Social System Design Lab

Brown School

Application of Systems Thinking to Children's Services

From Structural Violence to Learning Systems for Prevention

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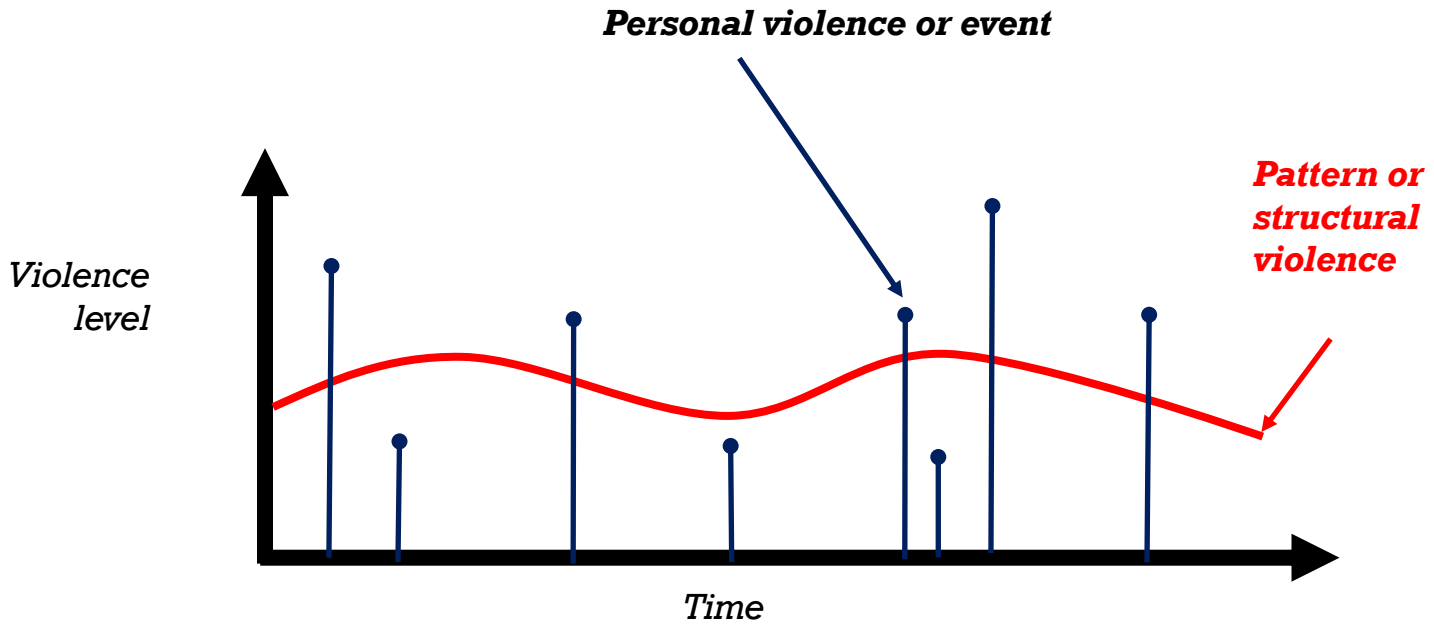
Structural violence as systemic patterns

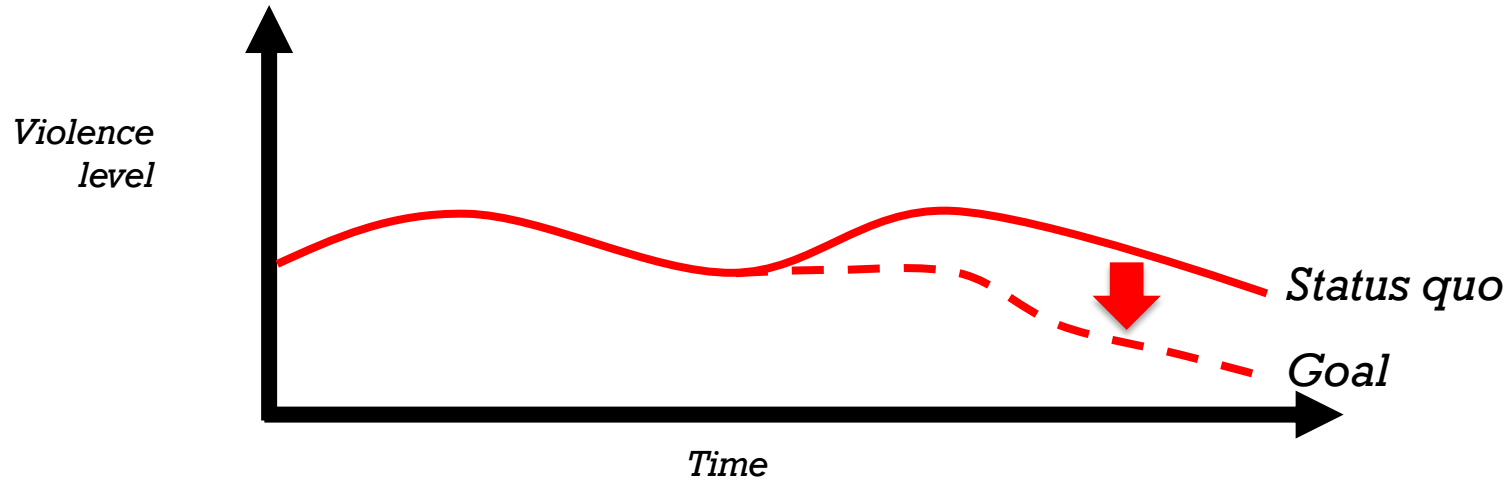
When one husband beats his wife there is a clear sense of personal violence, but when one million husbands keep one million wives in ignorance there is structural violence.

Johan Galtung (1969). Violence, peace, and peace research. *Journal of Peace Research, 6*(4), p. 171



(Redrawn from Galtung, 1969)

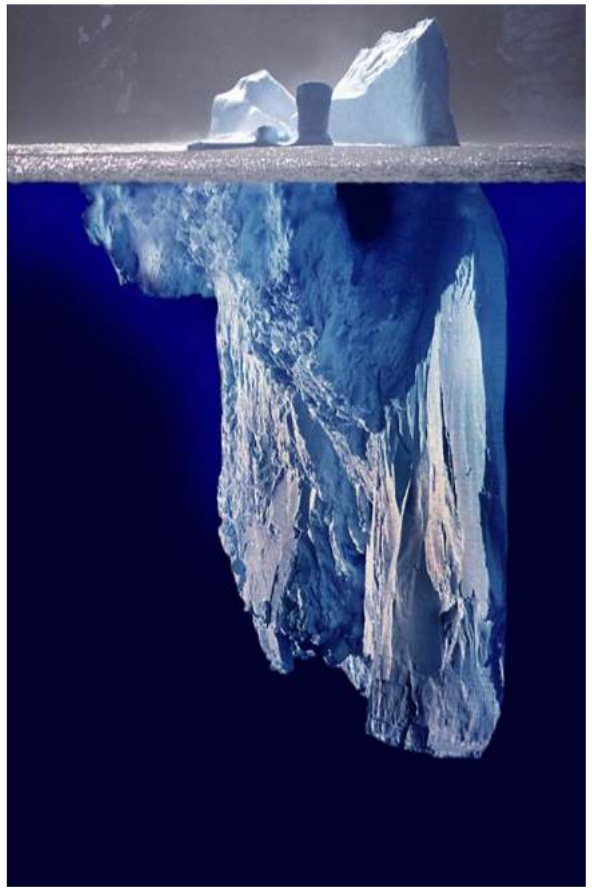
Structural violence as a *dynamic problem*



