

Archaeological research in Catalonia: projects 2014-2022

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Abstract

When trying to understand the development of a scientific field, analysing its capacity of funding attraction is key; in this sense, the study of archaeological research in Catalonia has often been neglected. To address this gap, in this study we examine the funding landscape of Catalan archaeology research by collecting data from public calls during the period of 2014-2022. Our objective is to provide a thorough descriptive analysis that delineates the trajectory of archaeological research funding in Catalonia, thus enhancing our understanding of its current status. Our findings reveal the impact of the 2008 economic recession during the first half of the period, followed by a gradual recovery and a slow increase of the funding from 2019 onwards. However, it is not until 2021 that it will equal or surpass pre-recession levels. Prehistory emerges as the chronocultural period predominantly studied in projects, with a primary focus on site and territory studies, particularly within the Catalan, Spanish and Mediterranean contexts. Most of the projects are financed by the programmes of the *Department of Culture* of the autonomous government of Catalonia, although the largest volume of financing comes from European research calls. Our research identifies three universities (*Universitat de Barcelona [UB]*, *Universitat Autònoma de Barcelona [UAB]*, and *Universitat Pompeu Fabra [UPF]*) and two research centres (*Institut Català de Paleoecologia Humana i Evolució Social [IPHES]* and *Institut Català d'Arqueologia Clàssica [ICAC]*) as the primary contributors to archaeological research in Catalonia. Finally, we emphasize the pivotal role of the latter in fostering archaeological research scene in Catalonia.

Keywords

Archaeology; Funded research; Research topics; Research centres; Inputs; Projects; R&D projects; Catalan universities; Public research funding; Meta-research; Catalonia.

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1. Introduction

The advancement of a scientific discipline is associated with the progress made in research across its areas. From a quantitative perspective, this development can be measured from its inputs, encompassing research projects in their diverse forms, research groups, and the acquisition of funding and resources. Additionally, the evaluation extends to outputs, primarily in the form of scientific publications of all kinds (journal articles, monographs, theses, conferences, etc.). Both serve as key performance indicators for research centers (**García-Holgado; Marcos-Pablos; García-Peñalvo, 2020**).



This article aims to expand the knowledge of Catalan archaeological research by doing a comprehensive analysis of its main inputs during the period 2014-2022. Conducted as a descriptive study, the research involves the compilation and examination of data derived from the most relevant calls for financial assistance dedicated to archaeological research in Catalonia, which are collected and analyzed. The aim is to determine the discipline's capacity to attract resources and define its structure and principle lines of research.

1.1. Background

The examination and analysis of projects and resources within Catalan archaeological research have hardly ever been in the spotlight of studies dedicated to this discipline. In contrast, other fields, such as communication (**Lozano-Ascencio et al.**, 2020; **Caffarel-Serra; Ortega-Mohedano; Gaitán-Moya**, 2018; **Barranquero-Carretero; Limón-Serrano**, 2017), information and documentation (**Travieso-Rodríguez; Ríos-Hilario**, 2020), or health sciences (**García-Holgado et al.**, 2019) have garnered more attention. While there has been a brief review of national R&D projects in Archaeology carried out by **González-Pérez** (2010), and some bibliometric analyzes focused on publications in academic journals (**Rodríguez-Yunta; Vidal-Liy**, 2020; **Rodríguez-Yunta; Vidal-Liy; Martínez-Navarrete**, 2019; **Gómez-Bach**, 2010; **Rodríguez-Alcalde et al.**, 1996; 1993; **Cruells**, 1995), there is a notable absence of studies focused on the inputs of archaeological research in Catalonia. For this reason, it is necessary to explore the few publications that assess the state of Catalan archaeological research, where, in some cases, the topic has been briefly touched upon.

Notably, Isabel Rodà was the first to express interest in the state of Archaeology in Catalonia. Her 1998 paper offers a comprehensive overview of the situation and evolution of archaeological research since 1990 (**Rodà**, 1998). Despite the valuable and systematic information it provides regarding the primary research activities, the publication provides limited insights about funding and research inputs, since its scope leans more towards reviewing results.

The situation during the following years was thoroughly investigated in the report dedicated to historical research in Catalonia, commissioned by the *Institut d'Estudis Catalans* (**Simon**, 2014). This report offered a much more detailed and structured snapshot of the archaeological research landscape from 2003 to 2009. Unlike previous assessments, this report featured several sections specifically aimed at the analysis of funding sources and projects and research groups allocation.

Following this comprehensive examination, there has been a noticeable absence of in-depth studies on the current state of archaeological research in Catalonia. It is necessary, therefore, to turn to other sources that address the issue indirectly. For example, the introduction of the *Pla de recerca de l'arqueologia i la paleontologia catalanes* (**Rueda; Ten; Buxó**, 2014) provides a brief overview of the situation of archaeological research in Catalonia during the first years following the economic recession of 2008. Although not an exhaustive study, this document superficially exposes the state of research and its evolution in the years immediately preceding the publication of the plan.

Of particular interest are the four debates published by the *Revista d'Arqueologia de Ponent*. These debates, respectively addressing the financing of archaeological research in Catalonia (**Gracia-Alonso et al.**, 2009), the research career in Archaeology (**Armada et al.**, 2010), the structure of Catalan archaeological research (**Rafael; Junyent; Alonso**, 2017) and financing within the framework of the *Projectes quadriennals de recerca en matèria d'arqueologia i paleontologia* (**Miró-Alaix et al.**, 2019), offer a subjective yet insightful perspective about contemporary archaeological issues, providing a platform for the voices of the key stakeholders. Thus, they present a pluralistic view of incalculable value for the study of the state of the discipline in recent years, particularly when juxtaposed with data derived from official sources.

Finally, a more detailed approach is provided through different articles written on the trajectories, lines of research and human capital of specific projects, research groups or centers. Notable examples include the dossier published in *Pyrenae* for the 50th anniversary of the journal, about the research groups of the former *Department of Prehistory, Ancient History and Archaeology* of the *University of Barcelona* (**Vilella-Masana et al.**, 2015; **Remesal-Rodríguez et al.**, 2015; **Sanmartí et al.**, 2015; **Gracia-Alonso et al.**, 2015; **Fullola-Pericot et al.**, 2015; **Cau-Ontiveros et al.**, 2015), the publications on the research activity of the *Institut Català d'Arqueologia Clàssica* (**Ventura-Manén; Guitart-Duran**, 2006; **Palet-Martínez**, 2018) and the official documents and reports of the *CERCA* research centers and the *Museu d'Arqueologia de Catalunya* (*Museu Arqueològic de Catalunya*, 2019; **Auladell-Marquès**, 2021; *Institut Català d'Arqueologia Clàssica*, 2020; *Institut Català de Paleoeologia Humana i Evolució Social*, 2020).

1.2. Goals

The absence of comprehensive studies on the components of Catalan archaeological research is glaring, and it is within this gap that the current article finds its purpose. The primary objective is to provide an updated and systematic analysis of research projects and funding within Catalan archaeological research, specifically focusing on the period from 2014 to 2022.

