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Racial and ethnic disparities in the perceived neighborhood walking environment and self-reported sleep health: A nationally representative sample of the United States

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Abstract

Objectives: To identify associations between perceived neighborhood walkability and sleep across racial and ethnic groups of US adults.

Methods: Data from the 2020 National Health Interview Survey (N = 27,521) were used to assess self-reported measures of walkability (pedestrian access, accessible amenities, unsafe walking conditions) and sleep (short and long duration; frequency of waking up unrested, trouble falling and staying asleep, sleep medication use). Stratified by racial and ethnic group, we calculated the age-adjusted prevalence of neighborhood walkability features and sleep measures and estimated prevalence ratios assessing associations between neighborhood walkability and sleep while adjusting for sociodemographic and health covariates.

Results: The prevalence of unsafe walking conditions due to crime was lowest among non-Hispanic White adults (6.9%), and access to places to relax was lowest among non-Hispanic Black adults (72.5%). The prevalence of short sleep duration was highest among non-Hispanic Black adults (37.9%). Neighborhood environment features had differential associations with sleep when stratified by race and ethnicity. For example, walking path access was related to lower sleep

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medication use among non-Hispanic Asian adults (adjusted prevalence ratio (aPR): 0.42, 95% CI: 0.19–0.91) but greater use among non-Hispanic White adults (aPR: 1.24, 95% CI: 1.05–1.46). More associations were observed among non-Hispanic White adults than other groups; and the strongest magnitude of association was observed among non-Hispanic Asian adults (traffic and sleep medication aPR: 0.31, 95% CI: 0.12–0.84).

Conclusions: Associations between the neighborhood environment and sleep vary and may be inconsistent by race and ethnicity. Future research may help identify determinants.

Keywords

Health disparities; Sleep duration; Sleep disturbances; Walkability; Built environment; National Health Interview Survey

Introduction

Suboptimal sleep, characterized by sleep disturbances and short (< 7 hours per 24-hour period) or long (> 9 hours per 24-hour period) duration, has been associated with several adverse health effects, such as obesity, type 2 diabetes, dementia, coronary heart disease, and premature mortality.^{1–4} Yet, approximately one-third of the US adult population report insufficient sleep.⁵ Given the established associations between poor sleep and adverse health conditions, it is important to identify determinants of sleep quantity and quality, including the neighborhood environment.

The neighborhood and sleep health

Growing evidence suggests that features of the built and social environment may be related to improved or worsened sleep health, depending on the feature. A recent study using data from the 2020 National Health Interview Survey (NHIS), a cross-sectional nationally representative data source, found that having places to relax and pedestrian access (e.g., walking paths, sidewalks) were related to better sleep health, while unsafe walking conditions (e.g., traffic, crime) were related to worse sleep health.⁶ Other studies have found that green space availability, the presence of spiritual centers, perceived neighborhood safety, and social cohesion are related to healthier sleep, while increased walkability as well as noise and disorder—measured both objectively and subjectively—have been associated with more disrupted sleep and shorter sleep duration.^{7–13}

Racial and ethnic differences in the neighborhood environment and sleep health

Apart from environment-related sleep disparities observed on the population level, researchers theorize that these associations may also differ by race and Hispanic origin, given documented racial and ethnic differences in the neighborhood environment and sleep outcomes.^{14,15} Rooted in a history of residential segregation, historically minoritized groups (i.e., racialized individuals, immigrant populations, economically disadvantaged individuals) are generally more likely to experience adverse neighborhood environments^{16,17} and live in areas that lack health-promoting features such as green space and playgrounds.¹⁸ Neighborhood disadvantage is likewise concentrated in areas that are predominantly populated by these groups.¹⁵

In terms of sleep disparities, several studies have demonstrated that racial and ethnic groups including Hispanic, non-Hispanic Black, and non-Hispanic Asian adults are more likely to be affected by poor sleep than non-Hispanic White adults based on measures such as short sleep duration and sleep latency.^{19–22} In contrast, other data indicate that these groups report fewer sleep complaints than their White counterparts.²³

Few studies examine race-stratified associations between the neighborhood environment and sleep health, but emerging evidence suggests that such associations exist. In terms of the social environment, findings from the Multi-Ethnic Study of Atherosclerosis (MESA) Sleep and Neighborhood ancillary studies found that higher neighborhood social cohesion and longer sleep duration were related among African American adults, while no associations were observed among Chinese, Hispanic or White individuals.²⁴ However, findings from the NHIS showed that low social cohesion was related to higher prevalence of short sleep duration among non-Hispanic White, non-Hispanic Black, Hispanic/Latinx, and Asian adults.⁷ In a recent study focused on the physical environment, exposure to light at night was linked to short sleep duration in Mexican and White men and Black, Mexican, and White women.²⁵ Apart from this, research exploring racial and ethnic differences in the relationships between sleep and physical features of the neighborhood environment—and particularly the built environment—is limited, leaving a gap in the literature.

The present study

Using Ward et al²⁶ as a guiding framework for examining health disparities—which recommends considering the distribution of exposures and outcomes across groups in addition to group differences in the relationships between them—we present the prevalence of features of the built (pedestrian access, accessible amenities) and social (unsafe walking conditions) environment and self-reported sleep quantity and quality as well as the associations between these factors, stratified by race and ethnicity.

Methods

Data source

We used data from the 2020 National Health Interview Survey (NHIS). Conducted by the National Center for Health Statistics (NCHS), the NHIS is a nationally representative household survey that collects data from noninstitutionalized US civilians on an annual basis. Typically, data are collected year-round through in-person interviews with telephone follow-up as needed. However, data collection procedures for the NHIS were disrupted in 2020 due to the COVID-19 pandemic. As a result, all interviews were conducted by telephone only from April through June; and from July through December, interviewers first attempted to collect data by phone, with in-person follow-up when possible. The 2020 NHIS was reviewed and approved by the NCHS Ethics Review Board, and all participants provided oral informed consent. Details on the 2020 NHIS data collection have been published elsewhere.²⁷ The overall 2020 NHIS adult sample comprised a total of 31,568 respondents, with a final response rate of 48.9%; and adults without complete data on neighborhood environment exposures ($n = 1739$), sleep measures ($n = 1136$), and all covariates ($n = 3070$) were excluded from this study. A total of 4047 unique respondents

were excluded for at least one of these reasons, and our final analytic sample included 27,521 participants.

Measures

Exposure assessment: Neighborhood environment: Questions on perceptions of the walking environment last appeared on the NHIS in 2020 and were sponsored by the National Cancer Institute at the National Institutes of Health and the National Center for Chronic Disease Prevention and Health Promotion at the Centers for Disease Control and Prevention. The survey questions included as exposures in the analysis covered pedestrian access, amenities, and safety in the neighborhood. Measures of pedestrian access were based on the items: “Where you live, are there roads, sidewalks, paths or trails where you can walk?,” and “Where you live, do most streets have sidewalks?” Land use measures describing neighborhood amenities consisted of the following survey items: “Are there places that you can walk to that help you relax, clear your mind, and reduce stress?,” “Are there shops, stores, or markets that you can walk to?,” “Are there bus or transit stops that you can walk to?,” and “Are there places like movies, libraries, or places of worship that you can walk to?” Lastly, neighborhood safety was measured through the items: “Does traffic make it unsafe for you to walk?,” and “Does crime make it unsafe for you to walk?” All item response options were binary (yes/no), and separate models were used to analyze each item.

