

# **Paleo Then and Now: A Five-Year follow-up Survey of the Ancestral Health Community**

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## **Abstract**

The Ancestral Health (or Paleo) movement is a collection of people who apply an evolutionary perspective to improve their health through lifestyle changes (e.g., diet, physical activity, sleep). In 2013, a survey of this population revealed that its participants did not align with media stereotypes; in contrast, survey participants were predominantly white, female, and middle aged. Since diet and health trends change over time, the goal of this survey study was to collect data on the members of the movement and compare the survey responses from five years earlier. In addition, we surveyed people who have left the movement to determine why they left and if they follow a particular diet now. Broadly, we hypothesized that participant demographics would remain the same while lifestyle characteristics (i.e., how they participate in the movement) would change. The survey was distributed online through various platforms (social media, blog posts, and mailing lists). A total of 1506 (54% female) participants completed the survey and a majority (75%) were still a member of the movement. Overall, numerous participant responses differed from the 2013 survey (18 questions;  $p < 0.05$  for all). One of the main changes between survey years was a general aging of the participants as demonstrated by an increase in participant age, income, and education level. This suggests that the movement is not capturing new and/or younger individuals. Further, the main reason participants left the paleo movement was a change to a new specific diet (16%; two most reported diets: low-carbohydrate and ketogenic diet), although 39% of participants who left do not currently follow any particular diet. We conclude by hypothesizing reasons for the changes and potential implications for the future of the movement.

## **Key Words**

Ancestral Health Movement, Paleo Diet, Fad, Lifestyle Medicine

## **Introduction**

The 2002 book, *The Paleo Diet*, is credited as starting the contemporary ‘paleo’ or ‘ancestral health’ movement [1]. The paleo diet, and lifestyle pattern (e.g., physical activity and sleep) that quickly followed, is produced by viewing modern health from an evolutionary perspective [2]. Clinical research has demonstrated beneficial effects of following a paleo diet [3,4]. Meanwhile, the paleo diet has since been labeled as a fad diet [5,6] and is surrounded by controversy [7–9]. Numerous concerns of the paleo diet have been presented: minimal clinical support, negative side effects, low calcium intake, and cost [6]. In addition, the often associated exercise program, CrossFit, has been found to be comparable to other workout programs [10]. Moreover, the ability the ability of this movement to go mainstream has been called into question, suggesting that this movement, as a whole, is simply a passing fad [11].

In 2013, the first survey of the ancestral health community revealed information about the population and addressed common stereotypes of the movement [12]. Certain stereotypes about the paleo movement dominated the media and the public’s imagination at the time. Followers of a paleo or ancestral lifestyle were often thought to be rather vain “modern cavemen”: athletic, single, meat-eating, young, white, and male [12]. Despite these common stereotypes, the survey suggests that the majority of participants were actually: white, female, middle aged (mean 38 years old), in a committed relationship, highly educated, relatively affluent, and motivated by weight loss and health concerns. Thus, while a few of the common preconceptions may have held up, others did not [12].

Since then, more research has been conducted on the various aspects of the ancestral health movement. That, plus the continued presence of other popular diets fad diets [5], suggest it is possible that the ancestral health community has changed. Thus, a follow up survey of the ancestral health community was warranted. By comparing the 2018 survey results to the 2013 data, the goal of this survey is to determine if, and how, the ancestral health movement has changed over the past five years. Specifically, we try to demonstrate who currently chooses to adopt an ancestral health lifestyle, how and to what degree they follow the lifestyle, and the obstacles they face while maintaining this lifestyle. In addition, data were collected on why some left the paleo movement and what kind of dietary approaches they now follow. Generally, we hypothesized that the basic demographic characteristics (e.g., age, gender, race, education) between the two data sets would remain the same while lifestyle characteristics (i.e., how they participate in the movement, adherence, motivation) would change.

## **Methodology**

### *Study Design*

A cross-sectional survey was distributed using a self-administered online questionnaire [13]. While distribution was directed at our target audience, any individual (except for those under the age of 18) who came upon the survey link could complete the questionnaire. Inclusion criteria included: access to the survey, being 18 years or older, and agreeing to informed consent. The study population consisted of adults who identified themselves one of two ways: currently following a paleo diet or no longer following a paleo diet. Most of the survey instrument was

duplicated from a 2013 survey on the same topic [12]. The responses for identical questions between the current survey and the 2013 survey were compared to determine difference between survey populations. Additional questions were added to capture information from participants who no longer follow a paleo lifestyle. Survey questions were used to collect information about: demographics, lifestyle choices (food, exercise, and sleep), attitude toward evolution, perceived health outcomes and diet/lifestyle change motivation, obstacles, and duration. The survey was managed through the internet-based management system (qualtrics.com). See Supplemental Text 1 for survey for details and questions.

### *Survey Distribution*

Survey distribution was modelled after the 2013 survey [12] to minimize difference in the population who had access to the survey. In particular, social media platforms (Instagram, Facebook, Twitter, and Reddit) were used for distribution of the survey link. Prominent influencers and organizations in the ancestral health and paleo community were contacted (n=26) and requested to assist with survey promotion via social media or email lists. Specifically, the leading paleo organization, the Ancestral Health Society (ancestralhealth.org), also promoted the survey. Survey distribution began October 23<sup>rd</sup>, 2018 and ended November 4<sup>th</sup>, 2018 (13 days). No incentive was included for participation.

### *Participants*

A total of 1,506 participants consented to the study. Only 1,463 answered the first question which identified their current relationship with the paleo diet (currently follow the paleo diet: n=1,133; no longer follow the paleo diet: n=251; never followed the paleo diet: n=79). A response rate was unattainable due to distribution methods, as it is impossible to know how many received the survey. The average duration for those who completed the survey was 18.16 minutes. For those who consented and started the survey, the completion rate was 93.38% for all participants. The dropout rate, those who did not submit the last survey question, was 9%. Data from our 2013 survey [12] was used as a comparison group to determine difference in the ancestral health community over five years.

### *Use of Human Subjects*

This survey was exempt from the Institution Review Board approval from the State University of New York, New Paltz, Human Research Ethics Board. Participant confidentiality was ensured since no identifying information was collected.

### *Statistical Analysis*

A chi-square test was used to test categorical variables between the 2018 and 2013 survey data. An unpaired t-test was used to compare numerical data between the 2018 and 2013 survey data. If the numerical data failed normality, a Mann-Whitney Rank Sum Test was used. Alpha was set to 0.05 for all tests. Statistical tests were applied using *SigmaStat 10.0 (Systat Software, San Jose, CA)*.

## **Results**

### *General Survey Statistics and Demographics*

A total of 1,508 participants from 55 countries consented to the study. Demographic data that differed from the prior 2013 survey year are presented in Figure 1. Non-significant or non-comparable data are presented in Supplemental Table 1. The median age increased 5 years (36 to 41 years of age; t-test:  $p < 0.001$ ) between the two survey years. Overall, the total number of participants who have children or are married/with a partner have both increased (33% to 51%, 1.55-fold change and 57% to 74%, 1.29-fold change, respectively). Further, the proportion of participants without children had decreased (67% to 47%, 0.73-fold change). The largest change in the reported education level was an increase in the proportion of participants with a master's degree (22% to 25%, 1.14-fold change). The proportion of participants who reported an income greater than \$100,000 increased between survey years (41% to 50%, 1.22-fold change). Participants were from the same top four countries and the same top five US states as the 2013 survey.

