Supplementary appendices to regional health organisations - an evidence review

Supplementary appendices

Date: August 2019

Table of Contents

Tables of tables

Appendices

Appendix A Country backgrounds

Canada

From the inception of universal health insurance in Canada in the late 1960s, federal, provincial and territorial governments have been interested in cost-savings, efficiency of service delivery, equity in service provision, citizen participation, and accountability of decision-makers.[1,2] The Canada Health Act[3] was brought into law in 1984 and outlines requirements that all provincial health insurance systems be publicly administered, comprehensive, universal, portable, and accessible. Healthcare in Canada is delivered through publicly funded healthcare systems in 10 provinces and 3 territories. From the national to regional level, regionalisation is fiscal.

Regionalisation within provinces or territories, or the restructuring of decision-making authority and responsibility for health care delivery within local communities has been one of the primary mechanisms adopted at the provincial-level to provide advice on how to constrain costs and improve the continuum of health services provided, paid for, or subsidised by the provinces and territories.[4] Supporters of regionalisation report[5] it offers a means of better coordinating and integrating health care delivery and controlling expenditures, and promises a more effective provision of services, and an avenue for citizen participation in health care decision-making. However, other commentators say, regionalisation presents significant challenges.[5] It faces obstacles to integrating and coordinating services in a manner that produces economies of scale; it requires an enhanced level of information that may be difficult to achieve; it is unlikely to involve citizens in health care decision-making; and it may actually lead to increased costs. In Canada, regional health organisations within provinces are "entities with responsibility for healthcare administration within a defined geographic region within a province or territory. They have appointed or elected boards and are responsible for delivering community and institutional health services in their region (P 16) [6] However, the regions are administrative rather than political and do not the powers to raise taxes.

In 1989, the first province (Quebec) transferred powers to regional health authorities(RHAs).[2] Later the nine other provinces and one of the territories followed this example.[2,7-9] In 2005, Ontario set up Local Health Integration Networks (LHINs), which were their regional funding and management models. While the creation of RHAs is sometimes portrayed as decentralization, governance and decision-making were taken out of the hands of individual hospitals, nursing homes and similar institutions, thus representing a centralising element as well. Numerous healthcare institutions' boards were replaced by a more limited number of RHA boards. Between 2001 and 2015, the number of RHAs decreased in all areas (Table 1): [2,7-9] for example, Alberta collapsed its 17 RHAs into nine in April 2003 and to 1 in 2008, NL collapsed the 14 regional health boards and 6 healthcare regions (established in 1994) into 4 integrated regional health authorities in 2005, and British Columbia reduced the number of RHAs from 11 in 1997 to 5 in 2001. Nova Scotia seems to be an exception as it increased the number of regions from four to nine in 2002, but decreased the number of RHAs to 1 in 2015. Furthermore, some provinces changed their governance model. For example, in 2001, Alberta introduced the concept that two-thirds of its board members elected by popular vote.

One recent commentator on regionalisation in Canada concluded that "after 20 years, we don't know whether regionalization has resulted in better health, better health care, or better value for Canadians. Data are limited, there is no information system to support and integrate what should be measured, and the already unclear set of goals changes too frequently. From a systems perspective, many stakeholders and elements that are essential for the transformation of the health care system are missing (page 69)".[10]

Province	Current number of regional health authorities	Governance evolution
British Columbia*	5 regional plus 1 provincial health authority	2001–2002: From 11 to 5 regional health authorities (RHAs) 1997: Established 11 RHAs

		1996: Attempted to establish 20 RHAs and 82 community health councils
Alberta*	1 provincial health service	2008: From 9 to 1 health authority (HA) 2003: From 17 to 9 RHAs plus 2 provincial health boards and 1 commission 1994: Established 17 RHAs
Saskatchewan	1 provincial health authority	2017: From 12 to 1 HA 2002: From 32 to 12 RHAs 1992: Established 32 RHAs
Manitoba	5 RHAs	2002: From 12 to 5 RHAs 1997: Established 12 RHAs (2 later merged to create 11 RHAs)
Ontario	14 local health integration networks (LHINs)	2006: Established 14 LHINs
Quebec	18 RHAs	1992: Established 18 RHAs (includes social service agencies)
New Brunswick	2 RHAs plus 1 provincial agency	2008: From 8 to 2 RHAs 1992: Established 8 RHAs
Nova Scotia*	1 provincial health service plus the Izaak Walton Killam (IWK) Hospital	2015: From 9 to 1 HA 2001: From 4 to 9 RHAs 1996: Established 4 RHAs
Newfoundland and Labrador*	4 regional health authorities	2005: Established 4 RHAs 1994: 6 institutional health boards, 4 health and community services boards, 2 integrated boards, 1 nursing home board, and 1 cancer treatment and research board
Prince Edward Island	1 provincial health service	2010: Ministry devolved to 1 HA 2005: From 5 RHAs to Ministry of Health 1993: Established 5 RHAs

Abrametz *et al.*,[11] Lewis and Kouri,[7] Government of Nova Scotia,[8] and Government of Saskatchewan[12]

* Evaluation studies included in Part 2 of the report.

Alberta (AB): Key points

- AB operates a universal health insurance plan titled the Alberta Health Care Insurance Plan
- AB has gone through three stages of regionalisation; the first stage started in 1994 to reduce health care spending by 17% or 24%,[13,14] [15] the second stage was commenced in 2003 and stage 3, commenced in 2008 (We could not find rationale for stages 2 and 3)
- Stage 1 established 17 regional health authorities in 1994.[13] (Our studies pertain to Stage 1)
- Stage 2 took place in 2003 and reduced the regional health authorities from 17 to 9
- Stage 3 reversed regionalisation and created one single health authority
- AB's Regional Health Authorities Act, 1994, gave regions responsibility to assess health needs, establish priorities and allocate resources.[13] This legislation required health authorities to act as the health-system manager for residents of the region it serves[13]
- AB's regional health authorities are run as corporations and have an appointed board. Of note, AB had a

partly elected board for a period

- The regions were responsible for planning and co-ordinating healthcare services through service agreements but have no role in legislation, regulation, and raising finance. Type of regionalisation is administrative.

British Columbia (BC): Key points

- BC operates a mandatory universal health insurance plan called the Medical Services Plan
- BC has gone through two stages of regionalisation; the first stage started in 1997 to integrate and coordinate health services at the regional and community level, so as to devolve decision making and control to local communities and empower citizens, and the second stage was commenced in 2001 to re-centralise power and authority with the provincial government
- Stage 1 established 52 local health authorities to look after health planning and service delivery across the province and these comprised: 11 regional health boards for metropolitan areas, 34 community health councils and 7 community health service societies for rural areas [4] (Our study pertains to Stage 1)
- Stage 2 took place in 2001 following a change in government and resulted in amalgamation of the province's health authorities into five larger regional health authorities and fifteen health service delivery area authorities [4]
- The integrated regions provide all aspects and levels of health care
- The regional health authorities are run as corporations and have an appointed board
- The regions were responsible for planning and co-ordinating healthcare services through service agreements [4] but have no role in legislation, raising finance, and regulation
- The provincial level was responsible for budgeting and financing healthcare.

Nova Scotia (NS): Key points

- NS operates a universal health insurance plan called the Nova Scotia Medical Service Insurance
- NS has gone through three stages of regionalization {Hanlon, 2003 #139; the first stage started in 1994 to introduce cost containment and increase accountability, the second stage was commenced in 2001 (following a change of government) to be more responsive to local community needs, contain costs and increase accountability, but still large enough to be served by one county hospital, and stage 3 commenced in 2015. [We have not found a rationale for Stage 3]
- Stage 1 established 4 regional health authorities in 1994.{Hanlon, 2003 #139} (Our study pertains to Stage 1)
- Stage 2 took place in 2000/1 and increased the regional health authorities from 4 to 9 district health authorities
- Stage 3, in 2015, reversed regionalisation and created one single health authority
- The four regional health authorities (stage 1) were established through legislation and were responsibility for managing and delivering hospital-based services and mental health services[16] but have no role in legislation, finance, and regulation. Commentary on regionalisation in Nova Scotia report that regionalisation of health care cannot be considered without considering politics and control
- Regionalisation occurred in a period of hospital restructuring, which included amalgamations, bed closures, and budget cuts

- The provincial level was responsible for financing healthcare.

Newfoundland and Labrador (NL): Key points

- NL operates a universal health insurance plan called the Medical Care Plan
- Newfoundland and Labrador has gone through two stages of regionalisation; the first stage was in the 1990s (1993/4 to 1996/7) to contain cost and introduce efficiency (while maintaining quality[17] [18] and the second stage was implemented in 2006 to reduce the provincial deficit
- 14 regional health boards and six healthcare regions were established as part of Stage 1,[17] and in 2006 (stage 2), the 14 regional health boards and 6 healthcare regions became 4 integrated regional health authorities and the latter are run as corporations without share capital
- As part of Stage 1 there was major hospital restructuring in St John's (the provincial capital)[17,18] (Our studies pertain to Stage 1)
- There was a reduction in management staff and an increase in frontline staff
- The integrated regions provide all aspects and levels of healthcare
- The integrated regions are not permitted to make, contract, or become liable for expenditure or indebtedness above what is outlined in the annual budget estimates
- The regions were responsible for planning, co-ordinating, and providing healthcare services through service agreements [17] but have no role in legislation, raising finance, and regulation.
- The provincial level was responsible for budgeting and financing healthcare.

Greece

Greece has an estimated population of 11.14 million as of 2018, and the majority of Greek people (approximately two-thirds) live in urban areas.[19] The Greek National Health System (ESY) was established in 1983.[20]Since 1983 services are provided free of charge to all citizens.[21]

It is important to note that the availability of data on Greece's health system is limited.

Seventeen administrative regional health and welfare authorities (YPEs) were established by legislation in 2001 (Law 2889/2001) and were the first step in decentralisation of the Greek ESY. [21 22] Two other pertinent laws were passed during 2001: the first, Law 2920 was on the appointment of external healthcare auditors for hospitals and the second, Law 2955 was on healthcare procurement policies.[21] A major goal of the three laws was to increase the efficiency of health services by reducing the cost of producing an output of given volume, quality and technology. The 2001 legislation required hospitals to operate as administrative and economic decentralised units, under the control of YPEs. In addition, professional managers were appointed to hospitals and signed 'efficiency contracts', which supposedly committed them to run them effectively and efficiently.

Commentators report that, on paper, the YPEs' competencies were extensive, namely the planning, organisation, coordination, and supervision of all public healthcare and welfare services within their catchment area; they would also provide recommendations to the Ministry of Health for the effective and efficient delivery of health and welfare services according to the needs of their catchment population, and monitor implementation of health programmes and policies. [21 22]

YPEs are reported to only have an advisory and supervisory role in practice, as public administration is still highly centralised in Greece and YPEs do not manage their own budgets. [22]

Using the categories proposed by Adolph *et al*.,[23]the national government in Greece has maintained its competency on legislation, planning and financing health services. The Greek regions deliver health services so regionalisation is administrative with limited powers.

Resources are allocated according to historical precedents and political negotiations[21]

The regional health and welfare authorities were relabelled regional health authorities (YPEs) in 2005 after a change in government. [22] In order to contain operational costs and restrain bureaucracy, in 2007 the number of YPEs was reduced from 17 to 7. [22]

The Greek ESY is heavily centred in hospitals; however, plans announced in 2017 are attempting to reform primary care to be a first-contact, local unit with a multidisciplinary team which also acts as a gatekeeping mechanism that manages referrals. [22]

Italy

The population of Italy was reported at 61.84 million in the 2016 Census.[24] Italy is subdivided into 20 regions but 21 health regions.[25] The 1948 Constitution recognises to five special statute regions (Friuli-Venezia Giulia, Sardinia, Sicily, Trentino-South Tyrol and Aosta Valley) and these receive larger financial transfers from the central government and enjoy a broader legislative autonomy.[26]

Legislation reform 1992-1993 provided for a decentralised management of the National Health Service (SSN).[26,27] The reform laws introducing decentralisation to the Italian public health system during the 1990s wanted to: attribute direct health services funding, organising, and delivery responsibilities to local authorities; and make public administrators and managers directly accountable, for the nature and quality of the services provided to citizens; and to reduce fiscal pressure and introduce horizontal competition between health providers.

This reform granted broad discretion to the regions in planning, organising and financing health care services in their own territory.[26-28] The individual regions have thus been able to choose one of three organisation models[26,28]: region as purchaser and all other actors are providers (chosen by 6 regions), the local health care units are both purchaser and provider (14 regions), or the local health care is the purchaser only (1 region). In addition, their cost of services is calculated using national or regional-based capitation rates and there are out–of–pocket charges for users. The local health care units were transformed into public agencies, headed by a general manager appointed by the regional

council.[26] Before this, the directors of the local health care units were appointed by the municipal councils, on a mainly political basis. The idea was to place the management of the health care agencies in the hands of public managers who were to be responsible for the results achieved by their agency. A further step forward in the process of regionalisation was represented by legislative decree no. 56 of 2000.[26] The decree established that financing of the regional health care systems would no longer depend, as in the past, exclusively on transfers from the central government. As from 2000, the regions can rely on a blend of their own resources and central government transfers. The process of regionalisation was further strengthened by a constitutional amendment passed in 2001.[26 29] On the basis of this amendment, health care has become the object of concurrent legislation between State and regions: this means that the regions have autonomy in organising and managing health care services on their own territory, whereas the State must confine itself to formulating the general rules of the system. The central government has jurisdiction for determining the 'essential levels of care' that must be guaranteed over the entire national territory; primary care is one component of this package. [25,26] The national government must guarantee to the regions the financial resources required to provide the essential levels of care, transferring funds from the wealthier regions to the poorer ones.[25-27] In the event that a region incurs an operating deficit, it must be covered with its own resources.[25,26] The state monitors regional performance/outcomes and identifies key benchmarks such as quality of services provided.[27] The national government financing process was only partly modified by law no. 42 of 2009 on fiscal federalism.[26] Starting from 2013, transfers to regions will be calculated on the basis of standard costs.[26,27] The standard cost method provides for the identification of some benchmark regions, which stand out against others for their efficiency and adequacy in providing health services. [26] The standard cost will correspond to the cost per capita borne by the said benchmark regions to guarantee the essential levels of care to their beneficiaries. The financial resources transferred by the central government to the single regions will be calculated on the basis of the said standard costs. The introduction of standard costs has the clear intent of driving the less efficient regions towards filling the gap that separates them from the benchmark regions.

The strengthening of the regional level was achieved by Italy's health care system represents a case of political decentralisation with some fiscal autonomy. In particular, the last two decades have witnessed the strengthening of the regional levels in Italy, whose organs of government are elected democratically, holding separate elections from national elections.[2]Using the categories proposed by Adolph *et al*.,[23] the national government in Italy has maintained its competency on 'framework legislation', whereas 'implementation legislation' has been entrusted to the regions. The Italian regions enjoy autonomy in organising the supply of services and regulating private suppliers, whereas strategic decisions on the financing of the system are shared, partly the responsibility of the central government (national taxes), and partly of the regions (local taxes).[27]

Regions are also encouraged to promote innovative practices.[26] They can authorise local health units and hospitals can carry out experimental administrative projects such as: co-payment charges for pharmaceutical assistance, or introducing new forms of funding such as integrative mutual funds. These funds should cover the fees of those services which are not included in the Italian basic basket of services.

Toth reports that disparities among regions are due to the individual regional governments that are free to adopt strategies and organisation models differing from one other.[26] The decentralisation process has taken place in a context characterised by huge disparities between one region and the other in terms of economic conditions, culture, politics and efficiency of administrative bodies. It was therefore to be expected that the single regional systems would have produced rather dissimilar strategies and outcomes. For example, the regions of the North have thus far been able to bring about a greater reduction of the acute care hospital bed availability, while enhancing the local care. By contrast, the regions of the south lag far behind on the path to de-hospitalisation. Those who hoped that regionalisation would lead the more backward regions to fill the gap separating them from the more efficient ones have been largely disappointed from the year 1999 to 2009, the gap between northern and southern regions has not been filled, but has rather increased. The residents of the northern regions generally pronounce themselves more satisfied than in the past with the hospital care received; by contrast, in the South, the level of satisfaction expressed by the patients decreased over the 1999-2009 decade in almost all regions. Over the same time span, the flow of patients from the South who seek medical treatment in the North has increased relative to the flow in

the opposite direction. At the financial level, the northern regions (except Liguria) have balanced their budgets; the progress of the southern regions in this area has been more limited, and some of them continue to close their budget with a heavy deficit. During recent years, the Italian government has adopted a strategy different from the past specifically in order to contain the health care deficit. On the basis of an agreement between the central government and the regions signed in 2006, the regions with serious deficits would have to arrange a 'budget balance plan' with the Ministry of Health and with that of Economy. Thus far, the constraint of the budget balance plan has yielded encouraging results in some regions (such as Sicily, Abruzzo and Campania), but it does not appear to have worked in others (Lazio, Liguria, Molise). There is also the concern that the strategy of the balanced budget plan is limited to the financial aspect. However, as discussed, the North-South gap concerns also the quality of the services provided. In other words, additional measures, besides the budget constraints, will be required to bridge the gap between the North and the South.

New Zealand

New Zealand is an island country in the southwestern Pacific Ocean, comprising two main islands and numerous smaller islands.[30] New Zealand has an estimated population of 4.79 million. [30,31]The population density of New Zealand is 17.9 people per square kilometre.

New Zealand's health and disability system is mainly funded from general taxation.[32] The other significant form of public funding comes from Accident Compensation Corporation levies.[32] Public funding for health goes into a budget for health called Vote Health, which is managed by the Ministry of Health.[33]

Prior to 1983, funding was allocated separately to a) hospital boards on a budget basis; b) GPs on a fee for service basis; and c) not for profit organisations on a grants basis. Since 1983, the New Zealand public health sector has undergone four major structural reforms.[34]With each change, a new set of organisations has been put in place to fund and deliver health services.[34]

The first major reform established 14 area health boards (AHBs), and functioned between 1983 and 1989.[34] Operational and public health responsibilities previously carried out by the Department of Health in New Zealand were devolved to the boards. These included hospital services, health promotion, health protection, and environmental health. Responsibility for primary care remained with the Department of Health. Under the new system, the Department of Health was responsible for policy formulation, advising the Minster of Health, developing targets and budgets for the boards, and monitoring and evaluating their performance against nationally agreed standards. AHBs were accountable to the Department of Health for their performance, based on these national requirements. Populations covered by AHBs varied in size from 35,000 to 900,000 and they were funded through a hospital-based funding formula. AHBs' board members were a mixture of locally elected and Government-appointed representatives.

As part of the second reform, four RHAs were set up to purchase primary, secondary and community services from a range of public and private providers for their regions; these RHAs operated from 1993 to 1997.[34] During this period, RHAs were funded by the new Ministry of Health according to a population-based formula and were accountable to the Minister of Health and to Parliament. Most area health boards were transformed into 23 Crown Health Enterprises (CHEs), which were run on a commercial basis with Government-appointed boards. The CHEs were autonomous, publicly owned business units, and typically included a single large hospital or a group of hospitals and related services. CHEs were funded by RHAs on a contractual price per volume basis, within a capped budget.. Similar to CHEs, the community trusts were private or independent providers who owned their facilities and could contract with the RHAs. The Ministry was responsible for monitoring the performance of the RHAs.

During the third reform four RHAs were amalgamated into a single HFA between 1997 and 1998, with the HFA existing until 2000.

Prior to the introduction of the current district health boards in 2001, funding for health services was centralised with one independent funding body, the Health Funding Authority.[34] The Health Funding Authority purchased healthcare services, including primary care, from a range of private and public providers in a competitive market. The performance of the Health Funding Authority was monitored

by the New Zealand Ministry of Health. Under the 1998–2000 system, there were 23 hospital and health services, which were run on a commercial basis with Government-appointed boards. They were autonomous, publicly owned business units, and typically included a single large hospital or a group of hospitals and related services. They were able to contract staff, raise capital, and operate independently, and were subject to commercial legislation.

Twenty-one statutory district health boards were established as Crown entities (statutory bodies) under the auspices of the New Zealand Public Health and Disability Act 2000[35] The establishment of these boards was based on the geographic locations of the hospital and health services in the previous health system.[36]The rationale for building district health boards around these existing hospital governance structures was to reduce the impact of restructuring.[36] This decision has led to significant differences in the population sizes served by boards, ranging from 33,190 people in the West Coast District Health Board to 597,570 in the Waitematā District Health Board; the average population size is 241,161.[37,38] In 2010, the number of boards was reduced to 20.[39]According to the New Zealand Government, establishing a Crown entity reflects a decision by Parliament that a function or functions should be carried out at arm's length from Ministers[34,40] Despite this distance, the Minister is still answerable to Parliament for overseeing and managing the Crown's interest in, and relationships with, the Crown entities in their portfolio.[40]

Under the auspices of the New Zealand Public Health and Disability Act 2000[35] the Ministry of Health became the chief policy advisor, planner, and funder of public health services; previously, the Health Funding Authority had been responsible for some of these roles. The Minister of Health is supported by the Ministry of Health and its business units. The Minister manages the publicly funded annual health budget. S/he is responsible for the planning and purchasing of some national-level services, such as disability support and public health services. The Ministry of Health, on behalf of the Minister, funds and monitors district health boards. Each district health board is held accountable to the Minister through a Crown Funding Agreement[41,42 43] which is updated and signed annually by the board and the Minister.

All district health boards have boards of up to 11 members.[35] Seven members are publicly elected through local elections and the Minister of Health may appoint up to four additional members. Two of the board members must be of Māori ethnicity. The planning, purchasing, and provision of health services are devolved to these boards, which are centrally funded by the Ministry of Health. The funding per district health board area ranges from NZ$127.8 million in the West Coast District Health Board to NZ$14.6 billion in the Waitematā District Health Board.[44] The share of funding received by each district health board is determined using a population-based funding formula.[45] The formula takes into account the number of people in each district health board and then adjusts for its specific demographic profile in terms of age, socioeconomic status, ethnicity, and sex. The formula also adjusts for the provision of rural health services, the provision of services to people with unmet needs (such as those living in areas of high deprivation), and the provision of services to eligible overseas visitors and refugees. District health boards fund primary care, hospital services, public health services, aged care services, and services provided by other non-government health providers including Māori and Pacific providers.[42 39] The district health boards fund primary health organisations to provide primary healthcare, and public hospitals are run and owned, or funded, by the boards.

Mays *et al.* published a series of research reports on the performance, effectiveness, and acceptability of the new health reform.[46]They concluded that the objectives of the reform – namely the focus on population health and the local focus of the model, along with community orientation and a collaborative approach – have largely been met. In addition, the underpinning values and principles of the system have strong support from those working in the sector. However, the authors also note that governance, management, and accountability within the health and disability sector are now more multifaceted, and sometimes more opaque, than in the previous system. The authors go on to report that there have been difficulties implementing the new system, particularly in clearly defining the roles, relationships, and responsibilities between the district health boards and the Ministry of Health. The evidence from the Mays *et al*.[46] research comparing the 2001 model to its predecessor suggests that there is unlikely to be one ideal model of governing and organising accountability for public healthcare.

In a 2009 overview of the state of the New Zealand health system, Gauld [38]reports that there were concerns over the design of the district health board system from the outset, particularly regarding the large number of separate planning and purchasing bodies relative to the size of the population. Given that district health boards were inherited from existing structures from the previous system, they vary considerably in size. Despite size differences, district health boards are expected to maintain identical administrative structures, provide similar services, and meet national policy targets. This led many to consider the district health board system 'unwieldy', prompting suggestions that the centralisation of some functions would improve the efficiency of the health system.