The specific goals we aim to achieve include:

- Examine the principal funding programs for research in Archaeology and identify the projects that have received funding.
 - Identify the key organizations that have played a significant role in promoting and developing archaeological research.
 - Delineate the primary themes and research directions that have characterized Catalan archaeological research.
- Analyse the temporal evolution concerning both approved projects and research groups, as well as the corresponding funding received.

2. Methods

The input-output model, rooted in economics and accounting principles (Godin, 2007), has been used to represent research systems since the 1960s (Godin; Ratel, 1999; OECD, 2002). This model has been the basis for the creation of indicators that allow measuring scientific and technological culture: research inputs, represented by funding, human resources and research infrastructure; and research outputs, mainly scientific publications in all their forms (articles, monographs, theses, etc.) (Cortés-Vargas, 2007).

The analysis of research inputs as a metric has been employed for an extended period, with international organizations advocating for its use due to its standardization and enhanced comparability (OECD, 2002). Among various research inputs, the analysis of project financing stands out as a valid, reliable, comparable, readily available, and informative indicator for assessing the scope of research and its progression (Godin; Gingras; Bourneuf, 1998). In recent decades, such data have been instrumental in used to analyze scientific cooperation (Sekerci; Alp, 2023), evaluate the scientific performance of universities (Ajdarpašić; Qorraj, 2019), describe projects funded by specific agencies (Liu *et al.*, 2019), and, significantly, assess the state of research within specific fields or subfields (Barranquero-Carretero; Limón-Serrano, 2017; Sánchez-Soriano; García-Jiménez, 2020; Travieso-Rodríguez; Ríos-Hilario, 2020; Gaitán-Moya *et al.*, 2021; Marzi; Morini; Gambarotta, 2022; Méndez-Majuelos; Olivares-García; Román-San-Miguel, 2023).

This study examines public competitive calls for funding research projects as a key indicator of the status and progression of archaeological research in Catalonia. The data on which the analysis is based, which refer to the selected projects and their financing, are of public nature and predominantly sourced from the websites and transparency portals of various financing entities or institutions under scrutiny. While these data are generally open and accessible, their location is not always straightforward. In some cases, when the required data were inaccessible or incomplete, direct requests were made to the institutions.

The geographical focus of this study is justified by the diversity in the management, legislation, and financing of archaeological heritage research across different autonomous communities. Concentrating on a singular region enables a more detailed analysis of primary actors, their contributions, and the status and progression of research within that specific territory. While the outcomes may not be universally extrapolated to the entire country due to this regional specificity, the methodology employed here could be replicated in other autonomous communities to gather comparable data for cross-regional comparisons.

The period studied goes from 2014 to the present (data closed in 2022). The selection of the initial date is influenced by data availability and the turning point that represents, for archaeological research in Catalonia, the approval of the *Pla de recerca de l'arqueologia i la paleontologia catalanes* (Rueda; Ten; Buxó, 2014).

2.1. Analyzed funding calls

To compile the dataset on the financing of archaeological research in Catalonia, we systematically identified the primary sources of public funding in three distinct geographical domains: Catalonia, Spain, and Europe.

With this objective, the resolutions of different calls associated with selected research assistance plans and programs have been meticulously examined, including:

- *Ajuts per donar suport a les activitats dels grups de recerca (SGR)*. Grants supporting the activities of research groups under the *Agència de Gestió d'Ajudes Universitàries i de Recerca (AGAUR)* of the *Generalitat de Catalunya*.
- *Projectes quadriennals de recerca en matèria d'arqueologia i paleontologia (PQA)*. Funding allocated to four-year archaeological research plans by the *Departament de Cultura* de la *Generalitat de Catalunya*.
- *Programa estatal de fomento de la investigación científica y técnica de excelencia*. State Research and Development (R&D) projects by the *Ministerio de Ciencia e Innovación* of the *Spanish Government*.
- Programs under *Horizon 2020* and *Horizon Europe* within the Research and Innovation area of the European Union.

2.1.1. Ajuts per donar suport a les activitats dels grups de recerca (SGR)

In the Catalan context, we examined the resolutions from calls for aid to research groups awarded by the *Agència de Gestió d'Ajudes Universitàries i de Recerca (AGAUR)* of the *Generalitat of Catalonia*. These grants usually involve relatively modest amounts that are intended to fund the group's basic research activities and are not tied to any specific project. The purpose of the outcomes of the calls are twofold: on the one hand, to acknowledge research groups affiliated with Catalan universities and research institutions and, on the other, to financially support their activities, fostering research and impact. This funding option includes a competitive selection process and scientific evaluation. Within the period studied three calls for the research group support program were conducted in 2014, 2017, and 2021.

The information concerning the research groups was extracted from the resolutions of the *Ajuts per donar suport a les activitats dels grups de recerca* (hereafter referred to as *SGR*) of the *Agència de Gestió d'Ajudes Universitàries i de Recerca (AGAUR)*, and complemented, when necessary, with information sourced from their websites or explanatory publications.

“ Rarely have the description and analysis of the projects and resources of Catalan archaeological research been in the spotlight of studies dedicated to this discipline, unlike other ”

2.1.2. Projectes quadriennals de recerca en matèria d'arqueologia i paleontologia (PQA)

Currently, the main aid plans in the field of archeology within the Catalan domain are the *Projectes quadriennals de recerca en matèria d'arqueologia i paleontologia* (from now on *PQA*), granted by the *Department of Culture of the Generalitat of Catalonia* in collaboration with *AGAUR*. These aid programs were defined and established in the *Catalan Archeology and Paleontology Research Plan* (Rueda; Ten; Buxó, 2014). three calls have been issued since the plan's publication in 2014, with subsequent calls in 2018 and 2022. The plans were designed to fund archaeological research interventions taking place within a structured project with a cohesive thematic focus (Moyà-Solà, 2019; Rueda; Ten; Buxó, 2014). However, these initiatives have not been immune to criticism, encompassing concerns about the scale of the subsidies (Miró-Alaix, 2019; Junyent; López, 2019; Edo-Benaiges, 2019), for the selection system employed (Miró-Alaix, 2019; Junyent; López, 2019; Edo; Benaiges, 2019; Alaix, 2019; Junyent; López, 2019; Gracia-Alonso; Garcia-Rubert, 2019; Moyà-Solà, 2019; Edo-Benaiges, 2019) or the lack of effective monitoring of the projects and their results (Moyà-Solà, 2019).

The basic information regarding the quadrennial calls has been extracted from the resolutions of the calls accessible through the website of the *Department of Culture*.

2.1.3. Programa estatal de fomento de la investigación científica y técnica de excelencia

Another source of funding are the calls for State Research and Development (R&D) projects promoted by the *State Research Agency (AEI)* from the *Ministry of Science and Innovation (MICIN)* of the *Government of Spain*. Among these, only the calls for "Proyectos de I+D+i Excelencia" (from now on *PMICIN*) have been used, as they are the ones that support research projects in different areas of knowledge.