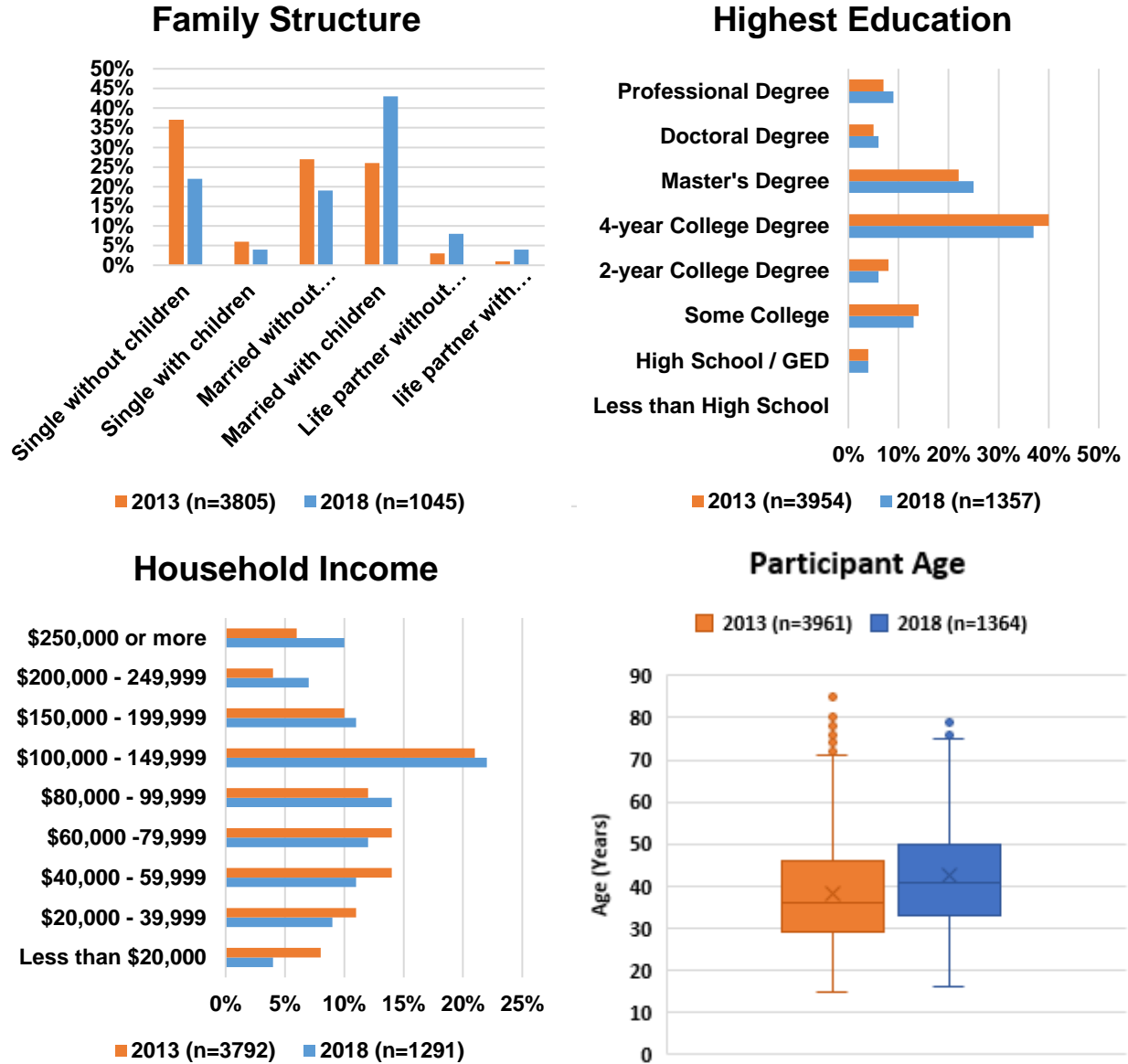


Figure 1: Significantly Different Demographic Information between Survey Years: Family Structure ( $p < 0.001$ ), Highest Education ( $p < 0.001$ ), Household Income ( $p < 0.001$ ), and Participant Age ( $p < 0.001$ ). Average age by gender did not differ between male (42.10 years) and female (42.87 years;  $p = 0.140$ ).

*Diet, Exercise, and Sleep*

Data on participant lifestyle choices that differed from the prior 2013 survey year are presented in Figure 2. Non-significant or non-comparable data are presented in Supplemental Table 2. Only 38% (n=412) of participants reported that they avoid all three food groups (Grains, Legumes, and Dairy). Whereas only 22% reported avoiding all the three food groups and alcohol. The majority (88%) of participants reported taking at least one supplement and the two largest changes between survey years was an increase in reported magnesium consumption (49% to 69%, 1.41-fold change) and a decrease in fish oil consumption (65% to 52%, 0.80-fold change). Overall, the proportion of participants who partake in strength training decreased (81% to 78%, 0.96-fold change) whereas the proportion of participants who partake in aerobic training increased (73% to 77%, 1.05-fold change). The overall proportion of participants who participate in CrossFit decreased (16% to 11%, 0.69-fold change) between survey years.

