Proceedings of CONF-BPS 2026 Symposium: GenAI, Labour Markets, and the Economics of Human and Financial Capital
DOI: 10.54254/2754-1169/2026.LD31763

Structural Roots and Policy Pathways: A Multilevel Analysis of Health Inequality in the United States

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Abstract. This study focuses on the long-standing health inequality phenomenon in the United States, finding that despite the advanced medical technology and significant investment in research and development in the country, the health gap between different racial and economic groups remains significant. This paper aims to explore the reasons behind this contradictory phenomenon. Based on the theoretical framework of health social determinants, the study first describes the current manifestations of health inequality, including the continuously expanding gap in life expectancy and phenomena such as "despair caused by medical costs". Subsequently, the article conducts an analysis from two structural roots: one is the long-standing systematic distribution imbalance of economic resources and geographical space; the other is the continuous influence of historical and institutional racism. These two reasons jointly lead to the decline in individual and group health levels, the impairment of the medical system's efficiency, and the weakening of the overall resilience of society. To address these issues, this paper proposes dual-track reform suggestions: one is to establish a universal medical security system centered on universal prevention; the other is to implement mandatory racial equality impact assessment and data accountability mechanisms to eliminate institutional discrimination. From the conclusion, it can be seen that this study not only systematically explains the deep-seated reasons for health inequality but also provides specific paths and values for policy makers, the healthcare and insurance industries, and social investors to promote health equity and develop innovative solutions.

Keywords: Health Inequity, Social Determinants of Health, Structural Racism, Universal Healthcare, Health Policy Analysis

1. Introduction

Although nearly 18% of the United States' GDP is invested in healthcare - the highest proportion in the world - among high-income countries, its life expectancy and health equity are at the bottom. A core contradiction that is increasingly prominent in the field of public health is that although medical technology has significantly improved compared to the past and diagnostic and therapeutic methods are constantly innovating, the health gap between different social groups has not narrowed but instead shows a trend of widening. This indicates that technological progress alone cannot overcome the structural obstacles rooted in the social and economic system. This situation is particularly

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typical in American society - despite being the country with the highest global investment in medical research and development and the most concentrated advanced medical technologies, health inequalities among different racial, class, and regional groups are very serious, creating a contradiction where "high technology" and "high gap" coexist. This reality profoundly reveals that the problem is not caused by the insufficiency of medical technology itself, but by deeper factors such as resource allocation, social and economic structure, and historical policy arrangements. Based on this, this paper, taking the core theoretical framework of health determinants (defined by Dahlgren and Whitehead's social determinant model and Link and Phelan's root cause theory) as the foundation, aims to systematically analyze the fundamental structural causes of health inequality in the United States and thereby explore public policies or response strategies oriented towards fairness. Choosing this topic was due to its direct connection to the core issue of fairness in contemporary social development: Despite the unprecedented prosperity of material wealth in this era, why are there such significant differences in health issues (from life expectancy to disease burden, etc.) among different groups? Exploring this question has urgent practical significance: It directly relates to the quality of life and dignity of hundreds of millions of people, profoundly influencing the rational and fair distribution of limited social resources, and fundamentally determining a country's ability to respond to major public health crises.

