

# Resiliency: Business Models

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## Business Models

Dependent Variables: `z_GINI_INDEX` and `z_unemp_perc`

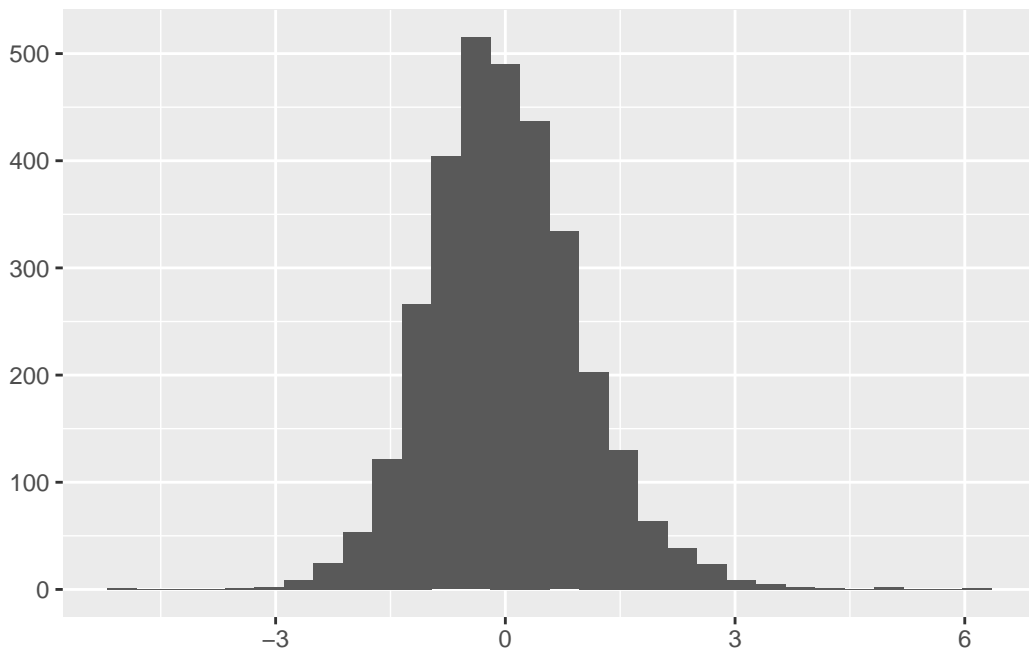


Figure 1: Histogram of Gini Index (z-scored)

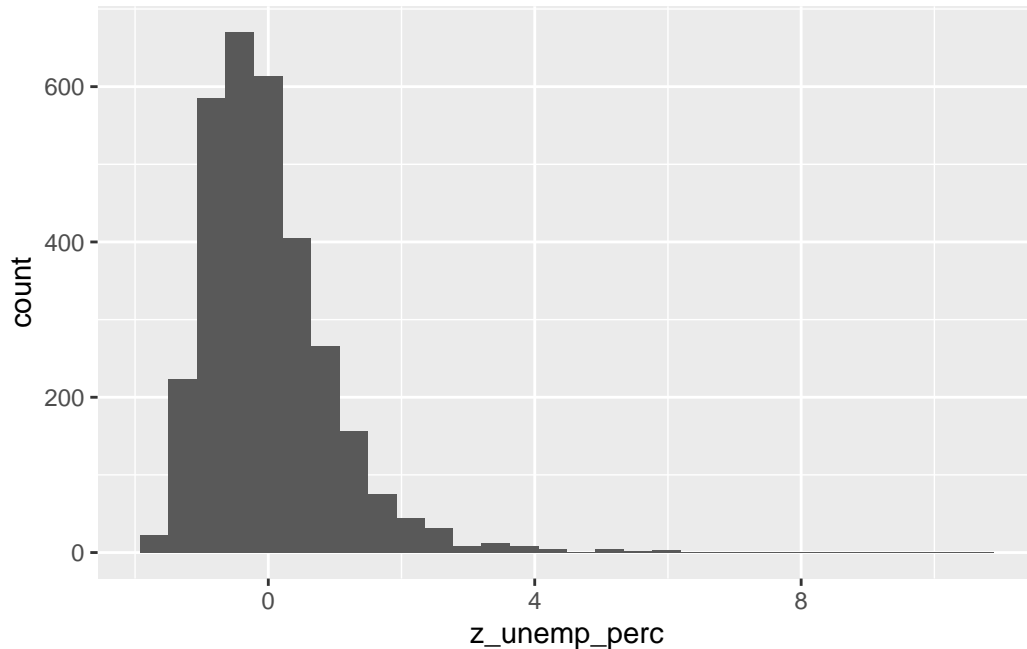


Figure 2: Histogram of Unemployed Percent (z-scored)

## Business Model: Gini Index (DV)

### IV: Demographics (9 variables), DV: Gini Index

```
z_gi_just_demos <- lm(formula = z_ACS_GINI_INDEX ~ z_ACS_PCT_BLACK +
  z_ACS_PCT_HISPAN + z_SVI_RPL_THEME1_SOCIECO + z_SVI_RPL_THEME2_HH_DISB +
  z_SVI_RPL_THEME3_MINO + z_SVI_RPL_THEME4_HH_TRANS + z_ACS_PCT_ENGL_NOT_WELL +
  z_ACS_PCT_NON_CITIZEN + z_ACS_MEDIAN_AGE, data = Z_and_Final_Variables_10.28.22)
summary(z_gi_just_demos)
```

Call:

```
lm(formula = z_ACS_GINI_INDEX ~ z_ACS_PCT_BLACK + z_ACS_PCT_HISPAN +
  z_SVI_RPL_THEME1_SOCIECO + z_SVI_RPL_THEME2_HH_DISB + z_SVI_RPL_THEME3_MINO +
  z_SVI_RPL_THEME4_HH_TRANS + z_ACS_PCT_ENGL_NOT_WELL + z_ACS_PCT_NON_CITIZEN +
  z_ACS_MEDIAN_AGE, data = Z_and_Final_Variables_10.28.22)
```

Residuals:

Min	1Q	Median	3Q	Max
-5.4004	-0.5418	-0.0643	0.4962	4.9409

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	0.00003699	0.01526923	0.002	0.998067
z_ACS_PCT_BLACK	0.23770286	0.02059351	11.543	< 0.0000000000000002
z_ACS_PCT_HISPAN	0.07491901	0.02751725	2.723	0.006513
z_SVI_RPL_THEME1_SOCIECO	0.20977655	0.02464648	8.511	< 0.0000000000000002
z_SVI_RPL_THEME2_HH_DISB	-0.03423599	0.02091873	-1.637	0.101811
z_SVI_RPL_THEME3_MINO	-0.00634909	0.02768863	-0.229	0.818648
z_SVI_RPL_THEME4_HH_TRANS	0.25880792	0.02034454	12.721	< 0.0000000000000002
z_ACS_PCT_ENGL_NOT_WELL	-0.16904992	0.04355145	-3.882	0.000106
z_ACS_PCT_NON_CITIZEN	0.15360409	0.03941076	3.898	0.00009922102
z_ACS_MEDIAN_AGE	0.10989421	0.01826968	6.015	0.00000000201

(Intercept)  
z\_ACS\_PCT\_BLACK \*\*\*  
z\_ACS\_PCT\_HISPAN \*\*  
z\_SVI\_RPL\_THEME1\_SOCIECO \*\*\*  
z\_SVI\_RPL\_THEME2\_HH\_DISB  
z\_SVI\_RPL\_THEME3\_MINO  
z\_SVI\_RPL\_THEME4\_HH\_TRANS \*\*\*  
z\_ACS\_PCT\_ENGL\_NOT\_WELL \*\*\*  
z\_ACS\_PCT\_NON\_CITIZEN \*\*\*  
z\_ACS\_MEDIAN\_AGE \*\*\*  
---

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

Residual standard error: 0.8556 on 3130 degrees of freedom

(1 observation deleted due to missingness)

Multiple R-squared: 0.27, Adjusted R-squared: 0.2679

F-statistic: 128.6 on 9 and 3130 DF, p-value: < 0.00000000000000022

## Confidence Intervals for Demographic IVs

```
confint(z_gi_just_demos)
```

	2.5 %	97.5 %
(Intercept)	-0.02990173	0.029975721
z_ACS_PCT_BLACK	0.19732471	0.278081002
z_ACS_PCT_HISPAN	0.02096532	0.128872703
z_SVI_RPL_THEME1_SOCIECO	0.16145165	0.258101453

z_SVI_RPL_THEME2_HH_DISB	-0.07525180	0.006779817
z_SVI_RPL_THEME3_MINO	-0.06063881	0.047940629
z_SVI_RPL_THEME4_HH_TRANS	0.21891793	0.298697908
z_ACS_PCT_ENGL_NOT_WELL	-0.25444222	-0.083657623
z_ACS_PCT_NON_CITIZEN	0.07633053	0.230877656
z_ACS_MEDIAN_AGE	0.07407245	0.145715971

## VIF for Demographic IVs

```
vif(z_gi_just_demos)
```

z_ACS_PCT_BLACK	z_ACS_PCT_HISPAN	z_SVI_RPL_THEME1_SOCIECO
1.818786	3.226749	2.604590
z_SVI_RPL_THEME2_HH_DISB	z_SVI_RPL_THEME3_MINO	z_SVI_RPL_THEME4_HH_TRANS
1.875876	3.286010	1.775255
z_ACS_PCT_ENGL_NOT_WELL	z_ACS_PCT_NON_CITIZEN	z_ACS_MEDIAN_AGE
8.135213	6.661849	1.431619

## IV: Food & Housing (14 variables), DV: Gini Index

```
z_gi_just_foodhouse <- lm(formula = z_ACS_GINI_INDEX ~
  z_food_afford + z_fd_enviro_indx + z_fi_percent +
  z_ACS_PCT_FOOD_STAMP + z_childelig_lunch_perc +
  z_shp_percent + z_shcb_percent + z_ACS_PCT_NO_VEH +
  z_ACS_PCT_RENTER_HH_CHILD + z_ACS_PCT_RENT_COST_30PCT +
  z_ACS_PCT_MOBILE_HOME + z_ACS_PCT_OWNED_HH +
  z_ACS_PCT_OWNER_HH_CHILD + z_ACS_MEDIAN_HOME_VALUE,
  data = Z_and_Final_Variables_10.28.22)
summary(z_gi_just_foodhouse)
```

Call:

```
lm(formula = z_ACS_GINI_INDEX ~ z_food_afford + z_fd_enviro_indx +
  z_fi_percent + z_ACS_PCT_FOOD_STAMP + z_childelig_lunch_perc +
  z_shp_percent + z_shcb_percent + z_ACS_PCT_NO_VEH + z_ACS_PCT_RENTER_HH_CHILD +
  z_ACS_PCT_RENT_COST_30PCT + z_ACS_PCT_MOBILE_HOME + z_ACS_PCT_OWNED_HH +
  z_ACS_PCT_OWNER_HH_CHILD + z_ACS_MEDIAN_HOME_VALUE, data = Z_and_Final_Variables_10.28.22)
```

Residuals:

Min	1Q	Median	3Q	Max
-3.2552	-0.4807	-0.0746	0.4203	3.7761

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	0.005049	0.014672	0.344	0.73079
z_food_afford	0.156195	0.023071	6.770	0.0000000000156 ***
z_fd_enviro_indx	-0.037758	0.025364	-1.489	0.13669
z_fi_percent	0.152193	0.029794	5.108	0.0000003474728 ***
z_ACS_PCT_FOOD_STAMP	-0.038389	0.028300	-1.356	0.17505
z_childelig_lunch_perc	0.133215	0.026039	5.116	0.0000003333807 ***
z_shp_percent	-0.118391	0.026633	-4.445	0.0000091206017 ***
z_shcb_percent	0.292342	0.029185	10.017	< 0.0000000000000002 ***
z_ACS_PCT_NO_VEH	0.084426	0.020099	4.201	0.0000274708181 ***
z_ACS_PCT_RENTER_HH_CHILD	-0.118919	0.017650	-6.738	0.0000000000195 ***
z_ACS_PCT_RENT_COST_30PCT	0.089767	0.021029	4.269	0.0000203089744 ***
z_ACS_PCT_MOBILE_HOME	0.064930	0.020108	3.229	0.00126 **
z_ACS_PCT_OWNED_HH	-0.106831	0.020522	-5.206	0.0000002073979 ***
z_ACS_PCT_OWNER_HH_CHILD	-0.031415	0.017289	-1.817	0.06931 .
z_ACS_MEDIAN_HOME_VALUE	0.037419	0.022373	1.672	0.09454 .

