

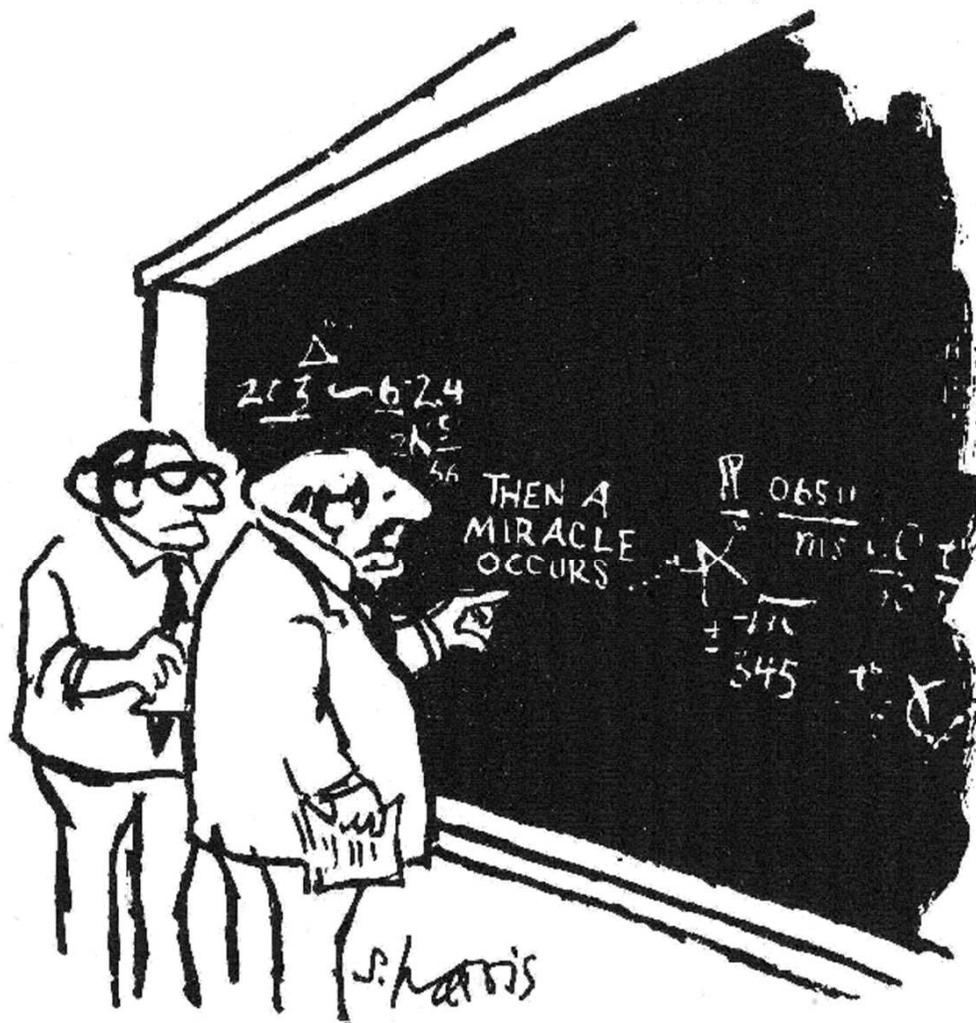
A&F steps & choices (first of all)

- Choice the purpose
- Choice the unit
- Choice the dimensions
- Choice of dimensions indicators
- Choice deprivation cut-off (poverty line per dimension)
- Choice poverty cut-off (multidimensional poverty line)
- Choice weights

**Exploratory
data analysis**

STATA or
any other
software

Then STATA



"I think you should be more explicit here in step two."

