The Effect of Large-scale Health Coverage Expansions in Wealthy Nations on Society-Wide Healthcare Utilization

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Most analysts project that a reform like Medicare-for-All that lowers financial barriers to care would cause a surge in the utilization of services, raising costs despite stable or even reduced prices. However, the finite supply of physicians and hospital beds could constrain such utilization increases. We reviewed the effects of 13 universal coverage expansions in capitalist nations on physician and hospital utilization, beginning with New Zealand's 1938 Social Security Act up through the 2010 Affordable Care Act in the USA. Almost all coverage expansions had either a small (i.e., < 10%) or no effect on society-wide utilization. However, coverage expansions often redistributed care—increasing use among newly covered groups while producing small, offsetting reductions among those already covered. We conclude that in wealthy nations, large-scale coverage expansions need not cause overall utilization to surge if provider supply is controlled. However, such reforms could redirect care towards patients who most need it.

KEY WORDS: healthcare reform; healthcare utilization.

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BACKGROUND

Both common sense and empirical studies indicate that when individuals gain new or improved coverage, utilization—their use of healthcare services—rises.[1–8] Hence, most analysts project that reforms such as Medicare-for-All that expand and upgrade insurance would cause large utilization increases, and that consequently, overall spending might rise, even if prices were held stable.[9–13]

However, the finite supply of beds and doctors may constrain society-wide utilization, a crowd-out effect not detectable in studies in which only a tiny proportion of the population gains coverage.[5] Some studies of large-scale national coverage expansions have found that increases in use among newly covered individuals are offset by small decreases among the previously insured.[14,15]

To shed further light on the likely utilization effects of implementing Medicare-for-All, we explored short-term utilization trends after major coverage expansions in high-income nations.

METHODS

We identified all rapid universal coverage expansions in high-income capitalist nations (E-Table 1 provides inclusion/exclusion criteria; additional details can be found in Appendix Notes 1–3 in the Electronic Supplementary Materials (ESM)). In brief, we considered a nation to have undergone a rapid universal coverage expansion if it experienced a ≥ 10 percentage point reduction in uninsurance rates over a 2-year period that brought it to ≥ 95% population coverage. Our final sample included the following: New Zealand—1938, Great Britain—1946, Sweden—1947/1953, Canada's hospital insurance—1957, Finland—1963, USA/Medicare—1965, Canada's physician insurance—1966, Australia—1974, Portugal—1979, Greece—1983, Spain—1986, Taiwan—1994, and the USA/ACA—2010 (although neither US expansion achieved 95% coverage, we include them because of their policy salience).

For each expansion, we abstracted (or calculated) estimates of short-term pre- to post-expansion changes in the (1) proportion of the population covered; (2) physician-visit rates; and (3) hospital discharges. Where possible, we also assessed redistribution of utilization among subpopulations. Appendix Note 4 provides details on calculation of utilization figures. Appendix Note 5 summarizes primary sources of data for each expansion, and E-Table 2 provides the search terms for our literature review.

Trends in coverage are summarized in Table 1, in hospital utilization in Table 2 and Fig. 1, and in physician utilization in Table 3. Below, we briefly describe each expansion and its effects.

NEW ZEALAND—1938

In 1938, New Zealand's first Labor government passed the Social Security Act (SSA), regarded as the first universal

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Table 1 Rapid Universal Coverage Expansions and Uninsurance Rates in OECD Nations and Taiwan

Nation/ province	Coverage expansion (year passed)	Date(s) implemented	Percent of population uninsured		References
			Pre-expansion (%, year)	Post-expansion (%, year)	
OECD nations					
New Zealand*	Social Security Act (1938)	July 1, 1939	~ 80 (1937)	~ 0 (1939)	17, 35
Great Britain	National Health Service (1946)	July 5, 1948	~ 60 (1938–39)	~ 0 (1948)	35, 23, 24(213)
Sweden	National Health Insurance Act (1947/53)	January 1, 1955	~ 30–56	~ 0 (1955)	29, 30, 35
Canada†	Hospital Insurance and Diagnostic Services Act (1957)	1958–1961	45 (1952)	~ 0 (1961)	35, 36, 50 and E-Table 3
Finland‡	National Health Insurance (1963)	1964; 1967	95 (1963)	0 (1964)	35, 44, 45
USA	Medicare and Medicaid (1965)	July 1, 1966	24 (1963)	15 (1968)	57
Canada§	Medical Care (Medicare) Act (1966)	1968–1971	27	0 (1970)	50, 35
Australia	Medibank (1974)	July 1, 1975	12 (1974)	0 (1975)	35
Portugal	National Health Service (1979)	1979	34 (1977)	0 (1978)	35
Greece	National Health System (1981)	1983–1989	12 (1983)	0 (1984)	35
Spain	National Health System (1986)	1986	14 (1982)	3 (1987)	35
USA	Affordable Care Act (2010)	January 1, 2014	15 (2013)	9 (2015)	35, 97
Non-OECD					
Taiwan	National Health Insurance (1994)	March 1, 1995	43 (1994)	3% (2001)	88

