

SCHOOL WELLNESS & DISCIPLINE IN OREGON HIGH SCHOOLS

by

HEATHER FRANCIS TERRAL

A DISSERTATION

Presented to the Department of Counseling Psychology and Human Services
and the Division of Graduate Studies of the University of Oregon
in partial fulfillment of the requirements
for the degree of
Doctor of Philosophy

June 2022

DISSERTATION APPROVAL PAGE

Student: Heather Francis Terral

Title: School Wellness & Discipline in Oregon High Schools

This dissertation has been accepted and approved in partial fulfillment of the requirements for the Doctor of Philosophy degree in the Department of Counseling Psychology and Human Services by:

Elizabeth Budd	Chairperson and Advisor
Jean Kjellstrand	Core Member
Rhonda Nese	Core Member
Cengiz Zopluoglu	Institutional Representative

and

Krista Chronister	Vice Provost for Graduate Studies
-------------------	-----------------------------------

Original approval signatures are on file with the University of Oregon Division of Graduate Studies.

Degree awarded June 2022

© 2022 Heather Francis Terral

DISSERTATION ABSTRACT

Heather Francis Terral

Doctor of Philosophy

Department of Counseling Psychology and Human Services

June 2022

Title: School Wellness & Discipline in Oregon High Schools

Introduction: Education is a social determinant of health, and its intersection with incarceration is a powerful nexus for well-being of students. Whether policies specific to student well-being are associated with exclusionary discipline, a documented risk factor for incarceration, is unknown. This study has three aims: (1) to identify whether there is an association between local school wellness policies' (LWPs) quality and exclusionary discipline incidents (EDIs) in Oregon high schools; (2) if the quality of specific policy domains (i.e., nutrition education and physical activity) is associated with EDIs; and (3) to determine if total LWP quality moderates the association between out of school suspensions and days missed due to suspension.

Methods: Data for Oregon high schools' LWPs were collected in 2017 and cross-matched to public, school-level student demographic data from the Oregon Department of Education in 2017 and enrollment and suspension data from the Office of Civil Rights Data Collection were collected for 2017-2018 year. Including post hoc analyses, ten multiple regression models were created to examine variation in EDIs. All models were adjusted for relevant covariates.

Results: Total LWP quality was not significantly associated with EDIs, nor was the quality of either Nutrition Education or Physical Education/Physical activity LWP domains. Post-hoc exploratory analyses revealed the strength of Standards for USDA Nutrition Programs and School Meals domain was negatively associated with EDIs (Cohen's $f^2 = 0.05$) as was comprehensiveness of the Wellness Promotion and Marketing domain (Cohen's $f^2 = 0.15$). The strength of Wellness Promotion and Marketing was positively associated with EDIs (Cohen's $f^2 = 0.06$). Total LWP quality was not associated with days missed due to suspension, and there was no moderating interaction detected.

Conclusion: The quality of two specific LWP domains, rather than total LWP quality, may matter in regard to EDIs in Oregon high schools. Results could aid informed policy decision making for promoting health equity on district and state levels. Future research should identify if these associations are present in other states.

ACKNOWLEDGMENTS

I would like to acknowledge author and activist Rachel Elizabeth Cargle. Her anti-racist course, Do The Work, introduced me to the Civil Rights Data Collection, without which this study would not be possible.

TABLE OF CONTENTS

Chapter	Page
I. INTRODUCTION.....	1
Physical Activity and Nutrition	2
Social And Emotional Climates.....	2
School-To-Prison Pipeline	4
Brief Oregon Educational Context.....	8
Discipline In Oregon.....	9
Local School Wellness Policies.....	10
The Present Study.....	12
Research Questions	12
Hypotheses	12
II. METHODS.....	15
Data Sources	15
Measures	15
Preliminary Analyses	20
Multiple Regression Analysis – Research Question 1	16
Multiple Regression Analysis – Research Question 2.....	21
Moderated Multiple Regression Analysis – Research Question 3.....	21
Post-Hoc Regressions	21
III. RESULTS	23
Study Aim 1 Results	23

Study Aim 2 Results	24
Post Hoc Exploratory Results	24
Study Aim 3 Results	25
IV. DISCUSSION.....	26
Limitations and Strengths	32
V. CONCLUSION.....	34
APPENDICES	
A.CIVIL RIGHTS DATA COLLECTION VARIABLES.....	47
B. SUPPLEMENTARY ANALYSES.....	52
REFERENCES CITED.....	55

LIST OF FIGURES

Figure	Page
1. Whole School, Whole Community, Whole Child Model	46

LIST OF TABLES

Table	Page
1. Demographic and academic data from Oregon public high schools, 2019 - 2020	34
2. WellSAT2.0 Psychometric Properties	35
3. Descriptive Statistics of Oregon Local School Wellness Policy Quality and Exclusionary Discipline	42
4. Unstandardized regression coefficients (standard errors) for regression models to explain variation in Oregon High Schools exclusionary discipline incident.....	43
5. Unstandardized regression coefficients (standard errors) for post-hoc regression models to explain variation in Oregon High School EDIs	44
B1. Correlations of Sums of WellSAT2.0 Domains	52
B2. Correlations of WellSAT2.0 Domain Strength (S) and Comprehensiveness (C)	53
B3. Unstandardized Regression Coefficients (Standard Errors) of Total Strength and Total Quality Regressed onto EDIs	54

Chapter I: Introduction

Education is presently an underappreciated social determinant of health (The Lancet Public Health, 2020). Lower educational attainment is associated with higher rates of chronic illness including type-II diabetes, cardiovascular disease, and all-cause mortality (Byrd, 2019). School environments are increasingly recognized as an important factor in children and adolescents' well-being (DeFosset et al., 2020). Safe and supportive schools are crucial for promoting positive youth development and health; this environmental support is especially important for adolescents who are undergoing a second sensitive development period (Viner et al., 2012). Adolescence is transitional period characterized by rapid development during which central nervous system is at its most vulnerable state since birth (Galler et al., 2017; Isaacs et al., 2008). Evidence suggests that students benefit from healthier school environments (Ickovics et al., 2019). As such, goals and interests of education and public health fields align within schools. The Centers for Disease Control and Prevention uses the Whole School, Whole Community, Whole Child (WSCC) model (2021) to address health in schools and illustrates a comprehensive understanding of the interconnected domains of health and education. As seen in Figure 1, physical education and physical activity, nutrition environment and services, and social and emotional climate are three of 10 aspects which, in concert, promote student learning and health. Yet, these aspects are infrequently considered together within the school health and discipline literatures. This gap ultimately bifurcates school wellness efforts and the school-to-prison-pipeline: indeed, this division between a protective factor (school wellness policies) and a risk

factor for health and incarceration disparities (exclusionary discipline) is curious at best, and troubling at worst.

Physical Activity and Nutrition

The benefits of regular physical activity and nutritious diet for healthy development, disease prevention, and longevity are undisputed (Haines et al., 2019; Posadzki et al., 2020; Sember et al., 2020). A vast body of evidence also supports the association of physical activity with cognitive function and mental health (Carlson et al., 2013; Trudeau & Shephard, 2008). Inversely, physical inactivity and unhealthy dietary behaviors are two of six leading causes of death, disability, and social dysfunction among U.S. youth and adults (Bradley & Greene, 2013). Children's cognitive structure is the result of interactions between their brain and their environment, including food environments, throughout development, and poor nutrition is associated with impaired development (Isaacs et al., 2008). Physical activity and nutrition are key aspects of a school's wellness environment and relevant practices are guided by documents known as local school wellness policies, which will be discussed in further detail later.

Social and Emotional Climates

Another domain of WSCC, social and emotional climates include interpersonal and community interactions. The domain of social and emotional climates is connected to disciplinary practices in schools, including suspensions and expulsions (Gage et al., 2016; Mitchell & Bradshaw, 2013). Suspensions and expulsions are exclusionary disciplinary incidents (EDIs) that remove students from classrooms and schools based on office referrals for student behavior. Exclusionary discipline is associated with increased risk of chronic attendance problems, academic failure, additional disciplinary problems, dropout,

and substance abuse (Nishioka et al., 2020). Even among non-suspended students, suspensions negatively affect academic success (Aronowitz et al., 2021), suggestive of the collective effect of social and emotional climates: what affects one student in the system is not isolated to that sole student. Among teachers, exclusionary discipline is associated with higher burnout and low job satisfaction (Nishioka et al., 2020). The family and community systems in which students are nested are also implicated; the time and financial resources disciplinary actions require can strain these systems (Fabes et al., 2021; Nishioka et al., 2021). The financial cost of exclusionary discipline is also tremendous: in the state of California alone, research suggests the suspension has cost “\$2.7 billion in social losses and about \$809 million in losses to taxpayers over their working lifetime”(Fabes et al., 2021, p. 1982).

Although school wellness and school discipline practices are not often considered together, school discipline is a risk factor for juvenile incarceration which is a preventable public health issue (Barnert et al., 2016; Wald & Losen, 2003). Furthermore, the disparities in education and health experienced by marginalized groups are connected (Freudenberg & Ruglis, 2007). Social determinants of health are the social contexts humans live within and are profoundly impactful on children’s health; they are influenced by the distribution of power and resources, globally and locally (Ragavan et al., 2020; Viner et al., 2012). Food insecurity, climate change, and education are a few of many recognized social determinants of health (Adler et al., 2016; Ragavan et al., 2020). Contemporary scholarship recognizes racism as a root cause perpetuating inequity across social determinants of health (Malawa et al., 2021; Yearby, 2020): the education system, legal system, housing system, and other interconnected social systems foster

discrimination which benefits White people to the detriment of other racial groups. Tackling the problem of White supremacy as an upstream contributor to the health and social disparities experienced by marginalized racial and ethnic groups is vital to any intervention (Bryan, 2017). Still, other systems of oppression exert influence on social determinants of health and their interconnections are infrequently addressed (Osborne, 2015). The interconnected, mutually reinforcing structures of social domination, known as kyriarchy, conceptualizes racism, ableism, sexism, classism, and other oppressive systems, not as indiscrete forces but rather interacting to influence individuals relative to their social positionality and intersectionality of identities; this kyriarchy dictates the distribution of power within a society (Osborne, 2015) and thus, social determinants of health, education, and incarceration.

School-to-Prison Pipeline

The school-to-prison pipeline is a well-documented phenomenon by which the use of exclusionary discipline in schools funnels youth, particularly youth of color and those with disabilities, into incarceration (Mallett, 2016; Wald & Losen, 2003). In the U.S., two million youth are arrested every year, a figure higher than any other industrialized country: of those, 60,000 youth will be detained and the majority of those will re-offend within three years of release (Barnert et al., 2016). Longitudinal analysis of nationally representative data indicates the racial disparities of school discipline are associated with racial disparities among adulthood arrests; additionally, that study also found that interrupting racially disparate school discipline could reduce adulthood arrest disparities by 16% (Barnes & Motz, 2018). Detention-involved youth are eligible for special education at a rate three to seven times higher than the community population,

and 65 - 70% have a diagnosable mental health disorder (Skowyra & Cocozza, 2004). It is important to note that during the COVID-19 pandemic, the majority of K-12 schools operated via remote learning and 33 states saw a 27% reduction in the adolescent detention population (Vinson & Waldman, 2020). However, this pause is likely to lift following schools' return to in-person instruction. Given the association between school discipline and health outcomes, health-care providers have been encouraged to advocate for school- and community-based strategies to reduce justice system referrals (Aronowitz et al., 2021; Vinson & Waldman, 2020).

