Preliminary Attitudinal Trends in Alternative Postsecondary Learning ⋆

John Vandivier[a]

[a] *4400 University Dr, Fairfax, VA 22030*

Abstract

This paper explores a novel data set (n = 1190) to understand trends in public disposition toward alternative postsecondary learning, with a focus on employers. Results indicate that public favorability is positive and will remain flat over the next year. Employer attitudes are not meaningfully different from the general public.

Keywords: education economics, alternative education, debt crisis, signaling

2010 MSC: D12, I21, I22, I24, I25, I26

⋆Go to `https://github.com/Vandivier/research-dissertation-case-for-alt-ed/tree/master/papers/alt-ed-survey` for additional materials including the online appendix, survey data, and data analysis source code.

Email address: `jvandivi@masonlive.gmu.edu` (John Vandivier)

1. Introduction and Description of Data

Student loan debt in the United States is a recognized concern[1]. Alternative postsecondary learning strategies can largely resolve this crisis, but an adoption problem is currently observed. This paper identifies factors of learner and employer favorability over time, then recommends activities to improve adoption. The reader should take away a better understanding of the market of alternative postsecondary learning, forecasted outlook on adoption, and individual or policy levers which influence the return to postsecondary education. The key hypothesis tested in this paper is that employers have positive favorability toward alternative credentials. This paper is also preliminary in the sense that it produces forecasts which can be validated in subsequent work.

Alternative postsecondary learning includes obtaining an accredited degree if such degree is obtained in a non-traditional manner. Examples of alternative pathways to a traditional credential include delayed, accelerated, and online-only courses of study. These approaches offer better access and return to education for many students [1].

1190 responses, including partial responses, were obtained for four comparable survey administrations from February 2018 to May 2019. Analysis includes 114 right-hand variables and two left-hand variables. Appendix A details the wording of questions and possible responses. Appendix B identifies factors included in each administration.

Responses were collected mainly through SurveyMonkey, Amazon Mechanical Turk, and social media. Each origination channel was grouped using a construct called a collector. Collector effects were insignificant. The population of interest is internet-using adult Americans. About 10 percent of Americans are not internet-using[3].

Factor-level sample size ranges from 240 to 1190. Appendix C lists technical

[1] Mattern and Wyatt[2] note that college students live an average distance of 268 miles from home and a median of 94 miles. This indicates that most students could reduce the cost of college by studying remotely from home.

variable names in alphabetical order along with summary statistics. Appendix D lists variable names in alphabetical order, and summarizes factor strength across models. Several constructs were redundantly operationalized. For example, age was measured continuously and also by age group. Appendix D clarifies this factor-to-variable mapping.

The variable of interest is entry-level suitability. This variable corresponds to question 2 in Appendix A. It is structured as a favorability question on a scale from 1 to 10. Higher numbers indicate stronger agreement. The wording of the statement to be favored is, "For many professions, alternative credentials can qualify a person for an entry-level position."

A 3-factor index of interest is explored as a secondary concern. This is a 3-factor index includes the variable of interest, favorability toward online learning, and expected conventionality. Expected conventionality measures favorability to the statement, "It will soon become fairly conventional for high school graduates to obtain alternative credentials instead of going to college." The index is checked to ensure findings are robust to the wording of the primary variable of interest. Index findings are also generalizable beyond alternative credentials to alternative education broadly.

No particular survey administration contains all questions across administrations. The 2019 analysis covers samples from 2018 and 2019. Questions in the October 2018 administration are a superset of those in February 2018. Similarly, May 2019 variables are a superset of February 2019. Analysis of survey results from 2018 indicated that certain factors were unimportant. As a result, some questions were replaced in 2019. It turns out that the most significant factors identified in the 2019 analysis were also measured in the 2018 administrations, but this may be due to oversampling.

Four key ordinary least squares models are identified per year. Factors are eliminated one at a time by significance until a subsequent model is obtained. The first model is a long model using all available right hand variables. The second is the weak model. This model includes factors with a p-value of less than .5. The third model is an adjusted r-squared maximizing model, and the

fourth model is a strong model involving factors with a p-value less than .1.

