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Framing the Local Context and Estimating the Health Impact of CPPW Obesity Prevention Strategies in Los Angeles County, 2010-2012

Tony Kuo, MD, MSHS; Brenda Robles, MPH; Justin G. Trogdon, PhD; Rachel Ferencik, MPA; Paul A. Simon, MD, MPH; Jonathan E. Fielding, MD, MPH

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Context: Few studies have described the range and health impacts of obesity prevention strategies in local communities supported by the *Communities Putting Prevention to Work* program. **Objective:** To address this gap, we reviewed implemented strategies in Los Angeles County (LAC) for 3 program focus areas: physical activity-promotion, health marketing, and creation of healthy food environments. Local context and results from an impact simulation are presented.

Design: Information on population reach and program milestones was synthesized to describe historical and programmatic progress of the obesity prevention efforts during 2010-2012. To forecast health impacts, the Prevention Impacts Simulation Model (PRISM) was used to simulate population health outcomes, including projected changes in obesity burden and health behaviors 30 years into the future. **Setting:** LAC with more than 9.8 million residents. **Participants:** Low-income adults and youth who were the intended audiences of the *Communities Putting Prevention to Work* program in LAC.

Intervention: Implemented strategies for the 3 focus areas.

Main Outcome Measures: Documentation of program reach and PRISM forecasting of obesity rates and health impacts.

Results: Implemented strategies in LAC ranged from best practices in healthy food procurement (estimated reach: 600 000 students, 300 000 meals per day) to completed shared-use agreements (10+ agreements across 5 school districts) to a series of strategically designed health marketing campaigns on healthy eating (>515 million impressions). On the basis of PRISM simulations, these highlighted program activities have the potential to reduce by 2040 the number of youth

(–29 870) and adults (–94 136) with obesity, youth (–112 453) and adults (–855 855) below recommended levels of physical activity, and youth (–14 544) and adults (–28 835) who consumed excess junk food, as compared with baseline (2010-2011). **Conclusions:** Program context and PRISM-simulated health impacts showed modest but promising results in LAC, which may lead to further population health

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improvements in the future. Downstream health and behavioral surveillance data are needed to confirm these estimates.

KEY WORDS: health impact forecasting, obesity prevention, program evaluation, system dynamics modeling

To address complex community factors that contribute to the obesity epidemic, federal, state, and local agencies in the United States have made substantive investments in community programs that seek to address the physical and social determinants of health (eg, improving the food and physical environments).¹⁻⁹ As a result of these investments, an array of evidence-based and practice-tested strategies (ie, system and structural modifications) has been disseminated across a number of communities in the United States.³ In Los Angeles County, these community programs or strategy interventions have included the following: (a) modifying food services and vending practices at food venues operated by county governments, cities, and school districts (eg, incorporating healthy nutrition standards through the contracting process with food vendors or suppliers)¹⁰⁻¹²; (b) adapting corner stores or other stores in low-income neighborhoods to offer more fresh produce, including affordable fruit and vegetables; (c) promoting breast-feeding at local hospitals prior to discharge and breast-feeding accommodations in the workplace (eg, access to lactation rooms); (d) increasing access to physical activity opportunities through shared-use agreements (the agreements represent contractually binding documents that enumerate how and where school property and programming are shared between schools and community-based entities) or school district efforts that improve the quality of physical education instruction^{13,14}; (e) encouraging active living through land use and transportation planning and other built environment improvements^{6,15}; and (f) utilizing health marketing to educate and empower the public to change adverse health behaviors such as excess sugar-sweetened beverage consumption.^{16,17}

