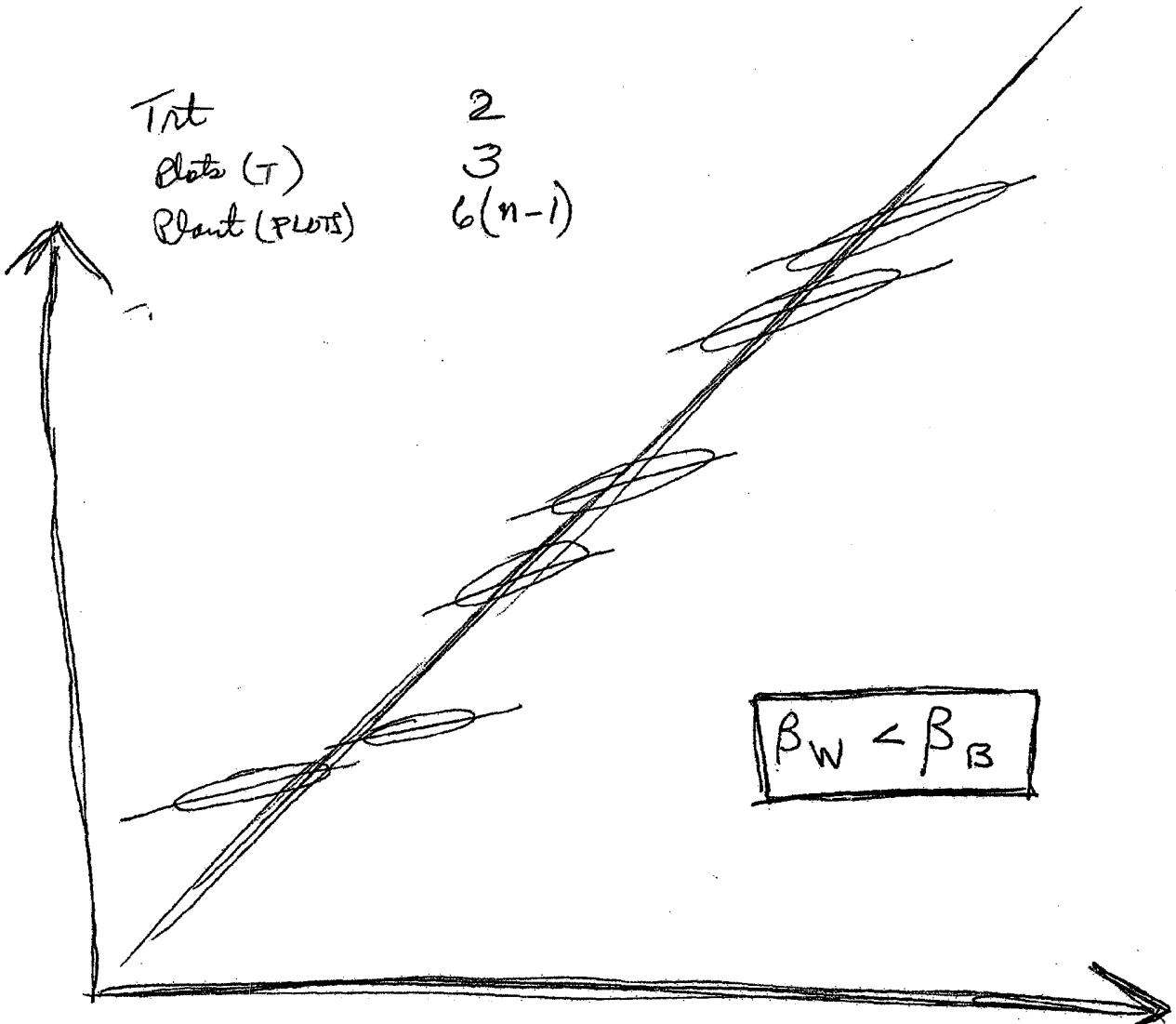


$$y = \mu + \alpha_i + \beta_1 (X - \bar{X}_{ij}) + \beta_2 (\bar{X}_{ij} - \bar{\bar{X}})$$

Strata
PSU (S)
Persons (PSU)

N33846

TEH 0532724

CONCERNS

(1) what between plot variable could be associated with Pb exposure?
- Urban ← air Pb + Dust Pb ?
- Income
- Black
- Black x male
- male x child

(2) Significance of "lead wt" variable

(3) need an illustration of $\beta_{BET} \neq \beta_{within}$

(4) Better summary of Pb variables
can't be a mystery

(5) what can we say about downward trends in diff population groups --- are they the same as others have claimed?