Although the severity of health inequality has been well established, its structural roots and policy solutions remain controversial. Existing research indicates that this issue has multi-dimensional characteristics. Based on a large amount of data from the 2022 Behavioral Risk Factor Surveillance System, Tang et al. revealed that in the United States, minority adult individuals bear significantly higher burdens in health-related social needs (such as social isolation, food security, and housing stability) than white adult individuals. These empirical data clearly show that there are profound racial structural differences behind the phenomenon of health inequality [1]. Lao et al. systematically evaluated the ability of the National Health and Nutrition Examination Survey (NHANES) as a national monitoring system to capture and reflect social determinants and its limitations from the perspectives of methodology and data foundation. Their research emphasized the indispensability of establishing a high-quality, multi-dimensional data system for accurately identifying vulnerable groups and scientifically assessing the effectiveness of policy interventions [2]. Huwen et al. through in-depth analysis of the global impact of the COVID-19 pandemic, convincingly demonstrated how social factors such as the density of living environment, the safety and flexibility of job types, etc., significantly exacerbate the impact and health damage of infectious diseases on socially and economically disadvantaged groups. Therefore, they used the crisis as a mirror to confirm that social structural factors are the key variables determining the success and fairness of public health crisis responses [3]. Additionally, Wicks et al. further explored deeper aspects by studying the long-term and complex relationship between health and wealth, thereby more comprehensively revealing this issue. Researchers proposed that deep-seated inequality in wealth and income distribution may be the fundamental economic root of health differences, providing a crucial theoretical basis for implementing macroeconomic policy interventions in the field of population health [4]. These studies collectively indicate that social determinants play a crucial role in exacerbating the problem of health inequality. However, the comprehensiveness of the existing literature is still insufficient: Most studies only identify the problem, describe its correlation, or assess it in a single domain, while in designing, implementing, and evaluating comprehensive policies that can drive structural change, there is a significant lack of theoretical exploration and empirical evidence. Therefore, this study adopts a structural political economy analytical perspective, methodologically combining quantitative data analysis and policy process

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tracking, and attempts to construct a three-stage analytical framework covering phenomenon diagnosis, root analysis, and path exploration. Based on some recent authoritative reports, this study systematically reviewed the specific manifestations and changing trends of health inequality in the United States across multiple dimensions (such as race, ethnicity, socioeconomic status (measured by income, education, and occupation), and geographical regions). This study particularly focused on the deep systemic factors that are often masked by individualized narratives. Health differences are often simplified to individual choices or genetic differences, but what really needs to be analyzed are the long-standing social economic structures, discriminatory policy legacies, the inherent logic of resource allocation, and the political decision-making process that affects the distribution of health resources. These forces are transmitted and superimposed along the "social determinants of health" chain, causing the health disadvantages of specific groups to become increasingly entrenched. Based on structural analysis, this study further proposes an intervention approach and governance possibility that focuses on fairness and emphasizes policy coordination. This not only involves understanding the mechanisms of inequality formation, but also aims to provide several feasible thinking directions for policy formulation and social actions, thereby fundamentally alleviating health disparities and promoting the establishment of a more complete system. It should be pointed out that if these deep-seated structural problems are not faced and responded to, what they will perpetuate will be far more than the health predicaments of specific groups of people, and may also affect the overall economic vitality of society and the position of the country in the global pattern.

2. Empirical manifestations: three-dimensional evidence of health inequality in the U.S.

Based on the theoretical foundation described in the previous text, this section will reveal through data the severity and multi-dimensional characteristics of current health inequality in the United States. Currently, health inequality in the United States is becoming increasingly severe, and this phenomenon is particularly prominent in three aspects: life expectancy, medical accessibility, and development trends.

First of all, there is a significant gap in life expectancy in the United States, which reflects a fundamental difference in living opportunities. Over the past few decades, the growth rate of life expectancy in America has been very slow, significantly lower than that in most other industrialized countries. More international comparative studies have shown that compared with 13 high-income countries such as Japan and Australia, the mortality rate of both men and women in the United States from birth to 75 years old is significantly higher, and their overall health status is at a relative disadvantage [5]. This not only indicates that there are problems in improving the overall health of the nation, but also highlights the serious structural inequality within the United States.

Secondly, there exists a deeply rooted economic exclusion in the medical system. High medical expenses have become a widespread social burden, which directly leads to the emergence of a large number of "cost-desperate" people (a term proposed by health economists, referring to individuals who give up seeking medical treatment due to their inability to afford medical costs, despite their health needs) - every year, a large number of adults abandon basic medical services and medications due to their complete inability to afford them. In addition, low-income families, African Americans, and Hispanic adults bear a much higher economic burden than their white peers. A large number of studies have shown that nearly a quarter of low-income families are deeply trapped in this predicament, becoming the highest-risk group for interrupting treatment or giving up medication due to economic constraints. This reality fundamentally determines that medical accessibility depends on a family's economic capacity rather than actual medical needs [6,7].

