

A Research Framework To Design Sustainable Patients' Mobility Policies In Sicily

By

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The movements of patients seeking public healthcare treatments out of their territorial jurisdiction is currently a policy makers' concern, both at international and national level, due to the socio-economic implications of this phenomenon. This paper presents the research framework of a project being carried out on the patients' mobility flows from Sicily towards other Italian regions. Such study, undertaken with the collaboration of the Sicilian Regional Healthcare Department, aims to build a System Dynamics model to support the design and implementation of sustainable patients' mobility-related policies. Main features of the research are presented and discussed, together with the first outcomes of the preliminary cause-and-effect model.

1. Introduction

Nowadays a growing attention is paid to the flows of people travelling for medical reasons. The phenomenon is often called medical tourism⁴ (Carrera & Bridges, 2006; Snyder et al., 2011; Ormond, 2011), a general expression indicating organized travel outside one's natural healthcare jurisdiction for the enhancement or restoration of the individual's health through medical intervention. According to Henderson (2004), the healthcare tourism can be further distinguished in subcategories: illness (check-up, screening, surgery, transplant), wellness (thermal cure, massages, etc...), and reproduction (fertility treatments).

In the European context, the movements of patients outside their residential area has been addressed in terms of cross-borders mobility for health care (Carrera & Lunt, 2010; Andritsos & Tang, 2013; Legido-Quigley et al. 2007), focusing on the patients entitled to access health care services by the affiliation to public health systems or private health insurers in privately funded system (Glinos et al. 2010).

According to recent estimations (Van Ginneken and Busse 2011) European patients mobility between countries counted for about 1% of overall public expenditure on health care. Although this phenomenon is still of relatively modest scale, the recent adoption of the "Cross-border EU directive" (2011/24/EU), currently under legislative transposition and implementation by the Member States, raises at a country level a series of issues on how to plan and delivery sustainable care.

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⁴ Not to be confused with the congress tourism of the physicians.

Despite the growing interest to cross-border patients flows within the EU, patients mobility taking place within the same country, e.g. from one region or federal state to another, did not received the same attention. In Italy, international mobility towards other countries did not assume relevant proportions (Zecchetti, 2012). Only on December the national Parliament elaborated a first schema of transposition decree for the Cross-border EU directive, which is currently been subjected to amendments and negotiations with the Regional Administrations. Nevertheless this debate intertwines the National and Regional Governments' concerns about the constants flows of patients mobility within the national borders.

In an public funded and regionalized Healthcare System like the Italian one (*Sistema Sanitario Nazionale*, or SSN) every Region, first administrative level of the State, has the responsibility of the health care provision and organizes autonomously its Regional Healthcare System (also called RHS in the present paper). In order to assure uniform standards of healthcare treatment throughout the Italian territory, the SSN guarantees everyone the possibility to use the public health services provided by other health authority, not necessarily located in the residential Region's territory.

On the one hand, such a mutual system, allowing freedom of choice to the patients, represents a strength of the SSN; on the other hand, at a Regional Government level such decision is not free of consequences, for both the local economy and the citizens.

First of all, the phenomenon is diffuse and financially relevant: about the 7% of the total amount of hospitalizations take place out of the residential Regions, for a financial value of 3 billion of euro on an annual basis (Petrelli et al. 2012). According to the Italian Healthcare System, in case a citizen decides to exercise the right to move to another Region, the destination Region is financially compensated by the residential one for the medical treatments provided to non-resident citizens. The annual amount of money transferred to other Regions can reach a considerable value, which can range in some cases from Eur 200 Million up to Eur 350 Million. Such figures, in particular in recession times, raise a high pressure on public decision makers as these resources represent a loss of economic growth opportunities they could fuel inside the Region (Bivona, 2013) and are a crucial factor for the sustainability of the Regional Healthcare Systems.

Furthermore, the patients mobility catches the public attention when it is symptom of a real or perceived inadequacy of the local health care offer (Costa & Cislighi, 2012). It is worth to note that one part of the mobility is "physiological": these are the cases of patients occasionally living closer geographically to establishments in another Region, or temporarily studying or working there, or needing specialist treatment only available in certain hospitals (Zecchetti, 2012). For this reason the RHSs focus their efforts on the "avoidable" component of the mobility, motivated by quantitative-qualitative lacks of the local offers, such as long waiting lists and low perceived quality of the Healthcare Systems (Petrelli et al. 2012).

In addition, the decision of mobility leads to additional social costs citizens have to sustain to get the desired health care treatments in another region. Such social costs, often not refundable, mainly refer to travel and accommodation costs for both the patients and the accompanying person/s, and the related loss of working days associated to the period of the medical treatment (Bivona, 2013).

