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SPATIAL PATTERNS OF COHORT FERTILITY IN ALBANIA (2001)

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ABSTRACT

Albania was a country with limited information about its demographic characteristics and behavior not only in national level but in regional level too, until the collapse of the communist regime in the 1990s. Albania's demographic behaviour has attracted considerable attention as, in one hand, it has not completed its demographic transition yet and on the other, notes the highest fertility level in Europe. This paper addresses the subject of cohort fertility in Albania with a spatial approach by focusing on the regional differentiation in cohort fertility patterns and changes. The data for this analysis are stemming from the latest available census (2001) and the spatial level of reference is the 374 communes according the administrative structure of 2001. The analysis revealed distinct patterns and changes in cohort fertility, as well as, the central role of internal and external migration to changing the spatial profile of cohort fertility in Albania.

Keywords: Albania; Spatial patterns; Cohort fertility; Census data

RESUME

L'Albanie était un pays disposant d'informations limitées sur ses caractéristiques démographiques et le comportement démographique, non seulement au niveau national mais aussi au niveau régional, jusqu'à l'effondrement du régime communiste dans les années '90. Le comportement démographique de l'Albanie a attiré une attention considérable car, d'un côté, le pays n'a pas encore accompli sa transition démographique et de l'autre, présente le niveau le plus élevé de fécondité en Europe. Cet article traite de la fécondité des générations en Albanie avec une approche spatiale en se concentrant sur la différenciation régionale que la fécondité longitudinale a modélisée et changée. Les données utilisées dans cette analyse proviennent du dernier recensement disponible (2001) tandis que le niveau spatial de la référence sont les 374 communes selon le découpage administratif de 2001. L'analyse a indiqué les modèles et les changements distincts de la fécondité des générations, aussi bien que, le rôle central de la migration interne et externe qui modifie le profil spatial de la fécondité longitudinale en Albanie.

Mots clés : Albanie, Modèles spatiales, Fécondité des cohortes, Données du recensement

INTRODUCTION

Albania was a "closed" rural society for a period of almost 50 years noting the highest level of fertility in Europe as it enters the last phase of its demographic transition (Kohler- Billari- Ortega: 2002). Political unrest and economic hardship, following the fall of the communist regime resulted in large scale migration flows within and outwards the country during the 1990s; influencing not only the population distribution but the demographic developments in Albania (Agorastakis- Sofianopoulou- Siapati: 2005, King: 2005). This paper addresses the subject of cohort fertility in Albania with a spatial approach by focusing on regional differentiation in cohort fertility patterns and changes.

1. DATA AND METHODOLOGY

The dataset used for the analysis, originated from the Population and Household Census which was held in 2001 by INSTAT- Institute of statistics of Albania¹. From the individual records of the census, the total number of women in every group of cohorts and the respected number of children (0, 1, 2....etc.) per cohort were derived; according to, firstly, the place of birth and secondly, the place of residence of the mother. The cohorts groups used for our analysis are: cohorts 1935-1939 (prewar) and 1955-1959 (postwar); with a difference of twenty years (the

¹ The dataset includes the complete census in individual records provided by INSTAT to the Laboratory of Demographic and Social Analyses (LDSA, www.ldsagr)

mean age of the selected groups are 64 and 44 years, respectively). The first group of women have fulfilled their fertility cycle (1935-1939), while the second group even if they have not completed their reproductive cycle (1955-1959) is rather unlikely to have a number of children from 2001 and onwards, capable of affecting our analysis.

At this point it is important to mention that the derived cohort fertility of both groups using the census data is not representative to the total number of women born in Albania in 1935-1939 and 1955- 1959; as the number of women that answered in the question “how many children have you born (alive)?” were those who were alive and residing in Albania at the exact time of the census. Therefore, the cohorts stocks were already affected in 2001 by differentiated mortality between cohorts and the results of migration, both internal from the regional point of view, as well as external. In the framework of this paper, we only examined the role of internal migration to the change of geography of cohort fertility in Albania.

The large scale, geographic mobility in the form of internal and external migration is reflected to the spatial patterns of cohort fertility especially in the second group that includes women of productive age. Especially, if there is differential fertility between women who lived in Albania in 2001 and women who emigrated abroad, the value of indicator CFR (the total number of children that a woman in that age has born during her lifetime fertility / the population of women in that age) calculated from the census data is probably over estimated, under the hypothesis that the number of children is negative correlated to the probability of migrating, especially for the 1955-1959 cohorts that participated in external migration. Therefore, the first group is considered “closed” regarding external migration; these women in the early ‘90s were already 53 years old and their level of participation in the migration process is low.

Summarizing, the primary data concern two cohorts groups that lived and born their children in different socio-economic conditions which have profound impact in their reproductive behavior. At this paper, firstly we examine the spatial patterns of fertility change in Albania and secondly we will try to confirm our hypothesis that internal migration has affected the spatial patterns of cohort fertility.

In the questionnaire of population census, there was the question “how many children alive have you born?”, concerning women above 15 years old. For these women we also know the commune of residence and the village of birth. Subsequently, we have selected the women who declared place of birth (village) and at the same time place of residence (commune); women with no response in either were excluded from the analysis, **Table 1**.

