

Online Appendix for *Conditional Congressional Communication: How Elite Speech Varies Across Medium*

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DATA SOURCES

Across mediums, we collected the number of communications issued by each House Representative in their official capacity for the 114th, 115th and 116th Congresses (2015-2021). Official capacity communications are different than campaign communications in that the efforts are funded by tax-payer dollars and created and disseminated using government staff. While official communications can discuss nearly any topic, legislators in this capacity are prohibited from asking for support in the form of votes or donations.

Information on medium usage comes from three distinct sources. First, press release and Twitter totals are from the collections archived and made available by ProPublica. Started as a continuation the Sunlight Foundation, this investigative data public interest group has been collecting congressional press releases from legislator websites since 2013 as a part of their Represent project (<https://projects.propublica.org/represent/statements>). The collection of all Tweets for this time are collected as a part of their Politiwhoops project (<https://projects.propublica.org/politwhoops/>), where they post Tweets deleted by members of Congress. ProPublica's Twitter data comes with one caveat: It has experienced periodic outages, resulting in some—theoretically random—missing data. Our choice to operationalize our data as number of tweets per year should minimize the effects of this known issue.

Second, e-newsletter totals come from DCinbox (dynamic: <http://www.dcinbox.com> static: <https://www.lindseycormack.com/dcinbox-data-downloads>). This collection started in 2009 and includes all official, .gov constituent e-newsletters sent by members of Congress. For details of the set up and collection see (Cormack 2017).

For press releases, e-newsletters, and Twitter, we have coverage across all years from the same sources. Facebook post counts come from two sources: Pew Research Center's data on Facebook use in Congress (Messing, Kessel, and Hughes 2017) and CrowdTangle. The Pew Data was generated by a research team using the Facebook Graph API to download the posts from members' public pages. The switch in sources to CrowdTangle is necessary due to the sunsetting of Pew's Facebook Graph API collection efforts in 2018 (they too have since moved to using CrowdTangle). CrowdTangle is a public insights tool owned and operated by Facebook now made available to academics on a case by case basis.

Thus we have coverage from 2015-2017 (114th and the first year of the 115th) from Pew and then 2019-2020 (116th) from CrowdTangle. In the Crowdtangle system, we had to identify the official Facebook accounts maintained by members of Congress and export a list of all posts made during the 116th Congress. Of the mediums, Facebook is one of the trickiest to collect because members can — and often do — close their official pages once they exit office and Facebook does not make such data available to outside researchers.

This joint collection is the most complete across the 114th-116th Congresses. Owing to the known — though theoretically random missingness — of some of the Tweets, and to the Facebook data outage in 2018 our dependent variable measures have been transformed to be the average number of communications per year per member for each medium.

CODEBOOK

There are 891 observations in our data set, where each observation is a member of the House of Representatives in a given Congress. The data set used for the analysis in this paper contains 25 variables. Each of these variables is briefly defined below and indicates where we accessed it. Information for each of our explanatory variables came from one of two sources: the Center for Effective Lawmaker's (CEL) data set (<https://thelawmakers.org/>), which has aggregated general information about legislator demographics and institutional position, and Social Explorer (<https://www.socialexplorer.com/>), which makes ACS and Census data easier to work with and manipulate.

- "**pr.scaled**": Scaled count of the number of press releases sent by a member of Congress in a given Congress. Raw counts come from ProPublica.
- "**enews.scaled**": Scaled count of the number of e-newsletters sent by a member of Congress in a given Congress. Raw counts come from DCInbox.
- "**tweets.scaled**": Scaled count of the number of tweets tweeted by a member of Congress in a given Congress. Raw counts come from ProPublica.
- "**fb.scaled**": Scaled count of the number of posts made by a member of Congress in a given Congress. Raw counts come from Pew Research Center.
- "**pr.yr**": Average number of press releases sent per year by a member of Congress in a given Congress. Raw counts come from ProPublica.
- "**enews.yr**": Average number of the number of e-newsletters per year sent by a member of Congress in a given Congress. Raw counts come from DCInbox.
- "**tweets.yr**": Average number of the number of tweets tweeted per year by a member of Congress in a given Congress. Raw counts come from ProPublica.
- "**fb.yr**": Average number of the number of posts per year made by a member of Congress in a given Congress. Raw counts come from Pew Research Center.
- "**majority**": Coded as 0 for those who are not members of the party in the majority in the House in the given Congress, and 1 for those who are members of the majority party. Information comes from the CEL data set.
- "**pres_inparty**": Coded as 0 for those in the majority party in the 114th Congress, and 1 for those in the majority party in the 115th Congress.
- "**leadership**": 0 if not part of either party's or the chamber's leadership. 1 if a member of either the minority or majority party's leadership (e.g., party leader, party whip) or leadership in the chamber (e.g., Speaker). Information comes from the CEL data set.