So far the Italian investigations on the inter-regional patients' mobility have been mainly conducted with traditional approaches: descriptive statistical analyses (Cipolla, & Foglietta, 2005; De Pascale et. al 2012; Falavigna et. al 2011; Petrarca et al. 2011) or econometric studies on the regional data flows (Fabbri & Robone, 2009; Levaggi, R., & Zanola, R. 2001). Although the National Agency for Regional Health Care Services (AGENAS, 2012) has recently released a special issue containing the distinct contributions of both epidemiologists and healthcare economists on the patients' mobility, relatively scarce attention was devoted to the design of management tools to alleviate/prevent the phenomenon. This work aims to contribute to fill this gap in the literature, suggesting a research framework to address the patients' mobility issues in Sicily and to support the design of sustainable regional healthcare policies.

Main research questions are the following:

1) How the Sicilian Regional Health Authorities are currently facing the patients' mobility issues? What are the main policy measures undertaken in the past to face the phenomenon? Did they work?

2) How can the System Dynamic approach can help the regional healthcare management in the design of effective and sustainable patients' mobility policies to contrast passive mobility and enhance active mobility?

In order to try to answer to the above research questions, an inter-institutional perspective is suggested to design a System Dynamics model to support the regional healthcare authorities in outlining patients' mobility policies. To this aim a one-year research project is being conducted in collaboration with the Sicilian Healthcare Administration.

The adoption of the SD approach was privileged because considered a valid tool to capture the multidimensional facets of the phenomenon. The decision was encouraged by looking at the previous literature on the application of SD to health care issues, in particular for analyzing the long term effectiveness of health care policy making, thus it was evaluated its usefulness also in the Sicilian case. General discussions on the application opportunities and the possible role of SD in analyzing the health care systems can be retrieved in Taylor & Lane (1998), Dangerfield (1999) and Homer & Hirsh (2006). Other authors underlined the usefulness of SD modeling for health care policy design (Royston et. al. 1999, Taylor and Dangerfield, 2005). Taking into consideration the perspective of National Health Care Services, some scholars focused on the long term effectiveness of the policies to manage the waiting lists (Van Ackere & Smith, 1999; Gonzales Busto, & Garcia, 1999), others addressed acute patients flows in UK (Lane & Husemann 2008) and the impact of intermediate care as structural initiatives for relieving pressure on the NHS (Wolstenholme, 1999). So far it was not retrieved any System Dynamics contribution directly investigating the flows of people travelling for medical reasons, neither the cross-border nor the in-border mobility, thus this research also aims to contribute to fill this gap in SD literature.

The paper is organized as follows. After the brief analysis of the patients mobility provided in this introduction, it will be given a hint of the institutional framework in which the Sicilian patients' mobility phenomenon is embedded and the relevance of the Sicilian patients' flows towards other Italian Regions, taking into account the triennial 2010-2012. Afterwards the ongoing

research framework and the research's state of progress will be described. Finally, first qualitative SD modeling outputs are presented.

2. The institutional framework

The National Healthcare Service (*Servizio Sanitario Nazionale*, SSN), was instituted with the national Law 833/1978 and it is accountable for prevention and healthcare education, diagnosis, care and rehabilitation. As remarked in the article 32 of the Italian Constitution, the SSN is based on the principle that all persons have the right to receive the required health care treatments in spite of their social or economic position.

The SSN is regionalized, meaning that Regions are in charge for the health care provision, making sure that inhabitants receive the care treatments needed in their residential territory. The regional autonomy in the health services organization finds two limitations: (1) a budget constraint, represented by the financial resources transferred by the State for the annual health care; (2) a positive limit, consisting on the so-called “minimum levels of healthcare assistance” (*Livelli essenziali di assistenza*, LEA), a list of standard services (health packages) to be provided uniformly to the population in Italy.

The cost associated with the LEA is fully covered by the State, except for small contribution fees, called “tickets”, which vary in pace with the treatment provided and the users' annual income.

Every Regional Healthcare Administration, according to the annual budget mentioned above, allocates the resources among the different Local Health Authorities (more than 150 in Italy), who are responsible for the coordination of the health care services in their jurisdiction area, provided by public and private operators, these ones must be authorized under specific requirements that have applied for become eligible for SSN reimbursements and can be contractualized if LHA evaluate their HC services are needed. In this case private operators are subsidiary. On the contrary, when they only authorized, they figure as competitors of the public level (see figure 1).