Table 1: Number of women per cohort groups used in the analysis

	Cohort group 1 (1935-1939)	Cohort group 2 (1955-1959)
Total number of women (census raw data)	51,812	100,618
Number of women born abroad	753	91
Number of women with no information on place of birth	1,723	2,823
Number of women used in the analysis	49,336	97,704

Source: Authors' calculations

Then, by utilizing the information at place of birth (village) and we aggregated our data to communal level. Completed fertility rate (CFR) for every cohorts group was derived by commune, according to the place of birth and the place of residence of the mother. The results were graphically represented to maps and a threshold of 25 women per cohort group per commune was selected because small populations can distort (as outliers) the results of the analysis. The graphic representation of CFR, separate, for each group revealed the spatial patterns of cohort fertility in 2001 according to the place of birth and residence of the mother. Additionally, the percentage change

of CFR between the two cohorts groups revealed the magnitude of this change as well as its spatial pattern. Since the spatial profiles of CFR according to birth and residence did not coincide for the same group, we assumed that the difference was attributed to internal migration. Therefore, in order to investigate the impact of internal migration, percentage change between the number of women born and those residing in the same commune per cohorts groups was derived and mapped.

2. SPATIAL PATTERNS OF COHORT FERTILITY IN ALBANIA

Albania until the fall of the regime and the opening of the borders was an “unknown” country to researchers. The demographic status of the country has attracted the interest of demographers since is the only country in Europe that at the end of the 20th century hasn’t completed the demographic transition process. The total completed fertility cohort rate (CFR) is the highest in Europe and significant over the population replacement level. (Falkingham-Gjonca: 2001, Aassve- Gjonca- Mencarini: 2006). The women that were born among 1935 – 1939 delivered their children in a rural society of work intensity characterized by high fertility levels (CFR1935-1939 = 4.71 children per woman). The analysis of the census fertility data by cohort reveals a rapid decrease of the CFR (Table 2) by 32.7% in the country level in a 20 years period, which led Albania at the last phase of the demographic transition, with a delay in respect to other European countries.

Table 2: Completed Fertility cohort Rate (CFR) in successive cohort groups in Albania

Cohorts	1935-1939	1940-1944	1945-1949	1950-1954	1955-1959
CFR (children per woman)	4.71	4.56	4.09	3.58	3.17

Source: Authors’ calculations

Calculating the CFR for the cohort 1935-1939 at the spatial level of communes based on the data by birthplace of the mother, we can identify the fertility patterns as if there has been no effect of internal migration. Representing the results in **Map 1** in seven clusters, excluding from the analysis communes in which the population of women (in this case are 10) was less that 25. From a first reading of the **Map 1** we can realize that in the majority of the communes, CFR was very high, in 60% of the communes the women born over five children. In the urban areas, including the capital of Tirana, the CFR is almost 2 children lower than the majority of the communes and there is also a distinctive difference at the south-east communes which noted significantly lower CFR levels than the national value. The latter, probably resulted by the differentiated behavior in fertility of the Greek minority that was living in the area and the external migration flows towards Greece that depopulated the southeast part of the country. We have to remind in this point that the data we derived from the census of 2001 refer to the women that were alive and present at the time of the census.

Women that were born 20 years later, cohort 1955-1959, have decreased their fertility levels by 1.5 children per woman in total, **Map 2**. The CFR is 3.17 children per woman in the country, still over the population replacement level (2.1 children per woman). The spatial pattern of the fertility has changed since the decrease of CFR is rapid and now only in 5% of the communes the women born over 5 children (20 years ago the percentage in this case was 60%). In the 30% of the communes the women delivered 3.00-3.50 children and another 30% is among 3.51 - 4.50 respectively. The urban areas recording the lower prices of the CFR with the capital Tirana be the lowest with CFR=1.91 children per woman. The northeast and central east parts of Albania preserve high fertility levels, over 4 children per woman. At the same time the coastal zone of Adriatic as the south and southeast areas had the lowest levels of fertility. These last areas were those that “hit” more from the massive external migration of labor force at the early ‘90s (the women of this group of generations were at the age of early 30s at that time) towards Italy (the population of coastal zone) and Greece (south and southeast areas). (King: 2003, Carletto -Davis - Stampini - Trento – Zezza: 2004, Zezza - Carletto – Davis: 2005).

The size of the fertility decline that was noted between the two groups of cohorts is revealed in **Map 3** which presents the CFR percentage change by birthplace of the mother. In this map, 7 clusters identified, only one presents positive change (5 communes, 1.3% of the total). Over the half of the spatial entities (57% of the total, 216 communes) registers more than 30% decrease of the CFR. The areas that had the maximum decrease were

mainly at the coastal zone and at the south and on the contrary those with the minimum decline or slightly positive change were at the north.

The spatial pattern of fertility in Albania as it was revealed using the dataset of the census 2001 by birthplace of the mother separates the country in three distinctive zones: 1) the “high” zone, that had extremely high levels of fertility at the old group of cohorts and preserves them high at the latter group of cohorts, which includes the north and northeast areas, 2) the “low” zone that had the lowest level of fertility at the generations 1935-1939 and decreased them even more after 20 years at the new generations, which includes the south, southeast and the urban areas and 3) the “medium” zone that had high levels of fertility at the beginning that decreased them rapidly later, which covers the central Albania and the coastal zone of Adriatic.

We mentioned above that Albania after the fall of the communist regime in 1989 had a massive internal and external migration. As a result, the population distribution changed and in our case it's probably the spatial patterns of fertility changed since women were part of this migration. We revealed above the fertility patterns using the data of women by birthplace; similarly approach was used for place of residence. We assume that internal migration created a different pattern of cohort fertility in Albania. Calculating the CFR for the two groups of cohorts by commune and the CFR percentage change we created a new dataset of maps with the same clusters as in previous analysis, at this time by residence of the mother.