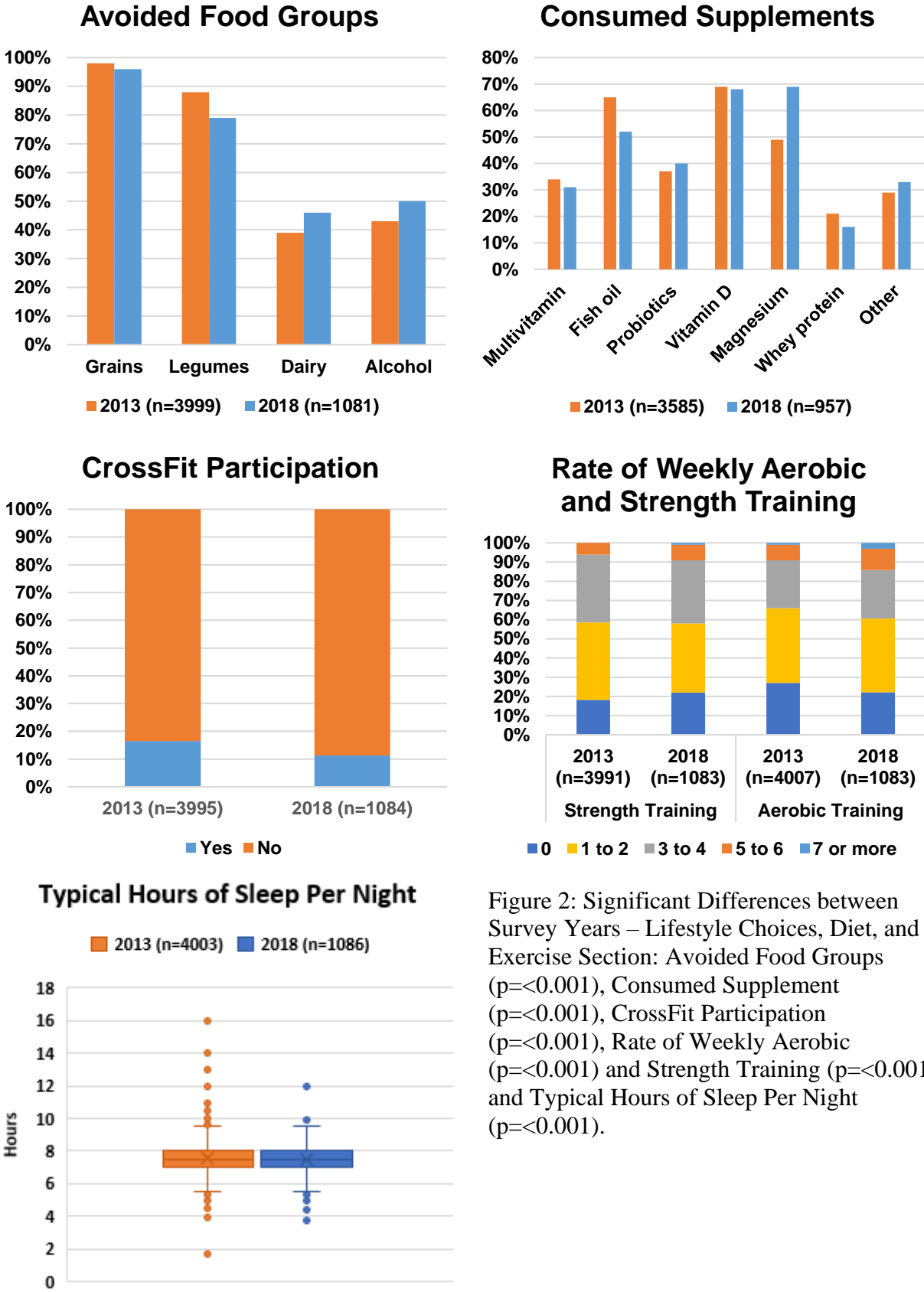


Figure 2: Significant Differences between Survey Years – Lifestyle Choices, Diet, and Exercise Section: Avoided Food Groups ( $p < 0.001$ ), Consumed Supplement ( $p < 0.001$ ), CrossFit Participation ( $p < 0.001$ ), Rate of Weekly Aerobic ( $p < 0.001$ ) and Strength Training ( $p < 0.001$ ), and Typical Hours of Sleep Per Night ( $p < 0.001$ ).



*Motivation, Obstacles, and Duration*

Data on participants' motivation, obstacles, and duration that differed from the prior 2013 survey year are presented in Figure 3. Non-significant or non-comparable data are presented in Supplemental Table 3. The two biggest changes in the reasoning for going paleo were an increase in recovery from illness (21% to 25%, 1.19-fold change) and a decrease in weight loss (31% to 28%, 0.90-fold change). The mean reported difficulty of maintain a paleo lifestyle (1-Very Difficult, 7- Very Easy) was significantly lower (2013 mean: 4.997 (SD: 1.429), 2018 mean: 5.163 (SD: 1.443), T-test:  $p < 0.001$ ) for the 2018 participants. The two biggest changes in the main obstacle of following a paleo diet were an increase in "giving up favorite non-paleo food" (21% to 24%, 1.14-fold change) and decrease in "too expensive" (13% to 10%, 0.77-fold change). Of those who chose "other" (n=283), 29% reported that they have no obstacles.

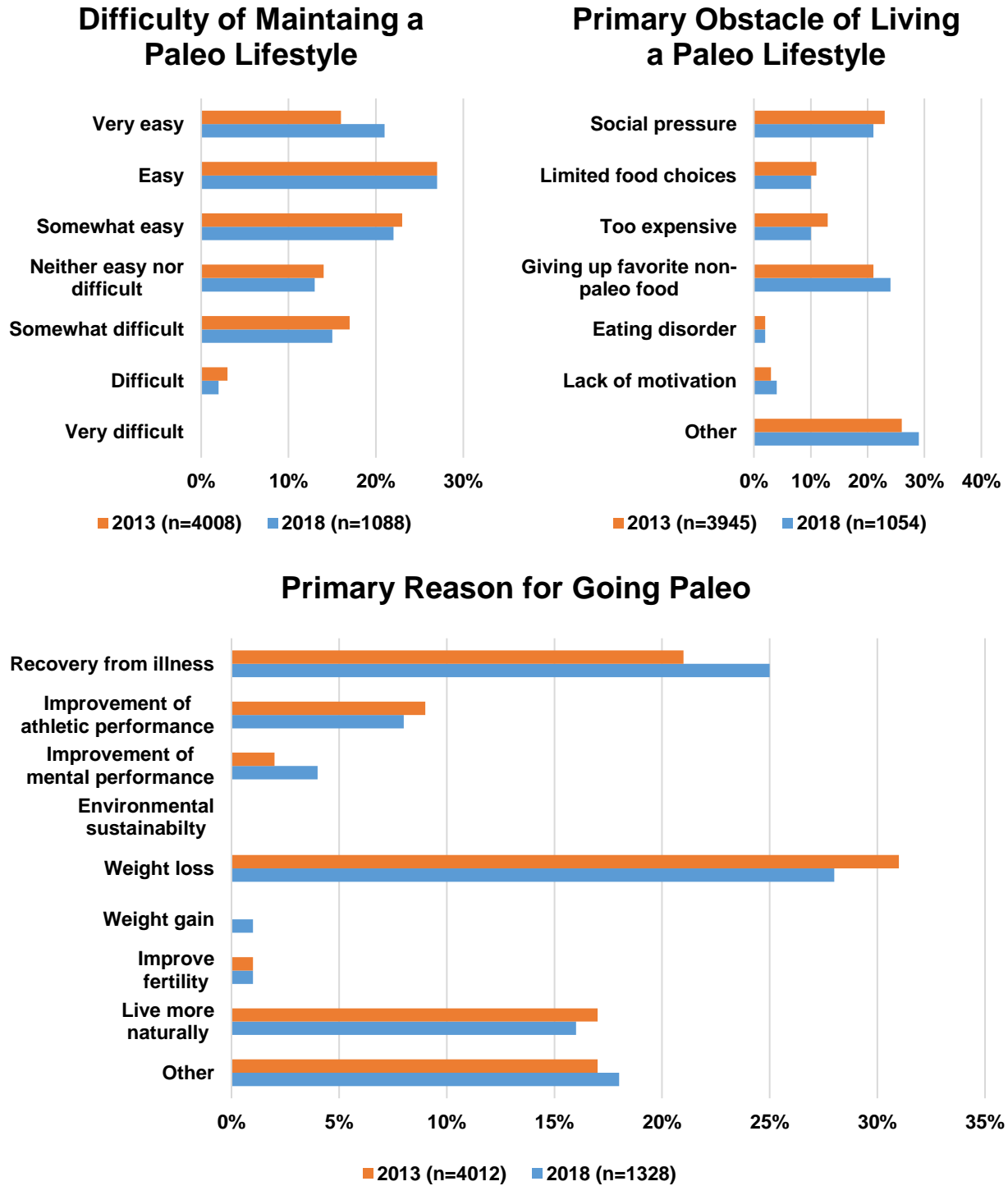


Figure 3: Significant Differences between Survey Years – Motivation, Obstacles, and Duration Section: Difficulty Maintain a Paleo Lifestyle (p=0.003), Primary Obstacle of Living a Paleo Lifestyle (p<0.001), and Primary Reason for Going Paleo (p<0.001).

*Perceived Health Outcomes*

Data on participants’ perceived changes in health outcomes are presented in Figure 4. Five categories came back significantly different compared to the 2013 survey year. Overall, the number of participants who reported they were aware of any change (i.e., worsened, stayed the same, or improved) in their blood chemistry increased (57% to 89%; 1.56-fold change). Within this, the proportion of participants who reported improvements in their blood chemistry increased (48% to 68%, 1.42-fold change).

