NUDGING TO REDUCE FOOD WASTE

OUTLINE

1. GENERAL CONSIDERATION
2. NUDGE AND LIBERTARIAN PATERNALISM
3. THE RESEARCH PAPER
   - INTRODUCTION
   - DESIGN
   - RESULT
   - DISCUSSION
4. NUDGE IT!

- Presentation of a paper by Kallbekken and Sælen

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Role of experiments (repetition)

I. Test of the theory
Compare observed choices with theoretical prediction

..."Whispering in the ears of princes“ (Roth, 1995)
Wind tunnels for new policy measures, institutions

Validity and experimental design (rep.)

I. - need for high internal validity
   - Laboratory Experiments
     → Low external validity

IV. - need for high external validity
   - Field Experiments
     → Lower internal validity
Libertarian Paternalism (rep.)

Design policies or “choice architectures” such that...
- biased decision makers avoid making mistakes...
- while at the same time decisions of perfectly rational people are not distorted

Nudges

... are ways of influencing choice without limiting the choice set or making alternatives appreciably more costly in terms of time, trouble, social sanctions, and so forth. They are called for because of flaws in individual decision-making, and they work by making use of those flaws.

(Hausman & Welch 2010, p. 126)
Steffen Kallbekken, Håkon Sælen: 'Nudging' hotel guests to reduce food waste as a win-win environmental measure


Center for International Climate and Environmental Research (CICERO) in Norway
Introduction

- Large environmental impact of food provision
- 1/3 of all food is wasted or lost

→ Reducing food waste = **reducing environmental burden** (e.g. GHG)

Nudge

- influence consumption norms through external cues
- 2 Nudges to reduce food waste (load less food)

reduce plate size  

norm, visual illusion  

a sign at the buffet  

social norm
Design
- Field experiment; observational study
- 52 hotels in 3 groups

<table>
<thead>
<tr>
<th>control group</th>
<th>plate size group</th>
<th>salient sign group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural differences in plate size: 15-28 cm</td>
<td>Changed from 24 to 21 cm</td>
<td>„Welcome back! Again! And again! Visit our buffet many times. That’s better than taking a lot once“</td>
</tr>
<tr>
<td>38 hotels</td>
<td>7 hotels</td>
<td>7 hotels</td>
</tr>
</tbody>
</table>

- Observation for 2.5 months in total
- Pre- and post-treatment measurement of waste
- Control for: number of guests; food sales revenue
Results of the experiment I

Table 1
Average amount of food waste (kg) per hotel in the control group (38 hotels) and test groups (7 hotels in each group), before and after the treatment was introduced. Standard deviations in brackets.

<table>
<thead>
<tr>
<th>Group</th>
<th>Pre-treatment food waste (kg, average per hotel)</th>
<th>Post-treatment food waste (kg, average per hotel)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>35.07 (34.63)</td>
<td>32.98 (30.77)</td>
</tr>
<tr>
<td>Reduced plate size</td>
<td>36.88 (51.06)</td>
<td>25.84 (27.15)</td>
</tr>
<tr>
<td>Salient sign</td>
<td>47.76 (38.88)</td>
<td>34.25 (25.84)</td>
</tr>
</tbody>
</table>
### Results of the experiment II

**Table 2**
Estimated coefficients (and the associated standard errors) from the difference-in-difference analysis.

<table>
<thead>
<tr>
<th></th>
<th>Plate size</th>
<th>Salient sign</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guests</td>
<td>0.033</td>
<td>0.038</td>
</tr>
<tr>
<td></td>
<td>0.004</td>
<td>0.005</td>
</tr>
<tr>
<td>Food sales</td>
<td>0.138</td>
<td>0.171</td>
</tr>
<tr>
<td></td>
<td>0.015</td>
<td>0.016</td>
</tr>
<tr>
<td>Time trend</td>
<td>−4.317</td>
<td>−4.428</td>
</tr>
<tr>
<td></td>
<td>0.754</td>
<td>0.749</td>
</tr>
<tr>
<td>Treatment effect</td>
<td>−7.179</td>
<td>−9.772</td>
</tr>
<tr>
<td></td>
<td>1.825</td>
<td>1.848</td>
</tr>
</tbody>
</table>
# Results of observational analysis

**Table 3**
Estimated coefficients, standard errors and *p*-values for the observational analysis.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th><em>p</em>-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate size</td>
<td>0.917</td>
<td>0.006</td>
<td></td>
</tr>
<tr>
<td>Guests</td>
<td>0.033</td>
<td>0.005</td>
<td>0.000</td>
</tr>
<tr>
<td>Food sales</td>
<td>0.172</td>
<td>0.016</td>
<td>0.000</td>
</tr>
<tr>
<td>Intercept</td>
<td>−35.188</td>
<td>22.045</td>
<td>0.110</td>
</tr>
</tbody>
</table>

1 cm reduction in plate size → 2.5 kg reduction of food waste (7.4%)
**Discussion**

- The nudges can substantially reduce food waste
- Is it win-win?

**PRIVATE**
- Cost of plate size reduction: negative
- Cost of the sign: minimal
- Less food waste = financial saving for the hotel

**PUBLIC**
- 1 Kg food waste = 1.9 Kg CO$_2$e
- Consumer satisfaction with buffet remains constant

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NUDGING TO REDUCE FOOD WASTE

Nudge it!
Nudges for Sustainable Consumption

Defaults in printer settings
41% reduction in printing paper consumption

...and other nudges!

Projekttutorium „Nudge“ at HU Berlin (SS 13; WS 13/14)
get to know, design and test green nudges

www.thenudge.de

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Ressources

Steffen Kallbekken, Håkon Sælen (2013): ‘Nudging’ hotel guests to reduce food waste as a win-win environmental measure

Daniel M. Hausman and Brynn Welch (2010): Debate: To Nudge or Not to Nudge
The Journal of Political Philosophy: Volume 18, Number 1, pp. 123–136