

## The scientific community of Alagoas: an analysis based on its research groups<sup>1</sup>

### *A comunidade científica de Alagoas: um olhar a partir dos seus grupos de pesquisa<sup>2</sup>*

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#### **Abstract:**

In the context of the expansion and diversification of Brazilian Higher Education, this paper approaches a theme that has been poorly explored in the national literature: the relationship between the expansion of this educational level and the construction and strengthening of the scientific communities in the states of the country. We analyzed the case of Alagoas aiming to understand the development of its scientific community in the last two decades. We work with data compiled and disseminated by the Directory of Research Groups of Conselho Nacional de Desenvolvimento Científico e Tecnológico, based on which we elaborated a characterization capable of providing a support for the objectification of research practice and the training of new researchers. Therefore, the Alagoas experience concomitantly expresses national and local issues, so its study implies a relational look at the recent reconfigurations of the development of science in the country.

**Keywords:** scientific community, expansion, Higher Education, Alagoas

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**Resumo:**

*No contexto da expansão e diversificação do Ensino Superior brasileiro, o presente texto busca aproximar-se de um tema parcamente explorado na literatura nacional: a relação entre a dilatação deste grau de ensino e a construção e o fortalecimento das comunidades científicas nos estados da federação. O caso alagoano é tomado à análise, com vistas a compreender o desenvolvimento de sua comunidade científica nas duas últimas décadas. Trabalhamos, para tanto, com dados compilados e difundidos pelo Diretório de Grupos de Pesquisa do Conselho Nacional de Desenvolvimento Científico e Tecnológico, com os quais elaboramos uma caracterização capaz de oferecer suporte para a objetivação da prática da pesquisa e da formação de novos pesquisadores. A experiência alagoana expressa, pois, questões nacionais e locais de forma concomitante, de maneira que seu estudo implica um olhar relacional sobre as reconfigurações recentes do desenvolvimento da ciência no país.*

**Palavras-chave:** comunidade científica, expansão, Ensino Superior, Alagoas

## Introduction

In the scenario of Brazilian Higher Education, the last decades have seen intense transformations encompassing, among other aspects, the rising incorporation of new publics through the expansion in the number of institutions and subjects (Martins, 2000; Neves, 2003; Zago, 2006). However, the processes of expansion cannot be linearly or homogeneously understood nationwide. Though submitted to national regulations, which allow a certain institutional, administrative, and didactic autonomy, Brazilian Higher Education is the result of particular experiences due to material conditions. Geographic location, institutions of different natures, with different administrative supports, different faculty and students establish heterogeneous expressions on how Higher Education is presented in Brazil.

This article is located on the empirical panorama of growth and diversity of Higher Education configurations. We are interested to correlate the widening and diversification of this educational level with the development of research in Brazil and, more specifically, in the state of Alagoas and its scientific community, seen here through its research groups. In this sense, our aim is to analyze the development of the scientific community in Alagoas in the last two

decades, through data on research groups, having as a background the processes of expansion and diversification of Brazilian Higher Education.

Focusing on one Brazilian state, in the scope of its scientific community, means having a relational look between local and national realities. The experience of Alagoas and its university researches show, on one hand, its specificities and, on the other, the reach of the State and its public policies to draw what we are calling a community of agents who work on research development, the construction and dissemination of knowledge. In the case of Alagoas, it shows the development of Higher Education and research in a state with a relatively recent history in this educational level, helping us to understand the role of Higher Education Institutions (HEIs) in establishing a scientific community.

From a methodological point of view, we used mixed methods (Creswell, 2012) aiming to combine quantitative and qualitative approaches. We based our study on the data of *Diretório dos Grupos de Pesquisa* (DGP- Directory of Research Groups) from *Conselho Nacional de Desenvolvimento Científico e Tecnológico* (CNPq- Brazilian National Council for Scientific and Technological Development). This directory works as an inventory of academic and technologic research groups in the country and is commonly used as a base for studies and considerations on the groups in the country, their human resources, lines of investigation, specialties, productions, and partnerships developed (Lopes & Lobo, 2016; Oliveira & Silva, 2014; Rapini, 2007).

At first, we will reflect on what we are calling Alagoas scientific community, through a dialogue between conceptual aspects and the sociohistorical conditions which allowed the construction of this community – highlighting the recent development of Higher Education in Alagoas, as well as the institutionalized spaces of research, as postgraduate programs and research groups. After, in the second part of the text, we focus on a longitudinal view to map the research groups in the state. There are two debate fronts which draw this mapping exercise: the institutional facet and the knowledge area one.

