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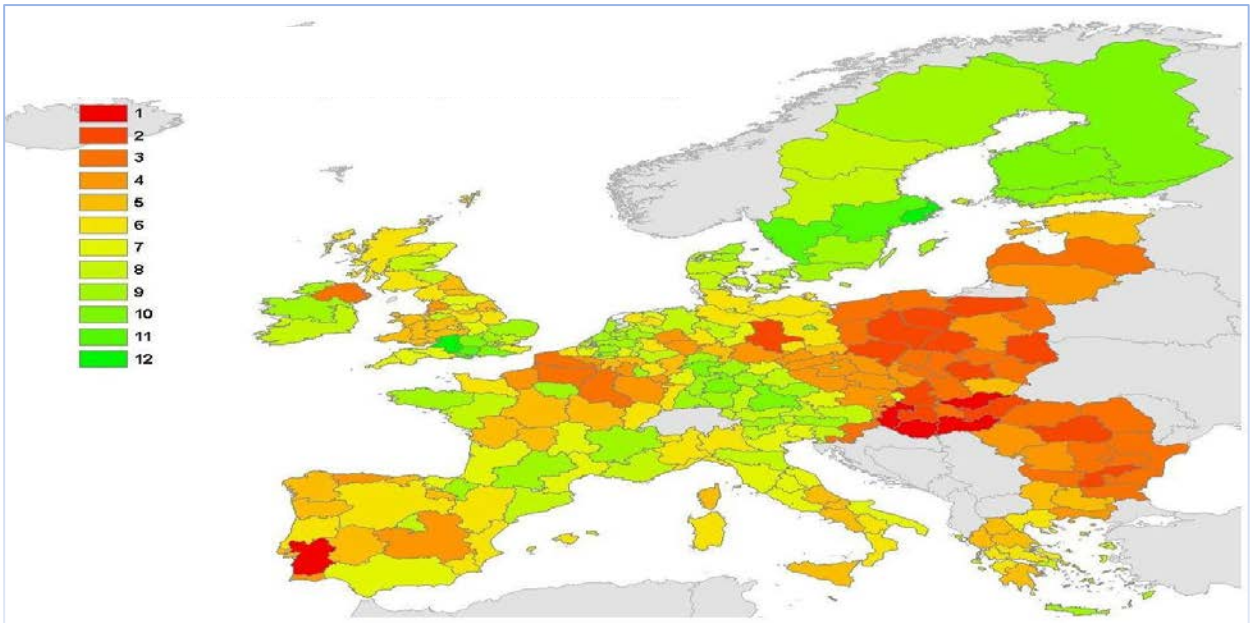

Mapping the distribution of Well-Being in Europe beyond national borders

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Abstract

Well-being is a difficult concept to define and even harder to measure. The first part of this report reviews and provides a synthesis of the vast amount of literature that exists on the concept of well-being. Two main broad approaches to well-being are considered - the subjective and the objective approaches. For each of these, the main definitions, the most important theoretical perspectives and the most relevant metrics and quantifications are reported. The most recent well-being approach, which integrates the objective and subjective approaches, is also presented in order to give an overview of the future directions of investigations into well-being. The second part of the report provides an integrated description of well-being across Europe. By evaluating multiple criteria, and by considering the twelve economic, social, environmental and health indicators developed by Eurostat for the 266 NUTS 2 regions, a study on regional well-being is provided for the year 2009.

Summary:

Well-being is a difficult concept to define and even harder to measure. The idea of providing descriptions and metrics to evaluate well-being goes back to Aristotle (1095 BC), further to which an increasingly large number of studies attempted to quantify the well-being of individuals and societies. Well-being is generally perceived to be a description of the state of human life. It has long captured the attention of sociologists, economists, psychologists, politicians and citizens, making it a widely debated interdisciplinary topic. Particularly in recent times, which are characterised by economic and environmental concerns, more and more attention has been devoted to establishing integrated descriptions of well-being that include all aspects of human life. In addition, as demonstrated by the increasing amount of literature on the topic, a lot of attention has been devoted to the contribution of politics and society to the progress of well-being.

The first part of this report reviews and provides a synthesis of the vast amount of literature that exists on the concept of well-being. Two main broad approaches to well-being are considered - the subjective and the objective approaches. For each of these, the main definitions, the most important theoretical perspectives and the most relevant metrics and quantifications are reported. The most recent well-being approach, which integrates the objective and subjective approaches, is also presented in order to give an overview of the future directions of investigations into well-being.

The second part of the report provides an integrated description of well-being across Europe. By evaluating multiple criteria, and by considering the twelve economic, social, environmental and health indicators developed by Eurostat for the 266 NUTS 2 regions, a study on regional well-being is provided for the year 2009 (the latest year for which data are available). In particular, three main analyses were performed:

1. Radar charts were elaborated to display the ranking of regional values obtained for the twelve indicators considered in this study, as compared with best European performance. This analysis allows for the identification of both the "optimal point" that could be reached by every indicator, and the distance between the regional and this optimal European level of well-being;

2. A map of regional well-being was elaborated by considering the number of indicators performing above, below or at the average European level, in order to compare the regional with the average European levels of well-being;

3. A Gini coefficient was calculated to identify indicators of the largest inequalities in well-being across Europe.

The main results of this study can be used to identify the indicators of well-being for which an improvement in performance is needed, for each of the considered regions. The non-compensatory approach and the objective description of well-being provided in this report also allow for subjective elements to be introduced as indicators based on individual systems of values and preference. The results of this study can help provide an integrated description of regional well-being across Europe, both from an objective as well as from a subjective perspective.

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1. Introduction

There has recently been a renewed interest in the concept of well-being, and many efforts have been made to quantify the level of well-being of individuals and societies. Some of the many projects that debate the level of well-being include the report prepared in 2008 by the "Commission on the Measurement of Economic Performance and Social Progress", carried out on the initiative of the French government (Stiglitz et al., 2009), the "Global Project on Measuring the Progress of Societies" and the "Better Life Initiative" of the OECD[1], and the recent E-Frame project financed by European Commission[2].

The recent economic crisis and the associated rise in environmental and social problems led many governments and institutions to extend the description of the state of societies from traditional economic variables to include a wider characterisation of well-being. However, the concept of well-being has a long history and has commonly been used in many disciplines to describe the state of the human condition.

One of the first definitions of well-being dates back to Aristotle (1095 BC) and is related to the concept of eudemonia, which summarises well-being as “doing and living well”. The basic idea is that we all have different perceptions, and therefore opinions, of what well-being should be. Subjectivity, individual values and different ways of viewing the world lead people to identify different factors to be considered as elements of well-being. As human adaptation is a dynamic process, the perception of well-being also develops dynamically. Peoples’ perceptions can change over time and space. Once we obtain what previously did not have (be it material or immaterial), we get used to it and the initial sense of well-being is transformed into a state of ordinariness (Jackson, 2007).

Starting from these ideas, many definitions have been proposed over the centuries, but there is still no common agreement on how well-being should be described. For example, different branches of knowledge have different ideas of well-being. In medicine, the concept of well-being usually refers to physical or physiological health; in philosophy, it refers to how well a person’s life meets his/her aspirations; in economics, it is generally summarised by income and wealth; in politics, it refers to the system of welfare; and in sociology, it usually describes subjective values such as personal satisfaction.

The different definitions of well-being are generally context-dependent, making the concept of well-being even harder to quantify than to define. The hedonic and the eudemonic

[1] http://www.oecd.org/

[2] http://www.istat.it/it/informazioni/per-i-ricercatori/societ%C3%A0-scientifiche/progetto-fp7-eframe

approaches are examples of that. The hedonic approach describes well-being as pleasure, enjoyment, satisfaction and subjective happiness. It is part of the utilitarian approach to well-being used in economics, and the subjective well-being approach of psychology (Kahnemann et al., 1999). The eudemonic approach describes well-being as the realisation of human potential, and is part of the capabilities approach used in economics (Ryan and Deci, 2001; Hupper, 2008).

Given the multiple perceptions of well-being, its multidimensionality, the subjectivity that characterises its definitions, and its variability over space and time, well-being is an ambiguous concept that lacks a universally accepted definition. In addition, its quantification is strongly dependent on the adopted approach (Saltelli et al., 2007). A plethora of metrics have been proposed and many attempts have been made over the past decades to quantify and compare the well-being of individuals and societies. Most of these have focused on the utilitarian approach derived from Jeremy Bentham (1789) and John Stuart Mill (Chrisp, 1998). The standard economic hypothesis that people's “utility” (well-being) increases with consumption leads to the idea that "more is better", reducing the definition of well-being to income and GDP.

Since the 1960s, however, an increasing number of concerns have arisen about this simplification that reduces well-being to income. One of the most famous examples is the speech that John F. Kennedy gave at the University of Kansas, on March 1968:

"Our Gross National Product counts air pollution and cigarette advertising, and ambulances to clear our highways of carnage. Its counts special locks for our doors and the jails for the people who break them. It counts the destruction of the redwood and the loss of our natural wonder in chaotic sprawl. It counts napalm and counts nuclear warheads and armoured cars for the policy to fight the riots in our cities..., and the television programs which glorify violence in order to sell toys to our children. Yet the Gross National Product does not allow for the health of our children, the quality of their education or the joy of their play. It does not include the beauty of our poetry or the strength of our marriages, the intelligence of our public debate or the integrity of our public officials. It measures neither our wit nor our courage, neither our wisdom nor our learning, neither our compassion nor our devotion to our country, it measures everything in short, except that which makes life worthwhile".

It was during that period that the idea of a critical level of GDP was identified, above which income inequalities, environmental degradation and reductions in leisure time tend to increase. Above that point, an increase in income has no effect on well-being, and individuals tend to put a higher value on better environmental quality and relationships with

friends or family (Easterlin, 1974, 2001, 2003; Veenhoven, 1991; Max-Neef, 1995; Inglehart and Klingemann, 2000; Talberth et al., 2007; Clark et al., 2008). The relative income hypothesis, positional goods, and comparisons with other individuals of society have also been found to be important elements of well-being (Duesenberry, 1949; Frank, 1997; Corazzini et al., 2012). These concepts are generally summarised by the 'Easterlin paradox', according to which once a certain absolute level of income is reached, gains in well-being are obtained by having higher income relative to other people, or by having benefits generated by social relationships or the environment (Bjornskov et al., 2008). In addition, the "set point theory of happiness" postulates that, as people tend to adapt their aspirations to their changing circumstances, an increasing level of income does not generate an increasing level of well-being in the long term (Frey and Stutzer 2002; Gilbert, 2006; Costanza et al., 2007).

By contrast, it is generally recognised that consumer values are an important causal factor of unhappiness and mental illness such as depression, anxiety and narcissism (Kasser and Ahuvia, 2002; Eckersley, 2006; McKibben, 2007; Aydin, 2010). Recent studies also found that only around 10% of subjective well-being is attributable to income. The remaining 90% is determined by personality and activities in which people choose to engage (Lyubomirsky et al., 2005; Headey et al., 2008).

Based on this evidence, an increasing body of literature has been devoted to reconceptualising well-being as a combination of social, cultural, psychological, and environmental aspirations, and today it is widely accepted that well-being is a multidimensional concept that encompasses all aspects of human life (McGillvray, 2007).

Two main approaches, the subjective and the objective, have been largely used to define and quantify the concept of well-being. Despite the debate that has long existed regarding objective versus subjective indicators, it is now generally accepted that they are different sides of the same coin, and recent measures of well-being tend to include both objective conditions and subjective evaluations of human lives (Veenhoven, 2002; Delhey et al., 2002; Hudler and Richter, 2002). Within this framework, the aim of this report is twofold:

- To provide a review of the literature on well-being. Rather than pretending to cover the extensive literature that exists on well-being, the present report aims to summarise the main definitions and theoretical approaches, and to show the diversity and the evolution of opinions on the concept of well-being.

- To provide an integrated description of well-being across European regions. By considering the most recent developments in well-being based on a non-compensatory approach and multi-criteria description, Eurostat indicators are used to provide a picture of well-being across the 266 NUTS 2 regions of Europe.

Why regions? The objective is to verify whether the multidimensional character of well-being can be seen beyond national borders, as one could expect. In other words, the aim is to verify whether elements could be common to communities due to their proximity in geographical location, culture/history, economies and other areas beyond the national subdivision. Furthermore, well-being pertains to the communities in which individuals live and generally depends more on relatively local than on country-wide parameters. NUTS 2 is the minimum level at which quantitative information is available for the communities in which people live.

The report is structured as follows: sections 2 and 3 summarise the definitions, the quantification techniques, the major studies, and the main limits and advantages of the subjective and objective approaches. Section 4 introduces an integrated description of well-being, and summarises the approach used in this report. Sections 5 and 6 present the data and methodology used. Section 7 summarises the main results. Section 8 discusses the limitations, the novelty of the approach, and possible future developments. The conclusions are given in Section 9.

2 Subjective well-being

Subjective well-being (SWB) is based on people's personal evaluations of their own lives. It aims to capture people's feelings about their life satisfaction, and is based on the subjective evaluation of past and future life experiences (Andrews and Withey, 1976; Diener and Lucas 2000; McGillivray and Clarke, 2006; van Hoorn, 2007). As it describes the extent to which an individual feels that his/her life is going well, it is based on subjective evaluations and is strongly influenced by expectations, personality, circumstances, aspirations and interpersonal comparisons (Warr, 1999).

There are three main approaches in the literature to investigate and analyse the concept of SWB: the Happiness, Life Satisfaction, and Multiple Discrepancies approaches. All are today recognised as important elements that contribute to determining SWB. In the following, a short description of the three main approaches is given.

2.1 Subjective well-being approaches

a) Happiness

The Happiness approach measures well-being based on people's evaluations of events that occur in their lives (Diener et al., 1999; Bruni and Porta, 2007). It is based on moods and emotions, and generally refers to a temporary and short-term feeling. Most of the literature agrees in distinguishing two broad categories of factors that can influence happiness.

The first category, which comprises what are generally called ‘bottom-up’ factors, includes external events and situations, such as for example the fulfilment of basic and universal human needs (Stallings et al., 1997).

The second, “top-down”, category of factors addresses the structures within the person that determine how events and circumstances are perceived (Diener, 1984). The quality of happiness is influenced by factors such as mood intensity, emotionality and mood variability (Lansed and Diener, 1987; Eisenberg et al., 1995; Lyubomirsky, 2001). Oishi et al. (1998) found that different individuals can have different levels of happiness based on their values and personalities. Within this context, personality is considered to be one of the strongest factors influencing SWB (Davern, 2004). Behavioural-genetic studies of heritability found evidence that some degree of variance in SWB scores can be explained by a genetic predisposition to be happy or unhappy (Tellegen, 1985; Tellegen et al., 1988).

However, there is still a great deal of inconsistency across studies that aim to quantify the degree to which SWB is influenced by genetic traits (McGue and Christensen, 1997; Lykken and Tellegen, 1996). Some authors are in favour the "dynamic equilibrium" theory, which claims that personality is the main determinant of the baseline levels of SWB, and that external factors or events can only temporarily affect the happiness level (Headey and Wearing, 1989; Kozma et al., 1997; Headey and Wearing, 2006).

In addition to the genetic studies carried out to quantify the baseline level of well-being and the variations in happiness, the social and psychological sciences generally use assessment methods such as surveys and one-off, self-reported happiness scales to investigate happiness levels.

b) Life Satisfaction

The Life Satisfaction approach is based on the idea that satisfaction is an important component of human well-being. It summarises a person's judgement of how well things are going, and it is related to the perceived discrepancy between aspirations and reality (Andrews and Withney, 1976; Campbell et al., 1976; Diener et al., 1985; Diener and Suh, 1999; Stutzer, 2004).

Most of the literature states that life satisfaction can be approached as a general construct or as a combination of many specific domains. Health, economy, family, friendships, and community environment are just some of the many aspects and spheres that determine the overall satisfaction level of a person's life. Based on the Cartesian approach, which considers that complex things can be better understood by dividing them into their parts, the life satisfaction approach is largely used for building databases and carrying out survey analyses (Rampichini and D'Andrea, 1998; van Praag and Ferrer-i-Carbonel, 2004).

c) Multiple Discrepancies

The Multiple Discrepancies theory of subjective well-being, proposed in 1985 by Michalos, is strictly related to the individual's perception of his/her well-being. The basic approach, which was used by the ancient Greeks, is that individuals compare themselves and their situations to other people, past conditions, aspirations, needs and ambitions. The resulting discrepancy between these factors and the individual's own reality can result in an increase or decrease in satisfaction levels.

Social comparisons between individuals and other members of society have been widely investigated in the literature. The main findings are that the influence of one's immediate social environment appears not to have a long-term effect on an individual's SWB, but can have a relevant effect on short-term happiness (Wood et al., 1985; Wood, 1996; Diener and Fujita, 1997; Blore et al., 2011).

Ambitions and aspirations also have a significant influence on an individual's level of SWB. The discrepancy between one's aspirations and actual life situation has also been found to significantly influence the level of SWB. However, no clear and simple relationship seems to exist between aspirations and well-being. Some literature findings support the idea that high aspirations can potentially lead to unhappiness (Wilson, 1967; Markus and Nurius, 1986; Michalos, 1985), while others consider aspirations to be an important element of well-being. Having aspirations provides meaning to daily life and, in some cases, the fact of having

ambitions is more important than actually achieving the goal (Caver et al., 1996). In addition, the aspirations themselves can also be influenced by the level of SWB. Past failures or success can determine a new aspiration level and consequently generate another level of SWB (McIntosh and Martin, 1992).

2.2 Subjective well-being measurements

Most measurements of SWB are obtained through questionnaires and interviews designed to obtain self-reported valuations of some aspects of an individual's life, or their life as a whole (Diener and Seligman, 2004; Diener, 2006; Kahneman et al., 2004). Answers are generally used to rank the SWB of individuals and societies. However, as the different values assigned to the different aspects of life are aggregated into a single subjective well-being index, the final value may be subject to errors in the aggregation or score attributions (Saltelli et al., 2007). In addition, as pointed out by Shwarz and Strack (1991), several factors can also negatively impact results, such as the scales used, the order of items, and the timeframe of the questions.

In spite of these limitations, however, many studies have been carried out to investigate the SWB of individuals and local communities covering large regions of the world. The "World Database of Happiness" (WDH), the "World Values Survey" and the "Satisfaction with Life Index" for example, collect data, indicators and measures of the happiness of nations, and also investigate the main values that characterise well-being (Veenhoven, 2008). The "Latinbarometer" collected surveys from 18 Latin American countries, the "Afrobarometer" covers 15 African countries, and the "Beyond Facts: Measuring Quality of Life" survey quantifies the happiness levels in Latin America and in the Caribbean (Bratton et al., 2004; Veenhoven, 2005, 2006).

Despite the fact that most of the databases focused on developed countries, where the data are available for lengthy time periods, an increasing number of psychologists and economists are advocating for the collection and use of more all-encompassing large-scale surveys to track the subjective well-being level over time and countries (Diener, E., 2000; Diener and Seligman, 2004).

A set of "National Indicators of Subjective Well-Being" has also been proposed to evaluate the subjective well-being of nations (Diener, 2005; Kahneman et al., 2004), and many measurement techniques have been elaborated to evaluate both individual and social well-being. The Experience Sampling Method, the Day Reconstruction Method, the U

(unpleasant)-Index and Brain Imaging are some of the most widely used techniques (for a complete description and discussion, see Kahnemann and Krueger, 2006).

The main findings of these studies reveal the existence of groups of factors that influence the level of SWB. Personality, interpersonal relationships, and demographic, institutional, environmental and economic factors are some of the most important of these. The personality with which a person is born has an important influence on his/her perception and evaluation of SWB (Tellegen et al., 1988; Hayes and Joseph, 2003). The study of interpersonal relationships finds that life satisfaction increases by increasing the number and quality of relationships with friends and the number of social interactions (Frey and Stutzer, 2002; Layard, 2005). Demographic factors such as age show that SWB is a U-shaped curve through a person's lifecycle, reaching the lowest level at 30-40 years (Blanchflower et al., 2008). Institutional factors include political and social situations such as, for example, terrorism or democracy (Frey and Stutzer, 2002(a); Frey and Stutzer, 2007), freedom of the press (Vemuri and Costanza, 2006), job possibilities and conditions (Clark and Postel-Vinay, 2009), unemployment, inflation and social inequalities (Oswald 1997; Frey and Stutzer, 2002; Wolfers, 2003; Pickett and Wilkinson., 2007; Alesina et al., 2001; Di Tella and MacCulloch, 2005; Di Tella et al., 2001). Environmental factors include climate (Rehdanz and Maddison, 2005, 2008), pollution (Welsch, 2002; Van Praag and Baarsma, 2005), ecosystem services and land types (Costanza et al., 1997; Sutton and Costanza, 2002). Economic factors mainly involve income, wealth and education (Clark and Oswald, 1994; Di Tella et al., 2001, 2003; Diener and Seligman, 2004; Becchetti et al., 2006).

In spite of the cultural differences that make it difficult to compare results across ethnic, gender and cultural boundaries, and in spite of the pluralities of values and perceptions of individuals, the main findings of these studies show that social relationships, economic and political stability, and a healthy environment generally have positive effects on individual and social well-being.

However, many differences exist between developed and developing countries. Evidence gathered from surveys and research is generally consistent in showing that individuals across nations and social classes in developed countries put more value on non-monetary assets than on their financial situation. By contrast, in poorer countries priority is given to basic material needs, not only for well-being but also for survival.

In spite of the possibility of large variability in the results of SWB evaluations, the main advantage of the SWB approach is to provide a picture of well-being that perfectly reflects the feelings of individuals. As it is based on self-reported experiences, it avoids the

reduction, approximation or interpretation that can result from well-being estimations provided by an external observer. On the other hand, however, the need for individual interviews and self-reported evaluations generally makes data collection expensive in terms of both time and resources.

3. Objective well-being

Objective well-being (OWB) is based on the idea that observable facts can be used as an approximation of well-being. Starting from the idea that economic, social or environmental variables can reflect the extent to which human needs are met, the OWB ranks well-being based on the values of the chosen variables (Cummins et al., 2006). The basic idea behind this approach is that individuals derive well-being form the satisfaction of their needs. Since the satisfaction of an individual's preferences cannot be observed directly, the OWB assesses the level of well-being by using proxies to measure the satisfaction of needs.

Two main approaches have been identified in the definition of objective human well-being, namely the needs and the capital (or input) approaches. The needs approach, also defined as a consumption-related approach, is valuated in terms of the gap between an individual's desires or consumption needs and the satisfaction of those needs (Maslow, 1954). The capital approach is based on the availability of the assets needed to generate well-being (Rawls, 1971). Both approaches have been widely used to quantify the well-being of individuals and societies, and have been used in policy approaches oriented to promote development and socio-economic growth.

3.1 Objective well-being approaches

a) Needs Approach

The needs approach, originally proposed by Abraham Maslow (1954; 1968), is based on the idea that human well-being is the outcome of meeting a set of needs. Classified in order of priority, the different categories of human needs are represented in a pyramid form, usually called Maslow's hierarchy of needs.

Fundamental human needs, such as food and shelter, are at the base of the pyramid. The next levels of the pyramid represent the security and social needs that arise after these

fundamental needs are met, defined as the needs that differ between societies and culture. At the top of the pyramid are the needs that characterise individual values, wants and expectations, such as self-esteem and self-actualisation.

During the past decades, many other classifications of needs have been proposed. For example, Donald et al. (2006) suggested an objective list approach composed of a list of commodities, attributes and characteristics that give an indication of individual well-being. Higgs (2006) proposed to split the categorisation of human needs into three parts: basic physical/psychological well-being, emotional/social well-being and cerebral/self-well-being. Since so many classifications have been promoted by many different authors, we suggest that Boulanger (2008) be referred to for a complete review of needs classifications.

Of the different classification approaches, we would like to focus on the Human-Scale Development Approach (H-SD) proposed by Max Neef (1986). Central to his approach is the idea of re-conceptualising the economic development process in terms of well-being by putting human needs at the centre of the economic development debate. Using a matrix structure, Max-Neef basically proposed the identification of correlations between human needs, classified in four main dimensions (having, doing, interacting and being), and satisfiers.

In spite of the fact that, as Max-Neef recognised, people have multiple and interdependent needs that interact in a way that makes it impossible to identify a perfect correlation between needs and satisfiers (basically because a need can require various satisfiers to be met, and a satisfier can help meet various human needs), the H-SD approach represented a cornerstone in the economic development debate. It became the most widely used approach in international development policies, as it promotes the idea that, in order to have a minimum required level of well-being, the availability of satisfiers must be guaranteed in order be able to meet basic primary needs.

b) Capital approach

The capital (or input) approach is strictly related to the concept of "primary goods" proposed by Rawls (1971), and is based on the idea that people need goods (or capital) to satisfy their needs. By defining capital as the material and non-material assets that must be available to meet an individual's objectives, the capital approach defines capital as the input needed to satisfy human needs. Within this perspective, the availability of capital is considered as a proxy for the potential level of well-being. Social, health, consumption, natural and human capital are the most widely used capital categories identified in the literature. However, many

other classifications and subcategories have also been identified (World Bank, 2006; Strange and Bayley, 2008; OECD, 2011). The main capital categories are defined as:

- Social Capital, or 'relational good', refers to the relationships between individuals, family and society, and reflects the idea that social networks have value. It is generally identified by using indicators of important elements that help people feel part of their local community, such as participation in local organisations or voluntary activities, crime statistics, and the degree of political rights and civil liberties (Putnam, 1993; 2000; Argyle, 2001; Helliwell and Putnam, 2004; Bruni and Stanca, 2006; Bartolini, 2007).

- Health Capital is the physical and physiological health of individuals and societies. It is approximated by the life expectancy at birth, suicide rates, the doctor/population ratio or government expenditure on health (Weston et al., 2004; Graham, 2009).

- Consumption Capital is defined as material goods, services and financial assets. It summarises the consumption potential of individuals and societies, and is generally quantified as per capita income (Deaton, 2008; Inglehart et al., 2008).

- Natural Capital identifies the state of the environment, and is approximated by statistics on water pollution, deforestation, air emissions, natural resource availability or biological diversity (World Bank, 2006; Hamilton and Ruta, 2006).

- Human Capital refers to an individual's abilities, education and freedom. Strictly related to the Sen's Capability Approach (1985), human capital describes both the opportunities offered by the society in which an individual lives, and the individual’s talents and skills. It is approximated by education, social and political freedom, and investment in training. The main idea is to consider well-being as being dependent on a person’s ability to convert income, commodities and social relationships into valuable achievements. By considering the capital needed to satisfy well-being not only in terms of material and non-material assets but also in terms of individual abilities to obtain potential well-being improvement, the capability well-being approach is widely used today in the planning of development and poverty-reduction policies. According to Sen, well-being is not only a matter of satisfying material needs, but also includes freedoms and capabilities that make it possible for each person to satisfy his/her individual

needs. Access to commodities or primary goods does not in itself constitute well-being, but is a means by which individuals have the potential to achieve well-being (Sen, 1992; Nussbaum and Sen, 1993). Within this context, well-being is strictly dependant on what individuals manage to do or be. Freedom is therefore needed to provide real opportunities to do and be what individuals have reason to value. In addition, the commodities required for the achievement of well-being generally differ between people and societies, making well-being largely dependent on cultural factors such as social conventions or status and class (Sen, 1992). During the past decades, the capability approach has become one of the main conceptual frameworks in development studies, policymaking, welfare economics and social and political sciences (Fukuda-Parr, 2003; Comin et al., 2008; Deneulin, 2009; Fukuda-Parr and Kumar, 2009; Crocker and Robeyns, 2009). Within this context, development policies focus more on the opportunities for improving lives than on economic output (Veenhoven, 2000). Welfare programmes that support health, education and social security, together with basic needs satisfaction, have been found to be much more effective, particularly in the long term, than top-down policies designed to increase the material production of societies (Sen, 1999; World Bank, 2006; Ruta and Hamilton, 2007; UNPD, 1990; 1995; 1997; 1998; 2011).

Considering capital as the input needed to satisfy human needs, the availability of capital is assumed to be an approximation of the present and potential future levels of well-being. In addition, since all the different types of capital are interconnected, the level of one type of capital can influence the level of other types of capital. The overall level of well-being will therefore not be generated by simply summing up the different types of capital, but will also be influenced by their interactions (Mouw, 2006).

3.2 Objective well-being measurements

The objective well-being approach is based on the assumption that well-being is dependent on a set of needs that are common to all individuals and societies (Prince and Prince, 2001). For this reason, the traditional measures of objective well-being have been based on the use of indicators that reduce environmental, economic and social needs to monetary values or to composite indicators.

In spite of the many concerns raised on the problematic and difficult assumptions that have to be made to provide pricing and monetary evaluations of non-market factors, the number of monetary indicators used to quantify well-being has greatly increased in the past decades, and are still used today by international organisations such as the United Nations and the OECD (Gadrey and Jany-Catrice, 2007).

The possibility to compare different levels of well-being and to rapidly evaluate trade-offs generated by different policy options, makes monetary and other composite indicators particularly appreciated by politicians, who usually prefer a single-value indicator because it is easy to use and has strong communicative power. The possibility to rank the well-being of individuals and societies on the basis of indicators provides a useful tool for making comparisons or assessing progress.

For these reasons, a large variety of composite indicators of well-being have been used both in policy and economic analysis. The basic idea behind this approach is to extend the well-being evaluation, generally based on income and Gross Domestic Product (GDP), to take into account other economic, social and environmental indicators, such as the natural environment or leisure activities (McGillivray, 2007). A fundamental step is the reduction of the different factors to a common unit of evaluation, which allows for comparisons and trade-offs to be made between different aspects and levels of well-being.

The most widely used indicators elaborated to quantify well-being are based on adjustment of GDP as an indicator of well-being. Well-known examples include the Measure of Economic Welfare, the Adjusted Net Saving, the Human Development Index, the Index of Economic Well-being, the Equivalent Income, the Gross National Happiness index, and the Index of Sustainable Economic Welfare. (For a complete and exhaustive review of the "Beyond GDP Indicators" report, see Brainpool project (2012[3] and for an overview of adjusted measures of economic welfare, see Jackson and McBride (2005):

- The Measure of Economic Welfare (MEW), originally proposed by Nordhaus and Tobin (1973), is based on Gross National Product (GNP) adjustments that classify GNP expenditures as ‘consumption’, ‘investment’ and ‘intermediate’, and to which services of consumer capital, leisure and household work are added. It also takes "disamenities of urbanization" into consideration, by subtracting negative externalities such as pollution and congestion.

[3] http://www.brainpoolproject.eu/

- The Adjusted Net Saving, proposed by the World Bank as an alternative to GDP as an indicator of well-being, measures the savings rate of the economy and takes into account investments in human capital, depletion of natural resources, and pollution damages.

- The Human Development Index (HDI), first proposed in the '90s by the United Nations Development Programme (UNPD 1990; 1995; 1997; 1998; 2011) and based on Sen's capability approach, combines the adjusted per capita income in constant purchasing power parity with a measure of life expectancy and education. Summarising a limited amount of information, it is one of the most regularly compiled indicators of well-being, allowing for systematic comparisons of countries, together with the Index of Sustainable Economic Welfare (Daly and Cobb, 1989).

- The Index of Economic Well-Being (IEWB), proposed by Osberg in 1985 and further developed by Osberg and Sharpe (2001), is a mix of different approaches that covers concepts such as current prosperity, sustainable accumulation, social prosperity and the environment. The IEWB is based on four main components, namely the 'effective per capita consumption flows', which includes consumption of market and non-market goods, and leisure; the 'net societal accumulation of stocks of productive resources', which includes the net accumulation of tangible capital and housing stocks, the net accumulation of human capital, minus the net change in level of foreign indebtedness and the social costs of environmental degradation; 'income distribution' measured by the Gini index of inequality, and 'Economic security' and the way it is undermined by for example unemployment, single parent poverty and poverty in old age.

- The Equivalent Income indicator reflects the willingness-to-pay of each individual for additional levels of well-being (Samuelson, 1974).

- The Gross National Happiness (GNH) index, introduced by the King of Bhutan in 1972 as alternative using to GDP as a measure of well-being, includes environmental elements such as deforestation.
- The Index of Sustainable Economic Welfare (ISEW) measures various activities that have an impact on the quality of human life, such as air pollution, household labour, income inequality and depletion of environmental assets.

The main results obtained using these indicators show that growth in GDP per capita generally exceeds growth in well-being. In addition, adverse trends in inequality, poverty,

insecurity and environmental degradation generate a lag between GDP growth and well-being.

In relation to the Sen Capability Approach, well-being is generally evaluated using an interconnected set of functions that represent personal well-being. This approach has been widely criticised over the past decades, particularly in relation to the lack of a substantial list of valuable functions and to the absence of guidance about how to weight and aggregate the different dimensions (Sugden, 1993; Srinivasan, 1994; Roemer, 1996).

According to Sen, as different people, cultures and human can have different values and priorities, no one universal list of basic functions exists. Functions and capabilities must reflect the person's real opportunities or freedom to choose between possible lifestyles, so the list of functions used in the capability approach must be open so that it can be adapted to different contexts.

In recent times, the use and construction of composite indicators has been largely criticised for oversimplifying the complexity and the multidimensionality of well-being evaluation, as they reduce and combine different elements measured on different scales, and involve decisions about weighting and aggregation factors, making the final ranking largely influenced by the perceptions and values of those constructing the indicator (Ivanova et al., 1999; Ogwand and Abdou, 2003; Qizalbash, 2004). In addition, most indicators generally assume that certain issues are valuable to society but do not explain why something is valuable or not, which removes all transparency from the process of indicator construction (Satelli, 2007; Nardo et al., 2005).

For these reasons, an increasing body of literature recommends that the simplification generated by the use of aggregated indicators should be avoided, and that an integrated description of well-being should be developed. The fuzzy sets theory and the multicriteria methods approaches are examples of recent developments that aim to move from a compensation and linear simplification approach to a combined analysis of objective and subjective well-being.

4. Integrated description of well-being

Recent developments in measuring well-being use a combination of the objective and subjective approaches (Costanza et al., 2007). As well-being is not only a matter of individual perception or indicators, the integrated well-being approach can be considered as

an umbrella that covers different descriptions of well-being, including individual perceptions and valuations. A multi-criteria framework is generally used to provide an integrated description of well-being. Starting from the idea that well-being is a multidimensional concept characterised by multiple interactions between different elements, the multi-criteria evaluation approach adopts a non-linear and non-compensatory approach that avoids the classical linear aggregation used, for example, by composite indicators. Economic, social, environmental and other dimensions are relevant for the definition of well-being, but an increase in the performance of one dimension is not necessarily compensated by a loss in another.

Within this context, the different elements of well-being are incommensurable and cannot be aggregated in overall evaluations (Martinez-Alier et al., 1998 ; Munda, 2008). The different dimensions and individual/social perceptions are combined in order to identify definitions, ranking or variations of well-being (Munda, 2005; Munda and Nardo, 2009).

An increasing number of multi-criteria techniques have recently been proposed, and many studies have been carried out that use multiple criteria in sustainability assessments or in decision support activities (Munda and Saisana, 2011). Most of these also adopt a participatory approach. When uncertainty is high and when the interactions between economic, social and environmental variables are highly complex, the participation of different stakeholders is fundamental to identify the relevant elements, the scale of analysis and the subjective description of reality as determined by individual or social values (Funtowicz and Ravets, 1993, 1994; Giampietro, 1994; Munda, 2004).

Despite the large body of literature that has applied the multi-criteria evaluation and participative approaches to sustainability issues (Nijkamp, 1986; Nijkamp et al., 1990; Munda, 2008), only a very limited number of studies applied both approaches to well-being evaluation. Since the participative multi-criteria methods require the participation of different stakeholders, the analysis is generally carried out on a small geographical scale. Examples include the analysis of the level of well-being of the small-scale Tsimane' society in the Bolivian Amazon (Masferrer-Dodas et al., 2011), and the identification of well-being in Kan Pasqual and Can Masdeu, two semiautonomous, small-scale, collective economic systems in Barcelona (Cattaneo and Gavala, 2011). Other examples include the recent studies on well-being and values of societies conducted within the Agenda 21 theoretical and procedural framework.

The results of this participative multi-criteria process usually produce an integrated description of objective, subjective and context-specific well-being. However, when large

geographical scales are taken into account it becomes very difficult and expensive to take a participative approach to well-being evaluation. In such cases, most techniques consider the general perception of what is good and bad as an approximation of the feeling of society, and use this information to select the indicators that will be used to produce an integrated description of well-being (Maxwell et al., 2011; OECD, 2011).

Based on the incommensurability of different elements of well-being, this study uses a multi-criteria rather than a compensatory approach to provide a picture of well-being across EU regions.

The choice of carrying out the study at the regional rather than the national scale stems from our interest in measuring the geographical fragmentation of well-being (according to the metrics selected in this study) within the EU Member States, and the possible commonalities that exist across borders.

Having identified a series of Eurostat indicators for economic, social, health and environmental variables, a combination of multi-criteria and fuzzy set techniques (the "ideal point" technique, the average value comparison, and a Gini index for inequalities) was used to compare the performance of these well-being indicators across EU regions. Based on the results, a European map and radar charts of regional well-being have been developed.

5. Data

Regional data provided by Eurostat were used in this study to describe well-being across Europe. Based on NUTS 2 classifications of 2009, 266 European regions were considered from across the 27 EU Member States (a detailed list of countries and regions is given in the Appendix). For each region, the available indicators describing the economic, social, health and environmental situation were used.

Of the indicators available in the Eurostat regional database, only those that were included in at least 95% of the 266 European regions were considered. As a general rule, the national average value was used to approximate all missing data. A total of twelve indicators that met these criteria were identified. In order to avoid an unequal weight distribution between the different dimensions, and according to the multi-criteria approach (Munda, 2008), three indicators were selected for each of the four dimensions considered in this study, namely:

1. Economic Dimension

- Gross Domestic Product
- Long-Term Unemployment Rate
- R&D Expenditure

2. Social Dimension

- Fertility Rate
- Tertiary Education
- Intentional Self-Harm

3. Health Dimension

- Infant Mortality Rate
- Life Expectancy
- Malignant Neoplasms

4. Environmental Dimension

- Generation of Municipal Waste
- Organic Crops
- Total Nights Spent by Tourists

As the direction that every indicator should take in order to increase the level of well-being is not always obvious, the following is a detailed explanation of the assumptions made and motivations behind each indicator for this study:

1. Economic Dimension:

- Gross Domestic Product (GDP) – Euro per inhabitant: calculated by Eurostat according to an expenditure approach (GDP = consumption + investments + exports – imports), the GDP is the indicator most widely used to describe the economic situation of a region and to summarise the economic dimension of well-being (http://epp.eurostat.ec.europa.eu/ – Headline indicators).

- Long-Term Unemployment Rate (twelve months or more): the number of people aged between 15-74 (between 16 and 74 in the UK, Iceland and Norway) who were available for but were without work during the reference period. Since the long-term unemployment rate is mainly determined by economic variables, an increasing rate

of this indicator indicates a decreasing trend in the economic dimension of well-being (Di Tella et al., 2001; Frey and Stutzer, 2002).

- R&D Expenditure – Euro per inhabitant: Eurostat's statistics on R&D expenditure are compiled based on OECD guidelines (Frascati manual, 2002). They summarise the expenditure on research and development made in the considered region for the year of reference. As science, technology and innovation are considered to be important drivers for the Europe 2020 growth strategy, increasing the rate of R&D expenditure is assumed to have a positive impact on the economic dimension of well-being, and in particular on medium-term economic development.

2. Social Dimension:

- Fertility Rate – children per woman: quantifying the average number of children per woman, the fertility rate in developed countries can be considered to be an indicator of long-term expectation of well-being (Eurostat website – Headline indicators[4]).

- Tertiary Education - % of population: the percentage of the population with a tertiary education. As an indication of the possibilities for higher-level education available to families, society and the system of welfare, tertiary education is positively related to the social dimension of well-being (European Commission, 2010; Stutzer and Frey, 2008).

- Intentional self-harm – per 100 000 inhabitants: since the number of suicide victims is largely influenced by depression, hopelessness, drugs or alcohol abuse and social isolation, intentional self-harm is here considered to be an indicator of the social dimension of well-being (Eurostat, 2009).

3. Health dimension:

- Infant mortality rate – per 1 000 live births: describes mortality during the first year of life, calculated as the ratio of the number of deaths of children under one year of age to the number of live births per annum. The infant mortality rate is universally considered to be representative of the level of health, development, quality of governance and well-being of a country's population (Eurostat, 2009).

[4] http://epp.eurostat.ec.europa.eu/portal/page/portal/europe_2020_indicators/headline_indicators/data

- Life expectancy at given exact age (1 year): refers to the number of years still to be lived by a person if subjected throughout the rest of his/her life to the current mortality conditions. Since health care is recognised as being one of the most important factors that influence life expectancy, this indicator can be used to describe the health dimension of well-being (Eurostat, 2009).

- Malignant neoplasms – per 100 000 inhabitants: malignant neoplasms are among the causes of death included among the cancer statistics collected by Eurostat. As environmental quality is recognised as being an important cause of cancer (e.g. smoking-related cancers, obesity or occupational hazards), the number of malignant neoplasms is considered in this study to be a negative indicator of health well-being (Eurostat, 2009).

4 Environmental dimension:

- Generation of municipal waste – kg per capita: according to the Eurostat definition, 'municipal waste generation' denotes the waste from consumption generated by households, commercial offices and public institutions. Since the EU Sustainable Development Strategies and the Waste Framework Directive set the target of 'avoiding the generation of waste and enhancing efficient use of natural resources by applying the concept of life-cycle thinking and promoting reuse and recycling', the quantity of municipal waste generated is a relevant indicator of resource use efficiency and the potential impacts of waste generation and treatment on the pollution of air, groundwater and soil. For this reason, the generation of municipal waste is here considered to be an indicator of the environmental dimension of well-being (Eurostat website – Headline indicators[5]).

- Organic crops - % of total used agricultural area (ha): as organic agriculture aims to sustain the health of soil, maintain ecosystem services, protect biodiversity and reduce the overall impacts on the environment, the percentage of the total agricultural area given over to organic crops is here considered to be an indicator of environmental well-being (IFOAM, http://www.ifoam.org/)

- Total nights spent by tourists: since tourism is higher in areas with historical patrimony, environmental quality, aesthetic landscapes, art and cultural heritage, the

[5] http://epp.eurostat.ec.europa.eu/portal/page/portal/europe_2020_indicators/headline_indicators/data

total nights spent by tourists is here considered to be an indicator of environmental quality, as people normally choose pleasant locations in which to spend their leisure time (Eurostat website – Headline indicators[6]).

The year considered is 2009, the most recent year for which the largest quantity of data for each of the twelve indicators is available.

6. Methodology:

In order to provide an integrated description of well-being across European regions, three main analyses were performed:

1) According to a well-established technique in multi-criteria evaluation (Yu, 1985; Zeleny, 1982), the best values reached within the 266 EU regions in any one of the twelve indicators considered in this study were identified in order to get a set of reference values. Each of these values was used as the "**ideal point**" against which to compare the specific values of each region and the best values across Europe. **Radar charts** were elaborated in order to show the performance of the regional values against the best European values. All the data were normalised using "10" as the best reference value. Since the best performance is refleced by lower values of the following indicators:

- Long-term unemployment rate
- Intentional self-harm
- Infant mortality rate
- Municipal waste
- Malignant neoplasms

their reciprocal values were used during the normalisation process. Based on this approach, higher values in the radar representation indicate higher levels of well-being for all the indicators considered in this study. The results of the study are reported in the following section, and the radar representations for each of the 266 EU regions are reported in the Appendix.

[6] http://epp.eurostat.ec.europa.eu/portal/page/portal/europe_2020_indicators/headline_indicators/data

Since this study aims to provide an integrated description of well-being and to avoid aggregation or compensatory approaches, the traditional "ideal point" method used in multi-criteria analysis to rank alternatives based on computing the mathematical distance of each region from the ideal point, is used in this report exclusively to provide a graphical representation of the performance of each region compared to the best performance at the European level.

Opting for the traditional “ideal point” technique would have involved giving an opinion on the relative importance of the indicators used to determine the level of well-being. This would mean that a positive performance of one indicator would have compensated the negative performance of another. Since the subjective level of each indicator of well-being may have varying degrees of importance, the mere summing up of the individual results would not be an accurate measurement of well-being. We have therefore opted to avoid a compensatory approach and to provide a genuine picture of how the individual indicator compares to the best performance at European level.

2) The average European value was calculated for each of the twelve indicators. The main objective is to have a term of reference against which to identify which and how many indicators of each region perform over, below or at the average European level. These data were then used to elaborate a **map of how each European region ranks in terms of well-being** (Figure 1, page 35).

We avoid aggregating the performance of individual indicators, which would have involved making subjective judgments. A caveat to this could be the fact that two regions could have an equal number of indicators that are near the EU average, but of a different nature (e.g. one economic, the other social). In such a case, a judgment would have to be made as to whether one configuration is better than the other. Instead, we make a first screening by allowing any individual from any of the considered regions to make a subjective ranking of the considered indicators based on his/her preferences. The objective description of well-being that we provide based on the available indicators allows to introduce subjective elements into the analysis based on individuals’ preferences.

3) A **Gini coefficient** was calculated in order to identify N indicators that measure the greatest levels of inequality across Europe. The different regions were ranked in decreasing

order based on each indicator of inequality, and the Gini coefficient for each region was calculated using the formula proposed by Angus Deaton (1997):

$$G = \frac{N+1}{N-1} - \frac{2}{N(N-1)u}(\Sigma_{i=1}^{n}\ P_i X_i)$$

where *u* is the average European value of the indicator of inequality, and *Pi* is the value of the indicator of region *i* that occupies position *P* in the ranking. The Gini coefficient was used in this study to identify which indicators have the largest discrepancies across European regions.

7. Results

7.1 Regional values v. European best performance

The radar charts in the Appendix show how each regional indicator compares with the corresponding best indicator value for the EU. As explained in the methodology section, all the values have been normalised, so higher values of each indicator indicate positive impacts on well-being. The radar charts can be useful for comparing the level of well-being of different EU regions, disaggregated between the twelve indicators considered in this study. This information is used to identify the "ideal point" that could potentially be reached by every European region, and to identify the indicators that need to be improved.

The best GDP performance levels are held by regions hosting some of the largest EU capital cities (Inner London, Luxembourg, the Ile-de-France, Stockholm and the Hovedstaten Region). The Capital Region of Denmark (Region Hovedstaden), together with the German regions of Upper Bavaria (Oberbayern), Stuttgart and Brunswick, have the highest levels of R&D expenditure, followed by the Scandinavian regions of Stockholm and northern Finland (Pohjois-Suomi). In terms of long-term unemployment rate, the Austrian areas of Tyrol and Salzburg, Denmark and the Netherlands have the best scores, particularly in the regions of Midtjylland, Sjaelland and Zeeland. At the other end of the scale, regions in Bulgaria, Poland and Romania (Severen tsentralen, Severozapaden, Luboskie, Opolskie, Podlaskie, Sud-Muntenia and Nord-Vest) have the lowest economic performance values, both in terms of GDP and R&D. In terms of long-term unemployment rate, some Spanish and Italian regions

also score badly (i.e. the Ciudad Autonoma de Melilla y Ceuta, and the regions of Sicily and Campania).

Considering the social dimension, the lowest rate of intentional self-harm is scored by Greece and other Mediterranean areas (Voreio Aigario, Dytiki Makedonia, Kentriki Makedonia, Attiki, Notio Aigaio, Thessalia, the Comunidad de Madrid, and Campania). The highest values are scored by central and eastern regions, mainly located in Hungary, Brittany and Luxembourg.

