

## Appendix

### Appendix A - Wording of Survey Items and Coding of Individual-Level Variables

**Political tolerance toward homosexuals** (ordinal, treated as continuous) D5. "And now, changing the topic and thinking of homosexuals, how strongly do you approve or disapprove of such people being permitted to run for public office?"

**Gender** (binary variable): Q1. (Recorded by Interviewer) Male, Female

**Age** (in years): Q2. "How old are you?"

**Education** (set of binary variables)- ED. "How many years of schooling you have completed?"

Categories: "None", "Primary Education", "Secondary Education", "Post-secondary school"

**Ethnicity** (set of binary variables)- ETID. "Do you consider yourself white, mestizo, indigenous, black, mulatto, or of another race?"

Categories: "White", "Mestizo", "Indigenous", "Black", "Mulatto", "Other"

**Religion** (set of binary variables)- Q3C. "What is your religion, if any?" (Options not read)

Categories: "Catholic", "Mainline Protestant", "Evangelical and Pentecostal", "Atheist and Agnostics", "Other"

**Religiosity** (set of binary variables)- Q5B. "Could you please tell me how important is religion in your life?"

Categories: "Very important", "Rather important", "Not very important", "Not at all important"

**Quintiles of wealth** (ordinal, treated as continuous)- QUINTALL, standard measured based on census approach to calculating wealth in which respondents are divided into quintiles of wealth according to series of household items

**Internet Use** (ordinal, treated as continuous)- WWW1. "Talking about other things, how often do you use the internet?" (1) "Never" (2) "Rarely" (3) "A few times a month" (4) "A few times a week" (5) "Daily"

**Attention to Media** (ordinal, treated as continuous)- GI0. "What is your religion, if any?" (1) "Never" (2) "Rarely" (3) "A few times a month" (4) "A few times a week" (5) "Daily"

**Education of Mother** (ordinal, treated as continuous)- ED2. "And what educational level did your mother/mom complete?" (Options not read)

(1) "None" (2) "Primary incomplete" (3) "Primary complete" (4) "Secondary incomplete" (5) "Secondary complete" (6) "Technical school/Associate degree complete" (7) "Technical school/Associate degree complete" (8) "University (bachelor's degree or higher) incomplete" (8) "University (bachelor's degree or higher) complete"

**Table A1. Coding of the education categories based on completed years of education (ED.)**

Country	Country code	No education	Primary	Secondary	Post-secondary
Mexico	1	0	1-6	7-12	13+
Guatemala	2	0	1-6	7-12	13+
El Salvador	3	0	1-6	7-12	13+
Honduras	4	0	1-6	7-12	13+
Nicaragua	5	0	1-6	7-12	13+
Costa Rica	6	0	1-6	7-12	13+
Panama	7	0	1-6	7-12	13+
Colombia	8	0	1-5	6-11	12+
Ecuador	9	0	1-6	7-12	13+
Bolivia	10	0	1-6	7-12	13+
Peru	11	0	1-6	7-11	12+
Paraguay	12	0	1-6	7-12	13+
Chile	13	0	1-6	7-12	13+
Uruguay	14	0	1-6	7-12	13+
Brazil	15	0	1-6	7-12	13+
Venezuela	16	0	1-6	7-11	12+
Argentina	17	0	1-7	8-12	13+
Dominican Republic	21	0	1-8	9-12	13+
Haiti	22	0	1-7	8-14	15+
Jamaica	23	0	1-6	7-11	12+
Guayana	24	0	1-6	7-11	12+
Trinidad & Tobago	25	0	1-5	6-12	13+
Belize	26	0	1-6	7-12	13+
Suriname	27	0	1-6	7-13	14+
Bahamas	28	0	1-6	7-12	13+
Barbados	29	0	1-6	7-12	13+

**Source:** Created by the authors after consulting with LAPOP.

## Appendix B – Description of Variables in Final Regressions

- Internet use: Aggregate of WWW1 at the Region Level
- Urbanization: Aggregate of UR at the Region Level
- % Lowest Income: Percent of First Wealth Quintile in Region
- Log10 of GNI/pc 2012: World Bank data (accessed on September 20, 2015)
- Level of Democracy: Freedom House Scores 2014 (accessed on September 20, 2015)
- Log10 of Population Density 2014: World Bank data (accessed on September 20, 2015)
- Stock of Democracy: from Democracy and Dictatorship Revisited data (Cheibub, Gandhi, & Vreeland, 2010)
- Gini Index (most recent year available prior to 2014 with most complete data, accessed on March 25, 2016)
- Freedom House Scores 2014 (accessed on March 25, 2016)
- % Government Expenditure on Education (most recent year available): World Bank data/UNESCO IS (accessed on March 20, 2016)
- % Government Expenditure on Education (most recent year available): World Bank data/UNESCO IS (accessed on March 20, 2016)
- Gay Marriage: Social Inclusion Index 2016, Americas Quarterly

**Table B1**  
**Number of Respondents and Strata per Country,**  
**and Second-Level Variables**

Country	Number of Strata	GNI/pc 2012	Freedom House 2014	% Govt. Expend on Education	Log of Population Density 2014	Stock of Democracy	Gini Index	Gay Marriage 2013
Argentina	7	13140	4	5.3	1.196	51	42.3	1
Bahamas	3	21430	2	.	1.583	37	.	0
Barbados	3	14960	2	5.5	2.819	44	.	0
Belize	6	4260	3	6.2	1.188	34	.	0
Bolivia	9	2280	6	6.4	0.989	34	48.1	0
Brazil	5	12160	4	5.9	1.392	48	52.9	1
Chile	9	14350	2	4.6	1.378	51	50.5	0
Colombia	6	7140	7	4.9	1.634	60	53.5	1
Costa Rica	5	9040	2	4.9	1.969	68	49.2	0
DR	4	5630	5	2.1	2.333	49	47.1	0
Ecuador	6	5390	6	4.2	1.806	50	47.3	0

Country	Number of Strata	GNI/pc 2012	Freedom House 2014	% Govt. Expend on Education	Log of Population Density 2014	Stock of Democracy	Gini Index	Gay Marriage 2013
El Salvador	5	3730	5	3.4	2.469	31	43.5	0
Guatemala	4	3070	7	2.8	2.175	58	52.4	0
Guyana	4	3600	5	3.2	0.589	.	.	0
Haiti	5	750	9	.	2.584	.	60.8	0
Honduras	8	2090	8	5.9	1.852	39	53.7	0
Jamaica	4	5190	5	6.3	2.400	53	.	0
Mexico	4	9580	6	5.1	1.810	15	48.1	0
Nicaragua	6	1700	9	4.5	1.699	31	45.7	0
Panama	4	9170	4	3.3	1.716	44	51.7	0
Paraguay	6	3440	6	5	1.217	26	48.3	0
Peru	7	5650	5	3.3	1.384	37	44.7	0
Suriname	5	9020	4	.	0.538	31	.	0
Trinidad & Tobago	5	14610	4	3.2	2.422	53	.	0
Uruguay	2	13910	2	4.4	1.291	57	41.9	1
Venezuela	8	12500	10	6.9	1.542	58	46.9	0

**Source:** Created by the authors using data from the AmericasBarometer 2014 surveys, World Bank Databank, Freedom House, Cheibub, Gandhi and Vreeland (2010), and the AmericasQuarterly report on Gay Marriage in the Social Inclusion Index.

**Table B2**  
**Distribution of Variables in Final Regressions**

Variable	Obs	Mean	Std. Dev.	Min	Max
Internet use	140	2.656488	.588708	1.302083	3.976248
% Urbanization	140	.635727	.3074013	0	1
% Lowest Income	140	.2260558	.1046578	.0583333	.7132617
Log of Number of Observations	140	5.461752	0.7396112	3.135494	7.904335
Log of Number of Observations-Squared	140	30.37385	8.18352	9.831324	62.47851
GNI/pc 2012	26	7991.923	5294.81	750	21430
Freedom House 2014	26	5.076923	2.296486	2	10
% Govt. Expend on Education	23	4.665217	1.307186	2.1	6.9
Stock of Democracy	24	44.125	12.72557	15	68
Log of Population Density 2014	26	1.691334	0.5908767	0.5378578	2.818901
Gini Index	19	48.87368	4.628276	41.9	60.8
Legalized Gay Marriage	26	0.1538461	0.367946	0	1

**Source:** Created by the authors using data from the AmericasBarometer 2014 surveys.

## Appendix C - Regions per Country and Number of Observations

**Table C1**  
**Regions per Country and Number of Observations**

Country	Region	Region Identifier	Total Number of Observations	Number of "10s" in Gay Marriage Q	Observations in Regression
Mexico	Norte	101	372	60	257
	Centro Occidente	102	290	82	196
	Centro	103	539	90	376
	Sur	104	334	38	245
Guatemala	Metropolitana	201	378	46	322
	Noroccidente	203	432	21	393
	Nororiente	205	264	4	236
	Sur	206	432	25	338
El Salvador	Región 1 (Occidental)	301	312	18	282
	Región 2 (Central 1)	302	264	20	241
	Región 3 (Central 2)	303	192	17	163
	Región 4 (Oriental)	304	312	27	285
	Región 5 (AMSS)	305	432	55	376
Honduras	Central A	401	192	41	172
	Central B	402	123	14	114
	Norte A	403	336	105	273
	Norte B	404	338	98	279
	Norte C	405	45	13	32
	Occidental	406	287	28	258
	Oriental A	407	120	12	98
	Sur	409	120	9	107
Nicaragua	Metropolitana	501	387	64	306
	Centro	502	219	40	178
	Norte	503	241	35	207
	Pacifico Norte	504	241	41	213
	Pacifico Sur	505	266	38	199
	Caribe	506	192	22	173

Country	Region	Region Identifier	Total Number of Observations	Number of "10s" in Gay Marriage Q	Observations in Regression
Costa Rica	Amsj	601	453	100	317
	Urb-Central	602	324	64	233
	Rur-Central	603	241	50	179
	Urb-Bajura	604	195	58	135
	Rur-Bajura	605	324	59	227
Panama	Metropolitana	701	577	9	520
	Oriental	702	363	37	305
	Central	703	291	71	223
	Occidental	704	277	5	220
Colombia	Atlántica	811	288	37	240
	Bogotá	812	257	75	180
	Central	813	359	75	239
	Oriental	814	282	57	223
	Pacífica	815	262	49	191
	Antiguos Territorios Nacionales	816	48	4	40
Ecuador	Costa Urbana	901	547	76	473
	Costa Rural	902	196	27	160
	Sierra urbana	903	394	64	300
	Sierra Rural	904	280	31	216
	Oriente Norte	905	36	8	28
	Oriente Sur	906	36	1	30
Bolivia	La Paz	1001	408	34	319
	Santa Cruz	1002	409	17	355
	Cochabamba	1003	410	31	330
	Oruro	1004	312	14	246
	Chuquisaca	1005	303	11	251
	Potosí	1006	302	18	257
	Pando	1007	311	35	209
	Tarija	1008	303	41	245
	Beni	1009	308	14	213

Country	Region	Region Identifier	Total Number of Observations	Number of "10s" in Gay Marriage Q	Observations in Regression
Peru	Costa Norte	1101	264	8	235
	Costa Sur	1102	132	6	107
	Lima Metropolitana	1103	504	41	411
	Selva	1104	168	11	143
	Sierra Centro	1105	96	7	80
	Sierra Norte	1106	132	5	110
	Sierra Sur	1107	204	2	168
Paraguay	Capital Capital	1201	144	44	100
	Departamento Central	1202	377	91	272
	Zona Norte	1203	214	28	138
	Zona Centro	1204	360	66	260
	Zona Sur	1205	195	23	133
	Zona Este	1206	213	29	141
Chile	North Zone (I-IV)	1301	24	10	14
	North Zone (I-IV)	1302	36	12	22
	North Zone (I-IV)	1303	126	26	90
	Central Zone (I-IV)	1304	132	38	87
	Central Zone (I-IV)	1305	372	134	206
	Central Zone (I-IV)	1306	480	217	250
	South Zone (I-IV)	1307	143	34	82
	South Zone (I-IV)	1308	108	35	58
	South Zone (I-IV)	1309	150	55	77
Uruguay	Montevideo	1401	600	359	212
	Interior	1402	912	468	418
Brazil	Norte	1501	216	20	168
	Nordeste	1502	336	110	173
	Centro-Oeste	1503	216	65	126
	Sudeste	1504	480	148	297
	Sul	1505	252	88	156

