



Operations Manual

University of California, Berkeley
School of Public Health

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35 INTRODUCTION

36

37 The Fit Study is a three-year, cluster-randomized controlled trial that will evaluate the impact of school-based
38 body mass index (BMI) screening and reporting on pediatric obesity in California. The study will also evaluate
39 the impact of BMI screening on stigmatization, weight-based teasing, and body satisfaction among students.
40 We will enroll 79 elementary and middle schools in California and randomize them to one of three groups: 1)
41 BMI screening and reporting, 2) BMI screening only, 3) no BMI screening or reporting (control). The Fit Study
42 has the following 3 specific aims:

- 43 • Aim 1: To prospectively determine the impact of school-based BMI screening and reporting on
44 pediatric obesity and obesity disparities.
- 45 • Aim 2: To prospectively compare the impact of reporting BMI alone versus reporting BMI with fitness
46 test results on pediatric obesity and fitness.
- 47 • Aim 3: To determine the extent to which BMI screening and reporting have unintended consequences
48 on weight-based stigmatization among children and adolescents.

49

50 BACKGROUND

51

52 Obesity remains the United States' greatest public health crisis. Disparities in pediatric obesity by
53 race/ethnicity are increasing, such that significant cost, morbidity, and mortality will be disproportionately
54 borne by low-income communities and communities of color.¹ While the Institute of Medicine recommends
55 school-based body mass index (BMI) screening as a tool to address obesity among diverse youth,² the Centers
56 for Disease Control and Prevention do not, citing a lack of evidence to support its effect.³ We undertook the
57 first large-scale study to examine the impact of school-based BMI screening and reporting on pediatric obesity
58 at the population level. Taking advantage of a natural experiment conducted in California, which mandates
59 annual BMI screening in public schools but makes reporting results to parents optional, we demonstrated that
60 current methods of school-based BMI reporting had no impact on pediatric obesity.⁴ Further analyses
61 suggested that current reporting methods in California, which report BMI with results from five fitness tests
62 (mile run or PACER, curl-ups, push-ups, trunk lift, and sit and reach), are unlikely to be understood by parents.
63 Typically, schools that report child results do so via a letter sent home to parents, but these letters do not
64 include a weight status classification (e.g., healthy, overweight, obese) or commentary on what parents might
65 to do improve their child's weight status.⁵ Additionally, many letters do not explain what BMI is or that a lower
66 BMI score is more desirable (in contrast to scores for push-ups, curl-ups, etc.). Without prior knowledge of
67 BMI, parents may be challenged to decipher meaning from these letters. This study will evaluate the impact of
68 sending an optimized BMI report to parents on rates of pediatric obesity in California.

69 While BMI screening and reporting may address obesity, numerous experts have raised concerns regarding its
70 potential to increase weight-based stigmatization.⁶⁻⁸ Evidence linking BMI screening and reporting to
71 stigmatization is sparse, but a case report⁹ and two small studies^{10,11} suggest a causal relationship. Additionally,
72 parent reports^{10,12} and student self-reports¹³ suggest unhealthy weight control behaviors increase subsequent
73 to BMI reports, though no studies have assessed the persistence of these behaviors. This study will provide
74 robust evidence about the impact of BMI screening on stigmatization, teasing, and weight control behaviors,
75 thus allowing for truly informed discussions of risks versus benefits with BMI screening and reporting.

76

77 FOCUS GROUPS

78

79 In April and May 2014, we will conduct focus groups with parents of elementary and middle school students in
80 the Bay Area. The purpose of these focus groups will be to obtain feedback regarding the development of an
81 optimized BMI report. In order to target the parents of overweight youth, we will recruit parents from Bay
82 Area schools at which more than 50% of students fell outside the Healthy Fitness Zone for body composition
83 during the 2012-13 school year. We will require that participating parents have a child in elementary or middle
84 school to match our study population.

85 We will conduct focus groups with each of the following race/ethnic groups: African American, Asian American,
86 Caucasian, and Latino. Table 1 presents suggested numbers of focus groups for each race/ethnic group based
87 on the race/ethnic breakdown of students enrolled in our top 12 priority school districts. As a result, we will
88 conduct 4 focus groups with Latino parents, 2 focus groups with Caucasian parents, 1 focus group with Asian
89 American parents, and 1 focus group with African American parents. We will conduct two of our Latino focus
90 groups in Spanish given that views on BMI reports in the Latino community may differ according to level of
91 acculturation. We will aim to include 8-12 parents in each focus group.

92 **Table 1. Number of focus groups to conduct based on race/ethnicity breakdown in priority school districts.**

African American	Asian American	Caucasian	Latino
0.83	0.80	1.63	4.12

93 Results are based on race/ethnicity data obtained from DataQuest for the 2012-13 school year.

94 We will use personal contacts at local elementary and middle schools to reach parents who currently have at
95 least one child in elementary or middle school and who self-identify as African American, Asian American,
96 Caucasian, or Latino. Our contacts will distribute recruitment fliers among parents and ask them to contact our
97 focus group coordinator if they are interested in participating. We will hold focus groups during the school day
98 or during the early evening, depending on parent preference. Focus groups will take place on school premises
99 (with permission from the school). We will provide parents with food, childcare, and a \$20 gift card to Target.
100 We will ask parents for 2 hours of their time, though the focus group discussion should only last 1 hour.
101 Personal contacts who help us coordinate focus groups will receive a \$25 Target gift card as a thank you.

102 During focus groups, the leader will prompt discussion about the following aspects of the BMI reports:

- 103 • Terminology used to define weight categories
- 104 • Inclusion of BMI and height/weight data versus only height/weight data
- 105 • Pictorial representation of student weight status
- 106 • Use of the child's name on the visual weight status scale
- 107 • Physical activity and nutrition resources
- 108 • Presentation of fitness test results

109

110 The focus group leader will also ask parents for general thoughts on how to make the BMI report
111 understandable and actionable for parents of all literacy levels and socioeconomic strata. If parents have
112 previously received a report with their child's FITNESSGRAM® results, we will ask for their reactions to
113 receiving the report.

114

115 Once we have developed final versions of the BMI reports, we will have several Spanish-speaking parents
116 review the Spanish translation to make sure it is grammatically correct and culturally appropriate.