The data concerning projects funded by the *Ministry of Science and Innovation* has been meticulously gathered from the web pages of the calls, extracting the information from the final resolutions. Among the diverse calls scrutinized, research projects in Archaeology were exclusively identified within specific programs. Specifically, they were found in the calls "Proyectos I+D" for the years 2014, 2015, 2016, and 2017; "Proyectos de I+D de Generación de Conocimiento" in 2018, and "Proyectos I+D+i" - Modalidades "Retos Investigación" y "Generación de Conocimiento" for the years 2019, 2020, and 2021.

2.1.4. Horizon2020

Certain research centers and universities in Catalonia actively coordinate or engage in international projects funded by the European Union, serving as an additional reservoir of resources for Catalan archaeological research. Beyond financial support, these projects also provide a platform for the promotion and internationalization of archaeological projects.

Of all the competitive calls for supporting scientific research initiated by the European Union, we focus on the *Horizon2020* and *Horizon Europe* programs. This selection is based on their significance and their temporal alignment with the period under study. Administered by the Research and Innovation sector of the European Union, these programs offer subsidies covering a broad spectrum of knowledge areas.

2.2. Search strategy and used indicators

From all these sources, archaeological research projects were selected. The search strategy was tailored to the unique characteristics and structures of the data sets.

All projects granted in the *PQA* program were incorporated to the analysis, with the exception of those affiliated with the *Institut Català de Paleontologia Miquel Crusafont*, as this program is expressly designed to subsidize research projects in Archaeology and Paleontology.

The selection methods used when considering the *SGR* aid calls data set varied across the different years. For the 2014 and 2017 calls, where groups were categorized into knowledge areas, all those falling within the fields of Archaeology and Prehistory were included in the dataset. Additionally, manual selections were conducted for groups categorized under Ancient History, Medieval History, Modern History, and Contemporary History. Regarding the 2021 call, selections were made manually based on an assessment of the group's name and information gathered online about their research activities.

In the case of *PMICIN* grants, lists featuring accepted projects were meticulously filtered using distinct search equations tailored to each call characteristics. In every instance, efforts were made to filter by the area of knowledge or subarea (sometimes represented only as an acronym in the project reference code), aiming to refine the results. Only projects categorized within the autonomous community of Catalonia or endorsed by an institution based in Catalonia were selected, depending on the availability of relevant information. For certain calls where data on the area of knowledge was missing or too broad, it was necessary to manually filter the results. In these cases, the project title and information gathered from the internet were used to decide on the projects' inclusion.

To gather data from the calls under the *Horizon2020* and *Horizon Europe* programs, the *Cordis* project database was consulted:

<https://cordis.europa.eu>

The search involved filtering by program and selecting projects classified in the fields of science such as “archaeology”, “archaeometry”, “bioarchaeology”, “ethnoarchaeology”, “history and archaeology”, and “underwater archaeology.” The search was constrained to projects initiated before 12/31/2022 and completed after 1/1/2014, with participation from institutions based in Spain. Following this, results were manually filtered to exclusively select archaeology projects, taking into account the potential inclusion of history projects within the broader category of “history and archaeology.” Only those projects coordinated by Catalan institutions or featuring a participating Catalan institution were ultimately included.

The searching equation used is the following:

```
contenttype='project' AND /project/relation/categories/euroSciVoc/code='/31/113/611' AND frameworkProgramme='H2020','HORIZON' AND startDate<=2022-12-31 AND relatedRegion/region/euCode='ES' AND endDate>=2014-01-01
```

The information from the selected projects was extracted and underwent a refinement process to describe it with a series of indicators. These indicators summarize the fundamental characteristics or attributes of the subject under study, namely the research projects, facilitating a comprehensive description of their context (Travieso-Rodríguez; Ríos-Hilario, 2020). The analyzed attributes or variables of the projects are the following:

- Title: The project title or group name.
- Institution: The Catalan institution that promotes, participates in, or hosts the project or research group. In cases where the institution promoting the project is not Catalan, this will be explicitly indicated with the phrase “external coordination.”
- Organization typology: The type of institution, with the following possible values (single descriptor): “University”, “Research Center”, “Museum”, “Public Administration”, “Private Company”, or “Others.”
- Financing obtained: The amount received by the project or group in the respective call.
- Funding body: The funding body responsible for the call.
- Scope of the call: Context of the call. Possible values (single descriptor): “Catalonia”, “Spain”, or “Europe.”
- Year: The year in which the call was made.
- Geographic scope: Between one and three labels describing the geographic scope of the project or group. Possible values include “Catalonia”, “Spain”, “Mediterranean Basin”, “Europe”, “Africa”, “Asia”, “America”, “Oceania”, and “Global.”
- Chronocultural period: Between one and three labels describing the chronocultural period of the project or group. Possible values include “Diachronic”, “Paleontology”, “Prehistory”, “Ancient Age”, “Late Antiquity”, “Middle Ages”, “Modern Era”, and “Contemporary Era.”
- Theme: Between one and three labels describing the topic of study of the project or group. Possible values include “Physical anthropology and evolution”, “Material culture and technology”, “Ecology, landscape and relationship with the environment”, “Economy”, “Habitat, architecture and urbanism”, “History and archaeology”, “Heritage and discipline archaeological”, “Population and territory”, “Social and cultural relations”, and “Religion and symbolic world.”

2.3. Limitations

It is crucial to emphasize the existing information gaps concerning the primary research focuses and the team members of the projects. This is an issue that appears across several calls. An effort has been made to mitigate this by locating project web pages to extract supplementary information, but the inconsistency of this additional information (Pacios; Vianello-Osti; Rodríguez-Bravo; 2016) hindered its systematic treatment and made comparisons impossible.

Moreover, the diversity of formats and dataset structures across the sources complicated the acquisition and cleaning processes –a recognized challenge in studies of this nature (Abadal; Guallar, 2020; García-Holgado; Marcos-Pablos; García-Peñalvo, 2020; Travieso-Rodríguez; Ríos-Hilario, 2020). In specific instances, the substantial differences in data formats between institutions rendered direct comparisons unfeasible.

Finally, it is essential to underscore that this study, with its descriptive objective, employs results from specific public calls as indicators of the overall state of archaeological research in Catalonia, its structural components, and its resource mobilization capabilities. Consequently, the study does not provide exhaustive coverage of all funding sources within the discipline. For this reason, it would be interesting to broaden the sample with data from other public (provincial councils, city councils, etc.) or private calls, which also contribute to archaeological research financing. Unfortunately, in this case, due to challenges in locating and accessing data, these sources had to be set aside.

3. Results

The data collection process has resulted in the compilation of a dataset comprising 374 archaeological research projects and groups either coordinated by or involving institutions in Catalonia. These projects were granted funding through one of the 22 analyzed funding calls spanning the period from 2014 to 2022, encompassing the Catalan, Spanish, and European contexts (see Table 1). This dataset serves as the foundation for the forthcoming analysis of inputs in Catalan archaeological research throughout the specified period.