As in other communities, increasing the likelihood of community acceptance of system or structural modifications to the food and the built environment in Los Angeles County requires ongoing learning about the challenges and impacts of multisector programming and multilevel planning.^{3,18} Although a recent US study has demonstrated the utility and impact of 6 intervention clusters as they relate to downstream cardiovascular health outcomes and risk factor-attributable costs in 2040,¹⁹ this national analysis, from a planning perspective, lacks immediate generalizability to local jurisdictions. Similar enumeration of health impacts in communities that received investments from the *Com-*

munities Putting Prevention to Work (CPPW) program, for example, would provide the supplemental context needed for advancing local decision making about prevention and health protection.²⁰ In this regard, Los Angeles County serves as a suitable case study, as the jurisdiction was among the largest of the CPPW program grantees and is home to more than 9.8 million adults and children.^{21,22}

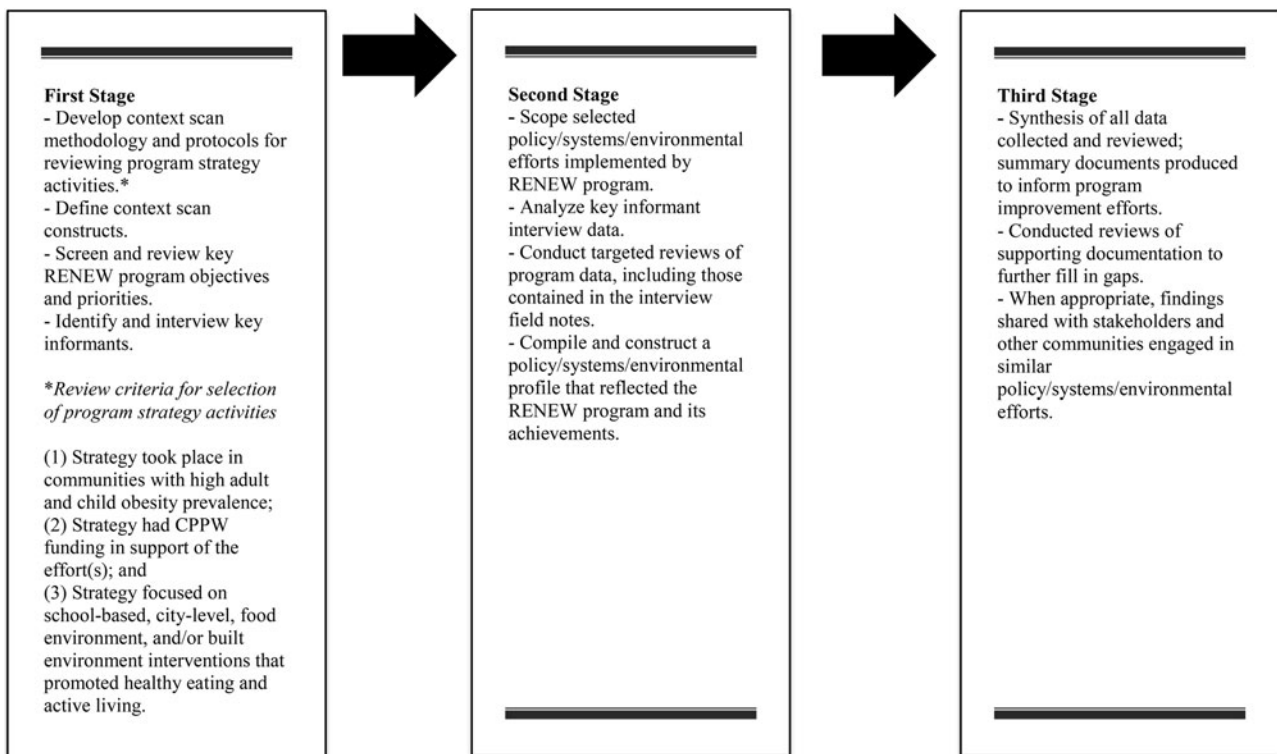
Capitalizing on the rich program data available from the Centers for Disease Control and Prevention (CDC) CPPW effort, the present study contributes to closing of the identified gap in public health practice by reviewing the strategies implemented for 3 program focus areas in Los Angeles County: physical activity-promotion, health marketing, and creation of healthy food environments during 2010-2012. Where feasible, the countywide health impacts of these obesity prevention strategies were estimated using the Prevention Impacts Simulation Model (PRISM).^{19,23,24}

