

## **High School Big Data Challenge Annotated Bibliography**

**Our Dataset:** <https://apps.who.int/gho/data/node.main.UHC?lang=en>

**Authors:** Jianray Gao, Sean Nie, Karan Kirpalani, Kashyap Sukshavasi, Jason Zhang.

**Topic:** Universal Health Coverage

---

[1]

Government of Canada. Health Care in Canada: Access Our Universal Health Care System [Internet]. www.canada.ca. *Government of Canada*; 2021. Available from: <https://www.canada.ca/en/immigration-refugees-citizenship/services/new-immigrants/new-life-canada/health-care/universal-system.html>

### **Summary**

This article examines how access to the universal healthcare system in Canada functions. It explains Canada's healthcare system Medicare, is publicly funded through taxes and provides access to hospital and physician services. It mentions that all Canadian citizens and permanent residents are eligible for public health insurance. Each province or territory also manages their health plan, leading to differences in coverage across the country. Once enrolled, residents receive a health card to access most health care services, including emergency services, at no direct cost. However, there may be a waiting period before coverage begins, during which private insurance is recommended. The article also describes how you can obtain prescriptions or medication from family doctors.

### **Potential Uses**

This source will help compare and contrast Canada's healthcare system with other healthcare models, seeing its effectiveness and whether it is just or not. We can also analyze Canada's healthcare system to see how it affects other aspects of society, such as the economy, politics, and environment.

### **Limitations**

The website may have a certain bias towards the benefits of the Canadian healthcare system, lacking the challenges and difficulties you may encounter when attempting to receive public health insurance.

[2]

Evans DB, Hsu J, Boerma T. Universal health coverage and universal access. Bulletin of the World Health Organization [Internet]. 2013 Aug 1;91(8):546–6A. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3738317/>

### **Summary**

This study discusses the idea of Universal Health Care (UHC) and universal access. It highlights that UHC aims to ensure all people receive the health services they need without financial hardship. The study also analyzes the different functions of UHC, including but not limited to promotion, prevention, treatment, rehabilitation, and palliation, along with financial risk protection. The study also mentions a flaw in UHC, that universal access is essential for UHC to work, but it is not sufficient on its own, meaning that there is much more to be done for UHC to benefit the world at its best.

### **Potential Uses**

This study will provide the basis for the concept of UHC (Universal Health Care), helping us determine which countries are on a path toward achieving it and how they might be doing it. The study also could help evaluate the impact of UHC on population health outcomes and financial protection. Improvements regarding UHC can also be considered.

### **Limitations**

The study lacks specific examples and empirical data, having a theoretical framework for UHC, making it a challenge to explain how UHC might benefit a certain region. The date of publication is also over a decade, which may conflict with current events or situations occurring in the healthcare field.

[3]

Tikkanen R, Osborn R, Mossialos E, Djordjevic A, Wharton G. Canada | Commonwealth Fund [Internet]. [www.commonwealthfund.org](http://www.commonwealthfund.org). The Commonwealth Fund; 2020. Available from: <https://www.commonwealthfund.org/international-health-policy-center/countries/canada>

### **Summary**

The article on Canada's healthcare system offers useful insights for analyzing disparities in healthcare access and usage across regions. With a decentralized, publicly funded model, provincial and territorial differences in coverage, care delivery, and payment systems create variations in healthcare access. These disparities are especially pronounced in areas like mental health services, long-term care, and non-hospital services (e.g., vision and dental care), where coverage varies widely.

### **Potential Uses**

This source can help us analyze open data from the different provinces, generative AI would be used to identify the root causes of disparities, such as differences in service availability or funding across regions. For example, the variation in coverage for outpatient prescription drugs and mental health services across provinces could be explored using open data to understand the geographical and socioeconomic factors contributing to these gaps.

### **Limitations**

A limitation seen in the article is the healthcare delivery, which is primarily controlled at the provincial level; the availability and consistency of open data will vary, hindering comprehensive national analysis. Some regions may have more data reporting than others.

[4]

WHO. Universal Health Coverage (UHC) [Internet]. World Health Organization. 2023. Available from: [https://www.who.int/news-room/fact-sheets/detail/universal-health-coverage-\(UHC\)](https://www.who.int/news-room/fact-sheets/detail/universal-health-coverage-(UHC))

### **Summary**

This article by the World Health Organization (WHO) is about the importance of Universal Health Coverage (UHC) and it stresses the necessity for ensuring that all people have the right to sufficient healthcare services regardless of their financial situation. UHC aims to provide access to a wide range of services such as disease prevention, treatment, rehabilitation, and palliative care. The WHO also talks about ways to achieve UHC. They are urging countries to strengthen their health systems, reduce unequal access to healthcare, and allocate resources more effectively. They also stressed that achieving UHC requires political commitment, collaboration between governments and health professionals, and more.