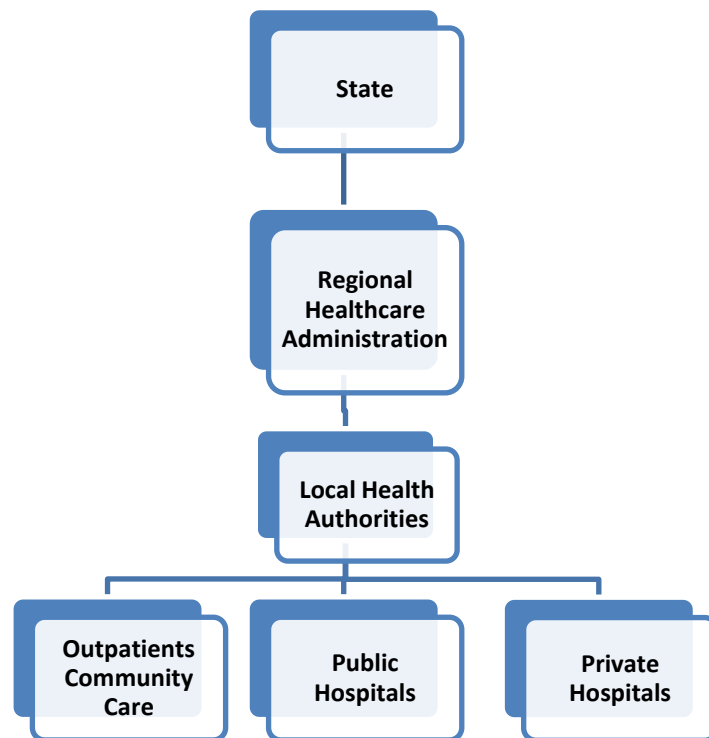


Figure 1. The main actors of the SSN

In the Sicilian Healthcare System there are nine LHAs, each of them matching the territory of a Sicilian province. The healthcare provider are:

- the outpatient community care: these providers are responsible for prevention, basic and specialist outpatients health services. They are both public (under the LHAs' jurisdiction), and private providers;
- the hospitals: both public (independent from LHAs or under the LHAs' jurisdiction) and private accredited hospitals.

3. The relevance of the Sicilian patients' mobility flows

Together with other two Southern Italian Regions (Campania and Calabria), Sicily is one of the major patients "exporters" all over the Italian State: regarding the frequency of out-of-region hospitalizations (passive mobility), it is placed at the third from last position. On the contrary, the most attractive Regions are Lombardy, Emilia Romagna and Tuscany, located in the North of Italy.

Considering the time period 2010-2013, the Sicilian Healthcare System has registered a sensible disequilibrium between the patients' passive and active mobility (not-Sicilian residents seeking care in Sicily). As it is possible to notice in figure 2, the hospitalizations of Sicilian residents out of region were about 40.000 on an annual basis, accounting for 190 million of euro and representing the 8-9% of the total Sicilian expenditures for hospitalizations. In the same time horizon, the active mobility didn't show significant figures: the attraction index (proportion of not

Sicilian residents being treated in Sicily over the total hospitalizations provided in Sicily) was the 1,7-1,8%, despite to a the fugue index (proportion of Sicilian patients treated out-of-region on the total hospitalizations for Sicilian residents) that ranged from 6,4 and 6,8%.

	2010	2011	2012
(A) Passive mobility (number of out-hospitalizations)	43.724	42.147	38.809
(B) Hospitalizations of Sicilian Residents (IN&OUT)	650.070	621.158	606.846
(C) Fugue Index (A)/(B) %	6,726%	6,785%	6,395%
(D) Financial Value of Passive Mobility (.000 euro)	193.438	190.511	182.594
(E) Financial value of Sicilian Residents' hospitalizations (.000 euro)	2.159.646	2.162.824	2.174.576
Financial value of Passive Mobility over the total financial value (D)/(E) %	8,957%	8,808%	8,397%
Active mobility (number of not Sicilian residents hospitalizations)	10.372	10.126	10.318
Active mobility financial value (.000 euro)	36.090	37.197	39.664
Attraction Index (Active mobility hospitalizations/total hospitalizations in Sicily) %	1,673%	1,711%	1,773%

Figure 2. Data about hospitalizations in and out of Sicily. (Source: elaboration from data provided by the Sicilian Healthcare Administration)

Although the unbalance between the active and passive mobility and the substantial stability of the active one, it is possible to see that the hospitalizations out-of-region are slightly decreasing, both in frequency and financial value, following the trend of the number of hospitalizations.

Indeed, in the 2009-2012 timeframe the Sicilian Department of Health identified some policies to contrast the passive mobility phenomenon that could impact also to the enhancement of the active mobility. These initiatives regarded both the public and the private accredited hospitals. In particular, such policies were:

1) in the public hospitals context, with the legislation of the Regional Law 5/2009 (norms for the reorganization of the Regional Health Service), it was pursued the rationalization of the whole hospital network according to an hub and spoke logic, the overall bed capacity was aligned to national standards (in particular, as far as the distribution of acute, post-acute and rehabilitation beds is concerned), and it was established the enhancement of the territorial outpatient structures.

2) in the private health care sector specific measures were also introduced to face passive patients mobility flows. In particular, in 2010, a list of the main DRG treatments taken from Sicilian residents in other Italian Regions was released and an extra budget to private hospitals was assigned (decree n. 957 dated 2010 April 2nd). Such a policy envisaged the possibility for private hospitals to get from the Regional Healthcare Administration additional financial resources, ranging from a minimum of the 50% up to the 70% of the regular DRG cost, in case the treatments provided in 2010 complied with the following two rules. First, the treatments must be included in the pre-assigned DRG list. Second, to get the 70% of the DRG cost, the annual passive patients mobility flow must record at regional level a 20% reduction.