117

118 **STUDY SAMPLE**

119 **School District Eligibility and Recruitment**

120 We will select five school districts across California for participation in this study. We will select at least one
121 district from Southern, Central, and Northern California to achieve geographic representation of schools across
122 the state. School districts (Table 2, next page) will be eligible to participate in The Fit Study if they meet the
123 following criteria:

- 124 1. District does not report BMI results to parents and has no history of doing so
- 125 2. District has at least eight schools that meet all of the school-level eligibility criteria (See *Eligibility and*
126 *Recruitment*)

127

128 We will prioritize enrolling districts that have at least eight schools with over 50% of students eligible for FRPM
129 and more than 75 students in grades 3 through 8 (See *School Eligibility and Recruitment* for rationale). We will
130 avoid recruiting districts that require written parent consent for research involving students.¹ We will also
131 avoid districts with specific research priorities that do not align with our study.² Districts that we will prioritize
132 during recruitment based on the aforementioned factors are bolded and highlighted in Table 2.

133 Our recruitment coordinator will begin recruiting districts by mailing a recruitment letter, district
134 Memorandum of Understanding (MOU), and study description to superintendents. Our recruitment
135 coordinator will then follow up with an email and a phone call. When needed, the recruitment coordinator will
136 visit district offices in-person to speak with the Superintendent. If a school district declines to participate in The
137 Fit Study, our recruitment coordinator will contact the next school district on the recruitment list. Recruitment
138 will continue until five schools districts have agreed to participate in the study, with at least one district from
139 each region of California.

140 **School Eligibility and Recruitment**

141 We will enroll 13-19 schools per district, for a total of 79 study schools. Schools will be eligible to participate in
142 The Fit Study if they meet the following three eligibility criteria:

- 143 • School does not report BMI results to parents and has no history of doing so
- 144 • School has an enrollment of 15% to 85% Latino students
- 145 • School has an enrollment of at least 30 students in grades 3 through 8

146 We will require that schools have an enrollment of 15% to 85% Latino students in order to facilitate analyses of
147 obesity disparities, which will require a fairly balanced enrollment of Latino and non-Latino youth. To maximize
148 efficiency in enrollment, we are including a minimum enrollment criterion of 30 students per grade, though we
149 will prioritize schools with at least 75 students per grade. We will also prioritize schools in which greater than
150 50% of students are eligible for FRPM in order to target low-income communities with higher rates of obesity-
151 related health risks. Lastly, to maximize the number of students who we can follow for two years, we will
152 prioritize the enrollment of K-6, K-8, and 6-8 schools over K-5 and 7-8 schools.

¹ We omitted Fresno Unified School District from our list of eligible school districts for this reason.

² We omitted Garden Grove Unified School District from our list of eligible school districts for this reason.

153 **Table 2. School districts that do not notify parents of FITNESSGRAM® results and have at least eight schools meeting *The Fit Study* eligibility criteria.**

	Number of schools meeting 3 required enrollment criteria*	Number of schools meeting 3 req. criteria & >50% FRPM*	Number of schools meeting 3 req. criteria & >75 students per grade*	Number of schools meeting 3 req. criteria, >75 stud, & > 50% FRPM*	Number of K-5 schools [†]	Number of K-6 schools [†]	Number of K-8 schools [†]	Number of 5-8 schools [†]	Number of 6-8 schools [†]
NORTHERN									
Lodi Unified	23	21	12	11	2	28	2	0	0
Manteca Unified	16	13	9	7	0	1	20	0	0
Mt. Diablo Unified	15	8	7	4	30	1	0	0	10
Napa Valley Unified	12	2	7	1	17	2	0	0	5
Oak Grove Elementary	9	2	6	2	0	15	0	1	1
Sacramento City Unified	41	38	17	15	0	49	11	2	0
San Jose Unified	11	2	8	1	25	0	2	1	6
Stockton Unified	25	25	9	9	2	0	40	0	2
Twin Rivers Unified	31	31	12	12	0	24	4	1	2
CENTRAL									
Fresno Unified	48	44	26	25	1	62	4	2	2
Merced City Elementary	11	10	9	8	12	0	1	0	4
Panama Buena-Vista Union	21	16	19	14	0	18	0	1	3
Visalia Unified	21	18	14	13	0	25	0	0	0
SOUTHERN									
ABC Unified	13	9	7	3	0	18	0	0	1
Alhambra Unified	9	8	6	5	0	0	13	0	0
Alta Loma Elementary	10	0	7	0	0	8	0	0	1
Apple Valley Unified	9	9	4	4	0	7	3	0	0
Bonita Unified	9	2	4	1	8	0	0	0	2
Capistrano Unified	12	4	7	2	37	0	2	0	12
Garden Grove Unified	26	25	14	14	0	41	3	0	2
Menifee Union Elementary	13	2	11	2	8	0	0	0	2
Moreno Valley Unified	14	14	13	13	21	2	0	3	0
Pasadena Unified	14	10	7	6	7	10	3	0	1
Saddleback Valley Unified	10	3	6	0	0	23	0	0	0
Westside Union Elementary	9	3	6	1	0	6	4	0	2

154 = Priority school district due to large number of schools that meet required & preferred eligibility criteria.

155 *Based on 2012-13 data obtained from DataQuest; †Based on 2010-11 data obtained from DataQuest.

156 When required, we will submit a research application to district research departments. When we've received a
 157 signed MOU from a school district, our recruitment coordinator will begin recruiting eligible schools. Our
 158 recruitment coordinator will first mail a recruitment letter, a school-level MOU, and a study description to
 159 school principals. She will then follow up with an email and a phone call. If necessary, the recruitment
 160 coordinator will visit schools in person. If a school declines to participate in the study, our recruitment
 161 coordinator will select another school from the list of eligible schools. Schools that agree to participate will sign
 162 the MOU appropriate for their school type.

163 **Student Eligibility and Recruitment**

164 All students in grades 3 through 8 will be eligible to participate in this study. Students will be recruited via an
 165 information sheet sent home to families (See *Parent consent* for distribution schedule) via the most reliable
 166 delivery mode (as determined by schools). Delivery modes may include sending the information sheet home in
 167 a homework folder, emailing it to parents, or mailing it home via US mail. Our research team will translate
 168 information letters into any languages that schools typically use when sending information home to parents.

169

170 **CONSENT**


171 **Parent Consent**

172 We have obtained a waiver of parent permission from UC Berkeley's Committee for the Protection of Human
 173 Subjects for this study. However, the study information sheet sent to parents will have an attached opt-out
 174 form that parents may sign if they DO NOT want their student to participate in the study. While we recognize
 175 that the opt-out method creates additional work for parents who don't want their child to participate in the
 176 study, we also recognize that greater levels of stress in many low-income families can make it difficult for
 177 parents to manage all forms that need to be returned to school. Since there is a strong correlation between
 178 lower household income and childhood obesity, we worry that requiring parents to return a form for their
 179 child to participate would result in the systematic exclusion of the students at greatest risk for obesity and
 180 weight-based stigmatization. Because the study poses minimal risk to students, we have elected to use the
 181 opt-out method to produce a more representative sample.