(Adapted from Galtung, 1969)

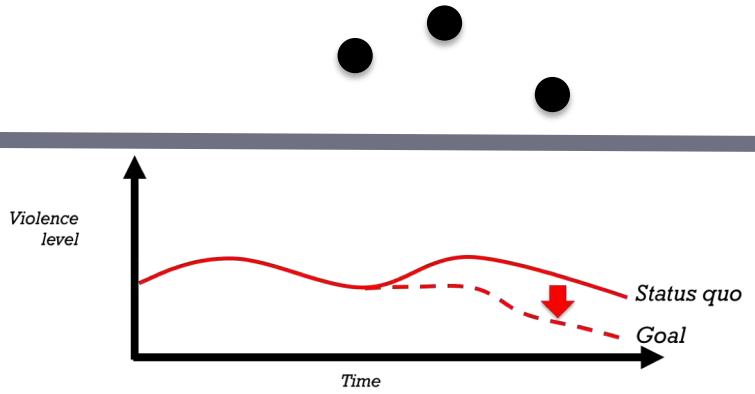
1. What ***can we*** prevent?
2. How do we do get there?
3. Is what we are doing working?

Systems thinking iceberg metaphor for structural violence

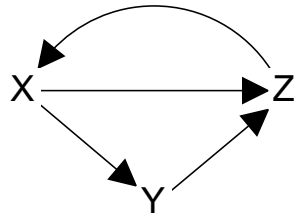


Events

Patterns over time



Structure



Values, attitudes, and norms

E.g., 'family', gender roles, culture, social needs, …

SCHOOL