- "**any_chair**": 0 if the legislator was not a committee or subcommittee chair, and 1 if the legislator was a committee or subcommittee chair. Information comes from the CEL data set.
- "**meddist**": Absolute value of the distance from the chamber's median DW-Nominate score (1st dimension). Information comes from the CEL data set.
- "**deleg_size**": Size of the state delegation. Information comes from the CEL data set.
- "**state_leg_prof**": 0 if a legislator never served in a state legislature. If a legislator did serve in a state legislature, then this is the value of the associated state's legislative professional score. Information comes from the CEL data set.
- "**voteprop**": Proportion of the vote share captured in the most recent election. Information comes from the CEL data set.
- "**seniority**": Number of terms served. Information comes from the CEL data set.
- "**female**": 0 if the legislator is a man, and 1 if the legislator is a woman. Information comes from the CEL data set.
- "**afam**": 0 if the legislator is not Black, and 1 if the legislator is Black. Information comes from the CEL data set.
- "**latino**": 0 if the legislator is not Latino or Latina, and 1 if the legislator is Latino or Latina. Information comes from the CEL data set.
- "**pct_latinx**": Proportion of the population that identifies as Hispanic. Information comes from the ACS via Social Explorer.
- "**pct_black**": Proportion of the population in the district that identifies as Black and non-Hispanic. Information comes from the ACS via Social Explorer.
- "**latino_cat**": Whether a majority of the district is Latino. Information comes from the ACS via Social Explorer.
- "**black_cat**": Whether a majority of the district is Black and non-Hispanic. Information comes from the ACS via Social Explorer.
- "**pct_mtHS**": Proportion of the population in the district with more than a high school education. Information comes from the ACS via Social Explorer.
- "**income_median_tens**": Median income of the district in hundreds of thousands of dollars. Information comes from the ACS via Social Explorer.
- "**density_pop**": Density of the population in the district as calculated by the ACS. Information comes from the ACS via Social Explorer.

DESCRIPTIVE STATISTICS

Figure 1 shows the distribution of these counts. Table 1 shows the summary statistics of the variables included in the main models presented in the paper.

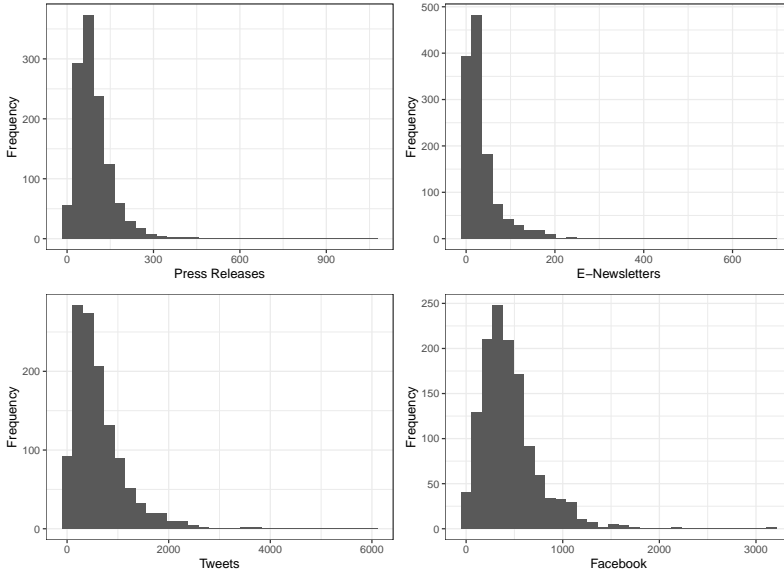


Figure 1. Histograms of Raw Counts

FULL TABLE OF RESULTS

In the body of the paper, we present the coefficient plot of the results of four OLS regressions each explaining the standardized rate of use of one of four mediums. Here we provide table showing the results of those regressions (Table 2).