182 **Informing parents at intervention schools.** Table 3 depicts the schedule for distributing information sheets
 183 and opt-out forms to students at intervention schools. In August 2014 (Year 1), parents of 4th-7th grade
 184 students will receive information sheets describing all future study activities and opt-out forms. Third grade
 185 students will receive these forms In January 2015 (Year 1) since they will not participate in the fall 2014 survey.
 186 In August 2015 (Year 2), we will provide information sheets and opt-out forms to the parents of incoming 6th
 187 grade students at 6-8 schools and 7th grade students at 7-8 schools; we will do this for 3rd grade students in
 188 January 2016. We will not enroll any students during Year 3 since those students would only contribute one
 189 year of data.

190 **Table 3. Distribution of student consent forms for INTERVENTION schools according to school type.**

School type	August 2014						January 2015						August 2015						January 2016					
	3 rd	4 th	5 th	6 th	7 th	8 th	3 rd	4 th	5 th	6 th	7 th	8 th	3 rd	4 th	5 th	6 th	7 th	8 th	3 rd	4 th	5 th	6 th	7 th	8 th
K-5		✓					✓							✓					✓					
K-6		✓	✓				✓							✓	✓				✓					
K-8		✓	✓	✓	✓		✓							✓	✓	✓	✓	✓						
6-8				✓	✓											✓	✓							
7-8					✓												✓							

191  = Consent forms distributed to NEW students only.

192 **Informing parents at control schools.** Table 4 depicts the schedule for distributing information sheets and
 193 opt-out forms to students at control schools. In August 2014 (Year 1), parents of all 4th-7th grade students will
 194 receive information sheets describing all future study activities and opt-out forms. In August 2015 (Year 2) and
 195 August 2016 (Year 3), we will provide information sheets and opt-out forms to the parents of incoming 4th
 196 grade students at K-5, K-6, and K-8 schools. We will enroll 4th grade students at control schools in Year 3 to
 197 increase our power for a cross-sectional comparison of BMI among students who had their BMI measured for
 198 two school years (Groups 1 and 2) versus those who did not (Group 3). Third grade students at control schools
 199 will not participate in the study.

200 **Table 4. Distribution of student consent forms for CONTROL schools according to school type.**

School type	August 2014					August 2015*					August 2016				
	4 th	5 th	6 th	7 th	8 th	4 th	5 th	6 th	7 th	8 th	4 th	5 th	6 th	7 th	8 th
K-5	✓					✓					✓				
K-6	✓	✓				✓					✓				
K-8	✓	✓	✓	✓		✓					✓				
6-8			✓	✓											
7-8				✓											

201 *We did not enroll new students in grades 5-7 in August 2015 at control schools.

202 **Student Assent**

203 Using the student survey script, we will obtain verbal assent from students prior to their participation in the
 204 student survey, excluding those whose parents signed an opt-out form. We have obtained a waiver of verbal
 205 assent for student participation in height, weight, and fitness assessments, given that they are already
 206 required in California public schools. If we sought verbal assent for the height and weight measurements,
 207 overweight children may selectively decline to participate, impairing our ability to assess the impact of BMI
 208 reporting on the youth most in need.

209

210 **RANDOMIZATION**

211 Randomization will take place in Fall 2014 after schools are recruited. We will do stratified random sampling
 212 based on school type (elementary vs. non-elementary), allowing us to achieve a balanced distribution of
 213 students from each grade level in each group. Professor Chuck McCulloch, the study's biostatistcian, will
 214 provide an Excel spreadsheet that uses a random number generator to allocate schools to the study arms using
 215 a random number generator.

216 **Study Design**

217 **School randomization.** The Fit Study is a cluster-randomized controlled trial. We will randomize 79
 218 elementary and middle schools in California to one of three groups (27 schools in Groups 1 and 2; 25 schools in
 219 Group 3):

- 220 • Group 1: BMI screening and reporting
 - 221 ○ Students in 3rd-8th grade will have their heights and weights measured and their BMIs
 - 222 calculated annually. Parents will receive a report with their students' BMI results (and possibly
 - 223 fitness test results).
- 224 • Group 2: BMI screening only
 - 225 ○ Students in 3rd-8th grade will have their heights and weights measured and their BMIs
 - 226 calculated annually. Parents will not receive reports with their students' BMI results.
- 227 • Group 3: No BMI screening or reporting (Control)

- 228 ○ Students in 3rd-8th grade will not have their heights and weights measured during the 2014-15
229 and 2015-16 school years.

230 **Student randomization.** We will further randomize 5th-8th grade students at Group 1 schools such that their
231 parents receive either a BMI-only or BMI+fitness report. This randomization will not apply to 3rd and 4th grade
232 students since they will not participate in the fitness tests.

233 **Obtaining a Waiver from CDE**

234 In Fall 2014, we will apply for a waiver that will exempt our 25 control schools from conducting state-
235 mandated height and weight measurements on their 5th and 7th grade students during the 2014-15 and 2015-
236 16 school years. This process will involve obtaining approval from each district's school board and teachers'
237 union president. School board meetings that discuss the waiver approval must be advertised in the local
238 newspaper so that community members have the opportunity to make a public comment. The waiver process
239 will also involve obtaining approval from each school site council. Once these approvals have been obtained
240 for all control schools in a given district, a waiver should be submitted via the CDE's online waiver portal, found
241 here: <http://www.cde.ca.gov/re/lr/wr/submit.asp>. Christine Gordon-Plumb may be contacted for questions
242 regarding the waiver submission process: (916) 319-0823 or cgordon@cde.ca.gov.

243 **STUDY INCENTIVES**

244 **Schools.** Schools will receive a \$500 cash stipend annually for their participation in The Fit Study. Schools will
245 also receive a Tanita BWB 800S electronic scale, ShorrBoard stadiometer, and laminated instructional cards to
246 use when conducting height and weight measurements. Intervention schools will receive this equipment in
247 January 2015; control schools will receive this equipment in January 2017.