AFFORDABLE HOUSING

Most severe
100

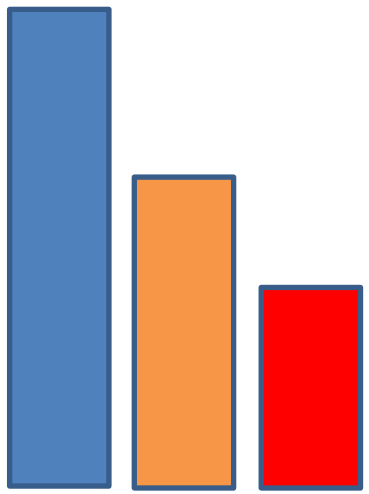
0
No need

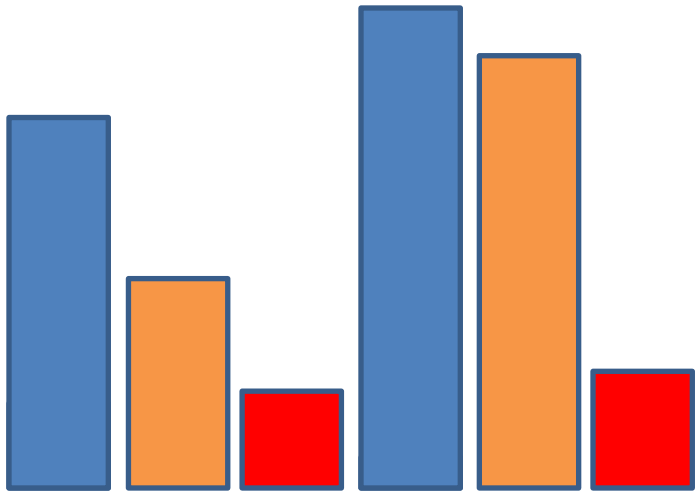
Most severe
100

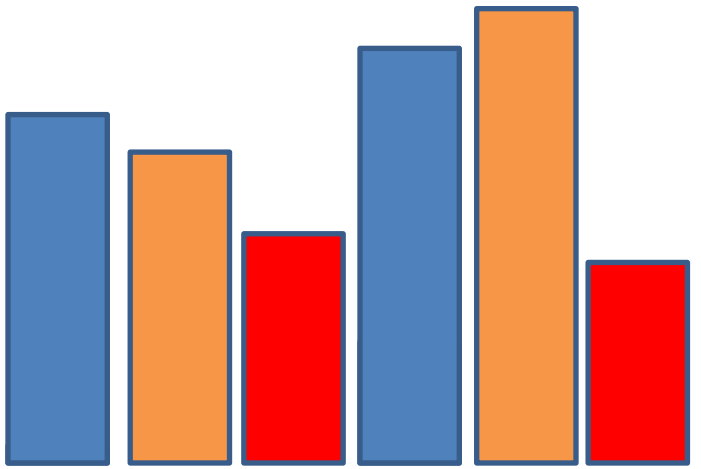
0
No need

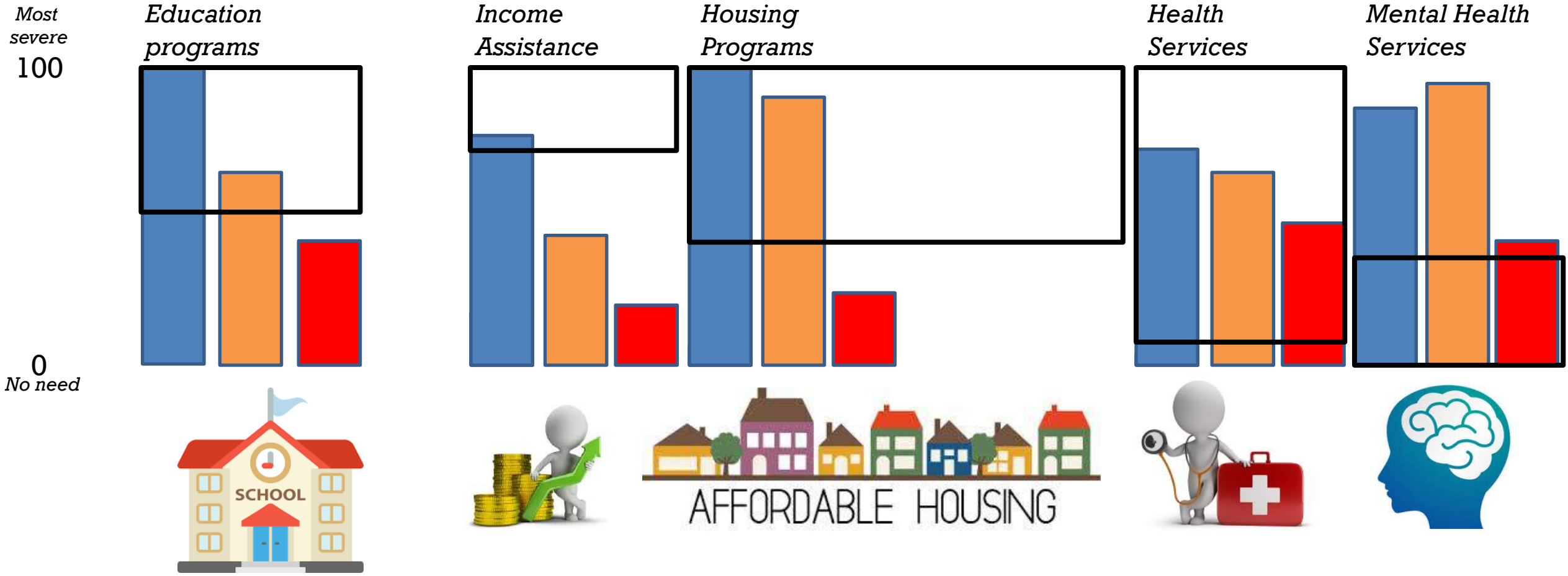
Most severe
100

0
No need

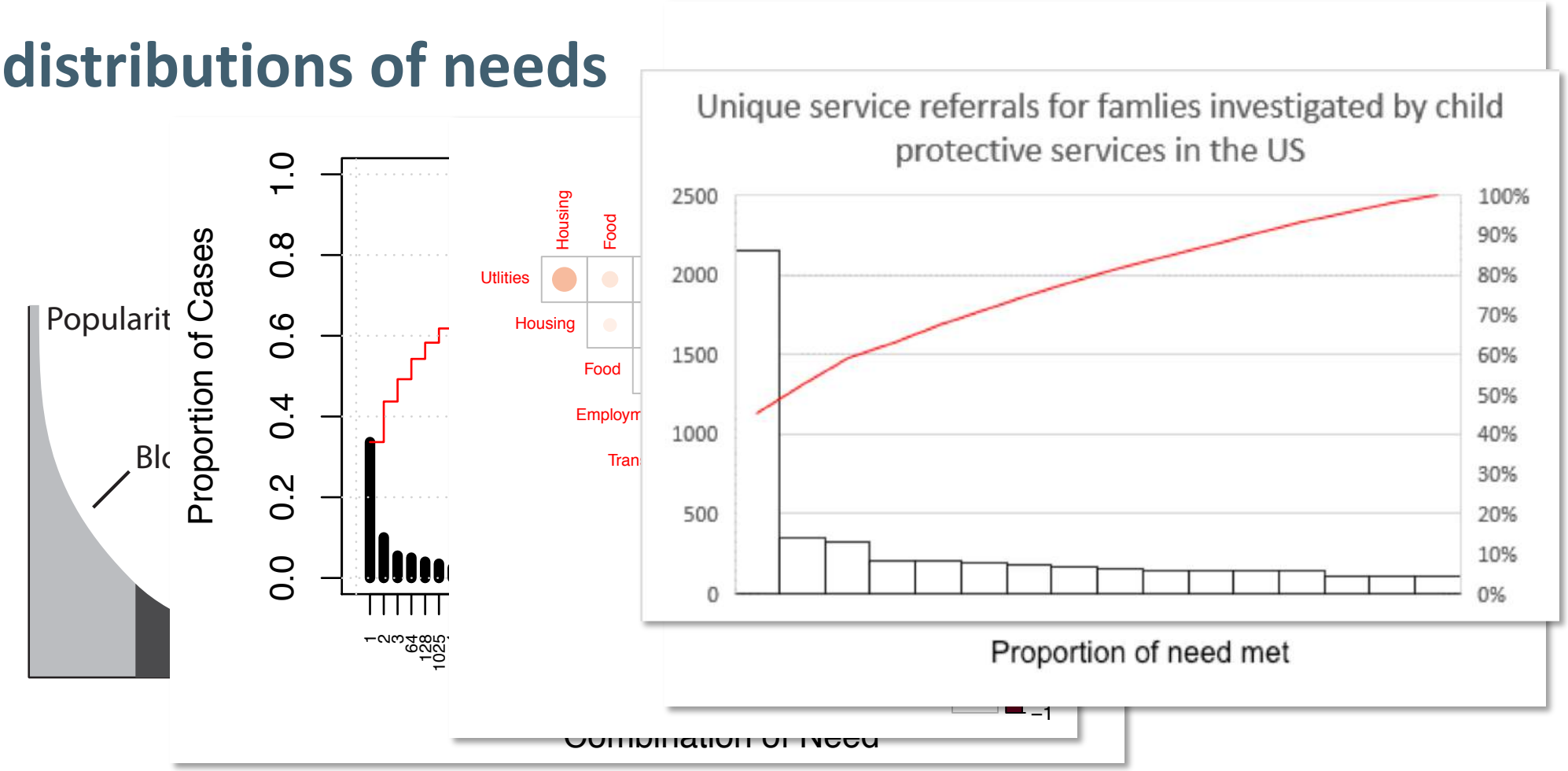




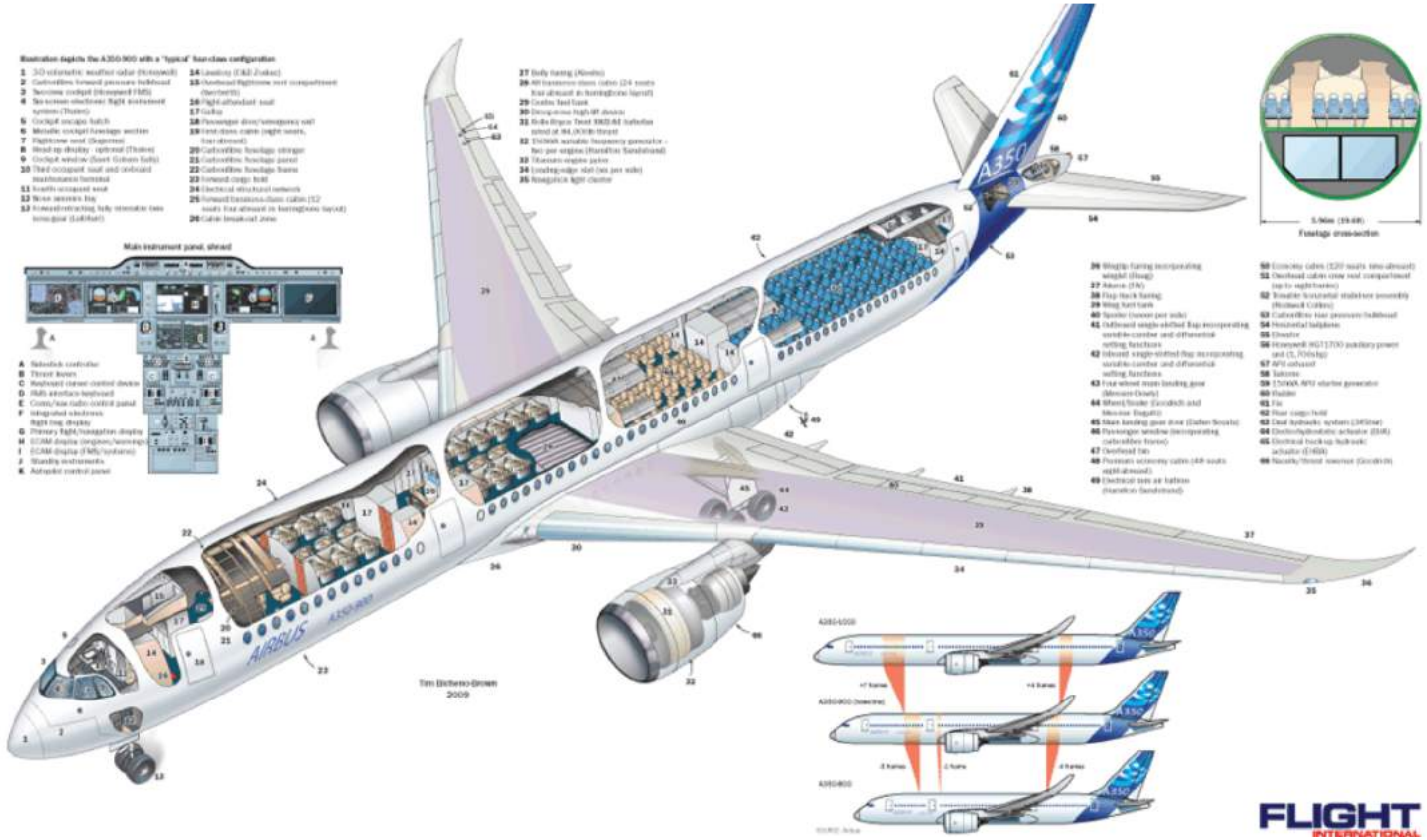



Most severe
100
0
No need
Education programs
Income Assistance