However, the greatest challenge facing district health boards has been financial sustainability. In 2009, Gauld[38] reported that deficits were an ongoing challenge for many DHBs, with 14 of the then 21 DHBs in deficit. An audit of district health boards' performance in 2016–2017 reveals that this continues to be a major challenge for the boards.[47] In 2017, 12 district health boards were in deficit. The continuing financial challenges faced by the DHBs have led to an ethos of cost control, making it difficult for DHBs to plan for the future or expand the scope of services that they deliver.

Mexico

Mexico is a federal republic with 31 states and one federal district[48] In July 2012, the population of Mexico was estimated to be 114.98 million, with population density reported to be approximately 57 people per square kilometre[48] Healthcare expenditure in Mexico was 6.2% of GDP in 2013, well below the OECD average of 8.9%.[49]

Healthcare coverage in Mexico depends on a person's employment. Salaried private sector employees and their families are covered under the Mexican Social Security Institute (Instituto Mexicano del Seguro Social, or IMSS). The IMSS covers approximately 57 million people or 40% of the population. Salaried public sector employees receive coverage through the Institute for Social Security and Services for State Workers (Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado), which covers approximately 12 million people (9%). The state oil company, the army, and the navy have their own smaller institutions which provide employees with healthcare coverage; these comprise 2% of the Mexican population.[50] Prior to 2003, the unemployed, self-employed, non-salaried, or non-formal sector employees were not covered under any insurance scheme. The Ministry of Health and, to a lesser extent, the states were responsible for providing health services to this uninsured population. Most services received by this group were funded by out-of-pocket payments made by the individual.[51]

In April 2003, Congress approved a new insurance scheme, the Sistema de Protección Social en Salud (Social Protection System in Health or commonly referred to as 'Seguro Popular'), to provide universal insurance to the uninsured, who accounted for 49% of the population. The system went into operation on 1 January 2004, with the goal of achieving universal coverage by 2010.[50] This previously uninsured population is now covered by one of several federal programmes managed by the Ministry of Health, including the Seguro Popular programme and IMSS-Oportunidades (a federally funded health service and conditional cash transfer programme). A number of Mexican residents are eligible for, and therefore enrolled under, multiple insurance schemes.[51] The Mexican healthcare system is highly fragmented, as each of these aforementioned institutions offers different benefits packages at different prices, with varying outcomes of care. Patients are not allowed to access services that are not covered under the scheme that they are enrolled in, and are not allowed to choose which insurance scheme they are enrolled in.[51]

The insurance scheme of interest to this review is the Seguro Popular, which is the responsibility of the Ministry of Health. Devolution and decentralisation of the healthcare system began in Mexico in the 1980s and continued throughout the 1990s.[9]Strengthening the stewardship role of the Federal Ministry of Health was an important element of this reform. In the implementation of the universal insurance scheme, the role of the central Ministry is the coordination, regulation, monitoring, and evaluation of its delivery.[9] The provision of the essential package of interventions available under the Seguro Popular has been devolved to the states.[9] The main aim of the decentralisation in Mexico was to transfer financial resources and responsibilities to state and local governments for the provision of specific public goods including healthcare. Mexico has a form of political decentralisation in that it can

raise local taxes for local health care. The legislation and strategic decision making at state-level are not clear.[52]

Funding for universal health insurance comes from three sources: the Federal Government, the state governments, and the families enrolled in the scheme. The Federal Government's contribution is on average one to five times that of the state's contribution, depending on the wealth of the state. Families make proportional contributions based on their income. The Federal Government manages about 10% of the overall contributions to cover unexpected fluctuations in demand, infrastructure for deprived areas, and some very specialised services.[9] The rest of the funding is managed by the states. This funding is allocated to the states on the basis of a formula which is largely determined by the number of families covered by the Seguro Popular. In the past, federally allocated state budgets in health were largely determined by historical payments and the size of the health sector payroll. Services provided through Seguro Popular are mostly, but not exclusively, contracted from public providers, which are predominantly the 32 ministries of health.[9]

The Federal Government contributed 13% of public health expenditure in 1993 which decreased to 9% in 2003 while the three social insurance institutions contributed 80% of public health expenditure in 1993 which also decreased in 2003 (to 66%). The state governments contributed 5% of public health expenditure in 1993 which increased to 17% in 2003. In 1993, the public contributed 2% in out-of-pocket payments which increased to 8% in 2003. The proportion of government expenditure for 49% of the population who do not have social insurance had increased from 18% in 1993 to 26% in 2003. This indicates that by 2003, equity had increased somewhat, but on average, the medical costs of the uninsured were less than half those of the insured population.[53].

Spain

Spain has an estimated population of 46.4 million as of 2018 and has the highest life expectancy in Europe.[54]

Decentralisation of healthcare responsibility to the 17 autonomous communities (ACs) in Spain occurred over a long period of time and in two waves.[55] The first wave of decentralisation involved regions with either a self-governing tradition or a strong regional identity; this occurred between 1981 and 1994 for the following regions: Catalonia in 1981, Andalusia in 1984, the Basque Country (self-governing and entitled to raise taxes) and Valencia in 1988, Galicia and Navarre (self-governing and entitled to raise taxes) in 1991, and ending with the transfer of healthcare responsibilities to the Canary Islands in 1994.[55,56] The second wave of decentralisation occurred in 2002 when the remaining 10 ACs obtained full responsibility for healthcare.[56] Prior to 2002, healthcare in these 10 ACs was centrally managed.[55] The objective of decentralisation in Spain was to make governments more accountable and responsive to citizens and improve efficiency. Spain is an example of a political decentralisation with two of its regions having both fiscal and political decentralisation.[2,56,57]

The populations of the regions range, from less than 300,000 people to almost 8 million people.[58]

The Spanish national health service (SNS) provides universal healthcare to all residents and is funded by general taxation. A few groups (civil and military servants) have the option to choose between the NHS and a range of private insurance packages funded by the public sector.[57] User co-payments have a markedly restricted role.[59] The change from a social insurance-funded system to a fully tax-based financing regime was completed in 1999.[58]

The Basque Country and Navarre are known as foral regions and have full fiscal responsibility, including collecting their own taxes.[56] In non-foral regions, a new system of payment was implemented in 2002; the regions can raise petrol surcharges; they can also receive 33% of the region's income tax take and 40% of the value added tax take. With this system, healthcare funds are part of a block grant transferred to regional governments, which are free to determine their own spending on healthcare.[56]

In conjunction with education, healthcare is currently the primary responsibility of the ACs, and accounts for between 60% and 70% of total AC funding. .[58]

Commentators report that while some efforts have been made to introduce a certain degree of autonomy to the regional governments by directly transferring to the regions some of the taxes

collected in their territory, regional governments have to date made little use of their 2002 discretion to raise their own sources of revenue.[56]

The SNS Cohesion and Quality Act 2003 prescribed the definition of the SNS common benefits basket as the basic entitlement for all Spaniards.[60]

The European Observatory on Health Systems and Policies' *Health Systems in Transition* document published in 2010 stated that public accountability was a challenge that the Spanish National Health Service was facing[60] Since this report's publication in 2010, the Spanish National Health Service has been facing the consequences of the economic and financial crisis. In terms of governance, there has been a clear shift from the usual decision-making mechanisms developed within the health system (consensus-based decisions reached within the Interterritorial Council for the SNS) to more centralised, executive decisions aimed at responding to the requirements of the Stability Programme of the Kingdom of Spain, with its focus on deficit and debt reduction.[61] With the exception of the foral regions, many of Spain's ACs run a deficit, particularly when opposing parties are in power at the central level and provincial level

Appendix B Search strategies

Question B search strategy

Database: Ovid MEDLINE(R) and Epub Ahead of Print, In-Process & Other Non-Indexed Citations, and Daily 1946 to present
Search date: 16 July 2018

Row no.	Search string	Results
1	barrier*.ti,ab.	243059
2	challenge*.ti,ab.	538441
3	impediment*.ti,ab.	7539
4	difficulties.ti,ab.	131967
5	facilitat*.ti,ab.	448510
6	enabl*.ti,ab.	363029
7	resist*.ti,ab.	908854
8	negative*.ti,ab.	1077654
9	factor*.ti,ab.	2939177
10	lesson*.ti,ab.	52979
11	positive*.ti,ab.	1512907
12	*"Delivery of Health Care, Integrated"/ or *"Delivery of Health Care, Economics"/	8014
13	exp *Models, Organizational/	5924
14	*National Health Programs/	19190
15	State medicine/ or Health Planning Organizations/ or Federal government/	67567
16	*Regional Health Planning/	3179
17	((department adj2 health) or (ministry adj2 health)).ti,ab.	30108
18	national health service.ti,ab.	11083
19	health administration.ti,ab.	5363
20	(better care fund$ or Sustainability Transformation Plan$ or vanguard$).ti,ab.	762
21	local health integration network$.ti,ab.	97
22	regional health authorit$.ti,ab.	995
23	local service network$.ti,ab.	9
24	(health board$ or (territorial adj2 health board$)).ti,ab.	1905
25	local service network$.ti,ab.	9
26	(local health district$ or local health network$ or district health board$).ti,ab.	738
27	integrated delivery network$.ti,ab.	118
28	health board$.ti,ab.	1905
29	health region$.ti,ab.	1914
30	health authorit$.ti,ab.	10865
31	care network$.ti,ab.	2005
32	integrated network$.ti,ab.	809
33	integrated delivery.ti,ab.	988

34	*regional health planning/ or health systems plans/ or *regional medical programs/ or *state health plans/	8533
35	regionali#ation.ti,ab.	2794
36	((regional or local or district or geographic) adj (organi#ation$ or authorit$ or network$ or board$ or (health adj1 board$))).ti,ab.	5575
37	(decentrali#ation or devolution).ti,ab.	2880
38	regional operating model.ti,ab.	1
39	(population-based adj1 approach).ti,ab.	473
40	regional health planning.ti,ab.	46
41	1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11	6493161
42	12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33	158226
43	34 or 35 or 36 or 37 or 38 or 39 or 40	19623
44	41 and 42 and 43	977

Table 1: List of databases searched to answer impact question

	Databases	Web address
1	Medline (Ovid platform)	
2	CINAHL (EBSCO Platform)	
3	Database of Abstracts of Reviews of Effects (DARE)	https://www.crd.york.ac.uk/CRDWeb/HomePage.asp
4	NHS Economic Evaluation Database (NHS EED)	https://www.crd.york.ac.uk/CRDWeb/HomePage.asp
5	HTA database	https://www.crd.york.ac.uk/CRDWeb/HomePage.asp

Question C search strategy

Database: Ovid MEDLINE(R) and Epub Ahead of Print, In-Process & Other Non-Indexed Citations, and Daily 1946 to present

Search date: 27 July 2018

Row no.	Searches	Results
1	*"Delivery of Health Care, Integrated"/ or *"Delivery of Health Care, Economics"/	8039
2	exp *Models, Organizational/	5931
3	*National Health Programs/	19216
4	State medicine/ or Health Planning Organizations/ or Federal government/	67611
5	*Regional Health Planning/	3181
6	((department adj2 health) or (ministry adj2 health)).ti,ab.	30172
7	national health service.ti,ab.	11108
8	health administration.ti,ab.	5379
9	(better care fund$ or Sustainability Transformation Plan$ or vanguard$).ti,ab.	763
10	local health integration network$.ti,ab.	97
11	regional health authorit$.ti,ab.	995
12	local service network$.ti,ab.	9
13	(health board$ or (territorial adj2 health board$)).ti,ab.	1909

14	local service network$.ti,ab.	9
15	(local health district$ or local health network$ or district health board$).ti,ab.	743
16	integrated delivery network$.ti,ab.	118
17	health board$.ti,ab.	1909
18	health region$.ti,ab.	1917
19	health authorit$.ti,ab.	10893
20	care network$.ti,ab.	2013
21	integrated network$.ti,ab.	811
22	integrated delivery.ti,ab.	987
23	*regional health planning/ or health systems plans/ or *regional medical programs/ or *state health plans/	8538
24	regionali#ation.ti,ab.	2799
25	((regional or local or district or geographic) adj (organi#ation$ or authorit$ or network$ or board$ or (health adj1 board$))).ti,ab.	5592
26	(decentrali#ation or devolution).ti,ab.	2894
27	regional operating model.ti,ab.	1
28	(population-based adj1 approach).ti,ab.	473
29	regional health planning.ti,ab.	46
30	or/1-22	158454
31	or/23-29	19662
32	Cost-utility analysis.ti,ab.	1975
33	exp Cost-Benefit Analysis/	73467
34	Cost-effectiveness.ti,ab.	50985
35	Cost-Benefit Analysis.ti,ab.	3297
36	Cost-minimisation analysis.ti,ab.	139
37	exp Clinical Trial/	802808
38	(randomized controlled trial or controlled clinical trial).pt. or (Clinical adj1 trial).ti,ab.	625260
39	exp Observational Study/	50238
40	Observational Stud$.ti,ab.	83001
41	(Before and after study).ti,ab.	2159
42	exp Interrupted Time Series Analysis/	450
43	(time adj series).ti,ab.	24965
44	comparative study.pt.	1804072
45	(impact$ or intervention$).mp.	1672226
46	evaluation studies/ or evaluation studies as topic/ or program evaluation/ or validation studies as topic/ or ((pre-test adj3 post-test) or (pretest adj3 posttest) or (program* adj3 evaluat*)).ti,ab.	425649
47	Historically controlled study/	140
48	Controlled before-after studies/	339
49	exp "Surveys and Questionnaires"/	907693
50	exp "Costs and Cost Analysis"/	216802
51	or/32-50	4966488

52	30 and 31	4797
53	51 and 52	1464
54	(decentralisation or decentralization).ti,ab.	2469
55	impact$.ti,ab.	906804
56	1 and 2	280
57	56 not 53	221
56	53 and 57	1685

Table 2: List of databases searched to answer barriers/facilitators question

	Database	Platform
1	Medline	Ovid
2	CINAHL	EBSCO

Appendix C Excluded studies

Table 3: Studies excluded from impact review

Author	Year	Title	Volume	Issue	Pages	Reason for exclusion
Akehurst, R. L. and Blackburn, K.	1979	Geographic cost variations in the North Western Regional Health Authority	75	11	400-5	Intervention
Aletras, V., Kontodimopoulos, N., Zagouldoudis, A. and Niakas, D.	2007	The short-term effect on technical and scale efficiency of establishing regional health systems and general management in Greek NHS hospitals	83	02-Mar	236-45	Intervention
Allin, S., Veillard, J., Wang, L. and Grignon, M.	2015	How Can Health System Efficiency Be Improved in Canada?	11	1	33-45	Intervention
Amundson, B. A. and Rosenblatt, R. A.	1991	The WAMI Rural Hospital Project. Part 6: Overview and conclusions	7	5	560-74	Intervention
Andersen, R., Smedby, B. and Vagero, D.	2001	Cost containment, solidarity and cautious experimentation: Swedish dilemmas	52	8	1195-204	Study design
Anonymous	1987	Big boost for regional bodies in NSW	125	11		Study design
Anonymous	1992	Providing better health care. National Interim Provider Board	44	3	01-Mar	Study design
Anonymous	1994	A more rational basis for funding services	46	5	01-Mar	Study design
Arah, O. A. and Westert, G. P.	2005	Correlates of health and healthcare performance: applying the Canadian Health Indicators Framework at the provincial-territorial level	5		76	Outcomes
Badrinath, P., Currell, R. A. and Bradley, P. M.	2006	Characteristics of Primary Care Trusts in financial deficit and surplus - a comparative study in the English NHS	6		64	Comparator
Balia, S., Brau, R. and Marrocu, E.	2014	What drives patient mobility across Italian regions? Evidence from hospital discharge data	12		133-54	Comparator
Beckley, D. J.	1975	Regional health planning in Sweden: a comparison	17	4	41, 44, 46	Study design
Bergevin, Y., Habib, B., Elicksen-Jensen, K., Samis, S., Rochon, J.,	2016	Transforming Regions into High-Performing Health Systems Toward the	16	1	34-52	Study design

Author	Year	Title	Volume	Issue	Pages	Reason for exclusion
Denis, J. L. and Roy, D.		Triple Aim of Better Health, Better Care and Better Value for Canadians				
Bevan, G.	2016	What Can We Learn from the UK's "Natural Experiments" of the Benefits of Regions?	16	1	16-20	Study design
Black, C. D., Roos, N. P. and Burchill, C. A.	1995	Utilization of hospital resources	33	12 Suppl	DS55-72	Intervention
Bodenheimer, T.	1997	The Oregon Health Plan--lessons for the nation. Second of two parts	337	10	720-3	Intervention
Bodenheimer, T.	1997	The Oregon Health Plan--lessons for the nation. First of two parts	337	9	651-5	Intervention
Borchardt, P. J.	1981	Non acute profiles: evaluation of physicians' nonacute utilization of hospital resources	7	11	21-Jun	Intervention
Borren, P. and Maynard, A.	1994	The market reform of the New Zealand health care system searching for the Holy Grail in the Antipodes	27	3	233-52	Intervention
Browne, G. B.	1999	Evidence that informs practice and policy: the role of strategic alliances at the municipal, provincial, and federal levels	31	1	79-94	Intervention
Brugulat, P., Seculi, E., Fuste, J., Junca, S., Martinez, V., Medina, A., Mercader, M. and Sanchez, E.	2003	[Health professionals' opinion of the Catalan Health Plan. Basis for a reflexion on the future]	17	1	52-8	Intervention
Carruthers, P. R.	1979	What can Canada teach us about health care financing?	33	4	30-2, 35-6, 38	Study design
Casebeer, A. L. and Hannah, K. J.	1998	Managing change in the context of health reform: lessons from Alberta	11	2	21-Jul	Study design
Cavalieri, M. and Ferrante, L.	2016	Does fiscal decentralization improve health outcomes? Evidence from infant mortality in Italy	164 IID - 36	74-88		Intervention
Cecchi, C.	2010	[Regional health conferences: assessment, observations, risks, challenges and prospects]	22	1	113-20	Study design
Cohen, P.	1993	Regional cuts	89	14	18	Study design
Costa-Font, J.	2012	Myths of health care decentralization	17	4	252-3	Study design
Crivelli, L. and Salari, P.	2014	The impact of federalism on the healthcare system in terms of	12		155-78	Comparator

Author	Year	Title	Volume	Issue	Pages	Reason for exclusion
		efficiency, equity, and cost containment: the case of Switzerland				
Davies, B. J.	1999	Cost containment mechanisms in Canada	40	2	287-93	Study design
Defever, M.	1995	Health care reforms: the unfinished agenda	34	1	01-Jul	Study design
Dharmalingam, A., Pool, I., Baxendine, S. and Sceats, J.	2004	Trends and patterns of avoidable hospitalisations in New Zealand:1980-1997	117	1198	U976	Intervention
Dixon, J. and Klein, R.	1997	Health authorities. Its all in the balance	107	5556	26-Jul	Study design
Dreyer, F. C., Jr.	1992	What kind of linkage? A community hospital perspective. Containing health care costs through linkage: regionalization, collaboration, and strategic planning, among community hospitals				Intervention
Eliasoph, H., Monaghan, B., Beaudoin, R., Cushman, R., DuBois-Wing, G., Emery, M. J., Fenn, W. M., Hanmer, S. J., Huras, P., Lowi-Young, M., Mandy, P., Trimnell, J., Switzer, G., Woolgar, T. and Butler, J.	2007	We are all in this together: integrated health service plans in Ontario	10	3	82-7	Study design
Esping-Andersen, G.	2000	The sustainability of welfare states into the twenty-first century	30 IID - 62	1	01-Dec	Study design
Ferrario, C. and Zanardi, A.	2011	Fiscal decentralization in the Italian NHS: what happens to interregional redistribution?	100	1	71-80	Outcomes
Frankish, C. J., Moulton, G. E., Quantz, D., Carson, A. J., Casebeer, A. L., Eyles, J. D., Labonte, R. and Evoy, B. E.	2007	Addressing the non-medical determinants of health: a survey of Canada's health regions	98	1	41-7	Outcomes
Gerzoff, R. B., Gordon, R. L. and Richards, T. B.	1996	Recent changes in local health department spending	17	2	170-80	Intervention
Glennerster, H. and Matsaganis, M.	1993	The UK health reforms: the fundholding experiment	23	3	179-91	Study design

Author	Year	Title	Volume	Issue	Pages	Reason for exclusion
Godden, S., McCoy, D. and Pollock, A.	2009	Policy on the rebound: trends and causes of delayed discharges in the NHS	102	1	22-Aug	Intervention
Gonzalez-Block, M. A.	1997	[The decentralization of the Secretaria de Salud de Mexico. The case of local health systems 1989-1994]	133	3	183-93	Outcomes
Gosselin, R.	1984	Decentralization/regionalization in health care: the Quebec experience	9	1	Jul-25	Study design
Gregory, D., Way, C., Barrett, B. and Parfrey, P.	2005	Health care quality from the perspective of health care providers and patients during and shortly after acute care restructuring in Newfoundland and Labrador	10 Suppl 2	S2:48-57		Intervention
Hagen, T. M.	2012	Moving toward regionalization. A viable means to improve patient outcomes while reducing costs	41	4	55	Study design
Hagopian, A., House, P., Dyck, S., LeMire, J., Billett, D., Knievel, M. and Hart, L. G.	2000	The use of community surveys for health planning: the experience of 56 northwest rural communities	16	1	81-90	Intervention
Hakansson, S.	1994	New ways of financing and organizing health care in Sweden	9	1	103-24	Intervention
Hamilton, S. M., Letourneau, S., Pekeles, E., Voaklander, D. and Johnston, D. W.	1997	The impact of regionalization on a surgery program in the Canadian health care system	132	6	605-9; discussion 609-11	Population
Hart, L. G., Lishner, D. M. and Amundson, B. A.	1991	The WAMI Rural Hospital Project. Part 5: Community perception of local health care services	7	5	542-59	Intervention
Hildebrandt, H., Kardel, U., Wetzel, M., Buntru, K. and Bachlein, B.	2011	[Electronic networking and the central electronic medical record as structural organizational elements of regional interdisciplinary health care in healthy Kinzigtal]	105	9	677-83	Intervention
Hodge, M.	1993	Predicting regional enterprises: IS implications	10	7	106, 108, 110	Study design
Homedes, N. and Ugalde, A.	2005	Human resources: the Cinderella of health sector reform in Latin America	3 IID - 88	1	1	Study design
Homedes, N. and Ugalde, A.	2005	[Neoliberal reforms in health services in Latin America: a critical view from two case studies]	17 IID - 89	3	210-20	Study design

Author	Year	Title	Volume	Issue	Pages	Reason for exclusion
Homedes, N. and Ugalde, A.	2005	Why neoliberal health reforms have failed in Latin America	71 IID - 90	1	83-96	Study design
Howard, D. and Jarrett, J. E.	1977	The Connecticut Commission on Hospitals and Health Care	41	2	105-12	Intervention
Howland, D.	1970	Toward a community health-system model	1	1	Nov-30	Outcomes
Jimenez-Rubio, D.	2011	The impact of fiscal decentralization on infant mortality rates: evidence from OECD countries	73 IID - 98	9	1401-7	Intervention
Jommi, C., Cantu, E. and Anessi-Pessina, E.	2001	New funding arrangements in the Italian National Health Service	16	4	347-68	Study design
Jones, D. R. and Masterman, S.	1976	NHS resources: scales of variation	30	4	244-50	Intervention
Kolehmainen-Aitken, R. L.	2004	Decentralization's impact on the health workforce: Perspectives of managers, workers and national leaders	2 IID - 112	1	5	Study design
Konkin, J., Howe, D., Soles, T. L. and Society of Rural Physicians of, C.	2004	SRPC policy paper on regionalization, spring 2004	9	4	257-9	Study design
Kristiansen, I. S. and Hansen, F. H.	1989	[What does the public think about the regional health care? A questionnaire study done in Northern Norway]	109	6	719-24	Intervention
Lawson, J. and Evans, A.	1992	The successful development of decentralised health service management: an evaluation of area health services in New South Wales	15	3	237-47	Outcomes
Lee, P. R., Leroy, L. and Estes, C. L.	1982	Needs and planning for manpower within a health region: concepts, problems, and progress	18	3	385-91	Study design
Levine, D.	2004	Regionalization: an opportunity for improving management	5	1	46-9; discussion 96-9	Study design
Lewis, S. and Kouri, D.	2004	Regionalization: making sense of the Canadian experience	5	1	Dec-31	Study design
Lewis, S. J., Kouri, D., Estabrooks, C. A., Dickinson, H., Dutchak, J. J., Williams, J. I., Mustard, C. and	2001	Devolution to democratic health authorities in Saskatchewan: an interim report	164	3	343-7	Comparator