The Mediterranean regions of Principado de Asturia, Galicia, Canarias Molise, Sardegna, Basilicata, score lowest in terms of fertility rate. Regions in Finland and the UK have the highest scores in terms of number of children per woman (Finland: Pohjois-Suomi; UK: Dorset and Somerset, Outer and Inner London). Inner London also scores highest in tertiary education values.

Bulgaria, Romania and Hungary have the largest number of regions with the lowest health scores, in terms of infant mortality rate, life expectancy and malignant neoplasms. The highest values were scored by Burgeland (Austria) for the infant mortality rate, the Provincia Autonoma di Bolzano (Italy) for life expectancy, and the Ciudad Autonoma de Melilla (Spain) for malignant neoplasms.

The Czech Republic regions of Podkarpackie, Swietokrzyskie, Lubelskie scored lowest for per capita municipal waste, followed by Brandenburg (Germany). The highest values were scored by the Ciudad Autonoma de Melilla y Ceuta (Spain), and the Algarve (Portugal).

The UK's industrial areas of Greater Manchester, South Yorkshire, the West Midlands, and Inner and Outer London had the lowest scores for land devoted to organic crop production. Praha (Czech Republic) and Salzburg (Austria) scored highest in terms of percentage of total agricultural areas devoted to organic crops.

In terms of tourism, Spanish regions had the highest scores for number of nights spent by tourists (Canarias, Cataluña, Islas Baleares and Andalusia) followed by Provence-Alpes-Côte d'Azur (France) and by almost all of the Italian regions. Severozapaden (Bulgaria) Dytiki Makedonia, Severen tsentralen and Opolskie (Czech Republic) scored lowest in terms of the tourism indicator.

In general terms, this analysis shows that the areas with better economic performance also have higher levels of tertiary education and higher fertility rates. Mediterranean regions have the largest number of nights spent by tourists and the lowest rate of intentional self-harm. In

terms of health variables, eastern European regions score lower than the EU average. Municipal waste is higher in the areas with higher GDP per capita, and lower in areas with lower consumption patterns. In order to make this information as transparent as possible, the individual values of each indicator in all EU regions are given in the Appendix.

7.2 Mapping the distribution of well-being beyond national borders

Figure 1 is a map of the level of well-being across European regions. As explained in the methodology section, the level of well-being is calculated by accounting for the number of indicators performing better than the European average per indicator. Regions with the largest number of indicators performing below the EU average are shown in red, those with an equal number of indicators above and below the EU average are shown in yellow, and those with the largest number of indicators performing better than the EU average are shown in green.

This map provides a first overview of the well-being across EU regions which avoids compensation between the economic, environmental, social and health indicators.

The map shows that eastern European regions have the largest numbers of indicators that perform below the European average. All Hungarian regions (except the Közép-Magyarország region, which includes the capital city), together with the Bulgarian region of Severen Tsentralen, the German region of Sachsen-Anhalt, the Polish regions of Lódzkie Malopolskie, Lubelskie, Swietokrzyskie, Dolnoslaskie, Wielkopolskie, Kujawsko-Pomorskie, the Portuguese regions of Alentejo and Região Autónoma dos Açores, the Central Romanian region, and the Slovakian region of Západné Slovensko, have only one or maximum two indicators above the European average.

A large number of other eastern European regions, together with the French regions of Nord-pas-de-Calais, Picardie and Champagne Ardenne, also scored below the overall European average, with only three indicators performing above the EU average.

By contrast, the regions that host capital cities have the largest number of well-being indicators that score above both the EU average and the scores of the other regions. Examples are the regions of Berlin (Germany), Praha (Checkz Republic), Wien (Austria) and Bratislava (Romania), which are represented on the map in a much deeper green than their surrounding areas.

Stockholm, Gloucestershire, Wiltshire and Bristol/Bath are the only regions for which all the twelve indicators scored above the EU average, followed by Östra Mellansverige, Västsverige, Hampshire, and Isle of Wight regions, for which eleven of the indicators scored above the EU average. For Etelä-Suomi, Länsi-Suomi, Pohjois-Suomi (Finland), Berkshire, Buckinghamshire and Oxfordshire, Surrey, East and West Sussex (UK); Stuttgart, Oberbayern and Berlin (Germany), only two of the twelve indicators score below the EU average.

To sum up, four main macro areas of well-being have been identified:

1) The eastern European regions, with the largest number of indicators scoring below the EU average;

2) The Scandinavian regions and the south of England, with scores above the EU average;

3) The Mediterranean regions, together with central England and eastern France, which score slightly below the EU average;

4) The central European regions, together with Ireland and Cyprus, which score slightly above the EU average.

In order to provide transparent and detailed information, the Appendix includes graphical representations of the performance indicators of each region, and of how these compare to the EU average. These graphs complement the data reported in Figure 1, and indicate which and how many indicators of each region are above or below the European average. This data can be used to calculate the performance of each indicator, and to identify measures to improve the level of well-being.

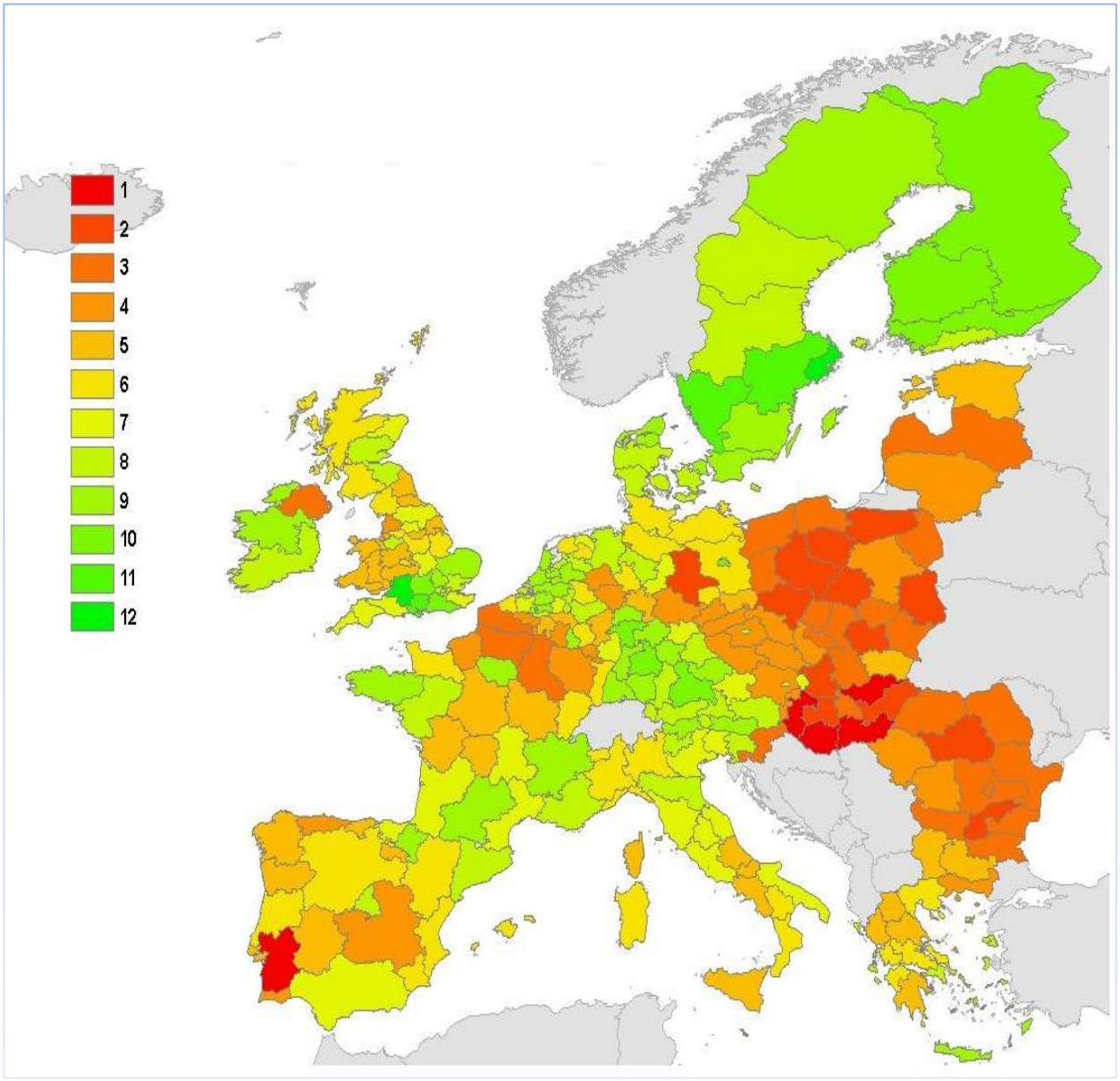

Figure 1: *Map of well-being across European regions. The colours represent the number of indicators whose values are above the EU average for their class. For example: a score of 3 means that the values of 3 of the 12 indicators are equal to or above the EU average per indicator. This implies that the other 9 indicators are underperforming with respect to the EU average per indicator and therefore, as explained in section 6, the well-being of the region is rated as being poor.*

7.3 Gini coefficient for well-being indicators

The Gini coefficient is commonly used to approximate the level of inequalities of income or wealth. As it is calculated as a statistical dispersion of values of a frequency distribution, it is used in this study to identify the well-being indicator scores that have the largest discrepancies across EU regions. Based on data provided by Eurostat and using the formula

reported in the methodology section, the Gini coefficient was calculated for the twelve indicators considered in this study. Results are reported in Table 1.

Table 1: Gini Index of well-being indicators

	Indicators	Gini Index	Average for indicator category
Economic Indicators	GDP	0.26	0.38
	Long-term unemployment rate	0.36	
	R&D expenditure	0.53	
Social Indicators	Intentional self-harm	0.28	0.20
	Fertility rates	0.11	
	Tertiary education	0.20	
Health Indicators	Infant mortality rate	0.23	0.12
	Life expectancy at given exact age	0.03	
	Malignant neoplasms	0.09	
Environmental Indicators	Generation of municipal waste per capita	0.18	0.41
	Organic crops	0.51	
	Total nights spent by tourist	0.53	

On average, the largest discrepancies across EU regions are found in the well-being scores of the Environmental Indicators. The ‘total nights spent by tourist’ and the ‘organic crops’ indicators have a coefficient higher than 0.50, highlighting a large deviation and an unequal distribution of such indicators across Europe. By contrast, the 0.18 coefficient value for the ‘generation of municipal waste per capita’ indicator implies that the quantity of municipal waste generated in Europe is similar across all regions. A similar trend is found in the ‘tertiary education’ and in the overall Social Indicator scores, with a Gini coefficient of 0.20. However, the higher Social Indicator coefficient for ‘intentional self-harm’ (0.28), implies that intentional self-harm is not equally distributed across Europe. The ‘fertility rate’ coefficient of 0.11, implies that this indicator is fairly equally distributed throughout Europe. The ‘life expectancy’ and ‘malignant neoplasms’ indicators are almost equally distributed across European regions, both with Gini coefficients of less than 0.1. The ‘infant mortality rate’ Health Indicator has the largest discrepancy across all areas. The average coefficient of the Economic Indicators group is 0.38, which reflects the economic differences that exist across European regions. "R&D expenditure" has the largest coefficient (0.53), followed by the long-term unemployment rate (0.36) and GDP (0.26). Each these latter indicators reflect the fact that economic well-being is not equally distributed across European regions.

8. Novelty, limitations and future development

This study provides an overview of the distribution of well-being across European regions, using an integrated approach, and a set of twelve indicators. It takes an objective perspective to calculate regional well-being, using economic, social, environment and health data. However, as well-being is subjectively experienced by individuals and largely influenced by specific social and cultural contexts, the method used in this paper can be complemented with subjective preferences and values, which would make it useful for analysing well-being at national, regional or individual scales.

The analysis specifically avoided assigning arbitrary weights to the different indicators. Since, for each individual person, one particular dimension may be more relevant than another in the overall definition of well-being, we provide a picture of well-being based on indicators that have each been attributed exactly the same importance.

Based on the idea that well-being is a matter of needs satisfaction and individual perceptions, the model presented in this paper is suitable for integrating objective and subjective well-being theories. Its main advantage relates to the fact that both approaches can be combined within a single methodological framework. In particular, the non-compensatory approach and the transparent and non-weighted selection of objective well-being indicators allow for the integration of subjective elements. The results of the study and the methodology presented in this paper are suitable to support future research oriented to provide a broader and more integrated description of well-being across individual or societal dimensions. Within this context, future development should be oriented towards collecting subjective perceptions and values across European regions and integrating the objective analysis provided in this study with more subjective evaluations.

Using a participative approach, interviews could be carried out to ask people "what really matters to them". The attribution of weightings to quantify the relative importance of the different indicators would move this analysis from a purely objective to a more subjective evaluation of well-being. Data from the European Quality of Life Survey (EQLS) could also be used to introduce subjective elements into the analysis. However, the main limitation of this database is that it is disaggregated between the 27 Member States, and does not provide regional data or detailed analyses of sub-groups in individual countries.

Since indicators are developed to provide information about a system (its current condition and how it changes over time), the present research should be updated once the latest data from Eurostat is available. Performing this analysis over time would provide an overview of the progress made by the different regions towards higher levels of well-being, and help

monitor reductions in regional disparities. By keeping the different indicators separate and avoiding their aggregation into a single index, it is possible to identify which indicators and dimensions improve and which indicators show reduced disparities over time and across Europe.

The map and graphical representations provided in this study can be used to support evidence-based policy. The graphical representations, which show the distance between specific indicators of specific regions, and the associated best values within the EU, can be used to identify the main weaknesses in each region and to set policy priorities. The results and their future updates could help determine the impact of policies, and the areas they need to further address. It can also provide a baseline for comparing performance across regions, which could help identify best practices and successful policy models.

This study provides an overview of "how regions are doing" in terms of achieving well-being compared to both the average and the best levels of European performance.

9. Conclusions

This report uses a multidimensional approach to provide a description of well-being across EU regions. It focused on the regional scale in an attempt to identify communalities that go beyond the national borders and adhere more to the local perception of well-being. A set of socio-economic, environmental and health indicators were selected from Eurostat. The year of analysis was 2009, as it was the most recent year for which the largest quantity of data was available.

One of the initial findings of this paper is the need for more regional data, especially on the environmental dimension for which a very limited number of indicators are available for the 266 NUTS 2 regions. In spite of this intrinsic deficiency, the proposed methodological approach clearly highlights aspects that could become more and more meaningful when a larger collection of indicators will be available. In addition, by using a transparent and non-compensatory approach,the main differences and similarities between EU areas are clearly highlighted, and the regions and areas for which improvements are needed could be identified.

Apart from the detailed results reported in the previous sections, some of the main findings show that:

- Eastern European regions have the largest number of indicators below the European average.
- All western European countries show singularities, with two to three regions ranking below the EU average.
- Scandinavian regions all score above the EU average.
- Regions hosting capital cities have the largest number of well-being indicators with values above those of both the EU average and all the other regions considered.
- The Mediterranean regions, central England and eastern France score slightly below the EU average.
- The central European regions, Ireland and Cyprus score slightly above the EU average.
- The cross-border concept, which was one of the research questions explored, was confirmed by the identification of bands of national regions that share the same number of indicators above or below the average.

The result present are far from being conclusive give the caveats presented on the number of indicators and the fact that this is the analysis of one specific year. However the methodological approach proposed in this report can be useful in a context of policy support. Within the context of the EU 2020 strategy, for which well-being promotion is a priority, the methodology proposed could be useful to scan the present situation alert on particular areas that would require special attention and help to design policies to effectively address and reduce the main disparities across EU.The methodology presented in this paper can be used to monitor levels of well-being or to identify hotspots and anomalies that require closer investigation. The procedure presented could facilitate an analysis of the factors behind comparable levels of well-being across national borders in some areas of EU, and help develop models that could be exported to other regions. It could also be used to monitor progress in creating more areas with high levels of well-being. For example, there are significant discrepancies in levels of well-being between metropolitan areas and neighbouring regions - certain metropolitan areas are typically run down, and many outlying commuter towns suffer from high levels of unemployment and lack of services.

Further analyses and a larger set of indicators are needed to better investigate these hypotheses. Those indicators are certainly available at national level and regional level too but they should be harmonized at EU level to be used in a context like the one described here.

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Appendix:

For each of the NUTS 2 regions considered in this report, two graphical representations are reported in the following section:

1. The graph on the left-hand side summarises the performance of every indicator in comparison to the EU average (red line). The main purpose is to complement the data reported in figure 1 of section 7.2. By providing information summarising for how many and for which indicators the considered region performs below or above the European average, it allows for the identification of the performance of every indicator and for the definition of measures oriented to improve well-being.

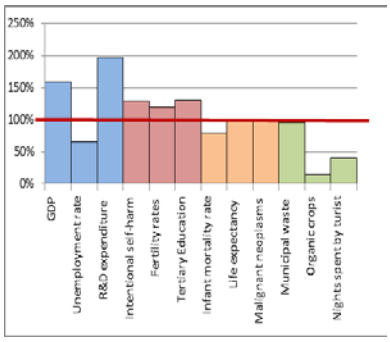
2. The graph on the right-hand side summarises the performance of every regional indicator in comparison with the best scores across European regions. As reported in the methodology section, since all the values have been normalised, higher values of each of the considered indicators correspond to higher levels of well-being. The reported representations, elaborated according to the "ideal point" method, can be used to compare the well-being performance of the different EU regions and to identify the best value hypothetically reachable by any of the indicators.

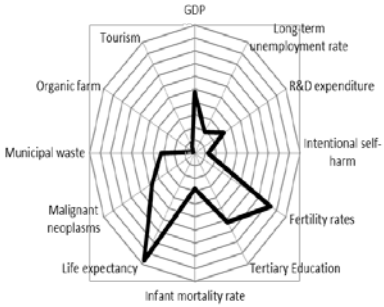
Member State		Page
Belgique/België	*Belgium*	**51**
България	*Bulgaria*	**54**
Česká republika	*Czech Republic*	**56**
Danmark	*Denmark*	**59**
Deutschland	*Germany*	**61**
Eesti	*Estonia*	**72**
Éire/Ireland	*Ireland*	**73**
Ελλάδα	*Greece*	**74**
España	*Spain*	**78**
France	*France*	**83**
Italia	*Italy*	**89**
Κύπρος	*Cyprus*	**95**
Latvija	*Latvia*	**96**
Lietuva	*Lithuania*	**97**
Luxembourg	*Luxembourg*	**98**
Magyarország	*Hungary*	**99**
Malta	*Malta*	**101**
Nederland	*Netherlands*	**102**

Member State		Page
Österreich	Austria	**105**
Polska	*Poland*	**108**
Portugal	*Portugal*	**113**
România	*Romania*	**115**
Slovenija	*Slovenia*	**117**
Slovensko	*Slovakia*	**118**
Suomi/Finland	*Finland*	**119**
Sverige	*Sweden*	**121**
United Kingdom	*United Kingdom*	**123**

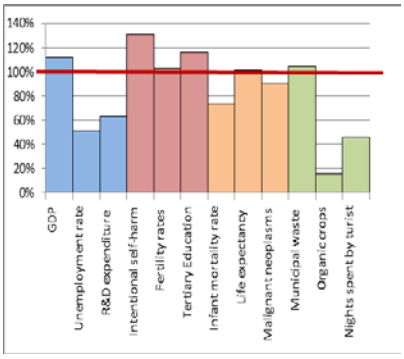
Belgium

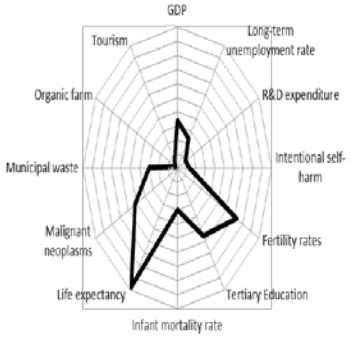
Prov. Antwerpen



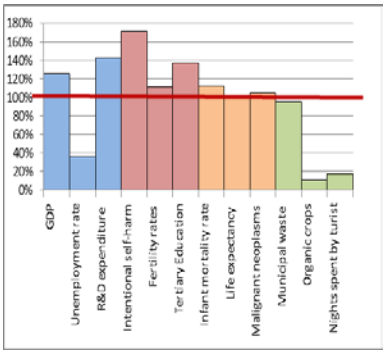


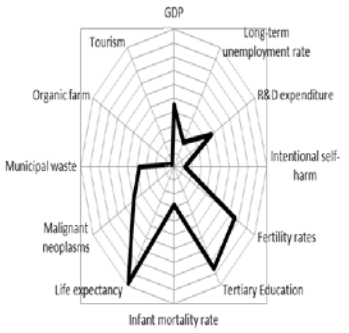
Prov. Limburg





Prov. Oost-Vlaanderen





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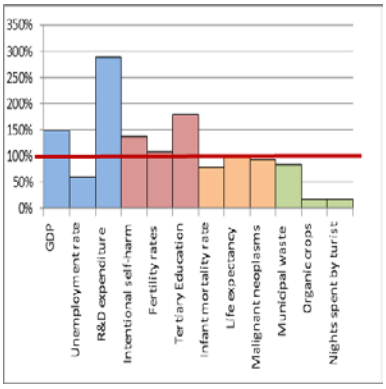

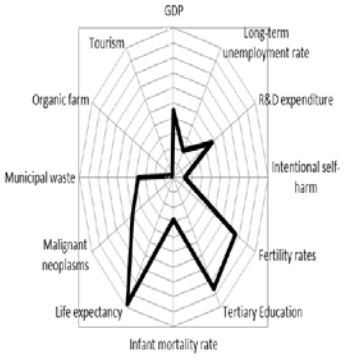

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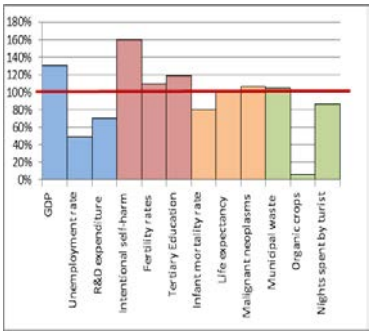

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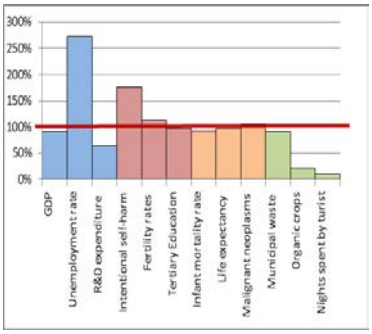

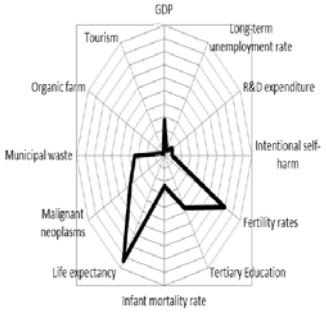

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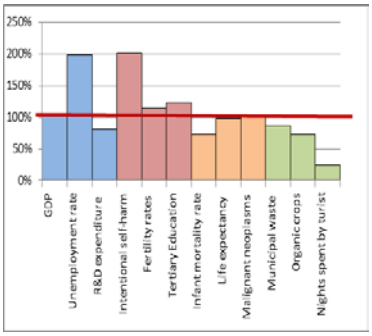

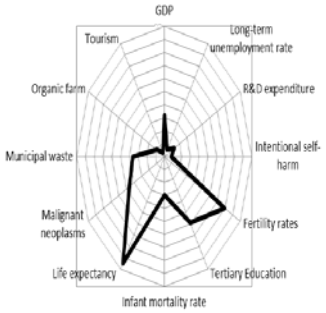

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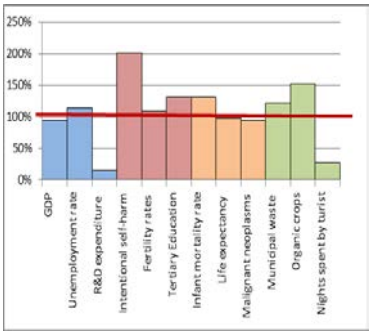

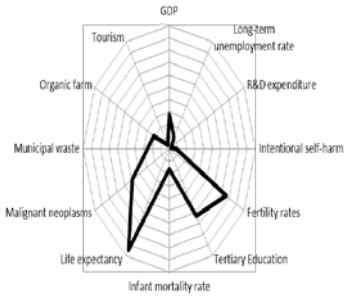

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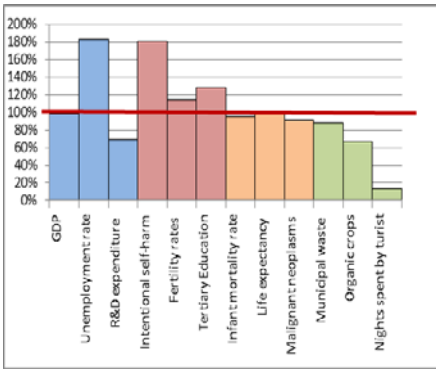
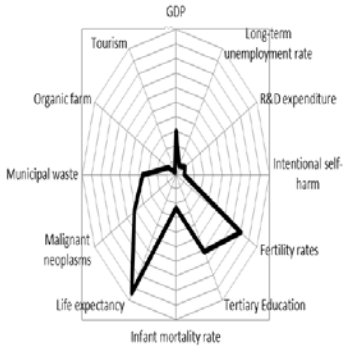
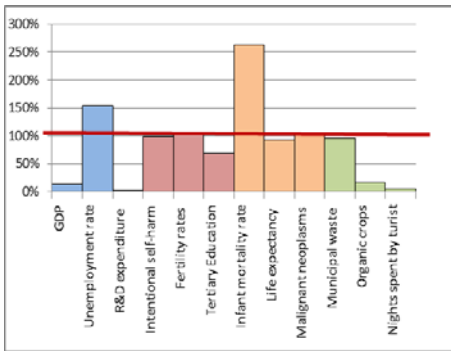
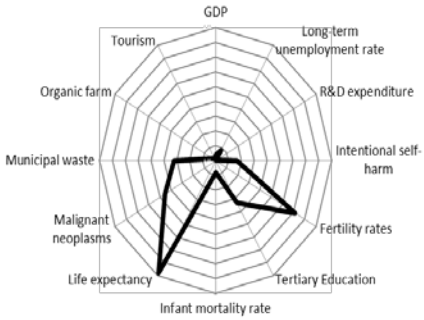

200%
180%
160%
140%
120%
100%
80%
60%
40%
20%
0%
GDP
Unemployment rate
R&D expenditure
Intentional self-harm
Fertility rates
Tertiary Education
Infant mortality rate
Life expectancy
Malignant neoplasms
Municipal waste
Organic crops
Nights spent by turist


GDP
Long-term unemployment rate
R&D expenditure
Intentional self-harm
Fertility rates
Tertiary Education
Infant mortality rate
Life expectancy
Malignant neoplasms
Municipal waste
Organic farm
Tourism

Bulgaria

Severozapaden





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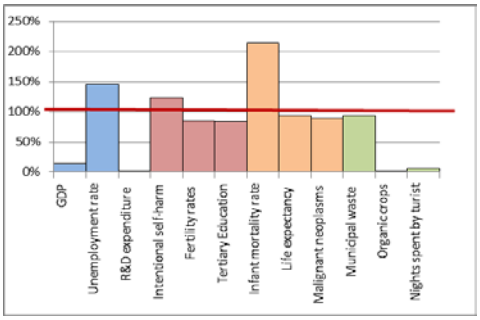

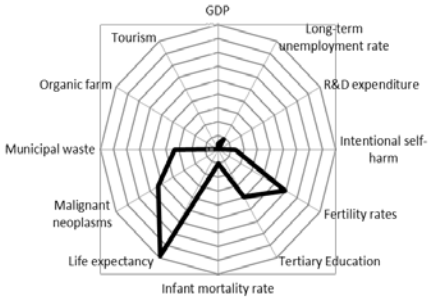

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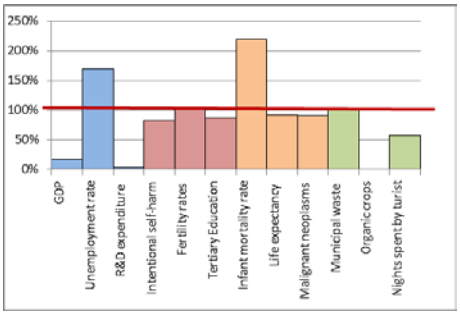

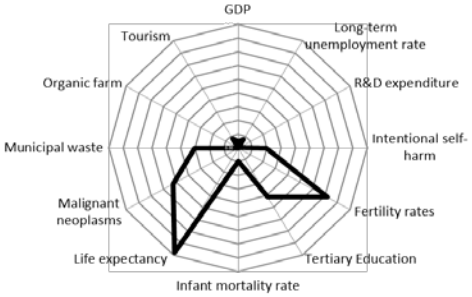

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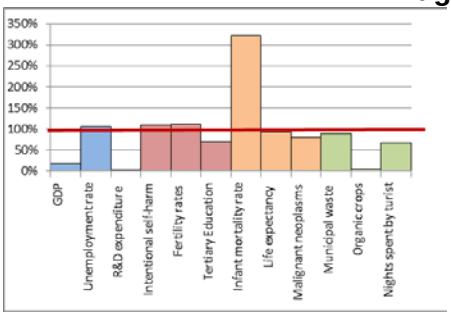

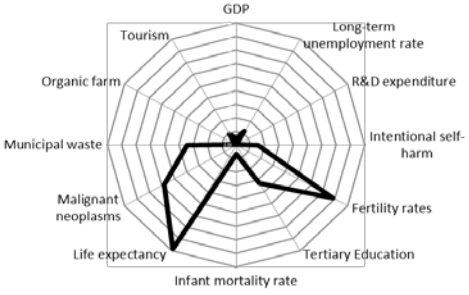

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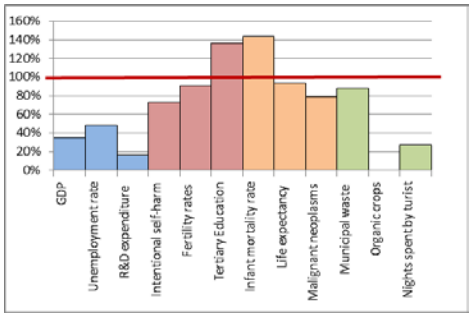

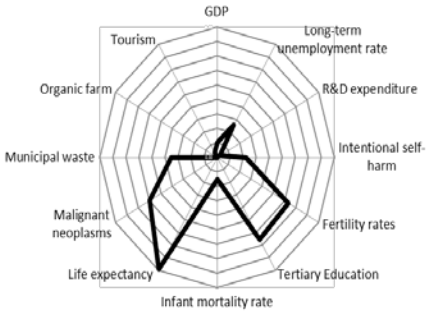

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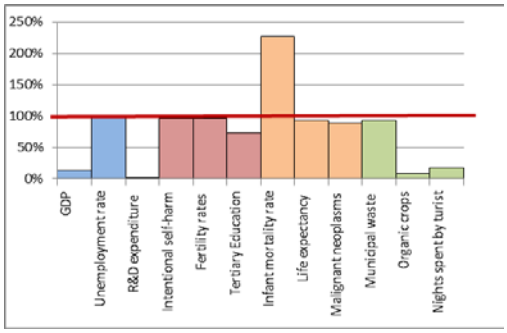
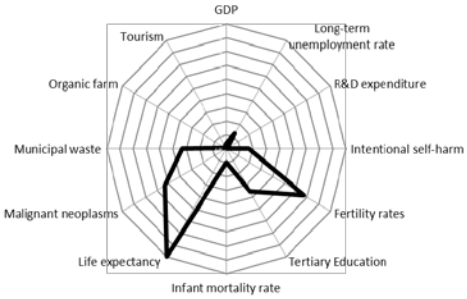
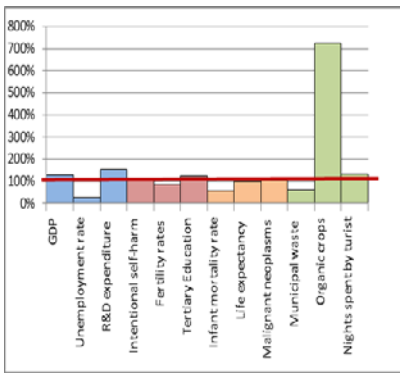
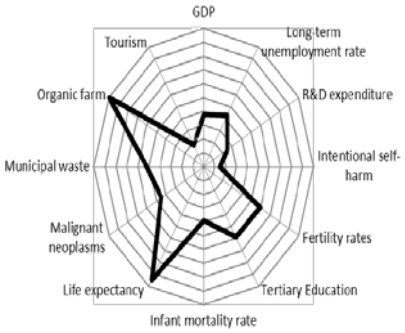




Czech Republic

Praha





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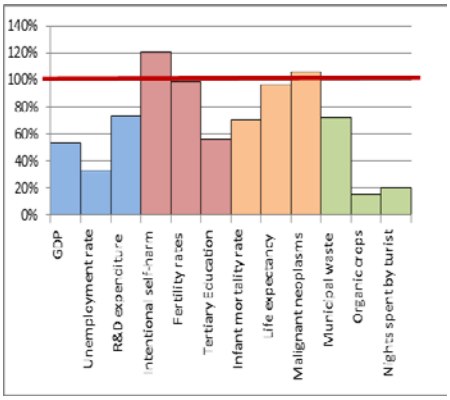

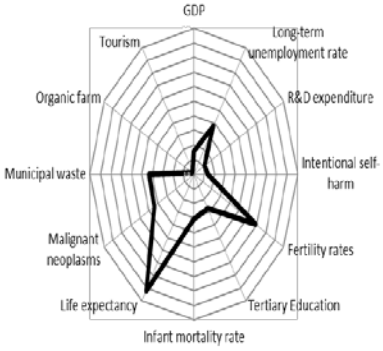

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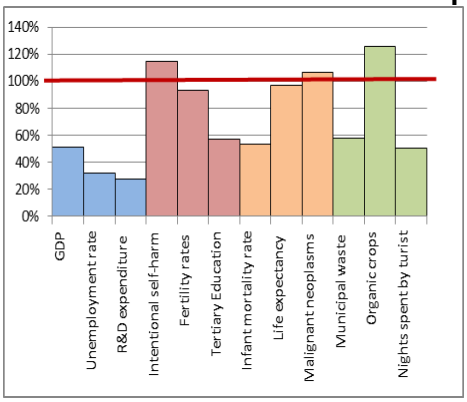

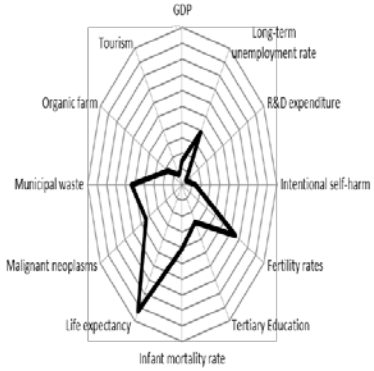

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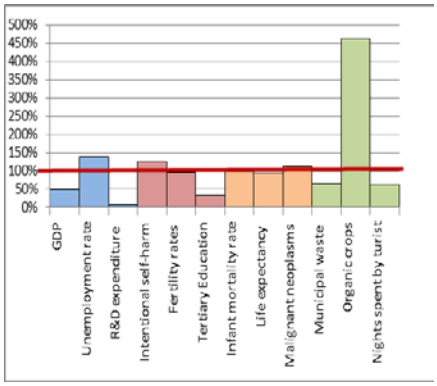

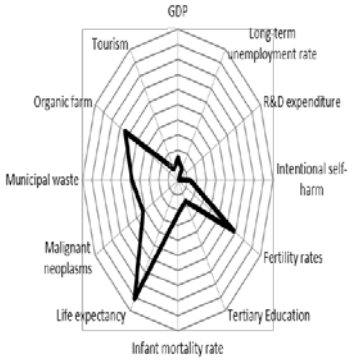

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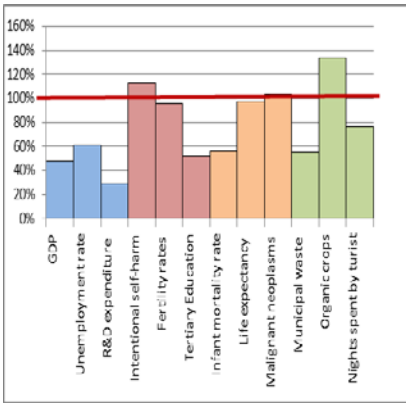

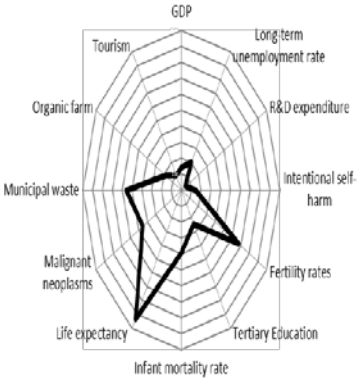

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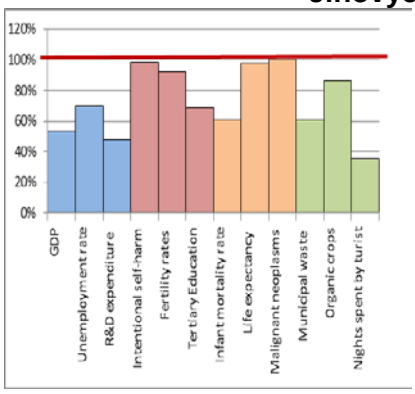

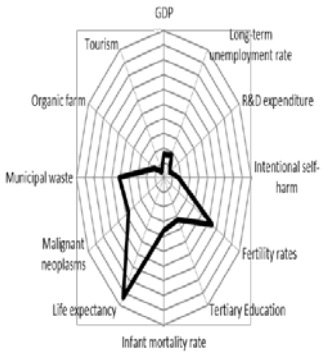

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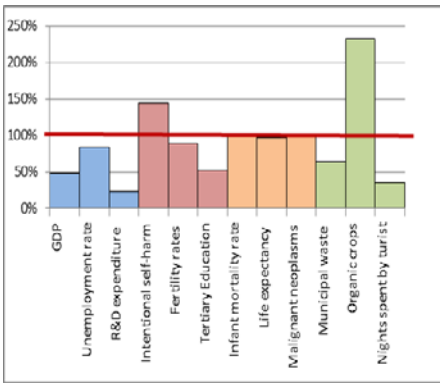

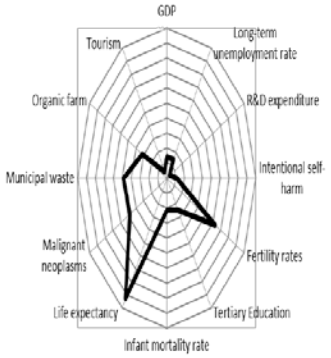

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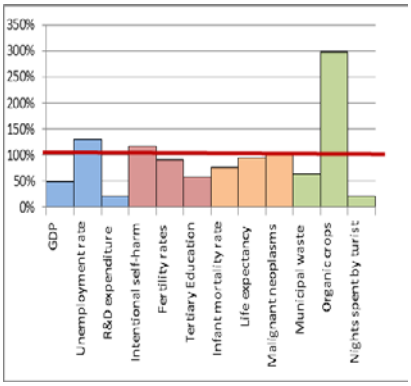
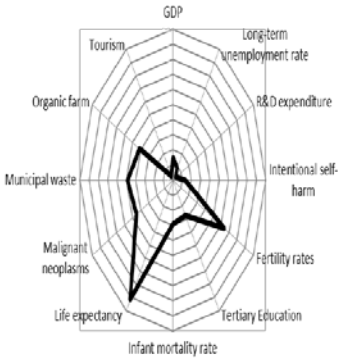
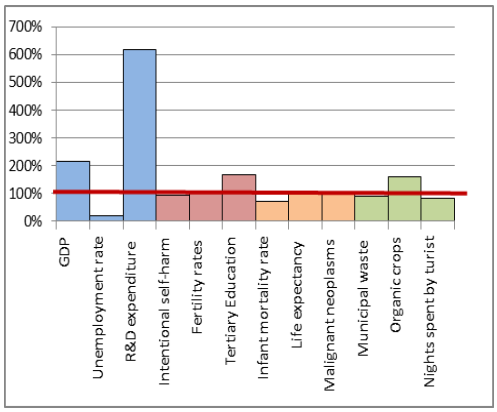
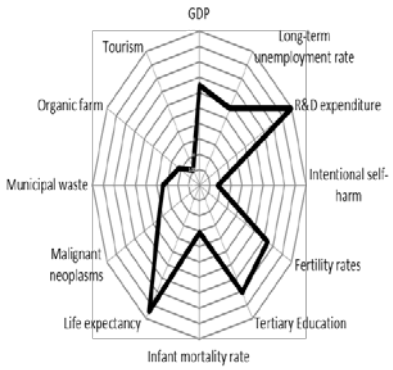




Denmark

Hovedstaden





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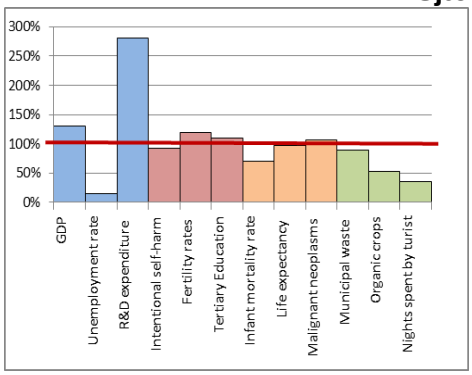
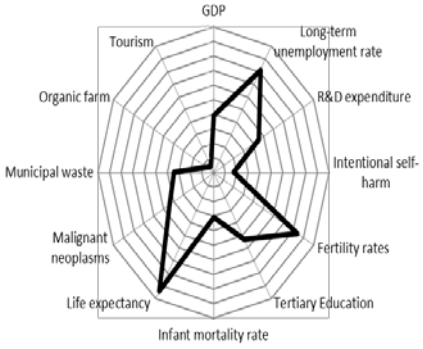
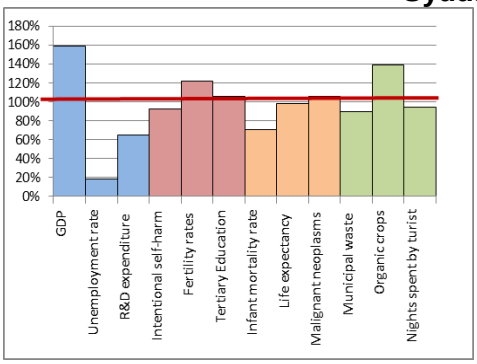
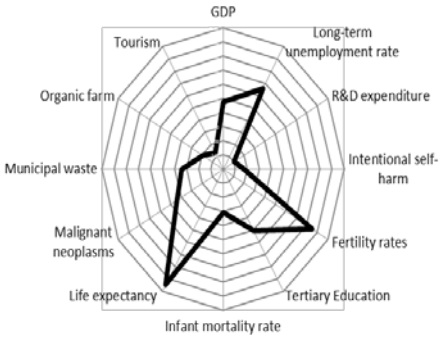




Syddanmark





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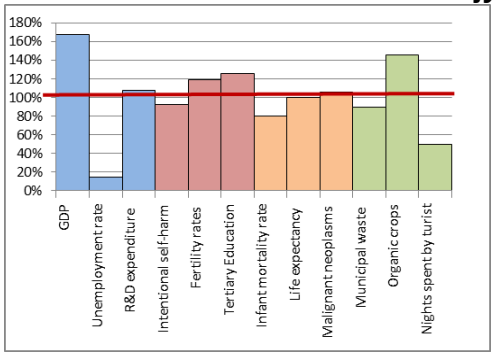
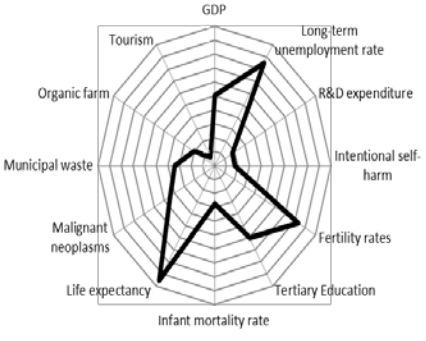
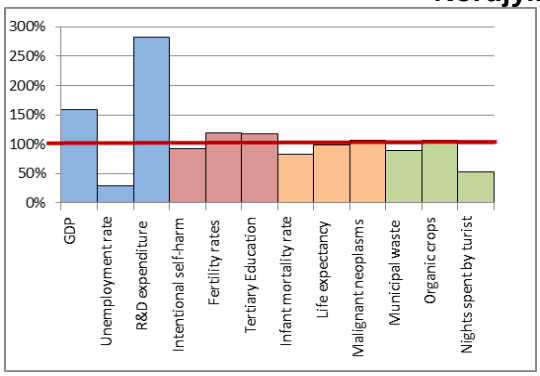


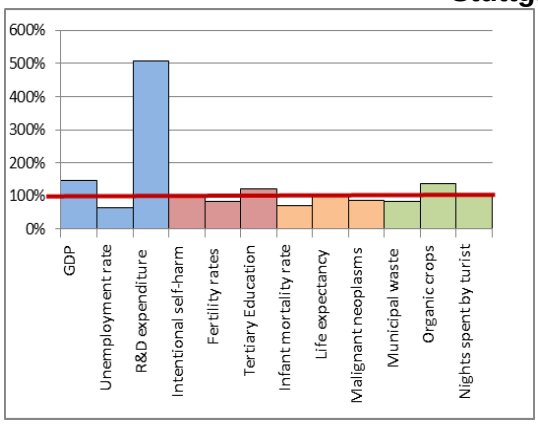


Nordjylland



Germany

Stuttgart



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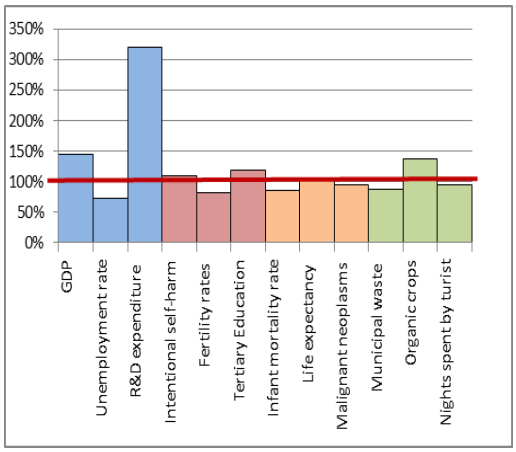
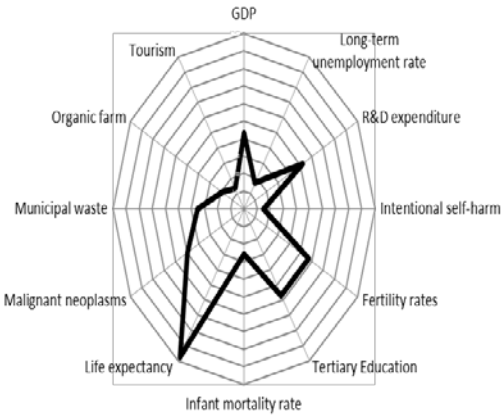
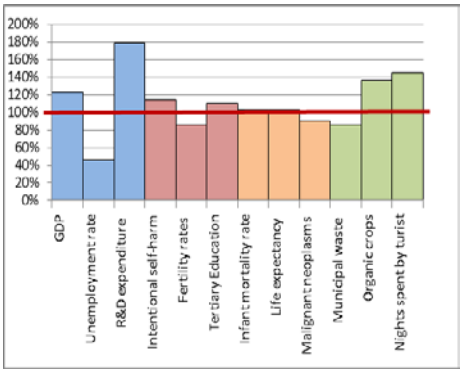
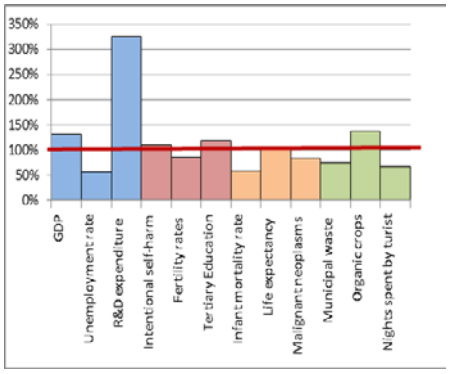