## **Alagoas and the recent establishment of a scientific community**

The transformations that took place since the 1990s in Brazilian university structure created opportunities to strengthen the science developed in the country. One of the elements triggered by such process regards the establishment and gradual consolidation of an “academic community”. The use of inverted commas to this term delimits a debate around the conceptualization of a set of institutions and agents involved in the construction and dissemination of scientific knowledge, the way the field works, and the formation of new boards. Some authors highlight the limitations of this construct due to the idea of harmony that impregnates the word “community”, what ends up shutting heterogeneity and the fights typical of the scientific field, mystifying this social space (Bourdieu, 2008; Hey, 2008; Sousa, 2010).

Considering this debate conceptually, we use here the notion of scientific community to deal with agents and institutions that act and shape the space dedicated to science within Brazilian scientific field and, more precisely, in Alagoas. In this sense, we understand that the own concept of community, as it is historically situated, is crossed by an increasing social differentiation and carries the disputes of a *whole* at the operation of a certain sphere of life in society. Therefore, the use of the term “scientific community” in this work refers to a field that works under its own logic with all its contradiction, heterogeneities, dominations, and fights, which involve different agents situated in different positions in this social space.

To do so, considering the perspective adopted by this study, we stay away from deeper analytic details, such as the trajectories of research groups, the characteristics of the groups in Alagoas scientific community, etc., and adjust our focus to understand a broader dimension of the process, that is: the establishment and development of this community through institutionalization of the research practice in university contexts.

The practice of scientific research in Brazil is closely connected to universities. This is due to the model of Higher Education adopted by the country since its Reform of 1968, with the Law n° 5.540, from November 28<sup>th</sup>, 1968, presupposes that scientific research is mainly under the responsibility of the universities. And, at the same time, to be considered a university, an institution needs to develop activities of teaching, research, and outreach. In the Brazilian context, “the academic field is understood as the locus where institutionalized practices of knowledge production take place, what mainly involves the idea of university” (Hey, 2008, p. 16).

Thus, in a context which Higher Education was broadened, its activities have also followed this expansion, be it as an education center, with the creation of new courses and places, or as a research center strengthening and establishing new research groups, or even as pillars of outreach and their projects.

Regarding specifically the case of Alagoas, its history in the Higher Education – conditions of establishment, growth, and recent expansion and consolidation of institutions in the state – is key to understand the space of possibilities, allowing us to current talk about an Alagoas scientific community.

The existence of institutions with Higher Education characteristics goes back to the beginning of the 20<sup>th</sup> century in Alagoas. The main concern for Higher Education at the time was the formation of an ecclesiastic and bureaucratic elite that could assumes positions in the countryside of the state which was recently structured. It is only on the second half of that century that the Alagoas scenario of HEIs starts to be different, from the emergence of more systematic initiatives of creation and organization of Higher Education – such were the cases of the Medical (1951) and the Philosophy (1952)<sup>3</sup> schools.

The creation and consolidation of those initiatives was related to the urbanization process of its capital, Maceió, since 1950, and the differentiation of the rural elite to start the formation of urban-intellectualized groups which disputed the positions in the bureaucracy of the state. The development of the project to create the first university institution in Alagoas can be seen as an example of the fight of urban groups for a space in the countryside of the state.

The initiative to create a project for *Universidade de Alagoas* started on a meeting of the faculty from the existing Schools under the guidance of the Professor Aristóteles C. Simões, from the Medical School. In fact, a series of isolated events favored the creation of this group of professors. The Law School had become a federal institution and the Medicine one wanted to do the same. The reason is that the federalization of the institutions implied that the federal government would pay for the School's expenses, including professors' salaries (Verçosa, 1997). Therefore, the initial project was to federalize the Medical School. However, faced by the

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<sup>3</sup> Another important institution is the *Faculdade de Direito* (Law School) created in 1933. However, from the second half of the 20<sup>th</sup> century, this institution becomes part of a network of HEIs that was been consolidated in Alagoas.

frustration of this project and the State demand to create new universities<sup>4</sup>, a different group of teachers from isolated Schools was formed to develop a project to create *Universidade de Alagoas*. This project had the support of the political representatives of Alagoas, at the Congress and at the Senate, who did the necessary political articulations to approve it so that, in 1961, the presidential decree was sanctioned to create the institution.

At that period, the university was in Brazil, in general, and in Alagoas, in particular, mainly guided towards the formation of graduate professionals, as the field of research development in the country was precarious or even inexistent.