Unsurprisingly, incarcerated youth experience disparately lower rates of academic achievement (Pyle et al., 2016). High school graduation contributes to health through increased access to economic, informational, and social resources: A high school degree provides access to economic resources as it is the minimum requirement for many jobs, and higher wages potentiate the purchase of better housing, food, medical care, and health insurance, all associated with better health (Freudenberg & Ruglis, 2007). Students can also be exposed to educational resources such as health education information and behavioral health tools, in addition to opportunities to create social connections and strengthen social support. Recognizing the importance of educational achievement, the Healthy People 2030 agenda set a target for increasing the national high school graduation rate to 90% (Office of Disease Prevention and Health Promotion, 2020).

In addition to educational disparities, exposure to incarceration has been associated with health disparities for youth including increased risk of depression, some chronic diseases, and mortality (Golzari et al., 2006). Groups which are vulnerable to health disparities are simultaneously at increased risk of involvement with juvenile

justice system (Palmer & Greytak, 2017; Snapp et al., 2015). Chronic stress and exposure to infectious disease are also implicated in the incarceration-health relationship (Massoglia & Pridemore, 2015). These effects appear to be persistent: health behaviors including physical inactivity, smoking, and poor mental health at mid-life have been positively significantly associated with youth incarceration, thought to be a function of the disruptions to opportunities for education, employment, and marriage (Massoglia, 2008).

It is imperative to remember a primary price suspended and expelled students pay: missing valuable days in the classroom receiving instruction, social engagement important for development, and ideally, exposure to environments providing opportunities for physical activity and nutrition. In the 2017 – 2018 school year, over 11 million days of school were missed due to suspensions across the United States, and high school students account for a majority of those missed days (Fabes et al., 2021). Missed school is positively associated with lower standardized testing scores and very low food security (Vish & Stolfi, 2020), which is particularly concerning. Of note, Icelandic researchers found a significant, negative association between school absence and student fitness (Blom & Kolbo, 2011). Contrary to their hypothesis, they did not find an association between disciplinary incidents and student fitness. In the Midwest U.S., researchers found students' cardiovascular fitness (as measured by time to run a mile and the Progressive Aerobic Cardiovascular Endurance Run test) was negatively associated with school absences, including suspensions (Centeio et al., 2018); the authors suggest that cardiovascular health may be a protective factor against school suspensions. This finding could imply opportunities for moderate-to-vigorous intensity physical activity in

schools can act as a protective factor for student attendance and discipline. Other research has found students' health-related fitness to be negatively associated with school delinquency and attendance (Welk et al., 2010). In Scotland, researchers found that school exclusions (i.e., suspensions) were positively associated with missed general practitioner health care appointments, further implicating school disciplinary actions with student health and wellness (McQueenie et al., 2021). Most research investigating school absences has overlooked suspensions (Fabes et al., 2021), and despite a handful of studies, the complex social intersection of school wellness and school discipline remains understudied, particularly regarding policy-level factors.

The negative biopsychosocial impact of incarceration necessitates that schools orient towards providing environments which support the physical and social development of all children and adolescents, while reducing contributions to the carceral system. Although nationwide data are not available, limited evidence does point to referrals originating from schools as a contributing factor to youth incarceration (Krezmien et al., 2010). Removing students from school environments is deleterious to their academic success, and repercussions may extend to health behaviors – especially if the school environment is providing nutritional and physical activity opportunities not available elsewhere. While it is unknown how many students rely on school meals for the majority of their calories, the inability of low-income families to financially recover from the loss of school meals during the summer has been documented (Bauer, 2020). As exclusionary school discipline is negatively associated with graduation rates (Aronowitz et al., 2021), and is a risk factor for exposure to the school-to-prison pipeline, all three of

which are linked to poorer health, it is a phenomenon of interest to both educators and public health workers.

Brief Oregon Educational Context

In the 2019 – 2020 school year, the state of Oregon served almost 600,000 students in public schools (Oregon Department of Education, 2019). The state of Oregon categorizes African American/Black, American Indian/Native American, Native Hawaiian/Pacific Islander, and Hispanic/Latino students as “underserved” (Office of Accountability, Research, & Information Services, 2017); however the term “marginalized” is used henceforth as it better reflects the sociopolitical conditions under which these students learn. Table 1 reports the demographics and completion rates of Oregon high school students. Compared to the national average of 85%, Oregon four-year graduation rates (82.63%) are lagging slightly behind (National Center for Education Statistics, 2020). For all racial and ethnic groups, five-year graduation rates in Oregon were somewhat higher (83%) compared to four-year rates, with the largest difference among Native Hawaiian/Pacific Islander students (+ 5.81%). Although not presented here in detail, teacher demographics do not reflect those of the students; a 2015 state report found that very few students from marginalized racial and ethnic groups had a teacher with the same race or ethnicity within the last three years (Office of Accountability, Research, & Information Services, 2017). This is important because research shows that students in classrooms with teachers of the same race or ethnicity demonstrate better academic achievement and socioemotional development (Rasheed et al., 2020). The evidence is most consistent for Black students paired with Black teachers, and to a lesser extent, Latino/a/x students with Latino/a/x teachers (Redding, 2019). Same-race teacher-

student dyads were associated with discipline reductions for Black students in North Carolina (Lindsay & Hart, 2017). However, race-matching does not appear to hold the same benefits for students with disabilities. Gottfried et al. (2019) found that kindergartners without disabilities' externalizing behaviors were reduced when paired with a teacher of the same race, but this was not the case among students with disabilities.

Discipline in Oregon

Racial and ethnic disparities in discipline outcomes have consistently been documented in the state (Burke & Nishioka, 2014; Nishioka et al., 2021), as soon as kindergarten (Sinkey & Curry-Stevens, 2015). Although each school district's guidelines for disciplinary practices are outlined within their district-level discipline policy, Oregon state law does contain a few specific mandates to which they must adhere. In 2013, the state legislature passed H.R. 2192 to renounce zero-tolerance policies, emphasize non-exclusionary discipline, and eliminate racial and ethnic disparities in exclusionary discipline (Nishioka et al., 2021). Two years later, Senate Bill 553 was passed to reduce disciplinary disparities and restrict the use of grades K-5 expulsions to only incidents that posed a "direct threat to the safety of students or school employees" (Nishioka et al., 2021, p. 1). Despite short-term decreases in exclusionary discipline following the 2015 legislation (Nishioka et al., 2020), disparities resurfaced for that and non-exclusionary discipline among Black and American Indian/Alaska Native students in K-5 schools. Nishioka and colleagues' research (2020) suggests reducing disciplinary disparities requires additional reinforcement in Oregon. Among students in special education in school year 2011 – 2012, Burke and Nishioka (2014) found that statewide, the percentage of students in special education receiving exclusionary discipline was 2.2 - 2.3 times

higher at the middle and high school level, and 3.6 times higher at the elementary school level. More recent analyses conducted by local newspaper Eugene Weekly reported that special education students are 2.26 times more likely to be suspended or expelled in Eugene's SD 4J school district; across the state, they comprise 27% of students suspended or expelled despite accounting for only 13% of the total student population (Asia Alvarez Zeller & Brandon Taylor, 2019).

Local School Wellness Policies

At the district level, local school wellness policies (LWPs) regulate physical education, physical activity, and nutrition environments and services of the K-12 schools within the district. Mandated by the federal government in 2004 for all schools participating in the National School Lunch Program to promote more salutatory school environments (Schwartz et al., 2009), they provide guidance and accountability for the amount and quality of physical activity opportunities schools provide, the nutritional quality of foods served in schools, and other wellness-related topics. These policies can also contain guidance regarding the acceptability of physical activity and food as tools for punishments and rewards. Content addressing wellness such as employee wellness and student chronic health conditions is sometimes present as well (Bobo et al., 2022). LWPs are often evaluated using the Wellness School Assessment Tool (WellSAT; Schwartz et al., 2020). Originally developed in 2009 by researchers, the WellSAT is periodically updated to reflect changes in federal law and is presently on its third iteration (WellSAT3.0; Schwartz et al., 2020). The WellSAT acts as a rubric by which to measure the presence (comprehensiveness) of content and specificity/requisites of language (strength; Schwartz et al., 2020) within an LWP. The combined strength and

comprehensiveness scores (Eggert et al., 2018; Meendering et al., 2016) make up the total quality of LWPs.

The literature suggests LWPs across the country have room for improvement. *Physical Education/Physical Activity scores* are typically very low, and competing demands for school resources, administrators, and teachers can make LWP implementation challenging (Chriqui et al., 2013; Francis et al., 2018; Harvey et al., 2018). Most research evaluating LWPs has focused on student outcomes like body mass index, caloric intake, and dietary quality and found significant associations in salutogenic directions (Ickovics et al., 2019). Some have also examined academic-related variables, such as graduation rate (Lyn et al., 2012): Researchers found that graduation rate was positively associated with *Nutrition Education* scores across Georgia state school districts. However, it is unknown whether LWPs' quality are associated with school discipline, and whether specific policy domains (i.e., *Physical Education/Physical Activity, Nutrition Education*) are correlated with exclusionary discipline. It also unknown how total LWP quality may interact with the known positive association between the high school-level number of suspensions and missed days of school due to suspensions (Fabes et al., 2021). Examining the associations between total LWP quality and exclusionary discipline practices, and exploring policy domains specific to student health and behaviors would fill present gaps in educational and health research. Additionally, whether total LWP quality moderates the association between the number of high school-level suspensions and missed school days due to suspension would contribute to a sparse literature base investigating suspension-related absences. This examination is timely and necessary, and findings can inform future district and school

policy decision-making that have serious social, educational, and health implications for students.

The Present Study

To address the aforementioned gaps in the literature and inform future high school health and disciplinary policy decisions, this cross-sectional study aims to: (1) identify whether there is an association between total LWP quality and total EDIs in Oregon high schools when accounting for relevant covariates; (2) determine if the quality of *Physical Activity/Physical Education and Nutrition Education* LWP domains specifically are associated with total EDIs in Oregon high schools; and (3) determine if total LWP quality moderates a hypothesized association between high school-level total suspensions and total days missed due to suspension.

Research Questions.

This study addresses the following research questions:

- 1) Is there an association between total LWP quality and total EDIs in Oregon high schools when accounting for relevant covariates?
- 2) Are the quality of *Physical Activity/Physical Education and Nutrition Education* LWP domains specifically associated with total EDIs in Oregon high schools when accounting for relevant covariates?
- 3) Does total LWP quality moderate a hypothesized association between high school-level total suspensions and total days missed due to suspension?