Author	Year	Title	Volume	Issue	Pages	Reason for exclusion
Hurley, J.						
Lishner, D. M., Amundson, B. A. and Hart, L. G.	1991	The WAMI Rural Hospital Project. Part 2: Changes in the availability and utilization of health services	7	5	492-510	Intervention
Logan, R. W., Jr. and Claytor, N. V.	1975	Cost saving through areawide planning	49	3	65-7, 70-1	Outcomes
Lomas, J.	1997	Devolving authority for health care in Canada's provinces: 4. Emerging issues and prospects	156	6	817-23	Study design
Lomas, J., Woods, J. and Veenstra, G.	1997	Devolving authority for health care in Canada's provinces: 1. An introduction to the issues	156	3	371-7	Comparator
Lopez-Casasnovas, G., Costa-Font, J. and Planas, I.	2005	Diversity and regional inequalities in the Spanish 'system of health care services'	14	Suppl 1	S221-35	Study design
Malcolm, L. and Barnett, P.	1995	Decentralisation, integration and accountability: perceptions of New Zealand's top health service managers	8	2	121-34	Comparator
Malcolm, L., Alp, B. and Bryson, J.	1994	Decentralisation of general management within the New Zealand health system	7	4	220-8	Study design
Mancuso, P. and Valdmanis, V. G.	2016	Care Appropriateness and Health Productivity Evolution: A Non-Parametric Analysis of the Italian Regional Health Systems	14	5	595-607	Intervention
Mannion, R., Goddard, M., Kuhn, M. and Bate, A.	2005	Decentralization strategies and provider incentives in healthcare: evidence from the english national health service	4	1	47-54	Outcomes
Marchildon, G. P.	2005	Canadian health system reforms: lessons for Australia?	29	1	105-19	Study design
Martin, J. J. and Gonzalez Mdel, P.	2011	[The sustainability of the Spanish National Health System]	16 IID - 136	6	2773-82	Study design
Meirovich, G., Brender-Ilan, Y. and Meirovich, A.	2007	Quality of hospital service: the impact of formalization and decentralization	20 IID - 143	02-Mar	240-52	Intervention
Menke, T. J. and Wray, N. P.	2001	When does regionalization of expensive medical care save money?	14	2	116-24	Study design
Mick, S. S. and Thompson, J. D.	1984	Public attitudes toward health planning under the Health Systems Agencies	8	4	782-800	Comparator

Author	Year	Title	Volume	Issue	Pages	Reason for exclusion
Milligan, C.	1998	Pathways of dependence: the impact of health and social care restructuring--the voluntary experience	46	6	743-53	Intervention
Minyard, K. J., Lineberry, I. C., Smith, T. A. and Byrd-Roubides, T.	2003	Transforming the delivery of rural health care in Georgia: state partnership strategy for developing rural health networks	19 Suppl		361-71	Study design
Moberly, T.	2017	STP savings plans are "not credible," think tanks warn	358		j4270	Study design
Mustard, C. A., Derksen, S. and Black, C.	1999	Widening regional inequality in premature mortality rates in Manitoba	90	6	372-6	Intervention
Neville, D., Barrowman, G., Fitzgerald, B. and Tomblin, S.	2005	Regionalization of health services in Newfoundland and Labrador: perceptions of the planning, implementation and consequences of regional governance	10 Suppl 2	S2:12-21		Study design
Oliveira, M. D. and Pinto, C. G.	2005	Health care reform in Portugal: an evaluation of the NHS experience	14	Suppl 1	S203-20	Study design
Parfrey, P., Gregory, D. and Barrett, B.	2005	An evaluation of acute care restructuring in Newfoundland and Labrador: conclusions	10 Suppl 2	S2:71-3		Study design
Pereira, A. M. M., Lima, L. D. and Machado, C. V.	2018	[Decentralization and regionalization of health policy: a historical-comparative approach between Brazil and Spain]	23	7	2239-2252	Study design
Prieto, D. C. and Lago-Penas, S.	2012	Decomposing the determinants of health care expenditure: the case of Spain	13	1	19-27	Outcomes
Przestrzelski, D.	1987	Decentralization: are nurses satisfied?	17 IID - 168	11	23-Aug	Intervention
Rico, A. and Costa-Font, J.	2005	Power rather than path dependency? The dynamics of institutional change under health care federalism	30	01-Feb	231-52	Study design
Rigoli, F. and Dussault, G.	2003	The interface between health sector reform and human resources in health	1 IID - 175	1	9	Study design
Riley, K. K. and Elder, W. G.	1991	The WAMI Rural Hospital Project. Part 4: Improving the financial health of rural hospitals	7	5	526-41	Intervention
Rosenblatt, R. A.	1991	The WAMI Rural Hospital Project. Part 1: Historical and theoretical	7	5	473-91	Intervention

Author	Year	Title	Volume	Issue	Pages	Reason for exclusion
		underpinnings				
Segovia, J., Edwards, A. C. and Bartlett, R. F.	1999	Newfoundland Panel on Health and Medical Care--adult health survey	90	6	412-6	Comparator
Simonet, D.	2010	Healthcare reforms and cost reduction strategies in Europe: the cases of Germany, UK, Switzerland, Italy and France	23	5	470-88	Study design
Sipes-Metzler, P. R.	1994	Oregon Health Plan: ration or reason	19	4	305-14	Intervention
Soifer, S., Balassone, M. L. and Johnstone, J.	1992	Prospects for national health care in the United States	3	3	Jan-17	Study design
Sojo, A.	1991	[Territory and decentralization in the agenda for productive transformation with equity]	19 IID - 199	53	79-115	Study design
Trani, A. M.	2002	[Organization of District Health Offices in Italy. Comparison of different regional achievements]	14	4	289-94	Outcomes
Veenstra, G.	2002	Social capital and health (plus wealth, income inequality and regional health governance)	54	6	849-68	Outcomes
Warren, S.	1976	Physicians and health regionalization: response to implied government involvement	10	1	39-46	Intervention
Wills, D. J.	1989	Survey: new management structures	17	1	08-Dec	Outcomes
Wlodarczyk, C. and Sabbat, J.	1993	Regional integration of health services in Poland--an ambitious pilot project	23	3	229-45	Outcomes
Wyss, K. and Lorenz, N.	2000	Decentralization and central and regional coordination of health services: the case of Switzerland	15	2	103-14	Study design
Yasar, G. Y.	2011	'Health transformation programme' in Turkey: an assessment	26	2	110-33	Study design
Zhong, H.	2010	The impact of decentralization of health care administration on equity in health and health care in Canada	10	3	219-37	Intervention

Table 4: Studies excluded from barriers/facilitators review

Author	Year	Title	Volume	Issue	Pages	Reason
Aletras, N.; Zagouldoudis, A.; Niakas, D.	2007	The short-term effect on technical and scale efficiency of establishing regional health systems and general management in Greek NHS hospitals	83	43161	236-45	Outcomes
Allin, J.; Wang, L.; Grignon, M.	2015	How Can Health System Efficiency Be Improved in Canada?	11	1	33-45	Outcomes
Alwan	2014	Addressing health challenges in the five regional priority areas: progress in one year	20	10	585-6	Study design
Anderson, B.	2012	Health and hospital reform in Australia--a local health district's perspective	48	3	21-4	Study design
Androutsou, M.; Yfantopoulos, J.	2011	Measuring Efficiency and Productivity Across Hospitals in the Regional Health Authority of Thessaly, in Greece	13	2	121-140	Outcomes
Anonymous	2006	A primer for building RHIOs	80	2	49-56, 1	Study design
Arah, G. P.	2005	Correlates of health and healthcare performance: applying the Canadian Health Indicators Framework at the provincial-territorial level	5		76	Outcomes
Arulambalam	1989	Critical success factors--and their use in managing organizations	41	5	6-7	Study design
Ashton	1992	The purchaser-provider split: implications for dental services	88	394	121-5	Outcomes
Badrinath, R. A.; Bradley, P. M.	2006	Characteristics of Primary Care Trusts in financial deficit and surplus - a comparative study in the English NHS	6		64	Intervention
Bankauskaite, C. M.	2010	Stewardship of the Spanish national health system	25	4	386-99	Study design
Bear, G.; Weatherill, S.	1998	The last critical care bed in Western Canada	11	4	45-6	Study design
Bevan	2010	Impact of devolution of health care in the UK: provider challenge in England and provider capture in Wales, Scotland and Northern Ireland?	15	2	67-8	Study design
Bevan	2016	What Can We Learn from the UK's "Natural Experiments" of the Benefits of Regions?	16	1	16-20	Study design
Bodenheimer	1997	The Oregon Health Plan--lessons for the nation. Second of two parts	337	10	720-3	Study design

Author	Year	Title	Volume	Issue	Pages	Reason
Bodenheimer	1997	The Oregon Health Plan--lessons for the nation. First of two parts	337	9	651-5	Study design
Borren, A.	1994	The market reform of the New Zealand health care system searching for the Holy Grail in the Antipodes	27	3	233-52	Study design
Bradbury	2014	Integrated care communities: putting change theory into practice	22	4	132-141	Study design
Brenna, F.	2015	Regional incentives and patient cross-border mobility: evidence from the Italian experience	4	6	363-72	Outcomes
Breton, L.; Haggerty, J.; Vedel, I.	2014	Mandated Local Health Networks across the province of Quebec: a better collaboration with primary care working in the communities?	6	4	71-8	Study design
Burns	1999	Polarity management: the key challenge for integrated health systems	44	1	14-31; discussion 31-3	Intervention
Busse, Juliane	2014	CHRONIC CARE. Integrated Care Experiences And Outcomes In Germany, The Netherlands, And England	33	9	1549-1558	Study design
Casebeer, D.	2000	Potholes in the information highway: the use of health service utilization data by Alberta health care managers	13	2	58-64	Outcomes
Cecchi	2010	[Regional health conferences: assessment, observations, risks, challenges and prospects]	22	1	113-20	Study design
Checkland, A.; Harrison, S.; Hiroeh, U.	2009	'We can't get anything done because...': making sense of 'barriers' to Practice-based Commissioning	14	1	20-6	Intervention
Cheetham, S.; Rushmer, R.; Greig, G.; Gibson, E.; Khazaeli, B.; Wiseman, A.	2017	'It is not a quick fix' structural and contextual issues that affect implementation of integrated health and well-being services: a qualitative study from North East England	152		99-107	Intervention
Chessie	2009	Health system regionalization in Canada's provincial and territorial health systems: do citizen governance boards represent, engage, and empower?	39	4	705-24	Outcomes
Conrad	1993	Coordinating patient care services in regional health systems: the challenge of clinical integration	38	4	491-508	Study design
Costa-Font, J.	2007	Public health expenditure and spatial interactions in a decentralized national health system	16	3	291-306	Outcomes

Author	Year	Title	Volume	Issue	Pages	Reason
Crichton	1985	Restructuring health services in Canada: challenges for policy makers, planners and managers in the eighties	1	1	7-26	Study design
Davies, Wulf; Owen, Emyr; Huxley, Peter	2016	Social care legislation as an act of integration	24	3	139-149	Intervention
de Belvis, F.; Specchia, M. L.; Valerio, L.; Fattore, G.; Ricciardi, W.	2012	The financial crisis in Italy: implications for the healthcare sector	106	1	10-6	Outcomes
de la Jara, T.	1995	Chile's health sector reform: lessons from four reform periods	32	1-3	155-66	Study design
Defever	1995	Health care reforms: the unfinished agenda	34	1	1-7	Study design
Dodson, K. J.	1996	Health care reform in the American states: administrative capacity building	19	2	118-32	Study design
Eliasoph, B.; Beaudoin, R.; Cushman, R.; DuBois-Wing, G.; Emery, M. J.; Fenn, W. M.; Hanmer, S. J.; Huras, P.; Lowi-Young, M.; Mandy, P.; Trimnell, J.; Switzer, G.; Woolgar, T.; Butler, J.	2007	We are all in this together: integrated health service plans in Ontario	10	3	82-7	Study design
Exworthy, F.; Jones, L.	2011	Are NHS foundation trusts able and willing to exercise autonomy? 'You can take a horse to water...'	16	4	232-7	Study design
Felder, H.	2013	Federal state differentials in the efficiency of health production in Germany: an artifact of spatial dependence?	14	1	21-39	Outcomes
Ferlie, L.; Ashburner, L.	1994	The creation and evolution of the new health authorities: the challenge of purchasing	7	2	120-30	Outcomes
Ferre, C.; Lega, F.	2012	The challenge and the future of health care turnaround plans: evidence from the Italian experience	106	1	3-9	Intervention
Forest, H. A.	2008	Examining fiscal federalism, regionalization and community-based initiatives in Canada's health care delivery system	23	4	69-88	Study design

Author	Year	Title	Volume	Issue	Pages	Reason
Frankish, B.; Ratner, P. A.; Higgins, J. W.; Larsen, C.	2002	Challenges of citizen participation in regional health authorities	54	10	1471-80	Study design
Gibis, D.	2003	Devolving healthcare delivery to regional health authorities: is health technology assessment prepared to follow?	16	1	24-31	Intervention
Goddard, R.	2006	Decentralising the NHS: rhetoric, reality and paradox	20	1	67-73	Intervention
Goedert	2009	Lesson from the HIE front. Organizations share lessons learned in the effort to develop health information exchanges and regional health information organizations	17	2	28-30, 32	Intervention
Goldie, J. W.	2001	New roles and relationships in the NHS--barriers to change	15	1	6-27	Intervention
Gonzalez-Block	1997	[The decentralization of the Secretaria de Salud de Mexico. The case of local health systems 1989-1994]	133	3	183-93	Outcomes
Gosselin	1984	Decentralization/regionalization in health care: the Quebec experience	9	1	45839	Study design
Gross, B.	1996	Decentralization in a sick fund: lessons from an evaluation	10	1	67-80	Intervention
Hammond, Anna; Checkland, Kath	2018	Health Reforms Research Project no 10 Performance of New Zealand's publically financed healthcare system: a focus on performance under the New Zealand Public Health and Disability Act	23	1	49-56	Intervention
Hildebrandt, Timo; Stunder, Brigitte	2012	Triple Aim in Kinzigtal, Germany: Improving population health, integrating health care and reducing costs of care -- lessons for the UK?	20	4	205-222	Outcomes
Howell	2004	Lessons from New Zealand for England's NHS Foundation Trusts	9	2	104-9	Study design
Jiwani, M. J.	2011	Divergent modes of integration: the Canadian way	11	Spec 10th Anniversary Ed	e018	Study design
Leese	2002	Impact on health authorities of the introduction of primary care groups and trusts	15	1	40-5	Intervention
Lega, M.; Ianni, L.	2010	The rise of governmentality in the Italian National Health System: physiology or pathology of a decentralized and (ongoing) federalist	23	4	172-80	Study design

Author	Year	Title	Volume	Issue	Pages	Reason
		system?				
Lewis, D.; Estabrooks, C. A.; Dickinson, H.; Dutchak, J. J.; Williams, J. I.; Mustard, C.; Hurley, J.	2001	Devolution to democratic health authorities in Saskatchewan: an interim report	164	3	343-7	Intervention
Mur-Veeman, A.; Paulus, A.	1999	Integrated care: the impact of governmental behaviour on collaborative networks	49	3	149-59	Study design
Smith, S.; Pohl, R.	1995	Designing healthcare regions: a Canadian approach	4	6	10-4	Study design
Tediosi, S.; Longo, F.	2009	Governing decentralization in health care under tough budget constraint: what can we learn from the Italian experience?	90	2-3	303-12	Study design
Volgger, T.; Pechlaner, H.; Mitas, O.	2015	Health region development from the perspective of system theory - an empirical cross-regional case study	124		321-30	Outcomes
West, M. D.	1976	Comparative analysis of community health planning: transition from CHPs to HSAs	1	2	173-95	Study design
Wyss, N.	2000	Decentralization and central and regional coordination of health services: the case of Switzerland	15	2	103-14	Study design
Zachariadis, E.; Barrett, M.; Zollinger-Read, P.	2013	Leadership of healthcare commissioning networks in England: a mixed-methods study on clinical commissioning groups	3	2		Intervention

Appendix D Results of critical appraisal

Table 5: Quality assessment of studies included in the impact question (part 1)

Study ID	Selection bias			Study design				Confounders		
	Representative of target population	% agreed	Section rating	Study design	Randomised	Method appropriate	Section rating	Differences between groups	% confounders controlled	Section rating
Alteras 2007	Somewhat likely	60–79%	Moderate	Other	No	No	Weak	Yes	60-70%	Moderate
Anton 2014	Can't tell	Can't tell	Weak	Interrupted time series	No	No	Moderate	Yes	80-100%	Strong
Arredondo 2004	Can't tell	Can't tell	Weak	Interrupted time series	No	No	Moderate	Yes	Less than 60%	Weak
Barrasa-Villar 2013	Very likely	N/A	Strong	Other	No	No	Weak	Yes	60-79%	Moderate
Barrett 2005	Very likely	80-100%	Strong	Other	No	No	Weak	Yes	60-79%	Moderate
Cantarero 2005	Very likely	80-100%	Strong	Other	No	No	Weak	Yes	60-79%	Moderate
Cantarero 2008	Very likely	80-100%	Strong	Other	No	No	Weak	Yes	60-79%	Moderate
Cloutier-Fisher 2006	Very likely	80-100%	Strong	Interrupted time series	No	No	Moderate	Yes	60-79%	Moderate
Costa-Font 2005	Somewhat likely	Can't tell	Moderate	Other	No	No	Weak	Yes	Can't tell	Weak
Costa-Font 2006	Very likely	N/A	Strong	Other	No	No	Weak	Yes	80-100%	Strong
Costa-Font 2007	Very likely	80-100%	Strong	Other	No	No	Weak	Yes	80-100%	Strong
Costa-Font 2008a	Very likely	80-100%	Strong	Other	No	No	Weak	Yes	80-100%	Strong
Costa-Font 2018	Can't tell	Can't tell	Weak	Other	No	No	Weak	Yes	80-100%	Strong
Cota-Font 2009	Very likely	Can't tell	Moderate	Other	No	No	Weak	Yes	80-100%	Strong

Study ID	Selection bias			Study design				Confounders		
Curtis 2005	Very likely	80-100%	Strong	Other	No	No	Weak	Yes	60-79%	Moderate
De Nicola 2014	Very likely	80-100%	Strong	Other	No	No	Weak	Yes	80-100%	Strong
Giannoni 2002	Very likely	80-100%	Strong	Other	No	No	Weak	Yes	80-100%	Strong
Hamilton 2001	Somewhat likely	Can't tell	Moderate	Other	No	No	Weak	Yes	80-100%	Strong
Hanlon 2003	Somewhat likely	N/A	Moderate	Interrupted time series	No	No	Moderate	Yes	Can't tell	Weak
Jimenez Rubio 2008	Very likely	Can't tell	Moderate	Other	No	No	Weak	Yes	Can't tell	Weak
Jimenez Rubio 2017	Very likely	80-100%	Strong	Interrupted time series	No	No	Moderate	Yes	80-100%	Strong
Jovell 2007	Very likely	Can't tell	Moderate	Other	No	No	Weak	Yes	60-79%	Moderate
Librero 2017	Very likely	80-100%	Strong	Other	No	No	Weak	Yes	60-79%	Moderate
Martin-Fernandez 2007	Very likely	60-79%	Moderate	Other	No	No	Weak	Yes	80-100%	Strong
Martinez-Fritscher 2011	Very likely	80-100%	Strong	Other	No	No	Weak	Yes	80-100%	Strong
Saunders 1999	Very likely	80-100%	Strong	Interrupted time series	No	No	Moderate	Yes	60-79%	Moderate
Toth 2014	Very likely	80-100%	Strong	Other	No	No	Weak	Yes	Can't tell	Weak
Twells 2005	Can't tell	Can't tell	Weak	Other	No	No	Weak	Yes	Less than 60%	Weak
Way 2005a	Very likely	Less than 60%	Weak	Other	No	No	Weak	Yes	Can't tell	Weak
Way 2005b	Somewhat likely	Less than 60%	Weak	Other	No	No	Weak0	Yes	Can't tell	Weak

[a] Based on the Effective Public Health Practice Project: 'Quality Assessment Tool for Quantitative Studies'

Table 6: Quality assessment of studies included in the impact question (part 2)

Study ID	Blinding			Data collection methods			Withdrawals and drop outs		
	Assessors aware	Participants aware	Section rating	Tools valid	Tools reliable	Section rating	Reported	% complete study	Section rating
Alteras 2007	Yes	No	Moderate	Can't tell	Can't tell	Weak	N/A	N/A	N/a
Anton 2014	Yes	Can't tell	Moderate	No	No	Weak	N/A	N/A	N/a
Arredondo 2004	Yes	No	Moderate	Can't tell	Can't tell	Weak	N/A	N/A	N/a
Barrasa-Villar 2013	Yes	No	Moderate	Yes	Yes	Strong	N/A	N/A	N/a
Barrett 2005	Yes	No	Moderate	Yes	Yes	Strong	N/A	N/A	N/a
Cantarero 2005	Yes	No	Moderate	Yes	Yes	Strong	N/A	N/A	N/a
Cantarero 2008	Yes	No	Moderate	Yes	Yes	Strong	N/A	N/A	N/a
Cloutier-Fisher 2006	Yes	No	Moderate	Yes	Yes	Strong	N/A	N/A	N/a
Costa-Font 2005	Yes	No	Moderate	Can't tell	Can't tell	Weak	N/A	N/A	N/a
Costa-Font 2006	Yes	No	Moderate	Yes	Yes	Strong	N/A	N/A	N/a
Costa-Font 2007	Yes	No	Moderate	Yes	Yes	Strong	N/A	N/A	N/a
Costa-Font 2008a	Yes	No	Moderate	Yes	Yes	Strong	N/A	N/A	N/a
Costa-Font 2018	Yes	Can't tell	Weak	Can't tell	Can't tell	Weak	N/A	N/A	N/a
Cota-Font 2009	Yes	No	Moderate	Can't tell	Can't tell	Weak	N/A	N/A	N/a
Curtis 2005	Yes	No	Moderate	Can't tell	Can't tell	Weak	N/A	N/A	N/a
De Nicola 2014	Yes	No	Moderate	Yes	Yes	Strong	N/A	N/A	N/a
Giannoni 2002	Yes	No	Moderate	Yes	Yes	Strong	N/A	N/A	N/a
Hamilton 2001	Yes	No	Moderate	Yes	Yes	Strong	N/A	N/A	N/a
Hanlon 2003	Yes	No	Moderate	Yes	Yes	Strong	N/A	N/A	N/a

