Vanessa Collier Final Project Unleashing Open Data With Python

# Assessing the Impact of Disinformation on Mobilization for Autocracy

Given the significant, well-established presence of increased disinformation and autocratization in global society<sup>1</sup>, there are important policy implications that warrant further analysis of their relativity. Primarily, if disinformation is contributing to the destabilization and autocratization of countries, then governments at both the national and international level should take note when considering policy reforms. While the European Union has adopted such measures to counteract the problem, many countries like the United States have not done so<sup>2</sup>, and some even have passed legislation that exacerbates the problem, as in the case of Italy passing anti-disinformation legislation making state police the authority mechanism of enforcing disinformation.<sup>3</sup>

Some scholars have noted the possible connection between increased levels of disinformation and autocratization, but the discussion has mostly been limited to disinformation as a populist tactic when discussing theories of regime change. As Haggard and Kaufman claim, "autocrats are masters of ambiguity and obfuscation, if not outright disinformation." Many works have explored polarization and disinformation, but the longer-term impacts for democratic institutions remain cloudy. In a recent summary of polarization research by Tucker et al, they note this dearth of literature: "hundreds of books and articles catalogue the effects of polarization on American democracy, but the consequences of misinformation are less understood." <sup>5</sup>

<sup>&</sup>lt;sup>1</sup> Seraphine F. Maerz and Carsten Schneider, "Public Discourse and Autocratization: Infringing on Autonomy, Sabotaging Accountability," *SSRN Electronic Journal* (2021). doi:10.2139/ssrn.3779244. <a href="https://gup.ub.gu.se/publication/303195">https://gup.ub.gu.se/publication/303195</a>.; Vanessa A. Boese, Nazifa Alizada, Martin Lundstedt, Kelly Morrison, Natalia Natsika, Yuko Sato, Hugo Tai, and Staffan I. Lindber, *Autocraticization Changing Nature?* Varieties of Democracy Institute (V-Dem).

<sup>&</sup>lt;sup>2</sup> Vanessa A. Boese, Nazifa Alizada, Martin Lundstedt, Kelly Morrison, Natalia Natsika, Yuko Sato, Hugo Tai, and Staffan I. Lindber, *Autocraticization Changing Nature?* 

<sup>;</sup> Maerz, "Public Discourse and Autocratization: Infringing on Autonomy, Sabotaging Accountability,"

<sup>&</sup>lt;sup>3</sup> https://www.poynter.org/fact-checking/2018/italians-can-now-report-fake-news-to-the-police-heres-why-thats-problematic/

<sup>&</sup>lt;sup>4</sup> Stephan Haggard and Robert Kaufman, "The Anatomy of Democratic Backsliding," *Journal of Democracy* 32, no. 4 (2021), 27-41. doi:10.1353/jod.2021.0050. <a href="https://search.proquest.com/docview/2590235278">https://search.proquest.com/docview/2590235278</a>.

<sup>&</sup>lt;sup>5</sup> Joshua Tucker et al., "Social Media, Political Polarization, and Political Disinformation: A Review of the Scientific Literature," *SSRN Electronic Journal* (. doi:10.2139/ssrn.3144139.

While the V-Dem Institute's 2022 annual report on autocracy states that "polarization and government misinformation are also increasing...these trends are interconnected," the extent of disinformation as contributing factor of autocratization has not been thoroughly explored.

By incorporating V-Dem's operationalized variables for disinformation and mobilization for autocracy, this exploratory data analysis will examine the relationship and document the trends by employing data visualizations and preliminary panel regression models.

Research Question: To what extent does disinformation affect the autocracy trend?

 $H_0$ : There is not a significant statistical relationship between disinformation and mobilization for autocracy and therefore, disinformation is not a contributing factor of the global trend towards autocracy.

 $H_A$ : There is a significant statistical relationship between disinformation and mobilization for autocracy and therefore, disinformation is a contributing factor of the global trend towards autocracy.

To test the hypothesis, the significance level will be set as:  $\alpha = 0.05$ .