---

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

Residual standard error: 0.7644 on 2777 degrees of freedom

(349 observations deleted due to missingness)

Multiple R-squared: 0.4134, Adjusted R-squared: 0.4104

F-statistic: 139.8 on 14 and 2777 DF, p-value: < 0.00000000000000022

## Confidence Intervals for Food & Housing IVs

```
confint(z_gi_just_foodhouse)
```

	2.5 %	97.5 %
(Intercept)	-0.023720942	0.033818561
z_food_afford	0.110957145	0.201433106
z_fd_enviro_indx	-0.087491292	0.011975777
z_fi_percent	0.093771231	0.210614385
z_ACS_PCT_FOOD_STAMP	-0.093880762	0.017102404
z_childelig_lunch_perc	0.082157193	0.184272648
z_shp_percent	-0.170613140	-0.066169011
z_shcb_percent	0.235116421	0.349568339

z_ACS_PCT_NO_VEH	0.045015377	0.123836189
z_ACS_PCT_RENTER_HH_CHILD	-0.153527483	-0.084310760
z_ACS_PCT_RENT_COST_30PCT	0.048534013	0.131000214
z_ACS_PCT_MOBILE_HOME	0.025502954	0.104357608
z_ACS_PCT_OWNED_HH	-0.147071350	-0.066591277
z_ACS_PCT_OWNER_HH_CHILD	-0.065315732	0.002484732
z_ACS_MEDIAN_HOME_VALUE	-0.006450745	0.081287812

## VIF for Food & Housing IVs

```
vif(z_gi_just_foodhouse)
```

z_food_afford	z_fd_enviro_indx	z_fi_percent
2.621112	3.130668	4.291634
z_ACS_PCT_FOOD_STAMP	z_childelig_lunch_perc	z_shp_percent
3.835126	2.604164	3.513064
z_shcb_percent	z_ACS_PCT_NO_VEH	z_ACS_PCT_RENTER_HH_CHILD
4.130954	2.031232	1.510216
z_ACS_PCT_RENT_COST_30PCT	z_ACS_PCT_MOBILE_HOME	z_ACS_PCT_OWNED_HH
2.111717	1.958472	1.985582
z_ACS_PCT_OWNER_HH_CHILD	z_ACS_MEDIAN_HOME_VALUE	
1.476876	2.335424	

## IV: Education (3 variables), DV: Gini Index

```
z_gi_just_ed <- lm(formula = z_ACS_GINI_INDEX ~ z_hsg_rate +
  z_sc_percent + z_ms_average, data = Z_and_Final_Variables_10.28.22)
summary(z_gi_just_ed)
```

Call:

```
lm(formula = z_ACS_GINI_INDEX ~ z_hsg_rate + z_sc_percent + z_ms_average,
  data = Z_and_Final_Variables_10.28.22)
```

Residuals:

Min	1Q	Median	3Q	Max
-2.9621	-0.6483	-0.0513	0.5771	5.5716

Coefficients:

```

              Estimate Std. Error t value      Pr(>|t|)
(Intercept)   0.02531    0.01973   1.283        0.2
z_hsg_rate   -0.16446    0.02157  -7.626 0.00000000000000351 ***
z_sc_percent -0.13026    0.02109  -6.176 0.00000000007755628 ***
z_ms_average -0.14962    0.02047  -7.309 0.00000000000003692 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.948 on 2323 degrees of freedom
(814 observations deleted due to missingness)
Multiple R-squared:  0.08334,    Adjusted R-squared:  0.08216
F-statistic:  70.4 on 3 and 2323 DF,  p-value: < 0.00000000000000022

```

## Confidence Intervals for Education IVs

```
confint(z_gi_just_ed)
```

```

              2.5 %      97.5 %
(Intercept) -0.0133804  0.06400937
z_hsg_rate   -0.2067501 -0.12217011
z_sc_percent -0.1716254 -0.08889941
z_ms_average -0.1897616 -0.10947381

```

## VIF for Education IVs

```
vif(z_gi_just_ed)
```

```

z_hsg_rate z_sc_percent z_ms_average
1.022551    1.083295    1.098559

```

## IV: Technology (3 variables), DV: Gini Index

```

z_gi_just_tech <- lm(formula = z_ACS_GINI_INDEX ~ z_ACS_PCT_NO_PC +
  z_ACS_PCT_SMARTPHONE + z_ACS_PCT_BROADBAND, data = Z_and_Final_Variables_10.28.22)
summary(z_gi_just_tech)

```

```
Call:
lm(formula = z_ACS_GINI_INDEX ~ z_ACS_PCT_NO_PC + z_ACS_PCT_SMARTPHONE +
    z_ACS_PCT_BROADBAND, data = Z_and_Final_Variables_10.28.22)
```

Residuals:

Min	1Q	Median	3Q	Max
-4.5923	-0.6234	-0.0572	0.5553	4.5251

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	0.0003157	0.0167380	0.019	0.985
z_ACS_PCT_NO_PC	0.3470477	0.0434047	7.996	0.00000000000000018 ***
z_ACS_PCT_SMARTPHONE	0.0895052	0.0209604	4.270	0.0000201091922317 ***
z_ACS_PCT_BROADBAND	0.0495532	0.0473263	1.047	0.295

---

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

Residual standard error: 0.9379 on 3136 degrees of freedom

(1 observation deleted due to missingness)

Multiple R-squared: 0.1211, Adjusted R-squared: 0.1203

F-statistic: 144.1 on 3 and 3136 DF, p-value: < 0.00000000000000022

## Confidence Intervals for Technology IVs

```
confint(z_gi_just_tech)
```

	2.5 %	97.5 %
(Intercept)	-0.03250286	0.0331342
z_ACS_PCT_NO_PC	0.26194321	0.4321521
z_ACS_PCT_SMARTPHONE	0.04840770	0.1306027
z_ACS_PCT_BROADBAND	-0.04324047	0.1423468

## VIF for Technology IVs

```
vif(z_gi_just_tech)
```

z_ACS_PCT_NO_PC	z_ACS_PCT_SMARTPHONE	z_ACS_PCT_BROADBAND
6.705097	1.567987	7.981994



#### IV: HWCC (7 variables), DV: Gini Index

```
z_gi_just_HWCC <- lm(formula = z_ACS_GINI_INDEX ~ z_pphd_avgnum +  
  z_pmhd_avgnum + z_lbw_percent_lbw + z_pi_phy_inact + z_cip_perc +  
  z_csph_perc + z_ACS_PCT_CHILD_DISAB, data = Z_and_Final_Variables_10.28.22)  
summary(z_gi_just_HWCC)
```

Call:

```
lm(formula = z_ACS_GINI_INDEX ~ z_pphd_avgnum + z_pmhd_avgnum +  
  z_lbw_percent_lbw + z_pi_phy_inact + z_cip_perc + z_csph_perc +  
  z_ACS_PCT_CHILD_DISAB, data = Z_and_Final_Variables_10.28.22)
```

Residuals:

Min	1Q	Median	3Q	Max
-3.8835	-0.5314	-0.0567	0.4849	4.8053

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	0.01169	0.01465	0.798	0.424957
z_pphd_avgnum	-0.09396	0.04812	-1.953	0.050963 .
z_pmhd_avgnum	0.14512	0.04316	3.362	0.000782 ***
z_lbw_percent_lbw	0.11582	0.01950	5.941	0.00000000316 ***
z_pi_phy_inact	-0.15549	0.01759	-8.839	< 0.0000000000000002 ***
z_cip_perc	0.40797	0.02842	14.353	< 0.0000000000000002 ***
z_csph_perc	0.13184	0.02179	6.051	0.00000000161 ***
z_ACS_PCT_CHILD_DISAB	-0.05053	0.01627	-3.106	0.001915 **

---

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

Residual standard error: 0.8052 on 3025 degrees of freedom

(108 observations deleted due to missingness)

Multiple R-squared: 0.3143, Adjusted R-squared: 0.3127

F-statistic: 198.1 on 7 and 3025 DF, p-value: < 0.00000000000000022

#### Confidence Intervals for HWCC IVs

```
confint(z_gi_just_HWCC)
```

	2.5 %	97.5 %
(Intercept)	-0.01702978	0.0404030051
z_pphd_avgnum	-0.18831979	0.0003938569
z_pmhd_avgnum	0.06049546	0.2297384855
z_lbw_percent_lbw	0.07759564	0.1540517238
z_pi_phy_inact	-0.18998365	-0.1209965935
z_cip_perc	0.35223445	0.4636971046
z_csph_perc	0.08912031	0.1745571384
z_ACS_PCT_CHILD_DISAB	-0.08243433	-0.0186311175

## VIF for HWCC IVs

```
vif(z_gi_just_HWCC)
```

z_pphd_avgnum	z_pmhd_avgnum	z_lbw_percent_lbw
10.759761	8.530993	1.776160
z_pi_phy_inact	z_cip_perc	z_csph_perc
1.467855	3.808865	2.124028
z_ACS_PCT_CHILD_DISAB		
1.164631		

## IV: Health A (6 variables), DV: Gini Index

```
z_gi_just_healthA <- lm(formula = z_ACS_GINI_INDEX ~ z_phys_per_cap +
  z_mhp_per_cap + z_dents_per_cap + z_uninsur_perc + z_opcp_rate +
  z_TeenBirths, data = Z_and_Final_Variables_10.28.22)
summary(z_gi_just_healthA)
```

Call:

```
lm(formula = z_ACS_GINI_INDEX ~ z_phys_per_cap + z_mhp_per_cap +
  z_dents_per_cap + z_uninsur_perc + z_opcp_rate + z_TeenBirths,
  data = Z_and_Final_Variables_10.28.22)
```

Residuals:

Min	1Q	Median	3Q	Max
-5.3512	-0.5843	-0.0549	0.5247	6.3217

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	0.02435	0.01707	1.427	0.154
z_phys_per_cap	0.03779	0.02420	1.561	0.119
z_mhp_per_cap	0.17855	0.02232	7.999	0.00000000000000177 ***
z_dents_per_cap	-0.02734	0.02348	-1.164	0.244
z_uninsur_perc	0.24490	0.01772	13.818	< 0.00000000000000002 ***
z_opcp_rate	0.12267	0.01965	6.244	0.00000000048509562 ***
z_TeenBirths	0.09134	0.01795	5.088	0.00000038335572817 ***

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

Residual standard error: 0.9367 on 3007 degrees of freedom

(127 observations deleted due to missingness)