● Methods

Framing the local context: Synthesis of data about Los Angeles County's obesity prevention strategies during CPPW, 2010-2012

From October to November 2011, a systematic assessment of institutional policies, systems-level changes, and environmental interventions (a policy/systems/environmental context scan, Figure 1) that were attributable to the local CPPW obesity prevention program in Los Angeles County (called "RENEW") was conducted. Evaluators from the Los Angeles County Department of Public Health spearheaded this assessment and utilized a multistage approach to document and monitor CPPW strategies that were in progress.²⁵ During the initial stage of this policy/systems/environmental context scan, evaluators identified and aligned the scan's objectives with key RENEW priorities, developing specific criteria to screen and select program activities for review. Strategy activities were selected and reviewed if they (1) took place in communities with high adult and child obesity prevalence; (2) had CPPW funding in support of the effort(s); and (3) focused on school-based, city-level, food environment, and/or built environment interventions that promoted healthy eating and active living.

Concurrently, during this stage, evaluators identified and interviewed a number of key RENEW program analysts or managers of the various community strategies. Two types of key informants were interviewed: (1) policy analysts who directly managed the selected RENEW efforts; and (2) communications manager(s) who was/were responsible for dissemination

FIGURE 1 ● Stages of the CPPW Policy/Systems/Environmental Context Scan in Los Angeles County, 2010-2012

Abbreviation: CPPW, *Communities Putting Prevention to Work*.

of print and other health marketing materials in support of these efforts.

In total, 7 policy analysts and 1 communications manager were interviewed. A short interactive script containing 3 open-ended questions, each having 1 to 2 follow-up questions or probes, was used to conduct the interviews. The interview questions generally focused on process dimensions and milestones such as (1) activity or policy/systems/environmental accomplishments attributable to RENEW; and (2) identified barriers to or facilitators of these change efforts. Interviews, by phone or in person, averaged 60 minutes. Detailed notes were hand recorded at the time of the interviews. Although audiotaping was available, most interviewees declined to be audiotaped. To augment the interviews, evaluators also obtained paper or electronic documentation to verify and provide context to the various RENEW strategy-related activities (eg, event announcements, written institutional policies or resolutions, health marketing campaign materials).

In the second stage of the assessment, evaluators scoped the selected policy/systems/environmental efforts implemented by RENEW. They reviewed and analyzed the information/qualitative data collected from the key informant interviews, employing thematic analysis procedures.²⁶ Data from these

semistructured or in-depth interviews were analyzed by 2 evaluators, with a third evaluator serving as the referee if consensus on particular themes or data interpretation could not be reached. First, each evaluator conducted an independent content analysis of the interview field notes to develop themes or describe a policy/systems/environmental profile that reflected the RENEW program. Then, the 2 evaluators compared their notes to develop a consolidated list of themes and generate a qualitative scope for the CPPW strategies that were implemented in the field.

In the third stage, evaluators organized and synthesized the data collected, summarizing them in a spreadsheet by categories: city, assigned RENEW staff in charge of the effort, relevant subcontractors or partners, program objective number (corresponding to the RENEW Community Action Plan), policy/systems/environmental activity details, and policy/systems/environmental change status. All supporting documents provided by interview participants were reviewed in detail to help fill in information gaps. All policy/systems/environmental context scan protocols and materials were reviewed and approved by the Los Angeles County Department of Public Health institutional review board prior to field implementation.