### Literature Review

While there have been numerous studies that demonstrate a new wave of autocratization<sup>7</sup> has begun, there is some disagreement as how to measure and define it. Haggard and Kaufman analyzed what they termed "democratic backsliding"; in their research they defined

<sup>&</sup>lt;sup>6</sup> Vanessa A. Boese, Nazifa Alizada, Martin Lundstedt, Kelly Morrison, Natalia Natsika, Yuko Sato, Hugo Tai, and Staffan I. Lindber, *Autocraticization Changing Nature?* 

<sup>&</sup>lt;sup>7</sup> David Waldner and Ellen Lust, "Unwelcome Change: Coming to Terms with Democratic Backsliding," Annual Review of Political Science 21, no. 1 (May 11, 2018), 93-113. doi:10.1146/annurev-polisci-050517-114628. http://dx.doi.org/10.1146/annurev-polisci-050517-114628.; Haggard, "The Anatomy of Democratic Backsliding,", 27-41; Sebastian Hellmeier et al., "State of the World 2020: Autocratization Turns Viral," Democratization 28, no. 6 (Aug 18, 2021), 1053-1074. doi:10.1080/13510347.2021.1922390. https://www.tandfonline.com/doi/abs/10.1080/13510347.2021.1922390.; Larry Diamond, "Democratic Regression in Comparative Perspective: Scope, Methods, and Causes," Democratization 28, no. 1 (Jan 2, 2021), 22-42. doi:10.1080/13510347.2020.1807517. https://www.tandfonline.com/doi/abs/10.1080/13510347.2020.1807517.; Patrick Merloe, "Authoritarianism Goes Global: Election Monitoring Vs. Disinformation," Journal of Democracy 26, no. 3 (2015), 79-93. doi:10.1353/jod.2015.0053. https://muse.jhu.edu/article/586480.; Maerz, "Public Discourse and Autocratization: Infringing on Autonomy, Sabotaging Accountability,"; Inken von Borzyskowski, Ursula Daxecker and Patrick M. Kuhn, "Fear of Campaign Violence and Support for Democracy and Autocracy," Conflict Management and Peace Science (Jul 5, 2021), 73889422110263. doi:10.1177/07388942211026319.; Anna Lührmann and Staffan I. Lindberg, "A Third Wave of Autocratization is here: What is New about it?" Democratization 26, no. 7 (October 3, 2019), 1095-1113. doi:10.1080/13510347.2019.1582029. https://www.tandfonline.com/doi/abs/10.1080/13510347.2019.1582029.; Vanessa A. Boese, Nazifa Alizada, Martin Lundstedt, Kelly Morrison, Natalia Natsika, Yuko Sato, Hugo Tai, and Staffan I. Lindber, Autocraticization Changing Nature?

democratic backsliding as a "statistically significant decline in the VDEM liberal democracy index"<sup>8</sup>. Lührmann and Lindberg define autocratization as "substantial de-facto decline of core institutional requirements for electoral democracy"<sup>9</sup> and prefer the term "democratic recession" when discussing autocratization within democracies, "democratic breakdown" when a democracy fully devolves into autocracy, and "autocratic consolidation" when autocracies move further away from democratic traits. Despite the lack of a common definition or measurement, there is consensus that we are currently experiencing a decade long increase in autocratization, for all regime types as defined by V-Dem Institute, Freedom House and others.<sup>10</sup>

## How This Autocratization Wave Differs

One commonality among the research seems to be how this 21<sup>st</sup> century wave of authoritarianism is distinguishable from previous waves. "Unlike the emergence during the post-Soviet era of competitive authoritarian regimes in places that were never really democratic to begin with, this retreat is happening in countries that had crossed a democratic threshold." Lührmann and Lindberg, while challenging the notion that democracy is in retreat, also concede that "evidence is mounting that a global reversal is challenging a series of established democracies, including the United States which was downgraded by both Freedom House and V-Dem in 2018." Moreover, historically, reversions to autocracy happened much more quickly via traditional means of military coups, an assessment shared by Diamond.

### Incrementalism and Stealth

According to the body of research, a key ingredient in the autocratization recipe appears to be the manner in which it occurs – slowly, and more or less quietly, under the guise of electoral democracy. Lührmann and Lindberg concur that "contemporary autocrats have mastered the art of subverting electoral standards without breaking their democratic façade completely." Haggard and Kauffman observe this as well: "democratic backsliding is the incremental erosion of institutions, rules, and norms that result from the actions of duly

<sup>&</sup>lt;sup>8</sup> Haggard, "The Anatomy of Democratic Backsliding,", 27-41