This section will describe the main Catalan Archeology research institutions that have been identified in the data set, highlighting the number of projects and research groups that they have promoted during the period studied. Next, the funding allocated in the aid calls will be analyzed in depth, and an exploration of the project contents will be undertaken.

3.1. Catalan research institutions in archaeology

The analysis of the collected dataset allows for the identification of various stakeholders in archaeological research in Catalonia, serving as the driving forces behind the structuring of research and the promotion of a significant portion of funded projects, as well as hosting recognized research groups in this field. Among these key actors, it is important to distinguish between universities and research centers, given their distinct characteristics and roles in the research landscape (Criado-Boado, 2017; Gutiérrez-Lloret; Jover-Maestre; Lorrio-Alvarado, 2017). It is important to note that, besides these two major groups, museums, public administration entities, other organizations, and private companies also actively participate in archaeological research.

Within the university landscape, six institutions stand out, each hosting archaeological research in different degrees: *Universitat de Barcelona (UB)*, *Universitat Autònoma de Barcelona (UAB)*, *Universitat Rovira i Virgili (URV)*, *Universitat Pompeu Fabra (UPF)*, *University of Lleida (UdL)*, and *University of Girona (UdG)*. Additionally, the *Polytechnic University of Catalonia (UPC)*, while not primarily engaged in archaeology research, has coordinated a European project on this topic during the analyzed period. As for research centers, three are dedicated to archaeological research, including two CERCA centers – *Institut Català d'Arqueologia Clàssica (ICAC)* and *Institut Català de Paleoeologia Humana i Evolució Social (IPHES)* – and a center affiliated with the *Higher Council for Scientific Research, Institut Milà i Fontanals (IMF-CSIC)*. Notably, the *Museu d'Arqueologia de Catalunya (MAC)* and the *Institut d'Estudis Catalans (IEC)* are also highlighted for their uniqueness and historical trajectory.

3.2. Research funding

It can be asserted that subsidies for research projects are considered the primary method of financing archaeological research. The calls for these grants often exhibit diverse formats, posing challenges in data acquisition and aggregation. However, to provide a generalized and approximate overview of the public financing landscape for archaeological research in Catalonia, the main funding programs have been analyzed.

Among the four analyzed sources of public financing, the *Projectes quadriennals de recerca en matèria d'arqueologia i paleontologia (PQA)* program emerge as the main supporter, contributing to 194 out of the 374 projects identified during the study period. Nevertheless, the total financial allocation of this program falls considerably below that of the European calls, which stand out as the most substantial contributors in terms of total funding for Catalan archaeological research (€10,737,313.06) (see Table 1).

Table 1. Summary of the analysed calls

Call context	Call	Year	Total funding (€)	Number of projects	Average funding per project (€)
Catalonia	SGR	2021	960,000.00	22	16,584.62
Catalonia	SGR	2014	431,200.00	26	27,608.56
Catalonia	SGR	2017	717,822.58	26	43,636.36
Catalonia	PQA	2014	2,180,003.99	60	36,333.40
Catalonia	PQA	2018	2,166,928.92	69	31,404.77
Catalonia	PQA	2022	4,202,770.27	65	64,658.00
Catalonia – Total			10,658,725.76	268	39,771.36
Spain	PMICIN	2014	271,040.00	4	67,760.00
Spain	PMICIN	2015	636,702.00	14	45,478.71
Spain	PMICIN	2016	781,660.00	15	52,110.67
Spain	PMICIN	2017	102,850.00	2	51,425.00
Spain	PMICIN	2018	392,040.00	6	65,340.00
Spain	PMICIN	2019	1,292,159.00	19	68,008.37
Spain	PMICIN	2020	977,680.00	11	88,880.00
Spain	PMICIN	2021	550,550.00	5	110,110.00
Spain – Total			5,004,681.00	76	65,851.07
Europe	Horizon2020	2015	158,121.60	1	158,121.60
Europe	Horizon2020	2016	1,443,010.99	4	360,752.75
Europe	Horizon2020	2017	316,243.20	2	158,121.60
Europe	Horizon2020	2018	4,202,034.20	5	840,406.84
Europe	Horizon2020	2019	3,601,899.58	5	720,379.92
Europe	Horizon2020	2020	584,769.84	3	194,923.28
Europe	Horizon2020	2021	1,765,032.00	3	588,344.00
Europe	HorizonEurope	2022	1,247,403.84	7	178,200.55
Europe – Total			13,318,515.25	30	443,950.51
TOTAL			28,981,922.01	374	77,491.77

3.2.1. Projectes quadriennals de recerca en matèria d'arqueologia i paleontologia (PQA)

As previously mentioned, the data set analysis reveals a total of 194 projects financed through the *Projectes quadriennals de recerca en matèria d'arqueologia i paleontologia (PQA)*. Consequently, this type of aid exhibits the highest representation in the sample in terms of the number of financed projects (see Table 1).

In the initial call for the *PQA* in 2014, 60 archaeology projects were accepted, with approximately half affiliated to universities (32), followed by research institutes (12), public administration and museums (7), commercial archaeology companies (5), and other entities (4).

The total funding awarded in 2014 for archaeological projects amounted to €2,180,003.99. In terms of financing distribution, the majority went to projects promoted by universities (€1,306,633.18), followed by research centers and institutes (€424,361.25), museum and public administration projects (€246,221.83), other institutions (€135,807.65), and private companies (€66,980.08) (see Fig. 1).

In the 2018 call for the period 2018-2021, 69 archaeology projects were approved, with approximately half originating from Catalan public universities (36). The rest were coordinated by research centers or institutes (16), museums or cultural entities (14), and private Archaeology companies (3).

The total funding awarded in 2018 to projects in archaeological research was €2,166,928.92. Predominantly, universities received the largest share of the total funding (€1,378,019.32), followed by research centers and institutes (€403,822.04), museums and other cultural institutions (€310,863.4), and private companies (€71,155.36) (see Fig. 1).

In 2022, a total of 65 archaeology projects were approved and financed. Similar to the 2014 and 2018 calls, the majority of the projects were promoted by universities (34), followed by research centers (14) and other institutions such as societies, institutes, and cultural entities (12). Projects promoted by public administration (3) and private companies (2) were fewer.

This last call, the funded amount nearly doubled, with a total of €4,202,770.27 awarded to archaeological research projects. As in other years, the largest portion of this sum went to university projects (€2,594,937.03) and research centers (€769,938.07) (see Fig. 1).

3.2.2. Ajuts per donar suport a les activitats dels grups de recerca (SGR)

In the *SGR* 2014 call, 25 Archeology research groups were recognized, of which 12 (48%) received funding. The amount received by these 12 groups was €431,200 (table 1). The funded archeology research groups therefore received an average of €35,933.33.