Outcome assessment: Sleep duration and sleep disturbances: Beginning in 2020, the NHIS includes questions about sleep biennially. The question: “On average, how many hours of sleep do you get in a 24-hour period?” was used to measure sleep duration, and participants were asked to round to the nearest whole hour. Sleep duration was categorized as short (< 7 hours) or long (≥ 9 hours). Though 9 hours of sleep is within acceptable guidelines for normal sleep for most adults,² we included 9 hours in our definition for long sleep duration because of the small numbers of respondents with sleep durations longer than that. This cut-off is also used in other studies.²⁸

To assess sleep disturbances, participants were classified as waking up feeling unrested if they responded (1) Never or (2) Some Days to the question: “During the past 30 days, how often did you wake up feeling well-rested?” Participants were classified as having trouble falling asleep, trouble staying asleep, or frequently using medication to help fall or stay asleep, respectively, if they responded (3) Most Days or (4) Every Day to the questions: “During the past 30 days, how often did you have trouble falling asleep?,” “During the past 30 days, how often did you have trouble staying asleep?,” and “How often did you take any medication to help you fall asleep or stay asleep? Include both prescribed and over-the-counter medications.”

Potential modifier: Classification of race and ethnicity: Race and ethnicity were self-identified based on responses to the questions, “Do you consider yourself to be Hispanic or Latino?” and “What race or races do you consider yourself to be? Please select 1 or more of these categories: White, Black or African American, American Indian, Alaska Native, Native Hawaiian, Other Pacific Islander, Asian, or some other race.” Race and ethnicity were categorized as Hispanic/Latino, non-Hispanic White (subsequently, White),

non-Hispanic Black (subsequently, Black), and non-Hispanic Asian (subsequently, Asian). Due to small sample sizes and insufficient power for reliable estimates, results for American Indian, Alaska Native, Native Hawaiian, Pacific Islander, “other” race, and multiple races are not shown. Adults categorized as Hispanic/Latino could be of any race or combination of races.

Potential confounders

Potential confounders were selected based on the published literature^{29–31} and included sociodemographic characteristics, health conditions, and health behaviors. Sociodemographic characteristics included age (18–44, 45–64, ≥65 years), self-identified sex (male, female), employment status (employed, unemployed/not in labor force), educational attainment level (less than high school diploma/General Educational Development high school equivalency diploma [GED], high school diploma/GED, some college, bachelor’s degree or higher), annual household family income as a percentage of the federal poverty level (FPL) (< 100% FPL, 100%–199% FPL, ≥200% FPL), marital status (married/living with partner, divorced/separated/widowed, never married), children living in the household (yes/no), and US Census region (Northeast, Midwest, South, West). Family income was imputed when missing. Health conditions and behaviors included self-rated health status (excellent/very good, good, fair/poor), functional disability (yes/no), regular feelings of anxiety or depression (yes/no), and a six-point cardiovascular health score (categorized as poor: 0–2, intermediate: 3–4, ideal: 5–6) based on the presence or absence of cigarette smoking, body mass index of 25 kg/m² or higher, not meeting physical activity guidelines, and history of high cholesterol, hypertension, or diabetes/prediabetes.³²

Statistical analysis

We calculated weighted estimates of sociodemographic and health characteristics. To examine differences by race and ethnicity, we produced weighted prevalence estimates of the sleep measures and neighborhood environment exposures stratified by each racial and ethnic category (Hispanic/Latino, White, Black, and Asian) and age-adjusted based on the 2000 US Census population following NCHS standards.³³ Differences between percentages were evaluated using two-sided significance tests at the .05 level. The NCHS standards for proportions³⁴ were used to assess statistical reliability, and all prevalence estimates presented meet these standards.

Logistic regression models were likewise run separately for each racial and ethnic group to assess the associations between neighborhood characteristics and measures of sleep health. The fully adjusted models adjust for all sociodemographic and health covariates listed above. We estimated prevalence ratios as the measures of association based on predicted marginals obtained from logistic regression analysis with robust variance estimation because odds ratios deviate from risk estimates when outcomes are common.³⁵ Point estimates and corresponding confidence intervals for this analysis were calculated using SAS-callable SUDAAN software³⁶ to account for the complex sample design of the NHIS.

Results

Characteristics of the study sample overall and by race and ethnicity are presented in Table 1 weighted to the US population. Approximately 17% were Hispanic/Latino, 63% were White, 11% were Black, 6% were Asian, and 3% were other non-Hispanic adults (data not shown separately for this group). Approximately 60% of the study population had at least some college education, were married or cohabiting, and reported excellent or very good health.

Prevalence of neighborhood environment exposures and sleep measures

Variation in the perceived neighborhood environment was observed by race and ethnicity (Fig. 1). Asian adults (17.9%) were least likely to report unsafe walking conditions due to traffic, and White adults (6.9%) were least likely to report unsafe walking conditions due to crime. Asian adults had the most access to pedestrian infrastructure such as sidewalks (89.2%) and other walkways (94.7%). White adults had the lowest access to sidewalks (56.7%), shops (53.4%), and transit (45.8%), whereas Hispanic/Latino (71.1%) and Asian (71.1%) adults were more likely to live close to transit stops than Black and White adults. Hispanic/Latino (57.3%) and Black (57.6%) adults were more likely to report living near entertainment/services, and proximity to places to relax was lowest among Black adults (72.5%).

In terms of sleep, short sleep duration was most prevalent among Black adults (37.9%), and trouble staying asleep was most prevalent among White adults (19.8%) (Fig. 2). White adults (9.7%) were also more likely to use sleep medication frequently. Asian adults were least likely to report sleep disturbances.

Associations between perceived neighborhood environment exposures and sleep measures

Short sleep duration: Unsafe walking conditions due to traffic were significantly associated with short sleep duration among White (adjusted prevalence ratio (aPR): 1.09, 95% CI: 1.02–1.17) and Asian adults (aPR: 1.32, 95% CI: 1.05–1.66) only, and unsafe conditions due to crime were associated only among White adults (aPR: 1.31, 95% CI: 1.19–1.45) (Table 2). Available walking paths were associated with a lower prevalence of short sleep duration in Hispanic/Latino adults only (aPR: 0.80, 95% CI: 0.65–0.99) and available sidewalks on most streets were associated only among Black adults (aPR: 0.85, 95% CI: 0.74–0.97).

Long sleep duration: Places to relax were associated with a lower prevalence of long sleep duration in Asian adults (aPR: 0.53, 95% CI: 0.31–0.91).

Waking up unrested: Lack of safety due to traffic was associated with a higher prevalence of waking up unrested in Hispanic/Latino (aPR: 1.26, 95% CI: 1.14–1.38), White (aPR: 1.11, 95% CI: 1.06–1.16), and Asian (aPR: 1.25, 95% CI: 1.04–1.50) adults. Crime was associated with a higher prevalence of this outcome in Hispanic/Latino (aPR 1.16, 95% CI: 1.04–1.31) and White (aPR 1.23, 95% CI: 1.15–1.32) adults only. In terms of land use,

transit access was associated with a higher prevalence of waking up unrested among White adults (aPR: 1.06, 95% CI: 1.01–1.10), while entertainment/services were associated with a lower prevalence in Asian adults (aPR: 0.80, 95% CI: 0.67–0.95) and places to relax were associated with a lower prevalence in White adults (aPR: 0.93, 95% CI: 0.89–0.97).

Trouble falling asleep: Crime was associated with a higher prevalence of trouble falling asleep among White adults only (aPR: 1.17, 95% CI: 1.01–1.35). The availability of walking paths was associated with a lower prevalence of trouble falling asleep among Hispanic/Latino (aPR: 0.75, 95% CI: 0.57–0.98) and Asian (aPR: 0.38, 95% CI: 0.21–0.70) adults.

