

Maintaining the Secondary Prevention against Breast Cancer for Women in Emilia-Romagna (IT) and External Social and Economic Shocks (2002-2016)

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Introduction

I presented studies on the effects on secondary prevention against breast cancer for women in the city of Bologna after the 2010 changes in the offering of breast cancer early detection services within the National Health Service at the AEA Annual Meetings in the last years.

The results showed that starting from these changes a significant part of the women in this city, who previously received mammogram for the early detection of breast cancer, gradually moved away from mammogram (at least received within the National Health Service) and, in particular, this happened for women who previously accessed mammogram via spontaneous access with the prescription of the general practitioner (Gatti, 2022).

One of the essential elements to achieve a high level of effectiveness of early detection of breast cancer lies in maintaining the recommended regular intervals for mammograms and other diagnostic investigations, and is therefore centered on the perseverance of women and their full participation in the interventions of early detection.

Now, in this paper I present on the basis of the same data provided to me (as a citizen in Generalized Civic Access) by the Regional Health Service (about 5,000,000 bilateral mammographic service records) and for the whole Emilia-Romagna region an analysis of the effects of social and economic shocks, external to the National or Regional Health Service or Local Health Authority, on the perseverance of women in Emilia-Romagna in maintaining the secondary prevention path against breast cancer. The time period of the study is that between 2002 and 2016.

Indicators of measurement of these effects on the secondary prevention against breast cancer for women linked to the most significant social and economic shocks in Italy and Emilia-Romagna in those years will be presented. The shocks that essentially undermine certainties and points of reference are considered.

Methods and Materials

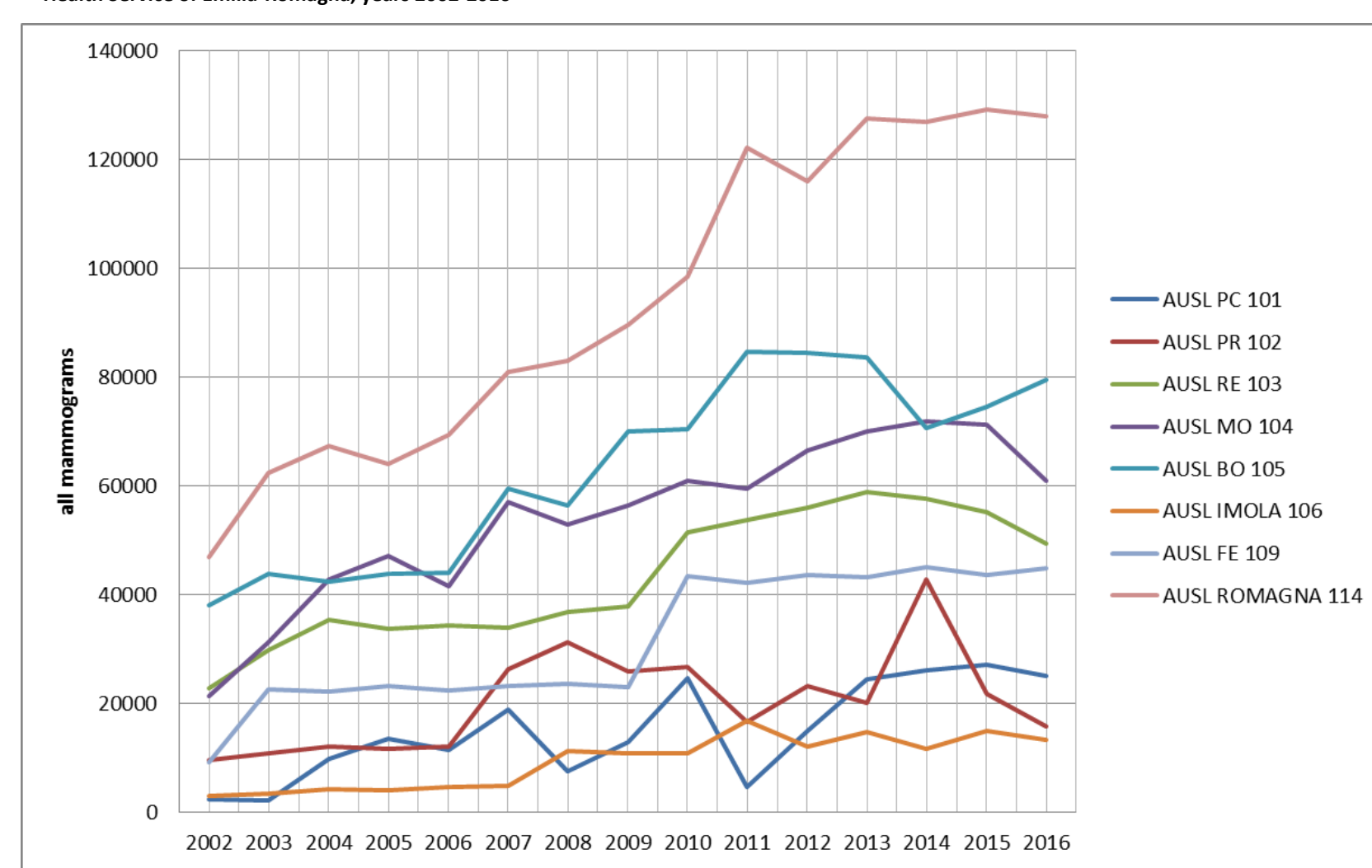
The work is made possible by the data accessed personally as generalized civic access:

