Quantitative Reasoning and Statistical Methods

Ezra Glenn

February 2, 2009
“High-rise syndrome in cats”, M.O. Whitney and C. J. Mehlhaff, 
Cats Falling from NYC High-Rises

[after Diamond (1988) and Whitlock & Schluter (2008)]

Floors

Injuries per Cat

1 2 3 4 5 6 7−8 9−32
Table: Number of Samples Collected by Height of Building

<table>
<thead>
<tr>
<th>floors</th>
<th>samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>3</td>
<td>14</td>
</tr>
<tr>
<td>4</td>
<td>27</td>
</tr>
<tr>
<td>5</td>
<td>34</td>
</tr>
<tr>
<td>6</td>
<td>21</td>
</tr>
<tr>
<td>7-8</td>
<td>9</td>
</tr>
<tr>
<td>9-32</td>
<td>13</td>
</tr>
</tbody>
</table>
Cats Falling from NYC High−Rises
(after Diamond (1988) and Whitlock & Schluter (2008))

Floors

Injuries per Cat

1 2 3 4 5 6 7−8 9−32

n= 8
n= 14
n= 27
n= 34
n= 21
n= 9
n= 13
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Quantitative Reasoning and Statistical Methods
CDC Obesity Maps: Percentage of Adults with BMI $\geq 30$

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CDC Obesity Maps: Percentage of Adults with BMI ≥ 30

1993

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1996

CDC Obesity Maps: Percentage of Adults with BMI ≥ 30

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Quantitative Reasoning and Statistical Methods
Together in this class, we will learn to:
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- develop an intuitive sense of numbers and understand their scale and meaning through comparisons, stories, and pictures
- measure (or estimate) difficult-to-quantify planning concepts
- gather, manage, and document data and sources
- visualize complex data and relationships
- state and investigate research hypotheses
- recognize and control for random chance, and distill from it hints of meaning where possible
- deal with uncertainty, both practical and existential
- think critically about the limitations of science and quantitative analysis
- communicate with integrity and persuasion to a wide variety of audiences about quantitative information, statistical analysis, and scientific findings
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I also expect you to think about ways to apply all of this to your own work, and to have fun.