A Risk Perception of Study of Attitudes Toward Homeland Security Systems

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Terrorism event creates demand for increased security

Event:
Terrorist Attack

Characteristics:
Uncontrollable
Shock
Fear

Signal:

Media Portrayal

Public Response

Interpretation and Response:

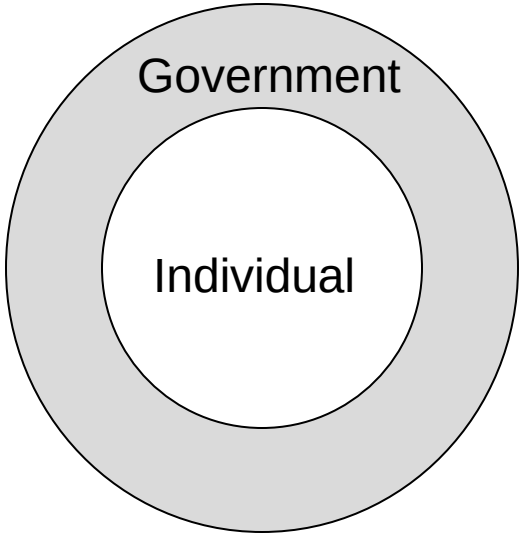
Develop new security systems

Type of Impact:

Demand for info

Public concern

Trust



Spread of Impact

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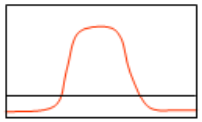
Examples of Security Systems

Primary signal

Threshold Processor



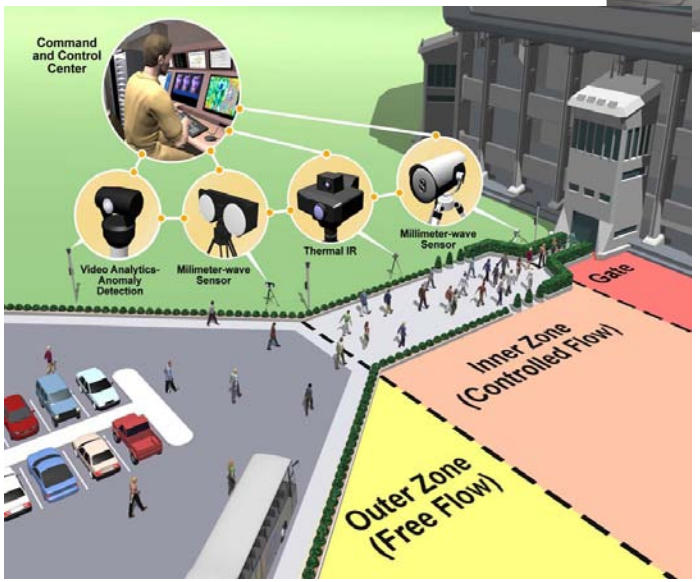
Alarm status all-or-none

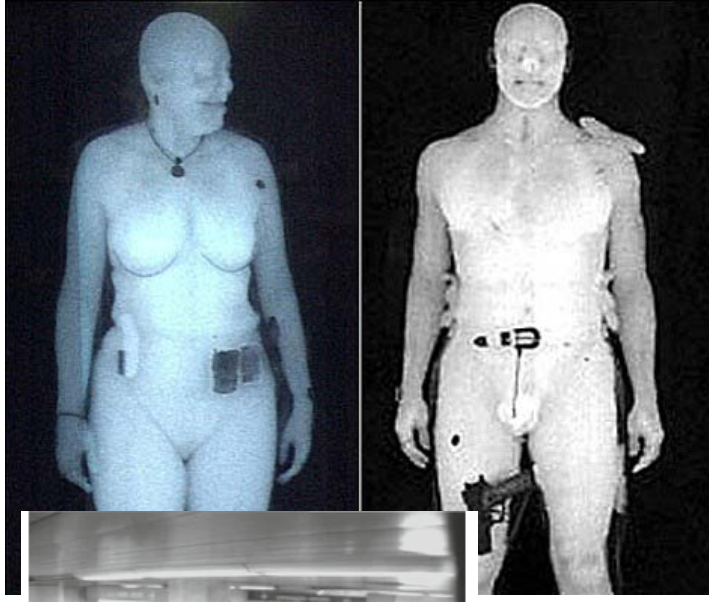
Secondary Scan

Confirm

Inspect

Resolve & Discharge





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Homeland security systems and information privacy - Issues

- People are *subjects* of security systems.
- Increasing concern over information privacy
- Several proposed government systems have stumbled on issue of privacy
  - Terrorism Information Awareness (TIA)
  - Computer Aided Passenger Profiling (II)
  - Secure Flight
- Potential Client Needs:
  - Data mining methods that preserve information privacy
  - Methods for understanding and predicting public acceptance
- Need to consider likelihood of terrorism events in relationship to security system utility and implementation costs

What do we really know about attitudes toward privacy and security?