OECD does not provide coverage rates prior to 1960; New Zealand, the UK, and Sweden were assumed to have attained ~ 100% coverage post-reform; all three had 100% coverage by the 1960, the first year of OECD data

**Dates of implementation differed by benefit; hospital benefits went into effect on July 1, 1939.[18] Pre-Social Security Act coverage refers to friendly society membership[17(1)]*

†OECD figures for Canada are for hospital insurance. The HIDS Act went into effect on July 1, 1958. On that date, 5 provinces had HIDS programs; the other provinces followed shortly, and all had a program running by January 1, 1961, when Quebec's plan was inaugurated.[36] Note that although the OECD figure reports 100% coverage for 1961, another source notes 99.3% coverage for 1965[50]

‡Prescription drug, laboratory, radiology, and travel benefits went into effect on September 1, 1964; physician benefits went into effect on January 1, 1967.[45] Of note, although OECD figures assert 55% coverage pre-NHI, a 1965 report from the Director General of the Finnish National Board of Health cites only 5% coverage in 1961,[45] similar to figures from two other sources.[44,46] The lower figure therefore seems more reliable, and so is presented here

§The Medical Care Act went into effect on July 1, 1968; all provinces were participating by 1971. OECD figures for coverage refer to hospital insurance, and so are not applicable to the Medical Care Act's effects. However, one source reports that 7.5 million of 18.2 million (41%) of Canadians lacked physician coverage in 1961.[50] Coverage figures closer to the year of implementation of the national act were higher due to interval provincial expansions, especially in Saskatchewan, which reached near 100% coverage by 1965; 73% had physician coverage in the pre-reform period.[50] We assumed 100% coverage post-reform

health coverage (UHC) program in a capitalist country.[16] It expanded coverage by 80 percentage points (20% were previously covered by "friendly societies").[17] Benefits included hospital care (implemented in 1939), physician services (1941), pharmaceuticals (1941), and radiology (1941).[18]

Prior to the SSA, public hospitals, which accounted for 80% of beds, were publicly financed by local and national funds,[19–21] but often required payments from patients.[21] The SSA shifted most funding to the federal government, and abolished cost-sharing for both inpatient and outpatient cares at public hospitals.[19–21] The SSA's architects intended to cover physician services without cost-sharing, but by the early 1950s, copayments for GP visits had become common.[16,18,20,21]

Utilization Trends

Public hospital discharges rose 27%, and hospital days 16%, after the implementation of the hospital benefit, a possible acceleration in pre-existing trends.[22] This increase should be interpreted cautiously, however; the reports cover only public hospitals, which probably experienced a disproportionate increase in use.[22] More importantly, the increase also reflects hospitalizations related to World War II: in 1941, military personnel accounted for about 10% of total discharges.[22]

We found no quantitative data on physician utilization. One source suggested a rise in demand for doctor services that exceeded supply, which it attributed, in part, to the number of physicians away in military service.[21]

GREAT BRITAIN: NATIONAL HEALTH SERVICE ACT (1946)

Great Britain implemented UHC on July 5, 1948, about 2 years after the Labor Party passed the National Health Service (NHS) Act. Previously, less than half of the British population had coverage under the 1911 National Health Insurance (NHI) scheme,[23,24] which covered GP services, but not specialists or, for the most part, hospital care.[23,25] The NHS provided coverage without cost-sharing for hospitalization, ambulatory care, and (until 1952) prescription drugs.

Utilization Trends

Between 1940 and 1950, hospital admissions per capita rose 9%,[23] a lower growth rate than in the preceding decade. However, this figure should be interpreted cautiously, given changes in the composition of beds, problems with comparability of pre- and post-NHS statistics, and the disruptive effect

Table 2 Effect of Coverage Expansions on Society-Wide Hospital Utilization in OECD Nations and Taiwan

	Hospitalizations per 100 persons per year			Hospital days per 10 persons per year			References
Expansion	Pre-expansion	Post-expansion	Change (%)	Pre-expansion	Post-expansion	Change (%)	
OECD nations							
New Zealand (1938)	6.4	8.2	27	14.1	16.4	16	22
Great Britain (1946)	6.8	7.4	9	-	-	-	23
Sweden (1947/53)	12.1	12.7	5	-	-	-	33
Canada (1957)	14.1	14.4	2	15.7	16.4	4	37, 40
USA (1965)	12.8	12.7	− 1	10.5	11.1	6	15
Australia (1974)	14.7	15.1	3	16.6	17.1	3	126
Portugal (1979)	8.8	9.0	3	-	-	-	127
Greece (1983)	11.2	11.3	0	11.5	10.4	− 9	35
Spain (1986)	9.1	9.4	2	9.2	9.3	0	35
USA (2010)	9.4	9.0	− 5	4.7	4.6	− 3	15
Non-OECD							
Taiwan (1992)	11.0	10.5	− 5	-	-	-	91