TABLE 1 *Summary Statistics of Explanatory Variables Included in Main Models*

	Min.	Median	Mean	Max.	SD	NA
Majority Party	0.00	1.00	0.55	1.00	0.50	0.00
President of Same Party	0.00	0.00	0.33	1.00	0.47	0.00
Leadership	0.00	0.00	0.05	1.00	0.21	1.00
Chair of Committee or Subcommittee	0.00	0.00	0.27	1.00	0.44	0.00
Distance from Median (DW-Nominate)	0.00	0.38	0.42	1.06	0.26	19.00
House Delegation Size	1.00	14.00	19.08	53.00	15.64	1.00
State Legislature Professionalism	0.00	0.00	0.14	0.65	0.19	9.00
Vote Prop., Last Election	0.44	0.64	0.67	1.00	0.13	7.00
Seniority	0.00	3.00	4.34	26.00	4.43	0.00
Female	0.00	0.00	0.22	1.00	0.41	0.00
Black	0.00	0.00	0.11	1.00	0.31	0.00
Latino	0.00	0.00	0.08	1.00	0.26	0.00
Pct. Latino	0.01	0.11	0.18	0.88	0.18	21.00
Pct. Black	0.00	0.07	0.12	0.67	0.14	21.00
Pct. More Than HS	0.29	0.61	0.61	0.87	0.09	18.00
Median Income	0.29	0.59	0.63	1.42	0.18	18.00
Population Density	1.29	359.89	2434.27	79991.10	7039.12	18.00

	(1)	(2)	(3)	(4)
	Press Releases	E-News	Twitter	FB
Intercept	-0.37 (0.30)	0.04 (0.30)	-1.90* (0.29)	-0.94* (0.29)
Democrat	0.28* (0.08)	-0.39* (0.08)	0.30* (0.07)	0.08 (0.07)
Majority Party	-0.16 (0.14)	-0.17 (0.13)	0.37* (0.13)	0.13 (0.13)
President of Same Party	-0.00 (0.06)	-0.04 (0.06)	-0.32* (0.06)	-0.13* (0.06)
Leadership	0.75* (0.13)	0.37* (0.13)	0.86* (0.13)	0.43* (0.13)
Chair of Committee or Subcommittee	-0.05 (0.08)	0.18* (0.08)	0.01 (0.07)	-0.03 (0.08)
Distance from Median (DW-Nominate)	-0.65* (0.24)	-0.66* (0.23)	0.50* (0.23)	0.06 (0.23)
State Legislature Professionalism	0.03 (0.15)	-0.08 (0.15)	-0.08 (0.14)	0.09 (0.14)
Vote Prop., Last Election	0.17 (0.25)	0.26 (0.25)	0.42 (0.24)	0.16 (0.24)
Freshman	0.18* (0.09)	-0.36* (0.08)	0.03 (0.08)	0.18* (0.08)
Seniority	0.02* (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.04* (0.01)
Female	0.22* (0.07)	0.08 (0.07)	0.15* (0.07)	0.18* (0.07)
Black	-0.18 (0.11)	-0.16 (0.11)	0.07 (0.11)	-0.13 (0.11)
Latino	-0.47* (0.15)	-0.12 (0.14)	-0.13 (0.14)	-0.33* (0.14)
Majority Latinx	0.40* (0.15)	0.09 (0.15)	0.38* (0.14)	0.87* (0.14)
Majority Black	-0.04 (0.16)	-0.11 (0.17)	-0.26 (0.16)	0.05 (0.16)
Pct. More Than HS	0.41 (0.50)	1.01* (0.49)	1.33* (0.48)	1.30* (0.48)
Median Income	0.50 (0.26)	-0.74* (0.26)	-0.04 (0.25)	0.16 (0.25)
log(Population Density)	-0.04* (0.02)	0.04* (0.02)	0.06* (0.02)	-0.02 (0.02)
R ²	0.10	0.10	0.16	0.11
Adj. R ²	0.09	0.08	0.15	0.09
Num. obs.	1211	1256	1233	1288

* $p < 0.05$

TABLE 2 OLS Regressions Explaining Standardized Dependent Variables

ALTERNATIVE SPECIFICATIONS

To test whether our choice of model informed our results, we fit the model in two additional ways. Instead of explaining the standardized dependent variables, each explains the raw count of medium use (i.e., the number of press releases published, e-newsletters sent, tweets tweeted, and posts of Facebook made). The variables used in each set of models are the same as in the body of the paper. The first set of models is simply refit using the count dependent variable and is fit using OLS regression (Table 3). However, this again ignores one aspect of this data: each of the dependent variables is a count. As such, we refit the model as a set of negative binomial regressions, which accounts for the count nature of the data and for the fact that it is over dispersed (Table 4). In each case, we see that results presented in the body of the paper (shown as a table in the previous section of the appendix) hold.

