



Center for Public Health
Systems Science

Brown School

To the Bench and Beyond

The Translational Science Benefits Model

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Washington University in St. Louis

In the beginning

We counted widgets

Measuring Impact

How should we measure the impact of our investment in science?

Evaluation the "Easy Way:"

- Publications
 - Number accepted
 - Impact factor
- Grants
 - Number submitted
 - Dollar amounts



These are only part of the story.



So What?

- Saving lives
- Improving health
- Saving money

These are the things that communities, policy makers, and funders care about.

How do you measure them?



A new way to measure impact

Goals

- Move impact assessment beyond widgets (e.g. papers & grants)
- Identify the ways that science benefits *society beyond* science itself
- Talk about the tangible benefits



Methods

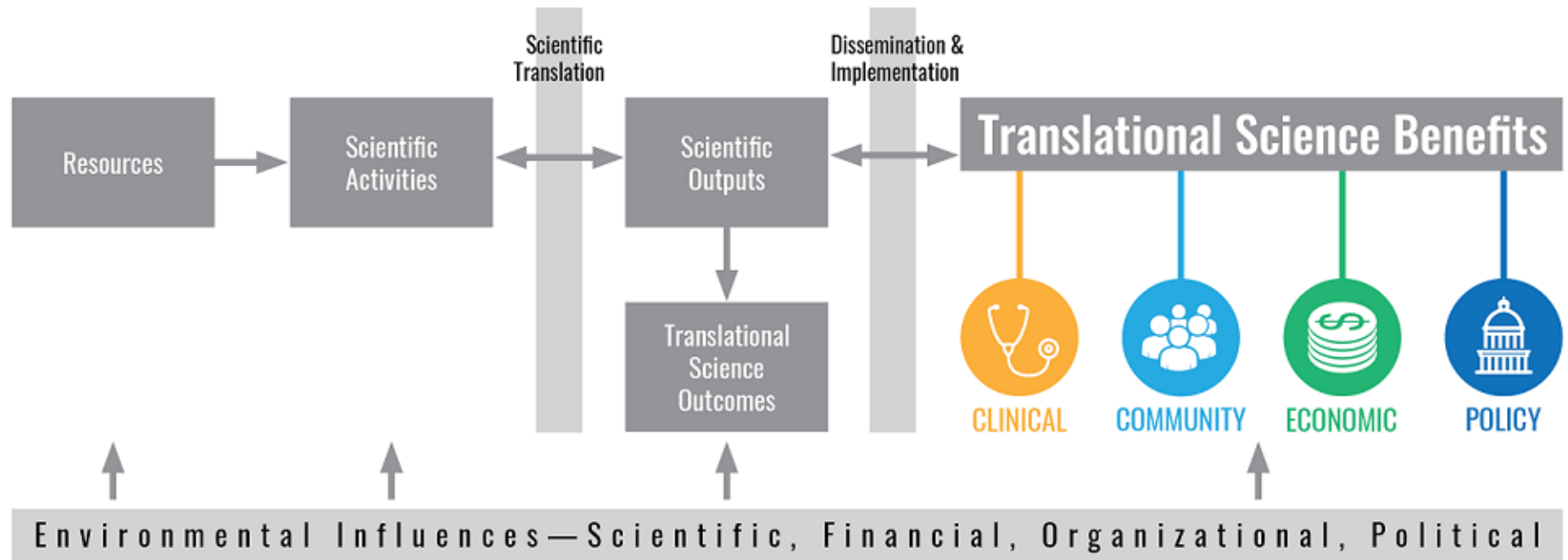
- Starting materials
 - Becker Model for Assessment of Research Impact ¹
 - Translational Research Impact Scale ²
 - Snowball Metrics ³
- Wound up with 240 indicators
- Reduced with Modified Delphi Method ⁴



1. Sarli CC, Dubinsky EK & Holmes KL. Beyond citation analysis: A model for assessment of research impact. *J Med Libr Assoc* 98, 17-23 (2010).
2. Dembe AE, Lynch MS, Gugiu PC & Jackson RD. The translational research impact scale: Development, construct validity, and reliability testing. *Eval Health Prof* 37, 50-70 (2014).
3. Colledge L. *Snowball Metrics Recipe Book*. 2nd ed. (2014). Available from: https://www.snowballmetrics.com/wp-content/uploads/snowball-recipe-book_HR.pdf
4. Dalkey N. The Delphi method: an experimental study of group opinion. *Futures* 1, 408-426 (1969).



