The RELICT HOMINOID INQUIRY 6:17-32 (2017)

Research Article

PHYSICAL AND SOCIAL CHARACTERISTICS OF US STATES AS PREDICTORS OF REPORTS TO THE BIGFOOT FIELD RESEARCHERS ORGANIZATION (BFRO)

John T. Chibnall*

1806 St-Legier, Switzerland

ABSTRACT. The Bigfoot Field Researchers Organization (BFRO) has maintained a US state-level database of Bigfoot-related reports since 1995. BFRO reports are self-submitted by individuals in the community who have experienced a Bigfoot sighting or Bigfoot-related phenomena. The database allows a unique opportunity to examine associations of state-level physical and social characteristics with reporting volume. The current analysis used 19 geographic (e.g., forest cover), climate (clear days), infrastructure (road miles), social (e.g., political, educational, and religious variables), and demographic (e.g., race) variables to predict number of BFRO reports by state (48 contiguous states). A multiple linear regression analysis explained 61.3% of the variance in reporting volume ($R = .78$, $P < .001$) from two physical variables: square miles of forest and number of clear days (15.0% of the variance); and three social variables: social component score (percent voting Republican in the 2016 US presidential election, percent college educated, gun ownership), UFO reports, and religiosity (46.3% of the variance). The results indicate that the number of BFRO reports at the state level is explained substantially by social variables characterized by more conservative politics, lower education level, higher gun ownership, higher UFO reporting, and higher religiosity. The primacy of social variables in predicting BFRO reports, relative to physical characteristics of the state like amount of forest cover, are suggestive of a strong sociological component to Bigfoot-related experiences and reporting.

KEY WORDS: forest cover, climate, social variables, Bigfoot reporting

INTRODUCTION

Quantitative data on Bigfoot-related phenomena are difficult to obtain, secondary to issues of limited research funding for large-scale studies, sampling challenges (including the reluctance of people to make public reports of their experiences), and verifiability/reliability. The oldest and largest source of publicly-available Bigfoot-related information is the Bigfoot Field Researchers Organization (BFRO; www.bfro.net). The BFRO has maintained a database of Bigfoot-related reports from North America (US states and Canada) since 1995, although a small number of reports are included in the database that precede 1995. Reports are self-submitted by individuals in the community who have experienced a Bigfoot sighting or Bigfoot-related phenomena. Importantly, all BFRO submissions are investigated and vetted for credibility by BFRO staff and volunteers across North America; only those deemed sufficiently credible are included in the public-access database. Thus, the BFRO database offers the most comprehensive and credible aggregation of Bigfoot-related reports (more than 5,000 to date) available to the

*Correspondence to: John T. Chibnall, chibabbru@gmail.com

public.

Research on Bigfoot-related reporting is virtually non-existent. The BFRO database, however, offers a starting point for exploration of quantitative associations between US state-level BFRO reporting volume and conceptually-relevant physical and social characteristics of states obtained from other sources. This was the aim of the current investigation. The selection of social variables for inclusion in this analysis was roughly guided by research in the social sciences on belief systems and their expression through political, educational, and religious values/behaviors (e.g., Whittle, 2004; Homer-Dixon et al., 2013) and the availability of representative variables at the state level. Physical characteristics were represented by state-level geographic, climate, and infrastructure variables. Demographic variables for housing, race, and age were also included. The purpose of the analysis was to examine the relative contributions of physical, social, and demographic factors to explaining BFRO reporting volume. It was expected that physical characteristics of a state — like amount of forest cover — would be strong predictors, whereas no specific hypotheses were made with respect to social variables. Based on an analysis of Ohio BFRO reports (https://thefisheriesblog.com/2016/04/04/bigfoot-teaches-statistics/, 2016), mobile home housing, Caucasian race, and younger age were expected to be significant correlates.

DATA SOURCES AND DESCRIPTION OF VARIABLES

All variables were aggregated at the state level for the 48 contiguous US states. Alaska proved to be a significant statistical outlier in the analyses and was eliminated (e.g., when included, Alaska values for square miles of land, water, and forest were 5.8, 6.2, and 6.0 standard deviation units above the mean, respectively; by contrast, the next highest values among the remaining 48 states were 2.2, 2.4, and 1.3 standard deviation units above the mean). There were no data in the BFRO database for the District of Columbia or Hawaii. Bigfoot report data were obtained from the BFRO website (www.bfro.net, 2016) as of December 15, 2016.

