Honest Answers to Embarrassing Questions
Assessing the Frequency of Doping

Werner Pitsch
(Eike Emrich)
(Markus Klein)

Saarland University
Institute for Sport Sciences
Problem: Description of the subject “doping”

1. At which rate do elite athletes use „doping“ during their top-level career?

2. At which rate do elite athletes use „doping“ in the actual season?
Problem: Description of the subject “doping”

Sources for estimation so far:

1. Speculation: „doping is an issue in every sport, at almost every level“

2. WADA-Statistics of adverse analytical findings

<table>
<thead>
<tr>
<th>Year</th>
<th>Tests</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Positive [%]</td>
<td>1.62</td>
<td>1.72</td>
<td>2.13</td>
<td>1.96</td>
</tr>
<tr>
<td>Tests</td>
<td>151,210</td>
<td>169,187</td>
<td>183,337</td>
<td>198,143</td>
<td></td>
</tr>
</tbody>
</table>

3. web-survey (Pitsch, Emrich & Klein, 2005, 2007)
Experience the Randomized Response Technique

Question:
Have You ever evaded tax?

If You were born in January, February, March or April please answer “yes” no matter if you haven’t ever behaved in that way.
If You were born in any other month please answer honestly.
Method: Randomized Response Technique

**Question:** Have you ever knowingly used performance-enhancing illicit drugs?

![Diagram with nodes and arrows illustrating the method]

- **doped athlete**
  - $\pi$: answer honestly
  - $1-p$: honest yes
- **clean athlete**
  - $1-\pi$ (\(\beta\))
  - $1-p$: honest yes
  - $p$: honest no

- **yes**
- **no**
Survey: doping Frequencies in elite Sports in Germany

- Web-Survey
- Randomized Response technique with “cheater detection” (Clarke & Desharnais, 1998)
- Pyramid (or: snowball, respondent-driven) e-mail sampling, starting from the Speakers in Athletes Commissions in Olympic Sports
  - Records: 586
  - Exploitable records: 448
Assessing the Frequency of Doping

Have you ever ...?

- 0.519 honest 'no'
- 0.223 cheaters
- 0.258 honest 'yes'

Have you ... in the current season?

- 0.613 honest 'no'
- 0.183 cheaters
- 0.204 honest 'yes'

Results

How do you rate the ethical standards of sport in the current season?
Assessing the Frequency of Doping

Results broken down by kind of sport

Have you ever …?

- mgs-sports
  - honest 'yes': 0.371
  - cheaters: 0.249
  - honest 'no': 0.381

- games
  - honest 'yes': 0.605
  - cheaters: 0.248
  - honest 'no': 0.147

Have you … in the current season?

- mgs-sports
  - honest 'yes': 0.378
  - cheaters: 0.271
  - honest 'no': 0.351

- games
  - honest 'yes': 0.708
  - cheaters: 0.174
  - honest 'no': 0.118

honest 'yes' □ cheaters □ honest 'no'
Assessing the Frequency of Doping

Results broken down by level of competition

<table>
<thead>
<tr>
<th>Level of Competition</th>
<th>Have you ever ...?</th>
<th>Have you ... in the current season?</th>
</tr>
</thead>
<tbody>
<tr>
<td>international level</td>
<td>0.465</td>
<td>0.537</td>
</tr>
<tr>
<td>up to national level</td>
<td>0.260</td>
<td>0.209</td>
</tr>
<tr>
<td>international level</td>
<td>0.275</td>
<td>0.255</td>
</tr>
<tr>
<td>up to national level</td>
<td>0.220</td>
<td>0.121</td>
</tr>
</tbody>
</table>

Results broken down by level of competition.
How to serve anti-doping with RRT-surveys?

Yet Anti-Doping Programs lack …

• … a proof of effectiveness, especially concerning doping in elite sports,
• … a measure of efficiency.
Assessing the frequency of doping to serve Anti-doping

RRT-based Internet-surveys may serve anti-doping
– by providing a baseline estimation from which effectiveness and efficiency can be estimated,
– by providing evidence of effects of anti-doping programs in the future, and
– by helping to prevent from a (possibly economically driven) legitimacy crisis.
Work in progress

- Assessing the frequency of doping among different national collectives of elite athletes in Europe.
- Providing the methodology for better estimations in “doping subcultures”.
- Assessing the frequency of drug abuse in recreational sports.

Thank you very much for your attention
References


# Sample

<table>
<thead>
<tr>
<th>Sport</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cycling</td>
<td>117</td>
</tr>
<tr>
<td>Weightlifting</td>
<td>61</td>
</tr>
<tr>
<td>Baseball</td>
<td>40</td>
</tr>
<tr>
<td>Hockey</td>
<td>33</td>
</tr>
<tr>
<td>Softball</td>
<td>33</td>
</tr>
<tr>
<td>Track and Field</td>
<td>20</td>
</tr>
<tr>
<td>Basketball</td>
<td>18</td>
</tr>
<tr>
<td>Swimming</td>
<td>17</td>
</tr>
<tr>
<td>Sailing</td>
<td>12</td>
</tr>
<tr>
<td>Handball</td>
<td>10</td>
</tr>
<tr>
<td>Others (n&lt;=5)</td>
<td>57</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>mgs-sports</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>249</td>
</tr>
<tr>
<td>Percentage</td>
<td>57,9</td>
</tr>
<tr>
<td>games</td>
<td></td>
</tr>
<tr>
<td>Number</td>
<td>149</td>
</tr>
<tr>
<td>Percentage</td>
<td>35,7</td>
</tr>
<tr>
<td>artistic sports</td>
<td></td>
</tr>
<tr>
<td>Number</td>
<td>13</td>
</tr>
<tr>
<td>Percentage</td>
<td>3,1</td>
</tr>
<tr>
<td>martial arts</td>
<td></td>
</tr>
<tr>
<td>Number</td>
<td>6</td>
</tr>
<tr>
<td>Percentage</td>
<td>1,4</td>
</tr>
</tbody>
</table>