ORIGINAL ARTICLE

Governing Longevity: Ethical and Social Trade-offs in Singapore's State-Led Health

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ABSTRACT

This paper examines the ethical implications of Singapore's emergence as the first engineered "Blue Zone 2.0," where public health outcomes are shaped through deliberate state-led policies rather than organic cultural practices. Drawing on theories of governmentality, liberty, and public health ethics, the paper develops a framework to assess how Singapore's policies simultaneously preserve formal freedoms and subtly guide citizens toward state-preferred behaviors. Through four tensions—non-interventionism, soft coercion, collective welfare, and the expansion of state authority—the analysis finds that Singapore's model blurs boundaries between governance and daily life. While policies improve population health and reduce preventable disease, they also rely on environmental nudges and moralized expectations that complicate individual autonomy and expand the cultural role of the state. The paper concludes that Singapore's engineered longevity challenges traditional ethical limits on state intervention and raises broader questions about autonomy, equity, and the political nature of designing health at scale.

Keywords: Blue Zones; Singapore; public health ethics; governmentality; soft coercion; autonomy; biopolitics; engineered environments; state intervention; longevity policy

Cities around the world are increasingly turning to engineered environments to promote healthier populations. The Blue Zone framework—regions where people live exceptionally long lives due to supportive social and physical environments—has become a model for designing longevity at scale. What started as five natural Blue Zones—Sardinia in Italy, Okinawa in Japan, Loma Linda in California, Nicoya in Costa Rica, and Ikaria in Greece—has turned into countries, specifically Singapore, engineering environments to emulate this. This raises an important ethical question for modern governance: what are the ethical implications of engineering health outcomes through top-down mandates? Using Singapore, the world's first "Blue Zone 2.0", as a case study, this paper examines how deliberate state policies can shape the conditions of daily life in ways that appear voluntary yet quietly guide citizens toward state-preferred behaviors.

I argue that while Singapore's Blue Zone inspired policies preserve formal freedoms and produce collective health benefits, they nonetheless rely on subtle forms of soft coercion and an expanded role of state authority that complicate individual autonomy.

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To situate this argument, I first outline the original Blue Zone concept developed by Dan Buettner and explain how Singapore's policy-driven model diverges from the natural Blue Zone model. I then describe the set of political and ethical theorists I will utilize to assess these interventions. Bringing together Foucault, Rose, Jasanoff, Mill, Berlin, and additional theorists, I build a framework to assess the population-level health engineering's ethics in Singapore. Using this framework, I analyze Singapore's interventions through four tensions: non-interventionism, soft coercion, prioritization of collective benefit, and the redefining of the state's cultural and moral authority. Subsequently, the discussion section synthesizes these findings to assess what Singapore's case reveals about the ethics of engineered longevity. Finally, the paper concludes by reflecting on the broader implications of designing health through state-led mandates.

BACKGROUND

The concept of a Blue Zone, coined by Dan Buettner, refers to regions in the world where people live exceptionally long and healthy lives, often reaching 100

years of age[1]. The original five Blue Zones—Sardinia in Italy, Okinawa in Japan, Loma Linda in California, Nicoya in Costa Rica, and Ikaria in Greece–share similar cultural and environmental traits that support healthy aging such as natural hills where daily walking is necessary or plant rich diets. Studies in these regions have shown that health is less about genetics and more about daily environments and social structures that make the healthy choice the default one.

Building on these observations, researchers identified the "Power 9" Principles that describe specific habits to promote longevity. These include natural movement through daily activity, a strong sense of purpose, stress relief routines, the 80% food rule, plant rich diets, wine at 5, having a strong sense of belonging, building strong family bonds, and having supportive social networks[1]. For instance, in natural Blue Zones, people stay active not through deliberate workouts but by tending to their garden or walking to neighbours' homes. Likewise, communal meals and family gatherings reinforce moderation, purpose, and connection. Together, these principles illustrate how longevity is not based on individual willpower but rather it is built on environments and cultures that encourage healthy aging.