Hypotheses.

Research question 1 hypothesis: Informed by the adjacent literature (Mullet, 2014), I hypothesize that total LWP quality will be significantly, negatively associated with total EDIs, after adjusting for the following covariates: school-level percentages of:

a) students with disabilities, b) male students, c) students qualifying for free/reduced price lunch, d) students with limited English proficiency, e) students from marginalized races and ethnicities, f) average teacher turnover, g) whether there was a new principal in the last five years, and h) total crime rate for the school's zip code. Inclusion of these covariates is based on extant literature showing significant associations with EDIs. Specifically, disability, gender, racial and ethnic identity, socioeconomic status, and English proficiency are associated with EDIs (Mallett, 2016; Sullivan et al., 2014; Wald & Losen, 2003). Although neither the presence nor direction of the associations are consistent, students' socioeconomic status and racial and ethnic identity also have documented associations with LWPs (Asada et al., 2017; Caspi et al., 2015; Metos & Murtaugh, 2011; Metos & Nanney, 2007; Nanney et al., 2013).

Research question 2 hypothesis: Due to their immediacy to student health and behaviors and the adjacent literature (Blom & Kolbo, 2011; Centeio et al., 2018; Welk et al., 2010), I hypothesize the total quality of *Physical Education/Physical Activity*, and *Nutrition Education* LWP domains will be negatively associated with EDIs when accounting for the aforementioned covariates.

Research question 3 hypothesis: Informed by the literature connecting student wellness and school attendance (Blom & Kolbo, 2011; Centeio et al., 2018; Welk et al., 2010), I hypothesize total LWP quality will moderate the association between total out of school suspensions and school days missed due to suspensions (Fabes et al., 2021), such that higher total LWP quality will buffer the hypothesized positive association between the out of school suspensions and school days missed. This model will retain the same covariates listed in the first two hypotheses.

Determining whether the quality of LWPs is associated with disciplinary outcomes can provide novel evidence to support policy suggestions for fortifying wellness environments. These findings will increase empirical understanding on school wellness-school discipline associations and provide data that can assist in evidence-informed decision making in regard to school health and disciplinary policies. Results can inform future school interventions to support educational and health equity not only among high school students in Oregon but in other states.

Chapter II: Methods

This is a cross-sectional study using several publicly available data sources. All analyses were conducted in R (R Core Team, 2020). Institutional Review Board approval was not needed as no human subjects or personally identifiable data were used.

Data Sources

From 2017 – 2018, the LWPs of all school districts containing a public, non-alternative high schools in the state of Oregon ($n = 201$) were quantitatively evaluated in a forthcoming publication by myself and collaborators (Terral et al., 2021, under review). Designed to measure the strength (presence of directive language) and comprehensiveness (inclusion of relevant content) of LWPs, the WellSAT2.0 instrument (Rudd Center, 2018) was used to rate policy documents across six areas: *Nutrition Education, Standards for USDA Child Nutrition Programs and School Meals, Nutrition Standards for Competitive and Other Foods and Beverages, Physical Education and Physical Activity, Wellness Promotion and Marketing, and Implementation, Evaluation, and Communication*. The strength and comprehensiveness of the six domains are averaged to generate total strength and total comprehensiveness scores, which are possible out of 100. The WellSAT2.0 has demonstrated good to excellent reliability across these six domains in this dataset (see Table 2), and good reliability overall, $\alpha = .825$. In addition to other school-level variables, the LWP dataset also contains each school's percentage of students qualifying for free/reduced price lunch, a widely used proxy for socioeconomic status which will be used in this study. These data were

gathered for the 2017 - 2018 from Oregon Department of Education's *At A-Glance* school profiles (Oregon Department of Education, 2021).

In the fall of 2021, exclusionary disciplinary outcomes for school years 2017 – 2018 for all reporting schools in all states were collected from the U.S. Department of Education's Civil Rights Data Collection (Office for Civil Rights, 2021). Cases were then reduced to schools located within Oregon, and then further filtered to crossmatch with the 201 schools within the LWP dataset. Only two schools were missing exclusionary discipline data, leaving 199 complete cases. A total of 38 variables were retained for this study from two Civil Rights Data Collection categories, expulsions and suspensions. From those raw variables, four variables were computed for this study (see Appendix A).

Measures

The LWP dataset contains 199 items that evaluate different aspects of Oregon LWPs, as well as school-level sociodemographic data. These data were cross matched to three final variables used for this study's analyses.

Total LWP Quality

Created by the sum of total strength and total comprehensiveness scores for each high school's LWP. Possible total quality scores range from 0 to 100. Total strength is created by the ratio of the number of WellSAT2.0 items rated as a "2" to all possible items. For example, a specific statement like "All schools are required to schedule 20 min of recess daily for every class in the school master schedule." would be coded as a 2 (Francis et al., 2018, p. 592). Total comprehensiveness is created by the ratio of the number of WellSAT2.0 items rated as a "1" to all possible items. The vagueness of the

statement “Elementary schools should provide students with opportunities for play when weather permits.” would be coded as a 1 (Francis et al., 2018, p. 592).

Physical Education/Physical Activity LWP Domain Quality

This domain is measured via 20 criteria, such as “There is a written physical education curriculum for grades K-12,” and “Addresses physical activity breaks for all K-12 students.” Created using the sum of the strength and comprehensiveness scores for this domain. Possible *Physical Education/Physical Activity* quality scores range from 0 to 200.

Nutrition Education LWP Domain Quality

This domain is measured via six criteria, such as “Nutrition education teaches skills that are behavior-focused,” and “Links nutrition education with the school food environment.” Created using the sum of the strength and comprehensiveness scores for this domain. *Nutrition Education* quality scores range from 0 to 200.

Standards for USDA Child Nutrition Programs and School Meals Domain

This domain is measured via 14 criteria such as “Addresses access to the USDA School Breakfast Program,” “School meals meet standards that are more stringent than those required by the USDA,” and “Free drinking water is available during meals.” *Standards for USDA Child Nutrition Programs and School Meals* comprehensiveness is calculated by the number of items in this section receiving a one or a two divided by 14 and multiplied by 100. Its strength is calculated by the number of items in this section receiving a two, divided by 14 and multiplied by 100. Possible scores range from 0 – 100.

Nutrition Standards for Competitive and Other Foods and Beverages Domain

This domain is measured via 11 criteria such as, “Addresses foods and beverages containing non-nutritive sweeteners,” and “Addresses compliance with USDA minimum nutrition standards for all foods sold to students during the school day.” *Nutrition Standards for Competitive and Other Foods and Beverages* comprehensiveness is calculated by the number of items in this section receiving a one or a two divided by 11 and multiplied by 100. Its strength is calculated by the number of items in this section receiving a two, divided by 11 and multiplied by 100. Possible scores range from 0 – 100.

Wellness Promotion and Marketing Domain

This domain is measured via 15 criteria such as “Addresses staff not modeling unhealthy eating/drinking behaviors,” and “Addresses staff not modeling unhealthy eating/drinking behaviors.” *Wellness Promotion and Marketing* comprehensiveness is calculated by the number of items in this section receiving a one or a two divided by 15 and multiplied by 100. Its strength is calculated by the number of items in this section receiving a two, divided by 15 and multiplied by 100. Possible scores range from 0 – 100.

Implementation, Evaluation and Communication

This domain is measured via 11 criteria such as “Establishes an ongoing district wellness committee,” and “Addresses annual assessment of SWP implementation/progress towards wellness goals.” *Implementation, Evaluation and Communication* comprehensiveness is calculated by the number of items in this section receiving a one or a two divided by 11 and multiplied by 100. Its strength is calculated by

the number of items in this section receiving a two, divided by 11 and multiplied by 100. Possible scores range from 0 – 100.

Crime Rate Index

Representing the relative risk of crime against people and property relative to the country's average, the total crime index was gathered for each high school's zip code for the year 2021 using ArcGIS® software (Esri, 2021). The USA Crime Index is supplied by market researchers Applied Geographic Solutions and data from Federal Bureau of Investigation reports is used to compute the index. For this variable, the values are all referenced by an index value. "The index values for the US level are 100, representing average crime for the country. A value of more than 100 represents higher crime than the national average, and a value of less than 100 represents lower crime than the national average. For example, an index of 120 implies that crime in the area is 20 percent higher than the US average; an index of 80 implies that crime is 20 percent lower than the US average" (Esri, 2021).

School Characteristics

Six school-level sociodemographic variables were gathered from the *At-A-Glance* school profiles (Oregon Department of Education, 2021), including percentages of students qualifying for free/reduced price lunch in each high school, students with disabilities, ever-English learners, average teacher turnover, and if there was a new principal within the last three years. Students from marginalized racial and ethnic backgrounds was created using the sum of percentages of American Indian/Alaskan Native, Black/African American, Hispanic/Latino, and Native Hawaiian/Pacific Islander students for each high school. Percentage of male students was created by dividing the

raw counts of male students the Civil Rights Data Collection dataset by the total number of students enrolled gathered from the At-A-Glance school profiles.

Total Out of School Suspensions

Created using the sum of all out-of-school suspensions for all students across racial and ethnic groups, disability, and sex.

Total EDIs

Created using the sum of total in-school suspensions, out-of-school suspensions, and expulsions for each high school. This is a continuous variable.

Total Days Missed

Created using the sum of all school days missed due to out-of-school suspensions for males and females for the 2017 – 2018 school year for each high school. Missed days include half days where students left early but teachers did not leave early (Civil Rights Data Collection, 2021).

Preliminary Analyses

Preliminary analyses included conducting descriptive statistics and unadjusted bivariate correlations to examine zero-order associations.

Multiple Regression Analysis – Research Question 1

To determine if LWP total quality is associated with total EDIs in Oregon high schools, multiple regression was conducted using total LWP quality as the independent variable and total EDIs as the dependent variable. Five covariates were included in the first model, school-level percentages of: students with disabilities, male students, students with limited English proficiency, students from marginalized racial and ethnic groups, and students qualifying for free/reduced price lunch. To facilitate more intuitive

interpretation, all variables were mean-centered. Assumptions of normality were checked by examining histograms, skewness and kurtosis measures, Q-Q plots, and other conventional methods of normality testing and diagnostics for multiple regression (Fox, 2016).

Multiple Regression Analysis – Research Question 2

To determine if the quality of *Physical Education/Physical Activity*, and *Nutrition Education* domains in LWPs is associated with EDIs, the same analytic protocol as study aim 1 was followed, including retention of the same covariates. Two models, one for each LWP domain, were generated with *Physical Education/Physical Activity* quality and *Nutrition Education* quality as the respective independent variables, and EDIs as the dependent variable.

Moderated Multiple Regression Analysis – Research Question 3

To determine if LWP total quality moderates the association between total out of school suspensions and total days missed due to suspensions in Oregon high schools, a fourth model using total out of school suspensions as the independent variable and total days missed due to suspensions as the dependent variable. To test for a moderation effect, an interaction term between total LWP quality and total days missed due to suspensions was included. The same protocol as the previous models was followed, including retention of the same covariates.