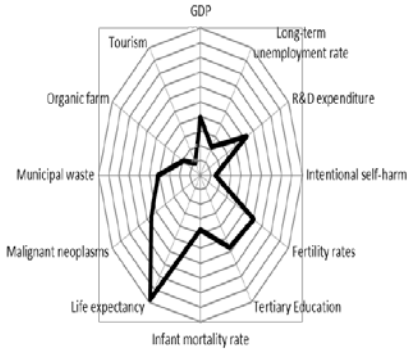


Freiburg

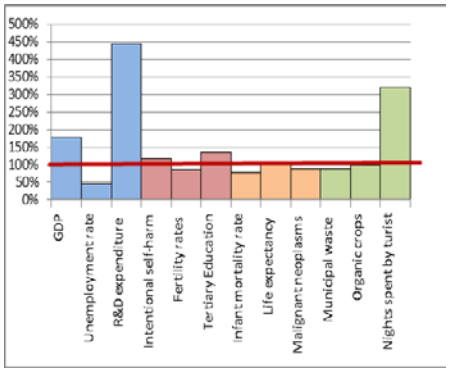


Tübingen





Oberbayern



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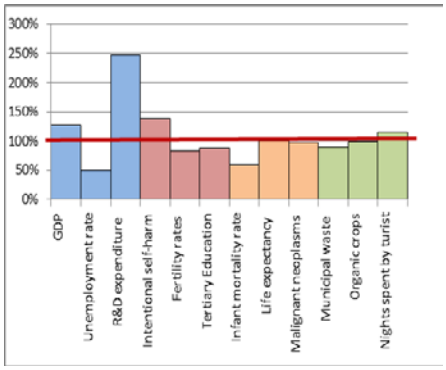

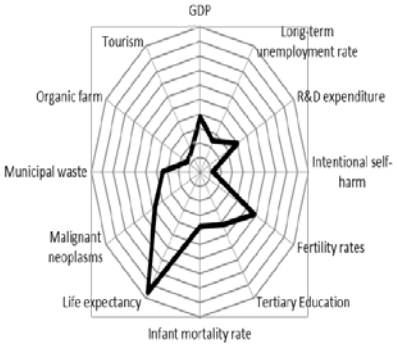

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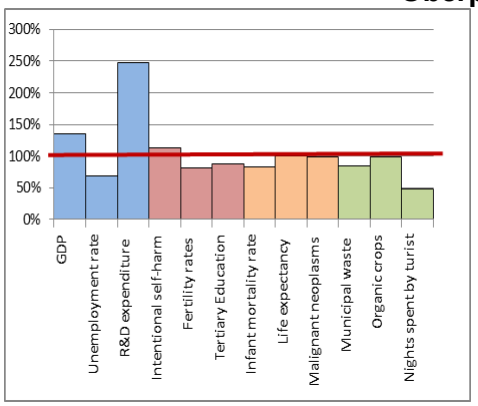
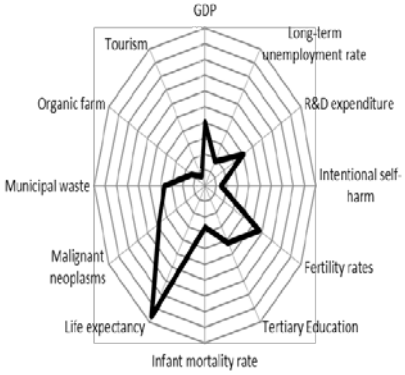
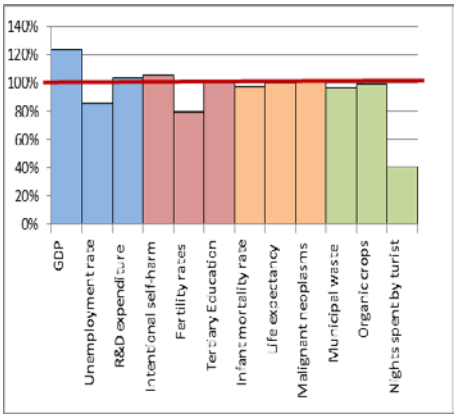
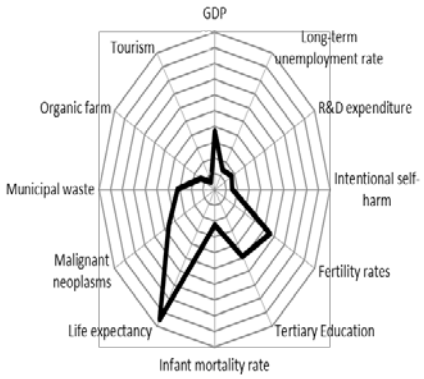


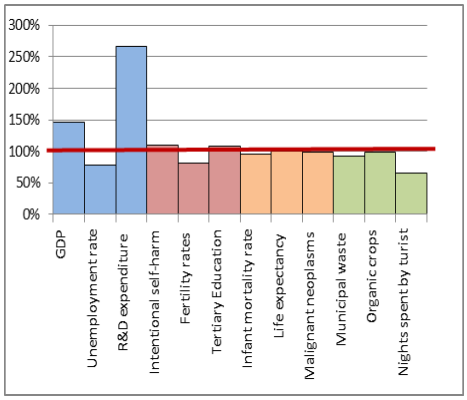


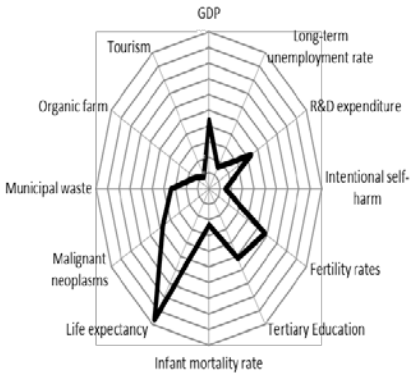
Oberfranken





Mittelfranken





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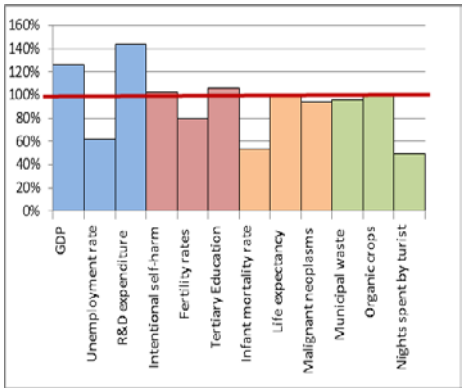
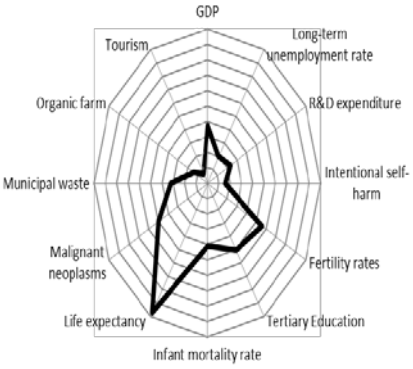
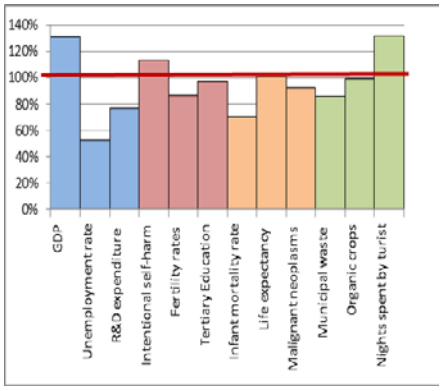
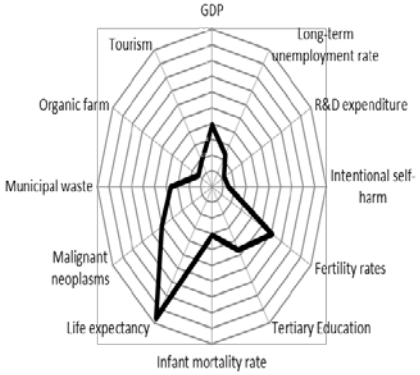


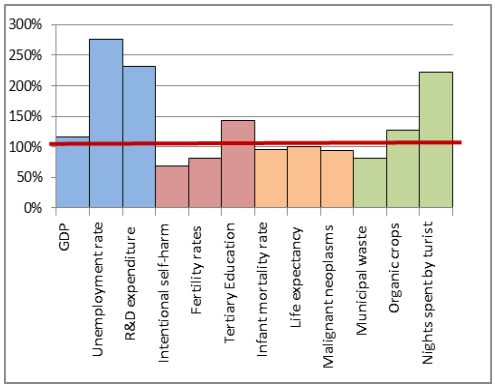


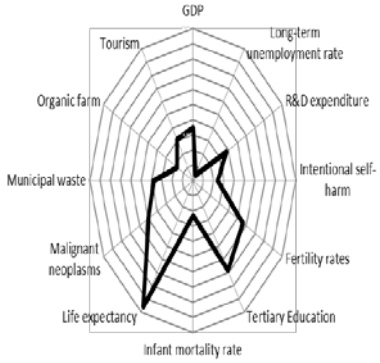
Schwaben



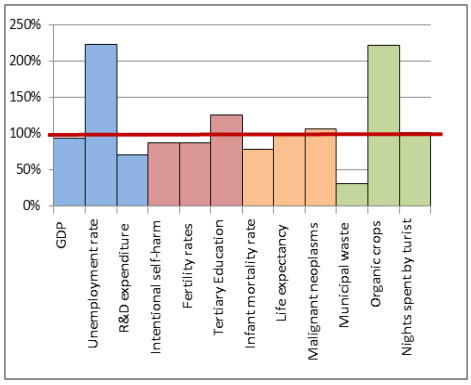


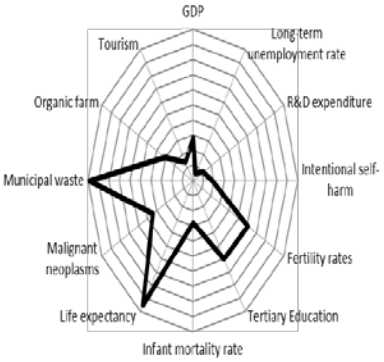
Berlin



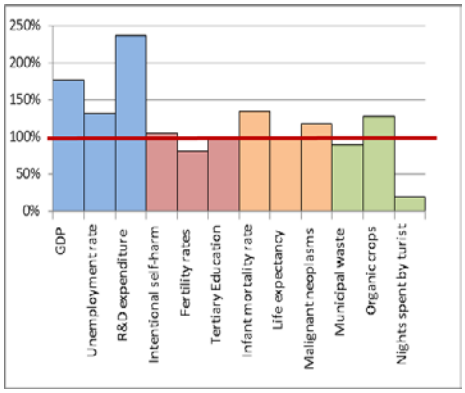


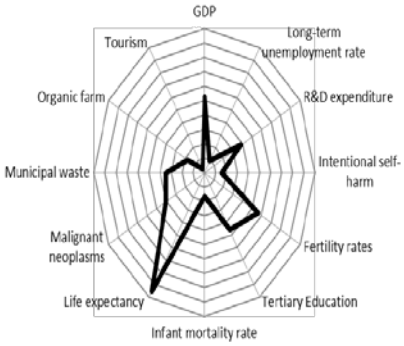
Brandenburg



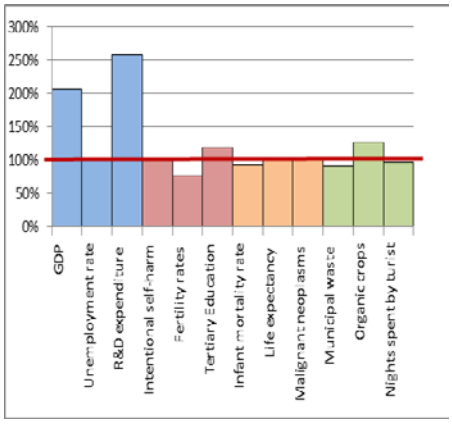


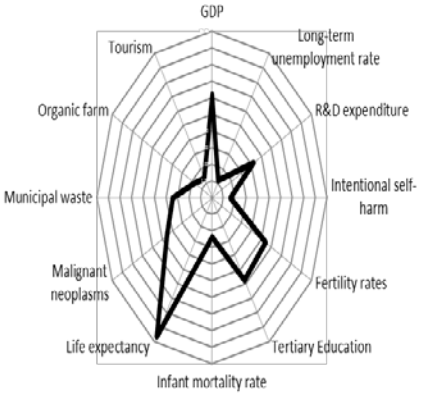
Bremen



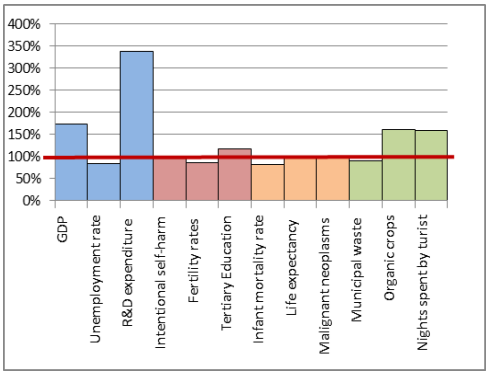


Hamburg

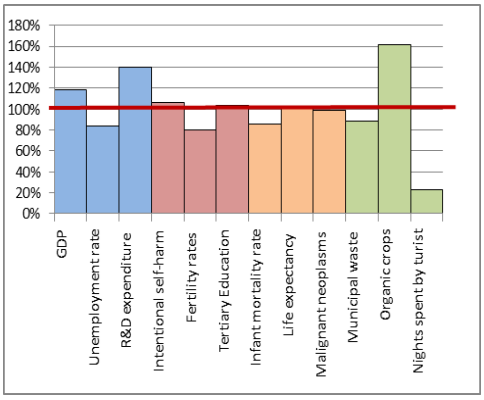


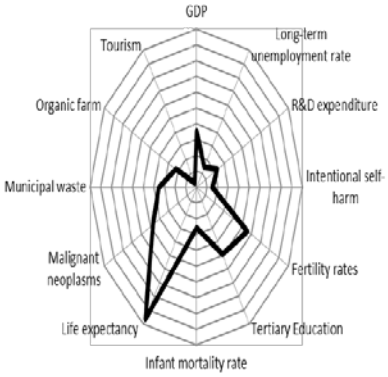


Darmstadt



Gießen





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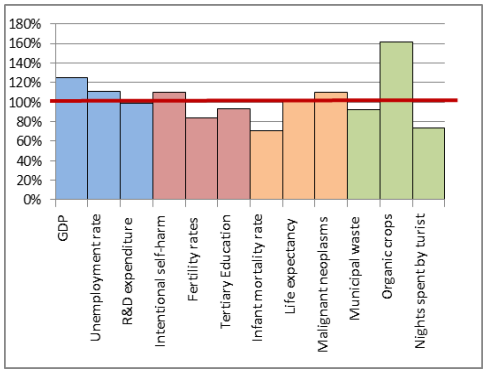
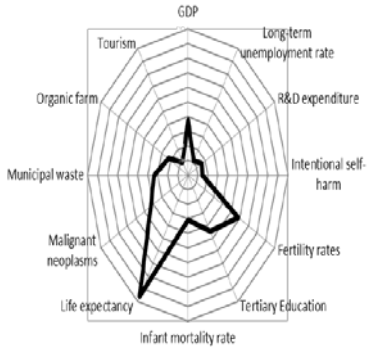
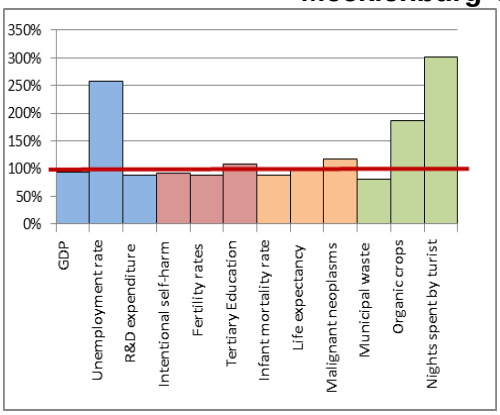
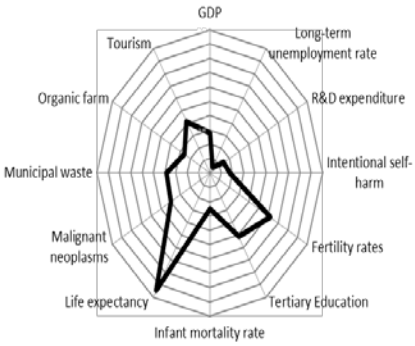


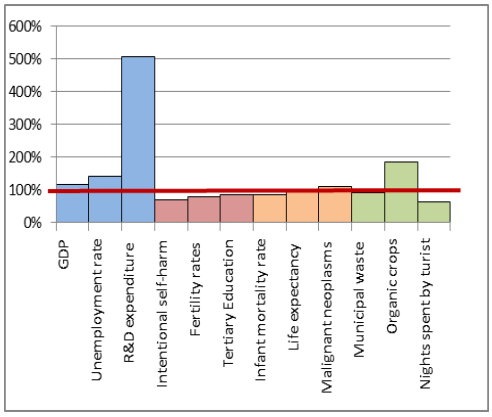


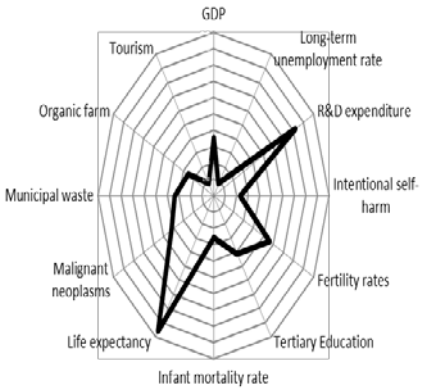
Mecklenburg-Vorpommern



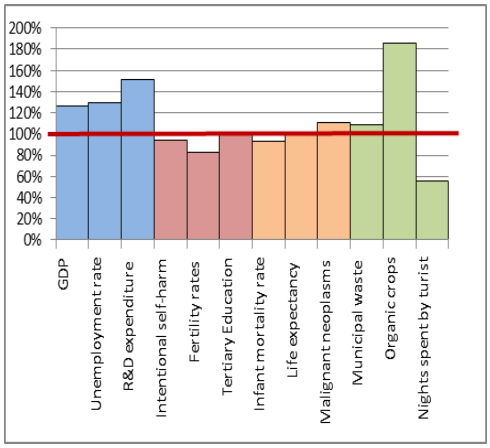


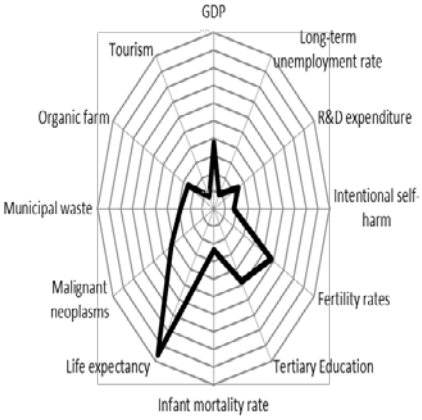
Braunschweig



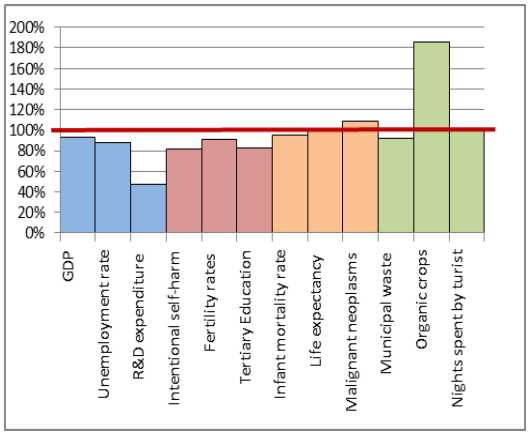


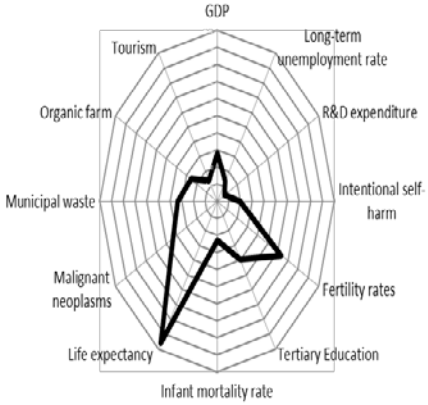
Hannover



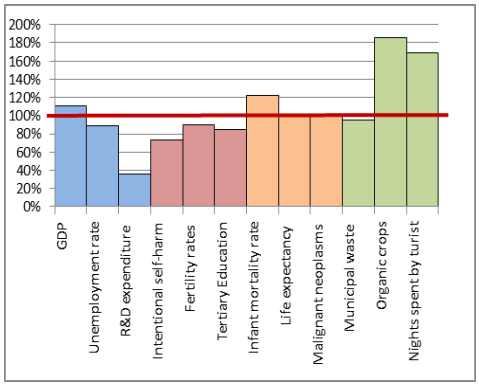


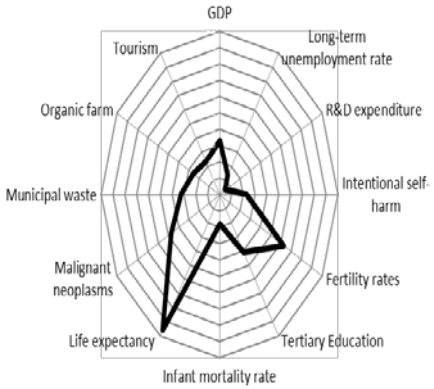
Lüneburg



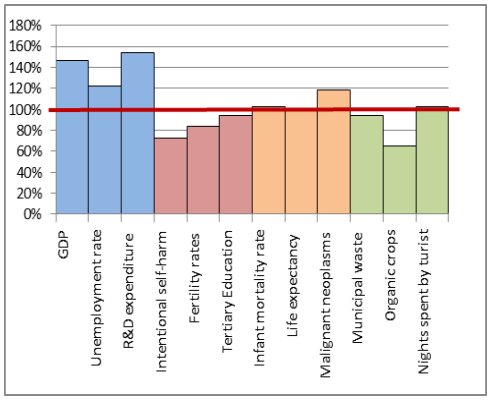


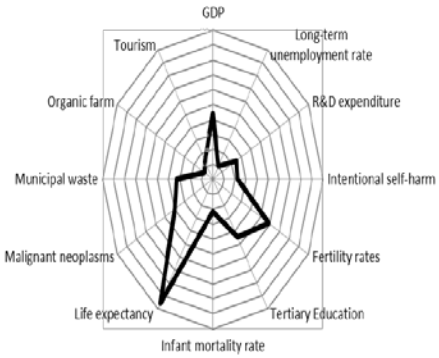
Weser-Ems



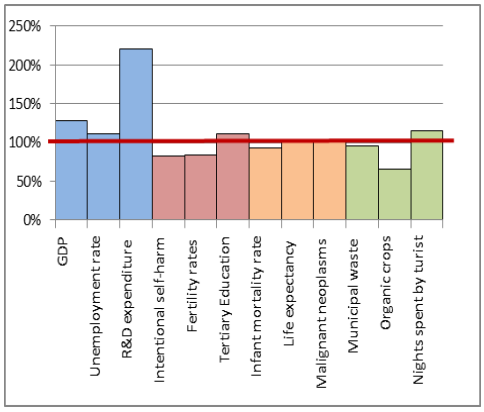


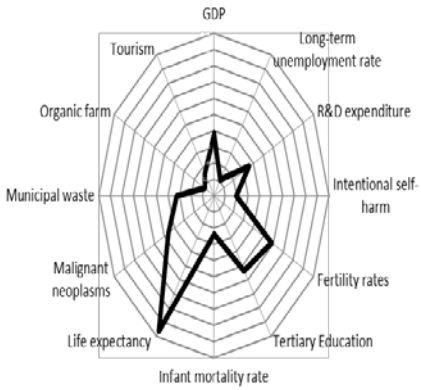
Düsseldorf



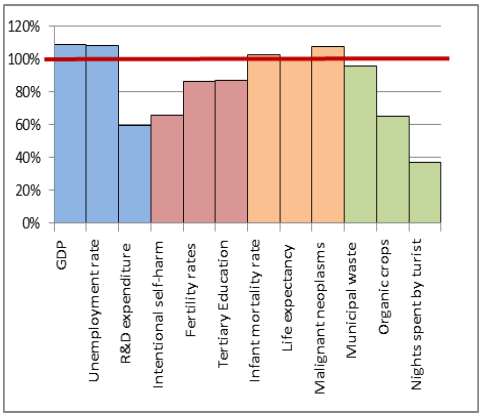


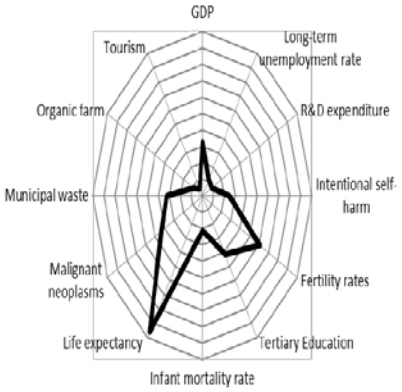
Köln



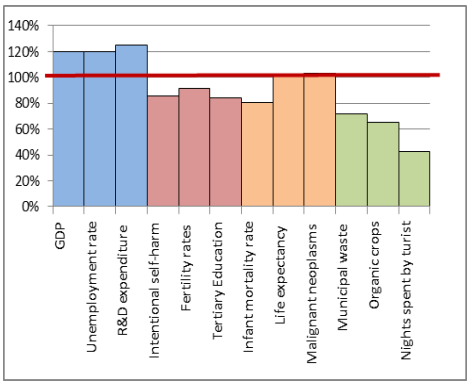


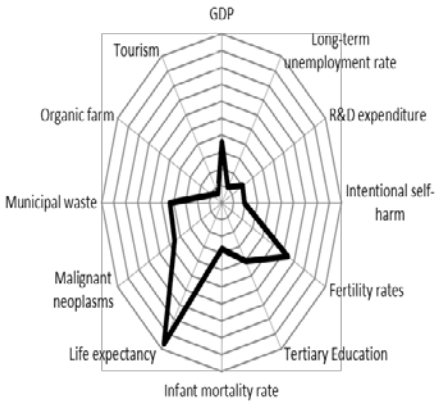
Münster



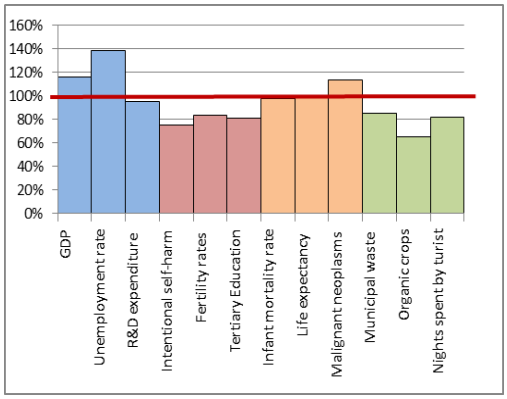


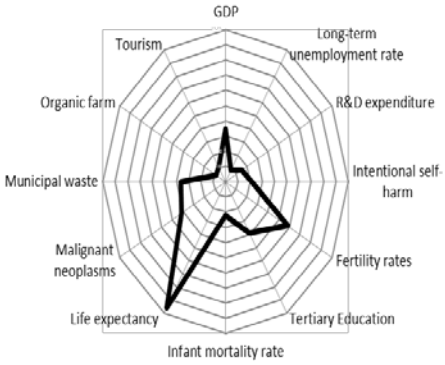
Detmold



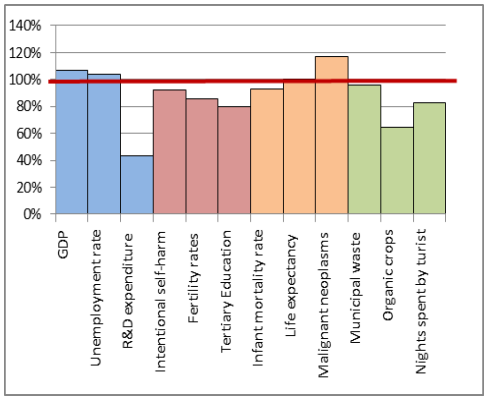


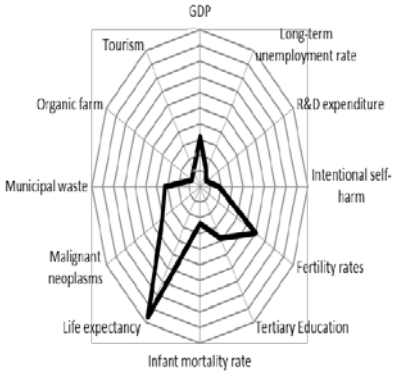
Arnsberg



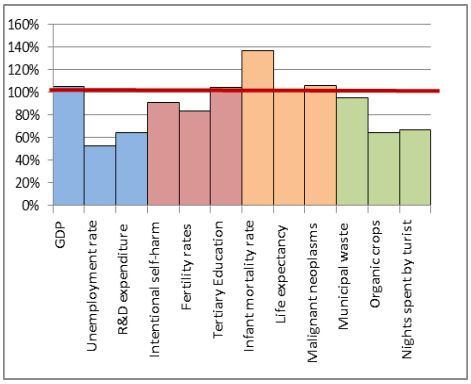


Koblenz





Trier



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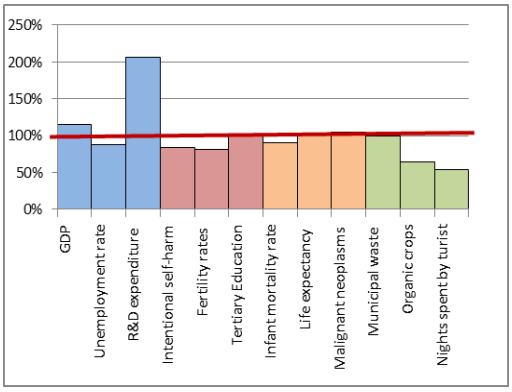

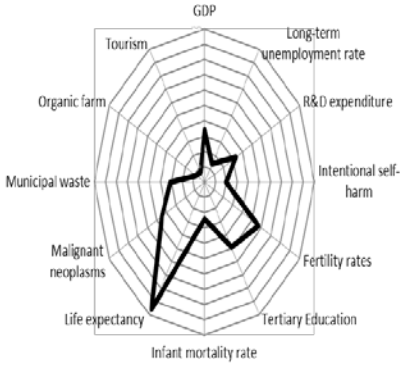

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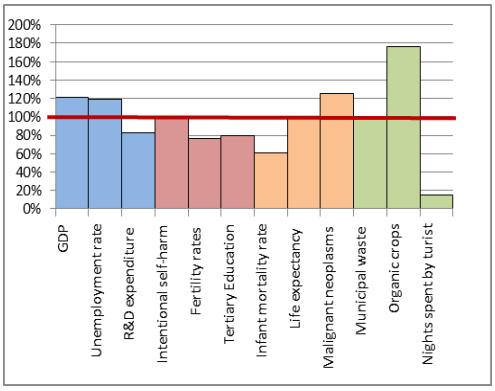

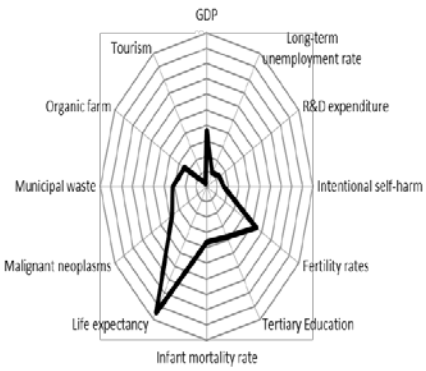

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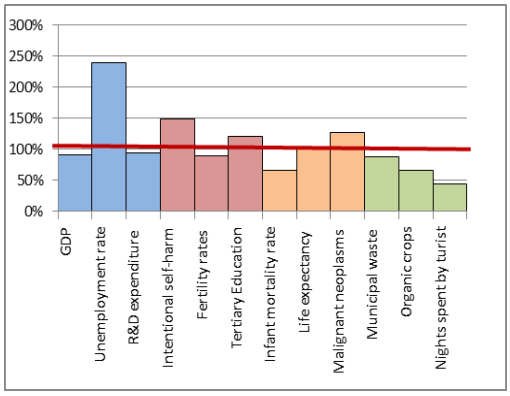

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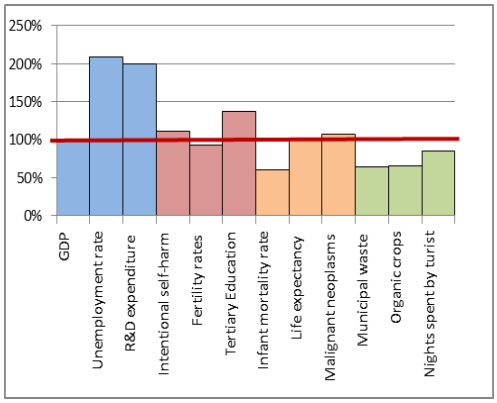

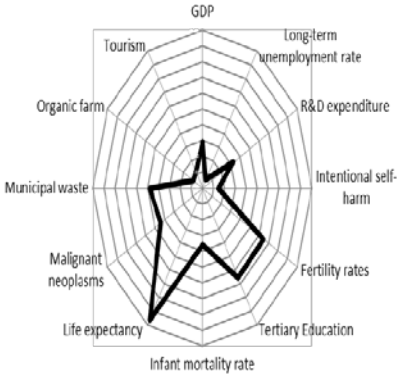

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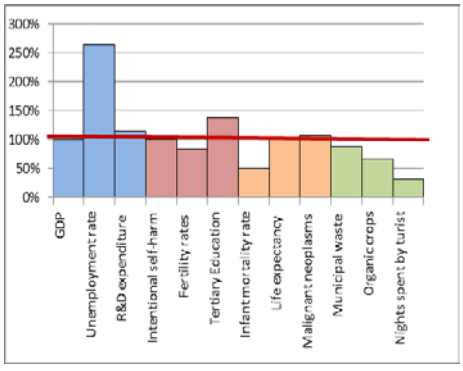

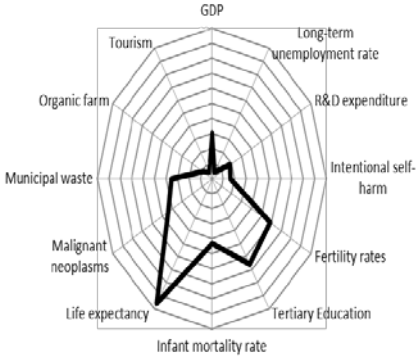

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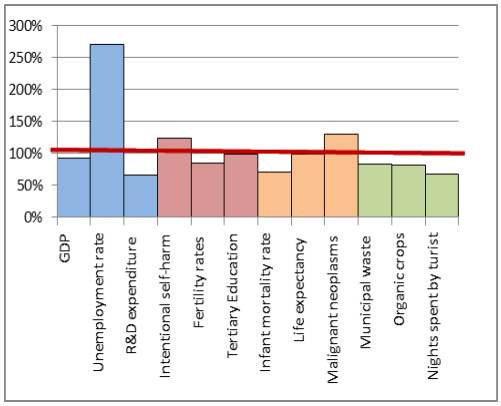

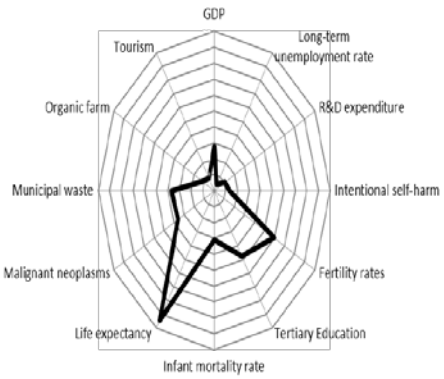

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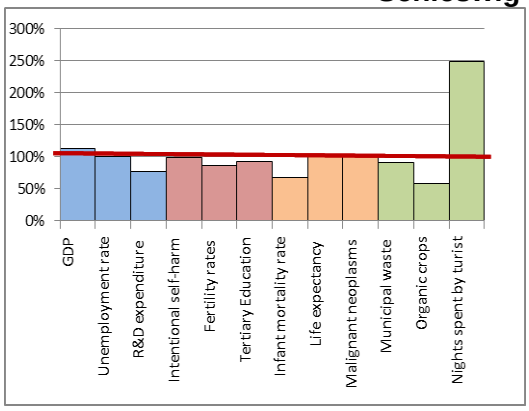

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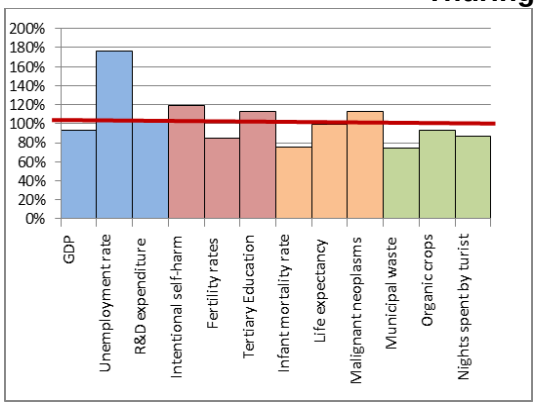
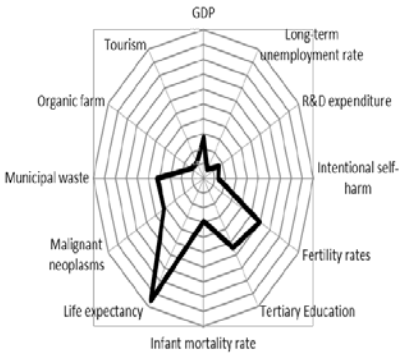
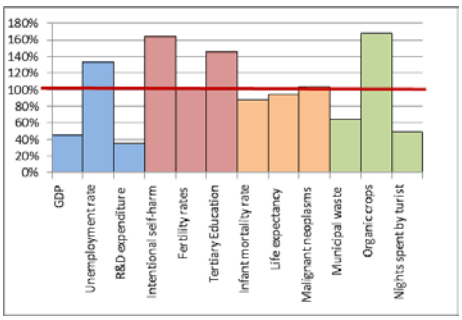
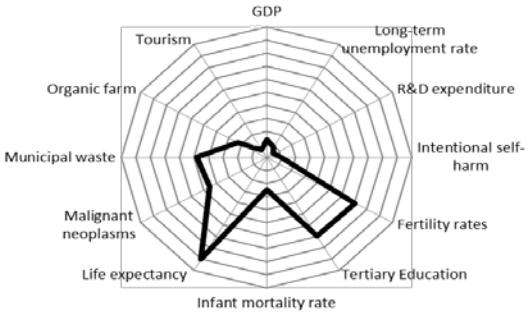




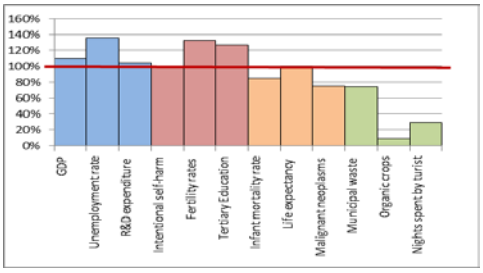
Estonia

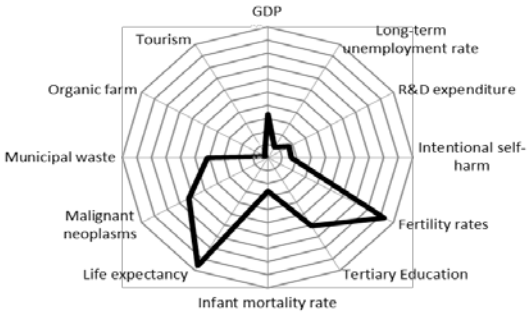

180%
160%
140%
120%
100%
80%
60%
40%
20%
0%
GDP
Unemployment rate
R&D expenditure
Intentional self-harm
Fertility rates
Tertiary Education
Infant mortality rate
Life expectancy
Malignant neoplasms
Municipal waste
Organic crops
Nights spent by turist


GDP
Long-term unemployment rate
R&D expenditure
Intentional self-harm
Fertility rates
Tertiary Education
Infant mortality rate
Life expectancy
Malignant neoplasms
Municipal waste
Organic farm
Tourism

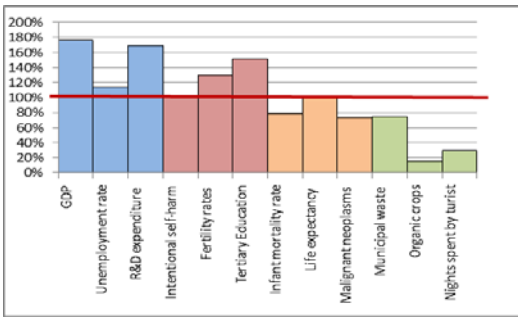
Ireland

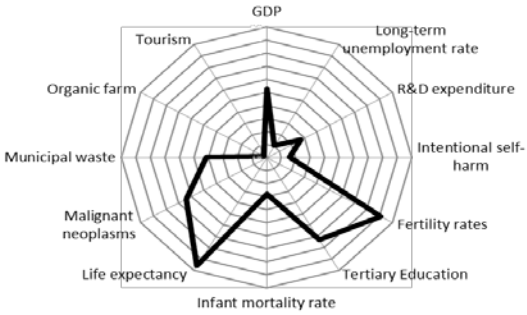
Border, Midland and Western





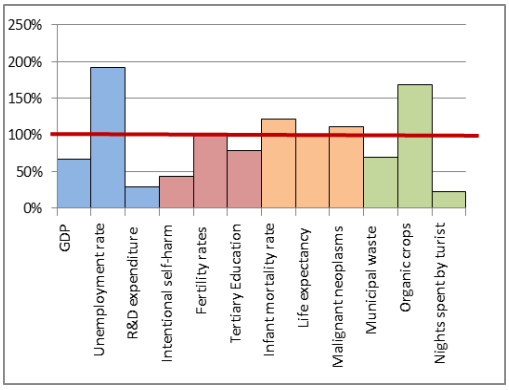
Southern and Eastern

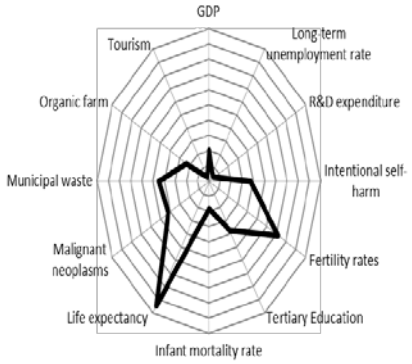




Greece

Anatoliki Makedonia, Thraki





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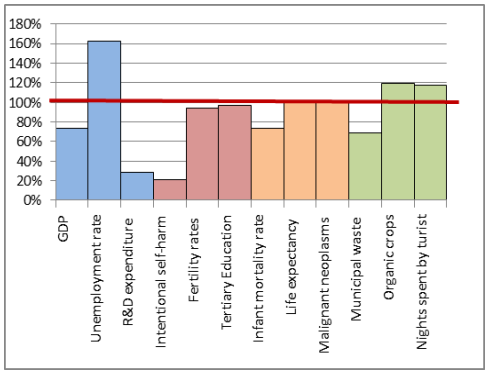

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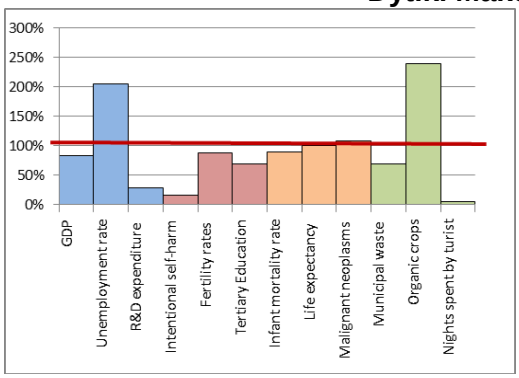

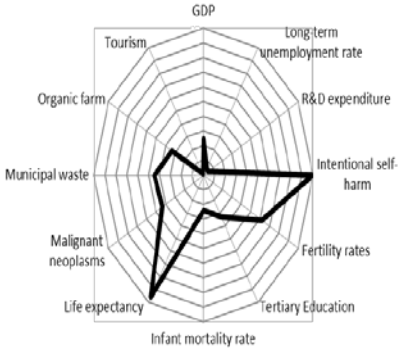

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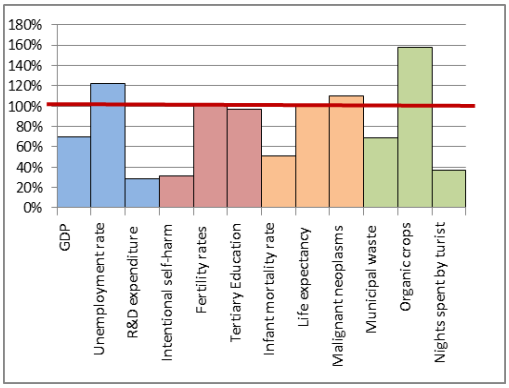
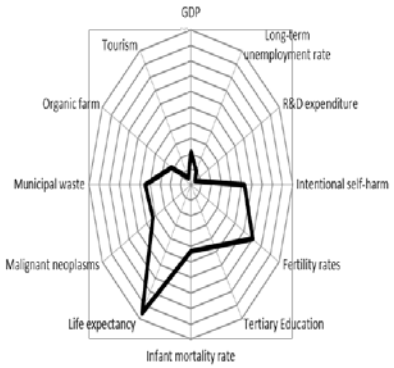
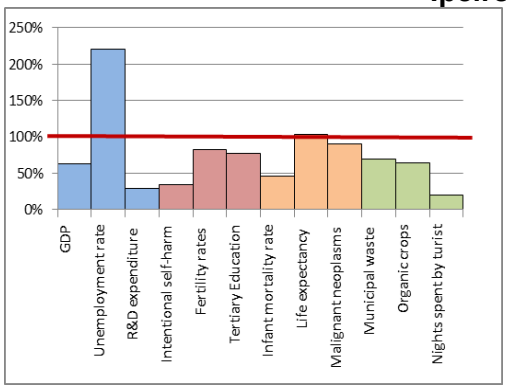




Ipeiros



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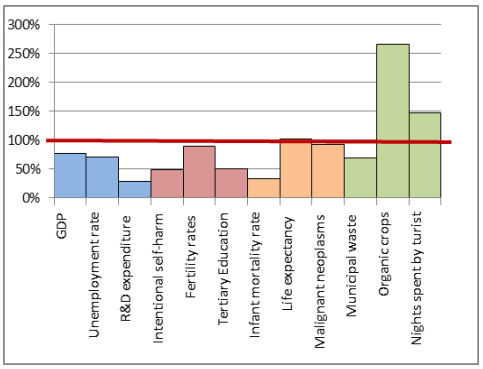