Housing Programs
Health Services
Mental Health Services
SCHOOL
AFFORDABLE HOUSING

Long-tailed distributions of needs

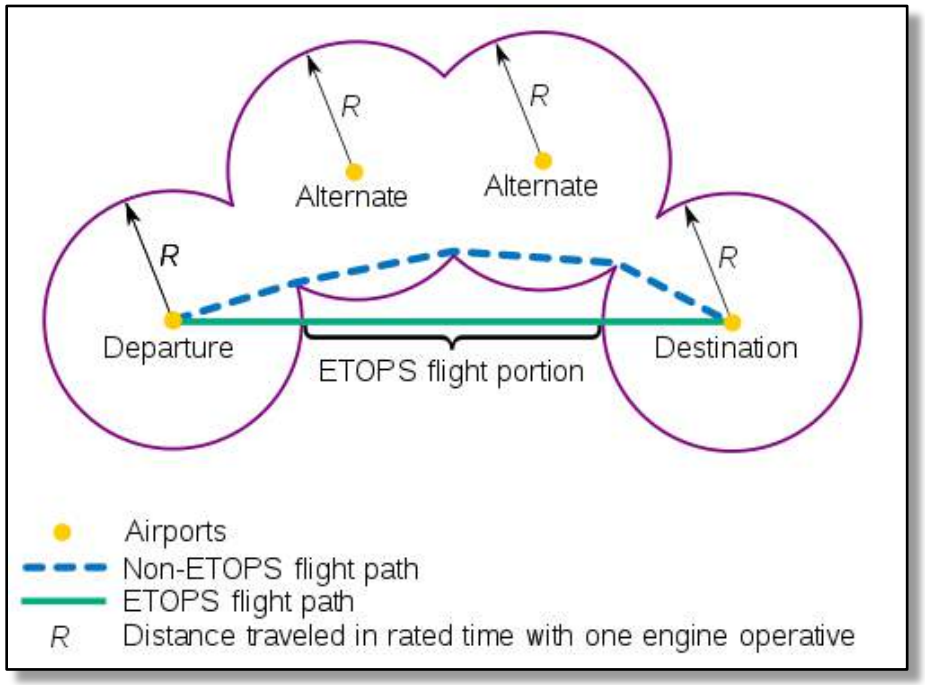


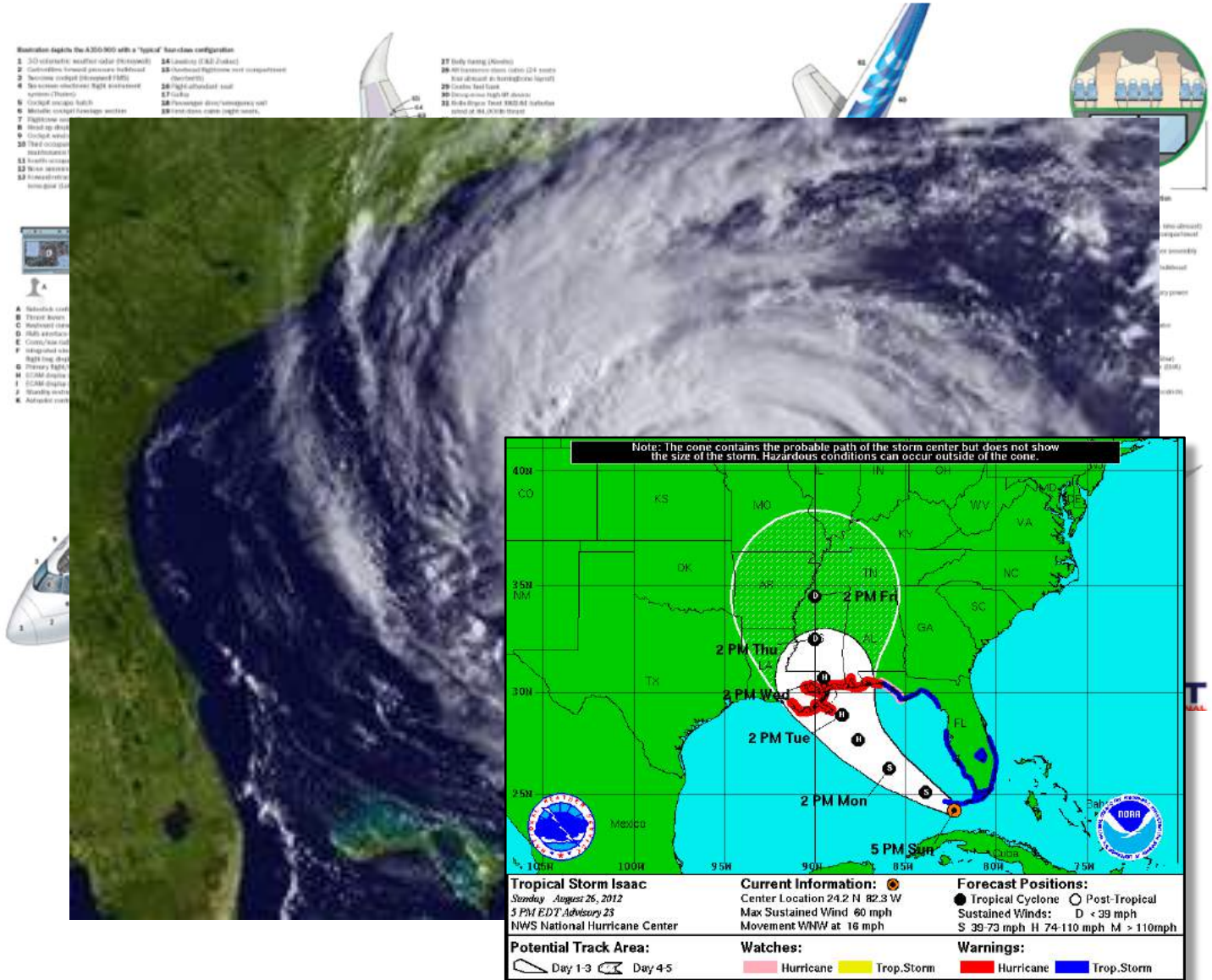
Kreuter MW, P Hovmand, DJ Pfeiffer, M Fairchild, S Rath, B Golla. 2014. The "Long Tail" and public health: new thinking for addressing health disparities. *Am J Public Health* **104**(12): 2271-2278.