Country	Region	Region Identifier	Total Number of Observations	Number of "10s" in Gay Marriage Q	Observations in Regression
Venezuela	Región Capital	1601	276	68	187
	Región Zuliana	1602	216	18	170
	Región Centrol-Occidental	1604	162	22	130
	Región Oriental	1605	180	26	158
	Región Los Llanos	1606	144	40	109
	Región Central	1607	252	56	154
	Región Guayana	1608	90	4	75
	Región Los Andes	1609	180	36	141
Argentina	AMBA (Capital Federal y GBA)	1701	450	170	181
	Centro	1702	288	71	156
	Noreste Argentino (NEA)	1703	144	36	76
	Noroeste (NOA)	1704	198	30	144
	Cuyo	1705	108	37	64
	Patagonia	1706	72	26	38
	Provincia de Buenos Aires	1707	252	107	105
DR	Región Metropolitana	2101	556	96	409
	Región Norte	2102	531	61	366
	Región Este	2103	193	32	139
	Región Sur	2104	240	21	172
Haiti	Metropolitan Area	2201	378	3	299
	Region 1 (North-Northeast)	2202	288	1	184
	Region 2 (Center-Artibonite)	2203	336	0	248
	Region 3 (West)	2204	222	0	174
	Region 4 (South-South-Grande Anse / N)	2205	288	0	238
Jamaica	KMR	2301	532	36	335
	Surrey	2302	153	10	88
	Middlesex	2303	484	16	281
	Cornwall	2304	334	16	232

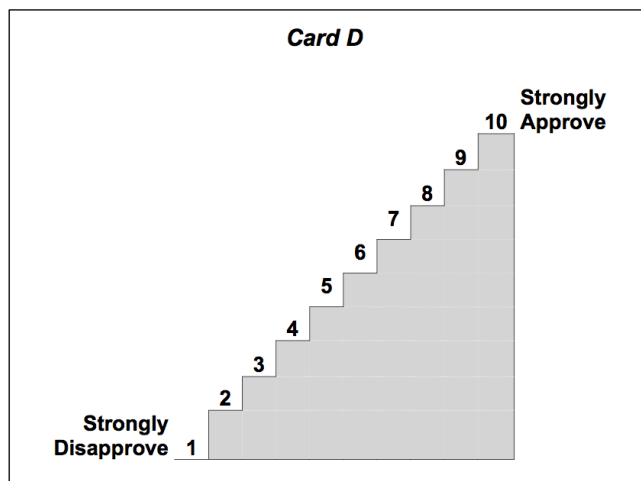


Country	Region	Region Identifier	Total Number of Observations	Number of "10s" in Gay Marriage Q	Observations in Regression
Guyana	Greater Georgetown	2401	305	53	206
	Region 3 and Rest of Region	2402	578	36	376
	Regions 2, 5, 6	2403	457	24	314
	Regions 1, 7, 8, 9, 10	2404	217	7	164
Trinidad & Tobago	Western	2501	3,011	266	2169
	Eastern	2502	301	31	227
	Central	2503	305	30	251
	Southern	2504	383	18	276
	Tobago	2505	203	3	171
Belize	Corozal	2601	197	14	165
	Orange Walk	2602	219	15	177
	Belize	2603	436	34	363
	Cayo	2604	365	28	311
	Stann Creek	2605	170	27	134
	Toledo	2606	146	2	136
Suriname	Paramaribo	2701	3,005	493	2122
	Wanica / Para	2702	321	56	180
	Nickerie / Coronie	2703	241	36	136
	Commewijne / Marowijne	2704	219	12	136
	Brokopondo / Sipaliwini	2705	214	11	118
Bahamas	New Providence	2801	3,011	171	1938
	Grand Bahama	2802	229	6	169
	Remaining Family Islands	2803	189	8	95
Barbados	Greater Bridgetown Area (GBA)	2901	2,906	381	1764
	Urban Coastal Core	2902	490	67	294
	Rest of the Island	2903	432	28	278

**Source:** Created by the authors using data from the AmericasBarometer 2014 surveys.

## Appendix D - Instrument Offered to Respondents for Use of the Scale

Figure D1



Source: Latin American Public Opinion Project (LAPOP).

## Appendix E – Correlation Between Tolerance Measures, D1-D4 and D5

**D1.** There are people who only say bad things about the (country) form of government, not just the current (incumbent) government but the system of government. How strongly do you approve or disapprove of such people's **right to vote**? Please read me the number from the scale:

**D2.** How strongly do you approve or disapprove that such people be allowed to conduct **peaceful demonstrations** in order to express their views? Please read me the number.

**D3.** Still thinking of those who only say bad things about the (country) form of government, how strongly do you approve or disapprove of such people being permitted **to run for public office**?

**D4.** How strongly do you approve or disapprove of such people appearing on television **to make speeches**?

**D5.** And now, changing the topic and thinking of homosexuals, how strongly do you approve or disapprove of such people being permitted to **run for public office**?

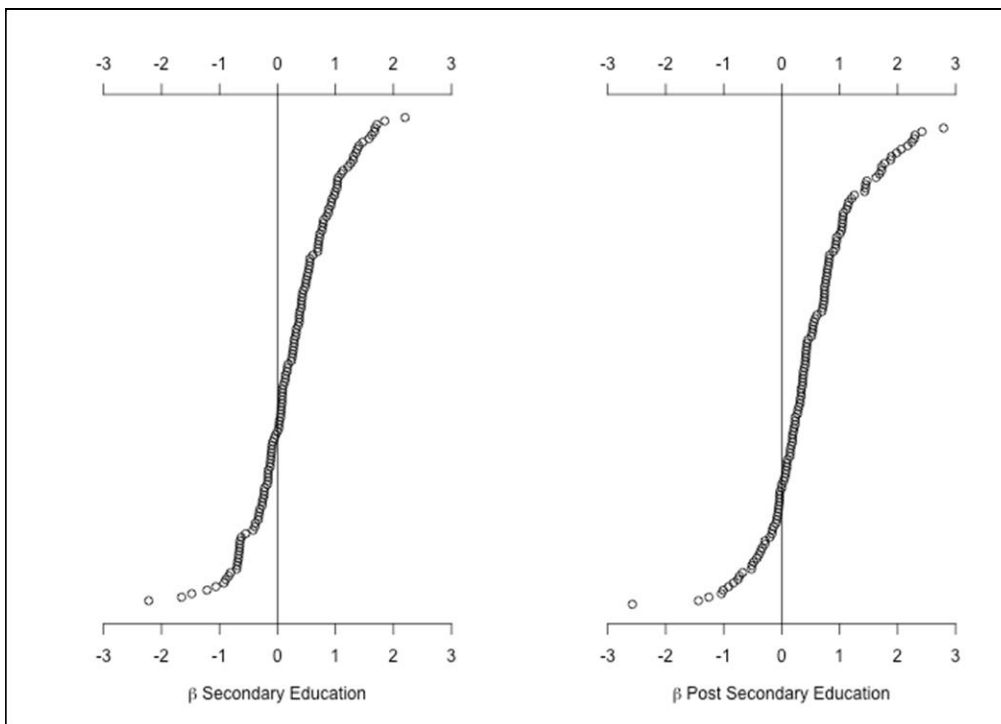
**Table E1**  
**Scores on Tolerance (D1) Questions**

Country	D1-D4, additive scale			D5			
	Mean	95% Lower bound	95% Upper bound	Mean	95% Lower bound	95% Upper bound	Correlation
Mexico	21.25	20.48	22.01	5.47	5.22	5.72	0.33
Guatemala	14.56	14.00	15.11	2.65	2.49	2.82	0.28
El Salvador	19.12	18.71	19.54	3.86	3.70	4.01	0.24
Honduras	19.60	19.02	20.18	4.64	4.42	4.86	0.20
Nicaragua	20.83	20.16	21.51	4.12	3.93	4.32	0.24
Costa Rica	21.02	20.13	21.91	5.53	5.29	5.76	0.32
Panama	15.54	14.89	16.18	3.80	3.56	4.04	0.25
Colombia	21.06	20.40	21.72	5.42	5.13	5.70	0.29
Ecuador	18.52	17.68	19.36	4.32	4.06	4.58	0.29
Bolivia	18.88	18.15	19.61	4.09	3.85	4.33	0.30
Peru	19.48	18.72	20.24	4.23	4.01	4.46	0.30
Paraguay	21.79	20.98	22.61	4.10	3.89	4.31	0.21
Chile	23.53	22.49	24.57	6.97	6.64	7.29	0.37
Uruguay	25.38	24.49	26.27	8.04	7.84	8.23	0.37
Brazil	23.06	22.13	23.99	6.37	6.11	6.63	0.37
Venezuela	26.34	25.25	27.43	5.14	4.82	5.45	0.34
Argentina	23.70	22.79	24.62	6.47	6.23	6.71	0.46
Dominican Republic	22.60	22.07	23.14	4.11	3.90	4.32	0.17
Haiti	22.07	21.44	22.70	1.94	1.80	2.09	0.09
Jamaica	24.01	22.99	25.03	2.44	2.24	2.63	0.16
Guyana	23.31	22.20	24.41	2.81	2.55	3.07	0.18
Trinidad & Tobago	25.81	24.88	26.74	3.27	3.06	3.49	0.10
Belize	22.02	21.26	22.79	2.62	2.47	2.77	0.23
						Average	0.27

**Source:** Created by the authors using data from the AmericasBarometer 2014 surveys.

## Appendix F – Coefficients for Education Levels from the 140 Individual-level Regressions

**Figure F1**  
Change in Tolerance associated with completing  
extra level of education with CIs



**Source:** Created by the authors using data from the AmericasBarometer 2014 surveys.

## Appendix G - “Null” Model and Original Partition of Variance

**Table G1**  
**Multilevel Analysis of Coefficients of Education Level Categories,**  
**“Empty” and “First-Level Only” Models**

	Variable	Effect of Secondary Education				Effect of Post-Secondary Education			
		$\beta$	(S.E.)	$\beta$	(S.E.)	$\beta$	(S.E.)	$\beta$	(S.E.)
Region-Level (First)	Internet Use	.	.	-0.55**	(0.26)	.	.	-0.08	(0.25)
	% Urbanization	.	.	-0.09	(0.27)	.	.	0.04	(0.28)
	% Lowest Income Quintile	.	.	-0.17	(0.80)	.	.	-0.24	(1.07)
Regression-Level (First)	Log of # of Observations	.	.	1.79	(1.11)	.	.	-0.86	(1.03)
	Log # of Observations-squared	.	.	-0.13	(0.09)	.	.	0.05	(0.09)
	Constant	0.30**	(0.06)	-4.08***	(3.80)	0.51***	(0.07)	3.93***	(3.38)
	Number of observations	140		140		140		140	
	Number of Countries	26		26		26		26	
	Variance (Country)	0.28	(0.04)	0.30	(0.04)	0.33	(0.06)	0.43	(0.09)
	Residual	0.58	(0.05)	0.54	(0.06)	0.63	(0.06)	0.61	(0.06)

**Source:** Created by the authors using data from the AmericasBarometer 2014 surveys.

## Appendix H - Mathematical Form of the “Independence of First-Level Effects” Assumption

In a standard hierarchical analysis of the association between education and tolerance, the regression would be modeled as:

$$\text{Tolerance}_{ij} = \beta_{0j} + \beta_{1j} \text{Education}_{ij} + \beta_{2j}(\text{Control 1})\text{Gender}_{ij} + \beta_{3j}(\text{Control 2})\text{Age}_{ij} + \dots + e_{ij}$$

where  $e_{ij} \sim N(0, \sigma_e^2)$

Existing studies suggest that average levels of tolerance should vary by cluster (may them be a region or country), therefore:

$$\beta_{0j} = \beta_{00} + u_{0j}, \text{ where } u_{0j} \sim N(0, \tau_{00}^2).$$

And that this variation is a function of economic development (GNI/pc), thus:

$$\beta_{0j} = \beta_{00} + \beta_{01} \text{GNI/pc}_j + u_{0j}, \text{ where } u_{0j} \sim N(0, \tau_{00}^2).$$

We argue that the impact of education should also vary per country, and is also a function of economic development (GNI/pc):

$$\beta_{1j} = \beta_{10} + \beta_{11} \text{GNI/pc}_j + u_{1j}, \text{ where } u_{1j} \sim N(0, \tau_{11}^2).$$

We assume that our errors ( $u_{0j}$  and  $u_{1j}$ ) follow a distribution with mean 0 and normal variance  $\tau_{00}$  and  $\tau_{11}$ . There is probably some co-variation ( $\tau_{10}$ ) between the variances of our errors...  $\begin{bmatrix} u_{0j} \\ u_{1j} \end{bmatrix} \sim \text{MVN}(\begin{bmatrix} 0 \\ 0 \end{bmatrix}, \begin{bmatrix} \tau_{00} & \\ & \tau_{11} \end{bmatrix})$

If we assume that the distribution of tolerance per cluster does not co-vary with the distribution of the association between education and tolerance per cluster, we assume  $\tau_{10} = 0$ . This is highly unlikely, however. In multilevel analysis, scholars commonly estimate random effects with unrestricted covariance between errors.

Moreover, we ought to consider the other independent variables (e.g., sex and age). Should the coefficients connected to these predictors vary by country?