Forecasting health impact

To forecast the health impacts of the obesity prevention strategies in the 3 program focus areas (physical activity-promotion, health marketing, and creation of healthy food environments), PRISM was used. This modeling tool simulates health outcomes, including projected changes in obesity burden (proxy indicator for cardiovascular health risk) and health behaviors 30 years into the future.²⁷ These simulated outcomes included changes in obesity prevalence, fraction of youth and adults without the recommended levels of physical activity, and fraction of youth and adults who consumed excess junk food (eg, high calorie foods, soda or beverages high in sugar content). Further downstream cardiovascular health outcomes can be modeled, including acute myocardial infarction events, number of hypertension cases, and mortality rates; however, these were not the focus of this analysis. To set baseline values for PRISM policy levers (data profiles) for the model, evaluators from the Los Angeles County Department of Public Health provided analysts at the Georgia Health Policy Center with estimated population reach numbers of the cluster of policy/systems/environmental interventions implemented in Los Angeles County,

based on local approximations of population characteristics for the period 2010-2012.

PRISM

PRISM is a CDC-supported Web-based system dynamics model built to help public health professionals understand and communicate how policies or systems-level changes in communities can be implemented to reduce and prevent cardiovascular disease (CVD) and other CVD risk factor-related mortality and costs (if data are available) (see screenshot in Figure 2).^{23,27-29} The version of PRISM used in this study simulates the potential impact of implementing various combinations of up to 34 strategy interventions on the occurrence and burden of CVD from the present through 2040. All interventions in the model are based on peer-reviewed literature and discussions with experts working in the field who helped specify and quantify their associative or causal effects.

PRISM has been calibrated to represent US averages by age and gender, for example, obesity prevalence rates from the National Health and Nutrition Examination Survey for 1988-1994 to 1999-2004. For CPPW communities, PRISM was further calibrated for 6

FIGURE 2 ● Sample Screenshot of the Web-Based PRISM Tool

The screenshot shows the PRISM web-based tool interface. At the top, it says "PRISM Create New Scenario" with a "Logout" button and the CDC logo. Below this is a navigation menu with options: "Introduction", "Map", "Set Initial Conditions", "Create New Scenario", "Results", "Compare Scenarios", and "Help".

The main content area is divided into two sections. On the left, under "Intervention Categories", there is a list of categories with checkboxes:

- Smoking
- PM2.5 air pollution
- Diet**
 - Junk food tax
 - Junk food counter-marketing
 - Fruit and vegetable access
 - Fruit and vegetable promotion
 - Sodium consumption among nonhypertensives
 - Sodium consumption among hypertensives
 - Trans fat consumption
- Physical Activity**
 - Access to physical activity spaces
 - Physical activity promotion
 - Physical activity in school
 - Physical activity in childcare
- Weight loss
- Risk factor care non-CVD
- Risk factor care post-CVD
- Post CVD care
- Distress

On the right, the "Physical Activity Interventions" section is expanded, showing a table of interventions with sliders and data fields. A "Click to show category levers" link is present. The table has columns for Name, Min, Max, Value, Initial Value, Start Time, and Ramp Time.

Name	Min	Max	Value	Initial Value	Start Time	Ramp Time
Access to physical activity (PA) spaces	25%	100%	80 %	51.5%	2010	3 years
Physical activity promotion index	0%	100%	23 %	1.0%	2010	3 years
Physical activity in school index	0%	100%	68.5 %	68.0%	2010	3 years
Physical activity in childcare index	0%	100%	2.5 %	0.0%	2010	3 years

At the bottom of the interface, there are two buttons: "Reset to Initial Conditions" and "Run Simulation". A footer note states: "Simulated projections under the base run or any other scenario should not be interpreted as forecasts. The findings are those of the developers and do not necessarily represent the views of the CDC. Work in progress. Please do not cite. Model Version: V2U2"

Abbreviation: PRISM, Prevention Impacts Simulation Model.

distinct community profiles to increase its sensitivity to characteristics not otherwise included in the original model, such as race, ethnicity, and poverty. Where appropriate, sensitivity ranges for the model estimates were generated as a feature of the PRISM analysis.²⁹