New Zealand: pre-period = average of 1937–38 for both discharges and days; for discharges, post-year = average of 1940–41; for hospital days, post-year = 1940 only, as no length of stay data are available for 1941. "Discharges" refers to patients treated, including those already admitted from previous years and those not yet discharged by the end of year. Days were estimated using length of stay, multiplied by discharges. Figures are for public hospitals only. Great Britain (England and Wales only): pre-year = 1940; post-year = 1950. Sweden: pre-year = 1950; post-years = average of 1955–56. Population denominator is from Statistics Sweden.[128] Includes admissions to all hospital types. US Medicare: pre-years = fiscal 1964–1966; post-years = fiscal 1967 and 1968 and calendar years 1969 and 1970. Based on report of short-stay hospitalizations in the past 6 months, which was annualized. Canadian National Hospital Insurance: pre-year = average of 1956–57; post-year = average of 1959–60. Figures are for "public" general hospitals.[40] Australia: pre-year = 1973; post-year = 1976. Note that bed days cover all hospitals, whereas admissions cover only public hospitals (admission data for private hospitals is missing for 1973).[126] Portugal: pre-year = 1975; post-year = 1980. Rate calculated with population data.[129] Greece: pre-years = average of 1981–82; post-years = average of 1984–85. Data is for "curative" hospital care only. Hospital days calculated by multiplying admissions by average length of stay. Spain: pre-years = average of 1984–85 (hospitalizations), but 1985 only for days, as length of stay was not available for 1984; post-years = average of 1987–88. Days calculated by multiplying admissions by average length of stay. Data are for "curative" hospital care only. Taiwan NHI: pre-year = 1994; post-year = 1995. Published data for Taiwan are stratified by pre-expansion insurance status; we computed an overall average rate pre- and post- weighted for the number of individuals in each coverage group in the survey. US ACA: pre-year = 2012–2013; post-year = 2014–2015

of World War II (personal communication, Professors Martin Gorsky and John Mohan).

More granular data on physician utilization is available from a household survey.[26–28] Depending on years of comparison, observers concluded that the NHS did not increase physician utilization,[24(174)] or that it increased visits by as much as 13%.[28] By comparing the average of 2 years pre- and 2 years post-implementation, we report an 11% increase in visits after the NHS' implementation.[26] However, a comparison of post-NHS figures to those from the late 1930s (to avoid the confounding effect of World War II, as some advise), suggests a small decline in visits/person (Appendix Note 6).[24]

Visit rates rose for women and older adults (two groups who mostly lacked coverage under the employment-based NHI scheme) and for those with lower incomes and lower-status occupations.[26–28] However, these increases were offset by small reductions in use among higher-income persons and those with professional or managerial occupations.[26,27]

SWEDEN: NATIONAL INSURANCE ACT—1947/1953

Prior to the implementation of UHC, Sweden had a system of publicly subsidized voluntary sickness funds covering an estimated 44[29] to 70%[30] of the population. The National Insurance Act, which was initially passed in 1947 by a Social Democratic–led government, revised in 1953, and implemented in 1955, broadened coverage to 100% of the population, covering physician visits (with 25% co-insurance) and hospital care (without cost-sharing at public hospitals).[29–31] After the Social Democrats passed the 1969 "Seven Crown's Reform," the visit co-insurance was mostly replaced with a flat low copay, and most physicians became salaried.[31,32]

Utilization Trends

Hospital admissions increased 5% from 1950 to 1955/56, a slower growth rate than from 1947–1950.[33]

The expansion's effect on physician visits is unclear (see Appendix Note 5).

CANADA'S HOSPITAL INSURANCE—1957

Hospital insurance expansions in Canada began at the provincial level, starting with universal hospital coverage implemented in Saskatchewan by the left-wing Co-operative Commonwealth Federation. Subsequent progress was uneven, and nearly half of the Canadian population still lacked hospital insurance by the early 1950s (E-Table 3). This changed with the 1957 passage of the Hospital Insurance and Diagnostic Services Act (HIDS), which offered federal subsidies that pushed provinces to adopt universal hospital insurance. Within 2 years of its July 1958 start-up, every province except Quebec had implemented a plan,[34] increasing hospital coverage close to 100% by the 1960s.[35] These provincial plans covered comprehensive inpatient care, although coverage of hospital-based outpatient services and cost-sharing varied by province.[34,36]