Recently, Singapore has been designated as the first "Blue Zone 2.0", because its environment was not based on centuries of cultural traditions, but rather deliberate policy implementations (policies outlined in next sub-section). As a small city-state facing the issues of aging populations, high healthcare costs, and rising rates of chronic disease, Singapore has had to engineer a society that encourages healthy living to reduce the long-term burden of disease on its healthcare system and preserve its people's wellbeing[2].

This engineered approach has produced measurable results. Dan Buettner himself discusses how Singapore has the world's highest health-adjusted life expectancy, demonstrating that carefully structured environments have the potential for the same benefits as natural Blue Zones[3]. Specifically, Singapore has made policy changes in housing, transport, healthcare, and community life to create a new longevity model[4,5]

Singapore's policies map closely onto Buettner's Power 9. For example, to "move naturally", the government discourages private car use by raising car taxes and invests highly in public transports and walkable regions[6]. Furthermore, "purpose" and "belonging" are supported by religious participation and community programs such as Active Ageing Centres[7]. "Downshifting"—an idea which emphasizes the integration of daily stress-free habits—is supported by flexible environments for seniors to volunteer in and wellness activities to participate in[1].

Food-related principles are addressed through the promotion of healthy food. This occurs through the Healthier Dining Programme which incentivizes food stalls to serve healthy foods such as brown rice and wholegrains, and through a labelling system so citizens are aware of what they are consuming[5]. Family bonds are strengthened by the Proximity Housing Grant which financially supports multi-generational living, and social networks are reinforced by Healthier SG[4]. Taken together, Singapore illustrates how these natural Blue Zone principles can be incorporated to increase healthy aging spans and make it the default for Singaporeans.

The Blue Zones principles have been applied to other settings, beyond their original settings and Singapore. For instance, it has been adapted through the Blue Zones Project in the United States. Beginning with a pilot in Albert Lea, Minnesota, in 2008, the initiative tried to build a "life radius" which puts schools and all essentials within walking distance of one's residence[1]. Similar initiatives have spread to parts of over 27 US cities, showing that the underlying principles of natural Blue Zones can be adapted to urban settings to promote longevity for population-level health outcomes[8].

While the Blue Zones framework offers clear health benefits, it raises important ethical debates. Specifically, in Singapore and other urban settings, these policies promote a framework of neoliberal governance, however it could glaze over structural determinants such as socioeconomic inequality that makes initiatives less effective for some[2,8]. Furthermore, these policies walk a fine line between empowerment and paternalism, potentially limiting individual choice in the name of collective health.

These tensions prompt broader ethical reflection: to what extent should governments shape individual lives to optimize health? Who benefits most from these policies and who gets left behind? Although this engineered longevity in Singapore can benefit some Singaporeans in living content, fulfilling lives, the project of designing health is political, ethical, and medical[9].

THEORETICAL FRAMEWORK

What should a Government do?

Foucault describes the "art of government" as an important concern for political thought, emphasizing

its purpose as its "state" and demonstrating how governments should limit their power to their state[10]. Furthermore, he describes the structure of liberalism, stating how governments should be both externally limited by laws and internally limited by principles. Essentially, Foucault highlights the balance between interference and freedom that a government has to tether between. However, this creates a fragile equilibrium between intervention and liberty which modern societies continue to navigate in their pursuit of social order.

Jassanoff and Rose suggest where this line may be. Adding a nuanced angle to this, Jasanoff discusses how governments need to act differently for the purpose of their societies. This can be influenced by different civic epistemologies, the way in which societies justify their knowledge claims, and their various political norms and beliefs within their society[11]. This is important to consider because of modern day cognitive and political shifts influenced by realist versus constructivist mindsets and the effects of global economies and globalization. Rose adds to this idea by explaining the gradual changes in how individuals are expected to govern themselves through, highlighting how modern systems have dispersed power[12].