Post-Hoc Regressions

Given the large range discrepancies and standard deviations in comprehensiveness and strength scores in this sample, post hoc analyses were conducted to examine associations with EDIs for each LWP domain's strength and

comprehensiveness separately, i.e., *Implementation, Evaluation, and Communication* strength and comprehensiveness. These additional models retained the same covariates as the previous aims, for a final total of ten multiple regression models conducted.

Chapter III: Results

Across Oregon public high schools, total LWP quality ranged from 0 to 89.1, with a mean of 49.8 ($SD = 16.58$). *Nutrition Education* quality averaged 77.32 ($SD = 20.84$), and *Physical Education Physical Activity* had a mean of 23.2 ($SD = 14.41$). Total EDIs ranged from 0 to 473 ($M = 94.78$, $SD = 77.72$), and total suspensions had a mean of 53.94 ($SD = 43.5$) and a range of 0 to 236. In this sample, the average total number of school days missed due to suspension in the 2017 – 2018 school year was 145.22 ($SD = 149.99$) and ranged from 0 to 892. Complete descriptive statistics are available in Table 3.

Regression diagnostics indicated that the percentage of students from a marginalized racial and ethnic background and the percentage of students classified as ever-English learners were multicollinear; percentage of students from a marginalized racial and ethnic background was retained to represent the most students in these models. The residuals for this model were not normally distributed, so robust standard errors are reported to account for the violation of normality and homoscedasticity assumptions.

Study Aim 1 Results

Total LWP quality was not significantly associated with total EDIs when controlling for school-level percentages of students with disabilities, male students, students with limited English proficiency, students from marginalized racial and ethnic groups, students qualifying for free/reduced price lunch, average teacher turnover, a new principal within three years, and crime rate index for the school's zip code, $\hat{\beta}_1 = 0.178$, $SE(\hat{\beta}_1) = 7.81$, $t(134) = 0.65$, $p = 0.514$. The full model is reported in Table 4. As a sensitivity analysis, a multiple regression model including separate variables total strength and total comprehensiveness (in contrast to the composite total LWP quality

variable) was generated. In accordance with the first analysis, neither total strength nor total comprehensiveness were significantly associated with total EDIs (see Table B3 for full model and Appendix B for additional supplementary analyses).

Study Aim 2 Results

When controlling for the aforementioned covariates, total *Nutrition Education* quality was not significantly associated with total EDIs, $\hat{\beta}_1=0.364$, $SE(\hat{\beta}_1)=0.31$, $t(134)=1.15$, $p = 0.24$. Similarly, when controlling for the aforementioned covariates, total *Physical Education Physical Activity* quality was not significantly associated with total EDIs, $\hat{\beta}_1 = 0.276$, $SE(\hat{\beta}_1)=0.48$, $t(134) = 0.56$, $p = 0.57$. See Table 4 for the complete model.

Post-Hoc Exploratory Results

Only *Standards for USDA Child Nutrition Programs and School Meals* strength and *Wellness Promotion and Marketing* strength and comprehensiveness were significantly associated with total EDIs (Table 4). When controlling for the aforementioned covariates, *Standards for USDA Child Nutrition Programs and School Meals* strength was significantly, negatively associated with total EDIs, $\hat{\beta}_2 = -1.60$, $SE(\hat{\beta}_2)=0.55$, $t(133)= -2.87$, $p < 0.005$. The model indicated that every unit increase in *Standards for USDA Child Nutrition Programs and School Meals* strength score is associated with about 1.6 units decrease in EDIs and that this domain's strength accounted for about 3% of the univariate variance in EDIs. The effect size was small (Cohen's $f^2 = .05$). *Wellness Promotion and Marketing* comprehensiveness was significantly, negatively associated with total EDIs, $\hat{\beta}_1 = -2.29$, $SE(\hat{\beta}_1)=0.50$, $t(133)= -4.54$, $p < 0.001$. The model indicated that every unit increase in *Wellness Promotion and Marketing*

comprehensiveness score is associated with about 2.3 units decrease in EDIs at the school-level, and this domain's strength accounted for about 5% of the variance in EDIs. The effect size was medium (Cohen's $f^2 = .15$). *Wellness Promotion and Marketing* strength was significantly, positively associated with EDIs, $\hat{\beta}_2 = 1.67, SE(\hat{\beta}_2) = 0.50, t(133) = 3.32, p < 0.001$, with every unit increase in *Wellness Promotion and Marketing* strength score associated with about 1.6 units increase in EDIs at the school-level. The effect size was small (Cohen's $f^2 = .06$). The strength and comprehensiveness scores for the other four domains were not significantly associated with EDIs (Table 3).

Study Aim 3 Results

When controlling for the aforementioned covariates, total LWP quality was not associated with total days missed due to suspension

($\hat{\beta}_1 = -0.01, SE(\hat{\beta}_1) = 0.80, t(132) = -0.01, p = 0.98$). The interaction between total out of school suspensions and LWP quality did not moderate the association between associated with total out of school suspensions and days missed due to suspensions,

$\hat{\beta}_{10} = 0.01, SE(\hat{\beta}_{10}) = 0.03, t(132) = 0.38, p = 0.70$. See Table 4 for the full model.

Chapter IV: Discussion

Informed by the WSCC model, this study contributes to filling a gap in the literature regarding the association between school wellness policies and school discipline incidents in Oregon high schools. Regarding study aim one, no evidence was found to suggest that the overall quality of these policies is associated with EDIs in Oregon. Although social/emotional climates, nutrition environments, and physical activity opportunities are connected within the WSCC model, this study finds few associations among policy evaluations of those constructs and student disciplinary outcomes. Research has shown that LWP strength is positively correlated with school-level implementation (Schwartz et al., 2012). In this study, strength scores were generally low across LWP domains, the average for each domain ranged from 11 – 62%. Low strength scores could suggest similarly low levels of LWP implementation however these data do not assess policy implementation. Of note, higher average teacher turnover was associated with lower EDIs, which is contrary to other literature (Kraft et al., 2016; Nguyen et al., 2020). Research examining characteristics of outgoing and incoming teachers in Oregon schools may shed light on this finding. Perhaps incoming instructors are equipped with more evidence-informed classroom management strategies than outgoing teachers, which is associated with fewer EDIs. Although the inclusion of teacher turnover does capture an important aspect of the school environment, an even more vital element missing from the present study is a measure of teacher bias (Anyon et al., 2016; Liu et al., 2022; Wymer et al., 2022). Office referrals from teachers who may hold implicit biases against marginalized students may partially account for inequities in exclusionary discipline (Barnes & Motz, 2018). Research suggests that intervening to

make teachers aware of their implicit biases could interrupt the negative developmental cascade associated with exclusionary discipline (Barnes & Motz, 2018; Bryan, 2017). Despite the minimal links between wellness policies and exclusionary discipline found in this study, both health behaviors and carceral disparities are linked to education (Barnert et al., 2016; Byrd, 2019; Freudenberg & Ruglis, 2007; Wald & Losen, 2003), and the school environment can play a pivotal role in mitigating risks for students. Using the WSCC model can support stakeholders in greater collaboration and implementation for policies and programs to support comprehensive student well-being (Chiang et al., 2015). This approach enables a coordinated effort to fill gaps across student health and academic metrics (Bobo et al., 2022).

Contrary to my hypotheses, neither *Nutrition Education* nor *Physical Education Physical Activity* domains were associated with EDIs in this sample. To my best knowledge, no other study has examined LWP domains and school discipline, however extant evidence indicated a reduction in school suspensions among elementary and middle school students following the implementation of schoolwide free meals through the Community Eligibility Provision within the legislation that mandated LWPs (Gordon & Ruffini, 2018). *Nutrition Education* is the highest scoring domain both in strength and comprehensiveness, and Oregon's average for this domain exceeds national and other states' averages (Chriqui et al., 2013; Eggert et al., 2018; Harvey et al., 2018; Lucarelli et al., 2015). Research investigating associations among LWP components and academic outcomes is limited, however Lyn et al (2012) reported a significant positive association between *Nutrition Education* and graduation rate in Georgia. Conversely, *Physical Education Physical Activity* is the lowest scoring domain in this sample, which is

consistent with others' findings (Francis et al., 2018; Snelling et al., 2017). Participation in physical activity has been linked to decreased disciplinary issues in schools (Michael et al., 2015), yet the low scores in this domain suggest low accountability for Oregon school districts to provide physical activity opportunities to their high school students.

The total quality of the *Nutrition Education* and *Physical Education Physical Activity* domains were not significantly associated with EDIs in Oregon high schools. Post-hoc analyses revealed additional detail in the associations between LWP domains' strength and comprehensiveness and EDIs. Despite the low score (29%), *Standards for USDA Child Nutrition Programs and School Meals* strength was significantly, negatively associated with EDIs in this sample. This domain is evaluated with criteria assessing the school meal environment, access to the USDA School Breakfast program, and off-campus lunch. The negative association suggests that including more directive language regarding food in schools could be associated with fewer EDIs in Oregon. Despite rejecting the a priori hypotheses, this study does lend empirical support to some small interconnectedness between LWP policies and EDIs in Oregon high schools. These findings can support evidence-informed decision making for school health and disciplinary policies.

Wellness Promotion and Marketing comprehensiveness was also significantly, negatively associated with EDIs. The *Wellness Promotion and Marketing* domain assesses whether LWP contents include items related to in-school wellness promotion, such as encouraging staff to model healthy eating/drinking behaviors and physical activity, whether strategies to encourage healthy eating and physical activity are indicated, as well as if food or physical activity can be used as rewards or punishment.

This domain also evaluates whether advertisements for foods that do not meet USDA standards is restricted on campus. Out of all the WellSAT2.0 domains, *Wellness Promotion and Marketing* is the most specifically environment/atmosphere oriented. This orientation connects to the social/emotional climate within the WSCC model and could suggest that schools with more supportive wellness environments are associated with less exclusionary discipline. Curiously, *Wellness Promotion and Marketing* domains is one of the lowest scoring domains across Oregon LWPs. The comprehensiveness of *Wellness Promotion and Marketing* was 36% and strength was 20%. Results indicating the positive association between the strength of *Wellness Promotion and Marketing* and EDIs are certainly intriguing and add complexity to the understanding of the association between LWPs and school discipline. It is possible there is a curvilinear association present between that domain's strength and EDIs. It is also possible the findings are Type II errors. More research investigating LWPs and EDIs can provide clarification, particularly in policies with more variance and in larger states with more school districts and students. Although unexpected, finding opposing directions of associations between strength and comprehensiveness is not unheard of. In Cox et al's (2016) of LWPs in Southeastern school districts, student-teacher ratio was negatively associated with total strength, but positively associated with total comprehensiveness. Stakeholders committed to supporting comprehensive student wellness can consider prioritizing quality improvement for *Standards for USDA Child Nutrition Programs and School Meals* strength and *Wellness Promotion and Marketing* comprehensiveness domains in their district's LWP.

