Regulation Intensity's Effects on Business Formation

Kiel Ong and Carsten Savage

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Professor Goel

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Introduction

While speaking with Jacquelyn Rodgers, the founder of the racially inclusive merchandise retailer Greentop Gifts, we discovered that Greentop Gifts has endured significant challenges as a result of state regulations. Greentop Gifts was originally established in North Carolina, but Jacquelyn and her husband moved to Atlanta, Georgia for her husband's new job. Since Greentop Gifts was still registered as a North Carolina business, Jacquelyn was forced to apply for a foreign entity license, which required Greentop to pay filing fees and attorney costs. This process also slowed down Greentop Gifts' momentum, a significant hurdle for a startup relative to large businesses, which have the resources to quickly and easily deal with these situations. Although regulations may seem small and insignificant individually, the compliance requirements and fees that result from these regulations pile up and become large obstacles for startups. Regulations present challenges for startups, but not all regulations are harmful to entrepreneurship; it is important to distinguish whether these regulations are simply antiquated and inefficient, meant to create barriers to entry to protect large corporations, or designed to be beneficial to startups' growth.

There is a wide variety of econometric literature that studies the impact of regulations on small startups. In analyses at the country level, economists such as Ghosh (2017) and Chambers and Munemo (2019) have discovered statistically significant negative relationships between entrepreneurial entry and activity and bureaucratic-related variables such as the imposition of additional regulations, the size of government, and increases in taxes. United States-centric econometric literature also exists. Malone et al. (2019), for example, study the effects of regulations on entrepreneurial activity in Missouri and Kansas specifically, while Malone and Lusk (2016) analyze this relationship using data from all 50 states.

This paper will synthesize entrepreneurship and regulation-focused econometric literature and case studies to demonstrate the extent of the challenges that regulations impose on startups. We will then conduct original research by analyzing the impact of regulations on startups in a US state-level panel data. Our work will be divided into three sections. First, we will review previous literature that includes analyses of the effects of regulations on entrepreneurial activity on both a country and state level and case studies of startups in the United States and their struggles with regulations. Our second section will consist of original data-driven research to provide evidence supporting the assertions made in the literature. Then, we will conclude by identifying the advantages that optimal regulations can provide startups and how the United States can alter regulations to foster innovation and entrepreneurship rather than creating unnecessary obstacles for startup growth.

Literature Review

Extensive economic research has been conducted concerning the impact of regulations on startups using multi-country panel data. Yonk et al. (2017), Ghosh (2017), and Chambers and Munemo (2019) in particular employ these multi-country data sets to demonstrate the negative impact that regulations can have on startups. Yonk et al. (2017) assert that countries with more entry regulations generally have higher levels of corruption, making it harder for startups without substantial resources to skirt or influence regulations. In addition, Ghosh (2017) finds that stricter regulations in general dissuade would-be entrepreneurs from starting businesses.

Chambers and Munemo (2019) employ the number of steps needed to start a new business as a proxy for the strictness of entry regulations. The authors find that a one-step increase in startup procedures decreases the number of new startups by 3-7% and ultimately leads to “less efficient market outcomes” for countries (Chambers and Munemo, 2019).

Furthermore, Calcagno and Sobel (2014) empirically examine how the level of state regulation, such as expenditures on regulatory enforcement, affects the size distribution of establishments. Calcagno and Sobel's results suggest that such regulations operate as a fixed cost for establishments, and higher levels of spending on regulation at the state level disproportionately disadvantage firms with fewer than five employees (2014). Calcagno and Sobel cite larger firms' ability to utilize economies of scale as a relative cost advantage over the smallest firms, even though higher regulatory hurdles generally increase costs for all businesses (2014).

Other economists, including Malone et al. (2019), Dove (2020), Palladino (2019), and Malone and Lusk (2016), conduct analyses on a US state level. Malone et al.'s work is particularly interesting because it demonstrates that regulatory competition between states--including providing tax breaks and other advantages to conglomerates fleeing less hospitable states--wipes out the economic gain created by newly-formed startups (2019). Similar to Chambers and Munemo's (2019) work, Malone et al. (2019) use data from Missouri and Kansas to show that increases in the time required to register a business decrease entrepreneurship substantially, and increases in "occupational licensing" requirements also decrease the new business formation rate by 1.41%. Likewise, Malone and Lusk analyze entrepreneurship in Kansas and suggest that the optimal way to foster entrepreneurship is to reduce regulations on startups and small businesses (2016).

Yonk et al. (2017) cite a lack of adherence to government regulations as a significant contributor to startup failure, while in his work, Dove (2020) demonstrates a negative relationship between entrepreneurship and both state and federal regulations. According to Dove, a one percentage point increase in the "relative burden" of federal regulations decreases opportunity entrepreneurship by up to 8.5% in a given state (2020).

Yonk et al. (2017) and Malone and Lusk (2016) conduct insightful case studies that help illuminate the harm that state regulations can subject startups to. For example, The White Mustache (TWM), a yogurt startup, incurred significant costs to register in California and adhere to overly strict, outdated health codes (Yonk et. al., 2017). Although TWM worked closely with California regulators, it was eventually forced to shut down after refusing to pay for a $15,000 dairy license and promptly relocated to New York State (Yonk et al., 2017), supporting Malone et al.'s claim that interstate competition for business can wipe out the economic gains of startup creation (2019). Similarly, Malone and Lusk's (2016) case study analyzes the beer industry. The authors find that states that legalized "self-distribution" of beer have 2.5 more breweries per county than those that did not, indicating that these regulations have a significant effect on the number of entrants (Malone and Lusk, 2016). In addition, this regulation of the brewery industry is partially facilitated by the monopoly of veteran breweries (Malone and Lusk, 2016).

Chambers and O'Reilly (2019) test the relationship between entry regulations and income inequality at the subnational level, and their results suggest a positive relationship in which a one percentage point increase in entry costs increases regional income inequality by over three percent. Likewise, Chambers et al. (2019) conduct an analysis of the relationship between entry regulation and income inequality, but at the national level, and find that countries with a greater number of steps required to open a business experience greater income inequality. Specifically, the authors find that in countries with average income inequality, there is a "7.2% increase in the share of income accruing to the top decile of income earners" associated with a one standard deviation increase in the number of steps required to open a new business (Chambers et al., 2019). Ultimately, both articles in conjunction demonstrate that lower-income individuals are disproportionately disadvantaged in becoming entrepreneurs due to regulatory barriers to entry.

While most studies in the literature find a negative relationship between startup regulations and entrepreneurial entry, Darnihamedani et al. (2018) assert that investigating such effects requires distinguishing between different types of entrepreneurship. They conduct an interesting analysis of the effects of regulation on innovative entrepreneurship—taking on risky, innovative ideas (2018)—and find that countries with high levels of startup regulations actually have a higher percentage of innovative entrepreneurship (2018), which the authors argue is due to innovative entrepreneurs' willingness to incur high startup costs because they expect high returns. Thus, while Darnihamedani et al. (2018)'s findings support prior studies that reducing startup regulations increases the quantity of entrepreneurship by lowering barriers to entry, their results provide evidence that this would have a negative effect on the quality of entrepreneurship.