2. Results

The average response for the variable of interest was 6.6. The median was 7 and the 25th percentile was 5. Unemployed status and other ethnic identification are the two largest significant effects, and they are both positive. Male identification has a large effect in the preferred model, but it is taken to have a true effect close to -0.42, as identified with higher significance in the strong model. Employer effects are not significant in any model, although in the preferred model employer effects obtain an insignificant coefficient of about -.47.

The average response for favorability of online education was the highest among the three index components at 6.8. The average response for expected conventionality is 6.1. All three components of the index of interest are strongly intercorrelated, indicating results for the entry-level suitability of alternative credentials are somewhat generalizable to alternative education broadly. Additional selected factor results are presented in 1. Appendix D describes factor strength across all models.

The 2019 medium model is preferred. This model explains the majority of sample variation while minimizing complexity. 2018 analysis initially indicated weak effects for religiosity and STEM industry identification, but reanalysis with 2019 data suggests inclusion of these variables may add importantly to explanatory power.

Innovation proxies include favorability to artificial intelligence, cryptocurrency, and online education. These factors are cross-correlated with a p-value of less than .001. Respondent favorability to government regulation moves positively with innovation, while religiosity is associated with reduced innovation favorability.

Status quo bias among conservatives is a common theme in the literature[4], but it is paradoxical in this situation. Markets facilitate innovation[5], so individuals seeking to maintain the status quo ought to disfavor it. Traditional

Table 1: Medium and Strong Models, Selected Variables

Factor	2018 Medium	2018 Strong	2019 Medium	2019 Strong
Male			-2.458*	-0.422**
Not STEM	-1.269*			
Pro AI	0.700*	0.776**		
Quadratic				
Pro AI	-0.065*	-0.069**		
Quadratic				
Pro American	0.011*	0.011*		
Quadratic Expect				
Convention			0.113**	0.081**
Cubic Expect				
Convention	0.003**	0.003**	-0.007*	-0.005***
Quadratic Pro				
Online Learning	0.067	0.016*	0.240	0.013***
Pro Regulation	1.161	0.110*	0.268***	0.110***
Religiosity	0.120*	0.105*		
Income	0.770**	0.192*		
Quadratic Income	-0.056*		0.046	
Unemployed			1.118*	
Other Ethnicity			1.682*	
X_0	1105.125	.106	-12345.347*	3.289***
R-Squared	.597	.504	.526	.319

* $p < .05$ ** $p < .01$ *** $p < .001$

education is heavily regulated, so individuals committed to high levels of regulation ought to disfavor alternatives.

A Kahneman-like explanation is one resolution. Survey respondents may be thinking fast[6]. The preference of some conservatives for the status quo in education becomes explained by risk aversion, lack of openness, and related factors. It may be the case that many of these same individuals would favor alternative credentials when a logical mode of thought is activated.

Age group has a more robust effect compared to exact age, indicating cohort effects. Minors are the only age group which is unfavorable toward alternative credentials on average. Minors are also the least sampled group in this data set. Educational attainment was more significant than age or income effects. In addition to level of education, a dummy for whether education was at or greater than obtaining a college degree was independently significant.

Two significant industrial effects exist in the preferred model. The legal industry coefficient of -2.51 is one of the largest effects in any model. It has a p-value of 0.006. The transportation industry coefficient is -1.67 with a p-value of 0.086. The mid-atlantic region is associated with a coefficient of -1.21 and a p-value of 0.01. Robust regional and industrial effects point to a policy explanation. The legal and transportation industries share a common theme of licensing.

Time has an unimportant effect in the preferred model, but a two-factor exponential expansion obtained an adjusted r-squared of .8689:

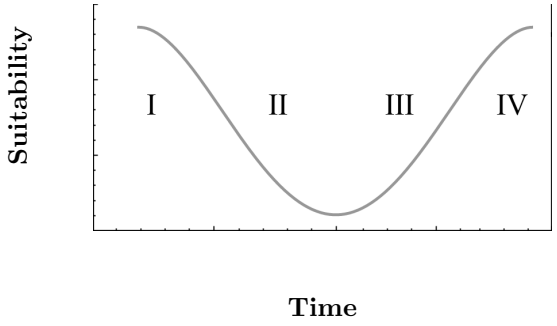
$$f(x) = b_1 b_2^t \tag{1}$$

The b_2 p-value is less than .001. The estimate of $b2$ was less than 1, indicating exponential decay, but the rate of decay is trivial so that forecasting is essentially flat. On Monday, February 26, 2018, when $t = 0$ the predicted dependent variable is equal to $b1$, which is estimated at about 6.65. t increments by the day, and the maximum value within the sample is 437. At that time, the point estimate for the dependent variable is about 6.59. Forecasting a year into the

future, the estimate is about 6.55.