Regarding the third study aim, no evidence was found to suggest that the total quality of LWPs interacts with the association between suspensions and days missed due to suspension. Identifying protective factors against suspension in Oregon schools is imperative; in the 2017 school year, a total of 28,899 school days (approximately 169 school years) were missed due to out-of-school suspension in this sample. The learning and developmental opportunities lost during these days by Oregon students is unquantifiable. Reducing exclusionary discipline is critical in the state of Oregon, which reported 18,861 EDIs among this high school sample in the 2017-2018 school year. Graduation rates are also connected to exclusionary discipline (Aronowitz et al., 2021), and reducing EDIs is one tactic to consider for supporting Oregon in meeting Healthy People 2030's goal of 90% graduation (Office of Disease Prevention and Health Promotion, 2020). Implementing alternatives to exclusionary discipline in schools can keep students from missing important classroom experiences. Restorative practices hold potential for promoting healthy school climates and reducing exclusionary discipline, however lack of standardization makes implementation and evaluation research challenging (Kervick et al., 2020). Recent research investigating an alternative to exclusionary discipline which incorporates restorative discipline procedures, known as the Inclusive Skill-building Learning Approach, shows promise for reducing both exclusionary discipline and instructional minutes lost due to behavior management (Nese et al., 2020). Evidence suggests that implementing school-wide positive behavioral interventions and supports can reduce office discipline referrals and reduce disparities in school discipline (McIntosh et al., 2021).

Legislative interventions to reduce and/or eliminate exclusionary discipline practices are also feasible. At present, students with disabilities have some protections from exclusionary discipline under section 1415(k) of the Individuals with Disabilities Education Act: removal for more than ten days is not permitted and educational supports must be maintained throughout that time (U.S. Department of Education, nd). Oregon has already taken legislative action to reduce exclusionary discipline in schools, with limited results (Nishioka et al., 2020, 2021). Introducing state policy to require the implementation and funding of evidence-based alternatives to exclusionary discipline and to phase out exclusionary discipline practices for all grade levels is worth considering.

Evidence-based policies are needed to comprehensively address school environments utilizing the WSCC model. Results of this study can contribute to evidence-informed decision making for stakeholders of Oregon education. Research indicates school districts struggle to create and implement quality LWPs (Hoke et al., 2022). School districts should consider partnering with local Supplemental Nutrition Assistance Program Education agencies for technical assistance to evaluate and improve their LWPs (LeGros et al., 2020). In Oregon, average comprehensiveness scores were 65% of points possible, and strength was 34% for a combined total quality of 49%. Despite the room for improvement present in Oregon LWPs, they do score higher than average national comprehensiveness (44%) and strength (25%) scores (Piekarz et al., 2016). Coordinated efforts to evaluate and revise these policies to improve their strength and comprehensiveness to support implementation are called for.

Limitations and Strengths

This study has important limitations to consider. The cross-sectional nature of this study precludes drawing any causal inference from these results. Longitudinal research examining outcomes over time would offer strong evidence in this area. Schools with low numbers of students with disabilities did not report those figures; although Oregon Department of Education was contacted to gather information on what those thresholds for non-reporting are, no answer was received and thus 56 were excluded from analyses. This decreased the analytic power in the study and increases the likelihood of Type 1 error. The inclusion of total crime for each school's zip code is not chronologically congruent with the other data used in this study; the crime data were only available for year 2020, which is three years later than the LWP and EDI data. Additionally, evidence suggests that the COVID-19 pandemic and the stay-at-home orders issued at the onset were associated with dramatically reduced crime rates (Stickle & Felson, 2020). Although the inclusion of this environmental variable is important to the validity of this study, the precision is questionable. Pre-K, kindergarten, and middle school EDIs were also not included, which limits the scope of understanding of exclusionary discipline across the state. Lastly, these findings may not be generalizable to other states; the demographics of Oregonian students are much less diverse than national averages (National Center for Education Statistics, 2022).

One strength of the present study is the novelty of the issue it addresses: school wellness and school discipline are infrequently considered together. The convergence of multiple sources of data to account for as many implicated factors is also a strength of this study. The high quality of these data from federal and state sources is another firm

strength. Given that the majority of school days missed due to exclusionary discipline are among high school students, the present focus on this group is justified. Findings also provide empirical evidence to support data-driven policy improvement in the context of Oregon school wellness.

Chapter V: Conclusion

Although the total quality of LWPs in Oregon high schools was not significantly associated with EDIs in this sample, novel evidence for associations among the strength and comprehensiveness of two LWP domains with EDIs was found. Increasing the comprehensiveness of *Wellness Promotion and Marketing* and the strength of *Standards for USDA Nutrition Programs and School Meals* domains may be additional targets for supporting the utility of LWPs for addressing exclusionary discipline. Modest evidence indicates LWPs and school discipline are connected in Oregon, and administrators and stakeholders should be mindful of this when reviewing and/or updating their policies. This study provides data, where it was previously absent, for more informed decision making among Oregon school administrators and other stakeholders: although connected, LWP improvements should not be prioritized as an exclusionary discipline intervention strategy based on study findings. Future research should coordinate to evaluate and revise LWPs and track relevant student wellness and discipline outcomes in a longitudinal study design.

Table 1*Demographic and academic data from Oregon public high schools, 2019 - 2020*

Race / Ethnicity	American Indian / Alaska Native	Asian	Native Hawaiian / Pacific Islander	Black / African American	Hispanic / Latino	Multi- Racial	White	Total
N (%)	7,010 (1.20)	23,208 (3.98)	4,431 (0.76)	13,176 (2.2)	138,273 (23.7)	38,306 (6.57)	358,257 (61.4)	560,917 (100)
Four-year graduation rate	72.4%	92.99%	77.88%	78.16%	81.8%	84.29%	87.11%	82.63%
Five-year graduation rate	78.92%	95.69%	83.69%	80.48%	83.72%	87.5%	88.37%	83.04%
Drop-out rate	4.68%	1.01%	3.56%	4.08%	2.91%	2.49%	2.13%	2.38%

Table 2*WellSAT2.0 Psychometric Properties*

	Cronbach's Alpha	N of Items
Nutrition Education	.810	7
Standards for USDA Child Nutrition Programs and School Meals	.851	14
Nutrition Standards for Competitive and Other Foods and Beverages	.948	25
Physical Education and Physical Activity	.819	20
Wellness Promotion and Marketing	.822	15
Implementation, Evaluation, and Communication	.824	2
Total Strength and Comprehensiveness	.930	2
Overall	.825	94

Table 3*Descriptive Statistics of Oregon Local School Wellness Policy Quality and Exclusionary Discipline*

Variable	Min	Max	M	SD	Skewness	Kurtosis	SE	SE
Total out of school suspensions	.00	236.0	53.93	43.49	1.48	.172	2.50	.343
Total exclusionary discipline incidents	.00	473.0	94.77	77.72	1.90	.172	4.73	.343
Total days missed	.00	892.0	145.22	149.99	1.86	.172	5.06	.343
Nutrition Education total quality	.00	200.0	154.65	41.46	-1.554	.172	2.801	.341
Physical Education Physical Activity total quality	.00	160.00	46.29	28.69	.979	.172	.880	.341
Nutrition education comprehensiveness	.00	100.0	92.38	18.26	-3.37	.172	11.61	.343
Nutrition education strength	.00	100.0	62.23	29.10	-.537	.172	-.399	.343
Physical education physical activity comprehensiveness	.00	80.00	35.12	16.62	.421	.172	.225	.343
Physical education physical activity strength	.00	80.00	11.28	14.13	1.32	.172	2.14	.343
Overall strength total	.00	80.77	34.31	16.49	.393	.172	-.575	.343
Overall comprehensiveness total	.00	100.0	65.27	17.78	-.605	.172	.599	.343
Total LWP quality	.00	89.10	49.79	16.58	-.065	.172	-.218	.343
Crime rate index	30.00	375.00	99.62	46.83	1.70	.172	5.72	.343
New principal in three years	.00	1.00	.3467	.4771	.649	.172	-1.59	.343
Average teacher turnover	.00	40.00	14.35	6.13	.929	.172	1.64	.343
Percentage students from marginalized racial and ethnic group	2.00	96.00	25.00	18.22	1.51	.172	2.01	.343
Percentage ever-English learners	.00	88.00	13.74	17.40	1.61	.172	2.44	.343
Percentage students with disabilities	.00	38.00	13.37	4.41	.183	.172	5.95	.343
Percentage male students	34.93	82.19	54.47	5.58	10.08	.172	4.66	.343
Percentage students qualifying for free/reduced price lunch	1.57	90.00	50.64	17.13	.298	.172	-.263	.343
Standards for USDA child nutrition programs and school meals comprehensiveness	.00	92.86	62.77	24.67	-.663	.172	-.982	.343
Standards for USDA child nutrition programs and school meals strength	.00	71.43	29.93	13.87	.756	.172	1.856	.343
Nutrition standards for competitive and other foods and beverages comprehensiveness	.00	100.0	69.12	23.97	-1.206	.172	.973	.343
Nutrition standards for competitive and other foods and beverages strength	.00	96.00	37.92	30.40	.006	.172	-1.280	.343
Wellness promotion and marketing comprehensiveness	.00	86.67	36.78	22.19	.391	.172	-.424	.343
Wellness promotion and marketing strength	.00	66.67	20.73	18.85	.663	.172	-.165	.343
Implementation, evaluation and communication comprehensiveness	.00	100.0	53.03	28.75	.339	.172	-1.297	.343
Implementation, evaluation and communication strength	.00	100.0	30.65	22.69	1.103	.172	.590	.343

Note. $N = 199$. SD = standard deviation, SE = standard error, USDA = United States Department of Agriculture. LWP = local school wellness policy.

Table 4*Unstandardized Regression Coefficients (Standard Errors) For Regression Models to Explain Variation In Oregon High School EDIs*

Variable	Model 1	Model 2	Model 3	Model 4
Intercept	5.10 (7.81)	-22.61 (24.29)	4.93 (7.84)	2.66 (14.94)
Total LWP Quality	0.178 (0.40)	-	-	-0.01 (0.80)
Total NE Quality	-	0.364 (0.31)	-	-
Total PEPA Quality	-	-	0.276 (0.48)	-
Total Suspensions	-	-	-	1.53 (0.29)**
% Male Students	0.977 (1.27)	0.930 (1.23)	0.939 (1.21)	2.63 (2.50)
% Students Qualifying for FRPL	0.754 (0.41)	0.740 (0.40)	0.767 (0.40)	-0.840 (0.77)
% SWD	-0.302 (1.74)	-0.330 (1.66)	-0.198 (1.69)	3.11 (3.20)
% Students From MREB	0.385 (0.50)	0.421 (0.51)	0.370 (0.51)	1.10 (0.71)
Average Teacher Turnover	-2.348 (1.18)*	-2.21 (1.17)	-2.34 (1.17)*	-2.47 (2.33)
New Principal Within Three Years	-14.32 (15.54)	-15.62 (15.79)	-13.84 (15.56)	-8.75 (25.91)
Total Crime Rate	0.163 (0.170)	0.137 (0.174)	0.181 (0.168)	0.20 (0.24)
Total LWP Quality*Total Suspensions	-	-	-	0.015 (0.01)
R-squared	0.08	0.08	0.08	0.27
Residual Std.Dev.	81.08	80.82	81.03	139.7

Note. $N = 133$. Robust coefficients and confidence intervals reported. EDIs = exclusionary discipline incidents. LWP = Local school wellness policy. LWP = local school wellness policy. NE = Nutrition Education. PEPA = Physical Education/Physical Activity. FRPL = Free/reduced price lunch. SWD = students with disabilities. MREB = marginalized racial and ethnic background * $p < .05$. ** $p < .01$.