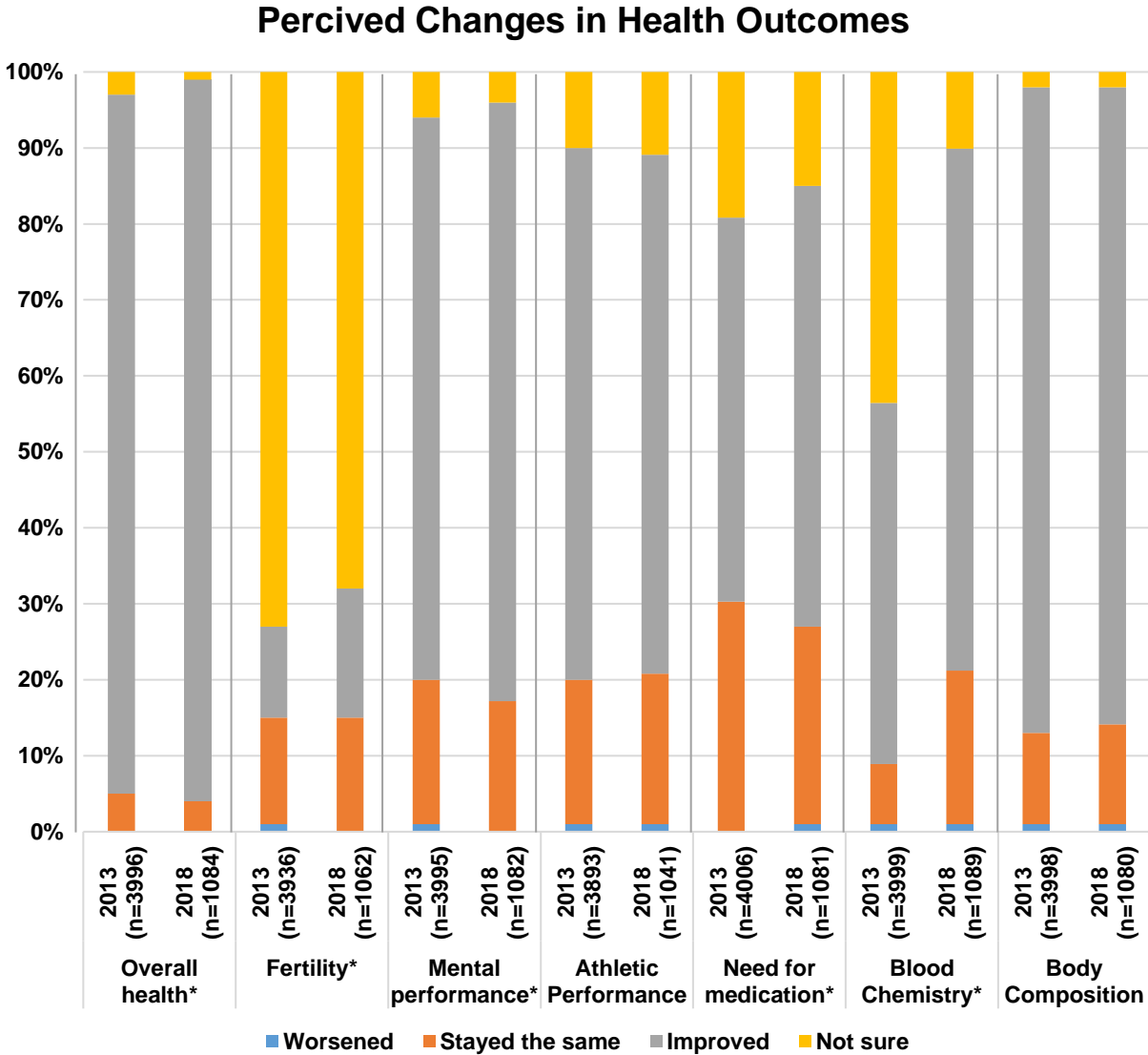


Figure 4: Differences in Perceived Health Outcomes between Survey Years. \*Statistically different responses between survey years ( $p \leq 0.001$  for all)

*Past Paleo Followers*

Data on those who reported they no longer follow the paleo lifestyle (n=251) can be found in Table 1. Of the n=38 participants who selected “Changed to a new specific diet” for their reason for no longer following a paleo lifestyle, n=17 (44%) reported they currently follow the Ketogenic Diet.

Table 1: Past Paleo Followers

	Percentage
<b>Primary reason for stopping paleo (n=242)</b>	
Changed to new specific diet	16%
Limited food choices	11%
Lack of motivation	9%
No specific Reason	8%
Giving up favorite non-paleo food	7%
Lost interest in living a paleo lifestyle	7%
Didn't see results	5%
People I know stopped living a paleo lifestyle	2%
Eating disorder	1%
Too expensive	1%
My doctor advised a different diet	1%
Other – write in themes <sup>a</sup>	32%
<i>Follow a diet similar to paleo</i>	14%
<i>Pregnant</i>	8%
<i>Diet change</i>	8%
<i>Lack of science backing paleo diet</i>	7%
<i>Introduced new foods</i>	5%
<i>Other/various</i>	58%
<b>Current diet (n=241)</b>	
No particular diet	39%
Low carb. diet	13%
Ketogenic diet	10%
Mediterranean diet	3%
Vegan	1%
Vegetarian	1%
Pegan	1%
Whole30	0%
DASH diet	0%
Other – write in themes <sup>a</sup>	30%
<i>Sort of Paleo/Primal</i>	35%
<i>Whole food</i>	26%
<i>Gluten free</i>	8%
<i>Low Carbohydrate/Ketogenic</i>	6%

<i>Macro Diet</i>	4%
<i>Carnivore</i>	4%
<i>Weston A. Price Foundation diet</i>	3%
<i>Low fiber</i>	3%
<i>Other</i>	11%

Items listed in descending order. <sup>a</sup>Themes (italicized) identified and categorized by authors.

## Discussion

By comparing survey responses from 2018 and 2013, we identified differences throughout the survey. Interpretation and implications of the differences and similarities are discussed below.

### *Changes in participation and demographics:*

One of the most notable changes between the two surveys is that survey participants are now – on average – five years older (median age went from: 36 to 41 years old). This could suggest fewer younger people may be joining the movement, while the movement, as a whole, continued to age. For example, the average age of a new members who joined the movement in the three-year period prior to the survey increased (from 37.7 years old to 40.4 years old; 2.7 years older). It is unclear why fewer younger individuals are being drawn to the paleo movement. Perhaps, they are turning to other popular diet trends [5] as the debate of which diet is best for health continues.

Similar to our 2013 study, the majority of the 2018 participants were middle-aged Generation Xers (born approximately from 1962 to 1982), not young Millennials (born approximately from 1982 to 2002). As summed up in our 2013 study, the median age of participants in both surveys of the ancestral health community may also be explained in part by:

“older individuals being sicker, and thus in need of alternative health and wellness paradigms. In other words, younger members of society have yet to feel the full effects of the “Diseases of Civilization” (diabetes, heart disease, and cancer, among others), which often accompany the process of aging. Young people may have simply experienced less frustration with ill health and our current health care system, and, as a result, are less motivated to seek out and experiment with alternative ways of caring for their bodies.”

