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## Original Research

# The role of urban food policy in preventing diet-related non-communicable diseases in Cape Town and New York



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## ABSTRACT

**Objectives:** Cities are important settings for production and prevention of non-communicable diseases. This article proposes a conceptual framework for identification of opportunities to prevent diet-related non-communicable diseases in cities. It compares two cities, Cape Town in South Africa and New York City in the United States, to illustrate municipal, regional, national and global influences in three policy domains that influence NCDs: product formulation, shaping retail environments and institutional food practices, domains in which each city has taken action.

**Study design:** Comparative case study.

**Methods:** Critical analysis of selected published studies and government and non-governmental reports on food policies and systems in Cape Town and New York City.

**Results:** While Cape Town and New York City differ in governance, history and culture, both have food systems that make unhealthy food more available in low-income than higher income neighborhoods; cope with food environments in which unhealthy food is increasingly ubiquitous; and have political economies dominated by business and financial sectors. New York City has more authority and resources to take on local influences on food environments but neither city has made progress in addressing deeper social determinants of diet-related NCDs including income inequality, child poverty and the disproportionate political influence of wealthy elites.

**Conclusions:** Through their intimate connections with the daily lives of their residents, municipal governments have the potential to shape environments that promote health. Identifying the specific opportunities to prevent diet-related NCDs in a particular city requires intersectoral and multilevel analyses of the full range of influences on food environments.

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## Introduction

A recent report shows that more than 10% of the global burden of disease can be attributed to dietary factors and physical inactivity, making these the single most significant risk factors for premature mortality, disability and preventable illnesses.<sup>1</sup> Recently, several expert groups have recognized the importance of diet in the aetiology of major non-communicable diseases (NCDs) and recommended various policies to change the food environments that contribute to these risks.<sup>2–4</sup> Such interventions seek to lower the burden of diet-related NCDs by encouraging reductions in consumption of products high in saturated or trans fats, refined grains, added sugar, and salt products and increases in intake of fresh fruit, vegetables and whole grains.<sup>5</sup> In addition, with renewed emphasis on the role of social determinants of health, experts have also recommended changes in more fundamental influences on NCDs, including trade agreements that increase access to unhealthy products (including alcohol and tobacco), social and economic policies that promote income inequality, and health care systems that limit access to primary and preventive care.<sup>6–8</sup>

While action to prevent NCDs is required at all levels, from global to community, the increased concentration of the world's population in cities<sup>9</sup> and the association of urban environments with NCD risk makes cities an especially important arena for prevention.<sup>10</sup> Moreover, cities may have unique capacities to modify the environments that contribute to NCDs.<sup>11,12</sup>

However, in order to identify opportunities for prevention, city leaders will need to understand the potential and limits for municipal action on diet-related NCDs. To assist cities to identify NCD prevention priorities, a conceptual framework was proposed for assessing the influences on food environments and therefore diet at different levels. This has been used to compare food environments and selected policy responses to diet-related NCDs in Cape Town and New York City, two cities that illustrate the complexity of urban food systems in middle and high income countries.

### *Influences on food systems by level*

Since food environments are shaped by influences that operate on multiple levels, the formulation of effective prevention policies requires an analysis of opportunities and obstacles at each level. [Table 1](#), based on a review of recent analyses of food policy, provides a conceptual framework for such a process, showing five levels and four sectors that operate at each of these levels. As the table shows, roles sometimes overlap across sectors and levels, emphasizing the importance of concrete analysis in defined settings.

In recent decades, rapid globalization of the food industry, food trade and food supply chains has led to more homogeneous food environments than in the past, especially in the large cities that constitute prime markets.<sup>13</sup> For example, the top 15 global supermarket companies now account for more than 30% of world supermarket sales.<sup>14</sup> In South Africa and elsewhere, these changes in food availability have resulted in

a steady increase in the per capita food supply of fat, protein, and total calories, changes associated with the increase in NCDs.<sup>15</sup>

At the national level, governments set the standards and regulate both imported and domestically grown food and food labelling. They also promote development of national food industries, two potentially conflicting roles. Regional governments — and sometimes local governments as well — provide oversight of retail food outlets, regulate or provide institutional food, and deliver some diet-related preventive health services. Local governments often regulate food safety in retail establishments while communities, by the purchasing decisions of their residents, shape the distribution and quality of retail food outlets. Civil society groups such as non-governmental organizations can play an important advocacy role. Each level of government can have responsibilities for setting or collecting taxes on food or offering subsidies and for creating or improving the standards for food jobs.