<sup>&</sup>lt;sup>9</sup> (Lührmann and Lindberg 2019, 1095-1113; von Borzyskowski, Daxecker, and Kuhn 2021, 73889422110263)

<sup>&</sup>lt;sup>10</sup> Vanessa A. Boese, Nazifa Alizada, Martin Lundstedt, Kelly Morrison, Natalia Natsika, Yuko Sato, Hugo Tai, and Staffan I. Lindber, *Autocraticization Changing Nature?* 

<sup>;</sup> Maerz, "Public Discourse and Autocratization: Infringing on Autonomy, Sabotaging Accountability,"; Hellmeier, "State of the World 2020: Autocratization Turns Viral,", 1053-1074; Waldner, "Unwelcome Change: Coming to Terms with Democratic Backsliding,", 93-113; Haggard, "The Anatomy of Democratic Backsliding,", 27-41; Diamond, "Democratic Regression in Comparative Perspective: Scope, Methods, and Causes,", 22-42; Lührmann, "A Third Wave of Autocratization is here: What is New about it?", 1095-1113

<sup>&</sup>lt;sup>11</sup> Haggard, "The Anatomy of Democratic Backsliding," , 27-41

<sup>&</sup>lt;sup>12</sup> (Lührmann and Lindberg 2019, 1095-1113)

elected governments."<sup>13</sup> Diamond agrees and adds that populism is another key feature involved. "The principal method of democratic regression has been incremental strangulation of democracy by elected (typically populist) executives."<sup>14</sup>

### Potential Causes of Autocratization

Haggard and Kauffman claim "three interrelated causal factors" contribute to the decline of democratic institutions:

- 1) social and political polarization,
- 2) the potential of autocrats to gain executive power and then dominate or obtain the support of a legislature
- 3) the "incremental nature" of democratic backsliding that enables autocracy to unfold with stealth, making it harder to neutralize before it takes hold.<sup>15</sup>

In their analysis of sixteen case studies, the three causal factors were assessed. They summarized the process for the majority of cases; first, high levels of polarization create an opportunity for autocrats to seize control by painting an "us vs. them" mentality. Once an autocrat is in executive control, they begin to prey on the legislative system and electoral process. As Haggard and Kauffman state, "the weaker the legislature, the more susceptible the system is to backsliding" once the process of "collapsing the separation of powers" has begun.<sup>16</sup>

# Accountability

There are two subthemes of accountability: first, that horizontal and vertical accountability are dismantled within legislative, judicial, and executive bodies. Diamond says one of the "inhibiting factors" preventing autocratization are the strength of political institutions as "agents of horizontal accountability."<sup>17</sup>

The second implication of accountability is the role of the media, including social media. Traditionally viewed as a "watchdog" of government agencies, that concept has been muddled with the introduction of disinformation and debates over what constitutes "fake news". As Waldner and Lust argue in their discussion of the Trump administration, "concerns about accountability stem from various efforts by the administration to undermine transparency and restrict the flow of information, limitations on media access to the

<sup>&</sup>lt;sup>13</sup> Haggard, "The Anatomy of Democratic Backsliding,", 27-41

<sup>&</sup>lt;sup>14</sup> Diamond, "Democratic Regression in Comparative Perspective: Scope, Methods, and Causes,", 22-42

<sup>&</sup>lt;sup>15</sup> Haggard, "The Anatomy of Democratic Backsliding,", 27-41

<sup>&</sup>lt;sup>16</sup> Haggard, "The Anatomy of Democratic Backsliding,", 27-41

<sup>&</sup>lt;sup>17</sup> Diamond, "Democratic Regression in Comparative Perspective: Scope, Methods, and Causes,", 22-42

administration, attacks on the media as purveyors of "fake news" and enemies of the people." <sup>18</sup>

## Disinformation and How it Attacks Democracies from Within

Diamond, Waldner and Lust, Haggard and Kauffman, Lührmann and Lindberg all acknowledge the influence of mass media and society in countering autocratization by providing vertical and horizontal accountability.<sup>19</sup> Haggard and Kauffman point out that "attacks on the media were an important and pervasive feature" and coincided with regressions in press freedom as measured by V-Dem.<sup>20</sup> For Diamond, the third inhibiting factor to autocratization is "civil society, as independent non-governmental organizations and mass media become essential supplements and reinforcements for agencies of horizontal accountability."