(Schwartz and Stapell, 2013; page 15)

Other demographic data suggests that our sample represents a rather privileged segment of society. While the 2013 participants reported very high levels of educational attainment, and a remarkably high level of income, compared to the national averages, five years later, the participants responses for these categories increased even further. For example, in 2018, 77% of participants held a 4-year degree or higher, and 50% of participants reported earning \$100,000 per year or more. Some of these changes may reflect the fact that, on average, the recent sample population is now older and further into peak earning years. These results may also be related to the fact that race and wealth are strongly correlated in the United States [14], so it follows from the SES data that the vast majority of participants are white (91% in both 2013 and 2018). Similar to the 2013 results, the 2018 sample had a higher frequency of those who believed in evolution without god compared

to the national average (66% vs. 33%) [15].

Geographically, participants were from the same top four countries (United States [US], Canada, Australia, United Kingdom) and five US states (California, Washington, Texas, Colorado, New York) as the 2013 survey. Since the survey was conducted and promoted through English-language blogs, organizations, and social media located in the United States, this likely explains the English-speaking countries at the top of the list. Within the United States, geographic location may play a role in both SES and the decision to follow a paleo lifestyle, as many participants are located in predominately high-income “blue” and “purple” states: California, New York, Washington, Colorado, and Texas. As stated in our previous 2013 study, these five states may have dominated both surveys due to their large cosmopolitan cities. Further, a similar percentage of participants came from outside the US (31% vs 30%) and a similar number of countries (55 vs 60) between the two survey years.

New to the 2018 survey, we asked participants about their political party affiliation. Democrat was the most common response. However, there was a relatively equal distribution among the four main political parties in the United States (in descending order): Democrat, Independent, Libertarian, and Republican. This undermines the common belief that most paleo followers are Libertarians due to the paleo-libertarian connection [16]. Therefore, the ancestral health community includes quite a diverse political community.

#### *Changes in lifestyles choices: diet, exercise, and sleep*

As in the 2013 survey, we found high avoidance of some non-paleo foods, namely grains and legumes, but not of dairy and alcohol among participants. However, only 22% of participants reported avoiding all three food groups (grains, legumes, and dairy) and alcohol. In other words, there is substantial variation in the food groups individuals avoid and many do not follow the typical standard paleo diet. Further, a majority of participants regularly consume starchy carbohydrates (e.g., white rice, potatoes, sweet potatoes, etc.). The majority reported regularly taking one or more supplements, with magnesium and Vitamin D being the most popular, and some differences were found compared to the 2013 study (participants reported taking less fish oil and more taking magnesium). As with the 2013 results, the majority of survey participants (78%) reported participating in any form physical activity, which is much higher compared to the estimated 80% of the US being insufficiently active [17]. Further, the reported hours of sleep (7.4 hours) is higher than the US average (6.8 hours [18]). The overall percentage of participants who participate in CrossFit also decreased over the five-year period. The exact reasons for these differences over the five years is unclear and could simply reflect variation in health trends or other observed changes in demographics.

#### *Changes in responses to motivation, obstacles, and duration*

Motivation is one key factor in adopting and maintaining a new diet and lifestyle. As in the 2013 survey, the same two most popular factors for adopting a paleo lifestyle were reported: weight loss and recovery from illness. However, the biggest change between the 2013 and 2018 in regards to reasons for adopting a paleo lifestyle was a decrease in those who reported “weight loss” and an increase “recovery from illness”. This suggests more people are now motivated to adopt a paleo

diet to address unresolved health problems, and fewer individuals are eating this way to lose weight. As suggested below, other popular diets, such as the ketogenic diet, may be competing for the attention of those interested in losing weight, which could explain the decrease seen here. Of note, during this time of increased discussion surrounding the possible perils of climate change, in both surveys, not a single participant chose environmental sustainability as the primary reason for going paleo. This suggests that concerns about the environment simply are not critical motivators for adopting a paleo lifestyle.

In terms of obstacles to maintaining a paleo diet and lifestyle, ‘social pressure’ and ‘giving up non-paleo foods’ were most often cited as the major obstacle to living a paleo lifestyle in both survey years. The two biggest changes were a decrease in survey participants indicating it was ‘too expensive’ and an increase ‘giving up non-paleo foods.’ As in 2013, under the category of “Other” in the 2018 survey, participants described a wide variety of obstacles, including: eating out of the house, preparing and finding food, and time constraints. Despite these obstacles, still the majority of participants (70%) said it was easy to maintain a paleo lifestyle (66% from the 2013 survey). The reported increase of ease may also be due to the increasing number of paleo-friendly foods found both in restaurants and supermarkets. Further, given the increased financial cost of following the paleo diet [19], the reported increase in average income between 2013 and 2018 survey data may be responsible for the increase in reported ease.

One of the most striking differences between the two survey years relates to adoption and duration. In 2013, 67% of participants reported joining the movement within the past two years, and 85% in the last three years. The current survey suggests a slowdown in the recent rate of adoption as only 33% of 2018 participants joined in the past three years. We believe this difference reflects the movement’s rapidly growing popularity in 2013 compared to 2018. Further, the difference between the two survey years could reflect the novelty of the movement is now over since most participants had only been living that way for a short amount of time in the 2013 survey. This difference suggests the rapid period of growth followed by a sharp decline in growth rates which is characteristic of fads. Moreover, to further illustrate the five-year aging of participants between the two survey years, 45% of the 2018 participants reported living this lifestyle for more than five years, compared to only 4% in the 2013 survey.

#### *Changes in perceived health outcomes*

As in the 2013 study, the 2018 survey participants perceived themselves to be better off physically and mentally after adopting a paleo diet and lifestyle as they reported improvements in five of the seven health categories were reported. Also, similar to 2013, the majority of participants in 2018 reported that they were unsure whether their fertility had improved or not. The largest change in perceived health outcomes between the two surveys can be found in the blood chemistry category: more participants were aware of any change in the blood chemistry, and the proportion of participants who reported improvements in their blood chemistry increased. This difference between the two surveys may be due to increased awareness about the potential benefits of routine lab work, the increase in household income, and greater access to blood work testing. Furthermore, improved access to medical care after 2013 with the Affordable Care Act (also known as Obamacare), in the US, may have had an influence on these numbers as well. While these responses are self-reported, and many are completely subjective, participants from both survey

years reported overall improvement in a broad range of health outcomes by transitioning to a paleo diet and lifestyle.

### *Past paleo followers*

In an effort to understand why some people choose to abandon a paleo lifestyle, we asked two questions on the 2018 survey addressed to those who left the movement. While, the largest reason for stopping paleo was a change to new specific diet (16%), all other responses suggest no switch to a different diet (e.g., limited food choices, lack of motivation or no specific reason). Furthermore, when asked what diet they followed now, the largest response (39%) was “no particular diet.” This could suggest that those who left paleo are not continuing their interest in promoting health via diet. The two most popular diets currently followed by participants who left paleo were low carbohydrate and ketogenic diet (selected by 23%). Both of these diets have the added advantage of not being associated with the common paleo media images of egotistical “modern cavemen.” Further, these approaches are not associated with the theory of evolution and thus do not have the baggage of debates around evolution common in the United States [15]. Together, the responses to these two questions suggest 1) the popularity of other fad diets: low carbohydrate and ketogenic diets, and 2) a large amount of paleo followers are not continuing to use a specific diet as a way to promote health. This further demonstrates the “fad” aspects of the paleo diet, as many seem to only adopt a paleo diet for a short period of time, and not continue their interest in dieting itself. Moreover, in a 2018 survey study, 76% of surveyed paleo diet followers consider their diet a fad diet [20]. While we did not ask this question in our survey, we have no reason to believe our sample would differ on perception of paleo as a fad diet.