- Very few empirical studies
- Privacy concerns decrease immediately following a terror event, and increase with passage of time
- Survey studies show there are privacy “concerns” but are not granular enough to understand the specifics
- Security technologies can be considered “risky” in terms of privacy and thus amenable to empirical analysis by risk perception methods

Social science and technology study of information privacy

- Legal review
  - EO 12333, Privacy Act, Foreign Intelligence Surveilllance Act, etc.
- Policy analysis
  - Privacy policies, Privacy offices and impact assessments, domain-specific privacy policies
- Technology analysis
  - Privacy preserving data mining techniques, data perturbation, pseudonymization
- Survey of attitudes
  - Homeland security technologies X rating dimensions

Survey methods

- Adopted risk perception framework:
  - what are the privacy risks and perceived benefits of homeland security technologies?
- Psychometric survey: 182 subjects, 12 security systems X 14 rating attributes, 7 point Likert scale
- Subjects recruited from PNNL (78) and University of Washington (104 undergrads)
- Rating scales developed from content analysis of privacy risk reports and security performance attributes
- Data reduced by factor analysis and evaluated with analysis of variance

Psychometric Survey Elements

- Systems
  - Airport Screening
  - Canine detectors
  - Surveillance cameras
  - Data mining
  - Radio frequency passport
  - Email & internet monitoring
  - GPS location tracking
  - Travel tracking
  - Trusted traveler
  - National ID card
  - Citizen observers
- Rating attributes
  - Transparency
  - Control
  - Personal benefit
  - National security
  - Accuracy
  - Equitable
  - Validity
  - Risk of disclosure
  - Risk of false ID as threat
  - Risk of financial loss
  - Risk of embarrassment
  - Intrusiveness
  - Civil liberties infringement
  - Acceptable