This element has crossed the *Universidade de Alagoas* during, at least, 30 years. The information about the formation of professors are curious: in the beginning of the 1970s, 330 professors had an undergraduate diploma, 38 an specialization one, and 2 a master's degree (Azevedo, 1982); in 1990, 579 professors had an undergraduate or a specialization diploma, 344 master's degree, 49 PhDs, and 10 researchers with a postdoc (Verçosa & Cavalcante, 2011). Thus, the quick turn on the academic degrees on the faculty in one university in Alagoas, in a 30 year-period, shows how this institution has adapted itself to research development through its professors. It is also important to notice that, in 1990, there were 215 research projects registered in the Office for Research and Postgraduate Programs (Verçosa & Cavalcante, 2011).

It is only in the beginning of the 21<sup>st</sup> century that the scenario of research development in Alagoas is developed and diversified. Further on, it will be possible to see this development through the research groups. Observing the faculty of *Universidade Federal de Alagoas* (Ufal), in 2010, we can see that 710 were PhD, 568 were masters, and 142 had undergraduate or specialization diplomas (Verçosa & Cavalcante, 2011).

This historical synthesis aims to highlight some elements that allow us to characterize the scientific production and development field in Alagoas. The main one is connected to the development of science in the country and its relation to Higher Education. If Higher Education in Brazil has been mainly guided towards teaching, or in the words of Bourdieu (2011) on French institutions it has “taken charge to transmit the legitimate culture and, because of this, it is invested of a cultural function of consecration and conservation” (p. 104), this is the social pillar

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<sup>4</sup> A key trace to create new universities was the agglutination of isolated Schools, what decreased the costs for the State while expanding the access to Higher Education. In 1964, we can see the creation of 39 universities (including *Universidade de Alagoas*).

through which Higher Education expands its activities. It is possible to see the process of differentiation of the “social functions of university”, mainly from the second half of the 20<sup>th</sup> century. Among the directions assumed by this process, we highlight here the development of science through the promotion of postgraduate programs.

In Alagoas the development of *stricto sensu* postgraduation started in the late 1980s with the creation of a master’s degree in Letters and Linguistics in Ufal. However, it is only in the early 2000s that this process advances with the opening of 13 programs of master’s degree and 3 of doctorate.

Its closer relation to the institutional development of Ufal is recent. Though in the beginning of the century the academic community of Alagoas has differentiated itself and has institutionally expanded itself beyond Ufal, as will be shown later, this university has a great importance in shaping the academic community. In this sense, this brief socio-historic reconstruction of the conditions that allowed the establishing and consequent development of Higher Education in Alagoas and its community of researchers, creator, and consumers of scientific and academic products helps us understand two key elements that guide the next topics in this text, that are: the recent character of the increase in the number of PhD professors in the State with the creation of postgraduate programs; and the role of Ufal and its pioneering role in research, not ignoring the institutional conditions of the university, which has research as one of its pillars.

## **Longitudinal mapping of research groups in Alagoas: institutional and disciplinary expression of the scientific community**

The establishment of a research group – implying institutional conditions, the gathering of human resources and objectives, also, science and technology governance – reveals a complex set of possibility factors which have, inexorably, a historical base, as we have shown for the case of Alagoas. If the HEIs, the postgraduate programs, and the increasing attraction of PhD professors are key elements to understand the establishment and consolidation of Alagoas scientific community, we will then use these elements to locally think a significant instance to analyze scientific communities: the research groups.

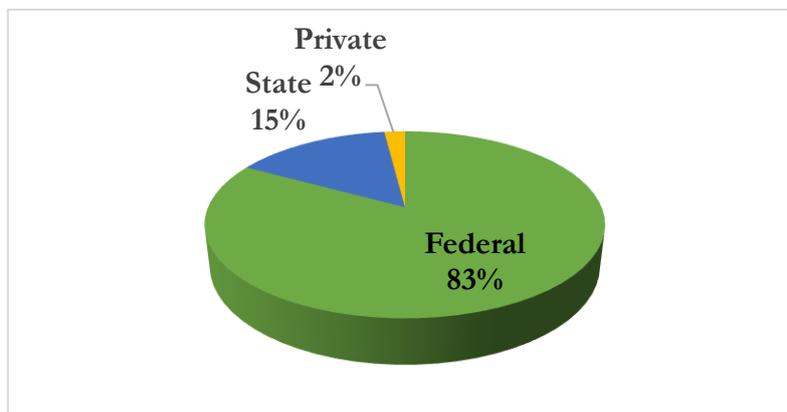
Between 2000 and 2016, the number of research groups in Alagoas had an over-600% growth, from 67 groups registered in CNPq in 2000 to 517 in 2016. This data shows the acceleration of the process to establish research groups in the state, especially considering that that the last decade (2006-2016) has seen its highest growth.