### *Limitations and future research*

Given the cross-sectional, internet-based, and self-selected anonymous design of this study, we are limited in our ability to comment on reasons for the changes seen. While valuable, the results of our two surveys only capture two time points of the paleo story; they do not offer us a complete story of paleo adherents over time. Future qualitative interviews could capture data that could potentially explain the differences seen in this study. This study allows us to capture broader trends in the movement, thus we can only hypothesize the reasons for the changes. Our data collection strategy was such that we are unable to judge the change in size of the ancestral movement, if any, over the past five years. Although, far fewer individuals completed our survey in 2018, we are unable to say definitively if that reflects less overall participation in the movement, or even less enthusiasm for a paleo diet and lifestyle today. However, this current study’s sample size is similar to a 2015 online social media diet survey study (n=1,326 paleo diet followers) [21]. It is possible the movement’s participants have moved elsewhere and were no longer in the survey distribution path. To our eye, the channels we relied upon for survey distribution remain central to the paleo movement, but we lack reliable data on the outlets most frequented by paleo adherents. In addition, the low sample size of those who no longer follow the paleo diet (n=242), limits the interpretation and generalization of these data.



Future research could build upon this second survey in several ways. First, as described in our 2013 paper, the examination of the ancestral health movement would be well served by an estimate of the total number of paleo adherents. Such an accurate study of the composition of the movement is only possible with a representative national survey. Second, our understanding of the movement would be improved by the collection of longitudinal data. A panel study would help identify, 1) how individuals develop or sever ties to the movement, 2) how individual practice of the paleo diet changes over time in response to new needs, and 3) how consistently paleo is practiced while individuals claim adherence to the lifestyle. Furthermore, how this diet trend reflects other fad diet trends would be of interest. For example, while low-carbohydrate diets (e.g., Atkins) were initially labeled as fad diets, low-carbohydrate diets have withstood the test of time, leading some to question if the low-carbohydrate diet should have been labeled a “fad” at all [22]. While research on the ancestral health movement, specifically the paleo diet, has been building over the past five years, there are still a number of unaddressed questions, 1) is the paleo lifestyle and demographic composition reflective of our results?, 2) are these demographics similar to those of other dietary trends/fads?, and 3) in what ways, if any, does the paleo movement represent more than just a fad diet? In a time when massive amounts of conflicting information about diet and lifestyle flood our screens daily, more detailed information about diet fads/trends could help people navigate the noise.

### *Conclusions and overall implications*

From 2013 to 2018, the ancestral health movement appears to have changed in some significant ways. Overall, the results from our 2018 survey suggest a maturing of the paleo movements; participants are in more committed relationships, older, more highly educated, more affluent. Further, as demonstrated by the decrease in the number of people joining the movement in the past three years, plus the aging of those who joined in the past three years, this suggests that fewer young people, and total people, are joining the paleo movement. Like our 2013 survey, these results further distance the ancestral health movement from the common young, vain, male, and single “modern caveman” media stereotypes; participants were still predominately white, female, and motivated by health and weight loss concern. They also suggest that the ancestral movement represents a very well-resourced segment of society. Collectively, this survey, and the prior 2013 study, allows us to document the population of individuals following a popular diet that is unique because it is based on the central keystone of all of biology: evolution. A diet and health movement based on a scientific theory with as much explanatory potential as evolution seems as though it should not be another passing fad; however, the results from this survey suggest that this may indeed be the case.

## References

- (1) Cordain L. *The Paleo Diet*, John Wiley & Sons, 2002.
- (2) Konner M, Eaton SB. Paleolithic Nutrition Twenty-Five Years Later. *Nutr Clin Pract*. 2010;25(6):594–602. PubMed PMID: 9347295.
- (3) de Menezes EVA, Sampaio HA de C, Carioca AAF, Parente NA, Brito FO, Moreira TMM, de Souza ACC, Arruda SPM. Influence of Paleolithic diet on anthropometric markers in chronic diseases: systematic review and meta-analysis. *Nutr J*. 2019;18(1):.
- (4) Mohammadi M, Mohammadi H, Ghaedi E, Ramezani-Jolfaie N, Salehi-Abargouei A. Effects of Paleolithic Diet on Glucose Control in Adults: A Systematic Review and Meta-analysis of Controlled Clinical Trials. *J Nutr Food Secur*. 2019;(February):
- (5) Kuchkuntla AR, Limketkai B, Nanda S, Hurt RT, Mundi MS. Fad Diets: Hype or Hope? *Curr Nutr Rep*. 2018 Dec 30;7(4):310–323. <http://link.springer.com/10.1007/s13668-018-0242-1>.
- (6) Obert J, Pearlman M, Obert L, Chapin S. Popular Weight Loss Strategies: a Review of Four Weight Loss Techniques. *Curr Gastroenterol Rep*. 2017;19(12):17–20.
- (7) Pitt CE. Cutting through the Paleo hype: The evidence for the Palaeolithic diet. *Aust Fam Physician*. 2016;45(1):35–38.
- (8) Turner BL, Thompson AL. Beyond the Paleolithic prescription: incorporating diversity and flexibility in the study of human diet evolution. *Nutr Rev*. 2013 Aug;71(8):501–510. <https://academic.oup.com/nutritionreviews/article-lookup/doi/10.1111/nure.12039>.
- (9) Veile A. Hunter-gatherer diets and human behavioral evolution. *Physiol Behav*. 2018;193(March):190–195. <https://doi.org/10.1016/j.physbeh.2018.05.023>.
- (10) Meyer J, Morrison J, Zuniga J. The Benefits and Risks of CrossFit: A Systematic Review. *Workplace Health Saf*. 2017 Dec 31;65(12):612–618. <http://journals.sagepub.com/doi/10.1177/2165079916685568>.
- (11) Stapell HM. Going Mainstream or Just a Passing Fad? The Future of the Ancestral Health Movement. *J Evol Heal*. 2016 Jan 20;1(1):. <https://jevohealth.com/journal/vol1/iss1/11>.
- (12) Schwartz DB, Stapell HM. Modern Cavemen? Stereotypes and Reality of the Ancestral Health Movement. *J Evol Heal*. 2013;1(1):3.
- (13) Couper M. Web surveys: a review of issues and approaches. *Public Opin Q*. 2000;64(4):464–94. PubMed PMID: 11171027.
- (14) Williams DR, Priest N, Anderson NB. Understanding associations among race, socioeconomic status, and health: Patterns and prospects. *Health Psychol*. 2016 Apr;35(4):407–11. PubMed PMID: 27018733.
- (15) Funk C. How highly religious Americans view evolution depends on how they're asked about it Title, Pew Res Cent. 2019. <https://www.pewresearch.org/fact-tank/2019/02/06/how-highly-religious-americans-view-evolution-depends-on-how-they-asked-about-it/> (accessed December 11, 2019).
- (16) Tierney J. Paleo Libertarians, ReasonCom. 2014. <https://reason.com/2014/03/16/paleo-libertarians/#> (accessed May 12, 2019).
- (17) Piercy KL, Troiano RP, Ballard RM, Carlson SA, Fulton JE, Galuska DA, George SM, Olson RD. The Physical Activity Guidelines for Americans. *JAMA*. 2018 Nov 20;320(19):2020. <http://jama.jamanetwork.com/article.aspx?doi=10.1001/jama.2018.14854>.
- (18) Jones J. In U.S., 40% Get Less Than Recommended Amount of Sleep, Gallup. 2013.

