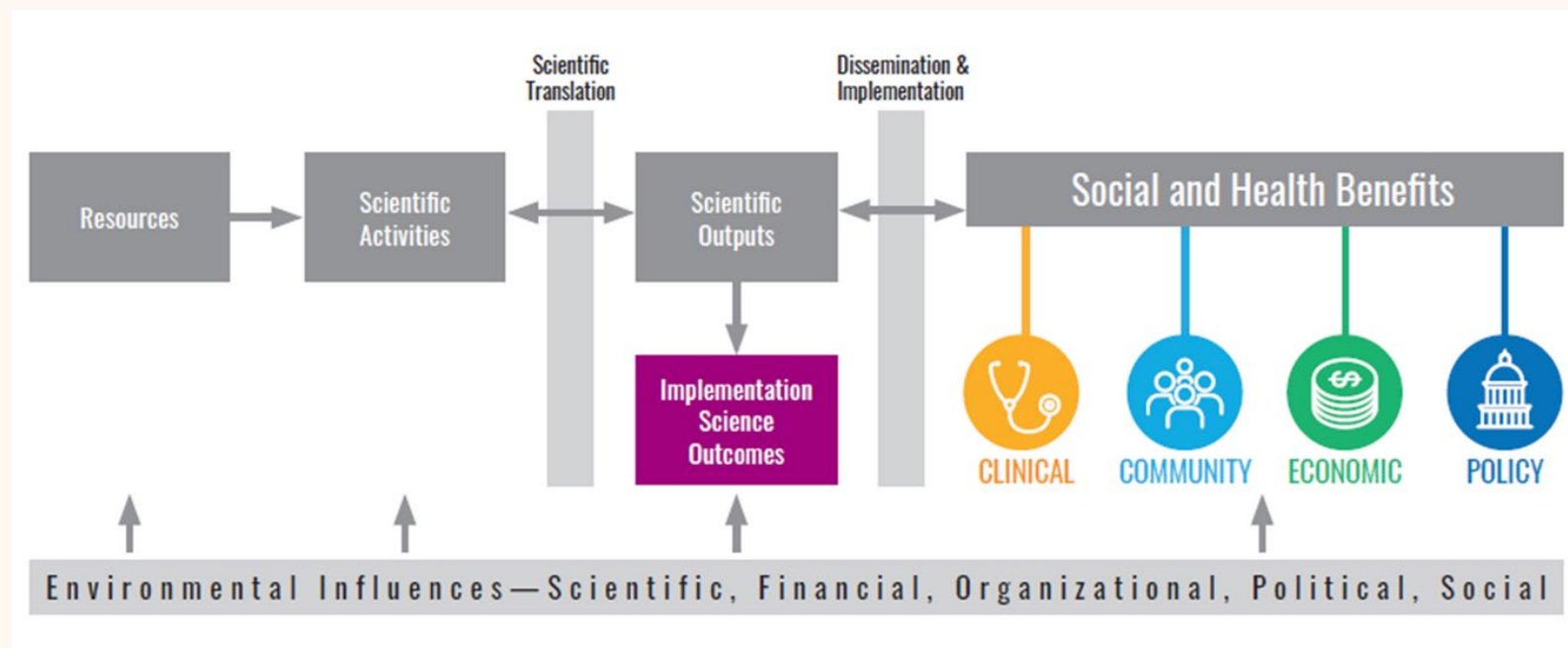
Specific agencies and universities represented by students enrolled to date:

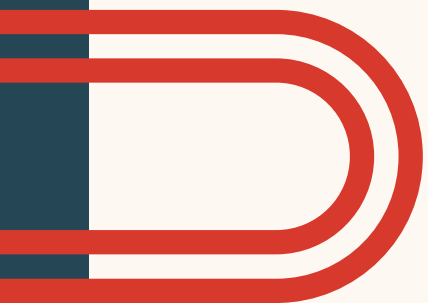
AltaMed, Centers for Disease Control and Prevention's National Institute for Occupational Safety and Health, Cincinnati Rainbow Children's Hospital, Cleveland Clinic, Colorado School of Public Health, Colorado State University, Eastern Colorado Veterans Administration Medical Center, Kaiser Permanente Colorado, Northwell Health, University of Colorado, University of Minnesota, University of Montreal, University of New Mexico, University of North Carolina Chapel Hill, and Weill-Cornell

SUMMARY

TSBM HELPS DEMONSTRATE THE REAL-WORLD IMPACT OF A PROJECT

- Four classic TSBM outputs:
 - Clinical
 - Community
 - Economic
 - Policy
- Assessing implementation outcomes are additional near-term ways to demonstrate project impact





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THANK YOU