Davis's (2016) paper, "Regulatory Complexity and Policy Uncertainty: Headwinds of Our Own Making," will be particularly useful for our analysis of the impact of regulations on business formation. Davis quantifies the intensity or burden of regulations by measuring the fraction of sentences in the "Risk Factor" portions of 10-Ks that refer to regulations and federal or state policies (2016). We will employ the aforementioned economic literature to determine the impact of regulation intensity on startups, entrepreneurship, and innovation.

Regression Analysis

This paper employs previous econometric literature as a foundation for our linear regression model. The dependent variable in our regression, Y_i, is the number of business applications by state and year, which is a proxy for startup formation[1], and we evaluate its relationship to regulation-related explanatory variables and controls.

[1] https://www.census.gov/econ/bfs/index.html

Davis (2016) quantifies regulation intensity risk by measuring the fraction of sentences in Part 1A of 10-Ks referring to "regulatory and policy matters." We employ a similar proxy for regulation intensity, $REGUL_j$, in which j= (1) average Flesch reading ease score, (2) total word count, (3) total restriction count, (4) average sentence length, (5) average Shannon Entropy score, and (6) average number of conditional terms in state regulatory text[2], respectively. Text-based quantitative approaches like this are made possible by advancements in machine learning.

Controlling for economic factors is also important for regulation-startup regressions (Chambers and Munemo, 2019; Darnihamedani et al., 2018). Our regression includes yearly GDP, *GDP*, and GDP per capita, *GDPCAP*, for each state in current USD$[3]. To analyze innovative entrepreneurship and high-tech-centric regulatory environments, we also create subgroups of total GDP that include high-tech sector and non-high-tech sector GDP. High-tech sector GDP was calculated by taking the sum of information services GDP and professional, science, and technology GDP by state[4] and year[5].

Two factors that may influence business formation rates are corporate tax rates and real estate prices. We control for yearly mean state corporate tax rates, *CORPTAX*[6]. Since real estate acts as collateral for many entrepreneurs who take out loans (Schott, 2013), we add housing price index data per state and year[7] to control for changes in real estate valuations on business formation, denoted by *REINDEX*.

[2] https://www.quantgov.org/state-regdata/
[3] https://apps.bea.gov/itable/iTable.cfm?ReqID=70&step=1&acrdn=1
[4] Appendix N provides a graphic of GDP by sector and state
[5] Appendix M provides a graphic of GDP by sector and year
[6] https://www.taxpolicycenter.org/statistics/state-corporate-income-tax-rates
[7] https://www.fhfa.gov/DataTools/Downloads/Pages/House-Price-Index-Datasets.aspx

To control for state demographics, we employ the state population total[8], *TOTALPOP*, and the percentage of each state's population living in urban areas[9] by year, *POPURB*.

$Y_i = ß_0 + ß_1 REGUL_j + ß_2 GDP + ß_3 GDPCAP + ß_4 CORPTAX + ß_5 REINDEX + ß_6 TOTALPOP + ß_7 POPURB + \mu$ in which Y_i is the sum of business applications by state and year. Y_i is represented by *SUMAPPS* in the appendices.

According to Appendix C, which regresses the yearly sum of business applications one-by-one on regulation-related components of *REGUL*, the coefficient signs are constant across Specifications (1) to (6). The size of the effects of *AVG_SHANNON*[10] and *AVG_COND*[11] is roughly halved between Specifications (2) and (6) as more intensity of regulation proxies are added. Without other controls, all variables are statistically significant at the 99% confidence level, excluding *AVG_LENGTH*[12] in Specification (4). According to the R-squared in Specification (6), without controls, the regulation proxies by themselves appear to explain about 54.6% of the variation in Y_i.

Appendix D displays a regression of Y_i on individual regulation components of *REGUL* while controlling for economic and demographic-related variables[13], and Y_i is regressed on all components of *REGUL* in Specification (7). The size of the effects of *AVG_COND* and *AVG_LENGTH* increase substantially when all components of *REGUL* and all controls are

[8] https://www.census.gov/data/tables/time-series/demo/popest/2010s-state-total.html
[9] https://www.icip.iastate.edu/tables/population/urban-pct-states
[10] A measure of the amount of information contained in regulatory text
[11] Average number of conditional terms in regulatory text
[12] Average length of sentences in regulatory text by word count
[13] Specifications (1) to (6)

included in the regression[14]. Interestingly, the signs on *AVG_SHANNON* and *AVG_FLESCH*[15] flip[16], and *AVG_SHANNON* becomes substantially positive.

According to Appendix D, *AVG_SHANNON*, *AVG_COND*, and *AVG_LENGTH* have both substantial and statistically significant effects on Y_i for states. A .01 unit increase in the measure of the average amount of information contained in a state's regulatory text (*AVG_SHANNON*) increases the sum of business applications by 174.53 applications. A one unit increase in the average number of conditional terms in regulatory text (*AVG_COND*), meanwhile, decreases the sum of business applications by 295.38 applications. Contrary to expectations, a one unit increase in *AVG_LENGTH*, the average sentence length of regulatory text by word count, increases the sum of business applications by 1,036.54 applications.

Also contrary to expectations is the negative coefficient on GDP, which suggests that higher state GDP is not indicative of higher startup birth rates. Appendix F[17] suggests that this negative coefficient is being driven by Florida and Texas, which had relatively low GDP in 2020 despite receiving high numbers of business applications. This could be a consequence of the opportunity-necessity entrepreneurship tradeoff. GDP per capita, however, is positively correlated with business applications. A $1 increase in a state's GDP per capita increases business applications by .66 applications, a finding that aligns with previous literature.

The effect of corporate taxes on business applications is also substantial and statistically significant. A one percent increase in a state's corporate tax rate results in a decrease of 569.43 business applications. As expected, though, higher property value is positively correlated with the sum of business applications. A one unit increase in the housing price index, *REINDEX*,

[14] Specification (7)
[15] A measure of the ease with which text can be read in regulatory text
[16] In Specification (7)
[17] Appendix F plots business applications and GDP by state

increases the number of business applications received by 5.974, which supports the findings of Schott that higher property values drive entrepreneurship (2013).

Interestingly, states' level of urbanization substantially increases business applications. A one percentage point increase in the percentage of a state's population living in urban areas increases the number of business applications by 263.17, which is demonstrated by Appendix I[18].

Appendix E regresses the regulation proxies on business applications while controlling for the GDP of states' high-tech sectors (Specification 2) and non-high-tech sectors (Specification 3). According to Specification (2), a $1 million increase in a state's high-tech sector GDP decreases the number of business applications by .11 applications, which is nearly three times greater than the negative effects of comparable increases in general GDP[19] and non-high-tech sector GDP. This suggests that states with more technology and science-related companies have lower startup formation rates than states with smaller high-tech sectors as a percentage of GDP, surprising given Appendix G[20]. In addition, controlling for high-tech sector GDP boosts the coefficient on *REINDEX* to 13.11, which is a significant increase from controlling for general GDP. This finding is supported by Appendix H[21].