National and regional governance and policies interact with market forces to create distinct prevention opportunities for municipal governments. Charting the options for a particular city to create food environments that reduce NCD risk requires identifying these opportunities and the political dynamics that facilitate or block action.

## Methods

The case studies are based on a critical analysis of selected scientific, government and civil society group reports on food policies and systems in these two cities, conversations with public officials and researchers in both cities, and own prior research on health and food policies in these settings.<sup>15–21</sup>

### *Cape Town and New York City*

As shown in [Table 2](#), Cape Town and New York City, two wealthy world cities, share high levels of income inequality, high NCD burdens, and diverse populations. In Cape Town, many key health and social responsibilities reside with the provincial government of the Western Cape. In New York, city government has more authority and resources but it also depends on New York State government for tax authority and for financing of education, health care and other services.

The two cities differ in their histories, cultures and governance structures. The next section examines how these similarities and differences have played out in the development of selected policies that have been proposed to prevent diet-related NCDs. Policies in three areas — product reformulation, improvements in institutional food, and expansion of healthy food in retail outlets were examined, using the framework shown in [Table 1](#). These three were selected because each presents opportunities for municipal action, has potential to contribute to reduction of diet-related NCDs, and has been the target of some policy action in the two cities. Other domains that warrant future analyses include food marketing, food assistance for low-income populations, and regulation of food service outlets.

**Table 1 – Influences on diet-related NCDs in urban settings.**

Level	Roles of sector			
	Food industry	Government	Public health/health care	NGOs, political parties & other civil society groups; citizens & consumers (C&C)
Global	Conducts research and development; sets global trade and marketing practices; creates commodity value chains	Negotiates trade agreements and intellectual property rights	Develops standards and global health treaties	Serve as counter to global industry; pressures other sectors through global advocacy
National	Creates commodity value chains, establishes distribution systems, sets national standards for chain outlets	Sets policies on agriculture, tax, food regulation and labelling, health care services, food sector workforce development, public food benefits and school and institutional food	Sets standards and reimbursement for diet-related health care and counselling; regulates national food advertising	Influences through advocacy policies on poverty, income inequality, food insecurity and diet-related diseases and wages, benefits and work conditions for food workforce
Regional (e.g., province or state)	Carries out wholesale distribution; oversees regional commodity value chains	Sets and enforces regional food, health and retail policies; administers food benefits; sets school and other public institutional food policies	Standards and provider reimbursement for diet-related health care and counselling	Influences through advocacy policies related to poverty, income inequality, food insecurity and diet-related diseases
Municipal	Distributes and sells retail food; operates commercial food services; executes local marketing and pricing practices; distributes retail outlets across city	Sets procurement policies for institutional food; distributes food benefits; implements school and other institutional food policies	Regulates food system; provides nutrition education	Determine food purchasing and consumption practices; participate in setting municipal food policy (C&C)
Community	Sets policies and practices in retail and food service outlets; places products within retail; creates local and point-of-purchase advertising; links between formal and informal food economies	Implements and enforces policies and programs at this level	Determines availability and quality of diet-related health care at local level; provides nutrition counselling and education	Determine food purchasing and consumption practices; participate in setting local food policy

Note: Actual allocation of responsibilities among various sectors varies by jurisdiction.

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## Results

### Product reformulation

Manufacturers redesign products for business or health reasons. In South Africa, in early 2013, the national health department announced new regulations that require manufacturers to reduce salt levels in several products that

contribute significantly to salt in South African diets.<sup>22</sup> One impetus for the new rules was a South African Department of Health strategic plan that proposed specific goals and objectives for the South African government and other sectors of society to reduce the burden of NCDs by 2017.<sup>23</sup> According to South Africa's Minister of Health, the nation's motivation to focus on NCD prevention was influenced by the 2011 United Nations High Level Meeting on NCDs,<sup>23,24</sup> an example of global events shaping national food policy.