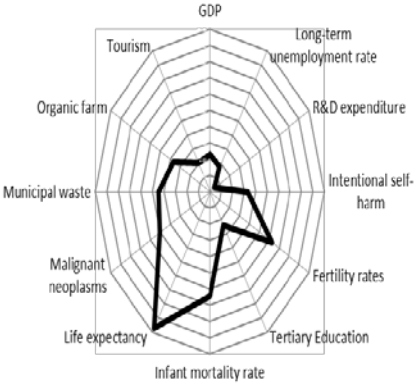

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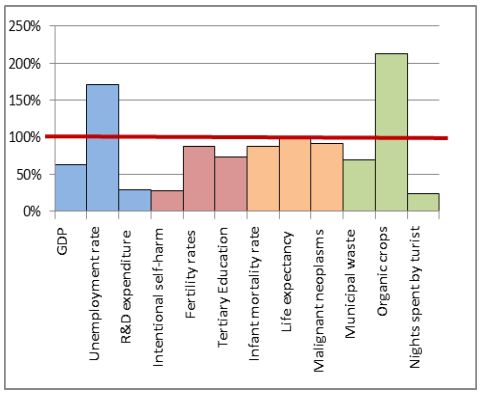

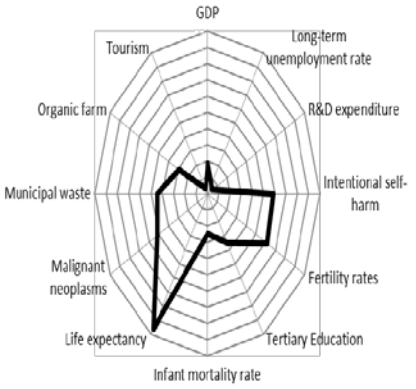

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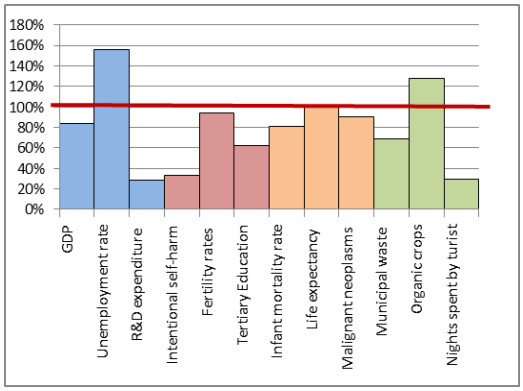
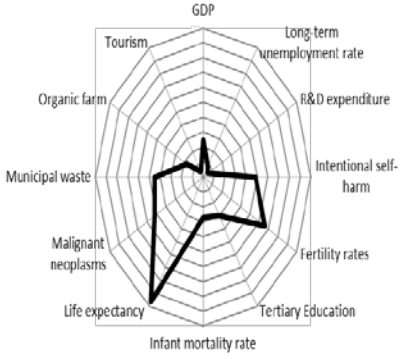
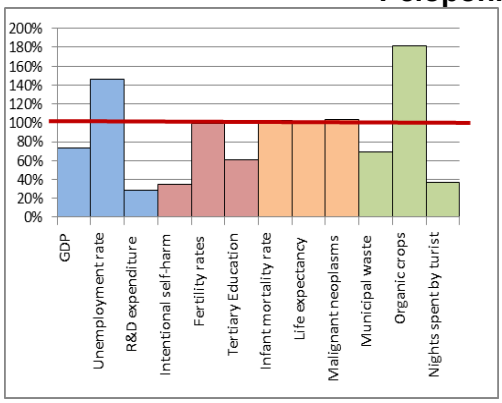
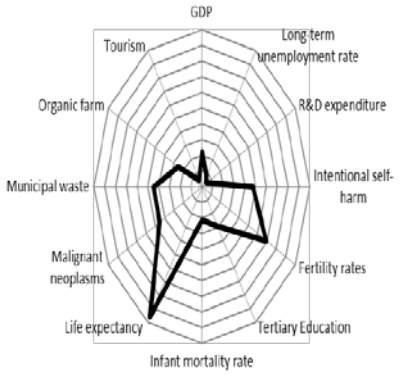




Peloponnisos





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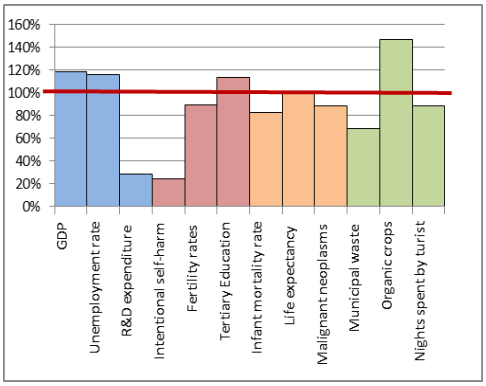
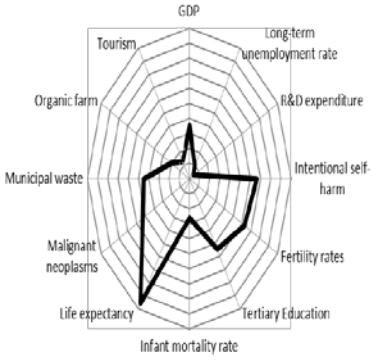
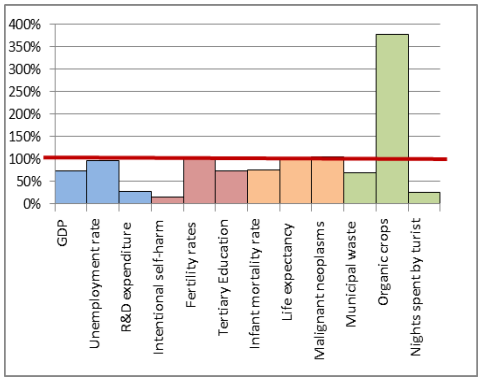
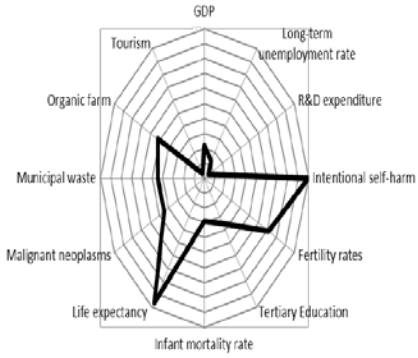


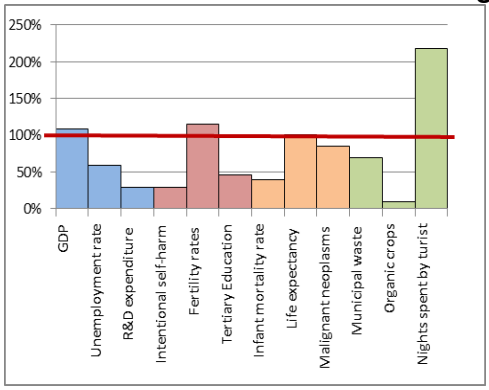


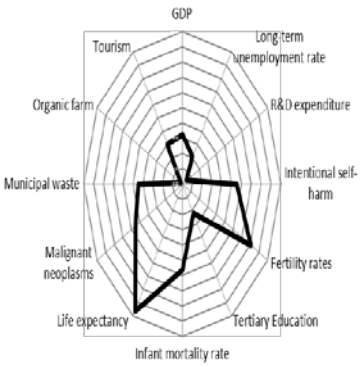
Voreio Aigaio



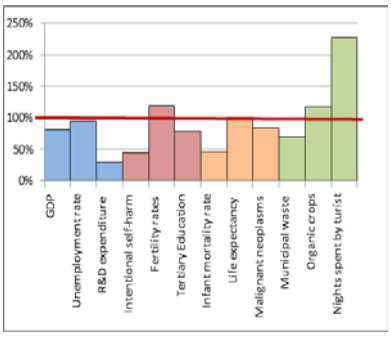


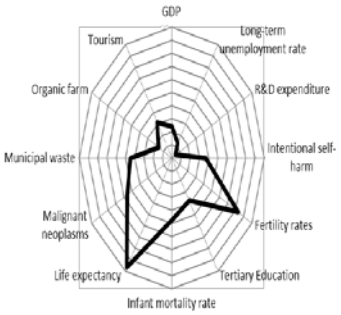
Notio Aigaio





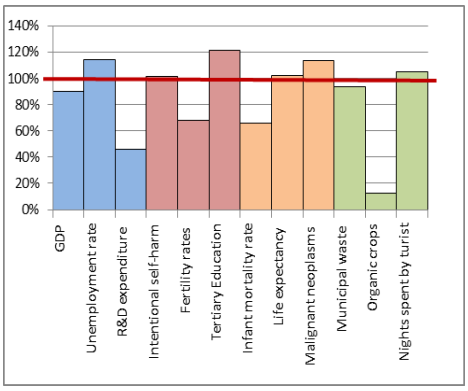
Kriti

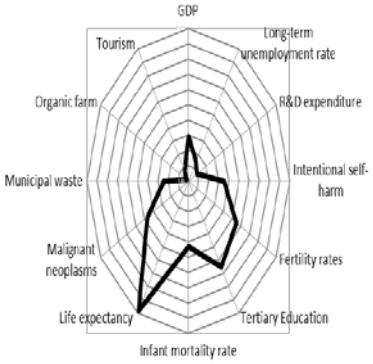

250%
200%
150%
100%
50%
0%
GDP
Unemployment rate
R&D expenditure
Intentional self-harm
Fertility rates
Tertiary Education
Infant mortality rate
Life expectancy
Malignant neoplasms
Municipal waste
Organic crops
Nights spent by turist


GDP
Long-term unemployment rate
R&D expenditure
Intentional self-harm
Fertility rates
Tertiary Education
Infant mortality rate
Life expectancy
Malignant neoplasms
Municipal waste
Organic farm
Tourism

