

The spread of religion in the Western Roman Empire

A study of the geographical and chronological distribution of Latin
votive inscriptions over the Roman Empire.

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Colophon

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Preface

I proudly present my master's thesis: "The spread of religion in the Western Roman Empire" about the geographical and chronological distribution of votive inscriptions across the Roman Empire. By discovering the distribution patterns of different types of deities, more information can be obtained about the movement of religion.

I have written this thesis with great pleasure. Moreover, I have learned a lot during the process of writing the thesis, both in terms of content and methodologically. I would like to thank my supervisor Rien Polak for all the effort he has put into this thesis. He has given me the inspiration for this study and taught me a great many new things. He has made me enthusiastic about the use of data in archaeological research and has shown me what wonderful things can be done with it.

Abstract

This study demonstrates how the geographical and chronological spread of religion over the Roman Empire can be examined during the period from approximately 0 to 300 AD. Its aim is to provide a comprehensive analysis of this spread, identifying general patterns and trends. The analysis is conducted using votive inscriptions from the Epigraphic Database Heidelberg (EDH).

The expansion of Rome from the third century BC onward led to intensive interactions with other cultures. Religious life in both Rome and its provinces underwent fundamental changes, such as the introduction of new deities or combinations of deities.

For the analysis of this spread, a new database was created, supplementing the EDH data with four additional variables: deity names, pantheon, gender, and site type. The combination of these variables with coordinates, place names, and dating enables quantitative and spatial analyses using tools like Excel, Access, and QGIS. The results are presented in tables and maps.

The geographical and statistical analyses of the relationships between the various variables reveal patterns in the spread of deities or groups of deities and their dating. This study provides important insights into the complexity of the dissemination of religion across different parts of the empire.

Additionally, the newly created dataset offers a solid foundation for future research into the spread of individual deities. This study contributes to broader academic discussions on globalization and connectivity within the Roman Empire.

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1. Introduction

The Roman Empire saw a great religious change during the Late Republic and Imperial period.¹ Especially the expansion from the third century BC onwards resulted in extensive interactions with various other cultures. These cross-cultural contacts significantly transformed religious life, both in Rome and across the Roman provinces. An example of this transformation is the introduction of new deities or combinations of deities.

Religion in the Roman Empire is a very broad and often studied concept. One aspect in the scholarship of Roman religion is the spread of religion, a topic that has been widely examined, often with a focus on specific deities or cults. Examples of this are studies on the spread of Christianity in the Roman Empire², on the spread of Asclepius³ and on the representation of deities on coinage in the Roman Empire⁴. In this study, the spread of religion remains central, but the objective is to adopt an approach that differs from prior studies by examining it across the Western Roman Empire, without concentrating on individual deities. Rather, this research explores and analyses the diffusion of religion broadly across all Latin provinces of the Empire.

For this purpose, religious inscriptions were used. At the end of the first century BC, the Roman Empire saw an explosion of inscriptions, both in eastern and in western provinces. Although the chronology of many regional inscriptions remains to be studied, this epigraphic boom was widespread. The majority of inscriptions were set up much later, at the end of the second and begin of the third centuries of the Common Era.⁵ Epigraphic evidence can be very helpful in collecting information about what deities were worshipped in a specific area, what kind of people worshipped them and what religious institutions existed throughout the Empire.⁶ Woolf argues that observed relationships between epigraphy and other phenomena can provide insight into aspects of Roman epigraphy, but they do not provide a general account of the epigraphic culture of the Empire.⁷ Moreover, epigraphic densities in the eastern provinces have been studied less.⁸ Looking at inscriptions as a form of spatial and temporal data, instead of merely as a textual source, can give additional information about a deity. When there is a large collection of inscriptions, this way of using inscriptions can teach us more about religion in general. By using religious inscriptions coming from all provinces of the Roman Empire, general patterns about the spread of religion could be analysed and examined.

To explore this spread on a macro level, the thesis uses votive inscriptions from the *Epigraphic Database Heidelberg* (EDH) of all provinces of the Roman Empire as its primary data source. Since EDH only contains Latin and bi-lingual (Greek and Latin) inscriptions, the research is focused on the western, Latin provinces of the Empire. Votive inscriptions provide insight into which deities were worshipped in different regions and how their veneration spread over time. The aim of this study is to offer a broad picture of the geographical and chronological spread of religion across the Roman Empire. It was therefore decided to keep the analyses as broad as possible. Where required, the underlying data was examined in more detail to better understand the outcomes. This research serves as a stepping stone for further research, for more specific research in which individual deities are central. In addition, the dataset that was created for this research is suited to carry out further and more detailed analyses.

Through the analysis of inscriptions, this study offers more insight into the broader patterns of religious diffusion throughout the empire. The trends, relationships and patterns that could be derived, can play an important role in further scientific research into, for example, globalisation or connectivity

¹ Collar 2013, 57.

² Fousek, Kaše, Mertel, Výtvarová & Chalupa, 2018.

³ Glomb, Kaše & Heřmánková, 2022.

⁴ Glomb, Kaše, Zavřel, 2023.

⁵ Woolf, 1996, 22.

⁶ Rives, 2015, 420

⁷ Woolf, 1996, 23.

⁸ Woolf, 1996, 38.

within the Roman Empire. The approach used in this research allows for a comprehensive understanding of religious diffusion, thereby contributing to the broader discourse on the role of religion in shaping social and cultural dynamics across the ancient world.

Votive inscriptions contribute to our knowledge about religion in the Roman Empire by showing the enormous variety of deities worshipped throughout the Empire.⁹ The findspot and dating of a votive inscription offer a spatial and chronological setting for the recorded deity or deities. Inscriptions can therefore provide insight into the geographical extent and duration of the worship of deities. When deities are categorized, distribution of the resulting groups over time and space can be studied.

This approach was applied in this study. The votive inscriptions, their findspot and their dating are recorded in EDH. To analyse the distribution of the deities, a new database was created in which the data from EDH was supplemented with new variables. This offers opportunities for quantitative and spatial analyses. To study the geographical and chronological distribution of religion, this study tried to answer the following research question:

How can the spread of religion over the Roman Empire be investigated using inscriptions and what patterns become visible in this spread?

The main question will be answered using three sub-questions:

1. *What is the geographical and chronological distribution of deities classified by pantheon?*

For this question, the deities mentioned in votive inscriptions are grouped into classical and regional deities. The geographical spread has been analysed by dividing the groups over the provinces in tables as well as showing them per findspot in maps. The chronological spread of the groups has been analysed with the help of dating curves.

2. *What is the geographical and chronological distribution of deities classified by gender?*

To answer this question, the deities were grouped into male and female deities. Inscriptions with these groups were divided over the provinces to analyse their geographical distribution. Moreover, their quantity per findspot is shown in maps. To analyse the geographical spread of inscriptions with male deities and inscriptions with female deities, dating curves were used.

3. *How are the deities, both individual and classified by pantheon and gender, distributed over the site types?*

In answering this question, different site types were created, five of which were used for the analyses: settlement, fort, sanctuary, bath and station. In this way, findspots could be classified as one of these five site types. The distribution over the site types has been analysed for all the deities, for deities grouped per pantheon and for deities grouped per gender. This distribution and relationships between both variables have been studied by different methods of analysis. To study the geographical distribution for some site types, dating curves were created.

In chapter 2, background information about studying religion in the Roman Empire is given. It is discussed what caused religion in the Roman Empire to change and how its distribution can be studied using epigraphy. Chapter 3 is an explanation of the methods and techniques used in this study. It describes which analyses were performed and how they were carried out. In chapter 4, the results of the various analyses are then shown and interpreted. A conclusion is drawn from these results and recommendations are made for future research in chapter 5.

⁹ Rives, 2015, 420-421

2. Studying religion in the Roman Empire

2.1 Religion in the Roman World

Religion in the Roman world is a widely studied subject and much debates are centred around it. A comprehensive overview of the scholarly work on Roman religion, tracing its development from the Renaissance to more recent advances, has been provided by Philips (2007).¹⁰ Furthermore, some of the main trends in research on Greco-Roman religion over the past three decades have been outlined by Rives (2009). He discusses the critique of earlier narratives and the emergence of a new model for understanding religion in the Roman World. Rives highlights a crucial aspect of Roman religion: what Western society identifies as “religion” did not exist as a separate domain of human activity in the Roman World. Instead, religious practices were embedded within the broader structures of ancient life. This conceptual shift has, in turn, spurred new research.¹¹

Some of the fundamental features of Roman religion are set out by Scheid (2003).¹² The central element of Roman religion is called orthopraxis, as opposed to orthodoxy. This means that Roman religion was a religion without books, without a dogma and with a focus on the correct performance of prescribed rituals. Roman religion was a polytheistic religion and open to new citizens and new gods. It was a religion with rituals and as long as these rituals were observed, individuals were free to conceive of the gods, religions and the worlds however they wanted. In contrast, Roman religion was at the same time a social religion, closely linked to the community. Individuals who did not have the same social status could not belong to the same religious community, creating a paradox with its openness. Another important aspect of Roman religion is that it was highly linked with political aspects. Scheid even calls Roman religion a political religion. Furthermore, Roman religion knew an shared authority, meaning that there was no particular leader or specific founder.

