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"Foresight and risk assessment (based on scenarios) of increasing extreme poverty from the COVID-19 Pandemic at national, regional and local level in relation to job loss"

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INTRODUCTION - OBJECTIVE OF THE RESEARCH

The present study aims at a foresight and risk assessment (based on scenarios) of the increase in extreme poverty due to the COVID-19 pandemic at the national, regional and local levels in relation to job loss. The methodology for the implementation of the above objective was constituted by the following methodological steps:

- In a first phase, a bibliographic review of the phenomenon of extreme poverty and the effects of the COVID-19 pandemic on it was carried out. As it turned out, the progress made in recent years in reducing the number of people in poverty is being eliminated due to the advent of COVID-19. For the first time since 1998, poverty rates are going to rise as the world economy recedes and there is a sharp decline in GDP per capita while the COVID-19 crisis is going to have a disproportionate impact on the poor, through job losses, loss of benefits, increasing needs for services such as education and health care. In Greece, the crisis due to the COVID-19 disease will possibly worsen the social situation of large sections of the population and increase income inequality.
- In a second phase, data on poverty were analyzed. For the measurement of poverty in Greece some of the administrative data that contain critical information on poverty are the registers of the Minimum Guaranteed Income (EEE) and the TEVA. The latter, however, is a subset of the former, which is why the EEE has been used as a basis for estimating poverty. In particular, the register used (February 2020) had 433,524 registrations with about half of the end recipients (53%) being unemployed.
- In a third phase, taking into account that people at risk of poverty or social exclusion were mainly in households with very low labour intensity (Eurostat, 2020), the effects of the pandemic on paid work and registered unemployment were analyzed while at the same time a risk assessment on the effects on jobs was carried out by combining the above with the analyses of the International Labor Organization (ILO) and the Bureau of Labor Statistics (BLS).
- In a fourth phase, following a review of the estimates of international organizations for the development of critical measures such as GDP, unemployment and employment, the parameters of the foresight were identified, and seven different scenarios were formulated. In the first two scenarios (Scenario 0-1) the forecast for the number of end recipients of the EEE was based on the actual change of the registered unemployed. The next five scenarios were based on risk assessment by sector of economic activity.

At the national level, the results of the analysis based on the estimates of international organizations translate into an increase from 46,000 (479,524) to 215,000 (648,524) end recipients of the EEE in relation to February 2020, depending on the number of unemployed who will register in the EEE (February 2020: 20.39%). The results of the analysis of the first two scenarios, based on recorded effects of the pandemic, translate into an increase from 34,467 (467,991) to 233,533 (667,057) end recipients of the EEE. The next 5 scenarios are based on a risk analysis by sector of economic activity and translate into an increase from 115,606 (549,130) to 2,094,433 (2,527,957). In the first scenario (ILO, BLS) a percentage (10%) of high risk workers is added to the end recipients of the EEE, in the second (ILO, BLS) a percentage (30%) is added, in the third (ILO, BLS) all high risk workers are added, in the fourth

(ILO, BLS) the high and medium risk workers are added, and in the fifth (ILO, BLS) all of the high, medium, low risk workers are added.

The investigation of the fourth and fifth (ILO, BLS) scenario was done even though the numbers at the national level seem very large, because there were cases of Municipalities whose forecasts according to the 2nd scenario far exceeded the corresponding o ILO-BLS scenarios (Municipality Zakynthos, Municipality of Karpathos, Municipality of Parga, Municipality of Symi, Municipality of Arriana). At the same time, due to the fact that the effects of the pandemic had a strong spatial differentiation, the Municipalities were grouped into 5 clusters in relation to the parameters of the investigation.

In all the investigated scenarios, cluster 3, which included the Municipalities of Rhodes, Zakynthos, Thira, Mykonos, Corfu, Heraklion, Kos, Rethymno, Chania and Hersonissos, presented the highest percentage increase. At the regional level, the Regions of the South Aegean, the Ionian Islands, Crete and Attica were the ones with the highest percentage increase. The analysis at the local level also revealed new Municipalities that are not contained in the above units with a high percentage increase such as the Municipalities of Tanagra, Thermi, Zitsa, Oreokastro, Tempi, etc.

Figure 1 and Figure 2 show the results of the foresight for each cluster of Municipalities and for each region. The scenarios highlight the estimates for the development of poverty in Greece based on the number of end recipients of EEE. These results are available through an interactive dashboard for further navigation at the following link[1]:

https://public.tableau.com/views/PovertyForesightEN/Cluster?:language=en&:display_count=y&publish=yes&:origin=viz_share_link

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[1] This dashboard is consisted of 3 different templates (cluster, regions, Municipalities).

Figure 1: Foresight results for the increase in extreme poverty due to the COVID-19 pandemic.

Foresight results (Click Clusters to expand)

	Municipalities	Minimum Guaranteed Income Feb 2020	Scenario 0	Scenario 1	Scenario 1 (ILO, BLS)	Scenario 2 (ILO, BLS)	Scenario 3 (ILO, BLS)	Scenario 4 (ILO, BLS)	Scenario 5 (ILO, BLS)
Cluster 1	80	119,253	127,329	142,155	128,981	148,437	216,533	235,802	274,664
Cluster 2	230	235,629	253,879	353,146	309,663	457,731	975,968	1,139,924	1,506,750
Cluster 3	10	12,977	16,814	88,493	23,074	43,268	113,948	132,399	167,753
Cluster 4	4	34,084	36,386	44,103	45,542	68,458	148,664	187,654	288,821
Cluster 5	1	31,581	33,584	39,160	41,870	62,447	134,466	179,921	289,969
Grand Total	325	433,524	467,991	667,057	549,130	780,341	1,589,579	1,875,700	2,527,957

Figure 2: Foresight results for the increase in extreme poverty due to the COVID-19 pandemic (continued).

Foresight results (Click Regions to expand)

	Municipalities	Minimum Guaranteed Income ..	Scenario 0	Scenario 1	Scenario 1 (ILO, BLS)	Scenario 2 (ILO, BLS)	Scenario 3 (ILO, BLS)	Scenario 4 (ILO, BLS)	Scenario 5 (ILO, BLS)
Attica	66	125,941	133,926	165,278	177,625	280,992	642,778	801,749	1,184,630
Central Greece	25	23,726	25,447	30,709	29,161	40,032	78,080	90,140	106,041
Central Macedonia	38	80,210	86,027	111,017	100,477	141,010	282,876	321,676	413,926
Crete	24	15,529	19,039	58,507	22,580	36,683	86,043	99,132	128,677
East Macedonia and Thrace	22	28,669	30,463	36,848	33,352	42,717	75,497	84,835	103,172
Epirus	18	12,164	13,286	18,567	14,708	19,795	37,600	43,733	55,148
Ionian Islands	7	4,114	5,533	28,087	6,079	10,009	23,765	27,699	33,772
North Aegean	9	8,341	9,205	12,832	9,558	11,993	20,513	23,227	30,062
Peloponnese	26	27,801	30,073	37,164	32,544	42,029	75,229	82,773	101,715
South Aegean	34	6,305	7,567	42,028	10,650	19,339	49,751	57,411	68,005
Thessaly	25	38,873	41,525	49,553	44,538	55,867	95,518	105,683	130,621
Western Greece	19	51,579	54,902	62,278	56,002	64,848	95,809	105,462	127,545
Western Macedonia	12	10,272	10,998	14,189	11,857	15,026	26,120	32,180	44,643
Grand Total	325	433,524	467,991	667,057	549,130	780,341	1,589,579	1,875,700	2,527,957

1 BIBLIOGRAPHY AND DEFINITIONS

1.1. Global Poverty

The common metric adopted to measure global poverty is the number of people or the percentage of the population living below the international poverty line. The international poverty line (IPL) is set by the World Bank and its magnitude is defined periodically based on changes in the cost of living for basic food, clothing and housing. In 2008 the poverty line was set at $ 1.25 per day, however in 2015 the limit was revised to $ 1.90 per day, which is still valid today (Ferreira, 2016)[2]. According to the World Bank, significant progress has been made in reducing poverty in recent decades, noting that this is the first of the global Sustainable Development Goals unanimously agreed by the United Nations in 2015[3]. According to the most recent estimates, in 2015, 10% of the world's population or 734 million people lived on less than $ 1.90 a day. This is lower than the almost 36% or 1.9 billion people in 1990 (World Bank, 2020).

According to the United Nations (2019), much of this decline is due to the progress made in recent decades in Southeast Asia. China has managed to eradicate extreme poverty, while India has also made great progress, especially since the early 2000s. However, global progress has been extremely uneven. In sub-Saharan Africa, more than 40% of the population lives on less than $ 1.90 a day, and the total number of extremely poor people is significantly higher today than it was two decades ago. In addition, the rate of poverty eradication has slowed significantly in recent years. According to estimates by the United Nations Department of Economic and Social Affairs (UN DESA), since May 2019, the number of people living in extreme poverty has increased in several African countries, where poverty levels were already very high[4]. These countries include the Democratic Republic of the Congo, with 74.6% of the population living below the poverty line of $ 1.90 per day (65.9 million), Madagascar with 77.1% (21, 1 million), Niger with 71% (17.1 million), Somalia with 87.7% (13.3 million), South Sudan with 83.4% (11.6 million), the Republic of the Congo with 75.3% (4.2 million), Eritrea with 72.3% (3.9 million), and the Central African Republic with 78.3% (3.8 million) (World Data Lab 2020). Poverty rates have also risen in parts of Latin America and the Caribbean, including some of the region's largest economies, such as Argentina, Brazil and the Bolivian Republic of Venezuela.

It is also worth noting that most countries with high poverty rates are also conflict-affected areas (Fragile or Conflict-Affected Situations (FCS)). These economies have stable poverty rates of over 40% of the population over the last decade, while countries where conflict has been reduced have reduced poverty rates by more than half (World Bank, 2020). [5] In addition, access to education, health care, electricity, safe water and other critical services remains

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[2] *In a recent report the World Bank (2018) also adopted the levels of 3.20$ and 5.50$ per day.*

[3] *The 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015, provides a common plan for peace and prosperity for people and the planet, now and in the future. At its heart are the 17 Sustainable Development Goals (SDGs), which are an urgent call for action from all countries - developed and developing alike. https://sustainabledevelopment.un.org/?menu=1300*

[4] *World Economic Situation and Prospects as of mid-2019, available from https://www.un.org/development/desa/dpad/publication/world-economic-situation-and-prospects-as-of-mid2019/.*

[5] *Lack of data makes it more difficult to accurately measure the extent of the problem. An estimated 500 million people live in FCS economies without data or outdated poverty data.*

elusive for many people, and is often determined by socioeconomic status, gender, ethnicity and geography. The share of poor, according to a multidimensional definition that includes consumption, education and access to basic utilities, is about 50% higher than when relying solely on monetary poverty (World Bank, 2020).

1.1.1. Basic needs

Although the available data give a fairly good picture of the magnitude of the problem, the official way of measuring poverty has been widely criticized. A first criticism is that its level is very low (eg Hickel, 2015). Another is that due to its low level, the addition of a small extra income does not create significant differences in a person's quality of life. The International Poverty Line also does not take into account other indicators, such as access to food, drinking water, housing, health care, electricity, security and respect for basic human rights. In order to address this problem in 1976 the "basic needs" approach was introduced by the International Labor Organization's World Employment Conference, making the satisfaction of basic human needs a primary goal of national and international development policy. According to a UN statement issued at the 1995 World Summit on Social Development in Copenhagen, absolute poverty is "*a situation characterized by severe deprivation of basic human needs, such as food, safe drinking water, sanitation, health, housing, education, and information. It depends not only on income but also on access to services"* (World Summit on Social Development, 1995).

1.1.2. The state of poverty in Europe

In addition to the international poverty line set by the World Bank, most countries have set national poverty lines, which are determined by the amount and distribution of their national income. These limits vary considerably from country to country, even in the richest of them. In the European Union, the term Number of People at Risk of Poverty or Social Exclusion is used. People at risk of poverty or social exclusion were in at least one of the following situations (Eurostat, 2020):

• **at risk of poverty after social transfers (income poverty)**: The risk-of-poverty rate is the share of people with equivalent disposable income below the poverty risk threshold, which is set at 60% of the national average disposable income.

• **severe material deprivation**: material deprivation refers to economic strain and durables, and includes inability to pay for unforeseen expenses, to cover a week away from the permanent home, to afford a meal that includes meat, chicken or fish every other day, adequate heating of a home, durable goods such as a washing machine, a colour TV, a telephone or a car, facing payment delays (mortgages, utility bills, rent installments or other loan payments).

• **living in households with very low labour intensity**: households with very low labour intensity are those whose members (able to work) have worked less than 20% of their potential in the past 12 months.

Consequently, in the European Union (EU) the risk of poverty and social exclusion does not depend strictly on a household's income level, but can also reflect unemployment, low labour

intensity, employment status or a number of other socio-economic issues. In 2018, it was estimated that 21.7% of the EU-28 population - or approximately 109.2 million people - were at risk of poverty or social exclusion (Eurostat, 2019). Table 1 presents the income limits for a household that includes 2 adults and 2 children under 14 in the 28 countries of the European Union (Eurostat, 2020).

Table 1: Income limits for the risk of poverty or social exclusion per European country for a household that includes 2 adults and 2 children under 14 years in indicative years (in euros).

Countries	Income limits		
	2010	2015	2018
Belgium	24525	27285	29844
Bulgaria	3801	4198	4524
Czech republic	8894	9353	11451
Denmark	32341	35739	37931
Germany	23684	26041	28618
Estonia	7216	9940	13260
Ireland	25846	27253	31399
Greece	**15073**	**9475**	**9908**
Spain	18402	16823	18629
France	25150	26983	27997
Croatia	7320	6871	8390
Italy	20115	19966	21223
Cyprus	20387	17380	19323
Latvia	5655	7344	9240
Lithuania	5077	6527	8688
Luxembourg	40740	44441	50740
Hungary	5343	5741	6834
Malta	13148	17074	18624
Netherlands	25568	26828	30260
Austria	26533	29308	31721
Poland	5551	7000	8283
Portugal	10935	10628	11776
Romania	2566	2917	4138
Slovenia	14787	15538	16687
Slovakia	7707	8732	9402
Finland	26899	29942	30926
Sweden	23811	31886	32180
Un. Kindom	21553	26495	27045

Source: Eurostat (2020)

The table shows primarily that the income limits for the risk of poverty differ significantly from country to country. The countries with the highest income thresholds are Luxembourg, Ireland, Sweden and Austria, while those with the lowest thresholds are Bulgaria, Romania and Hungary. Graph 1 presents the percentages of the population at risk of poverty or social exclusion for the countries of the European Union for the year 2018 (Eurostat, 2020).

Graph 1: Percentage of population at risk of poverty or social exclusion (%) (below 60% of average national income) in EU countries (2018).
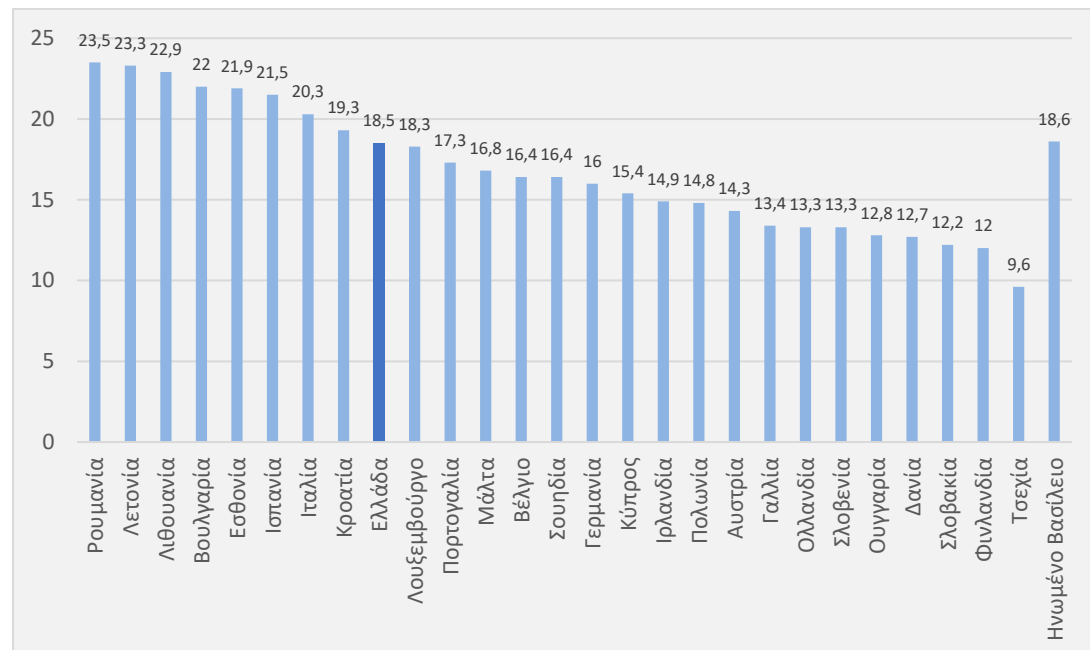
Source: Eurostat (2020)

Particularly high poverty rates are recorded in Romania, Latvia and Lithuania, while the lowest are recorded in the Czech Republic, Finland and Slovakia. The percentage for Greece is 18.5% of the population.

1.2. The problem of the working poor

The growing problem of the working poor cannot be absent from an investigation of the issue of poverty. According to an ILO report,[6] the share of the employed persons who are poor (known as the 'working poverty rate'), provides the information needed to link work and poverty, which is crucial for effective policy-making. The same report emphasizes the fact that work should be a factor of prosperity, however this goes hand in hand with the level of quality of work (income, job security and safe working environment) so **the relationship of employment to poverty depends on whether the labour market can ensure decent work**. According to the Eurofound (2020), [7] which is based on the Eurostat definition, those who work for more than six months and whose corresponding disposable income is below 60% of the national average household income run the risk of poverty while working. During the economic crisis, the number of workers at risk of poverty in the EU has increased. The latest Eurostat figures show that around 10% of European workers are at risk of poverty. Figure 3: Share of employed persons at risk of poverty, 2018 data shows the percentage of people at risk of poverty with Eurostat data for the year 2018. Greece ranks 6th with a rate of 10.9%,

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[6] Gammarano, R. (2019). The working poor or how a job is no guarantee of decent living conditions. ILOSTAT, no 6, April 2019. Available at: https://ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/publication/wcms_696387.pdf
[7] https://www.eurofound.europa.eu/topic/working-poor

followed by Romania (15%), Luxembourg (13.5%), Turkey (13.1%), Spain (13%) and Italy (12.3%).

Figure 3: Share of employed persons at risk of poverty, 2018 data

Source: Eurostat (2020b)
(https://ec.europa.eu/eurostat/databrowser/view/tespm070/default/map?lang=en)
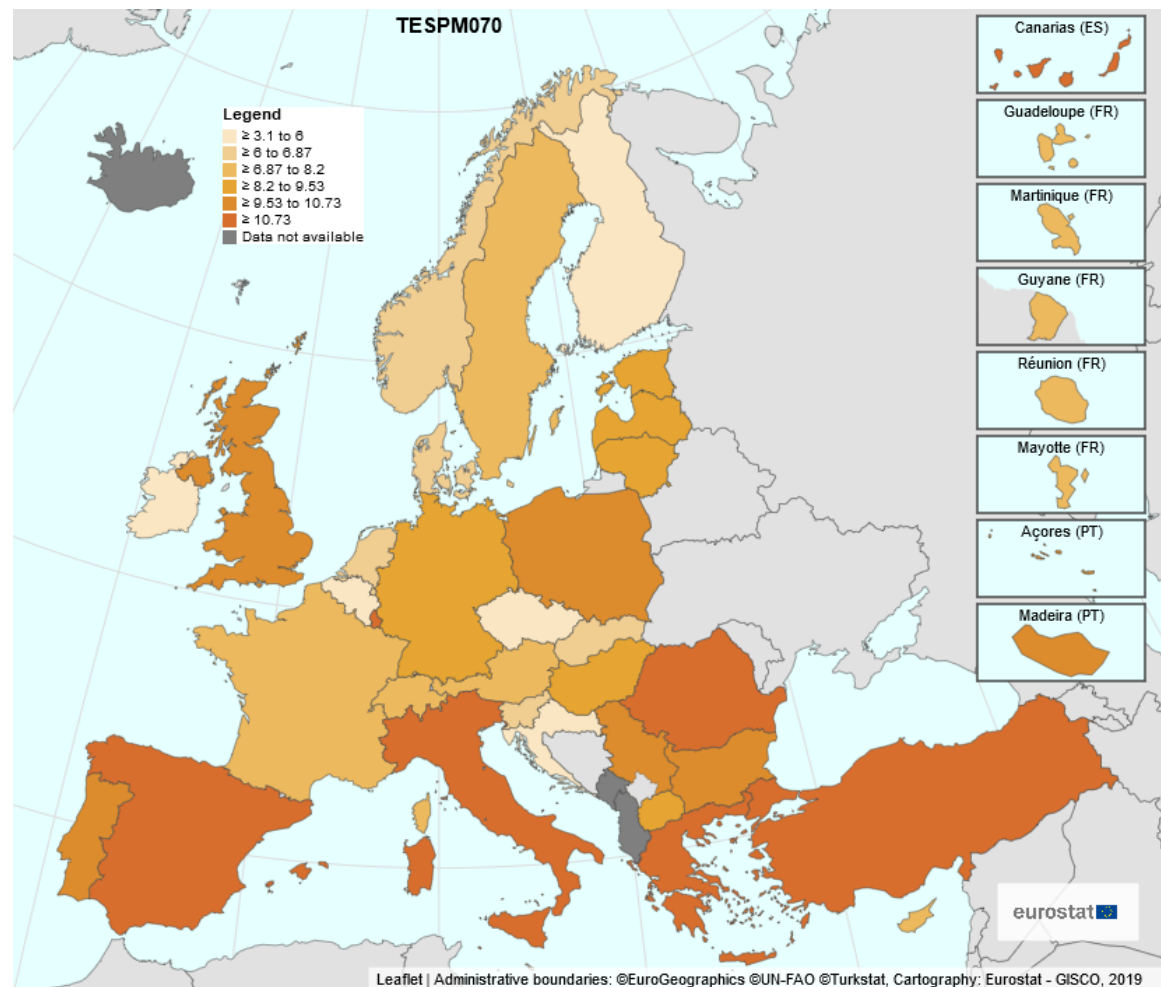
Figure 4 shows the time trend of the percentage of the employed at risk of poverty. It seems that all EU countries show an upward trend until 2016 while a small gradual decline follows. On the other hand, Greece shows fluctuations while from 2016 onwards it shows a significant decrease.

Figure 4: Percentage of employed persons at risk of poverty, data for EU (blue curve for the EU of 27 countries and orange for the EU of 19 countries) and for Greece (green curve)
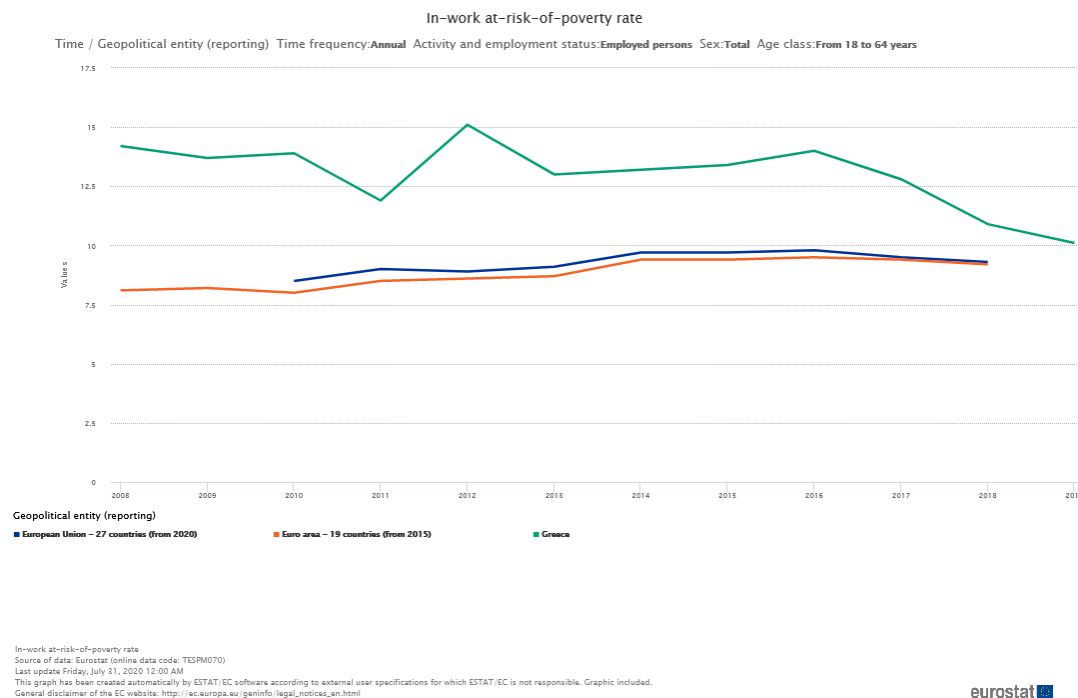
Source: Eurostat (2020b)

According to a report by the Observatory of Economic and Social Developments of INE of GSEE (2012) [8] the poverty of workers should be attributed to wider social and economic factors (p. 55). The unemployment rate alone cannot explain the fluctuations and the height of the risk of poverty as the quality of work plays an important role in shaping this risk. Depending on the characteristics of employment, especially in cases of part-time employment and self-employment without staff, the risk of poverty increases significantly (pp. 55-56). In general, the report shows that poverty is reproduced by the functioning of the labour market and is not effectively addressed by the social protection system, so that policies for the labour market and the way it operates constitute a central framework in which the risk of poverty must be tackled effectively (pp. 58-59).

