`mrp` objects

Let J be the expanded dimension of all cross-classifying categories (e.g., $S_{\text{states}} \times I_{\text{inc}} \times E_{\text{edu}}$)

poll	array: $J \times 3$: Cell design effect, $\bar{Y}_w$, N_{eff}
data	data.frame: flattened `poll` with quasibinomial 'response.yes, response.no' and predictors
population	array: J (possibly minus a stratum in `poll`, such as poll effect for combining polls)
multilevel.model	fitted `mer` model

Example data

`data(samesexmarriage)` loads 'marriage.data' and 'Statelevel'. Other data in package:

mrp.census	Census data with main data columns 'weighted2000', 'weighted2004', and 'weighted2008'.
mrp.regions	A data.frame with state two-letter abbreviations and five census region codes, with DC as its own region.
spmap.states	A projected map object with state names, FIPS codes, and two-letter state abbreviations.

The mrp() function

1. "Formula" interface to describe the cross-classifying factors
2. Consistency between J-dimensioned arrays to 2-dimenional representation with factors preserving category names and orderings
3. Poll and population arrays match dims
4. Easy transformations and left-joins

Full example call

```
R> M.full <- mrp(yes.of.all~
                 state + f.race + age + edu + poll,
                 poll=marriage.data,
                 population=mrp.census,use="weighted2008",
                 population.formula=.~.-poll,
                 add=list(Statelevel,
                   mrp.regions,
                   expression(age.edu <- interaction(age,edu)),
                   expression(z.age <- rescale(age))),
                 mr.formula= .~. + (1|region) + (1|age.edu)+
                 z.age + p.relig.full + p.kerry.full
                 )
```

`mr` and `poststratify` methods

`mr` calls `glmer` with the 2-col response – easy to replace `mr,mrp-method` with `bglmer` call or something else.

`poststratify` multiplies `fitted(multilevel.model)` by population vector, returns array.[1] **Whatever we write should have a `fitted()` extractor.**

[1] Does not do logit-shift for turnout yet.

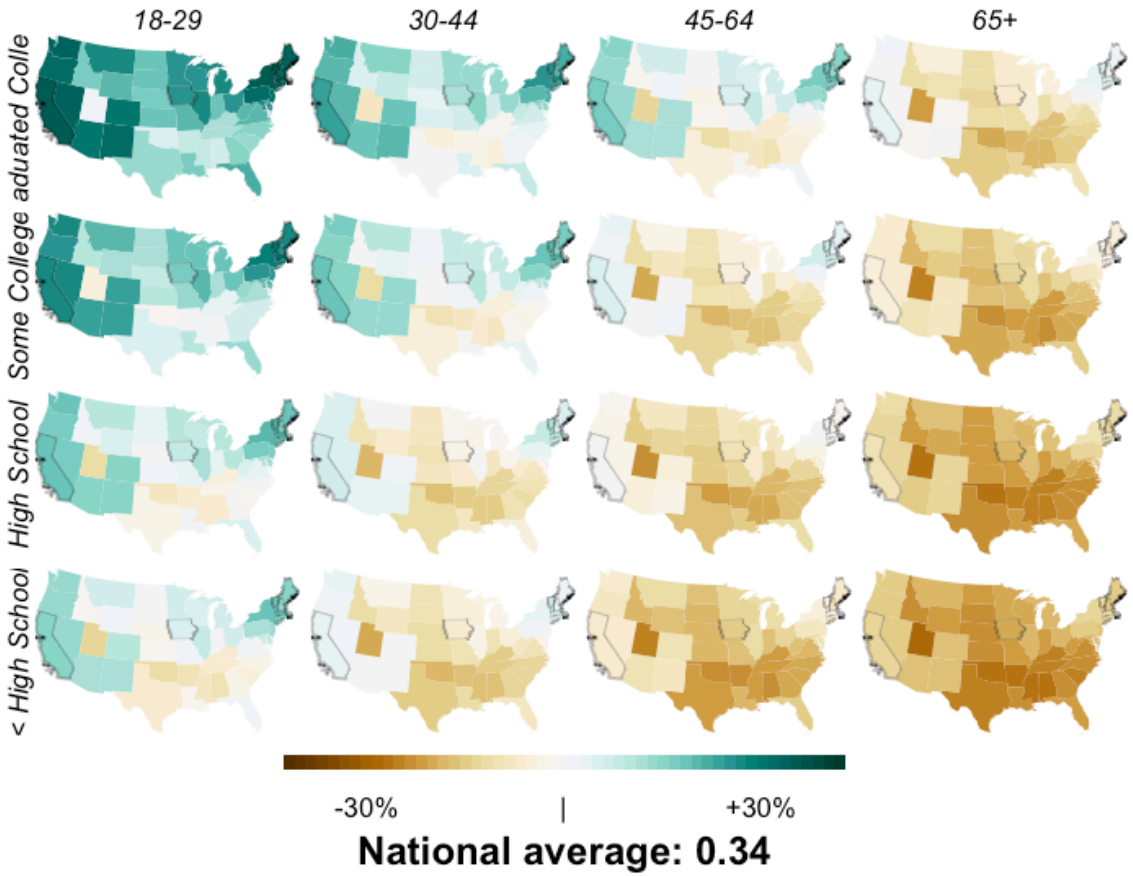
poststratify

```
R> xtable(poststratify(M.full, ~ edu+age)
        *100, digits=0)
```

	18-29	30-44	45-64	65+
< High School	38	28	20	14
High School	42	31	25	16
Some College	51	41	29	21
Graduated College	59	47	40	28

Maps

Same formula interface, where geographic unit is on the left side, strata on the right.



spplot map code

```
R> print(spplot(M.full, state ~ edu+age,
                    subset=TRUE,
                    spmap.states, "STATE", exclude=c("AK","DC","HI"),
                    stroke=list(
                      expression(hasmarriage2010==TRUE),
                      "CA"),
                    center=poststratify(M.full), cuts=50,
                    sub=paste("National average:",
                      format(poststratify(M.full),digits=2)),
                    add.settings=list(
                      regions=list(col=fBasics:::divPalette(51,"BrBG")),
                      superpose.line=list(col=c("#00000055","#00000044"),
                      lwd=c(.3,1.3))),
                      colorkey=list(
                      space="bottom",height=.5,width=.5,
                      labels=list(at=c(.04,.34,.64),
                      labels=c("-30%","|","+30%"), cex=.7)
                      )))
```