Multiple R-squared: 0.1199, Adjusted R-squared: 0.1181

F-statistic: 68.27 on 6 and 3007 DF, p-value: < 0.000000000000000022

## Confidence Intervals for Health A IVs

```
confint(z_gi_just_healthA)
```

	2.5 %	97.5 %
(Intercept)	-0.009115169	0.05781146
z_phys_per_cap	-0.009666375	0.08524088
z_mhp_per_cap	0.134785597	0.22231773
z_dents_per_cap	-0.073375489	0.01870532
z_uninsur_perc	0.210144974	0.27964779
z_opcp_rate	0.084154815	0.16119388
z_TeenBirths	0.056145087	0.12654168

## VIF for Health A IVs

```
vif(z_gi_just_healthA)
```

z_phys_per_cap	z_mhp_per_cap	z_dents_per_cap	z_uninsur_perc	z_opcp_rate
1.991955	1.674380	1.900260	1.092453	1.325375
z_TeenBirths				
1.148242				

#### IV: Health B (5 variables), DV: Gini Index

```
z_gi_just_healthB <- lm(formula = z_ACS_GINI_INDEX ~ z_phs_rate +  
  z_ms_perc_ann + z_AMFAR_AMATFAC + z_MP_PERCPEN + z_AHRF_RURAL_H_CLINIC,  
  data = Z_and_Final_Variables_10.28.22)  
summary(z_gi_just_healthB)
```

Call:

```
lm(formula = z_ACS_GINI_INDEX ~ z_phs_rate + z_ms_perc_ann +  
  z_AMFAR_AMATFAC + z_MP_PERCPEN + z_AHRF_RURAL_H_CLINIC, data = Z_and_Final_Variables_10.28.22)
```

Residuals:

Min	1Q	Median	3Q	Max
-3.3049	-0.6206	-0.0730	0.5538	5.4266

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	0.02352	0.01706	1.379	0.1681
z_phs_rate	0.18980	0.01785	10.635	< 0.0000000000000002 ***
z_ms_perc_ann	-0.09761	0.01806	-5.405	0.0000000699 ***
z_AMFAR_AMATFAC	0.15630	0.01701	9.188	< 0.0000000000000002 ***
z_MP_PERCPEN	0.03076	0.01765	1.742	0.0815 .
z_AHRF_RURAL_H_CLINIC	0.03350	0.01708	1.961	0.0500 *

---

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

Residual standard error: 0.9385 on 3023 degrees of freedom

(112 observations deleted due to missingness)

Multiple R-squared: 0.08166, Adjusted R-squared: 0.08014

F-statistic: 53.76 on 5 and 3023 DF, p-value: < 0.00000000000000022

#### Confidence Intervals for Health B IVs

```
confint(z_gi_just_healthB)
```

	2.5 %	97.5 %
(Intercept)	-0.0099288473294	0.05696206
z_phs_rate	0.1548087599808	0.22479903

z_ms_perc_ann	-0.1330193801182	-0.06219842
z_AMFAR_AMATFAC	0.1229462626395	0.18965486
z_MP_PERCPEN	-0.0038543090329	0.06537573
z_AHRF_RURAL_H_CLINIC	0.0000002729526	0.06699397

## VIF for Health B IVs

```
vif(z_gi_just_healthB)
```

z_phs_rate	z_ms_perc_ann	z_AMFAR_AMATFAC
1.086829	1.082936	1.030153
z_MP_PERCPEN	z_AHRF_RURAL_H_CLINIC	
1.073631	1.026651	

## IV: Business (2 variables), DV: Gini Index

**NOTE: both DVs for Business (Gini and unemp\_perc) have been removed as IVs here and in the final Business model**

```
z_gi_just_bus <- lm(formula = z_ACS_GINI_INDEX ~ z_ACS_MEDIAN_HH_INCOME +
  z_ACS_PCT_WORK_NO_CAR, data = Z_and_Final_Variables_10.28.22)
summary(z_gi_just_bus)
```

Call:

```
lm(formula = z_ACS_GINI_INDEX ~ z_ACS_MEDIAN_HH_INCOME + z_ACS_PCT_WORK_NO_CAR,
  data = Z_and_Final_Variables_10.28.22)
```

Residuals:

Min	1Q	Median	3Q	Max
-4.3866	-0.6047	-0.0704	0.5565	5.1394

Coefficients:

	Estimate	Std. Error	t value
(Intercept)	-0.0000000000000009202	0.01628207184235696062	0.000
z_ACS_MEDIAN_HH_INCOME	-0.37411577484645330838	0.01629398167264709679	-22.960
z_ACS_PCT_WORK_NO_CAR	0.15556279436469533373	0.01629398167264713149	9.547

Pr(>|t|)

(Intercept)	1
-------------	---

```

z_ACS_MEDIAN_HH_INCOME <0.0000000000000002 ***
z_ACS_PCT_WORK_NO_CAR <0.0000000000000002 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.9124 on 3137 degrees of freedom
(1 observation deleted due to missingness)
Multiple R-squared:  0.1681,    Adjusted R-squared:  0.1676
F-statistic: 316.9 on 2 and 3137 DF,  p-value: < 0.00000000000000022

```

## Confidence Intervals for Business IVs

```
confint(z_gi_just_bus)
```

	2.5 %	97.5 %
(Intercept)	-0.03192459	0.03192459
z_ACS_MEDIAN_HH_INCOME	-0.40606372	-0.34216783
z_ACS_PCT_WORK_NO_CAR	0.12361485	0.18751074

## VIF for Business IVs

```
vif(z_gi_just_bus)
```

z_ACS_MEDIAN_HH_INCOME	z_ACS_PCT_WORK_NO_CAR
1.001145	1.001145

## IV: Government (5 variables), DV: Gini Index

```

z_gi_just_gov <- lm(formula = z_ACS_GINI_INDEX ~ z_soc_assoc_num +
  z_aeo_perc_w_acc + z_dwv_presence + z_ACS_PCT_HH_PUB_ASSIST +
  z_AHRF_TXC_SITE_NO_CNTRL, data = Z_and_Final_Variables_10.28.22)
summary(z_gi_just_gov)

```

Call:

```
lm(formula = z_ACS_GINI_INDEX ~ z_soc_assoc_num + z_aeo_perc_w_acc +
  z_dwv_presence + z_ACS_PCT_HH_PUB_ASSIST + z_AHRF_TXC_SITE_NO_CNTRL,
```

```
data = Z_and_Final_Variables_10.28.22)
```

Residuals:

Min	1Q	Median	3Q	Max
-5.2519	-0.6506	-0.0657	0.5733	5.6629

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	-0.002062	0.017358	-0.119	0.905444
z_soc_assoc_num	0.212032	0.018879	11.231	< 0.0000000000000002 ***
z_aeo_perc_w_acc	-0.139996	0.018742	-7.470	0.0000000000000104 ***
z_dwv_presence	0.061991	0.017615	3.519	0.000439 ***
z_ACS_PCT_HH_PUB_ASSIST	0.114853	0.017948	6.399	0.000000000179843 ***
z_AHRF_TXC_SITE_NO_CNTRL	-0.007771	0.017854	-0.435	0.663410

---

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

Residual standard error: 0.9648 on 3085 degrees of freedom

(50 observations deleted due to missingness)

Multiple R-squared: 0.06237, Adjusted R-squared: 0.06085

F-statistic: 41.04 on 5 and 3085 DF, p-value: < 0.00000000000000022

## Confidence Intervals for Government IVs

```
confint(z_gi_just_gov)
```

	2.5 %	97.5 %
(Intercept)	-0.03609690	0.03197270
z_soc_assoc_num	0.17501525	0.24904815
z_aeo_perc_w_acc	-0.17674365	-0.10324741
z_dwv_presence	0.02745304	0.09652897
z_ACS_PCT_HH_PUB_ASSIST	0.07966209	0.15004444
z_AHRF_TXC_SITE_NO_CNTRL	-0.04277876	0.02723649

## VIF for Government IVs

```
vif(z_gi_just_gov)
```

z_soc_assoc_num	z_aeo_perc_w_acc	z_dwv_presence
1.197141	1.153198	1.029896
z_ACS_PCT_HH_PUB_ASSIST	z_AHRF_TXC_SITE_NO_CNTRL	
1.011419	1.063773	

## Final Government Model, DV: Gini Index; IVs: 54

```
z_gi_levels_12345678 <- lm(formula = z_ACS_GINI_INDEX ~ z_ACS_PCT_BLACK +
  z_ACS_PCT_HISPAN + z_SVI_RPL_THEME1_SOCIECO + z_SVI_RPL_THEME2_HH_DISB +
  z_SVI_RPL_THEME3_MINO + z_SVI_RPL_THEME4_HH_TRANS + z_ACS_PCT_ENGL_NOT_WELL +
  z_ACS_PCT_NON_CITIZEN + z_ACS_MEDIAN_AGE + z_food_afford +
  z_fd_enviro_indx + z_fi_percent + z_ACS_PCT_FOOD_STAMP +
  z_childelig_lunch_perc + z_shp_percent + z_shcb_percent +
  z_ACS_PCT_NO_VEH + z_ACS_PCT_RENTER_HH_CHILD + z_ACS_PCT_RENT_COST_30PCT +
  z_ACS_PCT_MOBILE_HOME + z_ACS_PCT_OWNED_HH + z_ACS_PCT_OWNER_HH_CHILD +
  z_ACS_MEDIAN_HOME_VALUE + z_hsg_rate + z_sc_percent + z_ms_average +
  z_ACS_PCT_NO_PC + z_ACS_PCT_SMARTPHONE + z_ACS_PCT_BROADBAND +
  z_pphd_avgnum + z_pmhd_avgnum + z_lbvw_percent_lbvw + z_pi_phy_inact +
  z_cip_perc + z_csph_perc + z_ACS_PCT_CHILD_DISAB + z_phys_per_cap +
  z_mhp_per_cap + z_dents_per_cap + z_uninsur_perc + z_opcp_rate +
  z_TeenBirths + z_phs_rate + z_ms_perc_ann + z_AMFAR_AMATFAC +
  z_MP_PERCPEN + z_AHRF_RURAL_H_CLINIC + z_ACS_MEDIAN_HH_INCOME +
  z_ACS_PCT_WORK_NO_CAR + z_soc_assoc_num + z_aeo_perc_w_acc +
  z_dwv_presence + z_ACS_PCT_HH_PUB_ASSIST + z_AHRF_TXC_SITE_NO_CNTRL,
  data = Z_and_Final_Variables_10.28.22)
summary(z_gi_levels_12345678)
```

Call:

```
lm(formula = z_ACS_GINI_INDEX ~ z_ACS_PCT_BLACK + z_ACS_PCT_HISPAN +
  z_SVI_RPL_THEME1_SOCIECO + z_SVI_RPL_THEME2_HH_DISB + z_SVI_RPL_THEME3_MINO +
  z_SVI_RPL_THEME4_HH_TRANS + z_ACS_PCT_ENGL_NOT_WELL + z_ACS_PCT_NON_CITIZEN +
  z_ACS_MEDIAN_AGE + z_food_afford + z_fd_enviro_indx + z_fi_percent +
  z_ACS_PCT_FOOD_STAMP + z_childelig_lunch_perc + z_shp_percent +
  z_shcb_percent + z_ACS_PCT_NO_VEH + z_ACS_PCT_RENTER_HH_CHILD +
  z_ACS_PCT_RENT_COST_30PCT + z_ACS_PCT_MOBILE_HOME + z_ACS_PCT_OWNED_HH +
  z_ACS_PCT_OWNER_HH_CHILD + z_ACS_MEDIAN_HOME_VALUE + z_hsg_rate +
  z_sc_percent + z_ms_average + z_ACS_PCT_NO_PC + z_ACS_PCT_SMARTPHONE +
  z_ACS_PCT_BROADBAND + z_pphd_avgnum + z_pmhd_avgnum + z_lbvw_percent_lbvw +
  z_pi_phy_inact + z_cip_perc + z_csph_perc + z_ACS_PCT_CHILD_DISAB +
```



```

z_phys_per_cap + z_mhp_per_cap + z_dents_per_cap + z_uninsur_perc +
z_opcp_rate + z_TeenBirths + z_phs_rate + z_ms_perc_ann +
z_AMFAR_AMATFAC + z_MP_PERCPEN + z_AHRF_RURAL_H_CLINIC +
z_ACS_MEDIAN_HH_INCOME + z_ACS_PCT_WORK_NO_CAR + z_soc_assoc_num +
z_aeo_perc_w_acc + z_dwv_presence + z_ACS_PCT_HH_PUB_ASSIST +
z_AHRF_TXC_SITE_NO_CNTRL, data = Z_and_Final_Variables_10.28.22)