248 **Teachers/School staff.** Teachers (or other participating school staff) will receive a \$25 gift card to
249 Amazon.com or Target when they conduct height and weight measurements with a classroom of students.
250 Additionally, classroom teachers will receive a \$25 gift card to Amazon.com or Target each time our research
251 team visits a classroom to administer the student survey. Teachers with multiple classes can receive up to 24
252 gift cards (\$600) per assessment period. If they are allotted more than 24 gift cards, they can use the
253 remaining funds to purchase PE equipment or they can receive the funds as taxable income (per UC Berkeley
254 policy).

255 **School contact person.** During each year of the study, one person at all intervention schools will receive a
256 \$100 gift card to Amazon.com or Target for being our point of contact for the study. This individual will help us
257 schedule the fall student survey, communicate with teachers about spring assessments, and obtain school-
258 level data for us when needed. The point person at control schools will receive a \$50 gift card to Amazon.com
259 or Target during the 2014-15 and 2015-16 school years, when no height and weight measurements are
260 conducted. During the 2016-17 school year, when 4th-8th grade students at control schools participate in height
261 and weight measurements, this person will receive a \$100 gift card to Amazon.com or Target. As we have done
262 in other school-based studies, we will work with school principals to identify the best individual to assume this
263 role at each school.

264 **Students.** Students will not receive incentives for their participation in the study.

265 **Parents.** Parents who are mailed a parent survey (See *Study Measures*) will receive a \$1 bill (included with the
266 survey) to incentivize them to complete and return the survey.

267

268 **STUDY MEASURES**

269 Table 5 illustrates data collection activities for students based on the grades in which they will participate.

270 **Table 5. Student involvement in study procedures by year, according to grade cohort.**

Cohort	2014-2015		2015-2016		2016-2017	
	Fall	Spring	Fall	Spring	Fall	Spring
3rd & 4th grade			3 rd grade		4 th grade	
Group 1				BMI	Survey	BMI*
Group 2				BMI	Survey	BMI*
Group 3					Survey	BMI*
3rd - 5th grade	3 rd grade		4 th grade		5 th grade	
Group 1		BMI	Survey	BMI	Survey	BMI*+fitness°
Group 2		BMI	Survey	BMI	Survey	BMI*+fitness°
Group 3			Survey		Survey	BMI*+fitness°
4th - 6th grade	4 rd grade		5 th grade		6 th grade	
Group 1	Survey	BMI	Survey	BMI + fitness	Survey	BMI* + AC
Group 2	Survey	BMI	Survey	BMI + fitness	Survey	BMI* + AC
Group 3	Survey		Survey	Fitness only**	Survey	BMI* + AC
5th - 7th grade	5 th grade		6 th grade		7 th grade	
Group 1	Survey	BMI+fitness	Survey	BMI*+fitness	Survey	BMI+fitness
Group 2	Survey	BMI+fitness	Survey	BMI*+fitness	Survey	BMI+fitness
Group 3	Survey	Fitness only	Survey		Survey	BMI+fitness
6th - 8th grade	6 rd grade		7 th grade		8 th grade	
Group 1	Survey	BMI+fitness	Survey	BMI*+fitness	Survey	BMI* + AC
Group 2	Survey	BMI+fitness	Survey	BMI*+fitness	Survey	BMI* + AC
Group 3	Survey		Survey	Fitness only**	Survey	BMI* + AC
7th & 8th grade	7 th grade		8 th grade			
Group 1	Survey	BMI+fitness	Survey	BMI*+fitness		
Group 2	Survey	BMI+fitness	Survey	BMI*+fitness		
Group 3	Survey	Fitness only	Survey			

271 BMI: Student BMI assessed by school staff; BMI+fitness: full FITNESSGRAM® test administered by PE teachers; Fitness only: 5 fitness
 272 assessments of FITNESSGRAM® test completed (not BMI); AC: aerobic capacity test (one-mile run or PACER).

273 Survey: Survey completed by students and proctored by the research team.

274 * About 10 students per grade at 4 intervention schools will have their heights and weights measured by school staff AND the research
 275 team as part of the BMI validation study.

276 ** We will not collect these fitness data from control schools.

277 °Fitness data will be collected for students at K-6 and K-8 schools only, not students at K-5 schools.

278 **Height and Weight (BMI) Measurements**

279 *Schedule at intervention schools.* Each spring, 3rd-8th grade students at intervention schools (Groups 1 and
 280 2) will have their heights and weights measured by school personnel (i.e., classroom teachers, PE teachers,
 281 school nurses, etc.). Measurements will take place in February - April to coincide with California’s mandated
 282 FITNESSGRAM® assessments, which are required for students in 5th, 7th, and 9th grades. Table 6 depicts the
 283 grade levels that will participate in height and weight measurements during each year of the study according
 284 to school type. During Year 1, only students who are expected to complete an additional year at their school
 285 will participate in height and weight measurements. Additionally, only students with data during Year 2 will
 286 participate in height and weight measurements during Year 3.

287 *Schedule at control schools.* In Year 3 only, 4th-8th grade students at control schools (Group 3) will have their
 288 heights and weights measured by school personnel. The grades included in these measurements will match the
 289 grades participating in height and weight measurements at intervention schools during Year 3. By measuring
 290 the heights and weights of students in Group 3 schools during Year 3, we will be able to conduct a cross-

291 sectional comparison of BMI data from Group 3 schools with BMI data from Group 2 schools. This will allow us
 292 to explore the impact of BMI assessments alone (not including reporting) on student weight status.

293 **Table 6. Height and weight measurement schedule by study year and school type.**

School type	2014-2015						2015-2016						2016-2017					
	3 rd	4 th	5 th	6 th	7 th	8 th	3 rd	4 th	5 th	6 th	7 th	8 th	3 rd	4 th	5 th	6 th	7 th	8 th
Intervention Schools (Groups 1 and 2)																		
K-5	✓	✓					✓	✓	✓					✓	✓			
K-6	✓	✓	✓				✓	✓	✓	✓				✓	✓	✓		
K-8	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
6-8				✓	✓					✓	✓	✓					✓	✓
7-8					✓						✓	✓						✓
Control Schools (Group 3)																		
K-5														✓	✓			
K-6														✓	✓	✓		
K-8														✓	✓	✓	✓	✓
6-8																	✓	✓
7-8																		✓

294

295 **Assessment protocol.** School personnel (i.e., classroom teachers, PE teachers, school nurses, etc.) will
 296 conduct all height and weight measurements with their students. It is important that school staff conduct
 297 these measurements rather than research staff since we want to evaluate the impact of school-based BMI
 298 screening practices as they would typically occur. Despite training, school staff may not protect privacy as well
 299 as researchers, which might play a role in unintended harms. As stated in *Study Incentives*, schools will receive
 300 one Tanita BWB 800S scale and one ShorrBoard stadiometer to use when conducting height and weight
 301 measurements. Additionally, we will provide schools with laminated cards that provide instructions on how to
 302 conduct accurate height and weight measurements. Intervention schools will receive this equipment in
 303 January 2015; control schools will receive this equipment in January 2017. We expect that height and weight
 304 measurements will take 30-45 minutes per class, depending on the number of students.