If we believe they also randomly vary by country (without systematic predictors), we would have the following equations and variance-covariance matrix of the error terms:

$$\begin{aligned} \beta_{2j} &= \beta_{20} + u_{2j}, \text{ where } u_{2j} \sim N(0, \tau_{22}^2), \\ \beta_{3j} &= \beta_{30} + u_{3j}, \text{ where } u_{3j} \sim N(0, \tau_{33}^2), \text{ and} \\ \begin{bmatrix} u_{0j} \\ u_{1j} \\ u_{2j} \\ u_{3j} \end{bmatrix} &\sim \text{MVN}(\begin{bmatrix} 0 \\ 0 \\ 0 \\ 0 \end{bmatrix}, \begin{bmatrix} \tau_{00} & & & \\ \tau_{10} & \tau_{11} & & \\ \tau_{20} & \tau_{21} & \tau_{22} & \\ \tau_{30} & \tau_{31} & \tau_{32} & \tau_{33} \end{bmatrix}) \end{aligned}$$

This means that now we have a larger matrix with six parameters of covariation between the error terms ( $\tau_{10}, \tau_{20}, \tau_{21}, \tau_{30}, \tau_{31}, \tau_{32}$ ), which demands a lot of computational power (and this was only for 3 independent variables!). We could assume the other independent variables (controls) do not vary per cluster, or simply that their coefficients would not have any covariation with the effect of our independent variables of interest (education), but this assumption is probably problematic. Not only it is unlikely these controls do not vary per cluster, but the variation in gender, and across individuals of the different ages probably vary along the variation in the effect of education. Therefore, given the type of data we have (large-n representative surveys), we prefer to perform our analysis using the “two-step approach” given we believe the association between our predictors and tolerance levels in each region is closer to independent than the individual associations between predictors and tolerance across countries.

## Appendix I - Robustness Check: Hierarchical Linear Model

**Table I1**  
**Standard Hierarchical Linear Model**  
**of Effect of Education on Tolerance**

		$\beta$	(S.E.)
First-level (Individual)	Years of Education	0.413**	(0.147)
	Female	0.371**	(0.031)
	Age	-0.002	(0.001)
	Urban	-0.226**	(0.039)
	Education of Mother	0.001	(0.011)
	Mestizo	0.272**	(0.052)
	Indigenous	-0.027	(0.087)
	Black	0.089	(0.072)
	Mulatto	0.128	(0.088)
	Other	0.108	(0.073)
	Mainline Protestant	-0.254**	(0.052)
	Evangelical and Pentecostal	-0.502**	(0.044)
	Atheist and Agnostics	-0.105	(0.064)
	Jehovah's Witness	-0.155**	(0.126)
	Mormon	0.025	(0.229)
	Jewish	-0.476	(0.593)
	Other	-0.22**	(0.085)
	Not very important	-0.073	(0.098)
	Rather important	-0.047	(0.093)
	Very important	-0.244**	(0.092)
First-level (Individual)	Wealth Quintiles	0.084**	(0.013)
	Internet Use	0.110**	(0.013)
	Attention to Media	0.038**	(0.016)
Country-Level explaining Average Level of Tolerance	Log of GNI/pc 2012	0.374	(0.557)
	Freedom House Score	0.058	(0.082)
	Log of Population Density 2014	-0.472*	(0.246)
	Same-Sex Marriage 2013	0.995**	(0.419)
Country-Level explaining Average Effect of Education on Tolerance	Log of GNI/pc 2012 * Education	0.064**	(0.029)

		$\beta$	(S.E.)
Regression Parameters	Constant	4.848	(2.638)
	Number of observations	34243	
	Number of Countries	26	
	Variance (Effect of Education)	0.046	(0.008)
	Variance (Constant per Country)	0.672	(0.108)
	Covariance (Education, Country)	-0.012	(0.243)
	Residual	2.838	(0.011)

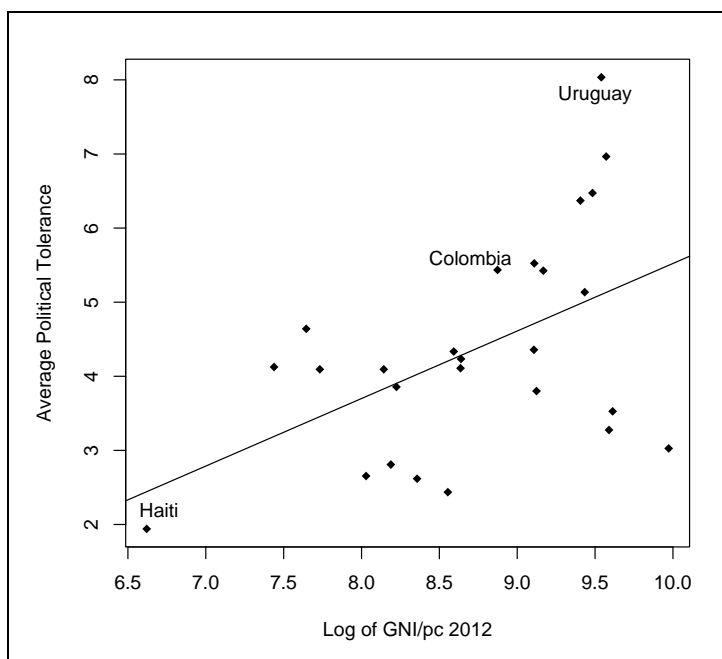
**Source:** Created by the authors using data from the AmericasBarometer 2014 surveys, World Bank Databank, Freedom House, Cheibub, Gandhi and Vreeland (2010), and the AmericasQuarterly report on Gay Marriage in the Social Inclusion Index.

Respondents who expressed complete approval of same-sex marriage (D6=10) are excluded from analysis.

\*\*p<0.05, \*p<0.10; Coefficients are hierarchical linear regression estimates with robust standard errors.

## Appendix J - Graph of Bivariate Relationship

**Figure J1**  
The bivariate relationship between National Wealth and Tolerance in the Americas



**Source:** Created by the authors using data from the AmericasBarometer 2014 surveys and the World Bank Databank



## Appendix K - Wealth, Investments on Education, and Quality of Education

We downloaded indicators of education quality collected by the UNESCO Institute of Statistics from 1990 through 2015 from the World Bank Online Data Source. As expected, a great number of countries (119 out of 214) have not provided information on the variables, which hinders our ability to make inferences about the entire population of countries. To minimize this problem, we use these indicators' data from 2010 because there is less missing values than any other period.

We operationalize education quality here with two indicators:

- 1-) Enrollment Rates (Lower and Upper Secondary)<sup>1</sup>
- 2-) Rate of Youth Illiteracy between the ages of 15-24<sup>2</sup>

To assess the impact of national wealth (log of GNI-PPP<sup>3</sup>) and expenditure (% Expenditure on Education) on these indicators, we run simple OLS regressions with population growth as a control. Countries with high population growth naturally have difficulties implementing education programs given their young population expand and are likely to be poor. According to our argument, after controlling for population growth, we should see larger wealth and expenditure associated with larger enrollment rates and lower youth illiteracy rates.

**Table K1**  
**Gross Enrollment Rate in Lower Secondary School 2010**

	$\beta$	(S.E.)
Log of GNI in \$US (PPP) 2010	34.68**	(2.89)
% Govt. Expenditure on Educ. 2010	0.80*	(0.36)
Population Growth 2010	-3.29**	(0.89)
Constant	-58.54*	14.52
Number of Countries	95	
R <sup>2</sup>	0.68	

**Source:** Created by the authors using data from the World Bank Databank.  
\*\*p<0.01, \*p<0.05; Coefficients are OLS regression estimates with standard errors.

The results from Table J1 indicate that, after controlling for expenditure and population growth, wealthier countries have, on average, larger enrollment rates. Similarly, countries that expand larger shares of their government budgets on education have more people in school. Finally, countries with higher population growth have smaller

<sup>1</sup> Total enrollment in lower secondary education, regardless of age, expressed as a percentage of the total population of official lower secondary education age. GER can exceed 100% due to the inclusion of over-aged and under-aged students because of early or late school entrance and grade repetition.

<sup>2</sup> Number of people age 15 to 24 years who can both read and write with understanding a short simple statement on their everyday life, divided by the population in that age group. Generally, 'literacy' also encompasses 'numeracy', the ability to make simple arithmetic calculations. Divide the number of people aged 15 to 24 years who are literate by the total population in the same age group and multiply the result by 100.

<sup>3</sup> To avoid biased estimates from skewed distributions, we take the log of countries' GNI.

enrollment rates. An increase of 1% in the population is associated with a decrease of over 3% in the enrollment ratio.

When we look at youth illiteracy rates, we find similar results.

**Table J2**  
**Youth Illiteracy Rate 2010**

	$\beta$	(S.E.)
Log of GNI in \$US (PPP) 2010	34.51**	(4.09)
% Govt. Expenditure on Educ. 2005	1.01*	(0.41)
Population Growth 2010	-2.56**	(0.88)
Constant	-61.09*	17.37
Number of Countries	23	
R <sup>2</sup>	0.80	

**Source:** Created by the authors using data from the World Bank Databank.

\*\*p<0.01, \*p<0.05; Coefficients are OLS regression estimates with standard errors.

As expected, we find that countries with larger population growth have larger youth illiteracy rates. Moreover, results from Table J2 confirm our expectations that wealthier countries and a larger share of government's expenditure on education have, on average, a positive impact on the percentage of illiterate young people

## Appendix L - Robustness Check: No Exclusion

In the paper we mention the exclusion of respondents who expressed complete approval of same-sex marriage, who are assumed to have no objection to homosexuals, does not have substantive impact on the results. Below we present the results of similar regressions when not excluding the respondents who responded "10" for the gay marriage question. The first table presents the results of regression models without the expenditure of education as a predictor; the second table includes expenditure of education, while the third table presents results from a standard HLM regression (comparable to the one presented in appendix I).

**Table L1**  
**Hierarchical Linear Models of Average Levels**  
**of Tolerance Across Strata**

		Effect of secondary education						Effect of higher education					
	Variable	$\beta$	(S.E.)	$\beta$	(S.E.)	$\beta$	(S.E.)	$\beta$	(S.E.)	$\beta$	(S.E.)	$\beta$	(S.E.)
Region-Level (First)	Internet Use	-0.59**	(0.29)	-0.60*	(0.32)	-0.22	(0.38)	-0.52	(0.34)	-0.67*	(0.35)	-0.59*	(0.30)
	% Urbanization	0.02	(0.29)	-0.14	(0.28)	-0.66**	(0.25)	0.78	(0.54)	0.78	(0.58)	1.35*	(0.71)
	% Lowest Income Quintile	-0.60	(0.92)	-0.97	(1.08)	0.44	(1.00)	-0.19	(1.21)	-1.03	(1.38)	0.05	(1.19)
Regression-Level (First)	Log of # of Observations	2.71**	(0.85)	2.68**	(0.82)	3.37**	(1.16)	0.33	(1.58)	0.28	(1.61)	2.33	(2.26)
	Log # of Observations-squared	-0.21**	(0.07)	-0.20**	(0.07)	-0.26**	(0.11)	-0.06	(0.14)	-0.05	(0.14)	-0.28	(0.21)
Country-Level (Second)	Log of GNI/pc 2012	0.98**	(0.39)	1.08**	(0.56)	1.01**	(0.47)	0.93	(0.56)	1.43**	(0.64)	0.48	(0.62)
	Level of Democracy	0.02	(0.05)	0.03	(0.04)	0.03	(0.05)	-0.02	(0.07)	-0.02	(0.06)	-0.03	(0.07)
	Log of Population Density	-0.10	(0.13)	-0.16	(0.18)	-0.28	(0.14)	0.12	(0.26)	0.18	(0.29)	0.32**	(0.14)
	Stock of Democracy	.	.	0.01	(0.01)	0.00	(0.01)	.	.	-0.02*	(0.01)	-0.00	(0.01)
	Gini Index	.	.	.	.	0.02	(0.03)	.	.	.	.	-0.02	(0.03)
	Constant	-10.18**	(3.07)	-10.63**	(3.20)	-13.53**	(2.93)	-2.06	(4.98)	-2.73	(5.08)	-4.35	(5.26)
	Number of observations	140		131		105		140		131		105	
	Number of Countries	26		24		18		26		24		18	
	Variance (Country)	0.17	(0.05)	0.18	(0.05)	0.15	(0.05)	0.30	(0.13)	0.54	(0.11)	0.44	(0.08)
	Residual	0.47	(0.13)	0.49	(0.14)	0.55	(0.18)	0.60	(0.20)	0.78	(0.14)	0.80	(0.15)

**Source:** Created by the authors using data from the AmericasBarometer 2014 surveys, World Bank Databank, Freedom House, Cheibub, Gandhi and Vreeland (2010), and the AmericasQuarterly report on Gay Marriage in the Social Inclusion Index.