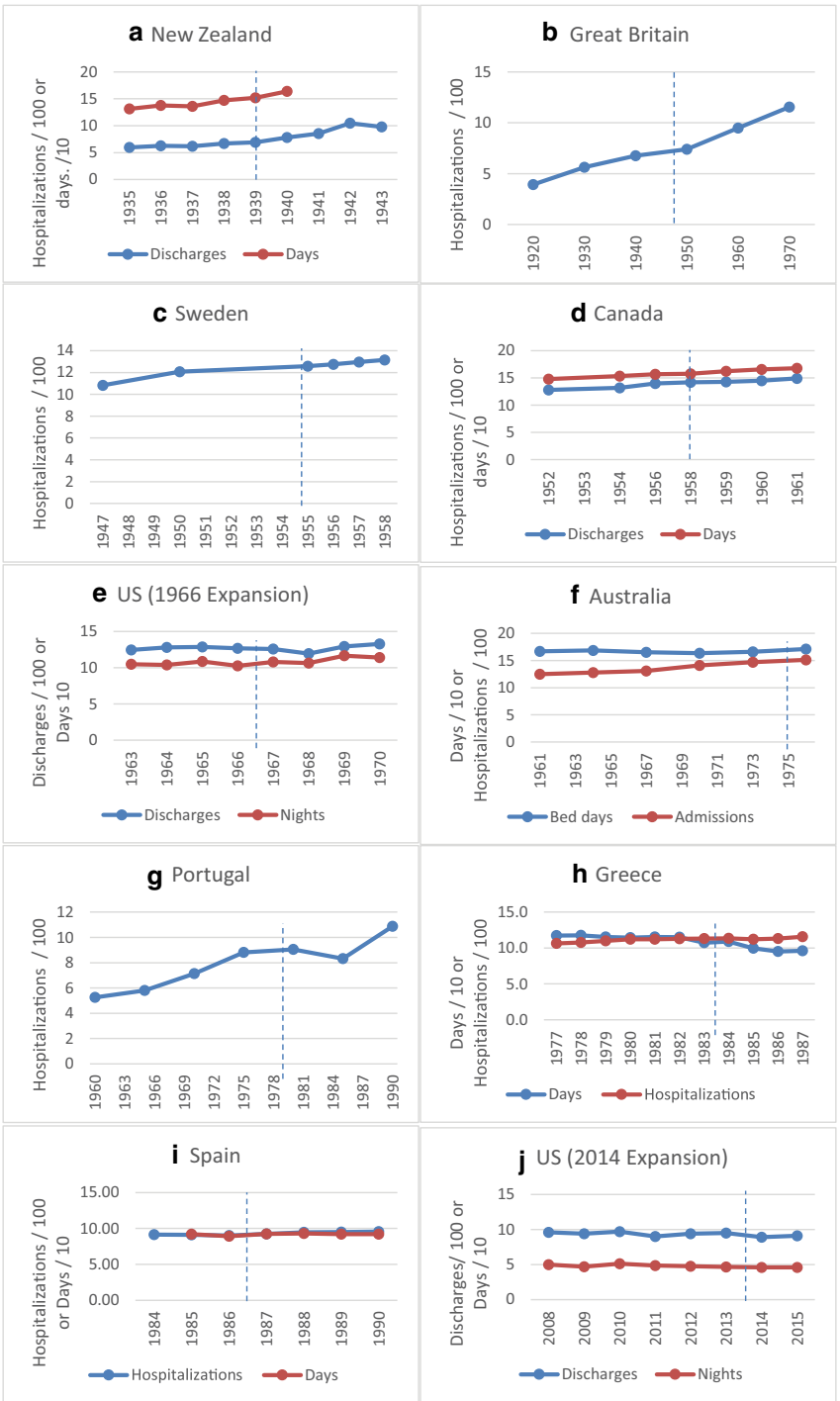

Figure 1 Trends in hospital utilization before and after coverage expansions in selected nations. Dashed line indicates implementation of the expansion. Panel a source: New Zealand Official Year-Books, multiple years (1937–1945).[22] Hospital days calculated by length of stays, which were not available after 1940. Date of implementation: July 1, 1939. Panel b source: Statistics compiled/calculated by Hollingsworth.[23] Date of implementation: July 5, 1948. Panel c source: statistical abstract of Sweden 1960;[33] population denominator from Statistics Sweden.[128] Data of implementation: January 1, 1955. Panel d source: statistics compiled by Reed and Carr.[40] Date of implementation of national law: July 1, 1958. Note that all provinces had implemented a program by 1961. Panel e source: National Health Interview Survey.[15] Data is for fiscal years until 1969, when it transitions to a calendar year. Hence, the second half of 1968 is excluded from this figure. Date of implementation: July 1, 1966. Panel f source: statistics compiled by Deeble.[126] Note that bed days is for total (public + private) hospitals, whereas admissions reflect only public hospitals (data for private hospitals is missing in some years). Date of implementation: July 1, 1975. Panel g source: the Database of Contemporary Portugal.[127] Source notes a break in series in 1985. Rate calculated with population data.[129] OECD data indicate that universal coverage was attained in 1978, although the National Health Service was implemented in 1979, which we treated as the first year post-implementation. However, the first year of "post" data from this source was 1980. Panel h source: OECD.[73] Note that statistics are for "curative" hospital care. Hospital days calculated by multiplying admissions by average length of stay. Note that the Greek National Health System was implemented over several years, 1983–1989. However, universal coverage was reached per OECD data in 1984, which we use as the date of implementation. Panel i source: OECD.[73] Days calculated by multiplying admissions by average length of stay. Data are for "curative" hospital care only. We considered the first year of implementation to be 1987, the year that population coverage exceeded 95% according to OECD data. Panel j source: analysis of the Medical Expenditure Panel Survey.[15]