Although there was an element of religious homogeneity across the Roman Empire, it saw a great religious change during the Late Republic and Imperial period.¹³ Already from the third century BC onwards, Rome controlled the Italian peninsula and expanded their influence overseas to Sicily, north Africa, Spain, Greece and Asia Minor.¹⁴ The city came in direct contact with these cultures, which also led to an expansion of the Roman pantheon by the adoption of foreign cults. In particular the expansion of the Empire towards the east during the Imperial period brought Rome into contact with new deities and religious practices.¹⁵ As a result, the religious life of Rome and the Roman provinces was fundamentally altered. Local cultures were easily integrated into Roman religion. Regional cults and deities that belonged to the lands of people incorporated into the Empire began to appear outside their homelands and were even worshipped as part of Roman religion.¹⁶ Different forms of religion could overlap and complement each other without generating tension or opposition.¹⁷ According to Collar (2013), the interaction between different belief systems and the integration of deities is caused by multiple factors. The Greco-Roman religion has a polytheistic nature, which facilitated the interaction between different belief systems. Other important factors are the influx of foreigners, the reconfiguration of social networks caused by the expansion and trade patterns.¹⁸ The way a cult was adopted by either the local population or by the Romans is part of the broader discussion centred around “Romanization” or more recently, about “globalisation”.

For much of the 20th century, cultural change in the Roman Empire – referred to as “Romanization” - was centred on an idealized Roman identity and the extent to which provinces

¹⁰ Philips 2007, 10-28.

¹¹ Rives 2010, 284.

¹² Scheid 2003,18-20.

¹³ Collar 2013, 57.

¹⁴ Orlin 2007, 61-62.

¹⁵ Collar 2013, 41.

¹⁶ Collar 2013, 57.

¹⁷ Collar 2013, 41.

¹⁸ Collar 2013, 58.

adopted this identity.¹⁹ However, various critiques of Romanization have led to approaches that incorporate greater diversity, including both local and global identities. To study religious change as a result of the complex connectivity by which the Roman World was characterized, globalising theory can be applied.²⁰ Definitions of globalisation are exhaustive, but Versluys' definition is all-encompassing: "Globalisation is about the interaction between the local, regional and global, and how this continuous entanglement shapes societies and history. Globalisation, therefore, is always glocalization and inherently about simultaneous homogenisation and diversification."²¹

Recently, globalisation has garnered increased attention from historians and archaeologists, as it seeks to move beyond the Romanization paradigm.²² To study the complex connectivity that characterized the Roman World, network theory can be an effective approach.²³ It provides the tools necessary for globalisation studies, enabling the analysis of connections across space and the evolution of these relationships over time.²⁴ The dissemination and exchange of religious ideas is made possible through individuals' social networks, making network analysis a suitable method for investigating religious movement.²⁵ Additionally, networks offer the capacity to model and analyse data.²⁶ In the study of religious change, this method proves particularly useful, advancing the scholarly debate beyond the Romanization paradigm.

2.2 Religion through epigraphy

Religious affiliation was expressed in various ways. The most prominent expression that fits within the field of archaeology is inscribing altars or other votive objects.²⁷ Some objects bear the name of the donor or the deity, but that does not apply to all objects, such as objects that do not survive in the archaeological record: food, clothing, liquids. The epigraphic record is therefore a vital piece of evidence that tells us more about individuals in the past. While inscriptions can be examined in various ways, treating them as individual entities with distinct properties, rather than merely textual sources, allows them to be viewed as religious material. As such, they become valuable resources within the field of archaeology.²⁸ However, in the study of religion, the iconographic and architectural evidence is also of great importance.²⁹ In some cases, local deities were venerated, as indicated by the iconography, while the inscription bore a traditional 'Roman' name. The distinction between 'traditional Roman' and 'local' is highly debated, and the dividing line is not clear-cut. Rives emphasizes that relying solely on epigraphic evidence can lead to misunderstandings regarding the deities being worshipped.³⁰

A distinction can be made between public and private inscriptions. Public inscriptions have a commemorative function and were found on e.g. monuments in public spaces, while private inscriptions contain messages aimed at a specific audience and were found on objects of everyday use. Public inscriptions are grouped according to different types based on their function, e.g. funerary, building, votive. Private inscriptions, on the other hand, are classified by the object it was written on, e.g. *instrumentum domesticum*, graffiti or writing-tablets.³¹ However, not all distinctions are evident and some types bestride the line between public and private.

It is generally agreed upon that the total number of surviving Latin inscriptions exceeds 300,000, of which many are concentrated in Rome and the cities of Italy. Other inscriptions come from

¹⁹ Witcher 2016, 645.

²⁰ Versluys 2021, 33.

²¹ Versluys 2021, 34.

²² Morley 2015, 85; van Alten 2017, 2.

²³ Witcher 2016, 639.

²⁴ Knappett 2017, 31.

²⁵ Collar 2013, 3.

²⁶ Knappett 2017, 31.

²⁷ Collar 2013, 41.

²⁸ Collar 2013, 41.

²⁹ Rives 2014, 423.

³⁰ Rives 2014, 423.

³¹ Lloris 2015a, 89-90.

the western and eastern provinces.³² In order to understand Roman religion, religious inscriptions should be investigated. A religious inscription is a dedication of a building, altar or object to a divinity.³³ Religious inscriptions can be further divided into other genres such as votive inscriptions, religious calendars, curse tablets, sacred regulations, priestly commentaries etc.³⁴ In this research, votive inscriptions are the central object of study. Votive inscriptions are defined by Haensch as: "... inscriptions on dedicated monumental objects such as temples, altars, statues, vases, etc. or referring to these things."³⁵ He describes the standard elements of a votive inscription: the name of the god, the name of the donor and most of the times an abbreviated dedicatory formula (such a *votum solvit laetus libens merito*).

One of the cults of Roman religion is the cult referencing to the emperor, which existed across the Empire. This worship emerged in different patterns, conditional on their occurrence in provinces, cities, individuals, the West or the East and how they were integrated into pre-existing structures. For instance, the ruler cult could be incorporated into prevailing religious structures in local communities.³⁶ Inscriptions can tell us something about the imperial cult, which is well documented. An abundance of survived inscriptions has been dedicated to the emperor and his family. Deities invoked to ensure the safety of the emperors were honoured with the epithet *Augustus/Augusta*.³⁷ Interestingly, dedications in the military realm linked the emperor to Greco-Roman deities rather than regional gods, with for example *pro salute* inscriptions. According to Bendlin, this shows how imperial ideology can influence the epigraphic habit.³⁸

Inscriptions are particularly suitable for studying the mobility of religion. This has to do with three characteristics of inscriptions: 1) an inscription can be treated as a distinct case, 2) it often allows for precise localizations and 3) it can, although less often, be dated.³⁹ Specifically, each individual inscription enables researchers to analyse the data at the lowest scale, a location can reveal distribution patterns and dating assists in examining the spread over time. However, when inscriptions survive in bulk, they can reveal the geography and popularity of some deities and give insights into cultural practices and societal norms.⁴⁰

The suitability of inscriptions for studying religion in the Roman world has been emphasized by numerous scholars. According to Derks, epigraphic sources are of great importance because of their textual information and their spatial dimension.⁴¹ This is also touched upon by Haensch, who explains that inscriptions can be used to determine the spread of a cult through space and over time.⁴² Epigraphic material has the unique ability to incorporate both the macro- and the micro-scales in research on the cultural history of the Greco-Roman world.⁴³ The latter is also stressed by Collar, who describes that distribution patterns of epigraphic evidence can help in analysing supra-social trends and phenomena.⁴⁴ However, epigraphy is not only applicable to study the Greco-Roman religion. Rives, for example, stresses that inscriptions are especially an important source of information for the worship of deities in the Roman provinces.⁴⁵ He explains how inscriptions can help investigate the spread of deities from, for example, Egyptian origin.⁴⁶ Dedicatory inscriptions are an important source

³² Lloris 2015b, 136-137.

³³ Lloris 2015a, 98.

³⁴ Kajava 2015, 397.

³⁵ Haensch 2007, 180.

³⁶ Bendlin 1997, 45.

³⁷ Kajava 2015, 406.

³⁸ Bendlin 1998, 46.

³⁹ Scheid 2004, 124.

⁴⁰ Kajava 2015, 398.

⁴¹ Derks 1998, 83.

⁴² Haensch 2007, 183.

⁴³ Collar 2013, 26.

⁴⁴ Collar 2013, 65.

⁴⁵ Rives 2014, 420.

⁴⁶ Rives 2014, 422.

of knowledge for cults that are not mentioned in literary sources.⁴⁷ They can be used to determine the spread of a these cult through space and over time.