In June 2012, the Sicilian Department of Health reiterated a similar policy (decree n. 1060 dated 2012 June 4th). The measure assigned a maximum budget for each Sicilian Province (which accounted in total for Eur 15 Million) and set the refund up to the 70% of the DRG treatment cost. Such an amount is recognised only for those private hospitals able to provide in 2012 a number of pre-identified DRGs treatments higher than the average number of DRGs delivered in the previous three years (2009-2011).

In July 2013, the same policy with minor changes has been introduced (decree n. 1384 dated 2013 July 22nd). The measure assigned a maximum budget of Eur 9 Million and set the refund up to the 70% of the DRG treatment cost only for those private hospitals able to deliver in 2013 a number of pre-identified DRGs treatments higher than the average number of DRGs supplied in the previous four years (2009-2012).

Furthermore, in the triennial period under consideration, the Sicilian Department of Health signed agreements of collaborations with some Italian private providers, characterized by national excellent reputation. The nature of the arrangements was the creation of highly specialized spin-off of those operators within Sicilian hospitals. This way the passive mobility was supposed to be discouraged and processes of know-how transfers were assumed to take place in the following areas: Pediatric Surgery (agreement with the Pediatric Hospital “Bambin Gesù”, located in Rome, dated 2010 May); General Orthopedics, Orthopedic Surgery, Physical Medicine and Rehabilitation, Intensive Care (agreement with the Orthopedic Institute Rizzoli, located in Bologna, dated 2011 October); Neurologic Rehabilitation (agreement with Fondazione Maugeri, sited in Pavia, Lombardy, dated 2011 October).

4. Research framework

In this heading it is presented the framework leading the one-year research activity being carried out with the collaboration of the Sicilian Healthcare Administration. The expected output of such analysis will be the design of a System Dynamics model to support the Regional Healthcare Administration in outlining patients’ mobility policies. Assuming an inter-institutional perspective (Bianchi, 2010), in-depth interviews are being conducted both to the Regional the Local Healthcare Authorities’ (LHA) management and the hospital management. Such perspective of analysis considers that the Regional Healthcare Administration plays the role of decision maker and coordinator in a system whose performance is affected by the roles and interrelations of different institutions, both public and private. The research framework (please see figure 3) was built according to the rationale described below.

First of all, it was taken into consideration each phase of the health care provision according to the institutional framework previously described, reported in logical and chronological order in the first column from the left.

As a starting point of such sequence it was located the “Use of Regional Mobility Flows’ Measurement System”, as the Sicilian Healthcare Administration is endowed with a mature regional informative system, also fueled at a national level, able to track the clinical records starting from the Hospital Discharge Registers (*Scheda di dimissione ospedaliera, SDO*). The other phases are: the

regional healthcare policy design, the implementation of the regional policies at a LHA's level, the health care supply and the patients' perception on health care supply.

Based on these figures, it was possible to plan five main research steps, shown in the second column. Then specific sources of data or information were identified: the access to the regional database as far as the first research step is concerned, and in-depth interviews with reference key-actors of the Sicilian Healthcare System at the regional and local level for the other steps. The expected deliverables of every stage of research are described in the forth column.

The first two steps of the research were already completed. In particular, based on the findings from step (1), it was possible to focus the surgical orthopedic branch's DRGs to deepen the analysis on, this decision being shared with regional managers interviewed. Their perspective was taken in account to investigate the main factors impacting on the mobility flows for the selected DRGs. At the end of this step, a qualitative model was sketched. Before presenting it, a more complete description of the mentioned DRGs' analysis is provided in the next heading.