Trouble staying asleep: In terms of trouble staying asleep, traffic was associated with a higher prevalence among Hispanic/Latino (aPR: 1.31, 95% CI: 1.01–1.69) and White (aPR: 1.22, 95% CI: 1.13–1.31) adults. Crime was associated with a higher prevalence only among White adults (aPR: 1.24, 95% CI: 1.10–1.41) while pedestrian access measures and places to relax were associated with a lower prevalence in this group (aPRs: walking paths: 0.88, 95% CI: 0.80–0.98; sidewalks on most streets: 0.90, 95% CI: 0.84, 0.96; places to relax: 0.88; 95% CI: 0.82–0.96).

Frequent use of sleep medication: The presence of traffic was associated with a lower prevalence of sleep medication use among Asian adults (aPR: 0.31, 95% CI: 0.12–0.84). Walking paths were associated with a higher prevalence of frequent sleep medication use among White adults (aPR: 1.24, 95% CI: 1.05–1.46) but a lower prevalence among Asian adults (aPR: 0.42, 95% CI: 0.19–0.91). Among Black adults, access to transit stops was associated with a lower prevalence of sleep medication use (aPR: 0.62, 95% CI: 0.42–0.90).

Discussion

In this nationally representative study of US adults, perceived neighborhood environments and sleep patterns both differed by race and ethnicity, and the associations between the perceived neighborhood environment and sleep also varied across racial and ethnic groups, with magnitudes of association inconsistently larger or smaller across groups as well as some differences in direction. Among Hispanic/Latino adults, unsafe walking conditions were associated with waking up unrested and having trouble staying asleep, while available walking paths were associated with a lower prevalence of short sleep duration and trouble falling asleep (Table 3). The significant finding for unsafe walking conditions and some sleep disturbances in Hispanic/Latino adults corresponds to evidence suggesting poorer sleep quality in young Puerto Rican adults living in neighborhoods with high stressors—which included measures of crime and safety—though the study sample was limited only to this ethnic subgroup living in two sites.¹²

Among White adults, unsafe walking conditions were associated with short sleep duration, waking up unrested, and trouble falling and staying asleep; walking paths and sidewalks were associated with a lower prevalence of trouble staying asleep, while walking paths were linked to increased sleep medication use; transit stops were positively associated with waking up unrested; and places to relax were negatively associated with trouble staying asleep and waking up unrested. The significant association between unsafe

walking conditions and short sleep duration observed in this analysis somewhat contradicts exploratory results showing no association between safety and sleep duration among White adults found in Johnson et al.²⁴ However, the sample in that study was not nationally representative and sleep duration was measured objectively while safety was assessed through different items.

Among Black adults, having sidewalks on most streets and access to transit stops were associated with a lower prevalence of short sleep duration and sleep medication use, respectively. The lack of association between safety measures and short sleep duration for Black adults in the present study also contrasts with previous findings linking safety and sleep duration as well as violence and short sleep in African American samples^{24,37}; but again, the studies differ in their populations and measures used.

Lastly, among Asian adults, traffic was associated with short sleep duration and waking up unrested but with a decreased prevalence of frequent sleep medication use; available walking paths were negatively associated with trouble falling asleep and frequently using sleep medication; and places to relax were associated with a lower prevalence of long sleep duration while access to entertainment/services was negatively associated with waking up unrested. Results from the Johnson et al.²⁴ analysis did not demonstrate an association between safety and sleep duration in Asian/Chinese participants, which may not necessarily support the current findings.

Our estimates of perceived neighborhood characteristics by race and ethnicity align with those reported by Soto et al.³⁸ The lower availability of certain amenities within walking distance observed for White adults in this study—such as sidewalks, stores, and transit stops—likely reflects the underrepresentation of the White population in urban areas³⁹ where such features may be integrated more closely within residential neighborhoods than in nonurban areas. Regarding sleep measures, our findings were consistent with previous literature that suggests shorter sleep duration among Black populations.^{14,40} While studies have also indicated greater sleep disturbances among racially minoritized groups, especially by objective measures,^{14,41} several analyses have found higher levels of sleep complaints, reported insomnia symptoms, and medication use among White populations,^{14,23,40,42,43} which is also supported by our estimates. These discrepancies may originate from cultural differences in reporting and stigmatization of sleep problems among historically minoritized groups, leading to under- or over-reporting of sleep complaints along racial and ethnic lines,²² as well as potential differences in attitudes toward and access to medication.⁴⁴

While we assessed variations in associations between the perceived neighborhood environment and sleep, it could be likely that prevalence differences in sleep health indicators may also be exacerbated by differences in other neighborhood characteristics among racial and ethnic groups, which could be further examined in future studies. Previous work suggests that sleep duration disparities by race and ethnicity do not exist or are attenuated in lower-income areas and housing where racially minoritized groups reside in similar living conditions to White populations,^{45–47} and a recent study found that neighborhood social vulnerability partly mediates the effect of race on severity of insomnia.⁴⁸

However, in contrast to previous work suggesting that associations between neighborhood and similar facets of sleep health are stronger among some racially minoritized populations,^{7,24} our results did not tend to confirm this. The strength of associations differed across relationships. These previous studies have focused on the social environment, but regarding perceived neighborhood walkability and other outcomes, Billings et al⁴⁹ also observed the strongest association between low walking environment and apnea-hypopnea index—a measure of obstructive sleep apnea—among Black study participants; however, their indicators of perceived walkability did not pertain to specific built environment features. Evidence relating to BMI based on the same data as the present study indicates that race and ethnicity does function as a moderator, with walkability associated with decreased BMI in White, Black, Hispanic, and Asian adults and only modest differences in magnitude among them.⁵⁰ Yet, unlike the present analysis, the study only assessed walkability using a sum score for the exposures and not the individual variables, so it is not possible to determine whether relationships may vary depending on the aspect of walkability.

Overall, however, the strongest association in our analysis was observed among Asian adults for traffic and sleep medication use. The finding of a lack of safety for walking due to traffic being linked to less frequent use of sleep medication may be a proxy for some other condition that cooccurs with traffic in these neighborhoods. This could perhaps be the case if the increased traffic is related to the presence of a valuable neighborhood asset that promotes well-being, such as a community or cultural center or other supportive community services. In addition, the direction of associations differed for some relationships, suggesting that some neighborhood features may be both favorable and unfavorable to sleep health depending on the racial and ethnic group. For example, walking path access was associated with lower sleep medication use among Asian adults but greater use among White adults. This may reflect potentially different uses of walking paths within the neighborhoods of Asian and White adults, such as if they are used more in one setting and not used as much in the other or have differing times or volumes of use that can impact sleep through noise. Additionally, the strength of associations did not necessarily correspond to the exposure or outcome burden. For example, although the strongest association for White adults was between crime and short sleep duration, they had the lowest burden of unsafe crime conditions in their neighborhoods; and similar situations were observed for other exposure-outcome pairs.

While the present study's results may represent true differential effects by race and ethnicity, some findings may also be affected in part by other factors. One is the fact that the NHIS is based on self-report, and sleep and neighborhood characteristics are therefore assessed subjectively rather than objectively. In addition to potential racial and ethnic differences in reporting, there may also be differences in interpretation of survey items, such as what constitutes a place to relax, being within walking distance, or most streets having sidewalks. Although perceptions of the neighborhood are independently—and sometimes more strongly—associated with health compared to objective measures,⁵¹ these possible perceptual differences by race and ethnicity may limit the ability to make comparisons across groups.