Taking into account those initial numbers, it is key to consider that the scientific community of Alagoas has its trajectory of establishment and strengthening intrinsically connected to the history of HEIs and their subjects in the state. In this sense, when we deal with research groups as objects of study we are referring to the maturing process of those institutions and their faculties, students, and technicians regarding the practices of academic research, formation of new researchers, and the dialogue with Alagoas community – this last aspect is important when we consider research as one of the ways to understand punctual socio-historic phenomena and answer them and the problems arisen from them.

This means affirming that, when making an institutional and disciplinary mapping of research groups in the state, we are not only highlight the actions of HEIs in the field of knowledge production, but also the recent transformations in the structure and configuration of Higher Education in Alagoas.

The first category to be analyzed exemplifies this correlation between scientific community ( specific space) and Higher Education ( broad field), the administrative support of research groups (figure 1):

**Figure 1 – Administrative support of Alagoas research groups- percentage considering the period 2000- 2016**



Source: created from DGP/CNPq (2017).

The predominance of public institutions in the number of research groups in Alagoas can be clearly seen on Figure 1, in which it is possible to see that 98% of those groups are in public HEIs – the division of this percentage between federal and state instances shows the power of the former to develop its own spaces to produce knowledge and form new researchers. But what explains this hegemony of the public sector, especially in a historical context of private dependence of Higher Education (Severino, 2008)?

The relation between public and private in this space, which apparently could be a contradiction, reveals, in fact, a division of the academic work that has been historically ratified in Brazil. On one hand, from a legal scope<sup>5</sup>, the different types of HEIs offers different educational and social roles for each institution. Neves (2002), when systematizing the types of HEIs, posits two great groups – university institutions and non-university one –, within each one there are gradations of teaching establishments with different natures. The diverse ends imply, therefore, on the inclusion and exclusion of specific academic activities: if the teaching and formation of students are common to all HEIs, research and outreach activities are developed by only a part of them.

On the other hand, in the percentual composition, we have the following scenario in the country: according to *Censo do Ensino Superior de 2016* (National Census of Higher Education)

<sup>5</sup> It is possible to see this diversity in the Law of Guidelines and Bases (Law n° 9.394/1996) and the Decree n° 5.773/2006.

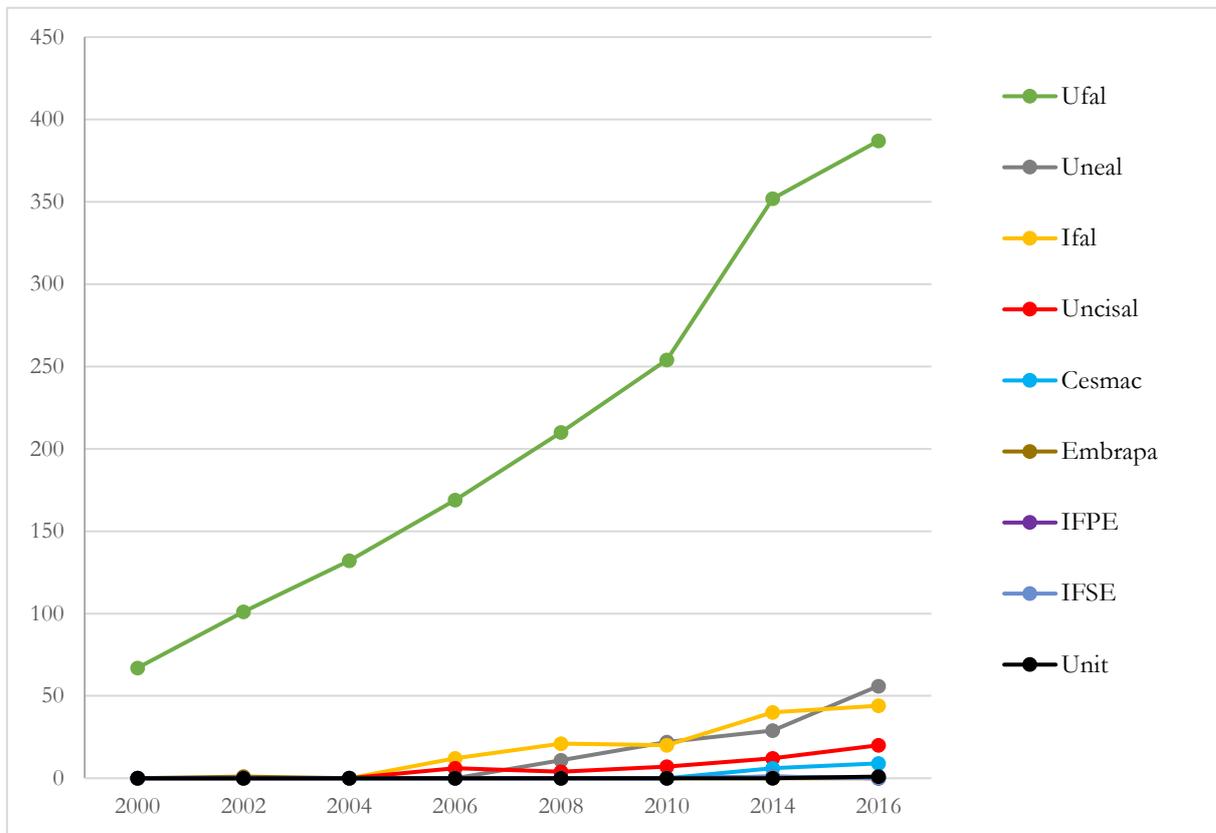
(Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira, 2017), 87.7% of institutions in this educational level are private and out of those 95.7% are Schools (*faculdades*) or university center (*centros universitários*), against 4.3% universities. Such numbers are important as they refer to two key elements in our debate. First, the predominance of the private sector in the scenario of Higher Education, in the number of establishments and students enrolled, what completely changes when we consider activities connected to research and outreach, for example. Second, the types of institutions within the private sector, which are legally not obligated to develop research activities (Neves, 2002).

