Untitled

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The primary research questions are as follows: 1. Do asthmatics have steeper rates of decline (slope) or lower levels of lung function (FEV1) than non-asthmatics, independent of smoking history? regress fev on time for non-asthmatics

```
tbl_regression(lm(fev~year +year:asthma, data = family_asthma_long), estimate_fun = partial(style_ratio
```

```
## Table printed with `knitr::kable()`, not {gt}. Learn why at
## https://www.danieldsjoberg.com/gtsummary/articles/rmarkdown.html
## To suppress this message, include `message = FALSE` in code chunk header.
```

Characteristic	Beta	95% CI	p-value
year	0.004	-0.002, 0.009	0.2
year * ever asthma	-0.005	-0.015, 0.005	0.3

2. Do asthmatic smokers have steeper rates of decline or lower levels of lung function than non-asthmatic smokers? Here you can explore three options 1) using the fixed effect variable ever smoke, 2) using the time dependent variable for smoking, or 3) using the current number of cigarettes per day. When using this I would suggest making it a categorical variable using quartiles etc. Hints:
3. When random effects are nested the order in which they are listed is important. The order in which they are specified (from left to right) is significant – xtmixed assumes that the second factor is nested in the first. In this data subjects (id) are nested within Families (family).
4. Subjects should be tested for a RCM with age but families should not, any adjustment for serial correlation with time done at the subject level would also remove it at the family level.