Furthermore, the associations between the neighborhood environment and sleep may vary depending on other social stressors, which could also partly account for unexpected or null findings in associations by race. For example, in the community-based African American Sleep & Health (AASH) Study, Williams et al^{52,53} found that the effects of greenspace redevelopment on sleep health depended on whether or not individuals within the communities were experiencing financial strain. Those living under financial strain in redeveloped communities had worse rather than better sleep health, which may be due to increased stress or fear of displacement because of rising costs associated with redevelopment. Thus, examining associations between the neighborhood environment and sleep in the context of other stressors may help to clarify the intricacies of these relationships.

Relatedly, race and ethnicity may interact with other identities and conditions in impacting the relationships between the perceived neighborhood environment and sleep health. While it was beyond the scope of this analysis, an intersectional approach can be useful in better understanding the nature of these associations by considering the role of other factors such as sex, age, or disability status. This approach has been adopted in studies of neighborhood social cohesion and sleep health using pooled data across multiple years.^{7,54}

We also acknowledge the impacts of the COVID-19 pandemic on sleep and neighborhood conditions in 2020, as well as on data collection and sample composition in the 2020 NHIS compared to other years, as this may have also influenced some results.²⁷ Studies have observed changes in sleep patterns during the pandemic, though sleep duration changes appear to be consistent across race and ethnicity.⁵⁵ A further limitation is the fact that some of the smaller racial subgroups (e.g., Asian) are underpowered while using only 1 year of data given that some outcomes have a low prevalence when stratified, which results in a reduced ability to detect significant associations of the same magnitude across racial groups. This also limits our ability to further adjust for additional covariates, especially those that may not have as much variation in some of the exposure variables, such as urban-rural residence. We likewise recognize the cross-sectional nature of the NHIS as an additional limitation.

Despite the limitations, these findings demonstrate the uniqueness of relationships between neighborhood factors and sleep, as results varied depending on the specific feature of neighborhood walkability, sleep outcome, as well as racial and ethnic group. Moreover, the study further documented the persistence of racial and ethnic inequities in sleep health based on the prevalence differences in sleep outcomes by group, and it similarly illustrated disparities in access and exposure to favorable and unfavorable features of the built and social environment. In particular, the results of this study underscore the need to consider exposure and outcome distributions in conjunction with effect measures to fully capture disparities,²⁶ as associations alone or distributions alone may not provide a complete picture. These findings highlight the complexities of conducting and interpreting health disparities research regarding the built environment with health outcomes.

The findings also have implications for clinical practice. Namely, they suggest the importance of considering neighborhood factors such as safety and land use types and

resources in screening for sleep conditions, as well as racial and ethnic groups that may be at greater risk. This can also extend to designing sleep interventions, which may likewise benefit from considering neighborhood circumstances and their relation to race and ethnicity.

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Disclaimer

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

Data availability

Public-use datasets from the National Health Interview Survey can be accessed at <https://www.cdc.gov/nchs/nhis/index.htm>.

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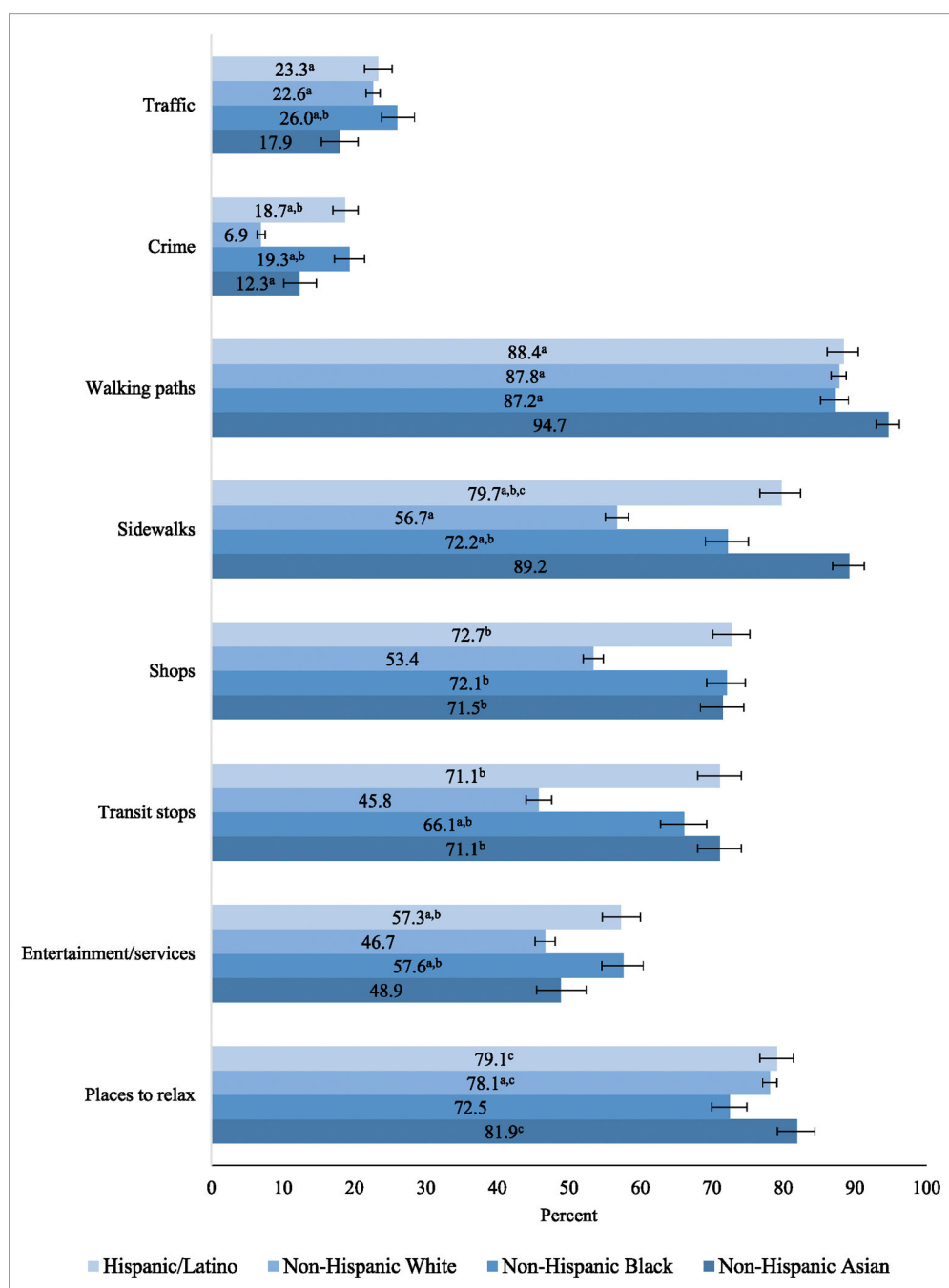


Fig. 1. Age-adjusted prevalence of neighborhood environment characteristics by race and ethnicity: United States, 2020. All estimates are based on a sample size of 27,521 and are weighted and account for the survey's complex sampling design. Estimates are age adjusted by the direct method to the 2000 projected US population using age groups 18–24, 25–44, 45–64, and 65 and over. Adults categorized as Hispanic/Latino may be of any race or combination of races. Adults categorized as non-Hispanic White, non-Hispanic Black, and non-Hispanic Asian indicated one race only. ^aSignificantly different from non-Hispanic Asian adults (p