Together, these writers suggest that the government's role is not isolated and should be considered by taking together its purpose, or "state", the cultural and political norms of its society and changing power dynamics between individuals and institutions.

Impact on Liberties

At the heart of this philosophy lies the tension between government authority and individual liberty. Mill's central argument is that absolute liberty in terms of discussion and individuality should be given to individuals as this is essential to a society's progress and happiness[13]. Primarily through the harm principle, he furthers this argument by discussing how coercion by authority should only be used when an individual's actions can threaten the livelihood of others.

Where Mill emphasizes absolute freedom, Foucault and Rose highlight how liberal governments structure liberty itself, through legal and social norms[10,12,13]. Specifically, Foucault complicates this framework by showing how liberal governments are structured through a tension between liberty and intervention, described as the "crisis of liberalism". Specifically, he described government intervention being limited in two ways: the rights of individuals and the utility of the intervention. Similarly, Rose describes this dynamic in contemporary biopolitics; he describes how while individuals seem free, societal norms coerce them into taking increasing responsibility for their health and risks. In line with Rose's notion of self-governance, Illich critiques the expropriation of health by emphasizing that autonomy and balance are essential for individuals to shape their own well-being in society[14].

Taken together, these frameworks suggest that liberties are not just reduced or expanded through government intervention, but they are shaped by responsibilities, freedoms, and regulations. Yet, this raises the question of how much agency individuals truly have in modern liberal systems.

Different Types of Liberties

To understand this tension, different types of liberties and their frame of these debates have to be considered. Berlin's framework of a negative and positive liberty provides a foundation for understanding modern debates[15]. While negative liberty discusses non-interference, emphasizing a space for individuals to act freely, positive liberty discusses the idea of self-mastery and how to govern oneself. Berlin warns that positive liberty can transform into coercion when authorities justify oppression as for the greater good. Mill's ideas are more optimistic, treating liberty as essential to progress and individuality[13]. Moreover, Foucault adds a new dimension by showing that liberties are produced and managed within liberal governments[10].

These tensions also emerge in contemporary health contexts. Illich warns about the industrialization of medicine harming individual autonomy, reducing liberties[14]. While Royo-Bordonada & Román-Maestre and Childress emphasize collective responsibility and population-level interventions, they recognize the importance of autonomy, transparency, and participation[16,17].

These perspectives reveal an encompassing way to view different liberties, from non-interventionism to self-expression to a constructed condition arising from governance and authority.

Coercion

While the concept of liberty demonstrates the possibilities of individual action, coercion demonstrates its constraints. Coercion is looked at through various levels of skepticism. On one hand, Berlin looks at coercion as dangerous when considering it as an impact of positive liberty, when authorities force individuals into self-realization[15]. Similarly, Rose shows coercion

through ethopolitics, where coercion is internalized as individuals are given the responsibility of managing and regulating their own health and behavior[12].

Furthermore, Illich discusses coercion in health as the subtle imposition of authority on individual health decisions[14]. Public health ethics frameworks highlight similar dilemmas such as the prevention paradox, which shows the tension between collective benefit and personal liberty[16,17].

On the other hand, Mill draws a contrast between accepting coercion in different cases: while it is acceptable to prevent individuals from causing harm to others, it is unacceptable to attempt to regulate self-regarding behavior[13]. Foucault shifts the idea of coercion to subtle disciplinary mechanisms, such as surveillance and selective interventions[10].

Collectively, these perspectives demonstrate that coercion isn't a direct force, but rather is a spectrum that is determined by social, legal, and self-regarding norms.

Taken together, these theories reveal the concept of liberty as far more complex than just freedom and restriction. Yet important questions remain unsolved: to what extent can individuals exercise genuine liberty in their liberal societies? How do these societies balance freedom with the need for intervention? These questions hold particular weight in contexts like that of Singapore, where public health policies try to convert Singapore's society into a Blue Zone. Examining these tensions in Singapore's system sheds light on how intervention either strengthens or risks different liberties.