Table 2 – Profile of Cape Town and New York.

	Cape Town		New York
Area	2454.72 square kilometres (947.8 square miles)		321.8 square miles
Average population density	1424.6 people per square kilometre (3689.8/per square mile) <sup>a</sup>		25, 383 people per square mile <sup>b</sup>
Total population (2011)	3,740,026 <sup>c</sup>		8,244,910 <sup>d</sup>
Race/ethnicity (%) (2011)	Colored (mixed race) 42.4	Black African 38.6	White 33.3
	White 15.7	Asian 1.4 <sup>e</sup>	Hispanic or Latino 28.8
			Black 22.9
			Asian/Pacific Islander 13.2
			Mixed race/other 1.7 <sup>f</sup>
Age distribution (%)	43.2 under age 24 years	51.3 ages 25–64	32.6 under 24 years
		5.5 65 or older <sup>c</sup>	55 between ages of 25–64
			12.2 above age of 65 <sup>b</sup>
Poverty <sup>g</sup> (%)	30		18.9 <sup>h</sup>
Adults over 20 with less than high school diploma (%)	53.1		27.6 <sup>i</sup>
Gini coefficient	.54 (2009) <sup>j</sup>		.536 (2005–9) <sup>k</sup>
City Gross domestic product (per capita) <sup>l</sup>	US \$56.8 billion (\$15, 721)		US \$1.21 trillion <sup>m</sup> (\$63, 238)
City budget (2012–3)			
Operating	\$2.38 billion		\$68.31 billion
Capital	\$578 million		\$9.1 billion
Total	\$2.95 billion <sup>n</sup>		\$77.41 billion <sup>o</sup>
Unemployment (%)	24 (2011)		9.6 <sup>p</sup>
Life expectancy (years)	Male 59.9	Female 65.8 <sup>q</sup> [Western Cape Province 2010]	Male 76
		Khayelitsha 1700	Female 82
Highest/lowest district overall mortality rates/100,000 pop, age standardized (Ratio)	Southern 800 [2006] (2.1) <sup>r</sup>		Brownsville 920
			Bayside 360 [2010] (2.6) <sup>s</sup>
NCD death rate/100,000, age standardized	Male 697/100,000	Female 509/100,000 <sup>t</sup> (2006)	432/100,000 population (2011) <sup>u</sup>

<sup>a</sup> <http://www.statssa.gov.za/publications/statsdownload.asp?PPN=P0302&SCH=4437>.

<sup>b</sup> <http://www.nyc.gov/html/dcp/pdf/neighbor/neighbor.pdf>.

<sup>c</sup> [http://www.capetown.gov.za/en/stats/Documents/2011%20Census/2011\\_Census\\_Cape\\_Town\\_Profile.pdf](http://www.capetown.gov.za/en/stats/Documents/2011%20Census/2011_Census_Cape_Town_Profile.pdf).

<sup>d</sup> <http://www.baruch.cuny.edu/nycdata/nyc-quickfacts.htm>.

<sup>e</sup> [http://www.capetown.gov.za/en/stats/Documents/2011%20Census/2011\\_Census\\_Cape\\_Town\\_Profile.pdf](http://www.capetown.gov.za/en/stats/Documents/2011%20Census/2011_Census_Cape_Town_Profile.pdf).

<sup>f</sup> <http://www.baruch.cuny.edu/nycdata/nyc-quickfacts.htm>.

<sup>g</sup> Poverty is defined differently in the US and South Africa. In SA poverty level is below R352 per month for adults. In the US poverty is measured using an annual income threshold set by the US Census. Current threshold for individual is \$10,830 and for family of four is \$22, 050.

<sup>h</sup> Of all people in New York City whose income was below the poverty level during the year before the census.

<sup>i</sup> <http://www.nyc.gov/html/dcp/pdf/census/sf3edp1.pdf>.

<sup>j</sup> <http://www.businessinsider.com/new-york-inequality-2011-1?op=1>.

<sup>k</sup> [www.census.gov/prod/2011pubs/acs-16.pdf](http://www.census.gov/prod/2011pubs/acs-16.pdf).