In the present analysis, 3 public health/health behavior indicators were examined: (1) obesity prevalence; (2) low physical activity levels based on deviations from national recommendations⁴; and (3) poor eating. Obesity prevalence was measured using the body mass index, with data from the 2011 Los Angeles County Healthy Survey for adults and the California Physical Fitness Testing Program [fitnessgram] for children. Low physical activity levels were measured using self-reports of “did not engage in vigorous activity 3 or more days” for 5- to 11-year-olds and “no moderate-to-vigorous physical activity” for adults aged 18+ years; data source was the California Health Interview Survey. Finally, poor eating was measured via self-report of “excess junk food” consumption, using data from the 2011 Los Angeles County Health Survey. Excess junk food was defined in PRISM as food options that introduce excess calories without physiological benefits (eg, sugar-sweetened beverages, fried potato chips).

● Results

Policy, systems, and environmental context

The policy/systems/environmental context scan systematically assessed CPPW strategies and field interventions that were disseminated across 88 municipalities and 1 large unincorporated area in Los Angeles County. During 2010-2012, the \$15.9 million RENEW program focused on reducing obesity and related health conditions by employing a menu of healthy eating and active living strategy interventions. Collectively, this overall effort represented more than 40 interventions, addressing 8 key program objectives.

For healthy eating, RENEW strategies included the following: (1) adoption and implementation of nutrition standards and other healthy food procurement practices designed to improve access to healthy food environments within county and city governments and in the nation’s second largest school district—Los Angeles Unified School District (>600 000 students); (2) adoption of breast-feeding practices, promoting supportive breast-feeding environments within hospitals and workplace settings; (3) corner store practices (eg, behavioral economics) and store infrastructure changes (eg, store makeovers) focused on increasing access to fresh produce in geographic areas with a low density of stores offering affordable fruit and vegetables; and (4) dissemination of multipronged health marketing cam-

paigns focused on encouraging healthy eating behaviors. Table 1 provides examples of these strategies.

For active living, implemented strategies included such efforts as increasing staff capacity to help public school students meet physical education requirements, development and implementation of shared-use agreements to increase access to physical activity opportunities in areas with limited low-cost or free recreational opportunities, and a range of land use and transportation strategies that promoted walking and biking in the jurisdiction. Land use and transportation strategies included such efforts as (1) implementation of “complete streets” design practices that seek to ensure transportation improvements via future capital investments—in so doing, these designs would encourage walking, bicycling, and use of public transportation; (2) development of transit-oriented districts to foster pedestrian access to transit stations and encourage high-density, mixed-use development within a quarter mile of the transit stations—in so doing, these transit-oriented districts would help promote space and sustainable living arrangements; (3) completion of an environmental impact report for the County of Los Angeles (“County”) bicycle master plan; (4) development of the County master plan for trails and bikeways that seeks to improve pedestrian and bike-friendliness in targeted communities; (5) development and implementation of a bicycle-friendly business district blueprint (eg, having community incentives for biking, improved space for biking) in the city of Long Beach; and (6) development of the South Bay bicycle master plan, which aimed to create bicycle-friendly environments and promote a bicycle culture in the region. Table 1 provides examples of these strategies.

Forecasts of health impact

On the basis of PRISM simulations, the highlighted program strategies, if sustained, have the collective potential by 2040 to reduce obesity in youth (29 870 fewer cases) and adults (94 136 fewer cases), the fraction of youth (112 453 fewer cases) and adults (855 855 fewer cases) who are below the recommended levels of physical activity, and the fraction of youth (14 544 fewer cases) and adults (28 835 fewer cases) who consume excess junk food or have a poor diet (Table 2).

● Discussion

The diverse strategies implemented by RENEW in Los Angeles County varied in their reach, breadth, and depth. The policy/systems/environmental context scan provided a unique glimpse of the scope and landscape of the multisector, multilevel interventions.