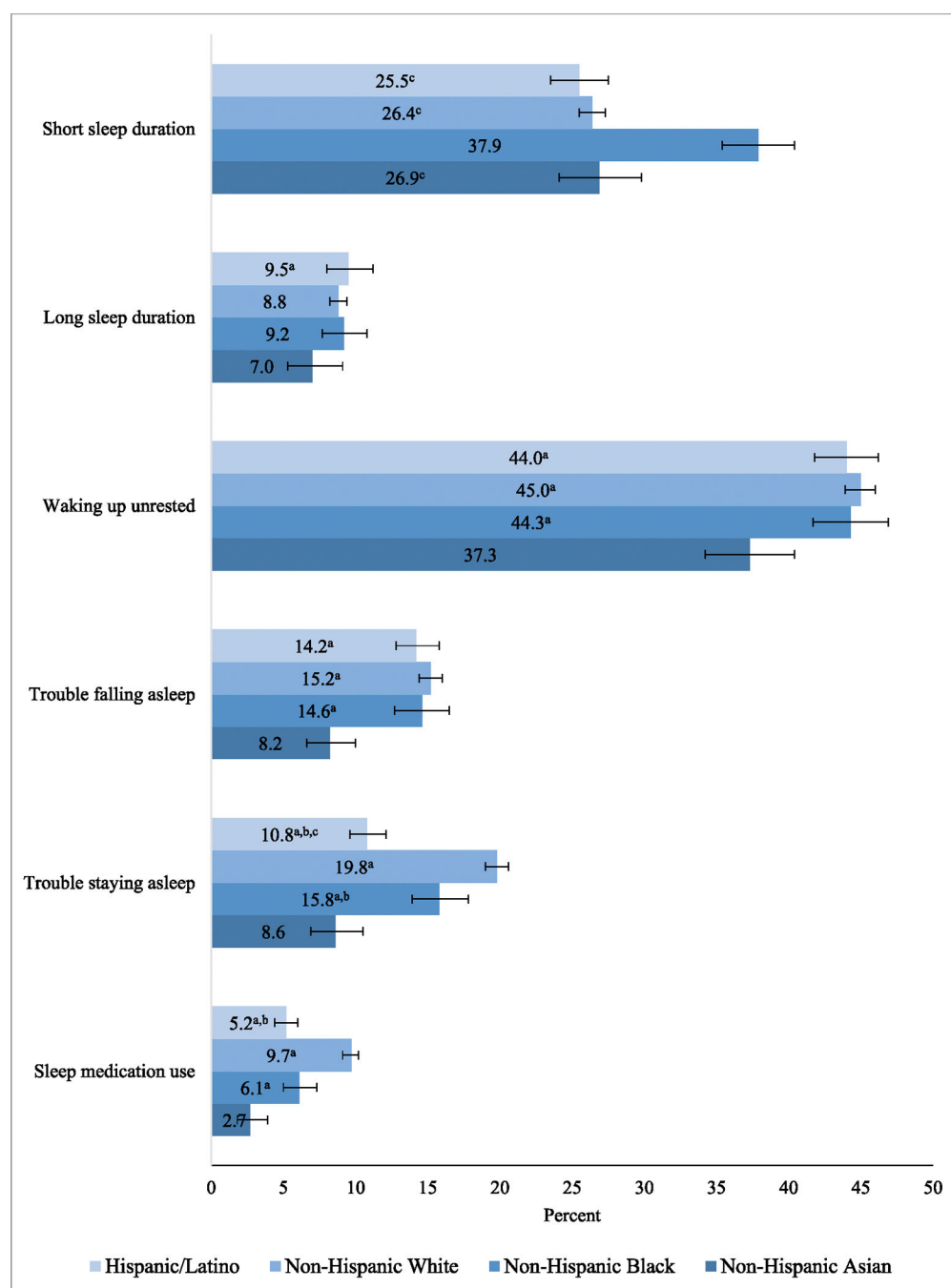
< .05). ^bSignificantly different from non-Hispanic White adults ($p < .05$). ^c Significantly different from non-Hispanic Black adults ($p < .05$)

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**Fig. 2.**

Age-adjusted prevalence of sleep characteristics by race and ethnicity: United States, 2020. All estimates are based on a sample size of 27,521 and are weighted and account for the survey's complex sampling design. Estimates are age adjusted by the direct method to the 2000 projected US population using age groups 18–24, 25–44, 45–64, and 65 and over. Adults categorized as Hispanic/Latino may be of any race or combination of races. Adults categorized as non-Hispanic White, non-Hispanic Black, and non-Hispanic Asian indicated one race only. Medication is to help fall or stay asleep, including both prescribed

and over-the-counter medications. ^aSignificantly different from non-Hispanic Asian adults ($p < .05$). ^bSignificantly different from non-Hispanic White adults ($p < .05$). ^cSignificantly different from non-Hispanic Black adults ($p < .05$)

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Percentage (95% CI)^a of sociodemographic and health-related characteristics by race and ethnicity^b: United States, 2020^c

Table 1

	Total (n = 27,521)	Hispanic/Latino (n = 3292, 16.6%)	Non-Hispanic White (n = 19,374, 63.3%)	Non-Hispanic Black (n = 2716, 11.4%)	Non-Hispanic Asian (n = 1482, 6.0%)
<i>Sociodemographic characteristics</i>					
Age, y					
18–44	46.1 (45.3, 47.0)	59.3 (57.2, 61.5)	40.9 (39.9, 41.8)	50.7 (48.0, 41.8)	52.3 (48.8, 55.7)
45–64	32.6 (31.8, 33.3)	29.7 (27.8, 31.6)	33.6 (32.8, 34.4)	32.3 (30.1, 34.6)	30.3 (27.3, 33.6)
≥65	21.3 (20.7, 21.9)	10.9 (9.7, 12.3)	25.5 (24.8, 26.3)	17.0 (15.4, 18.7)	17.4 (15.2, 19.8)
Sex					
Male	48.8 (48.0, 49.5)	48.8 (46.7, 51.0)	49.4 (48.4, 50.3)	44.4 (42.0, 46.9)	48.2 (45.1, 51.4)
Female	51.2 (50.5, 52.0)	51.2 (49.0, 53.3)	50.6 (49.7, 51.6)	55.6 (53.1, 58.0)	51.8 (48.7, 54.9)
Annual family income ^d					
\$0–\$49,999	34.9 (34.0, 35.8)	46.8 (44.3, 49.2)	29.1 (28.1, 30.0)	51.9 (48.9, 54.9)	27.1 (24.0, 30.3)
\$50,000–\$99,999	32.1 (31.4, 32.9)	32.9 (30.6, 35.2)	32.6 (31.7, 33.5)	30.5 (27.7, 33.3)	30.5 (27.4, 33.8)
\$100,000+	33.0 (32.1, 33.8)	20.4 (18.5, 22.4)	38.3 (37.2, 39.4)	17.6 (15.6, 19.9)	42.4 (39.0, 45.9)
Family income as a percentage of FPL ^e					
< 100% FPL	9.4 (8.9, 10.0)	16.6 (14.7, 18.7)	5.9 (5.4, 6.3)	18.0 (15.7, 20.4)	7.4 (5.7, 9.3)
100%–199% FPL	17.9 (17.2, 18.6)	29.2 (26.9, 31.5)	13.6 (12.9, 14.3)	25.8 (23.4, 28.3)	16.5 (13.8, 19.6)
≥200% FPL	72.7 (71.8, 73.5)	54.2 (51.7, 56.7)	80.5 (79.6, 81.4)	56.3 (53.4, 59.1)	76.1 (72.8, 79.2)
Educational attainment					
< High school	11.3 (10.7, 12.0)	29.1 (26.9, 31.5)	6.5 (5.9, 7.1)	12.6 (10.8, 14.5)	10.4 (8.0, 13.3)
High school graduate ^f	28.0 (27.2, 28.8)	30.2 (28.2, 32.3)	27.2 (26.2, 28.2)	33.8 (31.3, 36.5)	17.8 (15.2, 20.7)
Some college	30.8 (30.0, 31.5)	26.6 (24.7, 28.6)	32.1 (31.2, 33.0)	32.2 (29.8, 34.7)	22.1 (19.4, 25.0)
Bachelor's degree or higher	29.9 (29.2, 30.7)	14.0 (12.8, 15.4)	34.2 (33.2, 35.1)	21.4 (19.5, 23.3)	49.6 (46.2, 53.0)
Unemployed/not in labor force ^g	37.9 (37.1, 38.7)	33.4 (31.1, 35.7)	38.1 (37.2, 39.0)	42.8 (40.2, 45.5)	36.4 (33.2, 39.8)
Marital status					
Married/living with partner	60.7 (59.9, 61.5)	60.7 (58.5, 62.9)	64.8 (63.9, 65.7)	38.0 (35.6, 40.5)	65.0 (61.6, 68.3)
Divorced/separated/widowed	15.9 (15.4, 16.3)	13.6 (12.1, 15.1)	16.2 (15.6, 16.7)	20.7 (19.0, 22.5)	9.7 (8.0, 11.6)
Never married	23.4 (22.7, 24.2)	25.8 (23.8, 27.8)	19.0 (18.2, 19.9)	41.3 (38.7, 43.9)	25.3 (22.3, 28.6)
Children living in household	33.7 (32.9, 34.5)	50.0 (47.7, 52.3)	28.4 (27.6, 29.3)	35.4 (32.9, 37.9)	40.0 (36.7, 43.3)