Using epigraphy also brings with it some difficulties to keep in mind. A disadvantage of using epigraphy to study religion centres around issues of cultural identity. Namely, a foreign divine name could be replaced with a Greco-Roman equivalent by Latin-speakers. However, also non-Latin speakers and people from the provinces used Greco-Roman gods in their inscriptions. The question then arises whether they had in mind the actual Greco-Roman deity or whether they also had the practice of translating local names into a Greco-Roman name.⁴⁸ It also raises questions about the practice of combining Greco-Roman and local names and about personal identity and religious belief. To answer these questions, epigraphic evidence alone is not enough and is in that way a one-dimensional and limited source of knowledge. In addition, we only have the remains of what archaeology has revealed.⁴⁹

Another important aspect to keep in mind when using inscriptions as an object of study concerns the worshippers. First of all, inscriptions are expensive to make and not available for most people in the Roman World.⁵⁰ The writing of inscriptions was only found amongst the elite classes.⁵¹ This means that inscriptions are set up by those of higher status: those who could afford it could express their religious affiliation.⁵² Secondly, the internal reasons for people to adopt a certain religion cannot be ascertained.⁵³ We can analyse the diffusion of religion and test the social aspects of it, but we cannot determine an individual's reasons and choices for following a religious movement. Thirdly, inscribing dedications on stone was mainly a Graeco-Roman tradition. According to Rives, there is little evidence of this in the West prior to Roman occupation.⁵⁴ A fourth difficulty is the dating of inscriptions. This is complicated, especially when it has to be based on e.g. prosopographic elements, the location and units of the Roman army or on the form of letters. Finally, a cult could have been practiced for years before the first inscription was written.⁵⁵

For these reasons, the data provided by epigraphic evidence only concerns a part of the population and can therefore not be seen as a representation of the whole Roman world. This is also addressed by Kajava, who mentions the representativeness of the surviving epigraphic evidence.⁵⁶ The preserved texts are only a fraction of the total number that existed and moreover, only a fraction of the devotees of a deity ever erected an inscription. Research relying solely on epigraphic material is therefore of limited validity.⁵⁷ This aligns with Rives' point of view about the misunderstanding of inscriptions when used without context.⁵⁸ However, Haensch discusses that most inscriptions were not found *in situ*, which makes it hard to combine archaeological data with epigraphical data – another problem when studying the distribution of inscriptions.

Nevertheless, in some cases, inscriptions are the only source of evidence and therefore still very important for our knowledge on religion, especially on the variety of gods and the extent of their worship. Moreover, a dedication could also be set up communally. They were set up in the presence of more individuals because they could not afford an inscription on their own. In that sense, a large proportion of the inhabitants of the Roman Empire had access to the setting up of inscriptions.⁵⁹

⁴⁷ Haensch 2007, 183.

⁴⁸ Rives 2014, 426.

⁴⁹ Collar 2013, 77.

⁵⁰ Rives 2014, 427.

⁵¹ Derks 1998, 83.

⁵² Collar 2013, 41.

⁵³ Collar 2013, 77.

⁵⁴ Rives 2014, 427.

⁵⁵ Haensch 2007, 183.

⁵⁶ Kajava 2015, 398.

⁵⁷ Derks 1998, 83.

⁵⁸ Rives 2014, 423.

⁵⁹ Collar 2013, 65.

2.3 Distribution of epigraphic material

The distribution of written sources in the Roman period has been an object of study for several times in modern scholarship. It was first addressed by Ramsay MacMullen in 1982. He studied the distribution of papyri and ostraca in Roman Egypt, which survived in sufficient numbers to do a statistical analysis and to draw conclusions from the results.⁶⁰ He has created a graph with the number of papyri from the period AD 1-300. In spite of some distortions in his research, an interesting pattern can be deduced.⁶¹ There is a rise in papyri from AD 80 onwards with a steep increase in AD 120. Around 160, the high peak starts to decline slowly, until 220, when the number of papyri drops until a minimum.⁶² MacMullen complements his study by two other pioneering studies: the study of Lassère on epitaphs in Roman Africa and the study of Mrozek on the frequency of inscriptions in the early Empire.⁶³

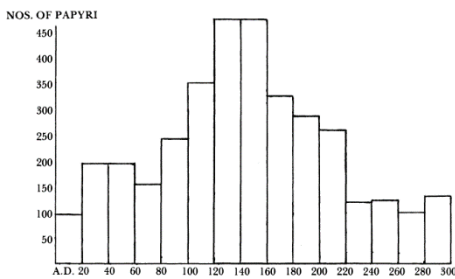


Figure 1: Number of papyri per year. Source: MacMullen, 1982, p. 235.

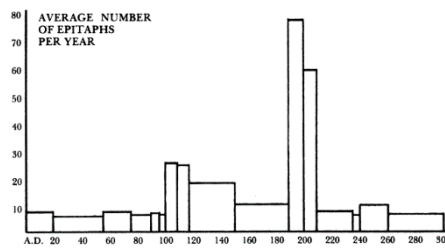


Figure 2: Average number of epitaphs in Roman Africa per year. Graph produced by Lassère (1973). Source: MacMullen, 1982, p. 242

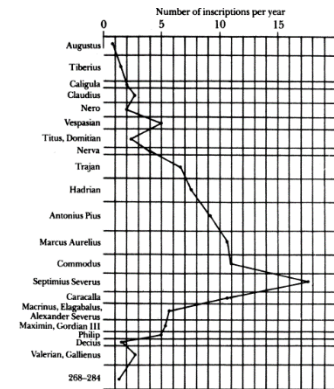


Figure 3: Number of inscriptions in the early Empire per year. Graph produced by Mrozek (1973). Source: MacMullen, 1982, p. 243.

Interestingly, the three graphs somewhat show the same pattern. This study of MacMullen, in which he created the term ‘epigraphic habit’, can be seen as the starting point for studies on the temporal distribution of ancient epigraphic material. With the term epigraphic habit, he emphasized the uneven distribution of epigraphic material through time. The epigraphic habit has been a central focus of numerous scholarly studies.

MacMullen raises an important question in his study on papyri and ostraca from Roman Egypt. Namely, do the patterns that arise from his study tell something about Roman Egypt, or is the profile a result of acts of preserving and recovering them and do these patterns tell us only something about more recent times?⁶⁴ This question is applicable to the broader study of epigraphy and delivers an important point of discussion. Can the epigraphic record give us a glimpse into life during the Roman period, or does it mainly tell us something about the preservation of the material and thus about the recent history of discovering and recovering the material. This point has been raised by several scientists. For example, Haensch describes that the preserved inscriptions today are only a small part of all those erected.⁶⁵ Therefore, it is hard to say something about, for example, the introduction of a cult based on solely epigraphic evidence. This means that determining the routes and spread of a certain cult is almost impossible.

⁶⁰ Macmullen 1982, 234.

⁶¹ He mentions that the ratio of ostraca to papyri is an approximation and that they were a phenomenon particular during Antonine reigns, making the rise in the bars for the first 75 years to the second century a possible exaggeration. Moreover, it could be possible that the proportion of papyri that are hard to date is greater in the third century. Then there are hoards of archives that turn up by chance. Finally, some cities produce many documents at once, concentrated in a particular wave of prosperity. Antinoopolis’ texts, for example, only begins in the third century. (pp. 235-236),

⁶² Macmullen 1982, 235.

⁶³ MacMullen 1982, 242-243.

⁶⁴ Macmullen 1982, 234.

⁶⁵ Haensch 2007, 184.

How can this phenomenon called ‘the epigraphic habit’ be explained? Much research has already been done on the issue. In the first century AD, there is not much interest in citizenship status and few people possessed it.⁶⁶ Then in the second century, Roman citizenship was pursued and desired.⁶⁷ For the individual, Roman citizenship was very attractive because of e.g. access to and protection under the Roman law.⁶⁸ A consequence of Roman citizenship was the testation of it as a clear and desirable definer of that citizenship. In the process of adopting public habits that came with the status, new citizens erected epitaphs as an indicator of their status symbol.⁶⁹ The grant of quasi-universal citizenship in 212 turned the status into a privilege for almost everyone, making an epitaph less of a status symbol because the status to be displayed was too common.⁷⁰ After this grant, the status of citizenship was no longer an important status expression and it didn’t needed to be announced in an inscription anymore. As a consequence, the epigraphic evidence dropped, although at a different pace per location. This could be the reason for the decline of epigraphic material in the third century.⁷¹

Bendlin gives a slightly different reason. According to him, we should not relate the altered epigraphic habit to a change in religious beliefs, but rather to a change in communication. Bendlin focuses on elites for his explanation. He relates the epigraphic decline in the third century to the demise of aristocratic self-representation in local towns. In the early empire, elites had to maintain their control over an increasingly complex economic system. Eventually, an increasing financial strain led to the transfer of elites resources to the countryside. This led to a change from the second century onwards in the public commemoration of religion. Bendlin stresses that, in the first century it was dominated by the Greco-Roman pantheon. During the peak of the epigraphic habit in the Severan period, religious communication was extended in so far that coinage, dedications and inscriptions in this period show a stronger emphasis on local deities than before. From the third century onwards, the elites favoured another mode of communication, with more emphasis on monumentalizing their rural villas than provincial towns. The earlier generations were driven by social and economic opportunities and they expressed their status and practiced their power through a certain uniformity of communication. As a result of the decentralization of provincial interest and the fusion of different cultural systems, this was fading. This change in elite communication is seen by Bendlin as a reason for the decline in the epigraphic habit in the third century.⁷²