Physical variables (n = 8) included square miles of land, square miles of water, percent of state that is land, and percent of state that is water (note that the water variables do not differentiate between salt vs. fresh water or between man-made vs. natural water resources) (http://water.usgs.gov/edu/wetstates.html, 2010); square miles of forest and percent of land that is forest (http://www.srs.fs.usda.gov/pubs/gtr/gtr_wo091.pdf, 2014); number of clear days per year (average number of days annually when cloud covers at most 30 percent of the sky during daylight hours) (https://www.currentresults.com/Weather/US/average-annual-state-sunshine.php, 2015); and road miles (http://blog.cubitplanning.com/2010/02/road-miles-by-state/, 2014).

Social variables (n = 9) included percent voting Republican in the November 2016 US presidential election (http://www.nytimes.com/elections/results/president, 2016); percent gun owners (http://www.businessinsider.com/gun-ownership-by-state-2015-7?IR=T, 2015); percent bachelor's degree and percent graduate degree (https://en.wikipedia.org/wiki/List_of_U.S._states_by_educational_attainment, 2009); intelligence quotient (IQ) (http://brandongaille.com/list-average-iq-by-country-and-american-states/, 2013); "smart" index (combination of IQ, SAT/ACT scores, and percent college graduates; index score is [state value] – [national median]) (https://www.washingtonpost.com/news/the-fix/wp/2015/11/13/actually-mr-trump-iowa-is-one-of-the-smartest-states-in-the-union/?utm_term=.19adbe3a8e51, 2015); religiosity (percent of population that is "highly religious": Any adult who reports at least two of four highly observant behaviors — attending religious

services at least weekly, praying at least daily, believing in God with absolute certainty, and saying that religion is very important to them — while not reporting a low level of religious observance in any of these areas) (http://www.pewresearch.org/fact-tank/2016/02/29/how-religious-is-your-state/?state=alabama, 2014); creationism in schools (0 = no, 1 = yes) (state law permits creationist instruction in public schools and/or private schools teach creationism and accept tax-funded vouchers/scholarships and/or Responsive Education Solutions charter schools use creationist curricula) (http://www.slate.com/articles/health_and_science/science/2014/01/creationism_in_public_schools_mapped_where_tax_money_supports_alternatives.html, 2014); and UFO reports per million population (National UFO Reporting Center) (http://metrocosm.com/map-of-ufo-sightings/, 2015). It is important to remember that these social variables represent characteristics of the state population, and not BFRO reporters themselves.

Demographic variables (n = 3) were percent of housing units that are mobile homes (http://www.statemaster.com/graph/hou_per_of_hou_uni_tha_are_mob_hom-housing-percent-units-mobile-homes, 2004); percent of population that is Caucasian (http://www.indexmundi.com/facts/united-states/quick-facts/all-states/white-population-percentage#map, 2013); and percent of population that is 19-34 years of age (http://kff.org/other/state-indicator/distribution-by-age/?currentTimeframe=0, 2015). These variables were included based on an existing analysis of BFRO reports in Ohio (website referenced above). Again, these variables are at the state level, not at the level of individual BFRO reporters.

STATISTICAL ANALYSIS

Analyses were done using IBM SPSS Statistics (version 24.0, 2016). Central tendency and dispersion of variables were characterized by mean, standard deviation (SD), median, and semi-interquartile range (SIR: one-half of the distance between values representing the third and first quartiles of the distribution). Number of BFRO reports was standardized to reports per 100,000 population; this precluded the need to adjust report volume for state population in multivariate statistical analyses. Variables that exhibited significant non-normality (skewness ≥ 1) were transformed for analysis using either a square root transformation or a base 10 logarithm transformation. These transformations effectively reduce significant positive skewness in a distribution, which is important when estimating linear associations with correlation coefficients and regression coefficients using parametric statistical methods. The variables "percent of state that is land" and "percent of state that is water" summed to 100%; thus, both variables were not necessary for analysis. "Percent of state that is water" was used in analyses because of its superior distributional qualities relative to "percent of state that is land."