Complicated = detail complexity

Boeing 787 with ~ 2.3 million parts, controllable and predictable even to the point of minimizing pilot error





Complicated = detail complexity

Boeing 787 with ~ 2.3 million parts, controllable and predictable even to the point of minimizing pilot error

Complex

Hurricane has 2.53 x 10^22 molecules of air interacting with a boundary layer of water in a set of universal differential equations

Complicated = detail complexity

Boeing 787 with ~ 2.3 million parts, controllable and predictable even to the point of minimizing pilot error

Complex

Hurricane has 2.53 x 10^22 molecules of air interacting with a boundary layer of water in a set of universal differential equations

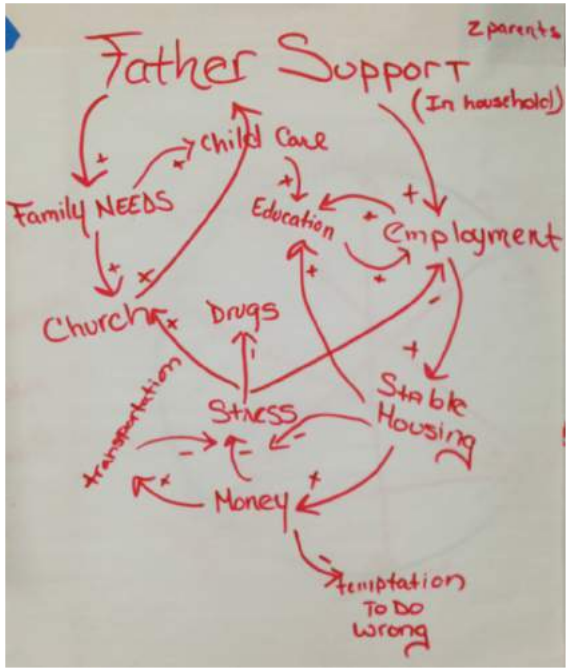
Dynamic complexity

Domestic violence involves interaction among multiple actors (e.g., abuser, victim/survivor, children, police, counselors, teachers, etc.) adapting and changing rules of social system in response to emergent behavior

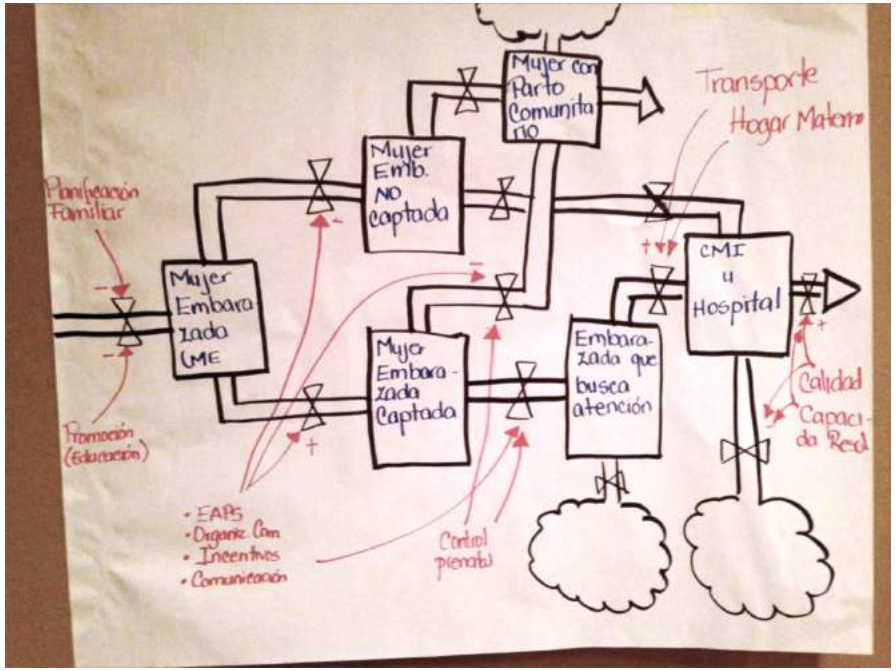
System Dynamics

System dynamics is the use of **informal maps** and formal models with computer simulation to uncover and understand endogenous sources of system behavior (Richardson, 2011)

Causal Loop Diagram



Stock and Flow Diagram



Richardson, G.P. (2011). Reflections on the foundations of system dynamics. System Dynamics Review, 27(3), 219-243.