However, there is another side to the media now - disinformation, a well-established tool of autocrats to "divide and conquer". Now, with modern methods such as social media, bots, and deep fakes, it has never been easier to deploy at scale. Haggard and Kauffman note that "the viral spread of disinformation through social media, however, is clearly a critical contributor to this particular determinant of backsliding."<sup>21</sup>

To this effect, Maerz et al believe there is a critical missing variable in how scholars are analyzing autocratization – words. "It is *words*, not (only) deeds that present the contemporary challenge to liberal democracy even before such challenges materialize in institutional change." In their analysis of 4,506 speeches of 25 heads of government from 22 countries and data on government disinformation and party identity, they found that "illiberal and authoritarian public rhetoric are tightly linked to autocratization and should no longer be ignored." They argue that while scholars have focused on the actions of autocrats seeking to dismantle democracy, another framework for the role of rhetoric and disinformation exists as well:

<sup>&</sup>lt;sup>18</sup> Waldner, "Unwelcome Change: Coming to Terms with Democratic Backsliding,", 93-113

<sup>&</sup>lt;sup>19</sup> Waldner, "Unwelcome Change: Coming to Terms with Democratic Backsliding,", 93-113; Haggard, "The Anatomy of Democratic Backsliding,", 27-41; Diamond, "Democratic Regression in Comparative Perspective: Scope, Methods, and Causes,", 22-42; Lührmann, "A Third Wave of Autocratization is here: What is New about it?", 1095-1113

<sup>&</sup>lt;sup>20</sup> Haggard, "The Anatomy of Democratic Backsliding,", 27-41

<sup>&</sup>lt;sup>21</sup> Haggard, "The Anatomy of Democratic Backsliding," , 27-41

<sup>&</sup>lt;sup>22</sup> Maerz, "Public Discourse and Autocratization: Infringing on Autonomy, Sabotaging Accountability,"

<sup>&</sup>lt;sup>23</sup> Maerz, "Public Discourse and Autocratization: Infringing on Autonomy, Sabotaging Accountability,"

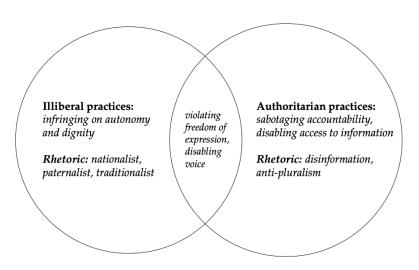


Figure 1: Illiberal and authoritarian public rhetoric (adjusted from Glasius, 2018, p. 531)

### Figure 1

Using regression and text analysis, Maerz et al demonstrated that authoritarian public rhetoric, specifically "official disinformation campaigns on social media and anti-pluralist rhetoric of ruling parties" are statistically significant predictors of the autocratization of democratic regimes.<sup>24</sup> This analysis will explore this concept further through data visualization and panel regression models using the V-Dem dataset from 2022.

### DATA AND METHODOLOGY

## **Data Description**

There are four primary variables in the analysis – v2caautmob, v3smpolsoc, e\_gdppc, and, disinformation\_median, which is a constructed variable calculated as the median of the aggregate for the following disinformation variables per country per year: v2smgovdom,v2smgovab,v2smpardom,v2smparab,v2smfordom,v2smforads (see appendix for description).

Each disinformation variable was rescaled for ease of interpretation since the original VDEM scale for disinformation was 0-4, with 0 being the highest level of disinformation. The original scale ran in opposition with the other variables, so the scale was inverted via reverse coding to make interpreting the highest levels of disinformation more intuitive.

For the regressions, disinformation\_median was included in the calculations, but for ease of interpretation on some of the graphs, a separate variable, "disinformation\_level" was created

<sup>&</sup>lt;sup>24</sup> Maerz, "Public Discourse and Autocratization: Infringing on Autonomy, Sabotaging Accountability,"

to cluster countries into five separate groups, 0-5, with 5 being the highest level of disinformation.

The dependent variable, v2caautmob, operationalizes mobilization for autocracy in a given country at yearly intervals. The form the mobilization takes (military, civilian, state-led, etc.) is not included in the codebook or dataset. It is originally coded by researchers as an ordinal variable on a scale:

- 0 = No mobilization for autocracy
- 1= Several small scale events
- 2= Many small scale events
- 3= Several large scale and small scale events
- 4= Many large and small scale events

For all continuous variables, VDEM applies a data transformation, which creates a continuous scale out of an ordinal one used by coders. For the dependent variable, the transformed scale is the range of -2.3 (low) to 4.3 (high).