ANALYSIS

Intervention vs. Non-intervention

Through a non-interventionist perspective, Singapore's policies appear ethical because they preserve freedom from interference. As Foucault explains through the concept of governmentality, modern power operates not through direct control but through the subtle shaping of individuals' conduct[10]. Policies that embody this include the Healthy Foods Policy, Healthier SG screenings, and ActiveSG gyms that reconfigure environments so that healthy behavior becomes the easiest, most visible, and socially praised option[3,4].

Technically, the interventions do not appear to be ethically problematic. There are two reasons for this. First, they neither restrict choice nor penalize non-compliance, and second, they interfere only to prevent harm. These 2 principles correspond with Berlin's concept of negative liberty, freedom from interference, and Mill's harm principle, which justifies intervention only when it prevents harm to others[13,15]. I will expand on this below.

First, by not making any of their policies mandatory, Singapore doesn't restrict choice or penalize non-compliance. Initiatives such as the Healthy Foods Policy and Healthier SG Screenings are designed to encourage participation, not to compel it. For instance, the Healthy Foods Policy does not ban sugar-rich drinks but instead promotes reduced-sugar options through labelling. Likewise, the Healthier SG screenings are voluntary health checks that citizens may choose to attend with added monetary incentives. In both cases, the state creates conditions that make healthy choices more accessible and socially valued, but the ultimate decision remains with the individual. This approach aligns closely with Berlin's idea of negative liberty, which defines freedom as the absence of external interference[15]. As long as individuals can make their own decisions without coercion or penalty, their liberty remains intact.

Second, by interfering only to prevent harm, Singapore respects citizen freedom while fulfilling its responsibility to protect public welfare. Mill's harm principle holds that state power is justified only to prevent harm to others, not to control individual conduct for its own sake[13]. Chronic diseases, rising healthcare costs, and public health burdens can all be understood as forms of collective harm. Singapore's policies address these risks by promoting early detection and prevention, encouraging citizens to act before harm occurs. In this way, the state's involvement can be viewed not as paternalistic but as protective. It intervenes preemptively to reduce harm to both individuals and the healthcare system, aligning with Mill's ethical threshold for legitimate state action.

When these perspectives are considered together, Singapore's Blue Zone inspired interventions appear ethically sound. If we believe the policies to be upholding formal freedoms and only intervening when harm is present, citizens are able to act freely within a supportive environment. However, it is precisely the state's emphasis on voluntary, harm-preventative governance that opens the door to another ethical concern: reliance on soft coercion in personal decisions.

Soft Coercion

Beyond formal freedoms, Singapore's policies exhibit soft coercion, especially in policies governing personal and family life. For example, Proximity Housing Grant and medical screening programs have an almost

coercive aspect especially because they subtly enforce a traditional state-preferred model of the family and make personal health an institutionalized expectation.

The Proximity Housing Grant, for example, incentivizes married couples to live within four kilometers distance of their parents[7]. Officially, although this is justified to promote social cohesion and family care, it subtly enforces a traditional state-preferred model of the family. While participation is voluntary, the design of incentives, more often monetary incentives such as subsidies or grants, guide citizens toward state-preferred actions. Rose's concept of "coercive benevolence" highlights how this policy is framed as caring but designed to align personal lives with state goals[12]. From Rose's idea, there is an argument to be made that this policy is unethical because it only rewards those who follow the traditional values of Singapore[12]. Specifically, the Proximity Housing Grant only aligns with those who are married, meaning that those who diverge–unmarried individuals or those seeking independence–receive fewer benefits, resulting in moralized inequality.

Similarly, medical screening programs through Healthier SG encourage regular health monitoring[4,7]. While this is voluntary, the monetary incentives provided reveal institutions expectations. Here, Illich's critique of medicalization becomes relevant: what were once private choices—exercise, diet, preventive care—are now guided by institutional norms, with moral and social expectations attached[14].