Controlling for high-tech sector[22] GDP in Appendix E, a .01 unit increase in *AVG_SHANNON* increases the sum of business applications by 163.14 applications, and when controlling for non-high-tech sector[23] GDP, this effect is an increase of 182.48 applications. A one unit increase in *AVG_COND*, meanwhile, decreases the sum of business applications by 290.43 and 301.77 applications when controlling for high-tech and non-high-tech sector GDP,

[18] The plot in Appendix I finds a positive relationship between urban population percentages and business applications
[19] Specification (1)
[20] The plot in Appendix G finds a positive relationship between high-tech GDP and business applications
[21] The plot in Appendix H finds a positive relationship between housing price index and business applications
[22] Specification (2)
[23] Specification (3)

respectively. Finally, a one unit increase in *T_RESTRICT* decreases the sum of business applications by 0.32 and 0.36 applications when controlling for high-tech and non-high-tech sector GDP, respectively. Thus, these results in conjunction do not provide evidence to support Darnihamedani et al.'s assertion that an increase in the level of regulations has a positive effect on innovative startup formation (2018), since the different measures of regulation level yield countervailing relationships. Based on our regression results, there appears to be no clear positive or negative relationship between increases in text-based intensity of regulation proxies and business formation rates. These findings do not mean that regulations do not affect business formation, however; they merely suggest that the text-based quantitative measures employed by this regression are not indicative of true regulation intensity.

Conclusion

This paper found countervailing effects regarding the intensity of regulation's impact on business formation, suggesting that text-based proxies may not be ideal. Despite the lack of regulation-related findings in this paper, state governments should reevaluate the ways that their regulations are impacting startups. For example, reducing the time required to register a business and loosening occupational licensing requirements can help boost entrepreneurship rates (Malone et al., 2019). In addition, rolling back unneeded, outdated, and overly restrictive regulations should be a priority, and startups should face fewer regulations than large businesses (Yonk et al., 2017). There will also always be room for states to streamline regulations and simplify regulatory text. Simplifying regulations can remove barriers to entry and reduce the intimidating complexity of regulations, encouraging both less educated and highly educated Americans to become entrepreneurs. And in an era when many startups are created solely to be

eventually acquired by large corporations, it is clear that large businesses' influence over the startup and regulatory environments may be too powerful.

One of the significant limitations of this paper is that the data was not measured yearly for some variables, including the text-based proxies for intensity of regulation. Further research could analyze the effects of particular classes of regulations on business formation, such as labor laws, tax laws, corporate social responsibility laws, and zoning laws. This data may provide a better proxy for regulation intensity than the text-based QuantGov data.

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Appendix A: Variable List

Variable	Variable Group	Unit	Explanation
SUMAPPS	*SUMAPPS*	Count (Mean)	Yearly sum of business applications received, by state
AVG_SHANNON	*REGUL*	Score	A measure of the amount of information contained in regulatory text
AVG_COND	*REGUL*	Count (Mean)	Average number of conditional terms in regulatory text
T_RESTRICT	*REGUL*	Count (Total)	Total instances of words classified as 'restrictive' in regulatory text (“shall,” “must,” “may not,” “prohibited,” and “required”)
AVG_LENGTH	*REGUL*	Count (Mean)	Average sentence length in regulatory text (by number of words)
T_WORDS	*REGUL*	Count (Total)	Total number of words in regulatory text
AVG_FLESCH	*REGUL*	Score	A measure of the ease with which text can be read (in regulatory text)
TOTALGDP	*GDP*	Current USD$ (Millions)	Total state GDP, all sectors
INFOGDP	*GDP*	Current USD$ (Millions)	Total information sector GDP
PROFTECHGDP	*GDP*	Current USD$ (Millions)	Professional, science, and technology sector GDP
LTGDP	*GDP*	Current USD$ (Millions)	Total non-high-tech sector GDP
HTGDP	*GDP*	Current USD$ (Millions)	Total high-tech sector GDP

GDPCAP	*GDPCAP*	Current USD$	GDP per capita
CORPTAX	*CORPTAX*	Percentage	State corporate tax rate
REINDEX	*REINDEX*	Index, 1975=100	Housing price index, in which 1975=100
TOTALPOP	*TOTALPOP*	Count (Total)	Total population count
POPURB	*POPURB*	Percentage	Population percentage of state living in urban areas

Appendix B: Summary Statistics

Table 1: Summary statistics for independent variables of interest.

Variable	Obs	Mean	Std. Dev.	Min	Max
AVG_SHANNON	6,396	7.931515	0.4114356	6.892767	8.856915
AVG_COND	6,396	53.27925	37.61242	8.124506	175.8511
T_RESTRICT	6,540	132392	72419.99	38961	395608
AVG_LENGTH	6,396	23.57426	6.892446	9.92022	41.88867
T_WORDS	6,540	9119833	4863425	3211823	2.26E+07
AVG_FLESCH	6,396	-246.89	1495.819	-9995.305	49.62617

Table 2: Summary statistics for dependent variable.

Variable	Obs	Mean	Std. Dev.	Min	Max
SUMAPPS	7,956	57644.82	72215.59	3846	498794

Table 3: Summary statistics for economic-related control variables.

Variable	Obs	Mean	Std. Dev.	Min	Max
TOTALGDP	7,116	356356.4	451549.4	25518.6	3205000
INFOGDP	7,116	18139.43	36216.35	542.2	321010.9
PROFTECHGDP	7,116	26254.29	39413.53	919.7	291012
LTGDP	7,116	311962.7	379678.8	23028.4	2605839
HTGDP	7,116	44393.71	74462.3	1572.7	610659.8

GDPCAP	6,288	47548.36	9152.173	30212	84750
CORPTAX	7,116	4.29511	3.119505	0	9
REINDEX	7,116	514.6848	167.0636	282.84	1268.81

Table 4: Summary statistics for demographic-related control variables.

Variable	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**
TOTALPOP	5,952	6400971	7098510	567299	3.95E+07
POPURB	7,116	73.34604	14.47329	38.2	95

Appendix C

Dependent Variable: Yearly sum of business applications (*SUMAPPS*)

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	SUMAPPS	SUMAPPS	SUMAPPS	SUMAPPS	SUMAPPS	SUMAPPS
AVG_SHANNON	-117.672***	-840.735***	-583.569***	-588.434***	-409.274***	-414.211***
	(-5.053)	(-25.367)	(-23.025)	(-23.087)	(-16.260)	(-16.323)
AVG_COND		1,053.303***	715.018***	715.451***	574.087***	579.636***
		(29.053)	(25.667)	(25.686)	(21.249)	(21.264)
T_RESTRICT			0.655***	0.669***	1.360***	1.354***
			(69.141)	(55.268)	(47.220)	(46.580)
AVG_LENGTH				-228.463*	-481.130***	-520.998***
				(-1.782)	(-3.937)	(-4.169)
T_WORDS					-0.011***	-0.011***
					(-26.184)	(-25.685)
AVG_FLESCH						0.695
						(1.523)
Constant	156,108.875***	673,487.598***	400,249.193***	407,684.644***	284,321.156***	289,020.548***
	(8.441)	(27.063)	(20.808)	(20.716)	(14.741)	(14.798)

Observations	6,396	6,396	6,396	6,396	6,396	6,396
R-squared	0.004	0.120	0.497	0.497	0.546	0.546
T-statistics in parentheses						
*** p<0.01, ** p<0.05, *p<0.1						