	Total (n = 27,521)	Hispanic/Latino (n = 3292, 16.6%)	Non-Hispanic White (n = 19,374, 63.3%)	Non-Hispanic Black (n = 2716, 11.4%)	Non-Hispanic Asian (n = 1482, 6.0%)
Region of residence					
Northeast	17.3 (16.4, 18.2)	13.2 (11.3, 15.3)	19.0 (17.9, 20.2)	14.9 (12.7, 17.3)	19.2 (16.4, 22.2)
Midwest	21.0 (20.1, 21.9)	9.5 (7.9, 11.3)	26.2 (25.1, 27.4)	14.3 (12.3, 16.6)	10.6 (8.6, 12.9)
South	37.7 (36.5, 39.0)	37.4 (34.2, 40.6)	34.8 (33.3, 36.4)	62.4 (59.2, 65.6)	24.0 (20.7, 27.5)
West	24.0 (22.9, 25.1)	39.9 (36.6, 43.3)	19.9 (18.7, 21.1)	8.4 (7.0, 9.9)	46.3 (42.4, 50.1)
<i>Health-related characteristics</i>					
Health status					
Excellent/very good	59.3 (58.5, 60.1)	53.6 (51.3, 56.0)	62.2 (61.3, 63.1)	50.1 (47.5, 52.7)	64.4 (61.1, 67.6)
Good	27.3 (26.6, 28.0)	30.6 (28.5, 32.7)	25.5 (24.7, 26.3)	31.6 (29.3, 33.9)	27.8 (24.7, 31.0)
Fair/poor	13.4 (12.8, 14.0)	15.8 (14.1, 17.6)	12.3 (11.6, 13.0)	18.3 (16.4, 20.3)	7.9 (6.2, 9.8)
Functional disability ^h	8.3 (7.9, 8.7)	6.7 (5.7, 7.9)	8.8 (8.3, 9.3)	8.7 (7.5, 10.2)	4.3 (3.0, 6.0)
Body mass index (BMI)					
Underweight (< 18.5 kg/m ²)	1.5 (1.3, 1.7)	1.0 (0.6, 1.5)	1.4 (1.2, 1.7)	1.1 (0.6, 1.8)	3.9 (3.0, 5.1)
Recommended weight (18.5- < 25 kg/m ²)	31.4 (30.7, 32.1)	24.8 (22.7, 26.9)	32.4 (31.5, 33.3)	22.8 (20.8, 24.9)	53.9 (50.7, 57.0)
Overweight (25-29.9 kg/m ²)	33.9 (33.2, 34.6)	36.4 (34.4, 38.5)	34.1 (33.2, 34.9)	30.7 (28.4, 33.0)	32.4 (29.5, 35.4)
Obesity (≥30 kg/m ²)	33.3 (32.5, 34.0)	37.8 (35.6, 40.1)	32.1 (31.3, 33.0)	45.5 (42.9, 48.0)	9.8 (7.9, 11.9)
Leisure-time physical activity (PA)					
Never/unable	26.1 (25.2, 26.9)	31.5 (29.2, 33.8)	24.1 (23.1, 25.0)	31.1 (28.5, 33.7)	22.1 (19.3, 25.0)
Does not meet PA guidelines ⁱ	26.2 (25.5, 26.9)	24.6 (22.9, 26.5)	26.0 (25.1, 26.8)	27.5 (25.2, 29.8)	29.3 (26.2, 32.5)
Meets PA guidelines	47.7 (46.9, 48.5)	43.9 (41.5, 46.3)	50.0 (48.9, 51.0)	41.4 (38.9, 44.0)	48.7 (45.3, 52.1)
Cigarette smoking status					
Never or quit > 1 y	85.9 (85.3, 86.5)	90.8 (89.5, 92.1)	84.8 (84.1, 85.5)	84.0 (81.8, 85.9)	91.8 (89.8, 93.5)
Former (≤1 y)	1.9 (1.7, 2.2)	1.2 (0.8, 1.8)	2.2 (1.9, 2.5)	2.0 (1.4, 2.9)	0.9 (0.4, 1.6)
Current	12.2 (11.6, 12.7)	7.9 (6.8, 9.2)	13.0 (12.4, 13.7)	14.0 (12.3, 15.9)	7.3 (5.7, 9.3)
High cholesterol ^j	26.1 (25.5, 26.8)	22.1 (20.3, 24.1)	28.1 (27.3, 28.9)	23.4 (21.5, 25.4)	24.2 (21.6, 27.0)
Hypertension ^j	30.8 (30.1, 31.5)	23.3 (21.4, 25.3)	31.7 (30.9, 32.6)	40.2 (37.6, 42.7)	23.3 (20.5, 26.3)
Diabetes/prediabetes ^j	16.7 (16.2, 17.3)	18.7 (17.0, 20.5)	15.1 (14.5, 15.7)	21.9 (20.0, 23.8)	17.8 (15.5, 20.4)
Cardiovascular health score ^k					
0-2	16.6 (16.1, 17.2)	15.0 (13.4, 16.7)	16.6 (16.0, 17.3)	22.4 (20.4, 24.4)	10.1 (8.2, 12.1)

	Total (n = 27,521)	Hispanic/Latino (n = 3292, 16.6%)	Non-Hispanic White (n = 19,374, 63.3%)	Non-Hispanic Black (n = 2716, 11.4%)	Non-Hispanic Asian (n = 1482, 6.0%)
3-4	45.0 (44.3, 45.8)	47.7 (45.5, 50.0)	44.8 (43.9, 45.7)	46.7 (44.1, 49.2)	37.3 (34.1, 40.6)
5-6	38.3 (37.5, 39.2)	37.3 (34.9, 39.7)	38.6 (37.6, 39.6)	31.0 (28.6, 33.5)	52.7 (49.3, 56.0)
≥3 alcoholic drinks per week on average	23.3 (22.6, 24.0)	15.4 (14.0, 16.9)	27.9 (27.0, 28.8)	16.6 (14.8, 18.5)	10.8 (9.1, 12.7)
Regularly feel depressed or anxious ^l	12.3 (11.8, 12.8)	10.0 (8.8, 11.4)	13.6 (12.9, 14.2)	10.7 (9.1, 12.4)	5.3 (4.1, 6.7)

^aCI is confidence interval. The 95% confidence intervals were generated using the Kom-Graubard method for complex surveys.