According to Collar, this decline does not necessarily indicate a decline of social and religious life. Rather, it represents an “intensification of and decline in communication”.⁷³ Lloris gives other reasons for the decline of the epigraphic material in the third century: the economic difficulties, the slowdown in the rate of construction of buildings and monuments, a decline in public competition within the elite and the triumph of Christianity.⁷⁴

Research has also been conducted into the distribution of deities across the Roman Empire. For example, there is a study on the popularity of the cult of Asclepius based on epigraphic evidence (Glomb, Kaše & Heřmánková, 2022). They also looked at the spatial distribution of inscriptions referring to Apollo and Jupiter. Glomb (2021) looked at inscriptions with Asclepius, Apollo, Minerva and Jupiter and their distribution over different provinces of the Roman Empire. To show the spatial patterns of the worship of Asclepius, he used GIS proximity analysis. Chalupa, Výtvarová, Mertel, Fousek, Hampejs (2021) discuss the role of the army in the spread of Mithraism. They look at the distribution of places with Mithraic evidence and the relationship to Roman fortresses. To discover the relationship between these, they use a network analytical approach. Collar (2013) demonstrates how a network approach can contribute to ancient history, archaeology and religious studies through a detailed study of the religious movements of the cult of Jupiter Dolichenus, by looking at how this movement was made possible by the military networks of the Roman army.

⁶⁶ Meyer 1990, 80

⁶⁷ Meyer 1990, 88

⁶⁸ Meyer 1990, 80

⁶⁹ Meyer 1990, 88

⁷⁰ Meyer 1990, 89

⁷¹ Meyer, 1990, 90

⁷² Bendlin 1997, 58-61

⁷³ Collar 2013, 66

⁷⁴ Lloris 2015b, 145

3. Methodology

This research is focused on getting a broader understanding of and an insight into the distribution of religion across the Roman Empire, by studying the deities in votive inscriptions. In this chapter, it will be discussed which methods were used to find answers to the research questions and why these methods were chosen. First, it will be described which databases were used for this research followed by an explanation of how the relevant data was processed. Then, it will be discussed which software was used to perform various analyses. Finally, it will be described which analyses were performed and how they were performed.

3.1 Data collection

In order to answer the research question, selected information from two existing databases, the *Epigraphic Database Heidelberg* and *Pleiades* was combined into a new database.

3.1.1 Epigraphic Database Heidelberg

The *Epigraphic Database Heidelberg* (EDH) is an online corpus of ancient Latin and bilingual (Latin-Greek) inscriptions which contributes to collecting and providing a reliable historical analysis of epigraphic monuments.⁷⁵ EDH's aim has been to represent the epigraphic documentation of the provinces of the Roman Empire with Antiquity as time span. The database consists of a total of 82,000 inscriptions, each of them accompanied by metadata.⁷⁶ For this research, the votive inscriptions from EDH were selected, in all 13,440 inscriptions. This research builds on information from EDH and thus depends on the choices made in this corpus. It is important to note that these 13,340 inscriptions have been categorized by EDH as votive inscriptions and that this study has adopted them as such. Dr. Francisca Feraudi-Gruénais, a scientific employee of the project, has explained that this category is based on texts mentioning gods, but also on the mentioning of votive or cultural actions like VSLM.⁷⁷ The database provides, amongst other things, the text of the inscription, the findspot, both ancient and modern, information about the monument itself (e.g. material) and the persons mentioned. The latter means: men or women mentioned in the inscription, but not the gods. In addition, a short commentary and links to publications of the inscription may be included.

An important note must be made regarding the completeness of the EDH database. The database was established as a long-term project in 1986 and has been funded by different funds since then. Unfortunately, in 2021, the funding of the project stopped, forcing EDH to freeze.⁷⁸ The last updates date from December 2021. As a result, not all the provinces could be completed, meaning that of some provinces, not all inscriptions have been processed. This implies that figures for the entire Roman Empire may not be representative, depending on the aspect studied. In this study, each step of the analysis was examined to determine whether this missing data influenced the results of the analysis. Where it had an influence, it has been indicated. Fortunately, it is not important in every type of analysis and there are still enough inscriptions in the database to draw useful conclusions. Both the completed and the uncompleted provinces are shown in table 1.

⁷⁵ <https://edh.ub.uni-heidelberg.de/projekt/konzept> (accessed 01-08-2024).

⁷⁶ <https://edh.ub.uni-heidelberg.de/projekt/inhalt/inschriften> (accessed 01-08-2024).

⁷⁷ Personal communication 06-06-2024.

⁷⁸ <https://edh.ub.uni-heidelberg.de/projekt/geschichte>. (accessed 01-08-2024).

Completed provinces	Votive inscriptions	Uncompleted provinces	Votive inscriptions
Germania superior	1686	Hispania citerior	354
Germania inferior	1484	Belgica	300
Dacia	1403	Baetica	225
Pannonia superior	1379	Africa Proconsularis	220
Pannonia inferior	974	Lusitania	154
Britannia	967	Narbonensis	138
Dalmatia	887	Numidia	76
Moesia inferior	555	Roma	76
Noricum	535	Lugdunensis	69
Moesia superior	349	Aquitania	63
Alpes Cottiae	293	Etruria	51
Raetia	207	Latium et Campania	43
Macedonia	150	Mauretania Caesariensis	35
Achaia	133	Transpadana	35
Venetia et Histria	99	Barbaricum	23
Alpes Poeninae	79	Syria	20
Thracia	40	Regnum Bospori	16
Alpes Maritimae	28	Samnium	16
Epirus	22	Asia	15
Alpes Graiae	10	Bithynia et Pontus	13
		Mauretania Tingitana	13
		Unknown	13
		Aemilia	12
		Aegyptus	10
		Liguria	10
		Umbria	9
		Arabia	8
		Apulia et Calabria	8
		Picenum	6
		Galatia	5
		Iudaea	5
		Creta	4
		Lycia et Pamphylia	4
		Tuscia et Umbria	2
		Bruttium et Lucania	2
		Cappadocia	1
		Cilicia	1
		Cyprus	1
		Cyrene	1
		Mesopotamia	1
		Sardinia	1
		Sicilia, Melita	1
Total	11280	Total	2060

Table 1: Number of votive inscriptions for the completed and uncompleted provinces. The provinces are ordered by the numbers of votive inscriptions found.

The completeness of EDH can be assessed by a comparison with another epigraphic database, the *Epigraphik-Datenbank Clauss-Slaby* (EDCS), which records almost all Latin inscriptions.⁷⁹ In table 2, the total number of inscriptions recorded in EDCS is given. The provinces that are marked in grey have been fully completed by the database. To facilitate a comparison between the two databases, table 3 presents the recorded inscriptions per province from EDH again. However, from both databases, only the corresponding provinces are given in tables 2 and 3. In other words: the lists are not complete because only the matching provinces of both databases are presented. Looking at both tables, it is noticeable that for all provinces of EDCS, more inscriptions have been processed than for the provinces of EDH. This means that the EDH database is not complete, even the completed provinces contain fewer inscriptions than the provinces of EDCS. When comparing the different types of inscriptions of both databases, two elements stand out. EDCS has two categories of inscriptions, *tituli*

⁷⁹ <http://www.manfredclauss.de/gb/index.html> (accessed 09-09).

fabricationis and *tituli possessionis*, which have been merged in EDH under *owner/artist inscription*. EDCS contains a large share of these two categories, together 173,783 of the in total 540,128 inscriptions. It is important to mention that EDCS sometimes adds multiple categories to one inscription. Nevertheless, EDH only contains 5337 inscriptions with the category *owner/artist inscription* out of a total of 82,450 inscriptions. Therefore, a discrepancy exists between the two databases and it is not unlikely that this merger could be a reason for the large difference in numbers of inscriptions between both databases. Furthermore, EDCS contains another category that is absent in EDH, the Christian inscriptions, which make up for 61,630 of the inscriptions in EDCS.

However, it is very important to mention that the EDCS database does not provide coordinates for the inscriptions, while EDH does. It is precisely this link between coordinates and inscriptions that is important for this research. Moreover, EDCS only provides a full text of the inscriptions and its findspot, but no other additional information and the data cannot be downloaded as a database. Therefore, this research could not have been carried out with the EDCS database. Because this research investigates the distribution of Latin inscriptions across space, it is dependent on coordinates and for that reason, the EDH database was chosen. In that respect, EDH is very suitable for this research.