Another dynamic perspective involves employer-lead favorability cycles. Multiple regression of four variables on the variable of interest results in an adjusted r-squared of .8692. These variables include time interacted with employer status, linear time, and the squares of each of those two. In this model, time has a linear negative and positive marginal effect, although neither are significant. Employer-time, however, is significant, as is its quadratic counterpart. Employer-time has a linear effect of 0.002, a p-value of about 0.03, and a negative but unimportant quadratic effect. This cycle model is conceptually depicted in Figure 1. Public favorability exists at II and employer attitudes are represented at III.

Figure 1: Employer Driven Favorability



3. Conclusions

Results have applications for firms, policy, and students. Age effects suggest learning providers should market to parents, rather than directly to high school students. Large corporations are able to leverage economies of scale, spread risk across hires, and internally train junior employees. Alternatively educated individuals are diverse[7], which is a common corporate goal. These incentives make large corporations a great adoption target for alternative education. This movement is already taking place. Industry leaders are already disavowing the need for formal education[8].

Policymakers should level the playing field for alternative education by limiting federal money, or empowering alternative education with those dollars. Licensing should be improved to support substitutes for accredited education. Internship should be facilitated to encourage learning while working. Tax-privileged vehicles targeted at accredited education should be liberalized to support alternative education.

Students should consider learning online, choosing non-elite providers, prior learning assessments, and credit by examination. For roles where a degree is inessential to junior placement, students should prefer a strategy of deferred college and leverage employer assistance once a role is obtained.

References

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[8] Glassdoor, Google & 14 more companies that no longer require a degree (Aug 2018).

URL https://www.glassdoor.com/blog/no-degree-required/

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John Vandivier

Online Appendix

Appendix A - Question Reference

1. Do you contribute to hiring and firing decisions at your company?
    a. One selection among the following was allowed:
        i. Yes
        ii. No
        iii. Unemployed
2. For many professions, alternative credentials can qualify a person for an entry-level position.
    a. An integer selection inclusively between 1 and 10.
    b. Value of 1 labeled “Strongly Disagree”
    c. Value of 10 labeled “Strongly Agree”
    d. Other values unlabeled.
    e. This is the default answer pattern. If some question doesn’t specify the available answers, then the answers available are similar to question #2.
3. It will soon become fairly conventional for high school graduates to obtain alternative credentials instead of going to college.
4. When you add up the pros and cons for online education, it's probably a good thing for society overall
5. When you add up the pros and cons for artificial intelligence, it's probably a good thing for society overall.
6. When you add up the pros and cons for cryptocurrency, it's probably a good thing for society overall.
7. When evaluating an applicant's education, it is important is important to check whether the degree was awarded from a US institution.
8. Have you heard of any of the following online course providers?
    a. Zero to many selections among the following were allowed:
        i. Udacity
        ii. Udemy
        iii. Coursera

iv. Pluralsight

v. Lynda.com

b. Note: In the May 2019 administration and onward, the choice for Lynda.com was changed to Lynda.com / LinkedIn Learning. This is due to the LinkedIn acquisition of Lynda.com.

9. Do you work in a STEM profession?
    a. One selection among the following was allowed:
        i. Yes
        ii. No
        iii. Unsure
10. Which of these industries most closely matches your profession?
    a. One selection among the following was allowed:
        i. Agriculture
        ii. Education
        iii. Energy
        iv. Finance, Investment, or Accounting
        v. Health
        vi. Information Technology
        vii. Law
        viii. Manufacturing
        ix. Military
        x. Other
        xi. Retail
        xii. Transportation
11. I consider myself religious
12. I consider myself Christian
13. Government regulation helps ensure businesses treat individuals more fairly.
14. Age
    a. Included by SurveyMonkey in 2018.
    b. In 2019 the question was explicitly asked.
    c. In May 2019 and onward, exact age was also asked.
    d. One selection among the following was allowed:

i. < 18
ii. 18 -29
iii. 30-44
iv. 45-60
v. > 60

15. Gender
    a. Included by SurveyMonkey in 2018.
    b. In 2019 the question was explicitly asked and the value of Other became a choice.
    c. One selection among the following was allowed:
        i. Male
        ii. Female