Since the data used for the calculation, have the same women and the only change is the reference place, **Map 4**, we observe again that in over 60% of the communes, women of cohort group 1935-1939 born five or more children. The remarkable on this map is the amount of the spatial entities which have less than 25 women, 10% of the total (41 communes) while in the distribution by birthplace was 2.7% (10 communes). This leads us to the result that these areas were affected from internal migration; most of them located at the southeast part of the country and the rest at the north and northeast. Additionally we have to mention that the suburban areas have slightly increased their fertility level, comparing to the birthplace analysis. These communes seem to be the recipient areas of the internal migration.

The decline of fertility, as was realized at the first analysis, is also obvious at **Map 5**, which portrays the CFR of cohort group 1955-1959. The northeast and central-east part of the country still had high levels of fertility and even higher, since in the 14% of the communes, women have been born 5 or more children comparing with the 5% respectively that measured at the previous analysis by birthplace of the mother. The coastal zone and the south and southeast areas noted the maximum decrease at the CFR again, but this decrease is less than that observed previously.

In **Map 6**, the CFR percentage change between the two cohorts groups, is presented. Only 3% of the total communes had positive change, while the 11.5% of the cases were excluded because of the small number of women (≤ 25). We have to refer again here that in the analysis by birthplace of the mother the corresponding percentage was 3%. The fertility decline is a fact independent of the reference place of the data. Comparing map 6 to map 3 (clustering is the same in both maps) was confirmed the above remark that the decrease observed at the coastal zone and the north and northeast areas is less than the one observed by the birthplace analysis. The image at the south and the southeast areas was more “blur” since there were several communes that excluded from the analysis and additionally the percentage changes of the CFR values are fluctuating in between clusters.

Finally, we proceeded to the hypothesis that the differences between the two analyses were caused by internal migration. In the context of this paper isn't possible to identify the weight of internal migration to cohort fertility changes. However, in order to locate the areas that were the main suppliers of internal migration and those that were recipients, we derived the percentage change of women born in a commune minus those residing to it for every group of cohorts, **Equation 1**.

$$A = (F_b - F_{res}) * 100 / F_b \quad (1)$$

A negative result means that in this commune higher number of women is residing than those who were born there; subsequently this implies that the area is a recipient of internal migrants and in the opposite case the area can be characterized as a supplier. Mapping the results of the above equation for the women of 1935-1939 group in **Map 7** in 4 negative, 5 positive and one neutral cluster, we observe that the majority of the communes (almost 60% of the total, 219 communes) had positive percentages. This means that these communes “lost” women who migrated to some other commune. The communes with the higher positive prices are at the south and some at the

northeast. On the contrary, the communes that had the lowest negative values (18% of the total, 69 communes) were the urban areas with the maximum value noted at the suburban areas of Durres and Tirana. The image is relatively the same according to the **Map 8** that portrays the percentage change between birthplace and residence of the second group of cohorts (1955-1959). The clusters were the same and 62% of the total, 231 communes, have positive percentages. The communes where the exodus is more intense were at the south of the country and at the northeast part of it. On the other hand stands again the urban areas that in the context of urbanization attract the majority of the internal migrants.