Province	Total EDCS
Achaia	2,029
Aegyptus	1,075
Aemilia / Regio VIII	4,941
Africa proconsularis	33,710
Alpes Cottiae	505
Alpes Graiae	200
Alpes Maritimae	581
Alpes Poeninae	252
Apulia et Calabria / Regio II	6,577
Aquitani(c)a	17,050
Arabia	112
Asia	2,155
Baetica	7,334
Barbaricum	883
Belgica	23,218
Bithynia et Pontus	563
Britannia	19,194
Bruttium et Lucania / Regio III	2,406
Cappadocia	522
Cilicia	179
Creta et Cyrenaica	343
Cyprus	113
Dacia	7,541
Dalmatia	10,140
Etruria / Regio VII	11,050
Galatia	918
Germania inferior	12,356
Germania superior	25,650
Hispania citerior	23,169
Latium et Campania / Regio I	43,342
Liguria / Regio IX	1,815
Lugdunensis	14,842
Lusitania	7,682
Lycia et Pamphylia	356
Macedonia	2,159
Mauretania Caesariensis	5,542
Mauretania Tingitana	1,236
Mesopotamia	13
Moesia inferior	4,725
Moesia superior	1,835
Narbonensis	22,419
Noricum	4,316
Numidia	17,232
Pannonia inferior	4,384
Pannonia superior	7,256
Picenum / Regio V	2,443
Raetia	3,256
Regnum Bospori	135
Roma	122,341
Samnium / Regio IV	6,867
Sardinia	287
Sicilia	6,147
Syria	1,607
Thracia	694
Transpadana / Regio XI	4,805
Umbria / Regio VI	5,482
Venetia et Histria / Regio X	16,359
Total	531,527

Table 2: Total number of inscriptions from the 'Epigraphik-Datenbank Clauss-Slaby' database. Provinces marked in grey are complete.

Province	Total EDH
Achaia	1,284
Aegyptus	167
Aemilia	211
Africa Proconsularis	4,456
Alpes Cottiae	475
Alpes Graiae	76
Alpes Maritimae	413
Alpes Poeninae	201
Apulia et Calabria	761
Aquitania	426
Arabia	234
Asia	491
Baetica	3,016
Barbaricum	172
Belgica	1,714
Bithynia et Pontus	289
Britannia	4,483
Bruttium et Lucania	246
Cappadocia	66
Cilicia	70
Creta	66
Cyprus	34
Dacia	3,582
Dalmatia	7,647
Etruria	651
Galatia	208
Germania inferior	3,495
Germania superior	6,833
Hispania citerior	4,686
Latium et Campania	2,598
Liguria	145
Lugdunensis	596
Lusitania	1,583
Lycia et Pamphylia	61
Macedonia	1,327
Mauretania Caesariensis	1,125
Mauretania Tingitana	291
Mesopotamia	12
Moesia inferior	1,974
Moesia superior	1,476
Narbonensis	1,403
Noricum	2,771
Numidia	2,644
Pannonia inferior	3,134
Pannonia superior	4,260
Picenum	171
Raetia	1,012
Regnum Bospori	78
Roma	4,393
Samnium	649
Sardinia	229
Sicilia, Melita	193
Syria	406
Thracia	396
Transpadana	165
Umbria	348
Venetia et Histria	1,157
Total	82,450

Table 3: Total number of inscriptions from the 'Epigraphic Database Heidelberg' database. Provinces marked in grey are complete.

3.1.2 Pleiades

EDH is not the only database that has been used for this study. For additional information on the findspots of the inscriptions, this study also used Pleiades.⁸⁰ Pleiades is an online database for spatial information, mostly about Greek and Roman places. The places in the database can be given more additional information, geographical coordinates and chronological periods.⁸¹ Pleiades uses data from the former *Digital Atlas of Roman and Medieval Civilizations*, now *Mapping Past Societies*⁸² and from the *Barrington Atlas of the Greek and Roman World (2000)*. This richness of information about places makes Pleiades a highly suitable database to use for anything related to geographical research. However, the database is focused towards the Mediterranean and specifically on areas around Athens and Rome, which may imply that the database is not necessarily a balanced representation of ancient activity for the whole Roman Empire. This could mean that some existing sites do not appear as records in the database and thus information for further analysis may be missed. Furthermore, the records in the database are selective in that they only contain information that contributors have chosen to include. The content of Pleiades is organized in four types of information structures: *places*, *locations*, *names* and *connections*. This research makes use of the information resource *places* because it contains the category *featureTypes*, which has been used to collect information about the site types of locations. In addition, *places* contains a Pleiades ID number, which allowed *featureTypes* to be connected to the inscriptions. This connection was made, among other things, via this ID number. In the next section, it will be described what exactly the database was used for and how it was combined with the EDH database.

3.2 Data editing

Not all data from EDH and Pleiades was needed for the new database that has been created. Moreover, this new database also includes self-generated data. Firstly, the relevant data from EDH was selected. The EDH database was filtered for votive inscriptions, leaving 13,340 unique records. The text of these inscriptions was entered into a database together with the EDH number, which can be seen as a record number, the province name and both the ancient and modern place name of the findspot. Subsequently, all brackets were removed from the text of the inscriptions, so that the analysis of the inscriptions was simplified. To these existing variables, three new variables were added. EDH does not provide separate fields with the names of the deities mentioned in a dedication. This is the first variable that was added to the new database. All deities mentioned in an inscription (and not only the gods to whom the inscription is dedicated) are listed in the new variable *Deities*. Secondly, the pantheon of the deities mentioned was examined. This roughly means: are the gods part of the classical Greco-Roman pantheon or are they regional gods? This terminology will be explained in more detail later in this chapter. This has led to the second variable: *Pantheon*. The third addition is the variable *Gender*, which indicates whether the gods mentioned are male or female, or a combination of both. In this way, new information has been added to the inscriptions. At the end of the analyses, an extra variable was added, in which some gods were combined into one deity to facilitate further analysis. An example of this is the grouping of all separate mother goddesses under the term *Matronae*. Adding these variables was the first step in the data collection and the creation of the new database. In the second step, the Pleiades database was combined with this database.

From the Pleiades database, information about the types of sites was added to the newly created database. As mentioned above, the variable *featureTypes* was used for this. However, this variable consists of 702 unique combinations, which is not usable for the analysis. For this reason, a simplified type was assigned to each unique value, which recoded them into 12 main types. In this way, a shortened list of site types was created, which are listed under the newly created variable *SiteType*. For the analysis, it was decided to only include the site types which appear more than 50 times in the database. The other types are so rare that it is not meaningful to include them in the research. This means that ultimately five categories of site types were included in the analysis: bath,

⁸⁰ <https://pleiades.stoa.org/home> (accessed 01-08-2024).

⁸¹ Weiland (2021).

⁸² <https://darmc.harvard.edu/>.

fort, sanctuary, settlement and station. The category 'uncertain' was disregarded. It is important to mention that these categories were created without being fully scientifically correct. Namely, in the variable *featureTypes*, the combination fort and settlement occurs often. These have all been given the site type fort, which in some cases is not entirely correct. For example, it could also be that the location was first a fort and later, after the army had left, remained as a settlement. It is important to take this into account when interpreting the data. In order to be able to use the database for spatial analysis, the coordinates of the findspots of the inscriptions were also added.

The newly created database thus included the EDH number, province name, ancient and modern place name, Pleiades ID, site type, the coordinates, the inscriptions and the three new variables, which is shown in table 4. This newly created database makes it possible to analyse the spatial and chronological distribution of deities and groups of deities (pantheon, gender). In that way, the database allows for the study of the distribution of religion.

Variable	Content	Source
hd_nr	Unique number inscription	EDH
provinz	Roman province	EDH
fo_antik	Roman place name	EDH
fo_modern	Modern place name	EDH
pl_ancient_loc1	Unique number place name	EDH/Pleiades
featureTypes	Findspot type	Pleiades
SiteType	Generalized findspot type	Own creation, based on Pleiades
longitude	x-coordinate	EDH
latitude	y-coordinate	EDH
i_gattung	Type of inscription	EDH
Text without	Text of inscription without brackets	EDH
Deities	Named deities in inscriptions	Own creation
Pantheon	Pantheon of named deities	Own creation
Gender	Gender of named deities	Own creation
dat_jahr_a	Minimum date of inscription	EDH
dat_jabr_e	Maximum date of inscription	EDH

Table 4: Overview of variables in dataset, including a short descriptions and the source.

3.3 Software

This research has built upon the inscriptions and information provided by EDH and the information on places provided by Pleiades to create a new database. To combine the data from these two different sources, Microsoft Access was used. Access is very suitable for creating a new database, because it makes it possible to combine variables from different databases and tables into a new table and to add new variables to that table. Access was thus used to analyse the inscriptions and to assign them a deity, a pantheon group and a gender. The information from Access was then exported to Excel to perform various analyses using pivot tables. Excel is a suitable tool to get a clear overview of all the collected data and to serve as the starting point for the interpretation of the results. Excel was also used for creating dating curves in order to inspect the chronological distribution of the data.⁸³

To study the relationships between different variables, correspondence analysis has been used. For analysing cross-tabular data, a correspondence analysis can be very useful. It gives a graphical overview of the results and allows for a quick interpretation and understanding of the data.⁸⁴ To perform the correspondence analyses for this research, an online tool, developed by G. Heinz and A.W.

⁸³ The tool for producing data curves was originally created by G.B. Dannell, A. W. Mees and M. Polak.

⁸⁴ Greenacre 2007, ix.

Mees, was used.⁸⁵ Another way to investigate relationships is through a chi-square test. This test can show whether the differences between variables (e.g. provinces and deities) are statistically significant and are thus asking for further explanation or whether they are random deviations. The chi-square tests were performed in Excel.