16. Household Income
    a. Included by SurveyMonkey in 2018.
    b. In 2019 the question was explicitly asked.
    c. Measured annually, in nominal USD.
    d. One selection among the following was allowed:
        i. 0-9,999
        ii. 10,000-24,999
        iii. 25,000-49,999
        iv. 50,000-74,999
        v. 75,000-99,999
        vi. 100,000-124,999
        vii. 125,000-149,999
        viii. 150,000-174,999
        ix. 175,000-199,999
        x. 200,000+
        xi. Prefer not to answer

17. Region
    a. Included by SurveyMonkey
    b. One selection among the following was allowed:

i. New England
ii. Middle Atlantic
iii. East North Central
iv. West North Central
v. South Atlantic
vi. East South Central
vii. West South Central
viii. Mountain
ix. Pacific

18. Device Type
    a. Included by SurveyMonkey
    b. One selection among the following was allowed:
        i. iOS Phone / Tablet
        ii. Android
        iii. Other Phone / Tablet
        iv. Windows Desktop
        v. MacOS Desktop
        vi. Other
19. What is the highest level of education you have completed?
    a. Did Not Graduate from High School
    b. GED
    c. High School Diploma
    d. Some College
    e. Obtained Undergraduate Degree
    f. Obtained Non-Doctoral Graduate Degree
    g. Obtained a Doctoral Degree
20. Which race/ethnicity best describes you?
    a. American Indian or Alaskan Native
    b. Asian / Pacific Islander
    c. Black or African American
    d. Hispanic

e. White / Caucasian
f. Other

Appendix B - Questions Per Survey

Question Definition Number*	Short Name(s)	2018, Feb	2018, Oct	2019, Feb	2019, May
1	Employment Status, Employer Effects	X	X	X	X
2	Entry-Level Suitability, Variable of Interest	VOI	VOI	VOI	VOI
3	Expected Conventionality	X	X	X	X
4	Online Education	X	X	X	X
5	Artificial Intelligence, Innovation Bias, Status Quo Bias		X	X	X
6	Cryptocurrency	X	X		
7	US Degree Centrism, Anti-Foreign Bias	X	X		
8	Provider Recognition	X	X	X	X
9	STEM	X	X		
10	Industry	X	X	X	X
11	Religiosity		X		
12	Christian Identification		X		
13	Regulatory Favorability		X	X	X
14	Age	X	X	X	X
15	Gender	X	X	X	X
16	Income	X	X	X	X
17	Region	X	X	X	X
18	Device Type	X	X	X	X
	Time		C	C	C
	Collector			C	C
19	Ethnicity				X
20	Educational Attainment				X

* Question definition number allows cross-reference into Appendix A and is not a statement about the presentation order of questions.
C - Response value was determined automatically, rather than by response of the participant.
VOI - Question was present and represents the variable of interest.
X - Question was present for survey. This does not guarantee every respondent answered the question. Particularly, Q14-Q18 were presented as SurveyMonkey included data for paid responses only during 2018. Beginning in 2019, Q14-Q16 were asked of all respondents, but Q17-Q18 remained observed for SurveyMonkey paid responses.