CONCLUSION

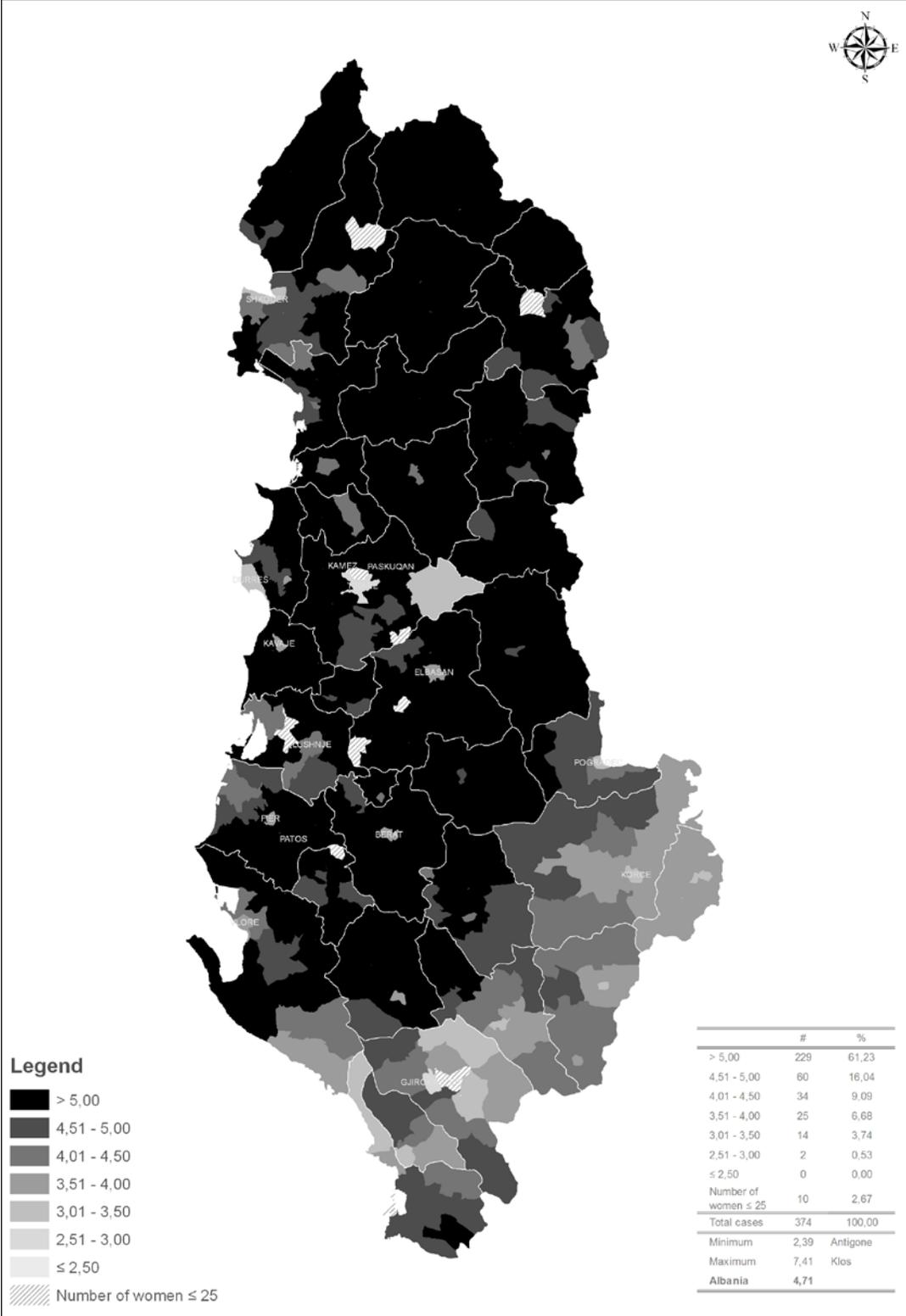
In the context of this paper we examined cohort fertility in Albania and its spatial aspect. We observed a *distinctive zoning pattern between North, Center (including coastal zone) and South of the country. The North has high levels of fertility, the South is the area of low fertility and the center, including the coastal zone of Adriatic, started with high levels of fertility but had a rapid decrease at the newest cohorts.* The decline of fertility that was recorded between the two cohort groups, born with 20 years difference and lived in very different social conditions, is a fact that implies that *Albania henceforth has entered in the last phase of her demographic transition.* Finally regarding the effect of internal immigration we can say that *fertility patterns have been affected by this phenomenon since roughly the 80% of territorial units participate in the internal migration process one or other way (supply or receive).*

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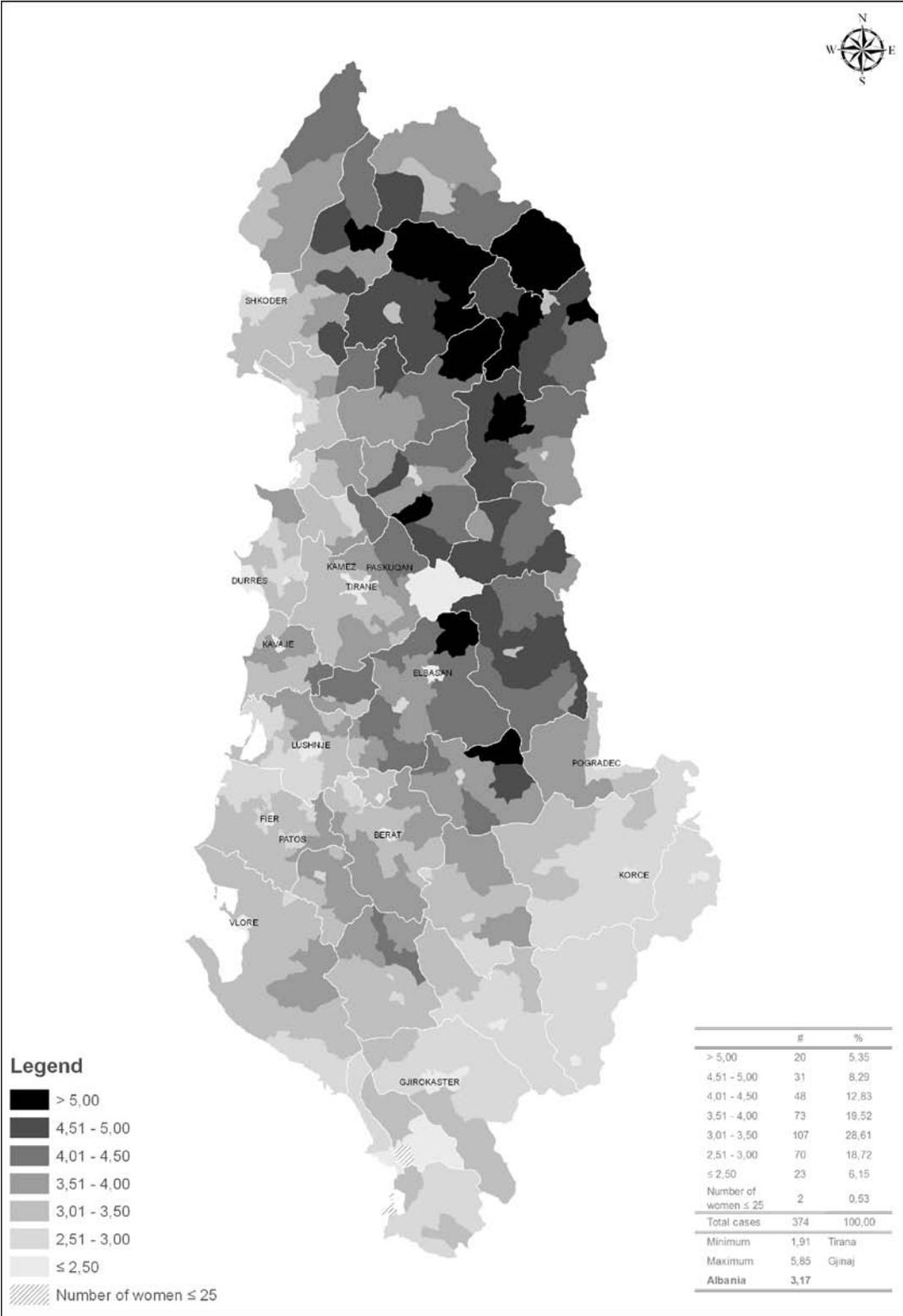
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Annex