TABLE 1 ● Communities Putting Prevention to Work Program—Healthy Eating and Active Living Policy/Systems/Environmental Change Strategies by Targeted Setting in Los Angeles County, 2010–2012

Targeted Environment	Setting and Intervention
Healthy Eating	
Institutional Food Service and Vending Venues	<p><i>Setting:</i> County of Los Angeles government (“County”)</p> <p><i>Intervention:</i> Recommended and/or implemented healthy nutrition standards (ie, codified limits on calories and other nutrients such as sodium) and other healthy food procurement practices (eg, menu labeling, product placement) in food and vending services across the 37 departments in the County.</p>
School Food Service and Vending Venues	<p><i>Setting:</i> Select municipalities</p> <p><i>Intervention:</i> Recommended and/or implemented healthy nutrition standards (ie, codified limits on calories and other nutrients such as sodium) and other healthy food procurement practices (eg, menu labeling, product placement) in 10 low-income cities with high rates of obesity.</p> <p><i>Setting:</i> Select school districts</p> <p><i>Intervention:</i> Implemented Institute of Medicine school meal nutrition standards (ie, codified limits on calories and other nutrients such as sodium) and other healthy food procurement practices (eg, purchasing of locally grown foods, signage and product placement that promotes healthy food and beverage options, elimination of flavored milk) in at least 4 school districts, including the Los Angeles Unified School District (>600 000 students, affects ~300 000 meals per day).</p>
Hospitals	<p><i>Setting:</i> Low-income preschools</p> <p><i>Intervention:</i> Promoted healthy nutrition policy guidelines and increased opportunities for physical education in at least 75 preschools located in low-income communities.</p> <p><i>Setting:</i> County of Los Angeles hospitals</p> <p><i>Intervention:</i> Achieved “baby-friendly” designation in 3 large, “safety-net” hospitals located across low-income areas to increase resources for and to promote breast-feeding among at-risk populations.</p>
Workplaces	<p><i>Setting:</i> County of Los Angeles government</p> <p><i>Intervention:</i> Adopted lactation accommodation policies to create supportive workplace breast-feeding environments (eg, designate an appropriate private location for lactating women to express milk in the workplace, inform employees about the policy prior to maternity leave or upon returning to work) in 37 County departments.</p> <p><i>Setting:</i> Municipalities</p> <p><i>Intervention:</i> Adopted lactation accommodation policies focused on educating city of Los Angeles departments about federal and state laws related to breast-feeding to create safe spaces for employees who wish to continue nursing their children upon returning to work across city of Los Angeles departments.</p> <p><i>Setting:</i> Private employers</p> <p><i>Intervention:</i> Adopted lactation accommodation policies ranging from strengthening existing lactation accommodation policies to disseminating technical memos citing the US Department of Labor, Wage and Hour Division lactation policy to remind departments about state and federal lactation accommodation requirements to create supportive workplace breast-feeding environments across 2 private employers.</p>
At-risk/low socioeconomic status neighborhoods	<p><i>Setting:</i> Select communities</p> <p><i>Intervention:</i> Implemented healthy corner store conversions (eg, increase access to fresh fruit and vegetables, improve product placement of healthy food and beverage options, decrease unhealthy food marketing) in 4 corner stores located across low-income neighborhoods identified as food deserts.</p>
Countywide	<p><i>Setting:</i> County of Los Angeles</p> <p><i>Intervention:</i> Disseminated the multipronged Choose Health LA initiative health marketing campaign focused on a variety of public health issues including high sugar-sweetened “sugary” beverage and sodium consumption among Los Angeles County residents through traditional media (eg, paid outdoor media campaign on transit and billboards [>515 million impressions]) and multimedia approaches (eg, Twitter, Facebook, sendable e-cards, videos, online applications, Web site).</p>

(Continues)

TABLE 1 • Communities Putting Prevention to Work Program—Healthy Eating and Active Living Policy/Systems/Environmental Change Strategies by Targeted Setting in Los Angeles County, 2010-2012 (Continued)