Study ID	Blinding			Data collection methods			Withdrawals and drop outs		
Jimenez Rubio 2008	Yes	No	Moderate	Can't tell	Can't tell	Weak	N/A	N/A	N/a
Jimenez Rubio 2017	Yes	No	Moderate	Yes	Yes	Strong	N/A	N/A	N/a
Jovell 2007	Yes	Yes	Weak	No	No	Weak	N/A	N/A	N/a
Librero 2017	Yes	No	Moderate	Can't tell	Can't tell	Weak	N/A	N/A	N/a
Martin-Fernandez 2007	Yes	Yes	Weak	Yes	Yes	Strong	N/A	N/A	N/a
Martinez-Fritscher 2011	Yes	No	Moderate	Yes	Yes	Strong	N/A	N/A	N/a
Saunders 1999	Yes	No	Moderate	Yes	Yes	Strong	N/A	N/A	N/a
Toth 2014	Yes	Can't tell	Moderate	Yes	Yes	Strong	N/A	N/A	N/a
Twells 2005	Yes	Can't tell	Moderate	Yes	Yes	Strong	N/A	N/A	N/a
Way 2005a	Yes	Can't tell	Weak	Yes	Yes	Strong	Yes	Less than 60%	Poor
Way 2005b	Yes	Can't tell	Weak	Yes	Yes	Strong	No	Can't tell	Poor

Table 7: Quality assessment of studies included in the impact question (part 3)

Study ID	Intervention integrity			Analyses				Global Score
	% received intervention	Consistency measured	Unintended contamination	Unit of allocation	Unit of analysis	Methods appropriate	ITT	
Alteras 2007	80-100%	No	No	Organisation	Organisation	Yes	No	Weak
Anton 2014	80-100%	No	No	Individual	Individual	Yes	Can't tell	Weak
Arredondo 2004	80-100%	No	No	Community	Community	Yes	Can't tell	Weak
Barrasa-Villar 2013	80-100%	No	No	Individual	Individual	Yes	Can't tell	Moderate
Barrett 2005	80-100%	No	No	Individual	Individual	Yes	No	Moderate
Cantarero 2005	80-100%	No	No	Community	Community	Yes	Can't tell	Moderate

Study ID	Intervention integrity			Analyses				Global Score
	% received intervention	Consistency measured	Unintended contamination	Unit of allocation	Unit of analysis	Methods appropriate	ITT	
Cantarero 2008	80-100%	No	No	Community	Community	Yes	Can't tell	Moderate
Cloutier-Fisher 2006	80-100%	No	No	Individual	Individual	Yes	No	Strong
Costa-Font 2005	80-100%	No	No	Individual	Community	Yes	Can't tell	Weak
Costa-Font 2006	80-100%	No	No	Community	Community	Yes	Can't tell	Moderate
Costa-Font 2007	80-100%	No	No	Community	Community	Yes	Can't tell	Moderate
Costa-Font 2008a	80-100%	No	No	Community	Community	Yes	Can't tell	Moderate
Costa-Font 2018	80-100%	No	No	Community	Community	Yes	Can't tell	Weak
Cota-Font 2009	80-100%	No	No	Individual	Community	Yes	Can't tell	Moderate
Curtis 2005	80-100%	No	No	Individual	Individual	Yes	Can't tell	Weak
De Nicola 2014	80-100%	No	No	Community	Community	Yes	Can't tell	Moderate
Giannoni 2002	80-100%	No	No	Community	Community	Yes	Can't tell	Moderate
Hamilton 2001	80-100%	No	No	Individual	Individual	Yes	Can't tell	Moderate
Hanlon 2003	80-100%	No	No	Individual	Community	Yes	Can't tell	Moderate
Jimenez Rubio 2008	80-100%	No	No	Individual	Individual	Yes	Can't tell	Weak
Jimenez Rubio 2017	80-100%	No	No	Community	Community	Yes	Can't tell	Strong
Jovell 2007	80-100%	No	No	Individual	Individual	Yes	Can't tell	Weak
Librero 2017	80-100%	No	No	Individual	Individual	Yes	Can't tell	Weak
Martin-Fernandez 2007	80-100%	No	No	Individual	Individual	Yes	Can't tell	Weak
Martinez-Fritscher 2011	80-100%	No	No	Community	Community	Yes	Can't tell	Moderate
Saunders 1999	80-100%	No	No	Individual	Individual	Yes	Can't tell	Strong

Study ID	Intervention integrity			Analyses				Global Score
	% received intervention	Consistency measured	Unintended contamination	Unit of allocation	Unit of analysis	Methods appropriate	ITT	
Toth 2014	80-100%	No	No	Individual	Community	Yes	Can't tell	Weak
Twells 2005	80-100%	No	No	Community	Community	Yes	Can't tell	Weak
Way 2005a	80-100%	No	No	Individual	Individual	Yes	No	Weak
Way 2005b	80-100%	No	No	Individual	Individual	Yes	Can't tell	Weak

Table 8: Quality assessment of the qualitative studies included in the barriers/facilitators question

Study ID	Purpose stated	Sampling described	Description of sample	Study site described	Ethical approval	Data collection reported	Researcher influence	Researcher bias stated	Analysis described	Findings supported	Conclusions appropriate	Final score
Arredondo 2006	1	0	1	1	0	1	0	0	1	1	1	Moderate
Arredondo 2008	1	0	1	1	0	1	0	0	1	1	1	Moderate
Arredondo 2015	1	0	0	1	0	1	0	0	1	1	1	Moderate
Arredondo 2018	1	0	1	1	1	0	0	0	1	1	1	Moderate
Ashton 2007	1	0	1	1	0	1	0	0	1	1	1	Moderate
Barnett 2007	1	0	1	1	0	1	0	0	1	1	1	Moderate
Barnett 2009	1	0	1	1	0	1	0	0	1	1	1	Moderate
Casebeer 1998	1	0	1	1	0	1	0	0	0	0	1	Moderate
CIHI 2016	1	1	1	1	0	1	0	0	1	0	1	Moderate
Cumming 2007	1	0	1	1	0	1	0	0	1	1	1	Moderate
Frankish 2002	1	1	1	1	0	1	0	0	0	1	0	Moderate
Goodhead 2007	1	0	1	1	0	1	0	0	1	1	1	Moderate
Longo 2011	1	0	1	1	0	1	0	0	0	1	1	Moderate

Study ID	Purpose stated	Sampling described	Description of sample	Study site described	Ethical approval	Data collection reported	Researcher influence	Researcher bias stated	Analysis described	Findings supported	Conclusions appropriate	Final score
Mays 2007	1	0	1	1	0	1	0	0	1	1	1	Moderate
Neville 2005	1	1	1	1	0	1	0	0	1	1	1	High
Nunez 2013	1	0	1	1	1	1	0	0	1	1	1	High
Tenbensel 2007a	1	0	1	1	0	1	0	0	1	1	1	Moderate
Tenbensel 2007b	1	0	1	1	0	1	0	0	1	1	1	Moderate
Tenbensel 2008	1	0	1	1	0	1	0	0	1	1	1	Moderate
Twells 2005	1	0	0	1	0	1	0	0	0	0	0	Low
Villa 2008	1	0	0	1	0	1	0	0	0	0	0	Low

Table 9: Quality assessment of the quantitative studies included in the barriers/facilitators question (part 1)

Study ID	Selection bias			Study design				Confounders		
	Representative of target population	% agreed	Section rating	Study design	Randomised	Method appropriate	Section rating	Differences between groups	% confounders controlled	Section rating
Barnett 2007	Somewhat likely	60 – 79% agreement	Moderate	Other	No	No	Weak	Yes	Can't Tell	Weak
Barnett 2009	Somewhat likely	60 – 79% agreement	Moderate	Other	No	No	Weak	Yes	Can't tell	Weak
Brunelle 1998	Can't tell	less than 60% agreement	Weak	Other	No	No	Weak	Yes	Can't Tell	Weak
Cumming 2007	Somewhat likely	60 – 79% agreement	Moderate	Other	No	No	Weak	Yes	Can't Tell	Weal
Frankish 2002	Very likely	less than 60% agreement	Moderate	Other	No	No	Weak	No	Not applicable	Weak
Goodhead 2007	Somewhat likely	60 – 79% agreement	Moderate	Other	No	No	Weak	Yes	Can't Tell	Weak
Kouri 1997	Not likely	60 – 79% agreement	Weak	Other	No	No	Weak	No	Not applicable	Weak
Kouri 2002	Not likely	less than 60% agreement	Weak	Other	No	No	Weak	Yes	80 – 100%	Weak
Lomas 1997a	Very likely	60 – 79% agreement	Good	Other	No	No	Weak	Yes	Can't Tell	Weak

Study ID	Selection bias			Study design			Confounders			
	Representative of target population	% agreed	Section rating	Study design	Randomised	Method appropriate	Section rating	Differences between groups	% confounders controlled	Section rating
Lomas 1997b	Very likely	60 – 79% agreement	Good	Other	No	No	Weak	Yes	Can't Tell	Weak
Tenbensel 2007b	Somewhat likely	60 – 79% agreement	Moderate	Other	No	No	Weak	Yes	Can't Tell	Weak
Tenbensel 2008	Somewhat likely	60 – 79% agreement	Moderate	Other	No	No	Weak	Yes	Can't Tell	Weak
Way 2005	Very likely	less than 60% agreement	Moderate	Other	No	No	Weak	No	Not applicable	??

Table 10: Quality assessment of the quantitative studies included in the barriers/facilitators question (part 2)

Study ID	Blinding			Data collection methods			Withdrawal and drop outs		
	Assessors aware	Participants aware	Section rating	Tools valid	Tools reliable	Section rating	Reported	% complete study	Section rating
Barnett 2007	Yes	Yes	Weak	Can't tell	Can't tell	Weak	Not applicable	Not applicable	
Barnett 2009	Yes	Yes	Weak	Can't tell	Can't tell	Weak	Not applicable	Not applicable	
Brunelle 1998	Yes	Yes	Weak	Can't tell	Can't tell	Weak	Not applicable	Not applicable	
Cumming 2007	Yes	Yes	Weak	Can't tell	Can't tell	Weak	Not applicable	Not applicable	
Frankish 2002	Yes	Yes	Weak	No	Can't tell	Weak	Not applicable	Not applicable	
Goodhead 2007	Yes	Yes	Weak	Can't tell	Can't tell	Weak	Not applicable	Not applicable	
Kouri 1997	Yes	Yes	Weak	No	No	Weak	Not applicable	Not applicable	
Kouri 2002	Yes	Yes	Weak	No	Can't tell	Weak	Not applicable	Not applicable	
Lomas 1997a	Yes	Yes	Weak	Yes	Can't tell	Moderate	Not applicable	Not applicable	
Lomas 1997b	Yes	Yes	Weak	Yes	Can't tell	Moderate	Not applicable	Not applicable	
Tenbensel 2007b	Yes	Yes	Weak	Can't tell	Can't tell	Weak	Not applicable	Not applicable	
Tenbensel 2008	Yes	Yes	Weak	Can't tell	Can't tell	Weak	Not applicable	Not applicable	

Study ID	Blinding			Data collection methods			Withdrawal and drop outs		
	Assessors aware	Participants aware	Section rating	Tools valid	Tools reliable	Section rating	Reported	% complete study	Section rating
Way 2005	Yes	Yes	Weak	Yes	Can't tell	Moderate	Not applicable	Not applicable	

Table 11: Quality assessment of the quantitative studies included in the barriers/facilitators question (part 3)

Study ID	Intervention integrity			Analyses				Global Score
	% received intervention	Consistency measured	Unintended contamination	Unit of allocation	Unit of analysis	Methods appropriate	ITT	
Barnett 2007	80 – 100%	Can't tell	No	organization/institution	individual	Yes	No	Weak
Barnett 2009	80 – 100%	Can't tell	No	organization/institution	individual	Yes	No	Weak
Brunelle 1998	60 – 79%	Can't tell	No	organization/institution	individual	Yes	No	Weak
Cumming 2007	80 – 100%	Can't tell	No	organization/institution	individual	Yes	No	Weak
Frankish 2002	80 – 100%	Can't tell	No	organization/institution	individual	Yes	No	Weak
Goodhead 2007	80 – 100%	Can't tell	No	organization/institution	individual	Yes	No	Weak
Kouri 1997	80 – 100%	Can't tell	No	organization/institution	individual	Yes	No	Weak
Kouri 2002	80 – 100%	Can't tell	No	organization/institution	individual	Yes	No	Weak
Lomas 1997a	80 – 100%	Can't tell	No	organization/institution	individual	Yes	No	Weak
Lomas 1997b	80 – 100%	Can't tell	No	organization/institution	individual	Yes	No	Weak
Tenbensel 2007	80 – 100%	Can't tell	No	organization/institution	individual	Yes	No	Weak
Tenbensel 2008	80 – 100%	Can't tell	No	organization/institution	individual	Yes	No	Weak
Way 2005	80 – 100%	Can't tell	No	organization/institution	individual	Yes	No	Weak

Table 12: Level of evidence of qualitative findings extracted for the barriers/facilitators question

Study ID	Level of evidence		
	Unequivocal (% of findings)	Credible (% of findings)	Not supported (% of findings)
Arredondo 2006		100%	
Arredondo 2008		100%	
Arredondo 2015		100%	
Arredondo 2015		100%	
Ashton 2007	44%	56%	
Barnett 2007	39%	61%	
Barnett 2009	25%	75%	
CIHI 2016		100%	
Casebeer 1998		67%	33%
Cumming 2007	17%	83%	
Frankish 2002		100%	
Goodhead 2007	26%	74%	
Longo 2011		100%	
Neville 2005	22%	78%	
Nunez 2013		100%	
Tenbensel 2007a		100%	
Tenbensel 2007b		100%	
Tenbensel 2008	38%	62%	
Twells 2005		33%	67%
Villa 2008	17%	33%	50%

Appendix E Coding structure

Table 13: Coding structure table

Theme	Sub-theme	Code
Influence of central government	Formation of RHOs	Uneven population sizes
		Pace of implementation too fast
		Halting regionalisation during assessment
	Influence of political parties	Sustaining political will for regionalisation
		Conflicts between regional and national political parties
	National strategies	National strategy helpful in the early stages of regionalisation
		Strong national strategy promotes consistency across regions
		Clear and consistent policies from MoH
		National service strategies linked to funding streams
		MoH excessively controlling in RHO interpretation of strategy
		Too many service strategies can create confusion in setting priorities
		Lack of practical guidance from MoH in how to implement strategies
	Provision of funding	Population-based funding formula
		Adjusting funding formula for regional variations
		Inadequate compensation for differences between regions
		RHOs constrained by the MoH in the use of new funds

Theme	Sub-theme	Code
		Insufficient funding
Influence of central government	Deficit management	Guaranteed funding streams
		Focus on reducing deficits in short term rather than on long term planning
	Services under RHOs' mandate	Physician contracts and pharmaceuticals outside of RHO mandate
		Slow devolution of disability, public health, and mental health services
	MoH support	MoH seconding staff to RHOs
		RHOs lacking support for management skills development
		RHOs lacking support for analytic skills development
		Lack of a national training programme to prepare RHOs for regionalisation
Balancing competing interests	MoH-RHO relationship	MoH reluctance to devolve power
		RHO boards overly restricted by MoH rules
		MoH inappropriately interfering with the RHO work
		Locus of decision making unclear
		RHO given responsibility for things over which they have insufficient control
	Lines of accountability	Formalised accountability agreements
		Elected RHO board members feel more accountable to constituents than to MoH
		Lack of clarity regarding accountability

Theme	Sub-theme	Code
Balancing competing interests	Reporting requirements	Collaboration between RHOs on how to address reporting requirements
		Expanding RHO planning and funding personnel
		Excessive reporting requirements
		Lack of feedback from MoH on reporting
		High opportunity costs in terms of time required
		Limited focus on relevant outcomes
	RHO strategic planning and prioritisation	Assessment of health needs for priority setting and planning
		District strategic plans for priority setting and planning
	Statutory committees	Served as channels for community input through community representatives on the committees
		Required structure of the committees not aligned with the service arrangements within the RHO
		High cost of servicing statutory committees
		Lack of clarity regarding boundaries between statutory committees and RHO boards
RHO processes and procedures	Coordination and collaboration	National network of RHOs
		Shared IT services
		Shared payroll services

Theme	Sub-theme	Code
RHO processes and procedures	between RHOs	Shared HR services
		Shared mental health and laboratory services
	Boards of management	Elected board members have more credibility in the community than appointed members
		Monthly board meetings rather than every six weeks
		Elected members lacking skills and expertise in relation to the health sector
		Board members lacking evidence-based information for decision-making
		Insufficient training for board members
		Lack of clarity regarding boundaries between board's governance role and that of RHO management
		Conflicts of interest from board members who are also RHO staff
	Internal RHO performance monitoring	Performance monitoring not leading to action
		Paper-based performance monitoring
	Contracts	Contracts reflect integrated care systems
		Contracts linked to outcomes
		Lack of detail in contracts inhibiting RHOs from undertaking due diligence
		Lack of capacity within RHOs to manage contracts
		Shorter and more concise contracts
	Managing providers	Clear RHO policy on managing private providers
		RHOs lacking managerial tools to monitor the network of providers
		Poor communication between RHOs and providers

Theme	Sub-theme	Code
RHO processes and procedures	Staff perceptions of regionalisation	Regionalisation increasing health managers' workload
		Resistance to change among health staff
	Engagement with clinicians	Involving clinicians in resource allocation discussions
		Having clinicians on boards of management
	Community engagement	Establishing two-way channels of communication with the community
		Community input into service design and delivery
		Community leaders providing input regarding local health priorities
		Poor communication with the public regarding regionalisation
		Community engagement slows decision-making

Appendix F Impact on utilisation

Table 14: Quantitative results for utilisation outcomes: Hospital nights

Study ID	Country	Year	Subgroup	Hospital nights* N	Mean nights
Jimenez-Rubio 2008	Canada	2001	Newfoundland	2866	0.78
		2001	Prince Edward Island	2553	0.83
		2001	Nova Scotia	4147	0.77
		2001	New Brunswick	3655	1.14
		2001	Quebec	18 267	0.84
		2001	Ontario	29 826	0.67
		2001	Manitoba	6086	0.75
		2001	Saskatchewan	5555	0.94
		2001	Alberta	10 477	0.69
		2001	British Columbia	13 563	0.65
		2001	Canada	96 995	0.74

*Hospital utilisation is measured on the basis of the question: 'For how many nights in the past 12 months have you been a patient overnight in a hospital, nursing home or convalescent home?

Table 15: Quantitative results for utilisation outcomes: LOS surgery specific

Study ID	Country (Province)	Year	Subgroup	Median length of stay[a]			30 day re-admission			
				Median	25th percentile	75th percentile	Disease/ procedure	N	n	%
Hamilton 2001	Canada (AB)	July93-June95	Surgery	8	6	12	All procedures	4524	360	8

	July95-June97	Surgery	7	6		9	All procedures	5203	365	7

[a] For patients discharged alive only

Table 16: Quantitative results for utilisation outcomes: procedures

Study ID	Country (province)	Year	Subgroup	Total day surgeries	Indexed rate	Mean no. surgeries (SD)	Average DPGW	L95%CI	U95%CI	Total DPGPW	Indexed rate
Barrett 2005	Canada (NL)	1996/97	HCCSJ	26122	100	-	0.203	0.201	0.205	5296	100
		1996/97	Rest of province	15077	100	-	0.175	0.174	0.176	2638	100
		1997/98	HCCSJ	27325	104.6	-	0.205	0.203	0.207	5600	105.7
		1997/98	Rest of province	15622	103.6	-	0.172	0.171	0.173	2688	101.9
		1998/99	HCCSJ	25971	99.4	-	0.196	0.194	0.198	5091	96.1
		1998/99	Rest of province	15447	102.4	-	0.169	0.168	0.171	2618	99.2
		1999/00	HCCSJ	27075	103.6	-	0.207	0.205	0.209	5613	106
		1999/00	Rest of province	15869	105.2	-	0.194	0.193	0.195	3078	116.7
		2000/01	HCCSJ	26620	101.9	-	0.194	0.192	0.196	5154	97.3
		2000/01	Rest of province	14593	96.8	-	0.177	0.176	0.179	2591	98.2
Aletras 2007	Greece	2000	Hospital	-	-	2619.02 (1905.17)	-	-		-	-
		2003	Hospital	-	-	2967.88(1921.41)	-	-		-	-

Table 17: Quantitative results for utilisation outcomes: specialist visits

Study ID	Country	Year	Subgroup	Mean specialist visits	Observations
Jimenez-Rubio 2008	Canada	2001	Newfoundland	1.1	2866
		2001	Prince Edward Island	1.33	2553
		2001	Nova Scotia	1.38	4147

Study ID	Country	Year	Subgroup	Mean specialist visits	Observations
		2001	New Brunswick	1.23	3655
		2001	Quebec	1.46	18 267
		2001	Ontario	1.58	29 826
		2001	Manitoba	1.34	6086
		2001	Saskatchewan	1.42	5555
		2001	Alberta	1.29	10 477
		2001	British Columbia	1.34	13 563
		2001	Canada	1.46	96 995

Table 18: Quantitative results for utilisation outcomes: physician visits

Study ID	Country	Year	Subgroup	Physician visit	Mean probability	SD
Costa-Font 2009	Spain	2001	Andalusia	2473	0.23	0.42
		2001	Aragon	1211	0.21	0.41
		2001	Asturias	993	0.24	0.43
		2001	Balearic Islands	994	0.2	0.4
		2001	Canary Islands	1211	0.22	0.42
		2001	Cantabria	985	0.18	0.39
		2001	Castile la Mancha	1242	0.24	0.42
		2001	Castile Leon	1851	0.24	0.43
		2001	Catalonia	2451	0.25	0.43
		2001	Valencia	1869	0.28	0.45

Study ID	Country	Year	Subgroup	Physician visit	Mean probability	SD
		2001	Extremadura	1240	0.28	0.45
		2001	Galicia	1838	0.19	0.4
		2001	Madrid	2457	0.3	0.46
		2001	Murcia	983	0.21	0.41
		2001	Navarre	994	0.13	0.34
		2001	Basque Country	1845	0.21	0.41
		2001	La Rioja	979	0.24	0.43

Table 19: Quantitative results for utilisation outcomes: outpatient visits

Study ID	Country	Year	Subgroup	Mean outpatient visits	SD
Aletras 2007	Greece	2000	Hospital	57067.88	27941.06
		2003	Hospital	65433.27	36224.7

Table 20: Quantitative results for utilisation outcomes: patient days

Study ID	Country	Year	Subgroup	Mean patient days (SD)	Mean inpatient days (SD)
Aletras 2007	Greece	2000	Hospital	45816.47 (26853.56)	11851.16 (6953.15)
		2003	Hospital	49671.39 (28259.74)	13691.22 (7807.88)

Table 21: Quantitative results for utilisation outcomes: Staff in NL

Study ID	Country (province)	Year	Subgroup	Average employee count	Average FTE count	External hires N	External hire rate	Internal transfers N	Internal transfers to total hires ratio	Total hires ratio[a]

Way 2005b	Canada (NL)	1996/97	HCCSJ	5888	5304.88	284	4.8	370	56.6	11.1
		1997/98	HCCSJ	6401	5193.04	583	9.1	997	63.1	24.7
		1998/99	HCCSJ	6541	5661.91	525	8	834	61.4	20.8
		1999/00	HCCSJ	6754	5917.38	735	10.9	1614	68.7	34.8
		2000/01	HCCSJ	6757	5998.89	721	10.7	1016	58.5	25.7
		2001/02	HCCSJ	6766	5951.05	451	6.7	608	57.4	15.7

[a]Total hires ratio definition sum of external hires and internal transfers as a proportion of employee counts

Table 22: Quantitative results for utilisation outcomes: Staff Greece

Study ID	Country	Year	Subgroup	Mean total physicians (SD)	Mean total other staff(SD)
Aletras 2007	Greece	2000	Hospital	104.67 (75.07)	398.39 (228.42)
		2003	Hospital	109.78 (71.39)	423.67 (230.27)