(6) need Std Errors for estimates of change

→ (7) Lets use Urban as a measure on non-Inhalation Contribution

no appropriate because gas Pb should be the estimate of ~~dif~~ gas lead exposure from all routes?

what happens if we fit urban after gas?

(8) Interpretation of Coeff

TEH 0532725

DUP050033995

LIMITATIONS OF AANNEST ET AL RESULTS

wrong model

Didn't account for two error variances and diff slopes
ie sampling scheme

Inaccurate Pb Exposure Variable

natural Gas Pb is a poor/crude measure

need a **local** measure not a **global** measure

→ Site Specific Pb Density varies over 3–4 orders of magnitude

used the wrong unit of analysis

Experimental unit was the individual

Replication of the study at diff sites was not considered

* There is a sampling error associated with the PSU site selection

$100\bar{X}$ = % URBAN at Site i

$X = 0$ Rural

$X = 1$ Urban

$$BPB = \mu + \alpha_i + \beta_W (X - \bar{X}_i) + \beta_B (\bar{X}_i - \bar{\bar{X}})$$

$$= \mu + \alpha_i + \beta_B (\bar{X} - \bar{\bar{X}}) + \epsilon_B + \beta_W (X - \bar{X}) + \epsilon_W$$

Ornestetal assumed $\beta_B = \beta_W$

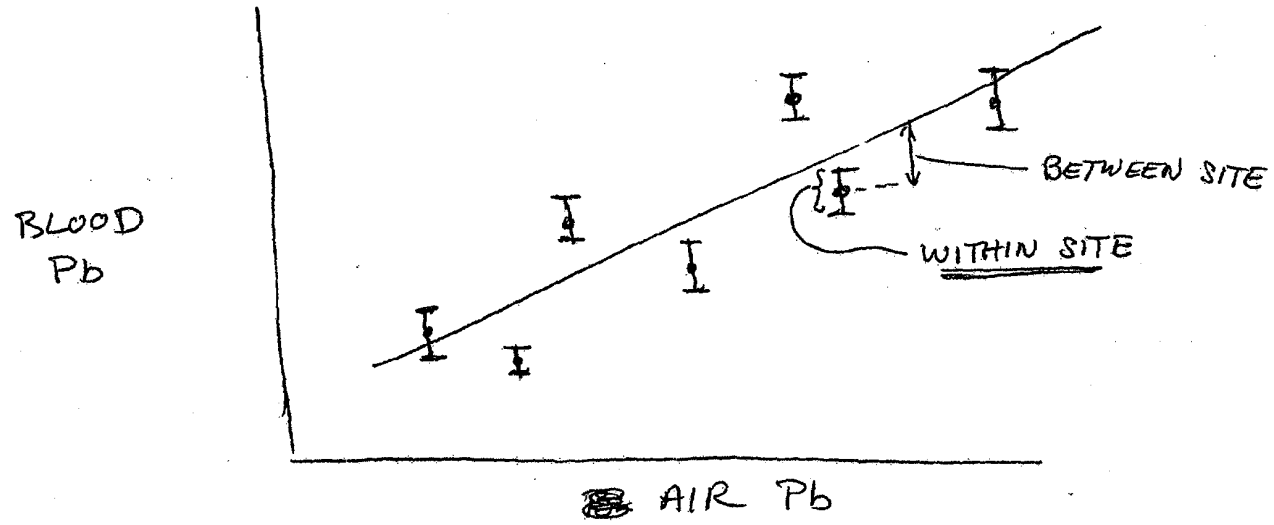
and

$\sigma_B = 0$

Split-Plot Model

There is variation in site averages above & beyond, that contributed by the diff subjects at the site

- an error associated with each given site & common to all subjects at the site


BLOOD
Pb
BETWEEN SITE
WITHIN SITE
AIR Pb

Gas Density (Tonnes Pb/mi^2)

$$\frac{(\text{State Pb Usage})}{(\text{Land Area in Site Counties})}\left(\frac{\text{Population in Site County}}{\text{State Population}}\right)$$

$$(\text{State Pb Used})\left(\frac{\text{County Population}}{\text{State Population}}\right)$$

= County Pb Used (Divide by area creates a density)

Gasoline Consumption = f(population)

Gas Consumption * Pb Conc = PB used

TEH 0532729

DUP050033999