This is a scenario that repeats itself in the Northeast of the country and, specifically, in Alagoas, with varied percentages: the 2016 Census showed that in the Northeast region there were 1,444,368 students enrolled in Higher Education, out of those 62% in private institutions and 38% in public ones. In Alagoas, the total number of enrollments was 77,738, 60% in the private sector and 40% in the public one (Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira, 2017).

Though private HEIs have a numerical advantage, in national, regional, and local scopes, the division of academic work in Brazilian Higher Education places public HEIs in a dominant position regarding research. This issue is seen through instances such as postgraduate programs (Velloso, 2004), research groups, research(er) associations, and even specialized journals which are mainly in the public sector.

In the case of Alagoas, it is possible to advance the analysis and deepen the characterization on the institutional aspect by detailing the HEIs to which each the research group is affiliated. Figure 2 describes this category through time.

**Figure 2 – Institutions affiliated to research groups in Alagoas- 2000-2016**



*Ufal: Universidade Federal de Alagoas; Uenal: Universidade Estadual de Alagoas; Ifal: Instituto Federal de Alagoas; Uncisal: Universidade Estadual de Ciências da Saúde de Alagoas; Cesmac: Centro Universitário Cesmac; Embrapa: Empresa Brasileira de Pesquisa Agropecuária; IFPE: Instituto Federal de Educação, Ciência e Tecnologia de Pernambuco; IFSE: Instituto Federal de Educação, Ciência e Tecnologia de Sergipe; Unit: Centro Universitário Tiradentes.*

Source: created from DGP/CNPq (2017).

The predominance of public HEIs, also seen in figure 1, is corroborated by the hegemony of Ufal, which presents a growth rate of approximately 477% during the period presented in figure 2, as well as the growth of research groups in the other public institutions in the state. We highlight the increase of PhDs between 2000 and 2016. While in 2000, there were 710 professors with a PhD, in 2016 they were 1,015 (Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira, 2017).

The case of Ufal must be understood in the scope of legal and historic attributions given to HEIs classified as universities. This issue makes sense when we observe the diversity of HEIs which compose tertiary level in Brazil – from universities to isolated schools, passing through university centers and non-university institutions – and, moreover, when noticing the fact that universities are pluri-disciplinary institutions, characterized by the inseparability of the teaching,

research and outreach pillars, besides having a full-time faculty with masters and doctors (Neves, 2003). In this sense, the correlation between the increase in the number of professors and research groups in the same time frame gains explanatory power to understand the work of the professional that became part of an institution which, historically, has research as one of its social roles.

Such increase in the doctorates, as expected, was not an endemic movement of Alagoas, let alone of Ufal, as the increase in the number of undergraduate and postgraduate courses in the countries was seen as one the ways to solve the problem of excess candidates, that is, the lack of places in the universities (Alves & Oliveira, 2014); the country increased the attention given to science and higher formation in the last decades; and the number of masters ad PhDs in Brazil is an indication of the efforts done by the postgraduation system (Centro de Gestão e Estudos Estratégicos, 2016). In the case of Ufal, one of the factors that contributed to this growth was, without a doubt, the *Programa de Apoio a Planos de Reestruturação e Expansão das Universidades Federais* (Reuni- Program to Support the Reestructuring and Expansion Plans of Federal Universities) and, beyond that, we can raise as explanatory elements: (i) the growth in the movement of “internal migration” of masters and PhDs in Brazil (Avellar, 2014), especially in the North and Northeast regions; and (ii) the difficulties to allocate PhDs in their hometowns and/or formation places, due to a diploma inflation, in relation to the group formed and the demand for professional positions, etc.