Additionally, we estimate re-estimate our models as Poisson regressions (Table 5). Here we see similar patterns as those noted in the paper. However, many more of the relationships see statistical significance, such as with the relationship between state legislature professionalism and vote share in last election. While these are shifts in interpretations of statistical significance, interpretation of the substantive significance is consistent. Further, this indicates that the differences in who uses each medium may be greater than noted in our article underscoring the need to carefully consider and discuss why certain mediums are used in a study.

Finally, we examine whether and how our choice to look at whether the majority of the district is Black or Latinx affects our results (Table 6). Here we see the same relationship between for the Black composition of the district regardless of measures. However, there are some differences with respect to the Latinx composition of the district. Namely, the the sign and statistical shifts with regards to the relationship between the Latinx composition of the district and press release use. These differences should be examined in future research, as they may be connected to broader differences in representational styles of those representing districts that may have multi-lingual constituents.

	(1)	(2)	(3)	(4)
	Press Releases	E-News	Twitter	FB
Intercept	65.89*	37.10*	-431.56*	153.29
	(22.38)	(14.23)	(161.87)	(92.82)
Democrat	20.71*	-18.52*	165.24*	24.60
	(5.66)	(3.58)	(41.20)	(23.54)
Majority Party	-12.25	-8.08	207.92*	40.94
	(10.06)	(6.28)	(71.40)	(41.11)
President of Same Party	-0.24	-1.98	-176.40*	-42.71*
	(4.43)	(2.80)	(31.83)	(18.05)
Leadership	55.79*	17.78*	479.34*	136.62*
	(9.98)	(6.36)	(73.10)	(40.63)
Chair of Committee or Subcommittee	-3.46	8.40*	3.71	-8.37
	(5.83)	(3.65)	(41.68)	(23.87)
Distance from Median (DW-Nominate)	-48.61*	-31.47*	281.76*	18.71
	(17.96)	(11.17)	(126.33)	(72.89)
State Legislature Professionalism	2.07	-3.63	-45.81	29.54
	(11.04)	(7.02)	(79.43)	(45.54)
Vote Prop., Last Election	12.73	12.56	235.81	51.15
	(18.50)	(11.78)	(133.38)	(75.90)
Freshman	13.12*	-17.28*	14.14	57.31*
	(6.51)	(4.05)	(46.08)	(26.22)
Seniority	1.65*	-0.39	-7.15	-12.45*
	(0.55)	(0.35)	(3.96)	(2.26)
Female	16.10*	3.96	84.04*	57.90*
	(5.42)	(3.42)	(38.96)	(22.31)
Black	-13.47	-7.69	40.47	-40.45
	(8.54)	(5.44)	(61.96)	(35.40)
Latino	-34.73*	-5.86	-75.36	-104.65*
	(10.82)	(6.88)	(76.93)	(44.52)
Majority Latinx	29.40*	4.41	210.23*	276.59*
	(11.39)	(7.08)	(79.68)	(45.97)
Majority Black	-2.89	-5.02	-147.43	15.32
	(12.10)	(7.93)	(88.34)	(49.99)
Pct. More Than HS	30.38	48.10*	742.34*	412.23*
	(37.00)	(23.44)	(266.91)	(152.41)
Median Income	36.83	-35.12*	-20.44	50.25
	(19.28)	(12.17)	(140.58)	(79.57)
log(Population Density)	-3.07*	1.88*	32.81*	-5.42
	(1.46)	(0.93)	(10.55)	(6.02)
R ²	0.10	0.10	0.16	0.11
Adj. R ²	0.09	0.08	0.15	0.09
Num. obs.	1211	1256	1233	1288