1.3. COVID-19 and Poverty

The progress made in recent years in reducing the number of poor is expected to be eliminated due to the advent of COVID-19. For the first time since 1998, poverty rates will rise as the world economy slides and GDP per capita falls sharply. The World Bank (2020b) states that the COVID-19 crisis will have a disproportionate impact on the poor, through job losses, loss of benefits, rising prices and disruptions in services such as education and healthcare. It is estimated that as a result, 40 million to 60 million people will fall into extreme poverty (below $ 1.90 / day) in 2020, compared to 2019. In addition, the proportion of people living on less than $ 3.20 per day could increase by 0.3 to 1.7 percentage points, to 23 percent or more, an increase of about 40 million to 150 million people. Finally, the proportion of people living on less than $ 5.50 a day could increase by 0.4 to 1.9 percentage points, to 42% or more,

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[8] https://www.inegsee.gr/wp-content/uploads/2014/04/files/report-6.pdf

an increase of about 70 million to 180 million people. It is important to note that these poverty projections are extremely volatile and could vary significantly between countries. Oxfam's forecasts are even more ominous, with a 20% drop in income that could push poverty (below $ 5.50 a day) to half a billion people (Table 2).

Table 2: Additional number of people in poverty due to 20% reduction in income as a result of the COVID-19 pandemic

Region	Additional number of people
East Asia and Pacific region	239,8
South Asia	128,8
Latin America and Caribbean	54,3
Middle East and South Africa	44,9
Sub-Saharan Africa	44,6
Europe and Central Asia	30,5
Other high-income countries	4,7
Total	547,6

According to Oxfam, the areas most affected will be East Asia and the Pacific, as well as South Asia (Statista, 2020). United Nations University researchers estimate the impact of COVID19 on global poverty, suggesting it could represent a reversal of nearly a decade in global progress in reducing poverty. In fact, in some areas, the negative effects could lead to levels of poverty similar to those recorded 30 years ago (Summer et al, 2020). Among the countries most expected to be strongly affected by COVID-19 poverty are India, Nigeria, Indonesia and Bangladesh (Kharas & Hamel, 2020).

An analysis by Save the Children and UNICEF (2020) reveals that without urgent action, the number of children living in poor households in low- and middle-income countries could increase due to the COVID19 crisis by 15% by 2020, reaching 672 million worldwide. Researchers at the Multidimensional Poverty Peer Network (MPPN) say COVID-19 could drive people living just above the poverty line into poverty because of its impact on the global economy, with many countries halting production and shutting down whole sectors of their economies. The epidemic creates a loss of employment due to the loss of basic services and the suspension of education for children. Many poor children are deprived of basic education, which can adversely affect their chances of escaping poverty. And while many developed countries solve this problem by switching to e-learning at home for school-age children, this is not possible in all countries (Evans & Kovesdi, 2020).

Researchers at the University of the United Nations Sumner et al (2020), having considered estimates from a number of sources - including the Asian Development Bank, Goldman Sachs, the IMF and the OECD - examined three possible economic scenarios for COVID-19, in which global income and consumption fell by 5%, 10% or 20%. They found that the worst case scenario (20%) could lead to 1.12 billion people worldwide living in extreme poverty - up from 727 million in 2018. Anser et al. (2020) report that poor health care and population density in many poor countries can lead to increased transmission of COVID19, which can also lead millions to a vicious cycle of poverty. Issakson (2020), on the other hand, emphasizes the need to support the manufacturing sector with special measures, especially in poor economies, as the service sectors (eg tourism) that traditionally provided employment and generated income for large sections of the population, have weakened due to the appearance of COVID-

19. They even say that "*developing countries are in a worse position than their industrial counterparts, due to lower economic margins, less resilience and greater general vulnerability.*"

1.4. The case of Greece

Greece is characterized by high income inequality and social transfers that have the lowest impact on reducing the risk of poverty in the EU (15.83% in 2017 compared to an average of 33.98% in the EU).

The COVID-19 crisis may further worsen the social situation of large sections of the population and increase income inequality. Prior to the outbreak of the pandemic, the percentage of the Greek population at risk of poverty or social exclusion was still among the highest in the EU, with children and people of working age at greater risk than the elderly. Other sources of concern were employee poverty, access to affordable housing, and energy poverty.

Measures are needed to mitigate the effects of the COVID-19 crisis on employees and businesses. According to the Commission forecasts, unemployment is expected to rise to 19.9% in 2020 and fall to 16.8% in 2021. Greece has already introduced a temporary system that reduces labour costs for companies whose operation has been suspended or which have been severely affected, while protecting employment contracts and providing income support to affected workers.[9]

Guaranteed Minimum Income and other social protection reforms reduce the depth of poverty, but poverty rates remain high, including those working for the OECD.

There is a high percentage of people at risk of poverty or social exclusion (31.8% of households - is the 3rd worst place in the EU after Bulgaria and Romania) with strong disparities between the Regions (44.6% in Western Greece compared to 28% in Ionian Islands).[10]

Supporting vulnerable households remains a major challenge, with a large percentage of them moving to the brink of poverty. The problem is directly related to the unsatisfactory access to the labor market, as well as to the low productivity that leads to low wages. Unemployment soared during the crisis of the previous decade, but it was already high and the years of growth that preceded the crisis. The very large size of the informal economy makes it difficult to tackle the problem effectively through a social protection system. The current system often discourages formal work and ultimately traps many low-income households.

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[9] NATIONAL REFORM PROGRAM RECOMMENDATIONS FOR ISSUES OF JURISDICTION OF MINISTRIES OF LABOR AND SOCIAL AFFAIRS, HEALTH EDUCATION AND RELIGIONS, Document COM (2019) 508/ 5.6.2019 FINAL, Document– COM (2020) 508/ 20.5.2020 FINAL

[10] Pissarides Committee Report, Executive Summary for issues related to the Ministry of Labour & Social Affairs.

Figure 5: Risk of poverty and social exclusion

Κίνδυνος φτώχειας και κοινωνικού αποκλεισμού, ποσοστό του πληθυσμού

Ανά χώρα της ΕΕ, 2018
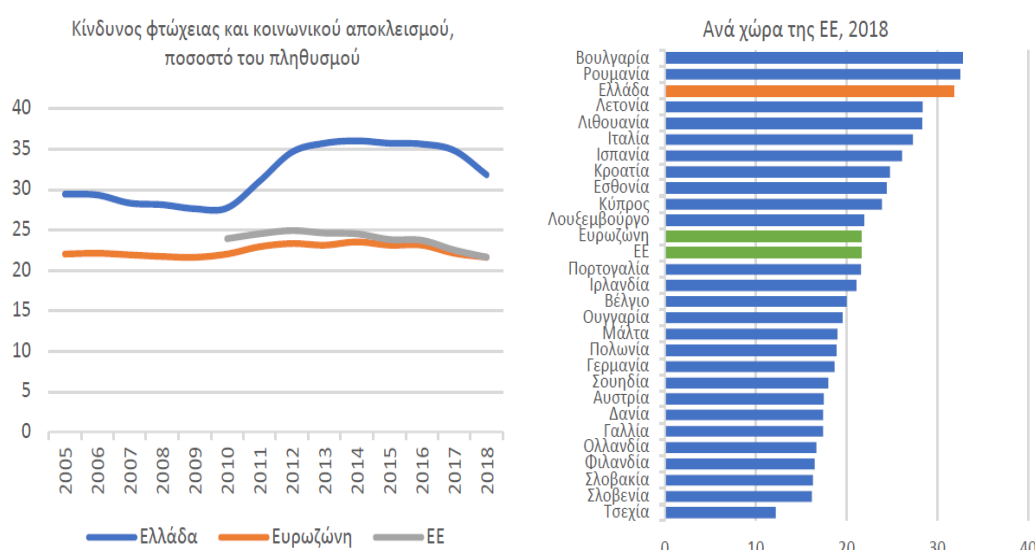
Source: Pissarides et al. (2020: 26) based on Eurostat data

The existing model of development of the country is characterized by significant social and economic disparities between its regions. In particular, the GDP per capita in Eastern Macedonia - Thrace (€ 11.9 thousand) and in the North Aegean (€ 11.8 thousand) is almost half of the level recorded in Attica (€ 23.3 thousand in 2018, at current prices - Figure 5). Significant regional disparities are also observed in social indicators (Figure 6).

The percentage of people at risk of poverty and social exclusion in Western Greece is particularly high (44.6% in 2018). They are followed by Crete (37.0%), Western Macedonia (36.7%) and the South Aegean (35.9%). Respectively, the unemployment rate is more than double in Western Greece (23.2% in the fourth quarter of 2019) and Western Macedonia (22.6%) compared to the Peloponnese (11.2%). Increased unemployment compared to the national average is also observed in Central Macedonia (19.4%), Central Greece (18.2%), Thessaly (18.1%), Eastern Macedonia - Thrace (16.9 %) and the North Aegean (16.9%).

Figure 6: Risk of poverty and unemployment by region

Ποσοστό ατόμων σε κίνδυνο φτώχειας και κοινωνικού αποκλεισμού, 2018

Region	Value
Δυτική Ελλάδα	44,6
Κρήτη	37,0
Δυτική Μακεδονία	36,7
Νότιο Αιγαίο	35,9
Αν. Μακεδονία και Θράκη	33,8
Θεσσαλία	33,6
Βόρειο Αιγαίο	33,6
Σύνολο χώρας	31,8
Πελοπόννησος	31,4
Ήπειρος	31,3
Στερεά Ελλάδα	31,1
Κεντρική Μακεδονία	30,4
Αττική	28,3
Ιόνια Νησιά	28,0

Ποσοστό ανεργίας, Δ' τρίμηνο 2019

Region	Value
Δυτική Ελλάδα	23,2
Δυτική Μακεδονία	22,6
Κεντρική Μακεδονία	19,4
Στερεά Ελλάδα	18,2
Θεσσαλία	18,1
Αν. Μακεδονία και Θράκη	16,9
Βόρειο Αιγαίο	16,9
Σύνολο χώρας	16,8
Ήπειρος	16,7
Αττική	15,7
Νότιο Αιγαίο	13,0
Κρήτη	12,5
Ιόνια Νησιά	12,1
Πελοπόννησος	11,2

Source: Pissarides et al. (2020: 27) based on Eurostat data

Supporting vulnerable households remains a major challenge, with a large proportion of them on the brink of poverty. The problem is directly related to the unsatisfactory access to the labour market, as well as to the low productivity that leads to low wages. Unemployment soared during the crisis of the previous decade, but it was already high during the years of growth that preceded the crisis. The very large size of the informal economy makes it difficult to tackle the problem effectively through a social protection system. The current system often discourages formal work and ultimately traps many low-income households.

2. ANALYSIS OF POVERTY DATA

For the measurement of poverty in Greece, one of the indicators that proves to be very useful is that of the Minimum Guaranteed Income (EEE) as it is a measure of protection from poverty. That is why it is used below as an estimation of poverty.

2.1. Guaranteed Minimum Income

2.1.1. Basic facts

According to the official website of OPEKA of the Ministry of Labor and Social Affairs, [11] the Minimum Guaranteed Income (EEE) is a welfare program given to vulnerable households and is a needed safety net to address the consequences of poverty and avoid social exclusion. At the same point, it is emphasized that the state's concern for ensuring the dignified living conditions of all citizens through a system of guaranteed minimum income is reinforced by Article 21 of the Constitution. This program is based on three pillars:[12]

a) Income support to specific beneficiary groups (Single-person household, Multi-person household, Homeless),

b) interoperability with social inclusion services (Free medical care for the uninsured, Referral and integration into social care and support structures and services, Integration into programs and social structures for tackling poverty, Integration into the actions implemented under the Operational Program of the European Aid to the Poor, Social Invoice for Electricity Service, Social Invoice for Water Supply, Social Invoice for Municipalities and Municipal Enterprises), and

(c) Interoperability with activation services aimed at the inclusion or reintegration of end recipients into the labor market and social reintegration (job placement, participation in community service programs, participation in vocational training programs, participation in professional experience programs, integration or return to the education system and second chance schools).

2.1.2. Density of EEE end recipients

The data of the end recipients in relation to the de facto population of each Municipality were used to calculate the density of the end recipients. From Figure 7 and Figure 8 conclusions are drawn about the spatial distribution of density. The Municipalities that seem to show the highest density are the Municipality of Kalymnion (17.59) with a significant difference from the next Municipality of Lipsi (12.76), followed by the Municipalities of Sofada (12.05), Kalamata (11.7), Arrianon (10.67), Abdera (10.33), Amfilochia (10.05) and Agrinio (10.04).

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[11] https://opeka.gr/elachisto-engyimeno-eisodima-kea/
[12] https://opeka.gr/elachisto-engyimeno-eisodima-kea/plirofories/

Figure 7: Density of EEE end recipients. Analysis of registry of 15/02/2020
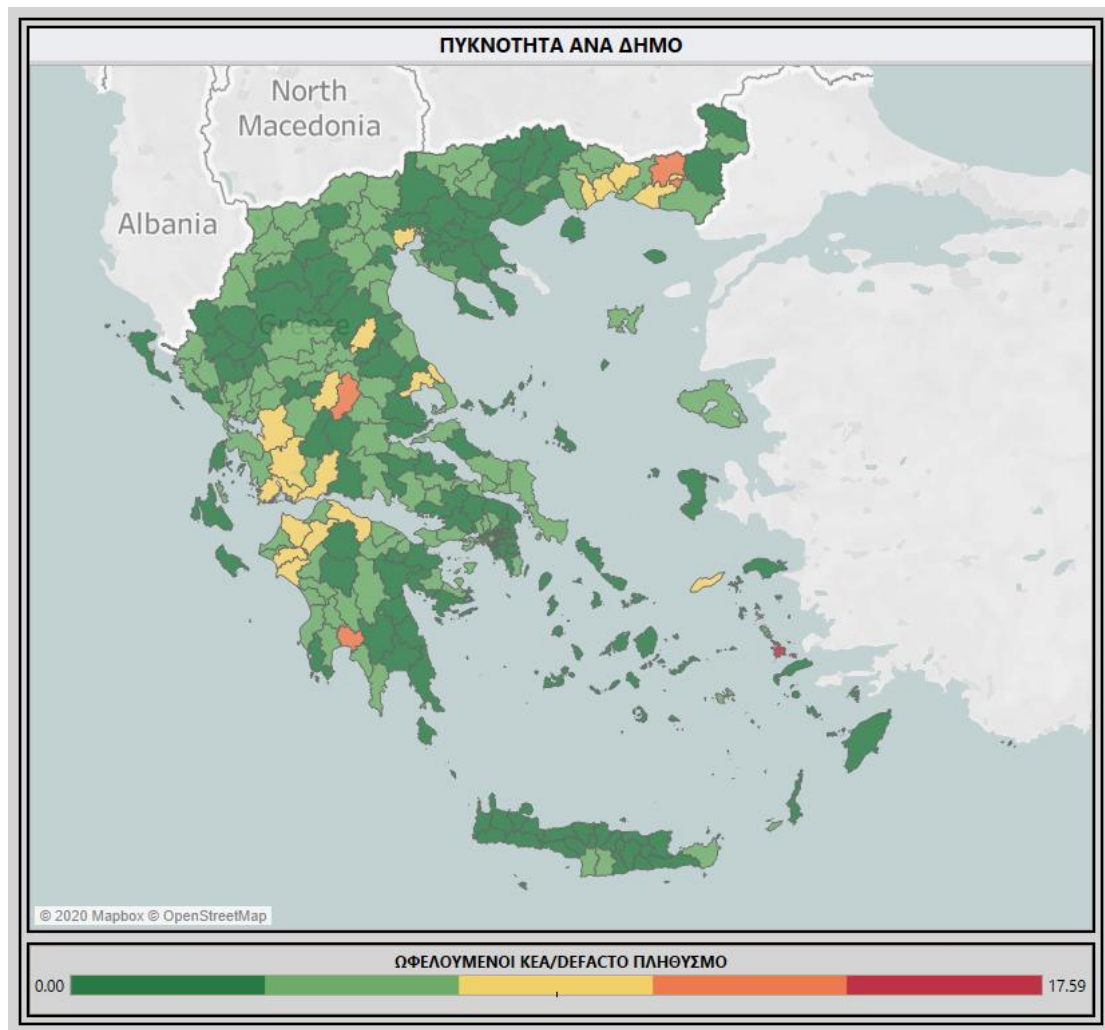
Examining the employment status of the EEE end recipients from the data in Figure 8, it appears that about half (53%) are unemployed while 18% are employed, pointing out the problem mentioned above related to the risk of the working poor.

Figure 9 shows the educational level of the EEE end recipients. It is observed that those who come from Compulsory education (primary) (19.4%), General Lyceum (18.3%), Children (16.7%) and Compulsory education (Gymnasium, Second Chance Schools) (16.5 %) are of the same size class.

Regarding the age distribution of the EEE end recipients (Figure 10) it appears that 18.2% are 55-64 years old, 17.7% are 45-54 years old, 15.3% are 35-44 years old and 15, 1% are under 15 years old.

Figure 8: Employment status of EEE end recipients

ΕΡΓΑΣΙΑΚΟ ΚΑΘΕΣΤΩΣ		
	EEE End Users	**% Επί του Συνόλου**
Unemployed	230.540	53,18%
Children	87.331	20,14%
Employee	77.486	17,87%
Student / Soldier	15.335	3,54%
Elderly (unable to work)	11.863	2,74%
Unable to work	5.546	1,28%
Retired	5.426	1,25%

Figure 9: Educational level of EEE end recipients

Educational Level		
	EEE End Users	**Percent of total**
Compulsory education (primary)	84.152	19,41%
General Lyceum	79.512	18,34%
Children	72.637	16,75%
Compulsory education (Gymnasium, Second Chance Schools)	71.603	16,52%
Vocational High School	25.451	5,87%
Without any Education	24.255	5,59%
Tertiary	20.946	4,83%
Unclassified	15.171	3,50%
Voacational Training	13.592	3,14%
IEK	10.715	2,47%
TEI	9.331	2,15%
Higher School, Degree	4.124	0,95%
Postgraduate	1.847	0,43%
Phd	191	0,04%

Figure 10: Age group of EEE end recipients

Age Group		
	EEE End Users	**Percent of total**
55-64	78.829	18,18%
45-54	76.929	17,74%
35-44	66.201	15,27%
<15	65.357	15,08%
15-24	51.113	11,79%
25-34	50.278	11,60%
65+	44.820	10,34%

2.2. Effects of pandemic Covid-19 on salaried employment

Using the recruitment and dismissal data of the ERGANI Information System, the effects of the Covid-19 pandemic are approached. The data used refer to the first 7 months of the years 2018, 2019 and 2020 as their comparative evolution helps to record the impact. Figure 11shows that hirings increased in 2019 compared to 2018, while in 2020 there were 512,712 fewer hirings. On the other hand, it appears that the redundancies / departures, while they increased by 78,822 in 2019, decreased by 342,242 in 2020. This should take into account the measures taken to protect workers from being laid off during the first wave of the pandemic. Regarding the new jobs, there is a small decrease in 2019 (from 289,561 in 2019 to 281,775 in 2019), while in 2020 a significant decrease is recorded, falling to 111,305 new jobs, reduced by 170,470 new jobs.

Figure 11: Hirings-firings of salaried employment, first 7-month period 2018-2019

	2018	2019	2020
Hirings	1.359.805	1.419.602	850.401
Diff per Year		59.797	-569.201
Firings	1.061.634	1.123.136	807.007
Diff per Year		61.502	-316.129
New Jobs	298.171	296.466	43.394
Diff per Year		-1.705	-253.072

Examining the same data on a monthly basis, it appears that most new positions lost due to the pandemic are recorded in March (-41,903 positions when in the same month in 2018 there were 55,494 new positions and 43,373 in 2019), April (7,205 new positions in the same month in 2018 there were 100,246 new positions and 110,895 in 2019) and May (32,975 new positions when in the same month in 2018 there were 108,725 new positions and 105,284 in 2019). On the other hand, in June and July 2020 more new positions are recorded compared to the respective months of 2018 and 2019. Specifically, in June 2018 33,620 new positions were created, in 2019 they increased to 33,620 while in 2020 they reached 37,568. In July the difference is much bigger as while in 2018 a loss of 8,610 positions was recorded and in 2019 a loss of 14,691 positions, in 2020 67,911 were created as the recruitments exceed the redundancies (Figure 12).

Figure 12: Hirings-firings of salaried employment, first 7-month period 2018-2020, by month

Month o..	Year ..	Hirings	Firings	New Jobs
	2018	153,876	170,418	-16,542
January	2019	157,141	179,474	-22,333
	2020	177,632	194,950	-17,318
	2018	150,345	133,717	16,628
February	2019	165,110	137,270	27,840
	2020	183,602	158,735	24,867
	2018	196,142	140,648	55,494
March	2019	202,157	158,784	43,373
	2020	103,002	144,905	-41,903
	2018	268,072	167,826	100,246
April	2019	282,181	171,286	110,895
	2020	48,555	41,350	7,205
	2018	308,169	199,444	108,725
May	2019	323,524	218,240	105,284
	2020	99,257	66,282	32,975
	2018	283,201	249,581	33,620
June	2019	289,489	258,082	31,407
	2020	238,353	200,785	37,568
	2018	239,080	247,690	-8,610
July	2019	250,319	265,010	-14,691
	2020	306,808	238,897	67,911

Figure 13 shows the new salaried jobs for the first 7 months of the years 2018-2020 per sector of economic activity, based on single-digit STAKOD 08 taxonomy of sectors. The data show that the Activities of accommodation services and catering services show the largest decrease new positions as from the 256,036 new positions in 2019 it fell to 152,855 new positions in 2020. Therefore the change of new positions for the two comparative 7-month periods amounts to -103,181 positions. The next sector that experienced a significant reduction in new paid jobs is Wholesale and retail trade, repair of motor vehicles and motorcycles, which had already shown a decrease in new jobs from 2018 to 2019 with -2,535 positions, while for the 7 months of 2020 the new positions amounted to 20,239 with a reduction compared to 2019 by 17,603 positions. Third in a row industry that shows a large decrease in new positions is the Administrative and support activities. The first 7 months of 2018 presented 13,303 new positions, in 2019 it reached 14,205 while in 2020 it fell to 552, essentially losing 13,653 new positions. It is followed by the Transport and storage sector, which was already showing a downward trend in new positions, as in the first 7 months of 2018 14,960 new positions were created, while in the corresponding period of 2019 there were 13,598 and falling in 2020 to 5,431, essentially experiencing a change of 8,167 new posts. The Education sector seems to have already shown a loss in each of the first 7 months of the last three years, as in 2018 a loss of 82,286 places was recorded, in 2019 the lost places increased to 89,544 and in 2020 due to the pandemic this trend intensified as 96,844 new places were lost. All other sectors are experiencing relative deterioration due to the pandemic outside the sectors Public administration and defense, compulsory social security and Activities of Human health and welfare. The first sector showed an increase of new positions in 2019 compared to 2018 by 1,971, while in 2020 it changed even more by 1,634 new positions. The second sector, which was also the core of the defense during the pandemic, seems to have strengthened with 1,177 new positions when in 2018 it presented only 611 new positions and in 2019 it recorded a loss of 1,219 salaried jobs.