For the purposes of classifying regime type (v2x\_regime), the definitions per the VDEM codebook are:

- 0: Closed autocracy: No multiparty elections for the chief executive or the legislature.
- 1: Electoral autocracy: De-jure multiparty elections for the chief executive and the legislature, but failing to achieve that elections are free and fair, or de-facto multiparty, or a minimum level of Dahl's institutional prerequisites of polyarchy as measured by V-Dem's Electoral Democracy Index (v2x\_polyarchy).
- 2: Electoral democracy: De-facto free and fair multiparty elections but either access to justice, or transparent law enforcement, or liberal principles of respect for personal liberties, rule of law, and judicial as well as legislative constraints on the executive not satisfied as measured by V-Dem's Liberal Component Index (v2x\_liberal).
- 3: Liberal democracy: De-facto free and fair multiparty elections, as well as access to justice, transparent law enforcement and the liberal principles of respect for personal liberties, rule of law, and judicial as well as legislative constraints on the executive satisfied as measured by V-Dem's Liberal Component Index (v2x\_liberal).

The data was filtered to 2000-2021 since values for disinformation were not recorded by VDEM until 2000 with regularity. Listwise deletion was completed to create a balanced panel data set.

# **Summary Values:**

	disinformation_median	v2caautmob	v2smpolsoc	e_gdppc
n	3450	3450	3450	3450
mean	2.593119	-0.546075	0.070687	15.203474
std	1.041642	1.368523	1.322359	16.547465
min	0.304833	-2.320000	-3.002000	0.538000
25%	1.849333	-1.732250	-0.904000	3.117250
50%	2.526833	-0.900000	-0.058000	8.939500
75%	3.410625	0.473000	1.004000	22.041750
max	5.951833	3.591000	4.300000	100.865000

### **RESULTS**



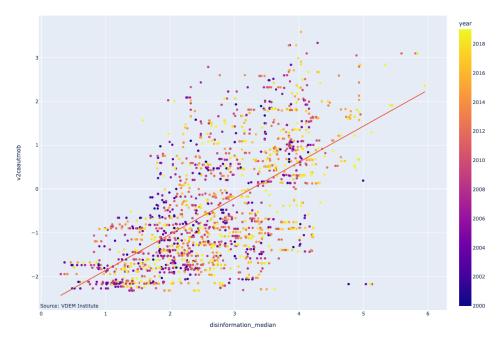


Figure 2

Figure 2 illustrates a positive linear relationship between disinformation and mobilization for autocracy. It appears that when the disinformation median increases, there is a likelihood that mobilization for autocracy will do the same.

Another level to investigate is whether the trend is different by regime type. Perhaps the level of disinformation is less likely to produce mobilization for autocracy in a stable, liberal democracy. However, figure 3 (below) indicates this might be otherwise; and the  $R^2$  value indicates that even stable, liberal democracies are vulnerable to the effects of disinformation on their democracy.

Regime Type	R <sup>2</sup> OLS Trendline		
Closed Autocracy	0.15		
Electoral Autocracy	0.23		
Electoral Democracy	0.17		
Liberal Democracy	0.20		

