Modeling - article 1

I am going to run the models and then try to print that to a page, in landscape orientation.

First, with the raw, untransformed data. Using the data with NA removed as things like MedHHinc have some NAs.

```
mod_1 <- lmer(CRMCYPERC ~ 1 + (1|city_st), data = df_na)
mod_2 <- lmer(CRMCYPERC ~ ndvi_mean_cbg_adj + (1|city_st), data = df_na)
mod_3 <- lmer(CRMCYPERC ~ ndvi_mean_cbg_adj + (ndvi_mean_cbg_adj|city_st), data = df_na)
mod_4 <- lmer(CRMCYPERC ~ ndvi_mean_cbg_adj + MedHHinc_000 + disad + divindex + PcU18_whole + log_popde
mod_5 <- lmer(CRMCYPERC ~ ndvi_mean_cbg_adj + MedHHinc_000 + disad + divindex + PcU18_whole + log_popde
```

```
## Warning: Some predictor variables are on very different scales: consider
## rescaling
```

Landscape

```
screenreg(list(mod_1, mod_2, mod_3, mod_4, mod_5))
```

```
##
## ============================================================================================================
##                                          Model 1         Model 2         Model 3         Model 4         Model 5
## ------------------------------------------------------------------------------------------------------------
## (Intercept)                           144.45 ***      304.92 ***      353.13 ***      533.03 ***      424.23 ***
##                                        (5.19)          (6.85)          (13.99)         (12.50)         (14.84)
## ndvi_mean_cbg_adj                                     -37.23 ***      -45.79 ***      -25.94 ***      -28.39 ***
##                                                        (0.62)          (2.22)          (1.79)          (1.66)
## MedHHinc_000                                                                           -0.40 ***       -0.39 ***
##                                                                                        (0.02)          (0.02)
## disad                                                                                  100.22 ***       99.86 ***
##                                                                                        (0.85)          (0.85)
## divindex                                                                               -35.00 ***      -34.81 ***
##                                                                                        (2.61)          (2.61)
## PcU18_whole                                                                             0.04            0.05
##                                                                                        (0.05)          (0.05)
## log_popden_cbg                                                                         -29.78 ***      -29.95 ***
##                                                                                        (0.57)          (0.57)
## PerCapitaOfficers1000                                                                                   4.27
##                                                                                                        (3.55)
## PCgdp15                                                                                                 0.00 ***
##                                                                                                        (0.00)
## factor(clust90_4)2                                                                                     -41.16 ***
##                                                                                                        (8.93)
## factor(clust90_4)3                                                                                      16.21 **
##                                                                                                        (5.90)
## factor(clust90_4)4                                                                                     -23.77 **
##                                                                                                        (7.75)
## rate_violentcrime                                                                                       15.37 ***
##                                                                                                        (0.81)
## ------------------------------------------------------------------------------------------------------------
## AIC                                    751956.20       748461.39       744940.69       717459.74       717133.35
## BIC                                    751983.19       748497.37       744994.67       717558.70       717286.28
## Log Likelihood                        -375975.10      -374226.69      -372464.34      -358718.87      -358549.67
## Num. obs.                              59647           59647           59647           59647           59647
## Num. groups: city_st                     301             301             301             301             301
```

```
## Var: city_st (Intercept)                      7945.18       11838.47       52843.45       35386.27       18675.84
## Var: Residual                                17125.87       16114.56       15038.38        9505.99        9515.70
## Var: city_st ndvi_mean_cbg_adj                                              1155.13         766.89         620.43
## Cov: city_st (Intercept) ndvi_mean_cbg_adj                                 -6807.03       -4874.89       -3283.25
## ============================================================================================================================
## *** p < 0.001, ** p < 0.01, * p < 0.05
```

Now with the grand centered variables

```
mod_6 <- lmer(CRMCYPERC ~ 1 + (1|city_st), data = df_na)
mod_7 <- lmer(CRMCYPERC ~ gndctr_ndvi_cbg_adj + (1|city_st), data = df_na)
mod_8 <- lmer(CRMCYPERC ~ gndctr_ndvi_cbg_adj + (gndctr_ndvi_cbg_adj|city_st), data = df_na)
mod_9 <- lmer(CRMCYPERC ~ gndctr_ndvi_cbg_adj + gndctr_MedHHinc000 + gndctr_disad + gndctr_diver + gndc
mod_10 <- lmer(CRMCYPERC ~ gndctr_ndvi_cbg_adj + gndctr_MedHHinc000 + gndctr_disad + gndctr_diver + gnd
```

```
## Warning: Some predictor variables are on very different scales: consider
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```