Appendix G Impact on care outcomes

Table 23: Quantitative results for care outcome: avoidable mortality

Study ID	Country	Year	Rate per 100,000	Ratio	Comparison	LCI95%	UCI95%
Barrasa-Villar 2013	Spain	1999-2001	76.5	0.81	06-08/99-01	0.8	0.81
		2006-2008	61.6				

Table 24: Quantitative results for care outcomes: median patient wait time for specified services

	1995		1998		2001	
	Time to specialist after referral from GP	Time to treatment after appointment with specialist	Sum of Time to specialist after referral from GP	Time to treatment after appointment with specialist	Time to specialist after referral from GP	Time to treatment after appointment with specialist
General surgery	2.5	2.7	4	2.7	4	5.3
Gynaecology	3.3	5.8			10	8.1
Gynaecology			3.5	5.9		
Internal medicine	2	2.5	4	2.3	5	5.1
Medical oncology	0	0	4	5.7	0	0
Neurosurgery	12	3.6	6	5.5	12	4.7
Ophthalmology	4.5	5	10	4.9	29	6.5
Orthopaedic surgery	13	4.7	12	6.2	12	25
Otolaryngology	3.5	7.8	5	30	6	4.2
Plastic surgery	10	3.8	16	11	9.5	26
Radiation oncology	2	2.4	2	2.2	5	6.7
Urology	8.5	3.2	8	3.1	6	4.6

Source: Curtis 2005

Table 25: Quantitative results for care outcomes: median patient wait time for overall services

Study ID	Country (province)	Year	Subgroup	Time in weeks to				
				Specialist after referral from GP	Treatment after appointment with specialist	CT scan	MRI scan	Ultrasound
Curtis 2005	Canada (NL)	1995/6	Overall	4.5	4.2	4.6	5	2.5
		1998/9	Overall	5.6	8.9	6.4	11.5	3.8
		2000/1	Overall	8.5	8.9	8	20	7.5

Table 26: Quantitative results for care outcomes: Roemer hospital quality index

Study ID	Country	Year	Subgroup	Mean	SD	Min	Max
Aletras 2007	Greece	2000	Hospital	4.06	1.51	2.1	8.69
		2003	Hospital	3.78	1.41	1.14	7.71

Table 27: Quantitative results for care outcome studies: Health Utility Index

Study ID	Country	Province	Year	Mean	No. observations
Jimenez-Rubio 2008	Canada	Newfoundland	2001	0.9	2866
		Prince Edward Island	2001	0.88	2553
		Nova Scotia	2001	0.86	4147
		New Brunswick	2001	0.88	3655
		Quebec	2001	0.9	18 267
		Ontario	2001	0.88	29 826

Study ID	Country	Province	Year	Mean	No. observations
		Manitoba	2001	0.88	6086
		Saskatchewan	2001	0.87	5555
		Alberta	2001	0.88	10 477
		British Columbia	2001	0.88	13 563
		All	2001	0.88	96 995

Table 28: Quantitative results for care outcomes: Self-reported Health status

Study ID	Country	Decentralised	Province	Year	N	Mean	S.E.
Costa-Font 2009	Spain	Yes	Andalusia	2001	2473	2.13	0.02
		No	Aragon	2001	1211	2.04	0.02
		No	Asturias	2001	993	2.05	0.03
		No	Balearic Islands	2001	994	2.11	0.03
		Yes	Canary Islands	2001	1211	2.15	0.02
		No	Cantabria	2001	985	2.02	0.02
		No	Castile la Mancha	2001	1242	2.13	0.02
		No	Castile Leon	2001	1851	2.11	0.02
		Yes	Catalonia	2001	2451	2.14	0.02
		Yes	Valencia	2001	1869	2.08	0.02
		No	Extremadura	2001	1240	2.1	0.02
		Yes	Galicia	2001	1838	2.28	0.02
		No	Madrid	2001	2457	2.09	0.01
		No	Murcia	2001	983	2.01	0.03
		Yes	Navarre	2001	994	1.9	0.02

Study ID	Country	Decentralised	Province	Year	N	Mean	S.E.
		Yes	Basque Country	2001	1845	2.04	0.02
		No	La Rioja	2001	979	2	0.02

The best SRHS ('very good') takes value 1 and the worst one ('very bad') takes value 5

Table 29: Quantitative results for care outcomes: in hospital death after surgery

Study ID	Country	Province/ state	Year	subgroup	n	%	p-value
Hamilton 2001	Canada	AB	July93-June95	Surgery	139	3.1	0.06
		AB	July95-June97	Surgery	127	2.4	

Table 30: Quantitative results for care outcomes: Schizophrenia and women's health

Study ID	Country (Province)	Year	Schizophrenia				Women's Health					
			Hospital bed days	LOS per episode	Discharged on atypical drug (%)	Readmitted within 1 year of discharge (%)	Births	C-section rate (%)	C-section infection rate (%)	Hysterectomy volume	Breastfeeding rate (%)	Infant mortality rate
Curtis 2005	Canada (NL)	1995-96	15, 089	15	16	62	2647	22	2.5	613	56	3.9
Curtis 2005	Canada (NL)	1998-99	16, 381	19	50.8	59	2210	24	3.6	514	57	9
Curtis 2005	Canada (NL)	2000-01	15, 691	22	77.3	59	2212	27	4	436	57	3.8

Table 31 Quantitative results for care outcomes: acute myocardial infarction

Study ID	Country (Province)	Year	Subgroup	Coronary care unit admissions			CCU LOS	In hospital mortality			Recurrent ischemia			Recurrent infarction		
				N	n	%	median days (25,75 percentiles)	N	N	%	N	N	%	N	N	%
Curtis 2005	Canada	1995-96	HCCSJ	-	-	-	-	-	-	-	-	-	-	-	-	-

	(NL)																
		1995-96	Rest of province	271	257	95	4(3, 5)		271	28	10	271	58	22	271	9	3
		1998-99	HCCSJ	202	178	88	3 (2, 4)		202	29	14	202	64	32	202	5	3
		1998-99	Rest of province	274	252	92	3 (2, 5)		274	40	15	274	64	23	274	19	7
		2000-01	HCCSJ	284	218	77	3 (2, 4)		284	34	12	284	88	31	284	11	4
		2000-01	Rest of province	280	248	89	3 (2, 5)		280	26	9	280	77	28	280	10	4

Table 32: Quantitative results for care outcomes: cerebrovascular accident

Study ID	Country (Province)	Year	Subgroup	CT scan/MRI performed			Time to first CT scan (days)	Discharge home			Time to discharge home (days)	Transfer			Time to transfer	In hospital mortality		
				N	n	%	median[a]	N	n	%	median [a]	N	n	%	median [a]	N	n	%
Curtis 2005	Canada (NL)	1995-96	HCCSJ	241	198	82	2 [0,3]	241	130	54	10 [6, 20]	241	59	25	23 [16, 38]	241	52	22
		1995-96	Rest of province	85	42	49	1 [0, 5]	85	48	57	11 [6, 19]	85	16	19	16.5 [9, 53]	85	21	25
		1998-99	HCCSJ	274	248	91	0 [0, 3]	274	134	49	10 [6, 15]	274	84	31	31 [15, 48]	274	56	20
		1998-99	Rest of province	109	67	62	2 [1, 5]	109	56	51	8.5 [5, 22]	109	29	27	28 [6, 41]	109	24	22
		2000-01	HCCSJ	175	166	95	0 [0, 2]	175	95	54	8 [5, 13]	175	45	26	25 [14, 37]	175	35	20
		2000-01	Rest of province	116	88	76	1 [0,3]	116	63	54	16 [8, 31]	116	32	28	17.5 [9, 55]	116	21	18

[a] Medians shown with [25th, 75th] percentiles

Table 33: Quantitative results for care outcomes: pneumonia and haemodialysis care

Study ID	Country	Province	Year	Subgroup	Pneumonia: overall mortality			Haemodialysis care			
					N	n	%	n at year-end	Fistula (%)	URR >67% (%)	Haemoglobin <100g/L (%)
Curtis 2005	Canada	N&L	1995-96	HCCSJ	226	20	9	89	31	50	65
			1995-96	Rest of province	108	13	12	27	54	63	39
			1998-99	HCCSJ	336	37	11	118	45	61	16
			1998-99	Rest of province	122	7	6	47	59	62	40
			2000-01	HCCSJ	264	25	10	143	58	82	16
			2000-01	Rest of province	110	10	9	73	71	70	22

Table 34: Quantitative results for care outcomes: Coronary artery bypass grafting received surgery within optimal waiting time

Study ID	Country	Province	Year	Subgroup	Extremely urgent			Urgent			Semi-urgent			Short list			Delayed		
					N	n	%	N	n	%	N	n	%	N	n	%	N	n	%
Curtis 2005	Canada	N&L	1995-96	HCCSJ	31	7	23	122	30	24	87	56	64	98	49	50	53	40	75
Curtis 2005	Canada	N&L	1998-99	HCCSJ	24	5	21	141	42	30	68	33	49	59	42	71	201	71	35

Table 35: Quantitative results for care outcomes: Percutaneous coronary intervention, Colectomy in Colorectal Cancer and Chronic Obstructive Pulmonary Disease

Study ID	Country	Year	Percutaneous Coronary Intervention		Colectomy in Colorectal Cancer		Chronic Obstructive Pulmonary Disease	
			cases	Admission rate per 10,000	cases	Admission rate per 10,000	cases	Admission rate per 10,000
Librero 2017	Spain	2002	27,566	7.7	14,990	4.19	75,084	20.98
		2003	31,919	8.74	16,055	4.39	77,935	21.33
		2004	35,837	9.68	16,652	4.5	72,333	19.54
		2005	39,621	10.48	17,258	4.57	80,081	21.19
		2006	42,696	11.12	17,773	4.63	68,667	17.88
		2007	45,317	11.67	18,673	4.81	77,255	19.89
		2008	44,656	11.31	19,217	4.87	72,698	18.41
		2009	48,184	12.1	20,311	5.1	71,012	17.84
		2010	51,695	12.94	17,153	4.29	64,625	16.17
		2011	49,935	12.47	17,347	4.33	65,373	16.32
		2012	51,033	12.74	16,797	4.19	65,005	16.22
		2013	53,372	13.37	16,973	4.25	61,393	15.38

Appendix H Impact on efficiency

Table 36: Quantitative results for efficiency outcomes: days due to inefficiency and lack of alternative care

Study ID	Country (Province)	Year	Subgroup	% acute care days due to inefficiency			% acute care days due to lack of alternate service		
				%	L95%CI	U95%CI	%	L95%CI	U95%CI
Barrett 2005	Canada (NL)	1995/96	HCCSJ	19	18.6	19.3	7.8	7.6	8
		1995/96	Rest of province	17.1	16.7	17.6	7.3	7	7.5
		1998/99	HCCSJ	17.2	16.9	17.5	8.3	8.1	8.4
		1998/99	Rest of province	14.1	13.7	14.5	6.9	6.7	7.2
		2000/01	HCCSJ	10.9	10.7	11.2	8.9	8.7	9.1
		2000/01	Rest of province	18.4	17.9	18.9	8.3	8	8.6

Table 37: Quantitative results for efficiency outcomes: days due to inefficiency and lack of alternative care in residents ≥75

Study ID	Country (Province)	Year	Subgroup	% of days designated as suitable for ALC			% stays > 60 days			%days due to stays >60 days		
				%	L95%CI	U95%CI	%	L95%CI	U95%CI	%	L95%CI	U95%CI
Barrett 2005	Canada (NL)	1995/96	HCCSJ residents ≥75	13.5	13.1	13.8	2.9	2.4	3.6	26.8	26.4	27.3
		1995/96	Rest of province residents ≥75	15.4	15.2	15.6	2.4	2.1	2.7	27	26.8	27.3
		1996/97	HCCSJ residents ≥75	15.6	15.3	16	3.2	2.6	3.9	30.9	30.5	31.4
		1996/97	Rest of province residents ≥75	12.1	11.9	12.3	2.2	1.9	2.5	22.4	22.2	22.7

Study ID	Country (Province)	Year	Subgroup	% of days designated as suitable for ALC			% stays > 60 days			%days due to stays >60 days		
				%	L95%CI	U95%CI	%	L95%CI	U95%CI	%	L95%CI	U95%CI
		1997/98	HCCSJ residents ≥75	17.1	16.8	17.5	3.8	3.1	4.5	29.5	29.1	29.9
		1997/98	Rest of province residents ≥75	7.4	7.3	7.6	2	1.7	2.3	18.3	18	18.5
		1998/99	HCCSJ residents ≥75	13.9	13.5	14.2	2.5	1.9	3.1	18.9	18.5	19.3
		1998/99	Rest of province residents ≥75	6.5	6.3	6.6	1.6	1.4	1.9	15.6	15.4	15.9
		1999/00	HCCSJ residents ≥75	15.4	15.1	15.8	3.3	2.7	4	26.1	25.6	26.5
		1999/00	Rest of province residents ≥75	9.5	9.3	9.7	2	1.7	2.3	18.5	18.3	18.8
		2000/01	HCCSJ residents ≥75	11.7	11.4	12	3.6	3	4.3	23	22.6	23.4
		2000/01	Rest of province residents ≥75	9.6	9.4	9.8	2.2	1.9	2.5	19.7	19.4	19.9
		P-value all years	HCCSJ residents ≥75	<0.0001			0.077			<0.0001		
			Rest of province residents ≥75	<0.0001			0.016			<0.0001		

Table 38: Quantitative results for efficiency outcomes: median time to placement in alternative care

Study ID	Country (province)	Year	Subgroup	Median time to placement in supervised care: days	Median time to placement in nursing home: days
Barrett 2005	Canada (NL)	1995/96	HCCSJ	22	77
		1999/00	HCCSJ	20	75

Statistical significance not measured

Table 39: Quantitative results for efficiency outcomes: hospital efficiency Greece

Study ID	Endpoint	Unit	2000	2003
Aletras 2007	Technical efficiency CRS model	Mean (sd)	80.74 (16.41)	65.02(19.68)
		Median (min, max)	84.32 (46.44, 100)	63.3 (27.73, 100)
	Technical efficiency VRS model	Mean (sd)	86.67 (15.9)	76.53 (17.92)
		Median (min, max)	92.7 (48.88, 100)	75.87 (37.38, 100)
	Hospital ranking CRS			
	100%	N (%)	10 (19.6)	4 (7.9)
	90-99.9%	N (%)	7 (13.7)	5 (9.8)
	80-89.9%	N (%)	14 (27.5)	3 (5.9)
	70-79.9%	N (%)	7 (13.7)	7(13.7)
	60-69.9%	N (%)	4 (7.9)	10 (19.6)
	50-59.9%	N (%)	8 (15.6)	13 (25.4)
	40-49.9%	N (%)	1 (2)	4 (7.9)
	<40%	N (%)	0 (0)	5 (9.8)
	Hospital ranking VRS			
	100%	N (%)	19 (37.3)	10 (19.6)
	90-99.9%	N (%)	7 (13.7)	5 (9.8)
	80-89.9%	N (%)	12 (23.5)	7 (13.7)
	70-79.9%	N (%)	5 (9.8)	9 (17.7)
	60-69.9%	N (%)	2 (3.9)	11 (21.6)
	50-59.9%	N (%)	5 (9.8)	5 (9.8)
	40-49.9%	N (%)	1 (2)	3 (5.9)

Study ID	Endpoint	Unit	2000	2003
	<40%	N (%)	0 (0)	1 (1.9)
	Scale efficiency	Mean (sd)	93.2 (9.27)	84.86 (15.31)
		Median (min, max)	97.2 (59.5, 100)	90.9 (56.1, 100)

Appendix I Impact on equity

Table 40: Quantitative results for equity outcomes: health outcomes

Study ID	Country	Year	Perspective	Subgroup	[Income related] Health inequalities						Self-reported health status
					CI[a]	s.e.	Lower limit	Upper limit	Inequity coef.[b]	Inequality coef.	Coef. variation
Costa-Font 2005	Spain	1997	Health System	Catalonia	-0.020	0.003	-0.030	-0.009	-	-	-
				Navarre	-0.013	0.004	-0.024	-0.002	-	-	-
				Basque Country	-0.018	0.002	-0.025	-0.010	-	-	-
				Canary Islands	-0.019	0.004	-0.031	-0.006	-	-	-
				Valencia	-0.019	0.002	-0.026	-0.011	-	-	-
				Galicia	-0.017	0.002	-0.024	-0.010	-	-	-
				Andalusia	-0.015	0.002	-0.022	-0.008	-	-	-
				INSALUD	-0.019	0.003	-0.031	-0.008	-	-	-
				Total	-0.020	0.002	-0.027	-0.013	-	-	-
Costa-Font 2009	Spain	2001	Health System	Spain	0.017	-	-	-	0.016		-
				Centralised regions	-	-	-	-		0.018	-
				Decentralised regions	-	-	-	-	0.015	0.016	-
				All	-	-	-	-	-	-	0.040

[a] The concentration index provides a measure of socioeconomic inequality in health. [62] The index is bound between -1 and 1. If a health variable is 'bad', a negative value of the concentration index means ill health is higher among the poor. {Worldbank}

Table 41: Quantitative results for equity outcomes: mortality

Study ID	Country	Year	Perspective	Subgroup	Mortality inequality		
					Unadjusted coef. variation	Adjusted coef. variation	RMD
Costa-Font 2006	Spain	1992	Health system	Total	0.12	0.12	0.12
		1992		INSALUD	0.11	0.09	0.09
		1992		Excluding FORAL	0.12	0.11	0.11
		1993		Total	0.12	0.12	0.12
		1993		INSALUD	0.11	0.09	0.09
		1993		Excluding FORAL	0.12	0.11	0.11
		1994		Total	0.12	0.12	0.12
		1994		INSALUD	0.11	0.09	0.09
		1994		Excluding FORAL	0.12	0.12	0.12
		1995		Total	0.13	0.12	0.12
		1995		INSALUD	0.12	0.09	0.09
		1995		Excluding FORAL	0.14	0.12	0.12
		1996		Total	0.13	0.12	0.12
		1996		INSALUD	0.12	0.09	0.09
		1996		Excluding FORAL	0.13	0.12	0.12
		1997		Total	0.13	0.13	0.13
		1997		INSALUD	0.12	0.1	0.1
		1997		Excluding FORAL	0.13	0.12	0.12
		1998		Total	0.12	0.12	0.12

Study ID	Country	Year	Perspective	Subgroup	Mortality inequality		
					Unadjusted coef. variation	Adjusted coef. variation	RMD
		1998		INSALUD	0.12	0.1	0.1
		1998		Excluding FORAL	0.13	0.12	0.12
		1999		Total	0.13	0.13	0.13
		1999		INSALUD	0.13	0.1	0.1
		1999		Excluding FORAL	0.14	0.13	0.13
		2000		Total	0.13	0.13	0.13
		2000		INSALUD	0.13	0.1	0.1
		2000		Excluding FORAL	0.14	0.13	0.13

Table 42: Quantitative results for equity outcomes: utilisation and satisfaction

Study ID	Country	Year	Perspective	Subgroup	Prob. physician visit	Inequality in health system satisfaction							
					Coef. variation	Gini index[a]	s.e.		Sig.	Coef. variation	Difference	s.e.	Sig.
Costa-Font 2009	Spain	2001	Health System	All	0.18	-	-	-	-	-	-	-	-
Costa-Font 2018	Spain	1998-2009	Health system	All	-	0.034	0.018	-	p<0.1	-	-	-	-
	Spain	1998-2002		Pre-regionalisation	-	0.019	0.029	-	NS	.468	-0.011	0.007	p<.01
	Spain	2003-2009		Post-regionalisation	-	0.062	0.023	-	p<0.05	.456	-	-	-

Study ID	Country	Year	Perspective	Subgroup	Prob. physician visit		Inequality in health system satisfaction						
					Coef. variation	Gini index[a]	s.e.		Sig.	Coef. variation	Difference	s.e.	Sig.
	Italy	1998-2009		All	-	0.147	0.009	-	p<0.01	-	-	-	-
	Italy	1998-2001		Pre- regionalisation	-	0.146	0.015	-	p<0.01	.339	0.005	0.005	NS
	Italy	2002-2009		Post- regionalisation	-	0.157	0.012	-	p<0.01	.344	-	-	-

[a] The Gini Index measures inequality among a frequency distribution. 0 represents perfect equality and 1 represents maximum inequality

Table 43: Quantitative results for equity outcomes: health

Study ID	Country (province)	Year	Perspective	Subgroup	Separations			Avoidable hospitalisations			Unavoidable hospitalisations		
					Per 1000	Relative rate	Sig.	Per 1000	Relative rate	Sig.	Per 1000	Relative rate	Sig.
Cloutier-Fisher 2006	Canada (BC)	1990	Health system	Urban	192.9	1.17		9.7	1.49		183.2	1.16	
		1990		Rural	226.4			14.4			212.1		
		1991		Urban	195.3	1.17		10.5	1.37		184.8	1.16	
		1991		Rural	228.3			14.4			213.9		
		1992		Urban	190.3	1.18		10.1	1.4		180.2	1.17	
		1992		Rural	224.3			14.1			210.2		
		1993		Urban	190.8	1.16		10.1	1.37		180.7	1.14	
		1993		Rural	220.8			13.8			206.9		
		1994		Urban	184.3	1.16		9.8	1.34		174.5	1.15	

Study ID	Country (province)	Year	Perspective	Subgroup	Separations			Avoidable hospitalisations			Unavoidable hospitalisations		
					Per 1000	Relative rate	Sig.	Per 1000	Relative rate	Sig.	Per 1000	Relative rate	Sig.
		1994		Rural	213.2			13.1			200.1		
		1995		Urban	180.2	1.17		9.1	1.34		171.1	1.16	
		1995		Rural	210.9			12.1			198.7		
		1996		Urban	177.9	1.19		9.4	1.34		168.5	1.18	
		1996		Rural	211.7			12.7			199		
		1997		Urban	172	1.22		9.2	1.37		162.9	1.22	
		1997		Rural	210.5			12.6			198		
		1998		Urban	167.2	1.21		8.9	1.37		158.4	1.21	
		1998		Rural	203			12.1			190.9		
		1999		Urban	171.5	1.24		8.5	1.34		162.9	1.24	
		1999		Rural	213.4			11.4			202		
		2000		Urban	167.3	1.25		7.4	1.45		159.9	1.24	
		2000		Rural	208.8			10.7			198.1		
		1990-2000		Urban vs. Rural			Y p<.001			N p>0.05			Y p<0.05

Table 44: Quantitative results for equity outcomes: healthcare expenditure

Study ID	Country	Province	Year	Perspective	Subgroup	Health expenditure	
						% of total	% change
Arredondo 2004	Mexico	State B	1990- 2000	Health systems	Uninsured	42.1	-

Study ID	Country	Province	Year	Perspective	Subgroup	Health expenditure	
						% of total	% change
			1990-2000		Insured	57.9	-
			1990-2000		Uninsured preventative	11.4	-
			1990-2000		Uninsured curative	30.7	-
			1990-2000		Insured preventative	3.3	-
			1990-2000		Insured curative	54.6	-
			1990		Uninsured preventative	37.3	-
			1991-1994		Uninsured preventative	-	-6.7
			1995		Uninsured preventative	-	1.9
			1990-1991/2		Insured preventative	-	-1.2
			1992-1993		Insured preventative	-	2.6
			1993-1994		Insured preventative	-	1.3
			1994-1995		Insured preventative	-	-1.8
			1996-2000		Insured preventative	-	-0.9
			1994-1995		Curative	-	2.5
			1999-2000		Curative	-	1
			1990-2000		Uninsured	23.4	-
			1990-2000		Uninsured preventative	4.1	-
			1990-2000		Uninsured curative	19.3	-
			1990-2000		Insured	76.6	-
			1990-2000		Insured preventative	3.8	-
			1990-2000		Insured curative	72.8	-