Reuni was a program to support the expansion of Brazilian federal university started in 2003 with the process of taking the *campi* of these institutions to the countryside<sup>6</sup>. However, only in 2007, the program got its final shape, through the publication of the Decree nº 6.096, from April 24<sup>th</sup>, 2007. This document presents the guidelines that normalized the creation of restructuring plans in federal universities. Among the goals of Reuni, we highlight the increase in the number of students’ places. Consequently, we can read in the document:

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<sup>6</sup> According to official data of the Ministry of Education (“O que é”, 2010), the prototype of Reuni starts with a plan of university expansion inland in 2003, that is, the physical, academic, and pedagogical expansion towards countryside cities/towns. Only in 2007, Reuni was established through a Provisional Measure and integrated the Development Plan of Education.

The Ministry of Education will give financial resources to the program which will be reserved for each federal university, during the elaboration and presentation of their respective restructuring plans, to support the expenses related to the initiatives proposed, especially regarding the:

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III- maintenance and personnel expenses associated to the expansion of activities resulting from the restructuring plan (“Decreto nº 6.096”, 2007).

The creation and execution of the expansion plan of Ufal allowed the expansion of its faculty. In this sense, the indicators of growth of research groups in this institution is related to the augmentation of investments in public exams for professors.

Another important element was the Provisional Measure nº 614, from May 14<sup>th</sup>, 2013, which demanded the PhD title to hire professors in universities and federal institutes. In fact, this measure did not stop the hiring of professors with only a master, however, it gave an advantage to those with a PhD. Certainly, the publication of this provisional measure is related to the increase of research groups as, together with Reuni, it represented the hiring of more full-time PhD professors, that is, those who should, as part of their activities, work on the development of teaching, research, and outreach activities.

After Ufal, other highlights are: *Universidade Estadual de Alagoas* (Uneal), that starts to have research groups in 2008, what is understandable considering its recent creation – its process to be incorporated to the state took place in 1995 and it became a university in 2006 (Aragão, 2010); followed by *Instituto Federal de Alagoas* (Ifal), which between 2006 and 2016 presented a significant growth, going from 12 to 44 research groups in a decade; and the *Universidade Estadual de Ciências da Saúde de Alagoas* (Uncisal), which started to have research groups registered in CNPq in 2006 and has more than tripled the number of groups in this time frame.

Still in the public sphere, throughout these years Alagoas has had groups interruptedly affiliated to other institutions, such as: *Empresa Brasileira de Pesquisa Agropecuária* (Embrapa), which appears as a group in 2002; the *Instituto Federal de Pernambuco* (Ifpe) and the *Instituto Federal de Sergipe* (IFSE), which appears each with one research group in 2014.

In the scope of private institutions, research groups are numerically rare and were only created (or at least registered at CNPq) in recent years. The *Centro Universitário Cesmac* starts to

have groups in 2014, going from 6 to 9 in 2016. The *Centro Universitário Tiradentes* (Unit) started to have a research group in 2016.

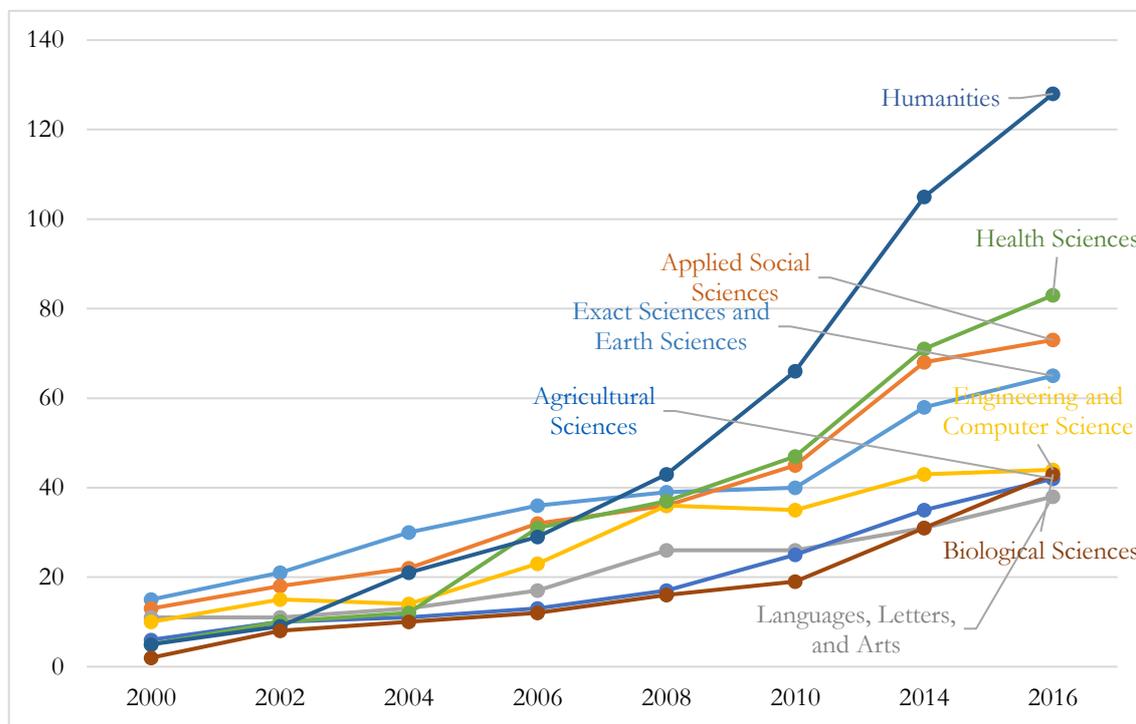
Considering the legal scope as a point of reference to understand the position represented by these two private universities in Alagoas, regarding research groups, the fact that they are established as university centers can help associate its nature to the lack of obligation to develop research activities – an issue criticized and discussed by some researchers, such as Severino (2008) and Soczec & Alencastro (2012).