- <https://news.gallup.com/poll/166553/less-recommended-amount-sleep.aspx>.
- (19) Metzgar M, Rideout TC, Fontes-Villalba M, Kuipers RS. The feasibility of a Paleolithic diet for low-income consumers. *Nutr Res.* 2011;31(6):444–451. PubMed PMID: 21745626.
  - (20) Aarthi M, Gayatri Devi R, Jothi Priya A. Survey on the people undergoing paleo diet. *Drug Invent Today.* 2018;10(12):2543–2545.
  - (21) Karlsen MC, Lichtenstein AH, Economos CD, Folta SC, Rogers G, Jacques PF, Livingston KA, Rancaño KM, McKeown NM. Web-Based Recruitment and Survey Methodology to Maximize Response Rates from Followers of Popular Diets: the Adhering to Dietary Approaches for Personal Taste (ADAPT) Feasibility Survey. *Curr Dev Nutr.* 2018;2(5):1–11.
  - (22) Feinman RD. Fad Diets in the Treatment of Diabetes. *Curr Diab Rep.* 2011 Apr 15;11(2):128–135. <http://link.springer.com/10.1007/s11892-011-0178-y>.

## Supplemental Tables

**Supplemental Table 1: 2018 Demographics - Not Significantly Different from 2013 Survey**

	Percentage
<b>Gender (n=1506)</b>	
Female	54%
Male	46%
<b>Self-identified Paleo Status (n=1506)</b>	
Currently follow a paleo diet	75%
No longer follow paleo diet	17%
Never followed paleo diet	5%
Other (didn't answer)	3%
<b>Ethnicity (n=1365)</b>	
White/Caucasian	91%
Hispanic	3%
Other	3%
Asian	2%
African American	0%
Native American	0%
Pacific Islander	0%
<b>Religiosity (n=1332)</b>	
Human beings developed over millions... God had no part in this process.	66%
Human beings developed over millions... God guided this process.	25%
God created human beings... within the last 10,000 years or so.	19%
<b>Political Affiliation (n=919)</b>	
Democrat	31%
Independent	23%
Libertarian	15%
Republican	15%
Other	5%
Green Party	1%
<b>Country of Residency (n=1363)</b>	
United States	69%
Canada	7%
United Kingdom	6%
Australia	5%
Germany	2%
<i>All Other Countries (n=50)</i>	12%
<b>State of Residence (US Only; n=909)</b>	
California	14%
Washington	7%
Texas	7%
Colorado	5%
New York	5%

---

*All Other States* (including Washington DC; n=44)

5%

Note: statistically different demographics between participants from 2013 and 2018 are presented in Figure 1. Statistical difference was not tested for country and state of origin data. Data listed in descending order. Italicized items are created by the authors and were not answer options on survey.

Supplemental Table 2: 2018 Diet, Exercise, and Sleep - Not Significantly Different from 2013 Survey

	Percentage unless otherwise stated
Percentage of your diet is paleo (n=1084)	
Average	87.19% (SD: 9.48)
Safe starch consumption (n=1082)	
Yes	58%
No	42%

\*Statistically different from 2013 survey participants. Further statistically different responses between participants from 2013 and 2018 are presented in Figure 3.

Supplemental Table 3: 2018 Motivation, Obstacles, and Duration - Not Significantly Different from 2013 Survey

	Percentage
<b>Paleo diet duration</b>	
Currently following a paleo diet (n=976):	
Less than 1 year	12%
2 years	11%
3 years	10%
4 years	9%
5 years	13%
6 years	10%
7 years	10%
8 years	10%
9 years	5%
10 years or more	10%
No longer following paleo diet (n=219):	
Less than 1 year	32%
2 years	19%
3 years	22%
4 years	11%
5 years	11%
6 years	4%
7 years	1%
8 years	0%
9 years	0%
10 years or more	0%

Note: statistically different responses between participants from 2013 and 2018 are presented in Figure 2.

## **Supplemental Text**

### Supplemental Text 1:

#### **Ancestral Health (Paleo) Survey 2018**

October 23, 2018

Hamilton M. Stapell, PhD  
State University of New York, New Paltz

Anthony J. Basile, MS, NDTR, PhD Student  
Arizona State University

**Estimated Time for Completion: 3 to 5 minutes**

#### **Purpose:**

The purpose of this follow-up study is to gather information on the Ancestral Health (Paleo) movement. The results of this new study will be compared to a previous survey from five years ago. All of the survey results will be used for academic purposes only.

#### **Procedure:**

If you agree to be in this study, you will answer approximately 25 survey questions on topics related to the Ancestral Health movement, diet, lifestyle, and exercise.

#### **Benefits and Risks to the Participant:**

You will help contribute to the compilation of statistics regarding the Ancestral Health movement. There are no known risks to participation in this study.

#### **Voluntary Nature of the Study and Confidentiality:**

Your participation in this study is entirely voluntary. You may refuse to complete the study at any point during the survey or refuse to answer any questions with which you are uncomfortable. Information that would make it possible to identify you will not be collected. The data will be accessible only to the researchers working on the project and will not be associated with any identifying information. Your anonymity and the confidentiality of the results are guaranteed.

#### **Questions:**

You may ask any questions you have regarding this study at any time by contacting Dr. Hamilton M. Stapell at stapellh@newpaltz.edu. Questions or concerns about institutional approval should be directed to Professor Maryalice Citera, Chair of the Human Research and Ethic Board, SUNY New Paltz, at hrebchair@newpaltz.edu.

#### **Statement of Consent:**

**I have read the above information. I know who to contact should I have any questions regarding the study. I am 18 years of age or older.**



I consent to participate in the study.

I decline to participate in the study.

*Skip To: End of Survey If Ancestral Health (Paleo) Survey 2018 October 23, 2018 Hamilton M. Stapell, PhD State Univ... = I decline to participate in the study.*

Page Break

### End of Block: Introduction Page

### Start of Block: Main Question Block

Q28 

**For the purposes of this survey, please take the word "paleo" to mean:   
   
 The effort to optimize human health today by examining our evolutionary or ancestral past. (Paleo, Primal, Darwinian, Stone Age, Cave Man, etc.)**

Q1 When were you first introduced to the paleo lifestyle? Please select the nearest year.

▼ Within the past year ... 10 years ago or more



Q2 How did you first hear about the paleo lifestyle?

- Friend
  - Website or blog
  - Family member
  - Co-worker
  - Media (i.e., TV, radio, newspaper, etc.)
  - Social Media (i.e., Twitter, Facebook, etc.)
  - Other \_\_\_\_\_
- 



Q10 Which of the following best describes your relationship to the paleo lifestyle?

- I am not paleo (never paleo)
- I am no longer paleo
- I am currently paleo

*Skip To: End of Block If Which of the following best describes your relationship to the paleo lifestyle? = I am not paleo (never paleo)*

*Skip To: End of Block If Which of the following best describes your relationship to the paleo lifestyle? = I am no longer paleo*

---

Q56 How long have you been living a paleo lifestyle?

▼ Less than 1 year ... 10 years or more

---



Q11 What was your <u>primary</u> reason for going paleo?

- Recovery from illness
  - Improvement of athletic performance
  - Improvement of mental performance
  - Environmental sustainability
  - Weight loss
  - Weight gain
  - Improve fertility
  - Live more naturally
  - Other \_\_\_\_\_
- 



Q12 Which of the following do you regularly avoid? (Please select all that apply.)

