Reading Tables of Rates and Percentages

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Part-Whole Grammar of Percentage and Rates

%1 X% of [whole] are 'part/.
%2 Among [whole], X% are 'part/.

P1 X% is the percentage of [whole] who are 'part/.
P2 Among [whole], X% is the percentage who are 'part/
P3 Among [whole], X% is the percentage of 'part/.

R1 The rate of 'part/ among [whole] is X per N.
R2 The 'part/ rate among [whole] is X per N.
R3 The 'part/ rate of [whole] is X per N.

Ambiguous Grammar

1. The accidental death rate among teenagers
2. The teenagers' accidental death rate is …
3. The accidental death rate of teenagers is …

4. The teenager accidental death rate is …
5. The rate of teenager deaths is …

4 and 5 are ambiguous; possessive is unstated.

Grammar Differences: Percentage and Rates

1. Adjectives:
   a. Accident rate  b. Accident percentage
2. ‘Of’:
   a. Rate of inflation  b. Percentage of inflation
3. ‘Of’ and relative clause:
   a. Rate of workers who are unemployed
   b. Percentage of workers who are unemployed
4. ‘Of’ and ‘among’:
   a. Rate of unemployment among workers
   b. Percentage of unemployment among workers

Percentage of Smoking Prevalence Among U.S. Adults, 18 and Older: 1955 - 1990

<table>
<thead>
<tr>
<th>Year</th>
<th>All</th>
<th>Males</th>
<th>Females</th>
<th>Whites</th>
<th>Blacks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1955</td>
<td>--</td>
<td>56.9</td>
<td>28.4</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>1965</td>
<td>42.4</td>
<td>51.9</td>
<td>33.9</td>
<td>42.1</td>
<td>45.6</td>
</tr>
<tr>
<td>1970</td>
<td>37.4</td>
<td>44.1</td>
<td>31.5</td>
<td>37.0</td>
<td>42.4</td>
</tr>
<tr>
<td>1980</td>
<td>33.2</td>
<td>37.6</td>
<td>29.3</td>
<td>32.9</td>
<td>36.9</td>
</tr>
<tr>
<td>1990</td>
<td>25.5</td>
<td>28.4</td>
<td>22.8</td>
<td>25.6</td>
<td>26.2</td>
</tr>
</tbody>
</table>

Among U.S. adults 18 and over in 1965, 45.8% is
a. the percentage of smokers who are black
b. the percentage who are black smokers
c. the percentage of blacks who are smokers
### Difficulties Reading Rates in Tables

**Percentage of Smoking Prevalence Among U.S. Adults, 18 and Older: 1955 - 1990**

<table>
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</table>

Among U.S. adults 18 and over in 1965,
- a. 45.8% of smokers are black
- b. 45.8% are black smokers
- c. 45.8% of blacks are smokers

### Presentation Rules for Ratio-Tables

1. Never use *percent* if *percentage* is needed.
   "The percentage of women who received services…"
2. Never omit relative clause indicators.
   "The percentage of men with disabilities…"
   "The percentage of unemployed men…"
4. Never use just "by" for a part.
   Use ‘distributed by’ or appropriate grammar.
   "Death Rates [classified] by specific causes"

### Difficulties Reading Percentages in Tables

**Percent of Women, 15 to 44, Who Received Selected Medical Services**

<table>
<thead>
<tr>
<th>CHARACTERISTIC</th>
<th>HIV Test</th>
<th>Pregnancy test</th>
<th>Pap smear</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>17.3</td>
<td>16.0</td>
<td>61.9</td>
</tr>
<tr>
<td>AGE AT INTERVIEW</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15-19 years old</td>
<td>14.6</td>
<td>16.1</td>
<td>53.5</td>
</tr>
<tr>
<td>20-24 years old</td>
<td>23.7</td>
<td>21.4</td>
<td>68.7</td>
</tr>
<tr>
<td>25-29 years old</td>
<td>23.6</td>
<td>25.3</td>
<td>70.9</td>
</tr>
<tr>
<td>30-34 years old</td>
<td>18.5</td>
<td>17.4</td>
<td>69.5</td>
</tr>
<tr>
<td>35-39 years old</td>
<td>18.5</td>
<td>8.1</td>
<td>62.9</td>
</tr>
<tr>
<td>40-44 years old</td>
<td>10.0</td>
<td>4.3</td>
<td>62.7</td>
</tr>
</tbody>
</table>

Source: Adopted from 1998 US Statistical Abstract (Some data omitted)

CHOICES: Among these women ages 15-44,
- a. 10% of those receiving an HIV test are ages 40-44.
- b. 10% of those ages 40-44 received an HIV test.
<table>
<thead>
<tr>
<th>Reading tables of ratios</th>
<th>Statistical Literacy</th>
</tr>
</thead>
</table>

**Actions**

1. Test students’ ability to describe and compare rates and percentages.
2. Test students’ ability to read and decode tables of rates and percentages.
3. Create materials to teach students how to read tables of rates and percentages.
4. Teach college students these materials, test their ability and present the results.