Figure 13: New salaried jobs, first 7 months of 2018-2020, by sector (single-digit codification by STAKOD 08)

	2018		2019		2020	
	New Jobs	Diff per Year	New Jobs	Diff per Year	New Jobs	Diff per Year
HUMAN HEALTH AND SOCIAL WORK ACTIVITIES	611		-1,219	-1,830	1,177	2,396
PUBLIC ADMINISTRATION AND DEFENCE; COMPULSORY SOCIAL SECUR..	6,869		8,840	1,971	10,474	1,634
WITHOUT CLASSIFICATION	57		30	-27	73	43
ACTIVITIES OF EXTRATERRITORIAL ORGANISATIONS AND BODIES	-53		-3	50	5	8
ACTIVITIES OF HOUSEHOLDS AS EMPLOYERS; UNDIFFERENTIATED GOO..	11		8	-3	5	-3
CONSTRUCTION	4,982		4,942	-40	4,845	-97
ELECTRICIT Y, GAS, STEAM AND AIR CONDITIONING SUPPLY	2,808		863	-1,945	755	-108
FINANCIAL AND INSURANCE ACTIVITIES	-871		-140	731	-709	-569
MINING AND QUARRYING	1,086		953	-133	323	-630
AGRICULTURE, FORESTRYAND FISHING	3,362		2,558	-804	1,861	-697
ARTS, ENTERTAINMENT AND RECREATION	-3,968		-5,739	-1,771	-7,039	-1,300
REAL ESTATE ACTIVITIES	2,448		2,471	23	1,098	-1,373
INFORMATION AND COMMUNICATION	1,593		1,794	201	-243	-2,037
OTHER SERVICE ACTIVITIES	5,582		5,573	-9	497	-5,076
PROFESSIONAL, SCIENTIFIC AND TECHNICAL ACTIVITIES	6,747		6,357	-390	867	-5,490
MANUFACTURING	22,804		22,359	-445	15,092	-7,267
EDUCATION	-82,286		-89,544	-7,258	-96,844	-7,300
TRANSPORTATION AND STORAGE	14,960		13,598	-1,362	5,431	-8,167
ADMINISTRATIVE AND SUPPORT SERVICE ACTIVITIES	13,303		14,205	902	552	-13,653
WHOLESALE AND RETAIL TRADE; REPAIR OF MOTOR VEHICLES AND MO..	40,368		37,833	-2,535	20,230	-17,603
ACCOMMODATION AND FOOD SERVICE ACTIVITIES	249,148		256,036	6,888	152,855	-103,181

Figure 14 then shows the same data by region. Specifically, it appears that the South Aegean had the biggest loss in new positions. It is observed that in the first 7 months of 2019 there was an increase of new jobs compared to 2018 by 5,783 jobs. On the other hand, in 2020 due to the pandemic the change shows a loss of 50,630 new positions, i.e. new jobs fell to 55,708 new positions. The same trend was shown by Crete and the Ionian Islands as the change between 2019 and 2020 amounts to -31.132 and -24.784 positions respectively. The Attica region is in a much worse situation as it was already showing a loss of new positions. In the first 7 months of 2018, a loss of 11,763 positions was recorded, in 2019 a loss of 20,584 positions and in 2020 this loss doubled, reaching 43,558 positions. Central Macedonia shows a similar decrease in new positions, as from 33,878 new positions in 2018, it fell to 32,143 new positions in 2019 and in 2020 it fell to 16,781. Another region that is showing job losses is Western Macedonia. Specifically, in the first 7 months of 2018, only 47 new positions are recorded, in 2019 2,035 are lost and in 2020 2,722 are lost. All other regions show similar declining trends in new paid jobs. In general, it appears that, apart from Attica and Western Macedonia, which are losing jobs, the most burdened regions, experiencing the largest losses of new jobs, are mainly those that are heavily dependent on tourism.

Figure 14: New salaried jobs, first 7 months of 2018-2020, by region

	2018		2019		2020	
	New Jobs	Diff per Year	New Jobs	Diff per Year	New Jobs	Diff per Year
SOUTH AEGEAN	100,555		106,338	5,783	55,708	-50,630
CRETE	63,972		64,582	610	33,450	-31,132
IONIAN ISLANDS	47,842		49,746	1,904	24,962	-24,784
ATTICA	-11,763		-20,584	-8,821	-43,558	-22,974
CENTRAL MACEDONIA	33,878		32,143	-1,735	16,781	-15,362
THESSALY	8,153		7,408	-745	2,143	-5,265
PELOPONNESE	13,059		11,939	-1,120	7,693	-4,246
EAST MACEDONIA AND TRACE	10,316		9,908	-408	5,940	-3,968
NORTH AEGEAN	8,034		7,135	-899	3,297	-3,838
EPIRUS	4,570		5,414	844	1,808	-3,606
WESTERN GREECE	4,046		3,866	-180	1,732	-2,134
CENTRAL CREECE	6,852		5,915	-937	4,071	-1,844
WESTERN MACEDONIA	47		-2,035	-2,082	-2,722	-687

Figure 15 shows the conditions prevailing in salaried employment at the level of the Regional Units. It appears that based on the losses of new jobs during the first 7 months of 2020 compared to the same period of 2019, the Regional Units with increased dependence on tourism show greater changes. Specifically, Rhodes, Corfu, Heraklion, Chania, Kos, Thira, Central Sector of Athens, Halkidiki, Zakynthos, Mykonos show high changes in the new positions between 2019 and 2020. The following are the other Regional Units which basically show negative changes in (losses of) new posts. It also follows from this spatial level that most of the affected Regional Units are mainly tourism-based.

Figure 15: New salaried jobs, first 7 months of 2018-2020, by Regional Unit

	2018		2019		2020	
	Νέες Θέσεις	Μεταβολή	Νέες Θέσεις	Μεταβολή	Νέες Θέσεις	Μεταβολή
Π.Ε. ΡΟΔΟΥ	31.604		32.415	811	14.520	-17.895
Π.Ε. ΚΕΡΚΥΡΑΣ	21.976		23.221	1.245	11.092	-12.129
Π.Ε. ΗΡΑΚΛΕΙΟΥ	26.527		26.374	-153	14.859	-11.515
Π.Ε. ΧΑΝΙΩΝ	17.946		18.512	566	8.124	-10.388
Π.Ε. ΚΩ	16.864		18.036	1.172	9.302	-8.734
Π.Ε. ΘΗΡΑΣ	15.994		17.171	1.177	8.554	-8.617
Π.Ε. ΚΕΝΤΡΙΚΟΥ ΤΟΜΕΑ ΑΘΗΝΑΣ	-11.641		-14.846	-3.205	-23.325	-8.479
Π.Ε. ΧΑΛΚΙΔΙΚΗΣ	26.049		26.247	198	18.222	-8.025
Π.Ε. ΖΑΚΥΝΘΟΥ	14.166		14.697	531	7.293	-7.404
Π.Ε. ΜΥΚΟΝΟΥ	13.787		14.979	1.192	8.016	-6.963
Π.Ε. ΑΝΑΤΟΛΙΚΗΣ ΑΤΤΙΚΗΣ	8.336		6.955	-1.381	754	-6.201
Π.Ε. ΒΟΡΕΙΟΥ ΤΟΜΕΑ ΑΘΗΝΑΣ	-2.975		-3.449	-474	-9.118	-5.669
Π.Ε. ΡΕΘΥΜΝΟΥ	10.780		10.987	207	5.481	-5.506
Π.Ε. ΘΕΣΣΑΛΟΝΙΚΗΣ	-5.809		-7.460	-1.651	-12.171	-4.711
Π.Ε. ΛΑΣΙΘΙΟΥ	8.719		8.709	-10	4.986	-3.723
Π.Ε. ΚΕΦΑΛΛΗΝΙΑΣ	6.836		6.642	-194	3.035	-3.607
Π.Ε. ΣΠΟΡΑΔΩΝ	5.797		5.687	-110	3.131	-2.556
Π.Ε. ΠΙΕΡΙΑΣ	5.492		5.389	-103	2.943	-2.446
Π.Ε. ΠΑΡΟΥ	6.372		6.818	446	4.520	-2.298
Π.Ε. ΝΑΞΟΥ	5.267		5.519	252	3.305	-2.214
Π.Ε. ΜΕΣΣΗΝΙΑΣ	4.714		4.951	237	3.069	-1.882
Π.Ε. ΣΑΜΟΥ	2.886		2.884	-2	1.144	-1.740
Π.Ε. ΝΟΤΙΟΥ ΤΟΜΕΑ ΑΘΗΝΑΣ	-5.867		-6.648	-781	-8.289	-1.641
Π.Ε. ΘΑΣΟΥ	5.038		5.155	117	3.595	-1.560
Π.Ε. ΛΕΥΚΑΔΑΣ	4.505		4.803	298	3.310	-1.493
Π.Ε. ΚΑΡΔΙΤΣΑΣ	-43		9	52	-1.468	-1.477
Π.Ε. ΠΡΕΒΕΖΑΣ	3.715		3.828	113	2.460	-1.368
Π.Ε. ΙΩΑΝΝΙΝΩΝ	-386		-144	242	-1.379	-1.235
Π.Ε. ΑΡΓΟΛΙΔΑΣ	2.676		2.193	-483	990	-1.203
Π.Ε. ΑΧΑΪΑΣ	622		1.218	596	52	-1.166
Π.Ε. ΛΕΣΒΟΥ	2.539		1.760	-779	710	-1.050
Π.Ε. ΕΥΒΟΙΑΣ	4.716		4.889	173	3.843	-1.046
Π.Ε. ΚΑΒΑΛΑΣ	4.066		3.402	-664	2.373	-1.029
Π.Ε. ΜΗΛΟΥ	3.203		3.434	231	2.439	-995
Π.Ε. ΚΑΡΠΑΘΟΥ	1.434		1.484	50	502	-982
Π.Ε. ΘΕΣΠΡΩΤΙΑΣ	1.715		2.045	330	1.181	-864
Π.Ε. ΔΥΤΙΚΗΣ ΑΤΤΙΚΗΣ	1.790		1.436	-354	651	-785
Π.Ε. ΛΑΚΩΝΙΑΣ	2.288		2.165	-123	1.444	-721
Π.Ε. ΕΒΡΟΥ	1.227		1.226	-1	563	-663
Π.Ε. ΝΗΣΩΝ	4.601		4.827	226	4.209	-618
Π.Ε. ΞΑΝΘΗΣ	-11		212	223	-380	-592
Π.Ε. ΣΥΡΟΥ	406		600	194	14	-586
Π.Ε. ΗΛΕΙΑΣ	2.678		2.540	-138	1.975	-565
Π.Ε. ΧΙΟΥ	1.047		808	-239	279	-529
Π.Ε. ΚΑΛΥΜΝΟΥ	2.026		2.038	12	1.510	-528
Π.Ε. ΤΡΙΚΑΛΩΝ	-284		-569	-285	-1.095	-526
Π.Ε. ΦΩΚΙΔΑΣ	719		652	-67	205	-447
Π.Ε. ΑΙΤΩΛΟΑΚΑΡΝΑΝΙΑΣ	746		108	-638	-295	-403
Π.Ε. ΜΑΓΝΗΣΙΑΣ	904		773	-131	380	-393
Π.Ε. ΛΗΜΝΟΥ	949		1.191	242	806	-385
Π.Ε. ΚΟΡΙΝΘΙΑΣ	2.964		2.542	-422	2.195	-347
Π.Ε. ΑΝΔΡΟΥ	1.134		1.222	88	877	-345
Π.Ε. ΤΗΝΟΥ	1.543		1.688	145	1.354	-334
Π.Ε. ΛΑΡΙΣΑΣ	1.779		1.508	-271	1.195	-313
Π.Ε. ΔΡΑΜΑΣ	507		321	-186	27	-294
Π.Ε. ΚΑΣΤΟΡΙΑΣ	-299		-474	-175	-724	-250
Π.Ε. ΚΟΖΑΝΗΣ	318		-1.312	-1.630	-1.555	-243
Π.Ε. ΠΕΛΛΑΣ	4.608		4.662	54	4.425	-237
Π.Ε. ΚΙΛΚΙΣ	158		444	286	226	-218
Π.Ε. ΒΟΙΩΤΙΑΣ	520		-34	-554	-237	-203
Π.Ε. ΙΘΑΚΗΣ	359		383	24	232	-151
Π.Ε. ΦΘΙΩΤΙΔΑΣ	962		598	-364	453	-145
Π.Ε. ΑΡΤΑΣ	-474		-315	159	-454	-139
Π.Ε. ΚΕΑΣ-ΚΥΘΝΟΥ	921		934	13	795	-139
Π.Ε. ΙΚΑΡΙΑΣ	613		492	-121	358	-134
Π.Ε. ΦΛΩΡΙΝΑΣ	-20		-327	-307	-426	-99
Π.Ε. ΓΡΕΒΕΝΩΝ	48		78	30	-17	-95
Π.Ε. ΑΡΚΑΔΙΑΣ	417		88	-329	-5	-93
Π.Ε. ΕΥΡΥΤΑΝΙΑΣ	-65		-190	-125	-193	-3
Π.Ε. ΣΕΡΡΩΝ	-299		-374	-75	-312	62
Π.Ε. ΔΥΤΙΚΟΥ ΤΟΜΕΑ ΑΘΗΝΑΣ	-3.853		-5.023	-1.170	-4.887	136
Π.Ε. ΡΟΔΟΠΗΣ	-511		-408	103	-238	170
Π.Ε. ΗΜΑΘΙΑΣ	3.679		3.235	-444	3.448	213
Π.Ε. ΠΕΙΡΑΙΑ	-2.154		-3.836	-1.682	-3.553	283

Figure 16 shows the 33 Municipalities that lost more than 1,000 jobs in the first 7 months of 2020. The data show that the largest burden is carried by the Municipalities of Rhodes (-17.467), Corfu (-11.923), Kos (-8.698), Athinaion (-8.391), Thiras (-7.848), Zakynthos (-7.404), Mykonos (-6.963), Hersonissos (-6.498), Chania (-6.062), Rethymno (-4.396), Heraklion (-3.688), Kefalias (-3.607), Kassandra (-3.528), Agios Nikolaos (-3.079), Platanias (-2.462), Paros (-2.081), Chalandri (-2.079), Spaton-Artemidos (-2.072), Maroussi (-2.048), Naxos & Small Cyclades (-2.023), Skiathos (-1.804), Samos (-1.740), Sithonia (-1.596), Varis-Voulas-Vouliagmeni (-1.589), Thassos (-1.560), Katerini (-1.504), Apokoronas (-1.465), Thessaloniki (-1.454), Limni Plastira (-1.433), Lefkada (-1.407), Nea Propontida (-1.395), Lesvos (-1.050) and Maleviziou (-1.010).

Figure 16: Municipalities with losses of more than 1,000 new jobs, first 7 months of 2018-2020

<-1000 ΘΕΣΕΙΣ ΕΡΓΑΣΙΑΣ	
Ρόδου	-17.467
Κέρκυρας	-11.923
Κω	-8.698
Αθηναίων	-8.391
Θήρας	-7.848
Ζακύνθου	-7.404
Μυκόνου	-6.963
Χερσονήσου	-6.498
Χανίων	-6.062
Ρεθύμνης	-4.396
Ηρακλείου	-3.688
Κεφαλονιάς	-3.607
Κασσάνδρας	-3.528
Αγίου Νικολάου	-3.079
Πλατανιά	-2.462
Πάρου	-2.081
Χαλανδρίου	-2.079
Σπάτων - Αρτέμιδος	-2.072
Αμαρουσίου	-2.048
Νάξου & Μικρών Κυκλάδων	-2.023
Σκιάθου	-1.804
Σάμου	-1.740
Σιθωνίας	-1.596
Βάρης - Βούλας - Βουλιαγμένης	-1.589
Θάσου	-1.560
Κατερίνης	-1.504
Αποκορώνου	-1.465
Θεσσαλονίκης	-1.454
Λίμνης Πλαστήρα	-1.433
Λευκάδας	-1.407
Νέας Προποντίδας	-1.395
Λέσβου	-1.050
Μαλεβιζίου	-1.010

Figure 17 shows the characteristics of the new salaried jobs in the first 7 months of the period 2018 - 2020. It appears that a large part of the new jobs lost concerns men aged 15-24, showing a change of -29,231 new jobs between 2019 and 2020. This is followed by women of the same age group with a change of -25,175 positions. Then the age group 25-34 years is affected with the female sex in this case losing more jobs, as from the 11,191 new places in 2019, in 2020 a loss of 10,863 places is recorded (change of -22,054 places). Men on the other hand show a change of -21,071 positions. The age groups that follow are those of 35-44 years, 45-54 years, 55-64 years, 65+ years and less than 15 years. In other words, it appears that the younger part of the workforce carried a heavier burden.

Figure 17: Characteristics of new salaried jobs, first 7 months of 2018-2020 (age and sex)

		2018		2019		2020	
		Νέες Θέσεις	Μεταβολή	Νέες Θέσεις	Μεταβολή	Νέες Θέσεις	Μεταβολή
15-24	Άνδρας	58.887		63.738	4.851	34.507	-29.231
	Γυναίκα	46.481		49.258	2.777	24.083	-25.175
25-34	Άνδρας	46.395		46.304	-91	25.233	-21.071
	Γυναίκα	16.463		11.191	-5.272	-10.863	-22.054
35-44	Άνδρας	28.852		25.694	-3.158	10.977	-14.717
	Γυναίκα	22.540		16.506	-6.034	-2.152	-18.658
45-54	Άνδρας	23.359		22.554	-805	11.139	-11.415
	Γυναίκα	26.030		25.673	-357	10.047	-15.626
55-64	Άνδρας	8.675		8.087	-588	3.598	-4.489
	Γυναίκα	11.043		11.820	777	5.190	-6.630
65+	Άνδρας	319		364	45	-396	-760
	Γυναίκα	514		598	84	-20	-618
<15	Άνδρας	-1		-10	-9	-18	-8
	Γυναίκα	4		-2	-6	-20	-18

2.3. Impact of pandemic Covid-19 on registered unemployment

In order to record the effects of the pandemic on unemployment, the data of registered unemployment (OAED) for the whole country, the regions, the Regional Units and the Municipalities are recorded. The return concerns the first five months of the years 2018, 2019 and 2020, recording the absolute numbers and the percentages of change.

Figure 18 shows that for the months of January and February, when the pandemic had not affected the economy, the change was greater in 2019 while in 2020 there was an increase in unemployment but with a small percentage change. However, in March the change reached 5.14%, while in April and May the serious effects of the pandemic became apparent. Specifically for the unemployed in April 2019, there was only a 1.14% increase compared to 2018, while in 2020 the change reached 21.73%. Respectively in May the change reached 25.13%.

Figure 18: Registered unemployment figures for the first 5 months of the years 2018-2020, country totals
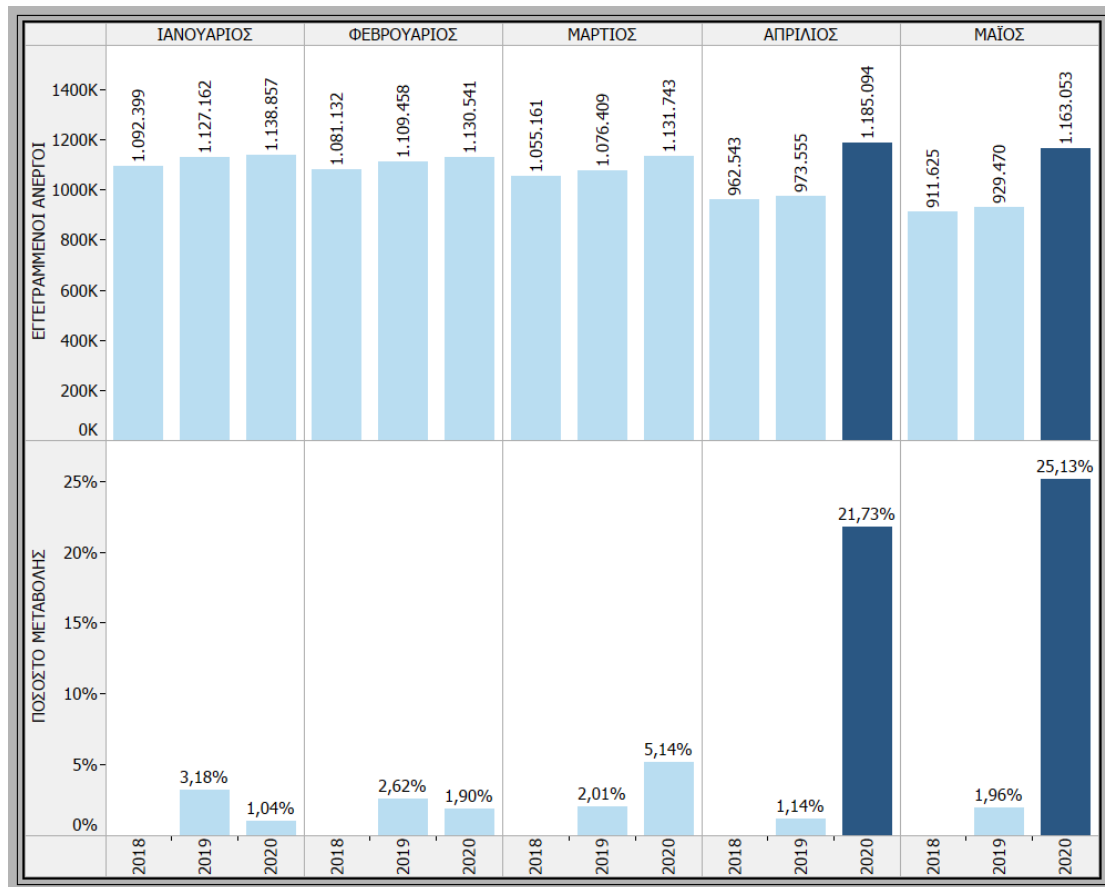
Source: OAED

Examining the regional level (Figure 19), the largest increases in the number of unemployed compared to 2019 were recorded in the Ionian Islands (in May 2020 a change of 248.76% was recorded), in the South Aegean (in May 2020 a change of 231.28% was recorded) and Crete (in May 2020 a change of 126.22% was recorded). Other regions with high unemployment rate in May are also the North Aegean (32.86%), Epirus (24.81%), Peloponnese (23.58%), while the other regions show less than 20%. It is worth noting that these problems are largely related to tourism.