The institution that received the largest amount (€108,000) was *IPHES*, followed by *UB* (€97,000), *UAB* (€88,000) and *ICAC* (€79,000). This highlights the competitiveness of the *CERCA* center groups (*IPHES* and *ICAC*) (fig. 2).

In the 2017 call, the total funding for archaeology research groups increased to €729,172.58, nearly double the amount of the previous call. This funding was distributed among the 18 groups (out of the 26 recognized) that received support. Consequently, 69.23% of archaeology research groups received aid, with an average funding per group rising to €40,509.59 (see Table 1).

IPHES once again led the list of centers in terms of funding received, obtaining €180,984, closely followed by *UAB* (€178,301.90) and *UB* (€173,578.88) (see Fig. 2). It is noteworthy that despite having only three groups, *IPHES* ranked

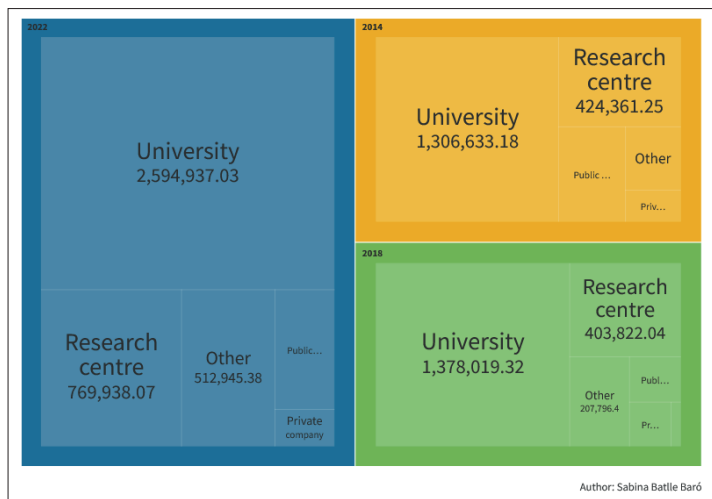


Figure 1. Distribution of the funding to archaeological projects depending on the type of the promoting entity (*Projectes quadriennals de recerca en matèria d'arqueologia i paleontologia (PQA)*, 2014, 2018, and 2022 calls).

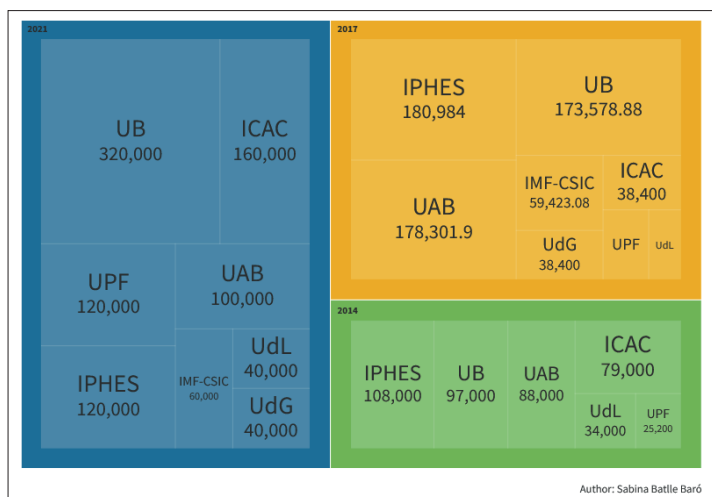


Figura 2. Distribution of the funding to archaeological research groups among research institutions (*SGR* program, 2014, 2017, and 2021 calls).

first in total funding received, surpassing *UB*, which had nine groups, and *UAB*, with seven. This difference in granted funding can be interpreted as an indication of the potential and quality of the archaeology research groups at *IPHES*. Regarding the previous call, it's noteworthy that *MAC* disappeared as a promoting institution, *ICAC*'s funding decreased significantly to €38,400 for its only group (less than 50% of the amount received in 2014), and *IMF-CSIC* entered the scene with a notable funding of €59,423.08 for a single group.

“ The main agents that support archaeological research in Catalonia are universities and research centers, but museums, public administration, other entities and private companies also participate ”

In 2021, a total funding of €960,000 was allocated to Archaeology research groups, almost a third more than in the previous call (see Table 1). This funding was distributed among 19 groups, representing 86.36% of the total 22 recognized groups. The groups received an average of €50,526.32, indicating an increase of almost 25% compared to the previous call.

In the 2021 call, *UB* received the largest amount of funding, amounting to €320,000 (see Fig. 2). Following closely, *ICAC* received €160,000, while *UPF* and *IPHES* received €120,000 each. Particularly noteworthy is the significant increase in funding for *UPF* (€120,000), almost five times higher than the amount received in previous calls despite maintaining the same number of groups (2). Additionally, *ICAC*, with two new groups, doubled the funding received in 2014 and quadrupled that of 2017. *UB* almost doubled the funding received in 2017 as well.

3.2.3. Programa estatal de fomento de la investigación científica y técnica de excelencia (PMICIN)

In total, over the studied period, state aid has been allocated to 95 archaeology projects promoted by Catalan institutions, receiving a total amount of €6,296,840.

In terms of the number of projects awarded, *UB* holds the top position with 27 projects over the seven years analyzed, followed by *UAB* with a total of 19 projects, and *ICAC* with 16.

Regarding the amount of aid, *UB* (€2,076,118), *UAB* (€1,242,307), and *ICAC* (€885,720) continue to stand out. However, it is noteworthy that *IPHES*, *UB*, and *UdL* are the institutions that, on average, have received the most funding per project (€78,246.67, €76,396.38, and €70,180, respectively). Generally, there is a trend toward an increase in the average funding per project across the calls, particularly starting in 2019.

3.2.4. Horizon2020 and Horizon Europe

Within the *Horizon2020* and *Horizon Europe* programs, a total of 30 projects were financed with the participation of seven Catalan research institutions (*UB*, *UPF*, *IPHES*, *ICAC*, *UdG*, *UAB* and *UPC*). Out of these, 24 projects were coordinated by the Catalan institutions themselves, which represented a total financing of €10,737,313.06. In the remaining 6, the participating Catalan institutions (*UB*, *UAB*, *UPF* and *IPHES*) received a total amount of €2,581,202.19. The total aid received by the Catalan institutions amounted to €13,318,515.25 (see Table 2).

Table 2. Funding received by institution in the programs *Horizon2020* and *Horizon Europe* (€).