Logic Model⁵



5. Luke DA, Sarli CC, Suiter AM, Carothers BJ, Combs TB, Allen JL, Beers CE, Evanoff BA. The Translational Science Benefits Model: A new framework for assessing the health and societal benefits of clinical and translational sciences. *Clin Transl Sci* 11 77-84 (2018). (modified version)



Domains



Clinical: Adoption and implementation of new tools and procedures in clinical settings



Community: Enhancement of healthcare or community and population well-being



Economic: Economic, commercial or financial improvements



Policy: Involvement with the policy process or formal adoption into policies, legislation or governmental standards



Translational Science Benefits Model

A new framework

Introductory Video

TRANSLATIONAL SCIENCE:
from research to impact

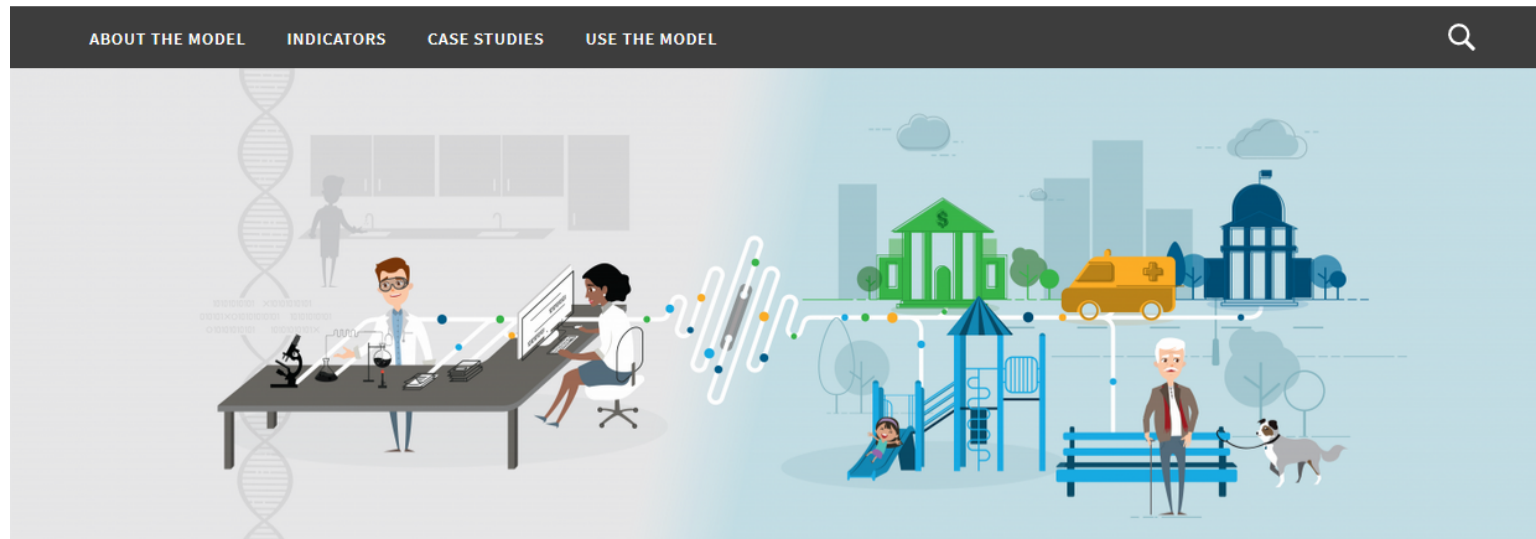
[link](#)



Website Tour

 Washington University in St. Louis

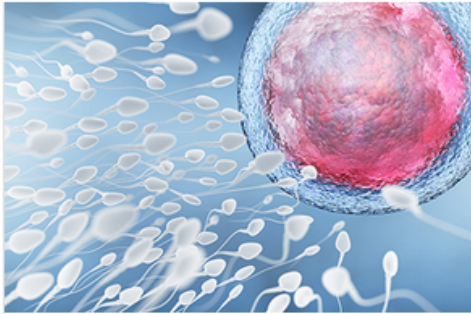
Translational Science Benefits Model



<https://translationalsciencebenefits.wustl.edu/>



Case Studies



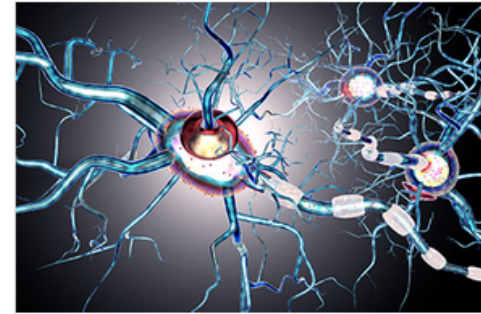
The Contraceptive CHOICE Project

Increasing accessibility and uptake of long-term, reversible contraception for almost 10,000 women, reducing teen pregnancy and abortion rates in the St. Louis Missouri area.