From the ASA database (Assistenza Specialistica Ambulatoriale - Outpatient Specialized Assistance) the bilateral mammographic services related to women resident in Emilia Romagna who carried out the service in an Emilia Romagna facility under the Italian NHS regime were extracted.

In the received file (about 5,000,000 bilateral mammographic service records) the following fields are present: YEAR: identifies the year in which the service was performed; COD_AZI: identifies the Local Health Authority of territorial location of the supplying structure; COD_STR1: identifies the code of the supplying structure through STS11 coding; COD_STR: identifies the code of the supplying structure and the name at 2016 (not all the structures of the past years have a name, for example the structures closed, which is why the code was also given); USL_RES: identifies the Local Health Authorities (AUSL) of residence of the client; ID_PAZ: numerically identifies a patient; PRESTAZ: identifies the code and the name of the bilateral mammogram; DT_EROG: identifies the delivery date; ETA: identifies the age of the patient at the time the service is provided; Screen: s for services performed in screening, n for services performed in another way.

The ASA database has existed since 2002 and entered into force after 2005. The year 2016 was delivered not yet complete because there is no the last data sending.

Graph 1 - Total number of mammograms provided (in spontaneous access and in population screening) by the 8 AUSLs of the Regional Health Service of Emilia-Romagna, years 2002-2016



Source: my elaboration on data of the SSR Emilia Romagna

The Shocks

An early detection is a diagnosis made when the disease is still in its early stages. Identifying a disease early allows people to start treatment before the damage worsens. But the examinations necessary in early detection of breast cancer are scheduled by the woman, both in the presence of a population screening and with spontaneous access through the general practitioner, in the absence of symptoms and therefore require a deep awareness that one must take care of oneself with regular visits and clinical examinations (in the case of early detection of breast cancer the examinations consist of a mammogram to be carried out in a dedicated center - Breast Unit - annually or every two years, depending on the case).

In the previous works (Gatti, 2016; Gatti, 2017; Gatti, 2018; Gatti, 2020; Gatti 2022) we have seen what happens in the early detection strategy against breast cancer in women in the city of Bologna when important processes of reorganization of the early detection services within the Regional Health Service have occurred.

But how do women react in the protection of their health and specifically in the early detection of breast cancer in the presence of shocks not deriving from the reorganization of public health services dedicated to them, but in the presence of strong changes in external conditions?

The data are those used for the analysis of the effects of the reorganization of early detection services. They are data ranging from 2002 to 2016. Over this period of time, two external shocks to the National and Regional Health Service were highlighted which may have had a strong impact on the lives of women and which may have attenuated their attention for the early detection of breast cancer through annual or biennial mammography, as appropriate, in Emilia-Romagna.