- Grains
  - Legumes
  - Dairy
  - Alcohol
- 

Q45 In a typical week, what percentage of your food consumption is paleo? (Please slide the bar to the corresponding percentage.)

0      20      40      60      80      100

---

---

Q13 Do you regularly consume "safe starches"? (i.e., white rice, potatoes, sweet potatoes, etc.)

- Yes
- No
- I don't know



Q43 Which of the following supplements do you regularly take? (Select all that apply.)

- Multivitamin
- Fish oil
- Probiotics
- Vitamin D
- Magnesium
- Whey protein
- Other \_\_\_\_\_

Q14 For you personally, how hard is it to maintain a paleo lifestyle?

- Very Difficult
  - Difficult
  - Somewhat Difficult
  - Neither easy nor difficult
  - Somewhat Easy
  - Easy
  - Very Easy
- 

Q15 How many times per week do you typically do strength training?

- 0
  - 1 to 2
  - 3 to 4
  - 5 to 6
  - 7 or more
-

Q25 How many times per week do you typically do aerobic training?

- 0
  - 1 to 2
  - 3 to 4
  - 5 to 6
  - 7 or more
- 

Q16 Do you regularly do CrossFit?

- Yes
  - No
- 

Q42 In a typical night, how many hours do you sleep? (Please slide the bar to the corresponding number of hours.)

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16





Q17 For you personally, what is the <u>primary</u> obstacle for living a paleo lifestyle?

- Social pressure
  - Limited food choices
  - Too expensive
  - Giving up favorite non-paleo food
  - Eating disorder
  - Lack of motivation
  - Other \_\_\_\_\_
-



Q41 In your estimation, how has your transition to a paleo lifestyle affected the categories below?

	Worsened	Stayed about the same	Improved	Not sure
Body composition	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Blood chemistry	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Need for medication	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Athletic performance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mental performance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fertility	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Overall health	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q34 What is your most trusted source for information on paleo living in each of the following categories? (Select all that apply.)

- Website \_\_\_\_\_
- Book \_\_\_\_\_
- Podcast \_\_\_\_\_
- Magazine \_\_\_\_\_

**End of Block: Main Question Block**

**Start of Block: No Longer Paleo**



Display This Question:

*If Which of the following best describes your relationship to the paleo lifestyle? = I am no longer paleo*

Q48 How long did you follow a paleo lifestyle before you stopped? Please select the nearest year.

▼ 1 year or less ... 10 years or more

Display This Question:

*If Which of the following best describes your relationship to the paleo lifestyle? = I am no longer paleo*



Q51 What was your <u>primary</u> reason for going paleo?

- Recovery from illness
- Improvement of athletic performance
- Improvement of mental performance
- Environmental sustainability
- Weight loss
- Weight gain
- Improve fertility
- Live more naturally
- Other \_\_\_\_\_

*Display This Question:*

*If Which of the following best describes your relationship to the paleo lifestyle? = I am no longer paleo*



Q52 What was your <u>primary</u> reason for stopping paleo?

- Limited food choices
- Giving up favorite non-paleo food
- Too expensive
- Lack of motivation
- Changed to new specific diet
- Lost interest in living a paleo lifestyle
- Didn't see results
- People I know stopped living a paleo lifestyle
- My doctor advised a different diet
- Eating disorder
- No specific reason
- Other \_\_\_\_\_

---

*Display This Question:*

*If Which of the following best describes your relationship to the paleo lifestyle? = I am no longer paleo*



Q53 Do you follow a specific diet now?

- Ketogenic diet (approx. fewer than 50g of carbohydrates per day)
- Whole30
- Vegan
- Vegetarian (including lactotarian, ovotarian, and pescatarian)
- Pegan (i.e. paleo-vegan)
- Low carbohydrate diet
- Mediterranean diet
- DASH diet (Dietary Approaches to Stop Hypertension)
- No particular diet
- Other \_\_\_\_\_

**End of Block: No Longer Paleo**

---

**Start of Block: Trap Question**

Q54 Did you answer the previous questions to the best of your ability or are you clicking random answers?

- I answered to the best of my abilities (choose this answer so we can verify your responses and confirm that you are not a robot)
- I'm answering randomly
- I'm not really paying attention
- My eyes are literally closed while doing this

*Skip To: End of Survey If Did you answer the previous questions to the best of your ability or are you clicking random answ... != I answered to the best of my abilities (choose this answer so we can verify your responses and confirm that you are not a robot)*

**End of Block: Trap Question**

---

**Start of Block: Demographic Questions**



Q18 In your estimation, what percentage of the population lives a paleo lifestyle in your country of residence? (Please enter the percentage in the box below, but do not include a "%" sign.)

---

Q19 From your perspective, when will a majority of your country's population know about the paleo lifestyle?

- The majority already knows about paleo
  - Within the next twelve months
  - One to two years
  - Three to four years
  - Four to five years
  - More than five years
  - Never
-

Q44 In your estimation, how long before a majority of your country's population lives a paleo lifestyle?

- The majority already lives paleo
- Within the next twelve months
- One to two years
- Three to four years
- Four to five years
- More than five years
- Never

---

Q20 Which of the following statements comes closest to your views on the origin and development of human beings?

- Human beings developed over millions of years from less advanced forms of life, but God guided this process.
- Human beings developed over millions of years from less advanced forms of life, but God had no part in this process.
- God created human beings pretty much in the present form at one time within the last 10,000 years or so.



Q20 What is your current age? (Please enter your age in the box below.)

---



Q8 What is your race?<br> <br>

- White/Caucasian
  - African American
  - Hispanic
  - Asian
  - Native American
  - Pacific Islander
  - Other
- 



Q32 In which country do you reside?

▼ United States of America ... Zimbabwe

---

*Display This Question:*

*If List of Countries = United States of America*

Q34 <p>In which state do you currently reside?</p>

▼ Alabama ... Wyoming

---



Q1 What is your gender?

- Male
  - Female
  - These do not describe me
- 



Edu What is the highest level of education you have completed?

- Less than High School
  - High School / GED
  - Some College
  - 2-year College Degree
  - 4-year College Degree
  - Master's Degree
  - Doctoral Degree
  - Professional Degree (i.e., JD, MD)
- 



Q30 In which industry are you currently employed?

▼ Forestry, fishing, hunting or agriculture ... Other

---



Q3 What is your combined annual household income?

- Less than \$20,000
  - \$20,000 – 39,999
  - \$40,000 – 59,999
  - \$60,000 – 79,999
  - \$80,000 – 99,999
  - \$100,000 – 149,999
  - \$150,000 – 199,999
  - \$200,000 – 249,999
  - \$250,000 or more
- 



Q5 Please indicate your current family structure.

- Single without children
  - Single with children
  - Married without children
  - Married with children
  - Life partner without children
  - Life partner with children
-



Q26 Including yourself, how many people in your household live a paleo lifestyle?

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9 or more

---

*Display This Question:*

*If List of Countries = United States of America*



Q55 What is your current political affiliation?

- Democrat
  - Republican
  - Independent
  - Libertarian
  - Green Party
  - None
  - Other \_\_\_\_\_
- 

Q57 The current survey is a follow up to a 2013 survey on the Ancestral Health (Paleo) community. <div><br></div><div>To the best of your knowledge, did you participate in the first round of this survey in 2013? </div>

- Yes
- No
- I don't recall

**End of Block: Demographic Questions**

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