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Fundamentally, the continuous deterioration of inequality is not caused by a single factor, but by multiple factors, and this inequality has deeply embedded itself in the social structure. These factors interact with each other, forming a detrimental positive feedback loop. The COVID-19 pandemic is like a stress test, not only exposing the long-standing wealth gap and racial health disparities, but also intensifying the impact on minority groups and low-income populations with an unprecedented intensity. At the same time, federal fiscal austerity measures indicate that tens of millions of people may face the risk of losing Medicaid and other public health insurance, which further weakens the already fragile social security network. The more profound impact is reflected in the stratification of disease burden: taking cancer as an example. Although the overall cancer mortality rate in the United States has decreased, the mortality rate among those with less than a high school education is still significantly higher than that of those with a college degree. This stark contrast clearly indicates that health inequality is not an accidental phenomenon, but is regularly generated along the social economic hierarchy and continues to persist, presenting a severe and continuously strengthening trend.

These empirical manifestations can be summarized in Table 1, which highlights the key dimensions, evidence, and implications of health inequality in the United States.

Table 1. Key empirical manifestations of health inequality in the United States

Dimension	Key Metric/Evidence	Implication
Life Expectancy Gap	20+ year gap between the highest and lowest county-level life expectancies (CDC)	Reflects profound inequality in life opportunities
Financial Access to Care	~25% of low-income adults forgo care due to cost (KFF)	Indicates the healthcare system is income-based, not need-based
Disease Burden Disparity	Higher cancer mortality among less-educated populations (NCI)	Demonstrates systematic reproduction of disadvantage
COVID-19 Impact	Disproportionate infection and death rates among racial minorities (APM Research Lab)	Acts as a stress test, exposing underlying vulnerabilities

3. Structural roots and systemic consequences: a multilevel analysis of health inequality in the U.S.

3.1. Structural attribution: the root causes of health inequality

The fundamental cause of health disparities in the United States lies in the structural inequality in the distribution of social resources and opportunities. This kind of injustice does not occur randomly but depends on the economic system, historical policies, and persistent social exclusion. Its influence is mainly transmitted through the following interrelated mechanisms and ultimately manifests as measurable health risks among different populations.

3.1.1. Economic and spatial inequality: the material foundation

This is the material basis for health inequality. The extreme disparity between wealth and income has plunged a considerable number of people into "despair of medical expenses" - that is, when facing health problems, their economic capacity is insufficient to afford basic medical care services and the drugs needed to maintain basic health. Meanwhile, the combination of historically institutionalized residential segregation policies (such as "red line segregation") and contemporary market forces has solidified a large number of low-income and minority communities into "resource

DOI: 10.54254/2754-1169/2026.LD31763

deserts". These communities generally lack supermarkets that supply fresh and healthy food (i.e., "food deserts"), safe parks and recreational facilities, as well as good schools. At the same time, they are more prone to generating environmental pollutants, noise, and a higher risk of crime. This systemic spatial inequality has seriously affected the basic ability of residents to maintain healthy living conditions.

3.1.2. Historical and institutional discrimination: the structural legacy

Structural racism (a system that perpetuates racial group inequality through policies, practices, and norms) has long been a core issue in American social history, and its influence is deeply rooted in national institutions [8]. Discriminatory policies in history, such as the "red line segregation" in housing loans, not only prevented African Americans from freely choosing their homes but also prevented them from accumulating wealth through real estate. This negative impact still persists to this day. Nowadays, similar systemic biases still exist in multiple fields such as criminal justice, the job market, and credit approval, continuously hindering the improvement of the socio-economic status of ethnic minorities. This deep-rooted institutional exclusion has led to "race" becoming a powerful social indicator for predicting an individual's health status.

