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(%83.3)

(y/x)

( X)

(1). .....  $\hat{Y} = \frac{y}{x} X$



$$\begin{array}{rcl}
 (2) \dots\dots\dots R_A^\wedge & = & \frac{Y_A^\wedge}{X_A^\wedge} \\
 & & : \\
 & & = R_A^\wedge \\
 (1) \quad A & & X \\
 & & = X_A^\wedge \\
 (1) \quad A & & Y \\
 & & = Y_A^\wedge \\
 \\
 \text{(Ratios)} & & \text{(Proportions)} \\
 & & 1 \quad X \\
 & & 1 \quad 0 \quad Y
 \end{array}$$

$$\begin{array}{rcl}
 \text{(Ultimate Clusters)} & & \\
 : \quad Y \quad A & & \\
 & & : \\
 (3) \quad V\left(\hat{Y}_A\right) & = & \sum_h \left[ \frac{n_h}{n_h - 1} \sum_{i=1}^{n_h} \left( \hat{Y}_{Ahi} - \frac{\hat{Y}_{Ah}}{n_h} \right)^2 \right] \quad ( )
 \end{array}$$

$$(4) \quad \hat{Y}_{Ahi} = \sum_{j \in A} W_{hij} Y_{hij}$$

$$(5) \quad \hat{Y}_{Ah} = \sum_i \sum_{j \in A} W_{hij} Y_{hij}$$

$$(6) \quad V\left(\hat{R}_A\right) = \frac{1}{X_A^{\wedge^2}} \left[ V\left(\hat{Y}_A\right) + R_A^{\wedge^2} V\left(\hat{X}_A\right) - 2 \hat{R}_A COV\left(\hat{X}_A, \hat{Y}_A\right) \right] \quad ( )$$

$$\text{COV} \left( \hat{\mathbf{X}}_{\text{A}}, \hat{\mathbf{Y}}_{\text{A}} \right) = \sum_{\text{h}}^{\text{Dom}} \frac{\mathbf{n}_{\text{h}}}{\mathbf{n}_{\text{h}} - 1} \sum_{i=1}^{\mathbf{n}_{\text{h}}} \left( \hat{\mathbf{X}}_{\text{Ahi}} - \frac{\hat{\mathbf{X}}_{\text{Ah}}}{\mathbf{n}_{\text{h}}} \right) \left( \hat{\mathbf{Y}}_{\text{Ahi}} - \frac{\hat{\mathbf{Y}}_{\text{Ah}}}{\mathbf{n}_{\text{h}}} \right)$$

$$:(3) \qquad \hat{\mathbf{V}}(\mathbf{Y}_{\text{A}}) \quad \hat{\mathbf{V}}(\mathbf{X}_{\text{A}})$$

$$.(2) \qquad \hat{\mathbf{R}}_{\text{A}} \qquad , (1) \qquad \hat{\mathbf{X}}_{\text{A}}$$

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Confidence Interval

Standard Error

Relative Error

(Complex Design )

### Simple Random Sampling Design

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%95

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%15.7

%0.6

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|              |              |              |              |  |
|--------------|--------------|--------------|--------------|--|
| 6,201        | 6,345        | 6,458        | 6,486        |  |
| 471          | 390          | 344          | 312          |  |
| 426          | 394          | 366          | 348          |  |
| 69           | 75           | 68           | 102          |  |
| 98           | 85           | 71           | 73           |  |
| 46           | 43           | 42           | 40           |  |
| 137          | 99           | 78           | 71           |  |
|              |              |              |              |  |
| 115          | 132          | 136          | 127          |  |
|              |              |              |              |  |
| <b>7,563</b> | <b>7,563</b> | <b>7,563</b> | <b>7,559</b> |  |

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| EMPCH    | .1<br>.2<br>.3             | (1) |
|----------|----------------------------|-----|
| INOUTLF  | .1<br>.2                   |     |
| EMPCHU   | .1<br>.2<br>.3<br>.4<br>.5 | (2) |
| EMPCHFIN | .1<br>.2<br>.3<br>.4       | (3) |
| WBGS     | .1<br>.2                   |     |
| Reason   | / .1<br>.2<br>.3<br>.4     |     |
| MARITALS | .1<br>.2                   |     |

|          | .3                                     |  |
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| PWORK    | .1<br>.2<br>.3<br>.4                   |  |
| EMPSTATS | .1<br>.2<br>.3<br>.4                   |  |
| INDUSTRY | .1<br>.2<br>.3<br>.4<br>.5<br>.6       |  |
| OCCUPATI | .1<br>.2<br>.3<br>.4<br>.5<br>.6<br>.7 |  |