<sup>l</sup> <http://www.brookings.edu/research/interactives/global-metro-monitor-3>.

<sup>m</sup> For NY metro region, population (for metro region, pop 19,128,439).

<sup>n</sup> [http://www.capetown.gov.za/en/Budget/Documents/T4IB03577\\_Budget\\_web\\_small.pdf](http://www.capetown.gov.za/en/Budget/Documents/T4IB03577_Budget_web_small.pdf).

<sup>o</sup> [http://www.nyc.gov/html/omb/downloads/pdf/adopt12\\_fmmod.pdf](http://www.nyc.gov/html/omb/downloads/pdf/adopt12_fmmod.pdf).

<sup>p</sup> [http://www.labor.state.ny.us/pressreleases/2009/August20\\_2009.htm](http://www.labor.state.ny.us/pressreleases/2009/August20_2009.htm).

<sup>q</sup> [http://www.health24.com/news/Enviro\\_Health\\_/1-1308,71849.asp](http://www.health24.com/news/Enviro_Health_/1-1308,71849.asp).

<sup>r</sup> Groenewald P, Bradshaw D, Daniels J, Matzopoulos R, Bourne D, Blease D, Zinyakatira N, Naledi NT. Cause of death and premature mortality in Cape Town, 2001–2006. Cape Town: South African Medical Research Council, 2008.

<sup>s</sup> Bureau Of Vital Statistics. Summary of Vital Statistics 2010 the City of New York, New York. City Department Of Health And Mental Hygiene, NYC, 2011. Available online at: <http://www.nyc.gov/html/doh/downloads/pdf/vs/vs-population-and-mortality-report.pdf>.

<sup>t</sup> Groenewald P, Bradshaw D, Daniels J, Matzopoulos R, Bourne D, Blease D, Zinyakatira N, Naledi NT. Cause of death and premature mortality in Cape Town, 2001–2006. Cape Town: South African Medical Research Council, 2008.

<sup>u</sup> <http://www.nyc.gov/html/doh/downloads/pdf/vs/vs-executive-summary-2011.pdf>.

The new rules on salt were based on research that demonstrated its role in the growing burden of NCDs in South Africa and the high levels of salt in the diets of South Africans, especially in Black Africans, the largest population group in the country and also the group with the highest levels of diet-related-NCDs. Researchers had also carried out intervention studies in partnership with two major food manufacturers that showed the potential of reformulated products to lower dietary salt levels.<sup>25</sup> In this case, the regulations were developed at the national level because that level of government has the authority to regulate food and the Minister of Health was moved by the evidence to champion policy action on salt reduction. Municipal-level civil society groups played a role in educating the residents of Cape Town about salt and the new regulations.<sup>26</sup>

In the United States, it was municipal-level action that led to changes in dietary salt. In 2009, the New York City health department spearheaded the National Salt Reduction Initiative (NSRI), a partnership among health organizations and national food companies with the goal of reducing sodium intake by 20% by 2014.<sup>27</sup> Researchers estimated that reducing sodium intake by 1200 mg/day could save tens of thousands of lives annually across the nation. NSRI was a voluntary, government-industry collaboration. It set targets for 62 categories of packaged food and 25 categories of restaurant food. By 2011, 28 major packaged-food companies and restaurants had committed to NSRI.<sup>28</sup> The city health department took action partly because the national regulatory agency, the US Food and Drug Administration, had failed to take action on salt for more than four decades, both because of scientific conflicts on the evidence on salt and food industry opposition.<sup>29</sup>

In another example of municipal action for product reformulation, in 2006, the New York City Board of Health voted to end the use of artificial trans fat in the city's restaurants. Researchers estimated that 4g of trans fat daily, the amount typically in a portion of French fried potatoes, increased heart disease risk by an estimated 23%. Five years later, 95% of restaurants were compliant with the trans fat restrictions and 15 other states and local jurisdictions had passed similar rules.<sup>30,31</sup> In 2013, the US Food and Drug Administration proposed new rules that would essentially eliminate trans fat from the US food supply.<sup>32</sup> In 2011, the national government of South Africa restricted the amount of trans fat in commercially prepared food,<sup>33</sup> another example of the global dissemination of policy innovation.