Study ID	Country	Province	Year	Perspective	Subgroup	Health expenditure	
						% of total	% change
			1992-1993		Uninsured preventative	-	-13.6
			1993-1994		Uninsured preventative	-	12.9
			1995-1998		Uninsured preventative	-	-28.2
			1992-1993		Uninsured curative	-	13.6
			1993-1994		Uninsured curative	-	-19.9
			1994-1995		Uninsured curative	-	4

Table 45: Quantitative results for equity outcomes: healthcare expenditure per capita

Study ID	Country	Year	Perspective	Subgroup	Public healthcare expenditure per capita								
					Unadjusted coef. variation	Adjusted coef. variation	RMD	Gini Index [a]	s.e.	Sig.	Coef. variation	Difference	Sig.
Costa-Font 2006	Spain	1992	Health systems	Total	0.01	0.01	0.01	-	-	-	-	-	-	-
		1992		INSALUD	0.01	0.01	0.01	-	-	-	-	-	-	-
		1992		Excluding FORAL	0.01	0.01	0.01	-	-	-	-	-	-	-
		1993		Total	0.02	0.01	0.01	-	-	-	-	-	-	-
		1993		INSALUD	0.01	0.01	0.01	-	-	-	-	-	-	-
		1993		Excluding FORAL	0.01	0.01	0.01	-	-	-	-	-	-	-
		1994		Total	0.02	0.01	0.01	-	-	-	-	-	-	-
		1994		INSALUD	0.01	0.02	0.01	-	-	-	-	-	-	-

Study ID	Country	Year	Perspective	Subgroup	Public healthcare expenditure per capita									
					Unadjusted coef. variation	Adjusted coef. variation	RMD	Gini Index [a]	s.e.	Sig.	Coef. variation	Difference		Sig.
		1994		Excluding FORAL	0.01	0.01	0.01	-	-	-	-	-	-	-
		1995		Total	0.01	0.01	0.01	-	-	-	-	-	-	-
		1995		INSALUD	0.01	0.01	0.01	-	-	-	-	-	-	-
		1995		Excluding FORAL	0.01	0.01	0.01	-	-	-	-	-	-	-
		1996		Total	0.01	0.01	0.01	-	-	-	-	-	-	-
		1996		INSALUD	0.01	0.01	0.01	-	-	-	-	-	-	-
		1996		Excluding FORAL	0.01	0.01	0.01	-	-	-	-	-	-	-
		1997		Total	0.01	0.01	0.01	-	-	-	-	-	-	-
		1997		INSALUD	0.01	0.01	0.01	-	-	-	-	-	-	-
		1997		Excluding FORAL	0.01	0.01	0.01	-	-	-	-	-	-	-
		1998		Total	0.01	0.01	0.01	-	-	-	-	-	-	-
		1998		INSALUD	0.01	0.01	0.01	-	-	-	-	-	-	-
		1998		Excluding FORAL	0.01	0.01	0.01	-	-	-	-	-	-	-
		1999		Total	0.01	0.01	0.01	-	-	-	-	-	-	-
		1999		INSALUD	0.01	0.01	0.01	-	-	-	-	-	-	-
		1999		Excluding FORAL	0.01	0.01	0.01	-	-	-	-	-	-	-
Costa-Font 2018	Spain	1998-2009	Health systems	-	-	-	-	0.093	0.009	p<0.01	-	-	-	-
	Spain	1998-2002	Health systems	Pre-regionalisation	-	-	-	0.031	0.008	p<0.01	0.079	0.011	0.002	p<0.01

Study ID	Country	Year	Perspective	Subgroup	Public healthcare expenditure per capita									
					Unadjusted coef. variation	Adjusted coef. variation	RMD	Gini Index [a]	s.e.	Sig.	Coef. variation	Difference		Sig.
	Spain	2003-2009	Health systems	Post-regionalisation	-	-	-	0.026	0.009	p<0.01	0.09	-	-	-
	Italy	1998-2009	Health systems	-	-	-	-	0.057	0.006	p<0.01	-	-	-	-
	Italy	1998-2001	Health systems	Pre-regionalisation	-	-	-	0.047	0.007	p<0.01	0.086	-0.009	0.001	p<0.01
	Italy	2002-2009	Health systems	Post-regionalisation	-	-	-	0.028	0.005	p<0.01	0.077	-	-	-

[a] The Gini Index measures inequality among a frequency distribution. 0 represents perfect equality and 1 represents maximum inequality

Table 46: Quantitative results for equity outcomes: healthcare payments

Study ID	Country	Year	Perspective	Subgroup	Inequity in healthcare payments											
					Gini index	Sig.	Income	Sig.	Indirect tax payments	Sig.	Public payments	Sig.	Private payments	Sig.	Total	Sig.
Costa-Font 2009	Spain	2000	Health systems	Spain	0.309	0.05	0.381	0.05	-0.102	0.05	0.043	0.05	-0.092	0.05	0.034	0.05
				Andalusia	0.314	0.05	0.445	0.05	-0.079	0.05	0.049	0.05	-0.049	NS	0.041	0.05
				Aragon	0.334	0.05	0.373	0.05	-0.201	0.05	-0.031	NS	-0.184	0.05	-0.038	NS
				Asturias	0.277	0.05	0.343	0.05	-0.108	0.05	0.052	0.05	-0.127	NS	0.040	0.1
				Balearic Islands	0.288	0.05	0.320	0.05	-0.069	0.05	0.050	0.05	-0.099	NS	0.038	0.1
				Canary Islands	0.341	0.05	0.422	0.05	-0.104	0.05	0.043	0.05	-0.092	0.1	0.029	NS
				Cantabria	0.268	0.05	0.374	0.05	-0.073	NS	0.018	NS	-0.181	0.05	0.008	NS

Study ID	Country	Year	Perspective	Subgroup	Inequity in healthcare payments											
					Gini index	Sig.	Income	Sig.	Indirect tax payments	Sig.	Public payments	Sig.	Private payments	Sig.	Total	Sig.
				Castile Leon	0.292	0.05	0.384	0.05	-0.092	0.05	0.047	0.05	-0.097	NS	0.038	0.05
				Castile la Mancha	0.266	0.05	0.434	0.05	-0.086	0.05	0.034	NS	0.018	NS	0.033	NS
				Catalonia	0.298	0.05	0.341	0.05	-0.123	0.05	0.040	0.05	-0.119	0.05	0.029	0.05
				Valencia	0.296	0.05	0.398	0.05	-0.091	0.05	0.060	0.05	-0.124	0.05	0.047	0.05
				Extremadura	0.346	0.05	0.486	0.05	-0.132	0.05	0.065	0.1	-0.201	0.1	0.045	NS
				Galicia	0.290	0.05	0.414	0.05	-0.070	0.05	0.046	0.05	-0.042	NS	0.040	0.05
				Madrid	0.300	0.05	0.335	0.05	-0.122	0.05	0.027	0.1	0.082	NS	0.021	NS
				Murcia	0.303	0.05	0.460	0.05	-0.109	0.05	0.001	NS	0.096	NS	-0.005	NS
				Navarre	0.276	0.05	0.311	0.05	-0.070	0.1	0.054	0.05	-0.171	0.05	0.044	0.1
				Basque Country	0.288	0.05	0.337	0.05	-0.121	0.05	0.024	NS	-0.154	0.05	0.015	NS
				La Rioja	0.278	0.05	0.371	0.05	-0.108	0.05	0.026	NS	0.024	NS	0.026	NS

Table 47: Quantitative results for equity outcomes: GDP per capita and needs

Study ID	Country	Year	Perspective	Subgroup	Inequality in GDP per capita				Inequality in needs			
					Coef. variation	Difference		Sig.	Coef. variation	Difference		Sig.
Costa-Font 2018	Spain	1999-2009	Health system	-	-	-	-	-	-	-	-	-
		1998-2002		Pre-regionalisation	0.214	-0.021	0.001	p<.01	0.180	-0.018	0.001	p<0.01
		2003-2009		Post-regionalisation	0.193	-	-	-	0.198	-	-	-
		1998-2009		-	-	-	-	-	-	-	-	-

	1998-2001	Pre-regionalisation	0.253	-0.006	0.001	p<.01	0.168	0.034	0.001	p<0.01
	2002-2009	Post-regionalisation	0.248	-	-	-	0.134	-	-	-

Table 48: Quantitative results for equity outcomes: correlations

Study ID	Country	Year	Perspective	Subgroup	Inequalities in health and gross-income inequalities		Inequities in health & income inequalities		Inequalities in probability of access to health care and gross-equalised-income inequalities		Inequities in the probability of use and income inequality	
					Correlation	Sig.	Correlation	Sig.	Correlation	Sig.	Correlation	Sig.
Costa-Font 2009	Spain	2001	Health system	All	0.672	0.05	0.675	0.05	-0.601	0.05	-	-
		2001		AC w/health care responsibilities	0.81	0.05	0.805	0.05	-	-	-	-
		2001		AC w/centralised health care responsibilities	-	-	-	-	0.72	0.05	-0.698	0.05

Table 49: Regression analysis results for equity outcomes (1)

Study ID	Outcome	Model number	Subgroup	Other factors considered in model	Short descriptive summary results	Statistically sig. regionalisation variable
Costa-Font 2018	Health system satisfaction	1 (Italy)	-	Healthcare spending p.c.	Overall, differences in health system satisfaction are not statistically significant. Results indicate that government decentralisation consistently did not increase regional inequality in outputs and outcomes	N
			Excluding regions with higher degree of autonomy			N
			-	Healthcare spending p.c., GDP, share of population over 65 years, alignment		N
			Excluding regions with higher degree of autonomy			N
		5 (Spain)	-	Healthcare spending p.c.		N
			Excluding regions with higher degree of autonomy			N

Study ID	Outcome	Model number	Subgroup	Other factors considered in model	Short descriptive summary results	Statistically sig. regionalisation variable
		9 (Italy & Spain)	-	Healthcare spending p.c., GDP, share of population over 65 years, alignment		N
			Excluding regions with higher degree of autonomy			N
			-	Healthcare spending p.c.	Results appear to be consistent across specifications and across different samples: differences in procedural outcomes appear to be more explained by differences in the coefficients than by differences in the observed determinants of outcomes. These results indicate that government decentralisation consistently did not increase regional inequality in outputs and outcomes.	N/A
			Excluding regions with higher degree of autonomy			
			-	Healthcare spending p.c., GDP, share of population over 65 years, alignment		
			Excluding regions with higher degree of autonomy			

Table 50: Regression analysis results for equity outcomes (2)

Study ID	Outcome	Model number	Subgroup	Other factors considered in model	Short descriptive summary results	Statistically sig. regionalisation variable
Jimenez Rubio 2008	GP visits	1	-	Age, sex, self-assessed health, health limitations, chronic conditions, province of residence, economic status, education	Overall, the measured degree of inequity in the utilisation of health-care services is mostly explained by variations across provinces, rather than within. The contribution of variations across provinces tends to be more pro-rich than the contribution of differences between rich and poor individuals within provinces	
	Hospital nights	1	-			
	Specialist visits	1	-			
	Health status	1	-		Results indicate a small but statistically significant pro-rich distribution of HUI (health status) among individuals in Canada. This is mostly due to health differences between higher and lower income individuals within provinces rather than health gaps between the provinces with unequal average incomes	
	GP visits	2	Excluding	Age, sex, self-assessed	Quebec contributes most to the observed pro-poor inequities in inpatient stays,	

Study ID	Outcome	Model number	Subgroup	Other factors considered in model	Short descriptive summary results	Statistically sig. regionalisation variable
	Hospital nights	2	Quebec	health, health limitations, chronic conditions, province of residence, economic status, education	as well as to the pro-rich inequities in GP visits. Results suggest that people in Quebec (where income is below the Canadian average) visit the GP less and spend more days in hospital	
	Specialist visits	3	Excluding Ontario		Ontario, the wealthiest province in Canada, contributes largely to the pro-rich inequities between provinces	
	Health status	2	Excluding Quebec		Quebec contributes most to the pro-poor income-related inequality in health	
Giannoni 2002	Public health expenditure p.c.	1	-	GDP p.c., ageing population, hospital beds, hospital staff, area clusters (based on health expenditure), regional time-series	In the framework of the inter-regional inequalities detected by the area clusters, certain regions with health care expenditures below the national average reduced it further while others increased it towards the average or above the average. Overall, the regions which were below the average in 1980 continued to remain there in 1995. Consequently, the reforms, which were initiated by purely financial considerations and affected proportionally rich and poor regions, did not ameliorate the interregional inequalities in health care expenditure; on the contrary they worsen it	

Appendix J Impact on patient flow

Table 51: Quantitative results for patient flow outcomes: self-sufficiency index and interregional patient outflow

Study ID	Country	Province	Year	Perspective	Subgroup	Self-sufficiency index	Interregional patients outflow		
						%	%	Mean	SD
Saunders 1999	Canada	AB	1991/ 92	Health system	Chinook	97.9	-	-	-
			1996/ 97			89.3	-	-	-
			1991/ 92		Palliser	82.8	-	-	-
			1996/ 97			82.9	-	-	-
			1991/ 92		Healthwater	54.7	-	-	-
			1996/ 97			53.3	-	-	-
			1991/ 92		Calgary	79.2	-	-	-
			1996/ 97			96.4	-	-	-
			1991/ 92		Region 5	55	-	-	-
			1996/ 97			57.9	-	-	-
			1991/ 92		David Thompson	77.6	-	-	-
			1996/ 97			76.9	-	-	-
			1991/ 92		East central	71	-	-	-
			1996/ 97			72.1	-	-	-
			1991/ 92		Weswiew	36.1	-	-	-
			1996/ 97			36.6	-	-	-
			1991/ 92		Crossroads	50	-	-	-
			1996/ 97			54.3	-	-	-

Study ID	Country	Province	Year	Perspective	Subgroup	Self-sufficiency index	Interregional patients outflow		
						%	%	Mean	SD
			1991/ 92		Capital	93.2	-	-	-
			1996/ 97			92.8	-	-	-
			1991/ 92		Aspen	54.7	-	-	-
			1996/ 97			54.2	-	-	-
			1991/ 92		Lakeland	66.4	-	-	-
			1996/ 97			66.1	-	-	-
			1991/ 92		Mistahla	84.5	-	-	-
			1996/ 97			85	-	-	-
			1991/ 92		Peace	68.4	-	-	-
			1996/ 97			69.8	-	-	-
			1991/ 92		Keeweetinok Lake	65.9	-	-	-
			1996/ 97			70	-	-	-
			1991/ 92		Northern Lights	83	-	-	-
			1996/ 97			81.9	-	-	-
			1991/ 92		Northwestern	75.3	-	-	-
			1996/ 97			76.4	-	-	-
De Nicola 2014	Italy	Piemonte	2005	Health system	ASL cent. cost adjusted	-	8.43	-	-
		V. Aosta			ASL cent. national	-	22.17	-	-
		Lombardy			Purchaser- provider. analytic	-	3.9	-	-
		Bolzano			ASL cent. national	-	4.58	-	-
		Trento			ASL cent. national	-	17.78	-	-

Study ID	Country	Province	Year	Perspective	Subgroup	Self-sufficiency index	Interregional patients outflow		
						%	%	Mean	SD
		Veneto			ASL cent. analytic	-	5.31	-	-
		Friuli			Regional cent. national	-	6.34	-	-
		Liguria			Regional cent. national	-	11.19	-	-
		Emilia R.			ASL cent. analytic	-	6.31	-	-
		Tuscany			ASL cent. analytic	-	5.92	-	-
		Umbria			ASL cent. analytic	-	11.28	-	-
		Marche			ASL cent. national	-	10.75	-	-
		Lazio			ASL cent. analytic	-	6.64	-	-
		Abruzzo			Regional cent. national	-	10.2	-	-
		Molise			Regional cent. national	-	20.62	-	-
		Campania			Regional cent. national	-	7.55	-	-
		Apulia			ASL cent. national	-	7.64	-	-
		Basilicata			ASL cent. national	-	24.01	-	-
		Calabria			ASL cent. national	-	14.82	-	-
		Sicily			Regional cent. cost adjusted	-	6.09	-	-
		Sardinia			ASL cent. national	-	4.24	-	-
		Italy			-	-	7.29	-	-
		North			-	-	6.08	-	-
		Centre			-	-	7.33	-	-
		South			-	-	8.52	-	-
					ASL centred	-	-	9.52	5.8

Study ID	Country	Province	Year	Perspective	Subgroup	Self-sufficiency index	Interregional patients outflow		
						%	%	Mean	SD
					Regional centred	-	-	9.94	5.49
					Purchaser-provider split	-	-	4.44	3.98

Table 52: Quantitative results for patient flow outcomes: index of mobility, retention rate and net patient transfers

Study ID	Country	Province/ state	Year	Perspective	Subgroup	Synthetic index of mobility		Resident retention rate	Net patient transfer
						Index	Change		
Toth 2014	Italy	Piemonte	1999	Health systems		0.74	-	-	-
		Aosta Valley	1999			0.56	-	-	-
		Lombardy	1999			1.96	-	-	-
		Trentino-South Tyrol	1999			0.97	-	-	-
		Veneto	1999			1.86	-	-	-
		Friuli-Venezia Giulia	1999			1.42		-	-
		Liguria	1999			1.3	-	-	-
		Emilia-Romagna	1999			2.08	-	-	-
		Tuscany	1999			1.71	-	-	-
		Umbria	1999			1.48	-	-	-
		Marche	1999			0.92	-	-	-
		Lazio	1999			1.4	-	-	-
		Abruzzo	1999			0.85	-	-	-
		Molise	1999			1.06	-	-	-

Study ID	Country	Province/ state	Year	Perspective	Subgroup	Synthetic index of mobility		Resident retention rate	Net patient transfer
						Index	Change		
		Campania	1999			0.27	-	-	-
		Apulia	1999			0.83	-	-	-
		Basilicata	1999			0.39	-	-	-
		Calabria	1999			0.27	-	-	-
		Sicily	1999			0.16	-	-	-
		Sardinia	1999			0.39	-	-	-
		Centre-North	1999			4.67	-	-	-
		Centre-South	1999			0.22	-	-	-
		Italy	1999			1	-	-	-
		Piemonte	1999-2009			0.83	0.09	-	-
		Valle d'Aosta	1999-2009			0.48	-0.08	-	-
		Lombardy	1999-2009			2.34	0.37	-	-
		Trentino-South Tyrol	1999-2009			0.76	-0.21	-	-
		Veneto	1999-2009			1.43	-0.43	-	-
		Friuli-Venezia Giulia	1999-2009			1.32	-0.1	-	-
		Liguria	1999-2009			0.84	-0.45	-	-
		Emilia-Romagna	1999-2009			2.35	0.27	-	-
		Tuscany	1999-2009			1.73	0.02	-	-
		Umbria	1999-2009			1.27	-0.2	-	-
		Marche	1999-2009			0.88	-0.04	-	-

Study ID	Country	Province/ state	Year	Perspective	Subgroup	Synthetic index of mobility		Resident retention rate	Net patient transfer
						Index	Change		
		Lazio	1999-2009			1.34	-0.06	-	-
		Abruzzo	1999-2009			0.71	-0.14	-	-
		Molise	1999-2009			1.32	0.26	-	-
		Campania	1999-2009			0.3	0.03	-	-
		Apulia	1999-2009			0.53	-0.3	-	-
		Basilicata	1999-2009			0.62	0.23	-	-
		Calabria	1999-2009			0.17	-0.1	-	
		Sicily	1999-2009			0.28	0.12	-	-
		Sardinia	1999-2009			0.01	-0.38	-	-
		Centre-North	1999-2009			4.91	0.24	-	-
		Centre-South	1999-2009			0.21	-0.01	-	-
		Italy	1999-2009			1	0	-	-
Hanlon 2003	Canada	Nova Scotia	1992/93	Health systems	DHA1	-	-	78.90%	-829
			1992/93		DHA 2	-	-	83.30%	-844
			1992/93		DHA 3	-	-	85.60%	-137
			1992/93		DHA 4	-	-	68.80%	-1,537
			1992/93		DHA 5	-	-	84.60%	-346
			1992/93		DHA 6	-	-	87.00%	-387
			1992/93		DHA 7	-	-	81.70%	-183
			1992/93		DHA 8	-	-	93.30%	-981

Study ID	Country	Province/ state	Year	Perspective	Subgroup	Synthetic index of mobility		Resident retention rate	Net patient transfer
						Index	Change		
			1992/93		DHA 9	-	-	98.00%	5,244
			1993/94		DHA 1	-	-	80.10%	-725
			1993/94		DHA 2	-	-	82.90%	-930
			1993/94		DHA 3	-	-	87.20%	39
			1993/94		DHA 4	-	-	67.80%	-1,541
			1993/94		DHA 5	-	-	80.50%	-465
			1993/94		DHA 6	-	-	85.30%	-464
			1993/94		DHA 7	-	-	80.70%	-201
			1993/94		DHA 8	-	-	92.80%	-1,142
			1993/94		DHA 9	-	-	97.90%	5,429
			1994/95		DHA 1	-	-	81.70%	-614
			1994/95		DHA 2	-	-	85.60%	-858
			1994/95		DHA 3	-	-	86.40%	-98
			1994/95		DHA 4	-	-	69.00%	-1,590
			1994/95		DHA 5	-	-	83.60%	-434
			1994/95		DHA 6	-	-	85.70%	-467
			1994/95		DHA 7	-	-	84.80%	-26
			1994/95		DHA 8	-	-	92.00%	-1,232
			1994/95		DHA 9	-	-	98.00%	5,319
			1995/96		DHA 1	-	-	77.40%	-889

Study ID	Country	Province/ state	Year	Perspective	Subgroup	Synthetic index of mobility		Resident retention rate	Net patient transfer
						Index	Change		
			1995/96		DHA 2	-	-	86.30%	-747
			1995/96		DHA 3	-	-	86.30%	-5
			1995/96		DHA 4	-	-	68.70%	-1,347
			1995/96		DHA 5	-	-	82.50%	-406
			1995/96		DHA 6	-	-	87.30%	-332
			1995/96		DHA 7	-	-	83.20%	-126
			1995/96		DHA 8	-	-	91.50%	-1,243
			1995/96		DHA 9	-	-	98.20%	5,095
			1996/97		DHA 1	-	-	77.20%	-913
			1996/97		DHA 2	-	-	87.70%	-634
			1996/97		DHA 3	-	-	87.40%	48
			1996/97		DHA 4	-	-	67.30%	-1,397
			1996/97		DHA 5	-	-	82.80%	-403
			1996/97		DHA 6	-	-	85.70%	-391
			1996/97		DHA 7	-	-	85.30%	54
			1996/97		DHA 8	-	-	91.80%	-1,230
			1996/97		DHA 9	-	-	98.10%	4,866
			1997/98		DHA 1	-	-	76.20%	-901
			1997/98		DHA 2	-	-	82.90%	-804
			1997/98		DHA 3	-	-	88.10%	114

Study ID	Country	Province/ state	Year	Perspective	Subgroup	Synthetic index of mobility		Resident retention rate	Net patient transfer
						Index	Change		
			1997/98		DHA 4	-	-	65.60%	-1,507
			1997/98		DHA 5	-	-	84.40%	-345
			1997/98		DHA 6	-	-	85.00%	-443
			1997/98		DHA 7	-	-	83.50%	-30
			1997/98		DHA 8	-	-	92.60%	-1,080
			1997/98		DHA 9	-	-	98.20%	4,996
			1998/99		DHA 1	-	-	76.60%	-847
			1998/99		DHA 2	-	-	81.20%	-941
			1998/99		DHA 3	-	-	87.60%	194
			1998/99		DHA 4	-	-	65.70%	-1,470
			1998/99		DHA 5	-	-	81.90%	-385
			1998/99		DHA 6	-	-	80.90%	-591
			1998/99		DHA 7	-	-	85.00%	-7
			1998/99		DHA 8	-	-	92.60%	-1,118
			1998/99		DHA 9	-	-	98.20%	5,165
			1999/00		DHA 1	-	-	78.80%	-676
			1999/00		DHA 2	-	-	80.70%	-943
			1999/00		DHA 3	-	-	87.20%	108
			1999/00		DHA 4	-	-	65.70%	-1,446
			1999/00		DHA 5	-	-	82.60%	-401

