Pet Ownership and Family Involvement in Sports and Other Activities

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Abstract

The impact that companion animals may have on adolescent engagement in sports and other activities is currently unclear. This study included participant data gathered from the Adolescent Brain Cognitive Development (ABCD) Study®, a longitudinal study of brain development and youth health outcomes in the United States (n = 8,489). This study aimed to clarify the extent to which companion animal type impacts family involvement in sports and other activities. Additionally, this study is framed within the bioecological model of human development, which provides a useful framework for human-animal interaction researchers going forward. Results of this study indicate that, when adjusting for context- and person-level covariates, there does not appear to be a meaningful relationship between companion animal type and family involvement and sports and other activities, physical activity, or screen time. This study serves as a guidepost for human-animal interaction researchers as to the importance of including contextual variables in their studies before making claims regarding the impact of companion animals on youth, especially when details about the companion animal relationship are unavailable.

Keywords: human-animal interactions, physical activity, sports, bioecological model

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Introduction

Adolescence is a period of rapid physical and emotional change in the lives of youth (Sawyer et al., 2012). These changes are influenced by both individual and environmental differences (Hollenstein & Lougheed, 2013). It is important to investigate potential protective factors in the lives of adolescents as well as aspects of their development that may be associated with more adaptive mental and physical health outcomes. One potentially important factor for youth is pet ownership; however, there is currently no overarching theory to account for the impact of interactions between families and their pets. Nonetheless, recent research by Barcelos et al. (2023) has synthesized previous theoretical frameworks into a series of hypotheses that attempt to account for the impact of pets on well-being. A goal of the present study is to build upon Barcelos and colleagues' research to integrate their frameworks within the bioecological model of human development (Bronfenbrenner & Morris, 2006) while utilizing data from the Adolescent Brain Cognitive Development Study®, a nationally-representative longitudinal study of brain development and youth health outcomes in the United States with a demographically-diverse sample of adolescents and their families. In doing so, this work may lay the foundation for future research to build upon when investigating the potential impact of companion animals on the youth with whom they live, and specifically investigate how pet ownership relates to family involvement in sports and other activities.

Relevant Theory

Although some researchers in the HAI field have posited theoretical models that could account for variation in outcomes related to HAI (e.g., Beetz et al., 2012; Gee et al., 2021), there is both currently and historically a neglect of sound theoretical bases and methodologies in HAI research (Rodriguez et al., 2021). This study offers a theoretical conceptualization for the hypothesized findings; namely, the bioecological model of human development (Bronfenbrenner & Morris, 2006). The bioecological model allows for considerable flexibility in allowing researchers to conceptualize mechanisms of development across multiple domains. The theory places individuals and the processes in which they engage regularly within their environmental contexts as well as throughout time (Bronfenbrenner & Morris, 2006). This model is currently neglected in the HAI literature, with a literature search revealing only a handful of peer-reviewed studies in which it is mentioned (i.e., Canelo, 2020; Costa et al., 2023; Jegatheesan et al., 2020). Due to the limitations of the dataset, this study will primarily focus on process, person, and context, with time being unavailable given the current state of the data collection. As the ABCD Study® continues to collect data, the research question asked herein can be revisited to investigate temporality (i.e., measure changes/stability over time).

Process

Bronfenbrenner & Morris (2006) noted that interactions that occur regularly throughout development between an individual and their environment are referred to as proximal processes and are involved in gaining knowledge. The impacts of the processes are affected by the characteristics of the individual, the context in which the processes take place, and across time. Conceptually, competence—development of knowledge and

skills, as opposed to dysfunction (difficulty maintaining control of behavior across contexts)—is gained through engagement in proximal processes (Bronfenbrenner & Morris, 2006).

Parent/guardian and youth physical activity (PA), youth participation in sports or other activities, as well as parent/guardian and youth screen time are considered as being within proximal processes of the individual. Unfortunately, companion animal interactions (e.g., play frequency, responsibility, etc.) are not captured by the current ABCD Study® measures, so they cannot be considered as processes in this study.

Person

Bronfenbrenner & Morris (2006) conceptualized the most influential aspect of the model—in terms of influencing development—as person, which is broken down further into dispositions, resources (i.e., influences on executive functioning such as ability and knowledge), and demand characteristics. Beyond the characterization of the individual, person also takes into account the individual characteristics of those within the individual's microsystem. Theoretically, conceptualization would also take into account individual pet characteristics (e.g., pet temperament, size, etc.), but again, due to limitations of the ABCD Study® measures, this study is unable to account for these variables. However, future research should continue to investigate the impact of individual differences in both youth and their companion animals.

Within this study, individual and parent demographic characteristics as well as pet type comprise the person aspect of the Bioecological model.

Contexts

Contexts are conceptualized as the microsystem, mesosystem, exosystem, and macrosystem. The microsystem comprises the immediate relationships and activities experienced by an individual (Bronfenbrenner, 1994). The mesosystem comprises the relationships between two or more microsystems (Bronfenbrenner & Morris, 2006). The exosystem contains multiple settings that indirectly impact processes within the setting of the individual, such as a parent/guardian's workplace (Bronfenbrenner, 1986). The macrosystem envelops all of the other contexts, and represents the greater cultural and ideological characteristics that affect the contexts it subsumes (Rosa & Tudge, 2013).

Within the context of this research, social contacts, including pets, parents/guardians, and siblings are the microsystems measured. The interaction between the microsystems will comprise the family mesosystem. Residential characteristics are characterized as part of the exosystem (walkability, locale, population density). The macrosystem would include sociocultural differences between urban and rural locations, but these differences are not directly captured within the ABCD Study®. Thus, they are not included in the analyses but are considered in the theoretical interpretation.

Physical Activity

This study theorizes that individual processes will vary across different contexts (e.g., companion animals, neighborhood factors, etc.) and person-level characteristics (e.g., pet types, demographic characteristics, etc.). One process that varies across contexts and person-level characteristics is one's engagement in PA—and specifically different types of PA—which is of particular interest in this study given the importance of PA to youth developmental outcomes. PA intensity is generally categorized into three

categories: light, moderate, and vigorous. Activities are apportioned into these categories by calculating the metabolic equivalent of a task (MET), which is essentially the comparison of energy expenditure between the target activity and sitting at rest—which is 1 MET (U. S. Department of Health and Human Services, 2018). Light-intensity activity is defined as any activity requiring less than 3 METs, such as slow walking or cooking. Moderate-intensity activity is defined as requiring between 3 and 6 METs, and activities could include brisk walking or raking the yard. Vigorous-intensity activity is defined as any activity requiring more than 6 METs, such as running or shoveling snow. The United States Department of Health and Human Services (HHS) recommends that children and adolescents engage in at least 60 minutes of moderate-to-vigorous physical activity (MVPA) per day (U. S. Department of Health and Human Services, 2018). Meta-analyses have found positive associations between PA and both mental (Rodriguez-Ayllon et al., 2019) and physical (Hallal et al., 2006) health outcomes for adolescents. Despite the HHS's recommendation and the benefits of PA, adolescents engage in less PA as they grow older (Wall et al., 2011) and only about 20% of adolescents meet the 60 minutes per day of MVPA recommendation (Rhodes et al., 2017; U. S. Department of Health and Human Services, 2018).

Sedentary behavior—which generally, but not necessarily, includes screen time (Tremblay et al., 2017)—is defined as "any waking behavior characterized by an energy expenditure ≤ 1.5 [METs], while in a sitting, reclining or lying posture" (Tremblay et al., 2017, p. 9). Sedentary behavior is associated with a number of deleterious health-related outcomes, which are independent of engagement in PA (Tremblay et al., 2010). A meta-analysis by Pearson et al. (2014) found a significant but small negative association

between sedentary behaviors and PA among children and adolescents. Taken together, the Tremblay et al. (2010) and Pearson et al. (2014) findings indicate that PA and sedentary behavior do not displace each other. In other words, increasing PA engagement does not result in decreased sedentary behavior. This lack of displacement is important to note given the negative outcomes associated with sedentary behavior. For example, Rodriguez-Ayllon et al. (2019) found in a systematic review and meta-analysis that increased sedentary behaviors were associated with lower psychological well-being and increased ill-being.

Increases in screen time have been associated broadly with decreases in psychological well-being for youth (Twenge & Campbell, 2018). However, it should also be noted that the precise nature of the relationship between PA, screen time, and psychological well-being (i.e., anxiety and depression) is somewhat unclear (Gunnell et al., 2016). During adolescence, youth also typically increase their screen time with age (Rideout et al., 2022), a trend that has accelerated due to the onset of the COVID-19 pandemic (Madigan et al., 2022; Rideout et al., 2022). However, it should also be noted that this increase in screen time may not apply to every adolescent. For example, a study by Bucksch et al. (2016) found that screen time differed based on gender and family affluence, indicating that both person-level variables as well as contextual variables are involved in screen time.

As a corollary to the finding that context impacts screen time, an adolescent's engagement in PA is also influenced by the contexts in which the adolescent lives. For example, engagement in PA is impacted by family dynamics, such as parental support of adolescent exercise (i.e., microsystem; Edwardson & Gorely, 2010; Yao & Rhodes,

2015). A study of German children by Erkelenz et al. (2014) found, among other things, that parent PA was associated with time spent in organized sports, even though parent PA was not associated with time spent in MVPA or time spent in non-organized sports. Similarly, in a study of Canadian adolescents, Desroches et al. (2022) found that the strongest antecedents of different patterns of participation in sports (i.e., specialized, moderate sports, low sports, no sports) were social and contextual. They found that parental involvement was associated with youth involvement in sports generally, and led to youth specializing in one sport, specifically (Desroches et al., 2022). Hamilton & White (2010) conducted a qualitative study of Australian parents, and found that their levels of PA decreased after having children, but also that having children allowed them opportunities to engage in PA that incorporates the whole family. Parental income also plays a role in youth engagement in sports; for example, Pedersen (2005) found that youth whose families were experiencing more extreme poverty were less likely to participate in extra-curricular activities. Taken together, these findings point to the dynamics that influence adolescent PA, and support the theoretical framing of this study in placing an emphasis on the aspects of an adolescent's environment that may influence their engagement in PA.

In terms of person-level characteristics, adolescents may be more likely to engage in PA if they enjoy the activity (as evidenced by an increase in steps per day among Pokémon Go players, for example; Khamzina et al., 2020). Given that youth report having close relationships with their companion animals (e.g., Cassels et al., 2017), it is possible that youth who enjoy engaging in PA with their companion animal (e.g., walking, etc.) may do so more frequently. Furthermore, if an adolescent lives in a house

with a companion animal, especially an animal that requires active care (i.e., dogs, horses), they may have more opportunities to engage in PA in terms of play with and care of the animal, because the animal requires those activities more frequently. However, it appears that only approximately a quarter of adolescents engage in regular walking or play activities with their companion animals (Martin et al., 2015; Mathers et al., 2010). This finding is consistent with research indicating that only about 20% of adolescents meet the recommended 60 minutes per day of MVPA (Rhodes et al., 2017; U. S. Department of Health and Human Services, 2018). Thus, there may be other factors that impact an adolescent's engagement in PA with their pets. For example, if an adolescent is responsible for dog walking, they may have less time for organized sports; or, alternatively, if an adolescent is preoccupied with participating in organized sports, they may have less time to engage in dog walking or play.

An additional factor that should be considered is youths' access to public areas in which they can engage in PA with or without their companion animal. The neighborhood context (i.e., exosystem) also impacts PA. In a systematic review of qualitative studies, Martins et al. (2015) noted that youth reported a number of facilitators and barriers to PA. Having fun was noted as being one of the primary facilitators, as well as the influence of one's social network (i.e., friends, family, educators/coaches) and environment (e.g., access to environments conducive to PA as well as opportunities to engage in PA; Martins et al., 2015). For example, if an adolescent would like to go running with their dog, but does not have access to any dog-friendly running trails, or any running trails whatsoever, then their ability to engage in that type of activity would be decreased. A broad review by Rhodes et al. (2017) noted these correlates, among others, but also noted

as a limitation that the field relies heavily on cross-sectional research. Thus, the findings should be interpreted with that limitation in mind, as causality is difficult to establish given the current literature.

Pets and Adolescents

Companion animals have been shown to be a unique component of the social support network (i.e., mesosystem) of adolescents (Meehan et al., 2017). As an example of the support that companion animals can offer, Carr & Rockett (2017) found that children in long-term foster care turned to their pets to fulfill attachment functions, and some often reported preferring their companion animals over their foster caregivers. In a study of pre-school-aged children, Wenden et al. (2021) suggested that pet dogs may also play a role in the social-emotional development of youth.

However, there are contextual factors beyond the micro- and mesosystems that impact the relationships between pets and adolescents. For example, there are differences in attitudes toward animals between rural and urban college students (Morrison et al., 2021). Specifically, those who either grew up in or were currently living in rural areas reported lower scores on a scale of attitudes toward animals (Morrison et al., 2021). Furthermore, residents of urban areas have reported higher companion animal bonding and attachment scores to their pets compared to residents of rural areas (Poresky & Daniels, 1998; Stevens, 1990). However, one study of rural adolescents found that rural adolescents who owned pets reported less loneliness than their non-pet-owning counterparts, that companion animal bonding scores were inversely related to loneliness scores, and that pet attachment was positively related to the number of humans in the social support network (Black, 2012). The differences between rural and urban

adolescents as they relate to their relationships with their pets should be explored further, as, to my knowledge, there has not been a comprehensive study examining the specific differences between the groups and their pets.

In terms of how companion animals impact youth PA, a scoping review of the literature by Chase et al. (2022) found that dog ownership was also associated with small increases in PA for youth. Dog ownership specifically has been associated with increased activity levels compared to non-dog owners (Mueller, Anderson, et al., 2021; Westgarth et al., 2019). For a recent review of the literature related to dogs and adult PA, see Potter & Sartore-Baldwin (2019). Furthermore, previous literature has found that households with dogs have higher levels of PA compared to households without dogs (McMinn et al., 2011; Owen et al., 2010). Alternatively, some studies have found more mixed results. For example, Christian et al. (2022) reported in a sample of Australian preschoolers that dog interactions (as opposed to ownership alone) were associated with increases in parent-reported PA, but not as measured by an accelerometer, which aligns with an earlier study of Australian adolescents which found that dog walking was not associated with an increase in overall PA, walking, or pedometer steps (Christian et al., 2014). One possible explanation for ownership alone being insufficient is the lack of detail regarding the specific relationship between the companion animal and family, as Gadomski et al. (2017) found that children who reported higher attachment to their dogs also reported more time spent being active with their dog (although this study did not measure total PA). Similarly, Engelberg et al. (2016) found no difference in MVPA between adolescents without a dog and those with a dog they did not walk, but adolescents who reported walking their dog had significantly higher MVPA.

However, these findings should be contextualized in HAI research due to the homogeneity of samples in many studies (Griffin et al., 2019; Rodriguez et al., 2021). An alternative explanation of these findings could be primarily due to differences in access to public spaces for PA (as noted above), such as public parks, as some research has shown that there are differences in pet ownership profiles across different locales and population densities (e.g., Applebaum et al., 2023; Mueller, Anderson, et al., 2021). The dearth of representative samples in the literature highlights the strength of this study utilizing a nationally-representative dataset with a demographically-diverse sample.

Purpose of this Study

Many questions remain regarding the role of pets in youth and family activity. Families that engage in vigorous sports and activities (e.g., running, horseback riding) could prefer active pets (i.e., dogs, horses) that can be included in those sports and activities. Similarly, families that do not participate in vigorous sports and activities could prefer passive pets (i.e., cats, fish). However, families that own active pets could also participate in fewer vigorous activities, due to the time commitments associated with pet care (Westgarth et al., 2017).

The HAI literature is historically marred by a lack of high-quality research, including a focus on small, homogeneous samples (Griffin et al., 2019; Rodriguez et al., 2021). Additionally, many findings become minimized when accounting for demographic covariates (e.g., Hardie et al., 2023), which leads authors to publish findings that may be significant, but with very small (i.e., meaningless) effect sizes, due to the file-drawer problem—essentially that findings which are not statistically significant are less likely to be published, and so end up in a researcher's file drawer, or cloud storage, in modern

parlance (Rosenthal, 1979). This problem is especially prevalent in the HAI field due in part to *the pet effect* (i.e., the idea that pets are good for people; Allen, 2003; Herzog, 2011).

This study marks an important shift in laying the foundation for future high-quality research in the HAI field. Secondary data from a large, nationally-representative sample will be used to answer the research question of whether pet ownership alone (not accounting for the human-animal bond) is associated with PA, engagement in sports, and screentime in a sample of adolescents and family members. Furthermore, in utilizing a large, longitudinal dataset, these data can be revisited to assess changes over time. The findings from this study could allow clinicians to better inform their recommendations for meeting PA guidelines. This study could also allow clinicians to better understand how companion animals may influence an adolescent's engagement in PA.

Hypotheses

Accounting for the previous research discussed, the following hypotheses were formed. First, to my knowledge, pet ownership type has not been explored in relation to PA or involvement in sports or other activities, but because dog ownership has been associated with increased PA for adolescents as well as adults (e.g., Chase et al., 2022; Potter & Sartore-Baldwin, 2019), it is hypothesized that active pet ownership type will be associated with increases in parent (moderate and vigorous) and youth (active) PA levels, but decreased involvement in sports and other activities (moderate and vigorous), compared to passive and non-pet ownership.

Second, while Gadomski et al. (2017) did not find a relationship between attachment (i.e., the emotional bond between children and their pet dogs) and screen

time, it is unclear if there is a relationship between types of pet owned and screen time, as Gadomski et al. (2017) investigated only attachment with dogs, not any other pet types or differences between pet-owning families and non-pet-owning families. Due to the lack of clarity in the literature, this hypothesis is based on the broad theoretical model used in this research; specifically, it is hypothesized that active pet ownership will be associated with a reduction in screen time for both parents and youth, compared to passive and non-pet ownership.

Methods

Power Analysis

Because the data used for the analyses have already been collected, post-hoc power analyses were run in G*Power version 3.1.9.7 (Faul et al., 2009) in order to confirm that the final analytic sample was appropriately powered for the statistical methods used. These analyses indicated that the most conservative analytic sample sizes were adequately sensitive to detect small effect sizes.

For parent PA, youth involvement in sports, and youth PA, given $\alpha = .05$, power = .95, and analytic sample sizes of 6,481, 6,377, and 6,615, respectively, the samples are adequately sensitive to detect small effect sizes for logistic regression (OR = 1.22). For the parent and youth screen time measures, given $\alpha = .05$, power = .95, a total sample size of 6,617, and 16 predictors, the samples are adequately sensitive to detect small effect sizes for multiple linear regression ($f^2 = .004$).

Participants and Procedure

This research used data from the Adolescent Brain Cognitive Development (ABCD) Study®, a longitudinal study of brain development and youth health outcomes

in the United States. The ABCD Study® is collecting annual and/or bi-annual physical, cognitive, social, emotional, environmental, behavioral, and academic assessments of youth over a ten-year period. A baseline cohort of 11,878 youth enrolled at 9–10 years of age, along with their parents/guardians, and participants are included in the study until they are 19 or 20 years old. Initial participants were recruited to participate in the ABCD Study® between July 2016 and August 2018. Recruitment areas were determined by locations of 21 study sites (catchment areas), which closely matched the sociodemographic composition of the United States population. Within the catchment areas, participants were recruited through school-based probability sampling, where schools within each area were coded based on geographic location and sociodemographic characteristics using data from the National Center for Education Statistics and converted into databases that were used to generate lists for random selection (Garavan et al., 2018). The sample target uses a slight oversampling of racial/ethnic minority youth to attempt to recruit a demographically diverse sample. For more information on recruitment see https://abcdstudy.org/scientists/ and Garavan et al. (2018).

The data collection procedures are well documented as part of the larger ABCD Study®, https://abcdstudy.org/scientists/protocols/. Due to the COVID-19 pandemic, most of the data collected for the 3-year follow-up were collected remotely, via video chat, tablet, or telephone. For the 3-year follow-up, ABCD Study® researchers collected data related to physical health, mental health, substance use, neurocognition, culture and environment, mobile technology, and other data sources, as well as biospecimens (for those who were in-person). This study analyzed data from the entire ABCD cohort (n = 11,880) except for twelve participants who withdrew consent to share their data as of the

ABCD Annual Curated Release 5.0 (DOI: 10.15154/8873-zj65) as well as the other exclusions noted below.

The overall study procedures were approved by each local ethics committee of the relevant institutions per National Institutes of Health (NIH) human subjects research guidelines. These data collection procedures are in accordance with Texas Tech University's Institutional Review Board guidelines and the American Psychological Association's Ethical Principles and Code of Conduct.

Measures

Pet Ownership (ce_y_pet)

The Pet Ownership survey is a youth-report measure of pet ownership developed by the ABCD Study® team. The measure contains seven items related to current pet ownership. Youth were asked first if they "currently have any pets" (*pet_identify___0*) and were then told to "select all the pets that you currently have." They were given the option to endorse multiple selections among the following options: dog (*pet_identify___1*); cat (*pet_identify___2*); horse (*pet_identify___3*); fish (*pet_identify___4*); other small animal (e.g., rabbit, hamster, bird; *pet_identify___5*); other (*pet_identify___6*).

Pet ownership will be categorized as follows: no pets, active pets (dog only, horse only, or dog/horse and any other pet), and passive pets (cat, fish, small animal, or other pet).

Within the analytic sample, 4,765 (56.1%) have dogs in the household, 2,583 (30.4%) have cats, 2,046 (24.1%) have no pets, 1,374 (16.2%) have other small animals, 921 (10.8%) have fish, 463 (5.5%) have other pets, and 71 (0.8%) have horses. 4,773

(56.2%) participants were categorized as being in the "active pets" group, 2,046 (24.1%) were categorized as having no pets, and 1,670 (19.7%) were categorized as being in the "passive pets" group.

ABCD International Physical Activity Questionnaire (IPAQ; ph_p_ipaq)

The short form of the International Physical Activity Questionnaire is a parent-report measure of the parent's level of PA (Booth, 2000). Parents were asked to report on how many days during the last week they: walked "for at least 10 minutes at a time" (*ipaq_light_acts*); did "moderate physical activities like carrying light loads, bicycling at a regular pace, or doubles tennis? Do not include walking" (*ipaq_mod_acts*); and did "vigorous physical activities like heavy lifting, digging, aerobics, or fast bicycling" (*ipaq_vig_acts*). For each type of PA that parents indicated they did during the past week, they were asked to report how many hours and minutes they would "usually spend doing [the activities] on one of those days." They were also asked to report how much time in hours and minutes they spent "sitting on a week day" (*ipaq_inactive_hrs*).

Based on the World Health Organization's (WHO) guidelines on PA and sedentary behavior for adults (Bull et al., 2020), physical activities were categorized as follows: inactive (≤ 150 minutes/week of any-intensity activity), light (≥ 150 minutes/week of light-intensity activity), moderate (≥ 150 minutes/week of moderate-intensity activity), and vigorous (≥ 75 minutes/week of vigorous-intensity activity). As a note, there are no explicit minutes/week guidelines for inactive or light PA, so those categorizations have been based on the guidance regarding moderate- and vigorous-intensity activity. Additionally, the WHO guidelines mention that an "equivalent combination" (p. 1456) of moderate-intensity and vigorous-intensity aerobic PA is

suitable for attaining health benefits, but they do not explicate what that combination might look like; therefore, moderate- and vigorous-intensity PA have been combined in the final analyses.

Within the analytic sample, 4,622 (54.4%) were categorized as moderate-to-vigorous, 1,960 (23.1%) were categorized as inactive, 1,528 (18.0%) were categorized as light, and 379 (4.5%) could not be categorized due to missingness.

ABCD Youth Risk Behavior Survey Exercise Physical Activity (YRB; ph_y_yrb)

The YRB is a youth-report measure of PA and exercise. Youth were asked to report on how many days they: were "physically active for a total of at least 60 minutes per day" during the past 7 days (*physical_activity1_y*); did "exercises to strengthen or tone your muscles, such as push-ups, sit-ups, or weight lifting" during the past 7 days (*physical_activity2_y*); and went "to physical education (PE) class" in an average week when they are in school (*physical_activity5_y*).

Based on U.S. Department of Health and Human Services (2018) guidelines for school-aged children and adolescents, PA levels were categorized as: inactive (those not meeting the guidelines of 7 days of aerobic PA per week with 3 of those days including muscle- and bone-strengthening) and active (7 days of aerobic PA and ≥ 3 days of muscle- and bone-strengthening).

Within the analytic sample, 969 (11.4%) youth were categorized as inactive, 7,507 (88.4%) were categorized as follows: active, and 13 (0.15%) could not be categorized due to missingness.

ABCD Longitudinal Parent Sports and Activities Involvement Questionnaire (SAIQ; ph_p_saiq)

The SAIQ is a parent-report measure of child involvement in sports and other activities. Parents were asked for how many years their child had participated in a given activity continuously for four months or more. The maximum length allowed for this question was 10 years. For the purposes of brevity, the sports and activities collected have been listed below but the full variable names are not listed.

Based on guidelines offered by Butte et al. (2018)—and for sports and activities not included in the youth activity compendium (Ainsworth et al., 2011)—and the U. S. Department of Health and Human Services (2018), sports and activities have been categorized into four groups: none, light (Metabolic Equivalent Task; METs < 3; i.e., yoga/tai chi, musical instrument, drawing/painting/graphic art/photography/pottery/sculpting, crafts, competitive games, hobbies), moderate (3 < METs < 6; i.e., gymnastics, ballet/dance ballet, baseball/softball, skateboarding, surfing, volleyball, drama/theater/acting/film drama, bowling, boxing, curling, field events, fishing/hunting/archery, golf, sailing/wind-surfing, table tennis/shuffleboard), and vigorous (METs > 6; i.e., basketball, climbing, field hockey, football, ice hockey, horseback riding/polo, ice or inline skating, martial arts, lacrosse, rugby, skiing/snowboarding, soccer, swimming/water polo, tennis, track/running/cross-country, wrestling/mixed martial arts, cheerleading, cycling, orienteering, paddleboarding/water skiing/wakeboarding, rowing/canoeing/kayaking, ultimate frisbee). For activities with multiple MET values, an average of the reported MET value was taken to determine the activity level.

Additional categorization was applied to participants, specifically categorizing them if they responded that they participated in each activity for at least 1 month and at least one day per week.

Within the analytic sample, 7,118 (83.8%) were categorized as moderate-to-vigorous, 252 (3.0%) were categorized as light, 697 (8.2%) were categorized as none, and 422 (5.0%) could not be categorized due to missingness. See Table 1 for a count of participation in each sport and activity.

ABCD Parent Screentime Questionnaire (PSQ; nt_p_psq)

The PSQ is a parent self-report of screen time behaviors and behavior modeling. Parents were asked to report the amount of time that they spend using various forms of visual media—specifically, watching TV, movies, videos, or live streams, playing video games (single- and multi-player), texting, visiting social media sites or apps, video chatting, and searching or browsing the internet (not for school or work purposes)—on weekdays and weekends.

Parents reported an average 400.55 minutes (*sd* = 382.47) of screen time per week, with a median of 307, a minimum of 1, and a maximum of 5,617.

Youth Screen Time (STQ; nt_y_st)

The STQ is a youth self-report measure which includes customized questions about the overall amount of time that the youth spends using visual media, on a typical weekday and weekend day. Media activities assessed include: (1) watching TV shows or movies; (2) watching or streaming videos (such as YouTube or Twitch); (3) playing video games on a computer, console, phone, or other device; (4) texting on a cell phone, tablet, or computer; (5) visiting social networking sites like Facebook, Twitter, or

Instagram; (6) video chatting; (7) editing photos to post on social media; (8) searching or browsing the internet (not for school); (9) and using dating apps.

Youth reported an average 416.35 minutes (*sd* = 499.18) of screen time per week, with a median of 277, a minimum of 1, and a maximum of 6,907.

Demographic Covariates (abcd_p_demo; gish_p_gi; gish_y_gi)

Demographic variables were reported by parents about them and their child. Responses include data related to demographic information such as race, ethnicity, gender (youth self-reported), family structure, income, education, and occupation. ABCD collection site ID was also collected and reported.

Because parent and youth racial identity were not mutually exclusive variables, a "multiracial" category was created for any participants who reported identification with more than one racial group.

Residential History Derived Scores (RHDS; led_l_denspop; led_l_urban; led_l_coi)

The RHDS is a linked external data set which contains information about the physical and natural environment of participants based on parent-reported address, such as population density, walkability, area deprivation, and air pollution, among other measures.

The variables investigated were walkability, locale (i.e., urbanized areas, urban clusters, rural), public parks, and population density which are conceptualized as potential covariates in relation to the primary variables of interest.

Table 2 contains descriptive information related to the demographic breakdown of the analytic sample.

Data Analysis

Analytic Sample

Following guidance by Saragosa-Harris et al. (2022) regarding the handling of outliers, only outliers that are obvious errors have been removed. Certain participants were removed from the analytic sample due to obvious data entry errors. Specifically, eight participants were removed because the parent and child ages were the same; one parent's age was listed as their birth year, so they were removed; one participant was removed because their age listed them as 16, which should not be possible; five participants were removed because the number of people in the household appeared to be data entry errors; nine participants were removed because their reported screen time exceeded the number of possible minutes in a week; additionally, 26 participants were removed because their site ID was listed as "site22" which is not one of the possible data collection sites. It was determined by visual inspection of the Cook's Distance for each observation that no outliers appear to exert extreme influence upon the models; therefore, extreme outliers remained in the analytic sample so as to not exclude participants who may simply exhibit behaviors that are outside of the norm. Upon examining recommendations by Saragosa-Harris et al. (2022), it became clear that siblings and twins were oversampled in study recruitment, so to avoid violating the assumption of independence of observations, only the initially-enrolled participants have been retained in the analytic sample (i.e., any siblings of participants who participated in the study have been removed from data analyses). These considerations bring the total analytic sample from 10,321 to 8,489.