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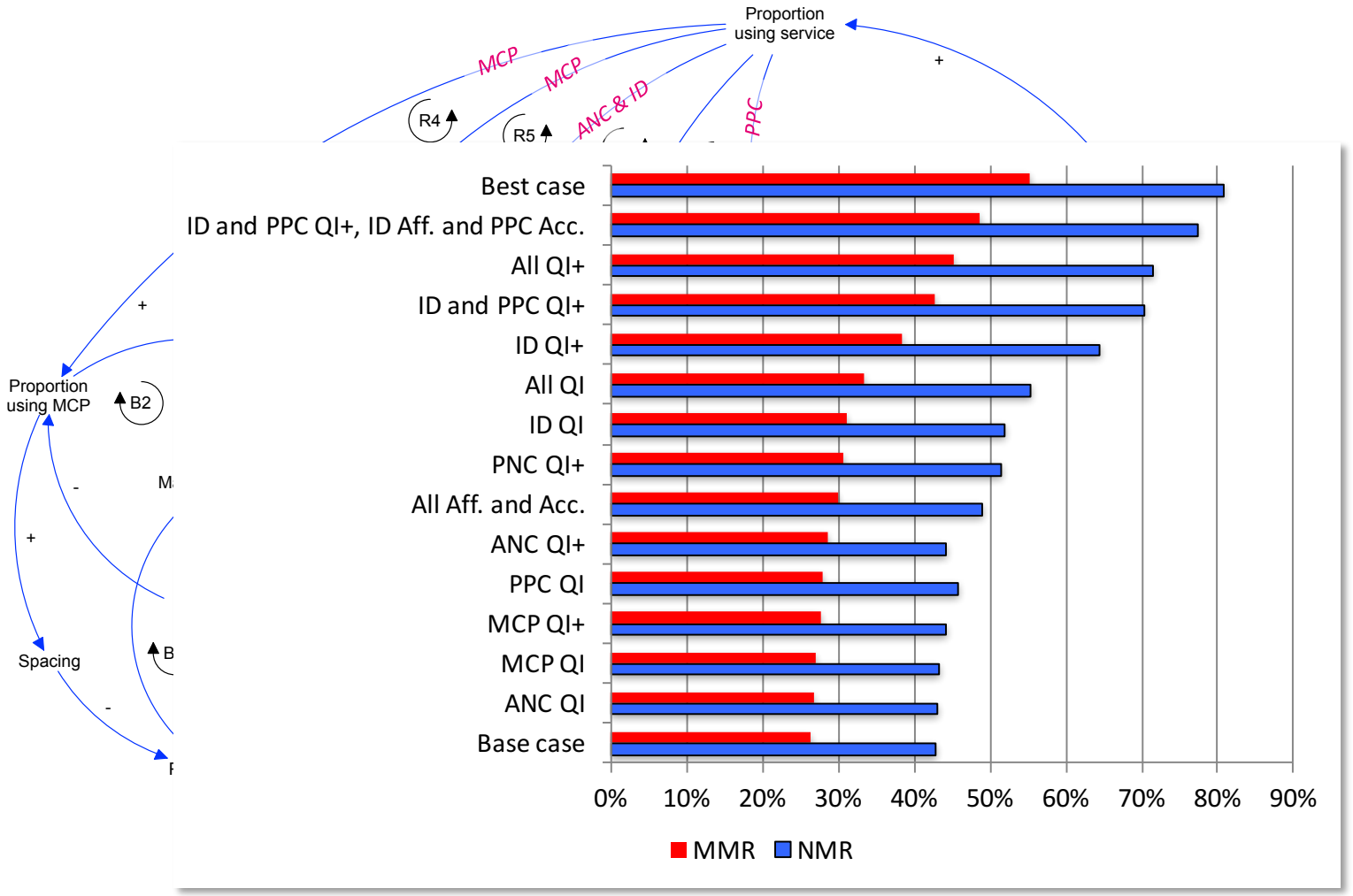

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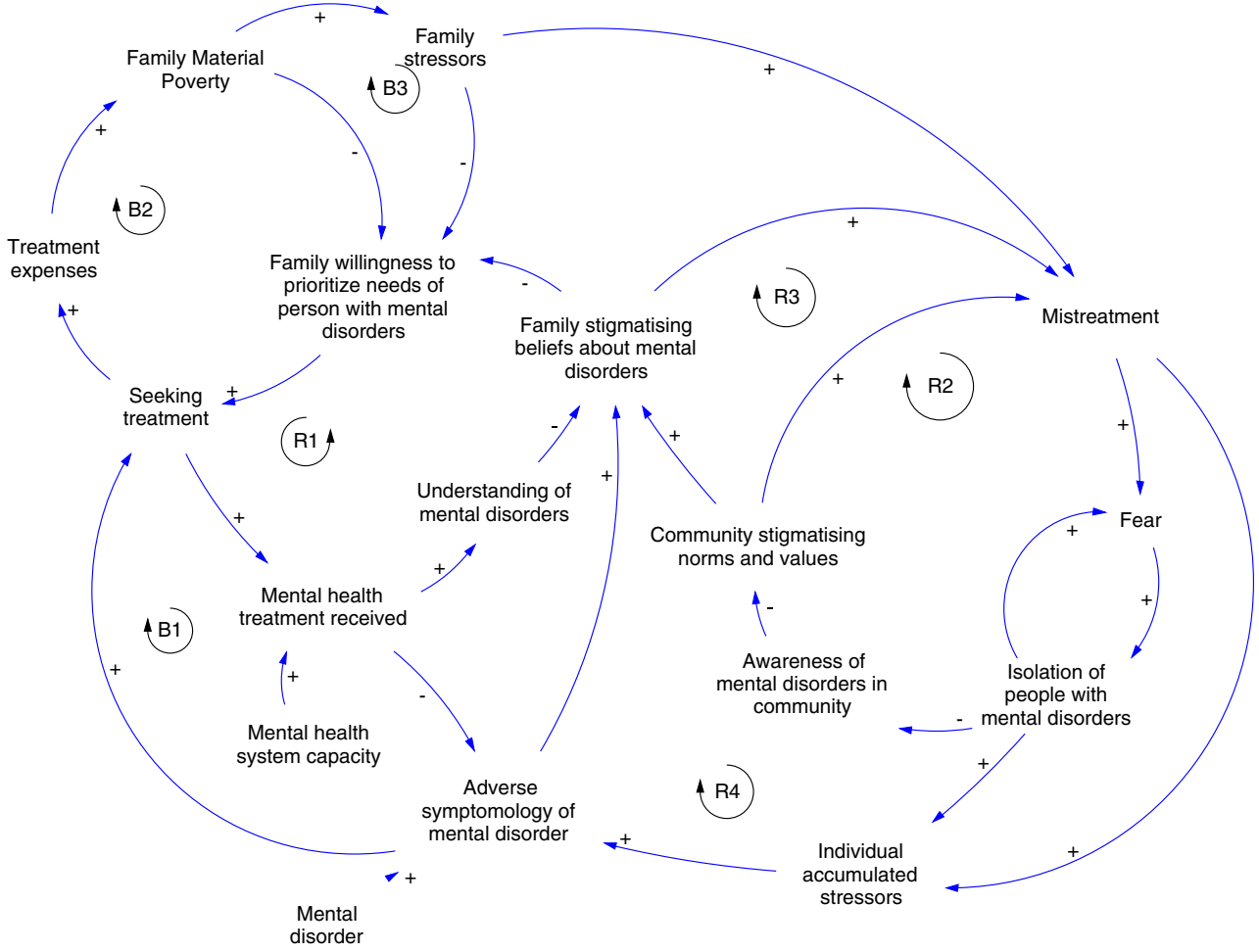
Group Model Building