* $p < 0.05$

TABLE 3 OLS Regressions Explaining the Raw Counts

	(1)	(2)	(3)	(4)
	Press Releases	E-News	Twitter	FB
Intercept	4.37*	3.48*	4.89*	5.51*
	(0.21)	(0.33)	(0.23)	(0.20)
Democrat	0.23*	-0.53*	0.23*	0.07
	(0.05)	(0.08)	(0.06)	(0.05)
Majority Party	-0.20*	-0.33*	0.21*	0.14
	(0.09)	(0.14)	(0.10)	(0.09)
President of Same Party	0.01	0.24*	-0.27*	-0.11*
	(0.04)	(0.06)	(0.05)	(0.04)
Leadership	0.42*	0.46*	0.70*	0.33*
	(0.09)	(0.14)	(0.11)	(0.09)
Chair of Committee or Subcommittee	-0.01	0.20*	0.03	-0.02
	(0.05)	(0.08)	(0.06)	(0.05)
Distance from Median (DW-Nominate)	-0.65*	-0.96*	0.35	0.10
	(0.16)	(0.26)	(0.18)	(0.16)
State Legislature Professionalism	0.13	-0.17	-0.10	0.13
	(0.10)	(0.16)	(0.11)	(0.10)
Vote Prop., Last Election	0.10	0.31	0.35	0.08
	(0.17)	(0.27)	(0.19)	(0.16)
Freshman	0.14*	-0.58*	-0.00	0.10
	(0.06)	(0.09)	(0.07)	(0.06)
Seniority	0.01	-0.01	-0.02*	-0.03*
	(0.01)	(0.01)	(0.01)	(0.00)
Female	0.15*	0.07	0.12*	0.14*
	(0.05)	(0.08)	(0.06)	(0.05)
Black	-0.13	-0.28*	0.05	-0.15
	(0.08)	(0.13)	(0.09)	(0.08)
Latino	-0.39*	-0.23	-0.11	-0.15
	(0.10)	(0.16)	(0.11)	(0.10)
Majority Latinx	0.33*	0.19	0.32*	0.52*
	(0.10)	(0.16)	(0.11)	(0.10)
Majority Black	0.02	-0.27	-0.18	0.03
	(0.11)	(0.18)	(0.13)	(0.11)
Pct. More Than HS	0.43	1.53*	1.17*	0.70*
	(0.34)	(0.54)	(0.39)	(0.33)
Median Income	0.26	-0.97*	-0.14	0.16
	(0.18)	(0.28)	(0.20)	(0.17)
log(Population Density)	-0.03*	0.06*	0.06*	-0.01
	(0.01)	(0.02)	(0.02)	(0.01)
AIC	13000.31	11297.73	18053.03	17852.38
BIC	13102.30	11400.44	18155.37	17955.59
Log Likelihood	-6480.16	-5628.86	-9006.51	-8906.19
Deviance	1299.13	1461.80	1348.17	1377.75
Num. obs.	1211	1256	1233	1288

* $p < 0.05$ TABLE 4 *Negative Binomial Regressions Predicting Count Dependent Variables*