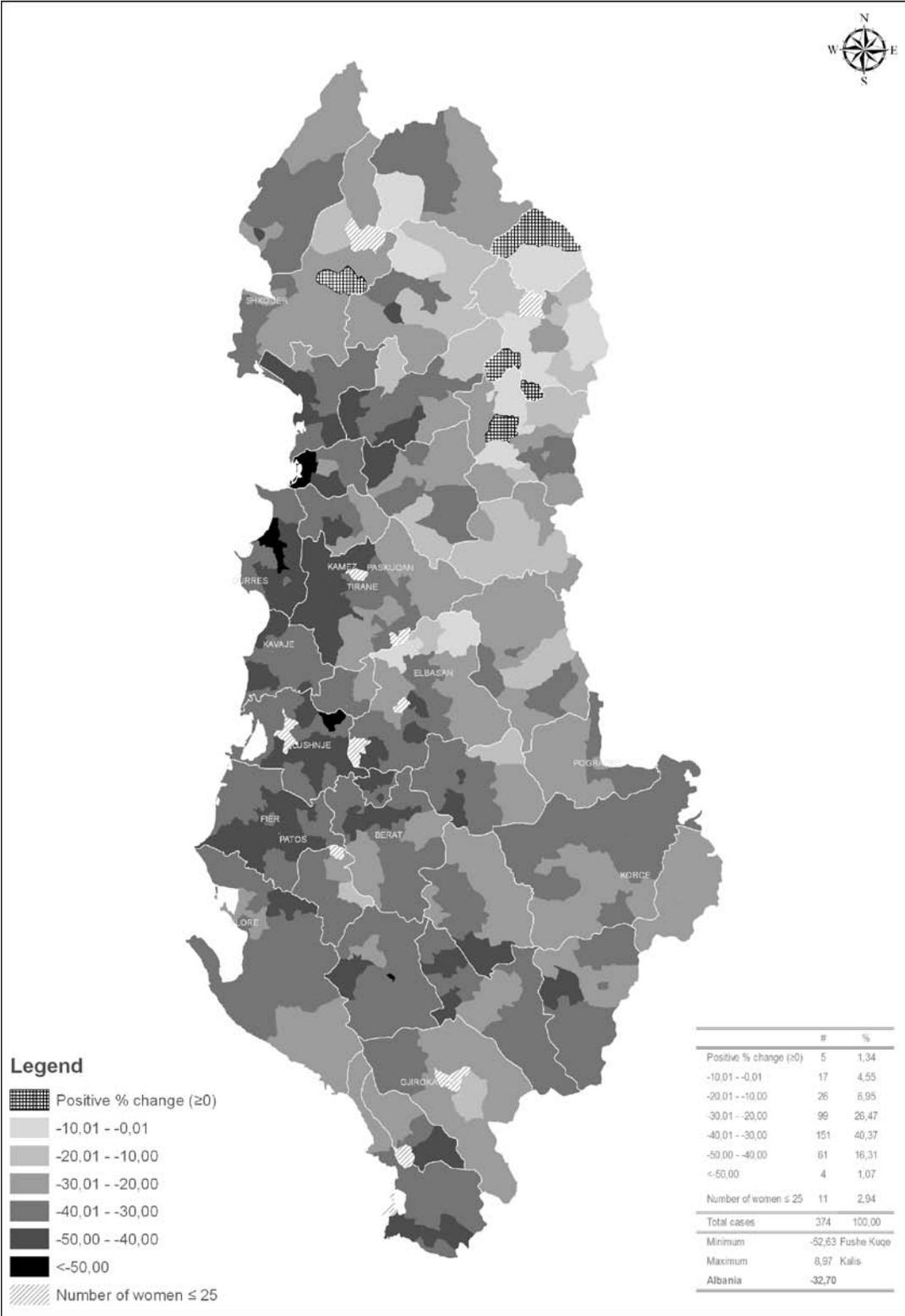
Map 1: Completed Fertility Rate of cohort 1935-1939 in Albania, based on the data by birthplace of the mother