RESEARCH FRAMEWORK			
PHASE OF THE PROCESS OF HEALTH CARE PROVISION	RESEARCH STEPS	SOURCE OF DATA/ INFORMATION	RESEARCH DELIVERABLES
1) Use of Regional Mobility Flows' Measurement System	1) Quantitative Identification of the phenomenon	Regional Database	<ul style="list-style-type: none"> - Detection of the aggregate active and passive mobility flows for hospital admissions. - Detection of the Sicilian Hospital care supply and demand. - Analysis of the passive mobility according to the DRG provided out-of-region. - Decision to focus on the first 20 more frequent DRGs treated out-of-region - Grouping of the DRGs treated out-of-region by using a bi-dimensional matrixes: frequency/ complexity.
2) Regional Healthcare Policy Design	2) Analysis of the policy levers activated to contrast the phenomenon at the regional level	<p>Hospital Planning Manager</p> <p>General Manager Strategic Planning Department</p>	<ul style="list-style-type: none"> - Critical analysis of DRGs' matrix created in the previous phase. - Focalization on specific DRGs. - Investigation of the main factors impacting on the mobility flows for the selected DRGs, according to the Regional level's perspective. - Investigation of the ongoing policy measures activated, and recognition of the models assessing the socio-economic and financial impacts of the strategies adopted.
3) Implementation of the regional policies at a LHA's level	3) Analysis of the implementation features of the regional policies at a LHA's level	<p>General Director of Local Health Authority</p> <p>Medical Director of Local Health Authority</p>	<ul style="list-style-type: none"> - Investigation of the main factors impacting on the mobility flows for the selected DRGs, according to the LHA level's perspective. - Investigation about the role of the LHA's management in the implementation of the regional health care policies in the jurisdiction's area - Selection of private and public providers to interview
4) Health care supply	4) Analysis of the effective quality of supply	<p>Manager of the Regional "Healthcare Activity and Epidemiological Observatory"</p> <p>Medical directors of selected private and public providers</p>	<ul style="list-style-type: none"> - Recognition of the model in use to assess quality of care (outcome of the care, waiting times, physician-patient relationship) - Analysis of the possible factors impacting on the quality of care (waiting times, inappropriateness of interventions, availability of beds, human resources, technological, organizational, etc...) and their effects on outcomes of care - Detection of elements of attractiveness/unattractiveness of the region (presence/lack of: information services, reservation systems and to accommodation systems for the patient and their family members)
5) Patients' perception on health care supplied	5) Analysis of the perceived quality of the supply	Panel of patients belonging to the same diagnosis related group	Questionnaire administered to a sample of patients belonging to the same diagnostic group , who received (or are about to receive) medical treatment in mobility.

Figure 3. Research framework

5. Patients' mobility analysis according to most frequent Diagnosis Related Groups

The first step of the research framework, aiming at the quantitative identification of the phenomenon, was carried out through successive approximations. To start with, for the period 2010-2012 the aggregate active and passive mobility flows for hospital admissions were detected, together with the Sicilian hospital care supply and demand. Those items allowed the determination of the “attraction” and “fugue” indexes already shown in this paper.

Afterwards the analysis of the passive mobility was carried on according to the typology of Diagnosis Related Groups. In particular, the decision was to focus on the first 20 more frequent DRGs treated out-of-region, as they alone represented more than the 25% of the total DRGs treated out Sicily, both in terms of frequency and financial value (see figure 4). In the same time frame, the surgical orthopedic DRGs showed a relevant weight (almost the 50% both in terms of frequency and financial value) within the selected list.

First 20 Drg treated out of Sicily	2010	2011	2012
Cumulated Frequency of the first 20 DRGs treated out of Sicily	11.922	10.520	10.846
% Cumulated Frequency of the first 20 DRGs over the total DRGs treated out of Sicily	27,27%	24,96%	27,95%
Financial value of the first 20 DRGs treated out of Sicily (euro)	52.339.745	51.861.896	47.641.254
% Financial value of the first 20 DRGs over the total financial value of DRG treated out Sicily	27,06%	27,22%	26,09%
Cumulated Orthopedic Surgery Drgs' frequency within the top 20	5.115	4.982	4.280
% Cumulated Orthopedic Surgery DRGs' frequency over the frequency of the first 20 Drg treated out of Sicily	42,90%	47,36%	39,46%
Financial value of the Orthopedic Surgery DRGs within the first 20 DRGs treated out of Sicily (euro)	25.238.434	25.381.016	23.295.460
% Orthopedic Surgery DRGs' financial value over the financial value of the first 20	48,22%	48,94%	48,90%

Figure 4. Cumulated frequency and financial value of the first 20 most frequent DRGs provided out of Sicily (Source: elaboration from data provided by the Sicilian Healthcare Administration).

The DRGs were then grouped and positioned in a bi-dimensional matrix according to frequency and complexity of the treatment (figure 5), taking as a proxy for the complexity the average DRG weight, conventionally defined as “high” or “low” when respectively higher or lower than 1.

For an immediate comprehension of the changes occurred over the time, the length of the arrow approximately represents the intensity of the variation registered from 2010 to 2012. There are 25 DRGs represented because the internal composition of the 20 items' ranking changes from one year to the others: every year two or three DRG exited from the top 20 ranking, substituted by new entries. Ten DRGs (the ones written in red capital letters) are the surgical orthopedic ones, characterized by variable frequencies and complexities all over the four quadrants. These figures, in addition to the financial weight of such diagnosis, groups call for further analyses.