Figure 19: Registered unemployment figures for the first 5 months of the years 2018-2020, regions

		ΙΑΝΟΥΑΡΙΟΣ			ΦΕΒΡΟΥΑΡΙΟΣ			ΜΑΡΤΙΟΣ			ΑΠΡΙΛΙΟΣ			ΜΑΪΟΣ		
		2018	2019	2020	2018	2019	2020	2018	2019	2020	2018	2019	2020	2018	2019	2020
ΠΕΡΙΦΕΡΕΙΑ ΑΝΑΤΟΛΙΚΗΣ ΜΑΚΕΔΟΝΙΑΣ ΘΡΑΚΗΣ	ΠΟΣΟΣΤΟ ΜΕΤΑΒΟΛΗΣ		5,87%	2,17%		4,37%	3,28%		4,43%	5,41%		4,61%	14,94%		5,48%	15,92%
	ΕΓΓΕΓΡΑΜΜΕΝΟΙ ΑΝΕ..	54.875	58.095	59.353	54.478	56.861	58.725	53.127	55.482	58.485	50.354	52.675	60.546	48.700	51.370	59.549
ΠΕΡΙΦΕΡΕΙΑ ΑΤΤΙΚΗΣ	ΠΟΣΟΣΤΟ ΜΕΤΑΒΟΛΗΣ		1,07%	-0,74%		0,90%	0,40%		-0,22%	2,96%		-0,36%	11,84%		0,48%	11,39%
	ΕΓΓΕΓΡΑΜΜΕΝΟΙ ΑΝΕ..	366.284	370.200	367.461	362.935	366.189	367.639	360.213	359.424	370.060	349.350	348.077	389.294	343.620	345.268	384.605
ΠΕΡΙΦΕΡΕΙΑ ΒΟΡΕΙΟΥ ΑΙΓΑΙΟΥ	ΠΟΣΟΣΤΟ ΜΕΤΑΒΟΛΗΣ		9,35%	0,50%		8,78%	3,20%		7,45%	6,51%		7,63%	23,71%		6,51%	32,86%
	ΕΓΓΕΓΡΑΜΜΕΝΟΙ ΑΝΕ..	15.845	17.326	17.413	15.713	17.093	17.640	15.474	16.627	17.710	13.797	14.850	18.371	12.831	13.666	18.157
ΠΕΡΙΦΕΡΕΙΑ ΔΥΤΙΚΗΣ ΕΛΛΑΔΑΣ	ΠΟΣΟΣΤΟ ΜΕΤΑΒΟΛΗΣ		7,08%	-0,27%		6,45%	1,00%		5,64%	3,61%		5,74%	12,91%		7,07%	14,77%
	ΕΓΓΕΓΡΑΜΜΕΝΟΙ ΑΝΕ..	75.247	80.573	80.354	74.588	79.398	80.190	73.655	77.807	80.619	70.242	74.271	83.862	67.654	72.437	83.136
ΠΕΡΙΦΕΡΕΙΑ ΔΥΤΙΚΗΣ ΜΑΚΕΔΟΝΙΑΣ	ΠΟΣΟΣΤΟ ΜΕΤΑΒΟΛΗΣ		-2,62%	0,83%		-2,66%	2,04%		-2,37%	4,99%		-2,31%	13,46%		-1,71%	14,80%
	ΕΓΓΕΓΡΑΜΜΕΝΟΙ ΑΝΕ..	29.721	28.943	29.183	29.508	28.723	29.308	28.800	28.117	29.520	27.784	27.143	30.797	26.932	26.472	30.389
ΠΕΡΙΦΕΡΕΙΑ ΗΠΕΙΡΟΥ	ΠΟΣΟΣΤΟ ΜΕΤΑΒΟΛΗΣ		-1,52%	3,33%		-2,05%	4,14%		-3,76%	7,73%		-4,55%	20,96%		-3,97%	24,81%
	ΕΓΓΕΓΡΑΜΜΕΝΟΙ ΑΝΕ..	30.841	30.373	31.385	30.601	29.973	31.213	30.314	29.175	31.430	28.299	27.010	32.672	26.873	25.806	32.209
ΠΕΡΙΦΕΡΕΙΑ ΘΕΣΣΑΛΙΑΣ	ΠΟΣΟΣΤΟ ΜΕΤΑΒΟΛΗΣ		2,83%	2,87%		1,96%	3,52%		1,97%	5,50%		1,45%	15,63%		2,65%	17,01%
	ΕΓΓΕΓΡΑΜΜΕΝΟΙ ΑΝΕ..	67.927	69.849	71.855	67.619	68.945	71.375	66.493	67.801	71.529	63.388	64.310	74.363	61.169	62.788	73.468
ΠΕΡΙΦΕΡΕΙΑ ΙΟΝΙΩΝ ΝΗΣΩΝ	ΠΟΣΟΣΤΟ ΜΕΤΑΒΟΛΗΣ		4,36%	6,30%		3,95%	5,90%		4,05%	12,61%		-1,10%	120,25%		-3,35%	248,76%
	ΕΓΓΕΓΡΑΜΜΕΝΟΙ ΑΝΕ..	31.613	32.990	35.069	30.722	31.935	33.818	28.493	29.647	33.386	16.206	16.027	35.299	9.992	9.657	33.680
ΠΕΡΙΦΕΡΕΙΑ ΚΕΝΤΡΙΚΗΣ ΜΑΚΕΔΟΝΙΑΣ	ΠΟΣΟΣΤΟ ΜΕΤΑΒΟΛΗΣ		3,63%	0,39%		2,72%	1,20%		1,65%	3,61%		1,14%	14,54%		1,94%	16,15%
	ΕΓΓΕΓΡΑΜΜΕΝΟΙ ΑΝΕ..	209.505	217.112	217.964	208.548	214.228	216.807	205.632	209.032	216.582	194.351	196.569	225.156	187.132	190.769	221.576
ΠΕΡΙΦΕΡΕΙΑ ΚΡΗΤΗΣ	ΠΟΣΟΣΤΟ ΜΕΤΑΒΟΛΗΣ		4,31%	3,71%		4,10%	3,85%		6,53%	11,53%		1,49%	82,06%		1,87%	126,22%
	ΕΓΓΕΓΡΑΜΜΕΝΟΙ ΑΝΕ..	72.212	75.326	78.117	70.424	73.310	76.136	63.627	67.784	75.600	43.367	44.014	80.134	33.425	34.051	77.029
ΠΕΡΙΦΕΡΕΙΑ ΝΟΤΙΟΥ ΑΙΓΑΙΟΥ	ΠΟΣΟΣΤΟ ΜΕΤΑΒΟΛΗΣ		6,05%	5,80%		5,40%	5,76%		7,01%	13,48%		4,16%	120,47%		4,08%	231,28%
	ΕΓΓΕΓΡΑΜΜΕΝΟΙ ΑΝΕ..	49.764	52.775	55.834	48.402	51.016	53.956	43.347	46.384	52.637	24.090	25.093	55.322	14.841	15.446	51.169
ΠΕΡΙΦΕΡΕΙΑ ΠΕΛΟΠΟΝΝΗΣΟΥ	ΠΟΣΟΣΤΟ ΜΕΤΑΒΟΛΗΣ		6,46%	2,10%		6,58%	1,81%		5,18%	6,72%		3,42%	21,95%		5,38%	23,58%
	ΕΓΓΕΓΡΑΜΜΕΝΟΙ ΑΝΕ..	43.308	46.106	47.075	42.699	45.509	46.334	41.894	44.063	47.023	39.526	40.879	49.852	37.685	39.713	49.076
ΠΕΡΙΦΕΡΕΙΑ ΣΤΕΡΕΑΣ ΕΛΛΑΔΑΣ	ΠΟΣΟΣΤΟ ΜΕΤΑΒΟΛΗΣ		4,94%	0,63%		3,08%	2,42%		2,21%	4,65%		2,03%	15,92%		3,08%	16,62%
	ΕΓΓΕΓΡΑΜΜΕΝΟΙ ΑΝΕ..	45.257	47.494	47.794	44.895	46.278	47.400	44.092	45.066	47.162	41.789	42.637	49.426	40.771	42.027	49.010

Source: OAED

At the level of Regional Units (Figure 20) it appears that the largest increases in the number of unemployed occur in touristic Regional Units. The most important Regional Units are recorded here, based on the percentage change in unemployment in May, among which the Regional Unit of Zakynthos (+ 445.95%), Thira (+ 425.5%), Kos (+ 399.9%), Rhodes (+366, 7%), Corfu (+ 245.9%), Rethymnon (+ 200.2%), Lassithi (+ 180.3%), Chania (+ 150.8%) and Heraklion (+ 97.1%).

Figure 20: Registered unemployment figures for the first 5 months of the years 2018-2020, Regional Units

	ΙΑΝΟΥΑΡΙΟΣ			ΦΕΒΡΟΥΑΡΙΟΣ			ΜΑΡΤΙΟΣ			ΑΠΡΙΛΙΟΣ			ΜΑΪΟΣ		
	2018	2019	2020	2018	2019	2020	2018	2019	2020	2018	2019	2020	2018	2019	2020
ΠΕ ΖΑΚΥΝΘΟΥ		8,0%	9,9%		8,0%	8,6%		7,3%	14,2%		12,4%	141,4%		0,6%	445,9%
ΠΕ ΘΗΡΑΣ		1,5%	4,1%		1,4%	3,6%		4,1%	19,3%		-5,2%	201,7%		-3,9%	425,5%
ΠΕ ΚΩ		1,0%	4,4%		0,3%	4,5%		1,0%	10,0%		4,6%	137,2%		-3,0%	399,9%
ΠΕ ΡΟΔΟΥ		7,8%	6,1%		7,3%	5,7%		10,1%	13,8%		6,9%	149,5%		0,4%	366,7%
ΠΕ ΚΕΡΚΥΡΑΣ		3,5%	5,2%		3,4%	4,9%		3,5%	13,5%		-5,8%	129,3%		-4,9%	245,9%
ΠΕ ΡΕΘΥΜΝΟΥ		6,5%	1,9%		5,6%	4,9%		10,3%	15,9%		2,4%	107,3%		4,0%	200,2%
ΠΕ ΛΑΣΙΘΙΟΥ		3,0%	4,1%		2,1%	3,5%		2,7%	10,9%		-1,7%	106,0%		-0,1%	180,3%
ΠΕ ΧΑΝΙΩΝ		3,7%	5,4%		3,3%	6,0%		6,2%	14,8%		1,5%	97,3%		1,3%	150,8%
ΠΕ ΗΡΑΚΛΕΙΟΥ		4,3%	3,4%		4,5%	2,7%		6,6%	9,2%		1,9%	66,6%		2,0%	97,1%

Source: OAED

Figure 21 shows the Municipalities with the largest change in unemployment for the month of May. It seems that at the local level as well the strongest effects are taking place in the touristic Municipalities. Important examples are the Municipalities of Hersonissos (+ 473.1%), Skiathos (+ 470.2%), Thira (+ 451%), Zakynthos (+ 445.9%), Mykonos (+ 445.2%), Apokoronas (+ 432.9%), Kos (+ 413.3%) and Halki (+ 412.5%).

Figure 21: Registered unemployment figures for the first 5 months of the years 2018-2020, Municipalities

	ΙΑΝΟΥΑΡΙΟΣ			ΦΕΒΡΟΥΑΡΙΟΣ			ΜΑΡΤΙΟΣ			ΑΠΡΙΛΙΟΣ			ΜΑΪΟΣ		
	2018	2019	2020	2018	2019	2020	2018	2019	2020	2018	2019	2020	2018	2019	2020
ΔΗΜΟΣ ΧΕΡΣΟΝΗΣΟΥ (Έδρα: Γούρνες)		6,6%	7,5%		5,6%	7,2%		10,5%	15,1%		6,5%	179,8%		9,5%	473,1%
ΔΗΜΟΣ ΣΚΙΑΘΟΥ (Έδρα: Σκιάθος)		-0,9%	12,9%		-2,5%	10,9%		-1,6%	14,5%		-3,1%	160,4%		-2,4%	470,2%
ΔΗΜΟΣ ΘΗΡΑΣ (Έδρα: Θήρα)		1,5%	2,7%		1,3%	1,8%		5,1%	17,5%		-4,0%	203,9%		-3,7%	451,0%
ΔΗΜΟΣ ΖΑΚΥΝΘΟΥ (Έδρα: Ζάκυνθος)		8,0%	9,9%		8,0%	8,6%		7,3%	14,2%		12,4%	141,4%		0,6%	445,9%
ΔΗΜΟΣ ΜΥΚΟΝΟΥ (Έδρα: Μύκονος)		5,1%	0,4%		2,3%	1,3%		2,7%	15,9%		2,7%	226,5%		15,2%	445,2%
ΔΗΜΟΣ ΑΠΟΚΟΡΩΝΟΥ (Έδρα: Βρύσες Ιστορική Έδρα: Βάμος)		8,5%	2,0%		9,1%	3,4%		13,8%	16,3%		7,2%	160,5%		-1,6%	432,9%
ΔΗΜΟΣ ΚΩ (Έδρα: Κως)		1,1%	4,1%		0,4%	4,2%		1,2%	9,7%		4,8%	139,2%		-2,7%	413,3%
ΔΗΜΟΣ ΧΑΛΚΗΣ (Έδρα: Χάλκη)		57,9%	23,3%		76,5%	20,0%		86,7%	39,3%		81,8%	120,0%		33,3%	412,5%
ΔΗΜΟΣ ΡΟΔΟΥ (Έδρα: Ρόδος)		7,7%	5,9%		7,3%	5,5%		10,2%	13,6%		6,9%	151,2%		0,9%	368,3%
ΔΗΜΟΣ ΠΑΞΩΝ (Έδρα: Γάιος)		16,8%	26,6%		14,7%	31,2%		20,6%	30,9%		29,2%	146,1%		27,3%	366,1%
ΔΗΜΟΣ ΠΛΑΤΑΝΙΑ (Έδρα: Γεράνι)		6,4%	9,5%		5,5%	10,4%		11,9%	18,7%		11,6%	174,4%		12,1%	355,6%
ΔΗΜΟΣ ΜΕΓΑΝΗΣΙΟΥ (Έδρα: Μεγανήσι)		-5,8%	4,6%		-11,6%	8,2%		-10,6%	8,5%		-7,9%	91,4%		-21,1%	333,3%
ΔΗΜΟΣ ΑΓΙΟΥ ΝΙΚΟΛΑΟΥ (Έδρα: Αγιος Νικόλαος Ιστορική Έδρα: Νεάπολη)		1,4%	0,9%		0,6%	-0,8%		1,6%	8,9%		-7,0%	152,5%		-1,8%	330,6%
ΔΗΜΟΣ ΙΗΤΩΝ (Έδρα: Ιος)		5,7%	16,2%		6,4%	21,1%		-0,9%	36,6%		-15,5%	200,0%		4,1%	330,3%
ΔΗΜΟΣ ΣΥΜΗΣ (Έδρα: Σύμη)		11,1%	12,0%		8,4%	13,2%		6,5%	21,0%		6,9%	90,5%		-4,9%	306,0%

Source: OAED

2.4. Foresight parameters

This section sets out the parameters that will be used later to conduct the foresight. Figure 22 shows the unemployed who are registered in the EEE as a share of the total of the registered unemployed in OAED (dRk / dRt) per Municipality for February 2020. The high concentration (> 50%) of unemployed receiving the EEE concerns 12 Municipalities, most of them of which are mountainous (eg Municipalities of Agrafa, Lake Plastira, Argithea, North Tzoumerka, Prespa, etc.).

Figure 22: Unemployed registered for EEE as a share of the total registered unemployed (dRk/dRt) by Municipality, February 2020.
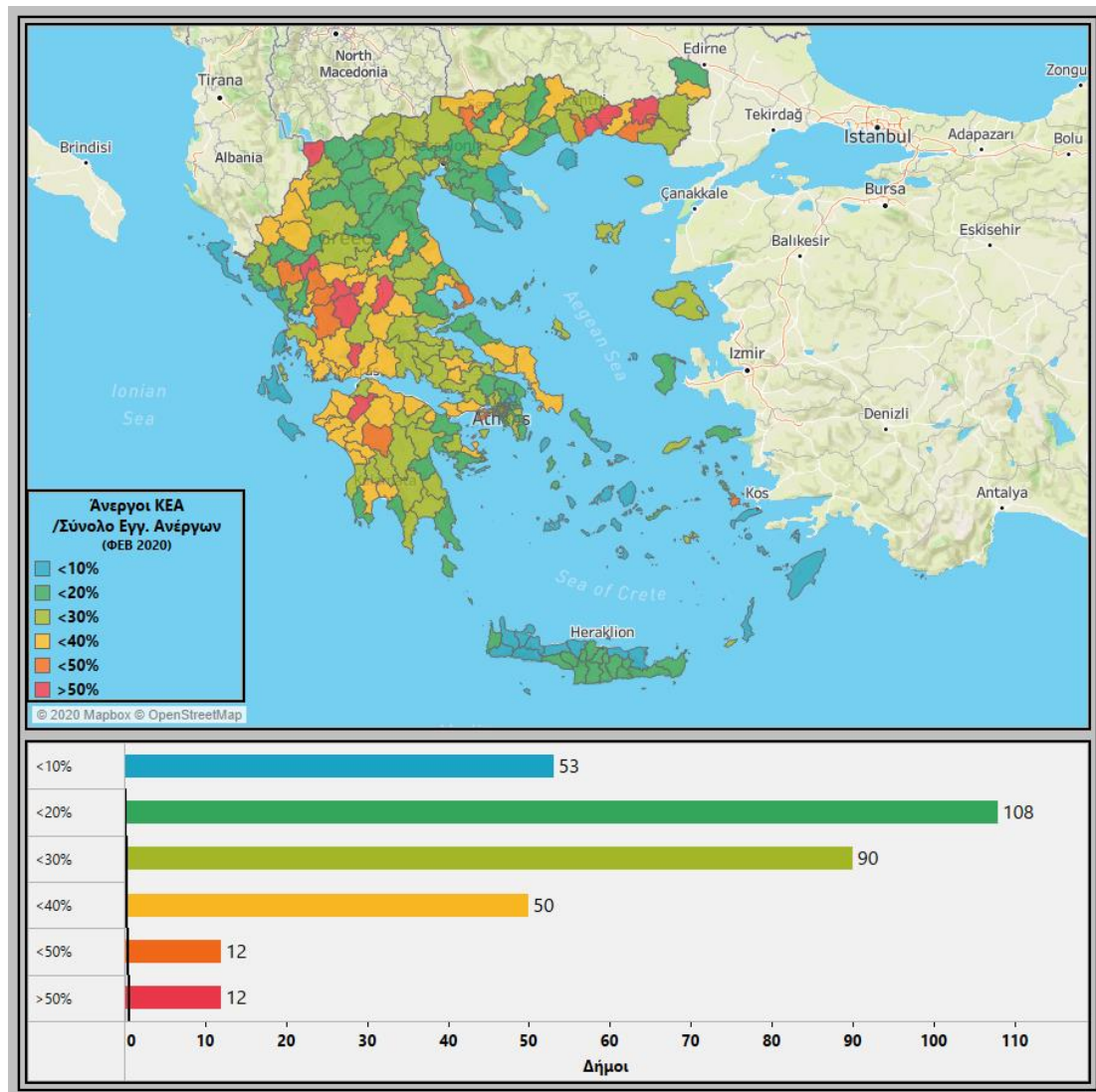
Figure 23 shows the Municipalities based on the change in the number of unemployed regarding the period February - May 2019-2020 [dMF (2020,2019)]. Most Municipalities (211) show an increase of less than 500 people. Eight Municipalities, however, show a change of more than 5,000 unemployed. These Municipalities are: Corfu, Zakynthos, Athens, Kos, Rhodes, Heraklion, Rethymno and Chania.

Figure 23: Changes in the number of the unemployed [dMF(2020,2019)] by Municipality, February-May 2019-2020
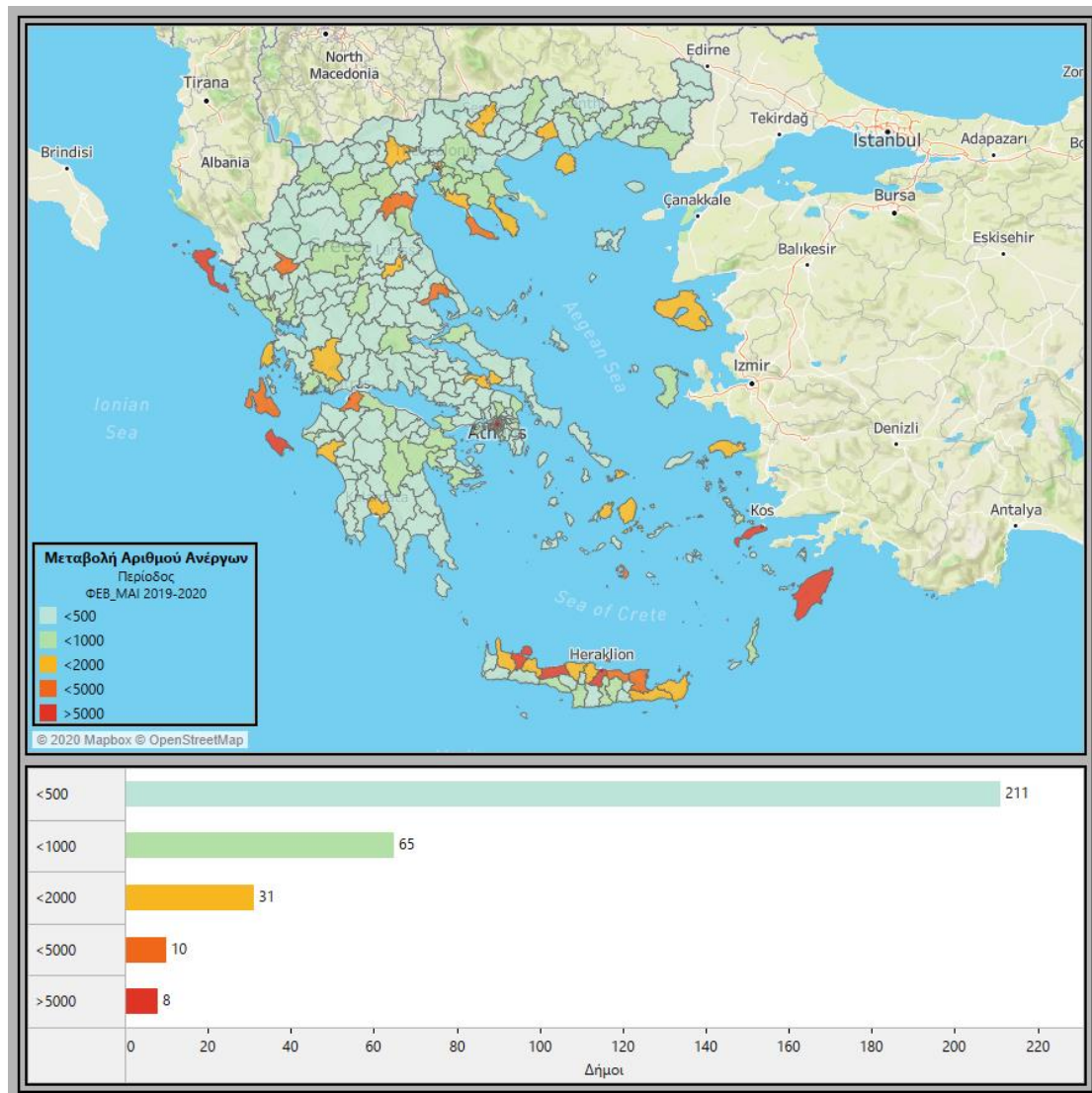
Figure 24 maps the number of high risk workers (dHr) per Municipality. It is estimated that there are about 28 Municipalities that show more than 10,000 high risk positions and these include especially Municipalities that cover large cities such as Athens, Thessaloniki, Ioannina, Heraklion, Chania Volos etc. The same logic applies to Municipalities with medium risk in jobs (dMr) (Figure 25) and Municipalities with low risk in jobs (dLr) (Figure 26).