Appendix C – Table of Variable Summary Statistics

Variable	N	Mean	SD	P25	Median	P75	Min	Max
ceduc1	406	4.65	1.4	4	5	5	1	8
ceduc2	406	23.55	13.26	16	25	25	1	64
ceduc3	406	127.51	105.17	64	125	125	1	512
cprovider1	1190	1.29	1.2	0	1	2	0	5
cprovider2	1190	3.1	5.22	0	1	4	0	25
cprovider3	1190	9.85	23.71	0	1	8	0	125
crage1	809	3.19	0.99	2	3	4	1	5
crage2	809	11.14	6.52	4	9	16	1	25
crage3	809	41.88	34.91	8	27	64	1	125
crea1	406	39.97	13.72	29	37	50	17	88
crea2	406	1785.07	1221.51	841	1369	2500	289	7744
crea3	406	87800.18	90599.36	24389	50653	1.25E+05	4913	6.81E+05
crincome1	773	4.28	2.08	3	4	5	1	10
crincome2	773	22.6	22.54	9	16	25	1	100
crincome3	773	141.9	219.35	27	64	125	1	1000
csmage1	771	3.42	1.08	2	4	4	2	5
csmage2	771	12.88	7.44	4	16	16	4	25
csmage3	771	52.05	41.27	8	64	64	8	125
csmincome1	699	4.06	2.07	3	4	5	1	10
csmincome2	699	20.76	21.24	9	16	25	1	100
csmincome3	699	126.53	200.29	27	64	125	1	1000
ctime1	1190	21557.74	138.76	21466	21604	21677	21241	21678
ctime2	1190	4.65E+08	5.96E+06	4.61E+08	4.67E+08	4.70E+08	4.51E+08	4.70E+08
ctime3	1190	1.00E+13	1.92E+11	9.89E+12	1.01E+13	1.02E+13	9.58E+12	1.02E+13
ioi	1190	19.55	6.13	16	20	24	3	30
iscollector1	1190	0.03	0.18	0	0	0	0	1
iscollector10	1190	0.23	0.42	0	0	0	0	1
iscollector11	1190	0.17	0.37	0	0	0	0	1
iscollector12	1190	0.17	0.38	0	0	0	0	1

iscollector2	1190	0.09	0.28	0	0	0	0	1
iscollector3	1190	0.02	0.13	0	0	0	0	1
iscollector4	1190	0.09	0.28	0	0	0	0	1
iscollector5	1190	0.03	0.16	0	0	0	0	1
iscollector6	1190	0.07	0.26	0	0	0	0	1
iscollector7	1190	0.02	0.13	0	0	0	0	1
iscollector8	1190	0.08	0.28	0	0	0	0	1
iscollector9	1190	0.01	0.09	0	0	0	0	1
isethnicity1	406	0.02	0.13	0	0	0	0	1
isethnicity2	406	0.14	0.34	0	0	0	0	1
isethnicity3	406	0.1	0.3	0	0	0	0	1
isethnicity4	406	0.07	0.26	0	0	0	0	1
isethnicity5	406	0.65	0.48	0	1	1	0	1
isethnicity6	406	0.03	0.17	0	0	0	0	1
isfemale	1190	0.47	0.5	0	0	1	0	1
ishighered	1190	0.84	0.37	1	1	1	0	1
isindustry1	1190	0.02	0.13	0	0	0	0	1
isindustry10	1190	0.25	0.43	0	0	0	0	1
isindustry11	1190	0.09	0.29	0	0	0	0	1
isindustry12	1190	0.03	0.18	0	0	0	0	1
isindustry2	1190	0.12	0.33	0	0	0	0	1
isindustry3	1190	0.02	0.14	0	0	0	0	1
isindustry4	1190	0.08	0.26	0	0	0	0	1
isindustry5	1190	0.12	0.32	0	0	0	0	1
isindustry6	1190	0.18	0.38	0	0	0	0	1
isindustry7	1190	0.03	0.18	0	0	0	0	1
isindustry8	1190	0.05	0.22	0	0	0	0	1
isindustry9	1190	0.01	0.11	0	0	0	0	1
ismale	1190	0.46	0.5	0	0	1	0	1
ismanager	1190	0.37	0.48	0	0	1	0	1
isnotstem	381	0.65	0.48	0	1	1	0	1
isregion1	770	0.06	0.23	0	0	0	0	1
isregion2	770	0.13	0.34	0	0	0	0	1
isregion3	770	0.13	0.33	0	0	0	0	1