The variables of interest were examined prior to analyses in order to determine the best course of action related to the handling of missing data. Little's Missing Completely At Random (MCAR) Test was conducted, which found that there were 118 distinct patterns of missingness in the data, which—in conjunction with visual inspection—suggest that the data are missing at random (MAR). The proportions of data missing from each analysis variable were examined to determine if the data within a particular measure were likely to be not missing at random (NMAR), but most of the variables had less than 10% missing data, and only one (income) had above 10% missing data; variable-level counts are included in Table 3. However, Madley-Dowd et al. (2019) suggested that examining the proportion of missingness alone should not be used to guide decision-making regarding missingness; therefore, out of an abundance of caution, multiple imputation (MI) was utilized—as recommended for logistic regression by Peng & Jin Zhu (2008)—and coefficients were compared for each analysis (i.e., comparing models with pooled MI datasets vs. datasets with missing values omitted). Importantly, given the relatively low rates of missingness compared to the full sample size, it is estimated that omitting participants with missing values will not have a significant impact on power. Thus, case deletions of participants with missing data will likely not affect estimation of population parameters. To ensure that participants' missing data did not systematically differ from those not missing data, descriptive analyses were conducted and comparison plots were constructed; results of these tests as well as plots can be found in Tables 4 & 5 and Figure 1–Figure 21, respectively. Although multiple models are presented for comparative purposes, interpretation of the results has been limited to the models with missing values omitted.

Descriptive and Inferential Analyses

Regression models were calculated to assess how pet ownership relates to family involvement in sports and other activities. Two multinomial logistic regressions used pet ownership type (active, passive, no pet) as predictor variables and parent PA levels (inactive, light, and moderate-to-vigorous) and youth involvement in sports (none, light, and moderate-to-vigorous) as outcome variables. A binomial logistic regression used pet ownership type (active, passive, no pet) as a predictor variable and youth PA levels (inactive, active) as an outcome variable. Two polytomous dummy regressions used pet ownership type (active, passive, no pet) as predictor variables and changes in screen time for parents and youth (continuous) as outcome variables. These regression models were selected in order to best examine the outcome variables according to their scalings (i.e., categorical and continuous).

Person-Level and Context-Level Covariates. Demographic covariates were included in each model based on both prior findings in the literature as well as the theoretical model used in this study. Race and ethnicity were included, as they have been shown to be associated with differences in pet ownership (Mueller, King, et al., 2021), PA (Belcher et al., 2010), and screen time (Christensen et al., 2016). Gender has also been associated with outcomes related to pet ownership (Mueller, King, et al., 2021), PA (Donnelly et al., 2023), and screen time (Del Pozo-Cruz et al., 2019). Age has been shown to have an impact on the relationship that youth have with their pets (Hirschenhauser et al., 2017), potentially impacting how youth engage with their pets. Age has also been shown to impact engagement with PA (Belcher et al., 2010) and screen time (Del Pozo-Cruz et al., 2019). Context-level characteristics have an impact on a

family's engagement with PA and sports. Specifically, the number of siblings within the household has been associated with pet ownership (Saunders et al., 2017), PA (Blazo & Smith, 2018), and screen time (Del Pozo-Cruz et al., 2019). Neighborhood characteristics, such as walkability, locale, population density, as well as access to public parks have been shown to impact pet ownership (Applebaum et al., 2023; Mueller, King, et al., 2021), PA (Kwarteng et al., 2014; Veugelers et al., 2008), and screen time (Parajára et al., 2020). Finally, family income has been associated with differences in pet ownership (Marsa-Sambola et al., 2016), PA (Evans et al., 2012; Kantomaa et al., 2007), and screen time (Del Pozo-Cruz et al., 2019).

Data analyses were conducted in R version 4.2.3 (R Core Team, 2023) using the RStudio (version 2023.6.0.421) integrated development environment (Posit Team, 2023), and a number of packages were utilized (Arnold, 2021; Fox & Weisberg, 2019; Hebbali, 2020; Jay, 2019; Kassambara, 2023; Müller, 2020; Nakazawa, 2023; Nattino et al., 2023; Robinson et al., 2023; Rosseel, 2012; Sjoberg et al., 2021; Tierney & Cook, 2023; Torchiano, 2020; van Buuren & Groothuis-Oudshoorn, 2011; Venables & Ripley, 2002; Wickham et al., 2019; William Revelle, 2023; Xie, 2014, 2015, 2023; Yanagida, 2023; Zeileis et al., 2008; Zhu, 2021).

Results

Assumptions

Logistic Regression Assumptions

Assumptions for logistic regression vary, but the assumptions suggested by Pituch & Stevens (2016) as well as Stoltzfus (2011) have been explored. The primary predictor and outcome variables do not have any extreme outliers, and none of the outliers appear

to exert significant influence on the models (determined via Cook's Distance for the binary logistic regression model) where influence can be measured, so the assumption of not having extreme outliers in the dataset has been met. Logistic regression assumes that there is a linear relationship between the logit and each continuous explanatory variable (categorical data, by definition, must have a linear relationship with the logit); this assumption was explored, and transformations were made to certain covariates in order to best meet this assumption—specifically, parent age was log transformed and population density was square root transformed for the two multinomial models, but not for the binomial model. Additionally, predictors are conceptually related to the outcome variable in each model. The sample size is large enough to make generalizations, so that assumption has been met due to the size of the ABCD Study® dataset. The independence of observations assumption has been met, given that there are no duplicate responses or repeated measures in these cross-sectional data. Finally, the predictor variables, to the best of my knowledge, have been measured without error, and steps have been taken to remove likely errors from the analytic sample. Plots exploring these assumptions have been included in Figures 22–24.

Linear Regression Assumptions

Meyers et al. (2017), list the following assumptions underlying the general linear model: multivariate normality, linearity, homoscedasticity, independence of errors, and no significant multicollinearity. Visual inspection of the data for the normality, linearity, and homoscedasticity assumptions have been included in Figures 25–26. The multicollinearity assumption was tested using the generalized variance inflation factor (adjusting for degrees of freedom), the results of which are depicted in Table 6.

Additionally, the influence of outliers was visually examined via Cook's Distance plots. The outcome variables were square root transformed to adjust for multivariate normality. After transformation, all of the above-listed assumptions appear to have been appropriately met, particularly when considering the large sample size of the dataset and the associated benefits related to that large sample consistent with the central limit theorem.

Pet Ownership and Parent Physical Activity

A multinomial logistic regression was performed to examine the relationship between pet ownership type (active, passive, no pet) and parent PA levels (inactive, light, moderate-to-vigorous), while adjusting for covariates. Missing values were omitted from the sample prior to analysis, resulting in an analytic sample of n = 6,481. The Hosmer-Lemeshow (HL) goodness of fit test was conducted to determine model fit; the test was adjusted to account for power as was recommended by Paul et al. (2013). The results of the HL test indicate acceptable model fit, $\chi^2(672) = 688.55$, $p = .32$, meaning that the full transformed model predicted expected parent PA relatively well. A likelihood ratio (LR) test—wherein the full model is tested against the intercept-only model—was performed to determine if the model is significantly predicting outcomes above 0. The LR test indicated that the model significantly predicts outcomes above the null (meaning that the full model is able to predict parent PA above 0), $\chi^2(94) = 388.94$, $p < .05$. Finally, McFadden's Pseudo R^2, which compares the predictor model against the null model, was obtained. It is important to note that Pseudo R^2 coefficients do not have standardized guidelines for interpretation and thus should not be used in the same manner as R^2 coefficients in ordinary least squares (OLS) regressions (Hu et al., 2006; Smith &

McKenna, 2013). Taking this consideration into account, McFadden's Pseudo R^2 is reported here as a measure of changes in the predictive validity of the full model compared against the model without covariates (R^2(non-covariate) = .002; R^2(full model) = .231), resulting in a Δ McFadden's R^2 of .229. The results of the full transformed model, the model without covariates, and the model with missing values imputed (using multiple imputation with five iterations) have been reported in Tables 7–9.

Pet Ownership and Youth Involvement in Sports and Other Activities

A multinomial logistic regression was performed to examine the relationship between pet ownership type (active, passive, no pet) and youth involvement in sports and other activities (none, light, moderate-to-vigorous) while adjusting for covariates. Missing values were omitted from the sample prior to analysis, resulting in an analytic sample of n = 6,448. The results of the HL test indicated acceptable model fit, $\chi^2(666) = 612.98$, $p = .93$. The LR test indicated that the model significantly predicts outcomes above the null, $\chi^2(94) = 667.16$, $p < .05$. McFadden's Pseudo R^2 is .01 for the non-covariate model and .34 for the full model, resulting in a Δ McFadden's R^2 of .33. The results of the full model, the model without covariates, and the model with missing values imputed (using multiple imputation with five iterations) have been reported in Tables 10–12.

Pet Ownership and Youth Physical Activity Levels

A binomial logistic regression was performed to examine the relationship between pet ownership type (active, passive, no pet) and youth PA levels (inactive, active) while adjusting for covariates. Missing values were omitted from the sample prior to analysis, resulting in an analytic sample of n = 6,615. The results of the HL test indicate acceptable

model fit, $\chi^2(350) = 380.32$, $p = .13$. The LR test indicated that the model significantly predicts outcomes above the null, $\chi^2(47) = 139.78$, $p < .05$. McFadden's Pseudo R^2 is .001 for the non-covariate model and .029 for the full model, resulting in a Δ McFadden's R^2 of .028. The results of the full model, the model without covariates, and the model with missing values imputed (using multiple imputation with five iterations) have been reported in Tables 13–15.

Pet Ownership and Parent Screen Time

A linear polytomous dummy regression was performed to examine the relationship between pet ownership type (active, passive, no pet) and changes in screen time for parents (continuous) while adjusting for covariates. Missing values were omitted from the sample prior to analysis, resulting in an analytic sample of $n = 6{,}617$. The overall model was significant, $F(47, 6{,}569) = 31.73$, $p < .001$, which indicates that the full model predicted screen time above the null. R^2 is a measure of the proportion of variance in the outcome variable that is explained by the regression. Interpretation of the value varies, but Ferguson (2009) recommended .64 as a strong effect, .25 as a moderate effect, and .04 as the recommended minimum effect size (with anything less than .04 being not practically significant). Adjusted R^2 adjusts for the number of predictors included in a multiple regression model, and is interpreted on the same scale as R^2. Adjusted R^2 was .004 for the non-covariate model and .179 for the full model (Δ Adjusted $R^2 = .175$), with the full model demonstrating a small effect. The results of the full model, the model without covariates, and the model with missing values imputed (using multiple imputation with five iterations) have been reported in Tables 16–18. To

aid in interpretation of this model after outcome variable transformation, standardized beta coefficients have been reported.

Pet Ownership and Youth Screen Time

A linear polytomous dummy regression was performed to examine the relationship between pet ownership type (active, passive, no pet) and changes in screen time for youth (continuous) while adjusting for covariates. Missing values were omitted from the sample prior to analysis, resulting in an analytic sample of $n = 6{,}617$. The overall model was significant, $F(47, 6{,}569) = 33.1$, $p < .001$. Adjusted R^2 was .003 for the non-covariate model and .186 for the full model (Δ Adjusted $R^2 = .183$), with the full model demonstrating a small effect. The results of the full model, the model without covariates, and the model with missing values imputed (using multiple imputation with five iterations) have been reported in Tables 19–21. To aid in interpretation of this model after outcome variable transformation, standardized beta coefficients have been reported.

Discussion

For each regression analysis discussed below, only the primary outcomes will be interpreted, as the contextual covariates were included in each model in order to adjust the estimates appropriately according to theoretical considerations in previous literature. When taking a broad view of the full models, there do not appear to be practically-meaningful (e.g., small effect sizes) differences between those who own active pets, passive pets, and no pets in the domains of self-reported PA, involvement in sports and other activities, and screen time, even though some findings may be statistically significant (Dick et al., 2021; Funder & Ozer, 2019). One finding of this study is that the inclusion of contextual variables is essential when interpreting the results of analyses

related to pet ownership, as prior to the inclusion of those covariates in the models, there were broadly larger effect sizes and a higher proportion of significant differences between groups. For example, compared to non-pet ownership, in the full model, active pet ownership was associated with a 1.352 increase in odds of involvement in moderate-to-vigorous sports and other activities compared to not engaging in any sports and other activities, while in the model without any covariates, the Adjusted Odds Ratio (AOR) was 1.961. Study hypotheses were not supported via the results of the analyses conducted.

Pet Ownership and Parent Physical Activity

Compared to non-pet ownership, active pet ownership was not significantly associated with parents being categorized in the light PA (AOR = 1.167, 95% CI: 0.957, 1.424) or MVPA (AOR = 1.005, 95% CI: 0.858, 1.178) groups compared to those categorized in the inactive group, and passive pet ownership was not significantly associated with parents being categorized in the light PA (AOR = 0.957, 95% CI: 0.755, 1.213) or MVPA (AOR = 0.848, 95% CI: 0.702, 1.024) groups compared to those categorized in the inactive group, adjusted for contextual covariates.

Pet Ownership and Youth Involvement in Sports and Other Activities

Compared to non-pet ownership, active pet ownership was not significantly associated with parent-reported youth involvement in light sports and other activities (AOR = .958, 95% CI: 0.635, 1.446) compared to not engaging in any sports and other activities, but it was associated with a 1.352 (95% CI: 1.067, 1.715) increase in odds of involvement in moderate-to-vigorous sports and other activities compared to not engaging in any sports and other activities; however, according to guidelines by Ferguson

(2009), this AOR is beneath the recommended minimum effect size, meaning that the effect may not be practically significant. Compared to non-pet ownership, passive pet ownership was not significantly associated with parent-reported youth involvement in light sports and other activities (AOR = 0.941, 95% CI: 0.581, 1.525) or moderate-to-vigorous sports and other activities (AOR = 0.936, 95% CI: 0.708, 1.238) compared to youth not engaging in any sports and other activities, adjusted for contextual covariates.

Pet Ownership and Youth Physical Activity Levels

Compared to non-pet ownership, active pet ownership was not significantly associated with self-reported categorization of youth in the active PA group (AOR = 1.117, 95% CI: 0.914, 1.369) compared to being categorized as inactive, adjusted for contextual covariates. Compared to non-pet ownership, passive pet ownership was not significantly associated with self-reported categorization of youth in the active PA group (AOR = 0.925, 95% CI: 0.721, 1.186) compared to being categorized as inactive, adjusted for contextual covariates.

Pet Ownership and Screen Time

Compared to non-pet ownership, active pet ownership was significantly associated with a self-reported standardized increase of 0.129 minutes of screen time per week ($t = 4.753$, $p < .001$) for parents and a self-reported standardized increase of 0.120 minutes of screen time per week ($t = 4.333$, $p < .001$) for youth, adjusted for contextual covariates. However, these findings—while significant—again fall under the recommended threshold for practical significance according to Ferguson (2009). Finally, compared to non-pet ownership, passive pet ownership was not significantly associated with changes in self-reported screen time for parents (Standardized $\beta = 0.066$, $t = 2.025$,

$p = .043$) or youth (Standardized $\beta = 0.011$, $t = 0.324$, $p = .746$), adjusted for contextual covariates.

Overall, this study adds additional evidence to the corpus of existing research in the HAI field, specifically related to how companion animals may impact family PA and involvement in sports and other activities. Specifically, this study has not found an association between companion animal type and involvement in sports and other activities when adjusting for context- and person-level characteristics, similar to findings from Christian et al. (2014). Although this study did not find any meaningful associations, it is important to note that this study, like any other study, is not conclusive—instead it is merely intended to add context to the current literature. This study did improve upon homogeneity of samples generally included in HAI research (Griffin et al., 2019; Rodriguez et al., 2021); however, it was still not perfectly representative of the population of the United States. Additionally, and demonstrating the utility of framing HAI research within the context of the bioecological theory (Bronfenbrenner & Morris, 2006), one strength of this study is its ability to explore contextual variables. Nonetheless, details related to these variables are lacking, as is discussed in the limitations below.

Limitations

Although the ABCD Study® allows access to a large pool of adolescent data, some of the measures lack crucial contextual information. Notably, due to limitations of the pet ownership measure, this study was not able to assess the bonds between participants and their pets, which previous research has shown to be a potentially-limiting factor in studies of HAI (Jacobson & Chang, 2018; Julius et al., 2012; Melson et al.,

1991; Wice et al., 2020). Furthermore, the pet ownership measure does not account for any detail about the pet-owning relationship, including length of ownership, number of pets owned, frequency of interactions, or type of pet (e.g., guard dog, working dog, family dog, etc.), which limits the predictive power of this study.

An additional limitation of this study is the lack of longitudinal data; although the ABCD Study® will continue to collect longitudinal data on these measures, the current data release (5.0) was the first full data release to include the pet ownership measure. Thus, I was unable to investigate temporal relationships between the measures of interest. Furthermore, the data analyzed were collected during the COVID-19 pandemic, which may have impacted family involvement in sports and other activities; however, the measure of involvement with sports and other activities asks about lifetime involvement. Although it is still possible that recency bias could cloud self-reporting, especially regarding PA, this measure should be robust to any COVID-related impact on involvement in sports and other activities. Future research should include more objective measures of day-to-day PA to explore whether those data systematically differ from self-reported PA data.

Although the ABCD Study® attempted to recruit a nationally-representative sample of adolescents, the demographic profile was not completely in-line with that of the larger United States, with White participants being over-represented and other races being under-represented (with the exception of Black/African American parents) in the sample compared to national estimates (Jones et al., 2021). Additionally, parent gender was predominantly female, which is discrepant with population estimates (Blakeslee et al., 2023), indicating that caution should be taken especially when interpreting the results

of the parent outcomes. Nevertheless, this ABCD Study® sample is notably more representative of the U.S. population than samples typically included in HAI research (Griffin et al., 2019), and serves as a step in the right direction in terms of our ability to make population-level inferences from the sample at hand. A comparison of population percentages in the current sample and U.S. population estimates from the 2020 census (see Blakeslee et al., 2023; Jones et al., 2021) can be found in Table 22.

Because siblings and twins were oversampled in recruitment for the ABCD Study®, some participants needed to be excluded from the analytic sample (i.e., siblings who also participated in the study). Additionally, the dataset features a number of nested layers, including family, school, school district, and study collection site. This study attempted to adjust for the nature of these data by excluding same-family siblings and including study collection sites within the regression models. However, it is possible that there is additional variance that could better be explained by other methodologies, such as multilevel models, hierarchical linear models, or Bayesian models, as noted by Saragosa-Harris et al. (2022). The regression models used in this study best allow the researcher to investigate the constructs of interest within the context of the strengths and limitations of the ABCD Study® dataset. Regression models allow for the incorporation of relevant contextual variables to parsimoniously adjust the outcome variables of interest.

Conclusions

The primary implications of this study are related to the consideration of bioecological theory as a basis upon which to generate hypotheses, the inclusion of context- and person-level covariates to adjust outcomes, and the utilization of a more representative sample of participants. This study indicated that, within a large sample of

adolescents and their families in the United States, companion animal ownership alone—that is, not accounting for relationship factors such as interaction quality or frequency, attitudes toward pets, or the specific emotional bond between adolescents and their companion animals—does not appear to be associated with meaningful changes in odds of engagement in sports or other activities, PA, or screen time while adjusting for context- and person-level covariates.

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Table 1

SAIP Descriptive Statistics

Activity level	Sport/activity name	*n* (%)
Light	Yoga/tai chi	166 (2.0)
	Musical instrument	3,372 (39.7)
	Drawing/painting/graphic art/photography/pottery/sculpting	1,630 (19.2)
	Crafts	693 (8.2)
	Competitive games	913 (10.8)
	Hobbies	498 (5.9)
Moderate	Gymnastics	1,866 (22.0)
	Ballet/dance ballet	2,116 (24.9)
	Baseball/softball	2,245 (26.4)
	Skateboarding	300 (3.5)
	Surfing	37 (0.4)
	Volleyball	192 (2.3)
	Drama/theater/acting/film drama	923 (10.9)
	Bowling	159 (1.9)
	Boxing	58 (0.7)
	Curling	1 (0.0)
	Field events	0 (0.0)
	Fishing/hunting/archery	304 (3.6)
	Golf	212 (2.5)
	Sailing/wind surfing	2 (0.0)
	Table tennis/shuffleboard	74 (0.9)
Vigorous	Basketball	2,111 (24.9)
	Climbing	248 (2.9)
	Field hockey	49 (0.6)
	Football	900 (10.6)
	Ice hockey	206 (2.4)
	Horseback riding/polo	285 (3.4)
	Ice or inline skating	468 (5.5)
	Martial arts	1,494 (17.6)
	Lacrosse	232 (2.7)
	Rugby	0 (0.0)
	Skiing/snowboarding	662 (7.8)
	Soccer	3,427 (40.4)
	Swimming/water polo	2,654 (31.3)
	Tennis	522 (6.1)
	Track/running/cross-country	569 (6.7)
	Wrestling/mixed martial arts	220 (2.6)
	Cheerleading	251 (3.0)
	Cycling	328 (3.9)
	Orienteering	13 (0.2)
	Paddleboarding/water skiing/wakeboarding	89 (1.0)
	Rowing/canoeing/kayaking	123 (1.4)

Table 1 Continued

Activity level	Sport/activity name	*n* (%)
	Ultimate frisbee	60 (0.7)

Table 2

Sociodemographic Descriptive Statistics

Sociodemographic characteristic	*n (%)*
Parent race[a]	
Asian[b]	306 (3.6)
Black/African American	1,156 (13.6)
Multiracial	420 (5.0)
Native American[c]	44 (0.5)
Other Race, don't know, or refuse to answer	550 (6.5)
Pacific Islander[d]	9 (0.1)
White	5,972 (70.3)
Youth race[e]	
Asian[b]	213 (2.5)
Black/African American	1,178 (13.9)
Multiracial	1,047 (12.3)
Native American[c]	47 (0.6)
Other Race, don't know, or refuse to answer	493 (5.8)
Pacific Islander[d]	7 (0.1)
White	5,496 (64.7)
Parent ethnicity[f]	
Hispanic	1,511 (17.8)
Non-Hispanic	6,929 (81.6)
Youth ethnicity[g]	
Hispanic	1,796 (21.2)
Non-Hispanic	6,588 (77.6)
Parent gender[h]	
Male	873 (10.3)
Female	7,415 (87.3)
Youth gender[i]	
Boy	4,457 (52.5)
Girl	3,704 (43.6)
Locale[j]	
Urbanized area	7,236 (85.2)
Urban cluster	228 (2.7)
Rural	663 (7.8)
Collection Site	
Children's Hospital Los Angeles (CHLA; Site 1)	296 (3.5)
University of Colorado Boulder (CUB; Site 2)	295 (3.5)
Florida International University (FIU; Site 3)	490 (5.8)
Laureate Institute for Brain Research (LIBR; Site 4)	599 (7.1)
Medical University of South Carolina (MUSC; Site 5)	281 (3.3)
Oregon Health & Science University (OHSU; Site 6)	501 (5.9)
University of Rochester (ROC; Site 7)	191 (2.3)
SRI International (SRI; Site 8)	258 (3.0)
University of California, Los Angeles (UCLA; Site 9)	366 (4.3)
University of California, San Diego (UCSD; Site 10)	584 (6.9)
University of Florida (UFL; Site 11)	292 (3.4)

Table 2 Continued

Sociodemographic characteristic	*n (%)*
University of Maryland at Baltimore (UMB; Site 12)	449 (5.3)
University of Michigan (UMICH; Site 13)	557 (6.6)
University of Minnesota (UMN; Site 14)	332 (3.9)
University of Pittsburgh (UPMC; Site 15)	320 (3.8)
University of Utah (UTAH; Site 16)	763 (9.0)
University of Vermont (UVM; Site 17)	442 (5.2)
University of Wisconsin-Milwaukee (UWM; Site 18)	299 (3.5)
Virginia Commonwealth University (VCU; Site 19)	283 (3.3)
Washington University in St. Louis (WUSTL; Site 20)	433 (5.1)
Yale University (YALE; Site 21)	458 (5.4)
	m (*sd*); Median
Parent age[k]	43.2 (6.8); 43
Youth age[l]	12.5 (0.7); 12
Number of children in the household	2.3 (1.4); 2
Household income[m]	7.61 (2.3);
Walkability[n]	10.7 (3.8); 10.8
Population density[o]	2,183.5 (2,253.2); 1,717.4
Public parks[p]	.05 (.09); .02

[a] NA = 32

[b] Includes the following racial group identities: Asian Indian, Chinese, Filipino, Japanese, Korean, Vietnamese, and other Asian.

[c] Includes the following racial group identities: American Indian, Native American, and Alaska Native.

[d] Includes the following racial group identities: Native Hawaiian, Guamanian, Samoan, other Pacific Islander.

[e] NA = 8

[f] NA = 49

[g] NA = 105

[h] NA = 201

[i] NA = 328

[j] NA = 362

[k] NA = 212

[l] NA = 183

[m] NA = 884; household income was measured on the following scale: 1 (<$5,000), 2 ($5,000–$11,999), 3 ($12,000–$15,999), 4 ($16,000–$24,999), 5 ($25,000–$34,999), 6 ($35,000–$49,999), 7 ($50,000–$74,999), 8 ($75,000–$99,999), 9 ($100,000–$199,999), and 10 (≥$200,000).

[n] NA = 647; measured on a scale between 1–20, with 20 being the most walkable.

[o] NA = 343; measured in persons per square kilometer.

[p] NA = 336; proportion of open park land within census tract.