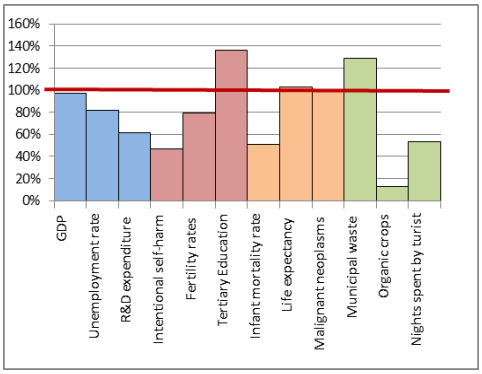
Spain

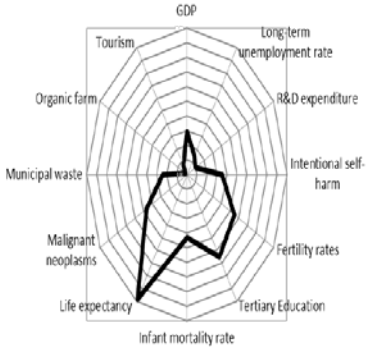
Galicia



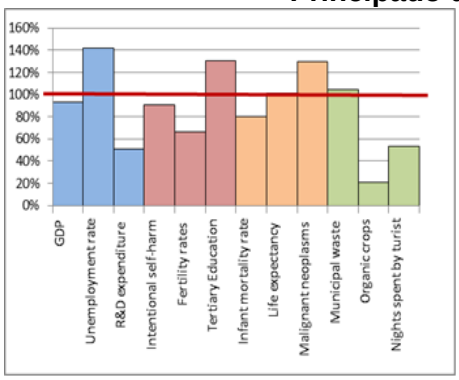


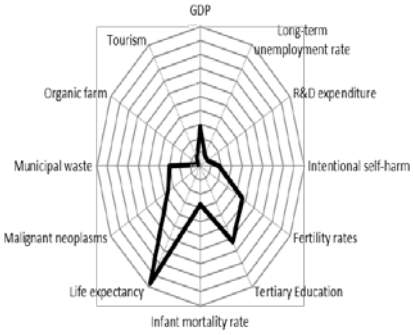
Cantabria



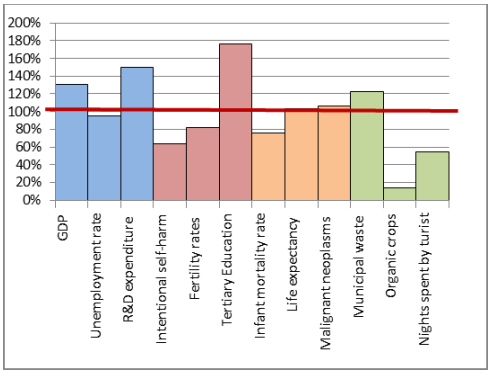


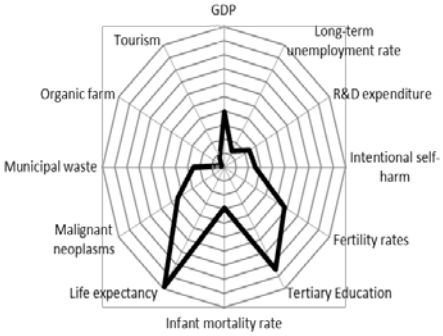
Principado de Asturias



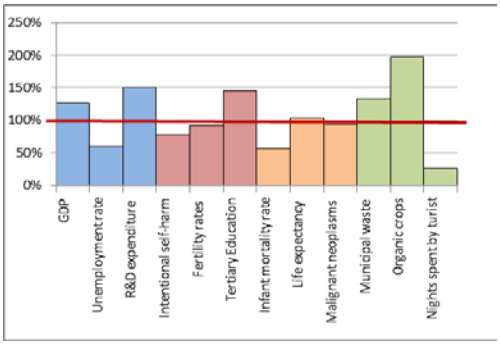


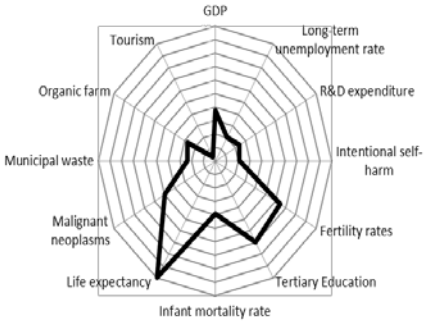
Pais Vasco



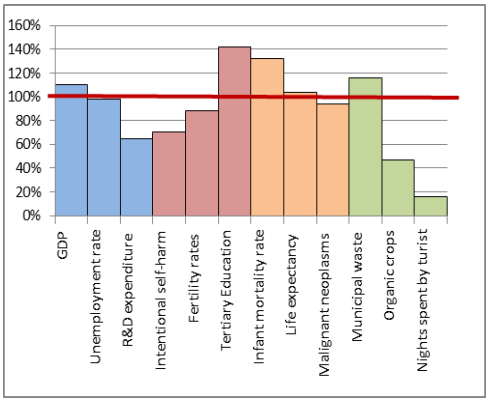


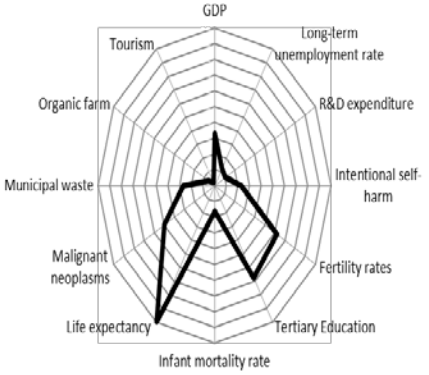
Comunidad Foral de Navarra



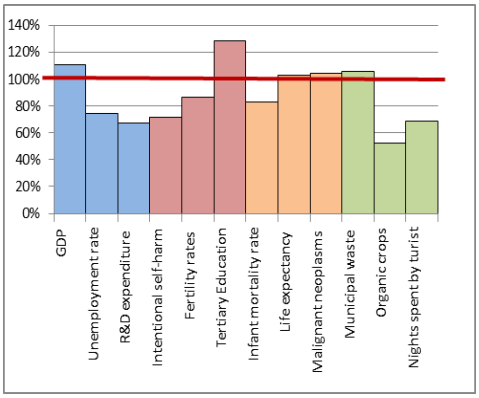


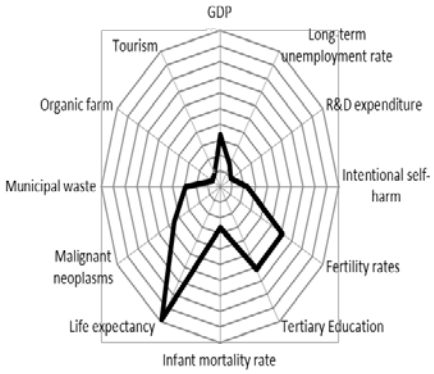
La Rioja



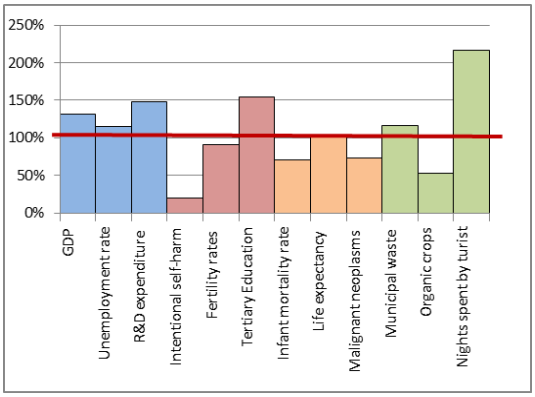


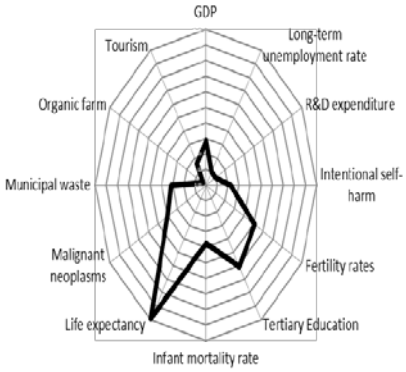
Aragon



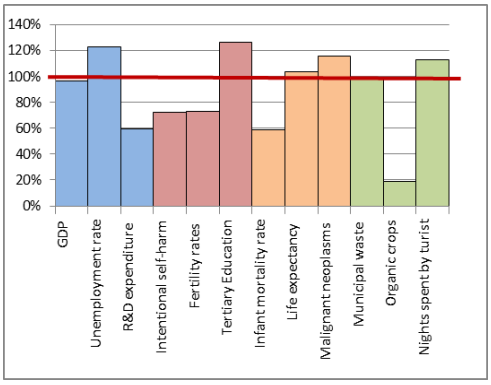


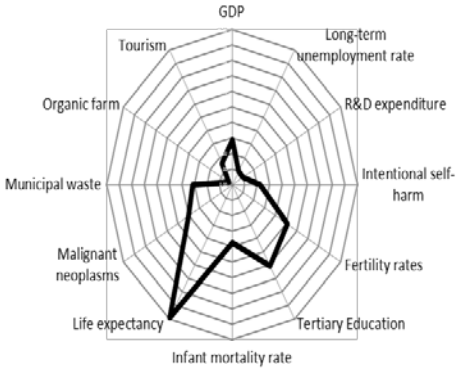
Comunidad de Madrid



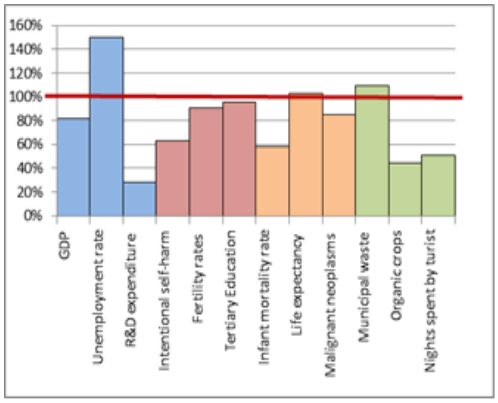


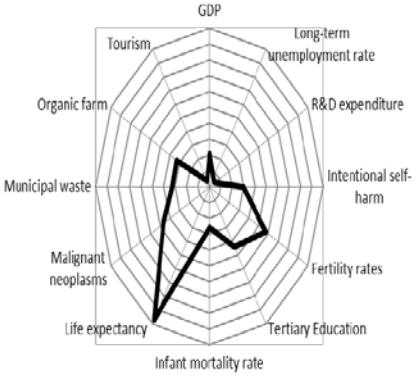
Castilla y Leon



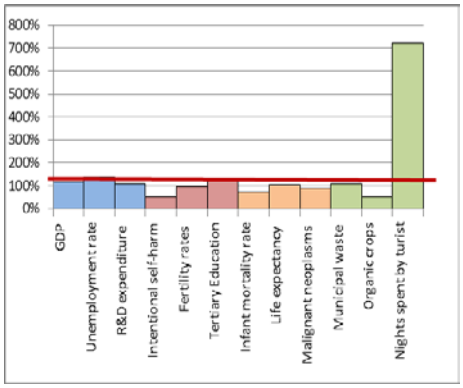


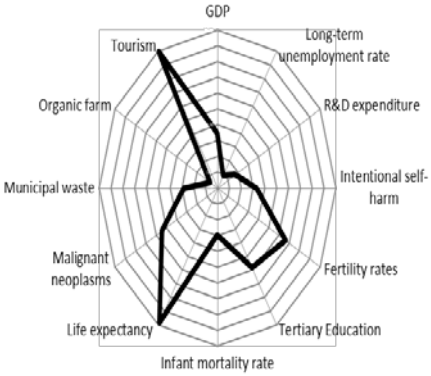
Extremadura



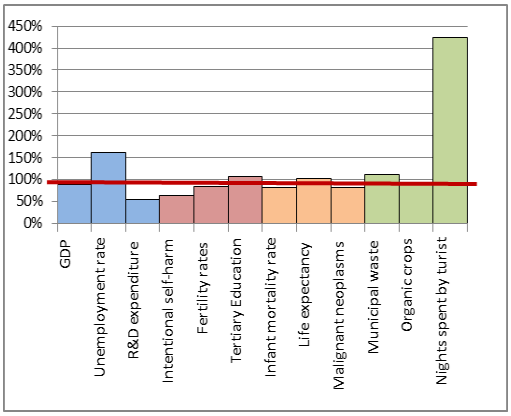


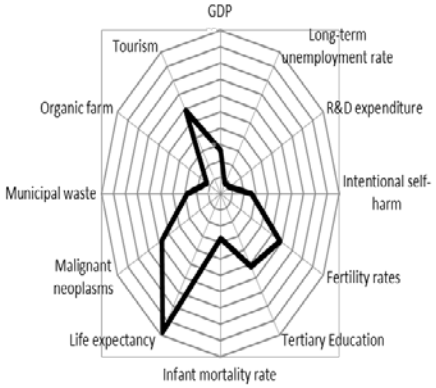
Cataluña



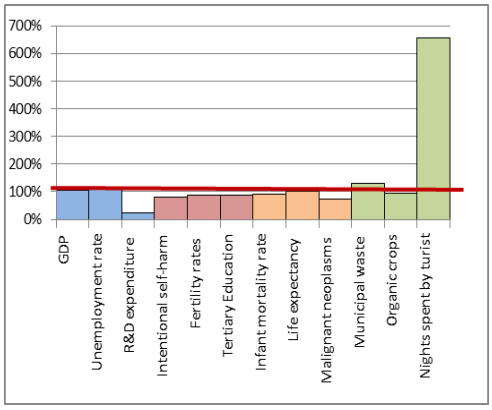


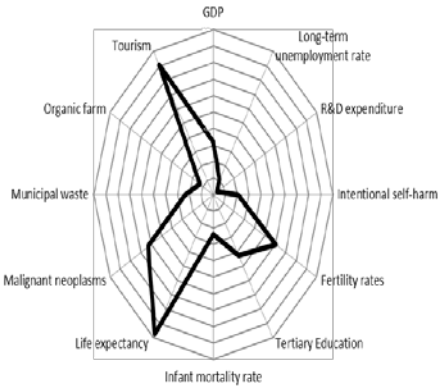
Comunidad Valenciana



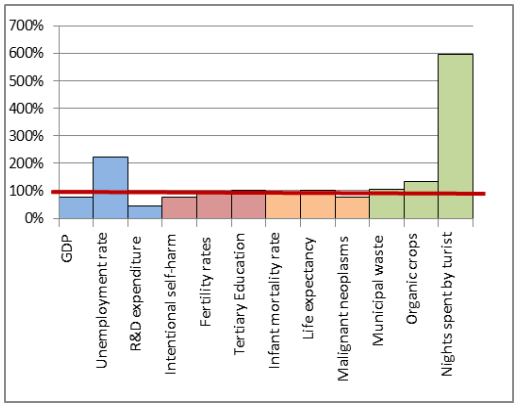


Isles Baleares

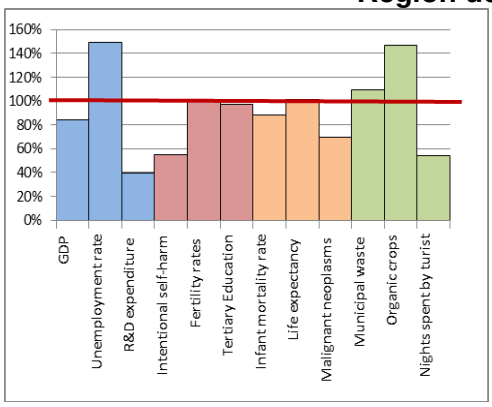


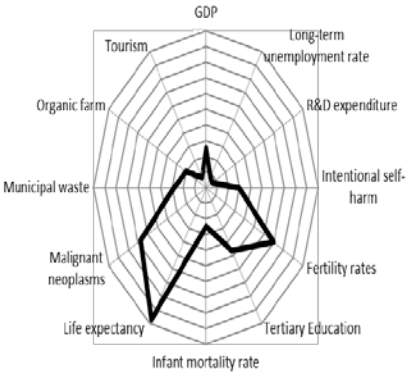


Andalucia

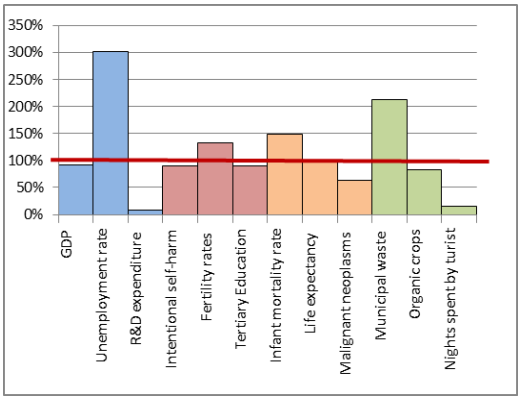


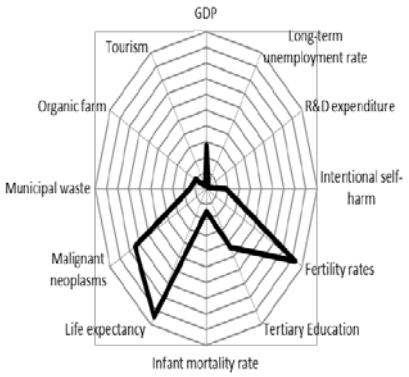
Region de Murcia



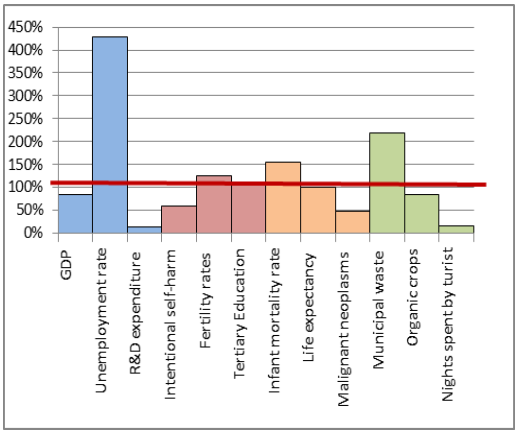


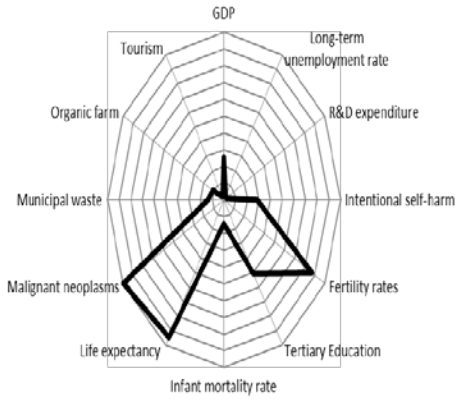
Comunidad Autonoma de Ceuta



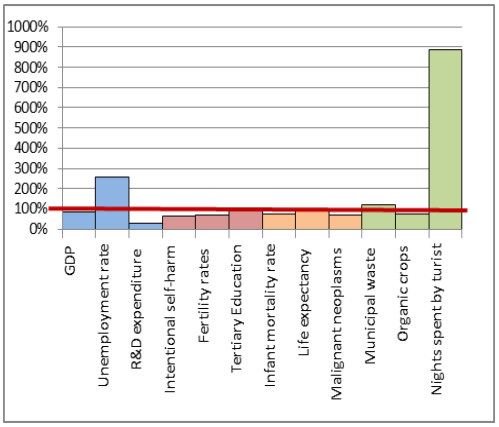


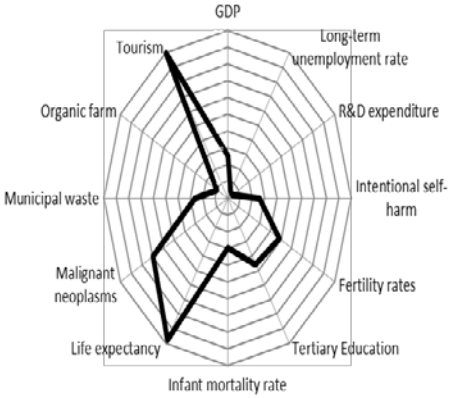
Comunidad Autonoma de Melilla





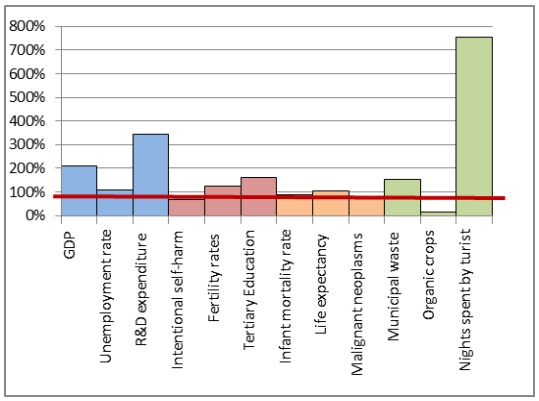
Canarias

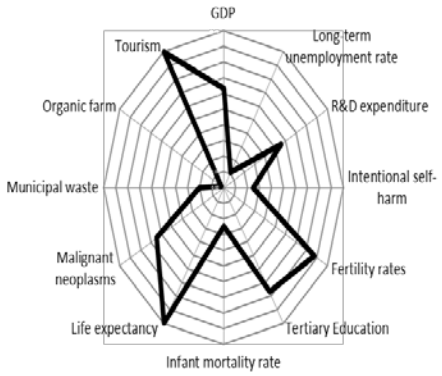




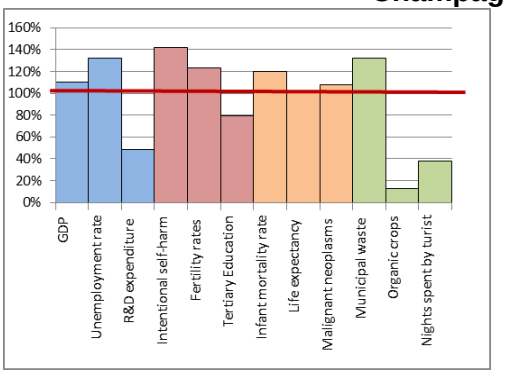
France

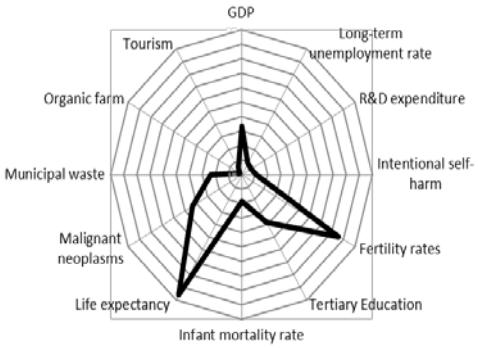
Île de France



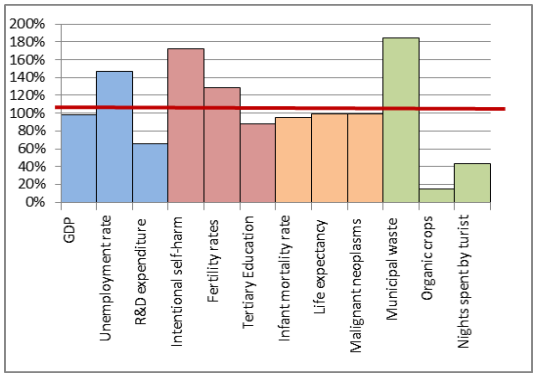


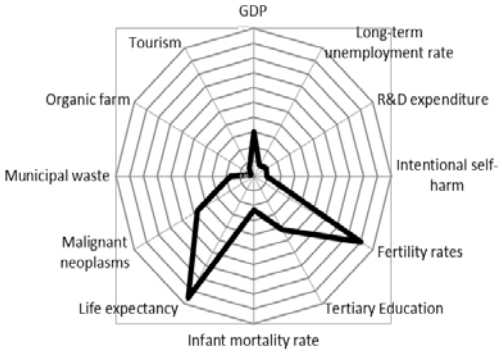
Champagne-Ardenne



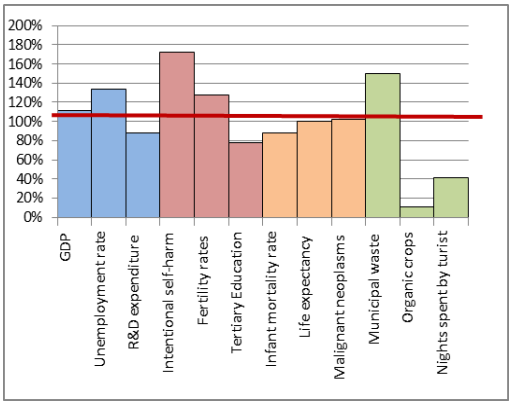


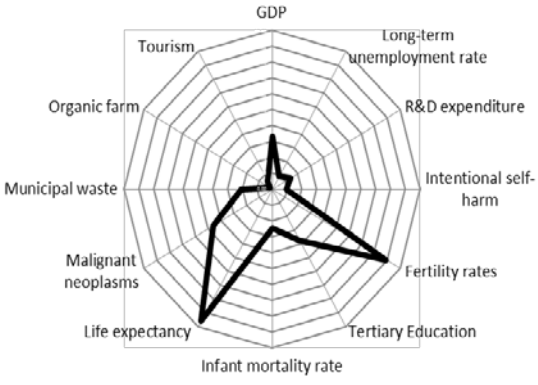
Picardie



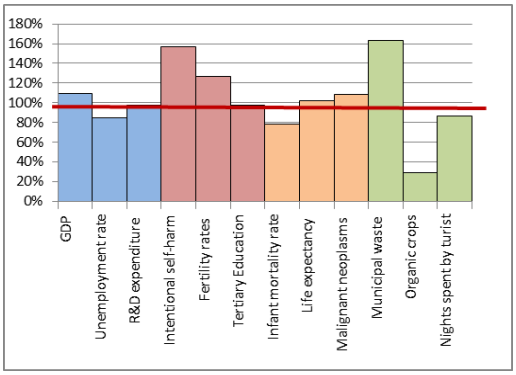


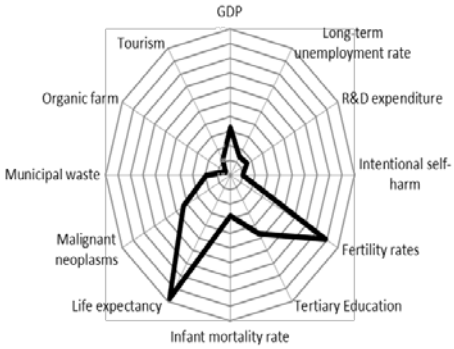
Haute-Normandie



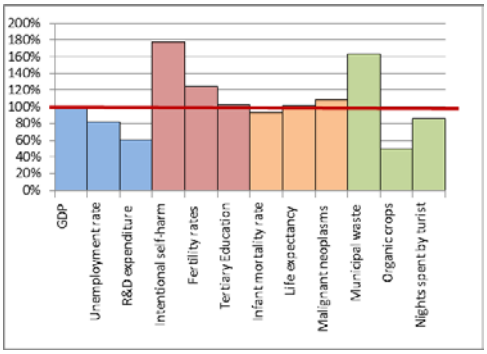


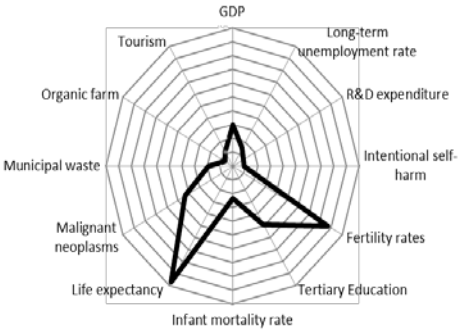
Centre



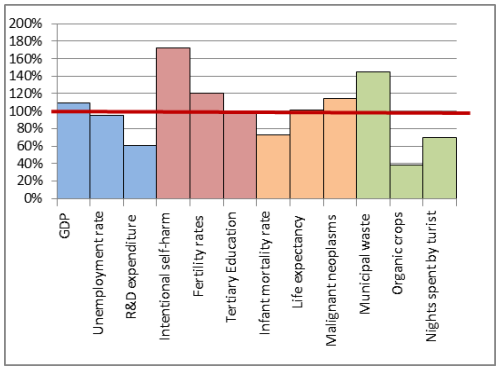


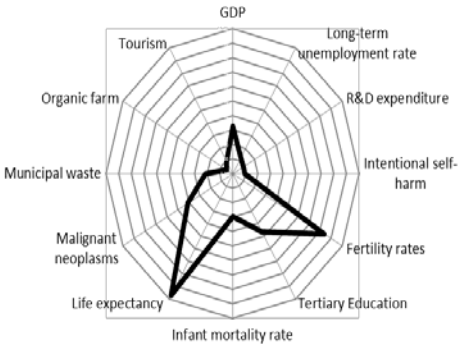
Basse Normandie



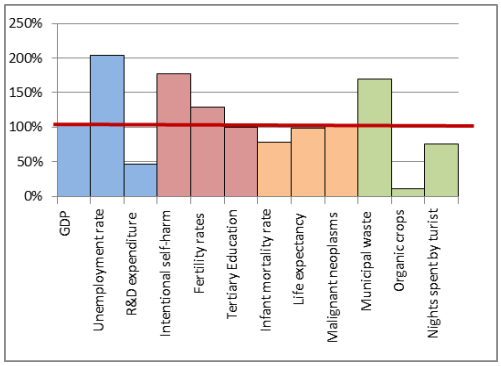


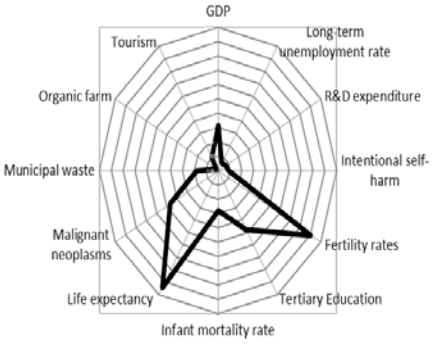
Bourgogne



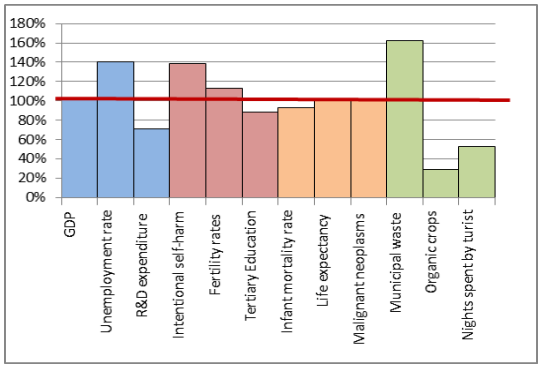


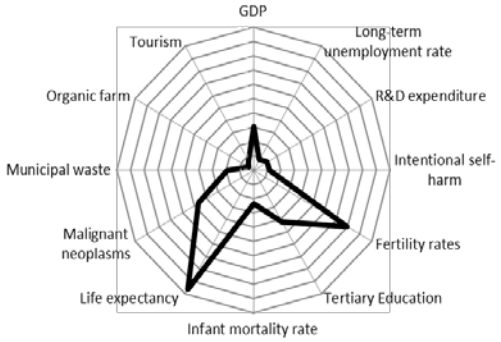
Nord - Pas-de-Calais



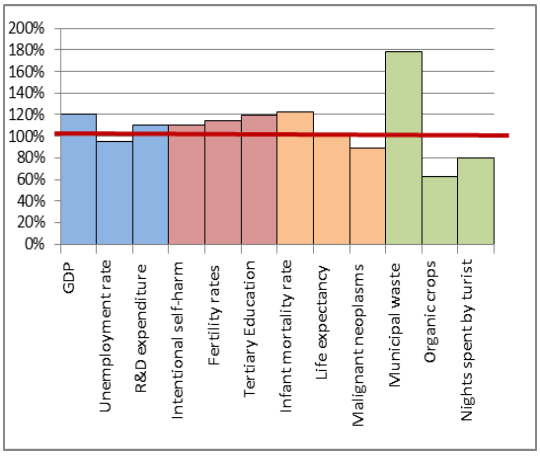


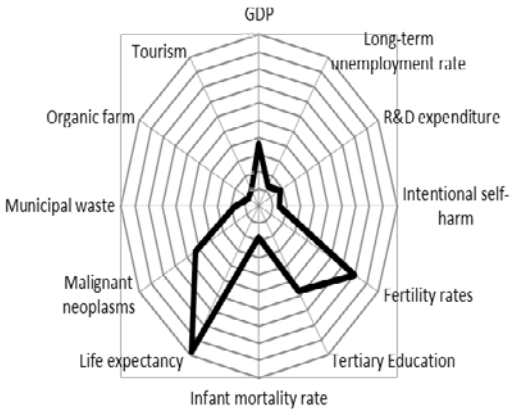
Lorraine



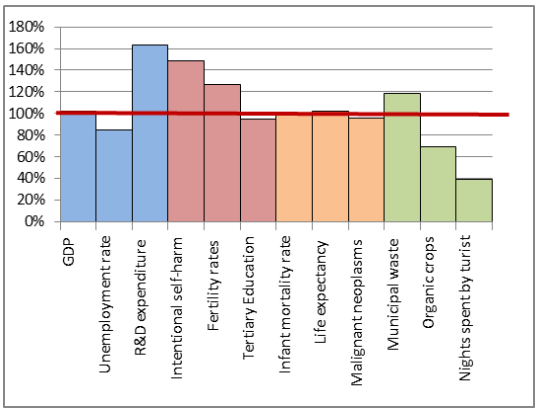


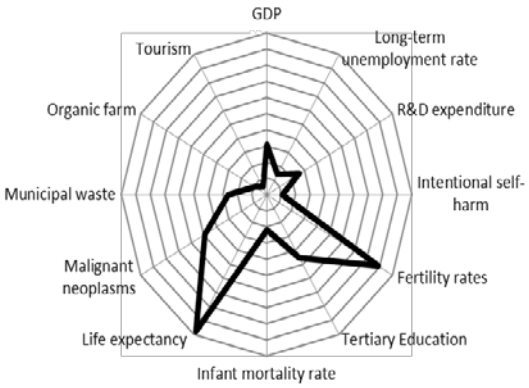
Alsace



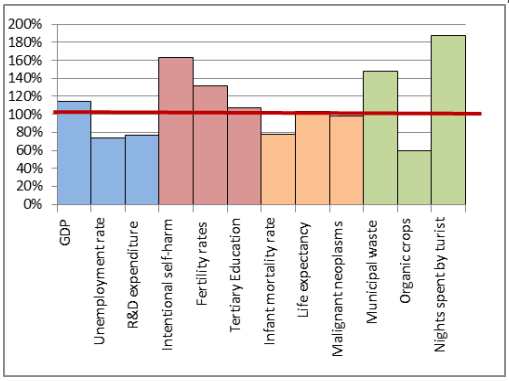


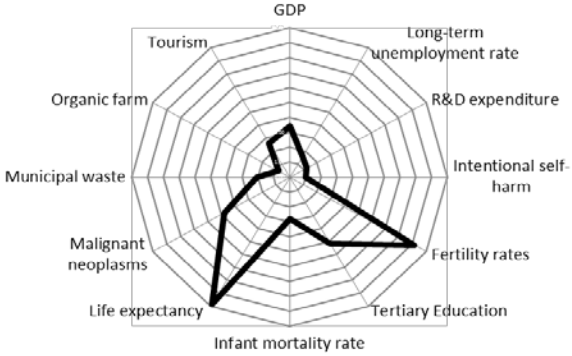
Franche-Comté



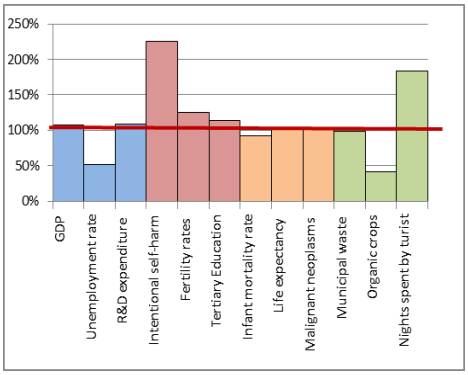


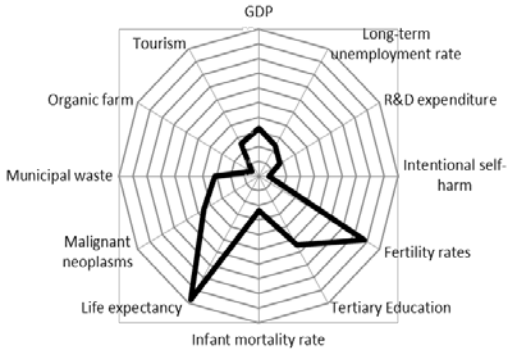
Pays de la Loire



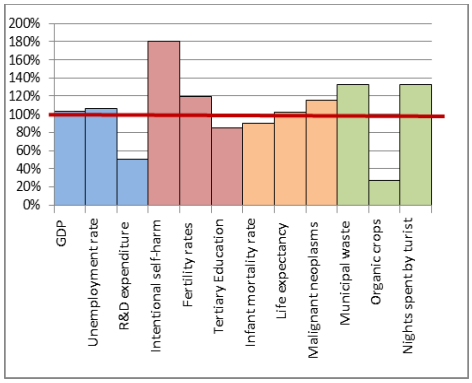


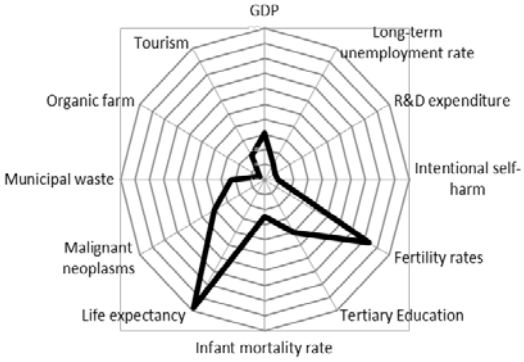
Bretagne



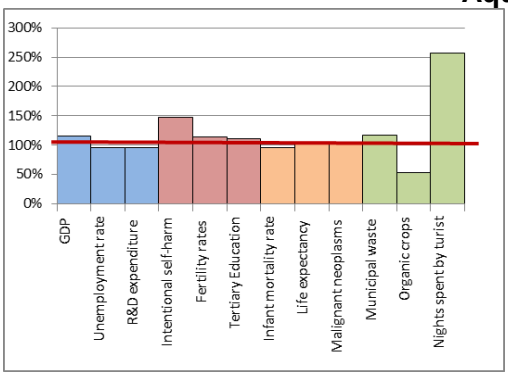


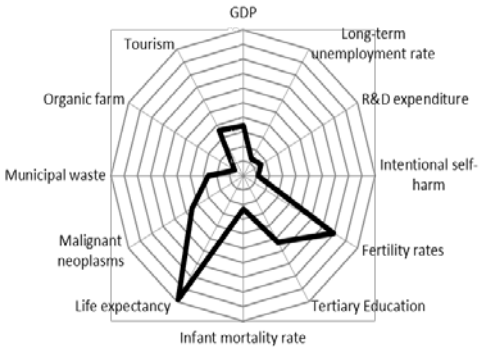
Poitou-Charentes



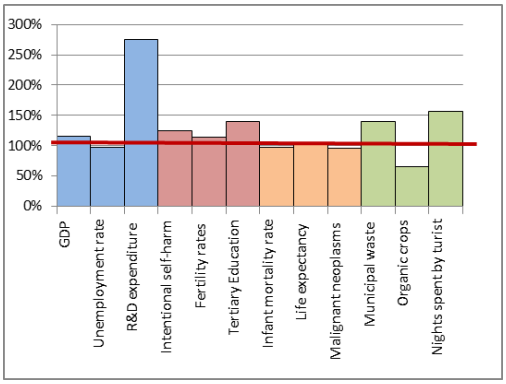


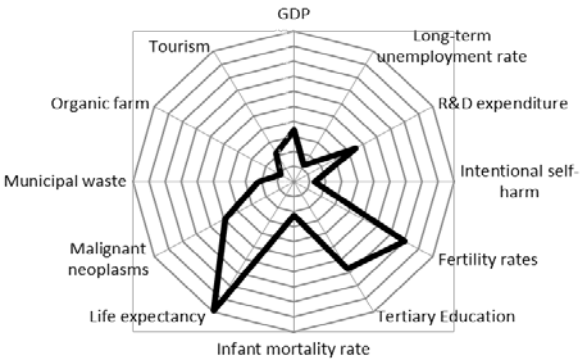
Aquitaine



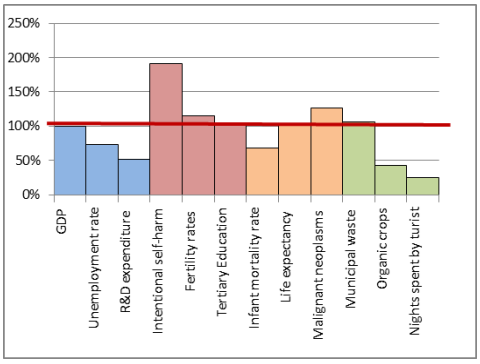


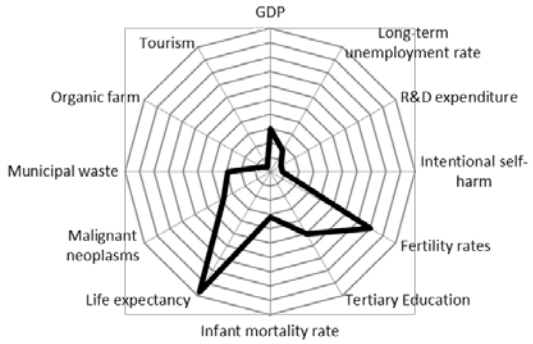
Midi-Pyrénées



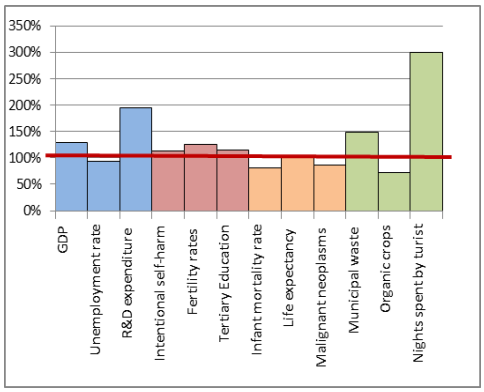


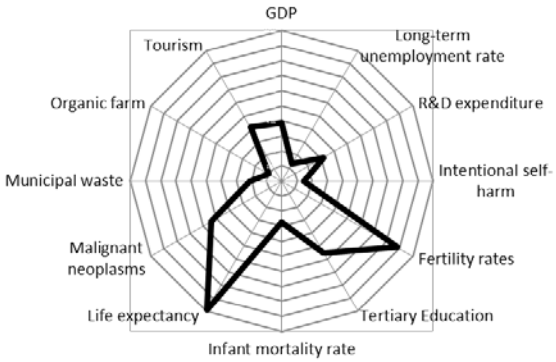
Limousin



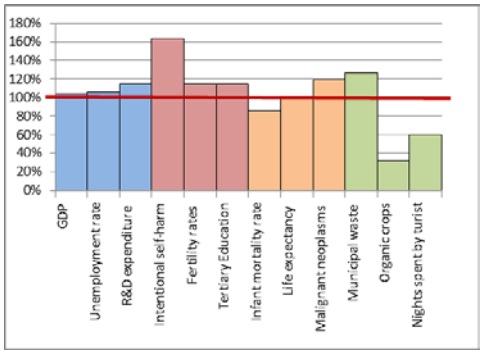


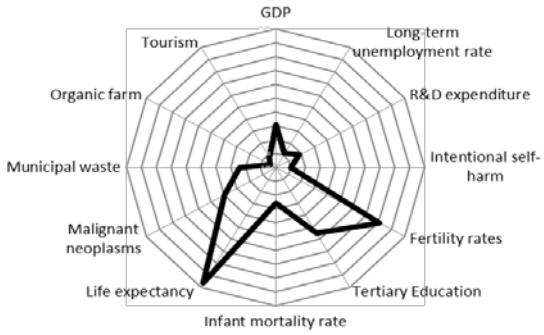
Rhône-Alpes



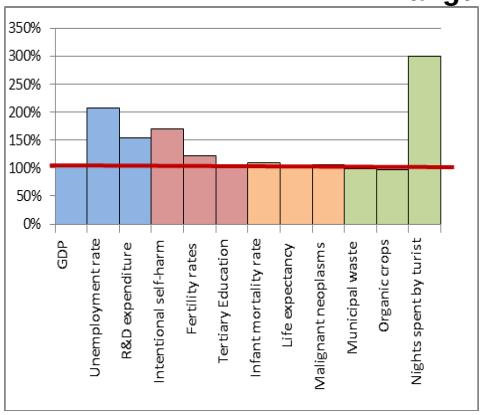


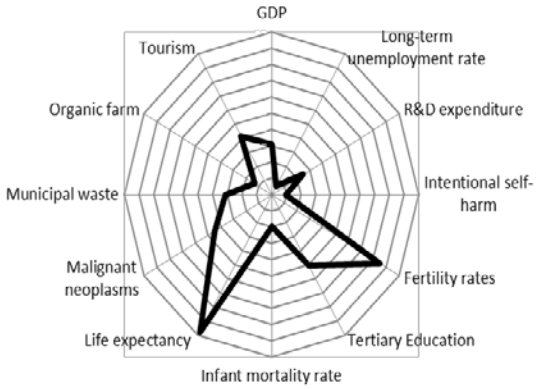
Auvergne



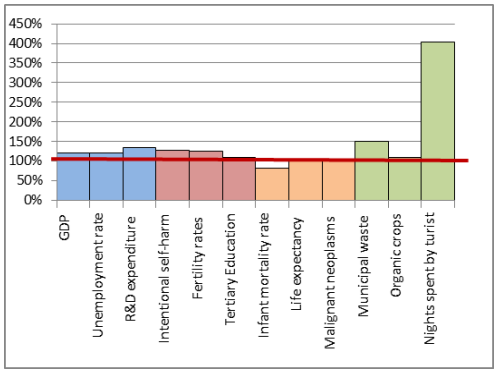


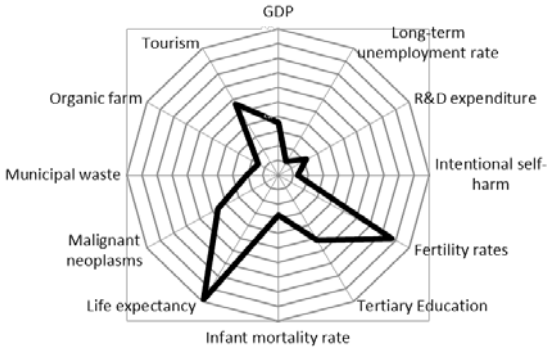
Languedoc-Roussillon





Provence-Alpes-Côte d'Azur





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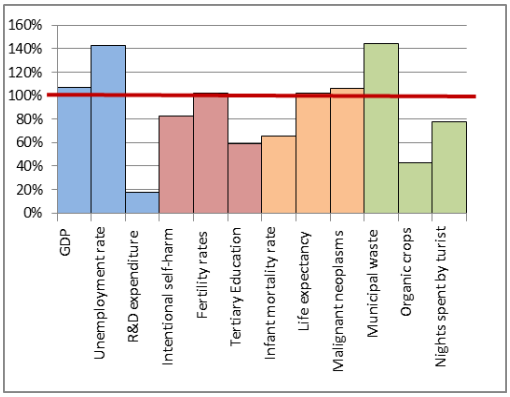
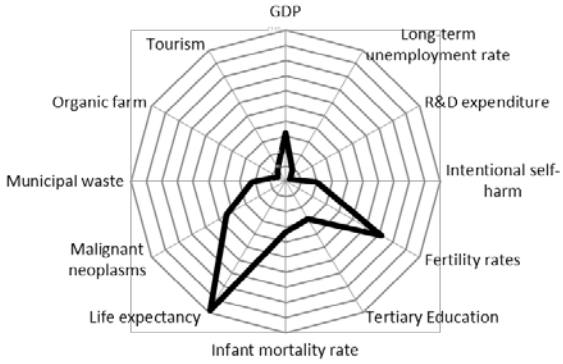
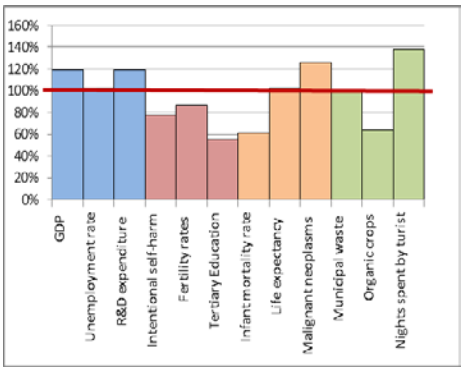
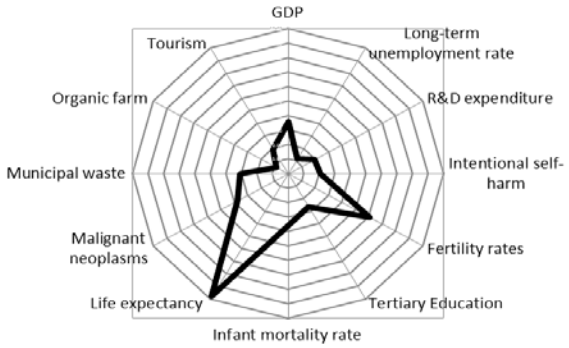




Italy

Piemonte





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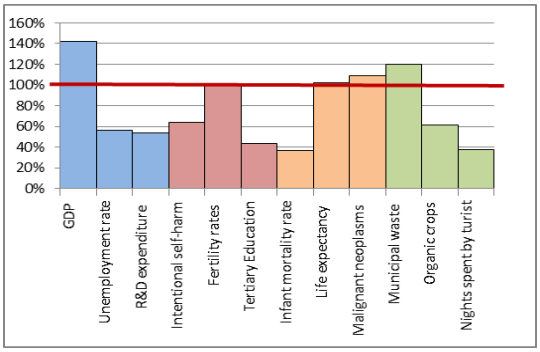

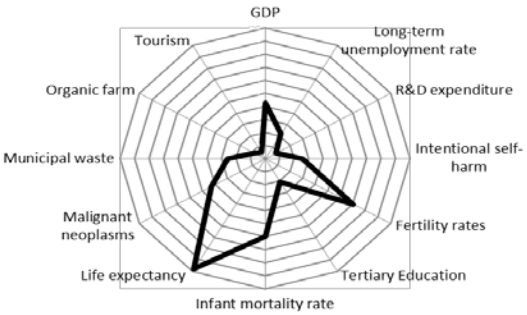

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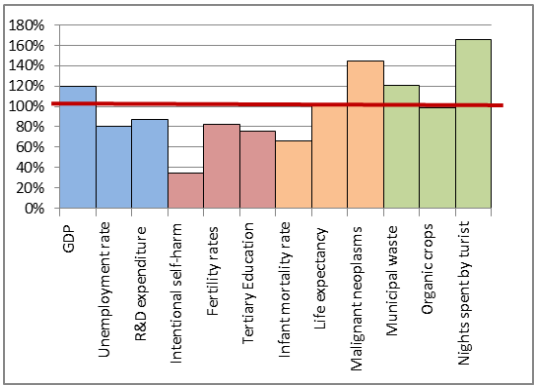
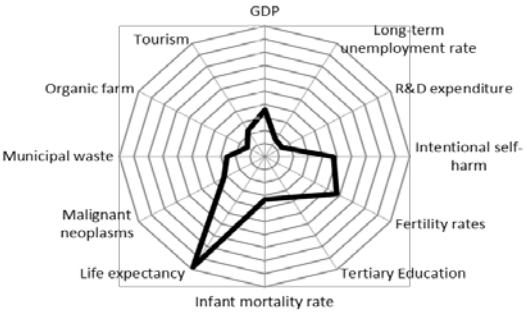
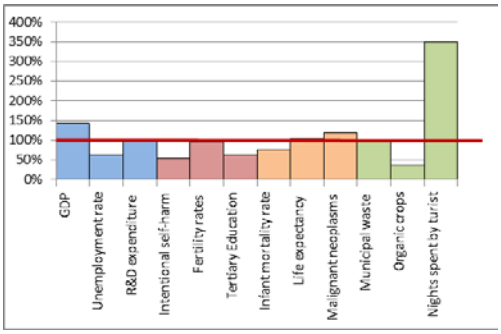
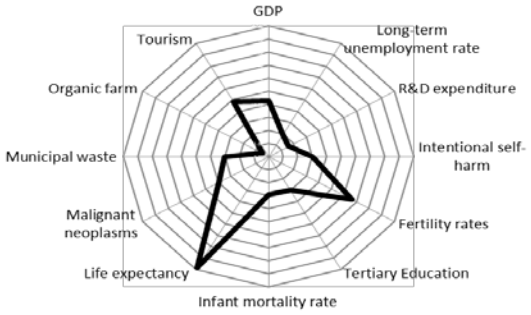


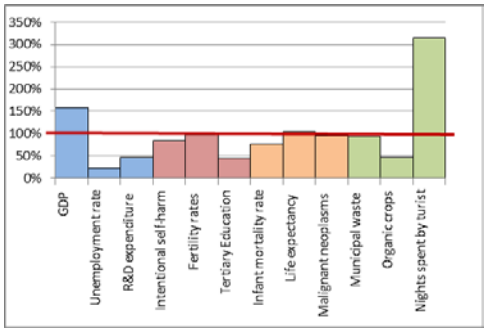


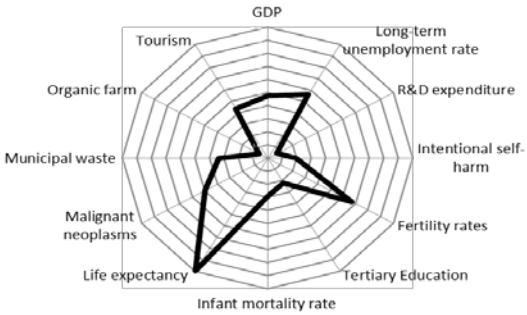
Lombardia



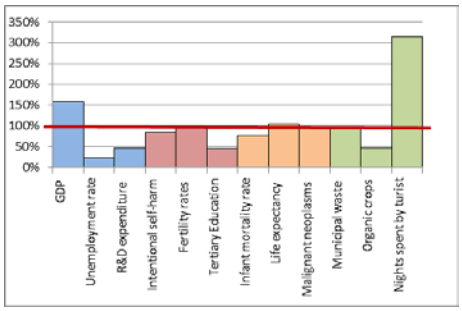


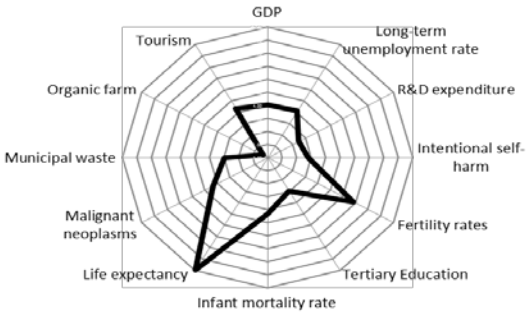
Provincia Autonoma di Bolzano



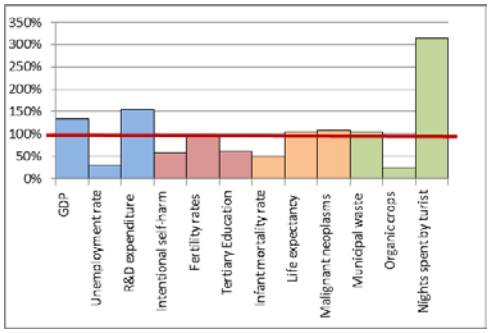


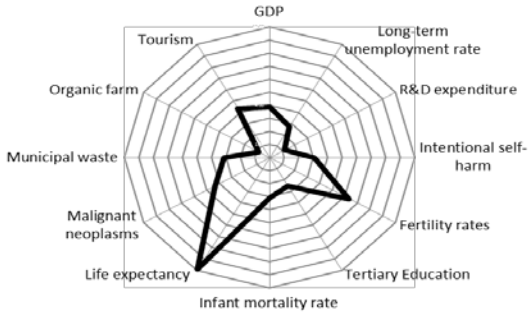
Provincia Autonoma di Trento





Veneto





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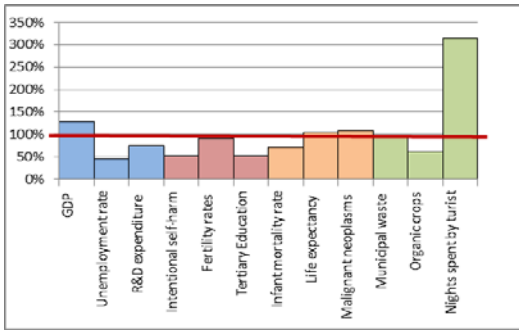
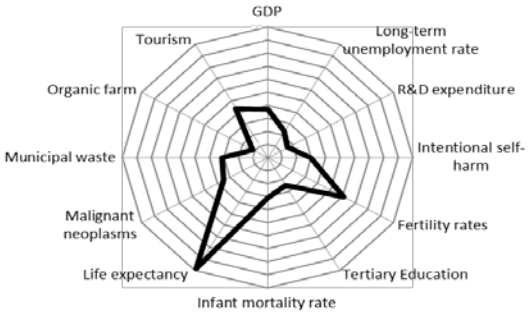
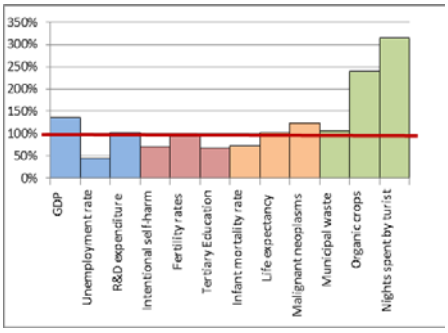
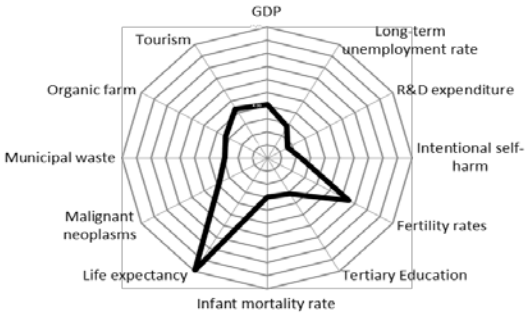


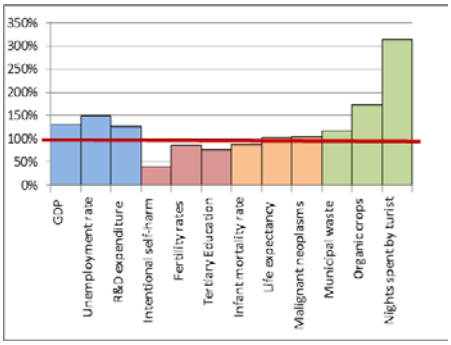


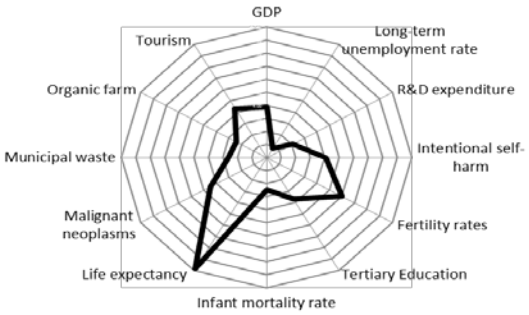
Emilia Romagna





Lazio





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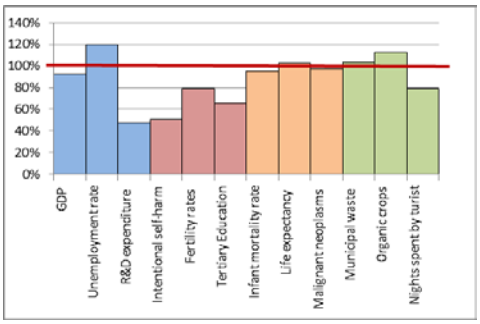
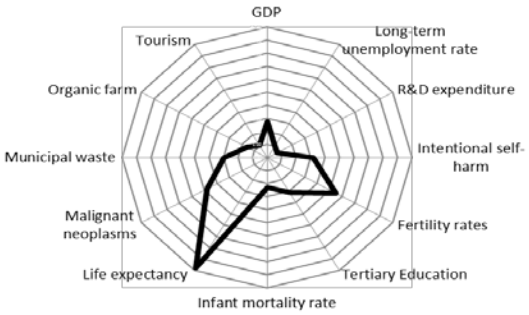
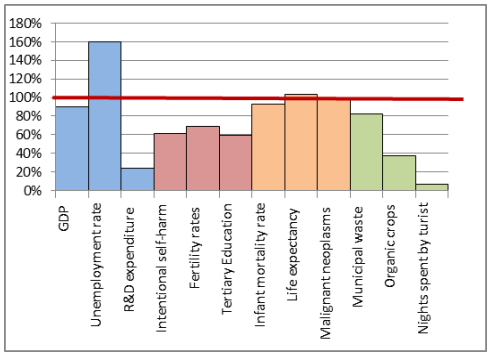
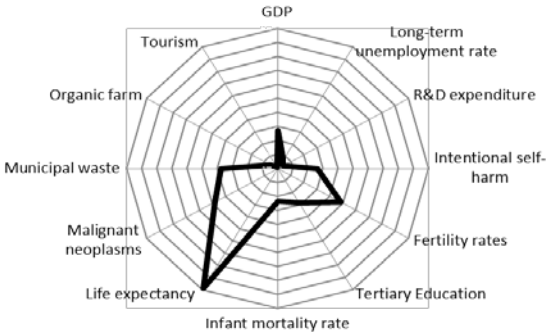




Molise





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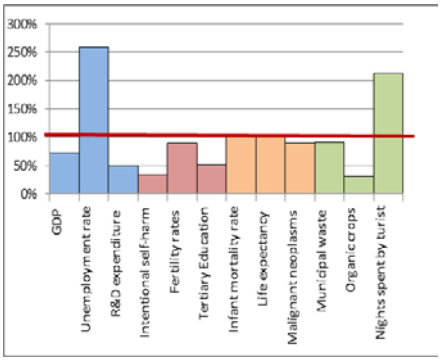

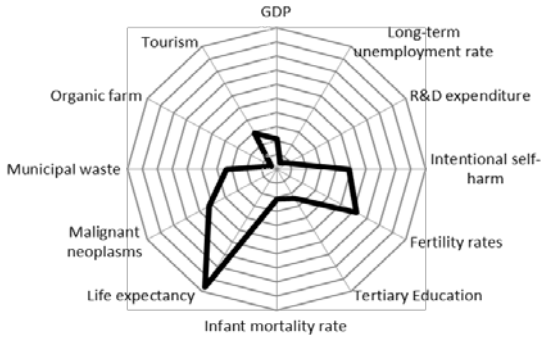

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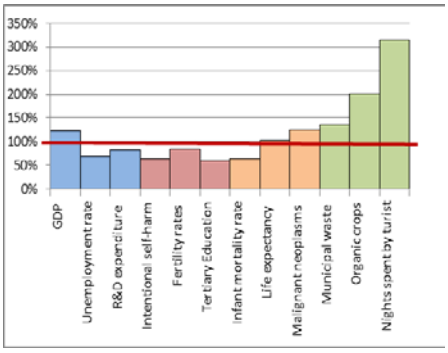

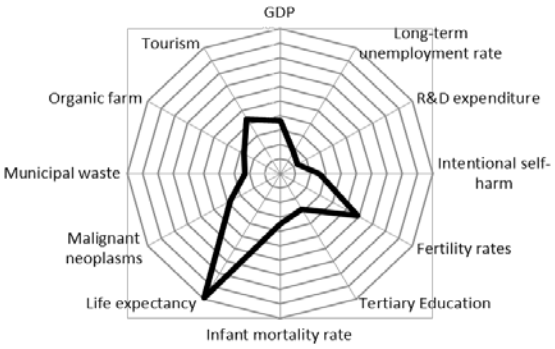

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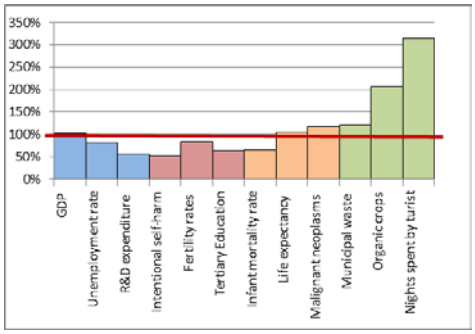

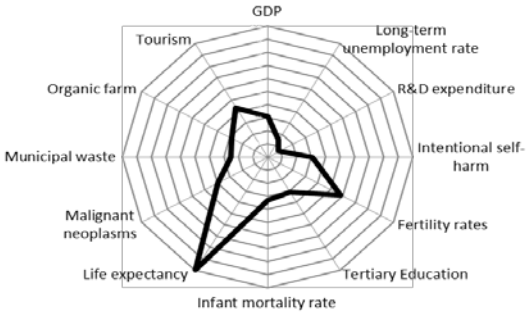

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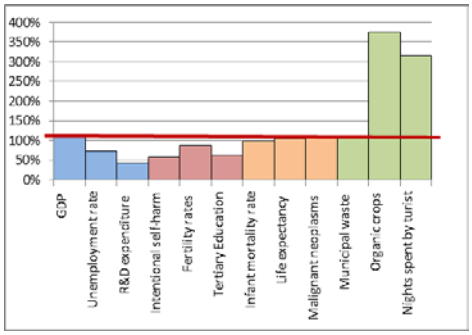

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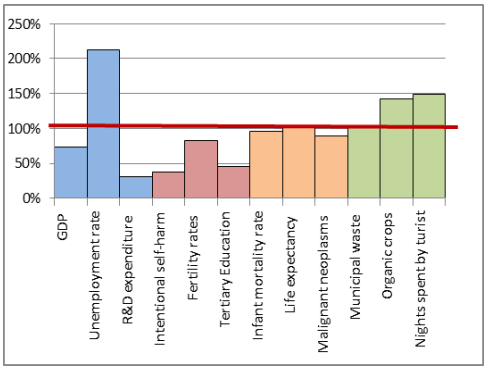

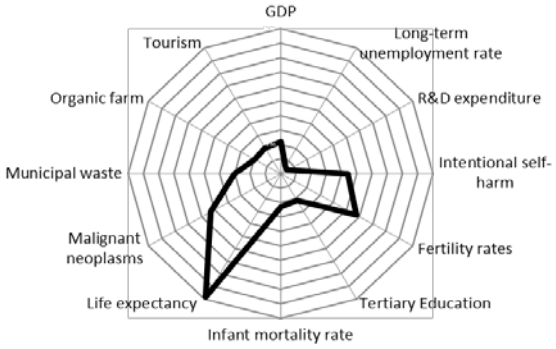

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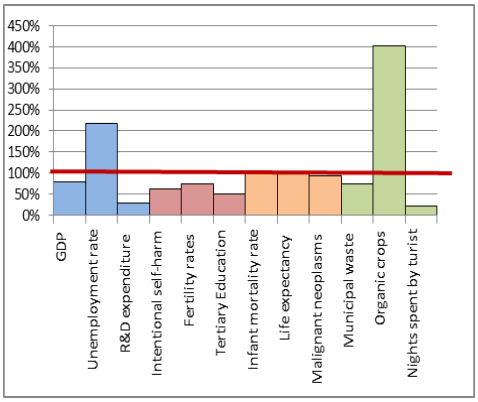

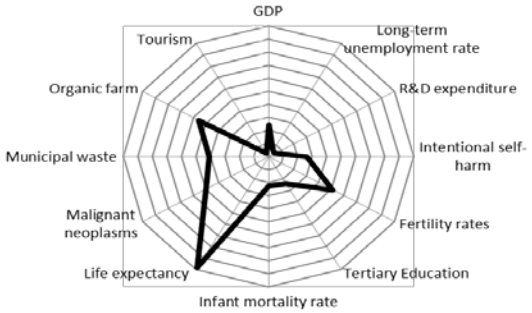

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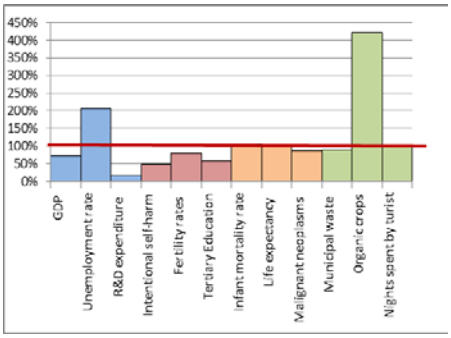
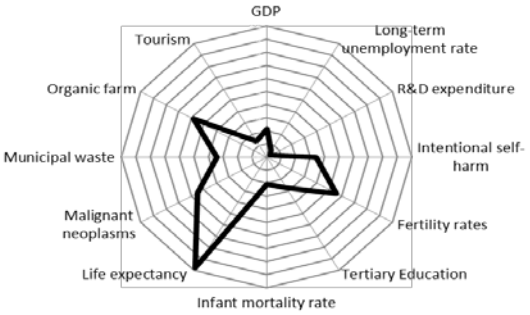
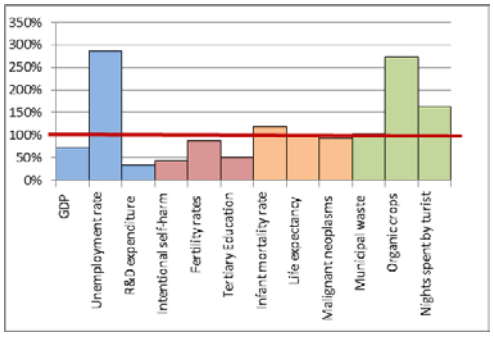
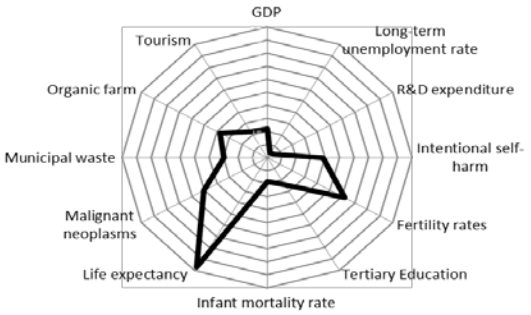


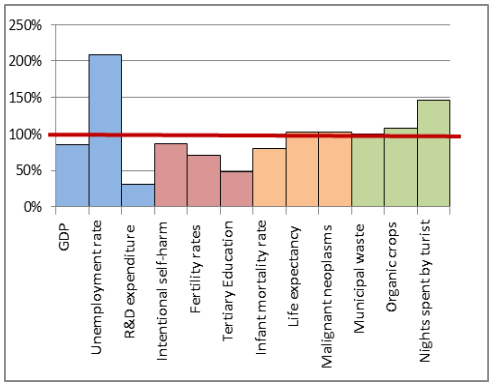


Sicilia





Sardegna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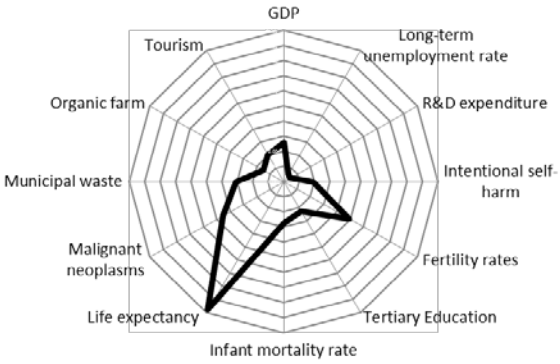
GDP
Unemployment rate
R&D expenditure
Intentional self-harm
Fertility rates
Tertiary Education
Infant mortality rate
Life expectancy
Malignant neoplasms
Municipal waste
Organic crops
Nights spent by turist


GDP
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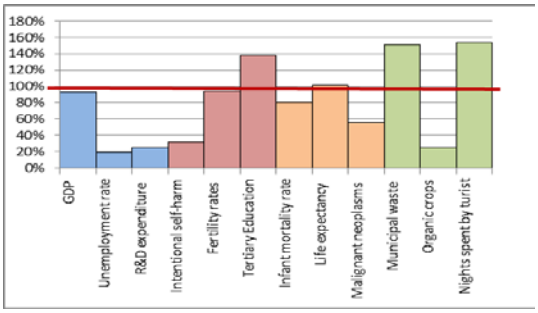
R&D expenditure
Intentional self-harm
Fertility rates
Tertiary Education
Infant mortality rate
Life expectancy
Malignant neoplasms
Municipal waste
Organic farm
Tourism

Cyprus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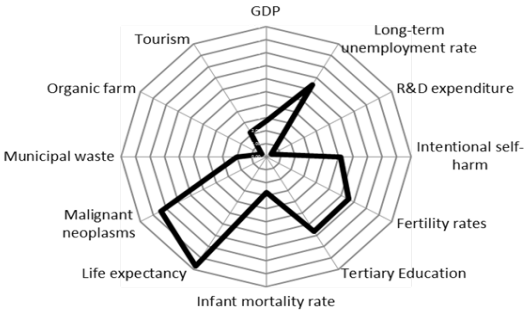
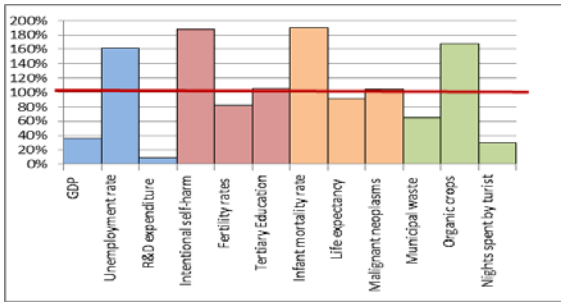
GDP
Unemployment rate
R&D expenditure
Intentional self-harm
Fertility rates
Tertiary Education
Infant mortality rate
Life expectancy
Malignant neoplasms
Municipal waste
Organic crops
Nights spent by turist


GDP
Long-term unemployment rate
R&D expenditure
Intentional self-harm
Fertility rates
Tertiary Education
Infant mortality rate
Life expectancy
Malignant neoplasms
Municipal waste
Organic farm
Tourism

Latvia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GDP
Unemployment rate
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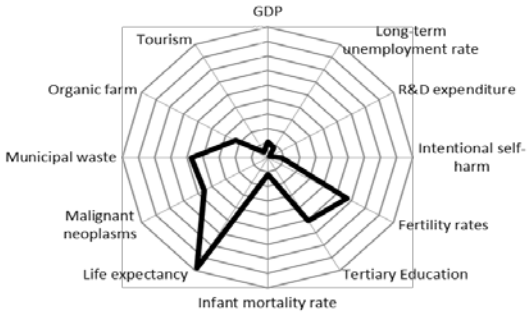
Intentional self-harm
Fertility rates
Tertiary Education
Infant mortality rate
Life expectancy
Malignant neoplasms
Municipal waste
Organic crops
Nights spent by turist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Long-term unemployment rate
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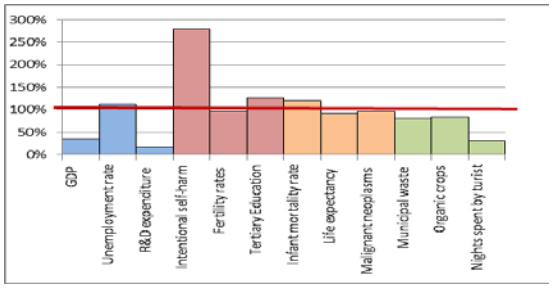
Intentional self-harm
Fertility rates
Tertiary Education
Infant mortality rate
Life expectancy
Malignant neoplasms
Municipal waste
Organic farm
Tourism

Lithuania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R&D expenditure
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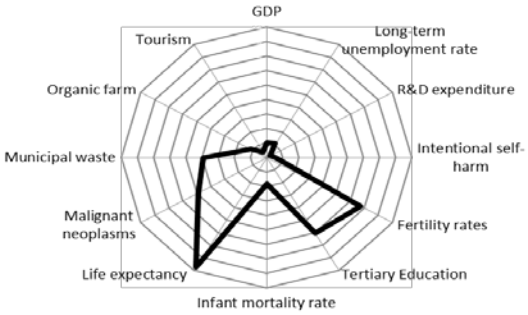
Fertility rates
Tertiary Education
Infant mortality rate
Life expectancy
Malignant neoplasms
Municipal waste
Organic crops
Nights spent by turist


GDP
Long-term unemployment rate
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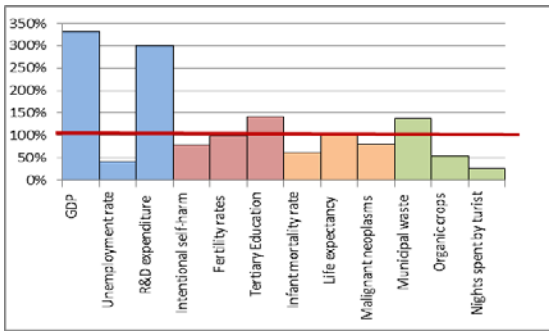
Intentional self-harm
Fertility rates
Tertiary Education
Infant mortality rate
Life expectancy
Malignant neoplasms
Municipal waste
Organic farm
Tourism

Luxembourg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GDP
Unemployment rate
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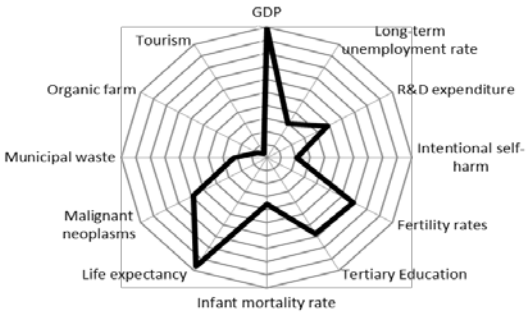
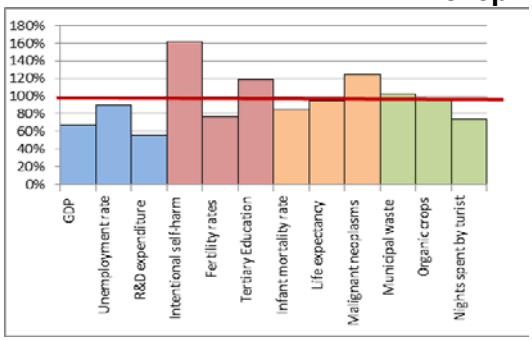
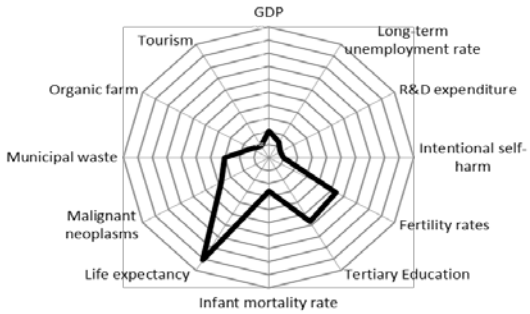
Organic crops
Nights spent by turist


GDP
Long-term unemployment rate
R&D expenditure
Intentional self-harm
Fertility rates
Tertiary Education
Infant mortality rate
Life expectancy
Malignant neoplasms
Municipal waste
Organic farm
Tourism

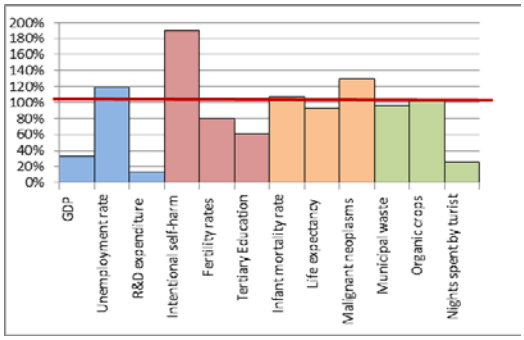
Hungary

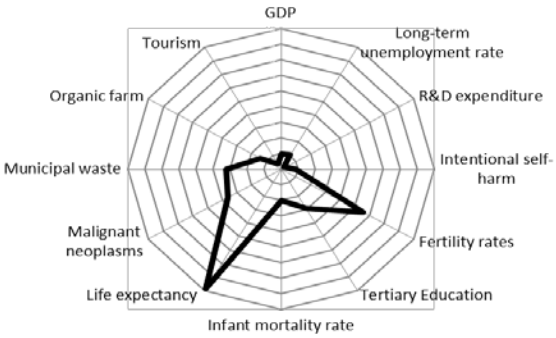
Közép-Magyarország



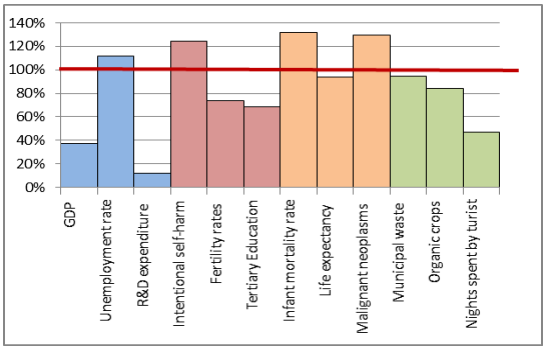


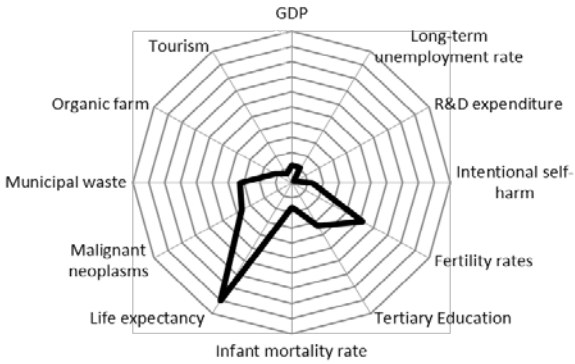
Közép-Dunántúl



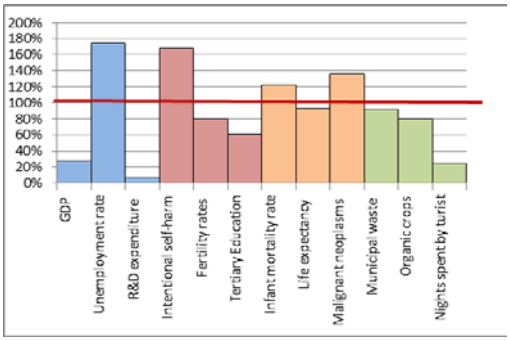


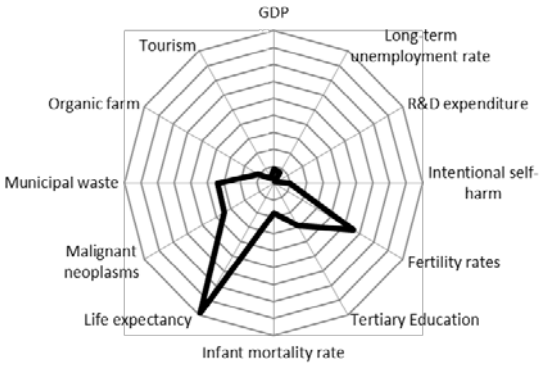
Nyugat-Dunántúl



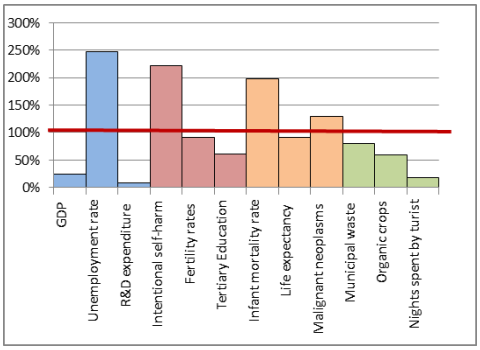


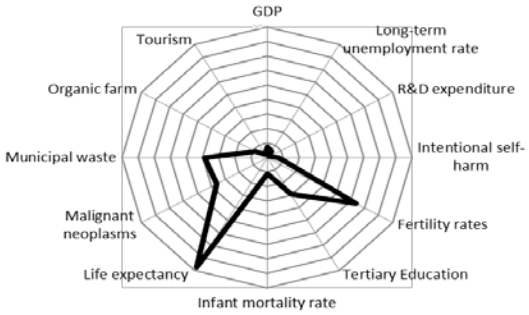
Dél-Dunántúl





Észak-Magyarország





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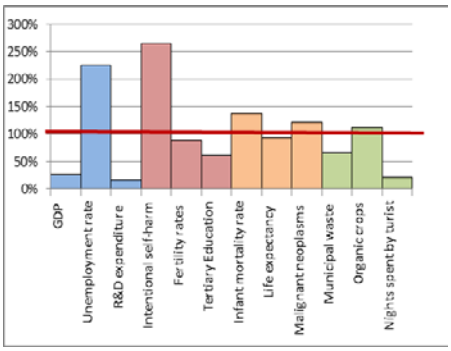
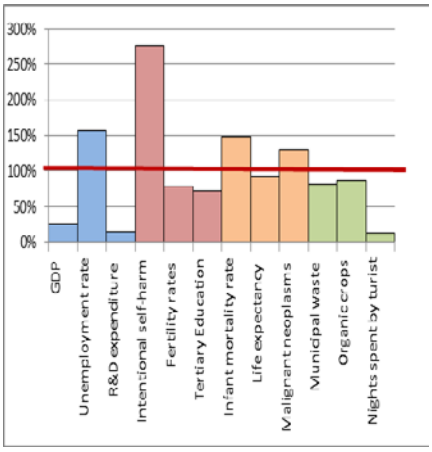
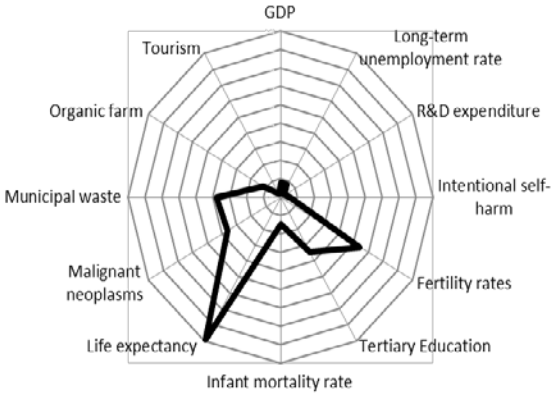
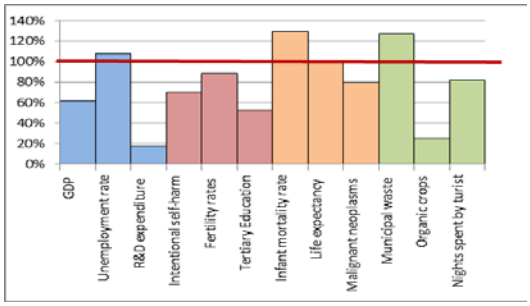