isregion4	770	0.07	0.26	0	0	0	0	1
isregion5	770	0.19	0.39	0	0	0	0	1
isregion6	770	0.06	0.24	0	0	0	0	1
isregion7	770	0.09	0.29	0	0	0	0	1
isregion8	770	0.07	0.26	0	0	0	0	1
isregion9	770	0.2	0.4	0	0	0	0	1
isreportedfemale	809	0.48	0.5	0	0	1	0	1
isreportedincomeprefernotdisclos	809	0.04	0.21	0	0	0	0	1
isreportedmale	809	0.5	0.5	0	1	1	0	1
isreportednonbinary	809	0.02	0.14	0	0	0	0	1
isstem	381	0.23	0.42	0	0	0	0	1
issurveymonkeyfemale	1190	0.36	0.48	0	0	1	0	1
issurveymonkeyincomeprefernotdis	1190	0.06	0.24	0	0	0	0	1
issurveymonkeymale	1190	0.29	0.45	0	0	1	0	1
issurveymonkeyunreportedgender	1190	0.35	0.48	0	0	1	0	1
isunemployed	1190	0.12	0.33	0	0	0	0	1
isunreportedgender	809	0	0	0	0	0	0	0
isunreportedstem	381	0	0	0	0	0	0	0
isunsurestem	381	0.12	0.32	0	0	0	0	1
nvoifai1	1049	5.95	2.53	4	6	8	1	10
nvoifai2	1049	41.79	30.03	16	36	64	1	100
nvoifai3	1049	322.39	313.02	64	216	512	1	1000
nvoifamerican1	381	5.94	2.63	4	6	8	1	10
nvoifamerican2	381	42.22	30.85	16	36	64	1	100
nvoifamerican3	381	329.63	318.86	64	216	512	1	1000
nvoifchristianity1	240	5.15	3.66	1	5	9	1	10
nvoifchristianity2	240	39.79	40.48	1	25	81	1	100
nvoifchristianity3	240	349.15	411.8	1	125	729	1	1000
nvoifconventionalsoon1	1190	6.13	2.6	4	6	8	1	10
nvoifconventionalsoon2	1190	44.26	31.17	16	36	64	1	100
nvoifconventionalsoon3	1190	349.73	328.68	64	216	512	1	1000
nvoifcrypto1	381	4.62	2.6	2	5	6	1	10

nvoifcrypto2	381	28.12	26.91	4	25	36	1	100
nvoifcrypto3	381	197.13	259.62	8	125	216	1	1000
nvoifonline1	1190	6.81	2.49	5	7	9	1	10
nvoifonline2	1190	52.55	31.45	25	49	81	1	100
nvoifonline3	1190	434.07	342.81	125	343	729	1	1000
nvoifregulation1	1049	6.23	2.5	5	6	8	1	10
nvoifregulation2	1049	45.03	29.92	25	36	64	1	100
nvoifregulation3	1049	352.99	314.41	125	216	512	1	1000
nvoifreligion1	240	5.09	3.4	1	5	8	1	10
nvoifreligion2	240	37.38	37.12	1	25	64	1	100
nvoifreligion3	240	312.66	373.82	1	125	512	1	1000
voi	1190	6.61	2.57	5	7	9	1	10

Appendix D – Table of Variable Strength

Variable	N	Factor Name	2018 Strength*	2019 Strength*	Preferred
ceduc1	406	Education	N	M	Y
ceduc2	406	Education	N	M	Y
ceduc3	406	Education	N	L	N
cprovider1	1190	Provider Recognition	W	M	Y
cprovider2	1190	Provider Recognition	M	M	Y
cprovider3	1190	Provider Recognition	W	W	N
crage1	809	Age	N	W	N
crage2	809	Age	N	W	N
crage3	809	Age	N	L	N
crea1	406	Age	N	L	N
crea2	406	Age	N	W	N
crea3	406	Age	N	W	N
crincome1	773	Income	N	L	N
crincome2	773	Income	N	W	N
crincome3	773	Income	N	L	N
csmage1	771	Age	M	M	Y
csmage2	771	Age	S	M	Y
csmage3	771	Age	M	M	Y
csmincome1	699	Income	S	W	Y
csmincome2	699	Income	M	M	Y
csmincome3	699	Income	L	M	Y
ctime1	1190	Time	M	L	Y
ctime2	1190	Time	L	L	Y
ctime3	1190	Time	L	M	Y
ioi	1190	VOI	VOI	VOI	VOI
iscollector1	1190	Collector	N	L	N
iscollector10	1190	Collector	N	L	N
iscollector11	1190	Collector	N	L	N
iscollector12	1190	Collector	N	L	N
iscollector2	1190	Collector	N	L	N
iscollector3	1190	Collector	N	L	N