Florêncio (2007) shows that the state of Alagoas, by improving its educational indexes in the last decades especially High School formation, created the conditions to attract private investments in Higher Education. In the period after the Law of Guidelines and Bases for National Education, of 1996, the state experienced an expansion of private Higher Education, attending a great part of the population whose schooling increased. Naturally, as pointed out by Silva Jr. & Sguissardi (2001), the expansion of private Higher Education in the country, with rare exception, ignores the model which integrates teaching, research, and outreach due to a simple relation between investment and financial return.

In this regard, the growth, expansion, and diversification of Higher Education in Alagoas, considering its historical specificities, ratify the division of academic work between public and private institutions, what can be seen, in the present study, on the researches.

The parallel between expansion and diversification and their expression in research groups are not restricted to institutions. We can observe it also in the areas of knowledge and their behaviors throughout the years, on one hand, and the number of subjects involved on the groups, on the other. This means that the increase in the number of research groups, as well as of HEIs which serve as spaces of creation, accreditation, and development of these groups, is directly proportional do the increase in the number of researchers in the state of Alagoas, research lines and their respective knowledge areas.

Figure 3 – Knowledge areas of the research groups in Alagoas- variation 2000-2016



Source: created from DGP/CNPq (2017).

Figure 3 shows a significant numeric evolution in all areas of knowledge, as well as a transformation in their arrangement. If in 2000, the Exact and Earth Sciences were prominent in the state, representing 23% of research groups at that year (the equivalent of 15 groups at that time), in 16 years we can see some transformations. The highest growth was in Humanities, going from 5 groups in 2000 to 128 in 2016, this growth means that the area has the highest number of research groups in the state since 2008. Within Humanities, the Education area<sup>7</sup> is predominant in this scenario, followed by Geography, History, Sociology, and Psychology.

We also highlight the Health Sciences that, as Education, had 5 groups in the 2000s and, in 2006, had 83 groups, establishing the second biggest area, in number of research groups, in the state of Alagoas. Beyond those areas, it is worth showing the continuous growth of Applied Social Sciences, as well as Exact and Earth Sciences, Engineering and Computer Science; Biological Sciences went from 2 groups in 2000 to 43 in 2016, in a similar movement, Agricultural Sciences went from 6 research groups in 2000 to 42 in 2016; finally, the area of

<sup>7</sup> We can understand this national growth of research groups in Education, pointed out by Silva (2017) as one of the consequences of the university autonomy process in this area of knowledge.

Languages, Letters, and Arts has a more timid movement in this period, going from 11 groups in the 2000s to 38 in 2016.

Faced by this numbers, we are interested to highlight the diversification of research areas and lines that Alagoas experienced since the expansion of its Higher Education and, consequently, its research groups. The numeric distances between the areas, on its turn, reveal, on one hand, the socio-historic paths and specificities that HEIs from Alagoas have been establishing and, on the other, how the disputes in the academic game have been taking shape in this context under each knowledge area – as these areas are in a relation of dispute for innumerable resources and scientific capitals (Bourdieu, 2008).

The last consolidation expression of research groups and the scientific community in Alagoas is given by the subjects. Naturally, after characterizing the absolute numbers, the institutions, their administrative supports, and knowledge areas, we also highlight here the growth of personnel in the research scenario in the state. As we argued in the beginning of this article, the expansion and diversification of Higher Education led, among other issues, to the need to form new boards for this educational level. In this sense, and considering that research and postgraduate programs are important instances for this formation, we should expect an increasing number of subjects involved with research in the universities in the last years, what can be related to the democratization of this space and also the broader dissemination of the researchers' work in Brazil.