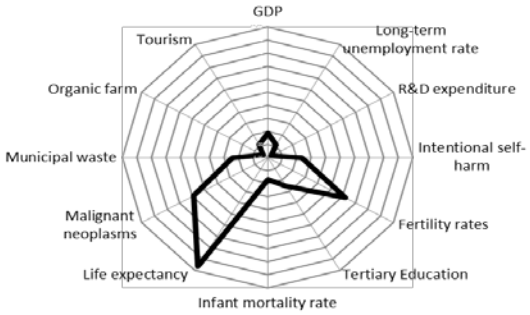
Dél-Alföld





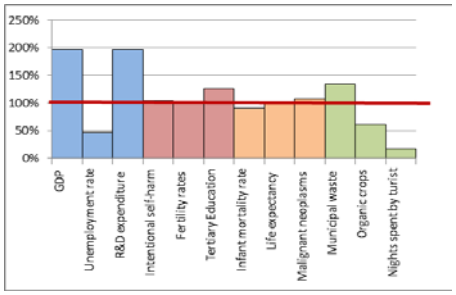
Malta

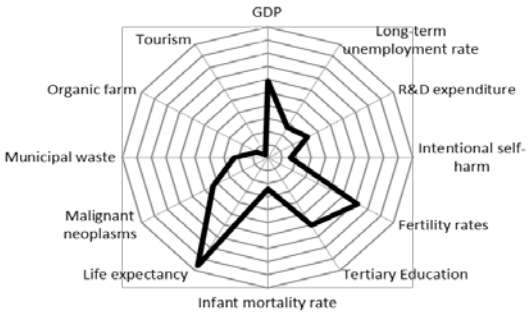

140%
120%
100%
80%
60%
40%
20%
0%
GDP
Unemployment rate
R&D expenditure
Intentional self-harm
Fertility rates
Tertiary Education
Infant mortality rate
Life expectancy
Malignant neoplasms
Municipal waste
Organic crops
Nights spent by turist


GDP
Long-term unemployment rate
R&D expenditure
Intentional self-harm
Fertility rates
Tertiary Education
Infant mortality rate
Life expectancy
Malignant neoplasms
Municipal waste
Organic farm
Tourism

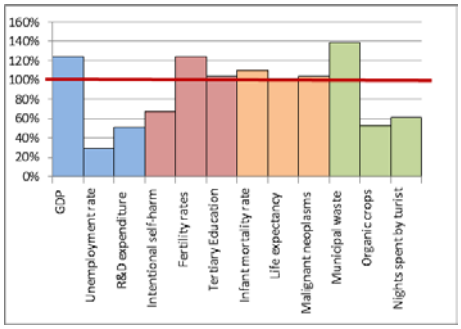
Netherlands

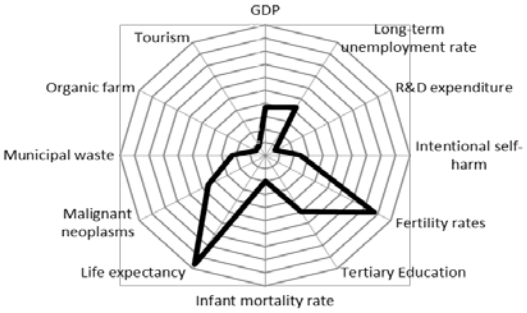
Groningen



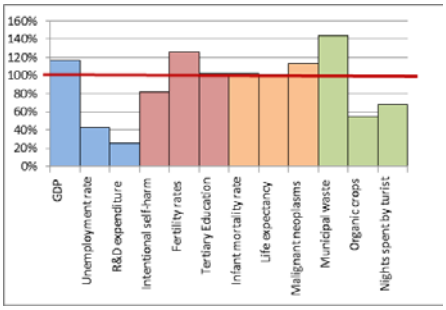


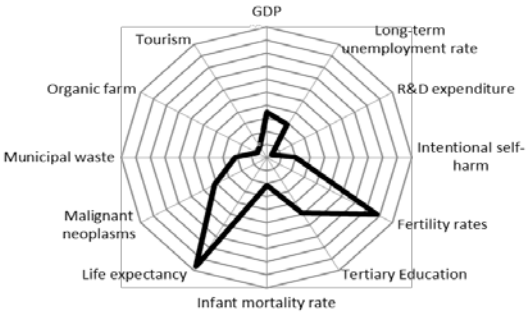
Friesland



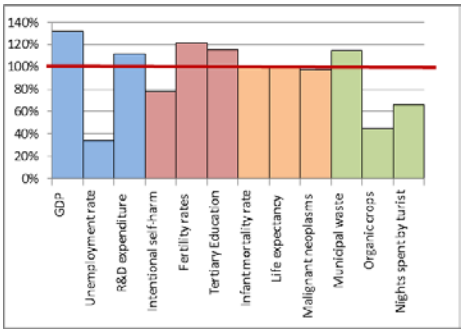


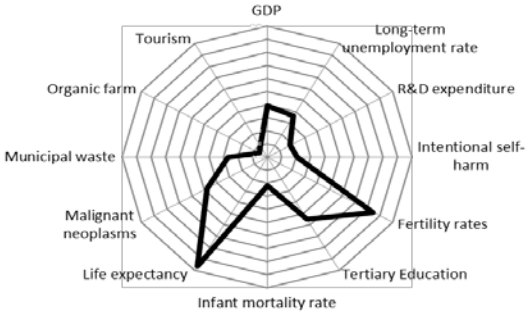
Drenthe



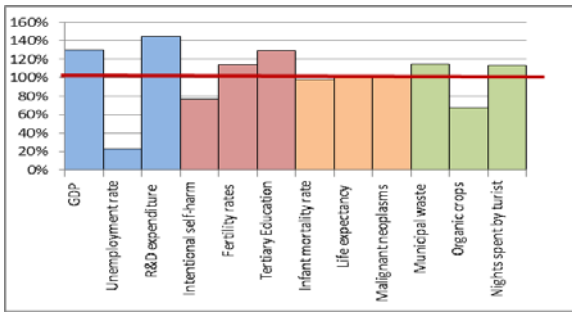


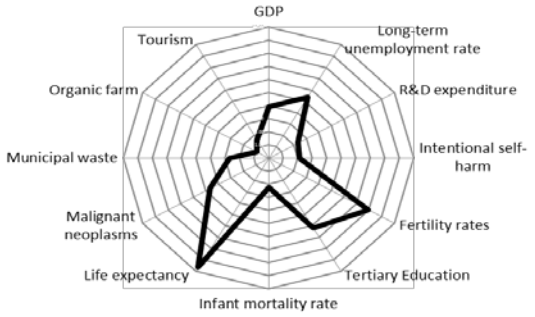
Overijssel



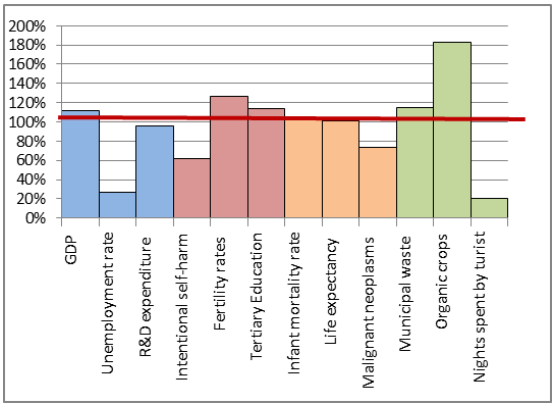


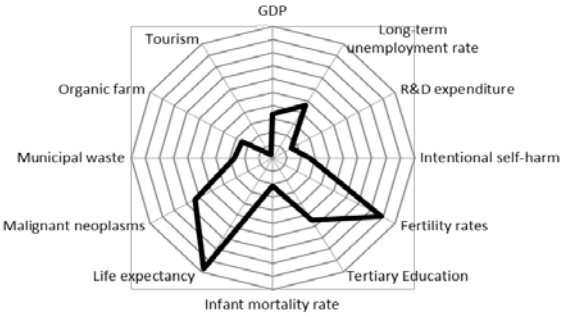
Gelderland



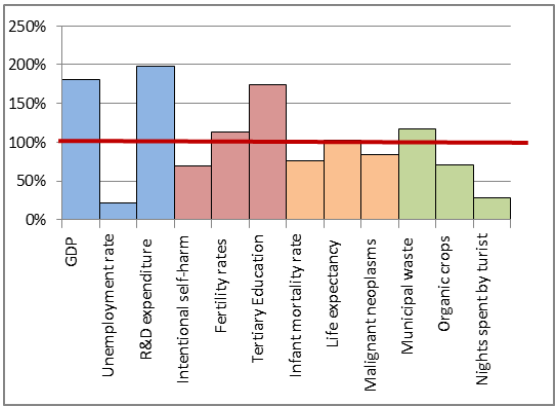


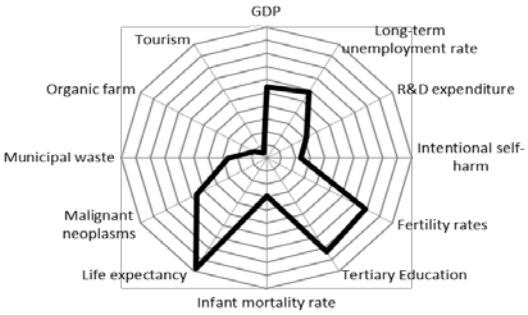
Flevoland



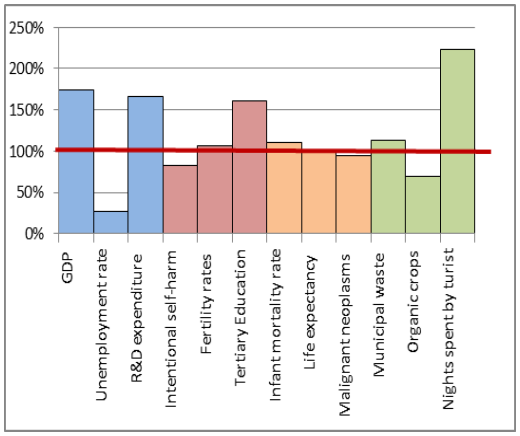


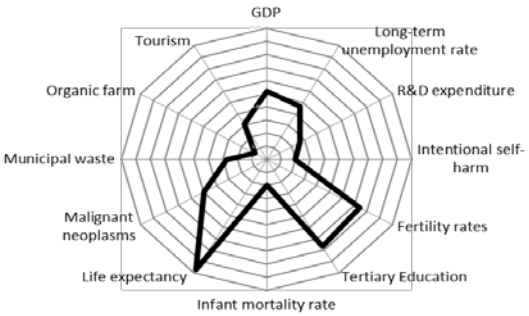
Utrecht



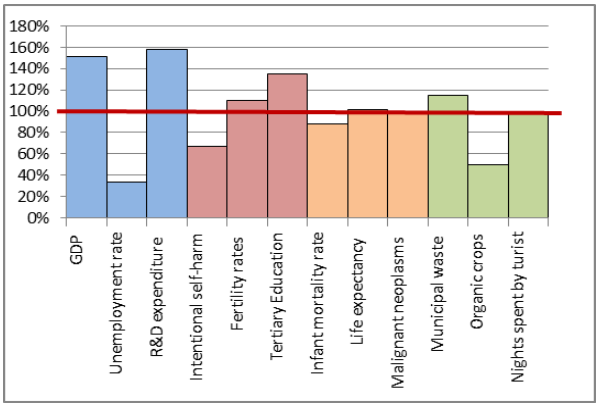


Noord-Holland

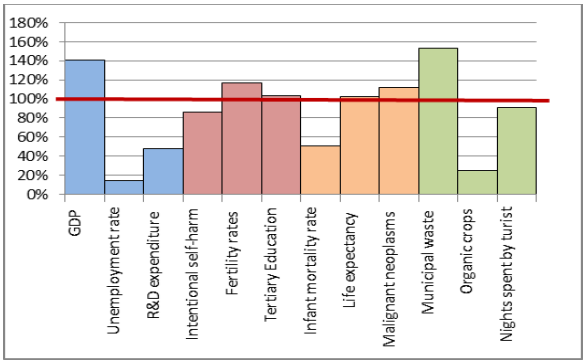


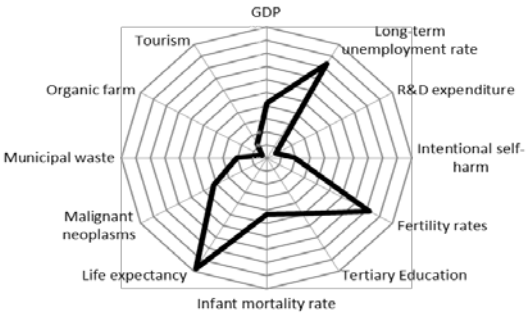


Zuid-Holland

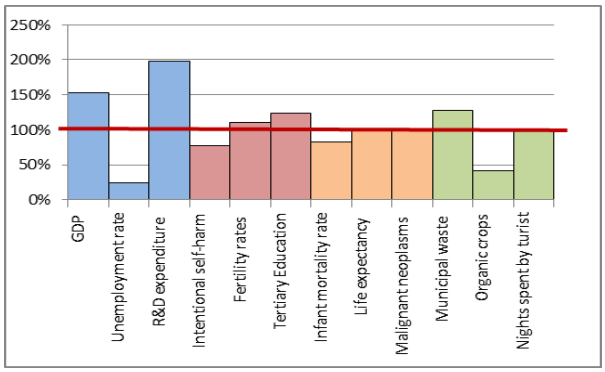


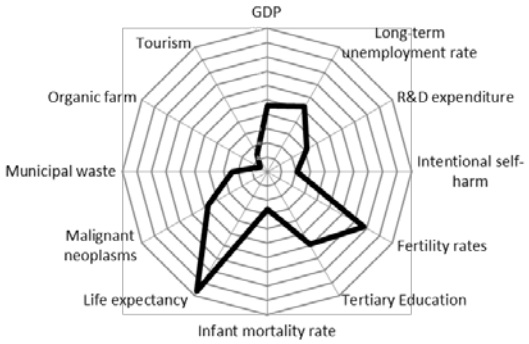
Zeeland



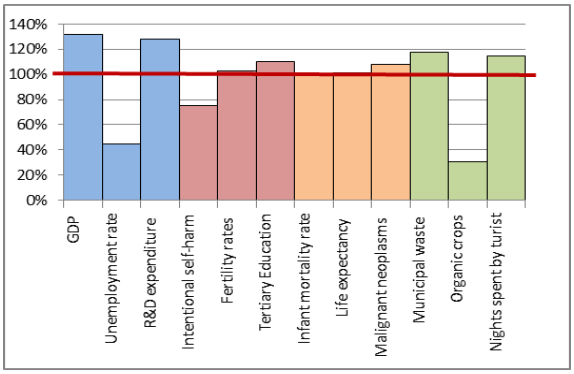


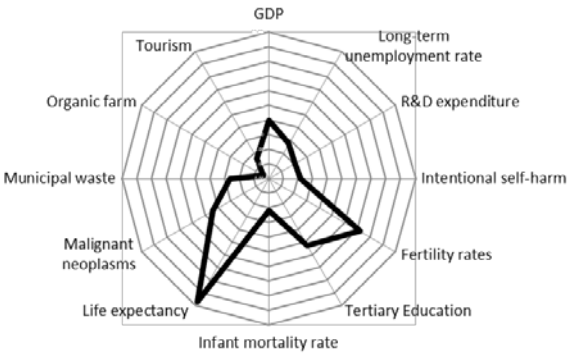
Noord-Brabant





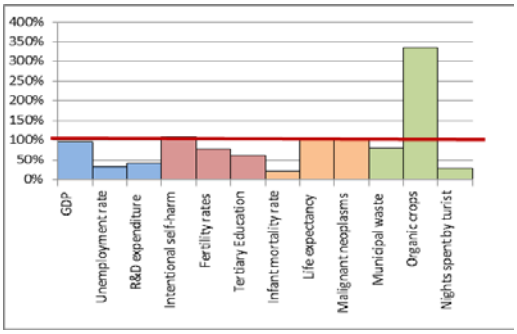
Limburg

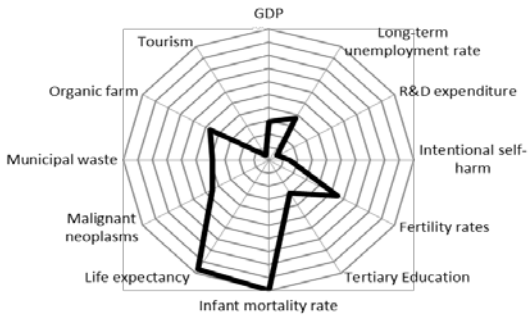




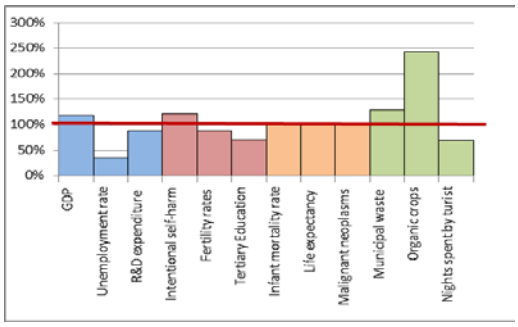
Austria

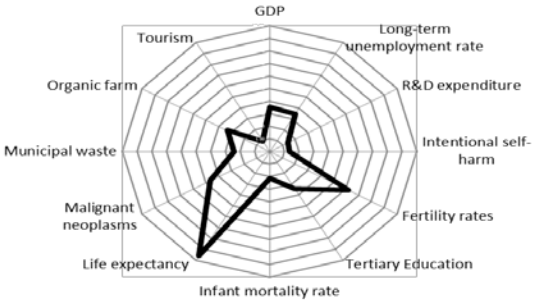
Burgenland



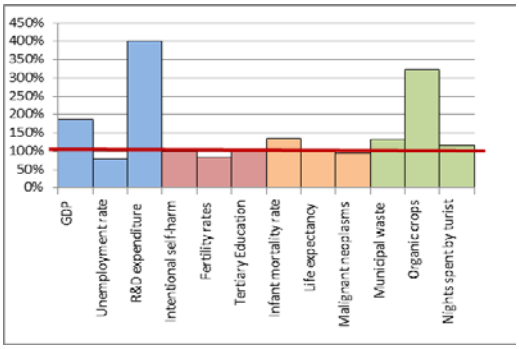


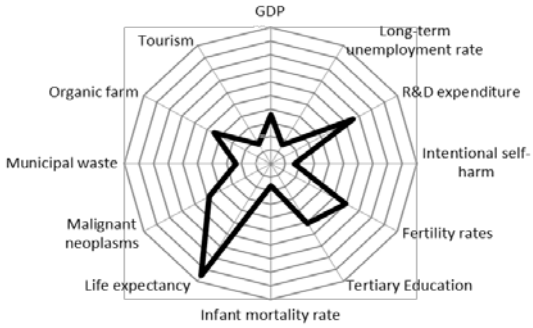
Niederösterreich



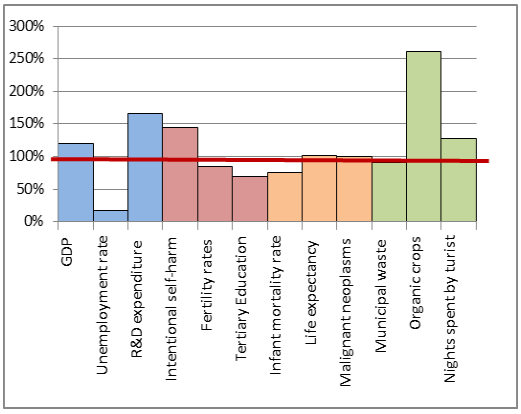


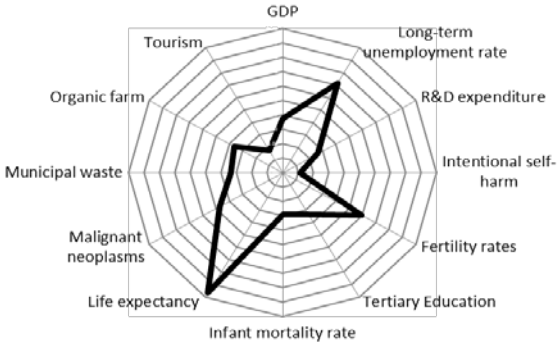
Wien



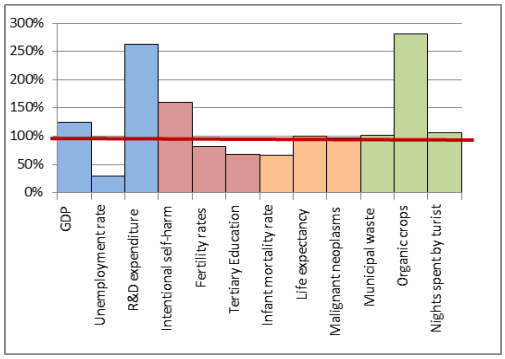


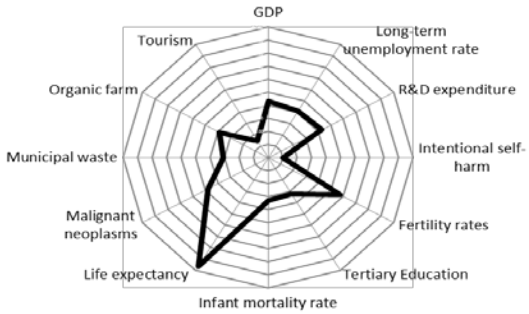
Kärnten



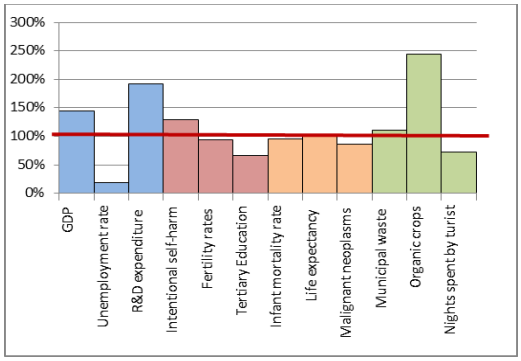


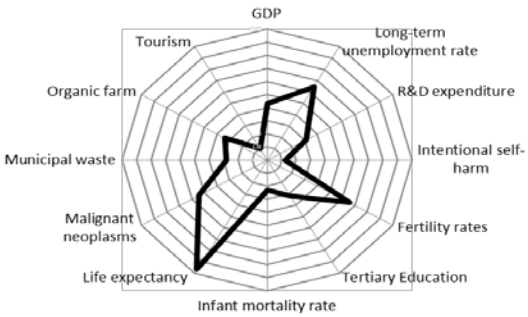
Steiermark



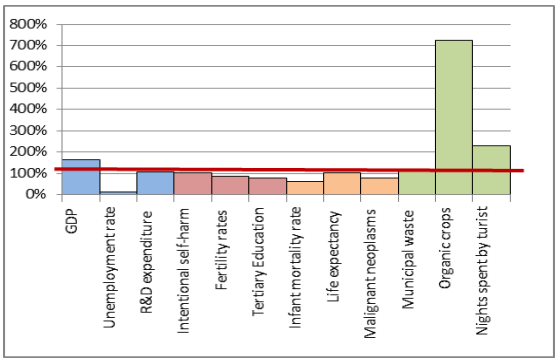


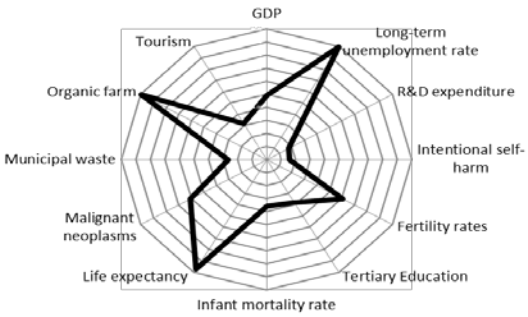
Oberösterreich



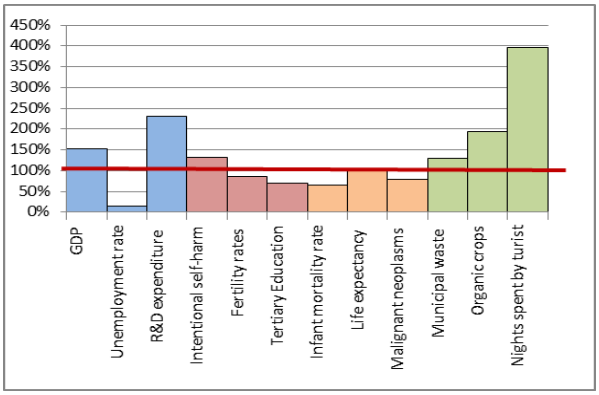


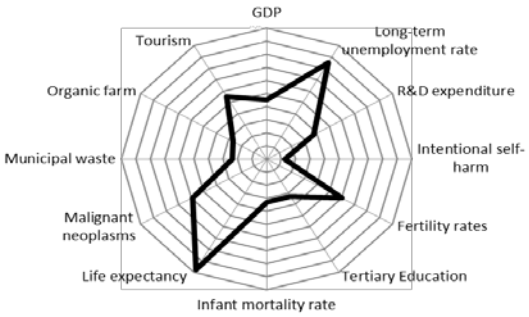
Salzburg



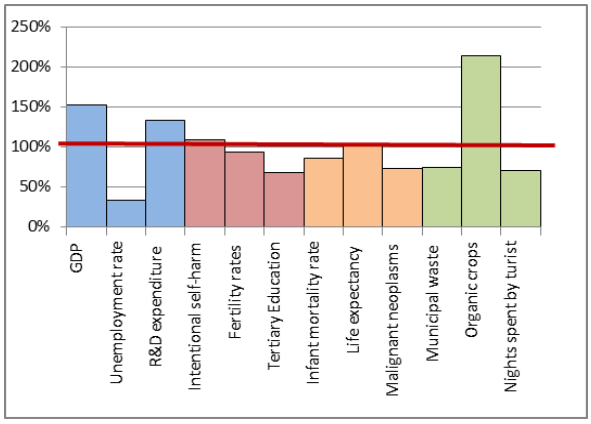


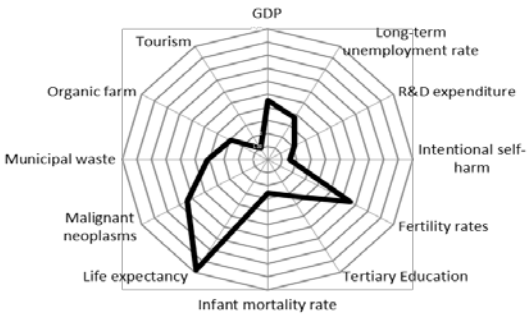
Tirol





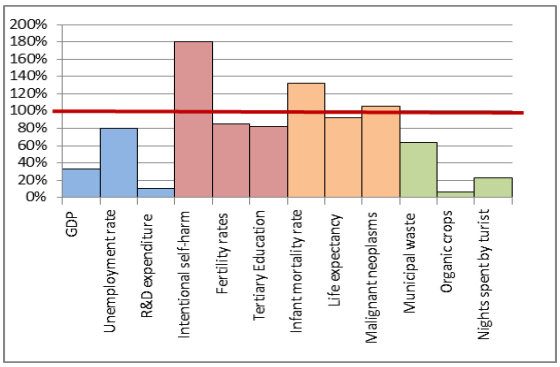
Vorarlberg

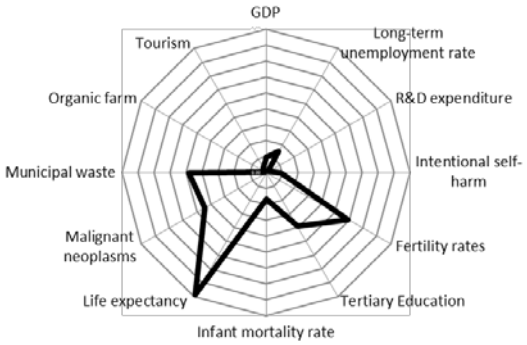

250%
200%
150%
100%
50%
0%
GDP
Unemployment rate
R&D expenditure
Intentional self-harm
Fertility rates
Tertiary Education
Infant mortality rate
Life expectancy
Malignant neoplasms
Municipal waste
Organic crops
Nights spent by turist


GDP
Long-term unemployment rate
R&D expenditure
Intentional self-harm
Fertility rates
Tertiary Education
Infant mortality rate
Life expectancy
Malignant neoplasms
Municipal waste
Organic farm
Tourism

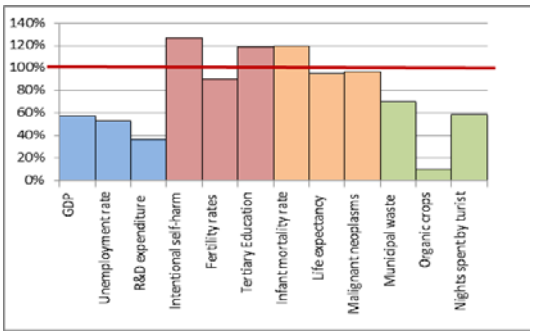
Poland

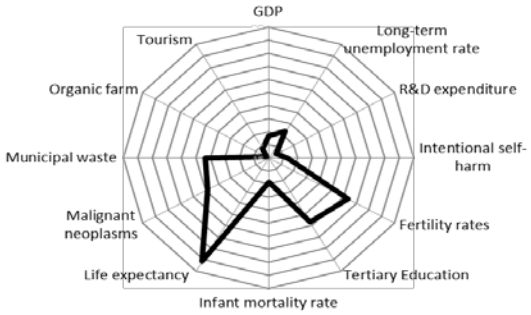
Lódzkie





Mazowieckie





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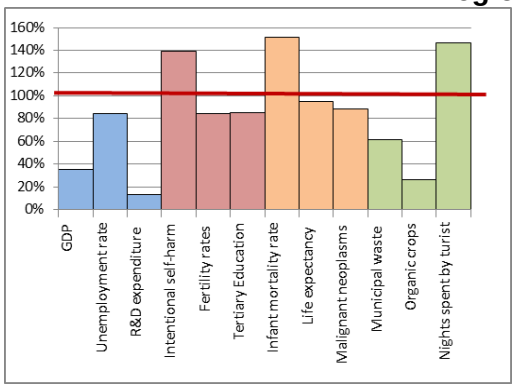

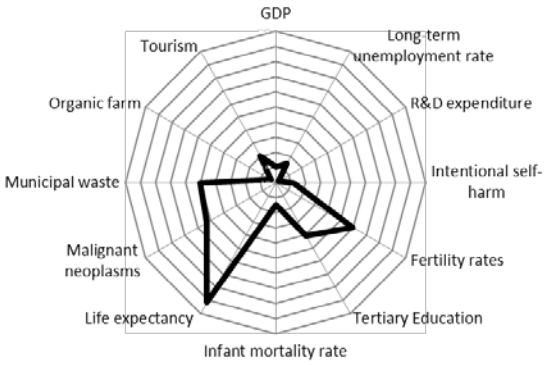

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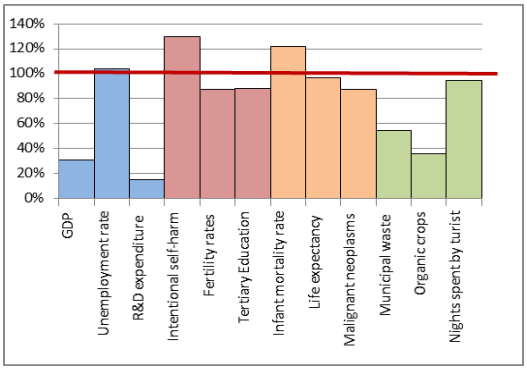

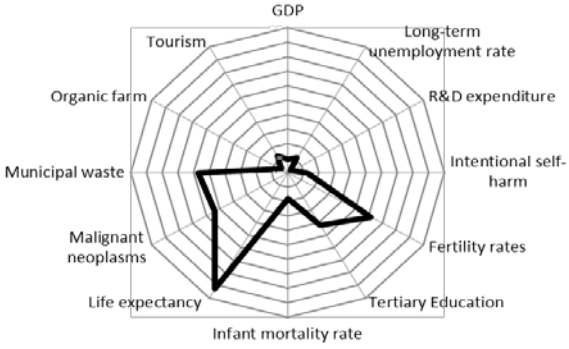

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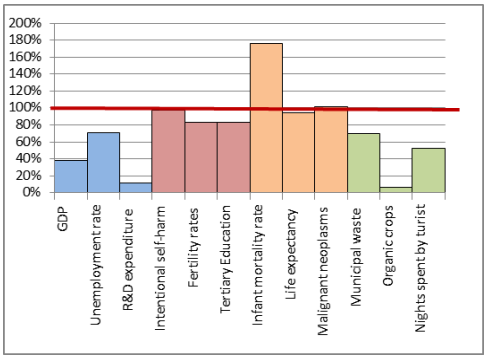

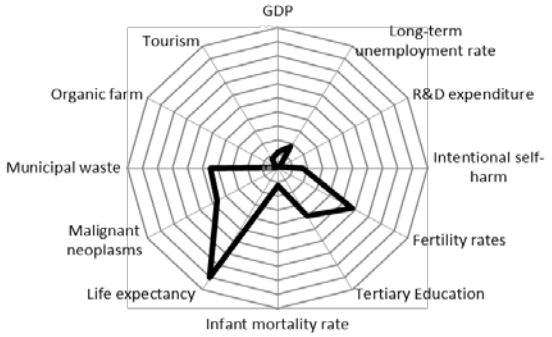

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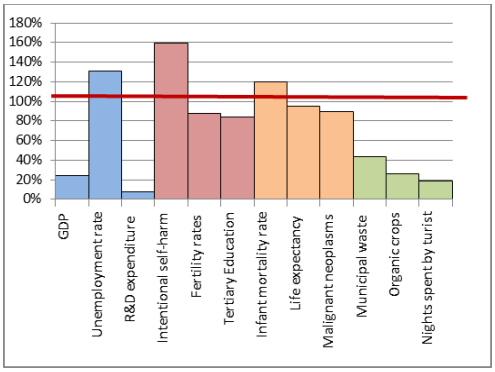

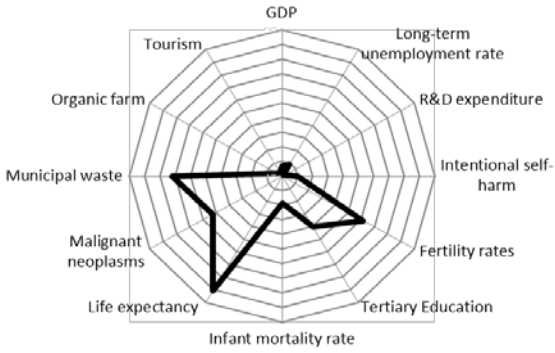

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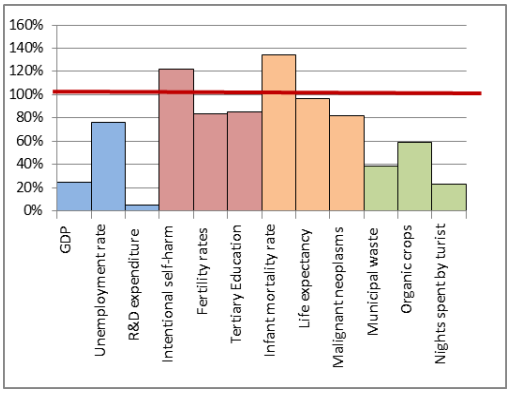
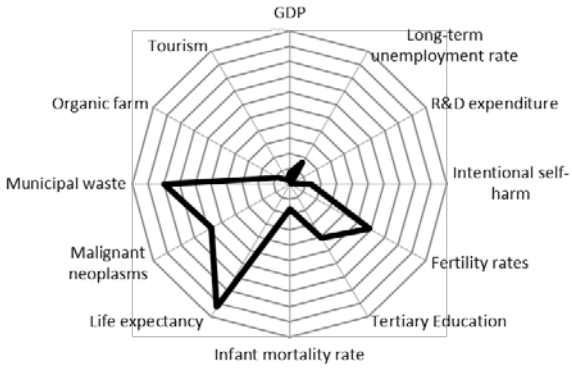
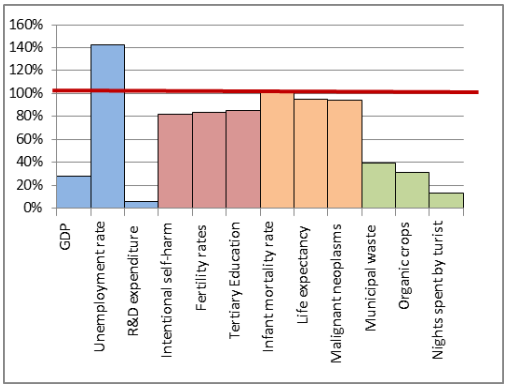
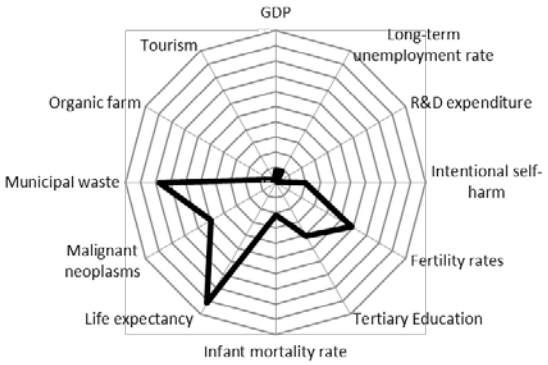




Swietokrzyskie





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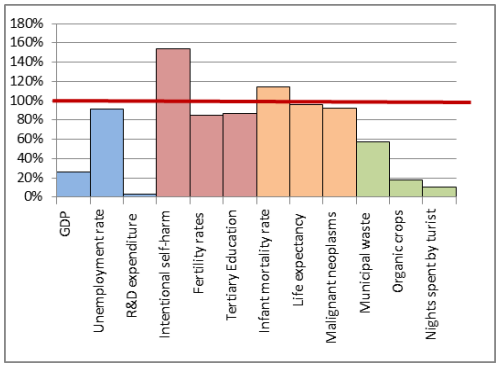
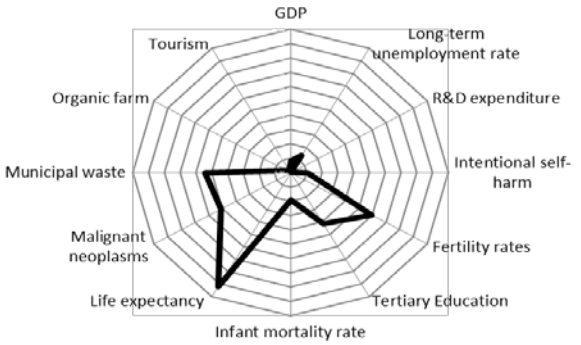
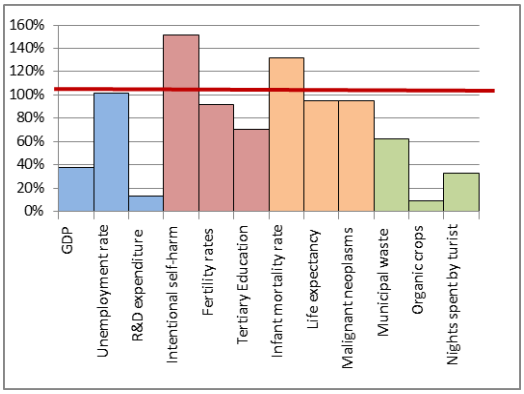
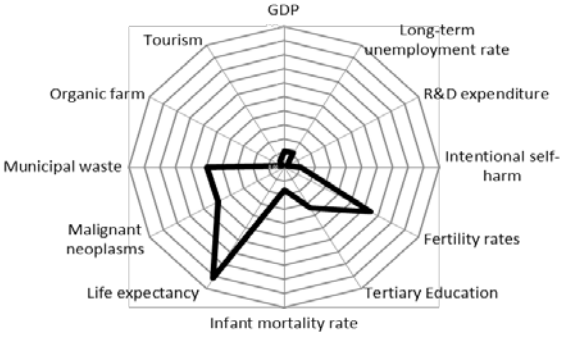


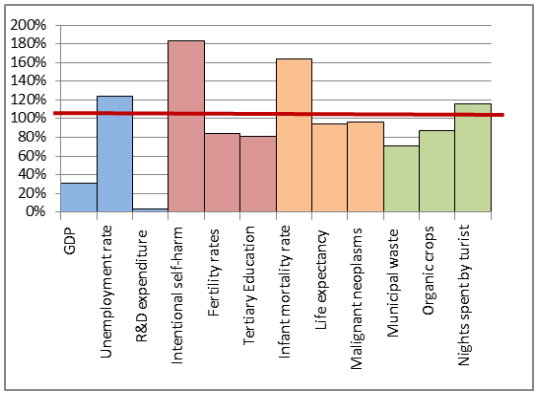


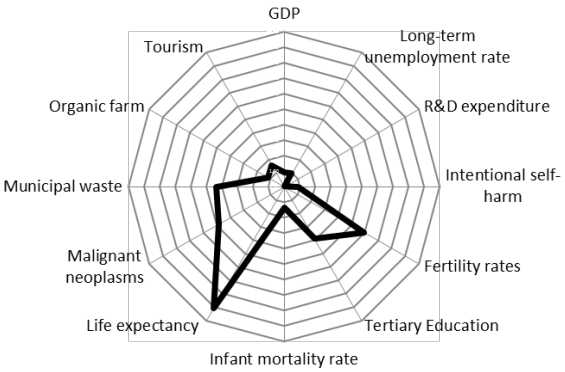
Wielkopolskie



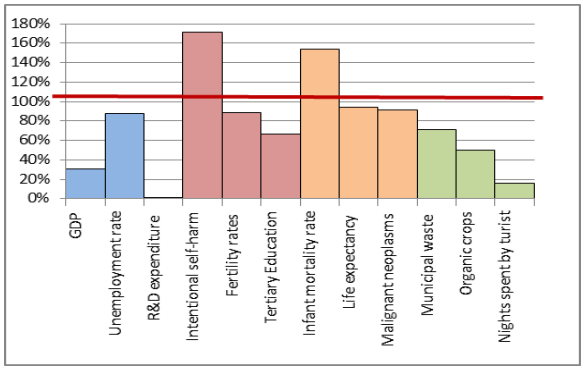


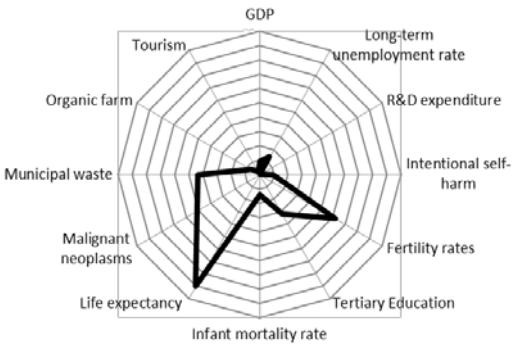
Zachodniopomorskie





Lubuskie





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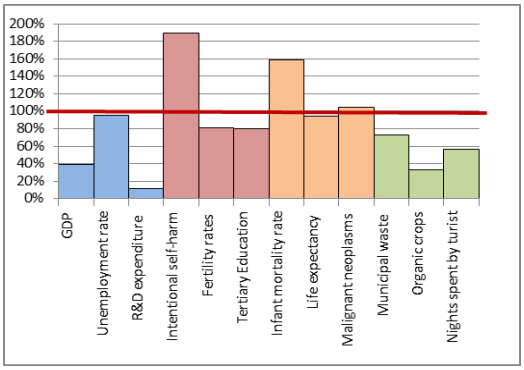
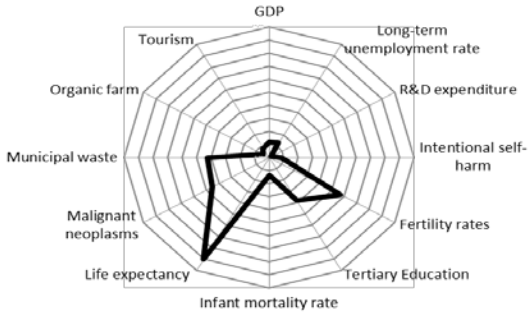
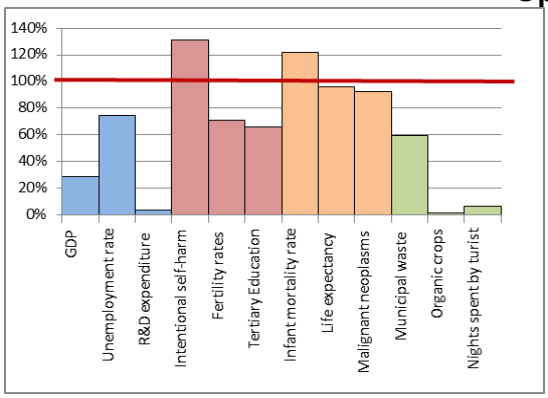
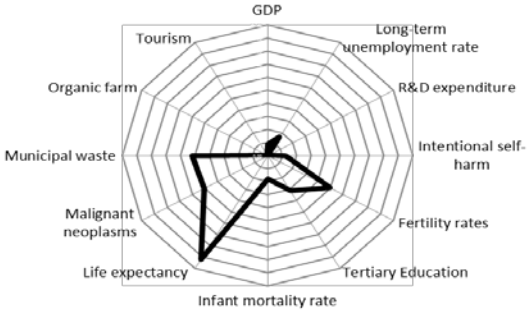