### **Improvement in institutional food**

Institutions such as schools, hospitals and social service programs often provide meals and snacks to their participants; government, non-profit and commercial entities play a role in preparing and serving this food. Improving the availability and nutritional quality of institutional food can help to reduce food insecurity, and reduce obesity by improving the nutritional quality of the diets of vulnerable populations.

In South Africa, national guidelines from the Department of Basic Education require that every student receive a cooked meal each school day<sup>34</sup> that provides at least 30% of the learners' daily nutritional needs.<sup>35</sup> Menu options and serving sizes are prescribed. Independent audits suggest most schools comply with the program's organizational guidelines.<sup>36</sup> In

Western Cape, the provincial government contracts with organizations to provide these meals and most vendors are large food companies.<sup>37</sup> A study of 100 schools in the province found that most (64%) also had tuck shops, small commercial operations selling sugary beverages, sweets and snacks. Few schools had policies to govern the operations of these shops. Students who consumed the mostly unhealthy items available from the tuck shop had a lower standard-of-living than those who did not consume such items, suggesting that the presence of these unregulated outlets may contribute to differences in diet among the better off and the poor.<sup>38</sup>

In New York City, institutional food programs are shaped by national, state and city policies. New York City serves about 260 million meals and snacks a year in its schools, child care centers, jails, hospitals, homeless shelters and other agencies, providing an important component of the dietary intake of some of the city's most vulnerable populations.<sup>39</sup> In 2008, the Mayor promulgated the New York City Food Standards,<sup>40</sup> which created nutrition standards for all meals and snacks that City institutions serve or purchase. Specifically, the standards provide guidance on the nutritional quality of foods purchased by agencies (e.g. regarding sodium, sugar, fat and fiber levels) and the components of a healthy meal. These standards have provided an important starting point for the improvement of institutional food in New York City.

### **Supermarket and other food retail policies**

Studies in a variety of settings suggest that at the neighborhood level, more access to supermarkets promotes healthier diets,<sup>41,42</sup> leading some to recommend policies that increase the number of supermarkets in poor communities. However, other investigators question this relationship, pointing out that the prices and quality of food available in supermarkets mediates their impact on diet.<sup>43</sup> In practice, the distribution and nutritional impact of supermarkets is shaped by the decisions of global food producers and supermarket chains as well as market forces at each of the five levels of organization shown in [Table 1](#). In addition, the decisions that people make about how and when to use supermarkets are shaped by other characteristics of food systems, especially the availability and affordability of smaller stores and informal food vendors.

In South Africa, chain supermarkets now control more than half of the retail share of the food market, which is dominated by four major chains, all of which are South African companies, although often with partnerships with global retail chains.<sup>15</sup> Since supermarkets are closely linked to other sectors of the global corporate food supply chain, they favour the processed, high fat, sugar and salt foods that bring the food industry its biggest profits.<sup>44</sup>

Especially in big cities like Cape Town, supermarkets influence food choices directly by the products and prices they offer but also indirectly by forcing the systematic closure of small scale food producers, processors and retailers, which can lead to a decline in the availability of affordable healthy food in the poorest neighborhoods.<sup>15</sup> Studies show that although even poor residents of townships now regularly use supermarkets, they rely more heavily on other sources such as small stores and on 'coping strategies' such as food aid, shared meals with neighbors, and community food kitchens.

In Cape Town, 55% of all households report purchasing food from informal vendors in the past week and 36% report regularly shopping at such establishments at least once a week.<sup>44</sup> The recent growth of supermarkets in townships may jeopardize this informal food sector, reducing food choices and increasing prices, leading to calls for municipal action to protect, support and improve the food sold by street vendors and other informal sector workers.<sup>45</sup>

A study comparing supermarket prices in three different Cape Town neighborhoods found that energy dense but nutrient poor foods were cheaper in low income neighborhoods than better off ones, leading the authors to conclude that dietary costs pressure low-income people to consume energy-dense, nutritionally inferior diets.<sup>46</sup> Other changes in food retail environments are shaped by market forces as well as global dynamics. In summary, to date the Cape Town municipal government has not had a strong role in shaping food retail environments.