## Scatterplot of Regime Type with Trendline

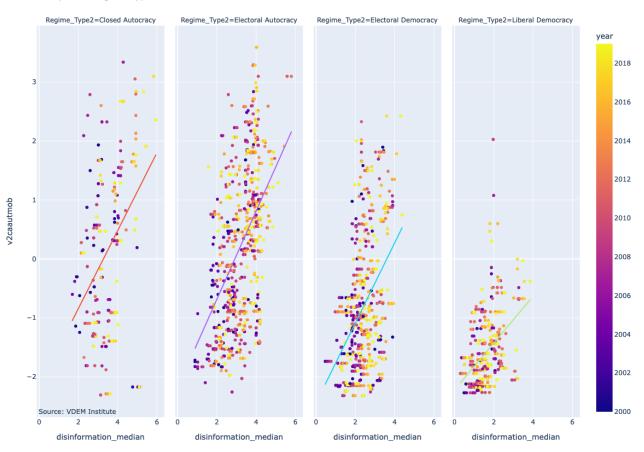


Figure 3

#### Disinformation by Regime Type by Year

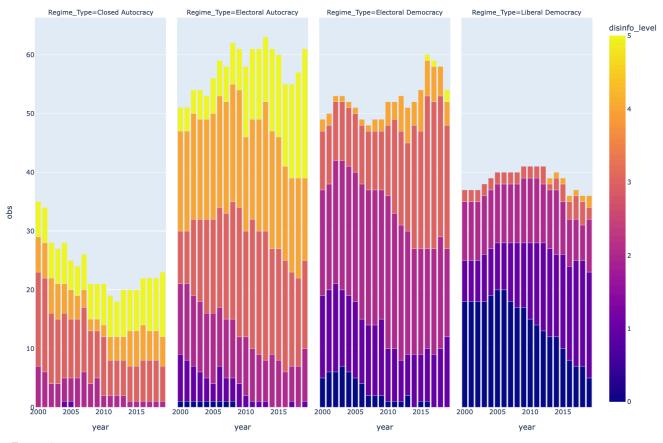


Figure 4

The number of closed autocracies begins to decrease around the year 2001, hitting a low point in 2010 and then begin to increase. The proportion of disinformation is most pronounced in electoral autocracies, perhaps an indication of disinformation being used as a tool to maintain autocratic standards within an electoral framework. Around 2013, liberal democracies begin to lose members to the electoral democracy group, while electoral democracies reach their zenith in 2016 then begin to decline. The rate of disinformation for electoral democracies begins to dramatically increase soon after 2000, presumably due to the expansion of the internet, and again beginning in 2010, around the time millions began to use social media.

## **Outliers**

Disinformation Median by Regime Type

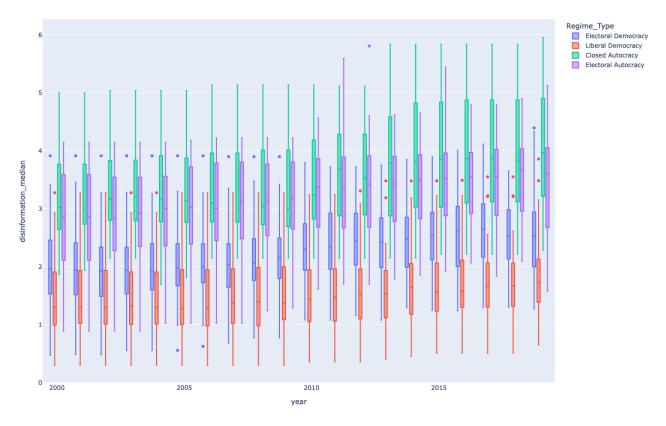


Figure 5

The trends in figure 5 again show increases in the disinformation median for all regime types, with visible outliers holding steady for liberal democracies. Notably, the country with the highest level of disinformation overall was Syria in 2012. Although generally liberal democracies appear the most impervious, the United States had the second highest level of disinformation among liberal democracies in 2019 and has since been downgraded to the status of an electoral democracy according to several think tanks and research institutes.<sup>25</sup> This raises the question – what does the trendline of the United States look like?

<sup>&</sup>lt;sup>25</sup> https://www.theguardian.com/us-news/2021/nov/22/us-list-backsliding-democracies-civil-liberties-international

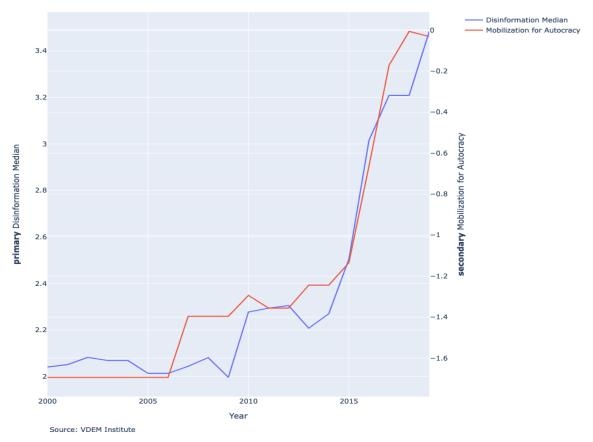


Figure 6

According to figure 6 above, disinformation and mobilization for autocracy are intertwined in the United States, particularly around 2005 – around the time millions began flocking to the internet in the social media boom. The most severe increases begin in 2015, and show no signs of slowing down.