To visually display the results of the analyses, QGIS has been used. QGIS is a free, open source software that enables users to create, analyse and publish geospatial information. For this research, QGIS has been used to create different maps of the geographical distribution of the analysed data. A map has been created for each newly created variable to show the distribution pattern. This means that there is a distribution map with all the different deities, a distribution map of the classical and regional deities and a distribution map of the gender of the gods. A map of the site types of the findspots of the inscriptions has also been created. All data is plotted on a map of the Roman Empire with its provincial borders. For this map, the file *roman_province_boundaries.json* was used.⁸⁶ This map is partly based on data from Pleiades.⁸⁷ The underlying source for this map is the Barrington Atlas. Because a separate map has been created for each variable, they can be placed on top of each other. In this way, the relationships between certain variables can be made visible. For example, the distribution of *Mars* could be plotted over the distribution of the site type settlement in order to see what the relationship is between the two. In this research, the results are thus viewed and interpreted from two sides: from tables in which results are displayed and from maps.

3.4 Analysis

As mentioned before, three variables were added in order to analyse the inscriptions. The first variable is very broad because of the great variety of (the composition of) gods and therefore subject to the choices of the researcher. Despite the careful analysis of the inscriptions, it is possible that a few deities have been missed or were assigned to the wrong group. Because the analysis was manual work, it is important to mention this. However, given the large number of gods, this will have no consequences for the results and conclusions. The discussion about the pantheon of various deities and their assignment as 'local' or not is acknowledged in this research. However, this study of more than 13,000 inscriptions was necessarily conducted at a macro-level, which is why deities could not be studied in detail. Therefore, the assignment of the name, pantheon and gender of deities is based on the general accepted opinion.

The second variable also requires some extra clarification. In this research, the world of the gods is viewed from a Roman perspective. This means that the pantheon of the gods is divided into classical and regional. Classical refers to the Greco-Roman pantheon. The gods that belong to this pantheon were worshipped throughout the Empire. This category encompasses more gods than the twelve Olympian gods (for example also Fortuna, Sol and Luna) and it includes the Greek gods that were adopted by the Romans, such as Hecate. In addition, personifications and gods that originate in well-known myths or have their origin in Roman culture are also included in this category.

Regional refers to the gods that are not Mediterranean. These include for example Celtic and Germanic gods. So-called 'combination gods' were also grouped as regional gods. These are gods from the Greco-Roman pantheon who have been given a local name, such as Hercules Magusanus or Jupiter-Ammon. If classical and regional deities appear together in an inscription, it has been assigned the category 'both'. As already mentioned, some deities were subsequently grouped under a single name to facilitate the analysis. An example of this are the numerous Germanic mother goddesses, like the *Matronae Aufianae* and the *Matronae Vacallinehae*, which are classified under *Matronae*.

The goal of this research was to get a broader insight into the spread of deities and therefore, the main focus of the analysis was on the geographical and chronological distribution. Different analyses have been conducted, which were performed per variable (gender, pantheon). In other words: no analysis was performed at a detailed level (for example, the relationship between one god and a site type)

⁸⁵ <https://www.rgzm.de/adp>.

⁸⁶ <https://edh.ub.uni-heidelberg.de/data/download>.

⁸⁷ <https://github.com/pelagios/magis-pleiades-regions>.

because this falls outside the scope of this research. However, the database and maps are suitable for this, so a more detailed study could be carried out with this data.

The geographical distribution could be analysed with the help of Excel. The number of inscriptions per category (e.g. total number of inscriptions, classical inscriptions, female inscriptions) was displayed per province. In doing so, complete and incomplete provinces were taken into account. In addition, the ratio between the number of inscriptions per province for a certain variable and the total number of inscriptions was calculated, so that both the absolute and relative values could be displayed.

To study the chronological distribution of the inscriptions, dating curves were used. A dating curve is a graph in which the dates of the inscriptions are distributed over time. In all, 11,545 of the 13,340 inscriptions have a start and end date in EDH. The bandwidth of these inscriptions varies greatly, from a few years to dozens or hundreds of years, which makes it difficult to determine the spread of the worship of a deity or its duration in a certain area. To study this, dating curves can be very helpful. In a dating curve, the number of inscriptions are calculated per year. This will be explained with an example. Suppose the total number of inscriptions in a dataset is 320 and 30 of them are dated between the years 140 and 160. To spread these inscriptions across the years their value per year is calculated. Since every inscription counts as one record and there are 20 years between 140 and 160, the calculation will be $1/20$ (1 divided by 20), which equals to 0.05. This means the share of each inscription per year is 0.05. If this is done for all 30 inscriptions, the value for each year is $0.05 * 30$, which gives a total value of 1.5 per year. This is the total share of inscriptions per year, which is turned into a percentage. Since the total number of inscriptions is 320, 1.5 is 0.47% of the total.

This calculation is performed for each year, which results in a series of percentages. This series is displayed as a curve. The horizontal axis shows the dates from 25 BC to AD 300 and the vertical axis shows the percentage of inscriptions per year. The curve allows the share of inscriptions in the dataset to be read per year. In this way, you can see in the graph which time period(s) are best represented in the selection of inscriptions you are interested in. In addition, it shows the increases and decreases of the inscriptions through time. A high peak at a certain time period in the graph means that that time period is better represented in the inscriptions than time periods with a lower peak.

To test the relationships in the dataset, a chi-square test was used. In a chi-square test, the individual observed values are compared with the expected values. In this study, a reliability of 95% has been used. The expected values are derived from the distribution of all inscriptions over all variables included in the test. For example: the distribution of classical and local inscriptions over the variable site type. In addition, a threshold value is calculated based on the degrees of freedom and the chi-square is calculated per group. The groups with the highest value in the chi-square table are the groups that make the largest contribution to the significance. The variation in the dataset of this research could be assessed and explored with a correspondence analysis. Variation means the degree to which the actual values deviate from the expected values. In order to interpret the relationships between the variables and to assess the variation, it is important to study the diagnostics and the graph it produces. The graph has also been added to the results.

In categorizing the inscriptions, certain categories were excluded from the analysis. To assess the effect of their exclusion from the analysis, the geographical and chronological distribution of the excluded categories have been briefly examined. This ensures that no important elements have been missed in the research. This short analysis is further described in section 4.5.

Firstly, the use of *Augustus* and *Augusta* following the name of a deity has been examined. In this context, *Augustus/Augusta* means something as ‘the capacity of the god as protector of the ruling emperor’.⁸⁸ In the database, a separate column was created to indicate whether *Augustus/Augusta* was added to the name of the deity. The geographical and chronological spread of these inscriptions has been analysed and the results of this are shown in section 4.5. Besides that, the addition of *Augustus/Augusta* is not incorporated in the rest of the analysis. This means that the deities with this addition have been used without this addition for all the analyses. Secondly, it was decided not to include the imperial cult in the database. For the analysis of the imperial cult, two formulas have been used: *pro salute* and *in honorem domus divinae* (IHDD). *Pro salute* means ‘for the welfare of’ and *in*

⁸⁸ Lipka 2009, 74.

honorem domus divinae means 'in honour of'. Both formula's imply that the inscription is meant for the welfare or honour of the emperor and can therefore be seen as an indication of the imperial cult. IHDD in an inscription can be important for dating the inscription and studying when and where the formula was used can have important implications for history.⁸⁹ The geographical and chronological distribution of this category was analysed.

Thirdly, the formula *dis deabusque* (and variants thereof), which means 'to all gods and goddesses', was examined. Because it does not refer to a specific god, the formula is not included in the database. That is, all inscriptions that have this formula are marked *none*, unless a specific deity was also mentioned, then it was naturally given the name of the deity. For this formula, the geographical and chronological distribution was analysed as well. Fourthly, inscriptions mentioning *deae* were not assigned a different group. This formula, like IHDD, is also important for dating inscriptions and therefore for dating archaeological sites.⁹⁰ For most deities with *deae* in front of their name, it was chosen to name them according to their unique name. For example, *Deae Nehalennia* was named *Nehalennia*. On the contrary, some deities were named including *deae*, for example *Bona Dea* and *Dea Sancta*. Inscriptions only mentioning *deae* and no other deity were categorised as *none*. However, to still get a complete overview of the geographical and chronological distribution of the formula, all inscriptions with *deae* were analysed. Fifthly, when an inscription was written in Greek, or when the inscription was written in both Latin and Greek, but the deity was written in Greek, the inscription was assigned the group 'Greek'. Because the focus of this research is on Latin inscriptions, this group was not included into the analysis. It was therefore also decided not to analyse the geographical and chronological distribution of inscriptions in Greek.

⁸⁹ Raepsaet-Charlier 1975, 233

⁹⁰ Raepsaet-Charlier 1975, 233

4. Analysis

In this chapter the results of the analyses will be presented per sub-question. It will be explained which analysis was performed and how it was carried out. Before the sub-questions are dealt with separately, the general distribution patterns of all the votive inscriptions will be examined first. These global trends will provide the background for the interpretation of the variables relevant to the sub-questions.