Specific Non-Invasive Diagnosis of Kidney Cancer

Exploring promising, noninvasive screening methods for the early detection of kidney cancer, including urine biomarkers.



Diagnostic Procedures for Creutzfeldt-Jakob Disease

Developing new preliminary diagnostic procedures for early detection of the rapidly progressive neurodegenerative disease through diffusion tensor imaging.



Track Your Own Work

Domains & Indicators Checklist

Use this checklist to track the **CLINICAL**, **COMMUNITY**, **ECONOMIC**, & **POLICY** benefits of your work.

CLINICAL & MEDICAL BENEFITS

Procedures & Guidelines

- ☐ **Diagnostic procedures** ▶ Methods and techniques performed to diagnose disease, disorders, or disability.
- ☐ **Investigative procedures** ▶ ADD THIS DEFINITION WHEN AVAILABLE.
- ☐ **Guidelines** ▶ Formal recommendations or principles to assist with patient care for specific clinical circumstances.
- ☐ **Therapeutic procedures** ▶ Methods and techniques concerned with interventions, treatment or prevention of diseases.

Tools & Products

- ☐ **Biological factors & products** ▶ Biological substances used to indicate, diagnose, prevent or treat diseases or medical conditions.
- ☐ **Biomedical technology** ▶ Technology applications for the solution of medical problems.
- ☐ **Drugs** ▶ Pharmaceutical products for human or veterinary use.
- ☐ **Equipment & supplies** ▶ Apparatus, instruments, and materials for diagnostic, surgical, therapeutic, and scientific procedures.
- ☐ **Software technologies** ▶ Computer programs or software installed on mobile or other electronic devices.

COMMUNITY & PUBLIC HEALTH BENEFITS

Health Activities & Products

- ☐ **Community health services** ▶ Diagnostic, therapeutic and preventive health services provided for individuals in the community.
- ☐ **Consumer software** ▶ Digital and mobile technologies used by or for consumers to improve health care delivery and outcomes.
- ☐ **Health education resources** ▶ Educational resources that relate to the improvement of health on an individual, population or community basis.

Health Care Characteristics

- ☐ **Health care accessibility** ▶ Equity and ability for all to gain entry to and to receive services from the health care system.
- ☐ **Health care delivery** ▶ Provision and distribution of health services to a patient population.
- ☐ **Health care quality** ▶ General characteristics of the health service or care provided based on accepted standards of quality.

Health Promotion

- ☐ **Disease prevention & reduction** ▶ Resources that enhance health promotion and disease prevention in communities or populations.
- ☐ **Life expectancy & quality of life** ▶ Life expectancy or quality of life for communities or populations.
- ☐ **Public health practices** ▶ Organization or delivery of public health services benefits to communities or populations.

Domains & Indicators Checklist cont.

TRANSLATIONAL SCIENCE
BENEFITS FRAMEWORK

Use this checklist to track the **CLINICAL**, **COMMUNITY**, **ECONOMIC**, & **POLICY** benefits of your work.

ECONOMIC BENEFITS

Commercial Products

- ☐ **License agreements** ▶ Governmental permit based on intellectual property. Investigators develop new technologies to be used for diagnostic or therapeutic applications with possible commercial use. Examples of applications are vaccines, drug deliveries, medical devices, imaging, software, algorithms, blood and tissue products, cellular and gene therapy, among others. A license allows for exploration of applications for potential human benefit.
- ☐ **Non-profit or commercial entities** ▶ Creation of businesses or non-profit agencies
- ☐ **Patents** ▶ Government authority or license based on intellectual property.

Financial Savings & Benefits

- ☐ **Cost effectiveness** ▶ Improvement in the benefits of a program relative to its cost.
- ☐ **Cost savings** ▶ Reduced financial costs of services or goods to providers or consumers.
- ☐ **Societal & financial cost of illness** ▶ ADD THIS DEFINITION WHEN AVAILABLE.

POLICY & LEGISLATIVE BENEFITS

Advisory Activities

- ☐ **Committee participation** ▶ Participation in advisory, standards, or other governmental or nongovernmental committees.
- ☐ **Expert testimony** ▶ Presentation of data or results to governmental, judicial or other regulatory bodies.
- ☐ **Scientific research reports** ▶ Research findings or summaries provided to inform policy or regulatory activity.

Policies & Legislation

- ☐ **Legislation** ▶ Bills, laws, statutes, and ordinances passed through governmental bodies.
- ☐ **Policies** ▶ Procedural rules formally adopted and mandated by governmental bodies or other organizations.
- ☐ **Standards** ▶ Formal industry, occupational, or government procedures and rules.

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