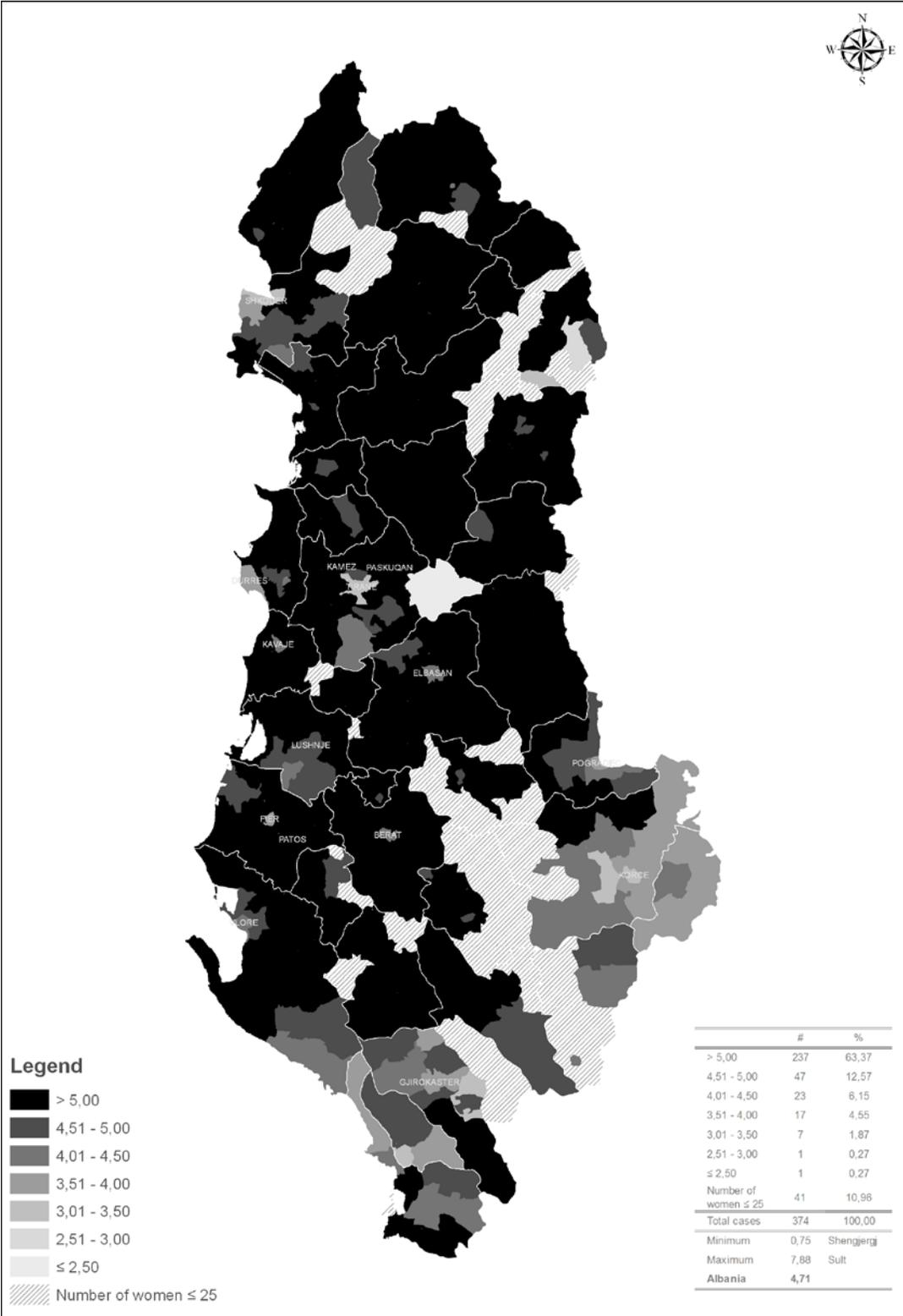
Map 2: Completed Fertility Rate of cohort 1955-1959 in Albania, based on the data by birthplace of the mother



