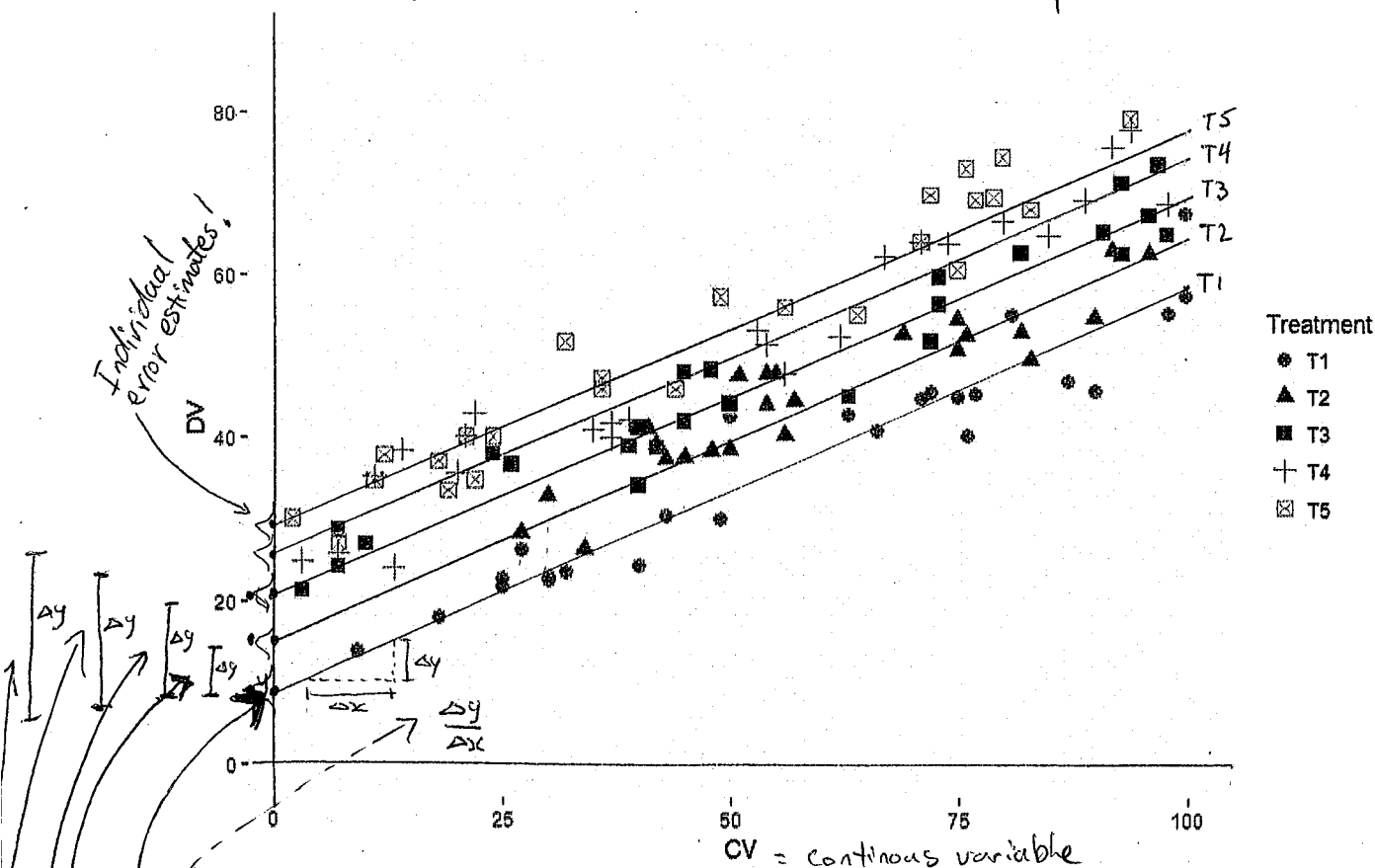


ANCOVA model



Call:

`lm(formula = DV ~ Treatment + CV, data = Data)`

Residuals:

Min	1Q	Median	3Q	Max
-8.0687	-2.3116	-0.2398	2.8512	9.1781

Coefficients: (Fixed effects)