Prior to the main statistical analyses, principal components analysis (PCA) was used in an attempt to reduce the number of predictor variables for multivariate analysis. This method has the additional benefit of averting potential multicollinearity in multiple regression analyses (see below) by combining highly correlated variables into composites. Physical variables (n = 7; "percent of state that is land" was excluded, as noted above), social variables (n = 8; the dichotomous creationism variable was excluded from PCA analysis only), and demographic variables (n = 3) were analyzed separately. Only transformed versions of applicable variables were used in the PCAs. Applicability of PCA to the correlation matrix was evaluated by the Kaiser-Meyer-Olin (KMO) statistic. KMO is an indicator of the suitability of the data for PCA; it is a test of sampling adequacy of each variable and the

final model. KMO values of 0.70-0.80 are acceptable. Given an adequate KMO, eigenvalue magnitude and percentage of variance explained were evaluated to determine the number of components to extract. Extracted components were rotated using the Varimax method and the magnitude of variable loadings was evaluated (the criterion was loading ≥ 0.40). Iterations of PCA were used after elimination of non-loading or low loading variables. Component (summary) scores were calculated from the final component matrix using the regression method. Essentially, this method standardizes the component variables, weights them by the component loadings, and combines them to produce a component score for each case, where the score distribution has a mean of 0 and a SD of 1.

Pearson correlation and multiple linear regression were the primary statistical analyses. For all parameters, $P < .05$ was the criterion for statistical significance. Correlations were first estimated between all study variables (including component scores) and transformed BFRO reports per 100,000 population. With N = 48, an alpha error probability of .05, and a two-tailed test, statistical power was adequate (80%) for $r \geq .39$ (by effect size convention, a medium effect; Cohen, 1992). Multiple linear regression was then used for multivariate analysis. A forward selection criterion was employed to select variables for inclusion in the equation based on statistical significance. Only transformed versions of applicable variables were used in this analysis. Variables that were represented in PCA-derived component scores were not considered individually; otherwise, all variables were eligible for inclusion in the regression equation. Unstandardized regression coefficients (B) with 95% confidence intervals (CI), standardized regression coefficients (β), and changes in R^2 were calculated. Variance inflation factors (VIFs) were examined for evidence of multicollinearity. With N = 48 and an alpha error probability of .05, statistical power was adequate (80%) for detecting single predictor changes in $R^2 \geq .148$ (a medium effect).

RESULTS

Table 1 displays descriptive information for BFRO reporting by state. The states with the most BFRO reports (> 4/100,000 people) were Washington, Oregon, West Virginia, Wyoming, Montana, and Idaho. States with the fewest BFRO reports (< 0.55/100,000 people) were Delaware, New York, Rhode Island, Massachusetts, Connecticut, and Nevada. Descriptive results for BFRO report variables are presented in Table 2. Number of BFRO reports by state had a mean (SD) of 103.35 (118.34); values for reports per 100,000 population were 1.85 (1.63). This variable was transformed prior to statistical analysis. Table 3 displays descriptive results for the remaining study variables. Transformations were required for square miles of land, square miles of water, percent of state that is water, road miles, and UFO reports/million population.

PCAs of the physical variables and demographic variables were inadequate. KMO values were below 0.50 and components were small with multiple cross-loadings. As a result, no component scores were created for physical or demographic variables. In the PCA of the social variables, creationism in schools was not included because it is a dichotomous, non-continuous variable. Initial PCA indicated that UFO reports and religiosity did not load uniquely on common components and were therefore removed from further PCA consideration. The remaining social variables yielded a KMO of 0.78 and produced two robust components that together explained 86.48% of the variance in the correlation matrix (see Table 4). Component 1 was composed of percent voting Republican, gun

owners, bachelor's degree, and graduate degree. This component explained 51.93% of the variance and loadings ranged from |0.79|-|0.93|. Component 2 was composed of IQ and the smart index. It explained 34.55% of the variance and loadings were 0.96 and 0.91, respectively. Component scores were calculated and labeled "social" for component 1 and "intelligence" for component 2.