Table 3 Effect of Coverage Expansions on Society-Wide Physician Utilization in OECD Nations and Taiwan

Coverage expansion	Visits/person/year			References
	Pre-expansion	Post-expansion	Change (%)	
OECD nations				
Great Britain (1946)	4.9	5.5	11	26
Finland (1963)	1.9	2.1	8	47, 49
USA (1965)	4.3	4.2	0	14
Canada (Quebec)	5.0	5.0	0	53
Australia (1974)	3.4	3.7	9	35
Greece (1983)	5.8	5.9	2	35
USA (2010)	3.7	3.7	0	14
Non-OECD				
Taiwan (1992)	11.3	14.9	33	91

Great Britain: pre-period = average of fiscal 1946–7 and 1947–8; post-period = average of 1948–49/1949–50. Excludes children under 16. Survey reported consultation rate in past month; these were annualized (i.e., multiplied by 12). Finland: pre-period = 1964; post-period = 1968. Study reported visits per 100 days among adults; these were annualized. US Medicare: pre-period = fiscal 1964–1966; post-period = fiscal 1967 and 1968 and calendar years 1969. Survey reported visits in past 2 weeks, which were annualized. Quebec Medicare: pre-period = average of 1969–70; post-period = average of 1971–72. Australia Medibank: pre-period = average of 1973–74; post-period = average of 1976–77. Greece: pre-period = average of 1981 and 1982; post-period = average of 1984 and 1985. Taiwan NHI: pre-year = 1994; post-year = 1995. Published data for Taiwan were stratified by pre-expansion insurance status. We computed an overall average rate, weighted by the number of individuals in each group. The rate was reported as visits in the last 2 weeks, which we annualized. US ACA: pre-years = 2011–2013; post-years = 2014–2016

Utilization Trends

While pre-HIDS provincial hospital coverage expansions may have increased hospital utilization, national-level data suggest that implementation of HIDS caused little or no increase in hospital utilization.[37–41] We report a 2% increase in discharges and a 4% increase in days after HIDS, similar to the previous growth trend, suggesting that the national expansion did not accelerate the growth in hospital utilization.

We did not locate studies directly analyzing the distributive impact of HIDS. A pre-HIDS 1950–1951 national survey suggested that low-income individuals were less likely to be hospitalized than middle-income persons,[42] a difference not evident in a 1978–1979 survey.[43] However, in both surveys, high-income earners used the fewest hospital days, and the analyses are not directly comparable.[42,43] Hence, HIDS' distributional impacts are uncertain.

FINLAND: NHI—1963

Finland had an undeveloped, voluntary social insurance system into the 1960s,[44] with only around 5% population coverage pre-reform.[45,46] The nation rapidly achieved UHC after a centrist-led government passed the NHI law of 1963, which covered physician visits, drugs, and diagnostics for all residents[45] (hospital care was already mostly publicly funded by the 1960s and was not covered by NHI).[45,47] NHI's cost-sharing varied by service, with doctor visits initially requiring 40% co-insurance.[45] The system was reformed in 1972, when a Social Democratic–led government passed the Primary Health Care Act, which established municipal multidisciplinary primary healthcare centers staffed by salaried physicians; nominal user fees were imposed, discontinued a decade later, and then reinstated in 1993.[16,48]

Utilization Trends

1964 and 1968 household surveys demonstrated an interval 8% rise in visits per capita, although it is unclear whether this represented a change from pre-existing trends.[47,49] The distribution of doctor visits shifted, increasing among rural residents, the chronically ill, and those with low incomes, while remaining flat among high-income individuals, and falling for high-income individuals when standardized for the number of days of illness.[49] "[T]he increase in the use in some places," investigators concluded, "seems actually to have caused a decrease in other places."[49]

CANADIAN PHYSICIAN SERVICES—1966

Canada lacked UHC for physician care until the 1960s. In 1961, Saskatchewan, still under a Co-operative Commonwealth Federation government, enacted a single-payer scheme that was implemented in July 1962, triggering a 3-week doctor strike. It increased physician care coverage from 67% in 1960 to 99.9% by 1965.[50] In 1966, the federal government followed suit, passing the Medical Care (Medicare) Act, which incentivized provinces to adopt federally subsidized physician care coverage with minimal cost-sharing. By 1971, all provinces had implemented such plans. However, cost-sharing persisted in some provinces until the Canada Health Act effectively ended it in 1984.