Institution	2015	2016	2017	2018	2019	2020	2021	2022	Total
<i>ICAC</i>	—	—	—	—	—	172,932.48	—	301,852.32	474,784.80
<i>IPHES</i>	158,121.60	—	316,243.20	—	—	—	761,412.48	—	1,235,777.28
<i>IPHES</i> (external coordination)	—	835,142.79	—	—	—	—	—	—	835,142.79
<i>UAB</i>	—	—	—	—	1,454,792.50	—	—	784,619.04	2,239,411.54
<i>UAB</i> (external coordination)	—	—	—	—	—	—	1,003,619.52	—	1,003,619.52
<i>UB</i>	—	—	—	2,397,496.60	1,908,174.60	—	—	—	4,305,671.20
<i>UB</i> (external coordination)	—	267,625.00	—	157,910.00	66,000.00	—	—	—	491,535.00
<i>UdG</i>	—	—	—	—	—	160,932.48	—	—	160,932.48
<i>UPC</i>	—	170,121.60	—	—	—	—	—	—	170,121.60
<i>UPF</i>	—	170,121.60	—	1,646,627.60	172,932.48	—	—	160,932.48	2,150,614.16
<i>UPF</i> (external coordination)	—	—	—	—	—	250,904.88	—	—	250,904.88
TOTAL	158,121.60	1,443,010.99	316,243.20	4,202,034.20	3,601,899.58	584,769.84	1,765,032.00	1,247,403.84	13,318,515.25

3.3. Content analysis

Based on the titles and information gathered, the content of the projects has been categorized with three types of labels: *chronocultural period*, *geographical context*, and *theme*. Each project has been assigned between one and three labels of each type, providing an overview of the overall content.

In terms of chronocultural periods studied, there is a notable predominance of projects focused on Prehistory, involving over 130 projects and research groups. This is followed, even though at a considerable distance, by studies of the Ancient Age, Protohistory, and diachronic analyses.

The majority of projects and research groups focus is centered within Catalonia, largely influenced by the projects from the two *PQA* calls, where all initiatives are structured around archaeological interventions in the Catalan territory. For projects extending beyond Catalonia, the majority focus on Spain, Europe, or the Mediterranean basin. However, there are specific cases where more distant areas are explored, as well as projects with a global reach.

The most explored themes encompass settlement patterns and landscape archaeology, urban planning and architecture at the settlement level, and, to a lesser extent, social and cultural relations.

“The *Quadriennial Archaeological Research Plans (PQA)* are the programs that has subsidized the most projects, but most of the total funding comes from European calls (*Horizon2020* and *Horizon Europe*)”

4. Discussion

4.1. Evolution and comparison with previous years

Drawing definitive conclusions about trends in the analysed data proves challenging for several reasons. On one hand, the period of study is relatively short. On the other, the different periodicities of various calls (annual for Spain, four-yearly for Catalonia) create distinct patterns in funding inflows. Furthermore, the substantial differences in funding amounts between European grants (averaging €443,950.51 per project) and those in Catalonia (€39,771.36 per project on average) and Spain (€66,282.53) mean that a single European Union-funded project contributes more to annual funding increases than an entire call for proposals in other contexts.

However, despite these complexities, comparing the evolution of the number of projects, total amounts, and average allocations per project for each program over the analysed years remains an interesting exercise. Where possible, the results can be contrasted with data from studies conducted in previous periods to identify trends. While some difficulties arise in direct comparisons due to incomplete or unspecified data in previous studies, general trends can still be identified. For instance, the *History research report (Simon, 2014)* and the *Pla de recerca de l'arqueologia i la paleontologia catalanes (Rueda; Ten; Buxó, 2014)* provide valuable references for the periods 2003-2009 and the years immediately following, respectively. These sources, despite focusing on research conducted and financed in Catalonia, and therefore omitting data over estate or European calls, offer insights that contribute to understanding the state of the research during those years. Consequently, the data published in these reports allows to compare the number of *SGR* grants allocated to archaeological research groups before and after the economic recession.

4.1.1. Institutions

When examining archaeological research in Catalonia from 2014 to 2022, we observe notable changes among the key actors, even though the main institutions remained mostly the same as those in the previous periods. The data provided by the *IEC* report (*Simon, 2014*) pointed *UB* and *UAB* as leading institutions in archaeological research, followed at a considerable distance by *URV* in terms of project numbers, research groups, and funding received. Similarly, during the period 2014-2022, *UB*, *UAB* and *ICAC* emerge as the institutions with the most projects. At the same time, *UB*, *UAB* and *UPF* stand out as the institutions with highest funding, whether as primary promoters or collaborators.

A noteworthy trend within this period is the growth of *UPF*, both in project numbers and, notably in the funding received, primarily thanks to their high participation in European projects. This growth positions the *UPF* among the key contributors to archaeological research in Catalonia. Also, the growth and solidification of the two primary *CERCA* centres, *IPHES* and *ICAC*, are evident, in contrast with their situation in the *IEC* report (*Simon, 2014*), during their first years of activity. Somehow related to this, the *URV* appears to be losing significance. Finally, an important decline in public research funding calls is observed in the institutions directly associated with the administration. This shift may be explained by the fact that these institutions collaborate more with other centres, or because changes instituted by the *Pla de recerca de l'arqueologia i la paleontologia catalanes (Rueda; Ten; Buxó, 2014)*, which established parallel financing for those institutions through alternative channels.

4.1.2. Research groups

Over the studied period, the total number of recognized research groups in the *SGR* calls has kept stable, with a trend towards the consolidation of archaeological research. In 2014, there were 21 consolidated groups, a figure that increased to 24 in 2017. Notably, three out of the four emerging groups acknowledged in the 2014 call attained pre-consolidated status in the 2017 call. Although the total number of groups slightly decreased to 22 in the 2021 call, all of them achieved consolidated status. In terms of institutional affiliation, it is noteworthy that the sole research group associated with *MAC* was lost in 2017. Additionally, there was a reduction in the number of *UAB* groups from six in 2014 to four in 2021.

A retrospective analysis reveals a decline in the total number of groups in 2014 (21 *GRC* and 4 *GRE*) compared to 2009 (27 *GRC* and 3 *GRE*). This decline is particularly notable considering that, in 2014, three new groups from *IPHES*, an ins-

titution that had not hosted any research group in the previous call, were included (Simon, 2014, p. 32). Despite this setback, which persisted in the following calls, it is discernible a trend towards consolidation of the groups, already observed in the years before (Simon, 2014, p.

32), and an increase in the quality, reflected in the number of funded groups, which also grows. Finally, the emergence of CERCA centres appears to imply a transfer of groups from their affiliated universities, as in the case of IPHES and ICAC, which were linked to URV.

4.1.3. Funding

In the case of SGR aid, a diachronic analysis reveals notable shifts in the total funding amount. In the 2009 call, archaeological groups (30 in total, with the exact number of funded groups unknown) received a sum of €898,720. This figure experienced a substantial reduction of nearly half in 2014 when the 12 funded groups (out of 25) were granted a total aid of €452,200. Economic recovery started to become noticeable in 2017, with funding amounting to €729,173 for 18 out of 26 accredited groups. However, this did not yet match pre-crisis levels, and surpassing them only occurred in the 2021 call when €960,000 were awarded to 19 archaeological research groups (out of 22).