Table 5 presents univariate correlations between study variables and transformed BFRO reports per 100,000 population. Significant correlations indicated a higher volume of BFRO reports associated with larger states (r = .38, P = .008), states with a lower percent of water (r = -.39, P = .006), and states with more square miles of forest (r = .37, P = .009). Among the social variables, more BFRO reports were associated with a higher percent of Republican votes in the November presidential election (r = .35, P = .016), more gun ownership (r = .52, P < .001), and fewer bachelor's degrees (r = -.35, P = .015) and graduate degrees (r = -.42, P = .003). The social component score representing these four variables also correlated significantly with reports (r = .49, P < .001). Other significant correlates included UFO reports/million population (r = .38, P = .008), percent of housing units that are mobile homes (r = .38, P = .007), and percent of the population that is Caucasian (r = .39, P = .007).

As presented in Table 6, five variables were significant predictors of BFRO reports in multivariate analysis: Social component score, UFO reports, square miles of forest, clear days, and religiosity. Together, these variables explained 61.3% of the variance in BFRO reports (R = .78): F(5,42) = 13.3, P < .001. The physical variables — square miles of forest and clear days — explained 15.0% of the variance, while the social variables — social component score, UFO reports, and religiosity — explained 46.3% of the variance. It is notable that clear days and religiosity were significant adjusted predictors of BFRO reports; their univariate correlations were not significant. All VIFs were < 3 and VIF was < 2 for four of the five predictors. A second multiple linear regression analysis was conducted with only social variables considered for inclusion. This analysis was in deference to the fact that there is often large variability on physical variables within states, including localized factors like forest cover that are conducive to Bigfoot-related experiences. Three social variables were significant predictors of BFRO reports in this analysis: Social component score (final B = 0.116, 95% CI = 0.025 – 0.207; final $\beta = 0.35$, P = .014; R^2 change = .237, P < .001), UFO reports (final B = 1.247, 95% CI = 0.671 – 1.822; final $\beta = 0.63$, P < .001; R^2 change = .178, P = .001), and religiosity (final B = 1.141, 95% CI = 0.097 – 2.184; final $\beta = 0.37$, P = .033; R^2 change = .058, P = .033). These variables explained 47.4% of the variance in BFRO reports (R = .69): F(3,44) = 13.2, P < .001.

DISCUSSION AND CONCLUSIONS

The results of this analysis indicate that the state-level volume of BFRO reports in the lower 48 states of the US can be strongly predicted from a small number of physical and social variables. That BFRO reporting is highest in more heavily forested and gloomy states is a reasonable assumption that the current data bear out, although the strength of the association of these variables with BFRO reporting was perhaps surprisingly low. Moreover, in multivariate analysis other physical features of a state did not predict BFRO reports, including the absolute and relative size of a state with respect to its land and water mass or in its number of road miles. Further, demographic characteristics — including mobile home density and race and age variables — were not significant multivariate predictors. Instead, social factors were the primary predictors, including conservative voting behavior, higher gun ownership, less

college education, more UFO reports, and greater religiosity. These variables predicted BFRO reports uniquely, with statistical adjustment for forest cover and clear days.

This pattern of prediction suggests that experiencing a Bigfoot-related phenomenon and reporting it to BFRO has a strong sociological component. It is important to consider that "intelligence" was not a factor in predicting reports. In fact, indicators of "intelligence" had almost no association with BFRO report volume. This further supports the primacy of a social construct in Bigfoot-related experiences and reporting, characterized by more traditional/conservative political, religious (Draper and Baker, 2011), and educational beliefs. The fact that UFO reports predicted BFRO reports may also suggest a tendency to interpret ambiguous experiences (e.g., shadows in the forest, lights in the sky) within a preternatural or suspicious context (c.f., Sharps, Matthews, and Asten, 2006; Hergovich, Schott, and Arendasy, 2008; Sharps et al., 2010; Miller, Saunders, and Farhart, 2016) and to report those experiences to an authority. Moreover, belief systems related to oneself and one's experiences vary considerably among people along a continuum of faith/spirituality to evidence/materialism, tendencies that appear to be in direct "tension" with each other, including at the level of brain structures (Jack, Friedman, Boyatzis, and Taylor, 2016). That human beings are "explanation seekers" is solidly grounded in research in the social sciences and neurosciences (Keil, 2006). The current analysis suggests that the interpretation and reporting of Bigfoot-related phenomena may be linked to social factors that are themselves an expression of a particular explanatory belief system (Naish, 2016).