The first external shock (of a financial nature) whose effect we are trying to investigate on the attention to early detection of breast cancer in women in Emilia-Romagna precedes the reorganizations whose effects we have studied in previous years. This is the explosion also in Italy of the financial crisis triggered by the subprime mortgage crisis that began in the United States in 2006. The symbol date in Italy is September 15, 2008 which corresponds to the start of the bankruptcy procedure of the investment bank Lehman Brothers.

A shock that, however, at least in the short term, did not affect the offer of early detection of breast cancer services in Emilia-Romagna and which hit the entire region fairly homogeneously.

The second external shock (of natural origin) of which we are trying to investigate the effect on the attention to the early detection of breast cancer in women in Emilia-Romagna is the earthquake in Emilia in May 2012 (between 20 and 29 May 2012) and therefore temporally at the beginning of the reorganization process of breast cancer early detection services in particular in Bologna. The area affected by the two seismic events was the northern portion of the Emilian Po Valley between the provinces of Reggio Emilia, Modena, Ferrara and Bologna (fig. C).

The 2012 earthquake in the affected areas of the Bologna AUSL led to the transfer of various outpatient and diagnostic activities, maintaining the offer (AUSL Bologna, 2012). For Modena "The impact of the earthquake also hit health facilities: 3 hospitals of the Modena Local Health Authority (Mirandola, Carpi and Finale Emilia) and part of the Modena University Hospital were evacuated, with an almost instantaneous subtraction of 700 beds, and the unavailability of spaces for many clinics in the northern area, in particular the closure of the structure of the former hospital of Guastalla [ndr. Province of Reggio Emilia]. This has had repercussions in the territorial services, pharmacies and general practitioners' surgeries, many of whom have had their studies uninhabitable and had to operate first in tented camps and then, even for not short periods, in containers. [...], the health system was activated immediately with a rapid and integrated collaboration, in particular of the two USL counties [Modena and Reggio Emilia], and its professionals worked at the forefront to guarantee the continuity of care immediately ..." (AUSL Modena, 2019).

The Effects 1

Using the data (2002-2016) from the Regional Health Service of Emilia-Romagna on the access to the mammographic services in the Local Health Authorities (AUSLs) of the region (data that I accessed as citizen as generalized civic access) can be verified in a simple way two types of changes: 1. To verify whether in correspondence with or following the two shocks described there has been a decrease in the mammograms requested and offered to women; 2. to verify, more specifically, if in the path of early detection of breast cancer of individual women (the data available allow it) in correspondence with or following the shocks taken into consideration there have been specific changes.

From the analysis of the trend of mammograms that women had access to in the 8 AUSL of Emilia-Romagna between 2002 and 2016 it emerges that in 2008 (explosion of the financial crisis in Italy) there was a significant decrease in mammograms received by women in the Piacenza AUSL (- 59.8% compared to the previous year) with a recovery in subsequent years (+ 69.6% from 2008 to 2009), in the Modena AUSL (-7.1% compared to the year before) with a recovery in subsequent years (+ 6.6% from 2008 to 2009) and in the AUSL of Bologna (- 5.3% compared to the previous year) with a recovery in subsequent years (+ 24.3% from 2008 to 2009). A particular case is that of the Parma AUSL which sees the peak of mammograms to which women had access in 2008 and which from there then sees a decline up to and including 2011 (graph. 1).

It must be remembered that since 2010, according to the new national scientific indications, in Emilia-Romagna the population mammography screening program, which was previously open to women aged 51 to 69 (with biennial mammography), has been extended to women between 45 and 50 years (with annual mammography) and between 70 and 74 (with biennial mammography).

The expansion of the number of women involved in population screening could partly cover possible dropouts due to the financial shock of 2008 and the subsequent economic crisis. Economic crisis that the PASSI survey (Carozzi, 2019; Istituto Superiore Sanità - Epicentro, 2021) highlighted in the years as a determinant of inconstancy or abandonment of the early detection of breast cancer in Italy and also in its Emilia-Romagna region. This difficulty of analysis can be overcome by the analysis of the individual path of women for the early detection of breast cancer, which is allowed by the type of data that you have.