**Note:** \*\*p<0.05, \*p<0.10; Coefficients are hierarchical linear regression estimates with robust standard errors.

**Table L2**  
**Hierarchical Linear Models of the Effect of**  
**Education on Tolerance Across Strata**

		Effect of secondary education						Effect of higher education					
	Variable	$\beta$	(S.E.)	$\beta$	(S.E.)	$\beta$	(S.E.)	$\beta$	(S.E.)	$\beta$	(S.E.)	$\beta$	(S.E.)
Region-Level (First)	Internet Use	-0.41	(0.30)	-0.43	(0.32)	-0.22	(0.38)	-0.78**	(0.35)	-0.85**	(0.34)	-0.59*	(0.30)
	% Urbanization	-0.08	(0.31)	-0.25	(0.29)	-0.66**	(0.25)	1.38**	(0.48)	1.31**	(0.52)	1.35*	(0.71)
	% Lowest Income Quintile	0.28	(0.91)	-0.17	(0.85)	0.44	(1.00)	-0.94	(1.55)	-1.26	(1.60)	0.04	(1.20)
Regression-Level (First)	Log of # of Observations	3.42**	(0.82)	3.32**	(0.78)	3.36**	(1.16)	0.59	(1.65)	0.54	(1.68)	2.34	(2.26)
	Log # of Observations-squared	-0.28**	(0.07)	-0.26**	(0.06)	-0.27**	(0.11)	-0.09	(0.14)	-0.08	(0.14)	-0.28	(0.21)
Country-Level (Second)	Log of GNI/pc 2012	1.05**	(0.48)	1.11**	(0.49)	0.82*	(0.44)	0.84	(0.61)	1.14**	(0.58)	0.58	(0.58)
	% Expenditure on Education	0.07	(0.06)	0.10	(0.06)	0.19**	(0.08)	-0.04	(0.05)	0.01	(0.07)	-0.09	(0.09)
	Level of Democracy	0.01	(0.04)	0.02	(0.04)	-0.02	(0.04)	-0.02	(0.07)	-0.03	(0.05)	-0.00	(0.06)
	Log of Population Density	-0.06	(0.15)	-0.00	(0.19)	0.09	(0.17)	0.49**	(0.21)	0.64**	(0.25)	0.13	(0.24)
	Stock of Democracy	.	.	0.00	(0.01)	0.00	(0.01)	.	.	-0.01	(0.01)	-0.00	(0.01)
	Gini Index	.	.	.	.	0.01	(0.03)	.	.	.	.	-0.01	(0.03)
	Constant	-13.20**	(2.88)	-13.43**	(2.88)	-13.50**	(2.99)	-2.24	(4.95)	-3.20	(5.20)	-4.36	(5.25)
	Number of observations	127		123		105		27		123		105	
	Number of Countries	23		22		18		23		22		18	
	Variance (Country)	0.13	(0.04)	0.14	(0.05)	0.12	(0.06)	0.20	(0.06)	0.20	(0.06)	0.19	(0.06)
	Residual	0.48	(0.14)	0.48	(0.15)	0.55	(0.18)	0.60	(0.21)	0.61	(0.22)	0.63	(0.24)

**Source:** Created by the authors using data from the AmericasBarometer 2014 surveys, World Bank Databank, Freedom House, Cheibub, Gandhi and Vreeland (2010), and the AmericasQuarterly report on Gay Marriage in the Social Inclusion Index. Note: \*\*p<0.05, \*p<0.10; Coefficients are hierarchical linear regression estimates with robust standard errors.

**Table L3**  
**Standard Hierarchical Linear Model of**  
**Effect of Education on Tolerance**

		$\beta$	(S.E.)	$\beta$	(S.E.)
First-level (Individual)	Years of Education	0.424**	(0.141)	0.540**	(0.190)
	Female	0.489**	(0.029)	0.482**	(0.031)
	Age	0.001	(0.001)	-0.001	(0.001)
	Urban	-0.313**	(0.037)	-0.288**	(0.040)
	Education of Mother	.	.	0.013	(0.010)
	Mestizo	0.224**	(0.047)	0.248**	(0.050)
	Indigenous	-0.111	(0.082)	-0.064	(0.087)
	Black	0.059	(0.066)	0.021	(0.072)
First-level (Individual)	Mulatto	0.146*	(0.079)	0.054	(0.086)
	Other	0.065	(0.067)	0.063	(0.072)
	Mainline Protestant	-0.336**	(0.048)	-0.336**	(0.053)
	Evangelical and Pentecostal	-0.621**	(0.041)	-0.644**	(0.044)
	Atheist and Agnostics	-0.004	(0.057)	0.015	(0.062)
	Jehovah's Witness	-0.382**	(0.117)	-0.300**	(0.129)
	Mormon	-0.166	(0.219)	-0.116	(0.232)
	Jewish	-0.013	(0.496)	-0.059	(0.549)
	Other	-0.117	(0.078)	-0.184**	(0.086)
	Not very important	-0.338**	(0.083)	-0.357**	(0.090)
	Rather important	-0.381**	(0.079)	-0.409**	(0.085)
	Very important	-0.573**	(0.079)	-0.590**	(0.085)
	Wealth Quintiles	0.106**	(0.012)	0.107**	(0.013)
	Internet Use	0.139**	(0.012)	0.129**	(0.013)
	Attention to Media	0.057**	(0.015)	0.047**	(0.016)
Country-Level explaining Average Level of Tolerance	Log of GNI/pc 2012	0.380	(0.313)	0.903	(0.760)
	Freedom House Score	0.024	(0.111)	0.042	(0.117)
	Log of Population Density 2014	-0.317**	(0.141)	-0.718**	(0.345)
Country-Level explaining Average Effect of Education on Tolerance	Log of GNI/pc 2012 * Education	0.041**	(0.018)	0.093**	(0.041)
	Freedom House Score * Education	0.006	(0.006)	0.004	(0.006)
	Log of Population Density 2014* Education	0.001	(0.008)	0.001	(0.019)

		$\beta$	(S.E.)	$\beta$	(S.E.)
Regression Parameters	Constant	7.736	(2.513)	8.854	(3.509)
	Number of observations	45045		38396	
	Number of Countries	26		26	
	Variance (Effect of Education)	0.003	(0.001)	0.050	(0.008)
	Variance (Constant per Country)	0.872	(0.257)	0.984	(0.146)
	Covariance (Education, Country)	0.006	(0.010)	0.024	(0.222)
	Residual	9.039	(0.060)	3.001	(0.011)

Source: Created by the authors using data from the AmericasBarometer 2014 surveys, World Bank Databank, Freedom House, Cheibub, Gandhi and Vreeland (2010), and the AmericasQuarterly report on Gay Marriage in the Social Inclusion Index.

## Appendix M - STATA code file

\*\*\*Guilherme Russo, Mitch Seligson and Daniel Moreno

\*\*Last change: April 16, 2018

\* Education, the Wealth of Nations and Political Tolerance Toward Homosexuals

\*\*\*\*\*

\* Creating an empty dataset as a placeholder

set more off

clear

gen estratopri=.

gen beta\_ed\_none =.

gen beta\_ed\_secondary =.

gen beta\_ed\_post =.

cd "working directory here"

save estratopri\_data, replace

\* Working directory and uploading the 2014 Merge Dataset (v3.0)

set more off

use "working directory/AmericasBarometer Merged 2014 (v3.0 temp).dta", clear

tab pais

\*\* Dropping the US and Canada (missing variables later on)

drop if pais > 39

\*\*\*\*\*

\*\*\*\*\* Demographics \*\*\*\*\*

\*\*\*\*\*

\*gender

tab q1

gen female=q1-1

label var female "Female"

\*age

tab q2

label var q2 "Age"

\*urban-rural area

tab ur

tab ur, nolabel

gen urban=2-ur

\*ethnicity

gen ethnicity = etid

recode ethnicity (1=1) (2=2) (3=3) (4=4) (5=5) (.=.) (else=6)

label var ethnicity "ethnicity"

label define ethnicity 1 "White" 2 "Mestizo" 3 "Indigenous" 4 "Black" 5 "Mulatto" 6 "Other"

label value ethnicity ethnicity

bysort pais: tab ethnicity

\*religion

tab q3c

tab q3c, nolabel

gen religion=.

\*catholic

replace religion=1 if q3c==1

\*protestant

replace religion=2 if q3c==2

\*evangelical pentecostal

replace religion=3 if q3c==5

\*jewish

\*replace religion=7 if q3c==10

\*jehovah's witness

\*replace religion=5 if q3c==12

\*mormon

\*replace religion=6 if q3c==6

\*atheist + agnostics

\*replace religion=4 if q3c==4

\*replace religion=4 if q3c==11

\*OTHER -> eastern religions + traditional or native

replace religion=8 if q3c==3 | q3c==4

replace religion=8 if q3c>5

label var religion "Religion"

label define religion 1 "Catholic" 2 "Mainline Protestant" 3 "Evangelical and Pentecostal" 4 "Other"

\* 4 "Atheist or Agnostic" 5 "Jehovah's Witness" 6 "Mormon" 7 "Jewish" 8 "Other"

label value religion religion

tab religion, gen(relig\_cat)

\*religiosity

tab q5b

gen religiosity=5-q5b

label define religiosity 1 "Not Important at All" 2 "Not Very Important" 3 "Rather Important" 4 "Very Important"

label value religiosity religiosity

tab religiosity

\*education of mother

tab ed2

tab ed2, nol

\*education

```

tab ed
tab edr
tab edr, nol
tab edr, gen(edr)

```

```

*****

```

```

*** Different Tolerances ***

```

```

corr d1 d2 d3 d4 d5 d6
factor d1 d2 d3 d4 d5 d6

```

```

levelsof pais, local(pais)
foreach p of local pais{
alpha d5 d6 if pais==`p'
}

```

```

*****

```

```

***** Dependent Variable *****

```

```

tab d5

```

```

* While this measures tolerance toward homosexuals, there is an argument
* that those who do not object to homosexuals should not be measured
* in the scale of tolerance...the minimal objection precondition
* Hence, we are going to drop those who say 10 in the same-sex marriage question
drop if d6==10

```

```

* Now we are going to create dummies for our categorical variables

```

```

tab ethnicity, gen(ethnicity)
tab religion, gen(religion)
tab religiosity, gen(religiosity)
tab quintall, gen(quintile)

```

```

*Creating the Stratum-Level Dataset
egen N_estrato=count(q1), by (estratopri)
egen N_pais=count(q1), by (pais)
g N_estrato_prop= N_estrato/N_pais

```

```

gen beta_ed_none=.
gen beta_ed_secondary=.
gen beta_ed_post=.
gen beta_female=.
gen beta_q2=.
gen beta_ur=.
gen beta_ethnicity2=.
gen beta_ethnicity3=.
gen beta_ethnicity4=.
gen beta_ethnicity5=.
gen beta_ethnicity6=.
gen beta_religion2=.
gen beta_religion3=.
gen beta_religion4=.
*gen beta_religion5=.
*gen beta_religion6=.
*gen beta_religion7=.
*gen beta_religion8=.
gen beta_religiosity2=.
gen beta_religiosity3=.
gen beta_religiosity4=.
gen beta_quintall=.

```



```

gen beta_www1=.
gen beta_gi0=.
gen beta_ed2=.

gen se_ed_none=.
gen se_ed_secondary=.
gen se_ed_post=.
gen se_female=.
gen se_q2=.
gen se_ur=.
gen se_quintall=.
gen se_www1=.
gen se_gi0=.
gen se_ed2=.

gen num_obs=.
gen rss=.

gen lb_ed_secondary=.
gen ub_ed_secondary=.

gen lb_ed_post=.
gen ub_ed_post=.

* Testing the code would work
tab estratopri, nol
svy: reg d5 edr1 edr3 edr4 female q2 ur ed2 ethnicity2 ethnicity3 ethnicity4 ethnicity5 ethnicity6
religion2 religion3 religion4 religiosity2 religiosity3 religiosity4 quintall www1 gi0 if estratopri==101
matrix list e(b)

** Here is the command to run the 140 regressions and create a new dataset for each
** and then merge all together creating the level 2 dataset.
* You may need to delete the /// between lines in order for your STATA to run
set more off
levelsof estratopri, local(strata)
foreach s of local strata{
preserve
local estratoprilab: label (estratopri) `s'
di "Estratopri=`estratoprilab'"
collapse (mean) pais municipio estratopri N_estrato N_estrato_prop first_q=quintile1
second_q=quintile2 third_q=quintile3 fourth_q=quintile4 fifth_q=quintile5 mean_d5=d5
mean_d6=d6 trust_local_govt=b32r parents_attend=cp7r percep_corruption=exc7r mean_ed2=ed2
satisfaction_school=sd3new2 satisfaction_health=sd6new2 internet=www1 urban
protestant=relig_cat2 evangelical=relig_cat3 other_relig=relig_cat4 percent_no_educ=edr1
percent_secondary=edr3 percent_post=edr4 age=q2 wealth=quintal if estratopri==`s'
save estratopri_`s'.dta, replace
restore, preserve
svy: reg d5 edr1 edr3 edr4 female q2 ur ed2 ethnicity2 ethnicity3 ethnicity4 ethnicity5 ethnicity6
religion2 religion3 religion4 religiosity2 religiosity3 religiosity4 quintall www1 gi0 ed2 if
estratopri==`s'
ereturn list
replace num_obs=e(N) if estratopri==`s' & e(sample)==1
replace rss=e(rss) if estratopri==`s' & e(sample)==1
matrix list e(b)
replace beta_ed_none=_b[edr1] if estratopri==`s' & e(sample)==1 & _b[edr1]!=0
replace beta_ed_secondary=_b[edr3] if estratopri==`s' & e(sample)==1
replace beta_female=_b[female] if estratopri==`s' & e(sample)==1
replace beta_q2=_b[q2] if estratopri==`s' & e(sample)==1