4.1 Provinces

The research question will be answered with the help of the sub-questions. However, to answer the research question, it is also necessary to study the geographical and chronological distribution of all the votive inscriptions and of the deities mentioned in these votive inscriptions. Therefore, the general distribution patterns of all the votive inscriptions was examined in this part. The geographical distribution of these inscriptions over the provinces is shown in tables. Moreover, different maps were created to show the distribution of the votive inscriptions and deities over the findspots. To study relationships between the provinces and the deities, a correspondence analysis was used, which helps to study the variation in the dataset. For the chronological distribution, dating curves of ten provinces were studied. These curves show the percentages of votive inscriptions per province per year.

Province	Total numbers of inscriptions EDH	Votive inscriptions	Ratio
Dalmatia	7647	887	0.12
Germania superior	6833	1686	0.25
Hispania citerior	4686	354	0.08
Britannia	4483	967	0.22
Africa Proconsularis	4456	220	0.05
Roma	4393	78	0.02
Pannonia superior	4260	1379	0.32
Dacia	3582	1403	0.39
Germania inferior	3495	1484	0.42
Pannonia inferior	3134	974	0.31
Baetica	3016	225	0.07
Noricum	2771	535	0.19
Numidia	2644	76	0.03
Latium et Campania	2598	43	0.02
Moesia inferior	1974	555	0.28
Belgica	1714	300	0.18
Lusitania	1583	154	0.10
Moesia superior	1476	349	0.24
Narbonensis	1403	138	0.10
Macedonia	1327	150	0.11
Achaia	1284	133	0.10
Venetia et Histria	1157	99	0.09
Mauretania Caesariensis	1125	35	0.03
Raetia	1012	207	0.20
Unknown	917	13	0.01
Apulia et Calabria	761	8	0.01
Etruria	651	51	0.08
Samnium	649	16	0.02
Lugdunensis	596	69	0.12
Asia	491	15	0.03
Alpes Cottiae	475	293	0.62
Aquitania	426	63	0.15
Alpes Maritimae	413	28	0.07
Syria	406	20	0.05
Thracia	396	40	0.10
Umbria	348	9	0.03
Mauretania Tingitana	291	13	0.04
Bithynia et Pontus	289	13	0.04
Bruttium et Lucania	246	2	0.01
Arabia	234	8	0.03
Sardinia	229	1	0.00
Aemilia	211	12	0.06
Galatia	208	5	0.02
Alpes Poeninae	201	79	0.39
Sicilia, Melita	193	1	0.01
Iudaea	187	5	0.03
Barbaricum	172	23	0.13
Picenum	171	6	0.04
Aegyptus	167	10	0.06
Transpadana	165	35	0.21
Liguria	145	10	0.07
Epirus	138	22	0.16
Cyrene	88	1	0.01
Regnum Bospori	78	16	0.21
Alpes Graiae	76	10	0.13
Cilicia	70	1	0.01
Cappadocia	66	1	0.02
Creta	66	4	0.06
Lycia et Pamphylia	61	4	0.07
Cyprus	34	1	0.03
Tuscia et Umbria	21	2	0.10
Mesopotamia	12	1	0.08

Table 5: Total numbers of inscriptions from the 'Epigraphic Database Heidelberg' database, numbers of votive inscriptions from this database and the ratio between these numbers from the provinces of the Roman Empire.

To study the geographical spread of religion over the Roman Empire, a general picture of the distribution of the votive inscriptions over the provinces was explored first. This helps to interpret the results of the analyses of the new variables and to eventually answer the main research question. In table 3 in chapter 3, some provinces were left out in order to compare that table with table 2. In table 5, the number of total inscriptions in EDH per province is shown again, including all provinces processed by EDH. In table 6, the number of votive inscriptions per province is shown. The provinces that were completed during the EDH project are marked in grey. In general, the provinces with large numbers of votive inscriptions belong to this group. Table 7 shows the ratio between the number of votive inscriptions and the total number of inscriptions in EDH per province. The share of votive inscriptions varies greatly between the provinces. For example, Alpes Cottiae has a ratio of 0.62, meaning that 62% of all 475 processed inscriptions in that province are votive inscriptions. In contrast, Cyrene has a ratio of 0.01, meaning that 1% of all inscriptions in that province are votive inscriptions. In this research, 'high' or 'large' means more than one standard deviation above the mean. For table 6 this threshold value is 620.2 and for table 7 this is 0.24. According to this standard, the provinces Germania superior to Dalmatia in table 6 have high numbers of inscriptions. In table 7, Alpes Cottiae, Alpes Poeninae, Dacia, Germania inferior, Germania superior, Pannonia inferior and Pannonia superior have high ratios. What is striking is that the latter seven provinces were all completed in EDH. The use of this ratio was an effort to reduce the effect of the missing data – the uncompleted provinces – but it is hampered by the circumstance that many inscriptions of the incomplete provinces have not yet been assigned a 'type of inscription'. This means that the actual proportion of votive inscriptions in incomplete provinces may be higher than shown in table 7.

Nevertheless, the ratio is an important factor because varying ratios also occur among the completed provinces. This means that in some provinces, relatively more votive inscriptions have been found than in other provinces. For example, in Dalmatia only 12% of all inscriptions are votive inscriptions, while in Germania inferior this is no less than 42%. Therefore, despite the incompleteness of the dataset, table 6 will function as a reference for the other analyses. The results of the analyses of the different variables will be plotted against this table to see what share a particular group has in a province compared to the total number of inscriptions in that province. In that way, the missing data will be less relevant. However, as already mentioned before, when the missing data is influencing the results, it will be addressed.

In figure 4, the total number of votive inscriptions per findspot is shown. The dark green provinces are completed. The map adds to the information given in table 6 because in figure 4, it can be seen in which part of the provinces most votive inscriptions were found. Moreover, the map shows whether inscriptions in a province are spread over multiple locations or concentrated in one place. Another advantage is that a map visualizes how the inscriptions are distributed over the Empire, instead of displaying it in a table. A few things stand out. First of all, the votive inscriptions are distributed over the Latin speaking provinces. Some inscriptions, however, are found outside the boundaries of the Roman Empire, as shown on this map. Sometimes an inscription was found in a location that once belonged to a province of the Roman Empire, but is not part of that province in this map and sometimes inscriptions were found outside the Roman Empire. That is why some points are situated outside the boundaries of the provinces.⁹¹ Secondly, the difference between completed and uncompleted provinces is clearly visible. The inscriptions are mainly situated in completed provinces, although the Iberian Peninsula and northern Africa also have a relatively high concentration of inscriptions as compared to the other uncompleted provinces. However, the quantities in which the inscriptions occur per findspot in the Iberian Peninsula and northern Africa are much lower than in the completed provinces, as can be seen from the size of the points. Thirdly, many inscriptions are found close to the borders of the Roman Empire, except for the provinces Alpes Cottiae, Dacia, Noricum and Pannonia Superior, where inscriptions are found in greater numbers inland.

⁹¹ In EDH, Regnum Bospori is classified as a Roman province. However, the Bosporan Kingdom was a client kingdom and only belonged to the Empire during Nero's reign. See Halamus (2018). For that reason, it is not displayed as a province on the maps. All votive inscriptions belonging to Regnum Bospori are therefore plotted outside the Empire.

The map in figure 4 also contains inscriptions which were classified as *none*. In some provinces, this is a substantial group (Budapest, for example, has 119 inscriptions categorised as *none*) and therefore a second map has been created from which inscriptions classified as *none* were excluded. This was done for two reasons: 1) to see if there is a big difference with the map including *none* and 2) to function as the base map for the other maps in this chapter, because those maps also do not include *none*. Excluding this group leaves 10,365 votive inscriptions to display, which is shown in figure 5. When comparing figure 4 with figure 5, not much difference is visible. The biggest difference can be found in the size of the points. The map in figure 5 seems to lack some large points compared to the map in figure 4, which means that for a number of findspots, a lot of inscriptions are classified as *none*. This is especially the case in the northwest of the empire and in the southeast of present-day France. The ten findspots with the most inscriptions (without *none*) are given in table 6. The table shows that Germania inferior has the most findspots in this top ten.