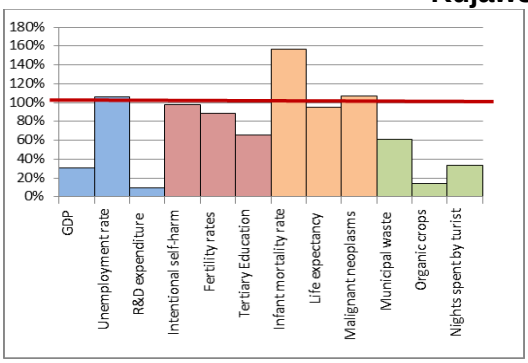


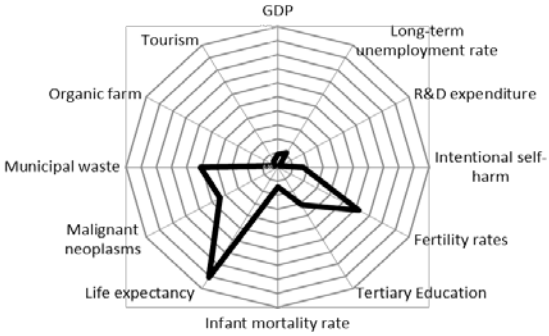
Opolskie





Kujawsko-Pomorskie





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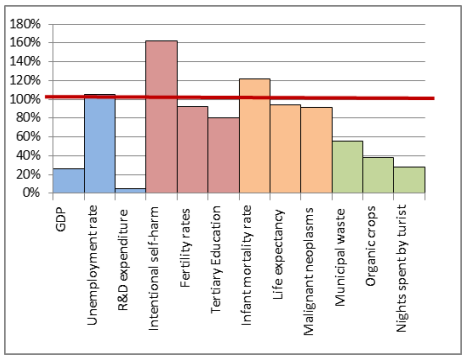
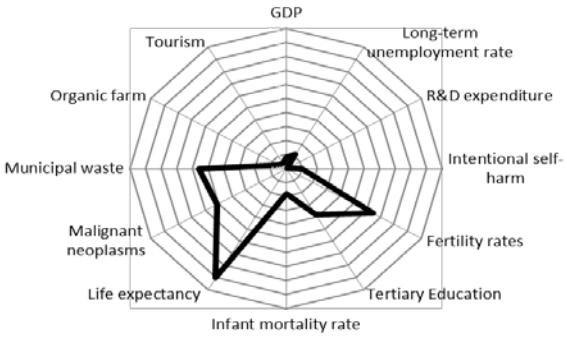
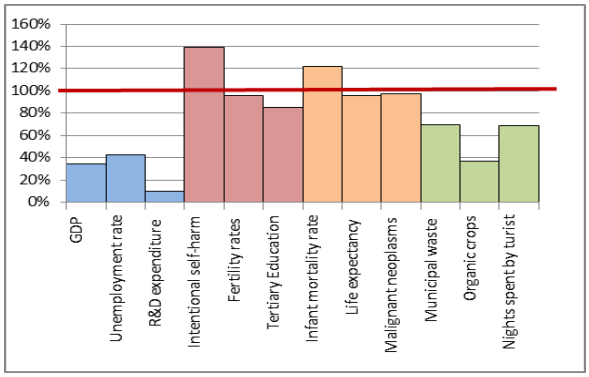
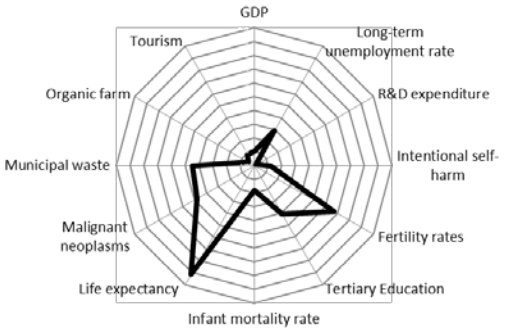




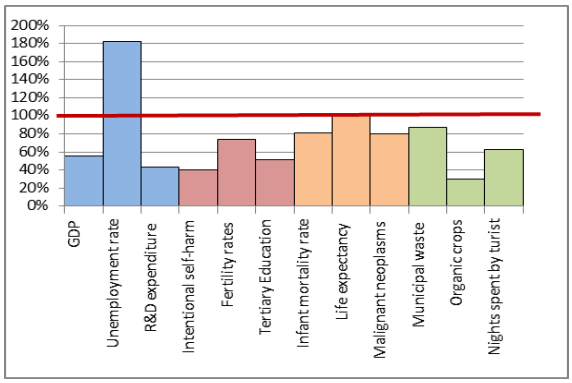
Pomorskie

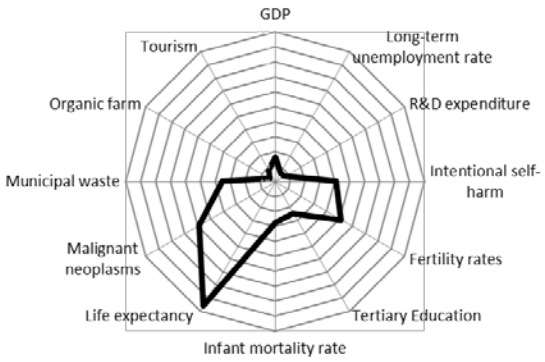

160%
140%
120%
100%
80%
60%
40%
20%
0%
GDP
Unemployment rate
R&D expenditure
Intentional self-harm
Fertility rates
Tertiary Education
Infant mortality rate
Life expectancy
Malignant neoplasms
Municipal waste
Organic crops
Nights spent by turist


GDP
Long-term unemployment rate
R&D expenditure
Intentional self-harm
Fertility rates
Tertiary Education
Infant mortality rate
Life expectancy
Malignant neoplasms
Municipal waste
Organic farm
Tourism

Portugal

Norte





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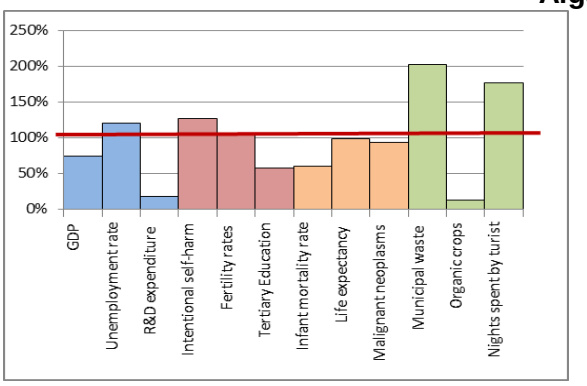

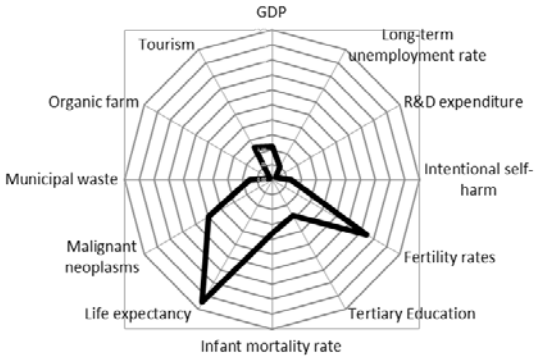

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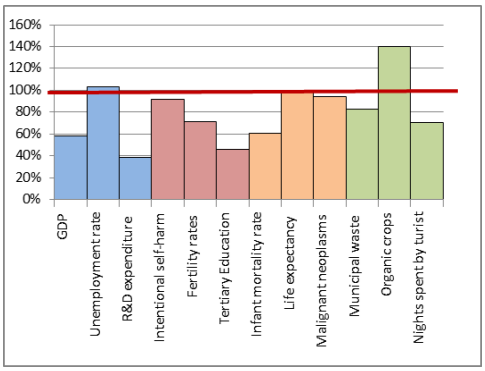
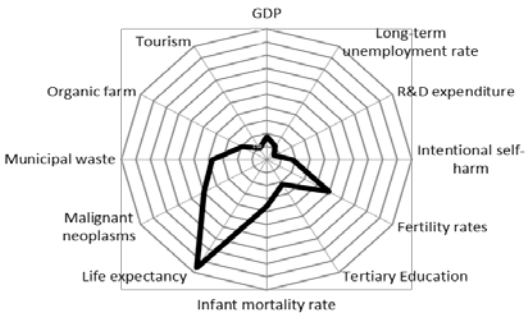
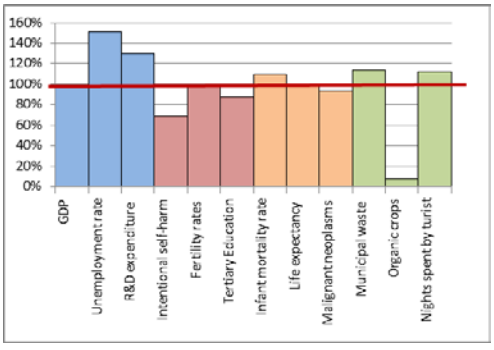
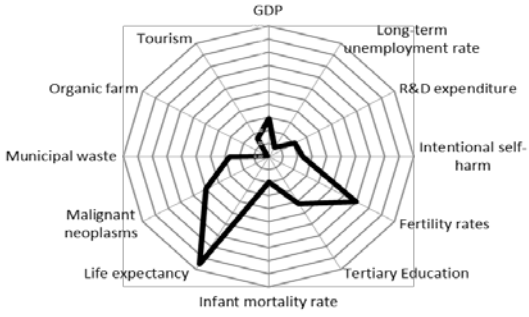




Lisboa





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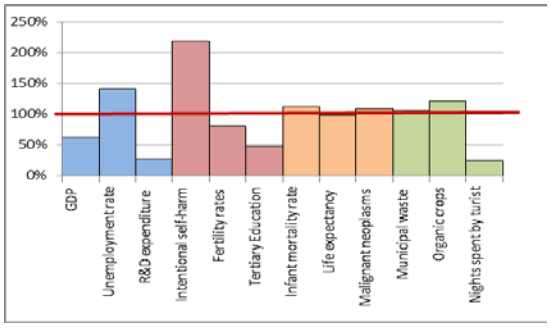
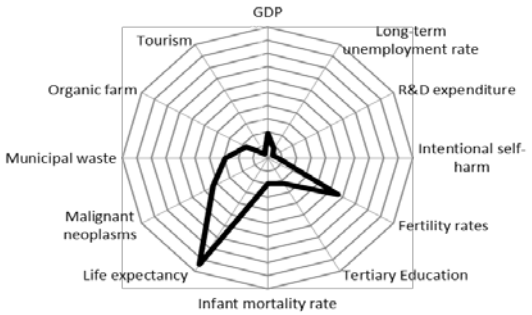
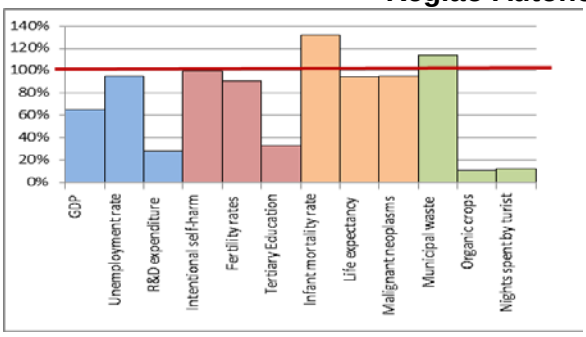
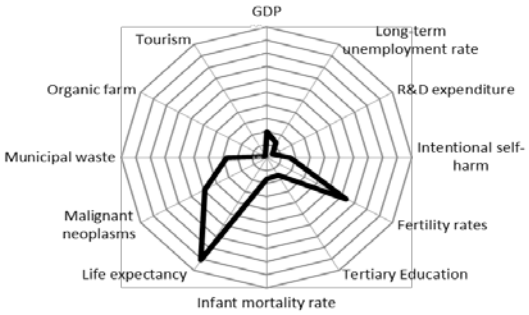




Região Autónoma dos Açores





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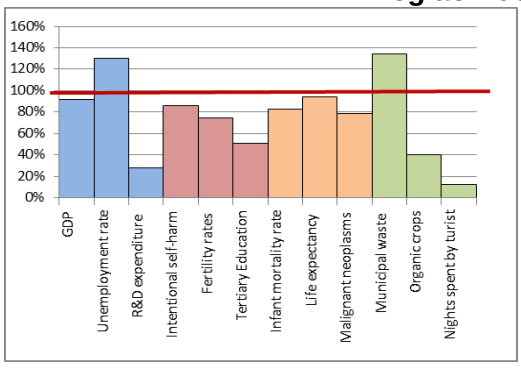
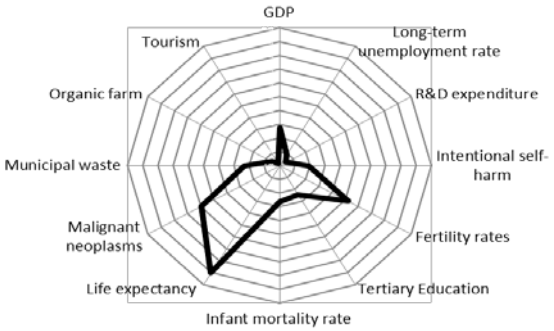
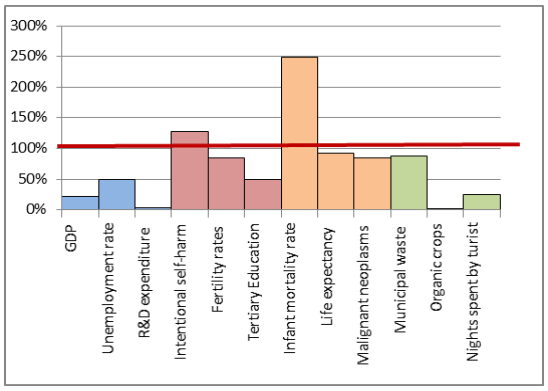
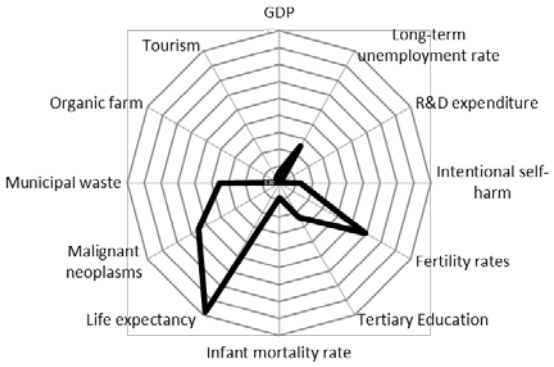




Romania

Nord-Vest





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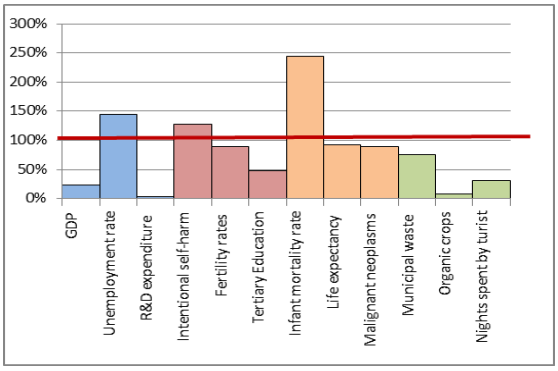
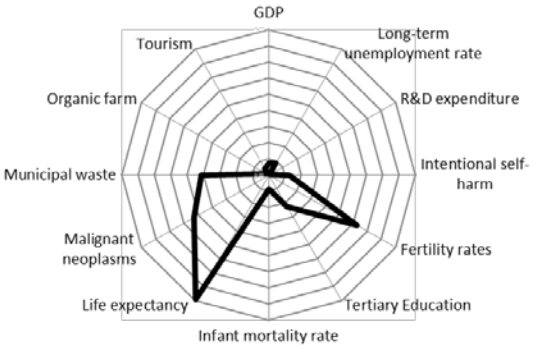
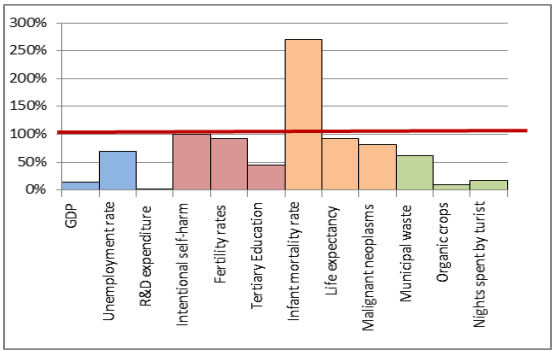
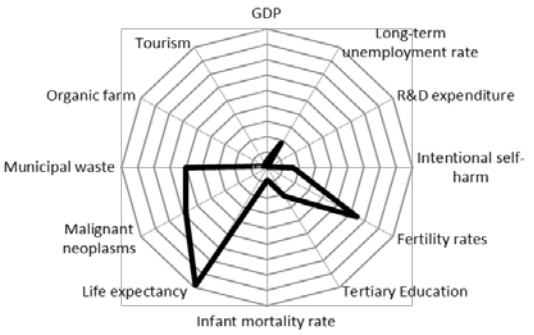


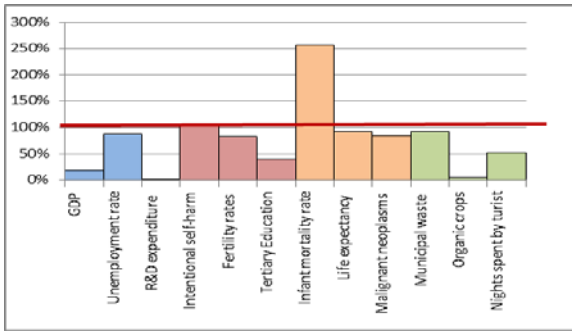


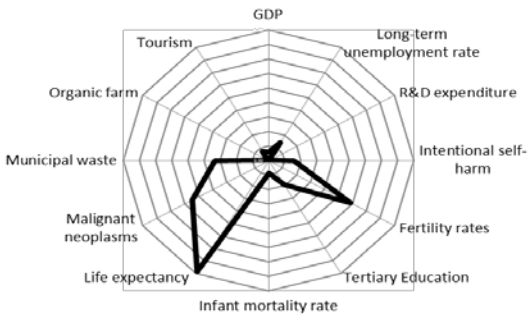
Nord-Est



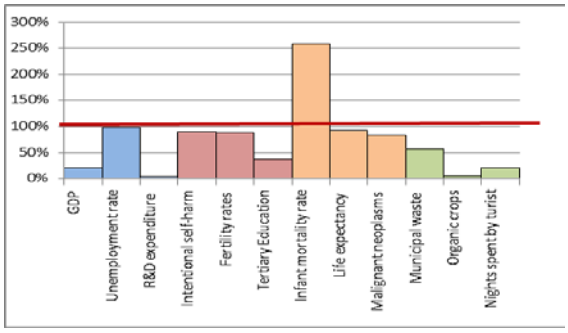


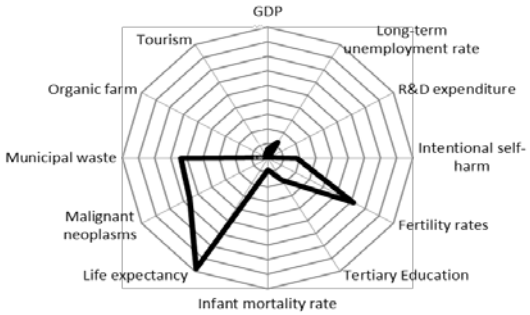
Sud-Est



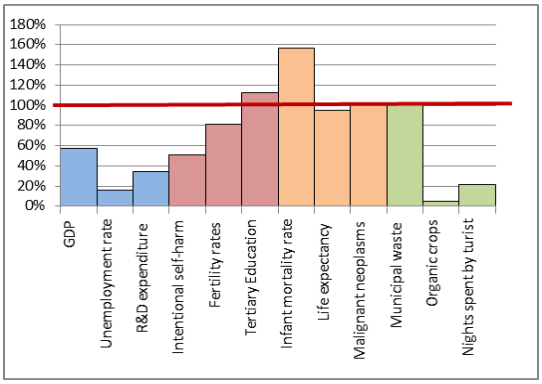


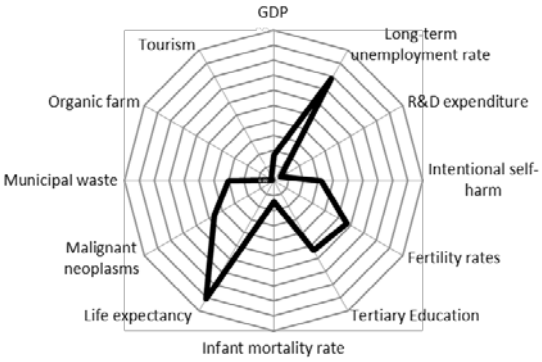
Sud - Muntenia



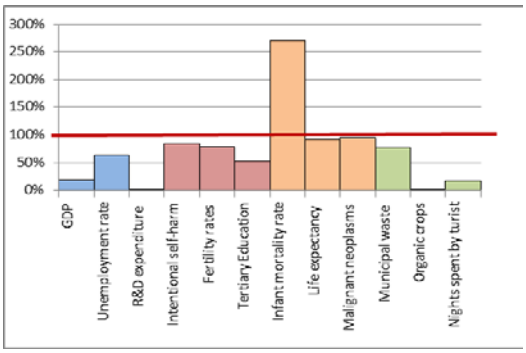


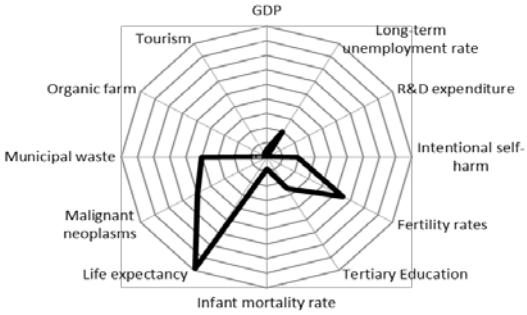
Bucuresti - Ilfov



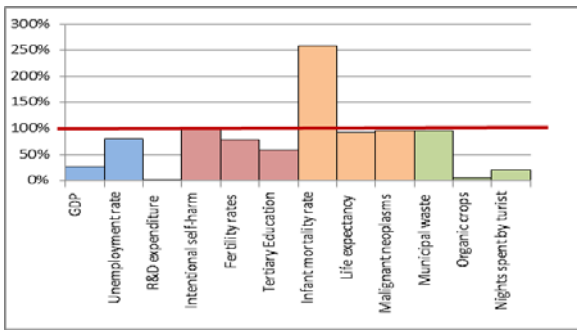


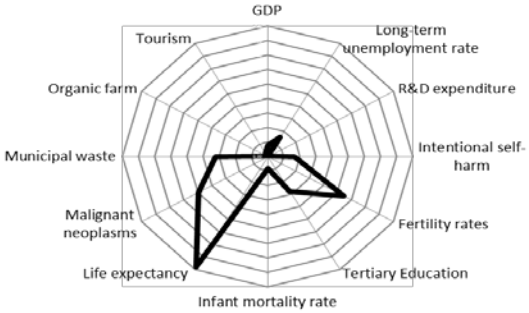
Sud-Vest Oltenia





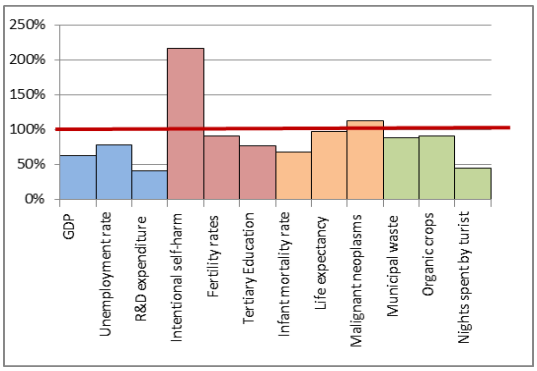
Vest

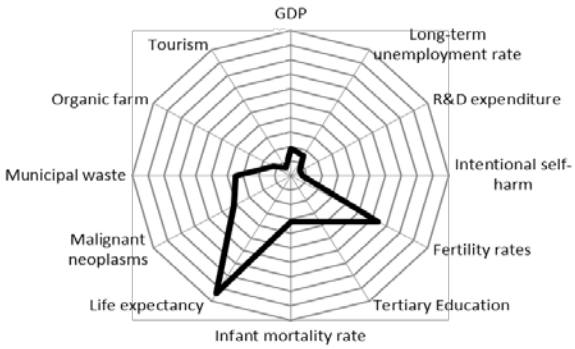




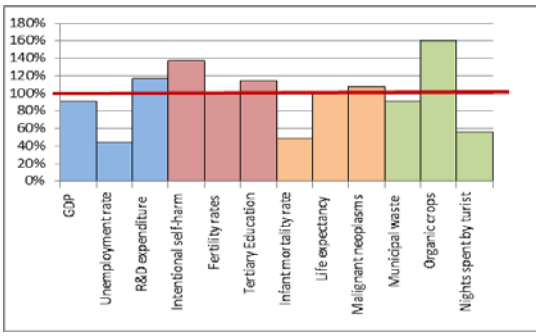
Slovenia

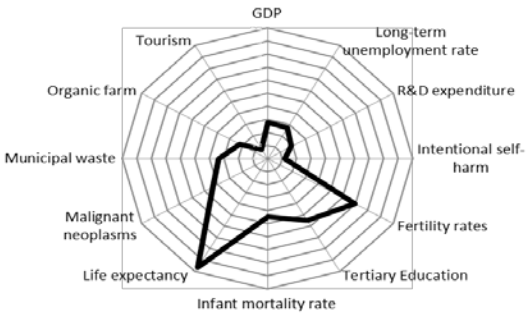
Vzhodna Slovenija





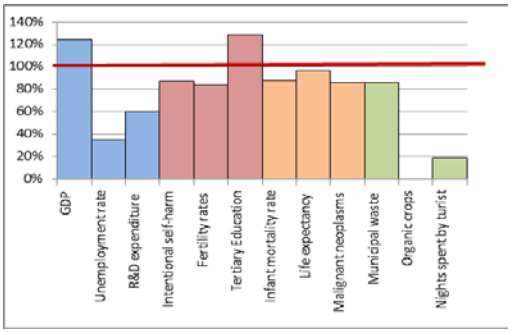
Zahodna Slovenija

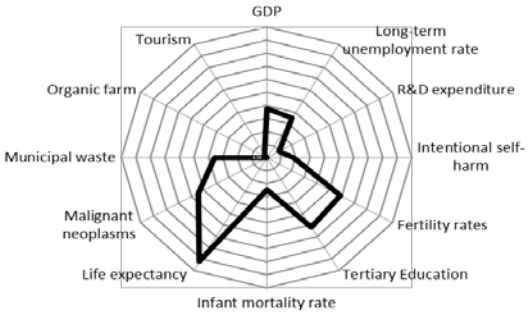




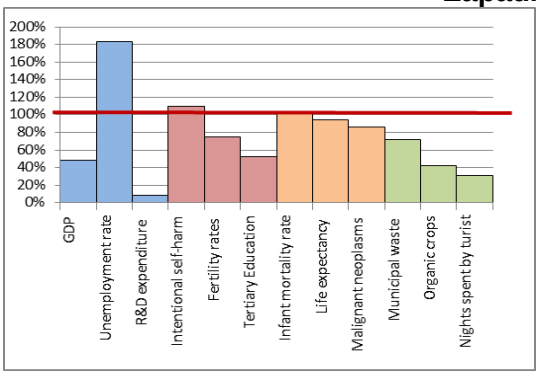
Slovakia

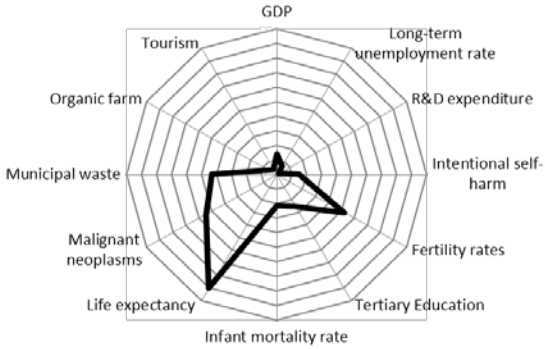
Bratislavský kraj



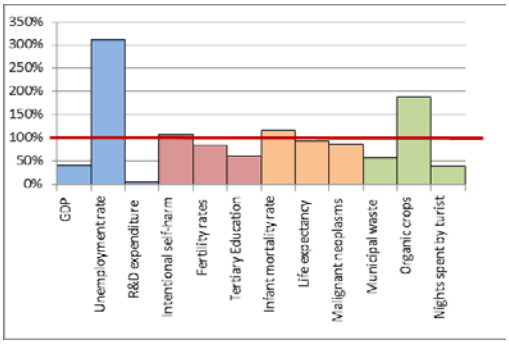


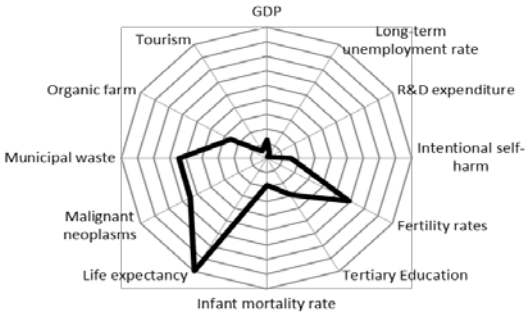
Západné Slovensko



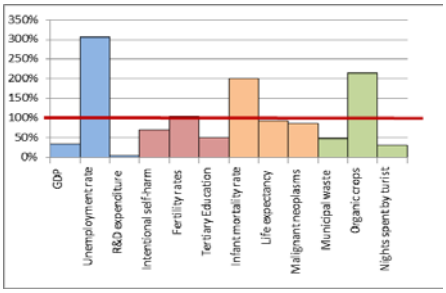


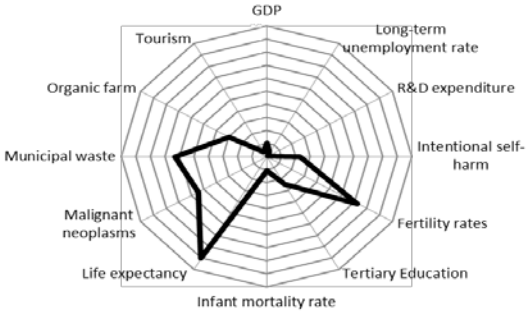
Stredné Slovensko





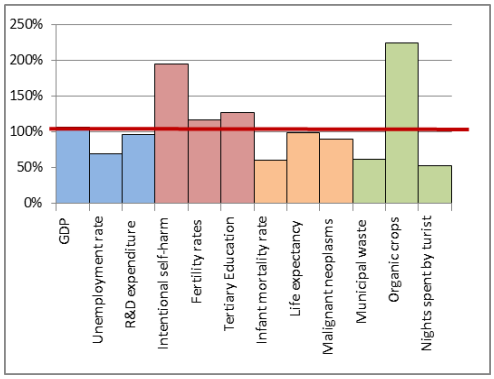
Východné Slovensko

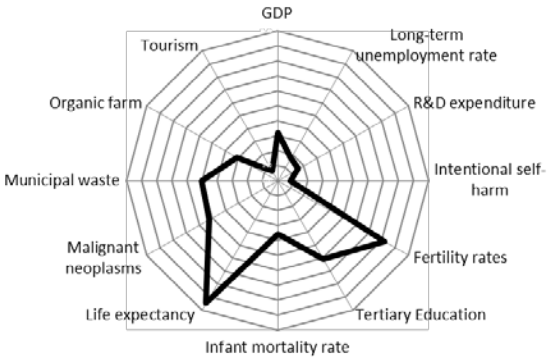




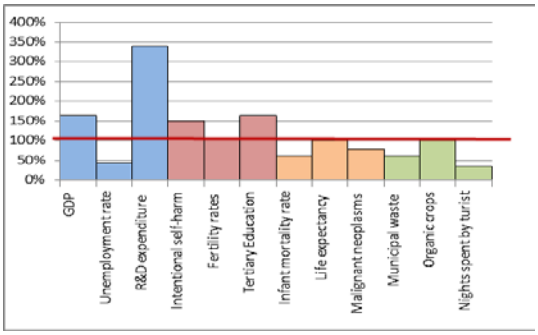
Finland

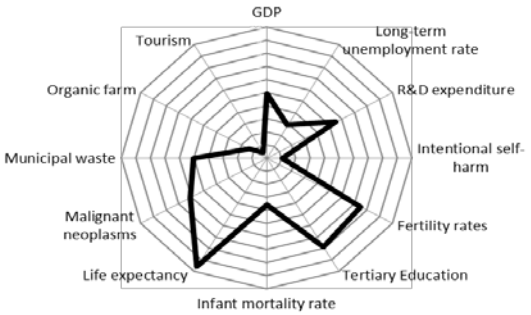
Itä-Suomi



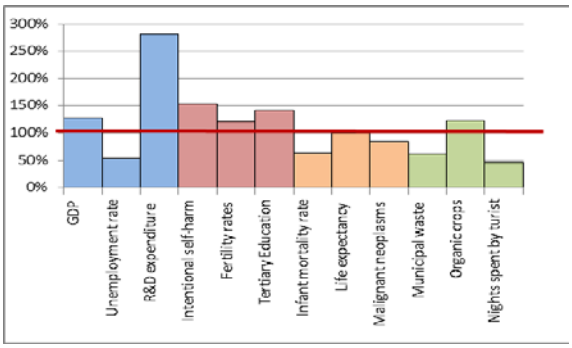


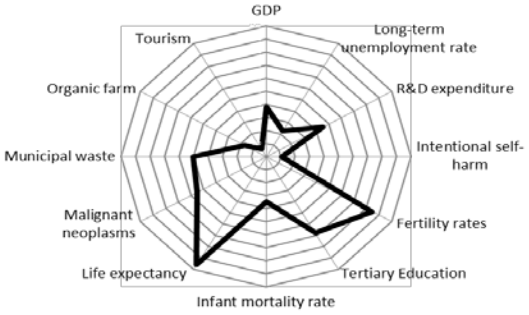
Etelä-Suomi



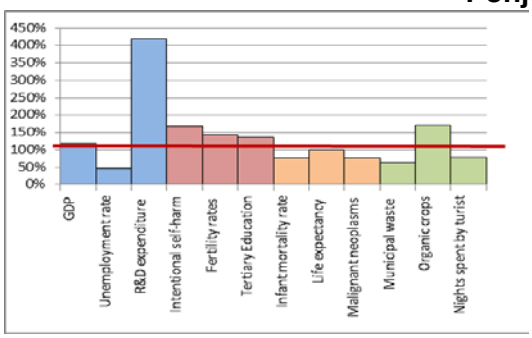


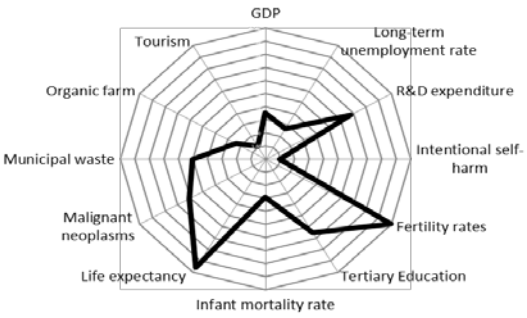
Länsi-Suomi



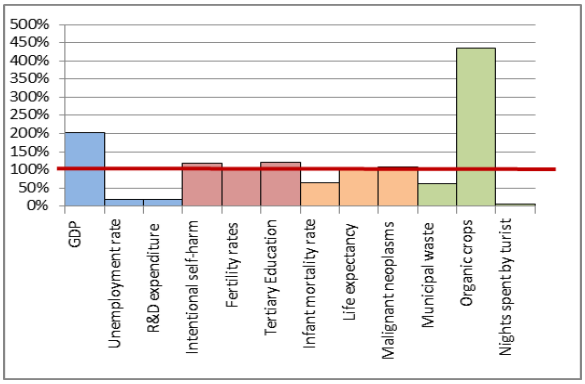


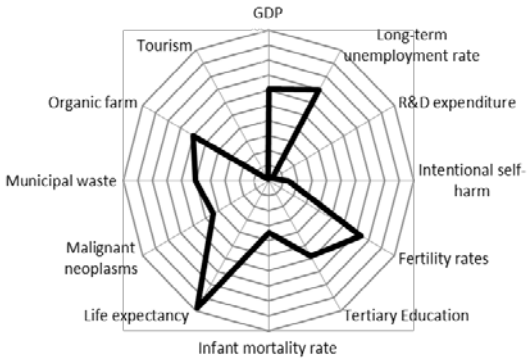
Pohjois-Suomi





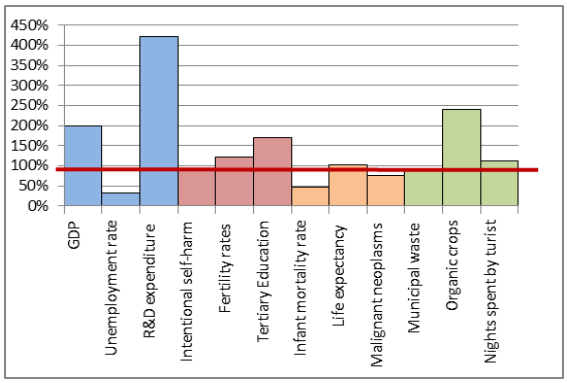
Åland

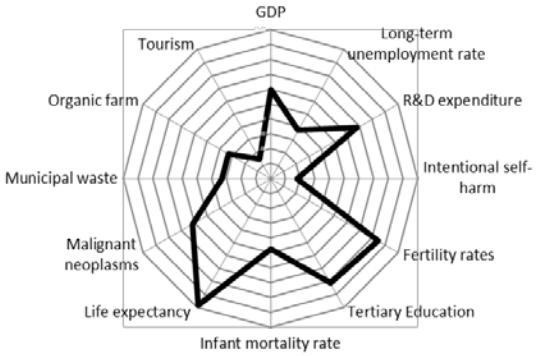

500%
450%
400%
350%
300%
250%
200%
150%
100%
50%
0%
GDP
Unemployment rate
R&D expenditure
Intentional self-harm
Fertility rates
Tertiary Education
Infant mortality rate
Life expectancy
Malignant neoplasms
Municipal waste
Organic crops
Nights spent by turist


GDP
Long-term unemployment rate
R&D expenditure
Intentional self-harm
Fertility rates
Tertiary Education
Infant mortality rate
Life expectancy
Malignant neoplasms
Municipal waste
Organic farm
Tourism