Table 3

Missing Data By Variable

Variable	*n (%)*
Subject ID	0 (0.0)
Site ID	0 (0.0)
IPAQ group	379 (4.5)
YRB group	13 (0.2)
SAIQ group	422 (5.0)
PSQ	0 (0.0)
STQ	0 (0.0)
Pet group	0 (0.0)
Parent race group	32 (0.4)
Youth race group	8 (0.1)
Parent Hispanic identity	49 (0.6)
Youth Hispanic identity	105 (1.2)
Parent gender	201 (2.4)
Youth gender	328 (3.9)
Parent age	212 (2.5)
Youth age	183 (2.2)
Number of children in the household	0 (0.0)
Income	884 (10.4)
Walkability	647 (7.6)
Locale	362 (4.3)
Population density	343 (4.0)
Parks	336 (4.0)

Note. Missing percentages have been calculated based on the total sample after excluding siblings enrolled in the study (n = 8,489)

Table 4

Participants with Complete Data Compared Against Participants Missing Data

Variable	*t* (df)	*p*	95% CI	Cohen's *d*	95% CI
PSQ	–4.28 (3,224.4)	< .001	[–66.40, –24.68]	–0.12	[–0.17, –0.07]
STQ	–7.94 (3,148.5)	< .001	[–138.88, –83.88]	–0.22	[–0.27, –0.18]
Parent age	4.38 (3,114.7)	< .001	[0.45, 1.17]	0.12	[0.07, 0.17]
Youth age	0.04 (3,342)	.96	[–0.03, 0.04]	0.001	[–0.05, 0.05]
Number of children in the household	9.36 (3,490.7)	< .001	[0.27, 0.42]	0.25	[0.20, 0.29]
Income	11.29 (1,774.7)	< .001	[0.71, 1.01]	0.38	[0.32, 0.44]
Walkability	–3.67 (2,468.7)	< .001	[–.058, –0.18]	–0.10	[–0.16, –0.05]
Population density	–6.35 (3,051.3)	< .001	[-494.70, –261.32]	–0.17	[–0.22, –0.12]
Parks	0.18 (3,072.9)	.86	[–0.004, 0.005]	0.004	[–0.05, 0.06]

Table 5

Relative Group Frequencies of Participants with Complete Data Compared Against Participants Missing Data

Group		Non-NA Data		NA Data	
		n	Frequency	*n*	Frequency
Site ID					
	CHLA	184	.03	114	.05
	CUB	235	.04	61	.03
	FIU	332	.05	165	.07
	LIBR	444	.07	163	.07
	MUSC	219	.03	63	.03
	OHSU	403	.06	101	.05
	ROC	138	.02	54	.02
	SRI	190	.03	69	.03
	UCLA	256	.04	115	.05
	UCSD	414	.07	181	.08
	UFL	207	.03	87	.04
	UMB	302	.05	151	.07
	UMICH	428	.07	133	.06
	UMN	283	.04	50	.02
	UPMC	218	.03	105	.05
	UTAH	631	.10	136	.06
	UVM	359	.06	85	.04
	UWM	261	.04	40	.02
	VCU	155	.02	129	.06
	WUSTL	347	.05	90	.04
	YALE	320	.05	140	.06
IPAQ					
	Inactive	1,458	.23	519	.28
	Light	1,201	.19	342	.19
	Moderate-to-vigorous	3,667	.58	992	.54
YRB					
	Inactive	5,593	.88	1,976	.89
	Active	733	.12	243	.11
SAIQ					
	None	488	.08	209	.12
	Light	190	.03	62	.03
	Moderate-to-vigorous	5,648	.89	1,539	.85
Pet					
	No Pet	1,438	.23	627	.28
	Passive pets	1,249	.20	438	.20
	Active pets	3,639	.58	1,167	.52
Parent race					
	Asian	223	.04	86	.04

Table 5 Continued

Group	Non-NA Data		NA Data	
	n	Frequency	*n*	Frequency
Black/African American	711	.11	459	.21
Multiracial	279	.04	144	.07
Native American	35	.01	9	.004
Other Race, don't know, or refuse to answer	346	.05	213	.10
Pacific Islander	5	.001	4	.002
White	4,727	.75	1,285	.58
Youth race				
Asian	151	.02	65	.03
Black/African American	741	.12	449	.20
Multiracial	752	.12	302	.14
Native American	31	.005	16	.01
Other Race, don't know, or refuse to answer	304	.05	197	.09
Pacific Islander	4	.001	3	.001
White	4,343	.69	1,192	.54
Parent Hispanic identity				
Non-Hispanic	5,297	.84	1,677	.77
Hispanic	1,029	.16	506	.23
Youth Hispanic identity				
Non-Hispanic	5,089	.80	1,541	.72
Hispanic	1,237	.20	586	.28
Parent gender				
Male	670	.11	210	.10
Female	5,656	.89	1,821	.90
Youth gender				
Boy	3,462	.55	1,015	.53
Girl	2,864	.45	889	.47
Locale				
Urbanized area	5,582	.88	1,716	.92
Urban cluster	181	.03	49	.03
Rural	563	.09	105	.06

Table 6

Generalized Variance Inflation Factor (GVIF) Results for PSQ and STQ Models

Variable	GVIF	*df*	$GVIF^{(1/(2*DF))}$
Site ID	5.5	20	1.0
Pet group	1.2	2	1.0
Parent race group	141.3	6	1.5
Youth race group	126.1	6	1.5
Parent Hispanic identity	4.5	1	2.1
Youth Hispanic identity	3.9	1	2.0
Parent gender	1.0	1	1.0
Youth gender	1.0	1	1.0
Parent age	1.2	1	1.1
Youth age	1.0	1	1.0
Number of children in the household	1.1	1	1.1
Income	1.6	1	1.3
Walkability	2.2	1	1.5
Locale	1.5	2	1.1
Population density	1.6	1	1.3
Parks	1.1	1	1.0

Table 7

Pet Ownership and Parent Physical Activity Multinomial Logistic Regression Full Model Results

Outcome Group[a]	Variable	Adj. *OR*	*SE*	*t*	*p*	95% CI
Light	(Intercept)	0.055	1.293	-2.249	.025	[0.004, 0.688]
	Pet[b]					
	Active Pets	1.167	0.101	1.524	.127	[0.957, 1.424]
	Passive Pets	0.957	0.121	-0.364	.716	[0.755, 1.213]
	Parent race[c]					
	Black/African American	0.551	0.287	-2.071	.038	[0.314, 0.969]
	Asian	0.957	0.280	-0.155	.877	[0.553, 1.659]
	Pacific Islander	6.813	1.470	1.305	.192	[0.382, 121.51]
	Native American	0.468	0.679	-1.120	.263	[0.124, 1.769]
	Other Race, don't know, or refuse to answer	0.735	0.300	-1.024	.306	[0.408, 1.324]
	Multiracial	0.908	0.219	-0.440	.660	[0.591, 1.396]
	Youth race[c]					
	Black/African American	1.039	0.284	0.134	.893	[0.595, 1.813]
	Asian	0.952	0.328	-0.150	.880	[0.5, 1.811]
	Pacific Islander	0.001	0.013	-555.309	.0	[0.001, 0.001]
	Native American	2.761	0.710	1.431	.152	[0.687, 11.094]
	Other Race, don't know, or refuse to answer	1.692	0.306	1.717	.086	[0.928, 3.084]
	Multiracial	0.965	0.155	-0.230	.818	[0.712, 1.308]
	Parent Hispanic identity[d]	0.826	0.213	-0.901	.368	[0.544, 1.252]
	Youth Hispanic identity[d]	0.970	0.183	-0.167	.867	[0.677, 1.389]
	Parent gender[e]	1.055	0.149	0.359	.720	[0.788, 1.412]
	Parent gender[f]	1.094	0.078	1.151	.250	[0.939, 1.276]
	Parent age	1.550	0.275	1.595	.111	[0.905, 2.655]
	Youth age	1.040	0.058	0.675	.50	[0.928, 1.166]
	Number of children in the household	0.996	0.030	-0.129	.897	[0.94, 1.056]
	Income	1.055	0.021	2.597	.009	[1.013, 1.098]
	Walkability	1.008	0.016	0.486	.627	[0.977, 1.04]
	Locale[g]					
	Urban cluster	0.950	0.245	-0.208	.835	[0.588, 1.536]
	Rural	0.715	0.175	-1.923	.054	[0.508, 1.006]
	Population density	0.999	0.003	-0.306	.760	[0.994, 1.005]
	Public parks	1.528	0.504	0.841	.40	[0.569, 4.1]

Table 7 Continued

Outcome Group[a]	Variable	Adj. *OR*	*SE*	*t*	*p*	95% CI
	Site ID[h]					
	CUB	1.036	0.340	0.105	.916	[0.532, 2.018]
	FIU	0.985	0.269	-0.057	.955	[0.581, 1.669]
	LIBR	0.960	0.279	-0.146	.884	[0.555, 1.66]
	MUSC	1.038	0.329	0.115	.909	[0.545, 1.98]
	OHSU	1.197	0.274	0.655	.512	[0.699, 2.05]
	ROC	0.700	0.351	-1.014	.311	[0.352, 1.394]
	SRI	1.551	0.320	1.370	.171	[0.828, 2.907]
	UCLA	1.153	0.287	0.494	.621	[0.657, 2.023]
	UCSD	1.293	0.254	1.009	.313	[0.785, 2.127]
	UFL	1.068	0.317	0.208	.835	[0.574, 1.988]
	UMB	1.234	0.286	0.735	.463	[0.704, 2.164]
	UMICH	1.161	0.277	0.541	.589	[0.675, 1.998]
	UMN	1.453	0.301	1.244	.213	[0.806, 2.619]
	UPMC	1.296	0.310	0.835	.403	[0.705, 2.382]
	UTAH	0.897	0.267	-0.407	.684	[0.531, 1.514]
	UVM	1.694	0.317	1.664	.096	[0.91, 3.151]
	UWM	1.065	0.295	0.212	.832	[0.597, 1.899]
	VCU	1.148	0.343	0.402	.688	[0.586, 2.249]
	WUSTL	0.953	0.287	-0.168	.866	[0.543, 1.671]
	YALE	1.219	0.289	0.683	.494	[0.691, 2.149]
Moderate-to-Vigorous	(Intercept)	1.098	1.041	0.090	.929	[0.143, 8.439]
	Pet[b]					
	Active Pets	1.005	0.081	0.066	.947	[0.858, 1.178]
	Passive Pets	0.848	0.096	-1.716	.086	[0.702, 1.024]
	Parent race[c]					
	Black/African American	0.588	0.229	-2.320	.020	[0.375, 0.921]
	Asian	0.481	0.243	-3.010	.003	[0.299, 0.775]
	Pacific Islander	0.789	1.507	-0.158	.875	[0.041, 15.129]
	Native American	0.424	0.547	-1.567	.117	[0.145, 1.24]
	Other Race, don't know, or refuse to answer	0.780	0.242	-1.025	.306	[0.486, 1.254]
	Multiracial	0.834	0.177	-1.024	.306	[0.589, 1.18]
	Youth race[c]					
	Black/African American	0.930	0.229	-0.318	.750	[0.594, 1.456]
	Asian	0.979	0.279	-0.078	.938	[0.566, 1.691]
	Pacific Islander	1.885	1.394	0.455	.649	[0.123, 28.984]
	Native American	2.465	0.602	1.500	.134	[0.758, 8.012]

Table 7 Continued

Outcome Group[a]	Variable	Adj. *OR*	*SE*	*t*	*p*	95% CI
	Other Race, don't know, or refuse to answer	1.392	0.253	1.309	.191	[0.848, 2.284]
	Multiracial	0.956	0.125	-0.357	.721	[0.748, 1.223]
	Parent Hispanic identity[d]	0.872	0.172	-0.798	.425	[0.622, 1.221]
	Youth Hispanic identity[d]	0.842	0.150	-1.150	.250	[0.627, 1.129]
	Parent gender[e]	0.588	0.114	-4.649	< .001	[0.47, 0.735]
	Parent gender[f]	1.040	0.063	0.618	.536	[0.919, 1.177]
	Parent age	1.281	0.222	1.117	.264	[0.83, 1.978]
	Youth age	0.978	0.047	-0.482	.630	[0.892, 1.072]
	Number of children in the household	1.002	0.024	0.076	.939	[0.956, 1.05]
	Income	1.105	0.017	6.003	< .001	[1.069, 1.141]
	Walkability	1.020	0.013	1.519	.129	[0.994, 1.046]
	Locale[g]					
	Urban cluster	0.884	0.202	-0.609	.542	[0.595, 1.314]
	Rural	0.804	0.137	-1.584	.113	[0.614, 1.053]
	Population density	0.994	0.002	-2.537	.011	[0.989, 0.999]
	Public parks	2.813	0.404	2.557	.011	[1.273, 6.214]
	Site ID[h]					
	CUB	1.796	0.269	2.179	.029	[1.061, 3.043]
	FIU	1.050	0.218	0.224	.823	[0.685, 1.608]
	LIBR	0.931	0.227	-0.313	.754	[0.596, 1.454]
	MUSC	1.154	0.264	0.543	.587	[0.688, 1.934]
	OHSU	1.083	0.227	0.351	.726	[0.694, 1.688]
	ROC	0.782	0.273	-0.900	.368	[0.458, 1.336]
	SRI	1.516	0.271	1.534	.125	[0.891, 2.582]
	UCLA	1.333	0.235	1.222	.222	[0.841, 2.115]
	UCSD	1.243	0.211	1.030	.303	[0.822, 1.879]
	UFL	0.763	0.261	-1.035	.301	[0.458, 1.273]
	UMB	1.179	0.235	0.699	.484	[0.744, 1.868]
	UMICH	0.913	0.228	-0.399	.690	[0.584, 1.428]
	UMN	1.126	0.252	0.471	.638	[0.687, 1.844]
	UPMC	1.161	0.254	0.587	.557	[0.706, 1.908]
	UTAH	1.070	0.216	0.315	.753	[0.701, 1.635]
	UVM	2.084	0.261	2.818	.005	[1.251, 3.473]
	UWM	0.930	0.243	-0.299	.765	[0.578, 1.497]
	VCU	1.007	0.280	0.024	.981	[0.582, 1.741]
	WUSTL	0.923	0.232	-0.344	.731	[0.586, 1.455]
	YALE	1.210	0.238	0.801	.423	[0.759, 1.927]

[a]The reference category is: Inactive.
[b]The reference category is: No Pets.
[c]The reference category is: White.
[d]The reference category is: Non-Hispanic.
[e]The reference category is: Male
[f]The reference category is: Boy.

[g]The reference category is: Urbanized Area.
[h]The reference category is: CHLA.

Table 8

Pet Ownership and Parent Physical Activity Multinomial Logistic Regression Basic Model Results

Outcome Group[a]	Variable	Adj. *OR*	*SE*	*t*	*p*	95% CI
Light	(Intercept)	0.611	0.069	-7.096	< .001	[0.534, 0.7]
Pet[b]						
	Active Pets	1.431	0.083	4.306	< .001	[1.216, 1.684]
	Passive Pets	1.258	0.103	2.228	.026	[1.028, 1.539]
Moderate-to-Vigorous	(Intercept)	1.945	0.053	12.659	< .001	[1.755, 2.156]
Pet[b]						
	Active Pets	1.352	0.064	4.691	< .001	[1.192, 1.533]
	Passive Pets	1.150	0.080	1.742	.081	[0.983, 1.345]

[a]The reference category is: Inactive.

[b]The reference category is: No Pets.

Table 9

Pet Ownership and Parent Physical Activity Multinomial Logistic Regression Full Imputed Model Results

Outcome Group[a]	Variable	Adj. *OR*	*SE*	*t*	*p*	95% CI
Light	(Intercept)	0.039	1.115	-2.903	.004	[0.004, 0.35]
	Pet[b]					
	Active Pets	1.193	0.088	1.993	.046	[1.003, 1.418]
	Passive Pets	1.062	0.106	0.569	.569	[0.863, 1.308]
	Parent race[c]					
	Black/African American	0.467	0.257	-2.962	.003	[0.282, 0.774]
	Asian	0.965	0.266	-0.136	.892	[0.572, 1.628]
	Pacific Islander	6.511	1.341	1.397	.163	[0.467, 90.808]
	Native American	0.602	0.647	-0.784	.434	[0.168, 2.157]
	Other Race, don't know, or refuse to answer	0.761	0.268	-1.021	.309	[0.448, 1.29]
	Multiracial	1.128	0.191	0.633	.527	[0.776, 1.641]
	Youth race[c]					
	Black/African American	1.366	0.254	1.228	.220	[0.829, 2.25]
	Asian	1.023	0.297	0.076	.939	[0.572, 1.831]
	Pacific Islander	0.158	1.824	-1.012	.314	[0.004, 5.888]
	Native American	2.077	0.636	1.150	.252	[0.593, 7.275]
	Other Race, don't know, or refuse to answer	1.672	0.288	1.787	.078	[0.942, 2.969]
	Multiracial	1.037	0.139	0.262	.793	[0.789, 1.363]
	Parent Hispanic identity[d]	0.967	0.188	-0.178	.859	[0.669, 1.398]
	Youth Hispanic identity[d]	0.789	0.164	-1.444	.149	[0.572, 1.089]
	Parent gender[e]	1.131	0.139	0.891	.375	[0.86, 1.487]
	Parent gender[f]	1.079	0.071	1.079	.281	[0.939, 1.24]
	Parent age	1.620	0.239	2.015	.044	[1.012, 2.591]
	Youth age	1.047	0.051	0.894	.372	[0.947, 1.158]
	Number of children in the household	0.996	0.025	-0.168	.866	[0.947, 1.046]
	Income	1.060	0.020	2.925	.006	[1.018, 1.104]
	Walkability	1.010	0.015	0.617	.540	[0.979, 1.041]
	Locale[g]					
	Urban cluster	0.795	0.226	-1.015	.310	[0.509, 1.24]

Table 9 Continued

Outcome Group[a]	Variable	Adj. *OR*	*SE*	*t*	*p*	95% CI
	Rural	0.734	0.156	-1.991	.047	[0.541, 0.996]
	Population density	0.999	0.004	-0.246	.810	[0.991, 1.007]
	Public parks	1.461	0.411	0.924	.356	[0.653, 3.271]
	Site ID[h]					
	CUB	1.004	0.297	0.012	.991	[0.56, 1.798]
	FIU	0.865	0.235	-0.619	.536	[0.546, 1.371]
	LIBR	0.834	0.244	-0.746	.456	[0.516, 1.346]
	MUSC	1.020	0.284	0.068	.946	[0.584, 1.78]
	OHSU	1.071	0.241	0.283	.777	[0.666, 1.721]
	ROC	0.831	0.292	-0.635	.525	[0.469, 1.473]
	SRI	1.141	0.263	0.500	.617	[0.681, 1.91]
	UCLA	0.954	0.244	-0.193	.847	[0.591, 1.54]
	UCSD	1.102	0.213	0.454	.650	[0.726, 1.672]
	UFL	1.047	0.294	0.156	.876	[0.585, 1.873]
	UMB	0.869	0.248	-0.564	.573	[0.534, 1.416]
	UMICH	1.075	0.238	0.302	.763	[0.673, 1.715]
	UMN	1.149	0.270	0.515	.607	[0.676, 1.953]
	UPMC	1.028	0.270	0.104	.917	[0.605, 1.747]
	UTAH	0.910	0.232	-0.404	.686	[0.577, 1.437]
	UVM	1.354	0.274	1.107	.269	[0.791, 2.316]
	UWM	1.012	0.264	0.045	.964	[0.603, 1.698]
	VCU	0.936	0.288	-0.230	.819	[0.531, 1.651]
	WUSTL	0.882	0.256	-0.490	.624	[0.533, 1.46]
	YALE	1.109	0.243	0.425	.671	[0.688, 1.788]
Moderate-to-Vigorous	(Intercept)	1.389	0.933	0.352	.725	[0.22, 8.754]
	Pet[b]					
	Active Pets	0.999	0.071	-0.018	.986	[0.869, 1.148]
	Passive Pets	0.877	0.085	-1.558	.119	[0.743, 1.035]
	Parent race[c]					
	Black/African American	0.562	0.208	-2.761	.006	[0.373, 0.848]
	Asian	0.567	0.218	-2.599	.009	[0.369, 0.87]
	Pacific Islander	0.496	1.386	-0.505	.614	[0.033, 7.543]
	Native American	0.656	0.478	-0.882	.378	[0.257, 1.676]
	Other Race, don't know, or refuse to answer	0.768	0.227	-1.159	.250	[0.488, 1.209]
	Multiracial	0.902	0.163	-0.628	.531	[0.654, 1.245]
	Youth race[c]					
	Black/African American	0.990	0.212	-0.045	.964	[0.652, 1.504]
	Asian	0.921	0.254	-0.323	.747	[0.56, 1.517]

Table 9 Continued

Outcome Group[a]	Variable	Adj. *OR*	*SE*	*t*	*p*	95% CI
	Pacific Islander	1.386	1.307	0.250	.803	[0.107, 17.996]
	Native American	1.779	0.500	1.152	.250	[0.666, 4.75]
	Other Race, don't know, or refuse to answer	1.371	0.246	1.284	.206	[0.835, 2.25]
	Multiracial	1.020	0.111	0.180	.857	[0.821, 1.267]
	Parent Hispanic identity[d]	0.928	0.151	-0.493	.622	[0.69, 1.249]
	Youth Hispanic identity[d]	0.778	0.130	-1.925	.054	[0.603, 1.005]
	Parent gender[e]	0.640	0.105	-4.237	< .001	[0.52, 0.788]
	Parent gender[f]	1.012	0.059	0.195	.846	[0.9, 1.137]
	Parent age	1.288	0.192	1.321	.187	[0.884, 1.876]
	Youth age	0.968	0.041	-0.806	.420	[0.893, 1.048]
	Number of children in the household	0.996	0.021	-0.202	.840	[0.956, 1.038]
	Income	1.086	0.021	3.948	.003	[1.037, 1.138]
	Walkability	1.019	0.014	1.395	.177	[0.991, 1.048]
	Locale[g]					
	Urban cluster	0.834	0.173	-1.044	.297	[0.594, 1.172]
	Rural	0.825	0.130	-1.481	.142	[0.637, 1.068]
	Population density	0.995	0.003	-1.864	.088	[0.989, 1.001]
	Public parks	1.872	0.326	1.923	.055	[0.988, 3.549]
	Site ID[h]					
	CUB	1.771	0.238	2.404	.016	[1.11, 2.823]
	FIU	0.967	0.182	-0.184	.854	[0.676, 1.383]
	LIBR	0.786	0.197	-1.223	.222	[0.534, 1.158]
	MUSC	1.073	0.229	0.308	.758	[0.685, 1.681]
	OHSU	0.990	0.195	-0.053	.958	[0.675, 1.451]
	ROC	0.767	0.244	-1.085	.279	[0.475, 1.241]
	SRI	1.079	0.228	0.332	.740	[0.689, 1.69]
	UCLA	1.102	0.198	0.490	.624	[0.747, 1.626]
	UCSD	1.137	0.176	0.731	.465	[0.806, 1.605]
	UFL	0.863	0.241	-0.612	.542	[0.535, 1.392]
	UMB	0.978	0.197	-0.112	.911	[0.665, 1.439]
	UMICH	0.886	0.199	-0.609	.543	[0.599, 1.31]
	UMN	1.098	0.219	0.427	.669	[0.715, 1.687]
	UPMC	1.025	0.220	0.113	.910	[0.666, 1.579]
	UTAH	1.044	0.188	0.230	.818	[0.722, 1.51]
	UVM	1.677	0.226	2.286	.023	[1.075, 2.615]
	UWM	0.959	0.217	-0.192	.848	[0.627, 1.467]
	VCU	0.914	0.226	-0.396	.692	[0.586, 1.427]
	WUSTL	0.889	0.201	-0.587	.558	[0.599, 1.318]
	YALE	1.086	0.206	0.398	.691	[0.723, 1.63]

[a]The reference category is: Inactive.
[b]The reference category is: No Pets.
[c]The reference category is: White.
[d]The reference category is: Non-Hispanic.
[e]The reference category is: Male
[f]The reference category is: Boy.
[g]The reference category is: Urbanized Area.
[h]The reference category is: CHLA.

Table 10

Pet Ownership and Youth Involvement in Sports and Other Activities Multinomial Logistic Regression Full Model Results

Outcome Group[a]	Variable	Adj. *OR*	*SE*	*t*	*p*	95% CI
Light	(Intercept)	< 0.001	2.773	-3.467	.001	[0, 0.015]
	Pet[b]					
	Active Pets	0.958	0.210	-0.202	.840	[0.635, 1.446]
	Passive Pets	0.941	0.246	-0.247	.805	[0.581, 1.525]
	Parent race[c]					
	Black/African American	0.917	0.621	-0.139	.889	[0.272, 3.095]
	Asian	0.858	0.717	-0.214	.831	[0.21, 3.499]
	Pacific Islander	0.001	0.001	-7691.719	< .001	[0.001, 0.001]
	Native American	0.001	0.001	-10593.250	< .001	[0.001, 0.001]
	Other Race, don't know, or refuse to answer	0.373	0.756	-1.303	.193	[0.085, 1.644]
	Multiracial	1.390	0.455	0.724	.469	[0.57, 3.392]
	Youth race[c]					
	Black/African American	0.983	0.621	-0.028	.978	[0.291, 3.322]
	Asian	0.852	0.817	-0.196	.844	[0.172, 4.228]
	Pacific Islander	< 0.001	< 0.001	-31501.500	< .001	[0, 0]
	Native American	0.006	0.001	-7368.718	< .001	[0.006, 0.006]
	Other Race, don't know, or refuse to answer	1.284	0.747	0.334	.738	[0.297, 5.556]
	Multiracial	0.920	0.359	-0.232	.817	[0.455, 1.861]
	Parent Hispanic identity[d]	1.677	0.514	1.005	.315	[0.612, 4.594]
	Youth Hispanic identity[d]	0.545	0.468	-1.296	.195	[0.218, 1.364]
	Parent gender[e]	1.436	0.300	1.204	.229	[0.797, 2.588]
	Parent gender[f]	1.302	0.173	1.528	.127	[0.928, 1.827]
	Parent age	4.035	0.579	2.409	.016	[1.297, 12.552]
	Youth age	1.175	0.128	1.258	.208	[0.914, 1.512]
	Number of children in the household	1.031	0.058	0.534	.594	[0.921, 1.155]
	Income	1.226	0.043	4.776	< .001	[1.127, 1.332]
	Walkability	0.949	0.036	-1.466	.143	[0.884, 1.018]
	Locale[g]					
	Urban cluster	0.671	0.553	-0.722	.471	[0.227, 1.983]
	Rural	1.201	0.421	0.435	.664	[0.526, 2.74]
	Population density	1.012	0.006	2.143	.032	[1.001, 1.024]

Table 10 Continued

Outcome Group[a]	Variable	Adj. *OR*	*SE*	*t*	*p*	95% CI
	Public parks	0.818	1.262	-0.159	.874	[0.069, 9.698]
	Site ID[h]					
	CUB	0.590	0.995	-0.530	.596	[0.084, 4.149]
	FIU	0.811	0.580	-0.362	.717	[0.26, 2.524]
	LIBR	0.659	0.628	-0.663	.507	[0.192, 2.258]
	MUSC	0.957	0.743	-0.059	.953	[0.223, 4.109]
	OHSU	0.808	0.624	-0.342	.732	[0.238, 2.744]
	ROC	0.444	0.942	-0.862	.389	[0.07, 2.813]
	SRI	1.145	0.847	0.160	.873	[0.218, 6.026]
	UCLA	0.835	0.776	-0.232	.816	[0.182, 3.824]
	UCSD	0.548	0.618	-0.973	.331	[0.163, 1.84]
	UFL	0.668	0.693	-0.583	.560	[0.171, 2.599]
	UMB	1.155	0.656	0.220	.826	[0.32, 4.177]
	UMICH	0.907	0.634	-0.154	.878	[0.262, 3.143]
	UMN	0.346	0.785	-1.353	.176	[0.074, 1.61]
	UPMC	0.790	0.691	-0.341	.733	[0.204, 3.061]
	UTAH	1.401	0.592	0.570	.569	[0.439, 4.466]
	UVM	0.592	0.829	-0.633	.527	[0.117, 3.002]
	UWM	0.993	0.699	-0.010	.992	[0.252, 3.907]
	VCU	1.147	0.765	0.180	.857	[0.256, 5.142]
	WUSTL	1.329	0.628	0.452	.651	[0.388, 4.553]
	YALE	0.612	0.691	-0.710	.478	[0.158, 2.372]
Moderate-to-Vigorous	(Intercept)	0.003	1.558	-3.696	< .001	[0, 0.067]
	Pet[b]					
	Active Pets	1.352	0.121	2.495	.013	[1.067, 1.715]
	Passive Pets	0.936	0.143	-0.464	.643	[0.708, 1.238]
	Parent race[c]					
	Black/African American	0.803	0.338	-0.647	.517	[0.414, 1.559]
	Asian	0.620	0.426	-1.120	.263	[0.269, 1.431]
	Pacific Islander	0.192	1.123	-1.470	.141	[0.021, 1.732]
	Native American	0.363	0.640	-1.583	.113	[0.104, 1.273]
	Other Race, don't know, or refuse to answer	0.682	0.351	-1.091	.275	[0.343, 1.356]
	Multiracial	0.806	0.270	-0.801	.423	[0.475, 1.367]
	Youth race[c]					
	Black/African American	0.800	0.342	-0.651	.515	[0.409, 1.565]
	Asian	0.652	0.483	-0.885	.376	[0.253, 1.68]
	Pacific Islander	0.041	1.292	-2.471	.013	[0.003, 0.517]

Table 10 Continued

Outcome Group[a]	Variable	Adj. *OR*	*SE*	*t*	*p*	95% CI
	Native American	2.087	0.767	0.959	.337	[0.464, 9.38]
	Other Race, don't know, or refuse to answer	0.931	0.358	-0.199	.842	[0.462, 1.879]
	Multiracial	0.955	0.204	-0.225	.822	[0.641, 1.424]
	Parent Hispanic identity[d]	0.867	0.264	-0.538	.590	[0.517, 1.456]
	Youth Hispanic identity[d]	0.824	0.234	-0.826	.409	[0.521, 1.304]
	Parent gender[e]	1.338	0.169	1.723	.085	[0.961, 1.864]
	Parent gender[f]	1.092	0.101	0.871	.384	[0.896, 1.33]
	Parent age	3.295	0.324	3.684	< .001	[1.747, 6.213]
	Youth age	1.196	0.073	2.450	.014	[1.037, 1.381]
	Number of children in the household	0.893	0.033	-3.424	.001	[0.837, 0.953]
	Income	1.360	0.023	13.491	< .001	[1.3, 1.422]
	Walkability	1.001	0.022	0.054	.957	[0.959, 1.045]
	Locale[g]					
	Urban cluster	0.704	0.300	-1.171	.242	[0.391, 1.267]
	Rural	1.185	0.260	0.652	.514	[0.712, 1.972]
	Population density	0.998	0.004	-0.473	.636	[0.991, 1.005]
	Public parks	3.758	0.744	1.778	.075	[0.873, 16.165]
	Site ID[h]					
	CUB	1.220	0.546	0.363	.716	[0.418, 3.559]
	FIU	0.497	0.320	-2.187	.029	[0.265, 0.93]
	LIBR	0.427	0.347	-2.453	.014	[0.216, 0.843]
	MUSC	0.676	0.439	-0.891	.373	[0.286, 1.6]
	OHSU	0.427	0.355	-2.393	.017	[0.213, 0.857]
	ROC	0.576	0.451	-1.223	.221	[0.238, 1.394]
	SRI	1.452	0.533	0.699	.484	[0.51, 4.13]
	UCLA	1.572	0.439	1.030	.303	[0.665, 3.716]
	UCSD	0.725	0.314	-1.027	.304	[0.392, 1.34]
	UFL	0.278	0.391	-3.272	.001	[0.129, 0.599]
	UMB	0.845	0.381	-0.442	.659	[0.401, 1.783]
	UMICH	0.562	0.364	-1.582	.114	[0.275, 1.147]
	UMN	0.408	0.407	-2.200	.028	[0.184, 0.907]
	UPMC	0.609	0.366	-1.355	.175	[0.298, 1.247]
	UTAH	0.547	0.344	-1.749	.080	[0.279, 1.075]
	UVM	0.931	0.469	-0.153	.878	[0.371, 2.336]
	UWM	0.601	0.419	-1.216	.224	[0.264, 1.366]
	VCU	0.686	0.467	-0.807	.420	[0.275, 1.713]
	WUSTL	0.521	0.370	-1.762	.078	[0.252, 1.076]
	YALE	0.786	0.389	-0.621	.535	[0.367, 1.683]

[a]The reference category is: None.