In the 16-year period we are analyzing (2000-2016), the number of researchers in Alagoas registered in the directory of groups at CNPq has gone from 256 to 3,081, summing up an exponential growth in the number of professors/researchers, and reflecting in the division of the previously mentioned knowledge areas. When we stick to the students on these groups, the growth rate is even more surprising: Alagoas passed from 377 students registered in research groups in 2000 to 6,309 in 2016. We can also highlight in the research group subjects, the technicians and foreign collaborators: between 2000 and 2016, the number of technicians in those groups went from 40 to 141; and between 2014 and 2016, CNPq registered an increase from 20 to 31 foreign researchers who collaborated with research groups of Alagoas.

In the case of professors/researchers, we have to point the following factors related to the context of Alagoas: the consolidation and recent expansion of Ufal and the consequent attraction of subjects, even from other states; the renewal of boards which allowed the

establishment of *stricto sensu* postgraduate programs in the state during the last decades; and the institutionalization of research in the HEIs in the state. Regarding students, it is key to understand this numeric evolution on the frame of Alagoas university expansion and the consequent diversification of its public (Lopes, 2015).

Summing up, characterizing the scientific community of Alagoas through its research groups has led us to understand the decisive role of Ufal as an institution that concentrates activities of production, dissemination, and consumption of knowledge produced by its scientific community. The expansion of Higher Education in Brazil in general and in its states in particular serve as a background to establish new research groups in the case of Alagoas, besides the consolidation of already existing ones, which refers to a conjecture of development and consolidation of boards of researchers in the state and, consequently, the academic community itself.

## Final remarks

The task to objectify the scientific community in the Alagoas context allowed us to correlate broader phenomena connected to the expansion and diversification of Higher Education in Brazil to more specific processes of improving the spaces of research development and the formation of new researchers in the state. This correlation is possible in the numerical increase of institutions and subjects led by the expansion of this educational level, a fact that ended up stimulating the different fronts that mark HEIs in the country – teaching, research, and outreach.

Hereof, articulating the processes of expansion of this educational level to the development of an increasing autonomous and consolidate sphere within university scope, here called scientific community, seems key due to its relational extent that this movement allows. From an analytical point of view, it enlarges the objects of study related to the theme of expansion and diversification of Higher Education that Brazil has recently experienced, while revealing the constellation of elements over which such transformations take place. Besides this, this approach shows the intersections that mark different fronts of teaching, research, and outreach in the university context, as movements such as the increase of places, new courses,

new professors, new HEIs, and the process of moving inland have extended an modified Brazilian scientific field.

These broader statements support our perspective on the case of Alagoas. Regarding the specificities of Alagoas experience, its recent history of establishing an institutional and human resource apparatus for Higher Education, has been determinant for the conditions to actualize a scientific community expressed, among other spaces, on research groups. In the relation national-local, we have the public policies for federal Higher Education, with a relatively strong importance for the strengthening of that scientific community in the State, as Ufal presents a much higher number of research groups, as seen through out the text, and IFAL is also prominent in this aspect.

Without ignoring the criticisms posited by the literature (Filardi, 2014), Reuni can be seen as an example of policy that promoted the reconfiguration of research in Alagoas, among other areas, as it ended up allowing the increase of places, courses, and *campi* of Ufal, key elements to expand the scientific community at this university– this type of correlation can be seen in Afonso (2014). Regarding Ifal, we can highlight its transformation from *Centro Federal de Educação Tecnológica* to *Instituto Federal*, which, regarding regulation, evaluation, supervision, and offer of Higher Education courses, has equated federal institutes to universities (Pacheco, Caldas, & Domingos Sobrinho, 2012), broadening their possibilities of research and knowledge production. This relation between public policies of Higher Education Expansion and the scientific community can establish, on its turn, a future line of investigation.

Furthermore, in the specific scope of research practice, it is crucial to see research groups as privileged spaces to construct knowledge and form new researchers. The recent history of Higher Education in Alagoas has on research an expression of maturity and consolidation of this educational level, as well as its scientific community. The data presented by this study reveal the movements of exponential increase of these groups, as well as its configuration. We highlight then: the division of academic work between public HEIs and private ones shown in the number of research groups on each one; the role of public institutions to implement a scientific community in Alagoas, specially Ufal; the relation between the increase in the number of subjects in Higher Education and the institutional and knowledge area diversification in the research groups; also, the issue of discontinuity of research groups, especially in private HEIs.

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