Study ID	Country	Province/ state	Year	Perspective	Subgroup	Synthetic index of mobility		Resident retention rate	Net patient transfer
						Index	Change		
			1999/00		DHA 6	-	-	83.70%	-485
			1999/00		DHA 7	-	-	85.50%	-16
			1999/00		DHA 8	-	-	92.70%	-1,039
			1999/00		DHA 9	-	-	98.30%	4,898

Appendix K Impact on cost

Table 53: Quantitative data for cost outcomes: health expenditure per capita Spain

Sum of Per capita health expenditure	1993	1994	1995	1996	1997	1998	1999
Andalusia	103.15	100.34	100.7	98.68	99.38	98.93	98.27
Aragon	106.89	106.3	105.45	108.27	107	109.62	105.58
Asturias	109.68	107.26	106.84	106.73	104.33	106.35	106.93
Balearic Islands	86.08	87.62	87.2	88.09	89.55	88.46	80.2
Canary Islands	102.06	98.85	101.88	100.82	100.01	98.25	95.23
Cantabria	108.25	106.91	106.69	101.66	107.51	107.58	105.81
Castilla La Mancha	91.59	92.67	92.84	97	95.35	94.15	93.82
Castilla Leon	95.12	95.2	95	95.44	96.27	97.8	97.85
Catalonia	99.81	99.89	101.35	100.19	100.63	102.85	101.24
Extremadura	99.78	95.84	97.56	101.09	100.15	100.83	100.64
Galicia	89.51	91.09	94.68	98.53	99.59	99.77	100.34
Madrid	107.12	112.34	105.72	104.15	101.85	101.43	94.7

Sum of Per capita health expenditure	1993	1994	1995	1996	1997	1998	1999
Murcia	92.34	88.66	93.33	100.24	100.29	97.13	93.65
National Mean	100	100	100	100	100	100	100
Rioja	92.49	95.41	95.53	89.4	93.6	93.7	92.14
Valencia	101.92	101.9	100.13	99.67	99.72	98.59	97.65

Source: Cantarero 2005

Table 54: Quantitative data for cost outcomes: per capita spending

Study ID	Country	Province	Year	Perspective	Subgroup	Per capita spending
De Nicola 2014	Italy	Piemonte	2005	Health system	ASL cent. cost adjusted	1655
		V. Aosta	2005		ASL cent. national	1857
		Lombardy	2005		Purchaser-provider. analytic	1575
		Bolzano	2005		ASL cent. national	2076
		Trento	2005		ASL cent. national	1721
		Veneto	2005		ASL cent. analytic	1616
		Friuli	2005		Regional cent. national	1658
		Liguria	2005		Regional cent. national	1833
		Emilia R.	2005		ASL cent. analytic	1686
		Tuscany	2005		ASL cent. analytic	1637
		Umbria	2005		ASL cent. analytic	1618
		Marche	2005		ASL cent. national	1542
		Lazio	2005		ASL cent. analytic	1816
		Abruzzo	2005		Regional cent. national	1700
		Molise	2005		Regional cent. national	1854

Study ID	Country	Province	Year	Perspective	Subgroup	Per capita spending
		Campania	2005		Regional cent. national	1603
		Apulia	2005		ASL cent. national	1432
		Basilicata	2005		ASL cent. national	1477
		Calabria	2005		ASL cent. national	1404
		Sicily	2005		Regional cent. cost adjusted	1556
		Sardinia	2005		ASL cent. national	1593
		Italy	2005		-	1622
		NORTH	2005		-	1960
		CENTRE	2005		-	1653
		SOUTH	2005		-	1577

Table 55: Quantitative data for cost outcomes: per capita spending

Study ID	Country	Province	Year	Perspective	Per capita spending			
					Amount	Mean	SD	% change
Giannoni 2002	Italy	Aosta Valley	1980	Health system	686.6			
		Aosta Valley	1995		866.7			
		Aosta Valley	1980-1991		-			35.89
		Aosta Valley	1992-1995		-			-6.71
		Piemonte	1980		615.7			
		Piemonte	1995		785.7			
		Piemonte	1980-1991					28.59

Study ID	Country	Province	Year	Perspective	Per capita spending			
					Amount	Mean	SD	% change
		Piemonte	1992-1995					-1.45
		Lombardy	1980		636.4			
		Lombardy	1995		748.7			
		Lombardy	1980-1991					22.37
		Lombardy	1992-1995					-2.89
		Trentino Alto Adige	1980		659.2			
		Trentino Alto Adige	1995		925			
		Trentino Alto Adige	1980-1991					35.3
		Trentino Alto Adige	1992-1995					2.4
		Veneto	1980		781.4			
		Veneto	1995		974.1			
		Veneto	1980-1991					17.64
		Veneto	1992-1995					2.9
		Fruli Venezia Giulia	1980		816.1			
		Fruli Venezia Giulia	1995		1035.4			
		Fruli Venezia Giulia	1980-1991					24.02
		Fruli Venezia Giulia	1992-1995					2.68
		Liguria	1980		891.9			
		Liguria	1995		1075.8			
		Liguria	1980-1991					23.09
		Liguria	1992-1995					-2.34

Study ID	Country	Province	Year	Perspective	Per capita spending			
					Amount	Mean	SD	% change
		Emilia-Romagna	1980		790.5			
		Emilia-Romagna	1995		1137.5			
		Emilia-Romagna	1980-1991					35.6
		Emilia-Romagna	1992-1995					2.79
		Tuscany	1980		697.9			
		Tuscany	1995		915.8			
		Tuscany	1980-1991					31.44
		Tuscany	1992-1995					1.25
		Umbria	1980		775.7			
		Umbria	1995		1014.9			
		Umbria	1980-1991					21.4
		Umbria	1992-1995					6.51
		Marche	1980		822.5			
		Marche	1995		1059.4			
		Marche	1980-1991					27.34
		Marche	1992-1995					-0.36
		Lazio	1980		625.8			
		Lazio	1995		786.8			
		Lazio	1980-1991					19.05
		Lazio	1992-1995					6.32
		Abruzzo	1980		695.3			

Study ID	Country	Province	Year	Perspective	Per capita spending			
					Amount	Mean	SD	% change
		Abruzzo	1995		855.9			
		Abruzzo	1980-1991					10.72
		Abruzzo	1992-1995					9.03
		Molise	1980		671.5			
		Molise	1995		895.5			
		Molise	1980-1991					19.93
		Molise	1992-1995					8.23
		Campania	1980		622.5			
		Campania	1995		749			
		Campania	1980-1991					2.82
		Campania	1992-1995					12.37
		Apulia	1980		530.8			
		Apulia	1995		522.4			
		Apulia	1980-1991					17.23
		Apulia	1992-1995					-12.76
		Basilicata	1980		443.5			
		Basilicata	1995		737.5			
		Basilicata	1980-1991					50.42
		Basilicata	1992-1995					6.53
		Calabria	1980		465.7			
		Calabria	1995		740.3			

Study ID	Country	Province	Year	Perspective	Per capita spending			
					Amount	Mean	SD	% change
		Calabria	1980-1991					44.23
		Calabria	1992-1995					6
		Sicily	1980		532.9			
		Sicily	1995		704.6			
		Sicily	1980-1991					29.53
		Sicily	1992-1995					1.24
		Sardinia	1980		667.1			
		Sardinia	1995		912.1			
		Sardinia	1980-1991					20.18
		Sardinia	1992-1995					12.9
		All	1980			655.4	119.9	
		All	1995			826	157.1	
		All	1980-1991			22.62	11.07	
		All	1992-1995			1.92	4.01	

Table 56: Quantitative data for cost outcomes: per capita spending, deficit per capita, % of total deficit

Author	Country	Province	Year	Perspective	Per capita spending		Deficit per capita	% of total deficit
					Amount	2017 euros[a]		
Toth 2014	Italy	Piemonte	1999	Health system	1065	1459	-44	3.8
		Aosta Valley	1999		1248	1710	-144	0.3

Author	Country	Province	Year	Perspective	Per capita spending		Deficit per capita	% of total deficit
					Amount	2017 euros[a]		
		Lombardy	1999		1060	1452	-49	9
		Trentino-South Tyrol	1999		1232	1688	-205	3.9
		Veneto	1999		1023	1401	-100	9.2
		Friuli-Venezia Giulia	1999		1086	1488	-40	1
		Liguria	1999		1221	1673	-46	1.5
		Emilia-Romagna	1999		1139	1560	-61	4.9
		Tuscany	1999		1046	1433	-94	6.7
		Umbria	1999		1049	1437	-44	0.7
		Marche	1999		1092	1496	-156	4.6
		Lazio	1999		1111	1522	-165	17.2
		Abruzzo	1999		952	1304	-133	3.4
		Molise	1999		989	1355	-36	0.2
		Campania	1999		966	1323	-66	7.7
		Apulia	1999		1004	1375	-130	10.7
		Basilicata	1999		876	1200	-51	0.6
		Calabria	1999		993	1360	-60	2.5
		Sicily	1999		929	1273	-75	7.6
		Sardinia	1999		1017	1393	-130	4.4
		Centre-North	1999		1080	1479	-75	45.6
		Centre-South	1999		997	1366	-104	54.4
		Italy	1999		1042	1427	-86	100

Author	Country	Province	Year	Perspective	Per capita spending		Deficit per capita	% of total deficit
					Amount	2017 euros[a]		
		Average North[b]	1999			1527		
		Average South[b]	1999			1345		
		Piemonte	2009		1864	2067	4	-0.5
		Aosta Valley	2009		2095	2323	-8	0.1
		Lombardy	2009		1751	1942	0	-0.1
		Trentino-South Tyrol	2009		2002	2220	25	-0.7
		Veneto	2009		1732	1920	-6	0.8
		Friuli-Venezia Giulia	2009		1964	2178	14	-0.5
		Liguria	2009		2046	2269	-65	3.1
		Emilia-Romagna	2009		1815	2012	5	-0.7
		Tuscany	2009		1883	2088	-2	0.2
		Umbria	2009		1801	1997	5	-0.1
		Marche	2009		1746	1936	11	-0.5
		Lazio	2009		2024	2244	-247	41.5
		Abruzzo	2009		1783	1977	-71	2.8
		Molise	2009		2090	2317	-199	1.9
		Campania	2009		1779	1973	-136	23.5
		Apulia	2009		1786	1980	-74	9
		Basilicata	2009		1855	2057	-36	0.6
		Calabria	2009		1765	1957	-115	6.9
		Sicily	2009		1707	1893	-40	5.9

Author	Country	Province	Year	Perspective	Per capita spending		Deficit per capita	% of total deficit
					Amount	2017 euros[a]		
		Sardinia	2009		1877	2081	-137	6.8
		Centre-North	2009		1818	2016	-1	1.1
		Centre-South	2009		1829	2028	-125	98.9
		Italy	2009		1823	2021	-56	100
		Average North[b]	2009			2086		
		Average South[b]	2009			2053		

[a]http://www.in2013dollars.com/1999-euro-in-2017
[b] Calculated by HRB

Table 57: Quantitative data for cost outcomes: per capita health expenditure

Author	Country	Year	Perspective	Per capita health expenditure			
	(province)			CA$1999	Conversion rate	CA$2017	Euro 2017[a]
Saunders 1999	Canada (AB)	1980/81	Health system	1515	1.3917	2108	1396
		1981/82		1628	1.3917	2266	1500
		1982/83		1687	1.3917	2348	1554
		1983/84		1658	1.3917	2307	1528
		1984/85		1621	1.3917	2256	1494
		1985/86		1647	1.3917	2292	1518
		1986/87		1669	1.3917	2323	1538
		1987/88		1551	1.3917	2159	1429
		1988/89		1608	1.3917	2238	1482

Author	Country (province)	Year	Perspective	Per capita health expenditure			
				CA$1999	Conversion rate	CA$2017	Euro 2017[a]
		1989/90		1605	1.3917	2234	1479
		1990/91		1592	1.3917	2216	1467
		1991/92		1571	1.3917	2186	1448
		1992/93		1558	1.3917	2168	1436
		1993/94		1437	1.3917	2000	1324
		1994/95		1333	1.3917	1855	1228
		1995/96		1243	1.3917	1730	1145
		1996/97		1259	1.3917	1752	1160
		1997/98		1318	1.3917	1834	1214
		1998/99		1287	1.3917	1791	1186
		Average 1997 – 1999[b]					1187

[a] https://www.poundsterlinglive.com/best-exchange-rates/euro-to-canadian-dollar-exchange-rate-on-2017-12-31

[b] Calculated by HRB

Table 58: Quantitative data for cost outcomes: expenditures

Author	Country (Province)	Year	Perspective	Location	Expenditure			
					Total CA$(mill)	CA$ 2017	Totals for 2 locations	Euro 2017 (mill)
Twells 2005	Canada (NL)	1995/96	Health system	HCCSJ	258.9	376.4		
Twells 2005		1995/96	Health system	5 reg hospitals	101.2	147.1	523.5	346.6
Twells 2005		2002/03	Health system	HCCSJ	416.4	526.2		
Twells 2005		2002/03	Health system	5 reg hospitals	155.7	196.7	723	478.6

Table 59: Quantitative data for cost outcomes: expenditures

Author	Country (Province)	Year	Subgroup	Location	Expenditure			
					Total CA$(mill)	Totals for 2 locations	CA$ 2017	Euro 2017 (mill)
Twells 2005	Canada (NL)	1995/96	Nurses	HCCSJ	67			
Twells 2005		1995/96	Nurses	5 reg hospitals	21.7	88.7	128.943	85.3733
Twells 2005		2002/03	Nurses	HCCSJ	115			0
Twells 2005		2002/03	Nurses	5 reg hospitals	36.5	151.5	191.435	126.749
Twells 2005		1995/96	Management	HCCSJ	27.8			0
Twells 2005		1995/96	Management	5 reg hospitals	9.3	37.1	53.932	35.709
Twells 2005		2002/03	Management	HCCSJ	19.1			0
Twells 2005		2002/03	Management	5 reg hospitals	9.3	28.4	35.886	23.760
Twells 2005		1995/96	Hospital support	HCCSJ	75.9			0
Twells 2005		1995/96	Hospital support	5 reg hospitals	24.4	100.3	145.806	96.538
Twells 2005		2002/03	Hospital support	HCCSJ	97.7			0
Twells 2005		2002/03	Hospital support	5 reg hospitals	36.3	134	169.322	112.108
Twells 2005		1995/96	Lab/X-ray	HCCSJ	13.2			0
Twells 2005		1995/96	Lab/X-ray	5 reg hospitals	6.3	19.5	28.3472	18.7687
Twells 2005		2002/03	Lab/X-ray	HCCSJ	20.9			0
Twells 2005		2002/03	Lab/X-ray	5 reg hospitals	10.9	31.8	40.1825	26.605
Twells 2005		1995/96	Allied health	HCCSJ	11.5			0
Twells 2005		1995/96	Allied health	5 reg hospitals	3.6	15.1	21.9509	14.5337
Twells 2005		2002/03	Allied health	HCCSJ	23.7			0
Twells 2005		2002/03	Allied health	5 reg hospitals	5.9	29.6	37.4026	24.764

Author	Country (Province)	Year	Subgroup	Location	Expenditure			
					Total CA$(mill)	Totals for 2 locations	CA$ 2017	Euro 2017 (mill)
Twells 2005		1995/96	Non-union, non-management	HCCSJ	2.1			0
Twells 2005		1995/96	Non-union, non-management	5 reg hospitals	1.5	3.6	5.233	3.465
Twells 2005		2002/03	Non-union, non-management	HCCSJ	2.4			0
Twells 2005		2002/03	Non-union, non-management	5 reg hospitals	1.7	4.1	5.1808	3.430
Twells 2005		1995/96	Health system	HCCSJ	316.3			0
Twells 2005		1995/96	Health system	5 reg hospitals	77	393.3	571.740	378.55
Twells 2005		2002/03	Health system	HCCSJ	307.4			0
Twells 2005		2002/03	Health system	5 reg hospitals	118.6	426	538.294	356.404

Table 60: Quantitative data for cost outcomes: human resources spending

Study ID	Country (Province)	Subgroup	Year	Location	Sick leave expenditure				Over time expenditure			
					CA$	Both locations CA$	CA$ 2017	Euro 2017 (millions)	CA$	Both locations CA$	CA$ 2017	Euro 2017 (millions)
Way 2005b	Canada (NL)		1995/96	HCCSJ	9.6				2.4		0	0
		Hospital support workers	1995/96	5 reg hospitals	8.7	18.3	26.603	17.614	1.5	3.9	5.669	3.754
			2002/03	HCCSJ	8		0	0	7.1		0	0
			2002/03	5 reg hospitals	12.1	20.1	25.398	16.816	3.9	11	13.9	9.203
			1995/96	HCCSJ	7.8		0	0	2.9		0	0
		Reg. nurse	1995/96	5 reg hospitals	7.5	15.3	22.242	14.726	1.7	4.6	6.687	4.428
			2002/03	HCCSJ	8.8		0	0	10.8		0	0

Study ID	Country (Province)	Subgroup	Year	Location	Sick leave expenditure				Over time expenditure			
					CA$	Both locations CA$	CA$ 2017	Euro 2017 (millions)	CA$	Both locations CA$	CA$ 2017	Euro 2017 (millions)
		Allied health professionals	2002/03	5 reg hospitals	10.8	19.6	24.767	16.398	7.1	17.9	22.618	14.976
			1995/96	HCCSJ	3		0	0	1.7		0	0
			1995/96	5 reg hospitals	2.6	5.6	8.141	5.39	1.1	2.8	4.070	2.695
			2002/03	HCCSJ	3.9		0	0	5.1		0	0
			2002/03	5 reg hospitals	3.8	7.7	9.73	6.442	2.4	7.5	9.477	6.275
		Management	1995/96	HCCSJ	2.9		0	0	0.9		0	0
			1995/96	5 reg hospitals	3.4	6.3	9.158	6.064	0.5	1.4	2.035	1.347
			2002/03	HCCSJ	2.8		0	0	3.4		0	0
			2002/03	5 reg hospitals	2.5	5.3	6.697	4.434	3	6.4	8.087	5.355

Table 61: Quantitative data for cost outcomes: health expenditure

Study ID	Country	Province	Year	Perspective	Per capita spending	Average spend	Change (%)
					Euro	Euro	Euro 2017
Costa Font 2006	Spain	Andalusia	1995	Health system	539		
		Andalusia	1996		568		
		Andalusia	1997		609		
		Andalusia	1998		623		
		Andalusia	1999		655		
		Valencia	1999-1995				22

Study ID	Country	Province	Year	Perspective	Per capita spending	Average spend		Change (%)
					Euro	Euro	Euro 2017	
		Valencia	1995		497			
		Valencia	1996		572			
		Valencia	1997		552			
		Valencia	1998		595			
		Valencia	1999		644			
		Valencia	1999-1995					30
		Canary Islands	1995		526			
		Canary Islands	1996		559			
		Canary Islands	1997		562			
		Canary Islands	1998		642			
		Canary Islands	1999		647			
		Canary Islands	1999-1995					23
		Catalonia	1995		548			
		Catalonia	1996		582			
		Catalonia	1997		611			
		Catalonia	1998		635			
		Catalonia	1999		683			
		Catalonia	1999-1995					25
		Galacia	1995		535			
		Galacia	1996		587			
		Galacia	1997		617			

Study ID	Country	Province	Year	Perspective	Per capita spending	Average spend		Change (%)
					Euro	Euro	Euro 2017	
		Galacia	1998		659			
		Galacia	1999		707			
		Galacia	1999-1995					32
		Navarre	1995		651			
		Navarre	1996		688			
		Navarre	1997		734			
		Navarre	1998		747			
		Navarre	1999		796			
		Navarre	1999-1995					22
		Basque Country	1995		613			
		Basque Country	1996		657			
		Basque Country	1997		684			
		Basque Country	1998		743			
		Basque Country	1999		792			
		Basque Country	1999-1995					29
		Decentralised regions	1995			558[a]	765[a]	
		Decentralised regions	1996			602[a]	824[a]	
		Decentralised regions	1997			624[a]	855[a]	
		Decentralised regions	1998			663[a]	909[a]	
		Decentralised regions	1999			703[a]	964[a]	
		Decentralised regions	1999-1995					26

Study ID	Country	Province	Year	Perspective	Per capita spending	Average spend	Change (%)	
					Euro	Euro	Euro 2017	
		INSALUD	1995		534		731	
		INSALUD	1996		563		771	
		INSALUD	1997		588		805	
		INSALUD	1998		625		856	
		INSALUD	1999		665		911	
		INSALUD	1999-1995					25

[a] Values calculated by HRB

Table 62: Quantitative data for cost outcomes: health expenditure

Author	Province	Year	Perspective	Expenditure				Cost breakdown (%)			
				US$ FX adjusted	Conversion rate	US$ 2017	Euro 2017	Federal	State	Municipal	Home
Arredondo 2004	State A	1990	Health system	16523000	1.875	30,987,234	25,809,267	94	0	0	6
	State A	1991		23917000	1.799	43,043,425	35,850,869	93.8	0	0	6.2
	State A	1992		28375000	1.747	49,573,963	41,290,153	93.9	0	0	6.1
	State A	1993		36831000	1.696	62,476,425	52,036,615	93.3	0	0	6.7
	State A	1994		44389000	1.654	73,419,406	61,151,023	92.7	0	0	7.3
	State A	1995		34642000	1.608	55,718,193	46,407,683	92.6	0.5	0	6.9
	State A	1996		41321000	1.562	64,555,798	53,768,524	92.3	1.5	0	6.2
	State A	1997		38121000	1.527	58,218,391	48,490,098	92.1	1.5	0	6.4
	State A	1998		35369000	1.503	53,187,902	44,300,204	91.3	1.6	0	7.1

Author	Province	Year	Perspective	Expenditure				Cost breakdown (%)			
				US$ FX adjusted	Conversion rate	US$ 2017	Euro 2017	Federal	State	Municipal	Home
	State A	1999		86298000	1.471	126,970,247	105,753,519	90.5	1.8	0.3	7.4
	State A	2000		93077000	1.423	132,495,110	110,355,177	90.1	1.9	0.5	7.5
	State B	1990		33669000	1.875	63,142,843	52,591,674	94.9	2.5	0	2.6
	State B	1991		45602000	1.799	82,069,919	68,356,036	94.4	3.3	0	2.3
	State B	1992		55136000	1.747	96,328,106	80,231,679	94.3	2.7	0	3
	State B	1993		73771000	1.696	125,137,747	104,227,230	93.8	3	0	3.2
	State B	1994		86299000	1.654	142,738,546	118,886,935	92.4	3.7	0	3.9
	State B	1995		63173000	1.608	101,607,453	84,628,848	91.3	3.8	0	4.9
	State B	1996		72926000	1.562	113,932,290	94,894,204	92.8	3.1	0	4.1
	State B	1997		54499000	1.527	83,230,873	69,322,994	89.2	3.9	0	6.9
	State B	1998		52422000	1.503	78,832,204	65,659,342	88.6	3.9	0	7.5
	State B	1999		129020000	1.471	189,827,126	158,107,013	91.5	4.5	0.5	3.5
	State B	2000		146954000	1.423	209,189,019	174,233,534	92.5	3.9	0.5	3.1
	State C	1990		13353000	1.8754	25,042,216.20	20,857,661.87	47.5	49.6	0	2.9
	State C	1991		17360000	1.7997	31,242,792.00	26,022,121.46	44.3	52.6	0	3.1
	State C	1992		20012000	1.7471	34,962,965.20	29,120,653.72	43.6	53.2	0.5	2.7
	State C	1993		24519000	1.6963	41,591,579.70	34,641,626.73	42.4	53.9	0.3	3.4
	State C	1994		26191000	1.654	43,319,914.00	36,081,156.37	41.3	54.9	0.3	3.5
	State C	1995		18692000	1.6084	30,064,212.80	25,040,482.84	40.8	56.9	0.6	1.7
	State C	1996		19071000	1.5623	29,794,623.30	24,815,941.75	39.7	57.8	0.5	2
	State C	1997		33292000	1.5272	50,843,542.40	42,347,586.46	38.8	57.9	0.5	2.8