## Correlation

In figure 7, there is a strong positive correlation between disinformation\_median and v2caautmob at 0.63. The other variables have weaker correlations, allowing for inclusion in the preliminary model.

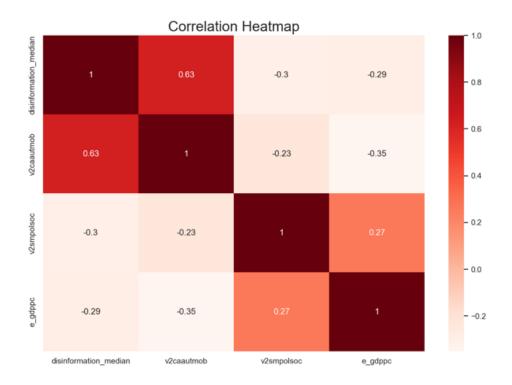


Figure 7

## **Panel Regression**

Fixed/Time Effects Panel Regression Formula:

$$Y_{it} = \beta_1 X_{it} + \alpha_i + u_{it}$$

Since the panel dataset contains many multiple entities over multiple time periods, panel data regression was selected as a methodology due to the possible heterogeneity and resulting endogeneity arising from the panel data format.

A series of panel regression methods were employed:

- 1) Pooled OLS regression (Models 1-3)
- 2) Entity fixed effects (Model 4)
- 3) Time fixed effects (Model 5)
- 4) Time and Entity fixed effects (Model 6)

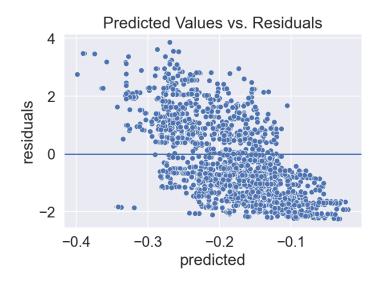
### **COMPARISON OF MODELS**

Model Comparison							
	(1)	(2)	(3)	(4)	(5)	(6)	
Dep. Variable	v2caautmob	v2caautmob	v2caautmob	v2caautmob	v2caautmob	v2caautmob	
Estimator	PooledOLS	PooledOLS	PooledOLS	PanelOLS	PanelOLS	PanelOLS	
No. Observations	3450	3450	3450	3450	3450	3450	
Cov. Est.	Clustered	Clustered	Clustered	Clustered	Clustered	Clustered	
R-squared	0.2762	0.2694	0.0161	0.1317	0.3916	0.0784	
R-Squared (Within)	-0.0199	-0.1171	-0.0405	0.1317	0.0500	0.1311	
R-Squared (Between)	0.3067	0.3066	0.0206	-1.0957	-3.1314	-0.9686	
R-Squared (Overall)	0.2762	0.2694	0.0161	-1.0074	-2.9032	-0.8895	
F-statistic	438.49	635.70	56.516	496.70	2207.5	277.12	
P-value (F-stat)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
disinformation_median	0.0945**	0.1069***	-0.0669*	0.4664***	0.8339***	0.4348***	
	(0.0338)	(0.0092)	(0.0890)	(9.765e-09)	(0.0000)	(2.108e-05)	
v2smpolsoc	-0.0971						
	(0.2504)						
e_gdppc	-0.0373***	-0.0395***					
	(1.332e-15)	(0.0000)					
Effects				= ======== Entity	Time	= ======== Entity	
						Time	

P-values reported in parentheses

## INTERPRETATION OF RESULTS

After running the first pooled OLS model, polarization (v2smpolsoc) was eliminated due to high poor performance. The coefficient on disinformation\_median was determined to be significant at the 0.05 level for model 1, and at the 0.01 level for models 2-5. The strongest performing model (5) included time fixed effects and had an  $R^2$  of 0.39 and a coefficient of 0.83.



In general, the predicted vs. residuals plot appears to have a linear relationship but it does exhibit some heteroscedasticity, meaning that the residuals get larger as the prediction moves along the x axis. However, most of the data appears to meet the criteria for homoscedasticity, wherein the residuals plot is the same width for all values of the predicted DV.

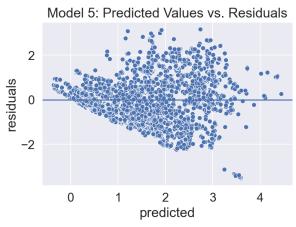
These preliminary results indicate that the p-value is significant, and we can reject the null hypothesis.