Figure 24: High-risk jobs (dHr) by Municipality
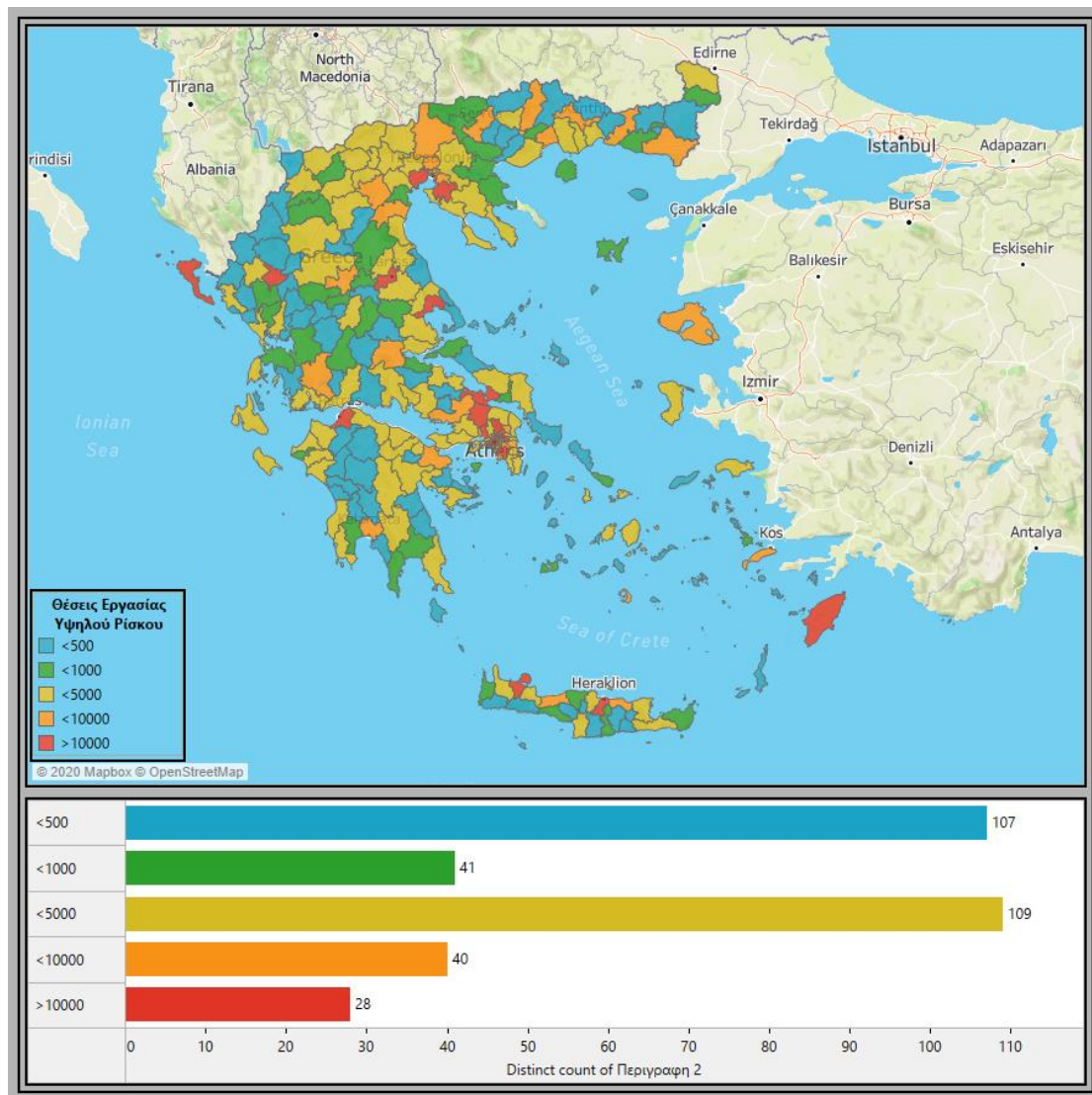
Figure 25: Medium-risk jobs (dMr) by Municipality
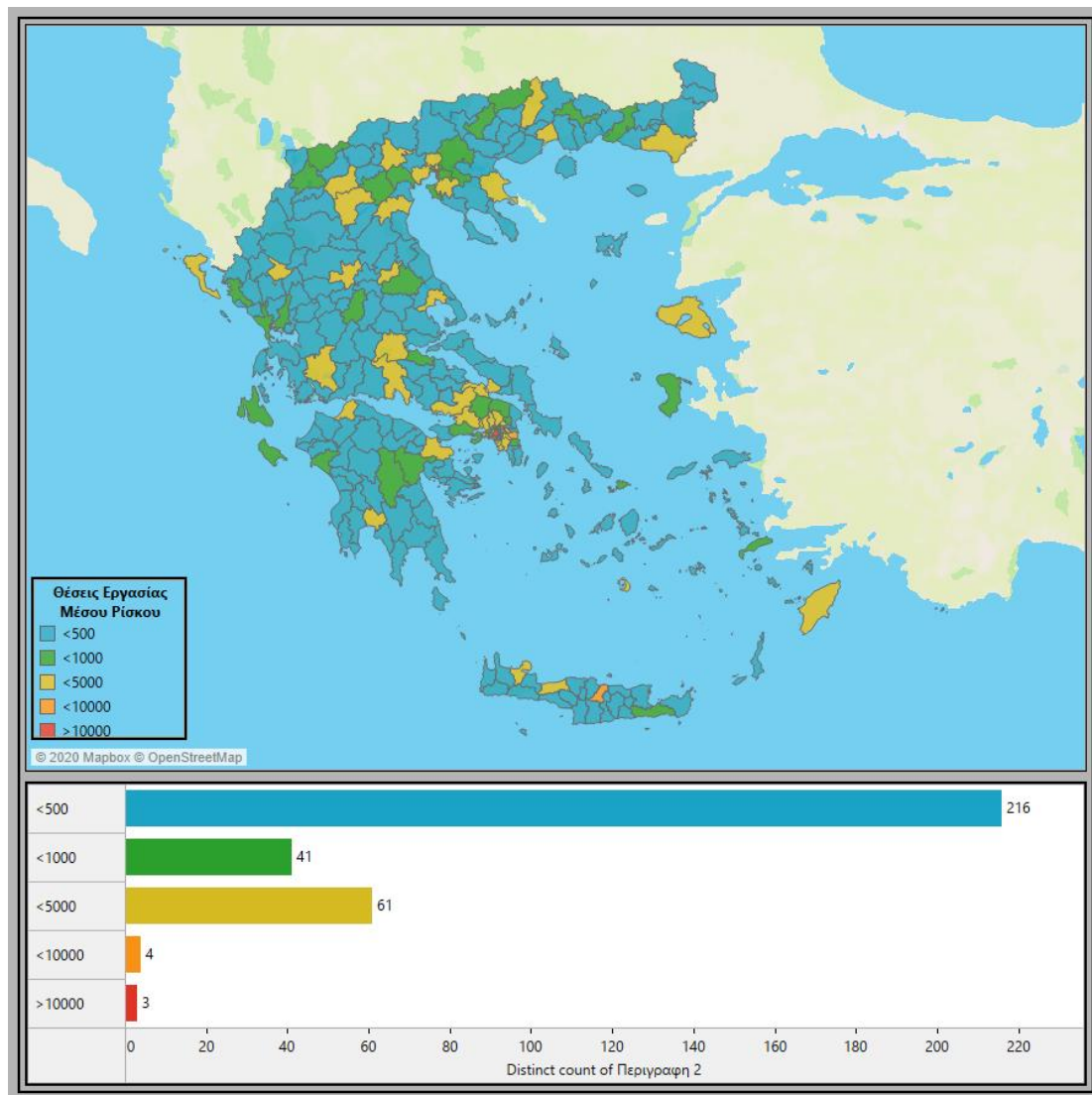
Figure 26: Low-risk jobs (dLr) by Municipality
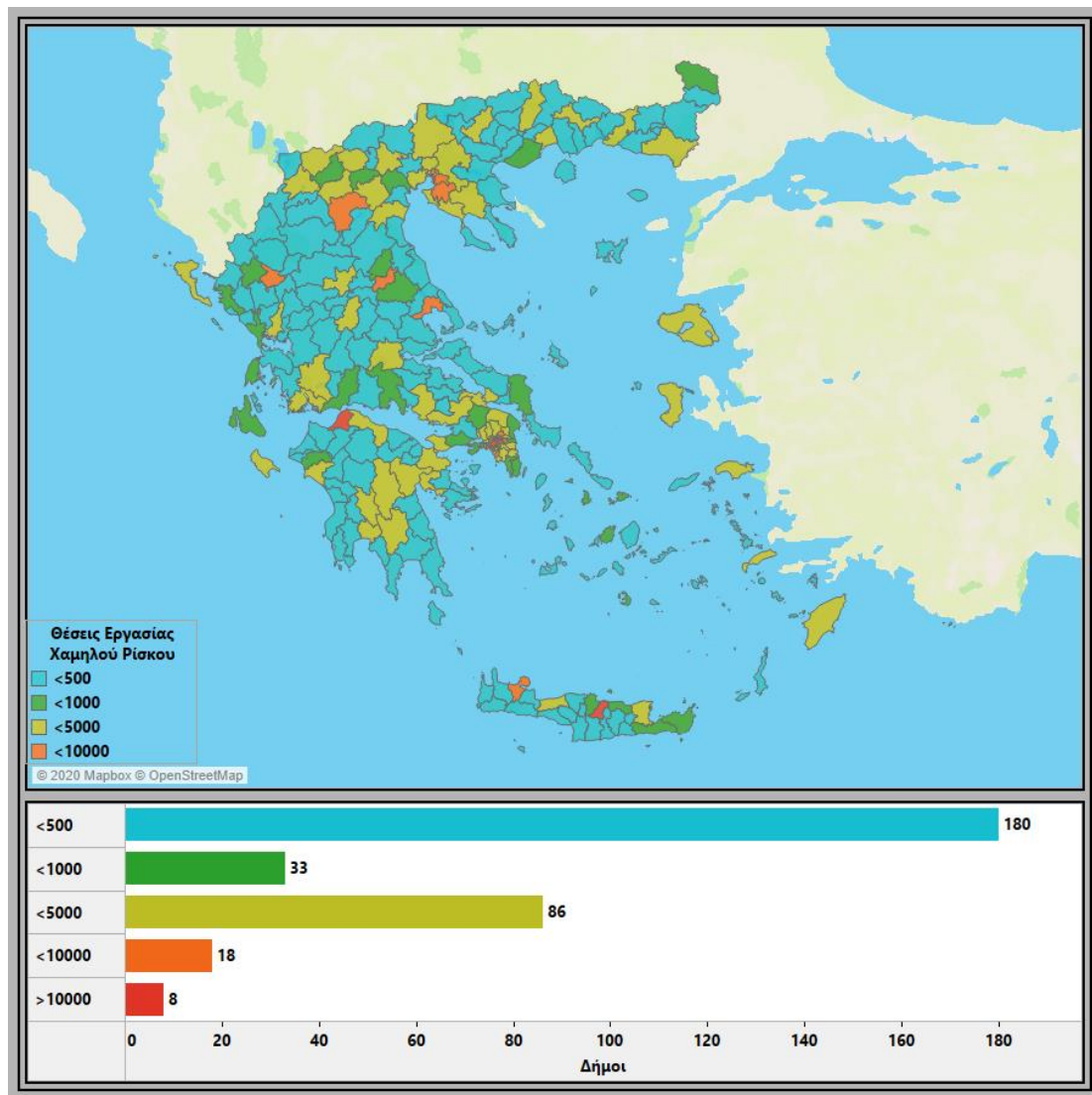
For the most effective management of the sizeable amount of information, the Municipalities were grouped in 5 clusters in relation to the foresight parameters. Figure 27 shows these clusters spatially, while Table 3, Table 4, Table 5 and Table 6 describe the clustering model.

Figure 27: Formation of clusters
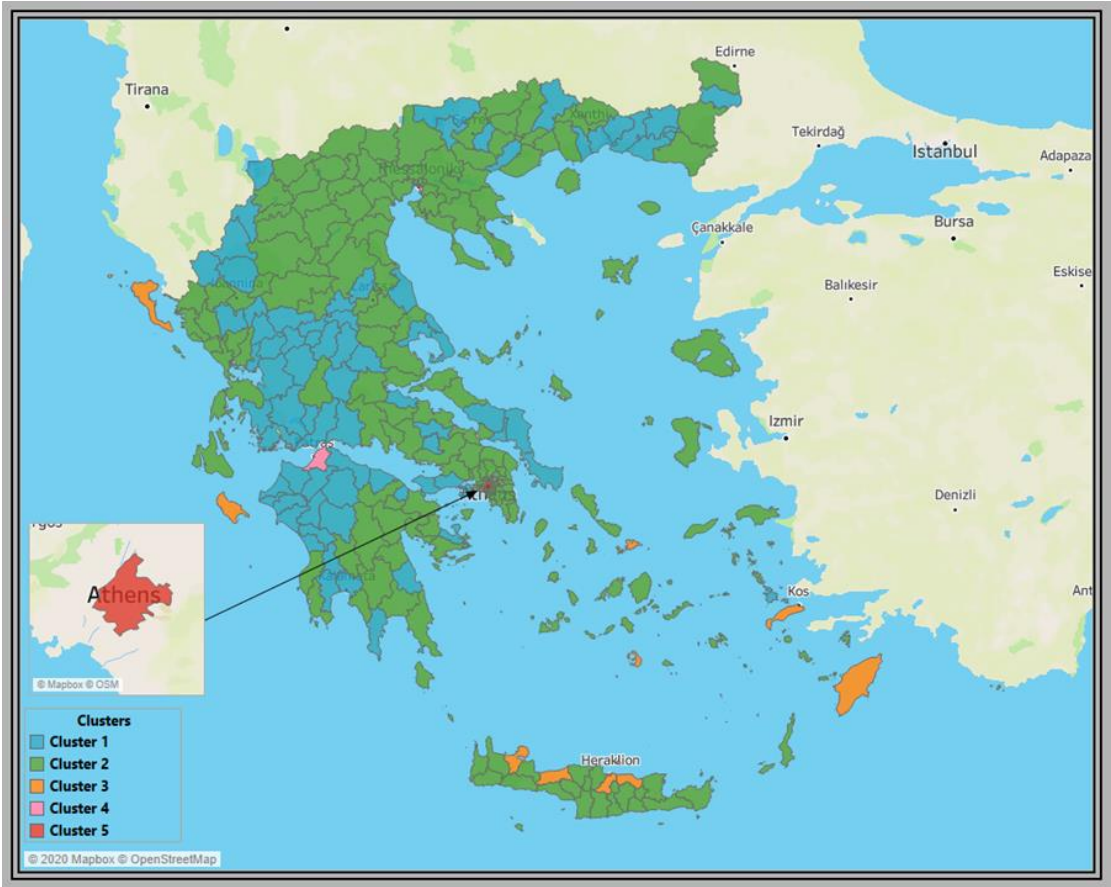
Table 3: Parameters for the grouping (clusters) of Municipalities

Variables:	ANERGOI KEA/ANERGOI FEB
	Sum of ΜΕΤΑΒΟΛΗ 2020
	mf20-mf19
	Sum of High
	Sum of Medium
	Sum of Low
Level of Detail:	Περιγραφή 2
Scaling:	Normalized

Table 4: Summary diagnostics

Number of Clusters:	5
Number of Points:	325
Between-group Sum of Squares:	12.071
Within-group Sum of Squares:	5.6203
Total Sum of Squares:	17.692

Table 5: Descriptive elements of clusters

Clusters	Number of Items	Centers					
		ANERGOI KEA/ANERGOI FEB	Sum of ΜΕΤΑΒΟΛΗ 2020	mf20-mf19	Sum of High	Sum of Medium	Sum of Low
Cluster 1	80	0.3952	-64.313	286.28	1216.0	240.86	485.78
Cluster 2	230	0.15878	-312.23	511.16	3218.9	713.21	1595.0
Cluster 3	10	0.042854	-8133.3	7551.6	10097.0	1845.1	3535.4
Cluster 4	4	0.20372	-946.75	2504.8	28645.0	9747.5	25292.0
Cluster 5	1	0.26422	-8391.0	7579.0	1.0289e+05	45455.0	1.1005e+05
Not Clustered	0						

Table 6: Analysis of variance

Variable	F-statistic	p-value	Model		Error	
			Sum of Squares	DF	Sum of Squares	DF
Sum of Low	70.37	0.0	1.163	4	1.323	320
Sum of Medium	70.15	0.0	1.137	4	1.297	320
Sum of ΜΕΤΑΒΟΛΗ 2020	59.7	0.0	2.058	4	2.757	320
Sum of High	58.02	0.0	1.254	4	1.729	320
mf20-mf19	52.38	0.0	1.761	4	2.689	320
ANERGOI KEA/ANERGOI FEB	47.6	0.0	4.698	4	7.896	320

3.   FORESIGHT

3.1.   Estimating the evolution of poverty: literature review

For a first reading of future estimates of the evolution of the risk of poverty, data from international bodies are used. Specifically, Table 7 records the estimates for the critical figures of GDP, unemployment and employment for the two years 2020-2021 as they are directly related to the risk of poverty. All the organizations considered predict a decrease in GDP for 2020 while in 2021 it is believed that there will be a recovery. Employment, for which only the European Commission has made a relevant forecast, is estimated to decrease in 2020, while in 2021 a recovery is forecast. Respectively for unemployment, the OECD predicts an increase in 2021 compared to 2020, while on the contrary the European Commission estimates a significant decrease in unemployment for the same period.

Table 7: Forecasts of critical measures related to poverty

	IMF [13]	NBG [14]	OECD [15]	EC[16]	EC [17]	Levy [18]	Statista [19]	Focus Economics [20]
GDP 2020 (%)	-10.0	-10.0 to -15.0	-9.8	-9.7	9.0	-10.4	-10.04	-8
GDP 2021 (%)	-	-	2.3	7.9	6.0	5.0	5.06	-
Unemployment 2020 (%)bb	-	-	19.4	19.9	-	-	-	-
Unemployment 2021 (%)	-	-	19.8	16.8	-	-	-	-
Employment 2020 (%)	-	-	-	-3.7	-	-	-	-
Employment 2021 (%)	-	-	-	3.8	-	-	-	-

Adapted from mentioned sources

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[13] https://www.imf.org/en/Countries/GRC
[14] https://www.nbg.gr/en/the-group/press-office/e-spot/reports/greece-macro-flash-tracking-greek-gdp-in-high-frequency
[15] https://issuu.com/oecd.publishing/docs/grc-eo-june-2020-15
[16] The European Commission's *Spring 2020 Economic Forecast* https://ec.europa.eu/economy_finance/forecasts/2020/spring/ecfin_forecast_spring_2020_el_en.pdf
[17] EC *Summer 2020 Economic Forecast* https://ec.europa.eu/economy_finance/forecasts/2020/summer/ecfin_forecast_summer_2020_el_en.pdf
[18] http://www.levyinstitute.org/pubs/sa_may_20.pdf
[19] https://ec.europa.eu/economy_finance/ameco/user/serie/ResultSerie.cfm
[20] https://www.focus-economics.com/countries/greece

The projection of the European Commission forecast of 19.9% unemployment in 2020 and the OECD forecast of 19.8% unemployment in 2021 translates into an increase from 46,000 (479,524) to 215,000 (648,524) end recipients in the EU compared to February 2020.

3.2. Scenarios of evolution of poverty in Greece
3.2.1. Scenario building philosophy

Seven different scenarios were studied for the foresight and risk assessment for extreme poverty from the COVID-19 Pandemic at national, regional and local level.

In the first two scenarios (Scenario 0-1) the forecast for the number of end recipients of the EEE is based on the actual change in the number of registered unemployed in the period February-May 2020 compared to February-May 2019.

Scenario 0 adds a percentage of dMF (2020,2019) to the end recipients of the EEE equal to the percentage of the unemployed already registered in the EEE to the total registered unemployed in February 2020 dRk / dRt (20.39%), while in Scenario 1 the total dMF (2020,2019) is added to the end recipients of the EEE.

The next 5 scenarios are based on the risk analysis by sector of economic activity as it emerged from the synthesis of the analyses of the ILO, the BLS and the results of ERGANI for the first 7 months of the year. In the first scenario, the percentage of employees expected to be affected (0.1 dHr) is added to the end recipients of the EU, in the second percentage (0.3) of dHr is added, in the third all dHr is added, in the fourth all dHr and dMr are added, and in the fifth all dHr, dMr and dLr are added.

Figure 28: Foresight-scenarios

	Δήμοι	ΚΕΑ Φεβ2020	Σενάριο 0	Σενάριο 1	Σενάριο 1 (ILO, BLS)	Σενάριο 2 (ILO, BLS)	Σενάριο 3 (ILO, BLS)	Σενάριο 4 (ILO, BLS)	Σενάριο 5 (ILO, BLS)
Προοπτική Διερεύνηση									
Σύνολο Χώρας	325	433,524	467,991	667,057	549,130	780,341	1,589,579	1,875,700	2,527,957
Cluster 2	230	235,629	253,879	353,146	309,663	457,731	975,968	1,139,924	1,506,750
Cluster 1	80	119,253	127,329	142,155	128,981	148,437	216,533	235,802	274,664
Cluster 3	10	12,977	16,814	88,493	23,074	43,268	113,948	132,399	167,753
Cluster 4	4	34,084	36,386	44,103	45,542	68,458	148,664	187,654	288,821
Cluster 5	1	31,581	33,584	39,160	41,870	62,447	134,466	179,921	289,969

Before analyzing the scenarios, it should be noted that the analysis of the International Labor Organization (ILO) on which the methodology is based was implemented on 29.04.2020 and reflects the risk posed by each sector.[21] Figure 29: Impact of the crisis of Covid-19 on economic sectors (ILO, 2020) shows the assessment of the impact of the Covid-19 crisis on the economic sectors based on this report.

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[21] For more information see the ILO (2020) report. Available at: https://www.ilo.org/wcmsp5/groups/public/@dgreports/@dcomm/documents/briefingnote/wcms_743146.pdf [downloaded at 31.08.2020].

Figure 29: Impact of the crisis of Covid-19 on economic sectors (ILO, 2020)

Economic sector	Impact of crisis on economic output
Wholesale and retail trade; repair of motor vehicles and motorcycles	High
Manufacturing	High
Accommodation and food services	High
Real estate; business and administrative activities	High
Arts, entertainment and recreation, and other services	Medium-high
Transport, storage and communication	Medium-high

Construction	Medium
Financial and insurance services	Medium
Mining and quarrying	Medium
Agriculture, forestry and fishing	Low-medium
Human health and social work activities	Low
Education	Low
Utilities	Low
Public administration and defence; compulsory social security	Low

Regarding the data used by the U.S. Bureau of Labor Statistics (BLS) for the approach to risk at sectoral level, they are shown in the Annex in the relevant Table 16.

3.2.2. Scenarios

- **Scenario 0**

Scenario 0 has R^2 = 0.99 with an average increase of end recipients by 7.95%. Cluster 3 which includes the very touristic Municipalities of the country (10) shows an average increase of 29.57% with a larger increase in the Municipalities of Mykonos and Rhodes by 60.84% and 45.67% respectively. At the regional level, the Ionian Islands Region shows an increase of 34.50%, the Crete Region by 22.61% and the South Aegean Region 20.02% while the other Regions show an increase of less than 11%.

Figure 30: Scenario 0 -- forecast at cluster level

Προοπτική Διερεύνηση				
	Δήμοι	ΚΕΑ Φεβ2020	Σενάριο 0	Μεταβολή Σενάριο 0
Σύνολο Χώρας	325	433,524	467,991	7.95%
Cluster 3	10	12,977	16,814	29.57%
Cluster 2	230	235,629	253,879	7.75%
Cluster 1	80	119,253	127,329	6.77%
Cluster 4	4	34,084	36,386	6.75%
Cluster 5	1	31,581	33,584	6.34%

Figure 31: Scenario 1—forecast at Regional level

Προοπτική Διερεύνηση				
	Δήμοι	ΚΕΑ Φεβ2020	Σενάριο 0	Μεταβολή Σενάριο 0
Ιονίων Νήσων	7	4,114	5,533	34.50%
Κρήτης	24	15,529	19,039	22.61%
Νοτίου Αιγαίου	34	6,305	7,567	20.02%
Βορείου Αιγαίου	9	8,341	9,205	10.36%
Ηπείρου	18	12,164	13,286	9.22%
Πελοποννήσ..	26	27,801	30,073	8.17%
Στερεάς Ελλάδας	25	23,726	25,447	7.25%
Κεντρικής Μακεδονίας	38	80,210	86,027	7.25%
Δυτικής Μακεδονίας	12	10,272	10,998	7.07%
Θεσσαλίας	25	38,873	41,525	6.82%
Δυτικής Ελλάδας	19	51,579	54,902	6.44%
Αττικής	66	125,941	133,926	6.34%
Ανατολικής Μακεδονίας ..	22	28,669	30,463	6.26%

Figure 32: Analysis of variance – Scenario 0
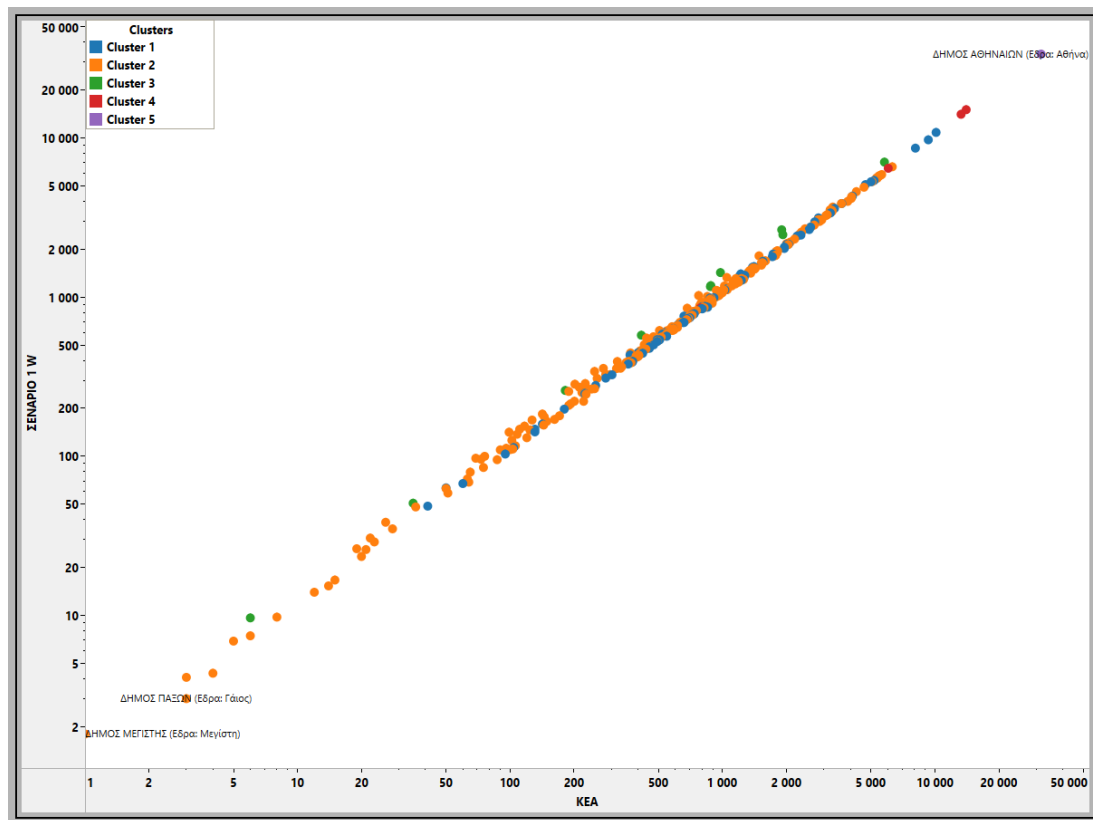
Table 8: Model characteristics of Scenario 0

Trend Lines Model

A linear trend model is computed for natural log of sum of ΣΕΝΑΡΙΟ 0 given natural log of sum of EEE. The model may be significant at p <= 0.05.