Appendix D

Dependent Variable: Yearly sum of business applications (*SUMAPPS*)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	SUMAPPS	SUMAPPS	SUMAPPS	SUMAPPS	SUMAPPS	SUMAPPS	SUMAPPS
AVG_SHANNON	-52.974***						174.537***
	(-5.851)						(12.081)
AVG_COND		-99.398***					-295.383***
		(-9.840)					(-18.113)
T_RESTRICT			-0.156***				-0.342***
			(-19.026)				(-15.097)
AVG_LENGTH				135.820**			1,036.549***
				(2.124)			(14.575)
T_WORDS					-0.002***		0.001***
					(-17.243)		(3.307)
AVG_FLESCH						1.075	-0.269
						(0.621)	(-0.153)
TOTALGDP	-0.068***	-0.065***	-0.041***	-0.067***	-0.052***	-0.065***	-0.034***
	(-15.026)	(-14.540)	(-9.101)	(-14.293)	(-11.890)	(-14.191)	(-7.143)

GDPCAP	0.950***	0.857***	0.649***	1.013***	0.623***	1.033***	0.664***
	(13.542)	(12.132)	(10.987)	(14.600)	(10.470)	(14.635)	(9.864)
CORPTAX	-291.934**	-415.748***	-272.943**	-347.902***	-320.187***	-379.233***	-569.435***
	(-2.508)	(-3.622)	(-2.490)	(-2.980)	(-2.903)	(-3.275)	(-5.098)
REINDEX	-7.015**	-5.958*	1.181	-10.438***	3.414	-11.700***	5.974*
	(-2.000)	(-1.733)	(0.370)	(-2.992)	(1.057)	(-3.400)	(1.759)
TOTALPOP	0.013***	0.013***	0.013***	0.013***	0.013***	0.013***	0.013***
	(46.444)	(46.964)	(46.999)	(45.487)	(47.376)	(45.666)	(49.319)
POPURB	359.809***	355.448***	333.081***	357.274***	364.338***	365.066***	263.175***
	(10.795)	(10.732)	(10.422)	(10.514)	(11.311)	(10.529)	(7.840)
Constant	-24,733.964***	-57,867.680***	-42,226.986***	-70,461.094***	-46,935.008***	-68,140.001***	-175,935.304***
	(-3.070)	(-17.395)	(-14.399)	(-20.812)	(-16.151)	(-21.333)	(-16.048)
Observations	5,232	5,232	5,352	5,232	5,352	5,232	5,232
R-squared	0.877	0.879	0.883	0.877	0.881	0.877	0.896
T-statistics in parentheses							
*** p<0.01, ** p<0.05, * p<0.1							

Appendix E

Dependent Variable: Yearly sum of business applications (*SUMAPPS*)

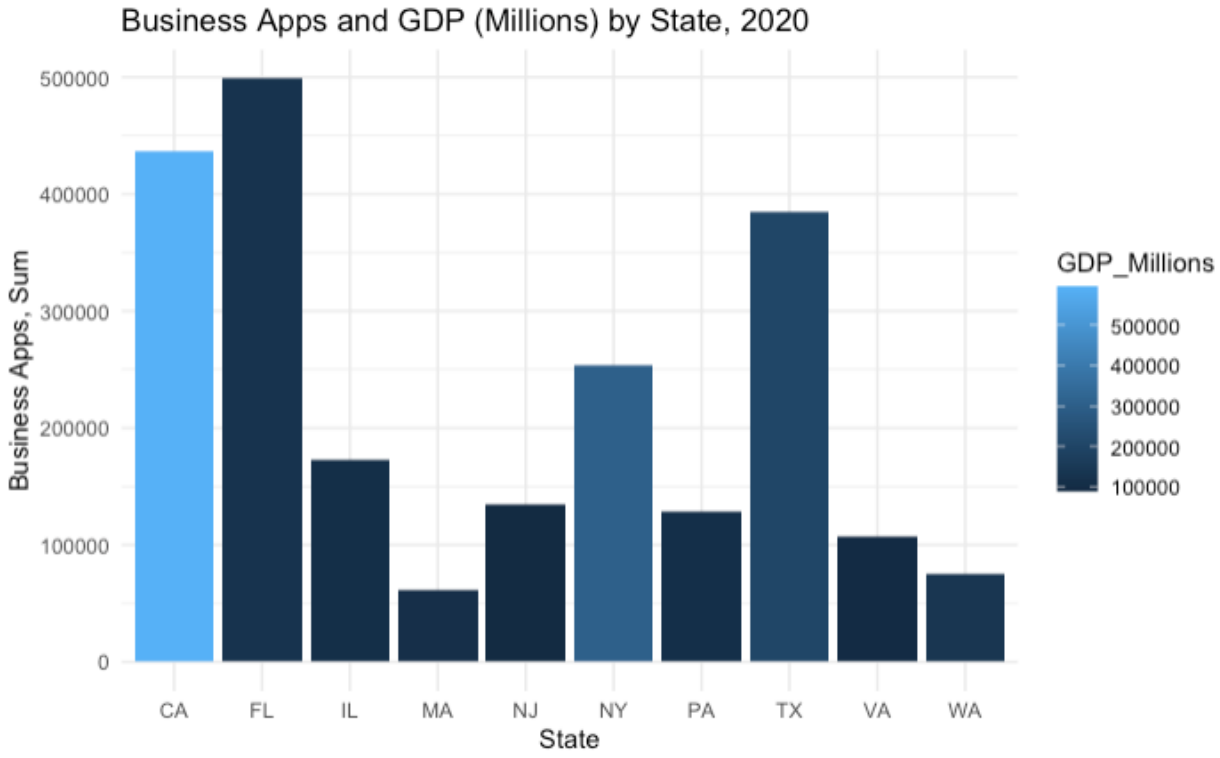
	(1)	(2)	(3)
VARIABLES	SUMAPPS	SUMAPPS	SUMAPPS
AVG_SHANNON	174.537***	163.142***	182.484***
	(12.081)	(10.819)	(12.800)
AVG_COND	-295.383***	-290.430***	-301.774***
	(-18.113)	(-17.466)	(-18.675)
T_RESTRICT	-0.342***	-0.324***	-0.357***
	(-15.097)	(-13.468)	(-16.128)
AVG_LENGTH	1,036.549***	961.344***	1,047.323***
	(14.575)	(13.715)	(14.626)
T_WORDS	0.001***	0.001**	0.001***
	(3.307)	(2.163)	(4.062)
AVG_FLESCH	-0.269	-1.148	-0.520
	(-0.153)	(-0.664)	(-0.298)
TOTALGDP	-0.034***		
	(-7.143)		
HTGDP		-0.118***	

		(-6.533)	
LTGDP			-0.040***
			(-6.731)
GDPCAP	0.664***	0.513***	0.684***
	(9.864)	(8.229)	(9.884)
CORPTAX	-569.435***	-526.201***	-604.271***
	(-5.098)	(-4.643)	(-5.433)
REINDEX	5.974*	13.116***	2.049
	(1.759)	(3.275)	(0.632)
TOTALPOP	0.013***	0.012***	0.013***
	(49.319)	(79.770)	(45.844)
POPURB	263.175***	274.699***	268.086***
	(7.840)	(8.231)	(7.996)
Constant	-175,935.304***	-163,588.865***	-180,885.866***
	(-16.048)	(-14.539)	(-16.517)
Observations	5,232	5,232	5,232
R-squared	0.896	0.896	0.896
T-statistics in parentheses			