LIMITATIONS

The present analysis must be interpreted in light of its limitations. First, it is important to note that only 19 variables were considered in this analysis. It would require little effort to create a list of other variables, both physical and social, that have the potential to explain variance in BFRO reporting. In a related vein, the selection of variables for this analysis, while conceptually grounded, may reflect the author's bias. The multivariate statistical method employed here must also be considered in relation to the results obtained. In regression analysis, a forward selection method includes variables in the equation based on statistical significance. For example, if two potential predictor variables have P-values of .0010 and .0011, the former variable will be entered into the equation first; further, if these two variables are significantly correlated, the second variable may not ever get into the equation once the first is included. Alternative methods include hierarchical forced entry of predictors based on theoretical models of hypothesized relationships. It is possible for different methods to produce somewhat different results. Nevertheless, when alternative methods were used with the present data (results not shown), the fundamental message of the results — that social factors are important predictors of BFRO reporting volume — did not change. The static nature of the predictor variables is also a potential limitation. The BFRO registry has existed since 1995, and includes reports of events that occurred prior to 1995. The predictor variables, on the other hand, were based on the most recent available sources, which ignores the fact that characteristics of states may change over time (although how dramatically with respect to the time course for this analysis is difficult to ascertain). Equally relevant, the degree to which BFRO reporters reflect the social characteristics measured here at the state level is unknown and would be impossible to determine from the BFRO database. Importantly, individuals self-select to report their experiences to BFRO; thus, these are people who had a

Bigfoot-related experience, who knew about BFRO, and who chose to file a report. Whether this group generalizes to all people who have had Bigfoot-related experiences is impossible to determine, but it is likely that the BFRO sample has unique qualities. Moreover, although BFRO investigates and vets reports, the credibility of reports is no doubt variable; attempting to reliably rate credibility in order to discard the more spurious reports was beyond the scope of the current analysis. On the other hand, the present work was motivated by the fact that BFRO receives reports from every US state in North America, a statistic that perhaps strains credibility and enhances the importance of social factors as predictors of reporting. The sample size of N = 48 limited statistical power to effect sizes of a medium magnitude or greater; smaller (but potentially important) effects, therefore, had a probability of being statistically non-significant that did not meet the conventional target for power (80%). Lastly, the unit of analysis here was the state; thus, the study had no ability to examine data or perform analyses on individual-level characteristics of reporters, a rich and important source of psychological and behavioral information (Sharps, Matthews, and Asten, 2006; Hergovich, Schott, and Arendasy, 2008; Sharps et al., 2010; Draper and Baker, 2011). The coarseness of a state-level analysis is also reflected in the fact that it cannot capture complex within-state variability on physical, social, and demographic variables.

LITERATURE CITED

Cohen J (1992) A power primer. *Psychological Bulletin* 112:155-159.

Draper S and Baker JO (2011) Angelic belief as American folk religion. *Sociological Forum* 26:623-643.

Hergovich A, Schott R, and Arendasy M (2008) On the relationship between paranormal belief and schizotypy among adolescents. *Personality and Individual Differences* 45:119-125.

Homer-Dixon T, Maynard JL, Mildenberger M, Milkoreit M, Mock SJ, Quilley S, Schröder T, and Thagard P (2013) A complex systems approach to the study of ideology: cognitive-affective structures and the dynamics of belief systems. *Journal of Social and Political Psychology* 1:337-363.

Jack AI, Friedman JP, Boyatzis RE, and Taylor SN (2016) Why do you believe in God? Relationships between religious belief, analytic thinking, mentalizing and moral concern. *PLoS ONE* 11(3): e0149989. doi:10.1371/journal.pone.0149989.

Keil FC (2006) Explanation and understanding. *Annual Review of Psychology* 57:227-254.