```

Residuals:

Min	1Q	Median	3Q	Max
-2.1373	-0.4003	-0.0398	0.3291	3.3718

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )	
(Intercept)	0.012253	0.015675	0.782	0.434492	
z_ACS_PCT_BLACK	-0.086199	0.032844	-2.624	0.008742	**
z_ACS_PCT_HISPAN	0.025843	0.032628	0.792	0.428435	
z_SVI_RPL_THEME1_SOCIECO	-0.312079	0.044513	-7.011	0.0000000000032012	***
z_SVI_RPL_THEME2_HH_DISB	0.012042	0.025225	0.477	0.633153	
z_SVI_RPL_THEME3_MINO	0.127080	0.030464	4.171	0.0000315303926452	***
z_SVI_RPL_THEME4_HH_TRANS	0.012951	0.024286	0.533	0.593913	
z_ACS_PCT_ENGL_NOT_WELL	-0.097995	0.047961	-2.043	0.041159	*
z_ACS_PCT_NON_CITIZEN	0.104664	0.043819	2.389	0.017005	*
z_ACS_MEDIAN_AGE	-0.054696	0.035139	-1.557	0.119724	
z_food_afford	-0.040078	0.028232	-1.420	0.155884	
z_fd_enviro_indx	-0.023290	0.031856	-0.731	0.464807	
z_fi_percent	0.081502	0.042699	1.909	0.056436	.
z_ACS_PCT_FOOD_STAMP	0.005187	0.038372	0.135	0.892493	
z_childelig_lunch_perc	-0.042117	0.031277	-1.347	0.178256	
z_shp_percent	-0.029749	0.037359	-0.796	0.425944	
z_shcb_percent	0.216673	0.035187	6.158	0.0000000008860015	***
z_ACS_PCT_NO_VEH	0.173933	0.054129	3.213	0.001332	**
z_ACS_PCT_RENTER_HH_CHILD	-0.095839	0.021439	-4.470	0.0000082352500404	***
z_ACS_PCT_RENT_COST_30PCT	0.063856	0.023196	2.753	0.005959	**
z_ACS_PCT_MOBILE_HOME	0.053901	0.024112	2.235	0.025497	*
z_ACS_PCT_OWNED_HH	0.023469	0.031067	0.755	0.450086	
z_ACS_PCT_OWNER_HH_CHILD	0.043925	0.031277	1.404	0.160360	
z_ACS_MEDIAN_HOME_VALUE	0.267945	0.038204	7.014	0.0000000000031443	***
z_hsg_rate	0.089716	0.018499	4.850	0.0000013294541962	***
z_sc_percent	0.097599	0.027786	3.513	0.000453	***
z_ms_average	-0.015044	0.032119	-0.468	0.639564	
z_ACS_PCT_NO_PC	0.217860	0.043502	5.008	0.0000005968787743	***
z_ACS_PCT_SMARTPHONE	0.014925	0.022934	0.651	0.515242	
z_ACS_PCT_BROADBAND	0.026712	0.043269	0.617	0.537085	

z_pphd_avgnum	-0.050423	0.054512	-0.925	0.355084	
z_pmhd_avgnum	0.111072	0.048058	2.311	0.020920	*
z_lbw_percent_lbw	0.091348	0.025077	3.643	0.000277	***
z_pi_phy_inact	0.023761	0.020811	1.142	0.253707	
z_cip_perc	0.325472	0.041748	7.796	0.0000000000000101	***
z_csph_perc	-0.020347	0.029735	-0.684	0.493882	
z_ACS_PCT_CHILD_DISAB	0.001375	0.016835	0.082	0.934908	
z_phys_per_cap	0.145284	0.024606	5.904	0.0000000041317280	***
z_mhp_per_cap	0.072770	0.021617	3.366	0.000776	***
z_dents_per_cap	0.079029	0.024659	3.205	0.001372	**
z_uninsur_perc	0.170298	0.025609	6.650	0.0000000000375413	***
z_opcp_rate	-0.034286	0.019309	-1.776	0.075929	.
z_TeenBirths	-0.062301	0.049593	-1.256	0.209165	
z_phs_rate	0.097319	0.017663	5.510	0.0000000404598197	***
z_ms_perc_ann	0.070177	0.020642	3.400	0.000687	***
z_AMFAR_AMATFAC	0.011276	0.021191	0.532	0.594694	
z_MP_PERCPEN	0.002021	0.016599	0.122	0.903088	
z_AHRF_RURAL_H_CLINIC	0.013071	0.014541	0.899	0.368814	
z_ACS_MEDIAN_HH_INCOME	-0.386529	0.051233	-7.545	0.0000000000000679	***
z_ACS_PCT_WORK_NO_CAR	-0.120341	0.045375	-2.652	0.008060	**
z_soc_assoc_num	0.112405	0.055753	2.016	0.043917	*
z_aeo_perc_w_acc	-0.047677	0.020552	-2.320	0.020448	*
z_dwv_presence	0.020681	0.015102	1.369	0.171012	
z_ACS_PCT_HH_PUB_ASSIST	0.016304	0.019946	0.817	0.413801	
z_AHRF_TXC_SITE_NO_CNTRL	-0.007614	0.015539	-0.490	0.624202	

---

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

Residual standard error: 0.6297 on 2045 degrees of freedom

(1041 observations deleted due to missingness)

Multiple R-squared: 0.5986, Adjusted R-squared: 0.588

F-statistic: 56.47 on 54 and 2045 DF, p-value: < 0.00000000000000022

## Confidence Intervals for Final Model

```
confint(z_gi_levels_12345678)
```

	2.5 %	97.5 %
(Intercept)	-0.018487629	0.042993140
z_ACS_PCT_BLACK	-0.150610162	-0.021787728
z_ACS_PCT_HISPAN	-0.038145703	0.089831069

z_SVI_RPL_THEME1_SOCIECO	-0.399373588	-0.224784319
z_SVI_RPL_THEME2_HH_DISB	-0.037428210	0.061511491
z_SVI_RPL_THEME3_MINO	0.067336180	0.186824325
z_SVI_RPL_THEME4_HH_TRANS	-0.034677076	0.060578380
z_ACS_PCT_ENGL_NOT_WELL	-0.192053506	-0.003936977
z_ACS_PCT_NON_CITIZEN	0.018729569	0.190598683
z_ACS_MEDIAN_AGE	-0.123607219	0.014214910
z_food_afford	-0.095445515	0.015289267
z_fd_enviro_indx	-0.085763523	0.039184073
z_fi_percent	-0.002236970	0.165240395
z_ACS_PCT_FOOD_STAMP	-0.070065065	0.080438210
z_childelig_lunch_perc	-0.103454854	0.019220102
z_shp_percent	-0.103014633	0.043516120
z_shcb_percent	0.147666372	0.285679678
z_ACS_PCT_NO_VEH	0.067779947	0.280085823
z_ACS_PCT_RENTER_HH_CHILD	-0.137883084	-0.053795215
z_ACS_PCT_RENT_COST_30PCT	0.018365814	0.109345245
z_ACS_PCT_MOBILE_HOME	0.006613820	0.101187300
z_ACS_PCT_OWNED_HH	-0.037458039	0.084395528
z_ACS_PCT_OWNER_HH_CHILD	-0.017413750	0.105263957
z_ACS_MEDIAN_HOME_VALUE	0.193023202	0.342867394
z_hsg_rate	0.053436729	0.125994532
z_sc_percent	0.043108162	0.152090648
z_ms_average	-0.078033401	0.047945651
z_ACS_PCT_NO_PC	0.132547920	0.303172209
z_ACS_PCT_SMARTPHONE	-0.030050277	0.059901202
z_ACS_PCT_BROADBAND	-0.058145078	0.111568117
z_pphd_avgnum	-0.157328068	0.056482421
z_pmhd_avgnum	0.016824954	0.205319498
z_lbwt_percent_lbwt	0.042167730	0.140527482
z_pi_phy_inact	-0.017053098	0.064574351
z_cip_perc	0.243599752	0.407345234
z_csph_perc	-0.078661978	0.037967826
z_ACS_PCT_CHILD_DISAB	-0.031640378	0.034390578
z_phys_per_cap	0.097029247	0.193539064
z_mhp_per_cap	0.030376523	0.115164010
z_dents_per_cap	0.030670006	0.127388039
z_uninsur_perc	0.120074850	0.220521658
z_opcp_rate	-0.072152952	0.003580023
z_TeenBirths	-0.159558700	0.034956139
z_phs_rate	0.062680089	0.131958827
z_ms_perc_ann	0.029696443	0.110658352
z_AMFAR_AMATFAC	-0.030281285	0.052833574

z_MP_PERCPEN	-0.030530910	0.034573588
z_AHRF_RURAL_H_CLINIC	-0.015445550	0.041586673
z_ACS_MEDIAN_HH_INCOME	-0.487002588	-0.286055336
z_ACS_PCT_WORK_NO_CAR	-0.209326944	-0.031354951
z_soc_assoc_num	0.003066572	0.221744255
z_aeo_perc_w_acc	-0.087981440	-0.007372228
z_dwv_presence	-0.008935579	0.050298024
z_ACS_PCT_HH_PUB_ASSIST	-0.022813440	0.055421451
z_AHRF_TXC_SITE_NO_CNTRL	-0.038088136	0.022860433

## VIF for Final Model

```
vif(z_gi_levels_12345678)
```

z_ACS_PCT_BLACK	z_ACS_PCT_HISPAN	z_SVI_RPL_THEME1_SOCIECO
6.675758	5.604265	10.516950
z_SVI_RPL_THEME2_HH_DISB	z_SVI_RPL_THEME3_MINO	z_SVI_RPL_THEME4_HH_TRANS
3.259749	4.614877	2.955829
z_ACS_PCT_ENGL_NOT_WELL	z_ACS_PCT_NON_CITIZEN	z_ACS_MEDIAN_AGE
11.356458	9.107052	5.836746
z_food_afford	z_fd_enviro_indx	z_fi_percent
4.041996	4.526579	9.717578
z_ACS_PCT_FOOD_STAMP	z_childelig_lunch_perc	z_shp_percent
6.968307	3.974096	4.637843
z_shcb_percent	z_ACS_PCT_NO_VEH	z_ACS_PCT_RENTER_HH_CHILD
5.341546	6.767777	2.231659
z_ACS_PCT_RENT_COST_30PCT	z_ACS_PCT_MOBILE_HOME	z_ACS_PCT_OWNED_HH
2.255729	3.224772	4.288899
z_ACS_PCT_OWNER_HH_CHILD	z_ACS_MEDIAN_HOME_VALUE	z_hsg_rate
4.695268	5.282654	1.536242
z_sc_percent	z_ms_average	z_ACS_PCT_NO_PC
3.801313	1.827504	10.099051
z_ACS_PCT_SMARTPHONE	z_ACS_PCT_BROADBAND	z_pphd_avgnum
2.827010	10.044476	15.691683
z_pmhd_avgnum	z_lbw_percent_lbw	z_pi_phy_inact
12.020442	3.411259	2.333277
z_cip_perc	z_csph_perc	z_ACS_PCT_CHILD_DISAB
9.672002	4.508067	1.373203
z_phys_per_cap	z_mhp_per_cap	z_dents_per_cap
2.635847	2.021884	2.546363
z_uninsur_perc	z_opcp_rate	z_TeenBirths