305 **School staff training.** School personnel who conduct height and weight measurements will watch a 10-
 306 minute training video on how to accurately measure height and weight. Teachers will watch this video prior to
 307 conducting height and weight measurements, and we will require that each teacher watch this video at least
 308 once (returning teachers will be encouraged but not required to watch the video). The video will be available
 309 on our study website, and it will be imbedded in a Qualtrics survey, which will allow us to track which teachers
 310 watch the video. The video, developed by our research staff, will train school personnel to collect height to the
 311 nearest 0.1 cm and weight to the nearest 0.1 kg using a protocol adapted from NHANES that has been used in
 312 prior studies. At the end of the video, teachers will complete several review questions to ensure that they
 313 correctly understood the information presented in the video.

314 **Fitness Assessments**

315 **Schedule at intervention schools.** Each year, 5th-8th grade students at intervention schools will participate in
 316 the five fitness assessments that, in addition to body composition, comprise the FITNESSGRAM® test. Table 7
 317 depicts the grade levels that will participate in fitness assessments during each year of the study according to
 318 school type. Assessments will take place in February and March to coincide with California’s mandated
 319 FITNESSGRAM® assessments, which are required for students in 5th, 7th, and 9th grades. Only students with at
 320 least one year remaining at their school will participate in fitness assessments during Year 1. Additionally, only
 321 students with data during Year 2 will participate in fitness assessments during Year 3.


322

323 Third and 4th grade students will not participate in fitness assessments due to the fact that 3rd and 4th grade
 324 teachers do not typically conduct the FITNESSGRAM® test and doing so would add significant burden.
 325 Additionally, FITNESSGRAM® Healthy Fitness Zones do not exist for students under 10 years old. Although 6th
 326 and 8th grade students also do not typically participate in the FITNESSGRAM® test, middle school PE teachers
 327 have experience administering the test and therefore adding one grade will likely not pose a significant burden.

328 **Schedule at control schools.** Each year, 5th and 7th grade students at control schools will participate in the
 329 FITNESSGRAM®'s five fitness assessments as required by California Education Code 60800. During the 2014-15
 330 and 2015-16 school years, 5th and 7th grade students will abstain from participating in the body composition
 331 assessment (i.e., height and weight measurements).

332 **Table 7. Fitness assessment schedule by study year and school type.**

School type	2014-2015						2015-2016						2016-2017					
	3 rd	4 th	5 th	6 th	7 th	8 th	3 rd	4 th	5 th	6 th	7 th	8 th	3 rd	4 th	5 th	6 th	7 th	8 th
Intervention Schools (Groups 1 and 2)																		
K-5			✓						✓						✓			
K-6			✓					✓	✓					✓	AC			
K-8			✓	✓	✓			✓	✓	✓	✓			✓	AC	✓	AC	
6-8				✓	✓				✓	✓	✓						✓	AC
7-8					✓					✓	✓						✓	AC
Control Schools (Group 3)																		
K-5			✓						✓						✓			
K-6			✓						✓						✓	AC		
K-8			✓		✓				✓		✓				✓	AC	✓	AC
6-8					✓						✓						✓	AC
7-8					✓						✓						✓	AC

333  = Data NOT collected by UC Berkeley

334 AC = aerobic capacity test only (one-mile run or PACER)

335 **Assessment protocol.** School personnel (likely PE teachers) will conduct all fitness assessments. Schools will
 336 have the option of conducting the one-mile run or PACER test for aerobic capacity. If control schools conduct
 337 the one-mile run with their students, mile times will need to be converted to PACER scores for submission to
 338 the San Joaquin County Office of Education (SJOE) for the Physical Fitness Test. SJOE requires the PACER test
 339 to calculate VO2max when height and weight are not measured. We expect that fitness assessments will take
 340 2-4 hours to complete for each class. Teachers will likely conduct fitness assessments over several days.

341 **School staff training.** School personnel who conduct fitness assessments will be asked to watch training
 342 videos created by the California Department of Education on how to administer the tests accurately. Teachers
 343 will be asked to watch these videos prior to each assessment period. We will only ask teachers at control
 344 schools to watch the videos during Year 3 since we will not collect FITNESSGRAM® data for 5th and 7th grade
 345 students at control schools during Years 1 and 2. The videos will last no more than 50 minutes in total and will
 346 be available on our study website for teachers to watch whenever they choose.

347

348 **Student Surveys**

349 Each fall, 4th-8th grade students at all study schools will complete a student survey. This survey will assess the
 350 following constructs related to weight stigmatization and its consequences: peer teasing and weight comments,
 351 parent teasing and weight focus, body satisfaction, and weight control behaviors. Students will complete the
 352 same survey each year, and the survey will not differ by study group. Table 8 depicts the grades that will
 353 complete this survey each year according to school type. During Year 1, only 4th-7th grade students will
 354 complete the survey given that 8th grade students will leave their schools after Year 1. All enrolled 4th-8th grade
 355 students will complete the survey during Years 2 and 3. Research staff will travel to schools to administer these
 356 surveys to students. A member of the research team will explain the survey to students using a prepared script
 357 before distributing surveys. Students will then complete the survey on their own, raising their hands if they
 358 have any questions. Three to four research staff members will be present to answer any questions that
 359 students have. All students will complete the surveys on paper. Third grade students will not complete the
 360 student survey due to the questionable validity of survey responses from children younger than 9 years old.
 361 We will pilot test the student survey with students in grades 4-8 prior to administration to ensure that all
 362 questions are understood correctly.