Deprivation Matrix

```

Do-file Editor - DO File 0109.do*
File Edit Tools View
DO File 0109 v2.do DO File 0109.do*
83 bys hh_id: egen d_lowbmi=max(lowbmi)
84 label variable d_lowbmi "Deprived in bmi"
85
86 ***** DEPRIVED IN LIVING STANDARD
87
88 **OVERCROWDING (the individual -HH- is considered overcrowded if ave
89
90 g crowding = (hhs/rooms_sleep)
91 g d_crowding = 0
92 replace d_crowding=1 if crowding>3
93 replace d_crowding=. if crowding==.
94 label variable d_crowding "Deprived in overcrowding"
95
96 ** DEPRIVED IN LIVING STANDARS HOUSING
97
98 g d_house= 0
99 replace d_house = 1 if roof==12 | roof==22 | roof==23
100 replace d_house=. if roof==.
101 label variable d_house "Deprived in housing"
102

```

$z^0 =$

	Over.	Floor	School	BMI
	0	0	0	0
	1	0	0	1
	1	1	1	1
	0	1	0	0

$z =$

			No	
	3	Earth	flush	18.5

1st cut off: Deprivation cut-off

Weighted Deprivation Matrix and deprivation counting vector

```

Do-file Editor - DO File 0109.do*
File Edit Tools View
DO File 0109 v2.do DO File 0109.do*
143 *****
144 **** Define the weights *****
145 *****
146 ** Create a loop for the variables with the same weight *****
147 *****
148 foreach var in d_dependrate d_childwor d_deadchild d_lowbmi {
149     local w_`var'=0.125
150 }
151 foreach var in d_crowding d_house d_assets d_water d_toilet d_e
152     local w_`var'=0.042
153 }
154 local w_d_educ=0.25
155 *****
156 ***** Define the weighed deprivation g0* matrix *****
157 *****
158 foreach var in `varlist_pov' {
159     gen wg0_`var'= `var'*`w_`var'"
160 }
161 *****
162 ***** Define the (weighted) deprivation count vector "ci" *****
163 *****
164 egen ci=rsum(wg0_*)
165 label variable ci "Deprivation Count"

```

	Over.	Floor	School	BMI
$wg^0 =$	0	0	0	0
	$1/6$	0	0	$1/3$
	$1/6$	$1/6$	$1/3$	$1/3$
	0	$1/6$	0	0
$z =$	3	Earth	8 years	18.5

Calculating the A&F Stats per individual (Identification vector/individual average deprivation)

$$wg^0 = \begin{array}{c|ccccc|c} & \text{Over.} & \text{Floor} & \text{School} & \text{BMI} & \text{ci} & \\ \hline & 0 & 0 & 0 & 0 & 0 & \\ & 1/6 & 0 & 0 & 1/3 & 0.5 & \\ & 1/6 & 1/6 & 1/3 & 1/3 & 1 & \\ & 0 & 0 & 0 & 0 & 0.16 & \end{array}$$

```

Do-file Editor - DO File 0109.do*
File Edit Tools View
DO File 0109 v2.do DO File 0109.do*
202 *****
203 ***** Create de identification vector (poor/non poor) *****
204 ***** and compute individual average of deprivation *****
205 *****
206 * Changes: We calculate the national MPI using the weights and the weighted censored matrix represented by (ci*idintification).
207 egen total_w=total(weight) if missing==0
208 forvalues x=1(1)10 {
209   gen ch_`x'0p=(ci>=`x'/10)
210   replace ch_`x'0p=. if missing==1
211   gen a_`x'0p=(ci) if ch_`x'0p==1
212   replace a_`x'0p=. if missing==1
213   egen MPI_`x'0p= total(ci*ch_`x'0p*weight/total_w)
214   label var ch_`x'0p "Condition of Multidimensional Poverty k=`x'"
215   label var a_`x'0p "Individual Average deprivation k=`x'"
216   label var MPI_`x'0p "National Multidimensional Poverty Index k=`x'"
217 }
218

```

Raw & Censored Headcount

```
Do-file Editor - DO File 0109.do*
File Edit Tools View
DO File 0109 v2.do DO File 0109.do*
220
221 *****
222 ***** Compute raw headcounts *****
223 *****
224 foreach var in `varlist_pov' {
225   gen `var'_raw=(`var')
226   replace `var'_raw=. if missing==1
227 }
228 su *_raw [iw=weight]
229 *****
230 ***** Compute Censored headcount and censored headcount *****
231 *****
232 ***** At line your poverty cutoff, the example shows k=
233 ***** ce with the name of the categorical variable
234 ***** "reg
235 ***** cc
236 pause
237 gen national=1
238 local k=20
239 local r="national"
240 foreach var in `varlist_pov' {
241   gen `var'_CH_`k'=(`var'==1 & ch_`k'==1)
242   replace `var'_CH_`k'=. if missing==1
243 }
244 summarize *_CH_`k' [iw=weight]
245 *****
246 *****
247 ***** Sampling *****
Ready
Start Tot... Ph... Sta... Do... W Ex... W Dra... Dat... Ex... Ph... Vie...
```