	3.630498	1.761685	14.453887
z_phs_rate		z_ms_perc_ann	z_AMFAR_AMATFAC
	1.605488	2.148228	1.848141
z_MP_PERCPEN	z_AHRF_RURAL_H_CLINIC	z_ACS_MEDIAN_HH_INCOME	
	1.376009	1.197175	12.395102
z_ACS_PCT_WORK_NO_CAR	z_soc_assoc_num	z_aeo_perc_w_acc	
	3.137767	15.935742	2.037765
z_dwv_presence	z_ACS_PCT_HH_PUB_ASSIST	z_AHRF_TXC_SITE_NO_CNTRL	
	1.177674	1.497050	1.069091

## Business Model: Unemployed Percent (DV)

### IV: Demographics (9 variables), DV: Unemp Perc

```
z_up_just_demos <- lm(formula = z_unemp_perc ~ z_ACS_PCT_BLACK +
  z_ACS_PCT_HISPAN + z_SVI_RPL_THEME1_SOCIECO + z_SVI_RPL_THEME2_HH_DISB +
  z_SVI_RPL_THEME3_MINO + z_SVI_RPL_THEME4_HH_TRANS + z_ACS_PCT_ENGL_NOT_WELL +
  z_ACS_PCT_NON_CITIZEN + z_ACS_MEDIAN_AGE, data = Z_and_Final_Variables_10.28.22)
summary(z_up_just_demos)
```

Call:

```
lm(formula = z_unemp_perc ~ z_ACS_PCT_BLACK + z_ACS_PCT_HISPAN +
  z_SVI_RPL_THEME1_SOCIECO + z_SVI_RPL_THEME2_HH_DISB + z_SVI_RPL_THEME3_MINO +
  z_SVI_RPL_THEME4_HH_TRANS + z_ACS_PCT_ENGL_NOT_WELL + z_ACS_PCT_NON_CITIZEN +
  z_ACS_MEDIAN_AGE, data = Z_and_Final_Variables_10.28.22)
```

Residuals:

Min	1Q	Median	3Q	Max
-1.9063	-0.4928	-0.1371	0.3479	10.1588

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	-0.0003006	0.0147129	-0.020	0.983701
z_ACS_PCT_BLACK	0.0707175	0.0198466	3.563	0.000372
z_ACS_PCT_HISPAN	0.0551974	0.0265350	2.080	0.037591
z_SVI_RPL_THEME1_SOCIECO	0.4691969	0.0237449	19.760	< 0.00000000000000002
z_SVI_RPL_THEME2_HH_DISB	-0.0222195	0.0201658	-1.102	0.270616
z_SVI_RPL_THEME3_MINO	-0.1268703	0.0267305	-4.746	0.000002164865560465
z_SVI_RPL_THEME4_HH_TRANS	0.1597156	0.0196037	8.147	0.000000000000000532

z_ACS_PCT_ENGL_NOT_WELL	0.1042091	0.0420778	2.477	0.013317
z_ACS_PCT_NON_CITIZEN	-0.1308059	0.0381033	-3.433	0.000605
z_ACS_MEDIAN_AGE	0.1189925	0.0176441	6.744	0.000000000018276198

(Intercept)

z_ACS_PCT_BLACK	***
z_ACS_PCT_HISPAN	*
z_SVI_RPL_THEME1_SOCIECO	***
z_SVI_RPL_THEME2_HH_DISB	
z_SVI_RPL_THEME3_MINO	***
z_SVI_RPL_THEME4_HH_TRANS	***
z_ACS_PCT_ENGL_NOT_WELL	*
z_ACS_PCT_NON_CITIZEN	***
z_ACS_MEDIAN_AGE	***

---

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

Residual standard error: 0.8243 on 3129 degrees of freedom

(2 observations deleted due to missingness)

Multiple R-squared: 0.3226, Adjusted R-squared: 0.3206

F-statistic: 165.5 on 9 and 3129 DF, p-value: < 0.00000000000000022

## Confidence Intervals for Demographic IVs

```
confint(z_up_just_demos)
```

	2.5 %	97.5 %
(Intercept)	-0.02914858	0.02854737
z_ACS_PCT_BLACK	0.03180382	0.10963120
z_ACS_PCT_HISPAN	0.00316958	0.10722529
z_SVI_RPL_THEME1_SOCIECO	0.42263972	0.51575412
z_SVI_RPL_THEME2_HH_DISB	-0.06175911	0.01732009
z_SVI_RPL_THEME3_MINO	-0.17928128	-0.07445923
z_SVI_RPL_THEME4_HH_TRANS	0.12127825	0.19815292
z_ACS_PCT_ENGL_NOT_WELL	0.02170617	0.18671197
z_ACS_PCT_NON_CITIZEN	-0.20551601	-0.05609585
z_ACS_MEDIAN_AGE	0.08439720	0.15358771

## VIF for Demographic IVs

```
vif(z_up_just_demos)
```

z_ACS_PCT_BLACK	z_ACS_PCT_HISPAN	z_SVI_RPL_THEME1_SOCIECO
1.819880	3.232503	2.603307
z_SVI_RPL_THEME2_HH_DISB	z_SVI_RPL_THEME3_MINO	z_SVI_RPL_THEME4_HH_TRANS
1.876916	3.297085	1.775887
z_ACS_PCT_ENGL_NOT_WELL	z_ACS_PCT_NON_CITIZEN	z_ACS_MEDIAN_AGE
8.179312	6.707839	1.434700

## IV: Food & Housing (14 variables), DV: Unemp Perc

```
z_up_just_foodhouse <- lm(formula = z_unemp_perc ~ z_food_afford +
  z_fd_enviro_indx + z_fi_percent + z_ACS_PCT_FOOD_STAMP +
  z_childelig_lunch_perc + z_shp_percent + z_shcb_percent +
  z_ACS_PCT_NO_VEH + z_ACS_PCT_RENTER_HH_CHILD + z_ACS_PCT_RENT_COST_30PCT +
  z_ACS_PCT_MOBILE_HOME + z_ACS_PCT_OWNED_HH + z_ACS_PCT_OWNER_HH_CHILD +
  z_ACS_MEDIAN_HOME_VALUE, data = Z_and_Final_Variables_10.28.22)
summary(z_up_just_foodhouse)
```

Call:

```
lm(formula = z_unemp_perc ~ z_food_afford + z_fd_enviro_indx +
  z_fi_percent + z_ACS_PCT_FOOD_STAMP + z_childelig_lunch_perc +
  z_shp_percent + z_shcb_percent + z_ACS_PCT_NO_VEH + z_ACS_PCT_RENTER_HH_CHILD +
  z_ACS_PCT_RENT_COST_30PCT + z_ACS_PCT_MOBILE_HOME + z_ACS_PCT_OWNED_HH +
  z_ACS_PCT_OWNER_HH_CHILD + z_ACS_MEDIAN_HOME_VALUE, data = Z_and_Final_Variables_10.28.22)
```

Residuals:

Min	1Q	Median	3Q	Max
-2.3379	-0.4140	-0.0924	0.3055	8.6899

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	-0.011408	0.013893	-0.821	0.411620
z_food_afford	0.022396	0.021845	1.025	0.305348
z_fd_enviro_indx	-0.072938	0.024016	-3.037	0.002411 **
z_fi_percent	0.247547	0.028212	8.775	< 0.0000000000000002 ***

z_ACS_PCT_FOOD_STAMP	0.412106	0.026797	15.379	< 0.0000000000000002	***
z_childelig_lunch_perc	-0.017284	0.024656	-0.701	0.483363	
z_shp_percent	0.255063	0.025218	10.114	< 0.0000000000000002	***
z_shcb_percent	-0.210844	0.027634	-7.630	0.0000000000000321	***
z_ACS_PCT_NO_VEH	0.117014	0.019031	6.149	0.0000000008940534	***
z_ACS_PCT_RENTER_HH_CHILD	-0.005276	0.016712	-0.316	0.752263	
z_ACS_PCT_RENT_COST_30PCT	0.080996	0.019911	4.068	0.0000487766484089	***
z_ACS_PCT_MOBILE_HOME	-0.016144	0.019039	-0.848	0.396557	
z_ACS_PCT_OWNED_HH	0.251142	0.019432	12.924	< 0.0000000000000002	***
z_ACS_PCT_OWNER_HH_CHILD	-0.058465	0.016370	-3.571	0.000361	***
z_ACS_MEDIAN_HOME_VALUE	0.130157	0.021184	6.144	0.0000000009197812	***

---

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

Residual standard error: 0.7238 on 2777 degrees of freedom

(349 observations deleted due to missingness)

Multiple R-squared: 0.5024, Adjusted R-squared: 0.4999

F-statistic: 200.3 on 14 and 2777 DF, p-value: < 0.00000000000000022

## Confidence Intervals for Food & Housing IVs

```
confint(z_up_just_foodhouse)
```

	2.5 %	97.5 %
(Intercept)	-0.03864959	0.01583290
z_food_afford	-0.02043833	0.06523074
z_fd_enviro_indx	-0.12002883	-0.02584634
z_fi_percent	0.19222894	0.30286434
z_ACS_PCT_FOOD_STAMP	0.35956289	0.46464964
z_childelig_lunch_perc	-0.06562859	0.03106158
z_shp_percent	0.20561586	0.30451098
z_shcb_percent	-0.26502924	-0.15665803
z_ACS_PCT_NO_VEH	0.07969786	0.15433101
z_ACS_PCT_RENTER_HH_CHILD	-0.03804551	0.02749380
z_ACS_PCT_RENT_COST_30PCT	0.04195308	0.12003794
z_ACS_PCT_MOBILE_HOME	-0.05347635	0.02118883
z_ACS_PCT_OWNED_HH	0.21304032	0.28924457
z_ACS_PCT_OWNER_HH_CHILD	-0.09056372	-0.02636542
z_ACS_MEDIAN_HOME_VALUE	0.08861816	0.17169526



## VIF for Food & Housing IVs

```
vif(z_up_just_foodhouse)
```

z_food_afford	z_fd_enviro_indx	z_fi_percent
2.621112	3.130668	4.291634
z_ACS_PCT_FOOD_STAMP	z_childelig_lunch_perc	z_shp_percent
3.835126	2.604164	3.513064
z_shcb_percent	z_ACS_PCT_NO_VEH	z_ACS_PCT_RENTER_HH_CHILD
4.130954	2.031232	1.510216
z_ACS_PCT_RENT_COST_30PCT	z_ACS_PCT_MOBILE_HOME	z_ACS_PCT_OWNED_HH
2.111717	1.958472	1.985582
z_ACS_PCT_OWNER_HH_CHILD	z_ACS_MEDIAN_HOME_VALUE	
1.476876	2.335424	