```

```

replace beta_ur = _b[ur] if estratopri==`s' & e(sample)==1 & _b[ur]!=0
replace beta_ethnicity2 = _b[ethnicity2] if estratopri==`s' & e(sample)==1 & _b[ethnicity2]!=0
replace beta_ethnicity3 = _b[ethnicity3] if estratopri==`s' & e(sample)==1 & _b[ethnicity3]!=0
replace beta_ethnicity4 = _b[ethnicity4] if estratopri==`s' & e(sample)==1 & _b[ethnicity4]!=0
replace beta_ethnicity5 = _b[ethnicity5] if estratopri==`s' & e(sample)==1 & _b[ethnicity5]!=0
replace beta_ethnicity6 = _b[ethnicity6] if estratopri==`s' & e(sample)==1 & _b[ethnicity6]!=0
replace beta_religion2 = _b[religion2] if estratopri==`s' & e(sample)==1 & _b[religion2]!=0
replace beta_religion3 = _b[religion3] if estratopri==`s' & e(sample)==1 & _b[religion3]!=0
replace beta_religion4 = _b[religion4] if estratopri==`s' & e(sample)==1 & _b[religion4]!=0
replace beta_religiosity2 = _b[religiosity2] if estratopri==`s' & e(sample)==1 & _b[religiosity2]!=0
replace beta_religiosity3 = _b[religiosity3] if estratopri==`s' & e(sample)==1 & _b[religiosity3]!=0
replace beta_religiosity4 = _b[religiosity4] if estratopri==`s' & e(sample)==1 & _b[religiosity4]!=0
replace beta_quintall = _b[quintall] if estratopri==`s' & e(sample)==1 & _b[quintall]!=0
replace beta_www1 = _b[www1] if estratopri==`s' & e(sample)==1 & _b[www1]!=0
replace beta_gi0 = _b[gi0] if estratopri==`s' & e(sample)==1 & _b[gi0]!=0
replace beta_ed2 = _b[ed2] if estratopri==`s' & e(sample)==1 & _b[ed2]!=0

replace se_female = _se[female] if estratopri==`s' & e(sample)==1
replace se_q2 = _se[q2] if estratopri==`s' & e(sample)==1
replace se_ur = _se[ur] if estratopri==`s' & e(sample)==1 & _b[ur]!=0
replace se_quintall = _se[edr1] if estratopri==`s' & e(sample)==1 & _b[quintall]!=0
replace se_www1 = _se[www1] if estratopri==`s' & e(sample)==1 & _b[www1]!=0
replace se_gi0 = _se[gi0] if estratopri==`s' & e(sample)==1 & _b[gi0]!=0
replace se_ed2 = _se[ed2] if estratopri==`s' & e(sample)==1 & _b[ed2]!=0
replace se_ed_none = _se[edr1] if estratopri==`s' & e(sample)==1 & _b[edr1]!=0
replace se_ed_secondary = _se[edr3] if estratopri==`s' & e(sample)==1

replace lb_ed_secondary = _b[edr3] - invttail(e(df_r),0.025)*_se[edr3] if estratopri==`s' &
e(sample)==1
replace ub_ed_secondary = _b[edr3] + invttail(e(df_r),0.025)*_se[edr3] if estratopri==`s' &
e(sample)==1

svy: reg d5 edr1 edr2 edr4 female q2 ur ethnicity2 ethnicity3 ethnicity4 ethnicity5 ethnicity6 religion2
religion3 religion4 religiosity2 religiosity3 religiosity4 quintall www1 gi0 ed2 if estratopri==`s'
matrix list e(b)
replace beta_ed_post = _b[edr4] if estratopri==`s' & e(sample)==1
replace se_ed_post = _se[edr4] if estratopri==`s' & e(sample)==1

replace lb_ed_post = _b[edr4] - invttail(e(df_r),0.025)*_se[edr4] if estratopri==`s' & e(sample)==1
replace ub_ed_post = _b[edr4] + invttail(e(df_r),0.025)*_se[edr4] if estratopri==`s' &
e(sample)==1

collapse (mean) num_obs rss beta_ed_none beta_ed_secondary beta_ed_post beta_female beta_q2
beta_ur beta_ethnicity2 beta_ethnicity3 beta_ethnicity4 beta_ethnicity5 beta_ethnicity6
beta_religion2 beta_religion3 beta_religion4 beta_religiosity2 beta_religiosity3 beta_religiosity4
beta_quintall beta_www1 beta_gi0 beta_ed2 se_female se_q2 se_ur se_quintall se_www1 se_gi0
se_ed2 se_ed_none se_ed_secondary se_ed_post lb_ed_secondary ub_ed_secondary lb_ed_post
ub_ed_post
merge 1:1 _n using estratopri_`s'.dta
save estratopri_beta`s'.dta, replace
restore
}

* Merging them all
levelsof estratopri, local(estratopri)
use estratopri_data.dta, clear
foreach p of local estratopri{
append using estratopri_beta`p'.dta

```

```

}
save estratopri_data, replace

*****
*****
**** Bringing the level-2 variables
cd "working directory"
use estratopri_data, clear

rename pais lapop_id
drop _merge

***** Adding Country-Level variables (equivalent to table B1 in this appendix)
merge m:1 lapop_id using country_level_variables.dta

*Labeling all the variables
label var lapop_id "Pais"
label var estratopri "Estratopri"
label var mean_d5 "Average d5"
label var internet "Average www1"
label var urban "Percent Urban"
label var prot "Percent Protestant"
label var evang "Percent Evangelical"
label var other_relig "Percent No Religion"
label var percent_no_educ "Percent No Education"
label var percent_secondary "Percent Secondary Education"
label var percent_post "Percent Post-Secondary Education"
label var age "Average Age of Respondents in Stratum"
label var wealth "Average Quintal Response"
label var N_estrato "Number of Observations in Stratum"
label var N_estrato_prop "Proportion of Observations from Country in Stratum"
label var num_obs "Number of Observations in Regression"
label var rss "Residual Sum of Squares"
label var beta_ed_none "Beta for None-Primary"
label var beta_ed_secondary "Beta for Secondary-Primary"
label var beta_ed_post "Beta for Post-Primary"
label var se_ed_none "S.E. for None-Primary"
label var se_ed_secondary "S.E. for Secondary-Primary"
label var se_ed_post "S.E. for Post-Primary"
label var lb_ed_secondary "L.B. for Secondary-Primary"
label var ub_ed_secondary "U.B. for Secondary-Primary"
label var lb_ed_post "L.B. for Post-Primary"
label var ub_ed_post "U.B. for Post-Primary"

label var rss "Residual Sum of Squares"
label var mean_d6 "Average d6"
label var trust_local_govt "Average b32r"
label var parents_attend "Average cp7r"
label var percep_corruption "Average b32r"
label var satisfaction_school "Average sd3new2"
label var satisfaction_health "Average sd6new2"

label var first_q "Percent 1st Quintile"
label var second_q "Percent 2nd Quintile"
label var third_q "Percent 3rd Quintile"
label var fourth_q "Percent 4th Quintile"
label var fifth_q "Percent 5th Quintile"

```

label var gni\_pc\_2012 "GNIpc 2012 (World Bank)"  
 label var expend\_educ "Percent Government Expenditure on Education (World Bank)"  
 label var population\_density\_2014 "Population Density 2014 (World Bank)"  
 label var population\_2014 "Population 2014 (World Bank)"  
 label var internet\_use\_2014 "Internet Use 2014 (World Bank)"  
 label var urban\_pop\_2014 "Percent Urban 2014 (World Bank)"  
 label var fh\_pr "Freedom House- Political Rights"  
 label var fh\_cl "Freedom House- Political Rights"  
 label var fh\_total "Freedom House- Final Score"  
 label var hdi\_2013 "Human Development Index 2013 (UNDP)"  
 label var age\_of\_democracy "Age of Democracy"  
 label var stock\_democracy "Stock of Democracy"  
 label var stock\_democracy\_prop "Stock of Democracy Prop."  
 label var age\_party "Age of Party System"  
 label var gini "GINI"  
 label var samesex\_marriage "Same-Sex Marriage Legal in 2013"

\*\*\*\*\*

\* Labeling the regions....

label define estratopri 101 "Norte" 102 "CentroOccidente" 103 "Centro" 104 "Sur" 201  
 "Metropolitana" 203 "Noroccidente" 205 "Nororiente" 206 "Sur" 301  
 "Regi□Occidental)" 302 "Regi□Central1)" 303 "Regi□Central2)" 304  
 "Regi□Oriental)" 305 "Regi□AMSS)" 401 "CentralA" 402 "CentralB" 403  
 409 "NorteA" 404 "NorteB" 405 "NorteC+OrientalB" 406 "Occidental" 407 "OrientalA"  
 "Sur" 501 "Metropolitana" 502 "Centro" 503 "Norte" 504 "PacíficoNorte" 505  
 "PacíficoSur" 506 "Caribe" 601 "Amsj" 602 "Urb-Central" 603 "Rur-Central" 604  
 "Urb-Bajura" 605 "Rur-Bajura" 701 "Metropolitana" 702 "Oriental" 703 "Central"  
 704 "Occidental" 811 "Atl□ica" 812 "Bogot" 813 "Central" 814 "Oriental" 815  
 "Pac□ca" 816 "AntiguosTerritoriosNacionales" 901 "CostaUrbana" 902  
 "CostaRural" 903 "SierraUrbana" 904 "SierraRural" 905 "OrienteNorte" 906  
 "OrienteSur" 1001 "LaPaz" 1002 "SantaCruz" 1003 "Cochabamba" 1004  
 "Oruro" 1005 "Chuquisaca" 1006 "Potos" 1007 "Pando" 1008 "Tarija"  
 1009 "Beni" 1101 "CostaNorte" 1102 "CostaSur" 1103 "LimaMetropolitana" 1104  
 "Selva" 1105 "SierraCentro" 1106 "SierraNorte" 1107 "SierraSur" 1201  
 "Capital" 1202 "DepartamentoCentral" 1203 "ZonaNorte" 1204  
 "ZonaCentro" 1205 "ZonaSur" 1206 "ZonaEste" 1301 "NorthZone(I-IV)Small" 1302  
 "NorthZone(I-IV)Medium" 1303 "NorthZone(1-IV)Large" 1304  
 "CentralZone(V-VII&RM)Small" 1305 "CentralZone(V-VII&RM)Medium" 1306  
 "CentralZone(V-VII&RM)Large" 1307 "SouthZone(VIII-XII)Small" 1308  
 "SouthZone(VIII-XII)Medium" 1309 "SouthZone(VIII-XII)Large" 1401  
 "Montevideo" 1402 "Interior" 1501 "Norte" 1502 "Nordeste" 1503 "Centro-  
 Oeste" 1504 "Sudeste" 1505 "Sul" 1601 "Regi□pital" 1602 "Regi□liana" 1604  
 "Regi□ntro-Occidental" 1605 "Regi□iental" 1606 "Regi□sLlanos" 1607  
 "Regi□ntral" 1608 "Regi□ayana" 1609 "Regi□sAndes" 1701  
 "AMBA(CapitalFederal)GBA" 1702 "Centro" 1703 "NoresteArgentino(NEA)" 1704  
 "NoroesteArgentino(NoA)" 1705 "Cuyo" 1706 "Patagonia" 1707  
 "ProvinciadeBuenosAires" 2101 "Regi□tropolitana" 2102 "Regi□rte" 2103 "Regi□te"  
 2104 "Regi□r" 2201 "MetropolitanArea" 2202 "Region1(North-Northwest-Northeast)" 2203  
 "Region2(Center-Artibonite)" 2204 "Region3(West)" 2205 "Region4(South-Southeast-  
 GrandeAnse/N" 2301 "KMR" 2302 "Surrey" 2303 "Middlesex" 2304 "Cornwall" 2401  
 "GreaterGeorgetown" 2402 "Region3AndRestOfRegion4" 2403 "Regions2,5,6" 2404  
 "Regions1,7,8,9,10" 2501 "Western" 2502 "Eastern" 2503 "Central" 2504 "Southern"  
 2505 "Tobago" 2601 "Corozal" 2602 "OrangeWalk" 2603 "Belize" 2604 "Cayo"  
 2605 "StannCreek" 2606 "Toledo" 2701 "Paramaribo" 2702 "Wanica/Para" 2703  
 "Nickerie/Coronie/Saramancca" 2704 "Commewijne/Marowijne" 2705  
 "Brokopondo/Sipaliwini" 2801 "NewProvidence" 2802 "GrandBahama" 2803

```

"RemainingFamilyIslands" 2901 "GreaterBridgetownArea(GBA)" 2902
"UrbanCoastalCore" 2903 "RestoftheIsland"
label value estratopri estratopri

*Saving Dataset
*save estratopri_data, replace
saveold estratopri_data, replace

*****
* Now on to the actual multilevel analysis

cd "working directory"
use estratopri_data, clear

*Creating weights for the strata
collapse (count) estratopri, by(lapop_id)
rename estratopri strata_wt
save strata_weight.dta, replace

use estratopri_data, clear
drop _merge
merge m:1 lapop_id using strata_weight.dta

*If we were estimating values for the whole sample (all countries).
* these weights would give all contries equal weight
gen strata_weight=140/strata_wt
tab strata_weight strata_wt

save estratopri_data, replace

*****
*****
***** Analysis *****
set more off

cd "working directory"
use estratopri_data, clear

* Hypothesis 1 is tested by the distribution of the Education coefficients
tab beta_ed_secondary
tab beta_ed_post
factor beta_ed_secondary beta_ed_post, ipf

*Checking Number of Strata per Country
mean strata_wt, over(lapop_id)
bysort lapop_id: tab strata_wt

tab strata_weight strata_wt

*And these are weights of stratum within country
tab N_estrato_prop

* Creating the weight that accounts for both the size of strata per country
* and the difference in strata between countries
g weight_country_stratum= strata_weight*N_estrato_prop

*Number of Observations to explain differences between regressions
hist num_obs