Utilization Trends

Hospital outpatient department visits in Saskatchewan increased 99.8% from 1961 to 1964 vs. 24.6% from 1958 to 1961.[51] However, this apparent upswing may reflect a trend towards physician practices relocating to hospitals, in part catalyzed by the physicians' strike, resulting in the substitution of outpatient for office visits.[51] We found no data on overall

(or office-based) physician utilization for this period in Saskatchewan.

A household survey in Alberta disproportionately sampled by insurance status and region[52] and cannot be used for province-wide estimates. However, within each of three regions studied, the investigators mostly found no significant increase in physician visits[52]; they did, however, find a trend towards increased use among previously uninsured rural residents, and among men.[52]

A household survey in Quebec found that the implementation of physician coverage had no effect on society-wide utilization of office visits.[53] However, the distribution of use changed, rising among those with low incomes, less education, minority race/ethnicity, lower-skill occupations,[53] with serious symptoms, and among postpartum women,[54] while persons with high incomes, more education, or professional occupations saw small reductions.[53] Notably, later surveys found no socioeconomic gradient in physician utilization in Quebec.[55]

Similarly, for Canada as a whole, a post-reform national survey found equity in use of medical services,[56] a sharp departure from the pro-rich gradient in 1950–51.[42]

USA: MEDICARE (AND MEDICAID)—1965

Medicare, initially proposed by John Kennedy during his 1960 Presidential campaign, was passed into law (along with Medicaid) following Kennedy's assassination and the Democrats' sweep in the 1964 election. Implemented in mid-1966, Medicare immediately covered almost all persons 65 and older for inpatient care and offered them subsidized physician coverage; Medicaid, which covered some of the poor, was rolled out over several years. Medicare, but not Medicaid, required cost-sharing. Together, the programs resulted in a 9 percentage point fall in the uninsurance rate.[57]

Utilization Trends

Contrary to predictions of surges in hospital utilization,[58] analyses of population-based survey data found no overall increase in hospital use in the 2 years after Medicare's implementation.[15] (Subsequently, as hospital supply increased, overall hospital utilization rose.[15,59,60]) However, hospital care was redistributed, rising among seniors[15,59,61–63] and those with low incomes,[15] and falling among the non-elderly[15,61,62] and higher-income groups.[15]

According to both household and physician surveys, society-wide physician utilization—measured by both visits and surgical procedures—also remained flat following the expansion,[14,64–66] although, like hospital care, it was redistributed. Increased physician visits by low-income persons were offset by reductions among higher-income Americans, while surgical procedure rates rose among the elderly and fell among the non-elderly.[14] Physician-provided data likewise suggested a shift from younger to older patients.[66]

AUSTRALIA: MEDIBANK—1974

In 1974, the Australian Labor Party passed Medibank, which it implemented on July 1, 1975. Medibank covered doctor visits (0–15% co-insurance) and hospital care (no cost-sharing at public hospitals).[67,68] However, the conservative government elected the following November-passed measures that ceded a progressively larger role to private insurers and reduced benefits,[67,68] effectively ending Medibank by 1981, when universal free care at public hospitals was abolished.[69] After Labor returned to power in 1983, it restored most of the original Medibank program, which it renamed Medicare.[67,70]

Utilization Trends

Prior to Medibank's implementation, critics predicted disruptive surges in demand, lengthy waiting lists, and deteriorating quality,[71] problems that do not appear to have materialized. Nationwide, hospital discharges and days rose about 3% from 1973 to 1976, similar to the 2% rise from 1970 to 1973.[72] Meanwhile, an analysis found a 7.7% increase in outpatient or "casualty" visits to public hospitals, a growth rate identical to the 3 years preceding the expansion; it concluded "Medibank … had little impact on public hospital services."[71]

Nationwide, physician visits rose 9%, in line with the previous trend (E-Figure 1).[73] Finally, a Sydney physician survey found an increase in visits/week/physician, which for GPs neared statistical significance.[74] Despite increased visits, physicians' workweek remained stable because of a small (~ 1 min) decline in mean visit length.[74]

PORTUGAL—1979

Portugal's modern health system emerged after the 1974 Carnation Revolution overthrew the dictatorship. Before 1974, Portugal's social insurance system, dating to the 1950s,[75] covered almost 60% of the population.[35] Subsequently, Portugal nationalized many hospitals, as well as health centers previously available only to social insurance beneficiaries.[75] The 1976 constitution guaranteed a right to health, to be delivered "free of charge" by the National Health Service (NHS), established in 1979.[75] NHS benefits were theoretically comprehensive, but failed to fully cover some services (e.g., dental and ophthalmic care).[76] Some occupation-based insurance schemes and voluntary private insurance also persisted, leading to a two-tier system with preferential access for some.[76,77] Although the 1976 constitution proscribed cost-sharing, a 1989 amendment permitted it, and copays were introduced in the early 1990s.[75,78]

Utilization Trends

Per capita health establishment admissions increased 3% from 1975 to 1980, a lower rate than in the two preceding 5-year periods. Redistributive effects, and changes in physician visits (see Appendix Note 5), are uncertain.