### **Potential Uses**

UHC is a goal set by the WHO for countries to create a strong, robust, and equal healthcare system. The WHO has also listed ways UHC can be implemented and it has talked about several crucial benefits to make this more appealing for governments. The main benefits include reducing inequalities in healthcare, creating a healthy workforce, and promoting public health to the people.

### **Limitations**

There are several limitations for countries to effectively implement UHC. They can vary depending on the country's economic development, unique situation, and conflicting interests. For example, many developing countries lack the infrastructure or the economy to support such a costly program like UHC, while other countries may even rely on healthcare income to support their economies. Political instability and weak governance also hinder the progress of UHC.

[5]

Government of Canada. Canada's Health Care System [Internet]. Government of Canada. 2019. Available from:

<https://www.canada.ca/en/health-canada/services/health-care-system/reports-publications/health-care-system/canada.html>

### **Summary**

Canada's publicly funded healthcare systems have changed over the last 40 years since it was established, but the fundamentals are the same. Canada went from being privately funded before WWII to nationalized healthcare in the 21st century. The responsibility of healthcare mostly falls onto the provincial government being the administration of health insurance, funding hospitals, and negotiating fee schedules with doctors, but some responsibility is also placed on the federal and municipal levels as well. Many health facilities have shifted from hospitals and doctors to smaller clinics and home care to try to keep costs low. Despite this, a significant percentage of the provincial budget is spent on health. Since the system was implemented, there have been many changes in health and there will continue to be challenges with obtaining the funding to keep up universal healthcare.

### **Potential Uses**

This article provides data collected that can inform policy recommendations at both provincial and federal levels to improve the efficiency and effectiveness of Canada's healthcare system, particularly in addressing regional disparities.

To cut down on health spending while keeping the same quality, many things will need to be implemented. One major source of spending is on purchasing drugs/pharmaceuticals. The government could try to eliminate monopolies on large drug companies, or they could provide subsidies to specific, high-demand drugs. Another big spender is hospitals. Streamlining the process of constructing and maintaining hospitals would undoubtedly reduce their cost.

### **Limitations**

Limitations to Canada's public healthcare are the expenses and people who have good health insurance. Preferably, people with insurance have to pay more taxes to maintain universal healthcare while receiving little benefit due to their insurance. Secondly, middle-class people may not need healthcare as much as others and will view the extra taxes as a liability. Another noticeable limitation includes changes in government policies and regulations, both at the provincial and federal levels, which can lead to fluctuations in healthcare practices over time, affecting the reliability of longitudinal studies.

[6]

Martin D, Miller AP, Quesnel-Vallée A, Caron NR, Vissandjée B, Marchildon GP. Canada's Universal Healthcare System: Achieving Its Potential. *The Lancet* [Internet]. 2018 Apr 28;391(10131):1718–35. Available from: [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(18\)30181-8/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(18)30181-8/fulltext)

### **Summary**

The article analyzes Canada's universal healthcare system, often referred to as Medicare. While many Canadians take pride in a system that emphasizes equitable access to health care, the article highlights several significant issues with Medicare such as long wait times, formal access to medications, and significant disparities in accessing quality healthcare among Indigenous populations. The authors advocate for a renewal of the social contract between governments, providers, and the public to enhance healthcare access and quality by emphasizing the need for expanded services, federal involvement, and a focus on the social determinants of health.

### **Potential Uses**

The three largest issues in Canada's universal healthcare system are long wait times, access to primary care, and privatization pressures. Firstly, some potential solutions for long wait times include increasing funding and allocating more resources for hospitals so that they can treat more people at a given time as well as implementing efficient messaging and scheduling services. Secondly, some potential solutions for improving access to primary care include expanding healthcare institutions to more rural and remote places and allocating more workers to assist these areas. Lastly, some potential solutions for privatization include turning public sentiment and support against privatization and increasing public investment in healthcare infrastructure.

### **Limitations**

Many things are hindering the improvement of Medicare like the aforementioned long wait times, access to primary care, and privatization pressures. First, Long waiting times have been a problem plaguing Medicare for a very long time. Especially for patients seeking elective surgeries, specialist consultations, and diagnoses. A patient who is delayed for too long can worsen their condition and cause otherwise avoidable problems. Secondly, success in primary care is another important issue, as the costs of expanding healthcare coverage to these areas make it infeasible to do so. Finally, privatization from investors and large corporations can undermine the core values of Medicare, which are universal access and equity for all.