In New York City, several supermarket chains dominate the market but these are not evenly spatially distributed. A 2008 study by the city government found that three million New Yorkers live in neighborhoods with high need for grocery stores and supermarkets and that in some poor neighborhoods, supermarkets were closing, further aggravating the shortage.<sup>47</sup>

In response, the city created the Food Retail Expansion to Support Health (FRESH), which offers zoning, financial and other incentives to encourage supermarket development in low-income areas. In its first five years, FRESH helped to create or expand about a dozen supermarkets. In another effort to expand access to healthy food, city government created the Green Cart Program in which street vendors were issued licenses and received technical assistance to enable them to sell fresh fruits and vegetables in low income city neighborhoods.<sup>48</sup> A recent evaluation of Green Carts found the program had increased access to fruits and vegetables in low income neighborhoods.<sup>49</sup>

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## Discussion

These brief descriptions of selected changes in food environments and policies in Cape Town, South Africa, and New York City, United States, illustrate both the challenges and opportunities municipal governments face in taking action to prevent diet-related NCDs.

In the case of product reformulation, it was the failure of national government to act that led New York City to use its own authority to reduce levels of salt and trans fat in the diets of New Yorkers. For salt, the city government chose a voluntary strategy, one that acknowledged its limited jurisdiction in the matter and the technical complexities of lowering salt in thousands of products. For trans fats, the city used the unique powers of its Board of Health, a non-partisan expert panel that sets the city's health code, to require restaurants to end the use of artificial trans fat. In doing so, it established a precedent that many other local and state governments followed, showing the power of municipal governments to innovate in food policy.<sup>31</sup> In addition, some major food retailers found it easier to reformulate all product lines than to produce different products for different jurisdictions.

In South Africa, the national government was willing to act on salt and the municipal government lacked authority to mandate reformulation. In this case, national regulations, if properly enforced, will bring about changes in the diets of all South Africans, potentially contributing to more impact on population health than a process of change triggered by voluntary and municipal action.

In both Cape Town and New York City, improving institutional food has the potential to improve the diets of vulnerable populations and to contribute simultaneously to reducing food insecurity and diet-related diseases. In both cities, the nutritional quality and scope of institutional food programs are shaped by national and regional rules and funding streams, limiting the city's capacity to maximize the benefits of these programs. In addition, in both cities, large food companies play a central role in provisioning institutional food programs. This practice increases the use of processed food, which are often less expensive, easier to prepare, and have longer shelf lives but contribute less to NCD prevention than would fresh fruits and vegetables and other unprocessed products.

The New York City Food Standards illustrate how a local government can use its existing authority to improve the quality of institutional food. Although implementing the standards is a complex administrative task, the rules provide an opportunity to educate municipal agencies and community-based service providers about their potential to improve the well-being of their clients.

In both Cape Town and New York, market forces, rather than government policy, play a central role in determining the distribution of retail outlets and the quality and price of healthy and unhealthy food. In both cities, food environments differ significantly between low-income and better off neighborhoods, a consequence in part of historic patterns of class and racial/ethnic housing segregation. Some analysts have suggested that ending patterns of housing segregation could do more to improve food environments than any specific food policy.<sup>50</sup>

In both cities, the supermarket sector influences and is influenced by smaller food stores and an informal food sector. New York City has used its zoning and taxing powers to offer incentives to supermarkets to locate in low income communities. In both Cape Town and New York, researchers and public officials are exploring ways to encourage street vendors to serve low income neighborhoods, both as an economic development strategy and, in New York, through the Green Carts programs, to improve access to fresh fruits and vegetables.<sup>48,51</sup> Whether such interventions can achieve a scale sufficient to change diets and NCD risk factors at the population level remains to be assessed.

Although both Cape Town and New York are wealthy—and unequal—world cities, New York is much wealthier. Its per capita GDP is 4 times that of Cape Town's and its per capita city municipal spending is almost 12 times higher (\$9389 vs. \$789). The two cities also have different governance structures that provide New York City with relatively more authority and resources to shape its own social environment.