*** $p < .005$.

Table 5*Unstandardized regression coefficients (standard errors) for regression models to explain variation in Oregon High School EDIs*

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Intercept	5.34(7.98)	6.69(8.35)	510(8.52)	6.03 (8.18)	7.93 (7.92)	5.46(8.42)
NE comprehensiveness	-0.22(0.53)	-	-	-	-	-
NE strength	-0.22(0.23)	-	-	-	-	-
SM comprehensiveness	-	0.18(0.45)	-	-	-	-
SM strength	-	- 1.60(0.78)*	-	-	-	-
NS comprehensiveness	-	-	-0.29(0.36)	-	-	-
NS strength	-	-	-0.05(0.30)	-	-	-
PEPA comprehensiveness	-	-	-	-1.22(0.69)	-	-
PEPA Activity strength	-	-	-	-0.29(0.71)	-	-
WPM strength	-	-	-	-	1.67(0.50)***	-
IEC comprehensiveness	-	-	-	-	-	0.19(0.39)
IEC strength	-	-	-	-	-	-0.89(0.51)
% Male students	0.57(1.27)	0.76(1.40)	0.97(1.43)	0.56(1.37)	0.71(1.24)	0.60(1.41)
% Students qualifying FRPL	0.67(0.41)	0.51(0.44)	0.69(0.43)	0.58(0.41)	0.77(0.35)*	0.6 (0.42)

Table 5 continued

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
% Students from MREB	0.50(0.50)	0.45(0.39)	0.52(0.41)	0.57(0.39)	0.62(0.47)	0.43(0.40)
Average teacher turnover	-2.38(1.14)*	-1.16(1.36)	-2.21(1.31)	-1.28(1.30)	-1.79(1.07)	-1.48(1.34)
New principal within three years	- 14.98(15.37)	- 18.77(14.26)	- 14.31(14.51)	- 16.91(13.95)	-22.25(13.81)	- 15.32(14.39)
Total crime rate	0.20(0.16)	0.29(0.14) *	0.18(0.13)	0.26(0.13) *	0.3(0.14)*	0.22(0.13)
R-squared	0.09	0.12	0.09	0.16	0.21	0.11
Residual Std.Dev.	80.91	79.26	80.99	77.68	75.13	79.89

Note. $N = 133$. Robust coefficients and confidence intervals reported to account for homoscedasticity. SEs = standard errors. EDIs = exclusionary discipline incidents. NEPE = Nutrition Education, SM = Standards for USDA Child Nutrition Programs and School Meals, NS = Nutrition Standards for Competitive and Other Foods and Beverages, PEPA = Physical Education and Physical Activity, WPM = Wellness Promotion and Marketing, IEC = Implementation, Evaluation, and Communication FRPL = Free/reduced price lunch. MREB = marginalized racial and ethnic background. * $p < .05$. ** $p < .01$. *** $p < .005$

Figure 1

Whole School, Whole Community, Whole Child Model



Note. Adapted from CDC Healthy Schools Whole School, Whole Community, Whole Child 2021. (<https://www.cdc.gov/healthyschools/wsc/index.htm>)

APPENDIX A

CIVIL RIGHTS DATA COLLECTION VARIABLES

Table A1

Civil Rights Data Collection Variables Used to Compute Variables for Exclusionary Discipline Incident Analyses

Variable Name	Definition
LEA_ENR	Count of Students
TOT_DISCWODIS_ISS_M	Total number of students without disabilities who received one or more in-school suspensions: Calculated Male Total
TOT_DISCWODIS_ISS_F	Total number of students without disabilities who received one or more in-school suspensions: Calculated Female Total
TOT_DISCWDIS_ISS_IDEA_M	Total number of students with disabilities who received one or more in-school suspensions: Calculated IDEA Male Total
TOT_DISCWDIS_ISS_IDEA_F	Total number of students with disabilities who received one or more in-school suspensions: Calculated IDEA Female Total
SCH_DISCWDIS_ISS_LEP_M	Students with disabilities who received one or more in-school suspensions: LEP Male
SCH_DISCWDIS_ISS_LEP_F	Students with disabilities who received one or more in-school suspensions: LEP Female

Table A1 continued

Variable Name	Definition
SCH_DISCWDIS_ISS_504_M	Students with disabilities who received one or more in-school suspensions: Section 504 Only Male
SCH_DISCWDIS_ISS_504_F	Students with disabilities who received one or more in-school suspensions: Section 504 Only Female
Total_ISS	*Sum of all in-school suspensions
SCH_OOSINSTANCES_WODIS	Instances of out-of-school suspension: Students without disabilities
SCH_OOSINSTANCES_IDEA	Instances of out-of-school suspension: Students with disabilities (IDEA)
SCH_OOSINSTANCES_504	Instances of out-of-school suspension: Section 504 Only
Total_OSS	*Sum of all out-of-school suspensions
TOT_DAYSMISSED_M	School days missed due to out-of-school suspension: Calculated Male Total
TOT_DAYSMISSED_F	School days missed due to out-of-school suspension: Calculated Female Total
Total_Days_Missed	*Sum of days missed due to OSS
TOT_DISCWODIS_EXPWE_M	Total Number of Students without Disabilities who received an expulsion with educational services: Calculated Male Total
TOT_DISCWODIS_EXPWE_F	Total Number of Students without Disabilities who received an expulsion with educational services: Calculated Female Total

TABLE A1 continued

Variable Name	Definition
TOT_DISCWODIS_EXPWOE_M	Total Number of Students without disabilities who received an expulsion without educational services: Calculated Male Total
TOT_DISCWODIS_EXPWOE_F	Total Number of Students without disabilities who received an expulsion without educational services: Calculated Female Total
TOT_DISCWODIS_EXPZT_M	Total Number of Students without disabilities who received an expulsion under zero tolerance policies: Calculated Male Total
TOT_DISCWODIS_EXPZT_F	Total Number of Students without disabilities who received an expulsion under zero tolerance policies: Calculated Female Total
TOT_DISCWDIS_EXPWE_IDEA_M	Total Number of Students with disabilities who received an expulsion with educational services: Calculated IDEA Male Total
TOT_DISCWDIS_EXPWE_IDEA_F	Total Number of Students with disabilities who received an expulsion with educational services: Calculated IDEA Female Total
SCH_DISCWDIS_EXPWE_LEP_M	Students with disabilities who received an expulsion with educational services: LEP Male
SCH_DISCWDIS_EXPWE_LEP_F	Students with disabilities who received an expulsion with educational services: LEP Female
SCH_DISCWDIS_EXPWE_504_M	Students with disabilities who received an expulsion with educational services: Number of Section 504 Only Male

TABLE A1 continued

Variable Name	Definition
TOT_DISCWDIS_EXPWOE_IDEA_M	Total Number of Students with disabilities who received an expulsion without educational services: Calculated IDEA Male Total
TOT_DISCWDIS_EXPWOE_IDEA_F	Total Number of Students with disabilities who received an expulsion without educational services: Calculated IDEA Female Total
SCH_DISCWDIS_EXPWOE_LEP_M	Students with disabilities who received an expulsion without educational services: LEP Male
SCH_DISCWDIS_EXPWOE_LEP_F	Students with disabilities who received an expulsion without educational services: LEP Female
SCH_DISCWDIS_EXPWOE_504_M	Students with disabilities who received an expulsion without educational services: Number of Section 504 Only Male
SCH_DISCWDIS_EXPWOE_504_F	Students with disabilities who received an expulsion without educational services: Number of Section 504 Only Female
TOT_DISCWDIS_EXPZT_IDEA_M	Total Number of Students with disabilities who received an expulsion under zero tolerance policies: Calculated IDEA Male Total
TOT_DISCWDIS_EXPZT_IDEA_F	Total Number of Students with disabilities who received an expulsion under zero tolerance policies: Calculated IDEA Female Total
SCH_DISCWDIS_EXPZT_LEP_M	Students with disabilities who received an expulsion under zero tolerance policies: LEP Male

TABLE A1 continued

Variable Name	Definition
SCH_DISCWDIS_EXPZT_LEP_F	Students with disabilities who received an expulsion under zero tolerance policies: LEP Female
SCH_DISCWDIS_EXPZT_504_M	Students with disabilities who received an expulsion under zero tolerance policies: Number of Section 504 Only Male
SCH_DISCWDIS_EXPZT_504_F	Students with disabilities who received an expulsion under zero tolerance policies: Number of Section 504 Only Female
Total_Expulsions	*Sum of all expulsions
Total_Exclusionary_Incidents	*Sum of all ISS, OSS and expulsion instances

APPENDIX B

SUPPLEMENTARY ANALYSES

Table B1

Correlations of Sums of WellSAT2.0 Domains

		NEPE	SM	NS	PEPA	WPM	IEC
Nutrition Education		1					
	N	201					
Standards for USDA Child Nutrition Programs and School Meals		.432***	1				
	N	199	199				
Nutrition Standards for Competitive and Other Foods and Beverages		.409***	.578***	1			
	N	199	197	199			
Physical Education and Physical Activity		.237***	.311***	.330***	1		
	N	199	197	197	199		
Wellness Promotion and Marketing		.179**	.764***	.471***	.259***	1	
	N	200	198	198	198	200	
Implementation, Evaluation, and Communication		-.036	-.024	.255***	.547***	-.028	1
	N	201	199	199	199	200	201

Note. Raw scores across each WellSAT2.0 domain were summed as an additional reliability analysis. NEPE = Nutrition Education, SM = Standards for USDA Child Nutrition Programs and School Meals, NS = Nutrition Standards for Competitive and Other Foods and Beverages, PEPA = Physical Education and Physical Activity, WPM = Wellness Promotion and Marketing, IEC = Implementation, Evaluation, and Communication. * $p < .05$. ** $p < .01$. *** $p < .005$

