

# Nudge theory and health risk control measures after the Fukushima disaster

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# Nudge and a “better” choice

## ◆ “Nudge”

By **carefully conveying messages** or **designing a default setting**, one is able to “nudge” others without forcing them to make certain **better choices**.

Nudge theory has its knowledge base in behavioral science. The main idea behind is that **there are no neutral designs** in the world.

◆ In the beginning episode one winter weekend Consumers have **complete freedom** of what to purchase, while the display **influences** their behavior. So...what is a **better** choice?

# Nudge and policies

In US, nudge theory attracts attention in the form of libertarian paternalism, which goes beyond any partnership of Democratic or Republican. This is used in economic policies and public health policies.

## Incarcerated parents

Nudge: Reference peers

Message: “Other parents have had courts lower their child support by \$200 to \$500 per month.”

Result: +11% in applications

## Families in need of welfare

Nudge: Emphasize losses

Message: “By not attending your appointment, you may: LOSE up to \$2508 a year in cash benefits.”

Result: +3.6% in attendance

# Today's topics

I overview examples of nudges after the Fukushima disaster.

(1) Risk communication with individuals or multiple people

(2) Default design of risk control measure systems  
Examples: whole body counter (WBC) test

# How conveying risk nudges individuals

- ◆ Survival rate 90% vs Mortality rate 10%
- ◆ No effect 99.9% vs Cancer risk 0.1%
- ◆ Media coverage
  - WBC test:  
94% was not detected vs 6% was detected
  - Radiation risk on diet:  
Lower than natural radionuclides vs Higher than benzene

# How providers should convey risk

- ◆ Providers' choices of how to convey risk can nudge people to encourage or to increase anxiety.
- ◆ Anxiety could be useful in dealing with risk but lead to other major risk (risk trade-off) and mental stresses.
- ◆ Providers may try to be neutral, but should understand how to convey risk can nudge people.
- ◆ Misuse of nudge (e.g. increase of risk by nudging) is not justified.

# How a system's default design nudges public

- ◆ Organ donor and mark a section on driver's licenses  
When they are willing to be vs Do not wish to be  
⇒ 12% (Germany) vs 99% (Austria)
- ◆ Federal program in US, Medicare Part D  
Selection following usage history vs Random selection  
⇒ 700 dollars/year differences
- ◆ WBC test  
Applicants can participate vs applicants can reject  
⇒ Participation ratio 15% vs 98%

# Examples: WBC tests

- ◆ WBC test works to identify high-risk subjects as a screening. ⇔ Detection ratio: 0.8% in 2013-2015.
- ◆ Some needs WBC to confirm dose levels. Parents expect an educational effect about radiation on children.
- ◆ Others immediately stopped eating their favorite foods.
- ◆ Participation ratio: 98% of children and 15% of adults.



# Examples: WBC tests

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## Benefits

Identification of high risk residents

Opportunities for risk communication and education

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## Harms and disadvantages

Possible change of lifestyles

Costs

- ◆ Children are expected by default to be assessed (involuntary), while for adults, those who wish can be tested (voluntary).
- ◆ Voluntary participation has selection biases due to risk perception and accessibility. An epidemiological approach based on the presence of biases has been implemented to project the whole population.

# Preferable default settings in systems

- ◆ Default setting should be designed according to the **balance between public benefits and harms/disadvantages**.
- ◆ When public benefit outweighs harm, participation should be set as the default, allowing applicants to reject being involved.
- ◆ Residents have **rights** and **complete freedom** to have medical services after a disaster in an either system.

# How authorities design a system's default

- ◆ Authorities' choices of how to set default in systems can nudge people to participate or not to participate.
- ◆ In case that participation in inspections related to risks has both benefit and harms, authorities' default setting is a key factor for overall public benefit and harms.
- ◆ Authorities should consider possible impacts as well as fairness, and carefully design the default of system.

# Take-home messages

- ◆ Providers should understand how to convey risk can nudge people. Misuse of nudge (e.g. increase of risk by nudging) is not justified.
- ◆ Authorities should carefully design the default of system. Default setting should be designed according to the balance between public benefits and harms.