Targeted Environment	Setting and Intervention
Active living	
Schools	<i>Setting:</i> Select public schools <i>Intervention:</i> Integrated staff development trainings and resources to support teacher capacity to implement existing, evidence-based physical education requirements at 50-70 public schools with high rates of childhood obesity.
At-risk/low socioeconomic status communities	<i>Setting:</i> Select school districts <i>Intervention:</i> Implemented shared-use strategies establishing various partnerships (eg, schools, community organizations, County of Los Angeles departments) to increase public access to a variety of existing physical activity venues (ie, largely parks located on school facilities) in >10 schools across 5 school districts located in communities with few recreational venues to increase youth and adult opportunities for free or low-cost physical activity during nonschool hours.
Countywide	<i>Setting:</i> County of Los Angeles <i>Intervention:</i> Developed land use and/or transportation strategies (eg, bicycle master plans, transit-oriented districts, “complete streets” policies) to increase pedestrian activity and biking in the city of Los Angeles, 8 other cities, and the unincorporated areas of the county.

As the scan illustrated, the diversity of obesity prevention strategies implemented during CPPW (2010-2012) was immense. For example, for healthy eating objectives, the multipronged health marketing campaigns were developed to reach the entire Los Angeles County population, whereas the adoption of nutrition standards and other healthy food procurement practices was implemented only in selected institutional settings—yet, because they were implemented in school districts and cities, they had very broad population reach (>850 000 students and adults).^{10,30,31} Other strategy interventions, such as the corner store conversions, targeted smaller geographic areas with low access to affordable, fresh produce and/or had among the highest burden of obesity. Similarly, active living strategies varied. Some land use and transportation strategies such as the update of the County bicycle master plan was meant to benefit all Los Angeles County residents, whereas shared-use agreements between schools and community partners were relatively small in scope but were highly portable and provided a potentially low-cost way to increase physical activity opportunities in low-income neighborhoods with limited open space.^{13,32} Collectively, these strategies, large and small, complemented each other to address the obesity burden distributed across Los Angeles County.

The simulated outcomes using PRISM suggest that CPPW investments should pay modest dividends over time, especially in terms of improved health behaviors in the next 2 decades. These more proximal outcomes, which are more valid in the short term, foreshadow fewer CVD events and mortality in the more distant future.

Although more research and program evaluation are clearly needed to confirm these estimates and demonstrate the actual effectiveness of these multisector strategies, the use of the context scan and PRISM to provide information about potential health impacts of local obesity prevention strategies has implications for local planning, program quality improvement efforts, and tailoring of future obesity prevention and control strategies to vulnerable populations.

Limitations

Policy/systems/environmental context scan

Although the breadth of the policy/systems/environmental context scan and its systematic approach represent strengths, there are a number of limitations to this analysis. First, the data gathered are generally qualitative and/or describe only program activities. They do not quantify intensity or dose-dependent effects of these activities. More analytic evaluations of the data were therefore not possible. Second, the data from the key informant interviews, while providing rich context and insights into program barriers and facilitators, offer no quantifiable indicators of progress or success. Finally, reviews of program data often require some degree of judgment by evaluators on the relevance of the information being reviewed. In these instances, bias can be introduced and not easily accounted for in the context scan.

PRISM

PRISM is a population model and although the model calculates age and gender strata separately, available

TABLE 2 ● Potential Scenarios for Los Angeles County by Decade: Forecasting Health Impacts Using the Prevention Impacts Simulation Model^a