```
##
## ============================================================================================================
##                                          Model 1         Model 2         Model 3         Model 4         Model 5
## ------------------------------------------------------------------------------------------------------------
## (Intercept)                           144.45 ***      153.62 ***      167.04 ***      166.05 ***      164.26 ***
##                                        (5.19)          (6.32)          (7.55)          (5.39)          (9.61)
## gndctr_ndvi_cbg_adj                                   -37.23 ***      -45.79 ***      -25.94 ***      -28.39 ***
##                                                        (0.62)          (2.22)          (1.79)          (1.66)
## gndctr_MedHHinc000                                                                    -0.40 ***       -0.39 ***
##                                                                                       (0.02)          (0.02)
## gndctr_disad                                                                         100.22 ***       99.86 ***
##                                                                                       (0.85)          (0.85)
## gndctr_diver                                                                         -35.00 ***      -34.81 ***
##                                                                                       (2.61)          (2.61)
## gndctr_U18                                                                            0.04            0.05
##                                                                                       (0.05)          (0.05)
## gndctr_logpopden                                                                     -29.78 ***      -29.95 ***
##                                                                                       (0.57)          (0.57)
## gndctr_Police                                                                                         4.27
##                                                                                                       (3.55)
## PCgdp15                                                                                               0.00 ***
##                                                                                                       (0.00)
## factor(clust90_4)2                                                                                   -41.16 ***
##                                                                                                       (8.93)
## factor(clust90_4)3                                                                                   16.21 **
##                                                                                                       (5.90)
## factor(clust90_4)4                                                                                   -23.77 **
##                                                                                                       (7.75)
## gndctr_rt_violent                                                                                    15.37 ***
##                                                                                                       (0.81)
## ------------------------------------------------------------------------------------------------------------
## AIC                                    751956.20       748461.39       744940.69       717459.74       717133.35
## BIC                                    751983.19       748497.37       744994.67       717558.70       717286.28
## Log Likelihood                        -375975.10      -374226.69      -372464.34      -358718.87      -358549.67
## Num. obs.                              59647           59647           59647           59647           59647
## Num. groups: city_st                     301             301             301             301             301
## Var: city_st (Intercept)                7945.18        11838.47        16593.96         8429.06         2236.71
## Var: Residual                          17125.87        16114.56        15038.38         9505.99         9515.70
## Var: city_st gndctr_ndvi_cbg_adj                                        1155.13          766.89          620.44
```

```
## Cov: city_st (Intercept) gndctr_ndvi_cbg_adj                                    -2112.51        -1758.22         -761.78
## ================================================================================================================================
## *** p < 0.001, ** p < 0.01, * p < 0.05
```

Interaction

Using grand mean centered variables, level 1 and level 2, let's add the interaction between Green and Climate.

```
## Warning: Some predictor variables are on very different scales: consider
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```

```
##
## ============================================================
##                                                  Model 1
## ------------------------------------------------------------
## (Intercept)                                        162.60 ***
##                                                    (10.07)
## gndctr_ndvi_cbg_adj                                -27.44 ***
##                                                     (3.23)
## factor(clust90_4)2                                 -47.79 ***
##                                                     (9.71)
## factor(clust90_4)3                                  27.60 ***
##                                                     (7.63)
## factor(clust90_4)4                                 -25.22 **
##                                                     (8.86)
## gndctr_MedHHinc000                                  -0.39 ***
##                                                     (0.02)
## gndctr_disad                                        99.85 ***
##                                                     (0.85)
## gndctr_diver                                       -34.87 ***
##                                                     (2.61)
## gndctr_U18                                          0.05
##                                                     (0.05)
## gndctr_logpopden                                   -29.98 ***
##                                                     (0.57)
## gndctr_Police                                       3.65
##                                                     (3.55)
## PCgdp15                                             0.00 ***
##                                                     (0.00)
## gndctr_rt_violent                                   15.41 ***
##                                                     (0.81)
## gndctr_ndvi_cbg_adj:factor(clust90_4)2              14.95 **
##                                                     (5.25)
## gndctr_ndvi_cbg_adj:factor(clust90_4)3              -9.22 *
##                                                     (4.10)
## gndctr_ndvi_cbg_adj:factor(clust90_4)4              1.94
##                                                     (4.72)
## ------------------------------------------------------------
## AIC                                              717099.73
## BIC                                              717279.66
## Log Likelihood                                  -358529.87
## Num. obs.                                        59647
## Num. groups: city_st                               301
## Var: city_st (Intercept)                          2161.43
## Var: city_st gndctr_ndvi_cbg_adj                   575.58
## Cov: city_st (Intercept) gndctr_ndvi_cbg_adj      -704.04
## Var: Residual                                     9515.05
## ============================================================
## *** p < 0.001, ** p < 0.01, * p < 0.05
```