GREEK NATIONAL HEALTH SYSTEM—1983

In 1983, about a decade after the fall of the military junta, the socialist party of Greece passed the National Health System (NHS) Act. Previously, a social insurance fund had covered 88% of Greeks;[35] however, benefits were skimpy, access was inequitable, hospitalization could still impose catastrophic costs, and the inadequate supply of fund-covered providers led many to pay out-of-pocket for private care.[79] The NHS Act was designed to establish comprehensive, equitable UHC, but was only partially implemented.[80–82] It expanded public healthcare infrastructure, particularly in rural areas, and curtailed the private healthcare sector, but did not bring about the planned fusion of the nation's social insurance programs into a single fund.[79,80] However, universal coverage was reached by 1984, when the uninsurance rate fell to 0%.[35] The system faltered in the wake of the Greek financial crisis, with 14% of the population reported uninsured in 2014.[35]

Utilization Effects

Hospitalizations at public facilities increased during the NHS' implementation, but declined by a similar amount at private hospitals (E-Figure 2).[83] Overall, hospitalizations rose slightly after 1983, but hospital days fell.[73] Greeks averaged about 6 physician visits annually both before and after 1983, a rate that fell in the late 1980s.[73]

SPANISH NATIONAL HEALTH SYSTEM—1986

As in Greece and Portugal, the end of dictatorship set the stage for UHC in Spain. Social insurance laws dating to the 1940s had extended coverage to more than 80% of Spaniards by the time of Franco's death in 1975.[35,84] The 1982 victory of the Spanish socialist party led to the passage of the 1986 General Health Law creating the Spanish National Health System (SNS), which covered the whole population for inpatient and ambulatory care without cost-sharing, and directly provided much care.[16,84,85] Almost the entire population was covered by 1987,[35,86] although the development of a primary care center network took longer.[86] A minority of the population continues to purchase private health insurance, which offers preferential access to some physicians and hospitals.[86]

Utilization Effects

Discharges from curative hospitals rose 2% after 1982, but hospital days were unchanged because length of stay declined.[73] Surveys conducted shortly after the SNS' implementation found that low-income Spaniards had more physician utilization than those with high incomes,[84] although adjustment for health needs revealed a persistent pro-rich disparity which was no longer evident a decade and a half later,[86] suggesting that the SNS shifted utilization towards lower-income populations. However, enrollment in duplicative private insurance contributed to some persistent inequity in use, especially of specialist visits.[86] Because pre-reform data is lacking, however, these redistributive shifts are uncertain.

UHC IN A NON-OECD NATION: TAIWAN'S SINGLE-PAYER NATIONAL HEALTH INSURANCE—1994

Before the implementation of its National Health Insurance (NHI) scheme, Taiwan's per capita GDP of $13,129 was about two-thirds the OECD average. A patchwork of ten social insurance funds covered 57% of the population.[87,88] Following the end of martial law in the late 1980s, the governing party pursued UHC reform to head off a new opposition party's challenge.[87] NHI, passed in 1994 and implemented less than a year later, covered 96% of the population by 1996.[88] It provided comprehensive benefits, including free prenatal[89] and well-baby visits,[90] but copayments for other services often exceeded those in the pre-1995 social insurance funds.[87,91]

Utilization Trends

Hospital utilization rose significantly among the newly insured,[91] the elderly,[92,93] and infants,[90] but fell (non-significantly) among the previously insured.[91]

The number of physician visits increased by over 30%.[91] Prenatal visits and the use of other maternity-related services increased,[89,94] but not preventive care for infants (at least nationwide).[90,95] Among the elderly, increases were most marked for those with low incomes.[92] As expected, visits by the previously uninsured increased sharply.[91,92,96] However, visit rates also rose among the previously insured, although most of them faced increased cost-sharing.[91,93] This increase, which contrasts with the trends in OECD nations, has been attributed to "non-NHI factors,"[96] particularly the surge in physician supply that coincided with NHI: the number of private practitioners grew 10% between 1994 and 1995 alone.[91]

USA: AFFORDABLE CARE ACT—2010

The ACA, mostly implemented in 2014, extended Medicaid to persons with incomes below 138% of the federal poverty level; required higher-income persons to obtain coverage or pay a fine (a provision since repealed); mandated that large employers offer coverage; and provided subsidies for private coverage for individuals with incomes < 400% of poverty not offered coverage by their employer. Much of the new private coverage carried high cost-sharing. Between 2013 and 2015, the uninsurance rate fell from 14 to 9%.[97] Of note, given its relatively recent implementation, studies of the ACA are limited to short-term effects.