In Singapore, familial love becomes policy and personal health becomes an institutionalized expectation. These policies do not force behavior but rather make alternate choices more costly or socially questionable, demonstrating paternalism disguised as choice. In this way, Singapore's policy turns a personal matter into something shaped by the state.

If we believe soft coercion to be unethical, when these perspectives are considered together, the ethical concern becomes clear. Rose and Ilich's theories demonstrate that even voluntary programs carry a coercive nature. Through Foucault's critique, these ideas are put into perspective by showing that this indirect governance extends into the private sphere, shaping self-regulation even in matters of self-monitoring health and family beliefs. The ethical tension is then rooted in the moralization of private conduct, not just the health outcomes.

Prioritization of Collective Benefit

Singapore often defends its strategies using arguments about collective welfare. Many of Singapore's interventions, such as ActiveSG gyms, health screenings, and car taxes are designed to maximize health outcomes at the population level. However, a downside to this is the disadvantages to individuals who experience inequities.

The prevention paradox explains Singapore's focus on population-level interventions: policies that bring small gains to many, like ActiveSG gyms or health screenings, produce larger overall health outcomes than only targeting certain groups[3,17]. For example, initiatives like food labeling and ActiveSG gyms may only slightly change behavior for any single individual but when millions of citizens are exposed to these measures, the cumulative impact on public health is significant, reducing chronic disease and healthcare burdens. The approach also reflects a utilitarian logic of maximizing overall health outcomes, even if individual benefits are modest. Similarly, when we consider the car taxes and COE, this benefits the public in the interest of reducing congestion and carbon emissions[2]. From Berlin's theory of positive liberty, freedom is not merely the absence of interference but the ability to achieve collective well-being through state intervention[15]. In this way, these interventions align with his theory of positive liberty. Through Mill's harm principle, liberty restrictions can only be justified to prevent harm[13]. Therefore, we can say that excess tax reduces harm by reducing the number of car accidents and reducing air pollution, thereby helping public health.

However, this creates a tension between public benefit and personal freedom. These policies which attempt to engineer population health may marginalize those who resist or cannot comply. So, while citizens may benefit from well-being and equity policies, they trade off autonomy, demonstrating the hidden costs of prioritizing collective health. Specifically, the car taxes and COE restrict personal freedom to own a car. Although designed to manage congestion and environmental impact, these measures disproportionately constrain lower-income groups who face reduced mobility options. From a negative liberty perspective of Berlin, this intervention shows clear intervention by excess tax, meaning that this does impinge on individual negative liberties. Similarly, people with disabilities may feel judged or stigmatized in an environment where ActiveSG gyms, or traditional exercise, are promoted. Furthermore, some people may have difficulty attending screenings due to work or transport. Although in Singapore, in many cases, legal leave exists for different people, a lot of Singaporeans deter medical care because of the potential cost of work obligations and burdening family members[19].

In sum, Singapore's population-level interventions illustrate a clear ethical trade-off. On one hand, policies like ActiveSG, food labeling, health screenings, and car taxes are ethically defensible at the collective level: they maximize overall health outcomes, prevent harm, and advance societal well being. On the other hand, these same policies can create inequities and impose disproportionate burdens on individuals. This ethical tension underscores that policies promoting collective welfare are not automatically ethically neutral, but their impact needs to be assessed on both aggregate and individual levels.

Cultural Narratives

A central feature of Singapore's Blue Zone-inspired policies is the creation of a cultural narrative around health optimization, referred to as health engineering. Through carefully designed intervention, Singapore's state uses science, metrics, and behavioral economics to redefine what it means to live a healthy life: eat healthy, stay active, support your parents, and contribute to the community[5,6].These policies are encoded in everyday living through subtle reforms in Singapore's environment, shaping what counts as a normal state. This raises ethical concerns when Singapore's redefinition of the state makes health institutionalized.