Table B2*Correlations of WellSAT2.0 Domain Strength (S) and Comprehensiveness (C)*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. NEPE (C)	1													
2. NEPE (S)	.522***	1												
3. SM (C)	.464***	.311***	1											
4. SM (S)	.337***	.296***	.776***	1										
5. NS (C)	.400***	.434***	.346***	.329***	1									
6. NS (S)	.216**	.264***	.646***	.557***	.637***	1								
7. PEPA (C)	.292***	.185**	.354***	.535***	.361***	.343***	1							
8. PEPA (S)	.069	.239***	-.077	.267***	.312***	.112	.752***	1						
9. WPM (C)	.222**	.173	.779***	.709***	.298***	.603***	.510***	.136*	1					
10. WPM (S)	.208**	.053	.706***	.487***	.165*	.463***	.201**	-.155*	.799***	1				
11. IEC (C)	-.137*	.115	-.199**	.152*	.325***	.220**	.424***	.587***	.065	-.356	1			
12. IEC (S)	-.254***	.013	-.118	.269***	.130	.177*	.379***	.546***	.231***	-.095	.798***	1		
13. Total (C)	.452***	.407***	.631***	.673***	.750***	.713***	.714***	.465***	.690***	.402***	.424***	.338***	1	
14. Total (S)	.259***	.414***	.638***	.728***	.598***	.862***	.586***	.434***	.720***	.508***	.378***	.441***	.872***	1

Note. $N = 201$. NEPE = Nutrition Education, SM = Standards for USDA Child Nutrition Programs and School Meals, NS = Nutrition Standards for Competitive and Other Foods and Beverages, PEPA = Physical Education and Physical Activity, WPM = Wellness Promotion and Marketing, IEC = Implementation, Evaluation, and Communication. * $p < .05$. ** $p < .01$. *** $p < .005$

Table B3*Unstandardized Regression Coefficients (Standard Errors) of Total Strength and Total Quality Regressed onto EDIs*

Intercept	5.17 (8.12)
Total strength	0.06 (0.85)
Total comprehensiveness	0.02 (0.90)
% Male students	0.75 (1.28)
% Students qualifying FRPL	0.70 (0.42)
% Students with disabilities	-0.07 (1.89)
% Students from marginalized racial and ethnic background	0.37 (0.52)
Average teacher turnover	-2.26 (1.18)*
New principal within three years	-14.27 (15.94)
Total crime rate	0.16 (0.17)
R-squared	0.07
Residual Standard Deviation	82.3

Note. EDIs = exclusionary discipline incidents. $N = 133$. Robust coefficients and confidence intervals reported to account for homoscedasticity. SEs = standard errors. LWP = Local school wellness policy. FRPL = Free/reduced price lunch. * $p < .05$. ** $p < .01$. *** $p < .005$

References Cited

- Adler, N. E., Glymour, M. M., & Fielding, J. (2016). Addressing social determinants of health and health inequalities. *JAMA*, *316*(16), 1641–1642.
<https://doi.org/10.1001/jama.2016.14058>
- Aronowitz, S. V., Kim, B., & Aronowitz, T. (2021). A mixed-studies review of the school-to-prison pipeline and a call to action for school nurses. *The Journal of School Nursing*, *37*(1), 51–60. <https://doi.org/10.1177/1059840520972003>
- Asada, Y., Hughes, A., & Chriqui, J. (2017). Insights on the intersection of health equity and school nutrition policy implementation: An exploratory qualitative secondary analysis. *Health Education & Behavior*, *44*(5), 685–695.
<https://doi.org/10.1177/1090198117723961>
- Asia Alvarez Zeller & Brandon Taylor. (2019, March 7). Unequal penalties. *Eugene Weekly*. <https://www.eugeneweekly.com/2019/03/07/unequal-penalties/>
- Barnert, E. S., Perry, R., & Morris, R. E. (2016). Juvenile incarceration and health. *Academic Pediatrics*, *16*(2), 99–109. <https://doi.org/10.1016/j.acap.2015.09.004>
- Barnes, J. C., & Motz, R. T. (2018). Reducing racial inequalities in adulthood arrest by reducing inequalities in school discipline: Evidence from the school-to-prison pipeline. *Developmental Psychology*, *54*(12), 2328–2340.
<https://doi.org/10.1037/dev0000613>
- Bauer, L. (2020, July 9). About 14 million children in the US are not getting enough to eat. *Brookings*. <https://www.brookings.edu/blog/up-front/2020/07/09/about-14-million-children-in-the-us-are-not-getting-enough-to-eat/>
- Blom, L. C., & Kolbo, J. (2011). Associations between Health-Related Physical Fitness, Academic Achievement and Selected Academic Behaviors of Elementary and Middle School Students in the State of Mississippi. *Journal of Research*, *6*(1), 7.
- Bradley, B. J., & Greene, A. C. (2013). Do health and education agencies in the United States share responsibility for academic achievement and health? A review of 25 years of evidence about the relationship of adolescents' academic achievement and health behaviors. *Journal of Adolescent Health*, *52*(5), 523–532.
<https://doi.org/10.1016/j.jadohealth.2013.01.008>
- Bryan, N. (2017). White teachers' role in sustaining the school-to-prison pipeline: recommendations for teacher education. *The Urban Review*, *49*(2), 326–345.
<https://doi.org/10.1007/s11256-017-0403-3>
- Burke, A., & Nishioka, V. (2014). *Suspension and expulsion patterns in six Oregon school districts (REL 2014–028)*. U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Northwest.
- Byrd, K. L. (2019). *An Analysis of Local Public Health Policy Development in Addressing Wellness for Girls of Color in Boston Public Schools* [Doctoral dissertation]. Harvard Medical School.
- Carlson, J. A., Sallis, J. F., Chriqui, J. F., Schneider, L., McDermid, L. C., & Agron, P. (2013). State policies about physical activity minutes in physical education or during school. *Journal of School Health*, *83*(3), 150–156.
<https://doi.org/10.1111/josh.12010>

- Caspi, C. E., Davey, C., Nelson, T. F., Larson, N., Kubik, M. Y., Coombes, B., & Nanney, M. S. (2015). Disparities persist in nutrition policies and practices in minnesota secondary schools. *Journal of the Academy of Nutrition and Dietetics*, *115*(3), 419-425.e3. <https://doi.org/10.1016/j.jand.2014.08.029>
- Centeio, E. E., Cance, J. D., Barcelona, J. M., & Castelli, D. M. (2018). Relationship between health risk and school attendance among adolescents. *American Journal of Health Education*, *49*(1), 28–32. <https://doi.org/10.1080/19325037.2017.1360810>
- Centers for Disease Control and Prevention. (2021, March 23). *Whole School, Whole Community, Whole Child*. CDC Healthy Schools. <https://www.cdc.gov/healthyschools/wscc/index.htm>
- Chriqui, J. F., Resnick, E., Schermbeck, R., Adock, T., Carrion, V., & Chaloupka, F. J. (2013). *School District Wellness Policies: Evaluating Progress and Potential for Improving Children’s Health Five Years after the Federal Mandate. School Years 2006–07 through 2010-11* (Bridging the Gap Program). University of Illinois at Chigcao.
- Civil Rights Data Collection. (2021). *Master List of CRDC Definitions 2017—2018*. <https://crdc.grads360.org/services/PDCService.svc/GetPDCDocumentFile?fileId=41241>
- DeFosset, A. R., Sivashanmugam, M., Gase, L. N., Lai, E., Tan, G., & Kuo, T. (2020). Local school wellness policy as a means to advance Whole School, Whole Community, Whole Child: Assessing alignment in Los Angeles County. *Journal of School Health*, *90*(2), 127–134. <https://doi.org/10.1111/josh.12855>
- Eggert, E., Overby, H., McCormack, L., & Meendering, J. (2018). Use of a model wellness policy may not increase the strength and comprehensiveness of written school wellness policies. *Journal of School Health*, *88*(7), 516–523. <https://doi.org/10.1111/josh.12635>
- Fabes, R. A., Catherine, E., Quick, M., Blevins, D., & Musgrave, A. (2021). The price of punishment: Days missed due to suspension in U.S. K–12 public schools. *Psychology in the Schools*, *58*(10), 1980–1994. <https://doi.org/10.1002/pits.22565>
- Fox, J. D. (2016). *Applied Regression Analysis and Generalized Linear Models* (3rd ed.). SAGE Publications.
- Francis, E., Hivner, E., Hoke, A., Ricci, T., Watach, A., & Kraschnewski, J. (2018). Quality of local school wellness policies for physical activity and resultant implementation in Pennsylvania schools. *Journal of Public Health*, *40*(3), 591–597. <https://doi.org/10.1093/pubmed/fox130>
- Freudenberg, N., & Ruglis, J. (2007). Reframing school dropout as a public health issue. *preventing chronic Disease*, *4*(4), 11.
- Gage, N. A., Larson, A., Sugai, G., & Chafouleas, S. M. (2016). Student perceptions of school climate as predictors of office discipline referrals. *American Educational Research Journal*, *53*(3), 492–515. <https://doi.org/10.3102/0002831216637349>
- Galler, J. R., Koethe, J. R., & Yolken, R. H. (2017). Neurodevelopment: The impact of nutrition and inflammation during adolescence in low-resource settings. *Pediatrics*, *139*(Supplement 1), S72–S84. <https://doi.org/10.1542/peds.2016-2828I>

- Golzari, M., Hunt, S., & Anoshiravani, A. (2006). The health status of youth in juvenile detention facilities. *Journal of Adolescent Health, 38*(6), 776–782. <https://doi.org/10.1016/j.jadohealth.2005.06.008>
- Gottfried, M. A., Kirksey, J. J., & Wright, A. (2019). Same-race student–teacher: Comparing outcomes for kindergartners with and without disabilities. *Remedial and Special Education, 40*(4), 225–235. <https://doi.org/10.1177/0741932518810870>
- Haines, J., Haycraft, E., Lytle, L., Nicklaus, S., Kok, F. J., Merdji, M., Fisberg, M., Moreno, L. A., Goulet, O., & Hughes, S. O. (2019). Nurturing children’s healthy eating: Position statement. *Appetite, 137*, 124–133. <https://doi.org/10.1016/j.appet.2019.02.007>
- Harvey, S. P., Markenson, D., & Gibson, C. A. (2018). Assessing school wellness policies and identifying priorities for action: Results of a bi-state evaluation. *Journal of School Health, 88*(5), 359–369. <https://doi.org/10.1111/josh.12619>
- Ickovics, J. R., Duffany, K. O., Shebl, F. M., Peters, S. M., Read, M. A., Gilstad-Hayden, K. R., & Schwartz, M. B. (2019). Implementing school-based policies to prevent obesity: Cluster randomized trial. *American Journal of Preventive Medicine, 56*(1), e1–e11. <https://doi.org/10.1016/j.amepre.2018.08.026>
- Isaacs, E., Oates, J., & ILSI Europe a.i.s.b.l. (2008). Nutrition and cognition: Assessing cognitive abilities in children and young people. *European Journal of Nutrition, 47*(S3), 4–24. <https://doi.org/10.1007/s00394-008-3002-y>
- Krezmien, M. P., Leone, P. E., Zablocki, M. S., & Wells, C. S. (2010). Juvenile court referrals and the public schools: Nature and extent of the practice in five states. *Journal of Contemporary Criminal Justice, 26*(3), 273–293. <https://doi.org/10.1177/1043986210368642>
- Lindsay, C. A., & Hart, C. M. D. (2017). Exposure to same-race teachers and student disciplinary outcomes for black students in north carolina. *Educational Evaluation and Policy Analysis, 39*(3), 485–510. <https://doi.org/10.3102/0162373717693109>
- Lyn, R., O’Meara, S., Hepburn, V. A., & Potter, A. (2012). Statewide evaluation of local wellness policies in Georgia: An examination of policy compliance, policy strength, and associated factors. *Journal of Nutrition Education and Behavior, 44*(6), 513–520. <https://doi.org/10.1016/j.jneb.2010.12.001>
- Malawa, Z., Gaarde, J., & Spellen, S. (2021). Racism as a root cause approach: A new framework. *Pediatrics, 147*(1), e2020015602. <https://doi.org/10.1542/peds.2020-015602>
- Mallett, C. A. (2016). The school-to-prison pipeline: A critical review of the punitive paradigm shift. *Child and Adolescent Social Work Journal, 33*(1), 15–24. <https://doi.org/10.1007/s10560-015-0397-1>
- Massoglia, M. (2008). Incarceration, health, and racial disparities in health. *Law & Society Review, 42*(2), 275–306. <https://doi.org/10.1111/j.1540-5893.2008.00342.x>
- Massoglia, M., & Pridemore, W. A. (2015). Incarceration and health. *Annual Review of Sociology, 41*(1), 291–310. <https://doi.org/10.1146/annurev-soc-073014-112326>