### LIMITATIONS OF ANALYSIS

## Panel Regression Assumptions

Panel regression attempts to control for heterogeneity and resulting endogeneity with either fixed or random effects. Like other regression models, certain assumptions must be met. Preliminary tests were done for some but not all of the regression assumptions:

 Linearity and homoscedasticity:
 While the model contains outliers, the form is mostly linear and homoscedastic, with room for refinement in future models.



- 2) Exogeneity the Hausman test was not yet performed to measure the exogeneity of disinformation\_median. A limitation of this research is the Hausman test was not performed to determine exogeneity prior to running the fixed effects models; the Hausman test indicate whether a fixed effects or random model would be more appropriate. Future research would benefit from its inclusion.
- 3) Non-autocorrelation- autocorrelation was addressed in models 4-6 by clustering by entity in model 4, time in model 5, and both in model 6. The Durbin-Watson test

yielded an approximate value of 0.17, indicating some positive autocorrelation with the time and entity, addressed in panel models 5 and 6.

- 3) Independent variables are not stochastic there are no random variables present in the models.
- 4) Multicollinearity to test for multicollinearity, the Variance Inflation Factor (VIF) scores were calculated with scores around 1.1 (1.16053404, 1.13566344, 1.14331024).

Additionally, models 4-6 must be considered with the  $R^2$  results of the time and entity fixed effects. The  $R^2$  values for the Within, Between and Overall estimators are negative on models 4-6. This indicates that the models do not explain variation in the dependent variable within individual countries over time or between individual countries (with the overall estimator being a weighted average of the two).

### CONCLUSION

If citizens and governments hope to achieve democratic progress, or even maintain the democratic institutions they have, they must also safeguard against disinformation in its vast array of modern forms. Unfortunately, the case of the United States, once the bulwark of democracy, is a prime example of autocratization driven by disinformation. In an article entitled "Trump Is an Authoritarian. So Are Millions of Americans", MacWilliams wrote that "the single factor that predicted whether a Republican primary voter supported Trump over his rivals was an inclination to authoritarianism." This suggests that even at its core, American democracy is in crisis.

Based on the results from all models, disinformation is associated with significant increases in mobilization for autocracy. Future research should further develop the models by inclusion of additional variables beyond mobilization for autocracy. Furthermore, the actors involved in mobilization (state, military or civilian) should be included as a measurement to determine whether most of the mobilization comes from civilian or state led events, particularly within the context of elections. This would assist in the diagnosis of disinformation's impact on the general population, institutions, and elections. If the events of January 6, 2021 are any indication, modern disinformation is indeed a precision tool used by autocrats to achieve their ends, and society must be steadfast and proactive in countering these attacks, regardless of their source.

<sup>&</sup>lt;sup>26</sup> MacWilliams, Matthew. "Trump is an Authoritarian. So are millions of Americans." 2020. https://www.politico.com/news/magazine/2020/09/23/trump-america-authoritarianism-420681

# APPENDIX A – VARIABLE DEFINITIONS

VARIABLE	DEFINITION	DATA TYPE
YEAR	Post WWII (1950 – present)	Date
COUNTRY_NAME	All countries included from 1950; countries with NA values removed via listwise deletion	Nominal
E_REGIONPOL	Region (politico-geographic)	Categorical
V2X_REGIME (DV)	Regime type: closed autocracy, electoral autocracy, electoral democracy	Ordinal
V2CAAUTMOB	Mobilization for Autocracy: How frequent and large have events of mass mobilization for pro-autocratic aims been?	Ordinal
V2SMPOLSOC	Polarization of society	Ordinal
V2SMGOVDOM*	Government dissemination of false information domestic	Ordinal
V2SMGOVAB*	Government dissemination of false information abroad	Ordinal
V2SMPARDOM*	Party dissemination of false information domestic	Ordinal
V2SMPARAB*	Party dissemination of false information abroad	Ordinal
V2SMFORDOM*	Foreign governments dissemination of false information	Ordinal
V2SMFORADS*	Foreign government ads	Ordinal
DISINFORMATION_AGG	Researcher-created variable based on aggregate of 6 disinformation variables.	Ordinal
DISINFORMATION_MEDIAN	Mean of disinformation_agg	Ordinal
E_GDPPC	GDP per capita	Numeric

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