The earthquake of May 2012, as we have seen, only touched the northern portion of the Emilian Po Valley between the provinces of Reggio Emilia, Modena, Ferrara and Bologna and therefore the analysis of the effects on women's attention to early detection of breast cancer is limited in this case only to the 4 AUSL of reference of these territories. For the AUSL of Reggio Emilia and for the AUSL of Modena, despite the unavailability of health facilities, no decline in the growth trend of mammograms received by women in 2012. This could confirm what the AUSL assured in terms of maintenance of the continuity of care, always taking into account the enlargement since 2010 of the number of women involved in population mammography screening throughout Emilia-Romagna. For the AUSL of Ferrara and Bologna there are no significant changes compared to the previous year.

In the years following 2012 in the Modena AUSL the growing trend of mammograms received by women continued until 2014 and then a decline as in other AUSL in the region. In the Reggio Emilia AUSL there was growth until 2013 and then the decline. For the Ferrara AUSL, the trend remains constant over time. For the AUSL of Bologna in the posters presented in the past years at the Meetings of the American Economic Association the heavy effects of the reorganization of the mammography offer and of the services available to women for the early detection of breast cancer have been studied. Effects that led women often outside, at least, of the National Health Service which should provide both spontaneous access with the prescription of the general practitioner, and population mammography screening. And the numbers of mammograms received by women in decline from 2011 to 2014, perhaps could be more the expression of the difficulties caused by the reorganization of the services of early detection of breast cancer in the AUSL of Bologna, than the effects of the shock of the earthquake of the May 2012 which did not have its epicenter in the Bologna area, also taking into account the declarations of the AUSL itself which guaranteed continuity of assistance even in the post-earthquake.

Tab. 1 - Partial snapshot of the early detection of breast cancer path of women who received a mammogram in the Modena AUSL in 2010 and repeated it in 2012 or 2013 or 2014 or 2015

The Effects 2

Among the two shocks taken into consideration, the one that probably most immediately undermined the balance of women's personal lives in a specific area is the 2012 Emilia earthquake in the Modena AUSL territory.

We will then consider this shock to apply a method of verifying its impact on the individual path of early detection of breast cancer of the women involved.

To evaluate the maintenance of the early detection of breast cancer with the data available as a citizen, a group of reference women was identified. We took into consideration the 60,891 women who in 2010 received a mammogram either in spontaneous access through the prescription of the general practitioner or within the population mammography screening program, however, always within the National Health Service in the AUSL of Modena. In order for there to be adherence to the path of early detection of breast cancer, not identifying individual women by age, we assume that this group of women must have a mammogram again at least within two years. Of the 60,891 women who received a mammogram in 2010, 36,853 (60.52%) had at least done it again in 2012, the year of the earthquake in May. 24,038 women from the initial group of 60,891 did not undergo any mammogram in 2012. Of these 24,038 women 14,095 (further 23.15% of the initial group) underwent mammogram in 2013, 2,339 did it in 2014 and 1,033 in 2015. 6,571 women remain (10.8% of the initial group) who did not undergo mammogram again as of 2015.

By checking the mammograms carried out before 2010 within this group of 60,891 women, it can be seen that the higher frequency of mammograms is linked to the repetition of mammogram at least in 2012, progressively more thinned in the 2002-2009 interval are the mammograms of women who after 2010 received the new mammogram more and more forward in time (table 1).

From these data it would seem that, despite the overall data on mammograms performed, the 2012 earthquake did not have a null impact on the early detection of breast cancer in women at the Modena AUSL. It would seem that there has been at least partly a shift in mammogram to 2013, in paths that are generally irregular with respect to the recommendations.