Author	Province	Year	Perspective	Expenditure				Cost breakdown (%)			
				US$ FX adjusted	Conversion rate	US$ 2017	Euro 2017	Federal	State	Municipal	Home
	State C	1998		33542000	1.5038	50,440,459.60	42,011,858.80	38.3	58	0.5	3.2
	State C	1999		59443000	1.4713	87,458,485.90	72,844,172.91	38	58.1	0.7	3.2
	State C	2000		64198000	1.4235	91,385,853.00	76,115,276.96	36.8	58.6	1.1	3.5
	State D	1990		11954000	1.8754	22,418,532	18,672,395	95.4	0	0	4.6
	State D	1991		16925000	1.7997	30,459,923	25,370,069	95.1	0	0	4.9
	State D	1992		21177000	1.7471	36,998,337	30,815,915	94.9	0	0	5.1
	State D	1993		35826000	1.6963	60,771,644	50,616,702	94.6	0	0	5.4
	State D	1994		39064000	1.654	64,611,856	53,815,215	93.9	0.5	0	5.6
	State D	1995		27954000	1.6084	44,961,214	37,448,195	93.3	0.5	0	6.2
	State D	1996		29447000	1.5623	46,005,048	38,317,605	93.1	0.6	0	6.3
	State D	1997		28790000	1.5272	43,968,088	36,621,020	93.9	0.5	0	5.6
	State D	1998		38721000	1.5038	58,228,640	48,498,634	94.5	0.7	0	4.8
	State D	1999		58003000	1.4713	85,339,814	71,079,531	95.7	0.6	0.2	3.5
	State D	2000		67354000	1.4235	95,878,419	79,857,135	95.5	0.8	0.4	3.3

Appendix L Impact on staff work experience

Table 63: Quantitative results for staff work experience outcomes (1)

Study ID	Country	Province	Year	Perspective	Subgroup	Turnover rate	Sick hours	Emotional climate		Practice issues		Collaborative relations		Importance of reform	
								M	SD	M	SD	M	SD	M	SD
Way 2005b	Canada	NL	1996/ 97	Health system	HCCSJ	12.2	111.4	-	-	-	-	-	-	-	-
			1997/98			10	105.2	-	-	-	-	-	-	-	-
			1998/99			4.3	94.4	-	-	-	-	-	-	-	-
			1999/00			4.9	94.4	-	-	-	-	-	-	-	-
			2000/01			11.4	91.1	-	-	-	-	-	-	-	-
			2001/02			8	86.9	-	-	-	-	-	-	-	-
Way 2005a	Canada	NL	1995	Nurses	HCCSJ	-	-	2.88	0.96	3.46	1.11	-	-	4.23	0.77
			1999			-	-	2.33	0.86	2.6	1.09	2.63	1.07	4.05	0.97
			2000			-	-	2.47	0.97	2.85	1.13	2.73	1.18	4	0.85
			2002			-	-	2.7	0.98	2.96	1.23	3.12	1.22	4.02	0.79

Table 64: Quantitative results for staff work experience outcomes (2)

Study ID	Country	Province	Year	Subgroup	PQL Overall		PQL Management support		PQL Workload		PQL Intrinsic motivation	
					L95%CI	U95%CI	L95%CI	U95%CI	L95%CI	U95%CI	L95%CI	U95%CI
Martin-Fernandez 2007	Spain	Madrid	2001	Group I[a]	4.59	5.46	4.82	5.36	6.14	6.67	7.16	7.62

	2001	Group II[b]	5.32	5.97	4.81	5.37	5.46	5.93	7.34	7.77
	2001	Group III[c]	4.04	5.09	4.43	5.15	5.94	6.62	6.99	7.63
	2003	Group I[a]	4.67	5.41	4.49	5	6.29	6.78	7.38	7.75
	2003	Group II[b]	5	5.96	4.79	5.48	5.73	6.34	7.25	7.73
	2003	Group III[c]	4.37	5.33	4.32	5.03	5.85	6.55	7.2	7.78
	2005	Group I[a]	4.99	5.36	4.89	5.1	6.61	6.86	7.38	7.59
	2005	Group II[b]	5.94	6.32	5.32	5.61	5.9	6.17	7.52	7.77
	2005	Group III[c]	5.17	5.77	4.88	5.29	6.24	6.68	7.21	7.59

[a] physicians, some pharmacists, dentists, psychologists

[b] nurses, midwives, physiotherapists, social workers

[c] auxiliary office workers, hospital porters, clinical auxiliaries

Appendix M Impact on perceived quality of care

Table 65: Quantitative results for perceived quality of care outcomes (1)

Study ID	Country	Province	Year	Perspective	Quality of care		Safety concerns		Standards of care		Satisfaction with hospital care					
											Very satisfied			Scarcely or not satisfied		
					M	SD	M	SD	M	SD	%	Change	Year range	%	Change	Year range
Way 2005a	Canada	NL	1995	Nurses	2.75	0.88	3.51	0.92	3.01	0.95	-	-	-	-	-	-
			1999	Nurses	2.19	0.94	2.79	0.91	2.45	0.9	-	-	-	-	-	-
			2000	Nurses	2.53	0.93	3.12	0.9	2.79	1.05	-	-	-	-	-	-
			2002	Nurses	2.77	0.82	3.4	0.87	3.01	0.87	-	-	-	-	-	-
Toth 2014	Italy	Piemonte	1999	Patients	-	-	-	-	-	-	48.5	-	-	12.8	-	-
		Aosta Valley	1999		-	-	-	-	-	-	35.5	-	-	7.8	-	-
		Lombardy	1999		-	-	-	-	-	-	48.5	-	-	10.2	-	-
		Trentino-South Tyrol	1999		-	-	-	-	-	-	56.6	-	-	7.5	-	-
		Veneto	1999		-	-	-	-	-	-	44.6	-	-	10.9	-	-
		Friuli-Venezia Giulia	1999		-	-	-	-	-	-	50.6	-	-	8.1	-	-
		Liguria	1999		-	-	-	-	-	-	43.3	-	-	7.4	-	-
		Emilia-Romagna	1999		-	-	-	-	-	-	41.8	-	-	5.8	-	-
		Tuscany	1999		-	-	-	-	-	-	50.1	-	-	6.5	-	-
		Umbria	1999		-	-	-	-	-	-	32.6	-	-	10.6	-	-

Study ID	Country	Province	Year	Perspective	Quality of care		Safety concerns		Standards of care		Satisfaction with hospital care					
											Very satisfied			Scarcely or not satisfied		
					M	SD	M	SD	M	SD	%	Change	Year range	%	Change	Year range
		Marche	1999		-	-	-	-	-	-	43.3	-	-	11.9	-	-
		Lazio	1999		-	-	-	-	-	-	27.5	-	-	14.6	-	-
		Abruzzo	1999		-	-	-	-	-	-	37.2	-	-	7.9	-	-
		Molise	1999		-	-	-	-	-	-	17.7	-	-	4.8	-	-
		Campania	1999		-	-	-	-	-	-	34.3	-	-	8.5	-	-
		Apulia	1999		-	-	-	-	-	-	26.2	-	-	18.7	-	-
		Basilicata	1999		-	-	-	-	-	-	35.7	-	-	15.5	-	-
		Calabria	1999		-	-	-	-	-	-	25.7	-	-	15	-	-
		Sicily	1999		-	-	-	-	-	-	24	-	-	9.7	-	-
		Sardinia	1999		-	-	-	-	-	-	34.1	-	-	7.2	-	-
		Centre-North	1999		-	-	-	-	-	-	46.6	-	-	9.5	-	-
		Centre-South	1999		-	-	-	-	-	-	29	-	-	12.1	-	-
		Italy	1999		-	-	-	-	-	-	38.5	-	-	10.7	-	-
		Piemonte	2009		-	-	-	-	-	-	48.2	-0.3	1999-2009	8.4	-4.4	1999-2009
		Aosta Valley	2009		-	-	-	-	-	-	37.9	2.4	1999-2009	10.2	2.4	1999-2009
		Lombardy	2009		-	-	-	-	-	-	48	-0.5	1999-2009	7.9	-2.3	1999-2009
		Trentino-South Tyrol	2009		-	-	-	-	-	-	54.2	-2.4	1999-2009	4.2	-3.3	1999-2009
		Veneto	2009		-	-	-	-	-	-	56	11.4	1999-2009	8.3	-2.6	1999-2009
		Friuli-Venezia Giulia	2009		-	-	-	-	-	-	44	-6.6	1999-2009	7.2	-0.9	1999-2009

Study ID	Country	Province	Year	Perspective	Quality of care		Safety concerns		Standards of care		Satisfaction with hospital care					
											Very satisfied			Scarcely or not satisfied		
					M	SD	M	SD	M	SD	%	Change	Year range	%	Change	Year range
		Liguria	2009		-	-	-	-	-	-	43.3	0	1999-2009	6.4	-1	1999-2009
		Emilia-Romagna	2009		-	-	-	-	-	-	58.5	16.7	1999-2009	8.6	2.8	1999-2009
		Tuscany	2009		-	-	-	-	-	-	38.5	-11.6	1999-2009	11.5	5	1999-2009
		Umbria	2009		-	-	-	-	-	-	31.3	-1.3	1999-2009	9.1	-1.5	1999-2009
		Marche	2009		-	-	-	-	-	-	40.4	-2.9	1999-2009	10.1	-1.8	1999-2009
		Lazio	2009		-	-	-	-	-	-	26.3	-1.2	1999-2009	18.1	3.5	1999-2009
		Abruzzo	2009		-	-	-	-	-	-	36.7	-0.5	1999-2009	15.1	7.2	1999-2009
		Molise	2009		-	-	-	-	-	-	18.8	1.1	1999-2009	12.3	7.5	1999-2009
		Campania	2009		-	-	-	-	-	-	26.5	-7.8	1999-2009	15.9	7.4	1999-2009
		Apulia	2009		-	-	-	-	-	-	19.6	-6.6	1999-2009	12	-6.7	1999-2009
		Basilicata	2009		-	-	-	-	-	-	23.6	-12.1	1999-2009	5.1	-10.4	1999-2009
		Calabria	2009		-	-	-	-	-	-	22.3	-3.4	1999-2009	13	-2	1999-2009
		Sicily	2009		-	-	-	-	-	-	14.5	-9.5	1999-2009	9.9	0.2	1999-2009
		Sardinia	2009		-	-	-	-	-	-	29.2	-4.9	1999-2009	16.7	9.5	1999-2009
		Centre-North	2009		-	-	-	-	-	-	48.5	1.9	1999-2009	8.4	-1	1999-2009
		Centre-South	2009		-	-	-	-	-	-	23.3	-5.6	1999-2009	14.1	2.1	1999-2009
		Italy	2009		-	-	-	-	-	-	37.4	-1.1	1999-2009	11.3	0.6	1999-2009

Table 66: Quantitative results for perceived quality of care outcomes (2)

Study ID	Country	Year	Perspective	Satisfaction with medical and health services						Views of health system		
				Total satisfied	Very satisfied	Somewhat satisfied	Total dissatisfied	Somewhat dissatisfied	Very dissatisfied	Needs minor changes	Needs fundamental changes	Must be completely rebuilt
Jovell 2007	Spain	1991	Citizens	71	28	43	28	18	10	21	49	28
		2005	Citizens	79	32	47	19	13	6	28	58	13

Appendix N Impact on public trust

Table 67: Quantitative results for public trust

Study ID	Country	Year	Institution	%	Profession	%
Jovell 2007	Spain	2005/06	Health centres or primary public care centres	78	Scientists	66
			Public hospitals	75	Hospital doctors	64
			Pharmaceutical companies	69	Primary care or family doctors	62
			Universities	63	Elementary and high school teachers	49
			Spanish railway system	62	University professors	45
			Media	56	Journalists	23
			Banks	52	Lawyers	20
			Airline companies	46	Economists	20
			Telephone companies	44	Politicians	11
			Government	41	-	

References

1. Forest P, Martin D. Fit for Purpose: Findings and Recommendations of the External Review of the Pan-Canadian Health Organizations. Calgary and Toronto, Canada: University of Calgary and Women's College Hospital Toronto, 2018.

2. Saltman R, Bankauskaite V, Vrangbaek K, editors. *Decentralization in Health Care*. Maidenhead, Berkshire, England: McGraw-Hill Open University Press, 2007.

3. Government of Canada. Canada Health Act. Secondary Canada Health Act 2017 Nov 09 2017. https://www.canada.ca/en/health-canada/services/health-care-system/canada-health-care-system-medicare/canada-health-act.html.

4. Cloutier-Fisher D, Penning MJ, Zheng C, et al. The devil is in the details: Trends in avoidable hospitalization rates by geography in British Columbia, 1990-2000. BMC Health Serv Res. 2006;6:104.

5. Church J, Barker P. Regionalization of Health Services in Canada: A Critical Perspective. Int J Health Serv. 1998 28(3):467-86.

6. Weaver P. The Regionalization of Healthcare in British Columbia: Does Closer to Home Really Matter? Department of Political Science. British Columbia, Canada: Simon Fraser University, 2006.

7. Lewis S, Kouri D. Regionalization: Making sense of the Canadian experience. Healthc Pap. 2004;5(1):12-31.

8. Government of Nova Scotia. Health--regional health board members announced. Halifax, Nova Scotia, Canada: Government of Nova Scotia, 1996.

9. Frenk J, González-Pier E, Gómez-Dantés O, et al. Comprehensive reform to improve health system performance in Mexico. Lancet. 2006;368(9546):1524-34.

10. Van Aerde J. Has regionalization of the Canadian health system contributed to better health? CJPL. 2016;2(3):65-70.

11. Abrametz B, Bragg T, Kendel D. Optimizing and Integrating Patient-Centred Care. Saskatchewan, Canada: Saskatchewan Advisory Panel on Health System Structure Report, 2016.

12. Government of Saskatchewan. Health system transformation. Secondary Health system transformation No date 2018. http://www.saskatchewan.ca/residents/health/health-system-transformation.

13. Martin H, Rushforth P. The big bang approach to health reform: An update from the Calgary Regional Health Authority. Hosp Q. 1998;2(2):43-50.

14. Saunders LD, Bay KS, Alibhai AA. Regionalization and hospital utilization: Alberta 1991/2-1996/7. Healthc Manage Forum. 1999;12(1):38-43.

15. Hamilton SM, Johnston WC, Voaklander DC. Outcomes after the regionalization of major surgical procedures in the Alberta Capital Health Region (Edmonton). Can J Surg. 2001;44(1):51-8.

16. Measuring aspects of devolved health authority performance: Nova Scotia patients who travel further than necessary to obtain hospital care. Healthcare Management Forum; 2003. SAGE Publications Sage CA: Los Angeles, CA.

17. Twells L, Doyle M, Gregory D, et al. Acute care restructuring in Newfoundland and Labrador: The history and impact on expenditure. J Health Serv Res Policy. 2005;10 Suppl 2:S2:4-11.

18. Barrett B, Way C, McDonald J, et al. Hospital utilization, efficiency and access to care during and shortly after restructuring acute care in Newfoundland and Labrador. J Health Serv Res Policy. 2005;10 Suppl 2:S2:31-7.

19. World Population Review. Greece population 2018 (demographics, maps, graphs). Secondary Greece population 2018 (demographics, maps, graphs) 2018 Jan 01 2018. http://worldpopulationreview.com/countries/greece-population/.

20. Halkos G, Tzeremes N. A conditional nonparametric analysis for measuring the efficiency of regional public healthcare delivery: An application to Greek prefectures. Health Policy. 2011;103(1):73-82.

21. Aletras V, Kontodimopoulos N, Zagouldoudis A, et al. The short-term effect on technical and scale efficiency of establishing regional health systems and general management in Greek NHS hospitals. Health Policy. 2007;83(2-3):236-45.

22. Economou C, Kaitelidou D, Karanikolos M, et al. Greece: Health system review. Health Syst Transit. 2017;19.

23. Adolph C, Greer S, Massard da Fonseca E. Allocation of authority in European health policy. Soc Sci Med. 2012;75:1595-603.

24. World Population Review. Italy population. Secondary Italy population No date 2018. http://worldpopulationreview.com/countries/italy-population/.

25. Donatini A. The Italian healthcare system. In: Mossialos E, Djordjevic A, Osborn R, et al., eds. International Profiles of Healthcare Systems. New York, USA: Commonwealth Fund, 2017:Not applicable.

26. Toth F. How health care regionalisation in Italy is widening the North-South gap. Health Econ Policy Law. 2014;9(3):231-49.

27. De Nicola A, Gitto S, Mancuso P, et al. Healthcare reform in Italy: An analysis of efficiency based on nonparametric methods. Int J Health Plann Manage. 2014;29 IID - 48(1):e48-e63.

28. Longo F, Salvatore D, Tasselli S. Are public health authorities able to “steer” rather than “row”? An empirical analysis in the Italian National Health Service. Int J Health Plann Manage. 2011;26(3):319-33.

29. Villa S, Alesani D, Borgonovi E. Getting health reforms right: What lessons from an Italian case? Health Serv Manage Res. 2008;21(2):131-40.

30. Ministry of Health [New Zealand]. District health boards. Secondary District health boards 2018/06/08/10:22:03 2018. https://www.health.govt.nz/new-zealand-health-system/key-health-sector-organisations-and-people/district-health-boards.

31. Government of New Zealand. Census 2013: Profile and summary reports. Secondary Census 2013: Profile and summary reports 2015 Jul 21 2013. http://archive.stats.govt.nz/Census/2013-census/profile-and-summary-reports.aspx.

32. Ministry of Health and Long-Term Care. Protecting access to public health care: Ontario Health Insurance Plan: Ministry programs: Public information: MOHLTC. Secondary Protecting access to public health care: Ontario Health Insurance Plan: Ministry programs: Public information: MOHLTC 2016 Jul 02 2016. http://www.health.gov.on.ca/en/public/programs/ohip/cfma.aspx.

33. The Treasury. Estimates of Appropriations. Vote Health: Health Sector Estimates 2018/2019. Wellington, New Zealand: Government of New Zealand,, 2018.

34. Quin P. New Zealand Health System Reforms. Wellington, New Zealand: New Zealand Parliamentary Library, 2009.

35. New Zealand Government. New Zealand Public Health and Disability Act 2000. In: Government NZ, ed. No 91. Welllington: Parliamentary Counsel Office, 2016.

36. Gauld R. One country, four systems: Comparing changing health policies in New Zealand. International Political Science Review. 2003;24(2):199-218.

37. Ministry of Health [New Zealand]. NZ Health Sytem: My DHB. Secondary NZ Health Sytem: My DHB 2018 Aug 18 2018. https://www.health.govt.nz/new-zealand-health-system/my-dhb.

38. Gauld R. Improving New Zealand's health system performance. Measuring and Tackling Health Inequalities across Europe. 2009;15(3):32.

39. Ministry of Health [New Zealand]. Location boundaries (map). Secondary Location boundaries (map) 2017 Sep 26 2017. https://www.health.govt.nz/new-zealand-health-system/key-health-sector-organisations-and-people/district-health-boards/location-boundaries-map.

40. Government of New Zealand State Services Commission. What is a Crown Entity? Secondary What is a Crown Entity? 2014 Jul 14 2014. http://www.ssc.govt.nz/cegmos3.

41. Ministry of Health [New Zealand]. Nationwide Service Framework Library: Crown Funding Agreement. . Secondary Nationwide Service Framework Library: Crown Funding Agreement. 2018 Jun 10 2018. https://nsfl.health.govt.nz/accountability/crown-funding-agreement.

42. Ministry of Health [New Zealand]. Nationwide Service Framework Library. Service Coverage Schedule. Secondary Nationwide Service Framework Library. Service Coverage Schedule. 2018 May 10 2018. https://nsfl.health.govt.nz/accountability/service-coverage-schedule.

43. New Zealand Ministry of Health. Operational Policy Framework 2018/19. Wellington, New Zealand: Ministry of Health, 2018.

44. New Zealand Ministry of Health. The New Zealand Health And Disability System: Handbook of organisations and responsibilites. Wellington, New Zealand: Ministry of Health, 2017.

45. New Zealand Ministry of Health. Population-Based Funding Formula Review: 2015 Technical Report. Wellington, New Zealand: Ministry of Health, 2016.

46. Mays N, Cumming J, Tenbensel T. *Health Reforms 2001 Research: Overview report*. Wellington, New Zealand: Victoria University of Wellington Health Services Research Centre, 2007.

47. Controller and Auditor General. HealthSector: Results of the 2016/17 Audits. Wellington, New Zealand: Office of the Auditor General, 2018.

48. World Population Review. Mexico population. Secondary Mexico population 2018 Jun 16 2018. http://worldpopulationreview.com/countries/mexico-population/.

49. OECD. How Does Health Spending in Mexico Compare? Paris, France: OECD, 2015.

50. Castro R. Health care delivery system: Mexico. In: Cockerham W, Dingwall R, Quah S, eds. The Wiley Blackwell Encyclopedia of Health, Illness, Behavior, and Society. Not recorded: Wiley Online Library, 2014:795-802.

51. OECD. *OECD Reviews of Health Systems: Mexico 2016*. Paris, France: OECD Publishing, 2016.

52. Martínez Fritscher A, Rodríguez Zamora C. An Evaluation of the 1997 Fiscal Decentralization Reform in Mexico: The Case of the Health Sector. Mexico City: Banco de Mexico, 2011.

53. Arredondo A, Parada I, Orozco E, et al. Impact of decentralization on health financing in Mexico [Efectos de la descentralización en el financiamiento de la salud en México]. Rev Saude Publica. 2004;38(1):121-9.

54. World Population Review. Spain population 2018 (demographics, maps, graphs). Secondary Spain population 2018 (demographics, maps, graphs) 2018 Jan 01 2018.

55. Costa-Font J, Greer S, editors. *Federalism and Decentralization in European Health and Social Care*. Basingstoke, England: Palgrave Macmillan, 2013.

56. Jimenez-Rubio D, Garcia-Gomez P. Decentralization of health care systems and health outcomes: Evidence from a natural experiment. Soc Sci Med. 2017;188 IID - 99:69-81.

57. Anton JI, Munoz de Bustillo R, Fernandez Macias E, et al. Effects of health care decentralization in Spain from a citizens' perspective. HEPAC. 2014;15 IID - 15(4):411-31.

58. Lopez-Casasnovas G, Costa-Font J, Planas I. Diversity and regional inequalities in the Spanish 'system of health care services'. Health Econ. 2005;14(Suppl 1):S221-35.

59. Costa-Font J. Inequalities in self-reported health within Spanish Regional Health Services: Devolution re-examined? Int J Health Plann Manage. 2005;20(1):41-52.

60. García-Armesto S, Abadía-Taira M, Durán A, et al. Spain: Health system review. Health Syst Transit. 2010.

61. Bernal-Delgado E, García-Armesto S, Oliva J, et al. Spain: Health system review. Health Syst Transit. 2018;20.

62. Wagstaff A, Van Doorslaer E. Equity in health care finance and delivery. Handbook of health economics. 2000;1:1803-62.