Miller JM, Saunders KL, and Farhart CE (2016) Conspiracy endorsement as motivated reasoning: the moderating roles of political knowledge and trust. *American Journal of Political Science* 60:824-844.

Naish D (2016) *Hunting Monsters: Cryptozoology and the Reality Behind the Myths*. London: Arcturus.

Sharps MJ, Matthews J, and Asten J (2006) Cognition and belief in paranormal phenomena: gestalt/feature-intensive processing theory and tendencies toward ADHD, depression, and dissociation. *Journal of Psychology* 140:579-590.

Sharps MJ, Newborg E, Van Arsdall S, DeRuiter J, Hayward B, and Alcantar B (2010) Paranormal encounters as eyewitness phenomena: psychological determinants of atypical perceptual interpretations. *Current Psychology* 29:320-327.

Whittle CH (2004) Development of beliefs in paranormal and supernatural phenomena. *Skeptical Inquirer* 28(2):43-45, 55.

John T. Chibnall is Adjunct Professor in the Departments of Psychiatry & Behavioral Neuroscience and Psychology at Saint Louis University. On the faculty of Saint Louis University for over 20 years, he was a tenured Professor prior to moving to Switzerland in 2016. He received his PhD in Applied Psychology, with an emphasis in Health Psychology, from Saint Louis University (1994). As a research psychologist, Chibnall's work focuses primarily on the social psychology of illness, particularly chronic pain. His other interests include ethics in research and medicine; medical student health and wellness; personnel selection in law enforcement; and the intersection of medicine, science, and spirituality. He also collaborates as a data analyst on a variety of clinical medicine research projects. He has co-authored more than 175 scientific papers in the psychology and medicine literatures. He has a long-standing interest in the psychology of belief and the interpretation of unusual phenomena, including Bigfoot-related experiences.

Table 1. BFRO Reports by State

States	BFRO Reports	BFRO Reports per 100K Population
Washington	622	8.55
Oregon	243	5.95
West Virginia	98	5.33
Wyoming	28	4.76
Montana	45	4.32
Idaho	69	4.12
Arkansas	93	3.11
Kentucky	107	2.41
Oklahoma	92	2.33
Utah	70	2.30
Ohio	267	2.30
Colorado	121	2.18
Missouri	132	2.16
Illinois	276	2.15
Iowa	67	2.13
Michigan	209	2.10
New Mexico	42	2.01
Alabama	98	2.01
South Dakota	17	1.97
Wisconsin	93	1.61
Florida	309	1.50
Tennessee	97	1.46
Kansas	41	1.40
Minnesota	71	1.29
Georgia	128	1.24

Arizona	83	1.20
Indiana	78	1.17
Vermont	7	1.12
California	433	1.10
South Carolina	52	1.05
Maine	13	0.98
New Hampshire	13	0.97
North Carolina	96	0.95
Virginia	77	0.91
Pennsylvania	114	0.89
Louisiana	41	0.87
Texas	218	0.78
North Dakota	6	0.77
Mississippi	22	0.74
Nebraska	14	0.73
New Jersey	61	0.68
Maryland	35	0.58
Delaware	5	0.52
New York	103	0.52
Rhode Island	5	0.47
Massachusetts	31	0.45
Connecticut	11	0.31
Nevada	8	0.27

Abbreviations: BFRO, Bigfoot Field Researchers Organization; K, thousand.

Table 2. Descriptive Results for BFRO Report Variables

Variables	Mean	SD	Skewness	Median	SIR
BFRO reports	103.35	118.34	2.52	74.00	41.75
Reports/100K population	1.85	1.63	2.20	1.26	0.68
Transformed[1]	0.14	0.33	0.19	0.10	0.22

Abbreviations: BFRO, Bigfoot Field Researchers Organization; SD, standard deviation; SIR, semi-interquartile range; K, thousand.
[1]Base 10 transformation.