3.1.3. Healthcare system architecture: the institutional amplifier

The healthcare system architecture in the United States is a significant factor contributing to health inequality. This system is highly dependent on employers providing medical insurance and mainly regards medical services as market commodities [9]. This relationship has led to two major problems: Firstly, there is a significant coverage gap, leaving the unemployed, part-time workers, and many low-income groups without medical insurance and only able to obtain the minimum protection plan, which makes them very vulnerable to disease infection. Secondly, it generates the wrong direction of incentives. Driven by profits, medical institutions and capital will be more inclined to invest in high-profit specialized services in wealthy communities rather than in infrastructure and primary care in low-income communities with limited medical services. This market logic further exacerbates the geographical disparity in medical accessibility, and this spatial inequality, in turn, reinforces economic and racial segregation, creating a negative positive feedback loop.

3.2. Systemic consequences: the multi-dimensional impacts

These structural causes continue to transmit their effects through the complex chain of "social determinants of health", ultimately producing multi-dimensional, far-reaching, and interconnected systemic consequences for society as a whole.

3.2.1. Micro-level impacts: health gradient and biological embodiment

The most immediate impact is the creation of a striking health gradient that corresponds strictly to socio-economic status. From the over 20-year gap in life expectancy between different racial groups to the multiple-fold risk of cancer mortality due to educational disparities, these findings demonstrate that socio-economic status is almost "written into" the biological processes of the human body [10]. This goes far beyond abstract data differences; it signifies that vulnerable populations as a whole face shorter life expectancies, earlier onset of diseases, heavier burdens of

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chronic conditions, and disproportionate harm during public health crises such as the COVID-19 pandemic.

3.2.2. Meso-level impacts: healthcare system inefficiency

Health inequality has led to the continuous aggravation of the long-standing problem of "high cost and low efficiency" in the U.S. healthcare system. A large portion of the high medical expenditure is used to treat late-stage complications caused by poverty (such as kidney failure due to uncontrolled diabetes), which could have been prevented by improving social conditions. Meanwhile, the reimbursement rate of the Medicaid program for low-income groups is generally low, which leads many medical institutions to be reluctant to set up service points in poverty-stricken areas, further reducing medical accessibility and creating a vicious cycle of "service deficiency → health deterioration → cost increase".

3.2.3. Macro-level impacts: societal resilience erosion

Health inequality can cause huge socio-economic losses. Its direct manifestation is the rising rate of sick absences among the labor force, the setback of social productivity, and the continuous imposition of a heavy financial burden on the public healthcare system. However, the more profound impact lies in the fact that this phenomenon gradually erodes the internal cohesion and crisis response capabilities of society. When society is confronted with major shocks such as public health crises or economic recessions, groups with significant health disparities tend to be more prone to trust breaks and group opposition. This internal division will seriously hinder the formation of a united and efficient collective response mechanism in society, and thereby threaten the long-term stability and development potential of the country. It is precisely these systemic chain reactions that highlight the urgency of intervention at the structural level.

4. Suggestion

To systematically address the health inequality issues in the United States caused by "uneven resource distribution" and "structural racism", a comprehensive national strategy must be implemented, which aims to reshape the resource distribution system and eliminate institutional discrimination. The following suggestions are based on a dual-track strategy: the first is to build a complete social security system, and the second is to correct the institutional injustices left over from history.

4.1. Track one: guaranteeing material foundations through universal health security and proactive investment

This plan aims to break the current fragmented welfare policy system and establish a system framework that can ensure the basic healthy life of all citizens. The core lies in designating health as a fundamental right rather than a commodity dependent on economic capacity. The first step is to formulate a "Universal Basic Health Security Plan" covering all residents. This plan needs to provide legally unified core services, including basic medical services, essential drug security, disease prevention, and public health services. The financing of the universal medical insurance system should follow the principle of fairness and establish a unified payment mechanism based on payment capacity to fundamentally eliminate the "despair of medical expenses". This method can

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directly address the issue of uneven resource distribution and ensure that geographically or economically disadvantaged groups receive stable and healthy services.