^bAdults categorized as Hispanic/Latino may be of any race or combination of races. Adults categorized as non-Hispanic White, non-Hispanic Black, and non-Hispanic Asian indicated one race only. Due to small sample sizes, estimates are not shown for non-Hispanic American Indian and Alaska Native, non-Hispanic Native Hawaiian and Pacific Islander, non-Hispanic other race, and non-Hispanic multiple race, but these groups are included in the total estimates (n=657).

^cAll estimates are based on a sample size of 27,521 and are weighted and account for the survey's complex sampling design. Percentages may not sum to 100 due to rounding.

^dFamily income was imputed when missing.

^eFPL is federal poverty level. Family income as a percentage of FPL is derived from the family's income in the previous calendar year and family size using the US Census Bureau's poverty thresholds.

^fIncludes adults who received a General Educational Development high school equivalency diploma (GED).

^gBased on whether the adult worked last week. Adults who performed seasonal or contract work or worked but not for pay are considered employed.

^hFunctional disability is defined as responding "a lot of difficulty" or "cannot do at all" to at least one of the following six functioning domains: seeing (even if wearing glasses), hearing (even if wearing hearing aids), mobility (walking or climbing stairs), communication (understanding or being understood by others), cognition (remembering or concentrating), and self-care (such as washing all over or dressing).

ⁱMeets aerobic physical activity (PA) guidelines defined as ≥150 min/week of moderate intensity or ≥75 min/week of vigorous intensity or ≥150 min/week of moderate and vigorous intensity where time in vigorous PA is multiplied by 2.

^jBased on ever being told by a doctor or other health professional that the adult had the condition.

^kComposed of 6 measures: cigarette smoking status, BMI, physical activity, and history of high cholesterol, hypertension, or diabetes/prediabetes. Scores range from 0 to 6 based on the presence or absence of each (0 represents a current cigarette smoker or former cigarette smoker for a year or less, a BMI ≥25 kg/m², not meeting aerobic physical activity guidelines, and having a prior diagnosis of high cholesterol, hypertension, and diabetes/prediabetes; a 6 ("Ideal") is defined as never smoking or being a former smoker for more than a year, BMI < 25 kg/m², meeting aerobic physical activity guidelines, and having no prior diagnosis of high cholesterol, hypertension, or diabetes/prediabetes).

^lDefined as having either regular feelings of depression or regular feelings of worry, nervousness or anxiety, where regular is defined as report of these feelings (a) occurring daily and describing the level as "somewhere in between a little and a lot" or "a lot" or (b) occurring weekly and describing the level as "a lot."

Table 2

Prevalence ratios (95% CI) for the associations of perceptions of the walking environment with sleep duration and disturbances among Hispanic/Latino and non-Hispanic White, Black, and Asian adults compared to their racial and ethnic counterparts^a. United States, 2020^b

	Hispanic/Latino (n = 3292)	Non-Hispanic White (n = 19,374)	Non-Hispanic Black (n = 2716)	Non-Hispanic Asian (n = 1482)
<i>Short sleep duration</i>				
Safety				
Traffic makes walking unsafe	1.03 (0.86, 1.22)	1.09 (1.02, 1.17)	1.03 (0.89, 1.18)	1.32 (1.05, 1.66)
Crime makes walking unsafe	1.08 (0.88, 1.32)	1.31 (1.19, 1.45)	1.03 (0.88, 1.21)	1.18 (0.88, 1.58)
Pedestrian access				
Walking paths available	0.80 (0.65, 0.99)	1.01 (0.92, 1.10)	1.02 (0.84, 1.24)	1.12 (0.73, 1.71)
Sidewalks on most streets	0.94 (0.80, 1.11)	1.05 (0.98, 1.11)	0.85 (0.74, 0.97)	0.99 (0.70, 1.40)
Amenities				
Shops	0.91 (0.77, 1.08)	1.06 (1.00, 1.13)	0.92 (0.80, 1.05)	0.94 (0.76, 1.16)
Transit	0.96 (0.81, 1.13)	1.05 (0.98, 1.12)	1.01 (0.88, 1.16)	0.99 (0.78, 1.26)
Entertainment/services	1.04 (0.90, 1.21)	1.06 (1.00, 1.13)	0.97 (0.85, 1.11)	0.99 (0.80, 1.22)
Places to relax	0.85 (0.72, 1.00)	0.93 (0.87, 1.00)	0.92 (0.81, 1.04)	0.98 (0.73, 1.31)
<i>Long sleep duration</i>				
Safety				
Traffic makes walking unsafe	0.76 (0.52, 1.11)	1.02 (0.90, 1.16)	1.21 (0.88, 1.65)	0.91 (0.43, 1.89)
Crime makes walking unsafe	0.69 (0.44, 1.08)	0.89 (0.72, 1.10)	1.16 (0.77, 1.74)	0.87 (0.39, 1.93)
Pedestrian access				
Walking paths available	1.01 (0.64, 1.59)	1.04 (0.87, 1.23)	0.87 (0.61, 1.23)	0.52 (0.21, 1.32)
Sidewalks on most streets	0.97 (0.68, 1.38)	0.94 (0.83, 1.05)	0.91 (0.63, 1.30)	0.74 (0.34, 1.62)
Amenities				
Shops	0.93 (0.68, 1.29)	0.98 (0.87, 1.09)	1.00 (0.70, 1.42)	1.21 (0.64, 2.29)
Transit	0.73 (0.52, 1.01)	1.00 (0.88, 1.13)	0.77 (0.54, 1.08)	1.27 (0.63, 2.57)
Entertainment/services	0.88 (0.65, 1.18)	0.99 (0.89, 1.11)	1.18 (0.88, 1.57)	1.23 (0.74, 2.03)
Places to relax	0.92 (0.62, 1.36)	1.02 (0.90, 1.15)	1.24 (0.87, 1.76)	0.53 (0.31, 0.91)
<i>Waking up unrested</i>				
Safety				
Traffic makes walking unsafe	1.26 (1.14, 1.38)	1.11 (1.06, 1.16)	1.09 (0.96, 1.23)	1.25 (1.04, 1.50)