*** p<0.01, ** p<0.05, * p<0.1			

Appendix F

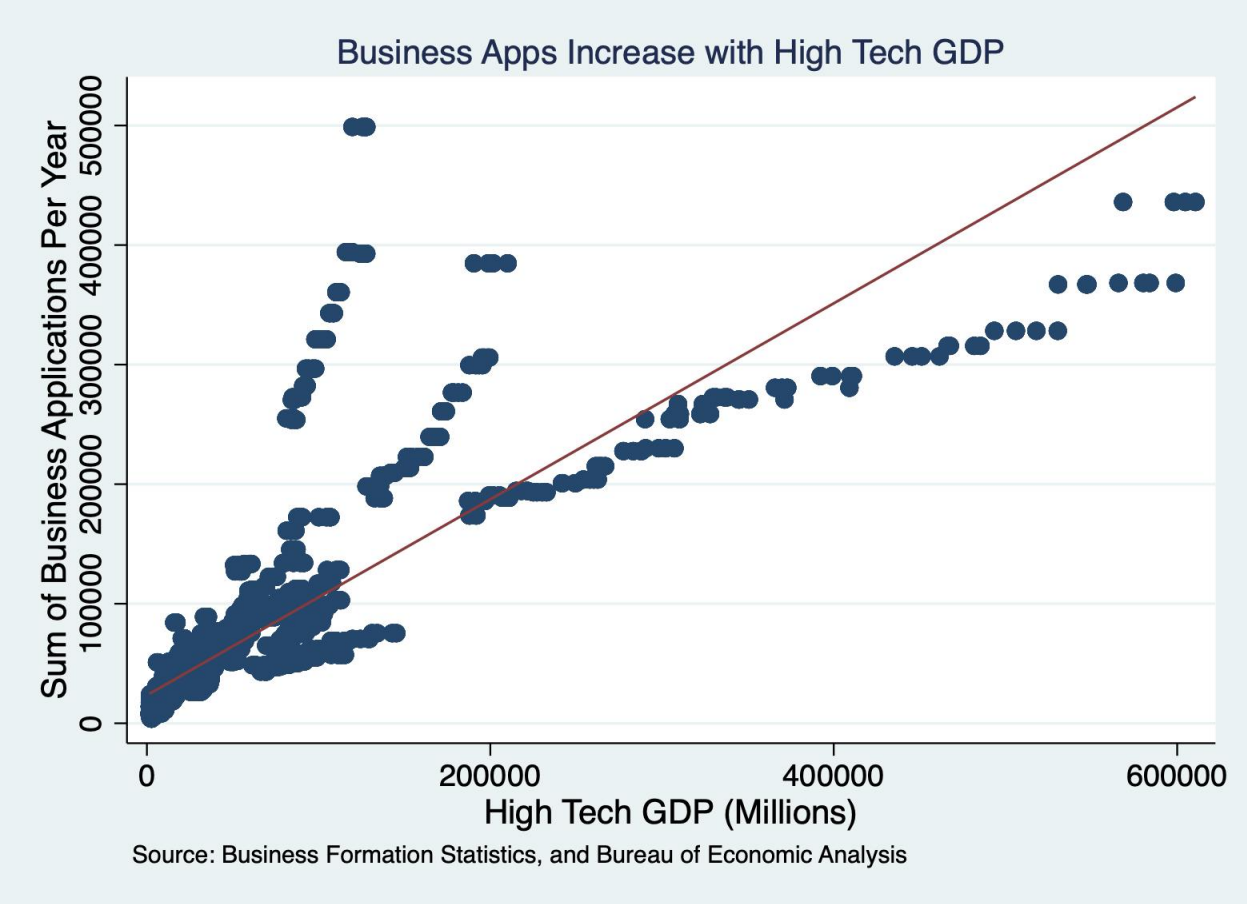
Business Applications and GDP (Millions) by State



Sources: Bureau of Economic Analysis, and Business Formation Statistics

Appendix G

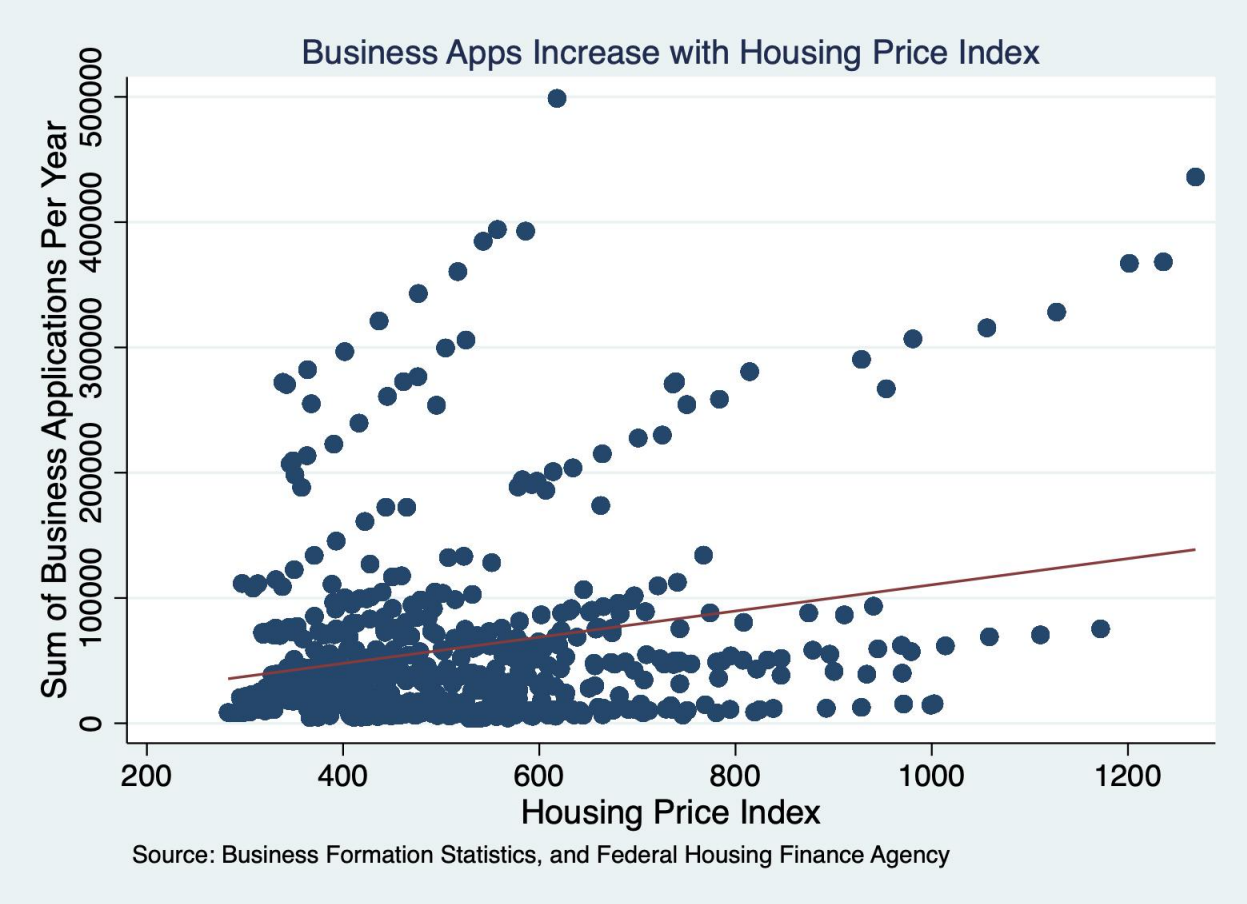
Business Applications and High-Tech GDP (Millions) by State