Regarding the financing of interventions associated with research projects by the *Department of Culture* of the *Generalitat de Catalunya*, data is available for the 2010-2011 and 2012-2013 biennia (Catalunya, 2011; 2013). In the 2010-2011 call (prior to the approval of the *Pla de recerca de l'arqueologia i la paleontologia catalanes* (Rueda; Ten; Buxó, 2014) which introduced four-year plans), 86 interventions were financed with a total of €1,236,000 (Catalunya, 2011). In the 2012-2013 biennium, 89 intervention projects were subsidized, receiving a total of €1,232,000 (Catalunya, 2013). This averages to a total investment of €618,000/year and €616,000/year, surpassing the amounts of €545,001/year granted in the 2014 call for four-year plans and €541,732.23/year in 2018. Notably, the latest investment in 2022 totalled €1,050,692.57/year for the period 2022-2025. At the project level, this translates to an average of €7,186.05/year for the 2010-2011 biennium, €6,921.34/year for 2012-2013, €9,083.35/year for 2014-2017, €7,851.19/year for 2018-2021, and €16,164.50/year for 2022-2025. While the total subsidies decreased in the initial calls of the new program, the reduction in the number of funded projects ensured that the average amounts received by the projects remained largely unaffected. Nevertheless, the last call demonstrates a significant increase, nearly doubling the amount awarded in previous instances.

Throughout the analysed years, the number of projects funded at the Spanish level has exhibited variability. While certain years, such as 2019, witnessed a considerable number of approved projects (38), the average number of projects per call stands at 11.88. Although the financing amount has fluctuated over the years, the average financing per project (which amounts to €787,105 for the whole period) reveals an upward trend.

Data pertaining to projects in the areas of Prehistory, Archaeology, and Ancient History funded under the *National Plan for Scientific Research, Development, and Technological Innovation* between 2003 and 2009 are available (Simon, 2014, p. 25). In this period, the average number of projects per call was 11.86. While data on the bulk of financing is absent, comparisons regarding the number of projects from different institutions can be made (see Fig. 3). According to González-Pérez (2010), during the 2004-2009 period, the UB and the UAB were among the top three institutions with the most state-funded archaeology projects, boasting 11 and 8 projects, respectively. Comparing these results with the data collected in the two mentioned works, notable decreases in two major universities (UAB and URV) are observed, with the latter potentially yielding importance to the affiliated CERCA centres. On the other hand, ICAC and UPF stand out, multiplying their project numbers by eight compared to the 2003-2009 period (from 2 to 16 and from 1 to 8, respectively).

4.1.4. Overall trends

In any case, and in light of the data analysed, it appears that the situation during the studied years is not significantly different from the pre-crisis period, both in terms of the number of approved projects and groups and the amounts of subsidies granted. In numerous instances where a comparison has been feasible, strikingly similar figures emerge between the two periods (2003-2009 and 2014-2022). In general, until 2019, a degree of stagnation is discernible, considering both the number of pro-

“ The predominance of the study of pre-history is clear among archaeological research projects ”

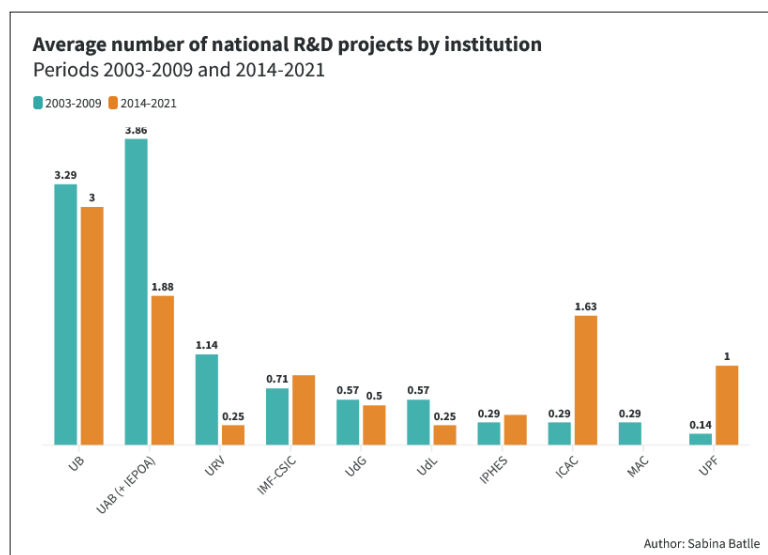


Figure 3. Comparison of the average yearly number of state projects by institution during periods 2003-2009 and 2014-2021.

jects and financial allocations –a trend that appears to shift in the latter years of the period, where both aspects start rising. The trend of this recovery is briefly interrupted in 2020, a setback potentially linked to the repercussions of the COVID-19 pandemic (Tejerizo-García, 2020). However, one could characterize this as a gradual recuperation, although further analysis of subsequent years is imperative to ascertain if the positive trend witnessed in the latter part of the studied period continues and leaves definitively the aftermath of the economic crisis behind.

4.2. Basic research and applied research

In archaeology, the distinction between basic research (front-line or field research) and applied research holds particular significance (Miró-Alaix *et al.*, 2019), to the extent that there are dedicated grant programs specifically for basic research, such as the *Projectes quadriennals de recerca en matèria d'arqueologia i paleontologia (PQA)*. While projects approved and funded in other schemes may involve interventions, they generally tend to emphasize applied research. Naturally, these two types of research are not directly comparable in terms of number of projects or volume of funding. However, it is noteworthy that among the four financing programs analysed, the *PQA* constitutes more than two-thirds of the total number of projects (although this is not the case with funding, as the figures for European programs are significantly higher than those for state and Catalan programs, preventing direct comparisons) (see Table 1).

Basic research in Catalan archaeology is predominantly regulated and funded by the *Generalitat*, particularly by the *Department of Culture* (in contrast to applied research, which is also financed by the *Generalitat* but managed by the *Department of Research*). Nevertheless, this funding is complemented, and at times exceeded, by contributions from city councils, local entities, and private financiers (Miró-Alaix *et al.*, 2019).

To get a grasp on front-line research, we can analyse the *PQA* calls. However, this information should be enriched by reviewing records of archaeological interventions conducted in Catalonia (*Generalitat de Catalunya*, 2019; *Departament de Cultura*, 2022). These data not only provide insights into the number and types of recent interventions but also categorize intervened sites based on their chronology, offering a comprehensive perspective on the landscape of research in Catalan archaeology.

The number of interventions with research purposes exhibits a slight increase during the studied period in comparison to preceding years, although this trend shows some irregularities (*Generalitat de Catalunya*, 2019; *Departament de Cultura*, 2022). However, these research-driven interventions contribute modestly to the overall count, representing between 6.28% and 18.04% of total interventions for the period 2014-2021 (averaging 12.34%), aligning with the trends observed in earlier years.

The gradual but consistent rise in research interventions could be attributed to the implementation of the *Pla de recerca de l'arqueologia i la paleontologia catalanes* (Rueda; Ten; Buxó, 2014). However, it is crucial to note that the average annual investment for the *PQA* calls of 2014 and 2018 is nearly identical to that of the preceding biennial calls in 2010 and 2012. It is not until the 2022 call that these amounts are surpassed.