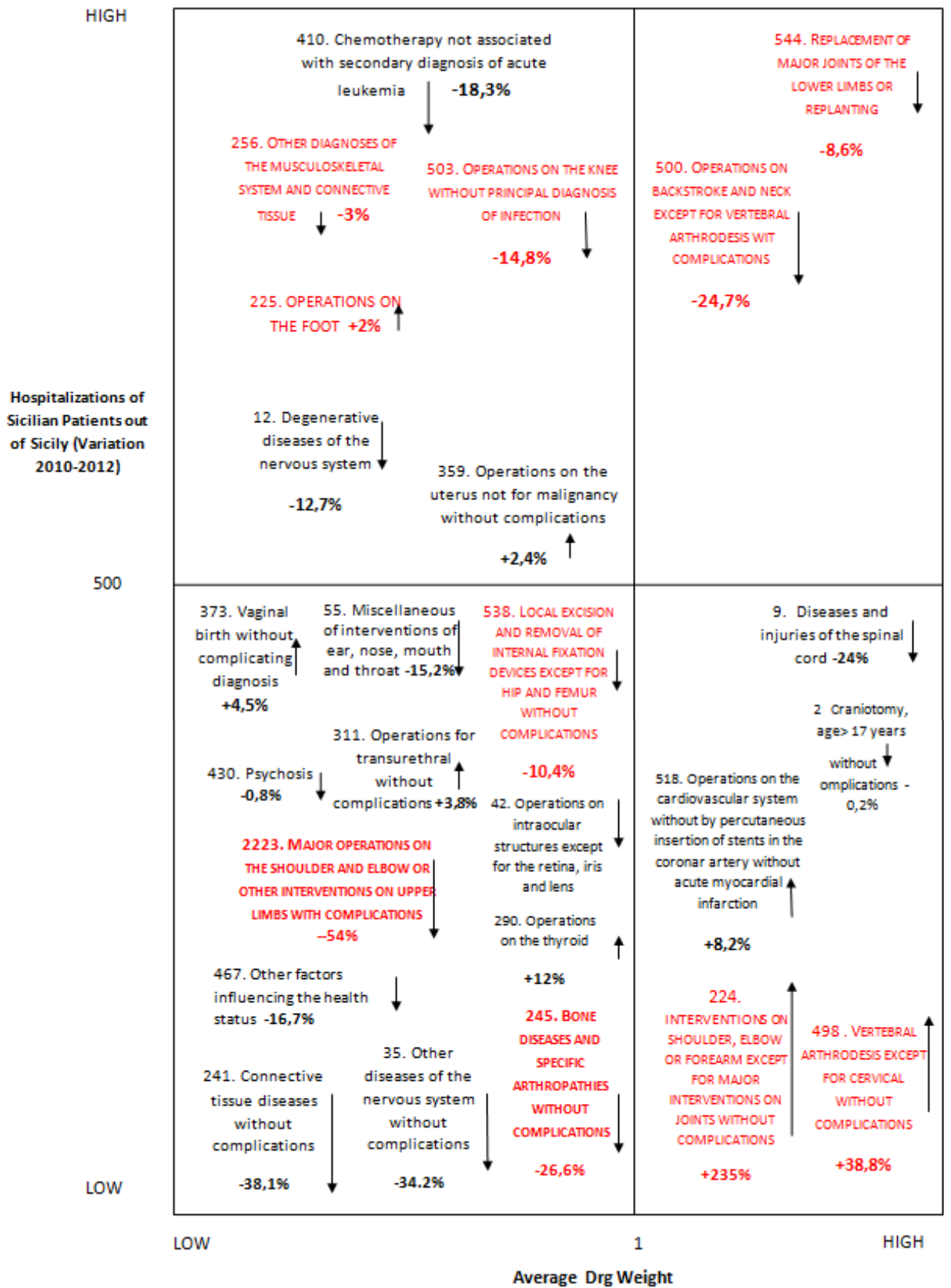


Figure 5. Variation 2010-2012 of the most frequent DRGs provided out of Sicily, grouped according to frequency and complexity.

In the triennial, eight over the ten orthopedic DRGs decreased in frequency, with rates of change ranging from -3% to -54%, for a 1,942 million of euro of positive financial variation. On the contrary, two orthopedic DRGs dramatically raised, causing a negative financial variation of 1,616 million of euro. The hospitalizations for the Drg 224⁵ increased from 119 in 2010 up to 398 in 2012, with a 235% rate of increase and a jump from the 96° to the 13° place in the ranking. The Drg 486⁶ in 2010 was at the 42° ranking with 250 hospitalizations out of the region and in 2012 got the 19° position, accounting 347 hospitalizations, with a 35,8% rate of increase.

6. First qualitative insight model

The research steps carried out up to now shed the light on the possible controversial effects of the policy measures undertaken at the regional level to contrast the patients' mobility phenomenon. Such findings confirm the need of evaluative and predictive tools to analyze the sustainability and effectiveness of the regional policy design and implementation processes.

The present research aims at the formulation of a System Dynamics able to fulfill such requirements according to an inter-institutional perspective linking the interrelationships between the healthcare actors involved in the Sicilian health care provision (see figure 6 for a modular representation of the model been building).