Utilization Trends

National-level studies found no increase in hospital utilization (including detoxification admissions[98]) after the ACA.[15,99–103] In state-level analyses, hospital use increased in California,[104] but not in Michigan,[105] or in a seven-state analysis.[106] One study using national data suggested a redistribution of hospital use, with non-significant increases among sicker populations and reductions among healthier populations;[15] another found increased hospitalizations that did not persist among low-income adults in Medicaid expansion states compared with non-expansion states.[107]

The ACA was not associated with a society-wide increase in physician visits per capita, although the proportion of Americans with at least one visit annually rose nationally.[14,108,109] Physician utilization shifted, increasing among low-income populations nationwide,[14,108,109] although the isolated effects of the Medicaid expansion alone were inconsistent.[107,108] However, utilization of outpatient opioid-use disorder treatment rose in states that expanded Medicaid, coincident with an increase in physicians licensed to prescribe buprenorphine.[98] Visits declined non-significantly among higher-income groups not targeted by the coverage expansion, suggesting offsets,[14] but one study found no evidence of an offset among a subgroup of the elderly.[110]

Finally, nationally representative survey data indicates that surgical procedure rates did not increase after the ACA,[14] although rates of some procedures increased among (generally poorer) individuals without private insurance in three states that expanded Medicaid relative to two that did not.[111]

DISCUSSION

Thirteen UHC expansions in 11 affluent nations spanning eight decades were mostly associated with small (< 10%), or no, increases in society-wide hospital and physician utilization. However, many redistributed care from well-off populations to more disadvantaged ones. These findings suggest that healthcare supply may constrain utilization increases, even when financial barriers are lifted. Most,[9,10,12,13] but not all,[11] cost projections of Medicare-for-All have failed to account for such supply constraints.

Milton Roemer famously noted that "a hospital bed built is a hospital bed filled,"[112] and conversely that a limited bed supply constrains utilization. Many studies[113–115]—and our finding that UHC rarely caused a surge in hospital utilization—support "Roemer's law." Only New Zealand's UHC was associated with a spike in hospitalizations, although its implementation during World War II complicates interpretation.

While US hospitals' average occupancy rate of about 70% suggests that they have spare capacity, the limited supply of nurses and physicians, age- and condition-specific wards, and other factors constrain utilization increases,[116,117] a conclusion supported by the lack of increased hospital utilization after the ACA.[15,99,103] However, if expanded coverage leads to a boom in hospital construction, as occurred a few years after Medicare's implementation, inpatient utilization could rise,[15,59] emphasizing the salience of regulating hospital expansion.

Physician utilization in the wake of UHC rose sharply only in Taiwan (where physician supply surged, suggesting the need for regulations on the healthcare workforce), with smaller increases in nations such as Great Britain and Finland with particularly large coverage expansions, and no increases in several nations. These findings are consistent with other studies of providers' responses to coverage changes. After a US miners' union added copayments in its insurance plan, members' physician visits decreased, but the miners' doctors provided more care to their other patients.[118] Similarly, when Oregon expanded Medicaid, clinic visits by newly insured patients rose, but fell among those whose insurance was unchanged.[119] After Saskatchewan imposed copayments in 1968, overall inpatient use did not change;[120] physician visits by poor individuals fell 18%, but probably increased among the affluent.[120–122] And although visits fell overall by 6%, more were billed as costlier "complete" physician examinations.[120,121]

Many,[123–125] but not all,[110] econometric analyses have similarly found that doctors provide slightly *less* care to the previously insured when coverage expands—and slightly *more* care to those remaining insured when coverage shrinks. Several studies suggest that such utilization reductions among insured populations predominantly affect low-value services, with no evidence of harm.[123,124] Similarly, an oversupply of hospital beds in a community apparently does not improve health[113] and may increase overutilization of low-value services.[114]

Our study has limitations. Data for many expansions was incomplete or unavailable, and formal statistical analyses, as well as rigorous study designs (except for the US expansions), often absent. All of the expansions coincided with secular changes in provider supply, which might confound the "demand-side" effect of expansions; consequently, we focused on rapid UHC expansions and short-term utilization changes. We did not analyze UHC's impact on the utilization of items such as prescription drugs or imaging that may not be supply-constrained, or qualitative changes, such as in the site (i.e., office-based vs. hospital-based) or type (e.g., primary care vs. specialty) of care provided. Nor did we try to assess the effect of coverage expansions on prices, or examine the complex relationship between price changes and utilization. Importantly, as mentioned, our review focused on short-term effects, when supply is constrained; if expanded coverage leads to the expansion of supply over a longer-term horizon (and if regulators permit such expansion), larger utilization increase may well occur.

The expansions we examined also differed in scope. Some achieved UHC without cost-sharing from a low baseline of population coverage, while others were less sweeping. The political, economic, and medical contexts for coverage

expansions varied widely, mandating caution in directly extrapolating from those experiences to the current US context. Yet the consistent patterns we observed suggest that our findings can help inform predictions of utilization effects of future coverage expansions in high-income nations.

In summary, history suggests that coverage expansions such as Medicare-for-All redirect care to the poor and sick, but need not drive up overall utilization if growth in supply is regulated.

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