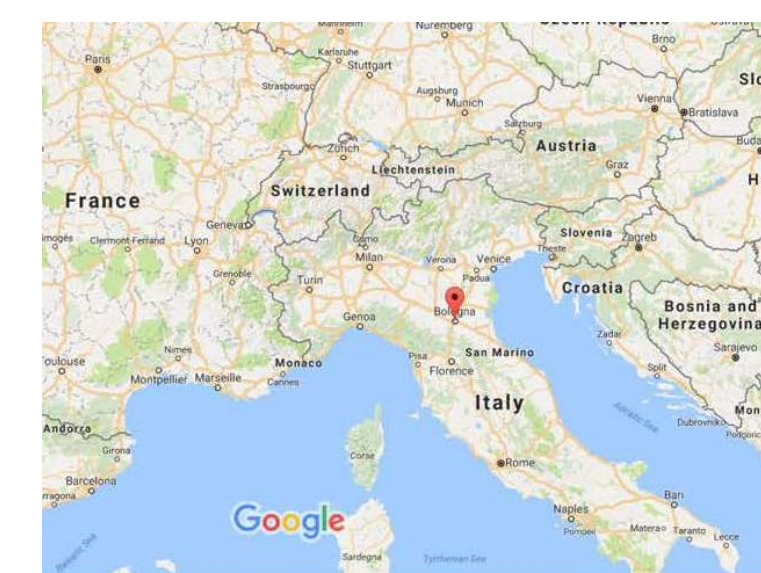


Figure A. The City of Bologna



Figure B. The collapse of Lehman Brothers on September 15, 2008

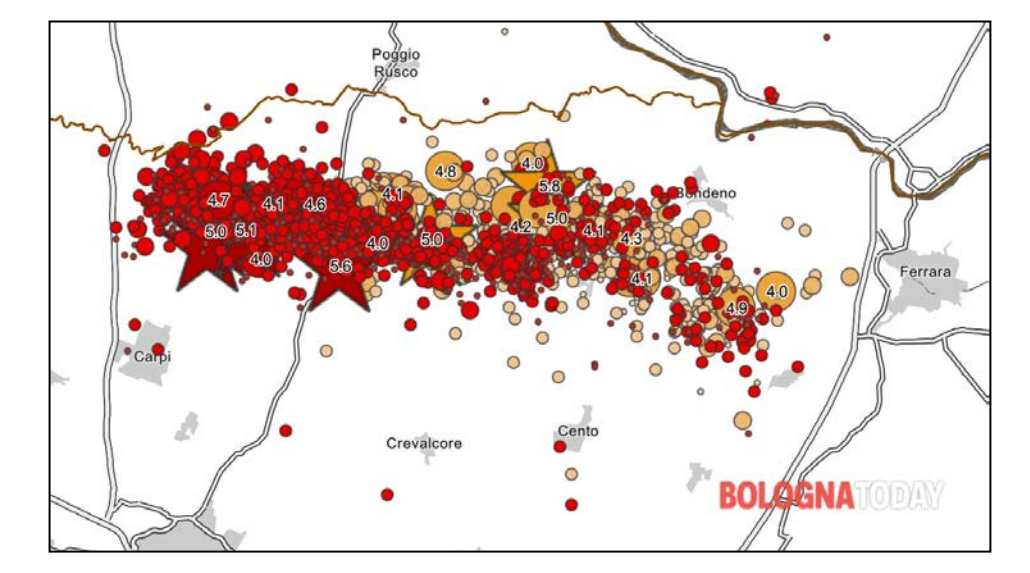


Figure C. Map of the seismic sequence from May 19 to July 19, 2012

Conclusions

External shocks and reorganization of breast cancer early detection services within the Regional Health Service of Emilia-Romagna, if analyzed in relation to the early detection path of each individual woman, seem to undermine this path of women for the protection of their own health. It is possible that these effects are more relevant in this context of secondary prevention, without obvious symptoms of disease and where the maintenance of the frequency of checks determines the future health outcome. The tools to protect this path of early detection lie in the tenacity of women, in the attention of the doctors and in the correct functioning of the National and Regional Health Service with respect to the principles that identify them.

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