Model formula:	(ln(EEE) + intercept)
Number of modeled observations:	316
Number of filtered observations:	9
Model degrees of freedom:	2
Residual degrees of freedom (DF):	314
SSE (sum squared error):	1.57458
MSE (mean squared error):	0.0050146
R-Squared:	0.997812
Standard error:	0.0708139
p-value (significance):	< 0.0001

Individual trend lines:

Panes		Line		Coefficients				
Row	**Column**	**p-value**	**DF**	**Term**	**Value**	**StdErr**	**t-value**	**p-value**
ΣΕΝΑΡΙΟ 0	EEE	< 0.0001	314	ln(EEE)	0.969483	0.0025617	378.453	< 0.0001
				intercept	0.305092	0.0167153	18.2523	< 0.0001

- **Scenario 1**

Scenario 1 has R^2 = 0.74 with an average increase of end recipients by 53.87 %%. Cluster 3 which includes the very touristic Municipalities of the country (10) shows an average increase of 581.92% with a larger increase in the Municipalities of Mykonos, Thira, Paxos, Hydra, Kos, Rhodes and Antiparos. In this scenario only the 81 Municipalities of cluster 1 and cluster 5 have a lower average increase of 19.20% and 24% respectively. At the regional level, the Ionian Islands Region shows an increase of 582.72%, the South Aegean Region by 566.58% and the Crete Region 276.76%, while the other Regions show an increase of less than 54%.

Figure 33: Scenario 1 – foresight at the cluster level

	Δήμοι	ΚΕΑ Φεβ2020	Σενάριο 1	Μεταβολή Σενάριο 1
Προοπτική Διερεύνηση				
Σύνολο Χώρας	325	433,524	667,057	53.87%
Cluster 3	10	12,977	88,493	581.92%
Cluster 2	230	235,629	353,146	49.87%
Cluster 4	4	34,084	44,103	29.40%
Cluster 5	1	31,581	39,160	24.00%
Cluster 1	80	119,253	142,155	19.20%

Figure 34: Scenario 1 – foresight at the regional level

	Δήμοι	ΚΕΑ Φεβ2020	Σενάριο 1	Μεταβολή Σενάριο 1
Προοπτική Διερεύνηση				
Ιονίων Νήσων	7	4,114	28,087	582.72%
Νοτίου Αιγαίου	34	6,305	42,028	566.58%
Κρήτης	24	15,529	58,507	276.76%
Βορείου Αιγαίου	9	8,341	12,832	53.84%
Ηπείρου	18	12,164	18,567	52.64%
Κεντρικής Μακεδονίας	38	80,210	111,017	38.41%
Δυτικής Μακεδονίας	12	10,272	14,189	38.13%
Πελοποννήσ..	26	27,801	37,164	33.68%
Αττικής	66	125,941	165,278	31.23%
Στερεάς Ελλάδας	25	23,726	30,709	29.43%
Ανατολικής Μακεδονίας ..	22	28,669	36,848	28.53%
Θεσσαλίας	25	38,873	49,553	27.47%
Δυτικής Ελλάδας	19	51,579	62,278	20.74%

Figure 35: Analysis of variance – Scenario 1

[46]

Table 9: Model characteristics of Scenario 1

<u>**Trend Lines Model**</u>

A linear trend model is computed for natural log of sum of Σεναριο 1 given natural log of sum of EEE. The model may be significant at p <= 0.05.

Model formula:	(ln(EEE) + intercept)
Number of modeled observations:	316
Number of filtered observations:	9
Model degrees of freedom:	2
Residual degrees of freedom (DF):	314
SSE (sum squared error):	123.889
MSE (mean squared error):	0.394552
R-Squared:	0.743563
Standard error:	0.628134
p-value (significance):	< 0.0001

Individual trend lines:

Panes		**Line**		**Coefficients**				
Row	**Column**	**p-value**	**DF**	**Term**	**Value**	**StdErr**	**t-value**	**p-value**
Σεναριο 1	EEE	< 0.0001	314	ln(EEE)	0.68564	0.0227228	30.174	< 0.0001
				intercept	2.61797	0.148268	17.657	< 0.0001

- **Scenario 1 (ILO, BLS)**

Scenario 1 (ILO, BLS) has R^2 = 0.93 with an average increase of end recipients by 26.67%. Cluster 3, which includes the very touristic Municipalities of the country (10), shows an average increase of 77.81%. The Municipalities of Tanagra and Hydra as well as other Municipalities of cluster 2 still show a significant increase. In this scenario only the 80 Municipalities of cluster 1 have a lower average increase of 8.16%. At the regional level, the Region of South Aegean by 68.91%, the Region of the Ionian Islands show an increase of 47.77%, the Region of Crete 45.41% and the Region of Attica 41.04%, while the other regions show an increase of less than 40 %.

Figure 36: Scenario 1 (ILO, BLS) – foresight at the cluster level

	Δήμοι	ΚΕΑ Φεβ2020	Σενάριο 1 (ILO, BLS)	Μεταβολή Σενάριο 1ILO
Προοπτική Διερεύνηση				
Σύνολο Χώρας	325	433,524	549,130	26.67%
Cluster 3	10	12,977	23,074	77.81%
Cluster 4	4	34,084	45,542	33.62%
Cluster 5	1	31,581	41,870	32.58%
Cluster 2	230	235,629	309,663	31.42%
Cluster 1	80	119,253	128,981	8.16%

Figure 37: Scenario 1 (ILO, BLS) – foresight at the regional level

	Δήμοι	ΚΕΑ Φεβ2020	Σενάριο 1 (ILO, BLS)	Μεταβολή Σενάριο 1ILO
Προοπτική Διερεύνηση				
Νοτίου Αιγαίου	34	6,305	10,650	68.91%
Ιονίων Νήσων	7	4,114	6,079	47.77%
Κρήτης	24	15,529	22,580	45.41%
Αττικής	66	125,941	177,625	41.04%
Κεντρικής Μακεδονίας	38	80,210	100,477	25.27%
Στερεάς Ελλάδας	25	23,726	29,161	22.91%
Ηπείρου	18	12,164	14,708	20.91%
Πελοποννήσ..	26	27,801	32,544	17.06%
Ανατολικής Μακεδονίας ..	22	28,669	33,352	16.33%
Δυτικής Μακεδονίας	12	10,272	11,857	15.43%
Βορείου Αιγαίου	9	8,341	9,558	14.59%
Θεσσαλίας	25	38,873	44,538	14.57%
Δυτικής Ελλάδας	19	51,579	56,002	8.58%

Figure 38: Analysis of variance – Scenario 1 (ILO, BLS)

[49]

Table 10: Model characteristics of Scenario 1 (ILO, BLS)

<u>**Trend Lines Model**</u>

A linear trend model is computed for natural log of sum of ΣΕΝΑΡΙΟ 1Ilo given natural log of sum of EEE. The model may be significant at p <= 0.05.

Model formula:	(ln(EEE) + intercept)
Number of modeled observations:	316
Number of filtered observations:	9
Model degrees of freedom:	2
Residual degrees of freedom (DF):	314
SSE (sum squared error):	47.5061
MSE (mean squared error):	0.151293
R-Squared:	0.929949
Standard error:	0.388964
p-value (significance):	< 0.0001

Individual trend lines:

Panes		**Line**		**Coefficients**				
Row	**Column**	**p-value**	**DF**	**Term**	**Value**	**StdErr**	**t-value**	**p-value**
ΣΕΝΑΡΙΟ 1Ilo	EEE	< 0.0001	314	ln(EEE)	0.90846	0.0140708	64.5633	< 0.0001
				intercept	0.879424	0.0918131	9.57842	< 0.0001

▪ **Scenario 2 (ILO, BLS)**

Scenario 2 (ILO, BLS) shows R^2 = 0.83 with an average increase of end recipients by 80%. Cluster 3, which includes the very touristic Municipalities of the country (10), shows an average increase of 233.42%. The Municipalities of Tanagra and Hydra as well as other Municipalities of cluster 2 still show a significant increase, as well as the Municipalities of cluster 4 where they show an increase of 100.85%. In this scenario only the 80 Municipalities of cluster 1 have a lower average increase of 23.47%. At the regional level, the Region of South Aegean shows an increase of 206.72%, the Region of Ionian Islands 143.30%, the Region of Crete 136.22% and the Region of Attica 123.11% while the other regions show an increase of less than 100%.

Figure 39: Scenario 2 (ILO, BLS) – foresight at the cluster level

	Δήμοι	ΚΕΑ Φεβ2020	Σενάριο 2 (ILO, BLS)	Μεταβολή Σενάριο 2ILO
Προοπτική Διερεύνηση				
Σύνολο Χώρας	325	433,524	780,341	80.00%
Cluster 3	10	12,977	43,268	233.42%
Cluster 4	4	34,084	68,458	100.85%
Cluster 5	1	31,581	62,447	97.73%
Cluster 2	230	235,629	457,731	94.26%
Cluster 1	80	119,253	148,437	24.47%

Figure 40: Scenario 2 (ILO, BLS) – foresight at the regional level

	Δήμοι	ΚΕΑ Φεβ2020	Σενάριο 2 (ILO, BLS)	Μεταβολή Σενάριο 2ILO
Προοπτική Διερεύνηση				
Νοτίου Αιγαίου	34	6,305	19,339	206.72%
Ιονίων Νήσων	7	4,114	10,009	143.30%
Κρήτης	24	15,529	36,683	136.22%
Αττικής	66	125,941	280,992	123.11%
Κεντρικής Μακεδονίας	38	80,210	141,010	75.80%
Στερεάς Ελλάδας	25	23,726	40,032	68.73%
Ηπείρου	18	12,164	19,795	62.73%
Πελοποννήσ..	26	27,801	42,029	51.18%
Ανατολικής Μακεδονίας ..	22	28,669	42,717	49.00%
Δυτικής Μακεδονίας	12	10,272	15,026	46.29%
Βορείου Αιγαίου	9	8,341	11,993	43.78%
Θεσσαλίας	25	38,873	55,867	43.72%
Δυτικής Ελλάδας	19	51,579	64,848	25.73%

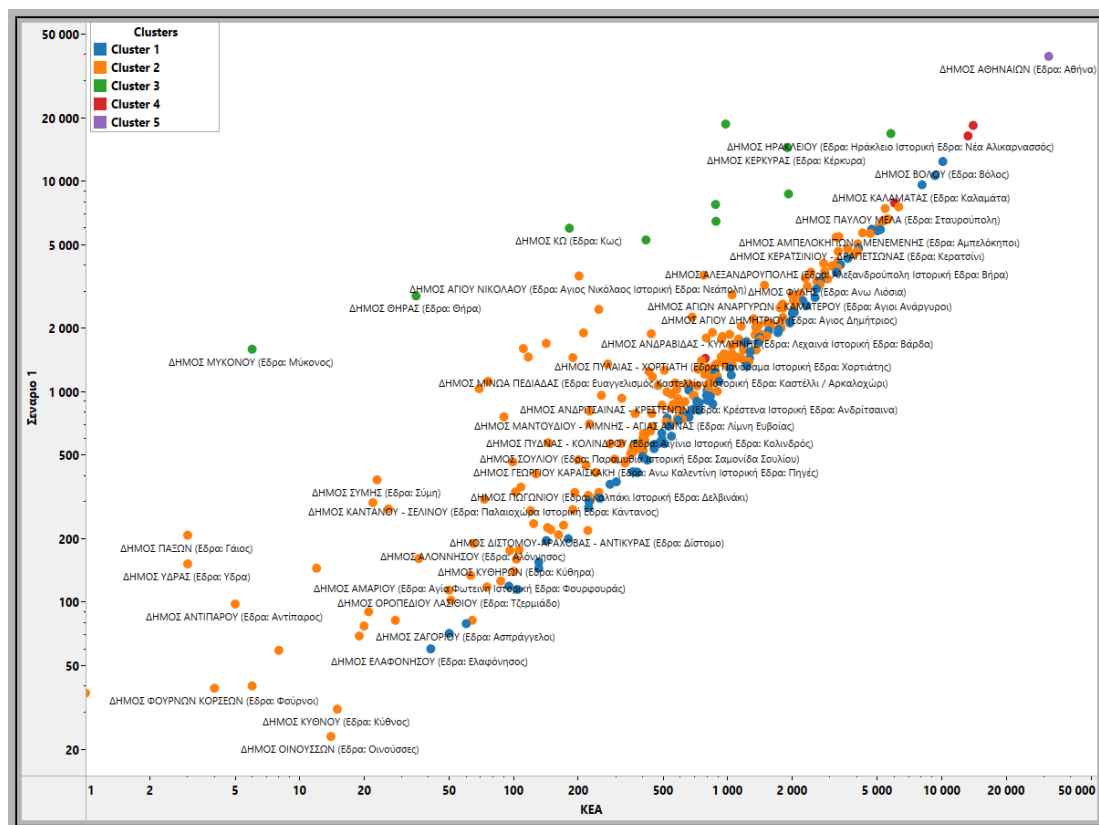*Figure 41: Analysis of variance – Scenario 2 (ILO, BLS)*
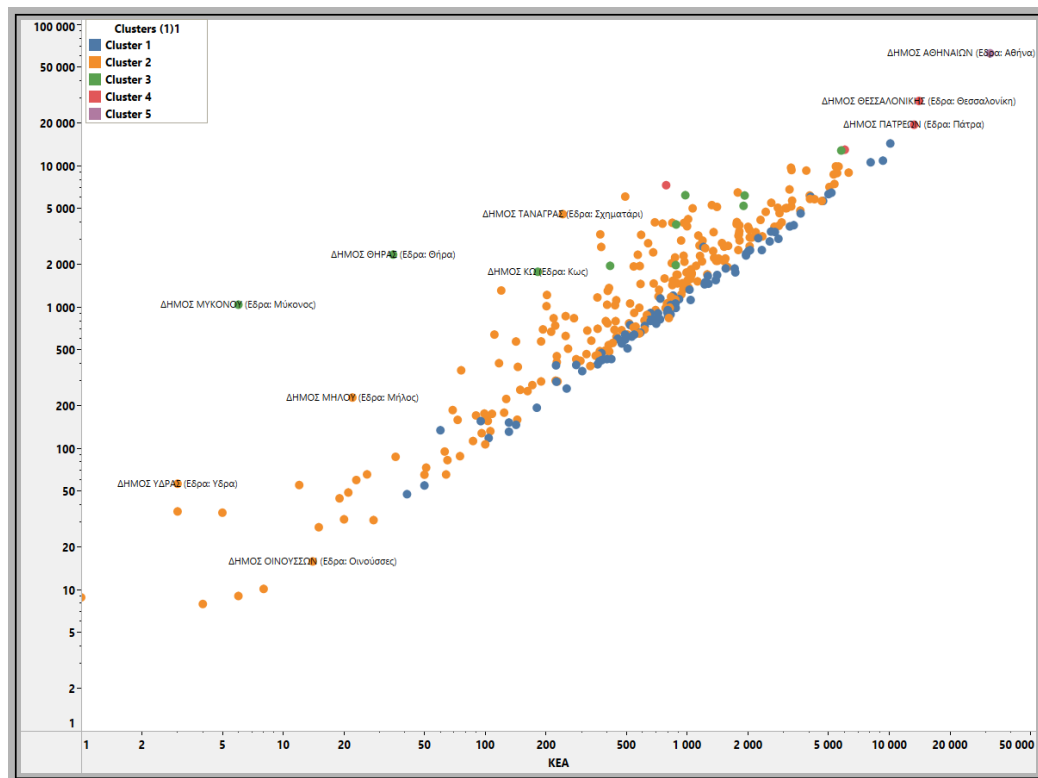
Table 11: Model characteristics of Scenario 2 (ILO, BLS)

Trend Lines Model

A linear trend model is computed for natural log of sum of ΣΕΝΑΡΙΟ 2Ilo given natural log of sum of EEE. The model may be significant at $p <= 0.05$.

Model formula:	(ln(EEE) + intercept)
Number of modeled observations:	316
Number of filtered observations:	9
Model degrees of freedom:	2
Residual degrees of freedom (DF):	314
SSE (sum squared error):	110.956
MSE (mean squared error):	0.353362
R-Squared:	0.838819
Standard error:	0.594442
p-value (significance):	< 0.0001

Individual trend lines:

Panes		Line		Coefficients				
Row	**Column**	**p-value**	**DF**	**Term**	**Value**	**StdErr**	**t-value**	**p-value**
ΣΕΝΑΡΙΟ 2Ilo	EEE	< 0.0001	314	ln(EEE)	0.869285	0.021504	40.4243	< 0.0001
				intercept	1.45825	0.140315	10.3927	< 0.0001

- **Scenario 3 (ILO, BLS)**

Scenario 3 (ILO, BLS) as shown in the chart below has R^2 = 0.71 with an average increase of end recipients by 266.66%. Cluster 3, which includes the very touristic Municipalities of the country (10), shows an average increase of 778.08%. The Municipalities of Tanagra and Hydra as well as other Municipalities of cluster 2 also show a significant increase, as well as the Municipalities of cluster 4 where they show an increase of 314.20%. In this scenario only the 80 Municipalities of cluster 1 have a lower average increase of 81.57%. At the regional level, the South Aegean Region shows an increase of 689.07%, the Ionian Islands Region 477.66%, the Region of Crete 454.05% and the Attica Region 410.38% while the other regions show a smaller increase.

Figure 42: Scenario 3 (ILO, BLS) – foresight at the cluster level

Προοπτική Διερεύνηση			
	Δήμοι	**ΚΕΑ Φεβ2020**	**Σενάριο 3 (ILO, BLS)**	**Μεταβολη Σενάριο 3ILO**
Σύνολο Χώρας	325	433,524	1,589,579	266.66%
Cluster 3	10	12,977	113,948	778.08%
Cluster 4	4	34,084	148,664	336.17%
Cluster 5	1	31,581	134,466	325.78%
Cluster 2	230	235,629	975,968	314.20%
Cluster 1	80	119,253	216,533	81.57%

Figure 43: Scenario 3 (ILO, BLS) – foresight at the regional level

	Δήμοι	ΚΕΑ Φεβ2020	Σενάριο 3 (ILO, BLS)	Μεταβολη Σενάριο 3ILO
Προοπτική Διερεύνηση				
Νοτίου Αιγαίου	34	6,305	49,751	689.07%
Ιονίων Νήσων	7	4,114	23,765	477.66%
Κρήτης	24	15,529	86,043	454.08%
Αττικής	66	125,941	642,778	410.38%
Κεντρικής Μακεδονίας	38	80,210	282,876	252.67%
Στερεάς Ελλάδας	25	23,726	78,080	229.09%
Ηπείρου	18	12,164	37,600	209.11%
Πελοποννήσ..	26	27,801	75,229	170.60%
Ανατολικής Μακεδονίας ..	22	28,669	75,497	163.34%
Δυτικής Μακεδονίας	12	10,272	26,120	154.28%
Βορείου Αιγαίου	9	8,341	20,513	145.93%
Θεσσαλίας	25	38,873	95,518	145.72%
Δυτικής Ελλάδας	19	51,579	95,809	85.75%

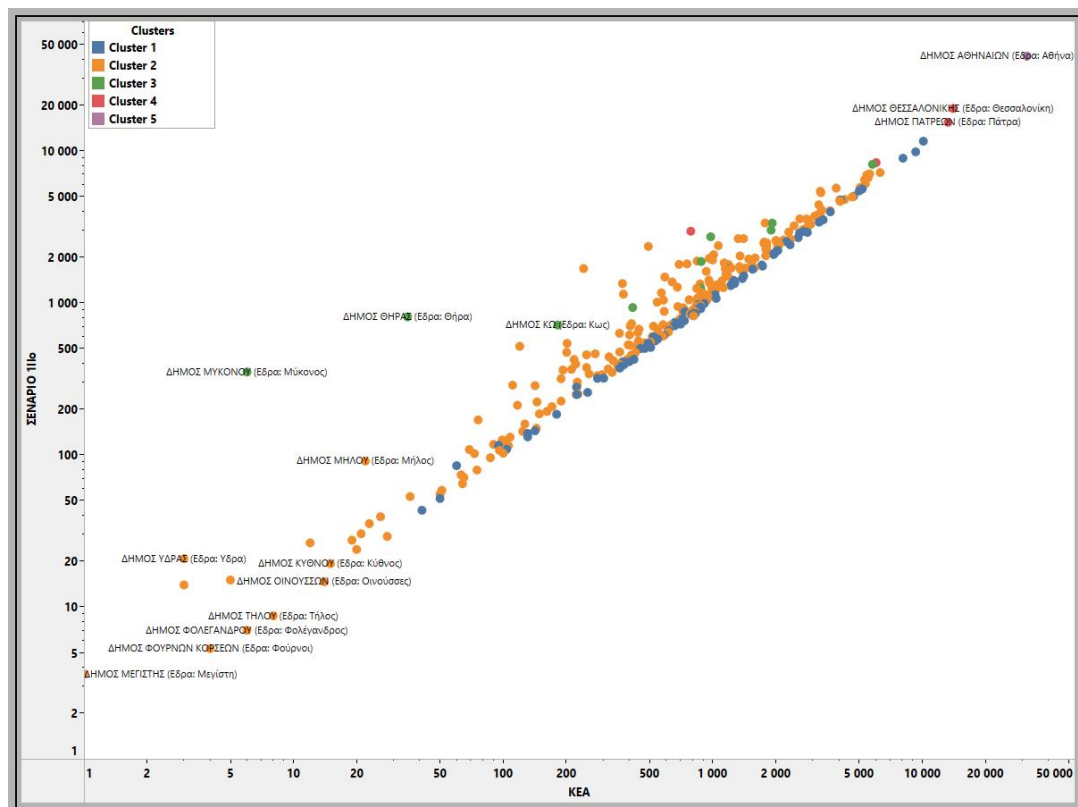*Figure 44: Analysis of variance – Scenario 3 (ILO, BLS)*

[54]

Table 12: Model characteristics of Scenario 3 (ILO, BLS)

<u>**Trend Lines Model**</u>

A linear trend model is computed for natural log of sum of ΣΕΝΑΡΙΟ 3Ilo given natural log of sum of EEE. The model may be significant at p <= 0.05.

Model formula:	(ln(EEE) + intercept)
Number of modeled observations:	316
Number of filtered observations:	9
Model degrees of freedom:	2
Residual degrees of freedom (DF):	314
SSE (sum squared error):	222.538
MSE (mean squared error):	0.708718
R-Squared:	0.706751
Standard error:	0.841854
p-value (significance):	< 0.0001

Individual trend lines:

Panes		**Line**		**Coefficients**				
Row	**Column**	**p-value**	**DF**	**Term**	**Value**	**StdErr**	**t-value**	**p-value**
ΣΕΝΑΡΙΟ 3Ilo	EEE	< 0.0001	314	ln(EEE)	0.837775	0.0304542	27.5093	< 0.0001
				intercept	2.27076	0.198715	11.4272	< 0.0001

- ▪ **Scenario 4 (ILO, BLS)**

Scenario 4 (ILO, BLS) as shown in the chart below shows $R^2 = 0.69$ with an average increase of end recipients by 332.66%. Cluster 3 which includes the very touristic Municipalities of the country (10) shows an average increase of 920.26%. The Municipalities of Tanagra and Hydra as well as other Municipalities of cluster 2 also show a significant increase, as well as the Municipalities of cluster 4 where they show an increase of 314.20%. In this scenario only the 80 Municipalities of cluster 1 have a lower average increase of 97.73%. At the regional level, the Region of South Aegean shows an increase of 810.56%, the Region of the Ionian Islands 573.29%, the Region of Crete 538.37% and the Region of Attica 536.61%, while the other regions show a smaller increase.