[b]The reference category is: No Pets.

[c]The reference category is: White.

[d]The reference category is: Non-Hispanic.
[e]The reference category is: Male
[f]The reference category is: Boy.
[g]The reference category is: Urbanized Area.
[h]The reference category is: CHLA.

Table 11

Pet Ownership and Youth Involvement in Sports and Other Activities Multinomial Logistic Regression Basic Model Results

Outcome Group[a]	Variable	Adj. *OR*	*SE*	*t*	*p*	95% CI
Light	(Intercept)	0.337	0.128	-8.453	< .001	[0.262, 0.434]
Pet[b]						
	Active Pets	1.089	0.169	0.504	.614	[0.782, 1.515]
	Passive Pets	1.152	0.203	0.697	.486	[0.774, 1.716]
Moderate-to-Vigorous	(Intercept)	6.721	0.069	27.538	< .001	[5.869, 7.697]
Pet[b]						
	Active Pets	1.961	0.091	7.426	< .001	[1.642, 2.342]
	Passive Pets	1.426	0.112	3.179	.001	[1.146, 1.775]

[a]The reference category is: None.

[b]The reference category is: No Pets.

Table 12

Pet Ownership and Youth Involvement in Sports and Other Activities Multinomial Logistic Regression Full Imputed Model Results

Outcome Group[a]	Variable	Adj. *OR*	*SE*	*t*	*p*	95% CI
Light	(Intercept)	< 0.001	2.465	-3.879	< .001	[0, 0.009]
	Pet[b]					
	Active Pets	0.857	0.184	-0.841	.401	[0.597, 1.229]
	Passive Pets	0.965	0.217	-0.166	.869	[0.629, 1.479]
	Parent race[c]					
	Black/African American	0.980	0.530	-0.038	.969	[0.345, 2.784]
	Asian	1.262	0.602	0.386	.700	[0.387, 4.108]
	Pacific Islander	0.008	0.876	-5.480	.505	[0, Inf]
	Native American	< 0.001	0.458	-21.029	.993	[0, Inf]
	Other Race, don't know, or refuse to answer	0.814	0.584	-0.353	.725	[0.256, 2.589]
	Multiracial	1.566	0.392	1.144	.253	[0.726, 3.378]
	Youth race[c]					
	Black/African American	0.707	0.544	-0.637	.525	[0.241, 2.071]
	Asian	0.669	0.727	-0.552	.581	[0.161, 2.788]
	Pacific Islander	0.004	1.077	-5.038	.556	[0, Inf]
	Native American	< 0.001	0.261	-34.101	.992	[0, Inf]
	Other Race, don't know, or refuse to answer	0.893	0.598	-0.189	.851	[0.272, 2.938]
	Multiracial	0.972	0.313	-0.091	.928	[0.525, 1.798]
	Parent Hispanic identity[d]	1.271	0.442	0.542	.588	[0.532, 3.036]
	Youth Hispanic identity[d]	0.607	0.398	-1.257	.210	[0.277, 1.33]
	Parent gender[e]	1.423	0.273	1.293	.197	[0.831, 2.436]
	Parent gender[f]	1.235	0.158	1.334	.184	[0.904, 1.688]
	Parent age	5.930	0.535	3.325	.001	[2.048, 17.171]
	Youth age	1.083	0.109	0.733	.463	[0.875, 1.341]
	Number of children in the household	0.991	0.056	-0.154	.878	[0.886, 1.11]
	Income	1.137	0.037	3.469	.001	[1.056, 1.223]
	Walkability	0.966	0.032	-1.083	.283	[0.907, 1.029]
	Locale[g]					
	Urban cluster	0.640	0.547	-0.816	.416	[0.217, 1.889]
	Rural	1.408	0.467	0.734	.471	[0.536, 3.702]
	Population density	1.007	0.005	1.388	.168	[0.997, 1.017]
	Public parks	1.127	1.317	0.091	.929	[0.071, 17.813]
	Site ID[h]					

Table 12 Continued

Outcome Group[a]	Variable	Adj. *OR*	*SE*	*t*	*p*	95% CI
	CUB	0.732	0.935	-0.334	.738	[0.117, 4.592]
	FIU	1.295	0.447	0.579	.563	[0.539, 3.111]
	LIBR	0.799	0.508	-0.442	.658	[0.294, 2.166]
	MUSC	1.152	0.606	0.233	.816	[0.351, 3.78]
	OHSU	1.130	0.506	0.242	.809	[0.418, 3.053]
	ROC	0.403	0.836	-1.087	.278	[0.078, 2.092]
	SRI	1.195	0.678	0.263	.793	[0.316, 4.52]
	UCLA	1.075	0.627	0.115	.909	[0.313, 3.689]
	UCSD	0.948	0.476	-0.112	.911	[0.373, 2.409]
	UFL	0.805	0.576	-0.376	.707	[0.26, 2.493]
	UMB	0.886	0.539	-0.224	.823	[0.308, 2.554]
	UMICH	1.191	0.507	0.344	.731	[0.441, 3.217]
	UMN	0.445	0.726	-1.116	.265	[0.107, 1.853]
	UPMC	0.923	0.567	-0.141	.888	[0.303, 2.813]
	UTAH	1.759	0.477	1.184	.237	[0.69, 4.482]
	UVM	0.718	0.684	-0.484	.629	[0.188, 2.748]
	UWM	1.219	0.585	0.338	.735	[0.387, 3.839]
	VCU	1.210	0.570	0.335	.738	[0.396, 3.704]
	WUSTL	1.949	0.500	1.336	.182	[0.732, 5.193]
	YALE	1.250	0.542	0.411	.681	[0.431, 3.62]
Moderate-to-Vigorous	(Intercept)	0.002	1.321	-4.803	< .001	[0, 0.024]
	Pet[b]					
	Active Pets	1.213	0.101	1.913	.056	[0.995, 1.477]
	Passive Pets	0.930	0.125	-0.579	.563	[0.728, 1.189]
	Parent race[c]					
	Black/African American	0.762	0.285	-0.958	.339	[0.435, 1.333]
	Asian	0.719	0.381	-0.867	.386	[0.341, 1.517]
	Pacific Islander	0.537	1.036	-0.600	.548	[0.07, 4.095]
	Native American	0.505	0.559	-1.223	.222	[0.169, 1.511]
	Other Race, don't know, or refuse to answer	0.790	0.275	-0.856	.392	[0.461, 1.355]
	Multiracial	1.071	0.232	0.294	.769	[0.679, 1.689]
	Youth race[c]					
	Black/African American	0.678	0.293	-1.322	.188	[0.38, 1.21]
	Asian	0.718	0.430	-0.768	.442	[0.309, 1.671]
	Pacific Islander	0.119	1.092	-1.947	.052	[0.014, 1.016]
	Native American	1.145	0.597	0.227	.821	[0.354, 3.7]

Table 12 Continued

Outcome Group[a]	Variable	Adj. *OR*	*SE*	*t*	*p*	95% CI
	Other Race, don't know, or refuse to answer	0.800	0.275	-0.811	.417	[0.466, 1.372]
	Multiracial	0.885	0.172	-0.708	.479	[0.631, 1.241]
	Parent Hispanic identity[d]	0.835	0.240	-0.750	.455	[0.518, 1.346]
	Youth Hispanic identity[d]	0.706	0.218	-1.593	.116	[0.456, 1.093]
	Parent gender[e]	1.237	0.150	1.419	.157	[0.921, 1.662]
	Parent gender[f]	1.056	0.089	0.618	.537	[0.887, 1.258]
	Parent age	5.425	0.330	5.119	< .001	[2.768, 10.632]
	Youth age	1.112	0.061	1.755	.079	[0.988, 1.252]
	Number of children in the household	0.948	0.033	-1.618	.115	[0.886, 1.014]
	Income	1.240	0.052	4.125	.009	[1.085, 1.419]
	Walkability	1.015	0.021	0.684	.502	[0.97, 1.061]
	Locale[g]					[0., 0.]
	Urban cluster	0.749	0.278	-1.039	.300	[0.433, 1.298]
	Rural	1.470	0.241	1.597	.113	[0.912, 2.369]
	Population density	0.996	0.003	-1.386	.168	[0.99, 1.002]
	Public parks	3.597	0.694	1.845	.074	[0.877, 14.758]
	Site ID[h]					
	CUB	1.835	0.505	1.203	.231	[0.678, 4.969]
	FIU	0.666	0.244	-1.666	.096	[0.412, 1.075]
	LIBR	0.542	0.269	-2.277	.023	[0.32, 0.919]
	MUSC	0.809	0.353	-0.603	.547	[0.404, 1.616]
	OHSU	0.584	0.289	-1.867	.063	[0.331, 1.03]
	ROC	0.596	0.359	-1.441	.152	[0.293, 1.212]
	SRI	1.624	0.431	1.125	.262	[0.694, 3.799]
	UCLA	1.746	0.381	1.464	.149	[0.813, 3.748]
	UCSD	1.129	0.245	0.497	.619	[0.698, 1.826]
	UFL	0.387	0.316	-3.007	.003	[0.208, 0.72]
	UMB	0.831	0.287	-0.644	.520	[0.473, 1.461]
	UMICH	0.712	0.314	-1.082	.282	[0.382, 1.328]
	UMN	0.614	0.361	-1.351	.178	[0.302, 1.25]
	UPMC	0.684	0.279	-1.360	.174	[0.396, 1.183]
	UTAH	0.682	0.292	-1.310	.193	[0.383, 1.216]
	UVM	1.026	0.395	0.066	.948	[0.47, 2.241]
	UWM	0.779	0.366	-0.684	.495	[0.378, 1.603]
	VCU	0.721	0.350	-0.935	.351	[0.361, 1.44]
	WUSTL	0.693	0.302	-1.210	.227	[0.382, 1.258]
	YALE	1.352	0.347	0.870	.387	[0.676, 2.704]

[a]The reference category is: None.
[b]The reference category is: No Pets.
[c]The reference category is: White.
[d]The reference category is: Non-Hispanic.
[e]The reference category is: Male

[f]The reference category is: Boy.
[g]The reference category is: Urbanized Area.
[h]The reference category is: CHLA.

Table 13

Pet Ownership and Youth Physical Activity Levels Binomial Logistic Regression Full Model Results

Variable	Adj. *OR*	*SE*	*t*	*p*	95% CI
(Intercept)	0.152	0.888	-2.121	.034	[0.026, 0.861]
Pet[a]					
Active Pets	1.117	0.103	1.069	.285	[0.914, 1.369]
Passive Pets	0.925	0.127	-0.613	.540	[0.721, 1.186]
Parent race[b]					
Black/African American	1.132	0.301	0.411	.681	[0.63, 2.047]
Asian	1.362	0.293	1.053	.292	[0.757, 2.396]
Pacific Islander	1.457	1.469	0.256	.798	[0.043, 17.913]
Native American	1.487	0.656	0.605	.545	[0.382, 5.063]
Other Race, don't know, or refuse to answer	1.844	0.308	1.985	.047	[0.991, 3.325]
Multiracial	0.884	0.234	-0.525	.599	[0.552, 1.385]
Youth race[b]					
Black/African American	0.974	0.296	-0.090	.928	[0.538, 1.718]
Asian	0.831	0.345	-0.537	.591	[0.414, 1.604]
Pacific Islander	1.880	1.489	0.424	.672	[0.057, 28.367]
Native American	1.260	0.656	0.352	.725	[0.323, 4.281]
Other Race, don't know, or refuse to answer	0.442	0.343	-2.383	.017	[0.224, 0.859]
Multiracial	0.965	0.155	-0.230	.818	[0.707, 1.299]
Parent Hispanic identity[c]	0.630	0.221	-2.093	.036	[0.41, 0.973]
Youth Hispanic identity[c]	1.225	0.182	1.117	.264	[0.849, 1.733]
Parent gender[d]	1.376	0.138	2.320	.020	[1.058, 1.817]
Parent gender[e]	0.542	0.082	-7.451	< .001	[0.461, 0.636]
Parent age	0.996	0.007	-0.672	.502	[0.983, 1.008]
Youth age	0.969	0.058	-0.542	.588	[0.864, 1.086]
Number of children in the household	0.983	0.031	-0.561	.575	[0.924, 1.044]
Income	1.032	0.023	1.418	.156	[0.988, 1.08]
Walkability	0.975	0.015	-1.614	.106	[0.946, 1.005]
Locale[f]					
Urban cluster	0.867	0.242	-0.591	.555	[0.526, 1.365]
Rural	0.867	0.151	-0.944	.345	[0.641, 1.162]
Population density	1.000	< 0.001	-0.631	.528	[1, 1]
Public parks	1.051	0.444	0.111	.912	[0.429, 2.447]
Site ID[g]					
CUB	2.066	0.363	2.001	.045	[1.041, 4.361]
FIU	1.421	0.363	0.968	.333	[0.714, 2.999]

Table 13 Continued

Variable	Adj. *OR*	*SE*	*t*	*p*	95% CI
LIBR	1.415	0.357	0.972	.331	[0.723, 2.962]
MUSC	2.277	0.372	2.209	.027	[1.125, 4.89]
OHSU	1.851	0.348	1.770	.077	[0.965, 3.812]
ROC	1.233	0.425	0.492	.623	[0.535, 2.877]
SRI	1.457	0.386	0.976	.329	[0.695, 3.189]
UCLA	1.503	0.366	1.112	.266	[0.748, 3.184]
UCSD	1.746	0.341	1.636	.102	[0.923, 3.551]
UFL	1.601	0.386	1.219	.223	[0.766, 3.518]
UMB	1.764	0.357	1.590	.112	[0.9, 3.689]
UMICH	1.788	0.351	1.656	.098	[0.926, 3.7]
UMN	1.547	0.368	1.185	.236	[0.77, 3.295]
UPMC	2.032	0.377	1.880	.060	[0.991, 4.397]
UTAH	1.185	0.348	0.488	.625	[0.618, 2.441]
UVM	2.321	0.354	2.378	.017	[1.194, 4.834]
UWM	1.669	0.366	1.399	.162	[0.834, 3.544]
VCU	1.331	0.415	0.690	.490	[0.594, 3.063]
WUSTL	0.897	0.381	-0.285	.776	[0.434, 1.95]
YALE	1.545	0.362	1.204	.229	[0.781, 3.256]

Note. The reference outcome category is: Inactive.

[a]The reference category is: No Pets.

[b]The reference category is: White.

[c]The reference category is: Non-Hispanic.

[d]The reference category is: Male

[e]The reference category is: Boy.

[f]The reference category is: Urbanized Area.

[g]The reference category is: CHLA.

Table 14

Pet Ownership and Youth Physical Activity Levels Binomial Logistic Regression Basic Model Results

Variable		Adj. *OR*	*SE*	*t*	*p*	95% CI
	(Intercept)	0.121	0.071	-29.608	< .001	[0.105, 0.139]
Pet[a]						
	Active Pets	1.140	0.084	1.559	.119	[0.968, 1.346]
	Passive Pets	0.928	0.108	-0.689	.491	[0.751, 1.146]

Note. The reference outcome category is: Inactive.

[a]The reference category is: No Pets.

Table 15

Pet Ownership and Youth Physical Activity Levels Binomial Logistic Regression Full Imputed Model Results

Variable	Adj. *OR*	*SE*	*t*	*p*	95% CI
(Intercept)	0.131	0.773	-2.631	.009	[0.029, 0.596]
Pet[a]					
Active Pets	1.124	0.090	1.296	.195	[0.942, 1.343]
Passive Pets	0.918	0.113	-0.758	.449	[0.736, 1.145]
Parent race[b]					
Black/African American	1.297	0.263	0.989	.323	[0.774, 2.171]
Asian	1.404	0.266	1.276	.202	[0.834, 2.366]
Pacific Islander	1.494	1.151	0.349	.727	[0.156, 14.282]
Native American	2.068	0.574	1.265	.206	[0.671, 6.373]
Other Race, don't know, or refuse to answer	1.745	0.263	2.115	.034	[1.042, 2.923]
Multiracial	1.024	0.200	0.116	.907	[0.692, 1.515]
Youth race[b]					
Black/African American	0.886	0.260	-0.466	.641	[0.532, 1.475]
Asian	0.749	0.320	-0.906	.365	[0.4, 1.401]
Pacific Islander	2.888	1.178	0.900	.368	[0.287, 29.09]
Native American	0.793	0.607	-0.382	.703	[0.241, 2.606]
Other Race, don't know, or refuse to answer	0.542	0.280	-2.191	.028	[0.313, 0.937]
Multiracial	0.937	0.140	-0.464	.643	[0.712, 1.233]
Parent Hispanic identity[c]	0.643	0.194	-2.275	.023	[0.44, 0.941]
Youth Hispanic identity[c]	1.226	0.163	1.256	.209	[0.892, 1.687]
Parent gender[d]	1.376	0.124	2.583	.010	[1.08, 1.753]
Parent gender[e]	0.526	0.075	-8.566	< .001	[0.454, 0.609]
Parent age	0.997	0.006	-0.577	.564	[0.985, 1.008]
Youth age	0.989	0.052	-0.206	.837	[0.893, 1.096]
Number of children in the household	0.994	0.027	-0.228	.819	[0.943, 1.047]
Income	1.029	0.019	1.561	.119	[0.993, 1.068]
Walkability	0.980	0.014	-1.450	.149	[0.954, 1.007]
Locale[f]					
Urban cluster	0.787	0.229	-1.050	.294	[0.502, 1.232]
Rural	0.925	0.141	-0.552	.581	[0.701, 1.221]
Population density	1.000	< 0.001	-1.117	.265	[1, 1]
Public parks	1.180	0.406	0.407	.684	[0.529, 2.632]
Site ID[g]					
CUB	1.563	0.293	1.526	.127	[0.881, 2.774]

Table 15 Continued

Variable	Adj. *OR*	*SE*	*t*	*p*	95% CI
FIU	1.046	0.288	0.155	.877	[0.595, 1.838]
LIBR	1.073	0.282	0.252	.801	[0.618, 1.864]
MUSC	1.647	0.299	1.670	.095	[0.917, 2.958]
OHSU	1.339	0.276	1.057	.290	[0.779, 2.303]
ROC	1.063	0.341	0.180	.857	[0.545, 2.074]
SRI	1.193	0.309	0.571	.568	[0.651, 2.185]
UCLA	1.129	0.292	0.415	.678	[0.637, 1.999]
UCSD	1.490	0.263	1.518	.129	[0.89, 2.492]
UFL	1.226	0.309	0.660	.509	[0.669, 2.246]
UMB	1.374	0.279	1.140	.254	[0.796, 2.372]
UMICH	1.398	0.275	1.219	.223	[0.816, 2.396]
UMN	1.304	0.296	0.897	.370	[0.73, 2.33]
UPMC	1.570	0.298	1.515	.130	[0.876, 2.814]
UTAH	1.064	0.271	0.228	.820	[0.625, 1.81]
UVM	1.767	0.280	2.032	.042	[1.02, 3.06]
UWM	1.327	0.298	0.951	.342	[0.74, 2.38]
VCU	1.112	0.313	0.340	.734	[0.602, 2.056]
WUSTL	0.852	0.300	-0.533	.594	[0.473, 1.535]
YALE	1.400	0.278	1.212	.226	[0.812, 2.414]

Note. The reference outcome category is: Inactive.

[a]The reference category is: No Pets.

[b]The reference category is: White.

[c]The reference category is: Non-Hispanic.

[d]The reference category is: Male

[e]The reference category is: Boy.

[f]The reference category is: Urbanized Area.

[g]The reference category is: CHLA.

Table 16

Pet Ownership and Parent Screen Time Linear Polytomous Dummy Regression Full Model Results

Variable	Unstandardized *B*	Standardized β	*SE*	*t*	*p*
(Intercept)	17.254	-0.237	0.078	-3.049	.002
Pet[a]					
Active Pets	1.021	0.129	0.027	4.753	< .001
Passive Pets	0.524	0.066	0.033	2.025	.043
Parent race[b]					
Black/African American	2.644	0.333	0.080	4.158	< .001
Asian	0.590	0.074	0.081	0.918	.359
Pacific Islander	-2.076	-0.262	0.415	-0.631	.528
Native American	5.388	0.679	0.191	3.560	< .001
Other Race, don't know, or refuse to answer	0.752	0.095	0.083	1.138	.255
Multiracial	1.280	0.161	0.060	2.700	.007
Youth race[b]					
Black/African American	2.781	0.351	0.079	4.429	< .001
Asian	-1.172	-0.148	0.092	-1.609	.108
Pacific Islander	5.850	0.738	0.454	1.623	.105
Native American	-1.946	-0.245	0.191	-1.284	.199
Other Race, don't know, or refuse to answer	-0.317	-0.040	0.085	-0.470	.638
Multiracial	0.281	0.035	0.041	0.855	.393
Parent Hispanic identity[c]	0.213	0.027	0.059	0.457	.648
Youth Hispanic identity[c]	0.789	0.099	0.051	1.959	.050
Parent gender[d]	0.204	0.026	0.034	0.746	.456
Parent gender[e]	-0.288	-0.036	0.021	-1.736	.083
Parent age	-0.110	-0.095	0.012	-8.095	< .001
Youth age	0.710	0.061	0.011	5.753	< .001
Number of children in the household	-0.224	-0.039	0.011	-3.482	.001
Income	-0.520	-0.150	0.013	-11.412	< .001
Walkability	-0.038	-0.018	0.015	-1.166	.244
Locale[f]					
Urban cluster	-0.517	-0.065	0.065	-1.000	.318
Rural	0.036	0.005	0.043	0.107	.915
Population density	0.000	0.007	0.013	0.489	.625
Public parks	-0.497	-0.005	0.011	-0.513	.608
Table 16 Continued					
Site ID[g]					
CUB	0.199	0.025	0.085	0.296	.767
FIU	0.930	0.117	0.077	1.523	.128
LIBR	0.667	0.084	0.079	1.068	.286
MUSC	0.735	0.093	0.090	1.035	.301

Table 16 Continued

Variable	Unstandardized *B*	Standardized β	*SE*	*t*	*p*
OHSU	0.336	0.042	0.077	0.551	.582
ROC	-0.250	-0.031	0.096	-0.327	.743
SRI	-0.928	-0.117	0.088	-1.337	.181
UCLA	0.697	0.088	0.080	1.099	.272
UCSD	0.030	0.004	0.073	0.051	.959
UFL	0.955	0.120	0.090	1.339	.181
UMB	1.016	0.128	0.080	1.594	.111
UMICH	0.041	0.005	0.078	0.067	.947
UMN	-0.311	-0.039	0.083	-0.472	.637
UPMC	3.079	0.388	0.088	4.428	< .001
UTAH	-0.676	-0.085	0.074	-1.149	.251
UVM	-1.233	-0.156	0.082	-1.902	.057
UWM	-0.402	-0.051	0.083	-0.608	.543
VCU	0.251	0.032	0.095	0.331	.740
WUSTL	0.900	0.113	0.080	1.410	.159
YALE	1.287	0.162	0.081	2.005	.045

[a]The reference category is: No Pets.

[b]The reference category is: White.

[c]The reference category is: Non-Hispanic.

[d]The reference category is: Male

[e]The reference category is: Boy.

[f]The reference category is: Urbanized Area.

[g]The reference category is: CHLA.

Table 17

Pet Ownership and Parent Screen Time Linear Polytomous Dummy Regression Basic Model Results

Variable		Unstandardized *B*	Standardized β	*SE*	*t*	*p*
(Intercept)		19.263	0.112	0.022	5.069	< .001
Pet[a]						
	Active Pets	-1.101	-0.139	0.026	-5.266	< .001
	Passive Pets	-1.360	-0.172	0.033	-5.212	< .001

[a]The reference category is: No Pets.

Table 18

Pet Ownership and Parent Screen Time Linear Polytomous Dummy Regression Full Imputed Model Results

Variable	Unstandardized *B*	Standardized β	*SE*	*t*	*p*
(Intercept)	12.874	-0.196	0.076	-2.580	.010
Pet[a]					
Active Pets	0.711	0.090	0.028	3.218	.001
Passive Pets	0.269	0.034	0.032	1.066	.286
Parent race[b]					
Black/African American	1.740	0.219	0.081	2.713	.007
Asian	0.034	0.004	0.082	0.052	.958
Pacific Islander	0.391	0.049	0.391	0.126	.899
Native American	4.461	0.563	0.183	3.074	.002
Other Race, don't know, or refuse to answer	0.730	0.092	0.080	1.151	.250
Multiracial	0.437	0.055	0.057	0.968	.333
Youth race[b]					
Black/African American	3.511	0.443	0.080	5.554	< .001
Asian	-1.109	-0.140	0.093	-1.509	.131
Pacific Islander	3.232	0.408	0.446	0.915	.360
Native American	-1.541	-0.194	0.180	-1.078	.281
Other Race, don't know, or refuse to answer	-0.702	-0.089	0.080	-1.106	.269
Multiracial	0.773	0.098	0.041	2.393	.017
Parent Hispanic identity[c]	0.467	0.059	0.062	0.956	.341
Youth Hispanic identity[c]	0.513	0.065	0.049	1.311	.190
Parent gender[d]	0.269	0.034	0.048	0.712	.487
Parent gender[e]	-0.424	-0.054	0.022	-2.485	.014
Parent age	-0.098	-0.084	0.034	-2.453	.058
Youth age	0.857	0.074	0.018	4.193	.002
Number of children in the household	0.204	0.036	0.013	2.860	.006
Income	-0.353	-0.106	0.052	-2.047	.103
Walkability	-0.037	-0.018	0.032	-0.561	.594
Locale[f]					
Urban cluster	-0.484	-0.061	0.068	-0.896	.371
Rural	-0.284	-0.036	0.050	-0.721	.475
Population density	0.000	0.018	0.019	0.918	.377
Public parks	-0.931	-0.011	0.011	-0.936	.351
Site ID[g]					
CUB	-0.156	-0.020	0.082	-0.240	.810
FIU	1.073	0.135	0.071	1.915	.055

Table 18 Continued

Variable	Unstandardized *B*	Standardized β	*SE*	*t*	*p*
LIBR	0.769	0.097	0.078	1.252	.212
MUSC	0.366	0.046	0.085	0.546	.585
OHSU	-0.053	-0.007	0.076	-0.088	.930
ROC	-0.893	-0.113	0.090	-1.257	.209
SRI	-2.350	-0.296	0.087	-3.397	.001
UCLA	-0.127	-0.016	0.079	-0.204	.838
UCSD	-0.127	-0.016	0.068	-0.235	.814
UFL	-0.573	-0.072	0.084	-0.865	.387
UMB	1.260	0.159	0.074	2.137	.033
UMICH	-0.073	-0.009	0.072	-0.127	.899
UMN	-0.823	-0.104	0.081	-1.286	.199
UPMC	2.921	0.368	0.088	4.192	< .001
UTAH	-1.238	-0.156	0.073	-2.132	.034
UVM	-1.273	-0.161	0.077	-2.079	.038
UWM	-0.465	-0.059	0.081	-0.722	.471
VCU	-0.617	-0.078	0.083	-0.932	.351
WUSTL	1.183	0.149	0.076	1.959	.050
YALE	1.334	0.168	0.077	2.172	.031

[a]The reference category is: No Pets.

[b]The reference category is: White.

[c]The reference category is: Non-Hispanic.

[d]The reference category is: Male

[e]The reference category is: Boy.

[f]The reference category is: Urbanized Area.

[g]The reference category is: CHLA.

Table 19

Pet Ownership and Youth Screen Time Linear Polytomous Dummy Regression Full Model Results

Variable	Unstandardized *B*	Standardized β	*SE*	*t*	*p*
(Intercept)	5.985	-0.234	0.080	-2.940	.003
Pet[a]					
Active Pets	1.162	0.120	0.028	4.333	< .001
Passive Pets	0.105	0.011	0.033	0.324	.746
Parent race[b]					
Black/African American	1.264	0.131	0.082	1.594	.111
Asian	-1.215	-0.126	0.083	-1.515	.130
Pacific Islander	-5.855	-0.606	0.425	-1.427	.154
Native American	4.145	0.429	0.195	2.195	.028
Other Race, don't know, or refuse to answer	0.234	0.024	0.085	0.283	.777
Multiracial	-0.183	-0.019	0.061	-0.309	.757
Youth race[b]					
Black/African American	4.462	0.462	0.081	5.696	< .001
Asian	0.047	0.005	0.094	0.052	.959
Pacific Islander	3.792	0.392	0.465	0.844	.399
Native American	2.596	0.269	0.196	1.373	.170
Other Race, don't know, or refuse to answer	0.197	0.020	0.087	0.235	.815
Multiracial	1.704	0.176	0.042	4.160	< .001
Parent Hispanic identity[c]	0.718	0.074	0.060	1.237	.216
Youth Hispanic identity[c]	0.941	0.097	0.052	1.874	.061
Parent gender[d]	0.098	0.010	0.035	0.287	.774
Parent gender[e]	-0.108	-0.011	0.021	-0.521	.602
Parent age	-0.047	-0.033	0.012	-2.753	.006
Youth age	1.324	0.093	0.011	8.601	< .001
Number of children in the household	-0.498	-0.072	0.012	-6.208	< .001
Income	-0.462	-0.109	0.013	-8.128	< .001
Walkability	-0.040	-0.015	0.016	-0.982	.326
Locale[f]					
Urban cluster	-0.093	-0.010	0.067	-0.144	.886
Rural	0.031	0.003	0.044	0.073	.942
Population density	0.000	0.037	0.014	2.687	.007
Public parks	-0.314	-0.003	0.011	-0.260	.795
Site ID[g]					
CUB	-0.913	-0.094	0.087	-1.091	.275
FIU	3.910	0.405	0.079	5.134	< .001
LIBR	0.896	0.093	0.081	1.150	.250
MUSC	1.011	0.105	0.092	1.141	.254
OHSU	-1.087	-0.112	0.079	-1.427	.154
ROC	0.195	0.020	0.098	0.205	.838

Table 19 Continued

Variable	Unstandardized *B*	Standardized β	*SE*	*t*	*p*
SRI	-0.483	-0.050	0.090	-0.558	.577
UCLA	0.866	0.090	0.082	1.095	.274
UCSD	-1.905	-0.197	0.075	-2.632	.009
UFL	0.886	0.092	0.092	0.995	.320
UMB	0.247	0.026	0.082	0.311	.756
UMICH	0.509	0.053	0.080	0.658	.511
UMN	-1.430	-0.148	0.085	-1.740	.082
UPMC	4.698	0.486	0.090	5.417	< .001
UTAH	-3.103	-0.321	0.076	-4.227	< .001
UVM	-2.760	-0.285	0.084	-3.410	.001
UWM	-0.226	-0.023	0.085	-0.274	.784
VCU	-0.670	-0.069	0.098	-0.710	.478
WUSTL	1.775	0.184	0.082	2.229	.026
YALE	1.905	0.197	0.083	2.379	.017

[a]The reference category is: No Pets.