```

```

gen num_obs_log=log(num_obs)
gen num_obs_log_sq= num_obs_log^2

*Recoding Country-Level Variables
hist gni_pc_2012
gen gni_pc_2012_log = log10(gni_pc_2012)
hist gni_pc_2012_log

hist population_density_2014
hist population_2014

gen population_density_2014_log = log10(population_density_2014)
gen population_2014_log = log10(population_2014)

hist internet_use_2014

hist urban_pop_2014
gen urban_pop_2014_exp = exp(urban_pop_2014)
hist urban_pop_2014_exp

hist hdi_2013
hist age_of_democracy
hist stock_democracy
hist gini

*Understanding the DV Variables
sum mean_d5
sum beta_ed_secondary
sum beta_ed_post

corr mean_d5 beta_ed_secondary beta_ed_post

bysort lapop_id: sum beta_ed_secondary
bysort lapop_id: sum beta_ed_post

mean beta_ed_secondary, over(lapop_id)

*****
* Explaining Average Levels of Support (Mean of D5)
*****
gen urban_sq= urban^2

mixed mean_d5 || lapop_id: , mle cov(un)

*With Weights
xtmixed mean_d5 num_obs_log internet urban first_q gni_pc_2012_log fh_total
population_density_2014_log [pweight=weight_country_stratum] || lapop_id:, mle cov(un)

corr wealth first_q fifth_q internet

*****
* Effect of Secondary School (v. Primary)
*****

drop _merge

***** Adding Country-Level variables (GDP, Life Expect)
*merge m:1 lapop_id using LAC_EDUC_2011_2014.dta

```

\*Amount of variance

```
xtmixed beta_ed_secondary [pweight=weight_country_stratum] || lapop_id: , mle cov(un)
xtmixed beta_ed_secondary internet urban first_q num_obs_log num_obs_log_sq
[pweight=weight_country_stratum] || lapop_id: , mle cov(un)
```

\*Regression Models\*

```
xtmixed beta_ed_secondary internet urban first_q num_obs_log num_obs_log_sq gni_pc_2012_log
fh_total population_density_2014_log samesex_marriage [pweight=weight_country_stratum] ||
lapop_id:, mle cov(un)
```

\* Including the expenditure on education...

```
xtmixed beta_ed_secondary internet urban first_q num_obs_log num_obs_log_sq gni_pc_2012_log
fh_total population_density_2014_log samesex_marriage expend_educ
[pweight=weight_country_stratum] || lapop_id:, mle cov(un)
```

\*\* Using the Coefficients and average values per variable, we have...

```
xtmixed beta_ed_secondary internet urban first_q num_obs_log num_obs_log_sq gni_pc_2012_log
fh_total population_density_2014_log samesex_marriage expend_educ stock_democracy gini
[pweight=weight_country_stratum] || lapop_id:, mle cov(un)
```

\* twoway lfitci beta\_ed\_secondary mean\_d5, r(2 8)

\*\*\*\*\*

\*\*\* To calculate predicted scores, let's look at the distributions...

```
sum internet urban first_q num_obs_log num_obs_log_sq gni_pc_2012_log fh_total
population_density_2014_log samesex_marriage expend_educ stock_democracy gini
```

\*For a country with GNI/pc=1000 all the way to 14000, (see end)

```
di _b[_cons] + (_b[internet]*2.596) + (_b[urban]*.6308) + (_b[first_q]*.2315) +
(_b[num_obs_log]*5.2408) + (_b[num_obs_log_sq]*28.0057) + (_b[fh_total]*5.35) +
(_b[population_density_2014_log]*1.6324) + (_b[samesex_marriage]*.1429) +
(_b[stock_democracy]*43.9) + (_b[gini]*48.9364) + (_b[gni_pc_2012_log]*log10(1000)) +
(_b[expend_educ]*4.8339)
di _b[_cons] + (_b[internet]*2.596) + (_b[urban]*.6308) + (_b[first_q]*.2315) +
(_b[num_obs_log]*5.2408) + (_b[num_obs_log_sq]*28.0057) + (_b[fh_total]*5.35) +
(_b[population_density_2014_log]*1.6324) + (_b[samesex_marriage]*.1429) +
(_b[stock_democracy]*43.9) + (_b[gini]*48.9364) + (_b[gni_pc_2012_log]*log10(2000)) +
(_b[expend_educ]*4.8339)
di _b[_cons] + (_b[internet]*2.596) + (_b[urban]*.6308) + (_b[first_q]*.2315) +
(_b[num_obs_log]*5.2408) + (_b[num_obs_log_sq]*28.0057) + (_b[fh_total]*5.35) +
(_b[population_density_2014_log]*1.6324) + (_b[samesex_marriage]*.1429) +
(_b[stock_democracy]*43.9) + (_b[gini]*48.9364) + (_b[gni_pc_2012_log]*log10(3000)) +
(_b[expend_educ]*4.8339)
di _b[_cons] + (_b[internet]*2.596) + (_b[urban]*.6308) + (_b[first_q]*.2315) +
(_b[num_obs_log]*5.2408) + (_b[num_obs_log_sq]*28.0057) + (_b[fh_total]*5.35) +
(_b[population_density_2014_log]*1.6324) + (_b[samesex_marriage]*.1429) +
(_b[stock_democracy]*43.9) + (_b[gini]*48.9364) + (_b[gni_pc_2012_log]*log10(4000)) +
(_b[expend_educ]*4.8339)
di _b[_cons] + (_b[internet]*2.596) + (_b[urban]*.6308) + (_b[first_q]*.2315) +
(_b[num_obs_log]*5.2408) + (_b[num_obs_log_sq]*28.0057) + (_b[fh_total]*5.35) +
(_b[population_density_2014_log]*1.6324) + (_b[samesex_marriage]*.1429) +
(_b[stock_democracy]*43.9) + (_b[gini]*48.9364) + (_b[gni_pc_2012_log]*log10(5000)) +
(_b[expend_educ]*4.8339)
di _b[_cons] + (_b[internet]*2.596) + (_b[urban]*.6308) + (_b[first_q]*.2315) +
(_b[num_obs_log]*5.2408) + (_b[num_obs_log_sq]*28.0057) + (_b[fh_total]*5.35) +
(_b[population_density_2014_log]*1.6324) + (_b[samesex_marriage]*.1429) +
```

```
(_b[stock_democracy]*43.9) + (_b[gini]*48.9364) + (_b[gni_pc_2012_log]*log10(6000)) +
(_b[expend_educ]*4.8339)
di _b[_cons] + (_b[internet]*2.596) + (_b[urban]*.6308) + (_b[first_q]*.2315) +
(_b[num_obs_log]*5.2408) + (_b[num_obs_log_sq]*28.0057) + (_b[fh_total]*5.35) +
(_b[population_density_2014_log]*1.6324) + (_b[samesex_marriage]*.1429) +
(_b[stock_democracy]*43.9) + (_b[gini]*48.9364) + (_b[gni_pc_2012_log]*log10(7000)) +
(_b[expend_educ]*4.8339)
di _b[_cons] + (_b[internet]*2.596) + (_b[urban]*.6308) + (_b[first_q]*.2315) +
(_b[num_obs_log]*5.2408) + (_b[num_obs_log_sq]*28.0057) + (_b[fh_total]*5.35) +
(_b[population_density_2014_log]*1.6324) + (_b[samesex_marriage]*.1429) +
(_b[stock_democracy]*43.9) + (_b[gini]*48.9364) + (_b[gni_pc_2012_log]*log10(8000)) +
(_b[expend_educ]*4.8339)
di _b[_cons] + (_b[internet]*2.596) + (_b[urban]*.6308) + (_b[first_q]*.2315) +
(_b[num_obs_log]*5.2408) + (_b[num_obs_log_sq]*28.0057) + (_b[fh_total]*5.35) +
(_b[population_density_2014_log]*1.6324) + (_b[samesex_marriage]*.1429) +
(_b[stock_democracy]*43.9) + (_b[gini]*48.9364) + (_b[gni_pc_2012_log]*log10(9000)) +
(_b[expend_educ]*4.8339)
di _b[_cons] + (_b[internet]*2.596) + (_b[urban]*.6308) + (_b[first_q]*.2315) +
(_b[num_obs_log]*5.2408) + (_b[num_obs_log_sq]*28.0057) + (_b[fh_total]*5.35) +
(_b[population_density_2014_log]*1.6324) + (_b[samesex_marriage]*.1429) +
(_b[stock_democracy]*43.9) + (_b[gini]*48.9364) + (_b[gni_pc_2012_log]*log10(10000)) +
(_b[expend_educ]*4.8339)
di _b[_cons] + (_b[internet]*2.596) + (_b[urban]*.6308) + (_b[first_q]*.2315) +
(_b[num_obs_log]*5.2408) + (_b[num_obs_log_sq]*28.0057) + (_b[fh_total]*5.35) +
(_b[population_density_2014_log]*1.6324) + (_b[samesex_marriage]*.1429) +
(_b[stock_democracy]*43.9) + (_b[gini]*48.9364) + (_b[gni_pc_2012_log]*log10(11000)) +
(_b[expend_educ]*4.8339)
di _b[_cons] + (_b[internet]*2.596) + (_b[urban]*.6308) + (_b[first_q]*.2315) +
(_b[num_obs_log]*5.2408) + (_b[num_obs_log_sq]*28.0057) + (_b[fh_total]*5.35) +
(_b[population_density_2014_log]*1.6324) + (_b[samesex_marriage]*.1429) +
(_b[stock_democracy]*43.9) + (_b[gini]*48.9364) + (_b[gni_pc_2012_log]*log10(12000)) +
(_b[expend_educ]*4.8339)
di _b[_cons] + (_b[internet]*2.596) + (_b[urban]*.6308) + (_b[first_q]*.2315) +
(_b[num_obs_log]*5.2408) + (_b[num_obs_log_sq]*28.0057) + (_b[fh_total]*5.35) +
(_b[population_density_2014_log]*1.6324) + (_b[samesex_marriage]*.1429) +
(_b[stock_democracy]*43.9) + (_b[gini]*48.9364) + (_b[gni_pc_2012_log]*log10(13000)) +
(_b[expend_educ]*4.8339)
di _b[_cons] + (_b[internet]*2.596) + (_b[urban]*.6308) + (_b[first_q]*.2315) +
(_b[num_obs_log]*5.2408) + (_b[num_obs_log_sq]*28.0057) + (_b[fh_total]*5.35) +
(_b[population_density_2014_log]*1.6324) + (_b[samesex_marriage]*.1429) +
(_b[stock_democracy]*43.9) + (_b[gini]*48.9364) + (_b[gni_pc_2012_log]*log10(14000)) +
(_b[expend_educ]*4.8339)
```

\*For a country with varying expend educ and fixed average GNI/pc

```

di _b[_cons] + (_b[internet]*2.596) + (_b[urban]*.6308) + (_b[first_q]*.2315) +
(_b[num_obs_log]*5.2408) + (_b[num_obs_log_sq]*28.0057) + (_b[fh_total]*5.35) +
(_b[population_density_2014_log]*1.6324) + (_b[samesex_marriage]*.1429) +
(_b[stock_democracy]*43.9) + (_b[gini]*48.9364) + (_b[gni_pc_2012_log]*3.7615) +
(_b[expend_educ]*2)
di _b[_cons] + (_b[internet]*2.596) + (_b[urban]*.6308) + (_b[first_q]*.2315) +
(_b[num_obs_log]*5.2408) + (_b[num_obs_log_sq]*28.0057) + (_b[fh_total]*5.35) +
(_b[population_density_2014_log]*1.6324) + (_b[samesex_marriage]*.1429) +
(_b[stock_democracy]*43.9) + (_b[gini]*48.9364) + (_b[gni_pc_2012_log]*3.7615) +
(_b[expend_educ]*3)
di _b[_cons] + (_b[internet]*2.596) + (_b[urban]*.6308) + (_b[first_q]*.2315) +
(_b[num_obs_log]*5.2408) + (_b[num_obs_log_sq]*28.0057) + (_b[fh_total]*5.35) +
(_b[population_density_2014_log]*1.6324) + (_b[samesex_marriage]*.1429) +
(_b[stock_democracy]*43.9) + (_b[gini]*48.9364) + (_b[gni_pc_2012_log]*3.7615) +