Figure 45: Scenario 4 (ILO, BLS) – foresight at the cluster level

Προοπτική Διερεύνηση			
	Δήμοι	ΚΕΑ Φεβ2020	Σενάριο 4 (ILO, BLS)	Μεταβολή Σενάριο 4ILO
Σύνολο Χώρας	325	433,524	1,875,700	332.66%
Cluster 3	10	12,977	132,399	920.26%
Cluster 4	4	34,084	187,654	450.56%
Cluster 5	1	31,581	179,921	469.71%
Cluster 2	230	235,629	1,139,924	383.78%
Cluster 1	80	119,253	235,802	97.73%

Figure 46: Scenario 4 (ILO, BLS) – foresight at the regional level

| Προοπτική Διερεύνηση			
	Δήμοι	ΚΕΑ Φεβ2020	Σενάριο 4 (ILO, BLS)	Μεταβολή Σενάριο 4ILO
Νοτίου Αιγαίου	34	6,305	57,411	810.56%
Ιονίων Νήσων	7	4,114	27,699	573.29%
Κρήτης	24	15,529	99,132	538.37%
Αττικής	66	125,941	801,749	536.61%
Κεντρικής Μακεδονίας	38	80,210	321,676	301.04%
Στερεάς Ελλάδας	25	23,726	90,140	279.92%
Ηπείρου	18	12,164	43,733	259.53%
Δυτικής Μακεδονίας	12	10,272	32,180	213.28%
Πελοποννήσ..	26	27,801	82,773	197.73%
Ανατολικής Μακεδονίας ..	22	28,669	84,835	195.91%
Βορείου Αιγαίου	9	8,341	23,227	178.47%
Θεσσαλίας	25	38,873	105,683	171.87%
Δυτικής Ελλάδας	19	51,579	105,462	104.47%

Figure 47: Analysis of variance – Scenario 4 (ILO, BLS)
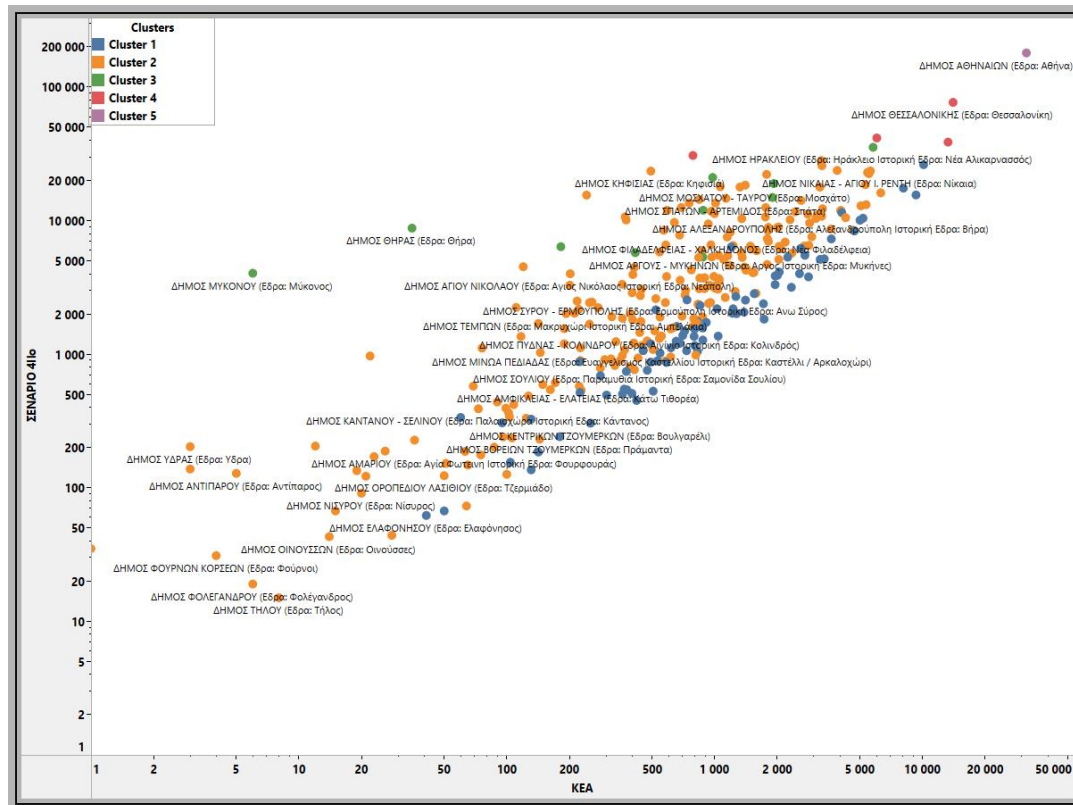
Table 13: Model characteristics of Scenario 4 (ILO, BLS)

Trend Lines Model

A linear trend model is computed for natural log of sum of ΣΕΝΑΡΙΟ 4Ilo given natural log of sum of EEE. The model may be significant at p <= 0.05.

Model formula:	(ln(EEE) + intercept)
Number of modeled observations:	316
Number of filtered observations:	9
Model degrees of freedom:	2
Residual degrees of freedom (DF):	314
SSE (sum squared error):	231.897
MSE (mean squared error):	0.738525
R-Squared:	0.691056
Standard error:	0.859375
p-value (significance):	< 0.0001

Individual trend lines:

Panes Row	Column	Line p-value	DF	Coefficients Term	Value	StdErr	t-value	p-value
ΣΕΝΑΡΙΟ 4Ilo	EEE	< 0.0001	314	ln(EEE)	0.8239	0.031088	26.5022	< 0.0001
				intercept	2.50423	0.202851	12.3452	< 0.0001

Scenario 5 (ILO, BLS) as shown in the chart below has R^2 = 0.66 with an average increase of end recipients by 483.12%. Cluster 3 which includes the very touristic Municipalities of the country (10) shows an average increase of 1,192.69%. The Municipalities of Tanagra and Hydra also show a significant increase as well as other Municipalities of cluster 2, as well as the Municipalities of cluster 4 where they show an increase of 747.38%. In this scenario only the 80 Municipalities of cluster 1 have a lower average increase of 130.32%. At the regional level, the Region of South Aegean shows an increase of 978.59%, the Region of the Ionian Islands 720.90%, the Region of Crete 728.62% and the Region of Attica 840.62%, while the other regions show a smaller increase.

Figure 48: Scenario 5 (ILO, BLS) – foresight at the cluster level

	Δήμοι	ΚΕΑ Φεβ2020	Σενάριο 5 (ILO, BLS)	Μεταβολή Σενάριο 5ILO
Προοπτική Διερεύνηση				
Σύνολο Χώρας	325	433,524	2,527,957	483.12%
Cluster 3	10	12,977	167,753	1192.69%
Cluster 5	1	31,581	289,969	818.18%
Cluster 4	4	34,084	288,821	747.38%
Cluster 2	230	235,629	1,506,750	539.46%
Cluster 1	80	119,253	274,664	130.32%

Figure 49: Scenario 5 (ILO, BLS) – foresight at the regional level

	Δήμοι	ΚΕΑ Φεβ2020	Σενάριο 5 (ILO, BLS)	Μεταβολή Σενάριο 5ILO
Προοπτική Διερεύνηση				
Νοτίου Αιγαίου	34	6,305	68,005	978.59%
Ιονίων Νήσων	7	4,114	33,772	720.90%
Κρήτης	24	15,529	128,677	728.62%
Αττικής	66	125,941	1,184,630	840.62%
Κεντρικής Μακεδονίας	38	80,210	413,926	416.05%
Στερεάς Ελλάδας	25	23,726	106,041	346.94%
Ηπείρου	18	12,164	55,148	353.37%
Δυτικής Μακεδονίας	12	10,272	44,643	334.61%
Πελοποννήσ..	26	27,801	101,715	265.87%
Ανατολικής Μακεδονίας ..	22	28,669	103,172	259.87%
Βορείου Αιγαίου	9	8,341	30,062	260.41%
Θεσσαλίας	25	38,873	130,621	236.02%
Δυτικής Ελλάδας	19	51,579	127,545	147.28%

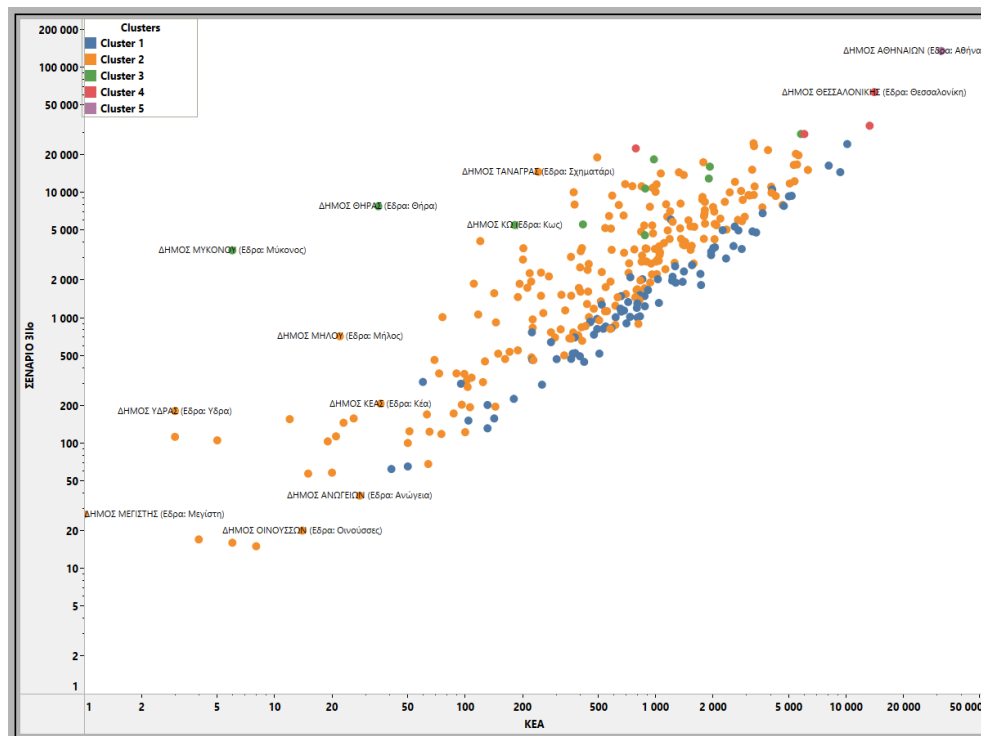[59]

Figure 50: Analysis of variance -- Scenario 5 (ILO, BLS)
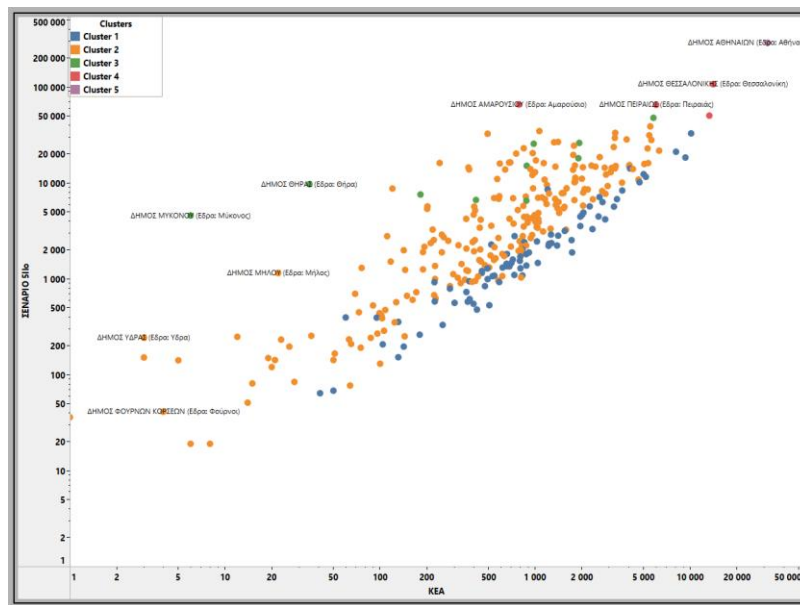
Table 14: Model characteristics of Scenario 5 (ILO, BLS)

Trend Lines Model

A linear trend model is computed for natural log of sum of ΣΕΝΑΡΙΟ 5Ilo given natural log of sum of EEE. The model may be significant at $p <= 0.05$.

Model formula:	(ln(EEE) + intercept)
Number of modeled observations:	316
Number of filtered observations:	9
Model degrees of freedom:	2
Residual degrees of freedom (DF):	314
SSE (sum squared error):	266.33
MSE (mean squared error):	0.848183
R-Squared:	0.669958
Standard error:	0.920969
p-value (significance):	< 0.0001

Individual trend lines:

Panes		Line		Coefficients				
Row	**Column**	**p-value**	**DF**	**Term**	**Value**	**StdErr**	**t-value**	**p-value**
ΣΕΝΑΡΙΟ 5Ilo	EEE	< 0.0001	314	ln(EEE)	0.841122	0.0333162	25.2466	< 0.0001
				intercept	2.59235	0.21739	11.9249	< 0.0001

3.2.3. Detailed results by Municipality

The following Figures 51 to 58 and Table 15 detail the results of the foresight by Municipality, as they have been grouped respectively.

Figure 51: Foresight results for Cluster 3

	Municipalities	Minimum Guaranteed Income Feb 2020	Scenario 0	Scenario 1	Scenario 1 (ILO, BLS)	Scenario 2 (ILO, BLS)	Scenario 3 (ILO, BLS)	Scenario 4 (ILO, BLS)	Scenario 5 (ILO, BLS)
Foresight results									
Heraklion	1	5,781	7,041	16,825	8,124	12,809	29,207	35,348	47,766
Chania	1	1,923	2,465	8,693	3,333	6,154	16,027	18,928	26,137
Rhodes	1	978	1,425	18,674	2,713	6,182	18,323	21,020	25,617
Corfu	1	1,899	2,646	14,437	2,998	5,196	12,890	14,891	18,103
Rethymno	1	881	1,179	6,445	1,865	3,834	10,725	11,946	15,098
Santorini	1	35	51	2,849	806	2,348	7,746	8,780	9,708
Kos	1	182	259	5,976	713	1,774	5,488	6,375	7,575
Chersonisos	1	415	576	5,255	928	1,955	5,549	5,752	6,645
Zakynthos	1	877	1,163	7,748	1,244	1,978	4,548	5,325	6,533
Mykonos	1	6	10	1,591	350	1,038	3,445	4,034	4,571
Grand Total	10	12,977	16,814	88,493	23,074	43,268	113,948	132,399	167,753

Επιλογή Συστάδας	Επιλογή Περιφέρειας	Επιλογή Δήμου
Cluster 3	All	Multiple values

Figure 52: Foresight results for Cluster 4

	Municipalities	Minimum Guaranteed Income Feb 2020	Scenario 0	Scenario 1	Scenario 1 (ILO, BLS)	Scenario 2 (ILO, BLS)	Scenario 3 (ILO, BLS)	Scenario 4 (ILO, BLS)	Scenario 5 (ILO, BLS)
Foresight results									
Thessaloniki	1	14,016	15,033	18,391	18,917	28,719	63,026	76,726	107,279
Marousi	1	786	852	1,440	2,950	7,278	22,425	30,714	65,891
Piraeus	1	6,022	6,440	7,875	8,340	12,976	29,201	41,542	65,284
Patras	1	13,260	14,060	16,397	15,335	19,486	34,012	38,672	50,367
Grand Total	4	34,084	36,386	44,103	45,542	68,458	148,664	187,654	288,821

Επιλογή Συστάδας	Επιλογή Περιφέρειας	Επιλογή Δήμου
Cluster 4	All	Multiple values

Figure 53: Foresight results for Cluster 5

	Municipalities	Minimum Guaranteed Income Feb 2020	Scenario 0	Scenario 1	Scenario 1 (ILO, BLS)	Scenario 2 (ILO, BLS)	Scenario 3 (ILO, BLS)	Scenario 4 (ILO, BLS)	Scenario 5 (ILO, BLS)
Foresight results									
Athens	1	31,581	33,584	39,160	41,870	62,447	134,466	179,921	289,969
Grand Total	1	31,581	33,584	39,160	41,870	62,447	134,466	179,921	289,969

Επιλογή Συστάδας	Επιλογή Περιφέρειας	Επιλογή Δήμου
Cluster 5	Attica	ΔΗΜΟΣ ΑΘΗΝΑΙΩΝ (Εδρα: Αθήνα)

Figure 54: Foresight results for Cluster 1

	Municipalities	Minimum Guaranteed Income Feb 2020	Scenario 0	Scenario 1	Scenario 1 (ILO, BLS)	Scenario 2 (ILO, BLS)	Scenario 3 (ILO, BLS)	Scenario 4 (ILO, BLS)	Scenario 5 (ILO, BLS)
Foresight results									
Volos	1	10,115	10,817	12,398	11,532	14,365	24,281	26,216	32,873
Kalamata	1	8,086	8,617	9,611	8,912	10,564	16,347	17,488	21,134
Agrinio	1	9,298	9,720	10,630	9,818	10,857	14,494	15,558	18,416
Komotini	1	4,086	4,306	4,798	4,731	6,020	10,534	11,480	14,142
Karditsa	1	4,999	5,300	5,808	5,428	6,287	9,293	10,062	12,330
Ampelokipoi-Mene..	1	5,170	5,401	5,889	5,591	6,434	9,382	10,418	11,575
Pyrgos	1	4,703	5,081	5,906	5,012	5,631	7,796	8,367	10,155
Loutraki-Perachora..	1	1,202	1,355	1,703	1,688	2,661	6,064	6,347	8,550
Aigialeia	1	3,640	3,868	4,299	3,957	4,592	6,812	7,291	8,335
Megara	1	2,596	2,750	3,077	2,869	3,416	5,330	6,200	7,118
Missolonghi	1	3,365	3,605	4,015	3,507	3,791	4,784	5,167	6,775
Salamis Island	1	2,716	2,966	3,331	2,941	3,392	4,970	5,494	6,312
West Achaea	1	2,245	2,418	2,701	2,519	3,067	4,985	5,322	5,695
Ilida	1	3,218	3,375	3,687	3,384	3,716	4,878	5,122	5,657
Nafpaktia	1	2,045	2,148	2,378	2,205	2,524	3,642	4,122	4,903
Tyrnavos	1	2,004	2,139	2,353	2,163	2,482	3,596	3,895	4,648
Agia Varvara	1	2,559	2,655	2,803	2,676	2,910	3,728	4,003	4,468
Kymi-Aliveri	1	1,954	2,020	2,146	2,095	2,377	3,363	3,853	4,453
Kalymnos	1	2,827	3,142	3,541	2,898	3,039	3,533	3,789	4,170

Επιλογή Συστάδας	Επιλογή Περιφέρειας	Επιλογή Δήμου
Cluster 1	All	Multiple values

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Figure 55: Foresight results for Cluster 1 (continued)

	Municipalities	Minimum Guaranteed Income Feb 2020	Scenario 0	Scenario 1	Scenario 1 (ILO, BLS)	Scenario 2 (ILO, BLS)	Scenario 3 (ILO, BLS)	Scenario 4 (ILO, BLS)	Scenario 5 (ILO, BLS)
Foresight results									
Abdera	1	1,953	2,057	2,120	2,073	2,314	3,157	3,316	3,549
Sofades	1	2,339	2,450	2,558	2,402	2,527	2,967	3,166	3,300
Andravida-Kyllini	1	1,550	1,676	1,945	1,658	1,873	2,626	2,837	3,159
Velo-Vocha	1	1,264	1,325	1,442	1,395	1,656	2,572	2,702	2,893
Messini	1	1,406	1,553	1,810	1,499	1,685	2,337	2,537	2,816
Dirfys-Messapia	1	736	786	884	873	1,146	2,101	2,547	2,787
Amfilochia	1	1,716	1,793	1,907	1,768	1,871	2,234	2,382	2,531
Xylokastro-Evrosti..	1	1,026	1,109	1,293	1,126	1,326	2,027	2,186	2,452
Topeiros	1	851	863	875	969	1,204	2,029	2,317	2,407
Sintiki	1	1,273	1,367	1,550	1,336	1,462	1,902	2,010	2,358
Maroneia-Sapes	1	1,226	1,273	1,323	1,316	1,495	2,122	2,185	2,317
Molos-Agios Konst..	1	521	585	749	596	745	1,269	2,145	2,277
Irakleia	1	1,384	1,540	1,702	1,439	1,549	1,933	2,062	2,223
Pineios	1	1,219	1,398	1,723	1,295	1,446	1,976	2,023	2,209
Didymoteicho	1	828	867	946	897	1,034	1,513	1,745	2,030
Arriana	1	1,729	1,861	1,975	1,738	1,757	1,822	1,828	1,883
Pyli	1	911	991	1,118	986	1,136	1,661	1,729	1,881
East Mani	1	658	758	1,017	741	906	1,486	1,611	1,814
Eretria	1	874	985	1,235	935	1,058	1,487	1,570	1,807

Επιλογή Συστάδας	Επιλογή Περιφέρειας	Επιλογή Δήμου
Cluster 1	All	Multiple values

[65]

Figure 56: Foresight results for Cluster 1 (continued)

Foresight results								
	Municipalities	**Minimum Guaranteed Income Feb 2020**	**Scenario 0**	**Scenario 1**	**Scenario 1 (ILO, BLS)**	**Scenario 2 (ILO, BLS)**	**Scenario 3 (ILO, BLS)**	**Scenario 4 (ILO, BLS)**	**Scenario 5 (ILO, BLS)**
Karystos	1	801	869	1,015	851	950	1,298	1,542	1,704
Farkadona	1	717	773	900	779	902	1,333	1,490	1,586
Palamas	1	796	845	960	836	916	1,197	1,359	1,539
Iasmos	1	1,039	1,121	1,199	1,066	1,121	1,312	1,365	1,463
Xiromero	1	702	742	832	722	762	901	1,380	1,461
Mouzaki	1	653	692	775	706	811	1,181	1,250	1,434
Olympia	1	877	972	1,194	913	984	1,234	1,274	1,373
Nikolaos Skoufas	1	659	692	755	705	797	1,118	1,213	1,352
Emmanouil Pappas	1	682	733	821	728	819	1,140	1,206	1,348
Agia	1	616	669	755	655	734	1,008	1,116	1,309
Orchomenos	1	803	843	910	823	863	1,003	1,159	1,286
Dorida	1	492	539	635	541	638	977	1,194	1,281
Oichalia	1	453	477	536	500	593	920	1,062	1,206
Aliartos	1	453	487	561	501	596	929	1,069	1,153
Erymanthos	1	733	782	815	761	818	1,015	1,061	1,096
Andritsaina-Kreste..	1	827	873	949	847	886	1,025	1,050	1,084
Domokos	1	546	567	614	577	638	851	1,018	1,078
South Pelion	1	531	597	685	560	617	816	893	1,065
Makrakomi	1	493	526	594	525	589	812	872	992

Επιλογή Συστάδας	Επιλογή Περιφέρειας	Επιλογή Δήμου
Cluster 1	All	Multiple values

[66]

Figure 57: Foresight results for Cluster 1 (continued)

	Municipalities	Minimum Guaranteed Income Feb 2020	Scenario 0	Scenario 1	Scenario 1 (ILO, BLS)	Scenario 2 (ILO, BLS)	Scenario 3 (ILO, BLS)	Scenario 4 (ILO, BLS)	Scenario 5 (ILO, BLS)
Foresight results									
Kalavryta	1	376	390	415	408	472	695	742	943
Zacharo	1	586	635	731	610	658	826	866	925
Dodoni	1	224	249	282	278	386	764	878	921
Zagora-Mouresi	1	474	501	567	500	551	732	757	838
Pogoni	1	282	310	363	318	389	637	689	789
Konitsa	1	360	379	416	371	393	469	503	728
Gortynia	1	378	394	413	392	421	521	541	614
North Kynouria	1	225	247	300	249	296	461	516	580
Troizinia-Methana	1	367	433	562	382	412	517	547	577
Amphipolis	1	302	325	373	319	352	467	494	561
Thermo	1	400	447	492	409	428	492	508	548
Agrafa	1	506	538	566	507	509	517	528	530
Georgios Karaiskak..	1	421	443	473	423	428	444	450	477
Zagori	1	60	67	79	85	134	307	336	395
Paranastiou	1	95	103	119	115	156	297	306	393
Lake Plastiras	1	131	142	145	138	152	201	326	355
Central Tzoumerka	1	253	278	311	257	265	292	304	330
North Tzoumerka	1	180	198	200	185	194	225	241	261
Prespes	1	104	113	115	109	118	151	155	207

Επιλογή Συστάδας	Επιλογή Περιφέρειας	Επιλογή Δήμου
Cluster 1	All	Multiple values

[67]

Figure 58: Foresight results for Cluster 1 (continued)