363 **Table 8. Student survey administration schedule by study year and school type.**

School type	2014-2015						2015-2016						2016-2017					
	3 rd	4 th	5 th	6 th	7 th	8 th	3 rd	4 th	5 th	6 th	7 th	8 th	3 rd	4 th	5 th	6 th	7 th	8 th
K-5		✓						✓	✓					✓	✓			
K-6		✓	✓					✓	✓	✓				✓	✓	✓		
K-8		✓	✓	✓	✓			✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
5-8			✓	✓	✓				✓	✓	✓	✓				✓	✓	✓
6-8				✓	✓					✓	✓	✓					✓	✓
7-8					✓						✓	✓						✓

364

365 The student survey will assess parent teasing and focus on weight using a 3-item subscale developed by Kluck
 366 et al, which asks how often mothers and fathers criticize weight or size, tease about weight or size, and
 367 encourage weight control behaviors. We will assess body satisfaction using several items from Pingitore’s 10-
 368 item *Body Satisfaction* scale, as adapted for Dr. Neumark-Sztainer’s *Project Eat*. Weight control behaviors, such
 369 as dieting, fasting, and skipping meals, as well as perceived weight status, will also be assessed using items
 370 developed for Dr. Neumark-Sztainer’s *Project Eat*. Questions developed by our research team will assess peer
 371 teasing.

372 In addition to questions related to weight stigmatization, the survey will include several questions regarding
 373 students’ experiences having their heights and weights measured at school. An initial question will ask
 374 students if they remember having their height and weight measured during the previous school year. If
 375 students respond yes, they will be asked how privacy was maintained during height and weight measures, the
 376 setting in which measures occurred (classroom, gym, office), and the staff person who conducted the
 377 measures (school nurse, PE teacher, classroom teacher). The survey will also include several questions about
 378 food availability at home and demographic questions (grade, sex, race/ethnic group).

379 **Parent Surveys**

380 In Spring 2015 and 2016, we will mail a parent survey to a subsample of parents from all study groups. The
 381 parent survey will assess parent behaviors related to students’ physical activity and nutrition, parent
 382 recognition of child weight status, and parent reactions to the BMI report. To examine parents’ behaviors
 383 related to their child’s diet and exercise, we will use items from the limit setting, monitoring, and
 384 reinforcement subscales from the Parenting Strategies for Eating and Activity Scale. These 15 Likert-scale items

385 have been tested with English- and Spanish-speaking parents with high reliability and good construct validity.
386 As part of a process evaluation, the survey will also assess parent perceptions of their child's weight status and
387 recollection of receiving a BMI report. Subsequent questions will determine how useful and likeable parents
388 find each report format.

389 Each year, we will mail the parent survey to 60 parents at each Group 1 school and 30 parents at each Group 2
390 and 3 school (3,030 in Spring 2015 and 3,060 in Spring 2016). In Spring 2016, selected parents will include all
391 those who returned a survey during the previous year, provided that their child is still participating in the study.
392 We will randomly select remaining parents. When choosing parents to receive the survey, we will stratify by
393 weight status such that 2/3 of parents selected have a child who is at risk for overweight or overweight. We
394 will also stratify by grade so that we have an even distribution across grades. We are conservatively assuming a
395 45% survey return rate based on recent studies, for an ultimate sample of 1,364 parents in Spring 2015 and
396 1,377 parents in Spring 2016. To maximize parent response rates, we will send a pre-notification post-card
397 (sent one week prior to initial survey) and one reminder survey (sent three weeks after initial survey),
398 techniques that have yielded greater than 60% response rates to mailed surveys. We will also include a \$1 bill
399 in each survey to incentivize participation. A self-addressed, stamped, return envelope will accompany each
400 survey packet. The front page of the survey will explain the survey's purpose. The front page will also explain
401 that parents may take the survey online if they prefer. The survey will be translated into any languages
402 typically used by schools for materials mailed to parents. We will mail surveys to parents using home
403 addresses provided by each district.

404 By administering the parent survey prior to sending home BMI reports, we will establish a baseline of
405 responses against which to compare Year 2 parent survey responses. Each survey will be labeled with the
406 unique identifier of the parent's student, which will allow us to compare individual parent responses to change
407 in student BMI. We will not ask parents to record their names or any other identifying information.

408 In Spring 2017, we will send a one-page survey home to all parents of Group 1 students asking if they received
409 a BMI letter in Fall 2016. The purpose of this survey will be to assess receipt of the BMI letter among parents
410 who were mailed one. Since some parents may never have seen the letter, either because it was not delivered
411 to the address where they live or because they never opened it, this will allow us to conduct sensitivity
412 analyses with parents who we know received and opened the letter. For parents who indicate that they
413 received the letter, the survey will ask parents to recall their child's weight status from the letter. The survey
414 will also ask about parent behaviors in response to the letter. To maximize parent response rates, we will send
415 a pre-notification post-card and one reminder survey. We will also include a \$1 bill in each parent survey.
416 Parents will be able to take the survey online if they prefer.

417 **Teacher Surveys**

418 Each spring, we will ask teachers who conduct height and weight measurements with their students to
419 complete a 5-minute online survey regarding their perceptions of the height and weight measurement process.
420 Questions on this survey will assess teacher perceptions' of privacy, data accuracy, and student feelings of
421 stigmatization. This survey will also ask about the location of height and weight measurements. An
422 introductory paragraph will explain the purpose of the survey to teachers. We will ask teachers to complete
423 this survey as soon as possible after conducting height and weight measurements.

424 **BMI Validation Study**

425 In Spring 2017, we will assess the validity of BMI measurements in 10 randomly-selected Group 1 schools and
426 10 randomly-selected Group 2 schools. Since 6th, 7th, and 8th grade students are only present in two school
427 types each (while 4th and 5th grade students are present in three school types each), we will oversample K-6
428 and 6-8 schools to produce an even distribution of grades. Within each group, therefore, we will randomly
429 select 2 K-8 schools, 2 K-5 schools, 3 K-6 schools, and 3 6-8 schools. We will randomly select two classrooms to
430 measure per school, ensuring a balance across grades and selecting different teachers from each school.

431 Assuming an average of 25 students measured per class, we expect to measure 1,000 students in total. A
432 member of our research team will travel to all schools to conduct the measurements under the guise that we
433 are assessing percent body fat on a subset of students (our Tanita scale will be able to assess percent body fat).
434 Once measures are completed, we will assess the accuracy of school staff measures (SD of difference), bias in
435 measures, and variance in measures of school personnel versus researchers. While studies have shown that
436 trained school staff can reliably measure BMI, concerns may be raised about the validity of school BMI
437 measures if we find that BMI reporting has no impact on obesity. Results from this validation study will allow
438 us to appropriately address such concerns.

