Calculate Case Fatality Rates and Attack Rates
Case Fatality Rate

- Proportion of cases that resulted in death

- If the CFR is over 25%
  - problems with case management?

- If the CFR is under 5%
  - may be "overdiagnosis"
  - severely ill may not be reaching health facilities
    ➤ discuss with health workers and community leaders
Calculate Case Fatality Rate

- **Number of Deaths** $\times$ 100
  
  **Number of Cases**

- 100 cases in one week, 10 patients died

\[
\frac{10}{100} = 0.1
\]

\[
0.1 \times 100 = 10
\]

CFR is 10%
Age Specific Attack Rates

- Calculate using data from field investigation and during an epidemic
- Use attack rates to plan vaccination strategy
- Age-groups with high ARs are at high risk of disease
- Target vaccination to age-groups with highest rates
Calculate Age-Specific Attack Rates

1. Calculate the number of persons who are in the age group in the area

2. Divide 100,000 by the # of persons in the age group

3. Tally the number of cases in the age group / week

4. Multiply the result of Step 2 by the # of cases in the age group

5. The result is the age-specific AR
Typical Age Distribution
Sub-Saharan Africa

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### Age-Specific Attack Rates

*Example: Dia District - 50,000 Population*

*Table Shell used by Dia District*

<table>
<thead>
<tr>
<th>Age Groups (years)</th>
<th>% of Total Population</th>
<th>District Population by age</th>
<th>Number of Cases</th>
<th>Attack Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-4</td>
<td>17</td>
<td>17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5-14</td>
<td>28</td>
<td>28</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15-29</td>
<td>28</td>
<td>28</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30-44</td>
<td>15</td>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>45 and older</td>
<td>12</td>
<td>12</td>
<td></td>
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</table>
Age-Specific Attack Rates

Example: Dia District

Step 1: Calculate the number of persons in the age group in the area

- District population = 50,000
- 17% of total population = 0-4 year olds
- $50,000 \times 0.17 = 8,500$
- Enter 8,500 in the table shell
## Age-Specific Attack Rates

**Dia District Example**

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Calculate Age-Specific Attack Rates

Step 2: For each age group, divide 100,000 by the # of persons in that age group

- For the 0-4 year olds

  $\frac{100,000}{8,500} = 11.8$
Calculate Age-Specific Attack Rates

Step 3: Tally # of cases in each age group

- 15 cases in 0-4 year olds
- 15 cases in 5-14 year olds
- 10 cases in 15-29 year olds
- 0 cases in 30-44 year olds
- 0 cases in 45 and older

- Enter tallies in the table shell
# Age-Specific Attack Rates

## Example

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<td>28</td>
<td>14,000</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>30-44</td>
<td>15</td>
<td>7,500</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>45 and older</td>
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<td>6,000</td>
<td>0</td>
<td></td>
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</table>
Calculate Age-Specific Attack Rates

Step 4: Multiply the result of Step 2 by the number of cases in that age group

- For the 0-4 year olds
  \[11.8 \times 15 = 176\]

- The ASAR for 0-4 year olds is 176

Enter the ASARs in the table
### Age-Specific Attack Rates

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<td>14,000</td>
<td>15</td>
<td>107</td>
</tr>
<tr>
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<td>28</td>
<td>14,000</td>
<td>10</td>
<td>71</td>
</tr>
<tr>
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<td>15</td>
<td>7,500</td>
<td>0</td>
<td>0</td>
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High ASAR = High Risk

- Target vaccination at high risk groups

- ASARS in the example:
  - 0-4 year olds = 176
  - 5-14 year olds = 107
  - 15-29 year olds = 71

- If resources are limited, vaccinate in that order