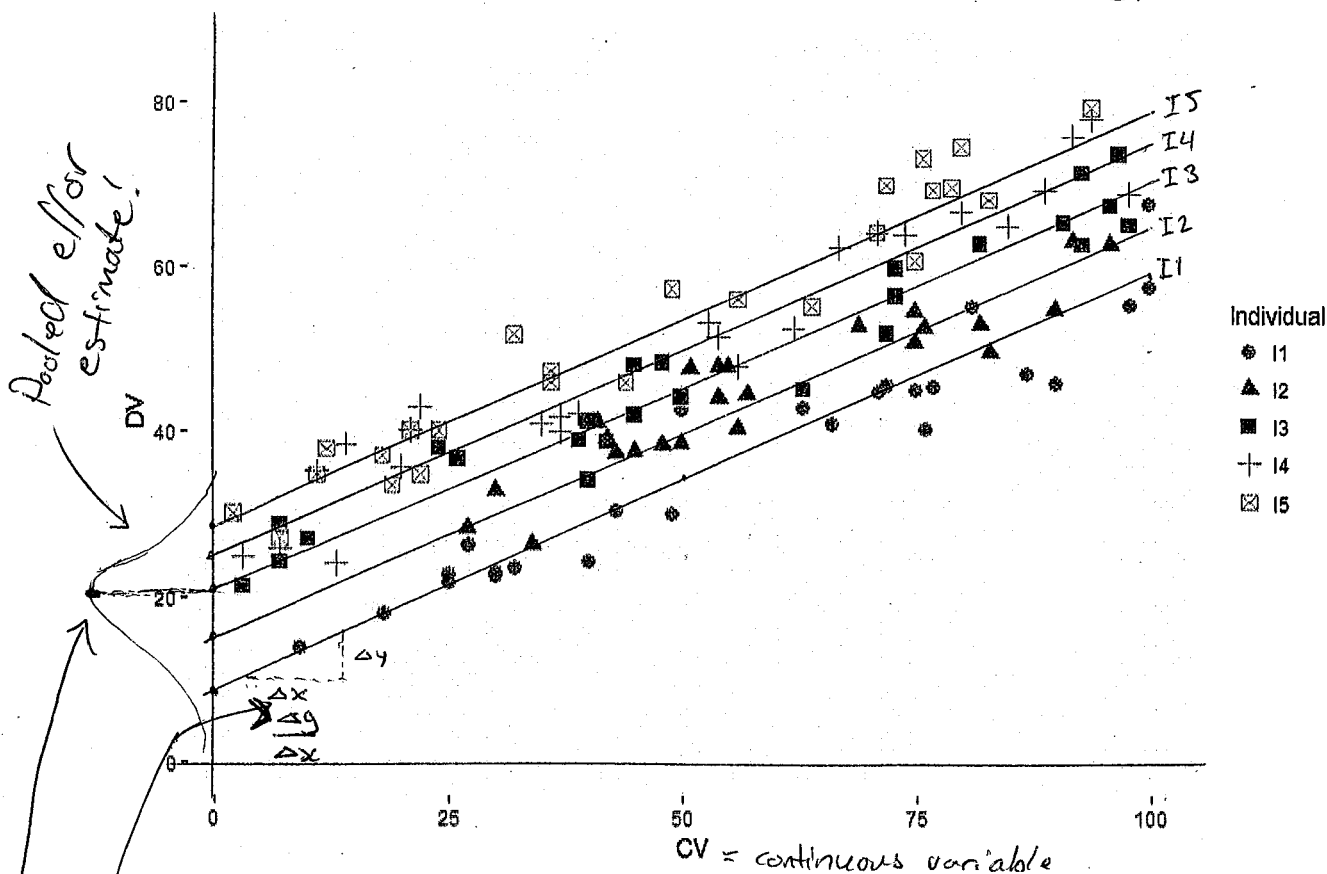
	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	9.12164 (10)	1.05807	8.621	3.36e-14 ***
TreatmentT2	6.98721 (5)	1.09375	6.388	3.39e-09 ***
TreatmentT3	11.78765 (10)	1.09424	10.772	< 2e-16 ***
TreatmentT4	16.59968 (15)	1.09818	15.116	< 2e-16 ***
TreatmentT5	20.21818 (20)	1.10223	18.343	< 2e-16 ***
CV	0.49340 (4.0)	0.01259	39.188	< 2e-16 ***

values being estimated

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 3.866 on 119 degrees of freedom
 Multiple R-squared: 0.9365, Adjusted R-squared: 0.9338
 F-statistic: 351 on 5 and 119 DF, p-value: < 2.2e-16

Mixed-effects model



Linear mixed model fit by REML t-tests use Satterthwaite approximations to degrees of freedom [lmerMod]

Formula: $DV \sim CV + (1 \mid \text{Individual})$

Data: Data

REML criterion at convergence: 716.7

Scaled residuals:

Min	1Q	Median	3Q	Max
-2.07716	-0.60637	-0.06504	0.71424	2.35098

Random effects:

Groups	Name	Variance	Std.Dev.
Individual	(Intercept)	62.87	7.929
Residual		14.95	3.866

Number of obs: 125 groups: Individual 5

Fixed effects:

	Estimate	Std. Error	df	t value	Pr(> t)
(Intercept)	20.26046	3.62549	4.29000	5.588	0.00409 **
CV	0.49302	0.01259	119.07000	39.163	< 2e-16 ***

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Correlation of Fixed Effects:

(Intr)
CV -0.185

estimate of 4.0

in an RSF, this would tell us about variation in selection strength across ~~populations~~ individuals

in an RSF, this would tell us the strength and direction of selection for a particular resource

Should I include x as a random effect?

x is continuous
~~numeric~~

No! fixed effect

x is a factor
with discrete levels

the levels of x
are ranked
eg. "Low", "Med", "High"
or bins of a
numeric variable

No! fixed effect

the levels of
 x have no
rank

how many
levels of x
do you have?
 $N = \underline{\hspace{1cm}}$

N is a sufficient
number
level of observations
to estimate a
normal distribution

too few
levels
eg. \wedge
freq. \wedge
#obs
intercept

There are too
few levels to
estimate a normal
distribution

No! fixed
effect

I am ~~specifically~~
interested
in the difference
between the
specific levels of
 x that I chose

Fixed
effect is what
you want ~~and~~
~~and~~ all along

I am interested in
generalizing to the
population of which
the levels of x are
a part

Random
Effect

but I want to
account for unequal
sample sizes between
levels!

fixed effects
do that too

but ~~my~~ the focus of
my study is not
on x , and having the
levels occupy my
table is a nuisance!

fine, but be clear that
you are not generalizing to
the population.