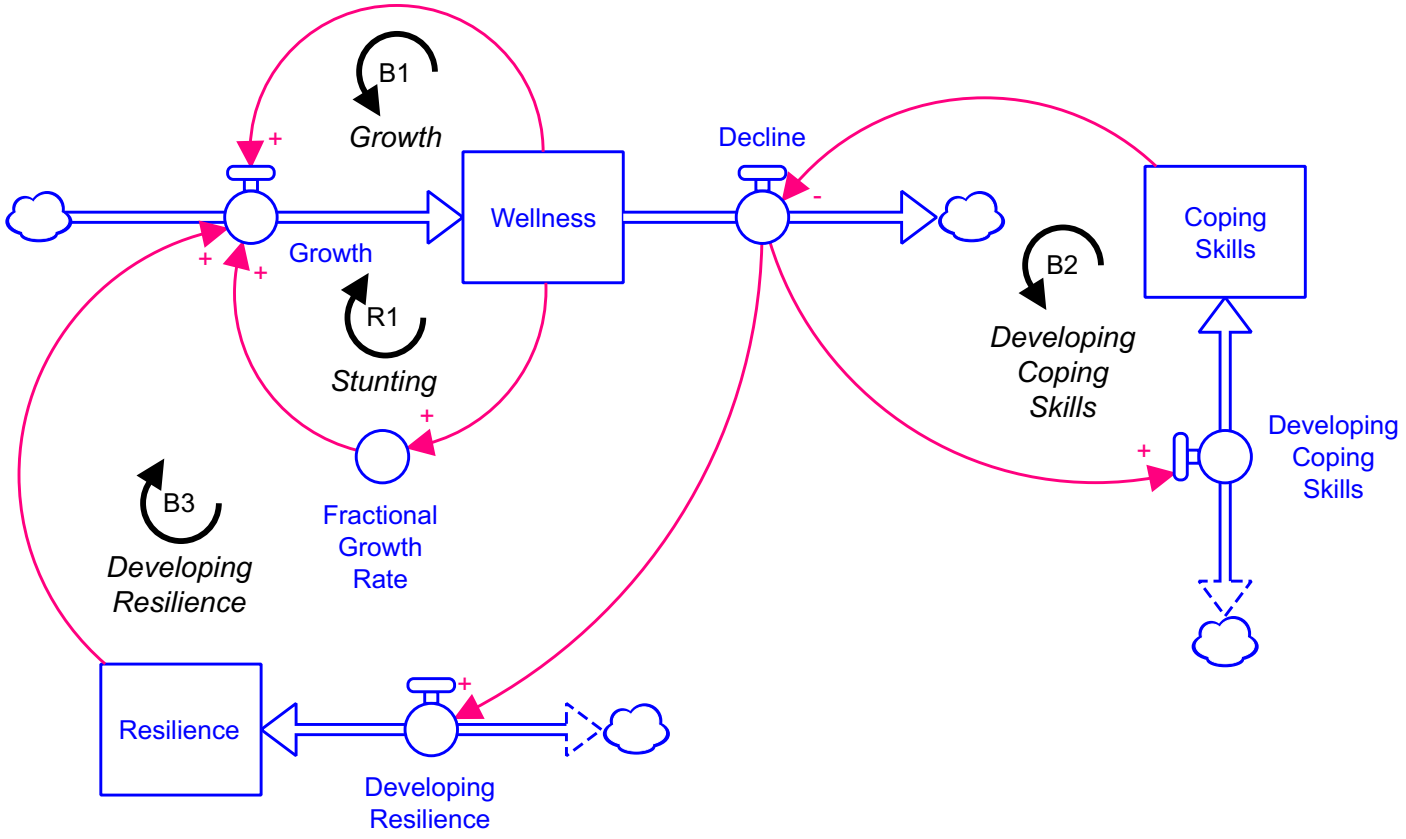
- Participatory method for engaging stakeholders in model building
- Andersen & Richardson (1995); Vennix (1996)
- Community based system dynamics
- Reason for GMB:
  - Seeing the system together
  - Sharing system insights
  - “Dignity of risk”
  - As an intervention*

Underlying generic structures



Trani J-F, E Ballard, P Bakhshi, P Hovmand. 2016. Community based system dynamic as an approach for understanding and acting on messy problems: a case study for global mental health intervention in Afghanistan. *Conflict and Health* **10**(1752-1505): 25.