It is evident that the decline in 2014 and 2018 can be linked to the new research plan and the four-year subsidy cycle. This is because the subsidies became effective in both cases after the summer, the season when many research excavations are conducted. As for the drop in 2020 and the subsequent surge in 2021, these fluctuations can be attributed to the emergency induced by the COVID-19 pandemic. The restrictions imposed by the pandemic in 2020 led to the postponement of many planned campaigns, a delay that, in some instances, was compensated by conducting two campaigns in 2021 (Tejerizo-García, 2020).

4.3. Agents: dichotomy universities - research centres

During the period 2014-2022 there has been a definitive consolidation of the *CERCA* centres, established in the early 21st century, as main contributors to the landscape of Catalan archaeological research. In some cases, these centres match or even outperform well-established institutions with many decades of tradition, including the primary Catalan public universities (see Fig. 4). The noteworthy activity and achievements of these centres, including the *IMF-CSIC*, have raised concerns among some researchers who perceive them as competitors to universities in an ostensibly uneven race, because university research is necessarily linked with educational responsibilities (Criado-Boado, 2017; Gutiérrez-Lloret; Jover-Maestre; Lorrio-Alvarado, 2017).

This dichotomy between universities and research centers reveals a distinct advantage for the latter, given their singular focus that allows them to channel all resources towards research. These centers, generally younger institutions, exhibit a greater dynamism and adaptability to the current research model, in which they originated. Their mission is clearer, and both their structure and infrastructure facilitate research mechanisms more effectively compared to larger and more administratively complex universities.

Regardless of the underlying reasons, the findings of this study demonstrate the growing significance of these research centers. While the initial impression suggested that the growth of *IPHES* and *ICAC* might have been at the expense of *URV*, the university to which both cen-

“ The entry into the game of the *CERCA* centers has energized archaeological research in Catalonia, and their role is becoming increasingly important ”

ters are affiliated, over time, this collaboration has proven to be mutually beneficial. Although not officially designated as a *CERCA* center, the collaboration between *IMF-CSIC* and *UPF* also seems to have given similar results.

In any case, beyond potential inequalities between institutions, looking at the overall landscape of archaeological research in Catalonia, it is undeniable that the capacity to attract funding has increased over the years thanks to the establishment or consolidation of research centers. In short, the involvement of these centers has injected vitality into archaeological research. There is no doubt of their progressively significant role within the broader panorama of Catalan archaeological research.

5. Conclusions

The outcomes of our study underscore the significance of the public financing model for archaeological research implemented in Catalonia over the past nine years. During this period, the *Generalitat* has contributed €10,658,725.76 to Catalan archaeological research, surpassing the €6,296,840 provided by the *Ministry* but falling short of the €13,318,515.25 financed by the European Union.

Upon scrutinizing the total funding and the number of projects/research groups, two distinct groups of institutions emerge: one comprised of major universities (*UB*, *UAB*, *UPF*) and the two main archaeological research centres (*ICAC*, *IPHES*), which hold the majority of projects and financing, and a second one that includes the remaining universities, research centres and additional research entities. When considering international projection, specifically institutions participating or leading more European-funded research projects, *UB* takes the lead, followed by *UPF* and *UAB*. However, the growing and noteworthy role of research centres is evident.

Chronocultural periods studied include prehistory, protohistory, and the ancient age, aligning with specialized research institutes' focus on these periods (*IPHES* and *ICAC*). The increasing number of diachronic projects is also noteworthy. Most projects concentrate on the Catalan region, attributed to a substantial number belonging to *Servei Català d'Arqueologia* calls, with additional projects extending into Spanish, European or Mediterranean territories. Nevertheless, there are projects that focus on other continents, which shows a global perspective. Concerning research topics, landscape and territory (paleoenvironment, human-environment relationships, population and settlement patterns) are more studied, along with architecture and urban planning of sites, followed by cultural contacts.

In general, even though the analysed period may be relatively short to draw definitive conclusions about temporal evolution, there appears to be an upward trend in the number of granted projects and research groups, as well as in the funding received across all programs. This suggests the consolidation of archaeological research in Catalonia. However, it's challenging to determine if there is continuity between projects due to a lack of data. This consolidation does not always correlate with an increase in financing, as it is often influenced by political and economic factors unrelated to the research itself. Comparisons with previous years indicate a period of general stagnation, even a slight decline, between 2014 and 2018, but the data from the second half of the studied period (2019-2022) suggest a potential opening for recovery and slow growth.

While this study is focused on the Catalan region, the methodology employed could be adapted to apply it in other contexts. The variations in the management and financing of archaeological heritage research across different autonomous communities in Spain, given their autonomous management of this competence, make it challenging to collect nationwide data. Expanding the geographical scope of the study would provide a comprehensive picture of the state and evolution of archaeological research resource collection at the national level. Looking ahead, repeating the study in the following years could confirm whether the recovery observed in the second half of the analysed period solidifies, and if the slight upward trend persists. Additionally, future iterations of the study could consider incorporating the analysis of human resources evolution, including permanent staff, *ICREA* and other programs for incorporating pre- and post-doctoral researchers, and other funding sources not considered here, such as private funding. Simultaneously, cross-referencing the data with publication records could offer insights into the impact of funding on the dissemination of scientific results.

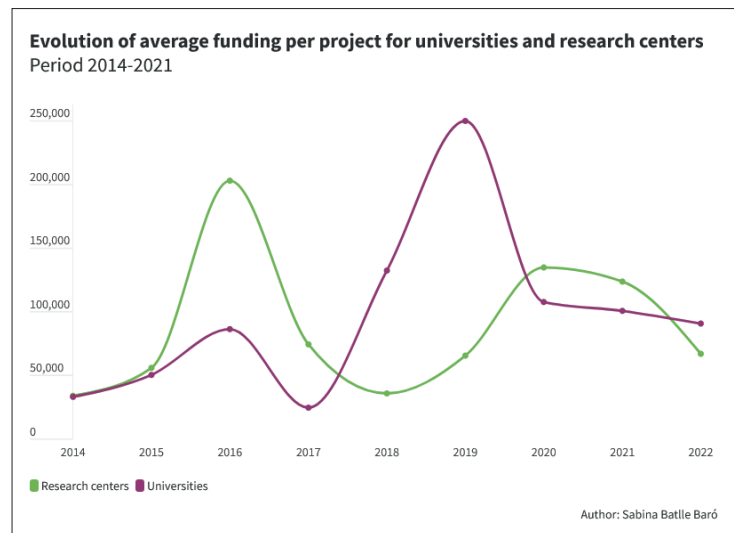


Figure 4. Evolution of the average funding per project depending on the institution type (universities and research centres).

“ The situation in the period 2014-2022 is not far from that before the crisis, and no visible growth is recorded until 2020 ”

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