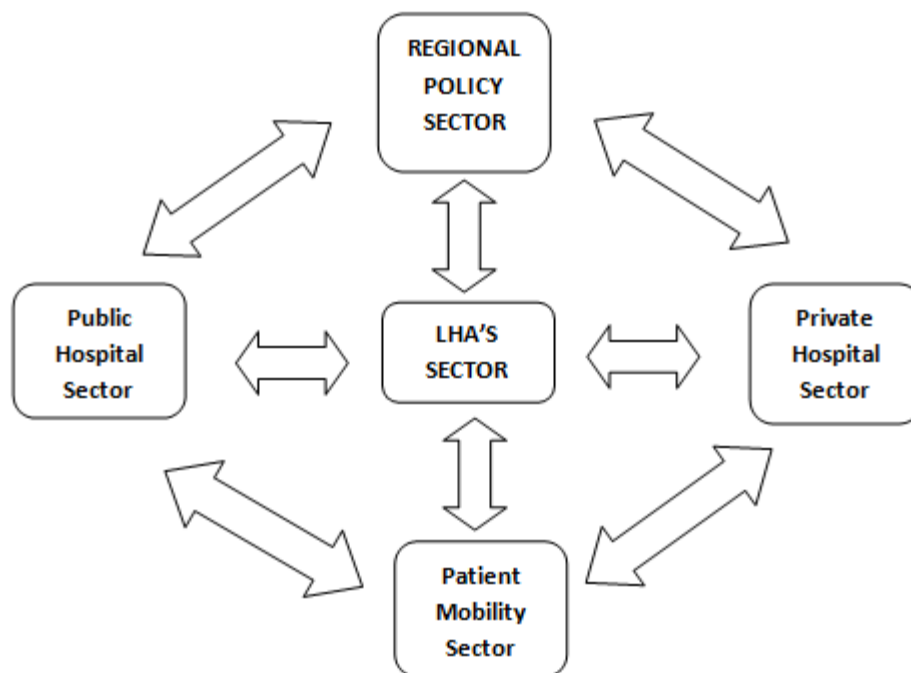


Figure 6. SD model's modular structure.

⁵ Interventions on shoulder, elbow or forearm except for major interventions on joints without complications, characterized by medium complexity, equal to 1,037 average DRG weight

⁶ Vertebral arthrodesis except for cervical without complications, characterized by high complexity, equal to 3,341 average DRG weight.

So far, considering the orthopedic surgery focus as emerged from the early stages of study, it was formulated a preliminary insight model based on the findings from the first round of interviews to the regional actors (figure 7).

In the CLD the variable Hospitalizations in Sicily is respectively fueled and drained by the Active and the Passive Mobility Flows. The Passive Mobility flow depends on the Perceived Quality of the Sicilian Healthcare System, which in turn was modeled as deriving from: the effective Quality of Care provided (here intending the care's outcomes), and a Sicilian patients' Word-of-mouth effect.

The latter depends upon two factors: the Perceived quality of the Regional Healthcare System and the number of Hospitalizations in region; the more are the people who receive a treatment, the more are supposed to be the people interactions enhancing the word-of-mouth.

The passive mobility flows has a depletive effect on the Financial Resources devoted to investments in the Sicilian Healthcare System, that is positively related to the investments in strategic resources (beds, equipment, booking services, etc...), impacting on the quality of care. The perceived quality of the Sicilian Healthcare System also affects the active mobility flow, which is positively linked with the financial resources to invest in the Sicilian Healthcare System. The quality of care also depends on the accumulated experience in relevant clinical records (Chowdhury et al. 2007; Hannan et al. 2009; Hopper et al. 2008; Halm et al. 2002, Luft et al. 1979), in its turn affected by the number of hospitalizations.

It is believed that the synergic dynamics of five reinforcing loops can play a role in the investigated patients mobility phenomenon.

Loop R1 depicts the self-reinforcing process of change in the perceived quality of the health care system due to the patients' word-of-mouth effect.

Loop R2, when working unfavorably, highlights how an increase of the passive patients' mobility flow, draining the hospitalizations in Sicily, is able to reduce the extent of the Sicilian patients' word-of-mouth, thereby worsening the perceived quality of the system and further stimulate the passive mobility flow.

Loop R3 shows that the increase in the number of hospitalizations is able to enhance the effective quality of the system (better care outcomes) through the rise of the accumulated experience in dealing with relevant clinical records, this way contributing to a better perceived quality and by this mean to lower propensity to move out of the residential region for seeking care.

Loop R4 represents how the financial dynamics related to the patients' mobility phenomenon can affect the quality of the system, as the inter-regional compensations credited to the mobility destination regions drain the resources available for the Sicilian Government to invest in new strategic healthcare assets, such as beds, equipment, know-how, etc...

Finally, loop R5 displays the positive effect of the active mobility enhancement on the quality of the health care through the fueling of new financial resources to be invested in strategic assets.