439 School Policies and Programs Survey

440 In Year 3, all schools will be asked to complete a survey regarding policies and programs related to nutrition
441 and physical activity. Questions for this survey will be taken from the School Health Index and will cover the
442 following topics: recess, food as a reward, access to drinking water, competitive foods and beverages, physical
443 education, classroom activity breaks, and schools meals. Schools will be asked to involve multiple people (food
444 services director, PE teacher, classroom teachers, etc.) in completing the survey when necessary. The purpose
445 of this survey is to capture any schoolwide nutrition and physical activity practices that might interfere with
446 our study's findings. Schools will receive a \$50 gift card for completing this survey.

447 Data Provided by Schools

448 Following each assessment period, schools will provide our research team with students' height, weight, and
449 fitness data using first and last names. As soon as our research team receives these data, the data will be
450 entered into an Excel spreadsheet stored on our secure server. Height, weight, and aerobic capacity data will
451 be entered twice and compared for accuracy. All documents containing student names and data will be stored
452 in locked filing cabinets in our locked research office during the data entry period. They will be destroyed once
453 all data have been entered and cleaned (likely three months after forms are received from schools).

454 School districts will provide date of birth, sex, race/ethnicity, and eligibility for free or reduced-price meals for
455 all students participating in the study. School districts will also provide home addresses for all Group 1
456 students (whose parents will receive a BMI report) and a subset of Group 2 and 3 students (whose parents will
457 receive a survey) during Years 1-3. Lastly, school districts will provide phone numbers for the subset of parents
458 who we select to participate in the parent interviews. We will clearly outline the data requirements in the
459 MOU that school districts sign to participate in the study.

460

461 **STUDY INTERVENTION**

462 In September 2015 and 2016, we will mail BMI reports to Group 1 parents. These reports will provide the
463 child's height, weight, BMI, and weight status classification. A bar graph will visually depict the child's
464 placement along the spectrum of weight status classifications based on age and sex, ranging from the 1st
465 percentile to the 99th percentile. When a student's BMI falls outside this range, the student's BMI will replace
466 the value of the 1st or 99th percentile on the bar graph. The report will also provide several evidence-based
467 nutrition and physical activity recommendations, as well as a recommendation that parents visit
468 www.choosemyplate.org for more physical activity and nutrition resources. We will use feedback obtained
469 from parent focus groups to design these reports.

470

471 In August 2015, we will randomly assign students in grades 6-8 (who participated in the fitness assessments as
472 5th-7th grade students during the previous spring) to receive one of the two letters: 1) BMI results only, or 2)
473 BMI and fitness results. Letters that also provide fitness results will provide the student's fitness test scores, an

474 indicator of a “healthy” score for each test, and an interpretation of the student’s performance on each fitness
475 test. Students in grades 4 and 5 will receive the report with BMI results only since they will not have
476 participated in the fitness assessments during the previous spring. In September 2016, parents will receive the
477 same report type that they received during Year 2. Parents of 6th-8th grade students who enrolled in the study
478 during the 2015-16 school year will be randomly assigned to letter type.

479

480 We will hire a graphic design team to design the BMI reports and create an infographic with nutrition and
481 physical activity messages. BMI reports will be printed using variable data printing, which allows template
482 letters to be populated with each student’s data. We will hire an outside contractor to print BMI reports and
483 prepare them for mailing. Reports will be sent via US mail and will be available in whatever languages districts
484 typically use to send information home to parents.

485

486 **STUDY ANALYSES and POWER CALCULATIONS**

487 **Aim 1:** To prospectively determine the impact of school-based BMI screening and reporting on obesity and
488 obesity disparities among approximately 16,000 students in grades 3-8.

489 Analyses

490 To determine the impact of BMI reporting on childhood obesity, we will use a mixed effects model with BMI z-
491 score as the outcome and a group-by-time (Group 1 vs. Group 2) interaction term as the primary predictor.
492 Students will be followed over three years. We will include random effects for district and school (to account
493 for clustering of students) and student, and we will adjust for student-level race/ethnicity, sex, and grade, as
494 well as for neighborhood socioeconomics. We expect the strongest effect of BMI reporting to be in youth with
495 a BMI \geq 85th percentile, whose parents will receive a BMI report stating that their child is at-risk-for overweight
496 or overweight. Therefore, our primary analysis will be limited to the estimated 40% of students with a BMI \geq
497 85th percentile in 2015 or 2016. Our primary analysis will compare the average effect of BMI reporting in
498 Groups 1a and 1b to the effect in Group 2. Because we hypothesize in Aim 2 that BMI-only reports may be
499 more effective than BMI+fitness reports, we plan a subgroup analysis to compare change in BMI z-score
500 between students in Group 1a (BMI-only reports) and students in Group 2.

501 To determine the impact of BMI reporting on childhood obesity disparities, we will employ a similar model, but
502 will examine ethnicity (Latino vs. non-Latino) and race (African American, Asian, and Caucasian) as effect
503 modifiers.

504 Power calculations

505 Based on our research with BMI screening and survey administration in schools, we anticipate having data on
506 90% of enrolled students each year and estimate that 10% of students will leave their school annually. With
507 these assumptions, we expect to have at least 2 years of BMI data on about 16,000 students in Groups 1 and 2,
508 of whom we expect 6,440 will be overweight (primary analysis). Accounting for the loss of up to 1 school per
509 group, we anticipate having 80% power to detect a difference in 1-year change in BMI z-score between groups
510 of .017 BMI z-scores (two-sided alpha of 0.05). This is equivalent to an average difference in a 1-year change in
511 weight of 0.35 pounds for a 10-year old with a BMI at the 90th percentile. We assume an SD for change in BMI
512 z-score of 0.19 based on our preliminary data and a study among 10-14 year old Latino youth. For the planned
513 subgroup analysis comparing Group 1a to Group 2, we are powered to detect a difference of 0.018 BMI z-
514 scores. These calculations are adjusted for the cluster design, assuming an intra-class correlation (ICC) of
515 0.0045 (between vs. within school differences in change in BMI z-score) based on our prior work. Power

516 calculations are based on 1-year change and are, therefore, conservative, as one-third of students will
517 contribute 2-year change data as well.

518 **Aim 2:** To prospectively compare the impact of reporting BMI alone versus reporting BMI with fitness test
519 results on obesity and fitness among 8,500 students in grades 3-8.

520 Analyses

521 We will compare 3-year trajectories of BMI and aerobic capacity between students in Group 1a (BMI-only
522 report letter, n~1125) and Group 1b (BMI + fitness test results report letter, n~1125). To explore the
523 mechanism of effect of the reports, we will compare parents' self-reported behaviors related to their child's
524 diet and exercise by report format, with sub-analyses stratifying by the student's baseline weight status and
525 baseline fitness status. Finally, we will compare parents' responses to questions about the utility of reports to
526 see if one report format appears more favorable, with subgroup analyses by parent race/ethnicity.