[7]

OHCHR | Access to medicines - a fundamental element of the right to health [Internet]. OHCHR. Available from: <https://www.ohchr.org/en/development/access-medicines-fundamental-element-right-health>

### **Summary**

Access to medicines is a fundamental human right for health and dignity, yet millions in developing countries face barriers to affordable, quality medicines. These challenges undermine rights to life, health, and development. States must strengthen health policies and systems to ensure the availability, affordability, and quality of essential medicines. A 2010 UN consultation highlighted the need for policy coherence, coordination, and collective action. The Special Rapporteur will present findings and recommendations to the Human Rights Council in 2011.

### **Potential Uses**

This perspective on health aligns with our research through its argument, in part using the frame of human rights, for equality and accountability within health policy concerning access to affordable and quality medicines. It is these values of equality and accountability that can be taken forward and applied to the model to highlight inequities in medicine access, thereby improving the access and affordability of essential medicines. Our findings could support policies to boost sustainable health financing and equitable access, drawing on the analysis of data on health outcomes.

### **Limitations**

This article limits itself to the question of access to medicines in developing countries, completely circumventing other parallel issues such as inaccessible drug prices in many rich countries. It focuses on state responsibility without going into the role of the pharmaceutical industry or intellectual property laws. Its call for policy coherence and global partnerships is devoid of actual solutions and reduces the political, economic, and legal causes that complicate the fight for accessible medicines.

[8]

OUP accepted the manuscript. Health Policy And Planning. 2019; Available from: <https://pmc.ncbi.nlm.nih.gov/articles/PMC6910076/>

### **Summary**

Laws on UHC determine access to essential medicines. In the case of 16 countries studied, rights-based frameworks played a major role. Robust legislation of UHC with a patient-centred rights approach can enhance access to medicines and contribute to attaining global goals on health equity.

### **Potential Uses**

Accordingly, UHC laws strengthen the health system and further equity in healthcare, thereby improving access to essential medicines. As a matter of fact, within the framework of rights-based approaches to UHC, access to medicine is guaranteed for the most vulnerable populations, thus reducing health disparities and fostering global health. At the same time, successful policies on UHC become exemplary models in certain countries while informing effective health policies around the world toward greater health equity through legal protection.

### **Limitations**

The limitation to selected countries could introduce bias in the form of sampling since the experiences of a subset of nations cannot represent the full range of healthcare policies across the world. This focus on the rights-based approach runs the risk of overlooking economic, cultural, and logistical obstacles that are grave deterrents to accessing medicines. Additionally, variations in the infrastructure of healthcare facilities, regulatory standards, and funding models across countries are contributing factors that could affect effectiveness; thus, providing that a broader or more varied analysis may offer a complete picture.



[9]

Canada H. Universal Access to Diabetes Medications, and Diabetes Device Fund for Devices and Supplies [Internet]. www.canada.ca. 2024. Available from: <https://www.canada.ca/en/health-canada/news/2024/02/universal-access-to-diabetes-medications-and-diabetes-device-fund-for-devices-and-supplies.html>

### **Summary**

The Government of Canada plans to examine the full cost of diabetes to the healthcare system. Specifically, it discusses the overall market in 2018 as an estimated \$27 billion and could exceed \$39 billion by 2028. The article discusses potential solutions, such as a proposed Bill C-64 to offer universal access to diabetes and targets vulnerable populations disproportionately affected by diabetes.

### **Potential Uses**

This source will provide the foundational predicted cost savings measures from reduced complications in health coverage, and identify coverage disparities by demographics or geographic regions, which could improve policy insights and optimize healthcare spending using our machine learning model.

### **Limitations**

This study provides limited provincial/territorial data sharing that may restrict our model's accuracy, and disparities in device funding across regions could lead to incomplete datasets. Additionally, many Indigenous considerations surrounding healthcare data privacy have been overlooked, which may pose challenges to statistical power and comparability.

[10]

Okeke C, Uchenna Ezenwaka, Adanma Ekenna, Chioma Onyedinma, Obinna Onwujekwe. Analyzing the progress in service delivery towards achieving universal health coverage in Nigeria: a scoping review. BMC Health Services Research. 2023 Oct 12;23(1).

### **Summary**

This article examines Nigeria's progress in service delivery toward achieving universal health coverage (UHC), highlighting slow advancements and significant gaps, especially in healthcare access among disadvantaged groups. Persistent inequalities due to socioeconomic, educational, and geographic disparities impact healthcare availability, maternal and child health, infectious and non-communicable disease control, and overall service readiness.

### **Potential Uses**

This source will be impactful to our research as a generative AI model could reveal root causes, like geographic isolation or socioeconomic barriers, and predict areas most in need of resource allocation. This would enable targeted policy interventions that are data-driven, optimizing healthcare distribution and improving progress toward UHC in Nigeria.

### **Limitations**

This article highlights data quality issues and limited coverage in rural areas that may hinder analysis accuracy. With limited data, this will affect our comparability with Western countries to incorporate a wider spectrum.