Sources: Bureau of Economic Analysis, and Business Formation Statistics

Appendix H

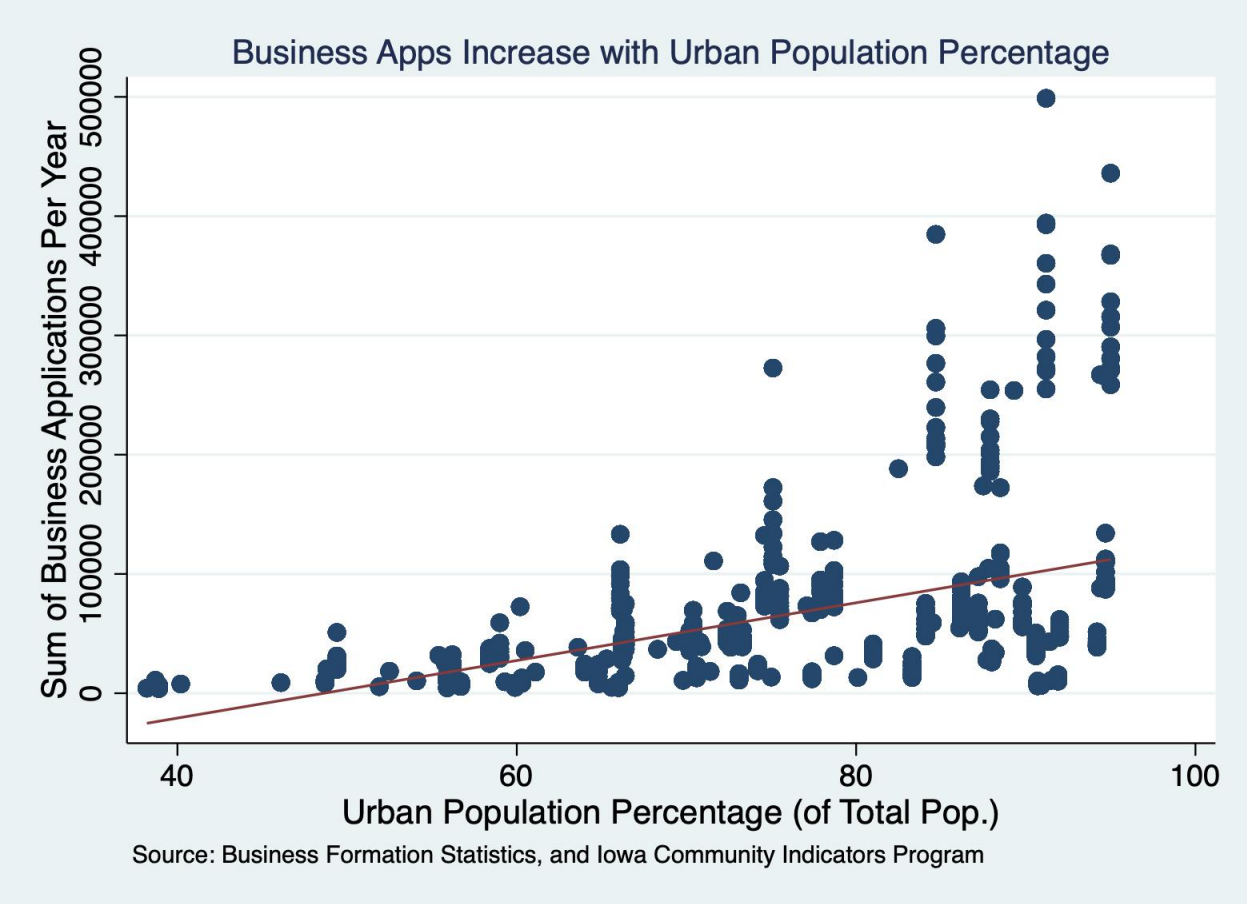
Business Applications and Housing Price Index by State



Sources: Federal Housing Finance Agency, and Business Formation Statistics

Appendix I

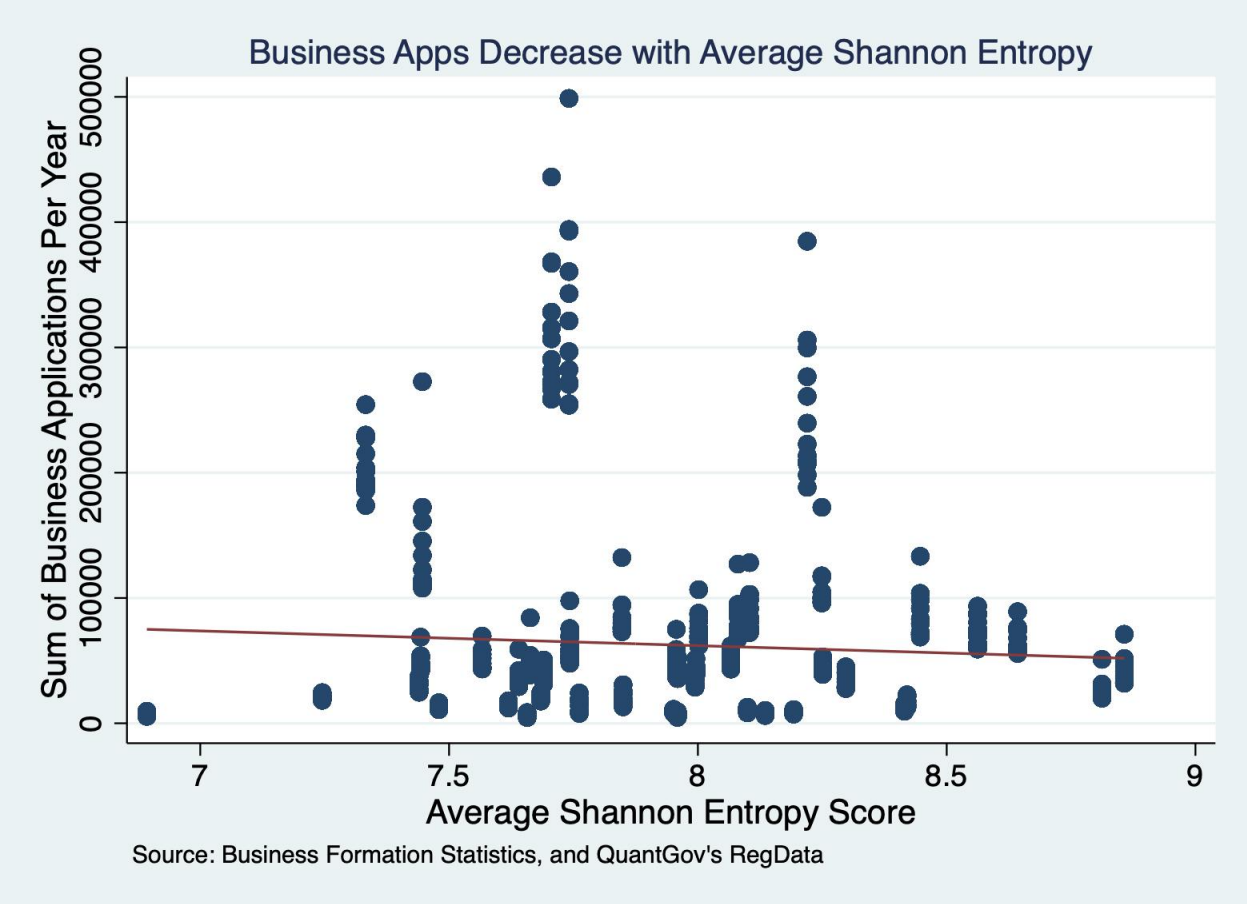
Business Applications and Urban Population Percentage by State