527 We will use mixed effects models with BMI z-score or aerobic capacity (VO₂max from the PACER, calculated
528 using Leger's equation¹⁴ as we have done previously¹⁵) as the outcome and a group-by-time interaction term
529 as the primary predictor, with random effects for school, district, and student, adjusted for student
530 demographics. We will limit our primary analysis to students with a BMI ≥ 85th percentile at baseline (n=2250).

531 Power Calculations

532 Based on assumptions above (*Aim 1, Power Calculations*), we will have 80% power to detect a difference in 1-
533 year change in BMI z-score between report formats of 0.036 (two-sided alpha of 0.05), which is equivalent to a
534 difference in weight gain between groups of approximately 0.4 pounds, for a 10-year old at the 90th BMI
535 percentile. We will also run the models for all students, regardless of BMI percentile at baseline. Parents may
536 make changes in the home in response to a child's poor fitness results even if BMI is normal; thus, BMI+fitness
537 reports may impact fitness and BMI trajectory independent of baseline weight status.

538 **Aim 3:** *To determine the extent to which BMI screening and reporting have unintended consequences on*
539 *weight-based stigmatization in approximately 20,000 students in grades 4-8.*

540 Analyses

541 We will compare changes over time in body satisfaction, exposure to stigmatizing comments, and unhealthy
542 weight-control behaviors between students who are exposed to BMI screening and reporting (Group 1),
543 students who are exposed to BMI screening only (Group 2), and students exposed to neither BMI screening
544 nor reporting (Group 3). As in analyses for Aims 1 and 2, we will use a mixed-effects model with random
545 effects for district and school, and a categorical (Group 1, 2 or 3) group-by-time variable as the primary
546 predictor. Because we cannot link anonymous survey responses over time, we will increase our power to
547 detect differences between groups by assigning students to clusters within schools, based on the student's
548 grade, sex, and race-ethnicity (Latino; non-Latino Caucasian, African American, and Asian American; and Other).
549 The mixed effect model will include a random effect for cluster, and will weight each cluster by the number of
550 students it contains. We will use separate models for each of the 4 constructs of interest.

551 Power Calculations

552 On average, each school will have approximately 45 unique clusters (e.g., one cluster would be African-
553 American boys in grade 4 in 2014 who are followed over time). With 25 schools per group, we can detect a
554 standardized effect for each outcome of 0.16, assuming an ICC of 0.015, based on the average cross-sectional
555 ICCs from statewide survey data on which we've published.¹⁶ A standardized effect size of 0.16 means we can
556 detect a difference between groups equivalent to 0.16 of the SD of the change in the measure – a very small

557 change in the distribution of responses, for all measures of interest. As an example, our measure of body
558 satisfaction has a published mean score for boys of 37, with a range of 10-50, and cross-sectional SD of 8.7.¹⁷
559 We estimate the SD for change as the cross-sectional SD*SQRT[2*(1-r)], where r is the assumed correlation
560 between responses at time 1 and time 2. Assuming a moderate correlation (0.50), our estimated SD for change
561 in scores is 8.7; therefore, with a standardized effect size of 0.16, we can detect a difference between groups
562 in change of 1.5 points. This is again a conservative estimate of power as it is based on one-year change, but
563 over half of the clusters of students will contribute 2- or 3-year change data as well.

564 **TIMELINE OF ACTIVITIES**

Study activity	Grades involved	Year 1												Year 2												Year 3												
		Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun		
		2014					2015							2016						2017																		
		2014-2015 school year												2015-2016 school year												2016-2017 school year												
Distribution of unsigned parent permission forms	3rd-7th	X	X				X								X	X										X	X											
Student survey	4th-8th		X	X	X	X									X	X	X										X	X	X									
Key informant interview	N/A																				X	X												X	X			
School randomization	N/A	X	X	X	X	X																																
Parent survey	3rd-8th									X	X									X	X																	
Obtain BMI waiver for control schools	N/A			X	X	X	X								X	X																						
BMI measurement - Intervention schools	3rd-8th							X	X	X									X	X	X											X	X	X				
Teacher survey - intervention schools	3rd-8th							X	X	X									X	X	X										X	X	X					
BMI measurement - Control schools	4th-8th																														X	X	X					
Teacher survey - Control schools	4th-8th																														X	X	X					
Fitness assessment - Intervention schools	5th-8th							X	X	X									X	X	X										X	X	X					
Fitness assessment - Control schools	5th & 7th							X	X	X									X	X	X										X	X	X					
BMI report sent to caregivers	4th-8th														X	X											X	X										
BMI reliability study	3rd-8th																		X	X	X																	

565

566

567 AMENDMENTS

568

569 Subsequent to the original Operations Manual, dated August 21, 2014, the following amendments to the study
570 protocol were made, which appear in the final version dated July 11, 2017. Names of the schools and school
571 districts have been redacted in this online version of the operations manual. Original documents are available
572 upon request.

573

574 **Sample size: number of schools.** The original sample size was 75 schools. After wave one of enrollment in fall
575 2014, the total number of students per school was slightly smaller than anticipated, so an additional 4 schools
576 were recruited to the study in wave 2 (fall 2015) for a total of 79 schools.

577 **Number of school districts.** We had originally planned to recruit 6 school districts, but as of fall 2014 were only
578 able to recruit 5 school districts.

579 **School-level eligibility.** We had originally planned to include schools with between 30% and 70% students of
580 Hispanic ethnicity to allow us to stratify analyses based on ethnicity. However, there were fewer schools within
581 this range than anticipated and we expanded eligibility to schools 15% to 85% Hispanic enrollment to meet
582 enrollment targets while still allowing for stratified analyses by ethnicity.

583 **Student survey.** We had intended to ask a single question on the survey about how often the student was
584 teased at school about their weight. On further discussion, we also included a question asking how often
585 other children were teased at school about their weight, in order to capture weight-based teasing in general.

586 **Parent survey.** We originally intended to send one baseline and one follow-up survey to parents. However,
587 because parent recall of BMI reports was lower than expected in the follow-up parent survey, we sent an
588 additional round of follow-up surveys in the final year of the study to re-measure parent recall.

589 **BMI validation study.** We originally intended to compare BMI measurements between trained researchers and
590 school staff in 4 schools, measuring 50 students per school. To increase our power to detect differences
591 between school staff BMI measurements and researchers' measurements, we increased our sample size to 10
592 schools with 100 students per school.

593

594

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