## IV: Education (3 variables), DV: Unemp Perc

```
z_up_just_ed <- lm(formula = z_unemp_perc ~ z_hsg_rate + z_sc_percent +
  z_ms_average, data = Z_and_Final_Variables_10.28.22)
summary(z_up_just_ed)
```

Call:

```
lm(formula = z_unemp_perc ~ z_hsg_rate + z_sc_percent + z_ms_average,
    data = Z_and_Final_Variables_10.28.22)
```

Residuals:

Min	1Q	Median	3Q	Max
-2.2959	-0.4944	-0.1226	0.4011	8.6296

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	-0.05125	0.01669	-3.071	0.00216 **
z_hsg_rate	-0.15108	0.01824	-8.284	< 0.0000000000000002 ***
z_sc_percent	-0.37512	0.01784	-21.028	< 0.0000000000000002 ***
z_ms_average	0.07676	0.01731	4.434	0.00000969 ***

---

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

Residual standard error: 0.8017 on 2323 degrees of freedom  
 (814 observations deleted due to missingness)  
 Multiple R-squared: 0.1867, Adjusted R-squared: 0.1857  
 F-statistic: 177.8 on 3 and 2323 DF, p-value: < 0.00000000000000022

## Confidence Intervals for Education IVs

```
confint(z_up_just_ed)
```

	2.5 %	97.5 %
(Intercept)	-0.08397144	-0.01851958
z_hsg_rate	-0.18685003	-0.11531709
z_sc_percent	-0.41010347	-0.34013858
z_ms_average	0.04281170	0.11071453

## VIF for Education IVs

```
vif(z_up_just_ed)
```

z_hsg_rate	z_sc_percent	z_ms_average
1.022551	1.083295	1.098559

## IV: Technology (3 variables), DV: Unemp Perc

```
z_up_just_tech <- lm(formula = z_unemp_perc ~ z_ACS_PCT_NO_PC +  
  z_ACS_PCT_SMARTPHONE + z_ACS_PCT_BROADBAND, data = Z_and_Final_Variables_10.28.22)  
summary(z_up_just_tech)
```

Call:

```
lm(formula = z_unemp_perc ~ z_ACS_PCT_NO_PC + z_ACS_PCT_SMARTPHONE +  
  z_ACS_PCT_BROADBAND, data = Z_and_Final_Variables_10.28.22)
```

Residuals:

Min	1Q	Median	3Q	Max
-2.2942	-0.5760	-0.1291	0.3983	9.7575

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	0.00006913	0.01636964	0.004	0.997
z_ACS_PCT_NO_PC	0.38203387	0.04242490	9.005	< 0.0000000000000002 ***
z_ACS_PCT_SMARTPHONE	0.11342943	0.02051507	5.529	0.0000000348 ***
z_ACS_PCT_BROADBAND	0.04762175	0.04631031	1.028	0.304

---

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

Residual standard error: 0.9173 on 3136 degrees of freedom

(1 observation deleted due to missingness)

Multiple R-squared: 0.1594, Adjusted R-squared: 0.1586

F-statistic: 198.2 on 3 and 3136 DF, p-value: < 0.00000000000000022

## Confidence Intervals for Technology IVs

```
confint(z_up_just_tech)
```

	2.5 %	97.5 %
(Intercept)	-0.03202717	0.03216543
z_ACS_PCT_NO_PC	0.29885049	0.46521724
z_ACS_PCT_SMARTPHONE	0.07320511	0.15365374
z_ACS_PCT_BROADBAND	-0.04317984	0.13842333

## VIF for Technology IVs

```
vif(z_up_just_tech)
```

z_ACS_PCT_NO_PC	z_ACS_PCT_SMARTPHONE	z_ACS_PCT_BROADBAND
6.714749	1.570286	7.998333

## IV: HWCC (7 variables), DV: Unemp Perc

```
z_up_just_HWCC <- lm(formula = z_unemp_perc ~ z_pphd_avgnum +  
  z_pmhd_avgnum + z_lbwr_percent_lbwr + z_pi_phy_inact + z_cip_perc +  
  z_csph_perc + z_ACS_PCT_CHILD_DISAB, data = Z_and_Final_Variables_10.28.22)  
summary(z_up_just_HWCC)
```

Call:

```
lm(formula = z_unemp_perc ~ z_pphd_avgnum + z_pmhd_avgnum + z_lbw_percent_lbw +  
    z_pi_phy_inact + z_cip_perc + z_csph_perc + z_ACS_PCT_CHILD_DISAB,  
    data = Z_and_Final_Variables_10.28.22)
```

Residuals:

Min	1Q	Median	3Q	Max
-2.1556	-0.4889	-0.1021	0.3521	8.7002

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	-0.001901	0.014260	-0.133	0.894
z_pphd_avgnum	0.356257	0.046827	7.608	0.0000000000000037 ***
z_pmhd_avgnum	0.001865	0.042009	0.044	0.965
z_lbw_percent_lbw	-0.094582	0.018981	-4.983	0.0000000661446491 ***
z_pi_phy_inact	-0.106759	0.017127	-6.233	0.000000000520537 ***
z_cip_perc	0.309676	0.027669	11.192	< 0.0000000000000002 ***
z_csph_perc	0.124888	0.021206	5.889	0.000000004303470 ***
z_ACS_PCT_CHILD_DISAB	-0.013368	0.015838	-0.844	0.399

---

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

Residual standard error: 0.7842 on 3026 degrees of freedom

(107 observations deleted due to missingness)

Multiple R-squared: 0.3732, Adjusted R-squared: 0.3718

F-statistic: 257.4 on 7 and 3026 DF, p-value: < 0.00000000000000022

## Confidence Intervals for HWCC IVs

```
confint(z_up_just_HWCC)
```

	2.5 %	97.5 %
(Intercept)	-0.02986109	0.02605990
z_pphd_avgnum	0.26444018	0.44807369
z_pmhd_avgnum	-0.08050383	0.08423450
z_lbw_percent_lbw	-0.13179984	-0.05736497
z_pi_phy_inact	-0.14034126	-0.07317584
z_cip_perc	0.25542348	0.36392812
z_csph_perc	0.08330860	0.16646669
z_ACS_PCT_CHILD_DISAB	-0.04442216	0.01768565

## VIF for HWCC IVs

```
vif(z_up_just_HWCC)
```

z_pphd_avgnum	z_pmhd_avgnum	z_lbw_percent_lbw
10.749658	8.524377	1.777139
z_pi_phy_inact	z_cip_perc	z_csph_perc
1.467398	3.806888	2.125023
z_ACS_PCT_CHILD_DISAB		
1.164656		

## IV: Health A (6 variables), DV: Unemp Perc

```
z_up_just_healthA <- lm(formula = z_unemp_perc ~ z_phys_per_cap +  
  z_mhp_per_cap + z_dents_per_cap + z_uninsur_perc + z_opcp_rate +  
  z_TeenBirths, data = Z_and_Final_Variables_10.28.22)  
summary(z_up_just_healthA)
```

Call:

```
lm(formula = z_unemp_perc ~ z_phys_per_cap + z_mhp_per_cap +  
  z_dents_per_cap + z_uninsur_perc + z_opcp_rate + z_TeenBirths,  
  data = Z_and_Final_Variables_10.28.22)
```

Residuals:

Min	1Q	Median	3Q	Max
-2.3476	-0.6266	-0.1452	0.4404	10.2664

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	0.02856	0.01795	1.591	0.111741
z_phys_per_cap	-0.09002	0.02546	-3.536	0.000412 ***
z_mhp_per_cap	-0.07084	0.02348	-3.017	0.002576 **
z_dents_per_cap	-0.12492	0.02470	-5.057	0.000000450430 ***
z_uninsur_perc	-0.01908	0.01864	-1.024	0.306144
z_opcp_rate	0.13275	0.02067	6.423	0.000000000154 ***
z_TeenBirths	0.02655	0.01888	1.406	0.159812

---

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

Residual standard error: 0.9854 on 3008 degrees of freedom  
 (126 observations deleted due to missingness)  
 Multiple R-squared: 0.04125, Adjusted R-squared: 0.03934  
 F-statistic: 21.57 on 6 and 3008 DF, p-value: < 0.00000000000000022

## Confidence Intervals for Health A IVs

```
confint(z_up_just_healthA)
```

	2.5 %	97.5 %
(Intercept)	-0.006639449	0.06375425
z_phys_per_cap	-0.139944691	-0.04010404
z_mhp_per_cap	-0.116879431	-0.02479726
z_dents_per_cap	-0.173354939	-0.07649047
z_uninsur_perc	-0.055641079	0.01747449
z_opcp_rate	0.092224888	0.17326784
z_TeenBirths	-0.010475271	0.06358066

## VIF for Health A IVs

```
vif(z_up_just_healthA)
```

	z_phys_per_cap	z_mhp_per_cap	z_dents_per_cap	z_uninsur_perc	z_opcp_rate
z_phys_per_cap	1.991970				
z_mhp_per_cap	1.674408	1.900274			
z_dents_per_cap		1.092448	1.325353		
z_uninsur_perc				1.148256	
z_opcp_rate					1.148256

## IV: Health B (5 variables), DV: Unemp Perc

```
z_up_just_healthB <- lm(formula = z_unemp_perc ~ z_phs_rate +
  z_ms_perc_ann + z_AMFAR_AMATFAC + z_MP_PERCPEN + z_AHRF_RURAL_H_CLINIC,
  data = Z_and_Final_Variables_10.28.22)
summary(z_up_just_healthB)
```

```
Call:
lm(formula = z_unemp_perc ~ z_phs_rate + z_ms_perc_ann + z_AMFAR_AMATFAC +
    z_MP_PERCPEN + z_AHRF_RURAL_H_CLINIC, data = Z_and_Final_Variables_10.28.22)
```

Residuals:

Min	1Q	Median	3Q	Max
-1.9496	-0.5478	-0.1383	0.4031	8.8277

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	-0.005603	0.015513	-0.361	0.718
z_phs_rate	0.157356	0.016232	9.694	< 0.0000000000000002 ***
z_ms_perc_ann	-0.234142	0.016423	-14.257	< 0.0000000000000002 ***
z_AMFAR_AMATFAC	0.006697	0.015473	0.433	0.665
z_MP_PERCPEN	0.110834	0.016057	6.903	0.0000000000000619 ***
z_AHRF_RURAL_H_CLINIC	0.146006	0.015538	9.396	< 0.0000000000000002 ***

---

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

Residual standard error: 0.8537 on 3024 degrees of freedom

(111 observations deleted due to missingness)

Multiple R-squared: 0.1539, Adjusted R-squared: 0.1525

F-statistic: 110 on 5 and 3024 DF, p-value: < 0.00000000000000022

## Confidence Intervals for Health B IVs

```
confint(z_up_just_healthB)
```

	2.5 %	97.5 %
(Intercept)	-0.03601953	0.02481450
z_phs_rate	0.12552938	0.18918262
z_ms_perc_ann	-0.26634334	-0.20193967
z_AMFAR_AMATFAC	-0.02364191	0.03703581
z_MP_PERCPEN	0.07935127	0.14231733
z_AHRF_RURAL_H_CLINIC	0.11553955	0.17647341

## VIF for Health B IVs

```
vif(z_up_just_healthB)
```

z_phs_rate	z_ms_perc_ann	z_AMFAR_AMATFAC
1.086643	1.082685	1.030124
z_MP_PERCPEN	z_AHRF_RURAL_H_CLINIC	
1.073504	1.026653	