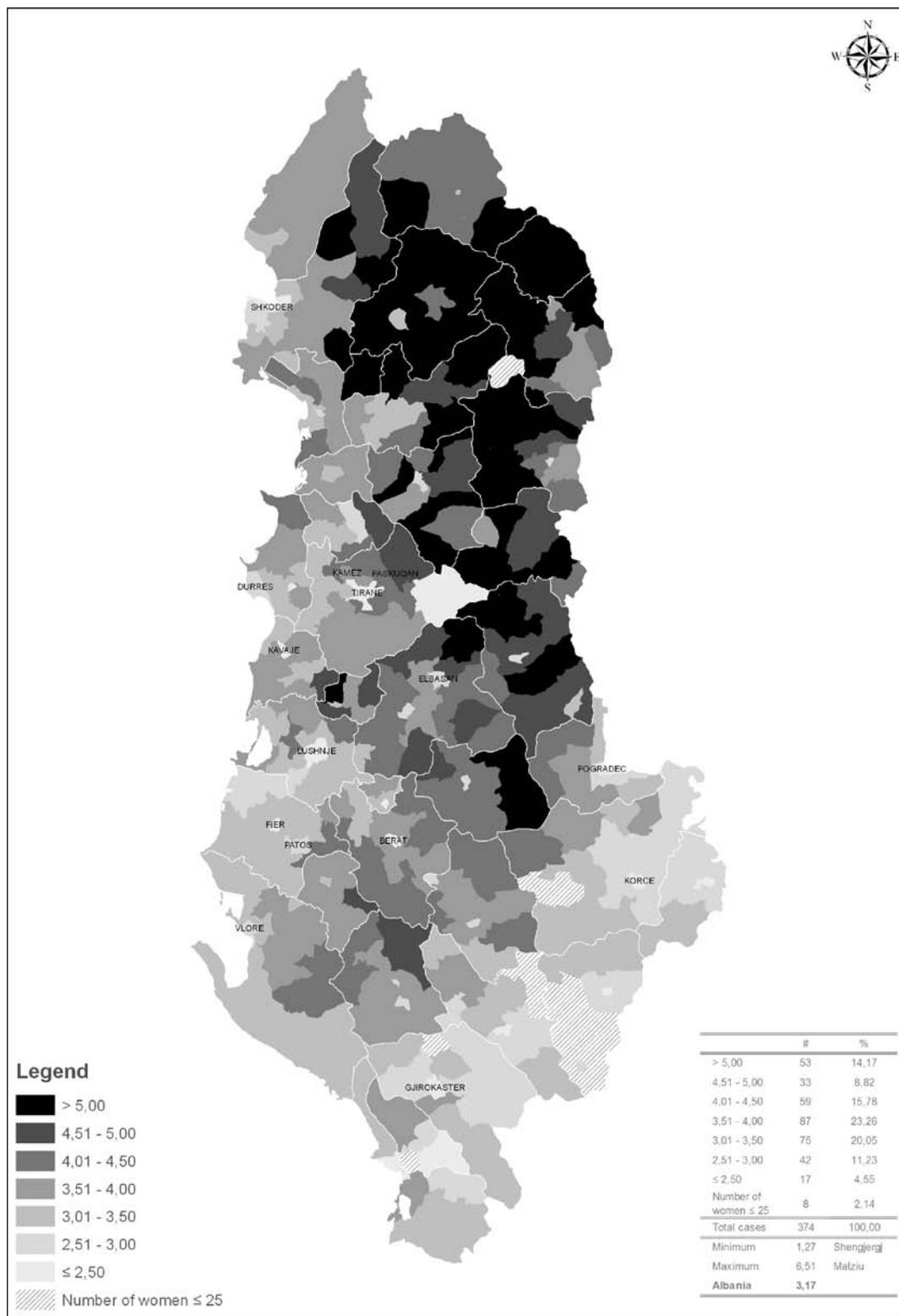
Map 3: Completed fertility percentage change between the groups of cohorts 1935-1939 and 1955-1959 $\{(CFR_{1955-1959}-CFR_{1935-1939}) * 100 / CFR_{1935-1939}\}$ in Albania based on the data by birthplace of the mother



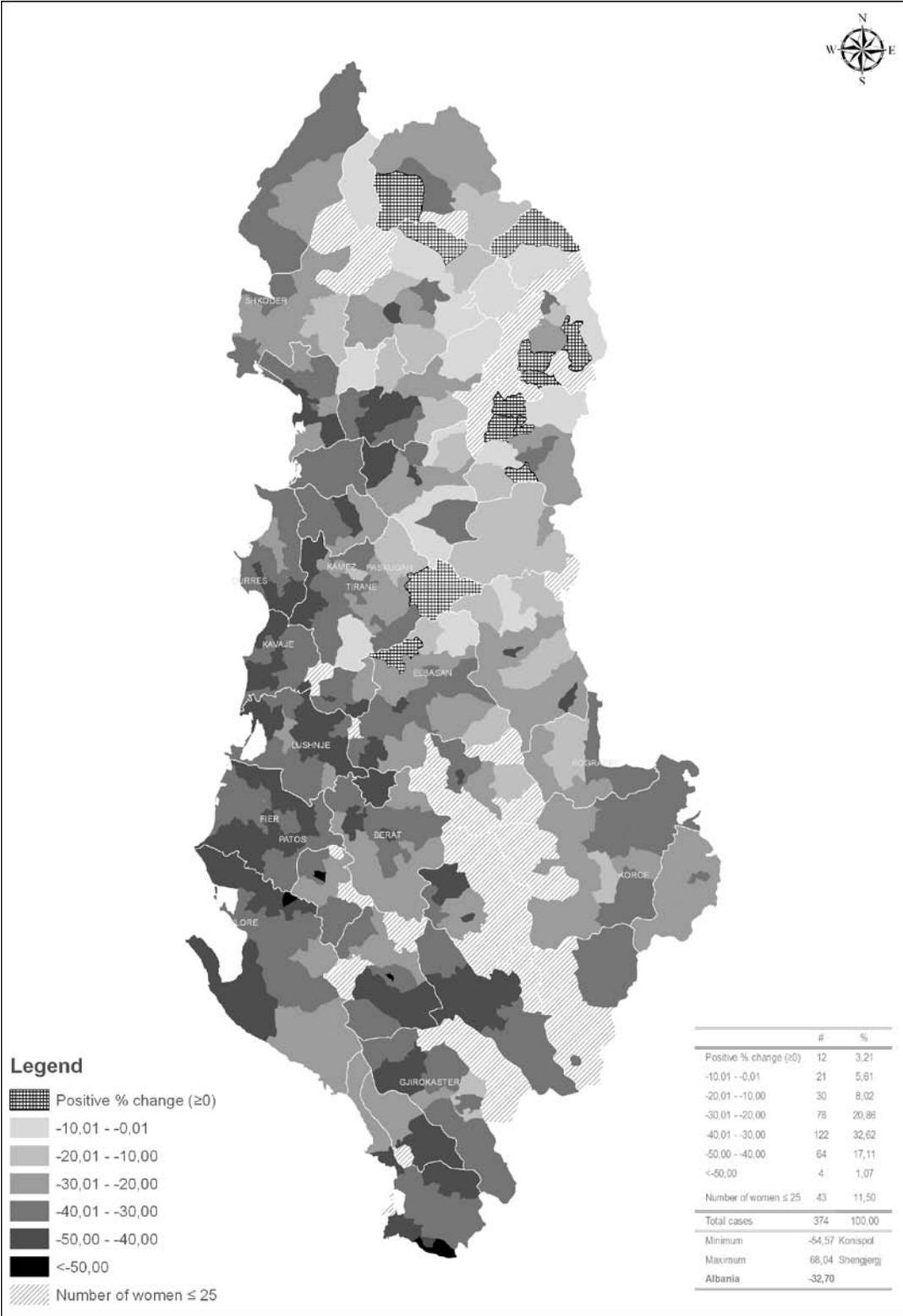
Map 4: Completed Fertility Rate of cohort 1935-1939 in Albania, based on the data by residence of the mother