Foresight results									
	Municipalities	Minimum Guaranteed In..	Scenario 0	Scenario 1	Scenario 1 (ILO, BLS)	Scenario 2 (ILO, BLS)	Scenario 3 (ILO, BLS)	Scenario 4 (ILO, BLS)	Scenario 5 (ILO, BLS)
Nestorio	1.0	142.0	159.1	196.0	143.5	146.5	157.0	185.0	196.0
Argithea	1.0	131.0	147.8	155.0	131.0	131.0	131.0	136.0	152.0
Agistri	1.0	50.0	63.3	71.0	51.5	54.5	65.0	67.0	68.0
Elafonisos	1.0	41.0	48.6	60.0	43.1	47.3	62.0	62.0	64.0
Grand Total	4.0	364.0	418.9	482.0	369.1	379.3	415.0	450.0	480.0

Επιλογή Συστάδας	Επιλογή Περιφέρειας	Επιλογή Δήμου
Cluster 1	All	All

Table 15: Foresight results for Cluster 2

	Municipalities	Minimum Guaranteed Income Feb 2020	Scenario 0	Scenario 1	Scenario 1 (ILO, BLS)	Scenario 2 (ILO, BLS)	Scenario 3 (ILO, BLS)	Scenario 4 (ILO, BLS)	Scenario 5 (ILO, BLS)
Kallithea	1	5 518	5 800	6 585	6 635	8 870	16 692	22 444	38 879
Chalandri	1	1 063	1 152	1 681	2 372	4 991	14 155	17 918	34 744
Peristeri	1	3 281	3 467	4 631	5 291	9 310	23 377	25 762	33 309
Kifisia	1	493	529	863	2 344	6 045	18 999	23 469	32 591
Larissa	1	5 437	5 760	7 410	6 921	9 890	20 281	22 925	31 383
Delta	1	3 260	3 431	3 863	5 398	9 674	24 639	28 154	29 510
Acharnes	1	3 883	3 990	4 491	5 668	9 237	21 730	23 734	28 440
Nikaia-Agios Ioannis Rentis	1	5 611	5 883	6 618	7 028	9 861	19 777	23 528	28 045
Moschato-Tavros	1	1 403	1 498	1 872	2 639	5 110	13 758	18 427	26 767
Glyfada	1	1 323	1 433	2 219	2 636	5 261	14 450	17 820	26 548
Aspropyrgos	1	1 778	1 826	2 008	3 339	6 461	17 388	22 173	24 453
Ioannina	1	3 207	3 528	5 416	4 402	6 792	15 156	17 809	23 669
Pallini	1	843	880	1 132	1 877	3 944	11 180	14 386	22 998
Chalcis	1	5 303	5 600	6 500	6 426	8 673	16 536	18 582	22 889
Pavlos Melas	1	6 292	6 580	7 544	7 172	8 932	15 093	16 138	21 710
Pylaia-Chortiatis	1	963	1 035	1 513	1 954	3 935	10 871	11 755	20 454
Thermi	1	754	823	1 403	1 799	3 888	11 201	13 540	20 242
Nea Ionia	1	1 760	1 819	2 111	2 503	3 989	9 189	12 516	19 599
Aigaleo	1	2 605	2 756	3 344	3 557	5 462	12 129	14 150	18 571

Kropia	1	1 010	1 108	1 493	2 068	4 185	11 594	13 535	17 191
Metamorfosi	1	691	734	960	1 785	3 974	11 633	12 531	16 379
Agia Paraskevi	1	678	720	1 074	1 264	2 436	6 537	7 783	16 304
Tanagra	1	242	264	413	1 675	4 541	14 573	15 521	16 154
Kordelio-Evosmos	1	5 351	5 581	6 466	6 042	7 424	12 260	13 154	16 103
Spata-Artemida	1	1 134	1 261	1 717	1 824	3 203	8 030	14 663	16 085
Elefsina	1	591	623	877	1 474	3 239	9 419	11 943	15 924
Trikala	1	5 051	5 307	6 036	5 723	7 067	11 772	12 901	15 758
Keratsini-Drapetsona	1	4 049	4 268	5 036	4 638	5 815	9 937	11 875	15 352
Kozani	1	1 804	1 903	2 601	2 301	3 294	6 769	8 416	15 208
Kalamaria	1	2 305	2 480	3 461	2 915	4 134	8 400	10 146	15 157
Katerini	1	3 303	3 675	5 447	4 088	5 657	11 150	12 264	15 020
Xanthi	1	4 035	4 166	4 648	4 741	6 152	11 093	11 887	15 008
Palaio Faliro	1	1 350	1 471	2 030	2 028	3 385	8 134	10 334	14 781
Kavala	1	2 445	2 683	3 690	3 201	4 712	10 001	11 634	14 773
Nea Smyrni	1	2 029	2 169	2 709	2 528	3 525	7 017	8 944	14 567
Dionysos	1	371	386	533	1 336	3 265	10 019	10 651	14 496
Serres	1	2 805	3 046	4 071	3 551	5 043	10 264	11 175	14 395
Lamia	1	3 111	3 289	3 969	3 744	5 010	9 442	10 961	14 334
Alexandroupoli	1	3 270	3 508	4 151	3 897	5 150	9 536	10 765	14 184
Lesvou	1	4 265	4 595	5 678	4 774	5 793	9 359	10 516	13 974
Elliniko-Argyroupoli	1	932	1 002	1 461	1 606	2 955	7 674	9 431	13 929

Paiania	1	375	398	565	1 137	2 660	7 991	10 105	13 818
Alimos	1	640	694	1 082	1 369	2 827	7 929	9 691	13 787
Agios Dimitrios	1	1 754	1 876	2 503	2 455	3 858	8 768	10 648	13 723
Oraiokastro	1	998	1 066	1 398	1 908	3 727	10 093	11 263	12 939
Veria	1	3 065	3 248	3 948	3 709	4 998	9 507	10 359	12 933
Ilio	1	2 861	2 983	3 505	3 446	4 615	8 709	9 593	12 215
Heraklion	1	959	1 020	1 374	1 408	2 305	5 444	6 580	12 116
Zografou	1	1 814	1 954	2 498	2 195	2 958	5 626	6 983	11 341
Corinth	1	2 000	2 162	2 882	2 563	3 690	7 634	8 869	11 071
Vari-Voula-Vouliagmeni	1	569	630	1 100	1 160	2 341	6 477	8 462	10 984
Dramas	1	1 810	1 944	2 594	2 352	3 435	7 225	8 487	10 850
Neapoli-Sykies	1	4 631	4 896	5 644	4 962	5 624	7 940	8 459	10 833
Filadelfeia-Chalkidona	1	1 149	1 209	1 447	1 674	2 723	6 396	7 534	10 822
Kilkis	1	1 811	1 909	2 251	2 469	3 785	8 391	8 880	10 290
Ilioupoli	1	1 792	1 920	2 581	2 259	3 192	6 457	7 317	10 165
Pella	1	3 627	3 866	4 782	4 023	4 815	7 586	8 646	10 074
Thebes	1	1 190	1 239	1 410	1 777	2 950	7 058	8 196	9 529
Fyli	1	2 932	3 057	3 430	3 277	3 967	6 383	7 575	9 279
Galatsi	1	1 593	1 689	2 107	1 965	2 709	5 312	5 950	8 791
Chaidari	1	968	1 033	1 426	1 342	2 089	4 706	5 328	8 781
Filothei-Psychiko	1	120	131	272	516	1 308	4 081	4 511	8 736
Tripoli	1	2 082	2 213	2 633	2 420	3 097	5 464	6 134	8 608

Agioi Anargyroi-Kamatero	1	2 183	2 313	2 911	2 582	3 380	6 174	6 897	8 547
Korydallos	1	2 700	2 831	3 235	3 033	3 699	6 029	6 449	8 229
Arta	1	2 038	2 173	2 725	2 394	3 105	5 596	6 404	7 929
Chios	1	1 522	1 633	2 126	1 905	2 670	5 350	6 127	7 837
Nea Propontida	1	1 485	1 814	3 202	1 935	2 834	5 981	6 432	7 815
Langadas	1	1 227	1 307	1 729	1 687	2 606	5 825	6 490	7 757
Thermaikos	1	2 837	3 061	3 716	3 142	3 753	5 891	6 522	7 709
Papagou-Cholargos	1	587	633	924	876	1 455	3 480	3 812	7 267
Oropos	1	870	957	1 331	1 327	2 241	5 439	5 970	7 206
Dafni-Ymittos	1	1 105	1 175	1 456	1 388	1 955	3 939	5 111	7 069
Eordaia	1	1 043	1 114	1 650	1 310	1 844	3 713	5 502	7 003
Markopoulo Mesogaias	1	543	590	834	1 008	1 937	5 189	5 813	6 962
Edessa	1	720	769	1 067	876	1 187	2 278	2 774	6 923
Mandra-Eidyllia	1	582	617	747	1 038	1 949	5 140	6 567	6 833
Argos-Mykines	1	1 343	1 463	1 864	1 725	2 490	5 165	5 726	6 811
Nafplio	1	1 156	1 306	2 046	1 537	2 300	4 968	5 452	6 767
Kastoria	1	2 353	2 560	3 169	2 622	3 160	5 043	5 714	6 748
Vyronas	1	1 789	1 935	2 545	2 036	2 530	4 259	4 689	6 621
Livadeia	1	1 414	1 497	1 769	1 651	2 124	3 779	4 248	6 325
Sparta	1	1 183	1 264	1 578	1 489	2 102	4 246	4 622	6 036
Perama	1	1 357	1 413	1 578	1 647	2 226	4 252	5 298	5 906

Alexandreia	1	2 035	2 134	2 468	2 254	2 693	4 227	5 119	5 792
Chalkidona	1	838	880	1 102	1 240	2 045	4 860	5 295	5 756
Agios Nikolaos	1	202	283	3 544	540	1 216	3 581	3 998	5 696
Lykovrysi-Pefki	1	404	429	633	703	1 300	3 392	3 946	5 662
Petroupoli	1	1 544	1 640	2 119	1 764	2 204	3 744	4 093	5 635
Preveza	1	1 390	1 524	2 062	1 634	2 123	3 833	4 481	5 458
Florina	1	1 524	1 586	1 835	1 719	2 110	3 478	4 075	5 450
Vrilissia	1	201	222	475	472	1 013	2 908	3 282	5 364
Kefalonia	1	772	1 022	3 575	1 045	1 592	3 504	4 272	5 219
Kileler	1	410	460	621	728	1 363	3 585	4 452	5 175
Naousa	1	1 427	1 517	1 871	1 687	2 206	4 022	4 327	4 869
Samos	1	1 048	1 326	2 885	1 260	1 685	3 171	3 652	4 858
Penteli	1	401	424	602	613	1 037	2 520	2 880	4 662
Lavreotiki	1	991	1 060	1 339	1 246	1 755	3 537	3 817	4 614
Saronikos	1	885	979	1 354	1 154	1 691	3 571	3 702	4 432
Ierapetra	1	848	1 008	1 910	1 076	1 533	3 131	3 713	4 423
Igoumenitsa	1	945	1 093	1 829	1 121	1 472	2 702	3 276	4 274
Malevizi	1	682	851	2 258	943	1 466	3 295	3 572	4 228
Rafina-Pikermi	1	359	386	530	629	1 168	3 055	3 334	4 219
Pangaio	1	1 048	1 128	1 510	1 274	1 725	3 306	3 675	4 187
Skydra	1	895	944	1 181	1 160	1 690	3 544	3 735	4 147
Polygyros	1	445	536	1 175	669	1 116	2 681	3 060	4 137
Delphi	1	1 014	1 105	1 405	1 135	1 377	2 224	3 279	3 996

Kaisariani	1	1 002	1 081	1 307	1 182	1 543	2 804	3 115	3 927
Paionia	1	1 052	1 113	1 336	1 280	1 735	3 328	3 503	3 897
Orestiada	1	894	915	1 004	1 085	1 468	2 806	3 092	3 852
Marathon	1	725	811	1 279	924	1 322	2 715	3 012	3 761
Syros-Ermoupoli	1	521	594	998	700	1 059	2 313	2 606	3 570
Nestos	1	843	913	1 153	1 038	1 429	2 795	3 085	3 509
Dion-Olympos	1	1 021	1 174	1 871	1 209	1 586	2 904	3 204	3 461
Lefkada	1	439	552	1 883	636	1 029	2 405	2 742	3 415
Trifylia	1	1 037	1 112	1 324	1 218	1 579	2 843	3 067	3 403
Sikyona	1	1 256	1 290	1 391	1 404	1 701	2 740	2 948	3 332
Zitsa	1	218	251	448	423	832	2 265	2 496	3 261
Almopia	1	1 580	1 680	2 033	1 693	1 918	2 705	2 854	3 253
Faistos	1	1 124	1 252	1 778	1 255	1 518	2 436	2 655	3 115
Kassandra	1	250	341	2 459	454	861	2 288	2 428	2 886
Kalambaka	1	955	1 082	1 455	1 081	1 333	2 214	2 433	2 862
Grevena	1	831	897	1 121	946	1 177	1 984	2 365	2 787
Paros	1	111	148	1 602	287	638	1 867	2 238	2 781
Aristotelis	1	257	308	961	340	506	1 088	2 453	2 718
Lokroi	1	579	651	848	715	988	1 941	2 430	2 666
Istiaia-Aidipsos	1	935	1 101	1 777	1 032	1 227	1 909	2 399	2 658
Distomo-Arachova-Antikyra	1	222	221	219	394	738	1 942	2 167	2 538
Megalopoli	1	408	445	577	451	537	839	1 211	2 531

Apokoronas	1	275	356	1 353	461	833	2 134	2 232	2 490
Sitia	1	793	916	1 799	880	1 053	1 661	1 847	2 470
Almyros	1	395	419	531	528	794	1 726	2 011	2 418
Naxos and Lesser Cyclades	1	212	271	1 902	364	668	1 732	2 025	2 356
Ermionida	1	320	393	930	440	681	1 522	1 905	2 238
Lemnos	1	874	968	1 259	958	1 127	1 716	1 896	2 224
Farsala	1	697	756	956	782	951	1 543	1 924	2 168
Amyntaio	1	819	858	1 014	874	984	1 368	1 611	2 166
Tempi	1	193	214	332	360	694	1 862	2 011	2 155
Pylos-Nestor	1	546	613	972	667	908	1 754	1 895	2 139
Prosotsanis	1	360	393	514	474	701	1 497	1 857	2 065
Elassona	1	807	854	1 073	888	1 049	1 612	1 744	2 027
Monemvasia	1	442	504	788	559	794	1 615	1 759	2 023
Platanias	1	142	184	1 696	285	570	1 567	1 695	1 984
Aigina	1	801	926	1 297	889	1 066	1 684	1 825	1 975
Volvi	1	781	883	1 207	848	983	1 454	1 594	1 957
Stylida	1	403	432	524	524	766	1 613	1 807	1 935
Aktio-Vonitsa	1	819	919	1 262	875	988	1 382	1 718	1 913
Sithonia	1	189	255	1 451	316	570	1 460	1 552	1 899
Rigas Feraios	1	250	266	332	375	624	1 495	1 677	1 889
Ziros	1	614	645	742	677	803	1 245	1 545	1 816
Visaltia	1	515	560	718	599	766	1 351	1 495	1 753
Orestida	1	631	694	895	713	878	1 455	1 577	1 728

Voio	1	555	606	870	612	727	1 128	1 367	1 638
Doxatou	1	542	581	699	600	717	1 125	1 310	1 572
Pydna-Kolindros	1	436	471	650	521	691	1 285	1 453	1 570
Karpenisi	1	446	494	683	502	615	1 010	1 158	1 518
Thasos	1	117	155	1 460	211	400	1 060	1 356	1 510
Evrotas	1	335	364	468	416	577	1 143	1 241	1 427
Archanes-Asterousia	1	473	563	1 069	544	685	1 179	1 255	1 390
Kissamos	1	226	276	702	300	449	968	1 116	1 361
Minoa Pediada	1	505	616	1 265	550	639	953	1 083	1 315
Mylopotamos	1	76	100	1 119	169	356	1 010	1 110	1 299
Neurokopiou Down	1	189	209	275	225	297	549	1 195	1 253
Tinos	1	145	177	572	222	377	917	1 028	1 238
Servia	1	360	390	546	392	456	681	977	1 225
Mantoudi-Limni-Agia Anna	1	369	446	786	408	487	762	1 080	1 208
Milos	1	22	31	297	91	228	710	968	1 148
Leros	1	296	326	478	336	416	695	910	1 117
Icaria	1	614	664	807	640	692	875	953	1 068
Parga	1	428	501	1 248	471	556	856	936	1 056
Myki	1	811	868	1 085	819	835	892	984	1 033
Andros	1	317	355	568	366	464	807	921	1 025
Agios Vasileios	1	226	286	808	287	408	831	895	995

Epidaurus	1	352	388	508	385	452	684	903	980
Gortyna	1	578	638	1 024	602	649	813	888	960
Soufli	1	411	454	584	435	484	654	765	950
Souli	1	392	427	551	425	491	723	808	929
Filiates	1	331	357	458	348	382	500	822	900
West Mani	1	282	327	565	330	427	765	786	839
South Kynouria	1	171	180	232	207	280	534	611	724
Skiathos	1	69	97	1 033	108	186	460	576	697
Amfikleia-Elateia	1	223	248	321	249	301	482	575	675
Nemea	1	149	166	221	186	259	516	592	663
Nea Zichni	1	228	245	303	251	297	459	537	623
Metsovo	1	162	170	209	193	254	468	542	603
Skopelos	1	127	169	407	159	223	448	486	570
Karpathos	1	90	110	759	117	171	359	438	527
Poros	1	108	137	352	130	175	332	419	473
Kantanos-Selino	1	73	96	308	102	159	359	390	447
Spetses	1	99	142	464	125	176	356	394	438
Patmos	1	102	126	334	123	166	316	364	414
Cythera	1	103	111	160	121	156	280	339	388
Ithaca	1	124	146	236	142	179	306	331	351
Deskati	1	106	116	177	115	132	193	236	287
Skyros	1	96	112	176	107	128	202	240	268

Kea	1	36	48	161	53	87	206	227	254
Viannos	1	144	157	226	149	159	195	231	251
Sifnos	1	12	14	145	26	55	155	205	248
Hydra	1	3	4	152	21	56	180	203	243
Samothrace	1	87	95	126	96	113	172	201	242
Amari	1	63	72	134	74	95	169	187	233
Symi	1	23	29	381	35	60	145	171	232
Alonnisos	1	65	79	190	71	82	123	148	209
Ios	1	26	38	277	39	65	157	188	196
Astypalaia	1	75	85	118	79	88	118	176	191
Amorgos	1	51	59	102	58	73	124	152	166
Paxi	1	3	3	208	14	36	112	138	151
Serifos	1	19	26	69	27	44	103	134	149
Sfakia	1	21	26	90	30	49	113	122	142
Oropedio Lasithiou	1	50	63	114	55	65	100	123	142
Antiparos	1	5	7	98	15	35	105	128	141
Leipsoi	1	100	110	140	102	107	122	126	130
Nisyros	1	20	23	77	24	31	58	91	120
Anogeia	1	28	35	82	29	31	38	44	84
Kythnos	1	15	17	31	19	28	57	67	81
Kasos	1	64	69	82	64	65	68	73	77
Oinousses	1	14	15	23	15	16	20	43	51
Chalki	1	0	0	33	1	3	9	38	47

Kimolos	1	0	0	21	1	3	10	33	41
Fournoi Korseon	1	4	4	39	5	8	17	31	41
Kastellorizo	1	1	2	37	4	9	27	35	36
Agathonisi	1	0	0	0	0	0	0	28	28
Tilos	1	8	10	59	9	10	15	15	19
Folegandros	1	6	7	40	7	9	16	19	19
Anafi	1	0	0	5	0	1	3	5	7
Sikinos	1	0	0	11	0	1	2	4	6
Psara	1	0	0	12	0	1	3	6	6
Gavdos	1	0	0	10	0	1	2	2	6
Agios Efstratios	1	0	0	3	0	1	2	3	3
Meganisi	1								

CONCLUSIONS

The objective of the present study was to deliver foresight and risk assessment based on scenarios for estimating the evolution of extreme poverty. This investigation is not a prediction. The formulation of the scenarios aims to capture possible future situations with the ultimate goal of supporting decision-making processes that support the affected social groups.

For the implementation and synthesis of the scenarios, a literature review of the phenomenon of extreme poverty and the effects of the COVID-19 pandemic on it was initially carried out in order to highlight the extent of the effects of the pandemic on poverty. Especially in Greece, the crisis due to COVID-19 disease may once again worsen the social situation of large sections of the population and increase income inequality. Relevant secondary data were analyzed for an in-depth understanding of the poverty figures in Greece. The focus was mainly on the Minimum Guaranteed Income (EEE) register. As people at risk of poverty or social exclusion are mainly in households with very low labor intensity, the effects of the pandemic on paid work and registered unemployment were analyzed and at the same time the risk of its impact on jobs was assessed by taking into account the above analyses of the International Labor Organization (ILO) and the Bureau of Labor Statistics (BLS). These analyses highlighted specific areas (regions, regional units and Municipalities) which show acute employment problems due to the pandemic. An important observation is that these areas are largely related to the tourism industry.

Finally, the parameters of the foresight were identified and seven different scenarios were formulated. In the first two scenarios (Scenario 0-1) the forecast for the number of end recipients of the EEE was based on the real change of the registered unemployed. The next five scenarios were based on risk assessment by sector of economic activity. In all the investigated scenarios, cluster 3, which included the Municipalities of Rhodes, Zakynthos, Thira, Mykonos, Corfu, Heraklion, Kos, Rethymno, Chania and Hersonissos, presented the highest percentage increase. At the regional level, the Regions of South Aegean, Ionian Islands, Crete and Attica were the ones with the highest percentage increase. The analysis at the local level also revealed new Municipalities that are not contained in the above units with a high percentage increase, such as the Municipalities of Tanagra, Thermi, Zitsa, Oreokastro, Tempi, etc.).

This foresight is considered crucial because the uncertain environment that societies live in today make it imperative to develop assessments that can act as a springboard for political initiatives and a basis for building respective strategies. However, it is crucial that such assessments are updated with the latest available data, and that is why this foresight will be updated at the end of 2020.

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ANNEX

Table A-1. List of highly exposed census industries[22]

Highly exposed sector	Census industrial classification system codes	Census industry
Restaurants and bars	8680	Restaurants and other food services
	8690	Drinking places, alcoholic beverages
Travel and transportation	6070	Air transportation
	6190	Taxi and limousine service
	8660	Traveler accommodation
Personal services	7980	Offices of dentists
	8970	Barber shops
	8980	Beauty salons
	8990	Nail salons and other personal care services
	9090	Other personal services
Entertainment	8560	Independent artists, performing arts, spectator sports, and related industries
	8580	Bowling centers
	8590	Other amusement, gambling, and recreation industries
Other sensitive retail	4670	Automobile dealers
	4680	Other motor vehicle dealers
	4770	Furniture and home furnishings stores
	5170	Clothing stores
	5180	Shoe stores
	5190	Jewelry, luggage, and leather goods stores
	5275	Sporting goods, and hobby and toy stores
	5280	Sewing, needlework, and piece goods stores
	5295	Musical instrument and supplies stores
	5370	Book stores and news dealers

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[22] https://www.bls.gov/opub/mlr/2020/tables/dey-table-a1.stm

Table A-1. List of highly exposed census industries[22]

Highly exposed sector	Census industrial classification system codes	Census industry
	5380	Department stores and discount stores
	5470	Retail florists
	5480	Office supplies and stationery stores
	5570	Gift, novelty, and souvenir shops
	5580	Miscellaneous retail stores
	5690	Other direct selling establishments
	7170	Video tape and disk rental
	7180	Other consumer goods rental
	4390	Apparel, piece goods, and notions merchant wholesalers
	4690	Automotive parts, accessories, and tire stores
	5680	Fuel dealers
Sensitive manufacturing	3470	Household appliance manufacturing
	3570	Motor vehicles and motor vehicle equipment manufacturing
	3580	Aircraft and parts manufacturing
	3590	Aerospace product and parts manufacturing
	3680	Ship and boat building
	3895	Furniture and related product manufacturing
	3970	Sporting and athletic goods; and doll, toy, and game manufacturing
	3980	Miscellaneous manufacturing, n.e.c.
	4070	Motor vehicle and motor vehicle parts and supplies merchant wholesalers
	4080	Furniture and home furnishing merchant wholesalers
	4280	Recyclable material merchant wholesalers
	4290	Miscellaneous durable goods merchant wholesalers
	1480	Fabric mills, except knitting mills

Table A-1. List of highly exposed census industries[22]

Highly exposed sector	Census industrial classification system codes	Census industry
	1670	Knitting fabric mills and apparel knitting mills
	1570	Carpet and rug mills
	1590	Textile product mills, except carpet and rug
	1680	Cut and sew apparel manufacturing