Risk Factor	By 2020				By 2030				By 2040				
	Baseline Prevalence, % ^b	% Change [Sensitivity Range]	Target Population	No. Fewer Cases From Interventions [Sensitivity Range]	% Change [Sensitivity Range]	Target Population	No. Fewer Cases From Interventions [Sensitivity Range]	% Change [Sensitivity Range]	Target Population	No. Fewer Cases From Interventions [Sensitivity Range]	% Change [Sensitivity Range]	Target Population	No. Fewer Cases From Interventions [Sensitivity Range]
Obesity—youth	22.4	4.35 [2.21-6.74]	587 625	25 562 [12 987-39 606]	4.61 [2.35-7.13]	641 701	29 582 [15 080-45 753]	4.63 [2.35-7.13]	645 132	29 870 [15 161-45 998]	4.63 [2.35-7.13]	645 132	29 870 [15 161-45 998]
Obesity—adults	23.6	2.92 [1.29-4.72]	2 027 455	59 202 [26 154-95 696]	3.84 [1.73-6.11]	2 137 110	82 065 [36 972-130 577]	4.15 [1.89-6.49]	2 268 326	94 136 [42 871-147 214]	4.15 [1.89-6.49]	2 268 326	94 136 [42 871-147 214]
Low physical activity—youths	31.9	12.00 [6.4-18.49]	836 841	100 421 [53 558-154 732]	12.22 [6.51-18.78]	913 851	111 673 [59 492-171 621]	12.24 [6.53-18.80]	918 737	112 453 [59 994-172 723]	12.24 [6.53-18.80]	918 737	112 453 [59 994-172 723]
Low physical activity—adults	66.8	12.36 [5.97-20.37]	5 738 728	709 307 [342 602-1 168 979]	12.86 [6.68-20.75]	6 049 109	777 915 [404 080-1 255 190]	13.33 [7.37-21.12]	6 420 517	855 855 [473 192-1 356 013]	13.33 [7.37-21.12]	6 420 517	855 855 [473 192-1 356 013]
Poor eating—youths ^c	50.5	0.98 [0.75-1.25]	1 324 780	12 983 [9 936-16 560]	1.00 [0.77-1.27]	1 446 692	14 467 [11 140-18 373]	1.00 [0.77-1.27]	1 454 427	14 544 [11 199-18 471]	1.00 [0.77-1.27]	1 454 427	14 544 [11 199-18 471]
Poor eating—adults ^c	40.0	0.65 [0.49-0.85]	3 436 364	22 336 [16 838-29 209]	0.70 [0.54-0.88]	3 622 221	25 356 [19 560-31 876]	0.75 [0.58-0.93]	3 844 621	28 835 [22 299-35 755]	0.75 [0.58-0.93]	3 844 621	28 835 [22 299-35 755]

^aTotal number of adults in Los Angeles County ~7 328 000; total number of children (aged 0-17 years) in Los Angeles County ~2 664 000.
^bFor 2020, 2030, and 2040, assuming the prevalence rates are at the same level(s) as 2010-2011. For low physical activity, the data are for 5- to 11-year-olds (did not engage in vigorous activity ≥3 days, 2009 data set) and 18+ adults (no moderate-to-vigorous physical activity, 2007 data set), from the California Health Interview Survey. Obesity rates for youth are from the California Physical Fitness Testing Program (fitnessgram). Obesity rates and eating behaviors data for adults are from the 2011 Los Angeles County Health Survey.
^cExcess junk food consumption and poor diet as proxy for poor eating.

results are generally population averages. Thus, the model does not typically allow simulations of health impacts of targeted strategies either for specific age groups or for geographic areas smaller than that of the regional/county level. In Los Angeles County, for example, this yielded model estimates that were highly relevant for planning at the county level but lacked specificity for use at the city or community level where the obesity burden may be variable or comparatively different.³³ Although PRISM includes most of the known CVD risk factors, many have been omitted. In addition, other risk factors affecting non-CVD chronic diseases were excluded during the model construction.

● Conclusions

Program context and PRISM simulations of CPPW strategies in Los Angeles County showed promising results, which may lead to overall population health improvements in the future. However, analysis of future health and behavioral surveillance data as well as better characterization of cost-benefits of these multi-sector, multilevel strategy interventions will be needed to confirm these forecasts and help inform future efforts seeking to improve these and other obesity prevention strategies implemented in the region.

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