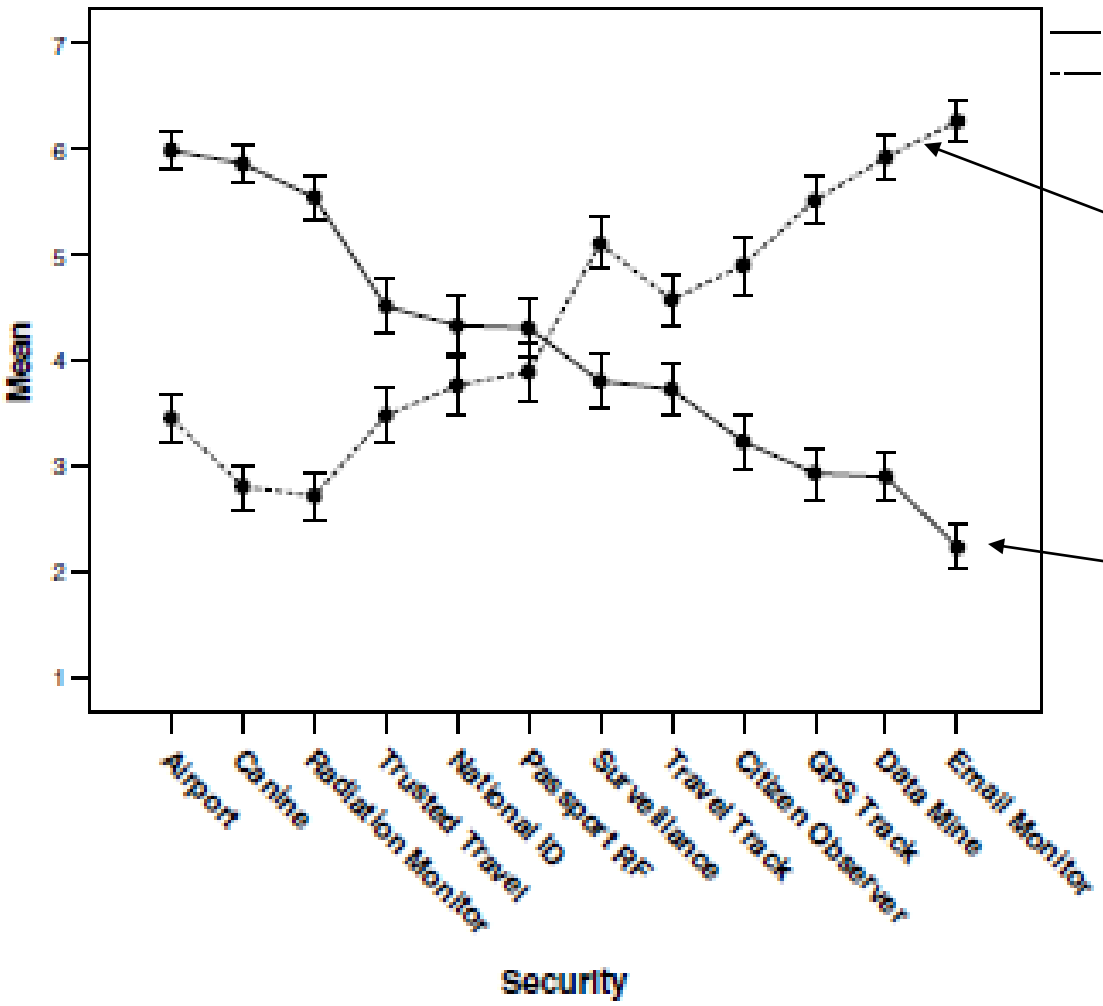
Survey item format

Please rate the following security approaches according to whether you perceive an improvement in **national security** that results from their application.

Definition of **National Security** – The extent to which there is reduced risk of terrorists carrying out attacks within the United States.

Airport passenger and baggage screening

Rating results



Civil Liberty Infringe

Acceptable

Factor Loadings

	Perceived Effectiveness	Perceived Intrusiveness
NatSec	**0.826**	−0.097
Valid	**0.814**	−0.226
PersBenefit	**0.764**	−0.237
Accuracy	**0.754**	−0.226
Acceptable	**0.682**	**−0.507**
Equitable	**0.580**	−0.320
Transparency	**0.513**	−0.188
Control	**0.454**	0.004
Embarrass	0.002	**0.774**
FinanceLoss	−0.122	**0.691**
Intrusive	−0.197	**0.783**
Disclose	−0.267	**0.665**
FalseID	−0.297	**0.651**
CivilLibInf	−0.300	**0.810**

Some interesting patterns

- In general student and professional respondents showed very similar patterns
- Students tend to rate some security systems as more useful than professionals (e.g., airport, surveillance & citizen observer)
- The least acceptable security processes are widely applied (e.g., data mining and email screening)
- Distinction between systems where subjects have knowledge of being screened, versus “invisible” application
- Systems rated as highly acceptable and effective (e.g., airport security, radiation screening) do not perform objectively as public perceives

What does psychology add to public acceptance of security technology?

- Concepts for understanding public perception: risk perception framework
- Methods for quickly measuring and predicting public acceptance
- Quantitative approaches to isolating important elements contributing to public acceptance
- Potential for addressing public concerns
  - Assess early
  - Anticipate likely reactions to planned security systems

Next steps

- Evaluate trust issue: does it matter who is administering security technology (or is it more important WHEN?)
- Assist in addressing public concern by understanding likely reactions to anticipated security systems
  - Advanced imaging technologies
  - Explosive detection
  - Surveillance imagery

Risk Analysis, 2008, 28(4): 1125 - 1133

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Lessons for raising looming threats to the fore....(such as climate change)

- Signal events – e.g., weather extremes, flooding, crop failures, migrations, droughts, glacial melts….
- Currently not portrayed by governments or media as existential threat (no dread risk….)
- Core problem of consumption addressed only indirectly by cap/trade policies
- Energy consumption has benefits (comfort and convenience) and risks (climate change)
- Attitudes and information about climate change risks do not translate to substantial and enduring behavior change

The New York Times

Climate Change Seen as Threat to U.S. Security

August 9, 2009

Thank You

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