Individual who are deprived in dimension "X"

Define poverty cut-off (K)

Define level of subgroup decomposition (r)

Individual who are poor (k=20%) and deprived in dimension "X"

Standard Errors & Confidence Intervals

```
Do-file Editor - DO File 0109.do*
File Edit Tools View
DO File 0109 v2.do DO File 0109.do*
267
268 *****
269 ** Calculating the confidence intervals of the M0 estimated *****
270 * Define the cluster and strata from the survey
271 * Create the appropriate 'PSU' and 'stata' variable consulting the manual of the survey. C
272 ** Declare survey design for dataset *****
273 ** svyset PSU [pweight=weight], strata(strata)
300 ** Calculating confidence intervals for M0
301 svy: mean Adj_H_`k'p if `r'==`g'
302 replace lb_M0_`k'p=_b[Adj_H_`k'p]-1.95996*(_se[Adj_H_`k'p]) if `r'==`g'
303 replace hb_M0_`k'p=_b[Adj_H_`k'p]+1.95996*(_se[Adj_H_`k'p]) if `r'==`g'
304 ** Calculating confidence intervals for H
305 svy: mean ch_`k'p if `r'==`g'
306 replace lb_sH_`k'p=_b[ch_`k'p]-1.95996*(_se[ch_`k'p]) if `r'==`g'
307 replace hb_sH_`k'p=_b[ch_`k'p]+1.95996*(_se[ch_`k'p]) if `r'==`g'
308 ** Calculating confidence intervals for A
309 svy: mean ch_`k'p Adj_H_`k'p if `r'==`g'
310 mat cov= e(V)
311 local cov = cov[2,1]
312 replace lb_sA_`k'p=( _b[Adj_H_`k'p]/_b[ch_`k'p])-2*((_se[Adj_H_`k'p]^2/_b[ch_`k'p]^2)
313 replace hb_sA_`k'p=( _b[Adj_H_`k'p]/_b[ch_`k'p])+2*((_se[Adj_H_`k'p]^2/_b[ch_`k'p]^
314 ** Calculating confidence intervals for Censored Headcount
315 foreach var in `varlist_pov' {
316 svy: mean `var'_CH_`k' if `r'==`g'
317 replace lb_s`var'_`k'p=_b[`var'_CH_`k']-1.95996*(_se[`var'_CH_`k']) if `r'==`g'
318 replace hb_s`var'_`k'p=_b[`var'_CH_`k']+1.95996*(_se[`var'_CH_`k']) if `r'==`g'
319 }
320 }
```

Declare survey design for dataset

See Yalonetzky, 2011
<http://www.ophi.org.uk/wp-content/uploads/OPHI-RP-25a.pdf>

Results before Collapse

Data Editor (Browse) - [data.dta]

File Edit Data Tools

hh_id[4] 20002

	hh_id	ind_id	relationship	sex	age	ch_10p	ch_20p	ch_30p	ch_40p	ch_50p	ch_60p	ch_70p	ch_80p
1	10027	1002701	head	female	33	1	0	0	0	0	0	0	0
2	10027	1002702	son/daug	male	14	1	0	0	0	0	0	0	0
3	10027	1002703	son/daug	female	6	1	0	0	0	0	0	0	0
4	20002	2000201	head	male	30	1	1	0	0	0	0	0	0
5	20002	2000202	wife or	female	19	1	1	0	0	0	0	0	0
6	20002	2000203	son/daug	male	1	1	1	0	0	0	0	0	0
7	20003	2000301	head	male	47	0	0	0	0	0	0	0	0
8	20076	2007601	head	female	54	1	1	1	1	0	0	0	0
9	20076	2007602	son/daug	female	18	1	0	0	0	0	0	0	0
10	20076	2007603	grandchi	female	1	1	0	0	0	0	0	0	0
11	20102	2010201	head	male	43	.	.	.	.	.	.	.	.
12	20102	2010202	wife or	female	35	.	.	.	.	.	.	.	.
13	20102	2010203	son/daug	female	6	.	.	.	.	.	.	.	.
14	20102	2010204	son/daug	female	5	.	.	.	.	.	.	.	.
15	20160	2016001	head	female	35	1	0	0	0	0	0	0	0
16	30045	3004501	head	male	27	1	0	0	0	0	0	0	0
17	30071	3007101	head	male	31	1	1	1	0	0	0	0	0
18	30071	3007102	wife or	female	24	1	1	1	1	1	0	0	0
19	30071	3007103	son/daug	male	7	1	1	1	0	0	0	0	0
20	30071	3007104	son/daug	male	5	1	1	1	0	0	0	0	0
21	30071	3007105	son/daug	female	3	1	1	1	0	0	0	0	0
22	30071	3007106	son/daug	female	0	1	1	1	0	0	0	0	0
23	30101	3010101	head	female	57	.	.	.	.	.	.	.	.
24	30111	3011101	head	male	47	1	1	0	0	0	0	0	0