## IV: Business (2 variables), DV: Unemp Perc

**NOTE: both DVs for Business (Gini and unemp\_perc) have been removed as IVs here and in the final Business model**

```
z_up_just_bus <- lm(formula = z_unemp_perc ~ z_ACS_MEDIAN_HH_INCOME +  
  z_ACS_PCT_WORK_NO_CAR, data = Z_and_Final_Variables_10.28.22)  
summary(z_up_just_bus)
```

Call:

```
lm(formula = z_unemp_perc ~ z_ACS_MEDIAN_HH_INCOME + z_ACS_PCT_WORK_NO_CAR,  
    data = Z_and_Final_Variables_10.28.22)
```

Residuals:

Min	1Q	Median	3Q	Max
-5.0680	-0.5568	-0.1260	0.4240	9.1735

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	-0.0001945	0.0156277	-0.012	0.99
z_ACS_MEDIAN_HH_INCOME	-0.3831517	0.0156382	-24.501	<0.0000000000000002 ***
z_ACS_PCT_WORK_NO_CAR	0.2825411	0.0156416	18.063	<0.0000000000000002 ***

---

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

Residual standard error: 0.8756 on 3136 degrees of freedom

(2 observations deleted due to missingness)

Multiple R-squared: 0.234, Adjusted R-squared: 0.2335

F-statistic: 479 on 2 and 3136 DF, p-value: < 0.00000000000000022



## Confidence Intervals for Business IVs

```
confint(z_up_just_bus)
```

		2.5 %	97.5 %
(Intercept)		-0.03083595	0.0304470
z_ACS_MEDIAN_HH_INCOME		-0.41381383	-0.3524896
z_ACS_PCT_WORK_NO_CAR		0.25187235	0.3132099

## VIF for Business IVs

```
vif(z_up_just_bus)
```

z_ACS_MEDIAN_HH_INCOME	z_ACS_PCT_WORK_NO_CAR
1.001168	1.001168

## IV: Government (5 variables), DV: Unemp Perc

```
z_up_just_gov <- lm(formula = z_unemp_perc ~ z_soc_assoc_num +  
  z_aeo_perc_w_acc + z_dwv_presence + z_ACS_PCT_HH_PUB_ASSIST +  
  z_AHRF_TXC_SITE_NO_CNTRL, data = Z_and_Final_Variables_10.28.22)  
summary(z_up_just_gov)
```

Call:

```
lm(formula = z_unemp_perc ~ z_soc_assoc_num + z_aeo_perc_w_acc +  
  z_dwv_presence + z_ACS_PCT_HH_PUB_ASSIST + z_AHRF_TXC_SITE_NO_CNTRL,  
  data = Z_and_Final_Variables_10.28.22)
```

Residuals:

Min	1Q	Median	3Q	Max
-5.1514	-0.5813	-0.1363	0.4364	8.6739

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	-0.0004895	0.0163419	-0.030	0.9761
z_soc_assoc_num	-0.0417340	0.0177735	-2.348	0.0189 *

z_aeo_perc_w_acc	-0.0943796	0.0176447	-5.349	0.000000095 ***
z_dwv_presence	0.0846770	0.0165835	5.106	0.000000349 ***
z_ACS_PCT_HH_PUB_ASSIST	0.3326923	0.0168971	19.689	< 0.0000000000000002 ***
z_AHRF_TXC_SITE_NO_CNTRL	0.0095645	0.0168090	0.569	0.5694

---

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

Residual standard error: 0.9083 on 3085 degrees of freedom

(50 observations deleted due to missingness)

Multiple R-squared: 0.1304, Adjusted R-squared: 0.129

F-statistic: 92.53 on 5 and 3085 DF, p-value: < 0.00000000000000022

## Confidence Intervals for Government IVs

```
confint(z_up_just_gov)
```

	2.5 %	97.5 %
(Intercept)	-0.03253155	0.031552534
z_soc_assoc_num	-0.07658316	-0.006884929
z_aeo_perc_w_acc	-0.12897614	-0.059783147
z_dwv_presence	0.05216120	0.117192700
z_ACS_PCT_HH_PUB_ASSIST	0.29956163	0.365823052
z_AHRF_TXC_SITE_NO_CNTRL	-0.02339345	0.042522358

## VIF for Government IVs

```
vif(z_up_just_gov)
```

z_soc_assoc_num	z_aeo_perc_w_acc	z_dwv_presence
1.197141	1.153198	1.029896
z_ACS_PCT_HH_PUB_ASSIST	z_AHRF_TXC_SITE_NO_CNTRL	
1.011419	1.063773	

## Final Government Model, DV: Unemp Perc; IVs: 54

```
z_up_levels_12345678 <- lm(formula = z_unemp_perc ~ z_ACS_PCT_BLACK +
  z_ACS_PCT_HISPAN + z_SVI_RPL_THEME1_SOCIECO + z_SVI_RPL_THEME2_HH_DISB +
  z_SVI_RPL_THEME3_MINO + z_SVI_RPL_THEME4_HH_TRANS + z_ACS_PCT_ENGL_NOT_WELL +
  z_ACS_PCT_NON_CITIZEN + z_ACS_MEDIAN_AGE + z_food_afford +
  z_fd_enviro_indx + z_fi_percent + z_ACS_PCT_FOOD_STAMP +
  z_childelig_lunch_perc + z_shp_percent + z_shcb_percent +
  z_ACS_PCT_NO_VEH + z_ACS_PCT_RENTER_HH_CHILD + z_ACS_PCT_RENT_COST_30PCT +
  z_ACS_PCT_MOBILE_HOME + z_ACS_PCT_OWNED_HH + z_ACS_PCT_OWNER_HH_CHILD +
  z_ACS_MEDIAN_HOME_VALUE + z_hsg_rate + z_sc_percent + z_ms_average +
  z_ACS_PCT_NO_PC + z_ACS_PCT_SMARTPHONE + z_ACS_PCT_BROADBAND +
  z_pphd_avgnum + z_pmhd_avgnum + z_lbw_percent_lbw + z_pi_phy_inact +
  z_cip_perc + z_csph_perc + z_ACS_PCT_CHILD_DISAB + z_phys_per_cap +
  z_mhp_per_cap + z_dents_per_cap + z_uninsur_perc + z_opcp_rate +
  z_TeenBirths + z_phs_rate + z_ms_perc_ann + z_AMFAR_AMATFAC +
  z_MP_PERCPEN + z_AHRF_RURAL_H_CLINIC + z_ACS_MEDIAN_HH_INCOME +
  z_ACS_PCT_WORK_NO_CAR + z_soc_assoc_num + z_aeo_perc_w_acc +
  z_dwv_presence + z_ACS_PCT_HH_PUB_ASSIST + z_AHRF_TXC_SITE_NO_CNTRL,
  data = Z_and_Final_Variables_10.28.22)
summary(z_up_levels_12345678)
```

Call:

```
lm(formula = z_unemp_perc ~ z_ACS_PCT_BLACK + z_ACS_PCT_HISPAN +
  z_SVI_RPL_THEME1_SOCIECO + z_SVI_RPL_THEME2_HH_DISB + z_SVI_RPL_THEME3_MINO +
  z_SVI_RPL_THEME4_HH_TRANS + z_ACS_PCT_ENGL_NOT_WELL + z_ACS_PCT_NON_CITIZEN +
  z_ACS_MEDIAN_AGE + z_food_afford + z_fd_enviro_indx + z_fi_percent +
  z_ACS_PCT_FOOD_STAMP + z_childelig_lunch_perc + z_shp_percent +
  z_shcb_percent + z_ACS_PCT_NO_VEH + z_ACS_PCT_RENTER_HH_CHILD +
  z_ACS_PCT_RENT_COST_30PCT + z_ACS_PCT_MOBILE_HOME + z_ACS_PCT_OWNED_HH +
  z_ACS_PCT_OWNER_HH_CHILD + z_ACS_MEDIAN_HOME_VALUE + z_hsg_rate +
  z_sc_percent + z_ms_average + z_ACS_PCT_NO_PC + z_ACS_PCT_SMARTPHONE +
  z_ACS_PCT_BROADBAND + z_pphd_avgnum + z_pmhd_avgnum + z_lbw_percent_lbw +
  z_pi_phy_inact + z_cip_perc + z_csph_perc + z_ACS_PCT_CHILD_DISAB +
  z_phys_per_cap + z_mhp_per_cap + z_dents_per_cap + z_uninsur_perc +
  z_opcp_rate + z_TeenBirths + z_phs_rate + z_ms_perc_ann +
  z_AMFAR_AMATFAC + z_MP_PERCPEN + z_AHRF_RURAL_H_CLINIC +
  z_ACS_MEDIAN_HH_INCOME + z_ACS_PCT_WORK_NO_CAR + z_soc_assoc_num +
  z_aeo_perc_w_acc + z_dwv_presence + z_ACS_PCT_HH_PUB_ASSIST +
  z_AHRF_TXC_SITE_NO_CNTRL, data = Z_and_Final_Variables_10.28.22)
```

## Residuals:

Min	1Q	Median	3Q	Max
-2.1639	-0.3377	-0.0515	0.2792	6.8370

## Coefficients:

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	-0.0686396	0.0141145	-4.863	0.00000124403439
z_ACS_PCT_BLACK	-0.0569939	0.0295745	-1.927	0.05410
z_ACS_PCT_HISPAN	0.3039555	0.0293804	10.346	< 0.0000000000000002
z_SVI_RPL_THEME1_SOCIECO	0.2539262	0.0400815	6.335	0.00000000029058
z_SVI_RPL_THEME2_HH_DISB	-0.0521803	0.0227142	-2.297	0.02170
z_SVI_RPL_THEME3_MINO	-0.1229286	0.0274316	-4.481	0.00000782975006
z_SVI_RPL_THEME4_HH_TRANS	-0.0287211	0.0218684	-1.313	0.18921
z_ACS_PCT_ENGL_NOT_WELL	0.0774854	0.0431870	1.794	0.07293
z_ACS_PCT_NON_CITIZEN	-0.0417057	0.0394570	-1.057	0.29064
z_ACS_MEDIAN_AGE	0.1271499	0.0316406	4.019	0.00006067450318
z_food_afford	0.0613694	0.0254220	2.414	0.01586
z_fd_enviro_indx	-0.0793797	0.0286850	-2.767	0.00570
z_fi_percent	0.5262423	0.0384488	13.687	< 0.0000000000000002
z_ACS_PCT_FOOD_STAMP	0.0907914	0.0345519	2.628	0.00866
z_childelig_lunch_perc	0.1386681	0.0281632	4.924	0.00000091714045
z_shp_percent	-0.0647984	0.0336399	-1.926	0.05421
z_shcb_percent	0.0176446	0.0316845	0.557	0.57767
z_ACS_PCT_NO_VEH	-0.0861625	0.0487403	-1.768	0.07725
z_ACS_PCT_RENTER_HH_CHILD	0.0360873	0.0193045	1.869	0.06171
z_ACS_PCT_RENT_COST_30PCT	0.0177167	0.0208867	0.848	0.39641
z_ACS_PCT_MOBILE_HOME	0.0338449	0.0217118	1.559	0.11919
z_ACS_PCT_OWNED_HH	0.1934771	0.0279746	6.916	0.000000000000618
z_ACS_PCT_OWNER_HH_CHILD	0.0324897	0.0281638	1.154	0.24880
z_ACS_MEDIAN_HOME_VALUE	0.1570413	0.0344006	4.565	0.00000528986337
z_hsg_rate	-0.0221966	0.0166575	-1.333	0.18284
z_sc_percent	-0.0146119	0.0250198	-0.584	0.55928
z_ms_average	-0.0095453	0.0289218	-0.330	0.74140
z_ACS_PCT_NO_PC	0.0357024	0.0391712	0.911	0.36217
z_ACS_PCT_SMARTPHONE	-0.0822768	0.0206507	-3.984	0.00007007506041
z_ACS_PCT_BROADBAND	0.0634578	0.0389621	1.629	0.10353
z_pphd_avgnum	-0.0512527	0.0490857	-1.044	0.29654
z_pmhd_avgnum	0.0287294	0.0432738	0.664	0.50683
z_lbw_percent_lbw	-0.0393589	0.0225810	-1.743	0.08148
z_pi_phy_inact	-0.0002041	0.0187397	-0.011	0.99131
z_cip_perc	0.0768964	0.0375920	2.046	0.04093
z_csph_perc	0.0489875	0.0267754	1.830	0.06746