[b]The reference category is: White.

[c]The reference category is: Non-Hispanic.

[d]The reference category is: Male

[e]The reference category is: Boy.

[f]The reference category is: Urbanized Area.

[g]The reference category is: CHLA.

Table 20

Pet Ownership and Youth Screen Time Linear Polytomous Dummy Regression Basic Model Results

	Variable	Unstandardized *B*	Standardized β	*SE*	*t*	*p*
	(Intercept)	18.892	0.095	0.022	4.318	< .001
Pet[a]						
	Active Pets	-1.073	-0.111	0.026	-4.208	< .001
	Passive Pets	-1.616	-0.167	0.033	-5.077	< .001

[a]The reference category is: No Pets.

Table 21

Pet Ownership and Youth Screen Time Linear Polytomous Dummy Regression Full Imputed Model Results

Variable	Unstandardized *B*	Standardized β	*SE*	*t*	*p*
(Intercept)	5.411	-0.205	0.072	-2.855	.004
Pet[a]					
Active Pets	1.068	0.110	0.026	4.263	< .001
Passive Pets	0.264	0.027	0.032	0.867	.386
Parent race[b]					
Black/African American	1.347	0.139	0.075	1.853	.064
Asian	-1.305	-0.135	0.079	-1.702	.089
Pacific Islander	-3.973	-0.411	0.385	-1.067	.286
Native American	5.086	0.526	0.216	2.433	.019
Other Race, don't know, or refuse to answer	-0.291	-0.030	0.078	-0.388	.698
Multiracial	-0.554	-0.057	0.056	-1.033	.302
Youth race[b]					
Black/African American	4.409	0.456	0.077	5.959	< .001
Asian	-0.335	-0.035	0.090	-0.384	.701
Pacific Islander	2.312	0.239	0.435	0.550	.582
Native American	0.926	0.096	0.190	0.504	.615
Other Race, don't know, or refuse to answer	0.872	0.090	0.078	1.163	.245
Multiracial	1.795	0.186	0.040	4.676	< .001
Parent Hispanic identity[c]	0.407	0.042	0.056	0.752	.452
Youth Hispanic identity[c]	1.156	0.120	0.049	2.447	.015
Parent gender[d]	0.164	0.017	0.033	0.518	.605
Parent gender[e]	-0.147	-0.015	0.020	-0.745	.456
Parent age	-0.038	-0.027	0.015	-1.827	.084
Youth age	1.306	0.092	0.010	8.935	< .001
Number of children in the household	-0.459	-0.067	0.011	-6.152	< .001
Income	-0.376	-0.093	0.018	-5.097	< .001
Walkability	-0.079	-0.031	0.049	-0.635	.555
Locale[f]					
Urban cluster	-0.140	-0.014	0.066	-0.219	.826
Rural	0.005	0.001	0.053	0.011	.992
Population density	0.000	0.065	0.036	1.827	.126
Public parks	0.450	0.004	0.011	0.376	.708
Site ID[g]					
CUB	-1.182	-0.122	0.081	-1.502	.133
FIU	3.434	0.355	0.072	4.915	< .001

Table 21 Continued

Variable	Unstandardized *B*	Standardized β	*SE*	*t*	*p*
LIBR	1.053	0.109	0.077	1.412	.160
MUSC	0.926	0.096	0.091	1.053	.295
OHSU	-1.159	-0.120	0.078	-1.534	.128
ROC	0.582	0.060	0.092	0.653	.514
SRI	-1.297	-0.134	0.082	-1.637	.102
UCLA	0.787	0.081	0.073	1.109	.267
UCSD	-1.940	-0.201	0.067	-3.002	.003
UFL	0.605	0.063	0.089	0.700	.485
UMB	0.246	0.025	0.073	0.347	.729
UMICH	0.155	0.016	0.075	0.214	.831
UMN	-1.907	-0.197	0.081	-2.436	.015
UPMC	5.083	0.526	0.090	5.814	< .001
UTAH	-3.270	-0.338	0.077	-4.410	< .001
UVM	-2.563	-0.265	0.082	-3.217	.002
UWM	-0.423	-0.044	0.081	-0.542	.588
VCU	-0.766	-0.079	0.088	-0.895	.372
WUSTL	1.574	0.163	0.079	2.070	.039
YALE	1.775	0.184	0.085	2.160	.036

[a]The reference category is: No Pets.

[b]The reference category is: White.

[c]The reference category is: Non-Hispanic.

[d]The reference category is: Male

[e]The reference category is: Boy.

[f]The reference category is: Urbanized Area.

[g]The reference category is: CHLA.

Table 22

Sample and U.S. National Comparison of Sociodemographic Descriptive Statistics

Sociodemographic characteristic	% of Sample	% of US population[a]
Parent race		
Asian	3.6	6.1
Black/African American	13.6	12.0
Multiracial	5.0	8.8
Native American	0.5	1.1
Other Race, don't know, or refuse to answer	6.5	7.7
Pacific Islander	0.1	0.2
White	70.3	64.1
Youth race		
Asian	2.5	5.5
Black/African American	13.9	13.9
Multiracial	12.3	15.1
Native American	0.6	1.4
Other Race, don't know, or refuse to answer	5.8	10.9
Pacific Islander	0.1	0.3
White	64.7	53.0
Parent ethnicity		
Hispanic	17.8	16.8
Non-Hispanic	81.6	83.2
Youth ethnicity		
Hispanic	21.2	25.7
Non-Hispanic	77.6	74.3
Parent gender		
Male	10.3	49.1
Female	87.3	50.9
Youth gender		
Boy	52.5	51.1
Girl	43.6	48.9

[a]Estimates were based on 2020 United States Census Data.