Sources: Business Formation Statistics, and Iowa Community Indicators Program

Appendix J

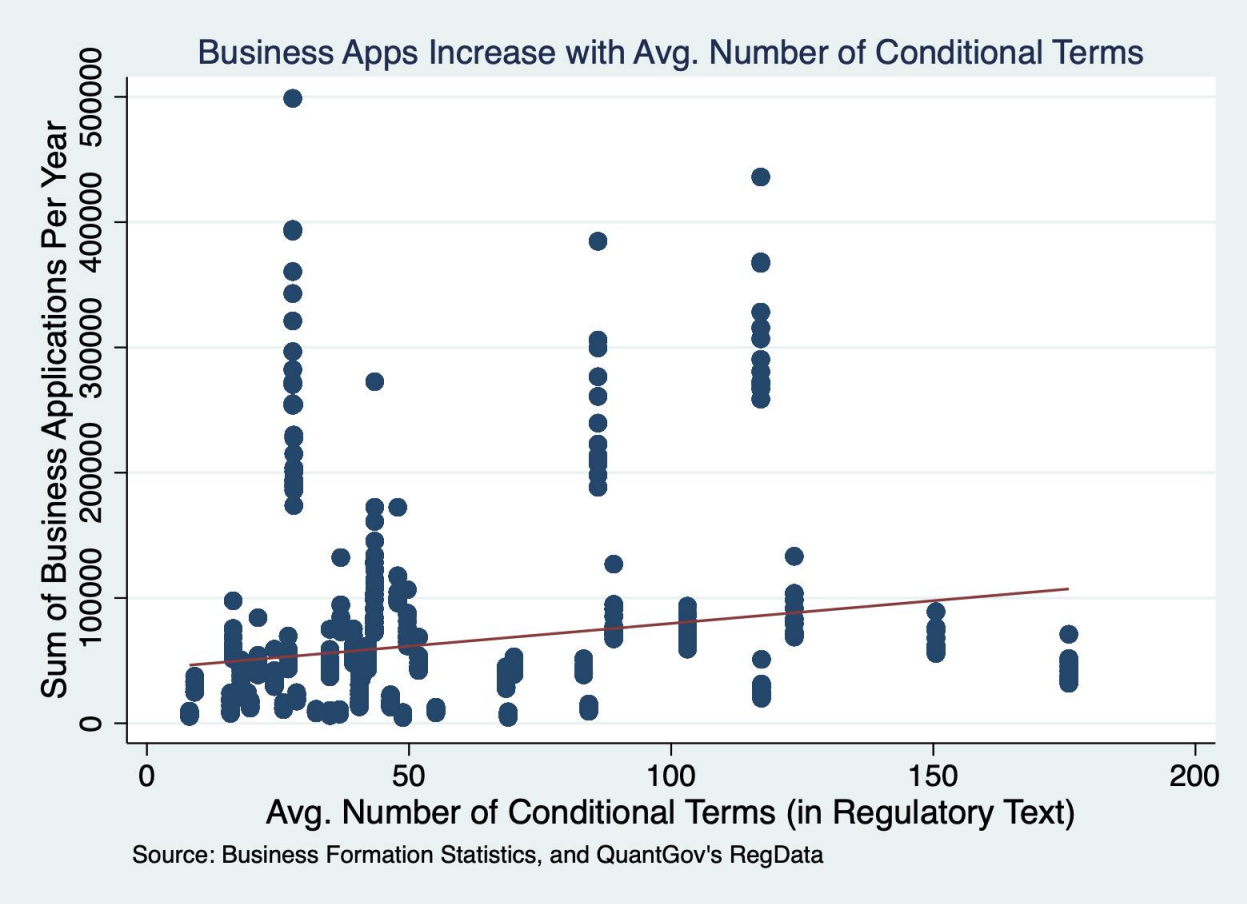
Business Applications and Average Shannon Entropy by State



Sources: Business Formation Statistics, and QuantGov's RegData

Appendix K

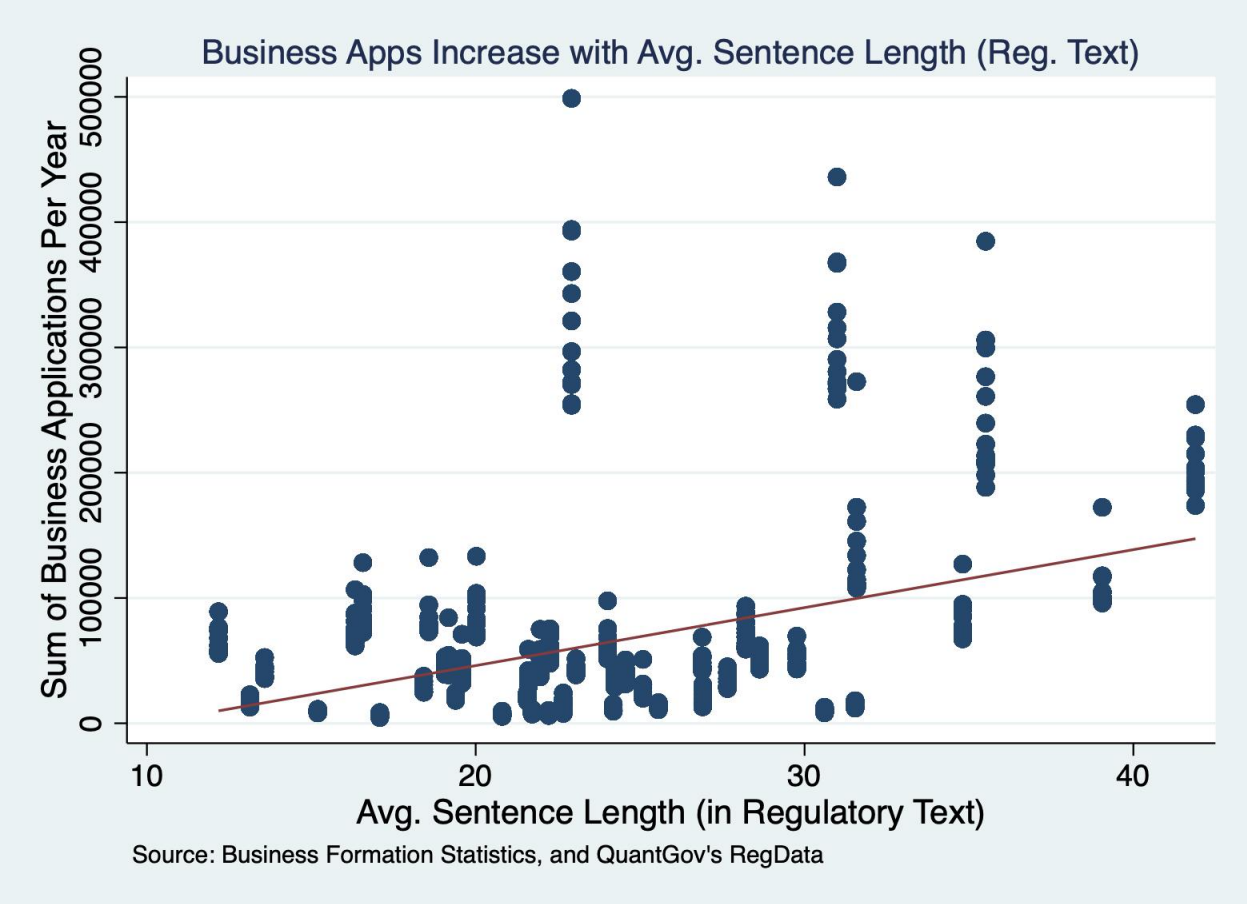
Business Applications and Average Number of Conditional Terms by State