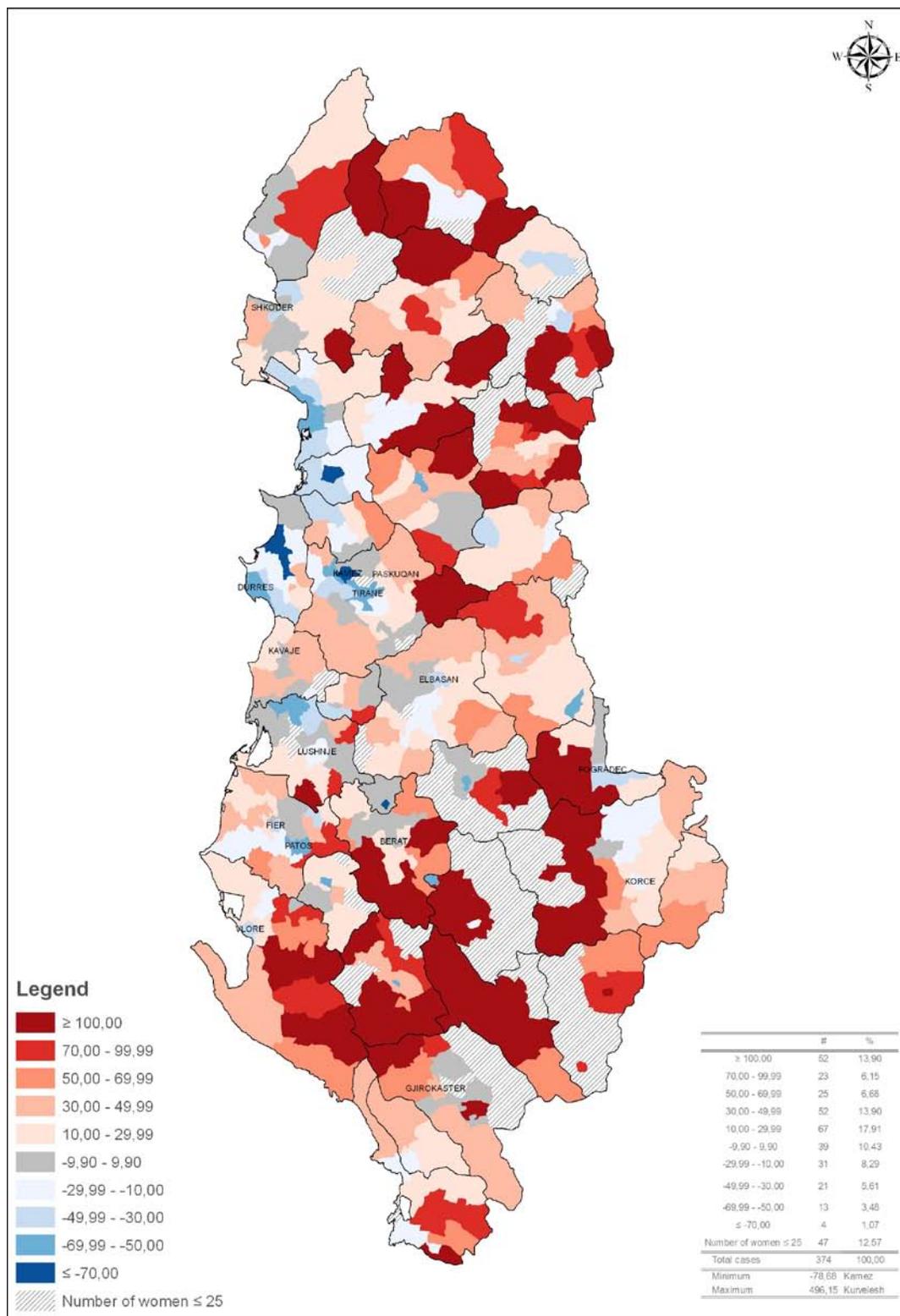
Map 5: Completed Fertility Rate of cohort 1955-1959 in Albania, based on the data by residence of the mother



Map 6: Completed fertility percentage change between the groups of cohorts 1935-1939 and 1955-1959 $\{(CFR_{1955-1959}-CFR_{1935-1939}) * 100 / CFR_{1935-1939}\}$ in Albania based on the data by residence of the mother



Map 7: $\Delta = (F_b - F_{res}) * 100 / F_b$ for cohorts 1935-1939



Map 8: $\Delta=(F_b-F_{res})*100/F_b$ for cohorts 1955-1959