Figure 1

PSQ Missing Data Comparison

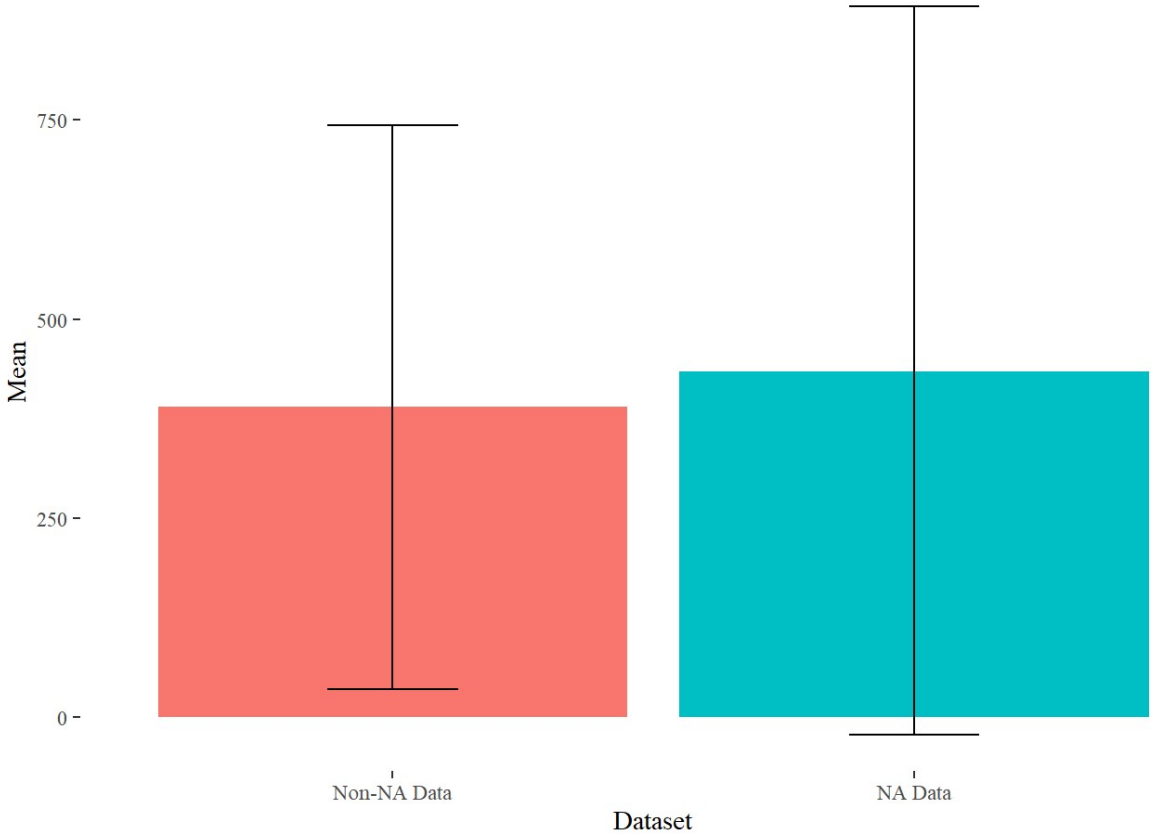


Figure 2

STQ Missing Data Comparison

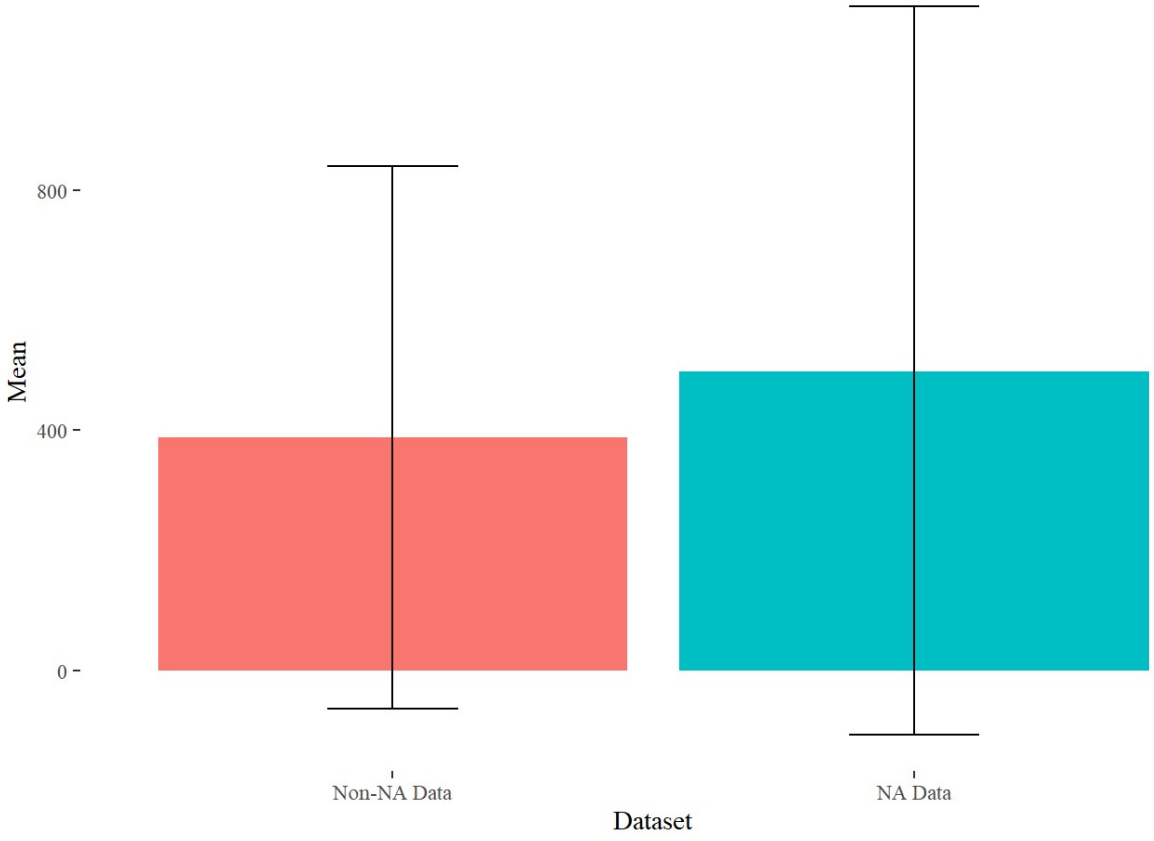


Figure 3

Parent Age Missing Data Comparison

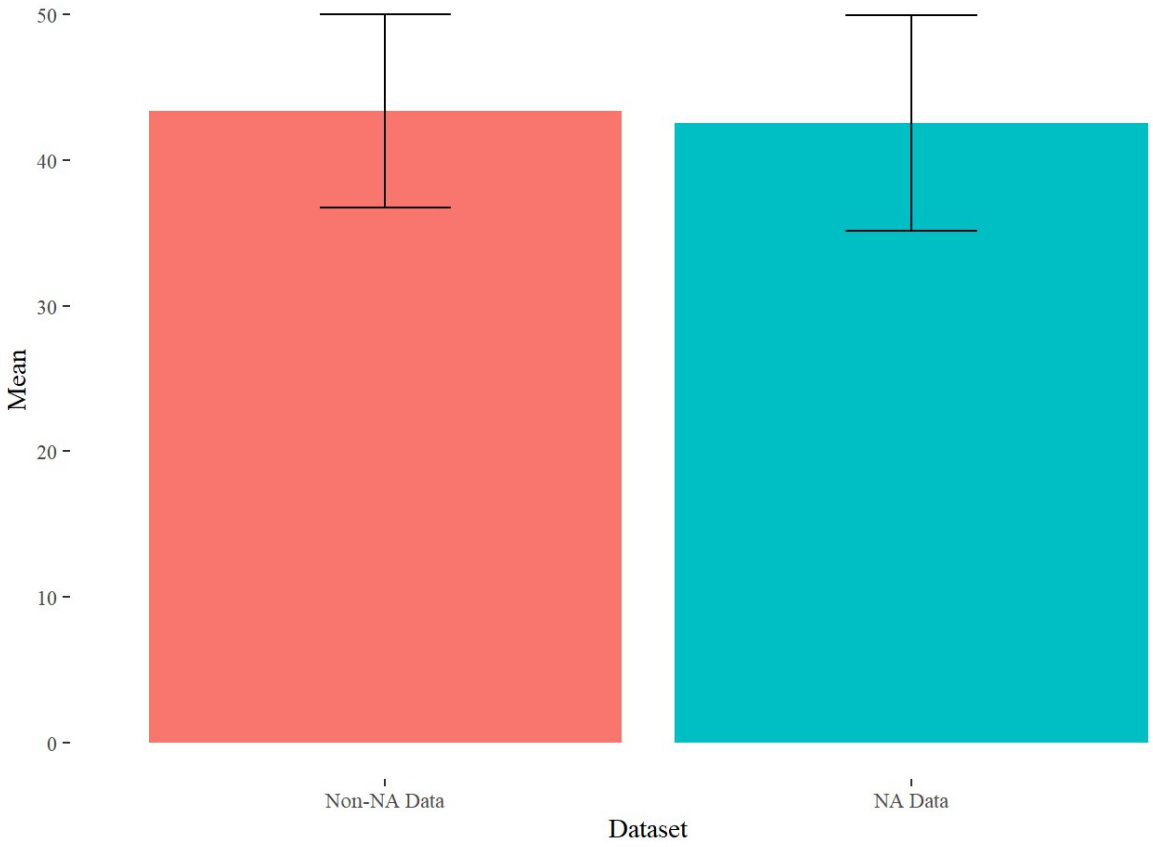


Figure 4

Child Age Missing Data Comparison

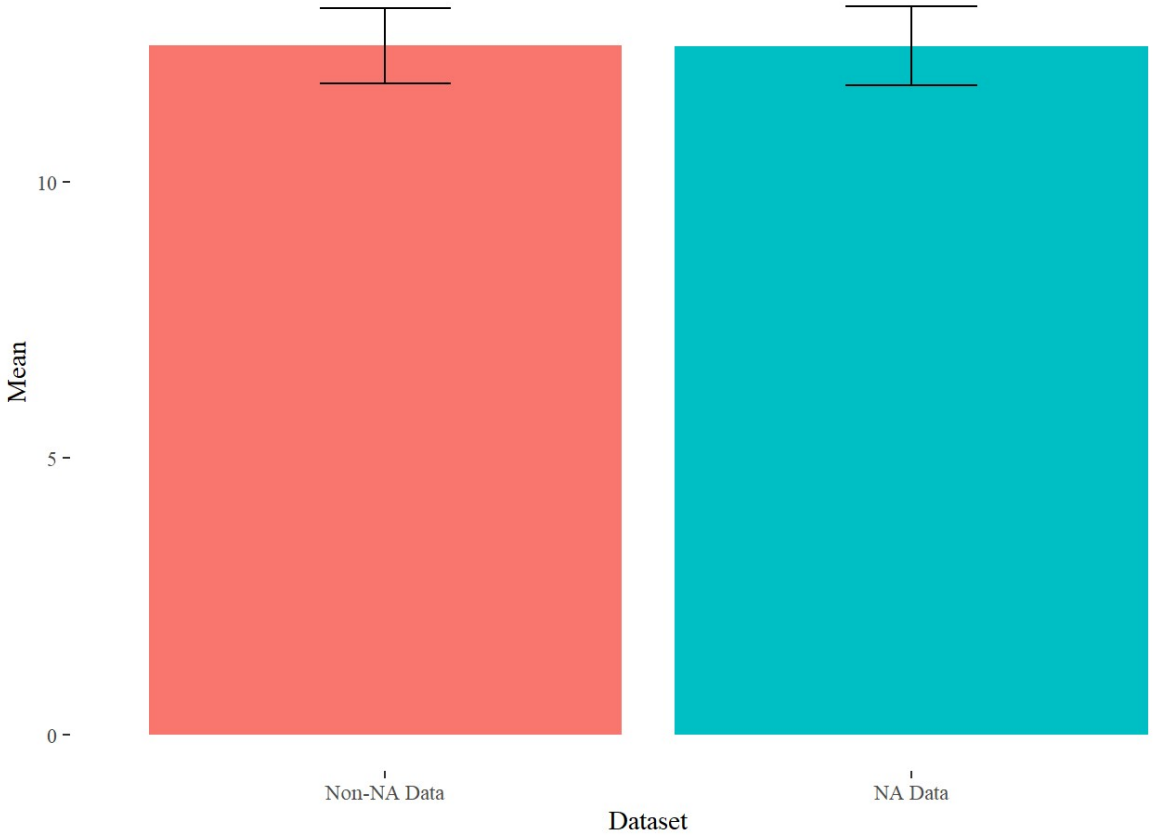


Figure 5

Number of Children in the Household Missing Data Comparison

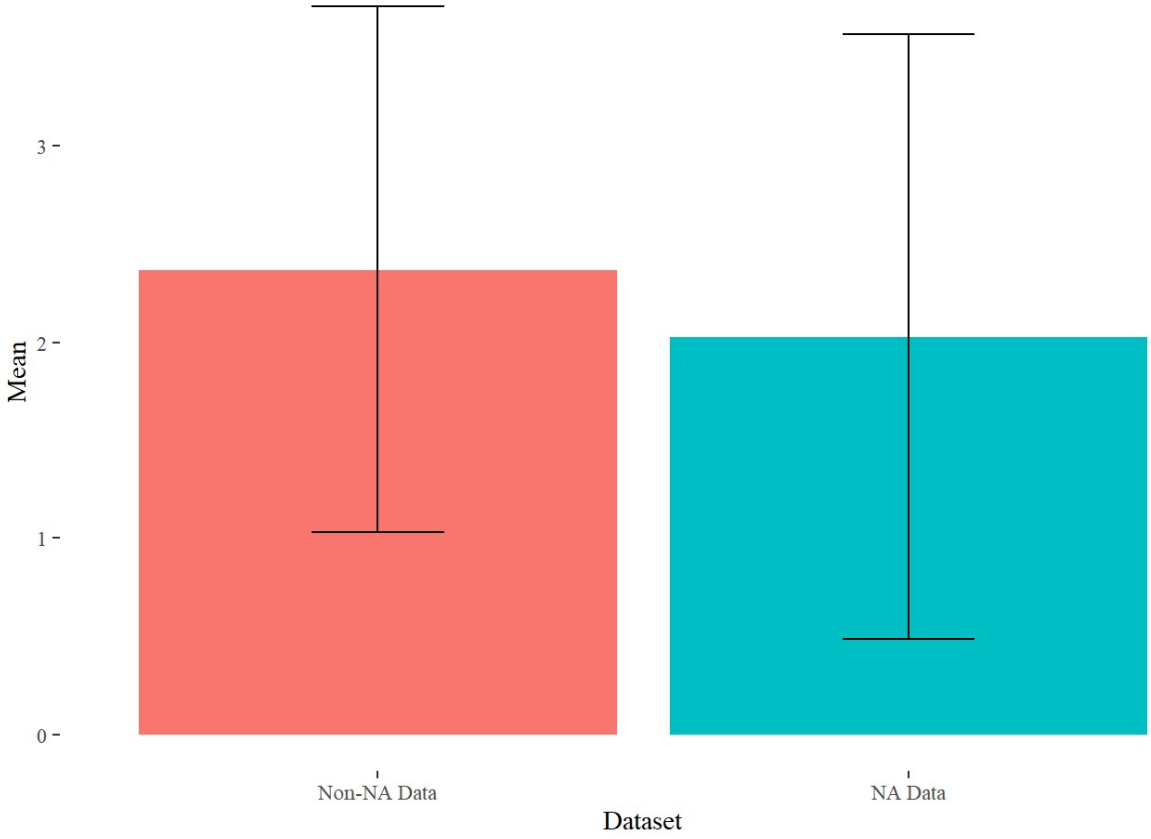


Figure 6

Income Missing Data Comparison

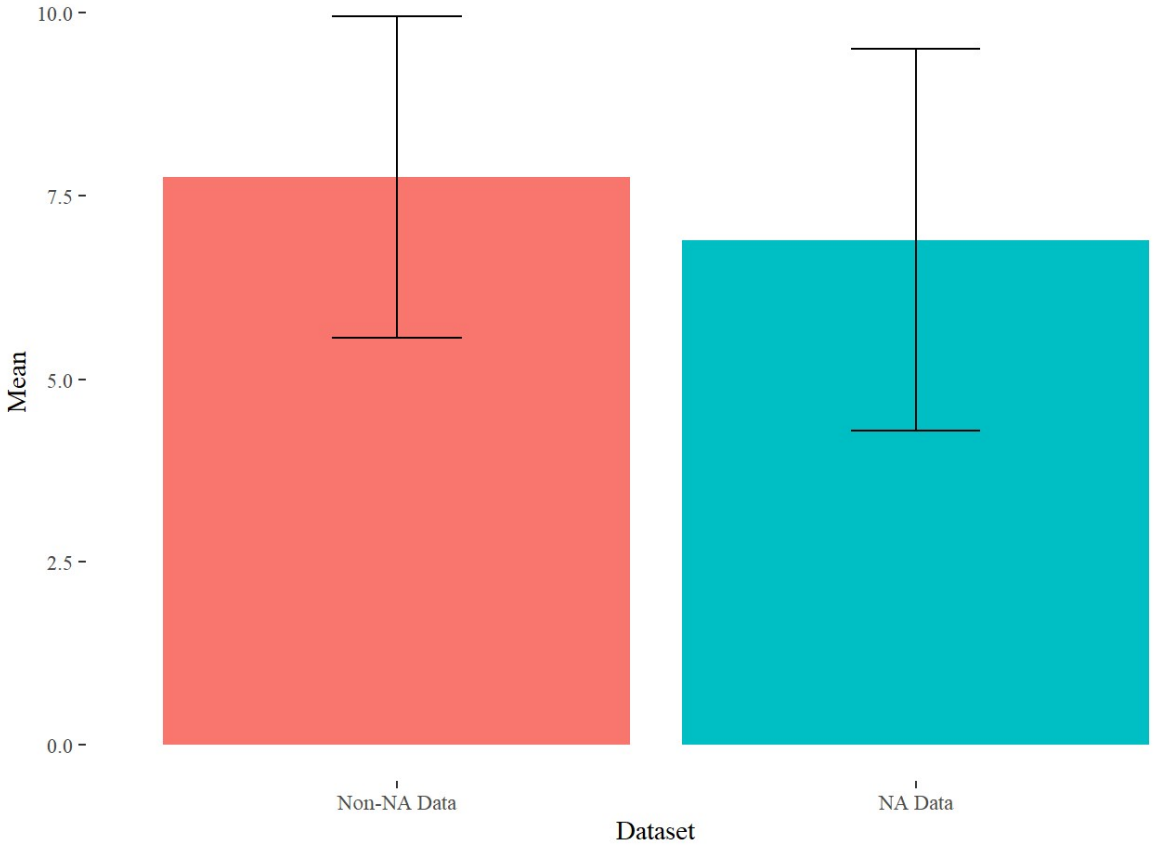


Figure 7

Walkability Missing Data Comparison

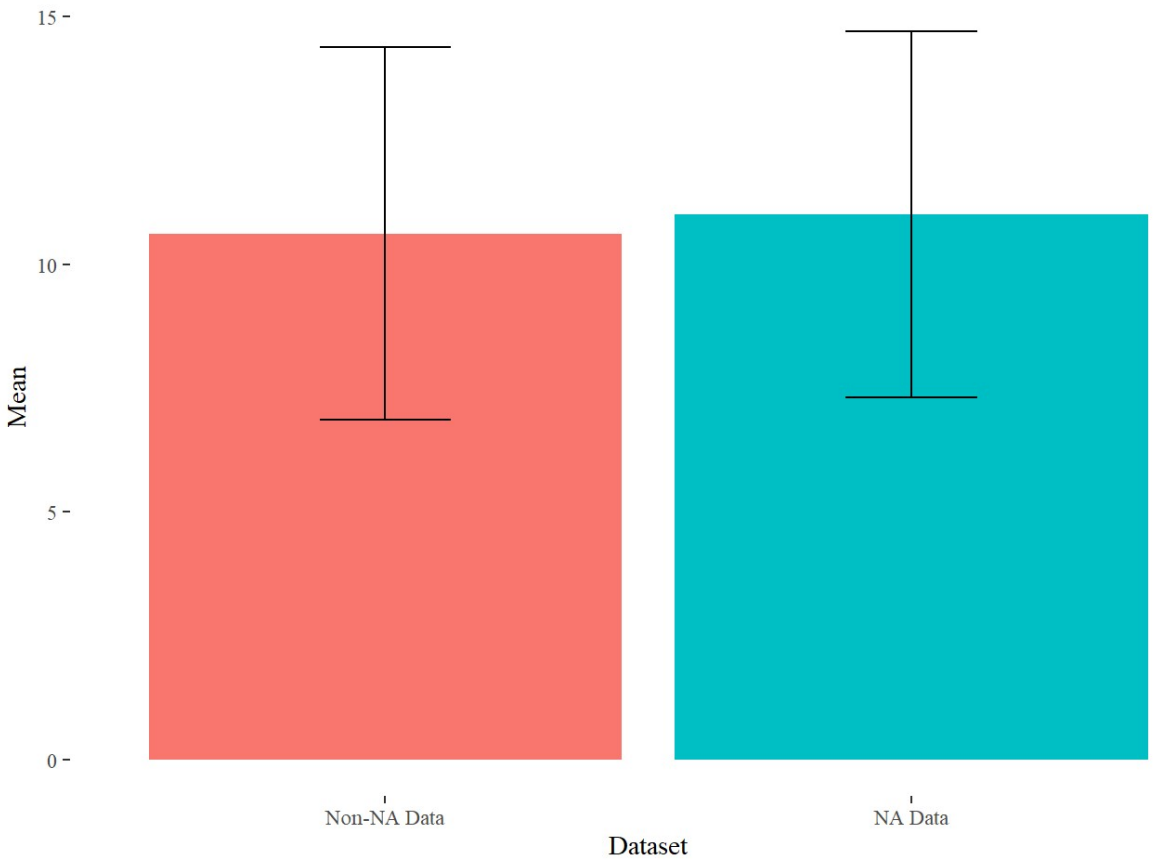


Figure 8

Population Density Missing Data Comparison

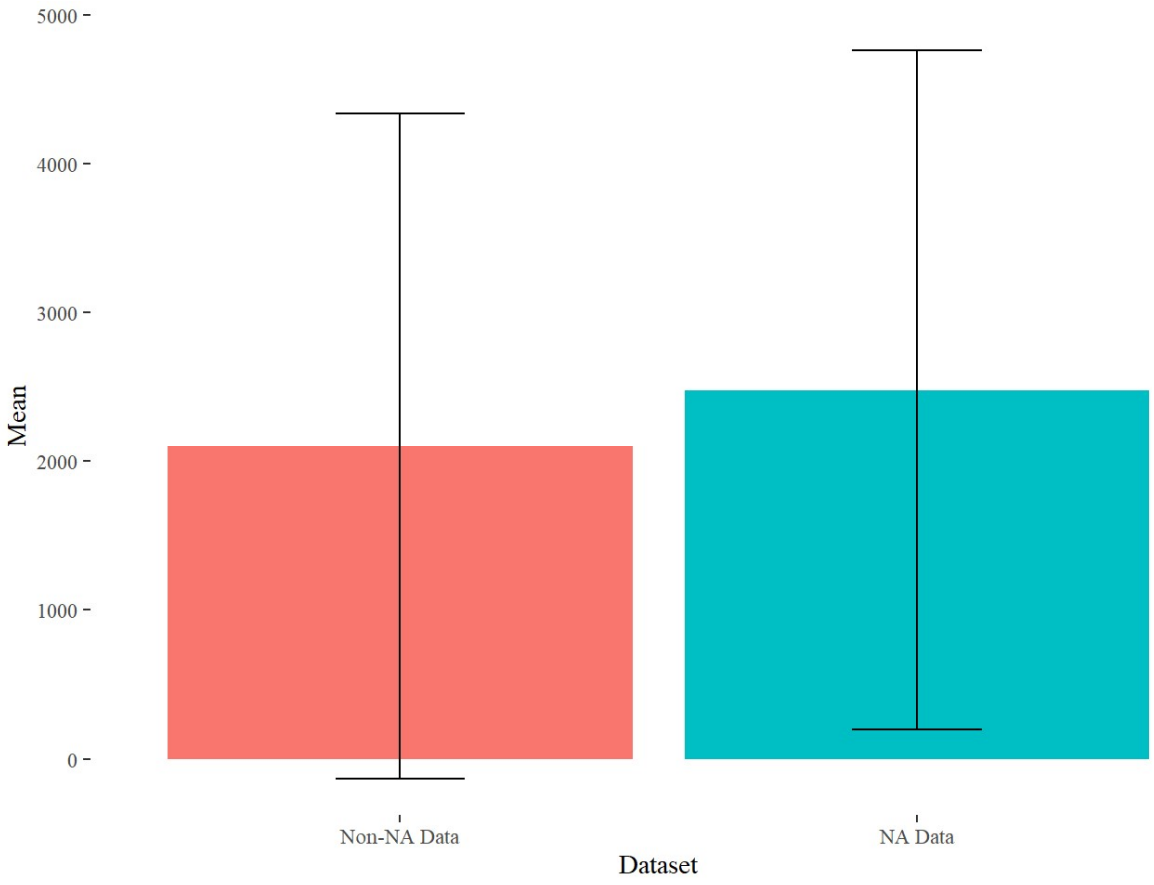


Figure 9

Parks Missing Data Comparison

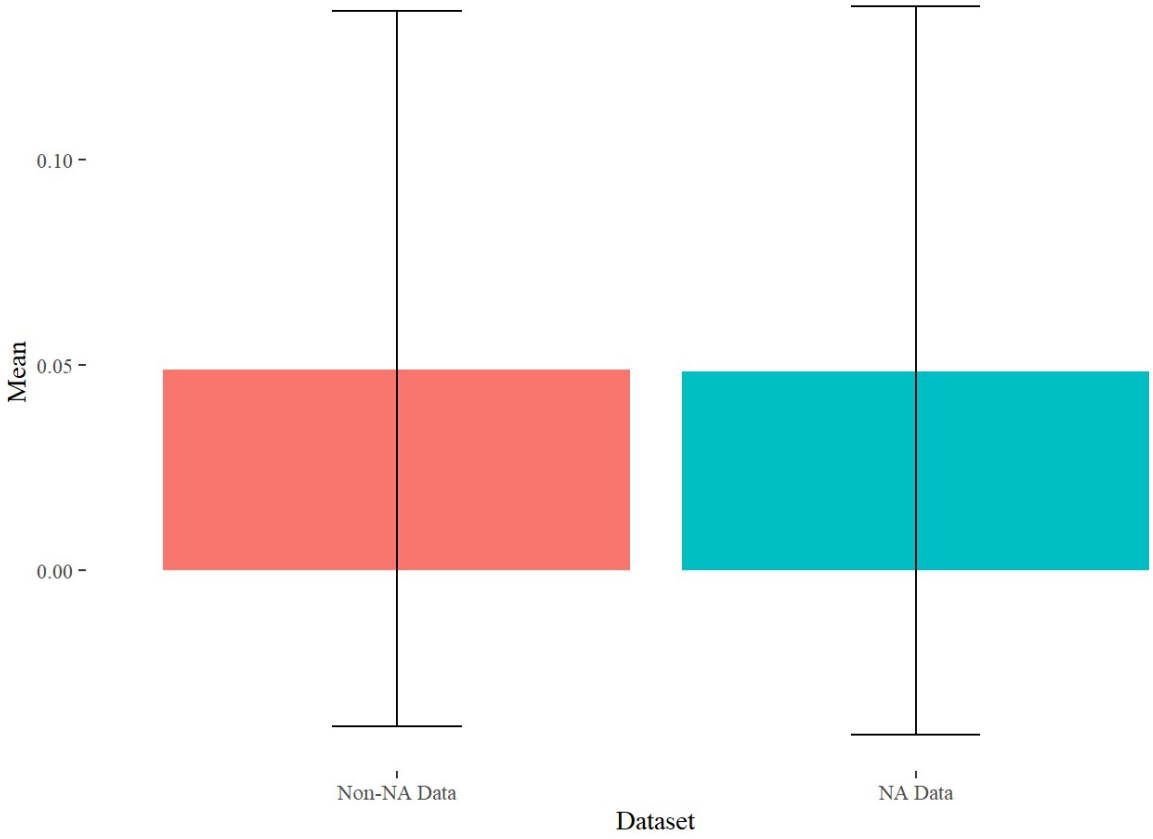


Figure 10

Site ID Relative Group Frequency Comparison

Figure 11

IPAQ Relative Group Frequency Comparison

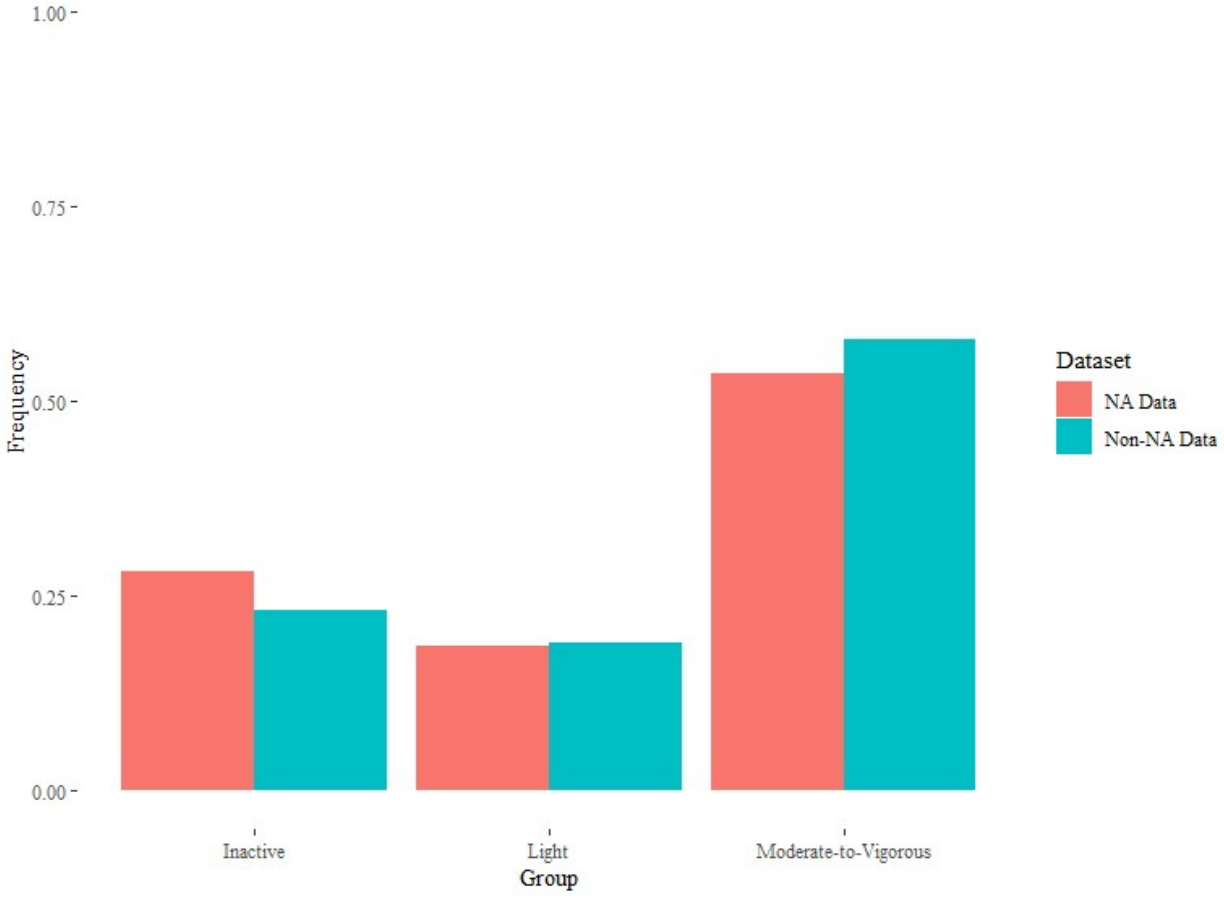


Figure 12

YRB Relative Group Frequency Comparison

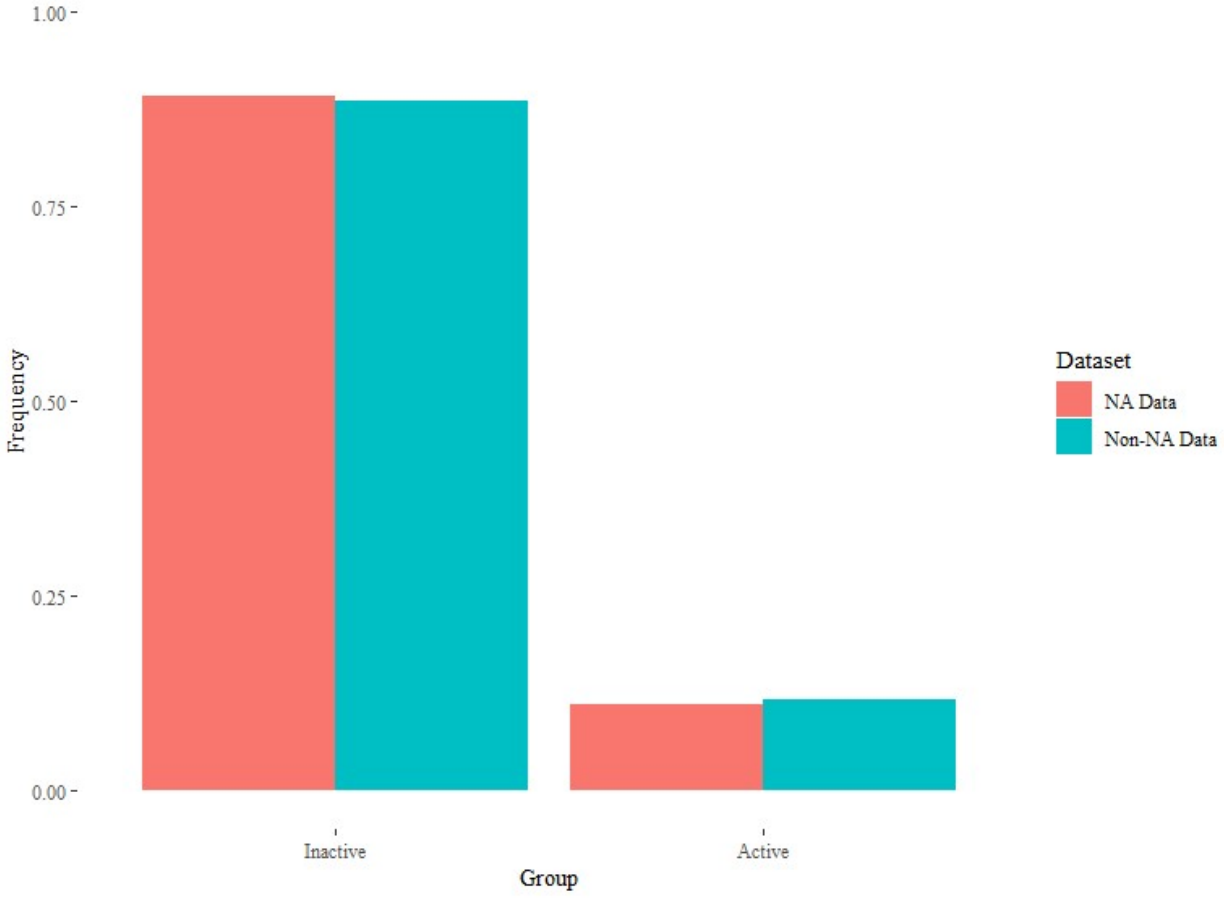


Figure 13

SAIQ Relative Group Frequency Comparison

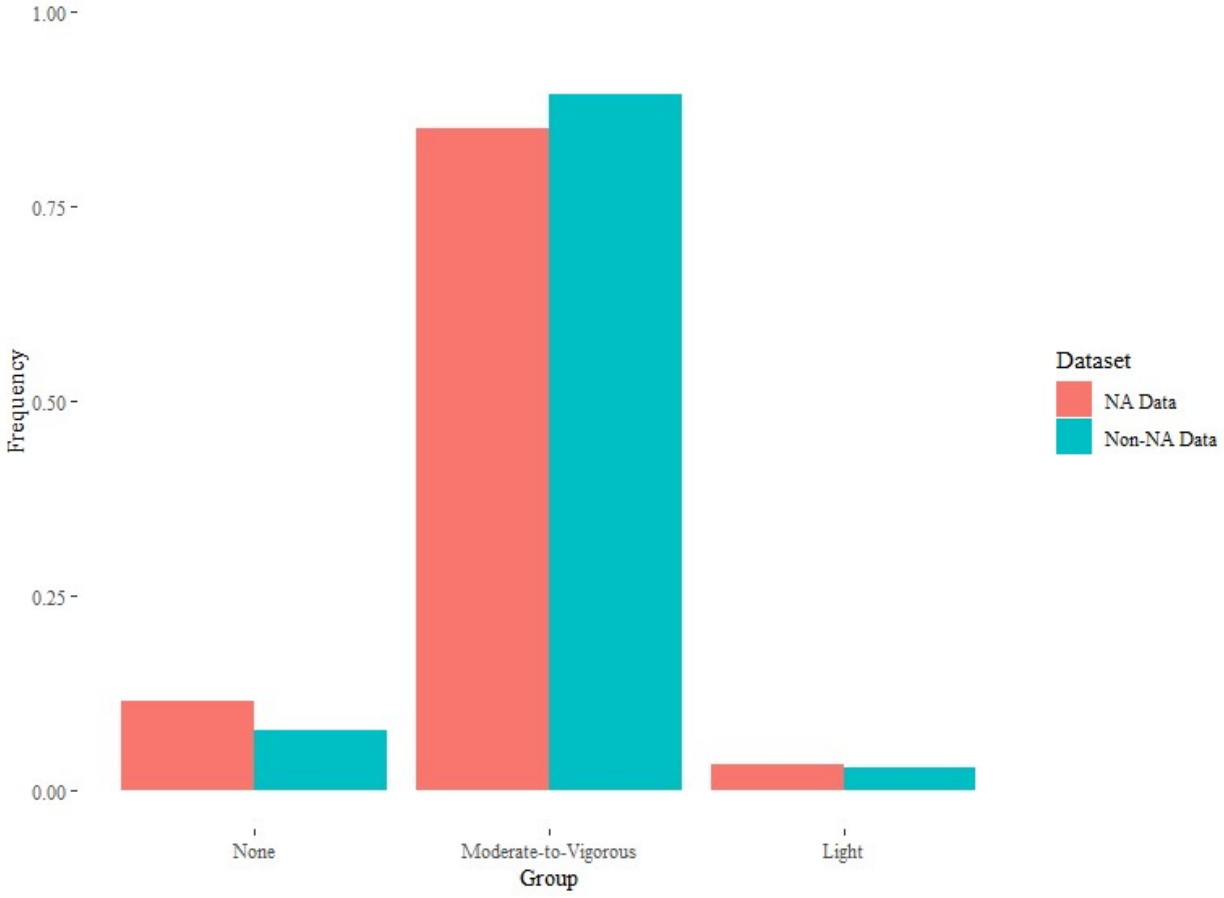


Figure 14

Pet Relative Group Frequency Comparison

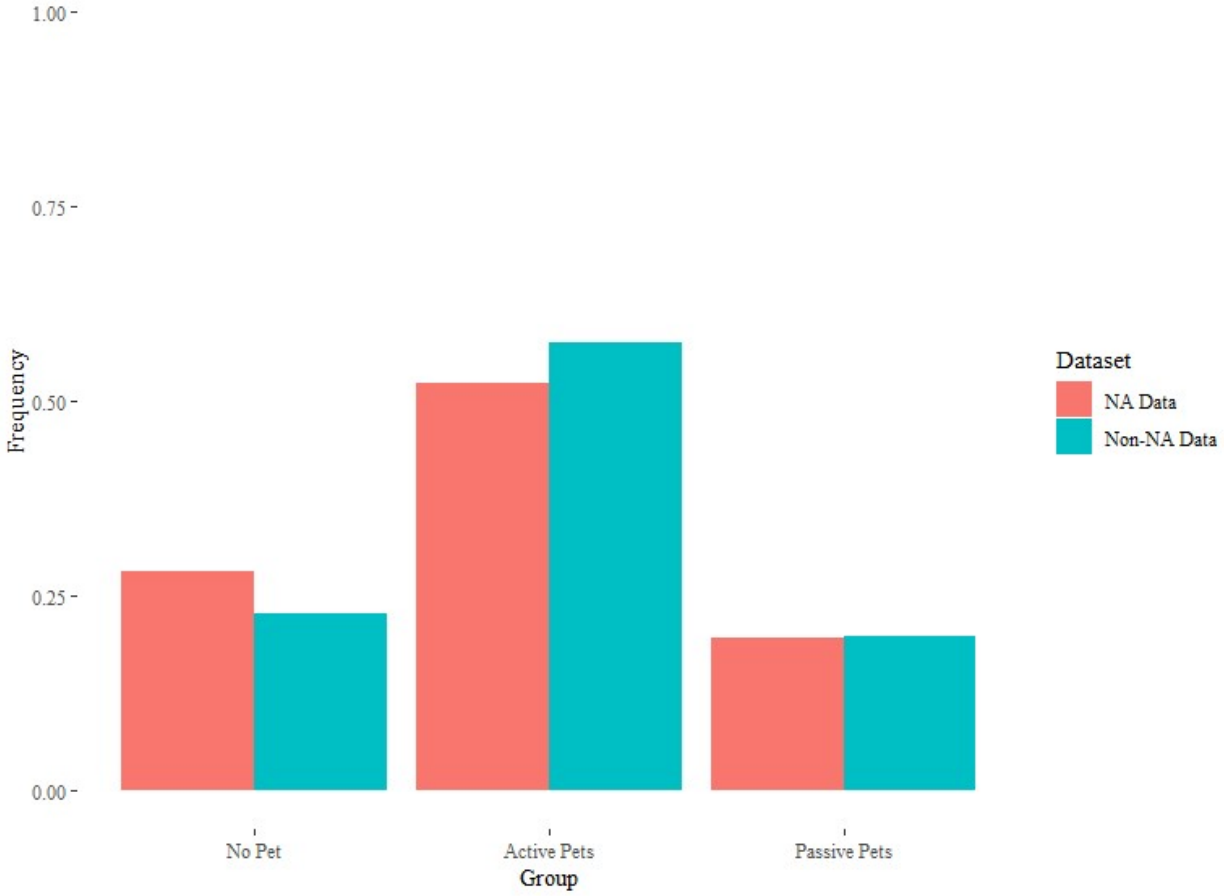


Figure 15

Parent Race Relative Group Frequency Comparison