```



```
(_b[expend_educ]*4)
di _b[_cons] + (_b[internet]*2.596) + (_b[urban]*.6308) + (_b[first_q]*.2315) +
(_b[num_obs_log]*5.2408) + (_b[num_obs_log_sq]*28.0057) + (_b[fh_total]*5.35) +
(_b[population_density_2014_log]*1.6324) + (_b[samesex_marriage]*.1429) +
(_b[stock_democracy]*43.9) + (_b[gini]*48.9364) + (_b[gni_pc_2012_log]*3.7615) +
(_b[expend_educ]*5)
di _b[_cons] + (_b[internet]*2.596) + (_b[urban]*.6308) + (_b[first_q]*.2315) +
(_b[num_obs_log]*5.2408) + (_b[num_obs_log_sq]*28.0057) + (_b[fh_total]*5.35) +
(_b[population_density_2014_log]*1.6324) + (_b[samesex_marriage]*.1429) +
(_b[stock_democracy]*43.9) + (_b[gini]*48.9364) + (_b[gni_pc_2012_log]*3.7615) +
(_b[expend_educ]*6)
di _b[_cons] + (_b[internet]*2.596) + (_b[urban]*.6308) + (_b[first_q]*.2315) +
(_b[num_obs_log]*5.2408) + (_b[num_obs_log_sq]*28.0057) + (_b[fh_total]*5.35) +
(_b[population_density_2014_log]*1.6324) + (_b[samesex_marriage]*.1429) +
(_b[stock_democracy]*43.9) + (_b[gini]*48.9364) + (_b[gni_pc_2012_log]*3.7615) +
(_b[expend_educ]*7)
```

\*\*\*\*\*

\* Effect of College (Post-Secondary School v. Secondary)

\*\*\*\*\*

\*Regression Models

```
xtmixed beta_ed_post [pweight=weight_country_stratum] || lapop_id: , mle cov(un)
```

```
xtmixed beta_ed_post internet urban first_q num_obs_log num_obs_log_sq gni_pc_2012_log fh_total
population_density_2014_log samesex_marriage [pweight=weight_country_stratum] || lapop_id:,
mle cov(un)
```

```
xtmixed beta_ed_post internet urban first_q num_obs_log num_obs_log_sq gni_pc_2012_log fh_total
population_density_2014_log samesex_marriage expend_educ [pweight=weight_country_stratum]
|| lapop_id:, mle cov(un)
```

```
xtmixed beta_ed_post internet urban first_q num_obs_log num_obs_log_sq gni_pc_2012_log fh_total
population_density_2014_log samesex_marriage expend_educ stock_democracy gini
[pweight=weight_country_stratum] || lapop_id:, mle cov(un)
```

\*For a country with GNI/pc=1000 all the way to 14000, (see end)

```
di _b[_cons] + (_b[internet]*2.596) + (_b[urban]*.6308) + (_b[first_q]*.2315) +
(_b[num_obs_log]*5.2408) + (_b[num_obs_log_sq]*28.0057) + (_b[fh_total]*5.35) +
(_b[population_density_2014_log]*1.6324) + (_b[samesex_marriage]*.1429) +
(_b[stock_democracy]*43.9) + (_b[gini]*48.9364) + (_b[gni_pc_2012_log]*log10(1000)) +
(_b[expend_educ]*4.8339)
di _b[_cons] + (_b[internet]*2.596) + (_b[urban]*.6308) + (_b[first_q]*.2315) +
(_b[num_obs_log]*5.2408) + (_b[num_obs_log_sq]*28.0057) + (_b[fh_total]*5.35) +
(_b[population_density_2014_log]*1.6324) + (_b[samesex_marriage]*.1429) +
(_b[stock_democracy]*43.9) + (_b[gini]*48.9364) + (_b[gni_pc_2012_log]*log10(2000)) +
(_b[expend_educ]*4.8339)
di _b[_cons] + (_b[internet]*2.596) + (_b[urban]*.6308) + (_b[first_q]*.2315) +
(_b[num_obs_log]*5.2408) + (_b[num_obs_log_sq]*28.0057) + (_b[fh_total]*5.35) +
(_b[population_density_2014_log]*1.6324) + (_b[samesex_marriage]*.1429) +
(_b[stock_democracy]*43.9) + (_b[gini]*48.9364) + (_b[gni_pc_2012_log]*log10(3000)) +
(_b[expend_educ]*4.8339)
di _b[_cons] + (_b[internet]*2.596) + (_b[urban]*.6308) + (_b[first_q]*.2315) +
(_b[num_obs_log]*5.2408) + (_b[num_obs_log_sq]*28.0057) + (_b[fh_total]*5.35) +
(_b[population_density_2014_log]*1.6324) + (_b[samesex_marriage]*.1429) +
(_b[stock_democracy]*43.9) + (_b[gini]*48.9364) + (_b[gni_pc_2012_log]*log10(4000)) +
(_b[expend_educ]*4.8339)
```

```

di _b[_cons] + (_b[internet]*2.596) + (_b[urban]*.6308) + (_b[first_q]*.2315) +
(_b[num_obs_log]*5.2408) + (_b[num_obs_log_sq]*28.0057) + (_b[fh_total]*5.35) +
(_b[population_density_2014_log]*1.6324) + (_b[samesex_marriage]*.1429) +
(_b[stock_democracy]*43.9) + (_b[gini]*48.9364) + (_b[gni_pc_2012_log]*log10(5000)) +
(_b[expend_educ]*4.8339)
di _b[_cons] + (_b[internet]*2.596) + (_b[urban]*.6308) + (_b[first_q]*.2315) +
(_b[num_obs_log]*5.2408) + (_b[num_obs_log_sq]*28.0057) + (_b[fh_total]*5.35) +
(_b[population_density_2014_log]*1.6324) + (_b[samesex_marriage]*.1429) +
(_b[stock_democracy]*43.9) + (_b[gini]*48.9364) + (_b[gni_pc_2012_log]*log10(6000)) +
(_b[expend_educ]*4.8339)
di _b[_cons] + (_b[internet]*2.596) + (_b[urban]*.6308) + (_b[first_q]*.2315) +
(_b[num_obs_log]*5.2408) + (_b[num_obs_log_sq]*28.0057) + (_b[fh_total]*5.35) +
(_b[population_density_2014_log]*1.6324) + (_b[samesex_marriage]*.1429) +
(_b[stock_democracy]*43.9) + (_b[gini]*48.9364) + (_b[gni_pc_2012_log]*log10(7000)) +
(_b[expend_educ]*4.8339)
di _b[_cons] + (_b[internet]*2.596) + (_b[urban]*.6308) + (_b[first_q]*.2315) +
(_b[num_obs_log]*5.2408) + (_b[num_obs_log_sq]*28.0057) + (_b[fh_total]*5.35) +
(_b[population_density_2014_log]*1.6324) + (_b[samesex_marriage]*.1429) +
(_b[stock_democracy]*43.9) + (_b[gini]*48.9364) + (_b[gni_pc_2012_log]*log10(8000)) +
(_b[expend_educ]*4.8339)
di _b[_cons] + (_b[internet]*2.596) + (_b[urban]*.6308) + (_b[first_q]*.2315) +
(_b[num_obs_log]*5.2408) + (_b[num_obs_log_sq]*28.0057) + (_b[fh_total]*5.35) +
(_b[population_density_2014_log]*1.6324) + (_b[samesex_marriage]*.1429) +
(_b[stock_democracy]*43.9) + (_b[gini]*48.9364) + (_b[gni_pc_2012_log]*log10(9000)) +
(_b[expend_educ]*4.8339)
di _b[_cons] + (_b[internet]*2.596) + (_b[urban]*.6308) + (_b[first_q]*.2315) +
(_b[num_obs_log]*5.2408) + (_b[num_obs_log_sq]*28.0057) + (_b[fh_total]*5.35) +
(_b[population_density_2014_log]*1.6324) + (_b[samesex_marriage]*.1429) +
(_b[stock_democracy]*43.9) + (_b[gini]*48.9364) + (_b[gni_pc_2012_log]*log10(10000)) +
(_b[expend_educ]*4.8339)
di _b[_cons] + (_b[internet]*2.596) + (_b[urban]*.6308) + (_b[first_q]*.2315) +
(_b[num_obs_log]*5.2408) + (_b[num_obs_log_sq]*28.0057) + (_b[fh_total]*5.35) +
(_b[population_density_2014_log]*1.6324) + (_b[samesex_marriage]*.1429) +
(_b[stock_democracy]*43.9) + (_b[gini]*48.9364) + (_b[gni_pc_2012_log]*log10(11000)) +
(_b[expend_educ]*4.8339)
di _b[_cons] + (_b[internet]*2.596) + (_b[urban]*.6308) + (_b[first_q]*.2315) +
(_b[num_obs_log]*5.2408) + (_b[num_obs_log_sq]*28.0057) + (_b[fh_total]*5.35) +
(_b[population_density_2014_log]*1.6324) + (_b[samesex_marriage]*.1429) +
(_b[stock_democracy]*43.9) + (_b[gini]*48.9364) + (_b[gni_pc_2012_log]*log10(12000)) +
(_b[expend_educ]*4.8339)
di _b[_cons] + (_b[internet]*2.596) + (_b[urban]*.6308) + (_b[first_q]*.2315) +
(_b[num_obs_log]*5.2408) + (_b[num_obs_log_sq]*28.0057) + (_b[fh_total]*5.35) +
(_b[population_density_2014_log]*1.6324) + (_b[samesex_marriage]*.1429) +
(_b[stock_democracy]*43.9) + (_b[gini]*48.9364) + (_b[gni_pc_2012_log]*log10(13000)) +
(_b[expend_educ]*4.8339)
di _b[_cons] + (_b[internet]*2.596) + (_b[urban]*.6308) + (_b[first_q]*.2315) +
(_b[num_obs_log]*5.2408) + (_b[num_obs_log_sq]*28.0057) + (_b[fh_total]*5.35) +
(_b[population_density_2014_log]*1.6324) + (_b[samesex_marriage]*.1429) +
(_b[stock_democracy]*43.9) + (_b[gini]*48.9364) + (_b[gni_pc_2012_log]*log10(14000)) +
(_b[expend_educ]*4.8339)

```

\*For a country with varying expend\_educ and fixed average GNI/pc

```

di _b[_cons] + (_b[internet]*2.596) + (_b[urban]*.6308) + (_b[first_q]*.2315) +
(_b[num_obs_log]*5.2408) + (_b[num_obs_log_sq]*28.0057) + (_b[fh_total]*5.35) +
(_b[population_density_2014_log]*1.6324) + (_b[samesex_marriage]*.1429) +
(_b[stock_democracy]*43.9) + (_b[gini]*48.9364) + (_b[gni_pc_2012_log]*3.7615) +
(_b[expend_educ]*2)
di _b[_cons] + (_b[internet]*2.596) + (_b[urban]*.6308) + (_b[first_q]*.2315) +

```

```
(_b[num_obs_log]*5.2408) + (_b[num_obs_log_sq]*28.0057) + (_b[fh_total]*5.35) +
(_b[population_density_2014_log]*1.6324) + (_b[samesex_marriage]*.1429) +
(_b[stock_democracy]*43.9) + (_b[gini]*48.9364) + (_b[gni_pc_2012_log]*3.7615) +
(_b[expend_educ]*3)
di _b[_cons] + (_b[internet]*2.596) + (_b[urban]*.6308) + (_b[first_q]*.2315) +
(_b[num_obs_log]*5.2408) + (_b[num_obs_log_sq]*28.0057) + (_b[fh_total]*5.35) +
(_b[population_density_2014_log]*1.6324) + (_b[samesex_marriage]*.1429) +
(_b[stock_democracy]*43.9) + (_b[gini]*48.9364) + (_b[gni_pc_2012_log]*3.7615) +
(_b[expend_educ]*4)
di _b[_cons] + (_b[internet]*2.596) + (_b[urban]*.6308) + (_b[first_q]*.2315) +
(_b[num_obs_log]*5.2408) + (_b[num_obs_log_sq]*28.0057) + (_b[fh_total]*5.35) +
(_b[population_density_2014_log]*1.6324) + (_b[samesex_marriage]*.1429) +
(_b[stock_democracy]*43.9) + (_b[gini]*48.9364) + (_b[gni_pc_2012_log]*3.7615) +
(_b[expend_educ]*5)
di _b[_cons] + (_b[internet]*2.596) + (_b[urban]*.6308) + (_b[first_q]*.2315) +
(_b[num_obs_log]*5.2408) + (_b[num_obs_log_sq]*28.0057) + (_b[fh_total]*5.35) +
(_b[population_density_2014_log]*1.6324) + (_b[samesex_marriage]*.1429) +
(_b[stock_democracy]*43.9) + (_b[gini]*48.9364) + (_b[gni_pc_2012_log]*3.7615) +
(_b[expend_educ]*6)
di _b[_cons] + (_b[internet]*2.596) + (_b[urban]*.6308) + (_b[first_q]*.2315) +
(_b[num_obs_log]*5.2408) + (_b[num_obs_log_sq]*28.0057) + (_b[fh_total]*5.35) +
(_b[population_density_2014_log]*1.6324) + (_b[samesex_marriage]*.1429) +
(_b[stock_democracy]*43.9) + (_b[gini]*48.9364) + (_b[gni_pc_2012_log]*3.7615) +
(_b[expend_educ]*7)
```

\*\*\*\*

\*\*\*\*

\*\*\* What about some specific cases??