- McQueenie, R., Ellis, D. A., Fleming, M., Wilson, P., & Williamson, A. E. (2021). Educational associations with missed GP appointments for patients under 35 years old: Administrative data linkage study. *BMC Medicine*, *19*(1), 219. <https://doi.org/10.1186/s12916-021-02100-7>
- Meendering, J., Kranz, E., Shafrath, T., & McCormack, L. (2016). Bigger ≠ better: The comprehensiveness and strength of school wellness policies varies by school district size. *Journal of School Health*, *86*(9), 653–659. <https://doi.org/10.1111/josh.12419>
- Metos, J., & Murtaugh, M. (2011). Words or reality: Are school district wellness policies implemented? A systematic review of the literature. *Childhood Obesity*, *7*(2), 90–100. <https://doi.org/10.1089/chi.2011.07.02.0514.metos>
- Metos, J., & Nanney, M. S. (2007). The strength of school wellness policies: One state’s experience. *Journal of School Health*, *77*(7), 367–372. <https://doi.org/10.1111/j.1746-1561.2007.00221.x>
- Mitchell, M. M., & Bradshaw, C. P. (2013). Examining classroom influences on student perceptions of school climate: The role of classroom management and exclusionary discipline strategies. *Journal of School Psychology*, *51*(5), 599–610. <https://doi.org/10.1016/j.jsp.2013.05.005>
- Mullet, J. H. (2014). Restorative discipline: From getting even to getting well. *Children & Schools*, *36*(3), 157–162. <https://doi.org/10.1093/cs/cdu011>
- Nanney, M. S., Davey, C. S., & Kubik, M. Y. (2013). Rural disparities in the distribution of policies that support healthy eating in us secondary schools. *Journal of the Academy of Nutrition and Dietetics*, *113*(8), 1062–1068. <https://doi.org/10.1016/j.jand.2013.04.021>
- National Center for Education Statistics. (2020). *The Condition of Education 2020* (NCES 2020144). https://nces.ed.gov/programs/coe/indicator_coi.asp
- Nishioka, V., Merrill, B., & Hanson, H. (2021). *Changes in Exclusionary and Nonexclusionary Discipline in Grades K–5 Following State Policy Reform in Oregon (REL 2021-061)* (p. 16). U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Northwest. <http://ies.ed.gov/ncee/edlabs>
- Nishioka, V., Stevens, D., Deutschlander, D., Burke, A., Merrill, B., & Aylward, A. (2020). *Are State Policy Reforms in Oregon Associated with Fewer School Suspensions and Expulsions?* 21.
- Office for Civil Rights. (2021). *Civil Rights Data Collection*. Wide-Ranging Education Data Collected from Our Nation’s Public Schools. <https://ocrdata.ed.gov>
- Office of Accountability, Research, & Information Services. (2017). *Student and Teacher Race/Ethnicity* (p. 3) [Data Brief]. Oregon Department of Education. https://www.oregon.gov/ode/reports-and-data/Documents/databrief_student_teacher_raceethnicity.pdf
- Office of Disease Prevention and Health Promotion. (2020). *Healthy People 2030*. <https://health.gov/healthypeople/objectives-and-data/browse-objectives/sleep/increase-proportion-adults-who-get-enough-sleep-sh-03>

- Oregon Department of Education. (2019). *Student Enrollment Reports*.
<https://www.oregon.gov/ode/reports-and-data/students/Pages/Student-Enrollment-Reports.aspx>
- Oregon Department of Education. (2021). *At-A-Glance Profiles and Accountability Details*. <https://www.ode.state.or.us/data/reportcard/reports.aspx>
- Osborne, N. (2015). Intersectionality and kyriarchy: A framework for approaching power and social justice in planning and climate change adaptation. *Planning Theory*, *14*(2), 130–151. <https://doi.org/10.1177/1473095213516443>
- Palmer, N. A., & Greytak, E. A. (2017). LGBTQ student victimization and its relationship to school discipline and justice system involvement. *Criminal Justice Review*, *42*(2), 163–187. <https://doi.org/10.1177/0734016817704698>
- Posadzki, P., Pieper, D., Bajpai, R., Makaruk, H., Könsgen, N., Neuhaus, A. L., & Semwal, M. (2020). Exercise/physical activity and health outcomes: An overview of Cochrane systematic reviews. *BMC Public Health*, *20*(1), 1724. <https://doi.org/10.1186/s12889-020-09855-3>
- Pyle, N., Flower, A., Fall, A. M., & Williams, J. (2016). Individual-level risk factors of incarcerated youth. *Remedial and Special Education*, *37*(3), 172–186. <https://doi.org/10.1177/0741932515593383>
- Ragavan, M. I., Marcil, L. E., & Garg, A. (2020). Climate change as a social determinant of health. *Pediatrics*, *145*(5), e20193169. <https://doi.org/10.1542/peds.2019-3169>
- Rasheed, D. S., Brown, J. L., Doyle, S. L., & Jennings, P. A. (2020). The effect of teacher–child race/ethnicity matching and classroom diversity on children’s socioemotional and academic skills. *Child Development*, *91*(3). <https://doi.org/10.1111/cdev.13275>
- Redding, C. (2019). A teacher like me: A review of the effect of student–teacher racial/ethnic matching on teacher perceptions of students and student academic and behavioral outcomes. *Review of Educational Research*, *89*(4), 499–535. <https://doi.org/10.3102/0034654319853545>
- Rudd Center. (2018). *WellSAT: Rudd Center*. Rudd Center. <http://www.wellsat.org/>
- Schwartz, M. B., Lund, A. E., Grow, H. M., McDonnell, E., Probart, C., Samuelson, A., & Lytle, L. (2009). A comprehensive coding system to measure the quality of school wellness policies. *Journal of the American Dietetic Association*, *109*(7), 1256–1262. <https://doi.org/10.1016/j.jada.2009.04.008>
- Schwartz, M. B., Piekarz-Porter, E., Read, M. A., & Chriqui, J. F. (2020). Wellness School Assessment Tool Version 3.0: An updated quantitative measure of written school wellness policies. *Preventing Chronic Disease*, *17*, 190373. <https://doi.org/10.5888/pcd17.190373>
- Sember, V., Jurak, G., Kovač, M., Morrison, S. A., & Starc, G. (2020). Children’s physical activity, academic performance, and cognitive functioning: a systematic review and meta-analysis. *Frontiers in Public Health*, *8*, 1–17. <https://doi.org/10.3389/fpubh.2020.00307>
- Sinkey, A., & Curry-Stevens, A. (2015). *Disaggregating Student Outcomes by Race and Income: Educational Equity in Oregon* (p. 63). : Center to Advance Racial Equity, Portland State University.

- Skowrya, K. R., & Coccozza, J. J. (2004). *Blueprint for Change* (p. 140). National Center for Mental Health and Juvenile Justice.
http://www.antonioacasella.eu/archipsy/Blueprint_2007.pdf
- Snapp, S. D., Hoenig, J. M., Fields, A., & Russell, S. T. (2015). Messy, butch, and queer: LGBTQ youth and the school-to-prison pipeline. *Journal of Adolescent Research, 30*(1), 57–82. <https://doi.org/10.1177/0743558414557625>
- Sullivan, A. L., Van Norman, E. R., & Klingbeil, D. A. (2014). Exclusionary discipline of students with disabilities: Student and school characteristics predicting suspension. *Remedial and Special Education, 35*(4), 199–210.
<https://doi.org/10.1177/0741932513519825>
- The Lancet Public Health. (2020). Education: A neglected social determinant of health. *The Lancet Public Health, 5*(7), e361. [https://doi.org/10.1016/S2468-2667\(20\)30144-4](https://doi.org/10.1016/S2468-2667(20)30144-4)
- Trudeau, F., & Shephard, R. J. (2008). Physical education, school physical activity, school sports and academic performance. *International Journal of Behavioral Nutrition and Physical Activity, 5*(1), 10. <https://doi.org/10.1186/1479-5868-5-10>
- Viner, R. M., Ozer, E. M., Denny, S., Marmot, M., Resnick, M., Fatusi, A., & Currie, C. (2012). Adolescence and the social determinants of health. *The Lancet, 379*(9826), 1641–1652. [https://doi.org/10.1016/S0140-6736\(12\)60149-4](https://doi.org/10.1016/S0140-6736(12)60149-4)
- Vinson, S. Y., & Waldman, R. J. (2020). The pandemic paused the US school-to-prison pipeline: Potential lessons learned. *The Lancet Child & Adolescent Health, 4*(11), 799–800. [https://doi.org/10.1016/S2352-4642\(20\)30306-0](https://doi.org/10.1016/S2352-4642(20)30306-0)
- Vish, N. L., & Stolfi, A. (2020). Relationship of children’s emotional and behavioral disorders with health care utilization and missed school. *Academic Pediatrics, 20*(5), 687–695. <https://doi.org/10.1016/j.acap.2020.02.017>
- Wald, J., & Losen, D. J. (2003). Defining and redirecting a school-to-prison pipeline. *New Directions for Youth Development, 2003*(99), 9–15.
<https://doi.org/10.1002/yd.51>
- Welk, G. J., Jackson, A. W., Morrow, J. R., Haskell, W. H., Meredith, M. D., & Cooper, K. H. (2010). The association of health-related fitness with indicators of academic performance in Texas schools. *Research Quarterly for Exercise and Sport, 81*(sup3), S16–S23. <https://doi.org/10.1080/02701367.2010.10599690>
- Yearby, R. (2020). Structural racism and health disparities: Reconfiguring the social determinants of health framework to include the root cause. *Journal of Law, Medicine & Ethics, 48*(3), 518–526. <https://doi.org/10.1177/1073110520958876>