Table 3. Descriptive Results for State Variables

Variables	Mean	SD	Skew	Median	SIR
Square miles of land	61557.96	46760.64	1.85	53891.50	22242.50
Transformed[1]	229.84	94.43	0.13	232.14	46.68
Square miles of water	3449.63	6177.37	4.77	1431.00	1587.50
Transformed[2]	3.21	0.50	0.49	3.15	0.39
Percent of state that is water	0.07	0.09	1.89	0.03	0.05
Transformed[2]	-1.44	0.57	-0.04	-1.49	0.46
Square miles of forest	20700.26	14448.76	0.52	21142.18	11142.58
Percent of land that is forest	0.42	0.23	-0.01	0.45	0.18
Clear days	104.42	27.65	0.82	101.00	13.62
Road miles	179403.56	114373.26	1.68	169341.50	76386.37
Transformed[1]	401.82	135.37	0.08	411.51	96.90
Percent voting Republican	0.50	0.10	-0.01	0.48	0.08
Percent gun owners	0.32	0.13	0.03	0.32	0.09
Percent bachelor’s degree	0.27	0.05	0.37	0.26	0.03
Percent graduate degree	0.10	0.03	0.97	0.09	0.02
IQ	100.47	2.67	-0.61	101.05	2.16
Smart index	3.61	16.57	-0.07	6.05	15.45
Religiosity	0.55	0.11	-0.01	0.54	0.07
Creationism in schools	0.27	0.45	n/a	n/a	n/a
UFO reports/million	16.92	7.27	1.33	14.00	3.00

Transformed[2]	1.19	0.17	0.51	1.15	0.08
Percent housing mobile homes	0.08	0.05	0.29	0.08	0.04
Percent Caucasian	0.81	0.09	-0.59	0.83	0.07
Percent 19-34 years of age	0.21	0.02	0.58	0.21	0.01

Abbreviations: SD, standard deviation; SIR, semi-interquartile range.
[1]Square root transformation.
[2]Base 10 transformation.

Table 4. PCA of Selected Social Variables

PCA Variables	Component 1 Loadings (51.93% of Variance)	Component 2 Loadings (34.55% of variance)
Percent voting Republican	0.93	—
Percent gun owners	0.79	—
Percent bachelor's degree	-0.84	—
Percent graduate degree	-0.90	—
IQ	—	0.96
Smart index	—	0.91

Abbreviations: PCA, principal components analysis.

Table 5. Pearson Correlations of State Variables with Transformed Number of BFRO Reports per 100,000 Population

Variables	r	P[1]
Square miles of land	.24	.094
Transformed	.38	.008
Square miles of water	.04	.795
Transformed	-.03	.850
Percent of state that is water	-.37	.010
Transformed	-.39	.006
Square miles of forest	.37	.009
Percent of land that is forest	-.06	.702
Clear days	-.16	.280
Road miles	.11	.468
Transformed	.20	.171
Social component score	.49	.000
Percent voting Republican	.35	.016
Percent gun owners	.52	.000
Percent bachelor's degree	-.35	.015
Percent graduate degree	-.42	.003
Intelligence component score	.08	.603
IQ	.04	.773
Smart index	-.09	.543

Religiosity	.18	.229
Creationism in schools	.11	.474
UFO reports/million	.39	.006
Transformed	.38	.008
Percent housing mobile homes	.38	.007
Percent Caucasian	.39	.007
Percent 19-34 years of age	-.22	.141

[1]All P-values are exact, except .000 which indicates P < .001.

Table 6. Multiple Linear Regression Analysis to Predict Transformed Number of BFRO Reports per 100,000 Population

Predictor Variables	Final B	B 95% CI	Final β (P)[1]	R^2 Δ (P)[1]
Social component score	0.115	0.035 – 0.195	0.35 (.006)	.237 (.000)
Transformed UFO reports	1.219	0.701 – 1.736	0.62 (.000)	.178 (.001)
Square miles of forest	6.581E-6	1.933E-6 – 11.229E-6	0.29 (.007)	.103 (.004)
Clear days	-0.003	-0.006 – -0.001	-0.27 (.009)	.047 (.037)
Religiosity	1.101	0.125 – 2.077	0.36 (.028)	.048 (.028)

Abbreviations: BFRO, Bigfoot Field Researchers Organization; B, unstandardized regression coefficient; CI, confidence interval; β, standardized regression coefficient; Δ, change.
[1]All P-values are exact, except .000 which indicates P < .001.