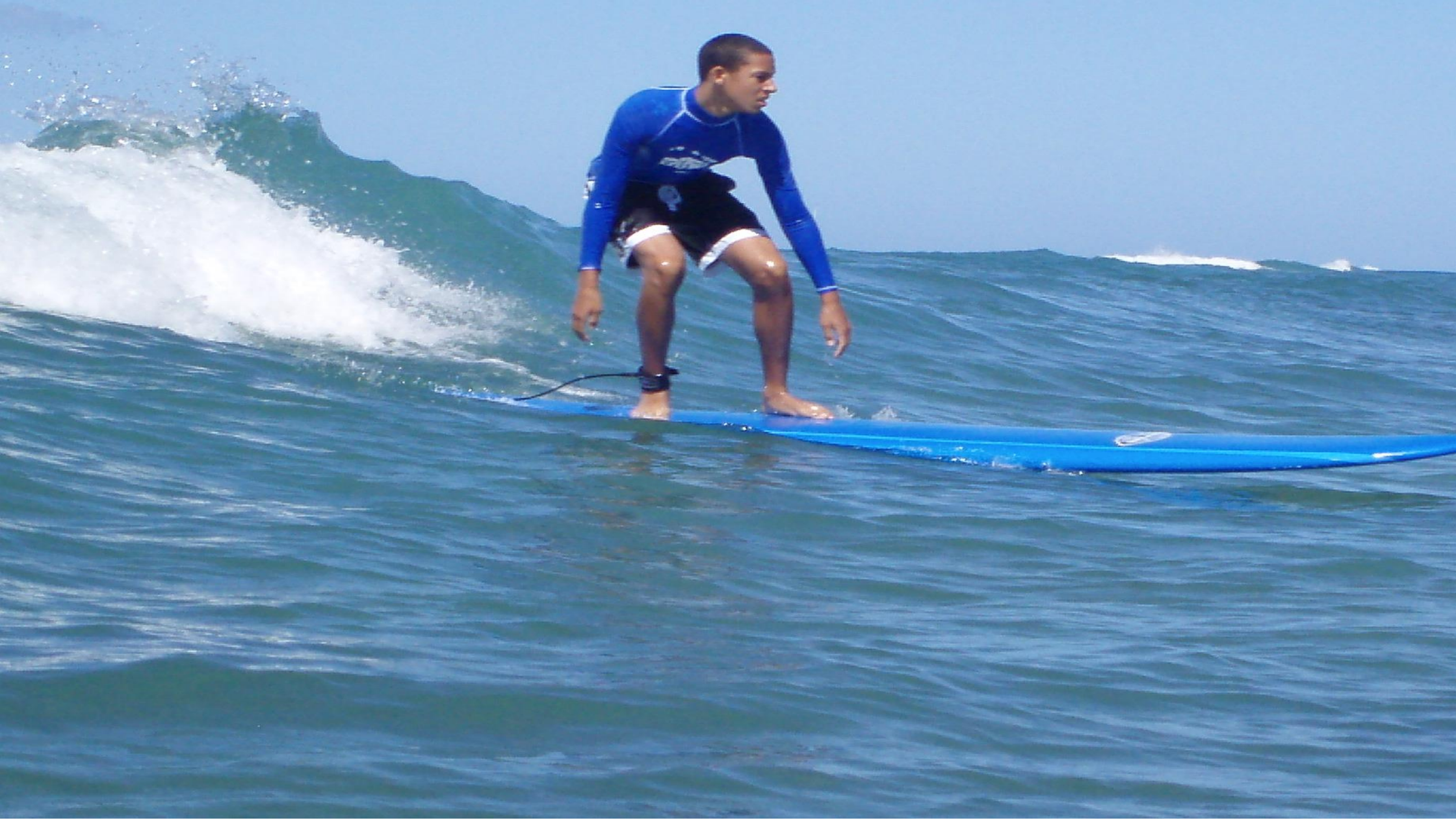


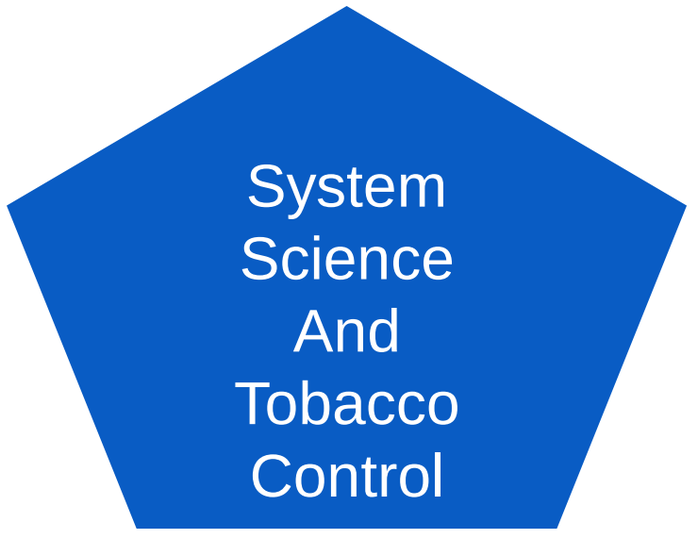
Complexity Science and Tobacco Control

Mark Clanton, MD,MPH
TReND
Tobacco Research Network on Disparities
October 26, 2010

Purpose: create models for understanding, designing,managing dynamic complexity

Dynamic Behavior is understood in terms of: Reinforcing and balancing feedback mechnism Stocks and flows

Participatory Group Model Building



Model identify reinforcing and balancing feedback mechanisms of system performance

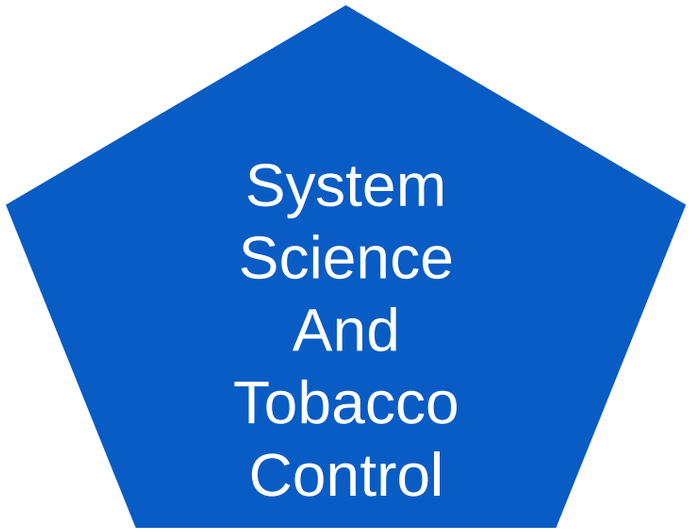
Peter Hovmand,Harnessing System Thinking for Racial Justice, transforming-race.org/archive/**HarnessingSystemsThinking**.p

Complex System
Social
Biological

Engineered

Complex Systems
Composed of multiple agents interacting over time

Complex systems may be any size or scale



Complex systems are challenged with respect to:
Control
Coordination
Resilience

Complex systems meet the challenges through decentralized networks of nonlinear interactions between individual agents

Complexity in Human, Natural, and Engineered Systems, https://complex-systems.wikidot.com/

Social-Ecology

Class And Gender

Race And Ethnicity

Genetics of nicotine receptors

Peer influence On Initiation

Parental education

Home band on tobacco

Public Policy

Receptor affinity

Receptor Polymorphism

Legislation And Tobacco Policy

System Science and Tobacco control

Biology nicotine addiction

Tobacco Marketing

Price Elasticity

POS

Nicotine Metabolism

Smoking Initiation

Public Health/ Medicine

Biology of Supertasters

Second Hand Smoking

Health disparities (Lung Cancer)

Smoking Cessation

Actions and Interventions are designed and measured based on Mental Models

Future directions for TReND Network

Model Tobacco control research and interventions based on applications of complexity science