z_ACS_PCT_CHILD_DISAB	-0.0338884	0.0151591	-2.236	0.02549
z_phys_per_cap	-0.0088864	0.0221563	-0.401	0.68840
z_mhp_per_cap	-0.0616266	0.0194652	-3.166	0.00157
z_dents_per_cap	0.0394319	0.0222041	1.776	0.07590
z_uninsur_perc	-0.3090842	0.0230602	-13.403	< 0.0000000000000002
z_opcp_rate	0.0468410	0.0173865	2.694	0.00712
z_TeenBirths	0.0186704	0.0446559	0.418	0.67592
z_phs_rate	0.0639525	0.0159047	4.021	0.00006006162933
z_ms_perc_ann	-0.0088476	0.0185869	-0.476	0.63412
z_AMFAR_AMATFAC	0.0061126	0.0190812	0.320	0.74874
z_MP_PERCPEN	0.0485686	0.0149464	3.250	0.00117
z_AHRF_RURAL_H_CLINIC	0.0159519	0.0130932	1.218	0.22324
z_ACS_MEDIAN_HH_INCOME	0.0720709	0.0461326	1.562	0.11838
z_ACS_PCT_WORK_NO_CAR	0.0977438	0.0408581	2.392	0.01683
z_soc_assoc_num	-0.0522775	0.0502031	-1.041	0.29785
z_aeo_perc_w_acc	0.0590332	0.0185059	3.190	0.00144
z_dwv_presence	0.0299856	0.0135986	2.205	0.02756
z_ACS_PCT_HH_PUB_ASSIST	0.0323229	0.0179608	1.800	0.07207
z_AHRF_TXC_SITE_NO_CNTRL	-0.0047572	0.0139923	-0.340	0.73390

(Intercept)	***
z_ACS_PCT_BLACK	.
z_ACS_PCT_HISPAN	***
z_SVI_RPL_THEME1_SOCIECO	***
z_SVI_RPL_THEME2_HH_DISB	*
z_SVI_RPL_THEME3_MINO	***
z_SVI_RPL_THEME4_HH_TRANS	.
z_ACS_PCT_ENGL_NOT_WELL	.
z_ACS_PCT_NON_CITIZEN	.
z_ACS_MEDIAN_AGE	***
z_food_afford	*
z_fd_enviro_indx	**
z_fi_percent	***
z_ACS_PCT_FOOD_STAMP	**
z_childelig_lunch_perc	***
z_shp_percent	.
z_shcb_percent	.
z_ACS_PCT_NO_VEH	.
z_ACS_PCT_RENTER_HH_CHILD	.
z_ACS_PCT_RENT_COST_30PCT	.
z_ACS_PCT_MOBILE_HOME	.
z_ACS_PCT_OWNED_HH	***
z_ACS_PCT_OWNER_HH_CHILD	.

z_ACS_MEDIAN_HOME_VALUE	***
z_hsg_rate	
z_sc_percent	
z_ms_average	
z_ACS_PCT_NO_PC	
z_ACS_PCT_SMARTPHONE	***
z_ACS_PCT_BROADBAND	
z_pphd_avgnum	
z_pmhd_avgnum	
z_lbwr_percent_lbwr	.
z_pi_phy_inact	
z_cip_perc	*
z_csph_perc	.
z_ACS_PCT_CHILD_DISAB	*
z_phys_per_cap	
z_mhp_per_cap	**
z_dents_per_cap	.
z_uninsur_perc	***
z_opcp_rate	**
z_TeenBirths	
z_phs_rate	***
z_ms_perc_ann	
z_AMFAR_AMATFAC	
z_MP_PERCPEN	**
z_AHRF_RURAL_H_CLINIC	
z_ACS_MEDIAN_HH_INCOME	
z_ACS_PCT_WORK_NO_CAR	*
z_soc_assoc_num	
z_aeo_perc_w_acc	**
z_dwv_presence	*
z_ACS_PCT_HH_PUB_ASSIST	.
z_AHRF_TXC_SITE_NO_CNTRL	

---

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

Residual standard error: 0.567 on 2045 degrees of freedom

(1041 observations deleted due to missingness)

Multiple R-squared: 0.6059, Adjusted R-squared: 0.5955

F-statistic: 58.23 on 54 and 2045 DF, p-value: < 0.00000000000000022

## Confidence Intervals for Final Model

```
confint(z_up_levels_12345678)
```

	2.5 %	97.5 %
(Intercept)	-0.096319921	-0.040959324
z_ACS_PCT_BLACK	-0.114993254	0.001005405
z_ACS_PCT_HISPAN	0.246336935	0.361574115
z_SVI_RPL_THEME1_SOCIECO	0.175321400	0.332530983
z_SVI_RPL_THEME2_HH_DISB	-0.096725651	-0.007635014
z_SVI_RPL_THEME3_MINO	-0.176725349	-0.069131787
z_SVI_RPL_THEME4_HH_TRANS	-0.071607693	0.014165451
z_ACS_PCT_ENGL_NOT_WELL	-0.007209727	0.162180531
z_ACS_PCT_NON_CITIZEN	-0.119085803	0.035674407
z_ACS_MEDIAN_AGE	0.065098618	0.189201088
z_food_afford	0.011513631	0.111225195
z_fd_enviro_indx	-0.135634484	-0.023124937
z_fi_percent	0.450839513	0.601645155
z_ACS_PCT_FOOD_STAMP	0.023030744	0.158552002
z_childelig_lunch_perc	0.083436501	0.193899640
z_shp_percent	-0.130770526	0.001173658
z_shcb_percent	-0.044492736	0.079781880
z_ACS_PCT_NO_VEH	-0.181748311	0.009423338
z_ACS_PCT_RENTER_HH_CHILD	-0.001771295	0.073945953
z_ACS_PCT_RENT_COST_30PCT	-0.023244676	0.058678106
z_ACS_PCT_MOBILE_HOME	-0.008734643	0.076424413
z_ACS_PCT_OWNED_HH	0.138615334	0.248338850
z_ACS_PCT_OWNER_HH_CHILD	-0.022743092	0.087722524
z_ACS_MEDIAN_HOME_VALUE	0.089577436	0.224505219
z_hsg_rate	-0.054864028	0.010470926
z_sc_percent	-0.063678729	0.034454973
z_ms_average	-0.066264475	0.047173851
z_ACS_PCT_NO_PC	-0.041117254	0.112522048
z_ACS_PCT_SMARTPHONE	-0.122775388	-0.041778231
z_ACS_PCT_BROADBAND	-0.012951634	0.139867271
z_pphd_avgnum	-0.147515988	0.045010495
z_pmhd_avgnum	-0.056135954	0.113594689
z_lbw_percent_lbw	-0.083643070	0.004925350
z_pi_phy_inact	-0.036954939	0.036546814
z_cip_perc	0.003173818	0.150619072
z_csph_perc	-0.003522333	0.101497426
z_ACS_PCT_CHILD_DISAB	-0.063617351	-0.004159521

z_phys_per_cap	-0.052337768	0.034564871
z_mhp_per_cap	-0.099800194	-0.023452972
z_dents_per_cap	-0.004113152	0.082976976
z_uninsur_perc	-0.354308036	-0.263860318
z_opcp_rate	0.012744019	0.080938069
z_TeenBirths	-0.068905373	0.106246268
z_phs_rate	0.032761320	0.095143629
z_ms_perc_ann	-0.045298831	0.027603634
z_AMFAR_AMATFAC	-0.031307953	0.043533143
z_MP_PERCPEN	0.019256809	0.077880407
z_AHRF_RURAL_H_CLINIC	-0.009725559	0.041629327
z_ACS_MEDIAN_HH_INCOME	-0.018400982	0.162542750
z_ACS_PCT_WORK_NO_CAR	0.017616060	0.177871632
z_soc_assoc_num	-0.150732131	0.046177037
z_aeo_perc_w_acc	0.022740786	0.095325663
z_dwv_presence	0.003317072	0.056654199
z_ACS_PCT_HH_PUB_ASSIST	-0.002900510	0.067546401
z_AHRF_TXC_SITE_NO_CNTRL	-0.032197901	0.022683474

## VIF for Final Model

```
vif(z_up_levels_12345678)
```

z_ACS_PCT_BLACK	z_ACS_PCT_HISPAN	z_SVI_RPL_THEME1_SOCIECO
6.675758	5.604265	10.516950
z_SVI_RPL_THEME2_HH_DISB	z_SVI_RPL_THEME3_MINO	z_SVI_RPL_THEME4_HH_TRANS
3.259749	4.614877	2.955829
z_ACS_PCT_ENGL_NOT_WELL	z_ACS_PCT_NON_CITIZEN	z_ACS_MEDIAN_AGE
11.356458	9.107052	5.836746
z_food_afford	z_fd_enviro_indx	z_fi_percent
4.041996	4.526579	9.717578
z_ACS_PCT_FOOD_STAMP	z_childelig_lunch_perc	z_shp_percent
6.968307	3.974096	4.637843
z_shcb_percent	z_ACS_PCT_NO_VEH	z_ACS_PCT_RENTER_HH_CHILD
5.341546	6.767777	2.231659
z_ACS_PCT_RENT_COST_30PCT	z_ACS_PCT_MOBILE_HOME	z_ACS_PCT_OWNED_HH
2.255729	3.224772	4.288899
z_ACS_PCT_OWNER_HH_CHILD	z_ACS_MEDIAN_HOME_VALUE	z_hsg_rate
4.695268	5.282654	1.536242
z_sc_percent	z_ms_average	z_ACS_PCT_NO_PC
3.801313	1.827504	10.099051



z_ACS_PCT_SMARTPHONE	z_ACS_PCT_BROADBAND	z_pphd_avgnum
2.827010	10.044476	15.691683
z_pmhd_avgnum	z_lbw_percent_lbw	z_pi_phy_inact
12.020442	3.411259	2.333277
z_cip_perc	z_csph_perc	z_ACS_PCT_CHILD_DISAB
9.672002	4.508067	1.373203
z_phys_per_cap	z_mhp_per_cap	z_dents_per_cap
2.635847	2.021884	2.546363
z_uninsur_perc	z_opcp_rate	z_TeenBirths
3.630498	1.761685	14.453887
z_phs_rate	z_ms_perc_ann	z_AMFAR_AMATFAC
1.605488	2.148228	1.848141
z_MP_PERCPEN	z_AHRF_RURAL_H_CLINIC	z_ACS_MEDIAN_HH_INCOME
1.376009	1.197175	12.395102
z_ACS_PCT_WORK_NO_CAR	z_soc_assoc_num	z_aeo_perc_w_acc
3.137767	15.935742	2.037765
z_dwv_presence	z_ACS_PCT_HH_PUB_ASSIST	z_AHRF_TXC_SITE_NO_CNTRL
1.177674	1.497050	1.069091