iscollector4	1190	Collector	N	L	N
iscollector5	1190	Collector	N	L	N
iscollector6	1190	Collector	N	L	N
iscollector7	1190	Collector	N	L	N
iscollector8	1190	Collector	N	L	N
iscollector9	1190	Collector	N	L	N
isethnicity1	406	Ethnicity	N	L	N
isethnicity2	406	Ethnicity	N	L	N
isethnicity3	406	Ethnicity	N	L	N
isethnicity4	406	Ethnicity	N	M	Y
isethnicity5	406	Ethnicity	N	W	N
isethnicity6	406	Ethnicity	N	M	Y
isfemale	1190	Gender	L	W	N
ishighered	1190	Education	N	M	Y
isindustry1	1190	Industry	M	W	Y
isindustry10	1190	Industry	M	M	Y
isindustry11	1190	Industry	M	W	Y
isindustry12	1190	Industry	L	M	Y
isindustry2	1190	Industry	M	W	Y
isindustry3	1190	Industry	L	W	N
isindustry4	1190	Industry	M	W	Y
isindustry5	1190	Industry	M	W	Y
isindustry6	1190	Industry	M	W	Y
isindustry7	1190	Industry	L	M	Y
isindustry8	1190	Industry	L	W	N
isindustry9	1190	Industry	L	L	N
ismale	1190	Gender	L	S	N
ismanager	1190	Employment	L	M	Y
isnotstem	381	STEM	M	N	Y
isregion1	770	Region	L	L	N
isregion2	770	Region	S	M	Y
isregion3	770	Region	M	M	Y
isregion4	770	Region	L	M	Y
isregion5	770	Region	L	L	N

isregion6	770	Region	M	L	Y
isregion7	770	Region	S	L	Y
isregion8	770	Region	L	L	N
isregion9	770	Region	L	W	N
isreportedfemale	809	Gender	N	L	N
isreportedincomeprefernotdiscl os	809	Gender	N	L	N
isreportedmale	809	Gender	N	W	N
isreportednonbinary	809	Gender	N	L	N
isstem	381	STEM	M	N	Y
issurveymonkeyfemale	1190	Gender	S	L	Y
issurveymonkeyincomeprefernot dis	1190	Income	L	L	N
Issurveymonkeymale	1190	Gender	L	M	Y
issurveymonkeyunreportedgend er	1190	Income	L	L	N
isunemployed	1190	Employment	L	M	Y
isunreportedgender	809	Gender	N	L	N
isunreportedstem	381	STEM	L	N	N
isunsurestem	381	STEM	L	N	N
nvoifai1	1049	Artificial Intelligence	S	L	Y
nvoifai2	1049	Artificial Intelligence	S	L	Y
nvoifai3	1049	Artificial Intelligence	L	S	Y
nvoifamerican1	381	US Degree Centrism	L	N	N
nvoifamerican2	381	US Degree Centrism	S	N	Y
nvoifamerican3	381	US Degree Centrism	L	N	N
nvoifchristianity1	240	Christianity	W	N	N
nvoifchristianity2	240	Christianity	W	N	N
nvoifchristianity3	240	Christianity	W	N	N
nvoifconventionalsoon1	1190	Conventionalism	W	L	N
nvoifconventionalsoon2	1190	Conventionalism	W	S	Y
nvoifconventionalsoon3	1190	Conventionalism	S	S	Y
nvoifcrypto1	381	Cryptocurrency	L	N	N

nvoifcrypto2	381	Cryptocurrency	M	N	Y
nvoifcrypto3	381	Cryptocurrency	L	N	N
nvoifonline1	1190	Online Education	L	M	Y
nvoifonline2	1190	Online Education	S	S	Y
nvoifonline3	1190	Online Education	M	M	Y
nvoifregulation1	1049	Regulatory Policy	S	S	Y
nvoifregulation2	1049	Regulatory Policy	M	L	Y
nvoifregulation3	1049	Regulatory Policy	M	L	Y
nvoifreligion1	240	Religiousness	S	N	Y
nvoifreligion2	240	Religiousness	L	N	N
nvoifreligion3	240	Religiousness	L	N	N
voi	1190	VOI	VOI	VOI	VOI

*The letter represents the most significant model the factor survived into. N = Not present in this administration. VOI = included as a variable of interest, and not assessed for explanatory significance. L = Long Model, W = Weak Model, M = Adjuster R-squared Maximizing Model, or Medium Importance, and S = Strong Model. Preferred variables were M or S in exploration of at least one year.