Using models to understand interventions in complex environments



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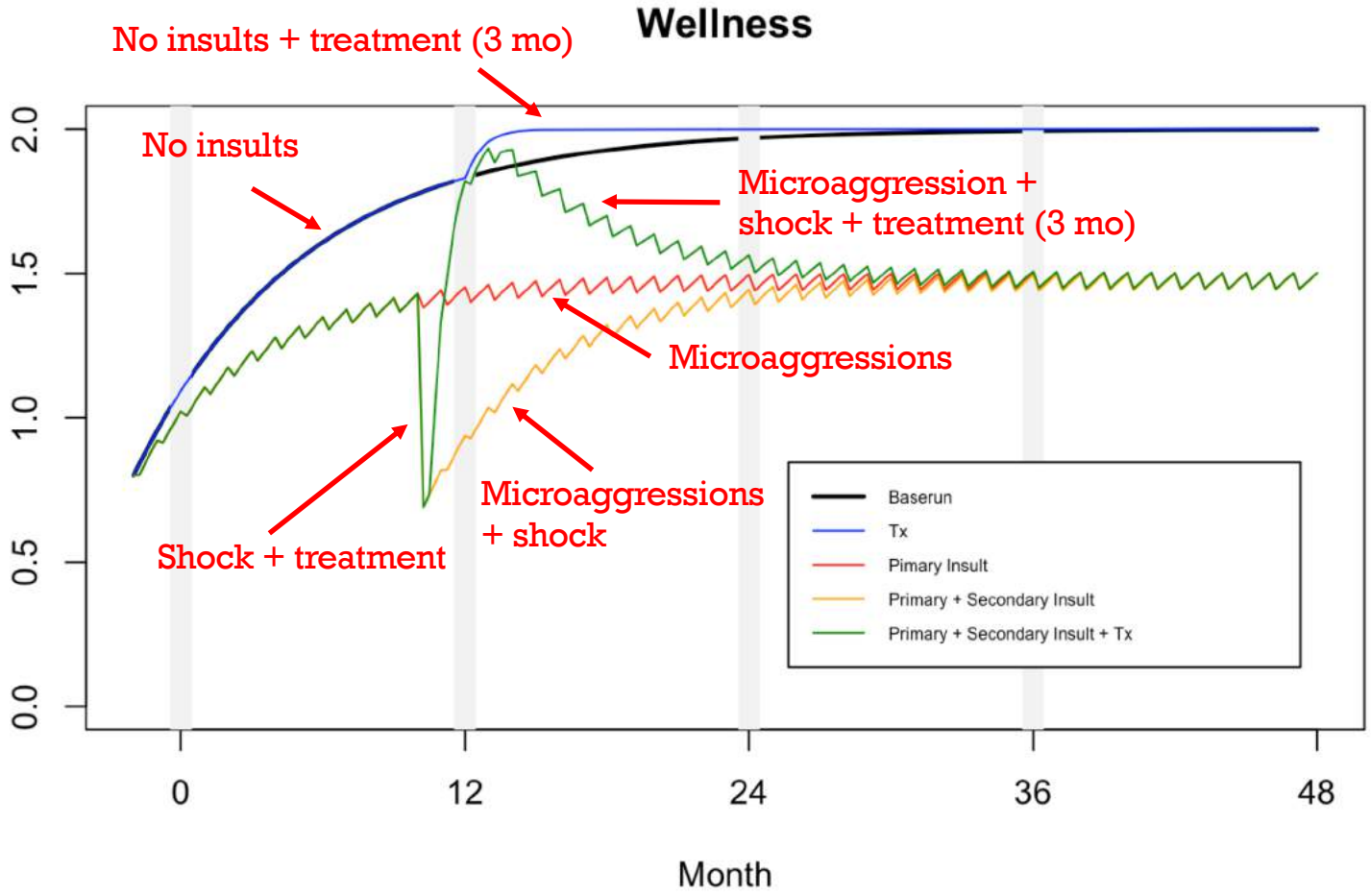
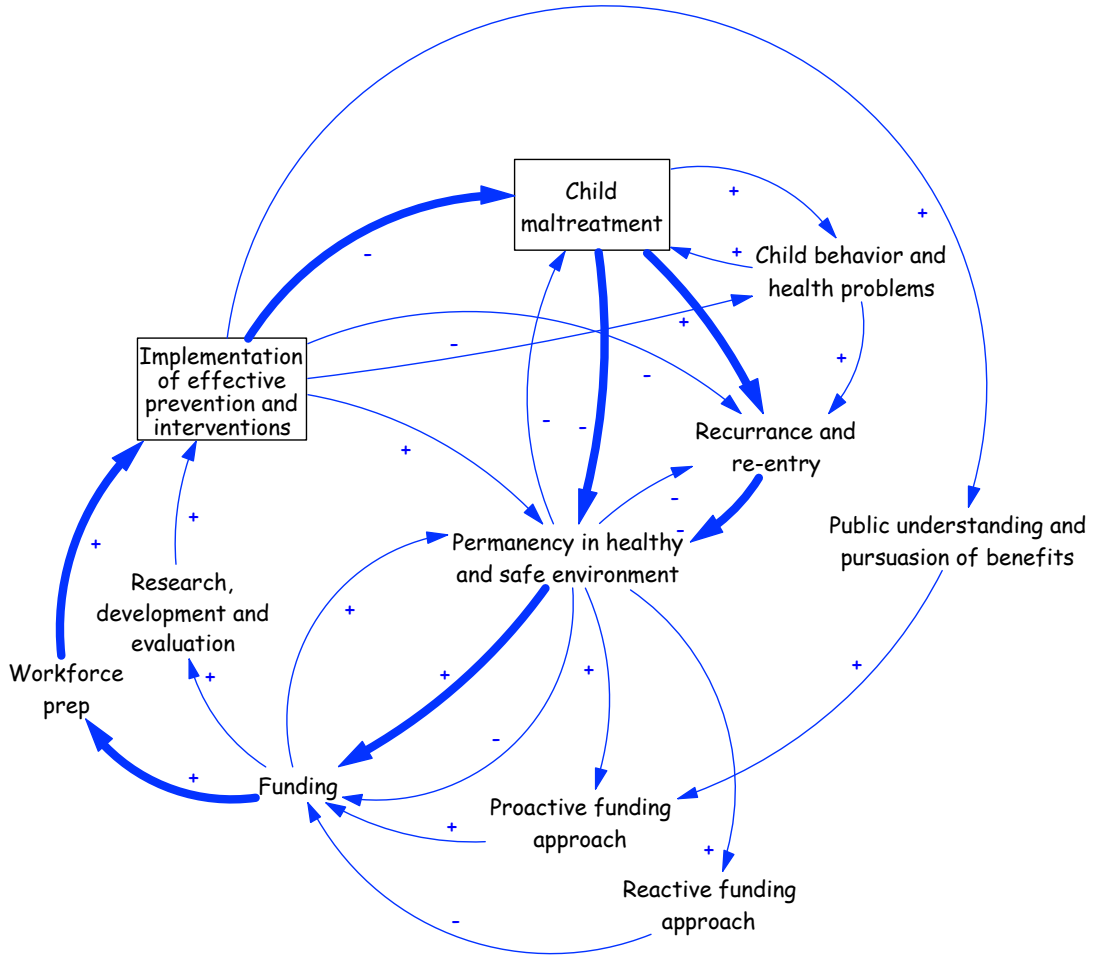


Identifying and addressing capability traps

- **Getting trapped "putting out fires" with no time for process improvement (Repenning & Sterman, 2002)**
- **Difficult to see and address in child welfare services**
- **System dynamics helps identify and coordinate multisectoral solutions**



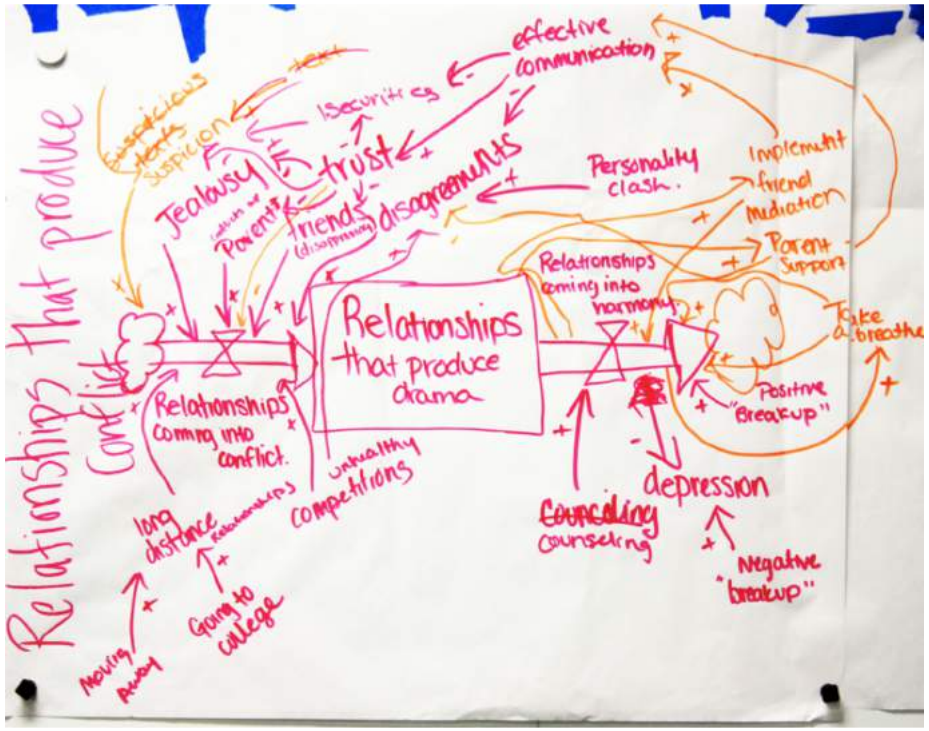
System dynamics for learning systems for prevention

Organizational learning is facilitated:

- Variety of knowledge and expanded possibilities for action
- Degree of shared comprehension and interpretation is uniform (Hodgkinson & Sparrow, 2002)

Boundary objects (Black & Andersen, 2012)

System dynamics provides unique visual language for learning systems



Closing reflections

Engaging communities is an intervention with valued tangible and intangible benefits

"Structural empathy" – having and knowing others understand the structural complexity of a situation

Identifying and **sharing knowledge**

Complexity a fact of life, having tools makes it more manageable

Believing people can learn how to model and use models

Thank you!