According to Max Weber, the state is traditionally understood as "a polity that maintains a monopoly on the legitimate use of violence", exercising coercion only when necessary to maintain order and protect citizens[20]. Under this conception, the state's authority is fundamentally political and legal. Yet Singapore's health engineering policies expand this definition, shaping cultural norms, moral expectations, and personal lifestyle choices. Health becomes an institutionalized expectation of citizenship.

This expansion is reinforced through Rose's concept of moral governance , in which citizens internalize state-defined ideals of health and responsibility, treating them as obligations[12]. Foucault's idea of governmentality further clarifies that this influence is not coerced but rather based on the structure of the environment, making compliance natural and expected[10]. In this sense, Singapore blurs Weber's boundary of state, shifting from political authority to engineer of everyday life.

Dawson and Verweij deepen this ethical critique. They argue that public health is often seen as a struggle between individuals and state[21]. In reality, they assert that effective public health is distributed across multiple actors such as communities, workplaces, schools, NGOs, religious groups, and more. By centralizing the health narrative, Singapore collapses this plurality and defines public health as part of the state's role, reinforcing the government's expanded ideological authority.

Taken together, these perspectives reveal a deeper ethical tension. Singapore's policies may not involve overt coercion, but by repositioning the state as the engineer of public health, they normalize its expanded moral authority. If we consider the ethical limits of state intervention[10], Singapore's policies become ethically problematic because they actively shift the boundary of what counts as a legitimate role of the state by blurring lines between governance, culture, and personal life.

DISCUSSION

The analysis demonstrates that Singapore's model complicates conventional ethical ideas about the limits of state power because it subtly redefines its role as the state. Rather than governing only through laws, Singapore inserts itself into daily life, culture, and individual health behaviors. In doing so, Singapore becomes less of a regulator and more of an architect of healthy behavior in the society. As a result of these interventions, many citizens follow and support these health initiatives that have extended the lives of people in the society.

Yet, this blurring of the line between personal life and government intervention raises unresolved questions: where is the boundary between guidance and intervention? While Foucault and Weber offer useful points to describe and define the line, they do not specify whether these bounds are arbitrary or normative. This uncertainty of Singapore's model makes it hard to qualify the ethics of its level of state intervention.

However, this analysis also has limits. It does not fully engage with the positive health benefits of Singapore's model, especially these Blue Zone inspired policies leading to a reduction of the gap between life expectancy and health-adjusted life expectancy[3]. Moreover, this paper also relies heavily on existing literature rather than fieldwork or interviews with Singaporeans, making it more of a scholarly interpretation rather than lived experience. Incorporating these perspectives could help add nuance and reveal how individuals navigate these blurred boundaries.

On the other hand, this analysis raises key questions in new areas for researchers to look into to understand the ethics of a policy driven Blue Zone model. Small communities in the United States where Blue Zone inspired policies have already been implemented can be compared to Singapore's model to understand the ethical differences[8]. Furthermore, another question

that arises is understanding the key differences in health outcomes between natural Blue Zones versus policy driven models such as that of Singapore. This can help us understand more about the scale of its positive impact on individuals. It is also important to address and discover the questions about equity in these policies—how Singapore might have potentially widened the gap within their population between those who have the ability to comply and others who do not.

CONCLUSION

This paper set out to answer one question: what are the ethical implications of engineering health outcomes through top-down mandates? I began by outlining Dan Buettner's original Blue Zone concept to demonstrate the difference between natural and policy-driven Blue Zones, such as that in Singapore. To evaluate the ethics of this, I created a theoretical framework drawing on government intervention, the idea of state roles, theories of freedom, and the institutionalization of health. Using these ideas, I analyzed Singapore's interventions through four tensions: its preservation of formal freedoms, its reliance on soft coercion, its prioritization of collective health benefits over individual benefit, and its expansion of the state's role.

From this analysis, I conclude that Singapore's artificially constructed Blue Zone model complicates conventional ethical ideas about the limits of state power because it subtly redefines its role as the state, blurring the line between personal health and government intervention.

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