Collapse

```
Do-file Editor - DO File 0109.do*
File Edit Tools View
DO File 0109 v2.do DO File 0109.do*
320 }
321 *****
322 **** Collapsing *****
323 * So far, our database has individual level data, if we want to aggregate
324 * at any level, we use the command "collapse". Collapse calculates weighted
325 * averages at the level defined by the user (region), if the option "by(region)"
326 * is not specified, the observations are aggregated at the national level.
327 * Before collapse, save your results using the following command
328 *****
329
330 save data, replace
331
332 * You can use also the commands preserve before the command "collapse" and restore just after
333 * preserve
334
335 * The following command will "collapse" our individual results according to the subgroup previously defined.
336 pause
337 collapse ch_ a_ *_CH_`k' *_raw *_miss missing MPI_ * pop_shr* sample_r_* sample_lost_ratio lb_* hb_* [iw=weight],by(`r')
```

Use weights

Variables that I want to collapse (obtain their means)

Subgroup, if you delete it you will get national results

Final Steps... Regional M0 and Decomposition by dimension and subgroup

```
339 * You have already calculated the national MPI. With the following lines you will calculate the
340 * MPI for every region using the formulation  $MPI=H*A$  obtained after collapsing the dataset.
341 * additionally, since with "collapse" average per region were obtained,
342 * we rename the Condition of Multidimensional Poverty for Decomposed Multidimensional Headcount Ratio
343 * and Individual Average Deprivation for Decomposed Average Deprivation
```

```
344
345 forvalues x=1(1)10 {
346   gen MO_`x'0p=ch_`x'0p*a_`x'0p
347 }
```

Calculate the regional M0 using HxA

```
348 * You can now obtain the contribution of each dimension/indicator using the c
```

```
349 foreach var in `varlist_pov'{
350   gen `var'_cont=((`var'_CH_`k'* `w_`var)'/ MO_`k'p)
351 }
```

Contribution by dimension

```
352 gen cont_subgroup_`k'=MO_`k'p/MPI_`k'p*pop_shr_after
```

```
353 label variable cont_subgroup_`k' "Population Subgroup Contribution"
```

Contribution by subgroup

Results After collapse

Data Editor (Browse) - [results.dta]

File Edit Data Tools

H_90p[14]

	region	H_10p	H_20p	H_30p	H_40p	H_50p	H_60p	H_70p	H_80p	H_90p
1	nairobi	.3579401	.1364639	.0902284	.0485685	.0056729	.0018095	0	0	
2	central	.8932109	.4485937	.2954343	.1343487	.0600399	.0239387	.0105221	0	
3	coast	.8906453	.6532532	.4477373	.2584332	.1848103	.0853378	.051163	0	
4	eastern	.9687216	.6974921	.5298217	.2387736	.125238	.0309346	.0078727	.0014839	
5	nyanza	.9700862	.7650561	.5501072	.2570527	.1263295	.0373018	.0161841	0	
6	rift val	.9107556	.6790457	.4766155	.2279786	.1375763	.0487671	.0170696	.0056425	
7	western	.9906334	.7684964	.5897723	.2754914	.1312586	.035245	.0160913	0	
8	north ea	1	.9507026	.8556439	.71964	.632751	.353582	.1231165	.0156502	.00754

STATA is only an instrument



TOMORROW 8:55