Sources: Business Formation Statistics, and QuantGov's RegData

Appendix L

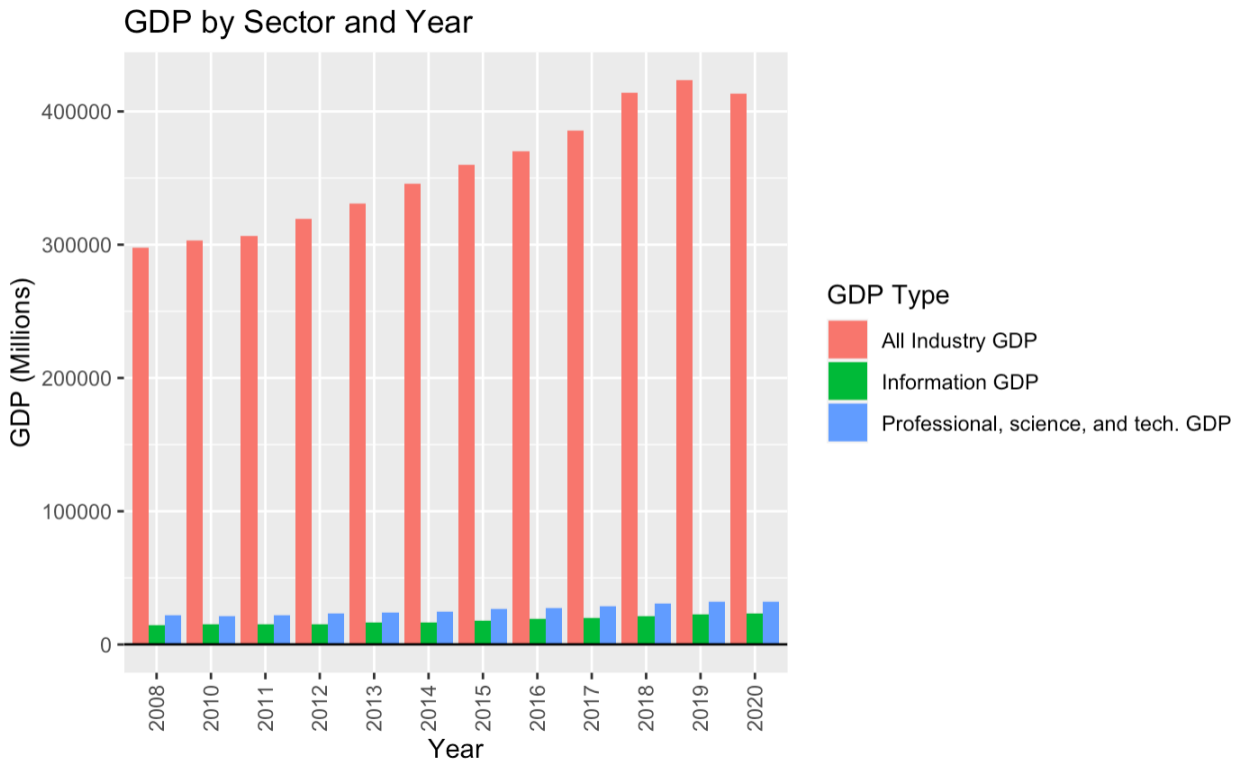
Business Applications and Average Sentence Length (Reg. Text) by State



Sources: Business Formation Statistics, and QuantGov's RegData

Appendix M

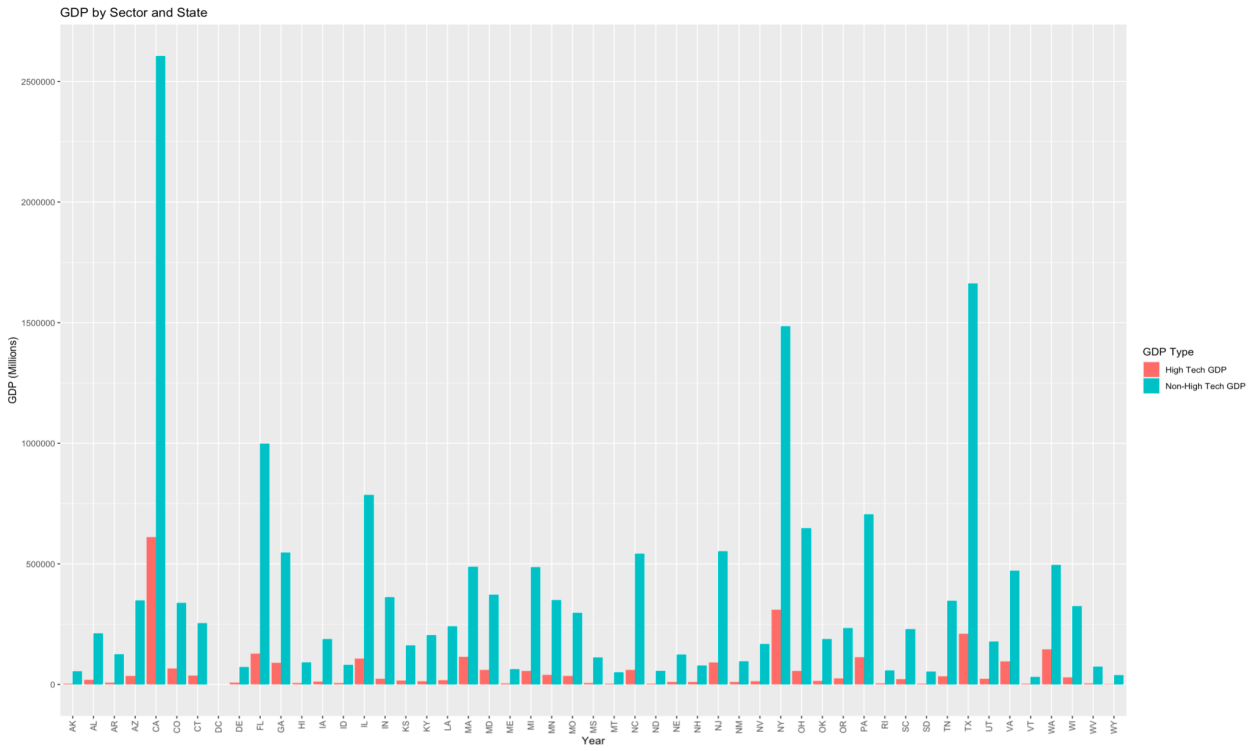
GDP Sector Average by Year, All States



Sources: Bureau of Economic Analysis

Appendix N

GDP by Sector and State



Source: Bureau of Economic Analysis