Despite these differences, both Cape Town and New York, like other large cities in middle and high income nations, face similar challenges in developing a comprehensive agenda to prevent diet-related NCDs. Both have food systems that make

unhealthy food more available in low-income than higher income neighborhoods, both are coping with food environments in which unhealthy food is increasingly ubiquitous, and both have political economies dominated by the business and financial sectors.<sup>52,53</sup> These groups often oppose changing the structural factors (e.g. income inequality and high rates of poverty) that contribute to NCDs and other health and social problems.<sup>2,3,7</sup>

New York City's greater wealth gives it the resources for more robust government programs and its governance system gives it greater capacity to use policy to modify local food environments. For the most part, however, its interventions on food policy—trans fats, super market incentives, food standards for institutional food programs—relied not on spending city resources but on using its political powers strategically to change food environments.

On the other hand, in comparison to the United States, the South African national government seems more willing to use its regulatory powers to protect health. In addition, national and provincial responsibility for education and health care free the municipal government from needing to find the resources to fund these services equitably across income groups. In New York City, despite its greater wealth, socio-economic disparities in public funding for education and health care contribute to the stark differences in NCD risks and burden across the class gradient and racial/ethnic groups.

In neither city has municipal government been able to do much to influence the fundamental causes of NCDs or their differential impact on sub-populations. Neither has made recent progress in reducing income inequality, housing segregation, promotion and ubiquity of unhealthy food, or vulnerable populations' lack of access to primary care and preventive services, all factors that can enhance the prevention of NCDs among the most vulnerable populations.<sup>54</sup> Progress in these areas may require more transformative political changes than seem imminent.

This pessimistic assessment does not preclude municipal governments from acting to reduce NCD risk. The comparison suggests several strategies that have promise in both Cape Town and New York.

First, since both cities already have authority to regulate food safety in retail outlets and restaurants, municipal government could seek to expand these responsibilities to include taking action to reduce the saturated fat, salt, sugar, refined grains and calories in the food sold in these establishments.<sup>55</sup> Both regulatory and voluntary approaches can play a role.

Second, in both Cape Town and New York City, municipal agencies and civil society groups are exploring how to create food jobs that simultaneously make healthier food more available, reduce unemployment and promote local economic development.<sup>56,57</sup> These urban intersectoral approaches, based on WHO's 'health in all policies',<sup>58</sup> can bring new players to the food policy table and catalyze action that can address several serious urban problems.

Third, while nutrition education has for the most part not been shown by itself to lead to changes in diet-related diseases,<sup>59</sup> in combination with other policy interventions, it may make a difference. In partnership with civil society groups, municipal governments can launch educational campaigns in schools, communities and workplaces to reduce

the demand for unhealthy food, assist families to reclaim healthier food preparation skills, and to serve as an antidote to the food industry's relentless promotion of unhealthy food.

Fourth, municipal governments can find ways to use their existing authority to restrict the promotion of unhealthy food, especially to children. Banning advertisements for unhealthy food on municipal property and transport systems could be a starting point.

Fifth, other cities, especially in Brazil, have developed a healthy food public sector that includes public markets, healthy food subsidies for growers and consumers, procurement guidelines for school food programs, and urban agriculture projects.<sup>60</sup> Not only can this sector make healthy food more available and affordable to low income populations, it can also compete with the corporate food sector, forcing changes in products and prices. Over time, scaling up some of the small such ventures that already exist in Cape Town and New York could create a robust, affordable alternative to the processed food that increases NCD risk.

Finally, municipal governments need more useful research evidence to translate into policy. Among the questions that warrant investigation are:

1. How can cities create programs that simultaneously reduce food insecurity and diet-related diseases?
2. What are the pathways by which local, national and global business practices influence NCD risk?
3. What are the most effective and feasible strategies for modifying food industry practices that elevate NCD risk?
4. How can cities best support sustainable alternative local food systems that can offer healthy, affordable food?
5. How can cities encourage better coordination among local, regional and national governments? What role can alliances of cities play in catalyzing such cooperation to achieve NCD prevention goals?

Through their intimate connections with the daily lives of their residents, municipal governments have the potential to shape environments that promote health. Every city, no matter how constrained by scarce resources and limited mandates, can do more to develop food policies and food environments that reduce the risk of diet-related NCDs. The authors hope this examination of the experiences of two cities will inspire others to expand the boundaries of this potential.

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## Author statements

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