Secondly, resources must be invested in a preventive manner to shape healthy social determinants. The federal government should launch some long-term investment plans to ensure the construction of community health infrastructure and enforce effective resource allocation to communities that have lagged behind in development in the past through legislation. This plan should include specific indicators, such as building a supply chain to eliminate "food deserts", implementing regulations to ensure safe housing and clean environments, and improving the quality of community schools and park coverage. The core logic lies in systematically correcting the inequality in the geographical distribution of resources in the market through public investment, laying a material foundation for everyone to enjoy a healthy environment.

4.2. Track two: dismantling institutional bias through mandatory equity assessment and data-driven accountability

In response to the deeply rooted historical and institutional roots of structural racism, solutions must go beyond superficial "diversity" measures and impose mandatory amendments to systemic rules.

The key measure lies in establishing relevant laws and conducting regular assessments of their impact on racial equality. Before any major public health, housing, environmental, tax and economic policies are promulgated, they must be subject to mandatory assessment by an independent agency, which quantitatively analyzes the expected impact of these policies on the health and socio-economic opportunities of different racial and ethnic groups. The report must also be made public. Policymakers have a legal obligation to adopt the mitigation suggestions in the assessment or explain the reasons. Doing so is to transform concerns about racial equality into a mandatory pre-procedure in the policy design stage and curb the reproduction of inequality from the institutional source.

At the same time, a "health equity tracking and accountability system" based on detailed data should also be established. This system needs to integrate and disclose key health indicators (such as life expectancy, infant mortality rate, and prevalence of chronic diseases) and their core social determinants data, which should be segmented by race, income, and postal code. By setting quantifiable health equity goals and releasing progress reports annually, the concept of health equity can be transformed into measurable and accountable administrative responsibilities. Continuous data transparency can not only accurately identify problems, but also form strong public supervision and political pressure.

5. Conclusion

The core finding of this study is that the severe health inequality problem in the United States does not stem from insufficient medical technology, but is deeply rooted in the socio-economic structure. At the problem level, the analysis reveals two major structural roots: one is the uneven systematic distribution of economic resources and geographical space, which directly leads to the "desperate medical cost" and "resource desert" communities; The second is historical and institutional racism, which solidifies race as a social label of health disadvantage through policy and market biases. The combined effect of the two has shaped an astonishing social gradient from life expectancy to the burden of disease, seriously reducing the efficiency of the medical system and social resilience.

DOI: 10.54254/2754-1169/2026.LD31763

At the solution level, this study accordingly proposes a dual-track parallel solution. To address resource inequality, the core lies in building an inclusive system based on universal basic health security, ensuring that everyone enjoys basic medical care through public financing. The key to addressing racism lies in establishing a mandatory mechanism for assessing the impact of racial equality and data accountability to correct discrimination at the source of policies. The combination of the two aims to systematically eliminate health disparities from two dimensions: ensuring the bottom line and promoting fairness.

This research has clear practical and social significance. From a practical perspective, the analysis of the deep-seated causes of health inequality has pointed out the direction for the fields of medical and health care, insurtech, and social investment. For instance, insurance companies can design more inclusive products based on data on social determinants. Technology enterprises can develop remote health products that serve disadvantaged communities. This not only opens up new markets but also demonstrates the fulfillment of social responsibilities.

This study also has certain limitations and points out the future direction. The main limitation lies in the fact that the analysis is based on macro literature and secondary data, lacking first-hand qualitative insights from the community or policy implementers, and may not fully capture the complex logic at the micro level. Meanwhile, the policy suggestions put forward (such as the specific financing model for universal health insurance and the quantitative standards for racial assessment) have not yet been able to provide fully concrete operational plans by integrating actuarial science and fiscal simulation, which has affected their immediate implementation. Therefore, future research can delve deeper in two directions: one is to adopt a hybrid research approach, collecting first-hand data through interviews and questionnaires to verify and enrich the understanding of the mechanism; Second, carry out specific policy design and simulation research, such as building actuarial models for different universal health insurance plans, or developing standardized operation tools for "racial equality impact assessment", so as to transform principle suggestions into executable and assessable specific policies, and promote a solid leap from theory to practice.

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