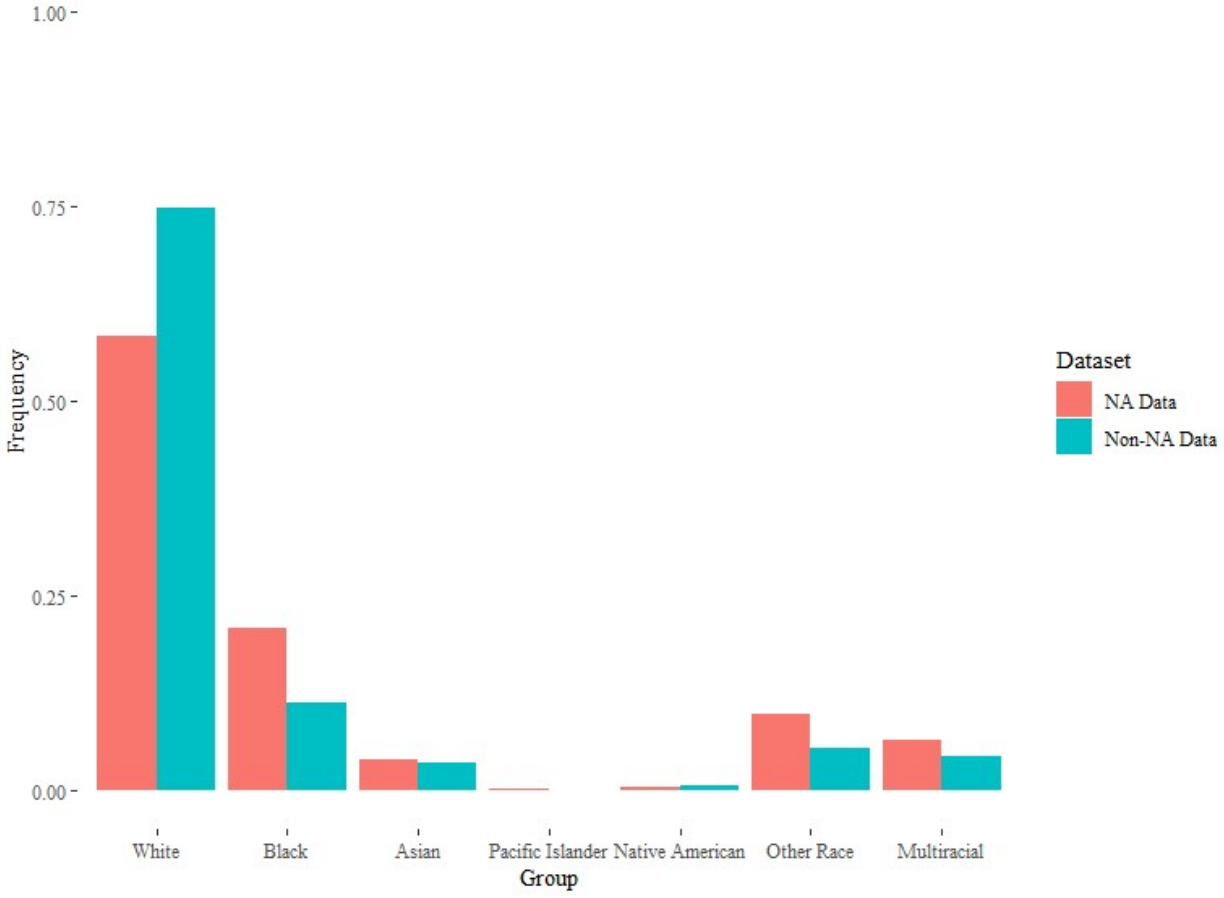


Figure 16

Child Race Relative Group Frequency Comparison

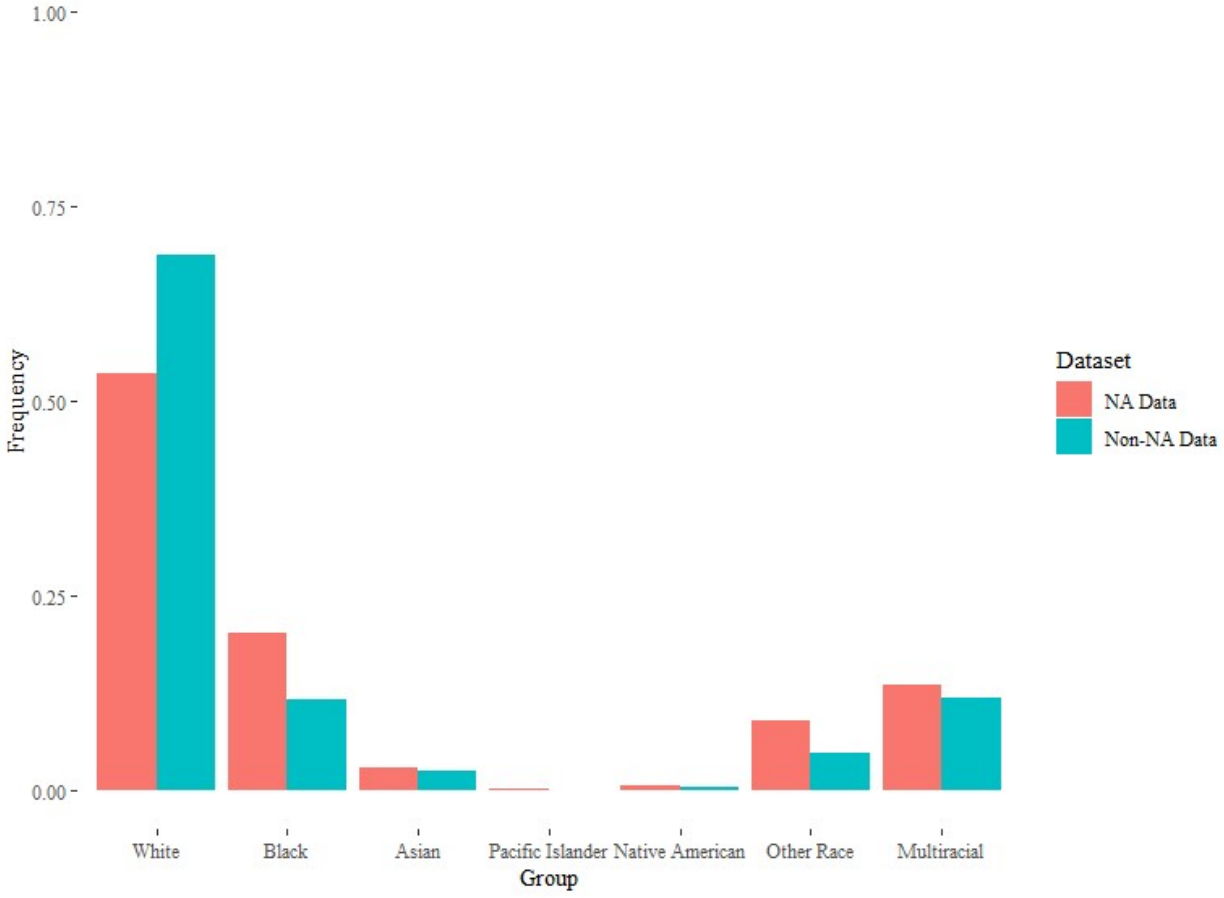


Figure 17

Parent Hispanic Identity Relative Group Frequency Comparison

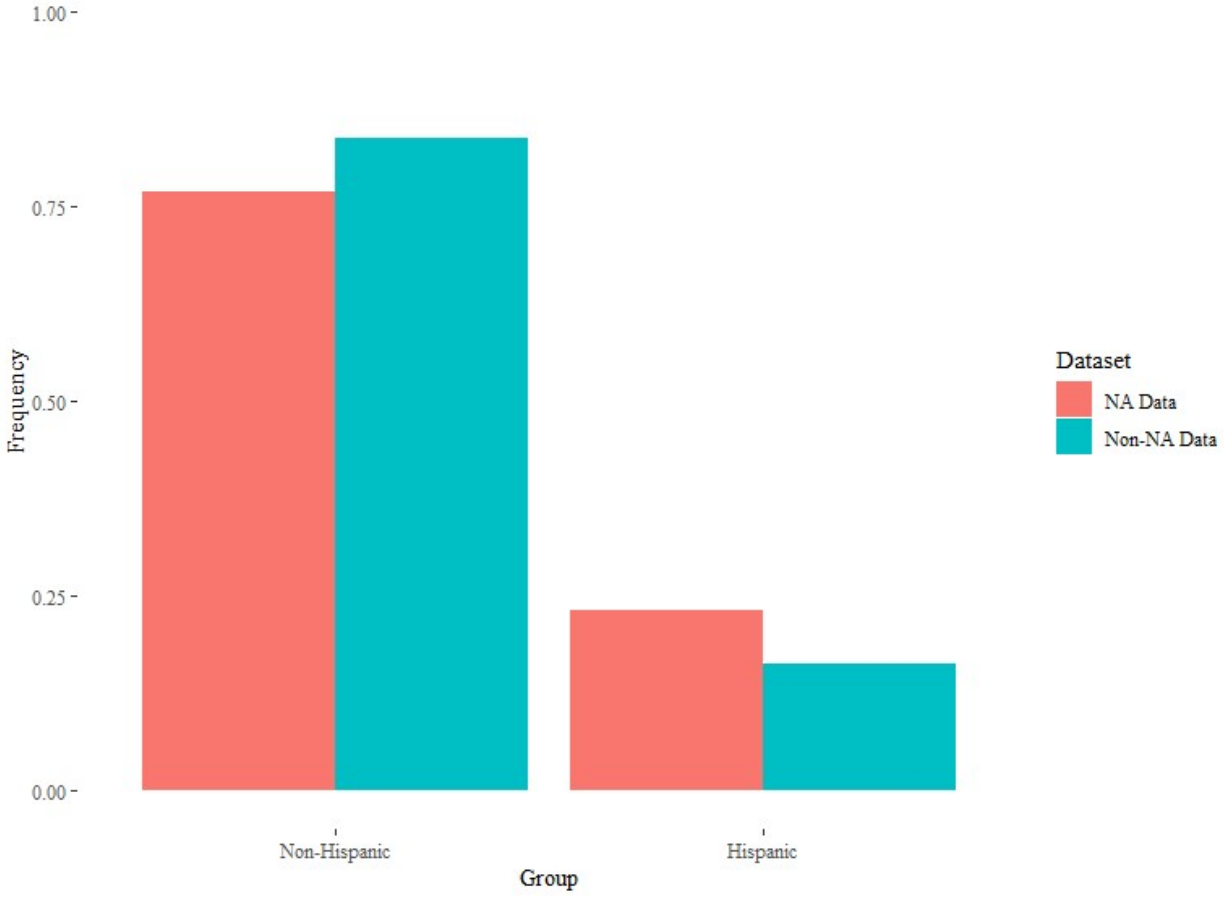


Figure 18

Child Hispanic Identity Relative Group Frequency Comparison

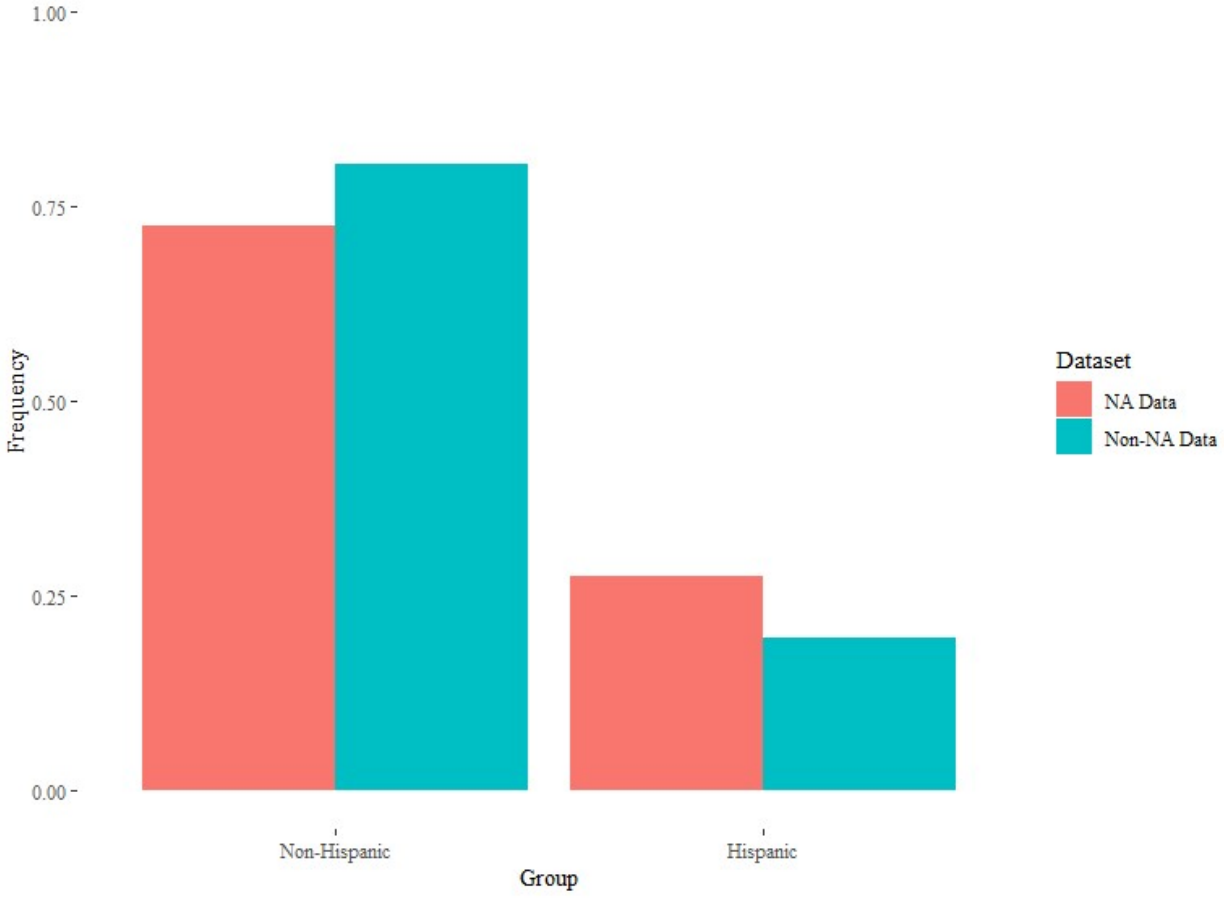


Figure 19

Parent Gender Relative Group Frequency Comparison

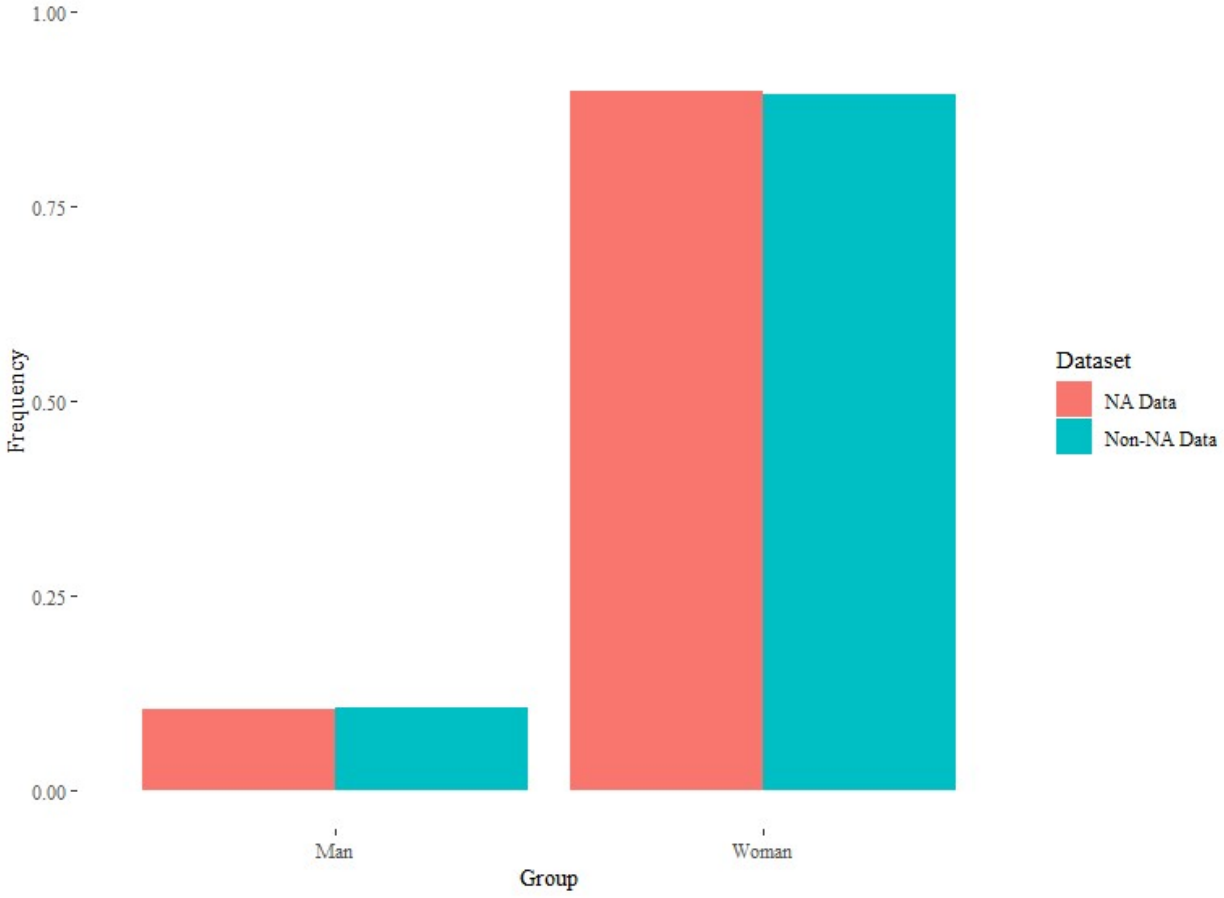


Figure 20

Child Gender Relative Group Frequency Comparison

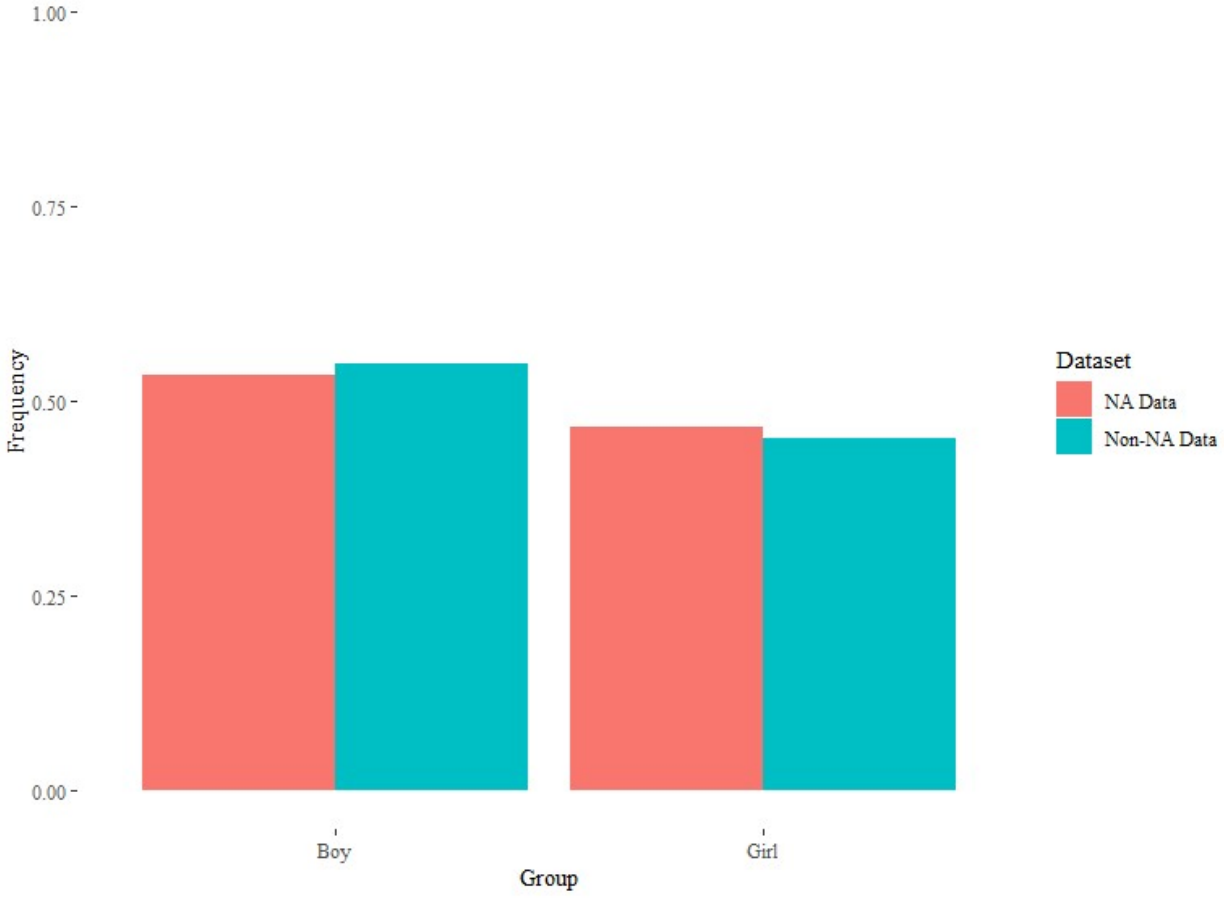


Figure 21

Locale Relative Group Frequency Comparison

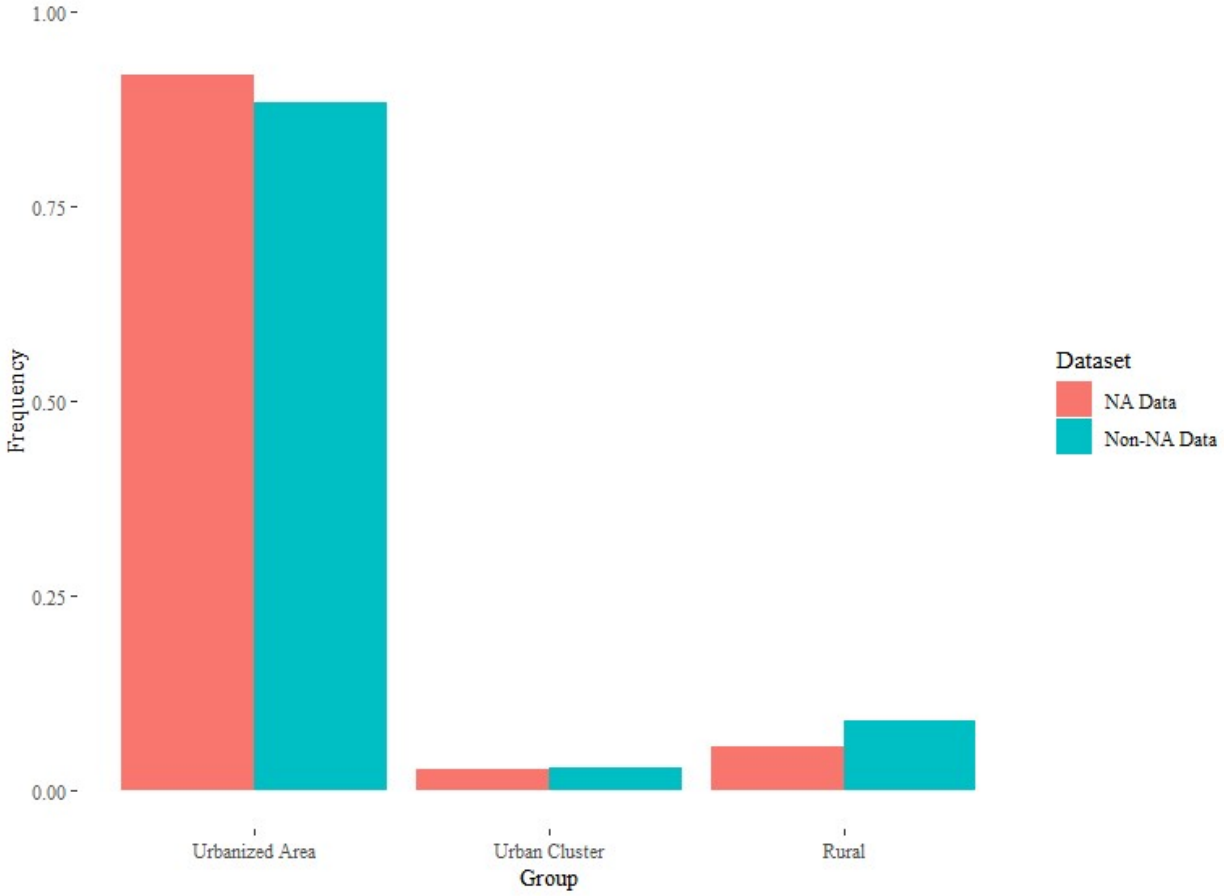
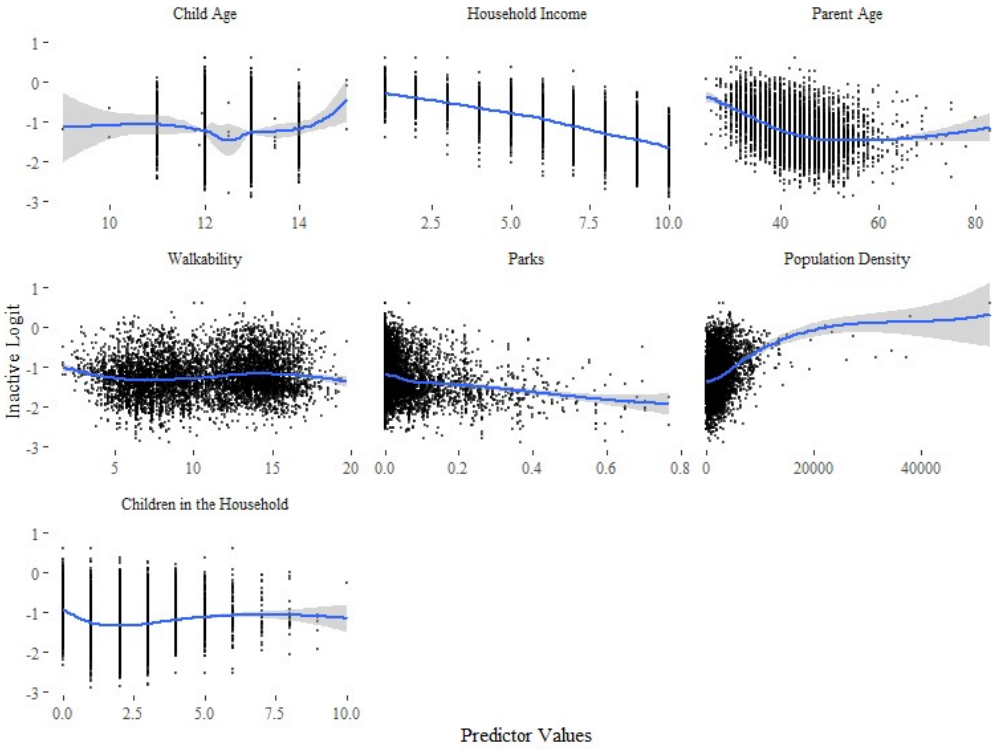
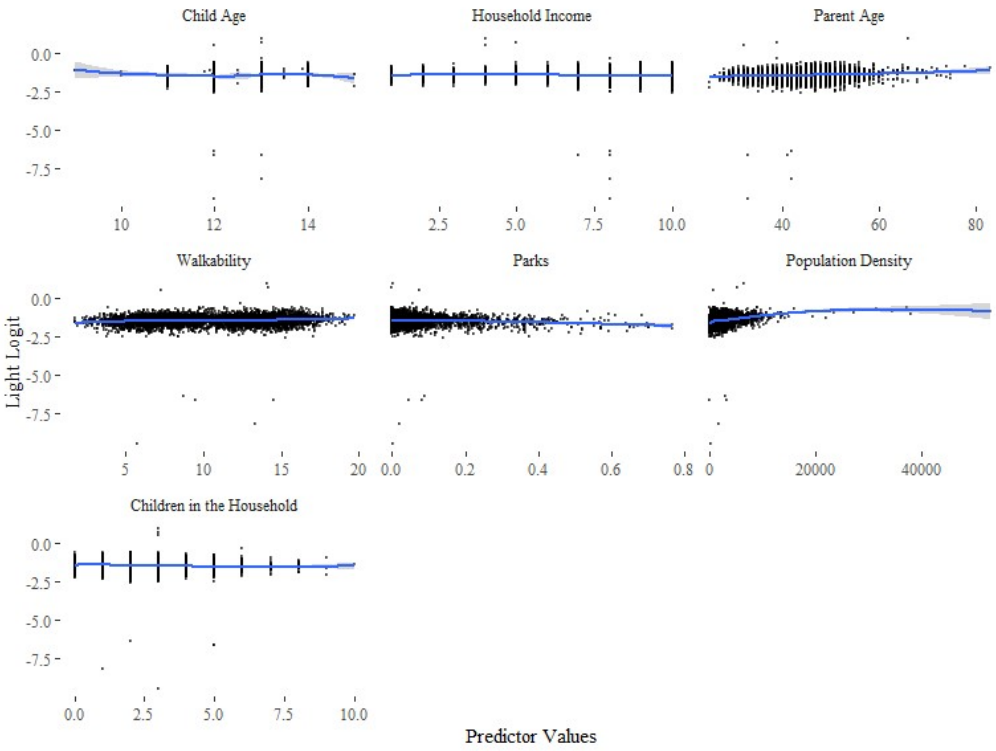


Figure 22

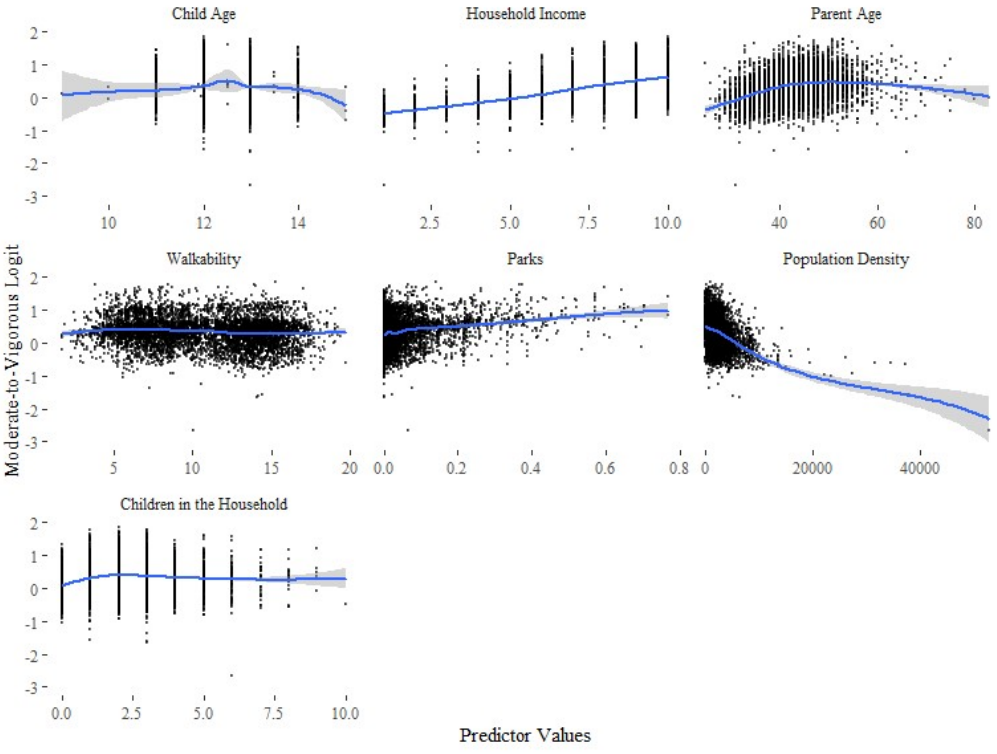
IPAQ Relationship between Continuous Predictors and Logit of the Outcomes



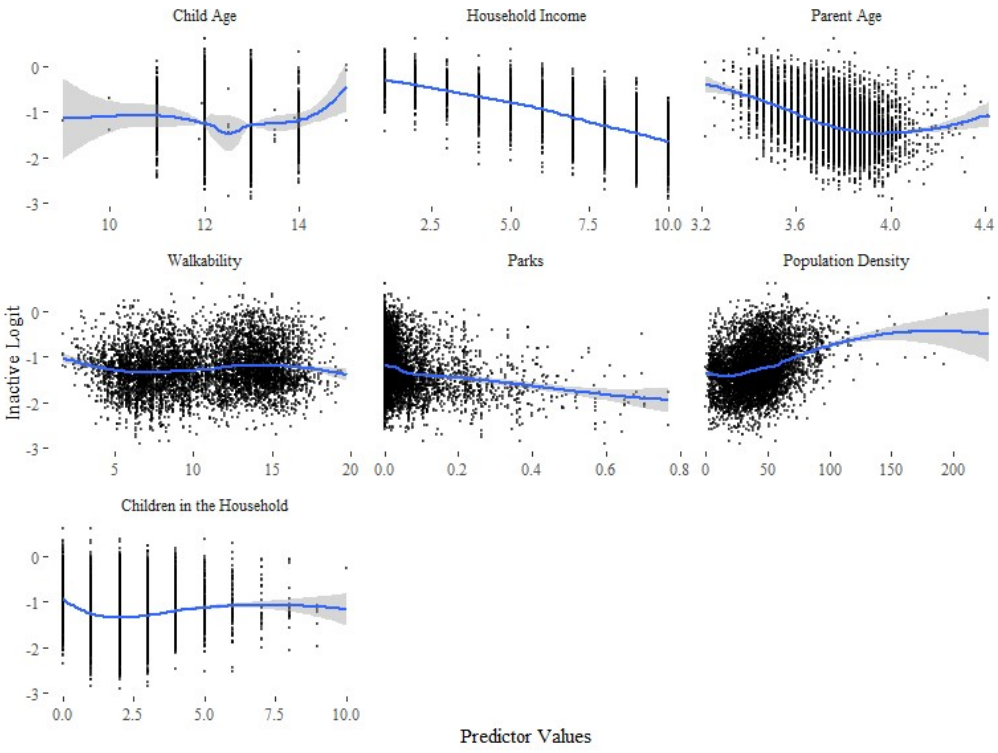
(a)


Child Age
Household Income
Parent Age
Walkability
Parks
Population Density
Children in the Household
Light Logit
Predictor Values

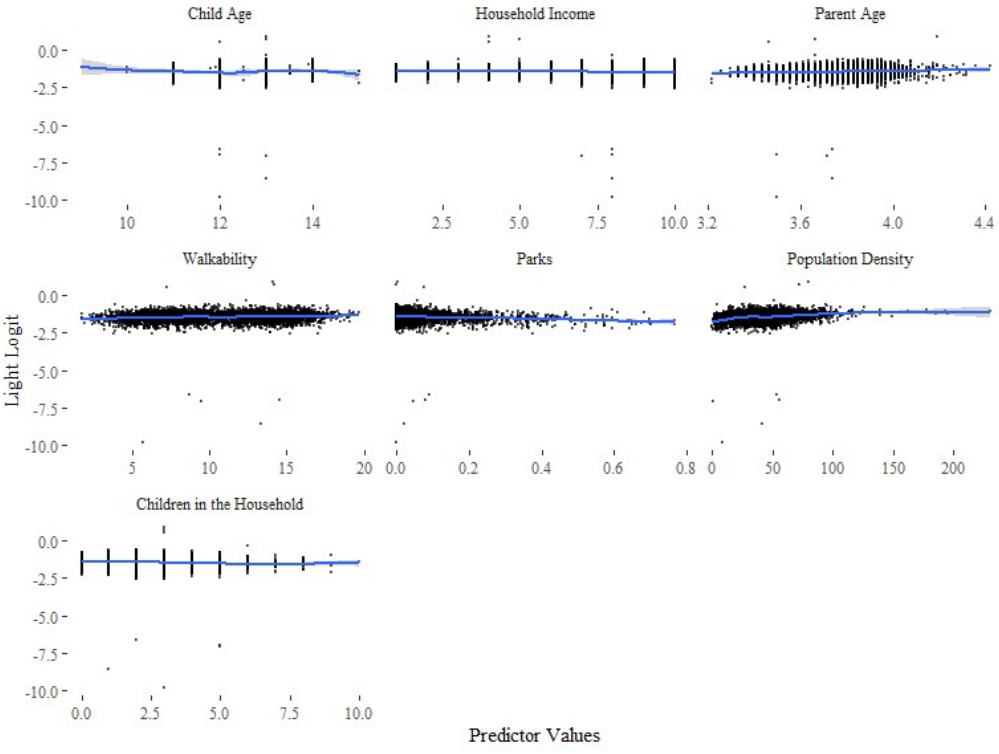
(b)


Child Age
Household Income
Parent Age
Walkability
Parks
Population Density
Children in the Household
Moderate-to-Vigorous Logit
Predictor Values