	(1)	(2)	(3)	(4)
	Press Releases	E-News	Twitter	FB
Intercept	4.26*	3.55*	4.82*	5.46*
	(0.03)	(0.05)	(0.01)	(0.01)
Democrat	0.21*	-0.52*	0.27*	0.05*
	(0.01)	(0.01)	(0.00)	(0.00)
Majority Party	-0.16*	-0.17*	0.31*	0.09*
	(0.01)	(0.02)	(0.01)	(0.01)
President of Same Party	0.01	-0.07*	-0.29*	-0.09*
	(0.01)	(0.01)	(0.00)	(0.00)
Leadership	0.47*	0.41*	0.59*	0.29*
	(0.01)	(0.02)	(0.00)	(0.01)
Chair of Committee or Subcommittee	-0.04*	0.20*	0.01*	-0.01*
	(0.01)	(0.01)	(0.00)	(0.00)
Distance from Median (DW-Nominate)	-0.58*	-0.83*	0.47*	0.05*
	(0.03)	(0.04)	(0.01)	(0.01)
State Legislature Professionalism	0.05*	-0.10*	-0.07*	0.09*
	(0.02)	(0.03)	(0.01)	(0.01)
Vote Prop., Last Election	0.14*	0.31*	0.29*	0.11*
	(0.03)	(0.04)	(0.01)	(0.01)
Freshman	0.13*	-0.61*	0.01*	0.09*
	(0.01)	(0.02)	(0.00)	(0.00)
Seniority	0.02*	-0.01*	-0.01*	-0.03*
	(0.00)	(0.00)	(0.00)	(0.00)
Female	0.15*	0.11*	0.10*	0.11*
	(0.01)	(0.01)	(0.00)	(0.00)
Black	-0.13*	-0.31*	0.03*	-0.10*
	(0.01)	(0.02)	(0.00)	(0.01)
Latino	-0.38*	-0.23*	-0.10*	-0.20*
	(0.02)	(0.03)	(0.01)	(0.01)
Majority Latinx	0.31*	0.14*	0.30*	0.54*
	(0.02)	(0.03)	(0.01)	(0.01)
Majority Black	-0.03	-0.21*	-0.19*	0.02*
	(0.02)	(0.04)	(0.01)	(0.01)
Pct. More Than HS	0.38*	1.41*	1.17*	0.90*
	(0.05)	(0.09)	(0.02)	(0.02)
Median Income	0.31*	-1.09*	-0.09*	0.10*
	(0.03)	(0.05)	(0.01)	(0.01)
log(Population Density)	-0.03*	0.06*	0.05*	-0.01*
	(0.00)	(0.00)	(0.00)	(0.00)
AIC	54391.88	49458.31	399852.24	228313.22
BIC	54488.76	49555.89	399949.47	228411.28
Log Likelihood	-27176.94	-24710.16	-199907.12	-114137.61
Deviance	46945.00	43591.67	390047.51	218358.18
Num. obs.	1211	1256	1233	1288

* $p < 0.05$ TABLE 5 *Poisson Regressions Predicting Count Dependent Variables*

	PR	E-News	Twitter	FB
Intercept	-0.12 (0.30)	0.05 (0.30)	-1.80* (0.29)	-0.87* (0.30)
Democrat	0.30* (0.08)	-0.40* (0.08)	0.29* (0.07)	0.07 (0.07)
Majority Party	-0.16 (0.14)	-0.17 (0.13)	0.39* (0.13)	0.13 (0.13)
President of Same Party	-0.00 (0.06)	-0.04 (0.06)	-0.32* (0.06)	-0.14* (0.06)
Leadership	0.74* (0.13)	0.37* (0.13)	0.85* (0.13)	0.44* (0.13)
Chair of Committee or Subcommittee	-0.04 (0.08)	0.17* (0.08)	0.00 (0.07)	-0.06 (0.08)
Distance from Median (DW-Nominate)	-0.66* (0.24)	-0.67* (0.24)	0.53* (0.23)	0.03 (0.23)
State Legislature Professionalism	0.07 (0.15)	-0.07 (0.15)	-0.10 (0.14)	0.06 (0.15)
Vote Prop., Last Election	0.13 (0.25)	0.24 (0.25)	0.40 (0.24)	0.16 (0.24)
Freshman	0.18* (0.09)	-0.36* (0.08)	0.03 (0.08)	0.20* (0.08)
Seniority	0.02* (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.04* (0.01)
Female	0.21* (0.07)	0.08 (0.07)	0.14 (0.07)	0.15* (0.07)
Black	-0.21 (0.13)	-0.21 (0.13)	0.07 (0.12)	-0.16 (0.12)
Latino	-0.19 (0.14)	-0.11 (0.14)	-0.07 (0.14)	-0.20 (0.14)
Latinx Prop. of District	-0.14 (0.23)	0.14 (0.23)	0.35 (0.22)	1.08* (0.22)
Black Prop. of District	0.03 (0.32)	0.09 (0.31)	-0.34 (0.30)	0.15 (0.31)
Pct. More Than HS	-0.14 (0.50)	0.98* (0.49)	1.13* (0.48)	1.11* (0.48)
Median Income	0.61* (0.27)	-0.71* (0.26)	-0.08 (0.26)	0.10 (0.26)
log(Population Density)	-0.03 (0.02)	0.04 (0.02)	0.07* (0.02)	-0.02 (0.02)
R ²	0.09	0.10	0.16	0.10
Adj. R ²	0.08	0.08	0.14	0.09
Num. obs.	1211	1256	1233	1288

* $p < 0.05$

TABLE 6 OLS Regressions Predicting Standardized Count Dependent Variables using Proportion of the District

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