Diffusion of Innovations: Implications for Practice

James W. Dearing
Kaiser Permanente
CRISP, University of Colorado
October 15, 2012
Today

• Definitions, historical roots
• Key diffusion concepts
  – The normal distribution of innovativeness
  – The cumulative curve question
  – Who constitutes the critical mass?
• 3 factors
• Design considerations
What is diffusion?

Diffusion is a process by which innovations are communicated through certain channels over time among the members of a social system.

Dissemination? Implementation?

The diffusion process can be visualized as an S-shaped curve.
Classic diffusion model

- Early Adopters
- Diffusion
- Later Adopters
What’s required to graph a diffusion curve?

- Clarity about the innovation
- Clarity about the unit of adoption
- Clarity about social system parameters
- Time of adoption for each unit
History

• Georg Simmel, *Conflict and the Web of Group Affiliations* (1892)
  – Normative effects; boundedness; led to concepts of the looking glass self, reference groups

• Gabriel Tarde, *The Laws of Imitation* (1903)
  – Nonrational adoption; nonlinear spread, conversation as key between the micro & macro

• Clark Wissler, *Man and Culture* (1923)
  – “age-area” analysis; led to tracer studies; focus on adjustive responses to contact; skepticism about whether form & function travel together
Setting the research paradigm


• The ISU Department of Rural Sociology and the Cooperative Extension Service

• The arrival of Everett M. Rogers
What were the key elements?

• An innovation (its attributes)
• A social system (its structure)
• Time
• Perceptions, norms
• Channels
• Conversation
• Information, influence
• Context
The macro view

Percent of population in each adoption phase

- Innovators: 2.5%
- Early Adopters: 13.5%
- Early Majority: 34%
- Late Majority: 34%
- Laggards: 16%

The micro view

- According to Rogers, all individuals or decision-making units go through the Innovation-Decision Process. **Early Adopters tend to have shorter Innovation-Decision processes** than early and late majorities and laggards. But all adopters must go through the process.

- Rogers' definition: Change Agents tend to be more senior individuals and have a broader view of how the innovation will be beneficial to the individuals and/or decision-making units. They are the first to see the need for change and innovations and have the formal authority to initiate innovation activities.

- Roger's definition: Opinion Leaders can be senior-level individuals as well but this is not a necessary characteristic. Opinion Leaders can be found at all levels of the organization. Opinion Leaders are the key influencers within the Diffusion Network. It is the Opinion Leaders who move the adoption curve into an inflection and beyond. They are the “S-Curve Accelerators”.

- All Opinion Leaders are generally Early Adopters. **Not all Early Adopters are Opinion Leaders.**

Three factors drive diffusion

1. Innovation attributes (what potential adopters think about the innovation)
2. Social influence (what potential adopters think others think about the innovation)
3. Timing and framing of the introduction

Factor 1. Innovation attributes
What potential adopters think about the innovation

- Perceived pros and cons
  - Cost
  - Simplicity
  - Compatibility
  - Evidence
  - Trialability
  - Observability

Evidence is just the beginning

- Standards of assessing evidence vary
- Other attributes typically matter more
- Those who attend to evidence are important…but the vast majority of adopters don’t attend much to evidence of effect
Factor 2. Social Influence

What potential adopters think *others* think about the innovation

- Potential adopters:
  - are interconnected
  - attend to common information sources
  - obey normative beliefs, practices and expectations
  - enjoy a stability in relational structure
The formal leader is not always the informal opinion leader

“At your school, whose advice do you most value for new ideas or better ways of doing things in the curriculum related to health education?”

School nurse: centrality = 0.596; 28 links
Principal: centrality = 0.085; 4 links
Response rate 90%; N=54 individuals; thicker lines mean more frequent general communication
Cancer care advice network in an inter-organizational system

General surgery, Oncology, OBGYN, Radiology, Radiation therapy, Palliative care;
435 nodes, 544 links
A typical KP Colorado employee’s 2-step network neighborhood
A KP Colorado bridging individual’s 2-step network neighborhood
Factor 3. Timing and framing

• When *timing* the introduction, consider:
  …organizational climate for change
  …other competing organizational changes
  …extra-organizational issues
  …availability of credible authorities

• When *framing* the introduction, consider:
  …prevalence of positive/negative messages in the mediated environment
  …objectives of key organizations
Can these 3 factors be affected? Yes

- Attribute research by marketing scientists
- Social influence research by health services researchers
- Readiness assessments of key stakeholders, media environments, policy priorities by community psychologists

Can diffusion intervention speed the adoption of innovations?

- Yes; generally efficacious
- The recruitment appeal should be normative
- Ask them to apply their judgment
- Ask them to communicate as they normally do
- Personal evaluation must be positive
- Contextual opportunity should exist

Accelerated diffusion

Classic Diffusion Model

Model for Accelerated Diffusion
Designing for diffusion

• Formative evaluation is the key
  – About perceived attributes, influence, framing and timing of innovation introductions

• For “bundles” of evidence-based programs & practices
  – To enhance adopter/user choice of innovation, and of options for personalization
Lastly, a “pull” orientation is more likely to stimulate diffusion than are “push” activities that normally comprise dissemination.

- Market demand is the objective
- Formative evaluation is the means
- Designing for diffusion is social science-informed marketing research
Bridging the Research - Practice Gap

**GOAL:** To increase the adoption, reach and impact of evidence-based cancer prevention and care

- **Science Push:** Documenting, Improving, and Communicating the Intervention for Wide Population use
- **Delivery Capacity:** Building the Capacity of Relevant Systems to Deliver the Intervention
- **Market Pull/Demand:** Building a Market and Demand for the Intervention

Increase the number of systems providing evidence-based cancer prevention & care
Increase the number of practitioners providing evidence-based cancer prevention & care
Increase the number of individuals receiving evidence-based cancer prevention & care

**Ultimate Goal:**
Improve Population Health and Patient Well Being
Contact

james.w.dearing@kp.org

www.crn-ccrc.org
www.research-practice.org