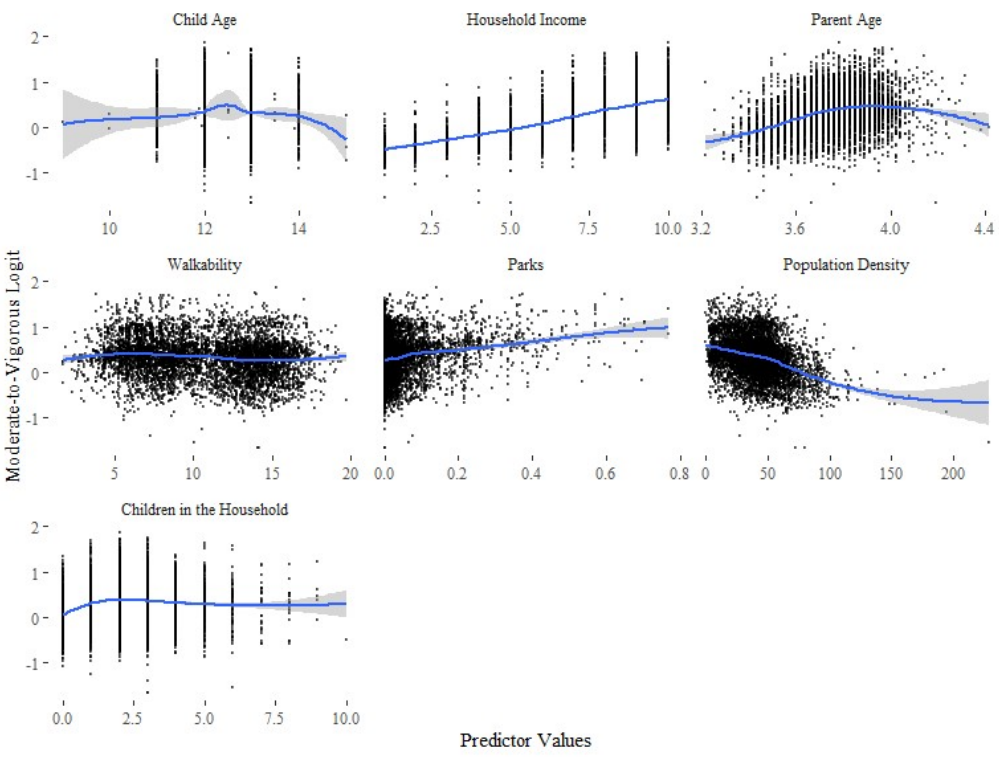
(c)


Child Age
Household Income
Parent Age
Walkability
Parks
Population Density
Children in the Household
Inactive Logit
Predictor Values

(d)


Child Age
Household Income
Parent Age
Walkability
Parks
Population Density
Children in the Household
Light Logit
Predictor Values

(e)

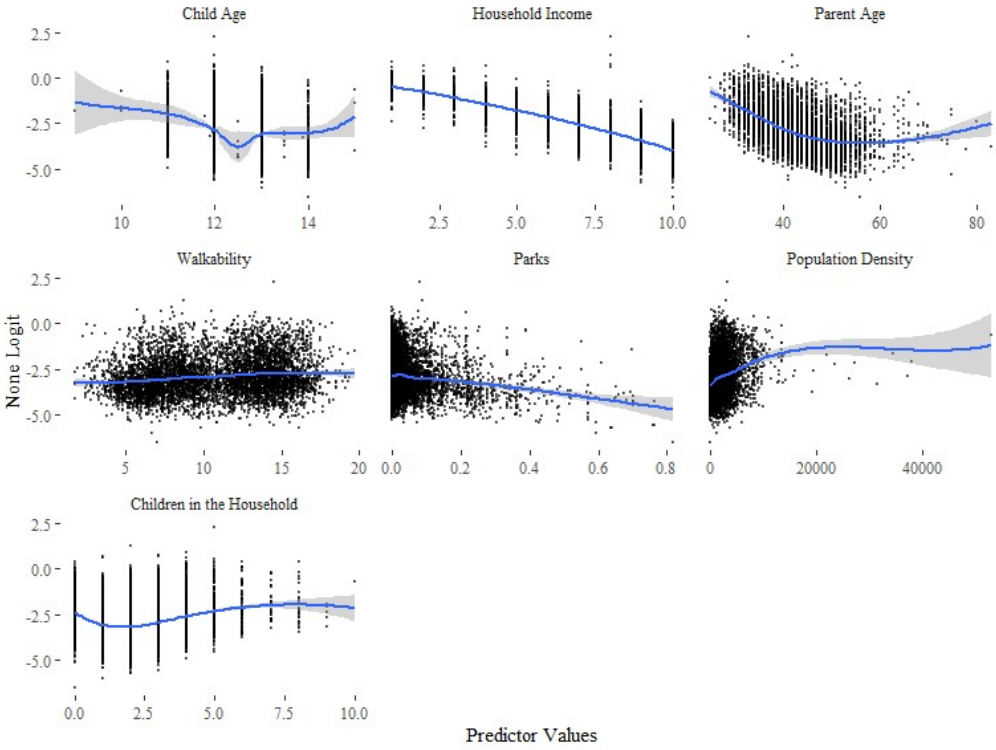


(f)

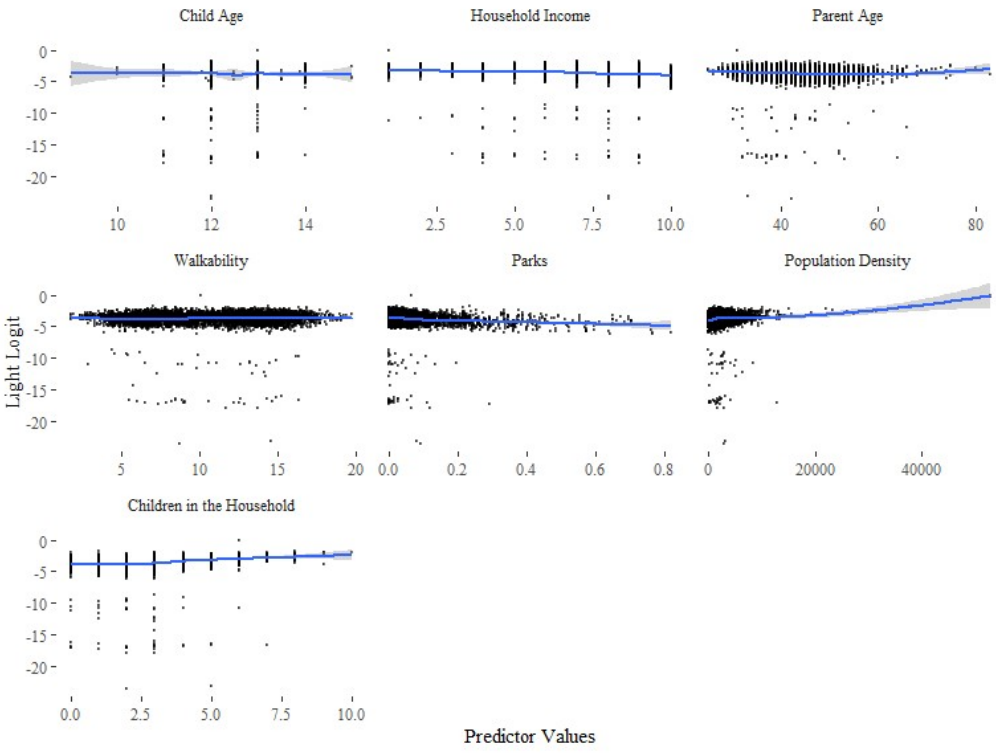
Note. (a) Inactive; (b) Light; (c) Moderate-to-vigorous; (d) Inactive with transformed variables; (e) Light with transformed variables; (f) Moderate-to-vigorous with transformed variables

Figure 23

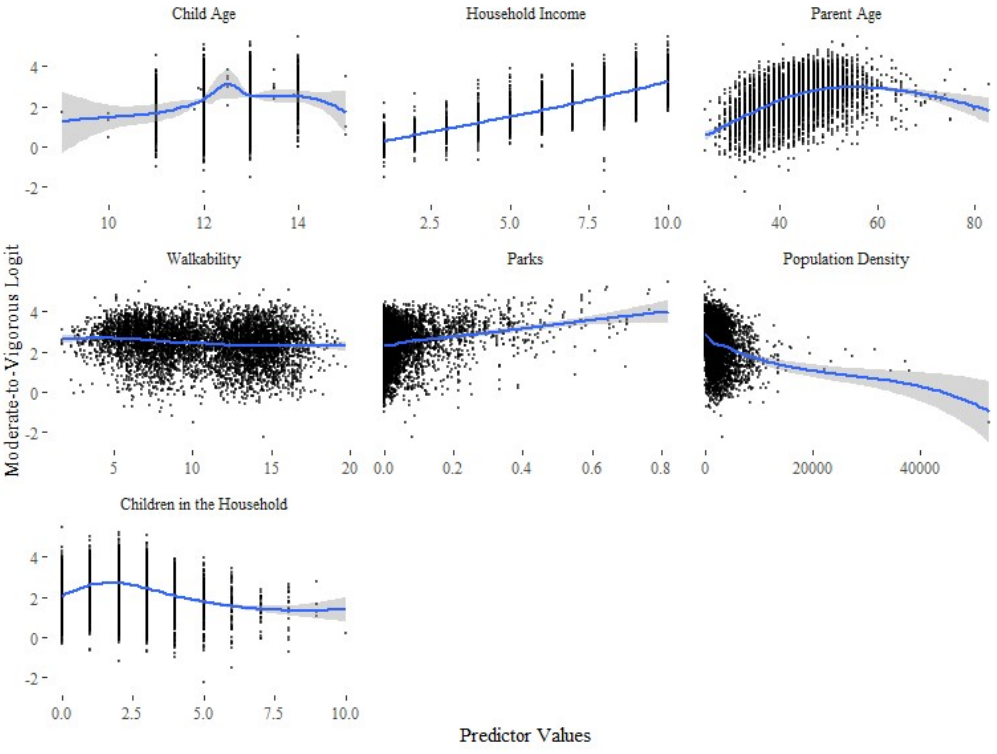
SAIQ Relationship between Continuous Predictors and Logit of the Outcomes



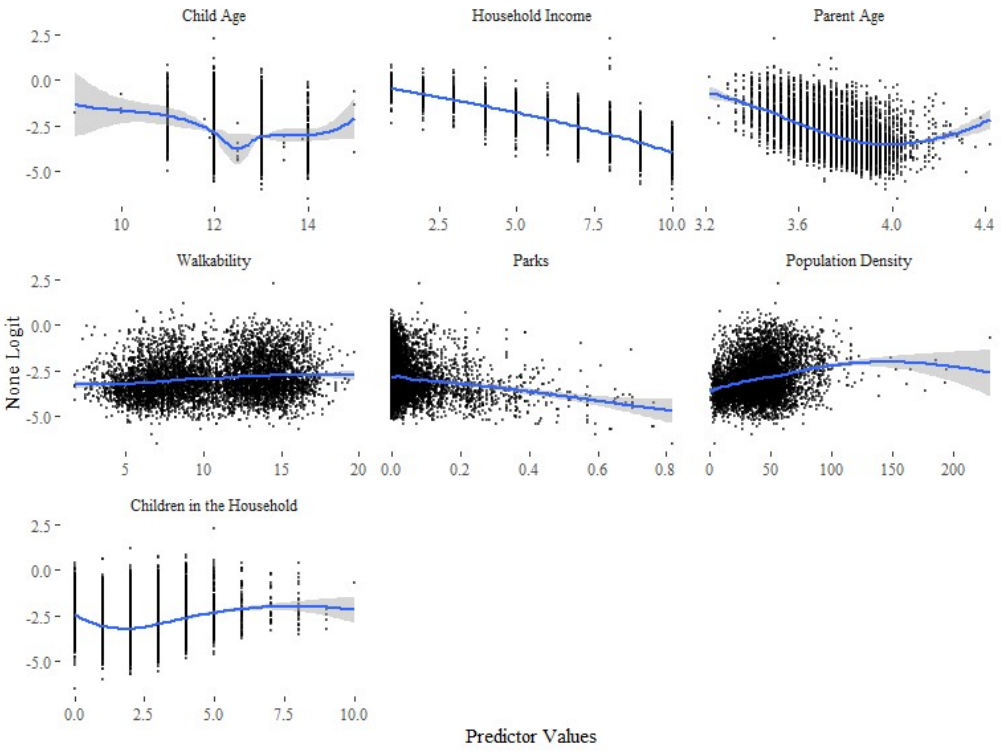
(a)


Child Age
Household Income
Parent Age
Walkability
Parks
Population Density
Children in the Household
Light Logit
Predictor Values

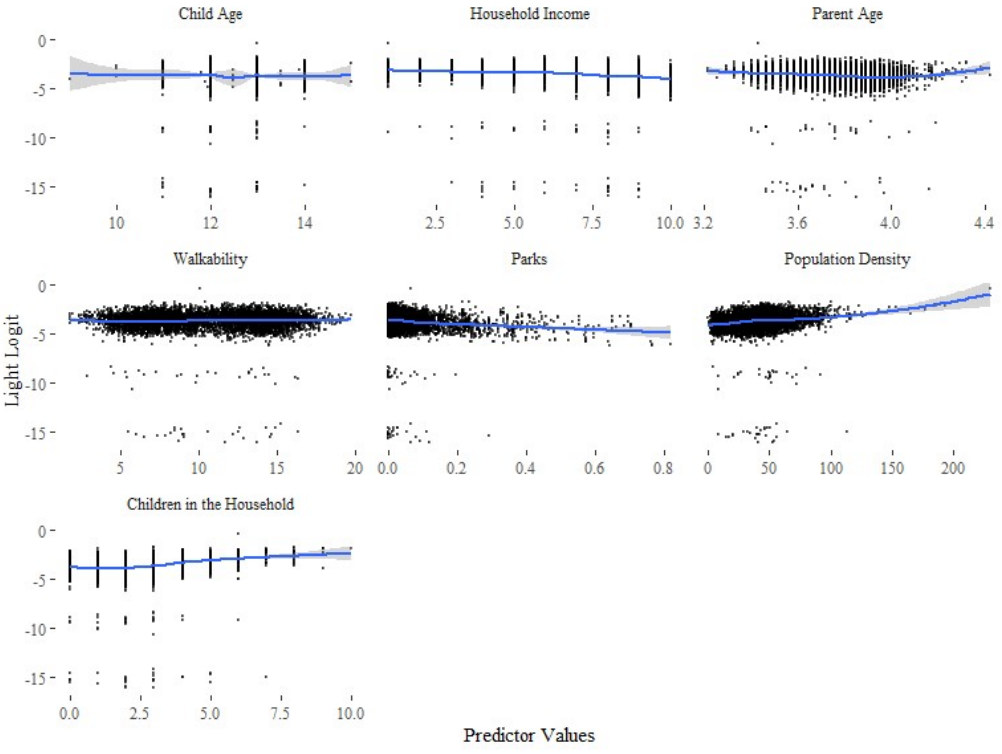
(b)


Child Age
Household Income
Parent Age
Walkability
Parks
Population Density
Children in the Household
Moderate-to-Vigorous Logit
Predictor Values

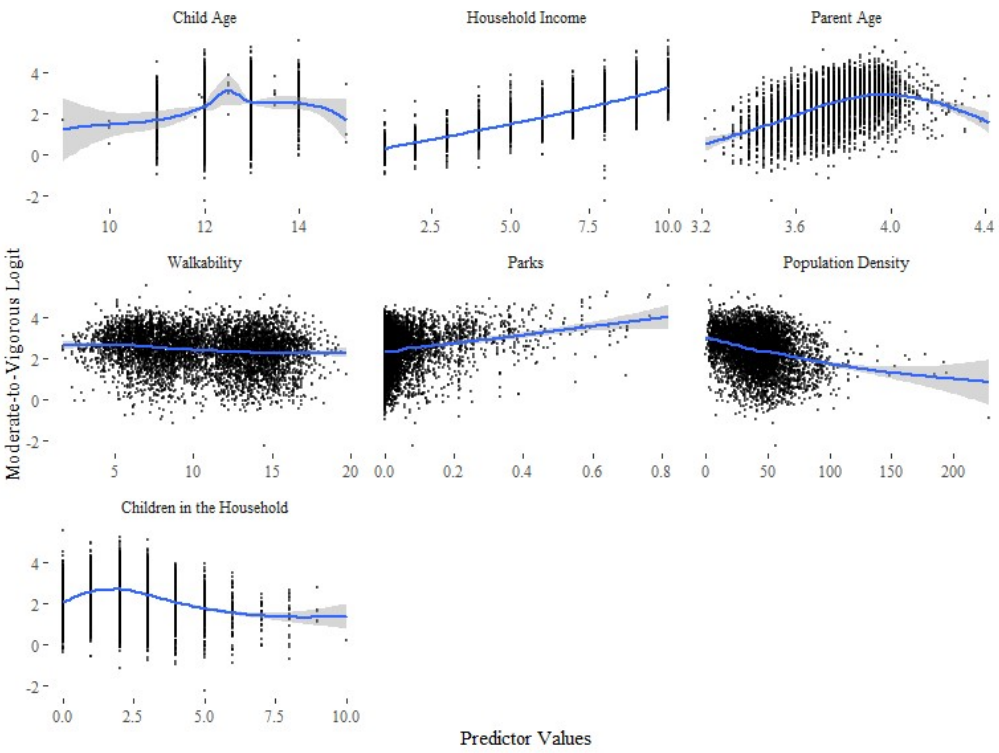
(c)


Child Age
Household Income
Parent Age
Walkability
Parks
Population Density
Children in the Household
None Logit
Predictor Values

(d)


Child Age
Household Income
Parent Age
Walkability
Parks
Population Density
Children in the Household
Light Logit
Predictor Values

(e)

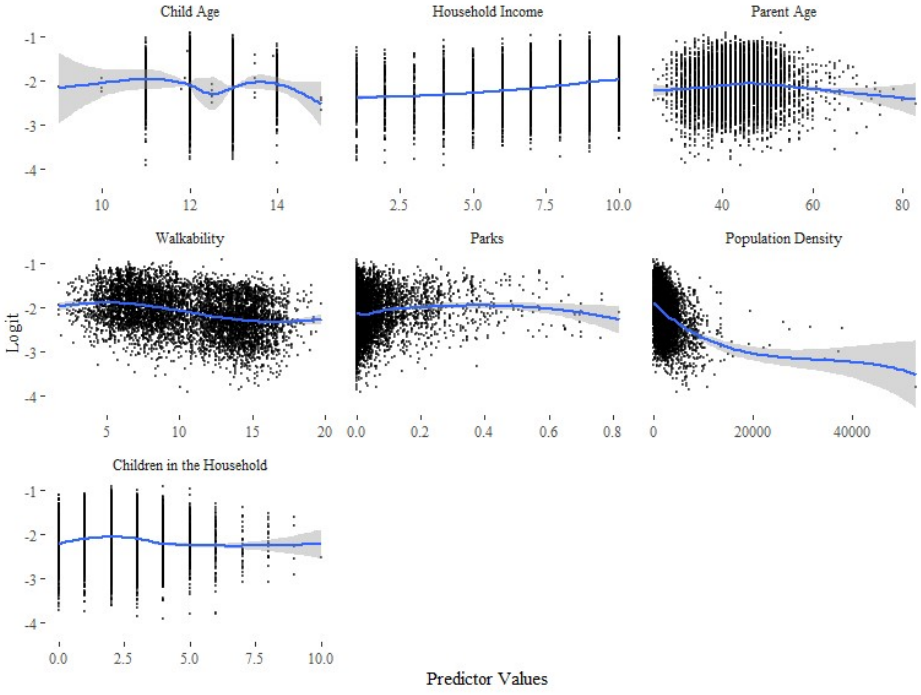


(f)

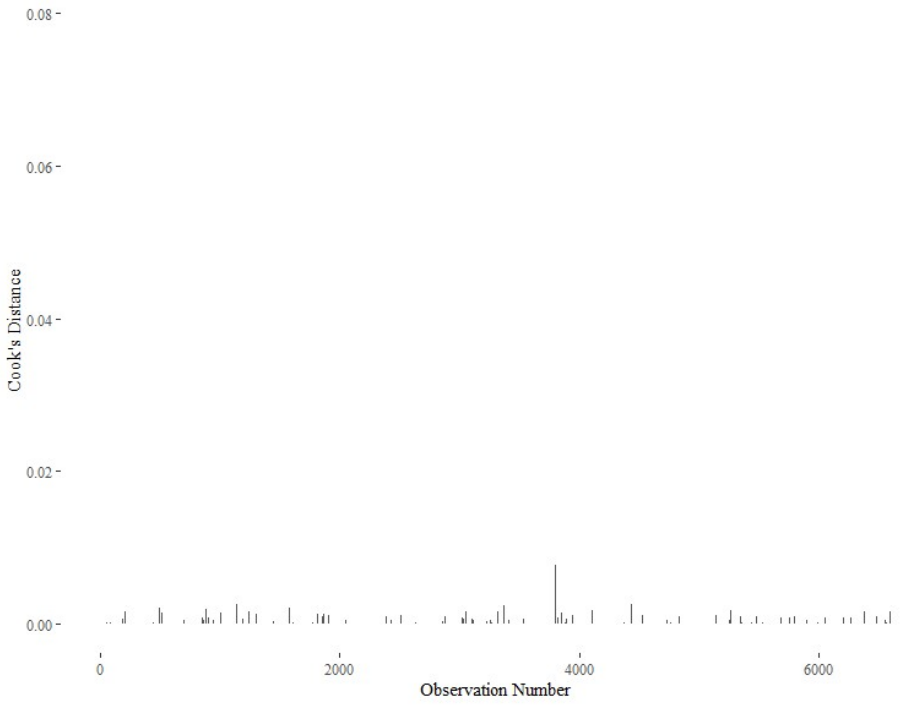
Note. (a) Inactive; (b) Light; (c) Moderate-to-vigorous; (d) None with transformed variables; (e) Light with transformed variables; (f) Moderate-to-vigorous with transformed variables

Figure 24

YRB Assumption Diagnostics



(a)

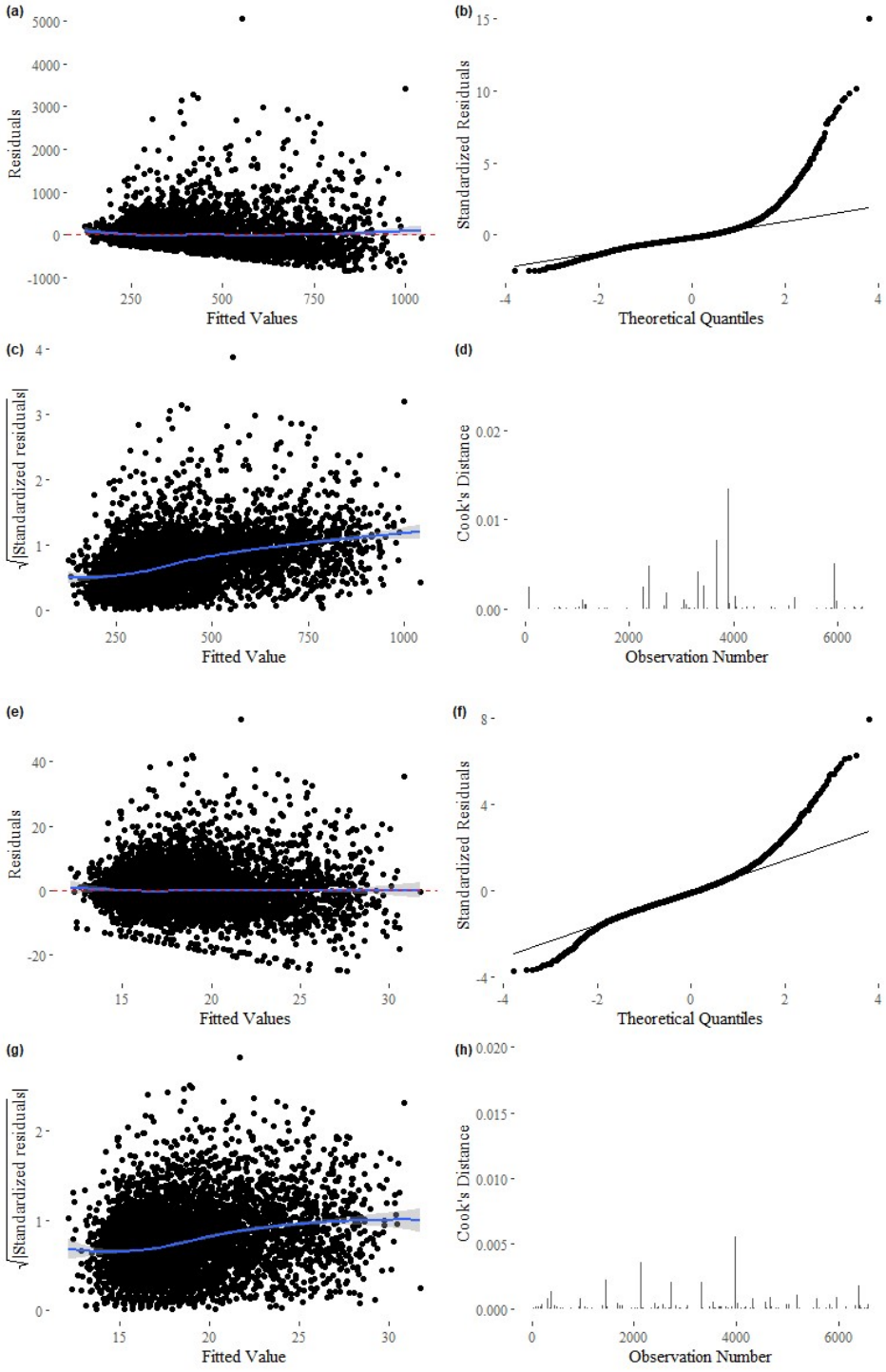


(b)

Note. (a) Relationships between the predictor variables and the logit; (b) Cook's Distance plot

Figure 25

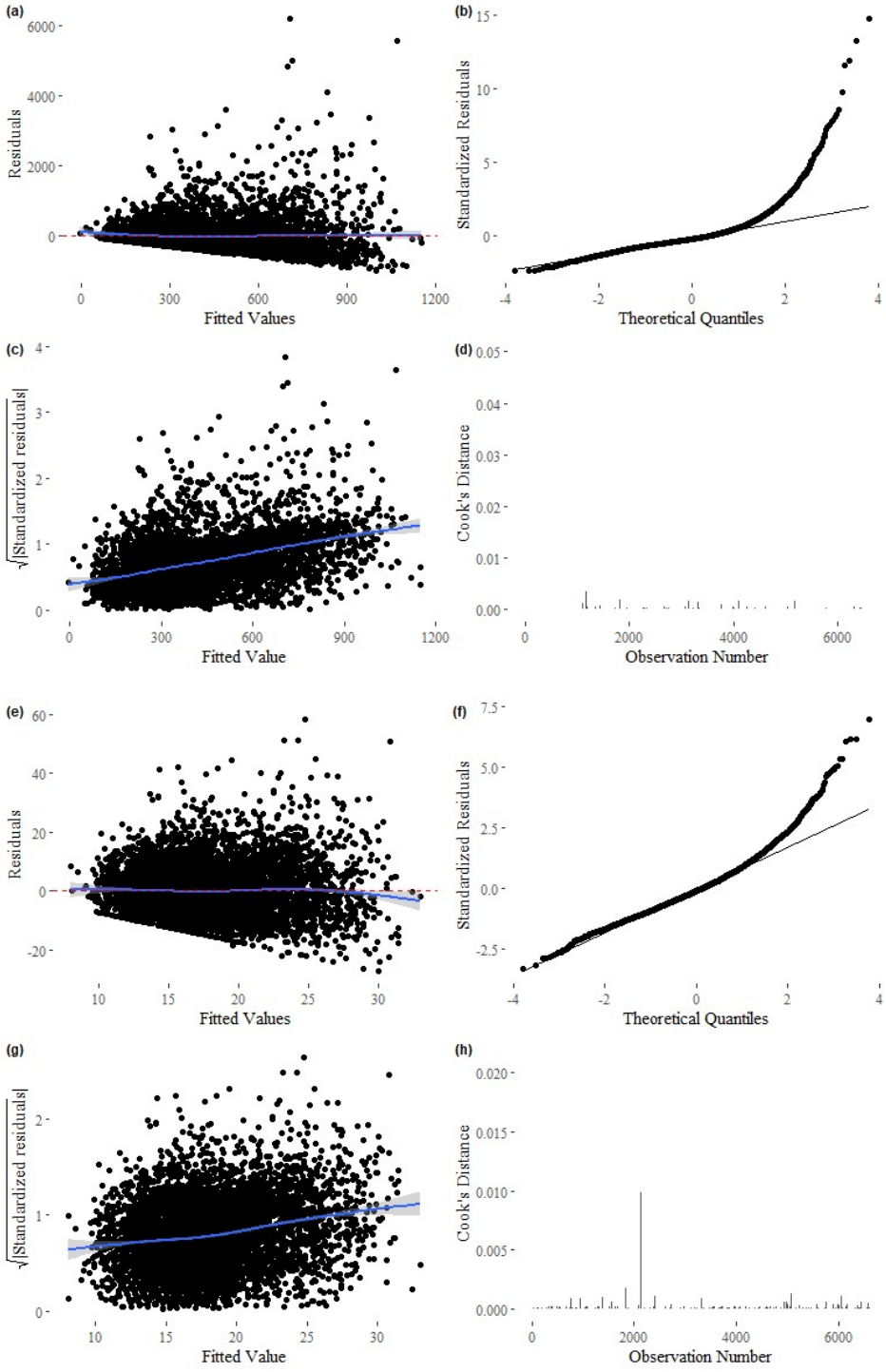
PSQ Assumption Diagnostics



Note. (a) Residual vs. fitted plot; (b) Normal Q-Q plot; (c) Scale-location plot; (d) Cook's Distance plot; (e) Transformed residual vs. fitted plot; (f) Transformed normal Q-Q plot; (g) Transformed scale-location plot; (h) Transformed Cook's Distance plot.

Figure 26

STQ Assumption Diagnostics



Note. (a) Residual vs. fitted plot; (b) Normal Q-Q plot; (c) Scale-location plot; (d) Cook's Distance plot; (e) Transformed residual vs. fitted plot; (f) Transformed normal Q-Q plot; (g) Transformed scale-location plot; (h) Transformed Cook's Distance plot.