\*\*\*\*

\*\* Secondary

\*Low Income country, Paraguay

```
sum num_obs_log num_obs_log_sq internet urban first_q gni_pc_2012_log expend_educ fh_total
population_density_2014_log samesex_marriage stock_democracy gini if estratopri>1199 &
estratopri<1300
```

```
di _b[_cons] + (_b[internet]*2.596) + (_b[urban]*.6308) + (_b[first_q]*.2315) +
(_b[num_obs_log]*5.2408) + (_b[num_obs_log_sq]*28.0057) + (_b[fh_total]*6) +
(_b[population_density_2014_log]*1.2173) + (_b[samesex_marriage]*0) +
(_b[stock_democracy]*26) + (_b[gini]*48.3) + (_b[gni_pc_2012_log]*3.54) +
(_b[expend_educ]*5)
```

\*Middle Income, Colombia

```
sum gni_pc_2012_log expend_educ fh_total population_density_2014_log samesex_marriage
stock_democracy gini if estratopri>799 & estratopri<900
```

```
di _b[_cons] + (_b[internet]*2.596) + (_b[urban]*.6308) + (_b[first_q]*.2315) +
(_b[num_obs_log]*5.2408) + (_b[num_obs_log_sq]*28.0057) + (_b[fh_total]*7) +
(_b[population_density_2014_log]*1.6342) + (_b[samesex_marriage]*1) +
(_b[stock_democracy]*60) + (_b[gini]*53.5) + (_b[gni_pc_2012_log]*3.8537) +
(_b[expend_educ]*4.9)
```

\*High Income, Argentina

```
sum gni_pc_2012_log expend_educ fh_total population_density_2014_log samesex_marriage
stock_democracy gini if estratopri>1699 & estratopri<1800
```

```
di _b[_cons] + (_b[internet]*2.596) + (_b[urban]*.6308) + (_b[first_q]*.2315) +
(_b[num_obs_log]*5.2408) + (_b[num_obs_log_sq]*28.0057) + (_b[fh_total]*4) +
(_b[population_density_2014_log]*1.196) + (_b[samesex_marriage]*1) +
(_b[stock_democracy]*51) + (_b[gini]*42.3) + (_b[gni_pc_2012_log]*4.1186) +
```

(\_b[expend\_educ]\*5.3)

\*\* Brazil

sum num\_obs\_log num\_obs\_log\_sq internet urban first\_q gni\_pc\_2012\_log expend\_educ fh\_total  
population\_density\_2014\_log samesex\_marriage stock\_democracy gini if estratopri>1499 &  
estratopri<1600

di \_b[\_cons] + (\_b[internet]\*2.596) + (\_b[urban]\*.6308) + (\_b[first\_q]\*.2315) +  
(\_b[num\_obs\_log]\*5.2408) + (\_b[num\_obs\_log\_sq]\*28.0057) + (\_b[fh\_total]\*4) +  
(\_b[population\_density\_2014\_log]\*1.3919) + (\_b[samesex\_marriage]\*1) +  
(\_b[stock\_democracy]\*48) + (\_b[gini]\*52.9) + (\_b[gni\_pc\_2012\_log]\*log10(12160)) +  
(\_b[expend\_educ]\*5.9)

\*\*\*\*

\*\*\*\*

\*\*\*\*

\*\* Post

\*Low Income country, Paraguay

xtmixed beta\_ed\_post internet urban first\_q num\_obs\_log num\_obs\_log\_sq gni\_pc\_2012\_log fh\_total  
population\_density\_2014\_log samesex\_marriage expend\_educ stock\_democracy gini  
[pweight=weight\_country\_stratum] || lapop\_id:, mle cov(un)

sum num\_obs\_log num\_obs\_log\_sq internet urban first\_q gni\_pc\_2012\_log expend\_educ fh\_total  
population\_density\_2014\_log samesex\_marriage stock\_democracy gini if estratopri>1199 &  
estratopri<1300

di \_b[\_cons] + (\_b[internet]\*2.596) + (\_b[urban]\*.6308) + (\_b[first\_q]\*.2315) +  
(\_b[num\_obs\_log]\*5.2408) + (\_b[num\_obs\_log\_sq]\*28.0057) + (\_b[fh\_total]\*6) +  
(\_b[population\_density\_2014\_log]\*1.2173) + (\_b[samesex\_marriage]\*0) +  
(\_b[stock\_democracy]\*26) + (\_b[gini]\*48.3) + (\_b[gni\_pc\_2012\_log]\*3.54) +  
(\_b[expend\_educ]\*5)

\*Middle Income, Colombia

sum gni\_pc\_2012\_log expend\_educ fh\_total population\_density\_2014\_log samesex\_marriage  
stock\_democracy gini if estratopri>799 & estratopri<900

di \_b[\_cons] + (\_b[internet]\*2.596) + (\_b[urban]\*.6308) + (\_b[first\_q]\*.2315) +  
(\_b[num\_obs\_log]\*5.2408) + (\_b[num\_obs\_log\_sq]\*28.0057) + (\_b[fh\_total]\*7) +  
(\_b[population\_density\_2014\_log]\*1.6342) + (\_b[samesex\_marriage]\*1) +  
(\_b[stock\_democracy]\*60) + (\_b[gini]\*53.5) + (\_b[gni\_pc\_2012\_log]\*3.8537) +  
(\_b[expend\_educ]\*4.9)

\*High Income, Argentina

sum gni\_pc\_2012\_log expend\_educ fh\_total population\_density\_2014\_log samesex\_marriage  
stock\_democracy gini if estratopri>1699 & estratopri<1800

di \_b[\_cons] + (\_b[internet]\*2.596) + (\_b[urban]\*.6308) + (\_b[first\_q]\*.2315) +  
(\_b[num\_obs\_log]\*5.2408) + (\_b[num\_obs\_log\_sq]\*28.0057) + (\_b[fh\_total]\*4) +  
(\_b[population\_density\_2014\_log]\*1.196) + (\_b[samesex\_marriage]\*1) +  
(\_b[stock\_democracy]\*51) + (\_b[gini]\*42.3) + (\_b[gni\_pc\_2012\_log]\*4.1186) +  
(\_b[expend\_educ]\*5.3)

\*\*\*\*\*  
\*\*\*\*\*  
\*\*\*\*\*  
\*\*\*\*\*  
\*\*\*\*\*

\* Now on to extra analysis for the appendix

\*\*\*\*\* For the overfitting hypothesis

```

* Secondary, yes expend_educ
xtmixed beta_ed_secondary num_obs_log num_obs_log_sq internet urban first_q gni_pc_2012_log
expend_educ [pweight=weight_country_stratum] || lapop_id:, mle cov(un) var

* Post-secondary, yes expend_educ
xtmixed beta_ed_post num_obs_log num_obs_log_sq internet urban first_q gni_pc_2012_log
expend_educ [pweight=weight_country_stratum] || lapop_id:, mle cov(un) var

*****
*****

***** TO TEST THE HLM ROBUSTNESS CHECK *****

*****
**** For testing hypothesis 2 and HLM Robustness check ****
*****

set more off
use "working directory/AmericasBarometer Merged 2014 (v3.0 temp).dta", clear

drop if pais > 39
tab estratopri d5

tab pais
rename pais lapop_id

cd "working directory"
***** Adding Country-Level variables (GDP, Life Expect)
merge m:1 lapop_id using country_level_variables.dta

label var gni_pc_2012 "GNIpc 2012 (World Bank)"
label var expend_educ "Percent Government Expenditure on Education (World Bank)"
label var population_density_2014 "Population Density 2014 (World Bank)"
label var population_2014 "Population 2014 (World Bank)"
label var internet_use_2014 "Internet Use 2014 (World Bank)"
label var urban_pop_2014 "Percent Urban 2014 (World Bank)"
label var fh_pr "Freedom House- Political Rights"
label var fh_cl "Freedom House- Political Rights"
label var fh_total "Freedom House- Final Score"
label var hdi_2013 "Human Development Index 2013 (UNDP)"
label var age_of_democracy "Age of Democracy"
label var stock_democracy "Stock of Democracy"
label var stock_democracy_prop "Stock of Democracy Prop."
label var age_party "Age of Party System"
label var gini "GINI"
label var samesex_marriage "Same-Sex Marriage Legal in 2013"

*****
***** Demographics *****
*****

*gender
tab q1
gen female=q1-1
label var female "Female"

*age
tab q2

```

label var q2 "Age"

\*urban-rural area

tab ur

tab ur, nolabel

gen urban=2-ur

\*ethnicity

gen ethnicity = etid

recode ethnicity (1=1) (2=2) (3=3) (4=4) (5=5) (.=.) (else=6)

label var ethnicity "ethnicity"

label define ethnicity 1 "White" 2 "Mestizo" 3 "Indigenous" 4 "Black" 5 "Mulatto" 6 "Other"

label value ethnicity ethnicity

bysort lapop\_id: tab ethnicity

\*religion

tab q3c

tab q3c, nolabel

gen religion=.

\*catholic

replace religion=1 if q3c==1

\*protestant

replace religion=2 if q3c==2

\*evangelical pentecostal

replace religion=3 if q3c==5

\*jewish

replace religion=7 if q3c==10

\*jehovah's witness

replace religion=5 if q3c==12

\*mormon

replace religion=6 if q3c==6

\*atheist + agnostics

replace religion=4 if q3c==4

replace religion=4 if q3c==11

\*OTHER -> eastern religions + traditional or native

replace religion=8 if q3c==3

replace religion=8 if q3c==7

label var religion "Religion"

label define religion 1 "Catholic" 2 "Mainline Protestant" 3 "Evangelical and Pentecostal" 4 "Atheist and Agnostics" 5 "Jehovah's Witness" 6 "Mormon" 7 "Jewish" 8 "Other"

label value religion religion

tab religion, gen(relig\_cat)

tab edr, gen(edr)

tab ethnicity, gen(ethnicity)

tab religion, gen(religion)

tab quintall, gen(quintile)

\*\*\*\*\*

\*\*\* Other Independent Variables \*\*\*

\*\*\*\*\*

\*religiosity

tab q5b

gen religiosity=5-q5b

label define religiosity 1 "Not Important at All" 2 "Not Very Important" 3 "Rather Important" 4 "Very

Important"

label value religiosity religiosity

tab religiosity, gen(religiosity)

\*Internet Usage

tab www1

replace www1=6-www1

\*Attention to the News

tab gi0

replace gi0=6-gi0

\*Recoding Country-Level Variables

gen gni\_pc\_2012\_log = log10(gni\_pc\_2012)

gen population\_density\_2014\_log = log10(population\_density\_2014)

gen population\_2014\_log = log(population\_2014)

gen urban\_pop\_2014\_exp = exp(urban\_pop\_2014)

\*\*\*\*\*

\*\*\* Robustness Check using HLM \*\*\*

\*\*\*\*\*

replace gni\_pc\_2012\_log=gni\_pc\_2012\_log-8.844517

g gni\_pc\_2012\_log\_ed=gni\_pc\_2012\_log\*ed

g fh\_total\_ed=fh\_total\*ed

g population\_density\_2014\_log\_ed=population\_density\_2014\_log\*ed

xtmixed d5 ed female ed2 q2 ur ethnicity2 ethnicity3 ethnicity4 ethnicity5 ethnicity6 religion2 religion3  
religion4 religion5 religion6 religion7 religion8 religiosity2 religiosity3 religiosity4 quintall www1 gi0  
gni\_pc\_2012\_log fh\_total population\_density\_2014\_log gni\_pc\_2012\_log\_ed fh\_total\_ed  
population\_density\_2014\_log\_ed || lapop\_id: ed, mle cov(un)

g samesex\_marriage\_ed= samesex\_marriage\*ed

preserve

drop if d6>9

xtmixed d5 ed female ed2 q2 ur ethnicity2 ethnicity3 ethnicity4 ethnicity5 ethnicity6 religion2 religion3  
religion4 religion5 religion6 religion7 religion8 religiosity2 religiosity3 religiosity4 quintall www1 gi0  
gni\_pc\_2012\_log fh\_total population\_density\_2014\_log samesex\_marriage gni\_pc\_2012\_log\_ed ||  
lapop\_id: ed, mle cov(un)