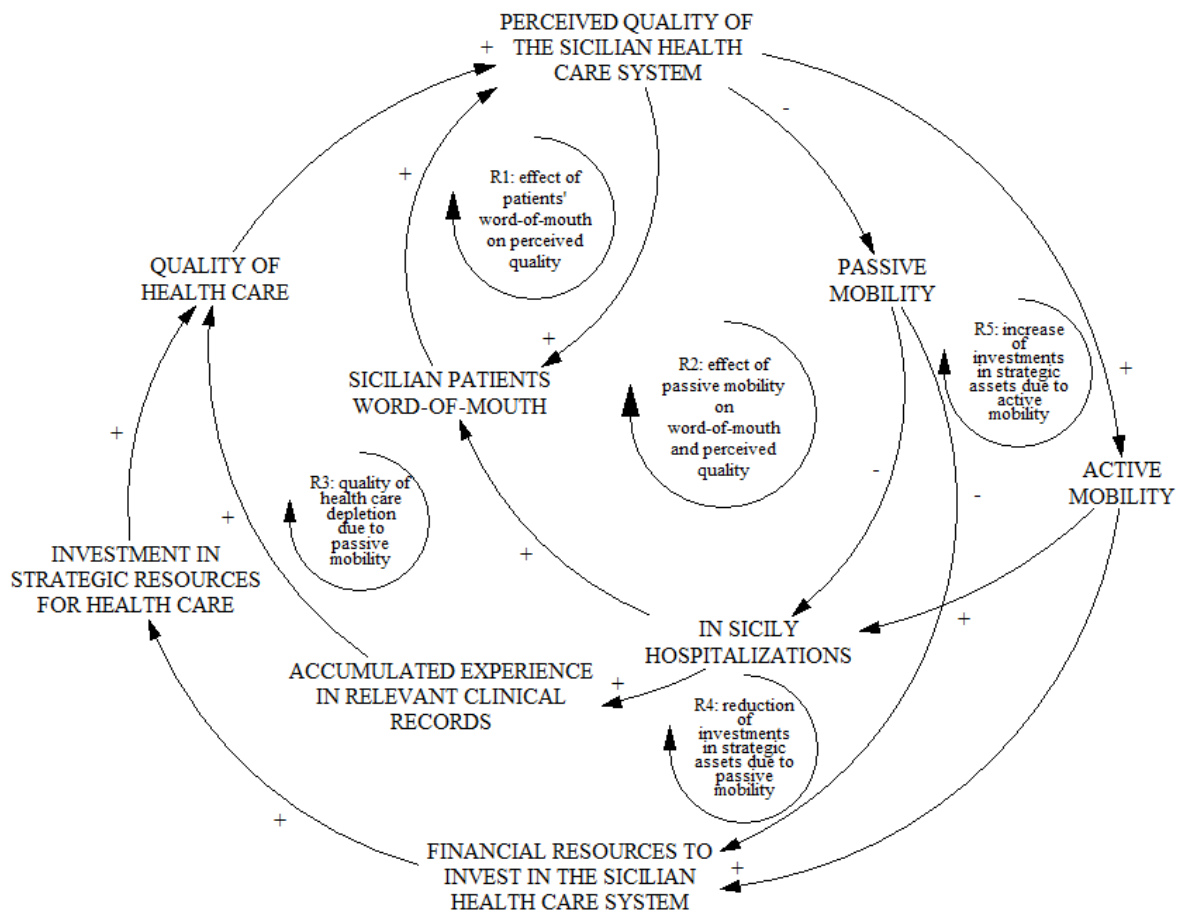


Figure 7. Preliminary insight model

7. Conclusions

This paper suggested a research framework to support the policy makers in the design of sustainable regional healthcare mobility-related policies. The expected outcome of the research is a System Dynamics model depicting the inter-institutional relationships among the core actors of the system. Such model can represent a valid evaluative and predictive tool to analyze the sustainability and effectiveness of the regional health care policies. Its usefulness is expected to be particularly appreciated by the strategic management, planning and control, and hospital planning management areas. Despite the model will be initially designed for addressing the Sicilian case, future adjustments and adaptations at the national and supranational level will be taken into consideration. However the model building is still at an early stage. The first turn of in-depth interviews with the regional key-interlocutors was completed and a very simplified qualitative model was sketched

taking into account a cluster of DRGs identified with the collaboration of the regional healthcare management. The next step will be the conduction of other in-depth interviews at the Local Health Authority and hospital providers' level, primarily to investigate which are the main factors impacting on the mobility flows for the selected DRGs, according to their perspective.

Furthermore, to reach a better understanding of the discrepancy between the effective quality and the perceived quality of care, patients' perspective will be considered through the delivery of a questionnaire to a sample of patients belonging to the orthopedic diagnostic groups, who have received (or are about to receive) medical treatment in mobility, investigating the push and pull factors determining their decision.

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