	Hispanic/Latino (n = 3292)	Non-Hispanic White (n = 19,374)	Non-Hispanic Black (n = 2716)	Non-Hispanic Asian (n = 1482)
Crime makes walking unsafe	1.16 (1.04, 1.31)	1.23 (1.15, 1.32)	0.99 (0.86, 1.15)	1.20 (0.98, 1.48)
Pedestrian access				
Walking paths available	0.94 (0.81, 1.11)	0.95 (0.90, 1.00)	0.95 (0.82, 1.09)	0.83 (0.60, 1.15)
Sidewalks on most streets	0.93 (0.82, 1.05)	1.02 (0.98, 1.07)	0.95 (0.83, 1.07)	0.85 (0.67, 1.08)
Amenities				
Shops	1.02 (0.91, 1.15)	1.01 (0.97, 1.06)	0.90 (0.80, 1.00)	0.91 (0.77, 1.08)
Transit	1.01 (0.90, 1.14)	1.06 (1.01, 1.10)	1.01 (0.90, 1.14)	1.04 (0.86, 1.27)
Entertainment/services	0.90 (0.82, 1.00)	1.00 (0.96, 1.04)	0.94 (0.84, 1.06)	0.80 (0.67, 0.95)
Places to relax	0.90 (0.80, 1.02)	0.93 (0.89, 0.97)	0.92 (0.82, 1.04)	0.85 (0.70, 1.04)
<i>Trouble falling asleep</i>				
Safety				
Traffic makes walking unsafe	1.16 (0.93, 1.44)	1.09 (0.99, 1.20)	1.04 (0.83, 1.31)	0.99 (0.59, 1.63)
Crime makes walking unsafe	1.07 (0.82, 1.39)	1.17 (1.01, 1.35)	1.08 (0.83, 1.41)	0.61 (0.34, 1.10)
Pedestrian access				
Walking paths available	0.75 (0.57, 0.98)	1.04 (0.90, 1.19)	1.12 (0.76, 1.64)	0.38 (0.21, 0.70)
Sidewalks on most streets	0.79 (0.62, 1.01)	1.05 (0.97, 1.15)	0.90 (0.67, 1.21)	0.80 (0.44, 1.43)
Amenities				
Shops	0.96 (0.76, 1.21)	1.09 (1.00, 1.18)	0.97 (0.74, 1.26)	0.98 (0.63, 1.53)
Transit	0.85 (0.65, 1.12)	1.07 (0.98, 1.17)	0.91 (0.68, 1.21)	1.08 (0.67, 1.74)
Entertainment/services	0.87 (0.69, 1.08)	1.00 (0.92, 1.09)	1.10 (0.85, 1.42)	0.92 (0.62, 1.37)
Places to relax	0.79 (0.61, 1.03)	0.92 (0.83, 1.02)	1.05 (0.80, 1.37)	1.10 (0.65, 1.87)
<i>Trouble staying asleep</i>				
Safety				
Traffic makes walking unsafe	1.31 (1.01, 1.69)	1.22 (1.13, 1.31)	0.99 (0.78, 1.25)	0.80 (0.51, 1.26)
Crime makes walking unsafe	1.17 (0.89, 1.55)	1.24 (1.10, 1.41)	1.08 (0.82, 1.42)	0.68 (0.39, 1.17)
Pedestrian access				
Walking paths available	0.78 (0.56, 1.10)	0.88 (0.80, 0.98)	0.93 (0.67, 1.30)	0.60 (0.33, 1.09)
Sidewalks on most streets	0.83 (0.63, 1.11)	0.90 (0.84, 0.96)	0.90 (0.69, 1.17)	0.80 (0.49, 1.30)
Amenities				
Shops	0.99 (0.78, 1.25)	0.98 (0.92, 1.04)	0.79 (0.60, 1.04)	0.75 (0.51, 1.11)
Transit	0.89 (0.64, 1.24)	0.93 (0.87, 1.00)	0.94 (0.72, 1.21)	1.21 (0.78, 1.88)

	Hispanic/Latino (n = 3292)	Non-Hispanic White (n = 19,374)	Non-Hispanic Black (n = 2716)	Non-Hispanic Asian (n = 1482)
Entertainment/services	0.99 (0.74, 1.32)	0.96 (0.90, 1.03)	1.10 (0.86, 1.41)	0.99 (0.69, 1.41)
Places to relax	0.83 (0.59, 1.16)	0.88 (0.82, 0.96)	0.93 (0.73, 1.19)	1.09 (0.68, 1.75)
<i>Frequent use of sleep medication^c</i>				
Safety				
Traffic makes walking unsafe	0.98 (0.65, 1.50)	1.04 (0.93, 1.18)	1.39 (0.98, 1.97)	0.31 (0.12, 0.84)
Crime makes walking unsafe	1.02 (0.67, 1.53)	1.03 (0.86, 1.24)	1.35 (0.92, 1.98)	0.46 (0.16, 1.28)
Pedestrian access				
Walking paths available	0.96 (0.50, 1.87)	1.24 (1.05, 1.46)	1.21 (0.74, 1.99)	0.42 (0.19, 0.91)
Sidewalks on most streets	0.89 (0.59, 1.35)	1.05 (0.95, 1.17)	1.06 (0.68, 1.66)	0.81 (0.36, 1.81)
Amenities				
Shops	1.09 (0.75, 1.60)	1.04 (0.94, 1.16)	0.71 (0.47, 1.08)	0.87 (0.41, 1.83)
Transit	0.98 (0.67, 1.46)	1.08 (0.97, 1.20)	0.62 (0.42, 0.90)	1.21 (0.56, 2.61)
Entertainment/services	1.10 (0.79, 1.54)	1.00 (0.90, 1.12)	0.72 (0.51, 1.02)	1.06 (0.55, 2.01)
Places to relax	0.82 (0.56, 1.19)	1.08 (0.96, 1.21)	0.70 (0.48, 1.03)	1.19 (0.59, 2.42)

Boldface indicates statistically significant results at the .05 level.

^aAdults categorized as Hispanic/Latino may be of any race or combination of races. Adults categorized as non-Hispanic White, non-Hispanic Black, and non-Hispanic Asian indicated one race only.

^bAll analyses are based on a sample size of 27,521 and are weighted and account for the survey's complex sampling design. Models are adjusted for sociodemographic characteristics (age, sex, marital status, children living in household, region of residence, family income, educational attainment, unemployment status), health status (excellent/very good, good, fair/poor), functional disability, alcohol drinking status (current moderate/heavy drinking or abstainer/former/current infrequent or light drinking), cardiovascular health score, and regular depressed or anxious feelings.

^cMedication to help fall or stay asleep, including both prescribed and over-the-counter medications.

Table 3
Summary of the perceived walking environment and associations with sleep duration and disturbances by race and ethnicity^a

	Traffic unsafe	Crime unsafe	Walking paths available	Sidewalks on most streets	Shops	Transit stops	Entertainment/ services	Places to relax
Hispanic/Latino	↑ Waking up unrested ↑ Trouble staying asleep	↑ Waking up unrested	↓ Short sleep ↓ Trouble falling asleep					
Non-Hispanic White	↓ Short sleep ↑ Waking up unrested ↑ Trouble staying asleep	Least exposure ↑ Short sleep ↑ Waking up unrested ↑ Trouble falling asleep	↓ Trouble staying asleep ↑ Sleep medication	Least access ↓ Trouble staying asleep	Least access	Least access ↑ Waking up unrested		↓ Waking up unrested ↓ Trouble staying asleep
Non-Hispanic Black		↑ Trouble staying asleep		↓ Short sleep		↓ Sleep medication		Least access
Non-Hispanic Asian	Least exposure ↓ Short sleep ↑ Waking up unrested ↓ Sleep medication		Most access ↓ Trouble falling asleep ↓ Sleep medication	Most access			↓ Waking up unrested	↓ Long sleep

^a Adults categorized as Hispanic/Latino may be of any race or combination of races. Adults categorized as non-Hispanic White, non-Hispanic Black, and non-Hispanic Asian indicated one race only.