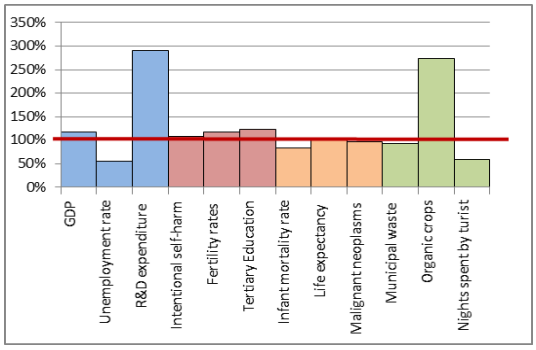
Sweden

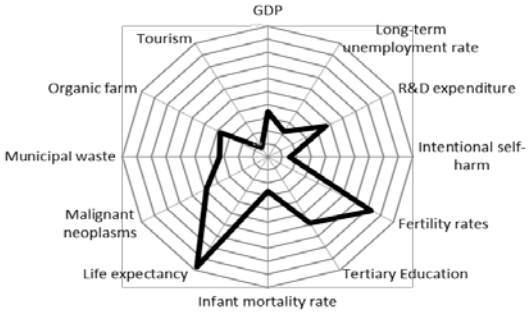
Stockholm



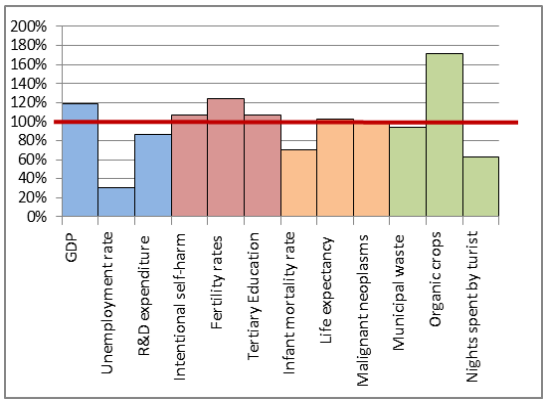


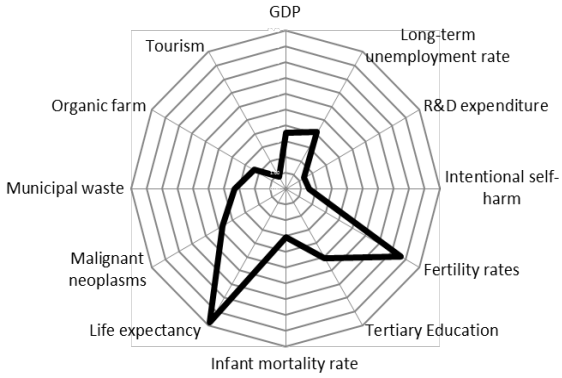
Östra Mellansverige



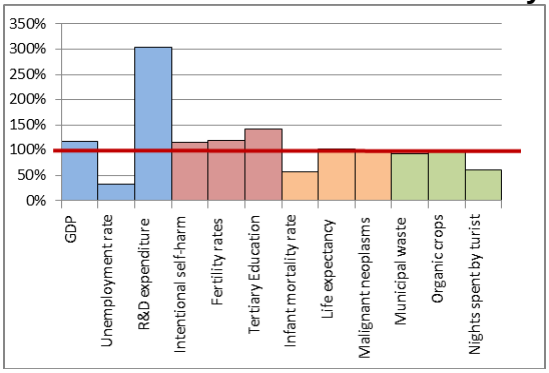


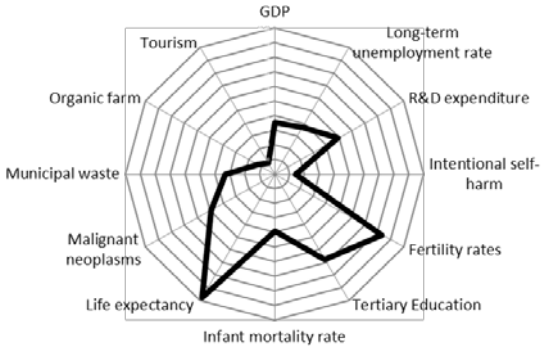
Småland med öarna



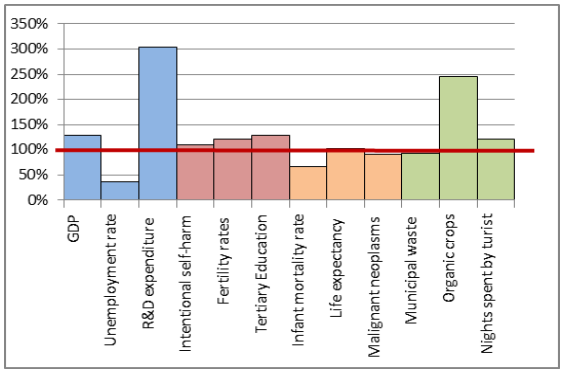


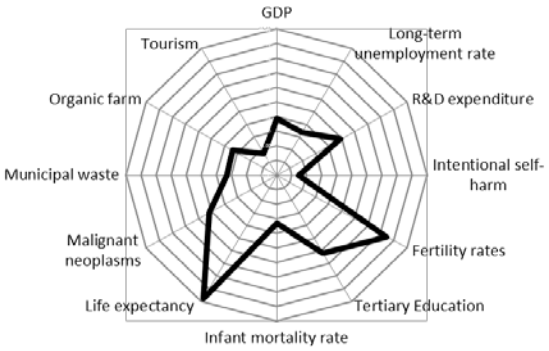
Sydsverige



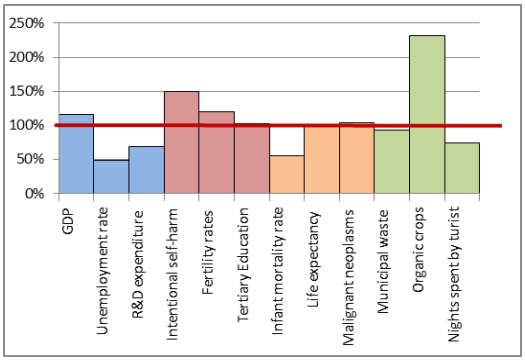


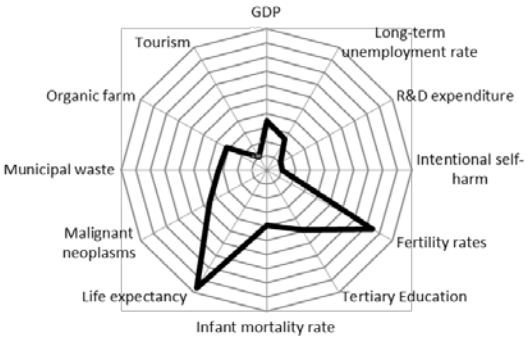
Västsverige



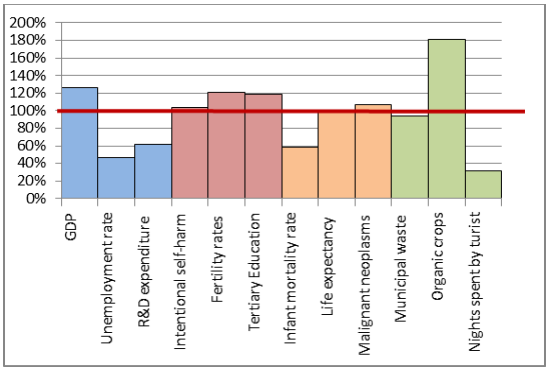


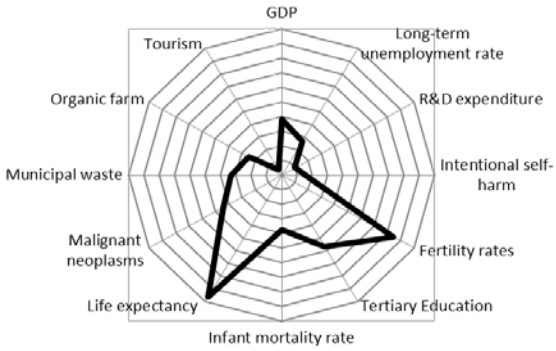
Norra Mellansverige



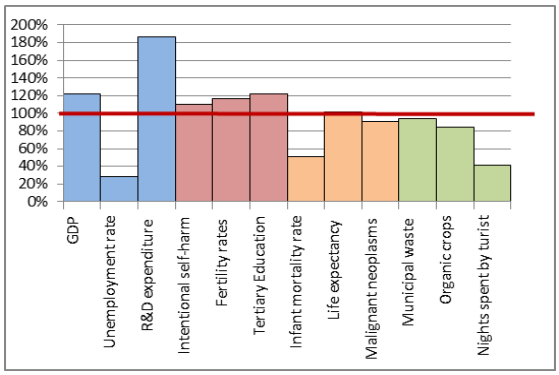


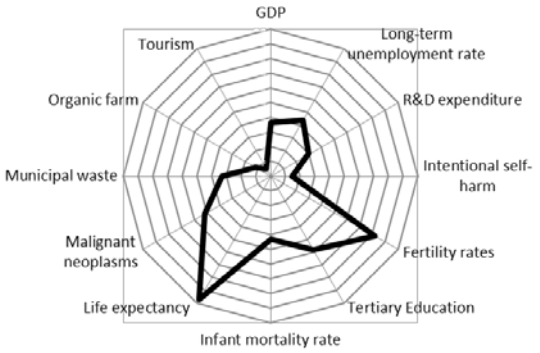
Mellersta Norrland





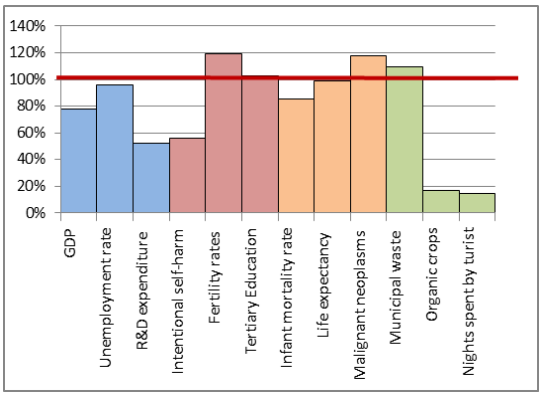
Övre Norrland

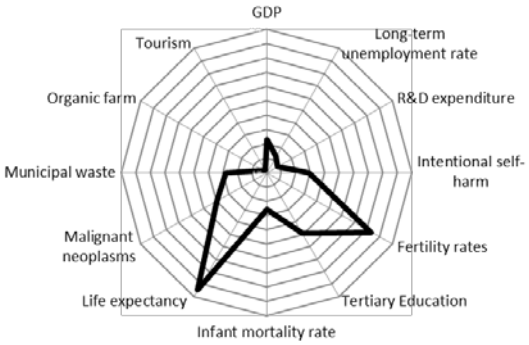




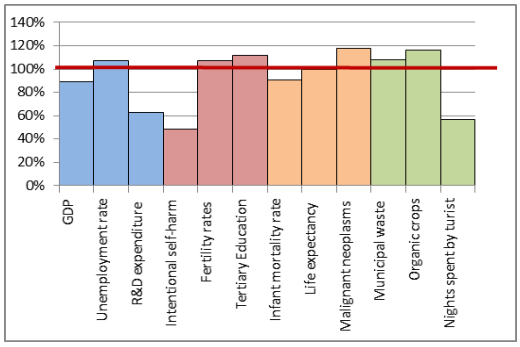
United Kingdom

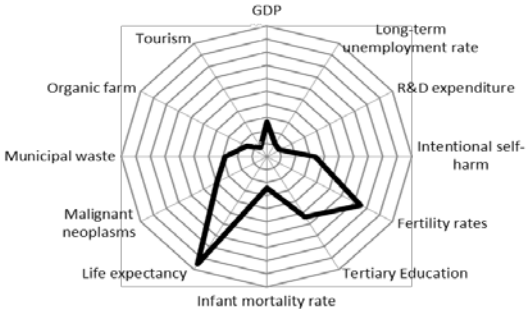
Tees Valley and Durham



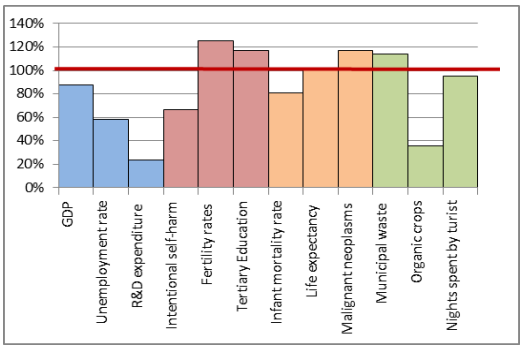


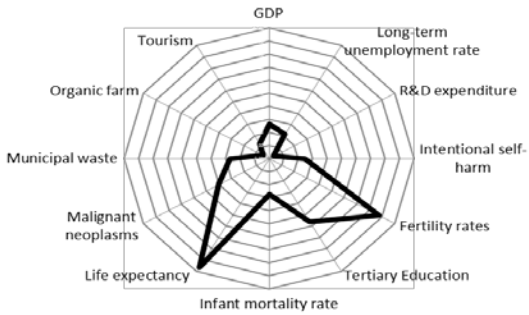
Northumberland and Tyne and Wear



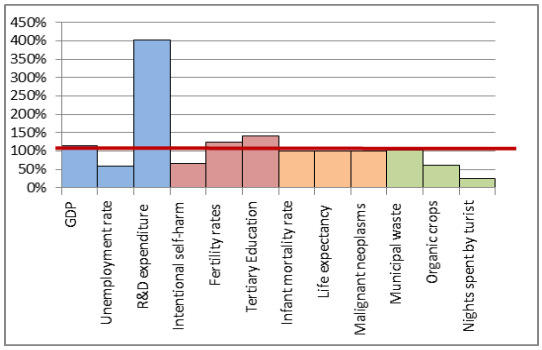


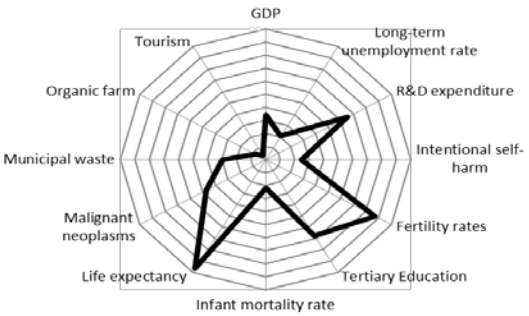
Cumbria



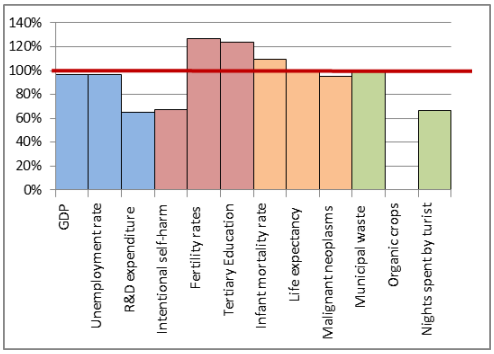


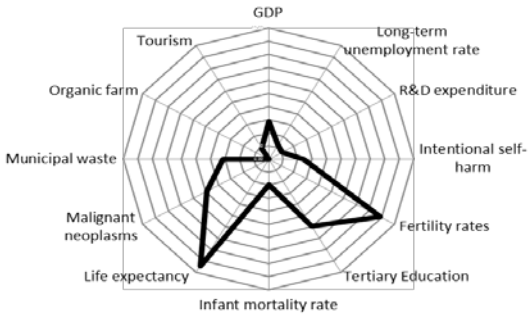
Cheshire



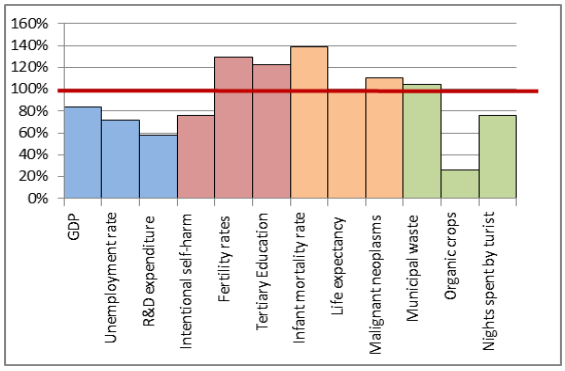


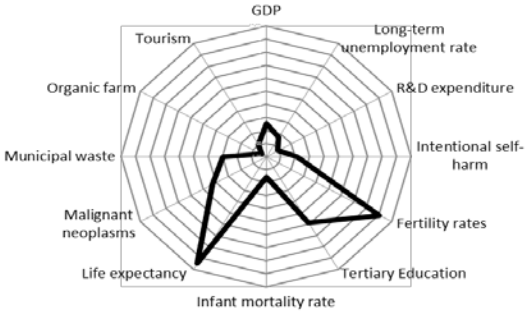
Greater Manchester



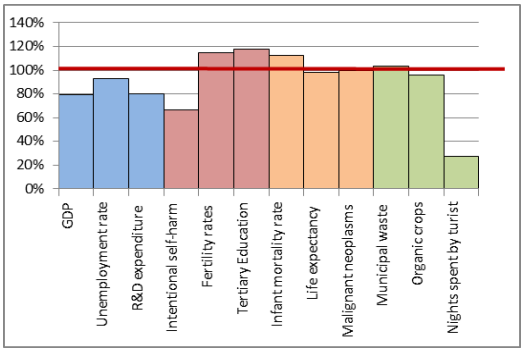


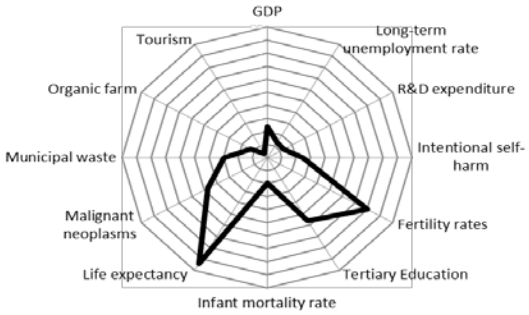
Lancashire



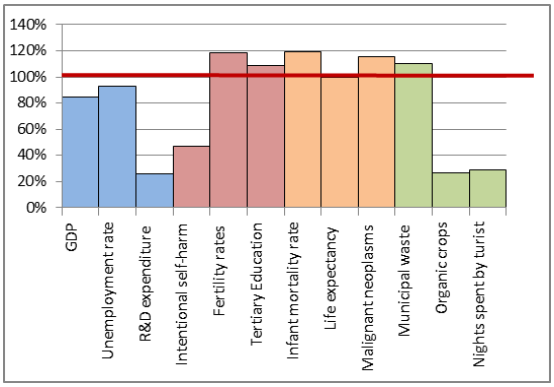


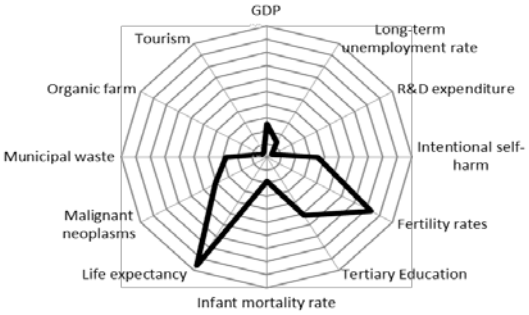
Merseyside



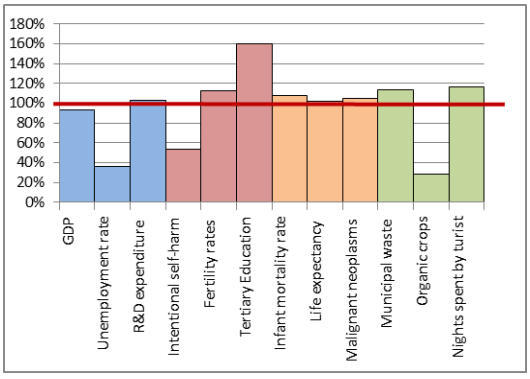


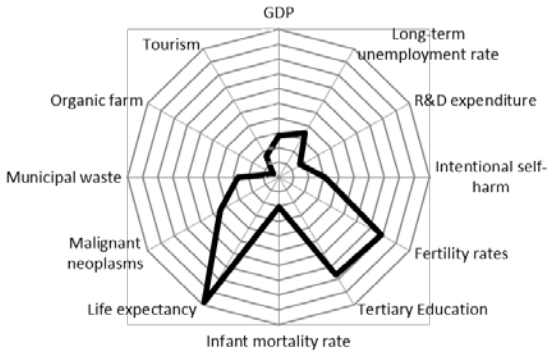
East Yorkshire and Northern Lincolnshire



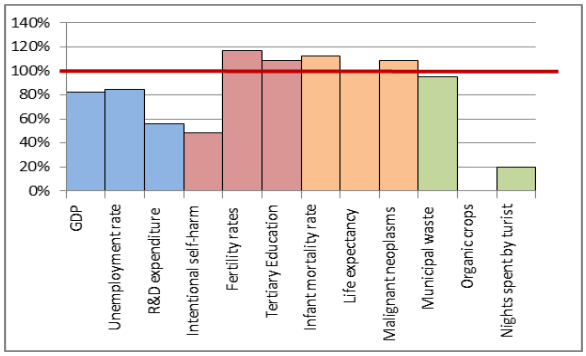


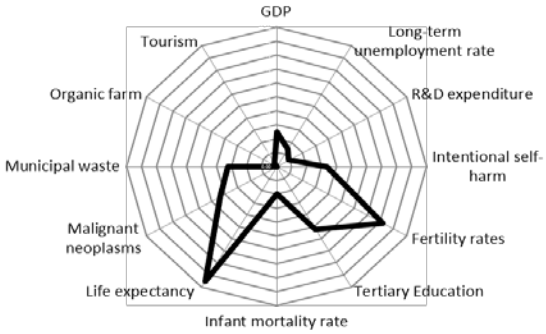
North Yorkshire





South Yorkshire





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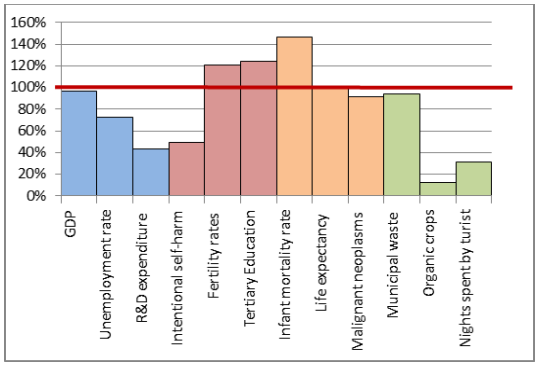
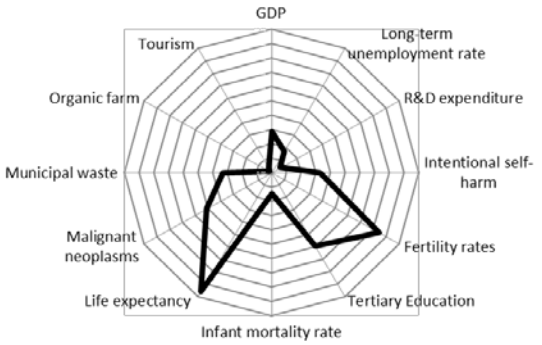
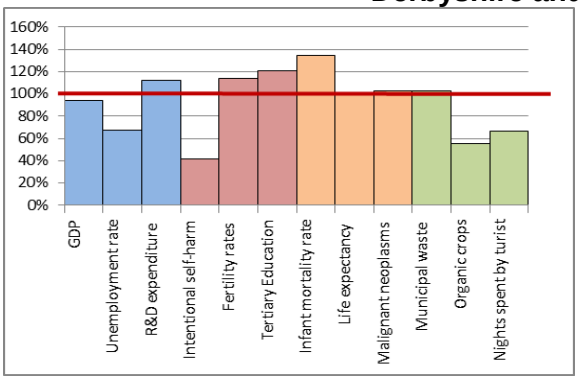
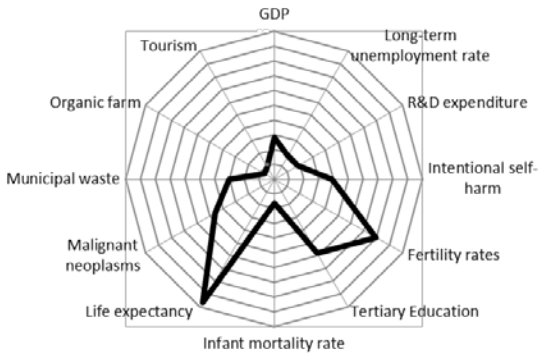


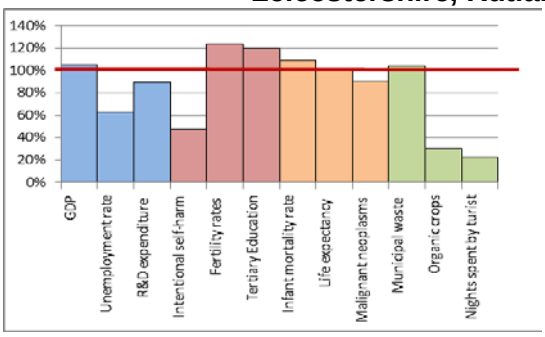


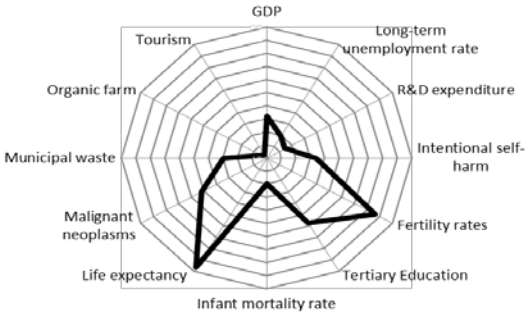
Derbyshire and Nottinghamshire



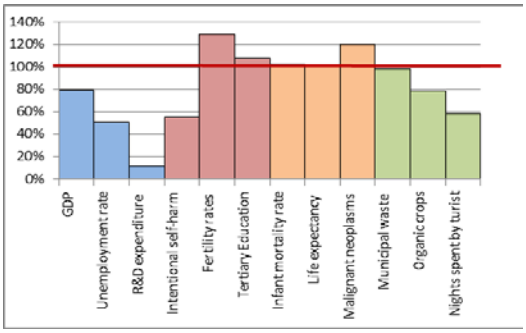


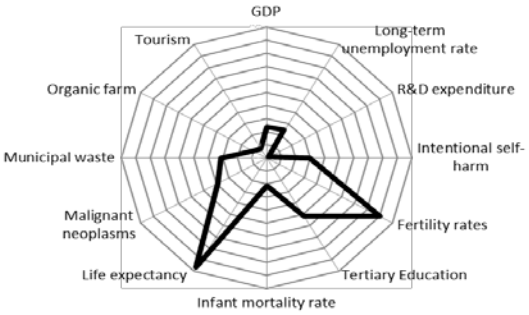
Leicestershire, Rutland and Northamptonshire



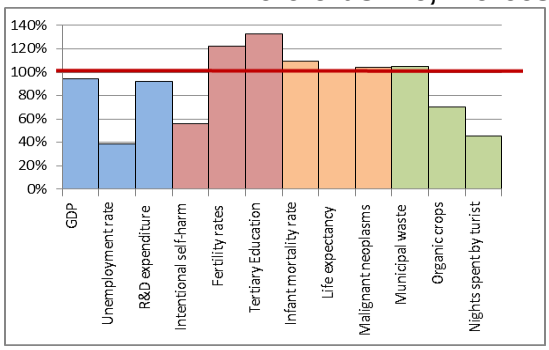


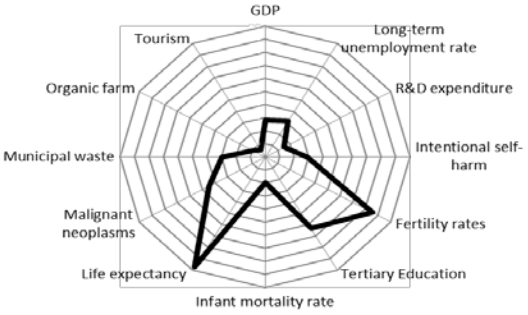
Lincolnshire



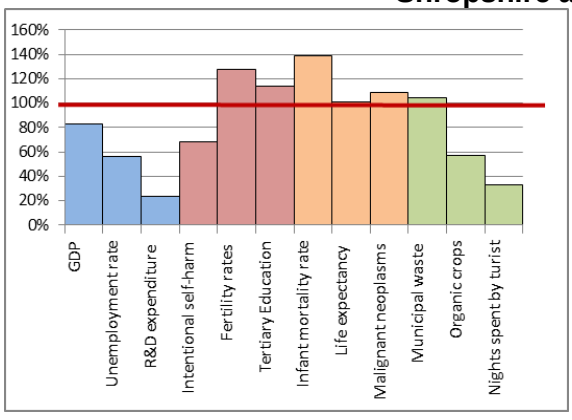


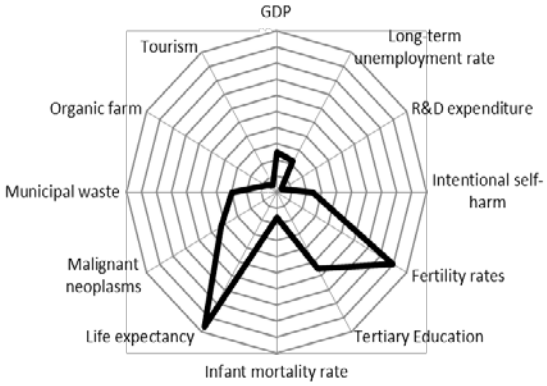
Herefordshire, Worcestershire and Warwickshire



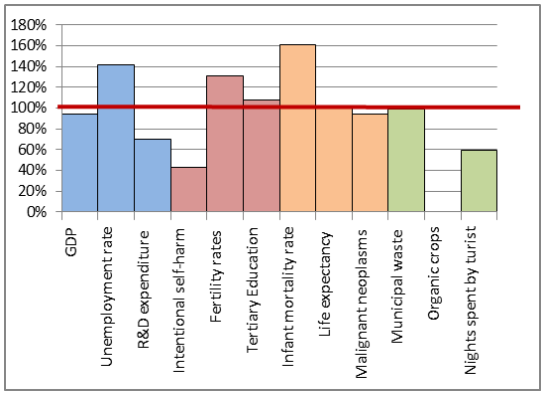


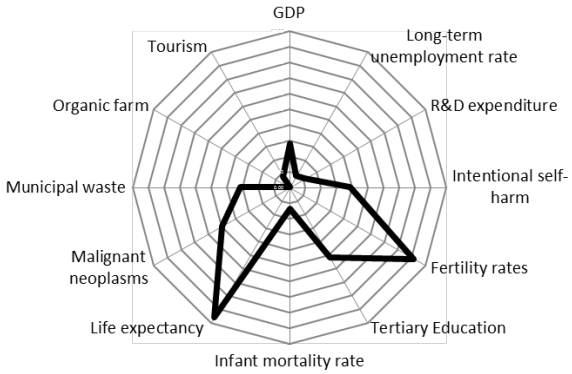
Shropshire and Staffordshire





West Midlands





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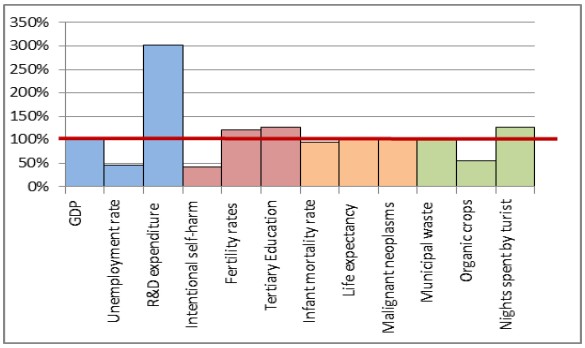
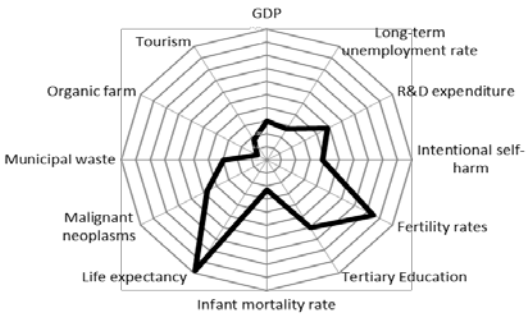
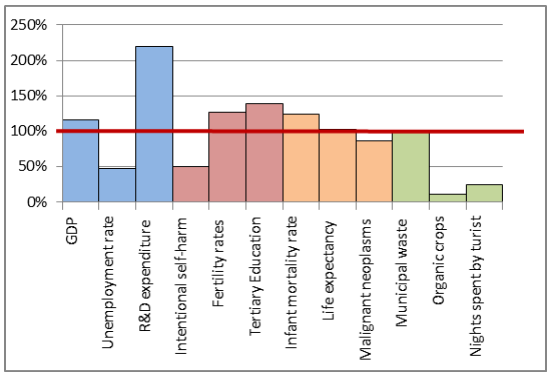
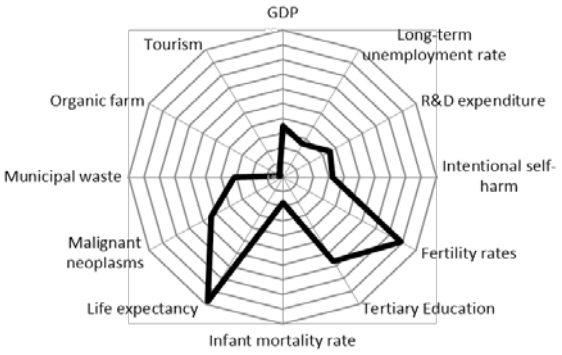




Bedfordshire and Hertfordshire





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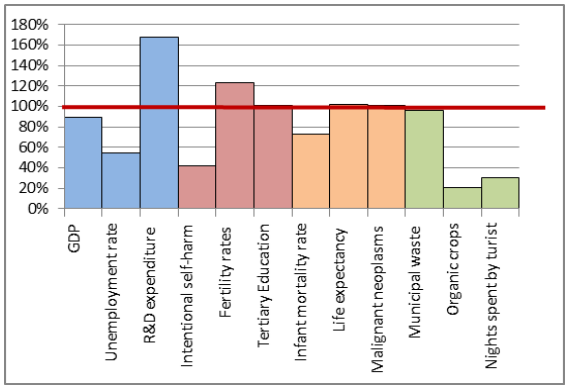
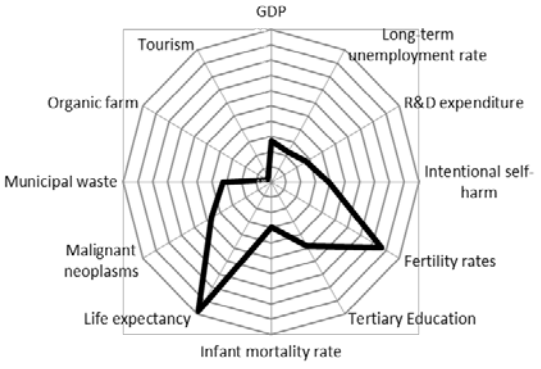
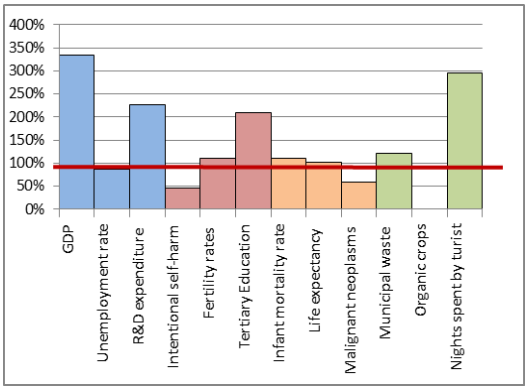
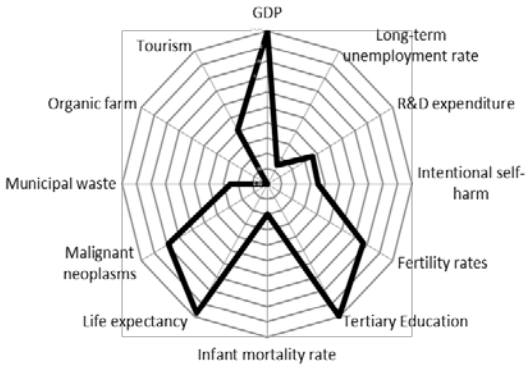


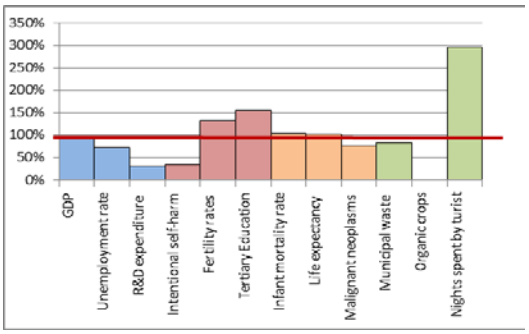


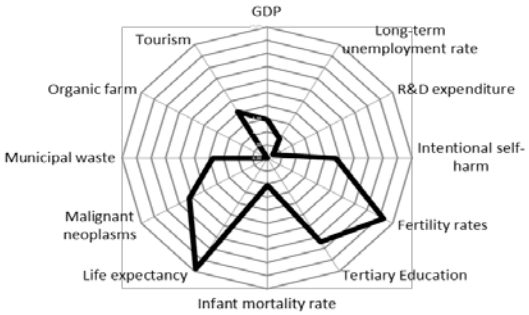
Inner London



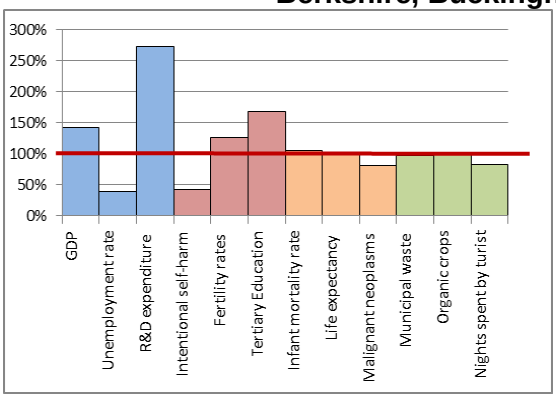


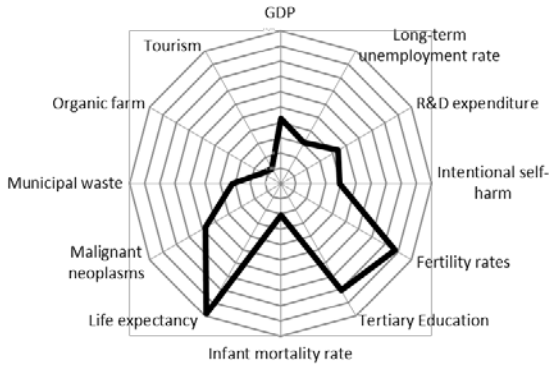
Outer London



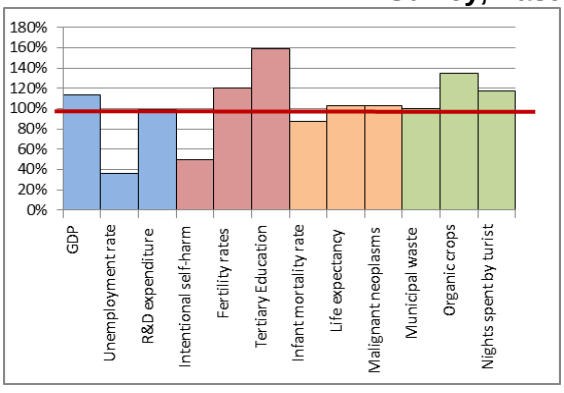


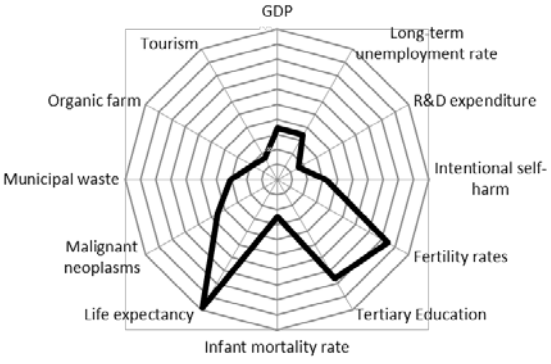
Berkshire, Buckinghamshire and Oxfordshire



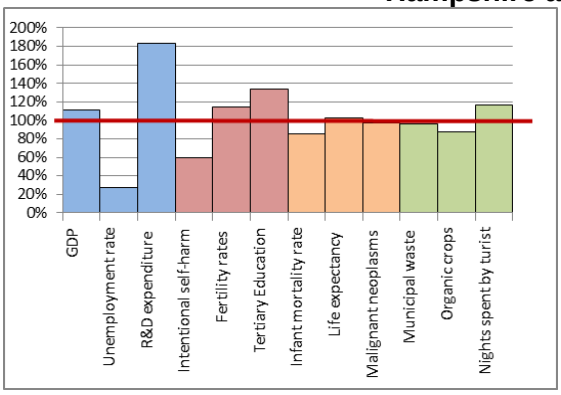


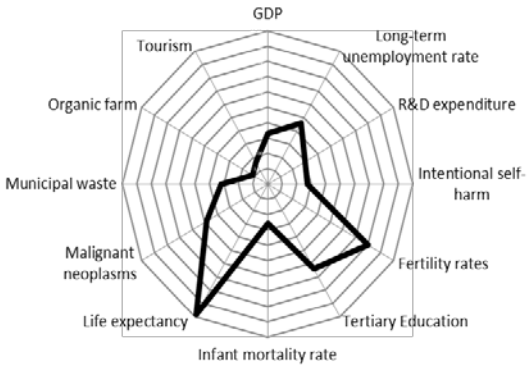
Surrey, East and West Sussex



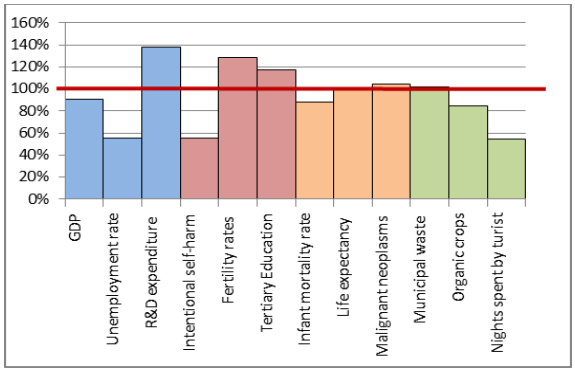


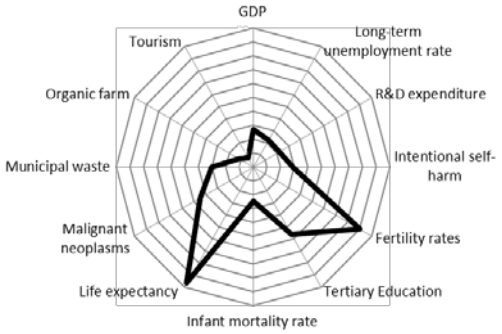
Hampshire and Isle of Wight



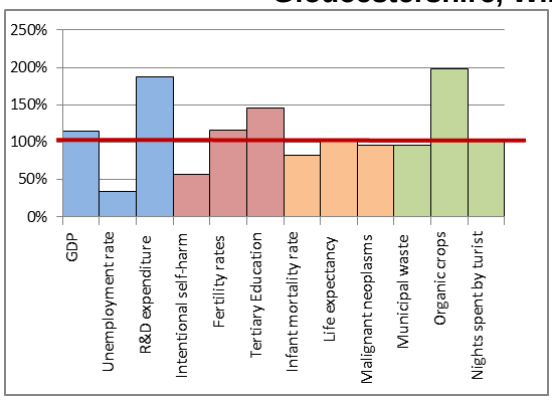


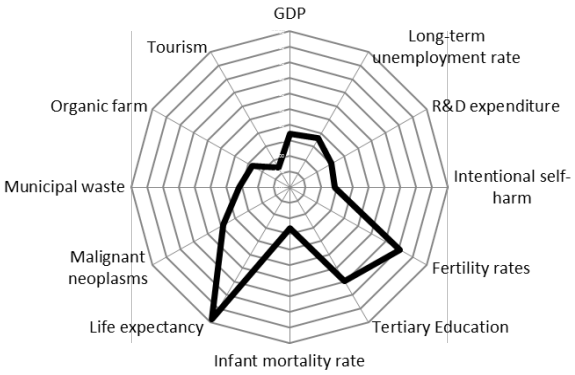
Kent



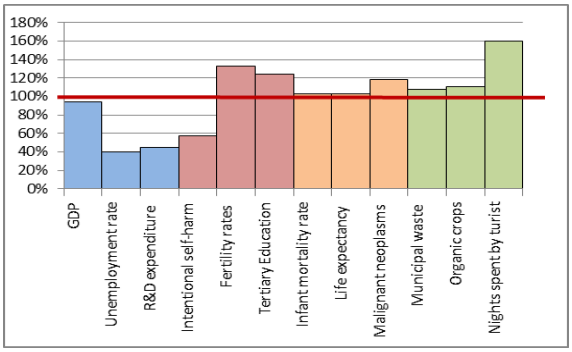


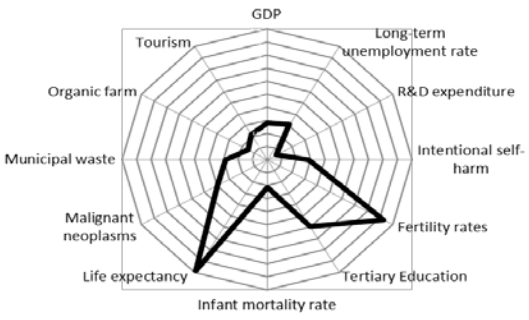
Gloucestershire, Wiltshire and Bristol/Bath area



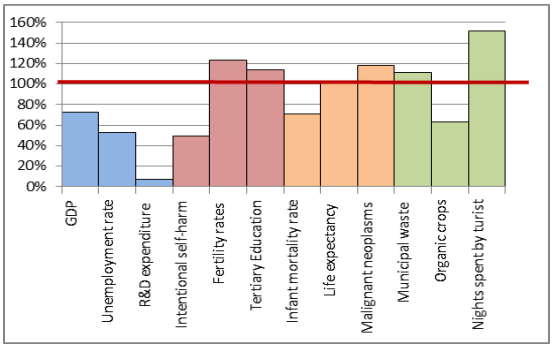


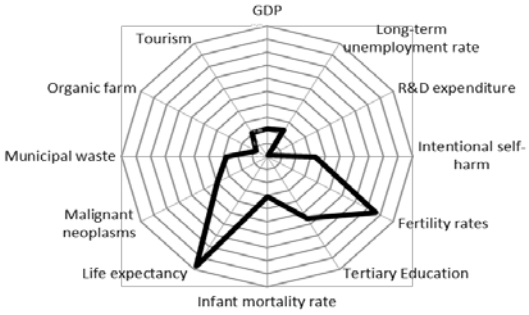
Dorset and Somerset



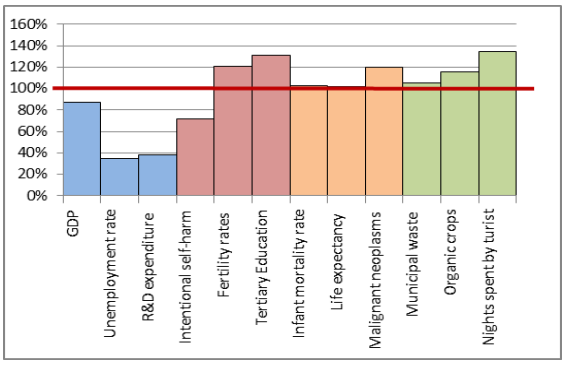


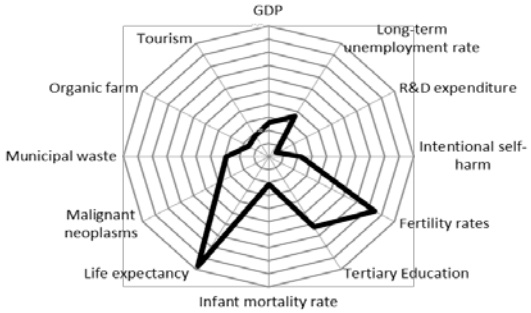
Cornwall and Isles of Scilly



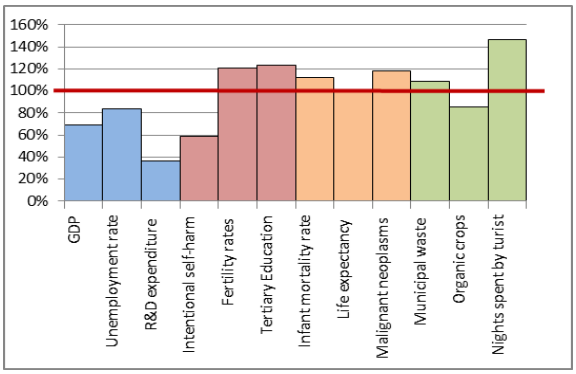


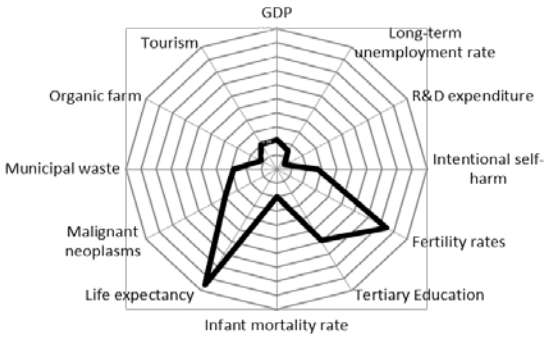
Devon



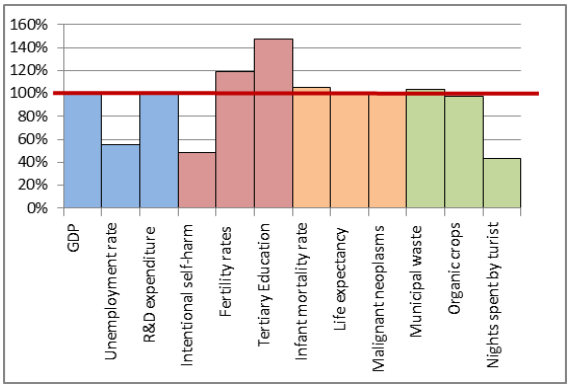


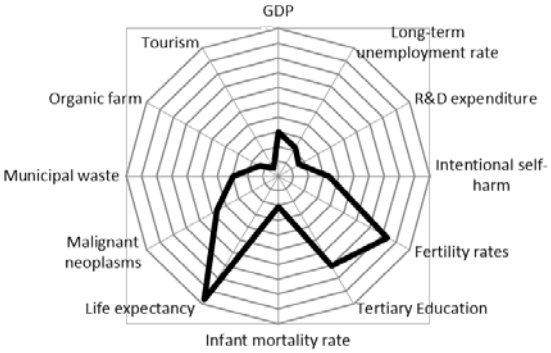
West Wales and The Valleys



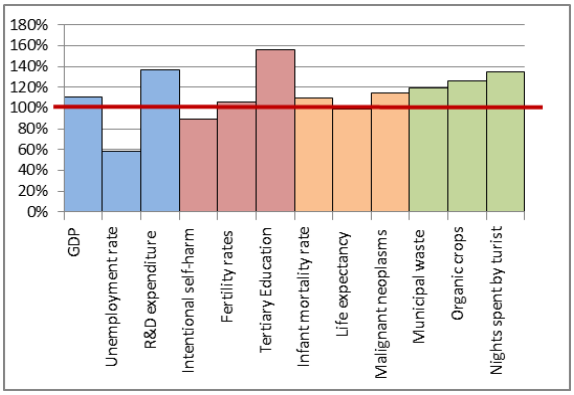


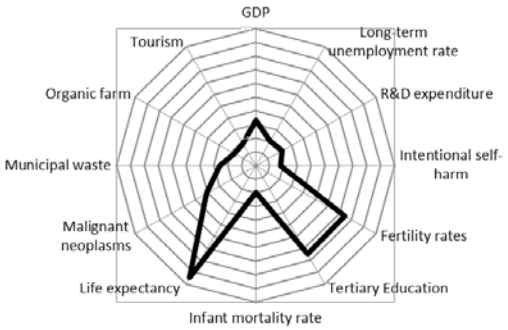
East Wales



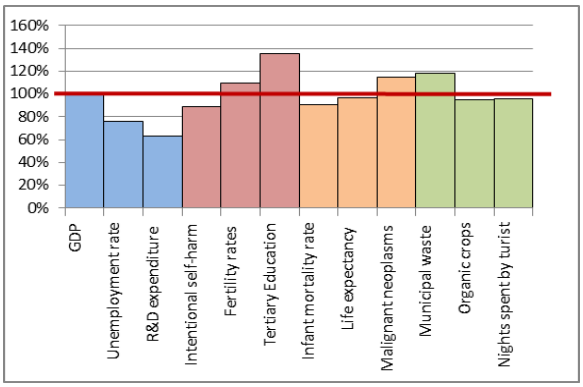


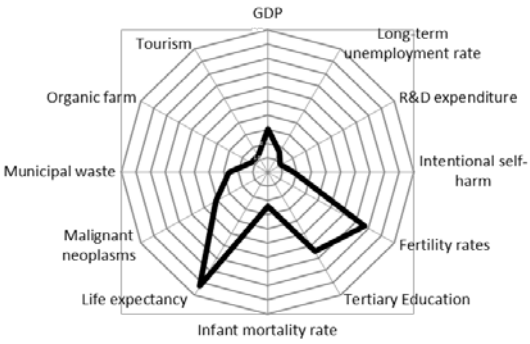
Eastern Scotland



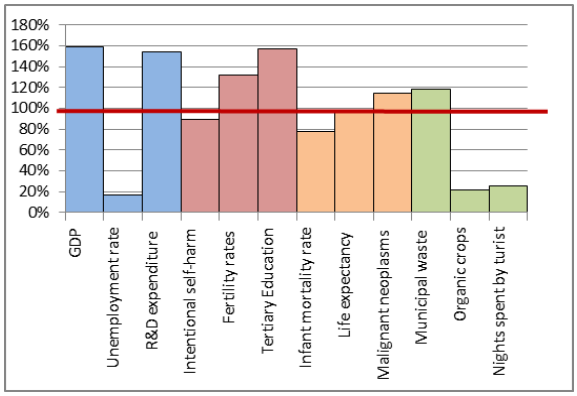


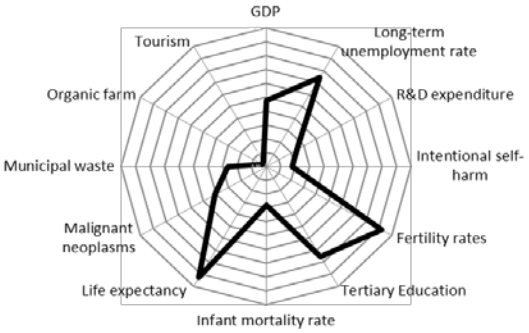
South Western Scotland



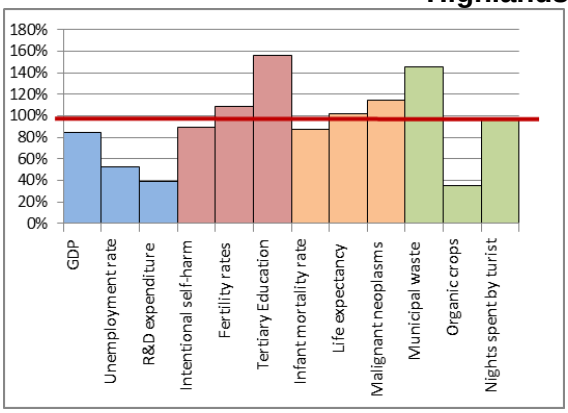


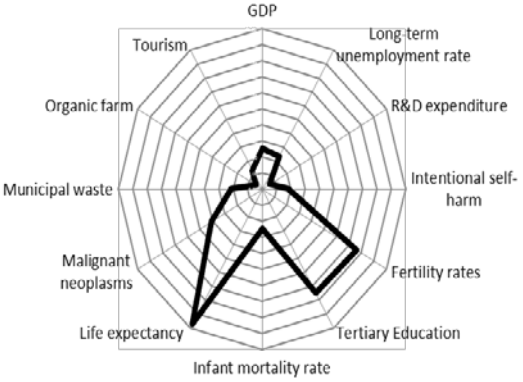
North Eastern Scotland



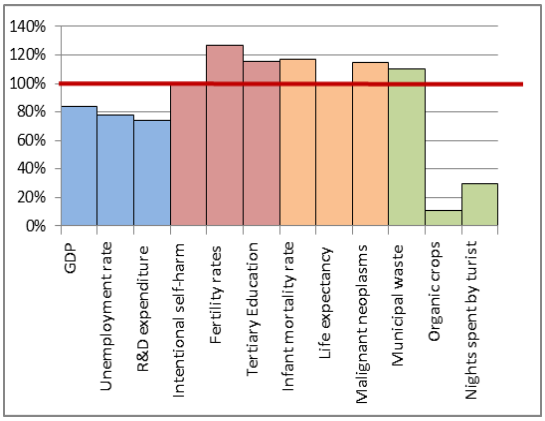


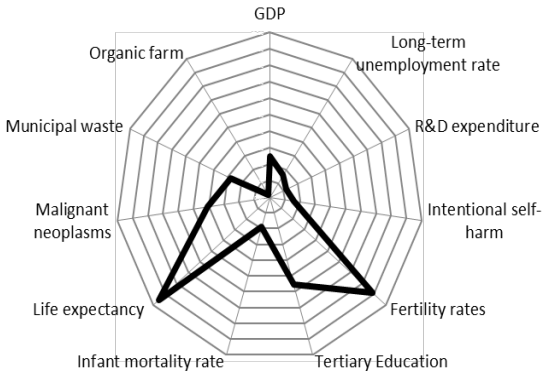
Highlands and Islands





Northern Ireland





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