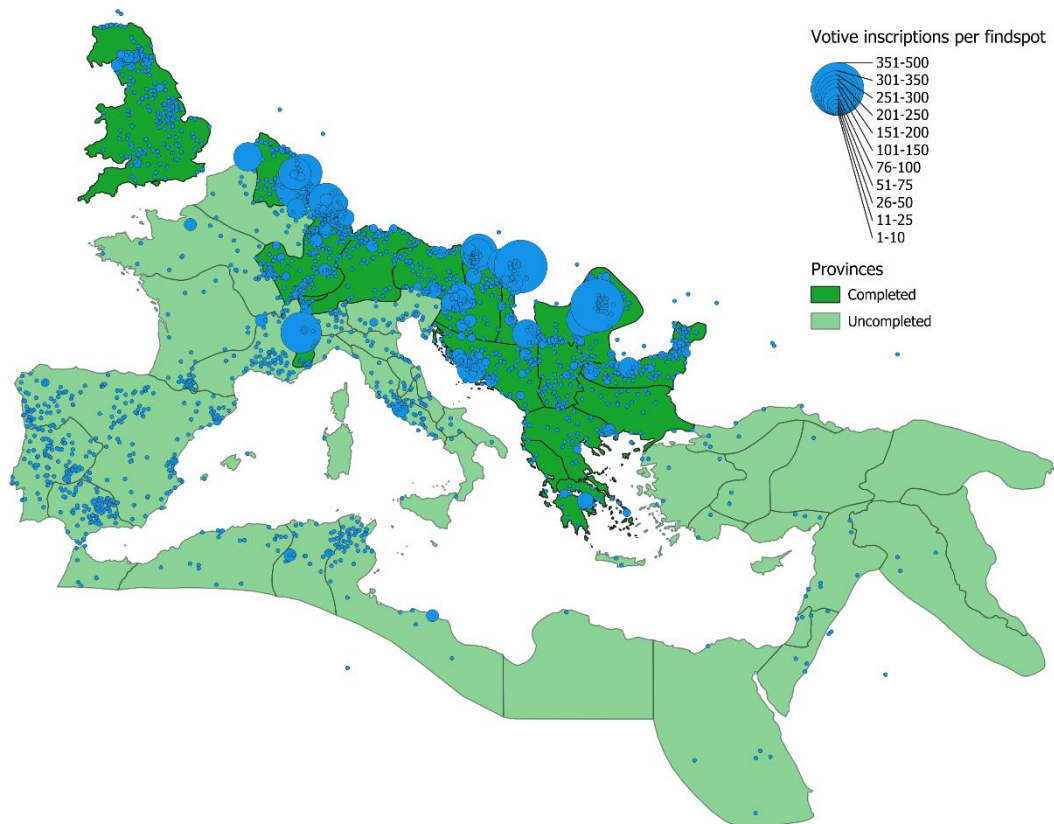


Figure 4: Votive inscriptions per findspot, including inscriptions classified as 'none'.

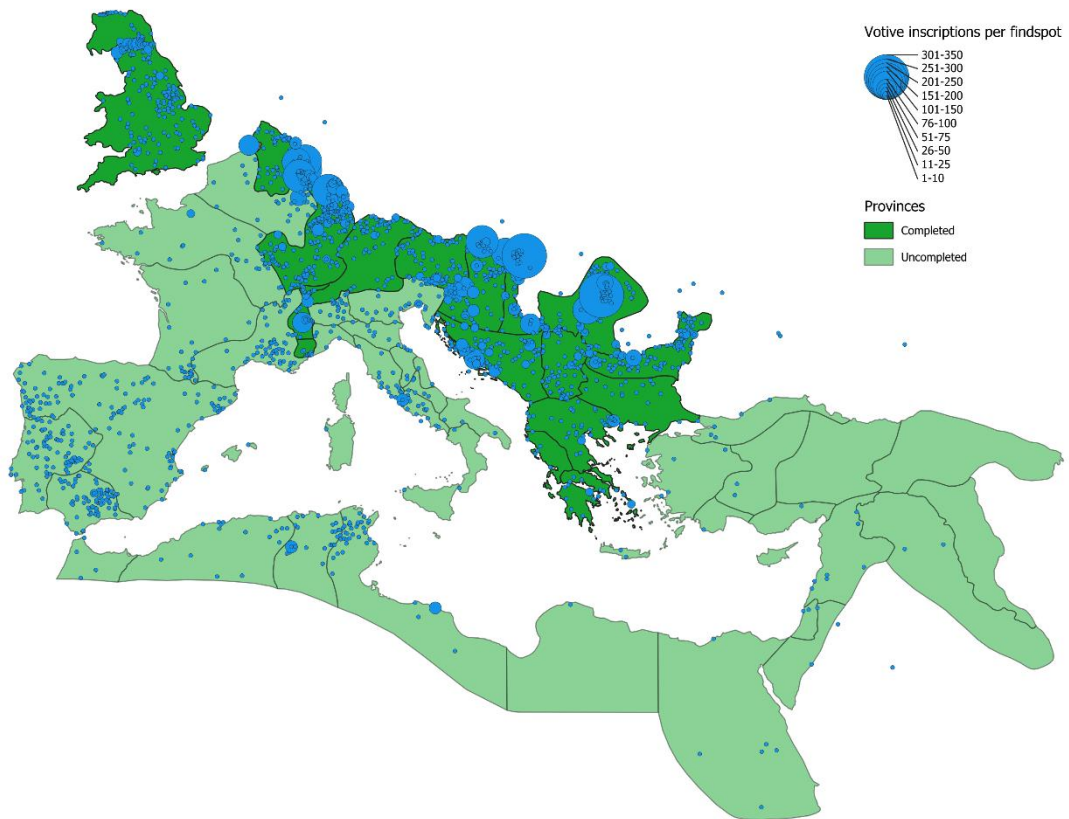


Figure 5: Votive inscriptions per findspot, excluding inscriptions classified as 'none'.

Findspot	Province	Numbers of inscriptions
Budapest	Pannonia inferior	347
Alba Iulia	Dacia	337
Nettersheim	Germania inferior	182
Mainz	Germania superior	179
Köln	Germania inferior	176
Bad Deutsch-Altenburg	Pannonia superior	171
Sarmizegetusa	Dacia	137
Morken - Harff	Germania inferior	126
Petronell-Carnuntum	Pannonia superior	122
Bonn	Germania inferior	108

Table 6: The ten provinces with the highest numbers of votive inscriptions, the provinces they belong to and the numbers of inscriptions.

Figures 4 and 5 show the votive inscriptions per findspot. This research, however, is based on the distribution of deities in these votive inscriptions, which is why two other maps have been created: a map that shows the numbers of inscriptions per deity in a findspot (figure 6) and a map that shows the numbers of different deities per findspot (figure 7). The map in figure 6 shows how many inscriptions in a particular location are mentioning the same deity. It can be seen that for some locations, the number of inscriptions mentioning the same deity is high. In figure 6, the points are smaller than in figure 5, which is caused by the fact that the maps are based on different variables. In figure 5, a site has one point which size is determined by its value (the number of total votive inscriptions), while in figure 6, one site can have multiple points. For example, Budapest has 93 different deities or combinations of deities, which means that 93 points are shown at this site.

The two maps are therefore not really comparable. However, to interpret figure 6, figure 5 is needed because the number of inscriptions in which a deity is mentioned is of course dependent on the total number of votive inscriptions in that one location. The largest concentration of inscriptions

mentioning the same deity at a site (i.e. the largest point) is situated in the northwest of the Roman Empire. This point represents the occurrence of *Matronae* in Nettersheim in the province of Germania inferior. This big point can also be seen on the map in figure 5, which means that *Matronae* form a large part of all the inscriptions found at this location. The underlying data show that this is indeed the case: of the 182 inscriptions from Nettersheim (*none* excluded), 175 mention *Matronae*. This pattern is also noticeable for other places, which means that some deities formed a large part of the total number of votive inscriptions at the place where they were worshipped. This may point to the presence of a sanctuary for that deity or the habitat of people who worshipped a specific deity. The map in figure 6 also shows that findspots with large concentrations of deities are located along the borders of the Roman Empire, as was also visible in figure 5.

A disadvantage of the map is that the data is based on modern-day sites. If inscriptions for a deity occur in two modern neighbouring villages, which were part of the same Roman settlement, the records for this deity are divided over two points in this map. For example, Petronell-Carnuntum and Bad-Deutsch Alteburg both have many inscriptions in which *Silvanus Domesticus* is mentioned. These two villages are close to each other and belonged to the same agglomeration in Roman times (Carnuntum). Because the deity is now divided over two places, the two points are smaller than if they were to fall under the same location. Furthermore, the spelling of sites is a problem. Sometimes the name of a place is recorded in different ways, causing the points to appear smaller than they should be in reality. Another disadvantage is that the points are plotted based on individual deities. *Matronae*, for example, stand out because the deities are mentioned in 175 inscriptions. However, when a location contains a lot of different deities but only in small quantities, the points are plotted on top of each other and the great variety of deities remains invisible. An example is the modern-day city of Cluj-Napoca in Dacia. This place has 19 different deities spread over 33 inscriptions, meaning that only a small point is visible on the map. To show the variety of deities per findspot, the map in figure 7 was created.

Some aspects stand out in this figure. The large point at Nettersheim in Germania inferior is much smaller on this map. Nevertheless, there are still a few large points in that region, indicating that there are multiple locations with a large variety of deities there. In addition, there is little variety in the interior of the Roman Empire. A small variety of deities, however, does not automatically mean a large number of inscriptions for the same god, as could be deduced from figures 5 and 6. The place with the largest variety is Budapest in Pannonia inferior with 93 different deities, followed by Alba Iulia in Dacia with 91 different deities. The two largest points in the northwest represent Mainz, Germania superior, with 70 different deities, and Köln, Germania inferior, with 66 different deities. Another large point is situated in the south of the Empire, at Al Khums, the city of Leptis Magna. On the map in figure 6, only few deities seem to be present there, while on this map it appears that the place has 27 different deities. Finally, Dacia has a high concentration of findspots with a great variety of deities.

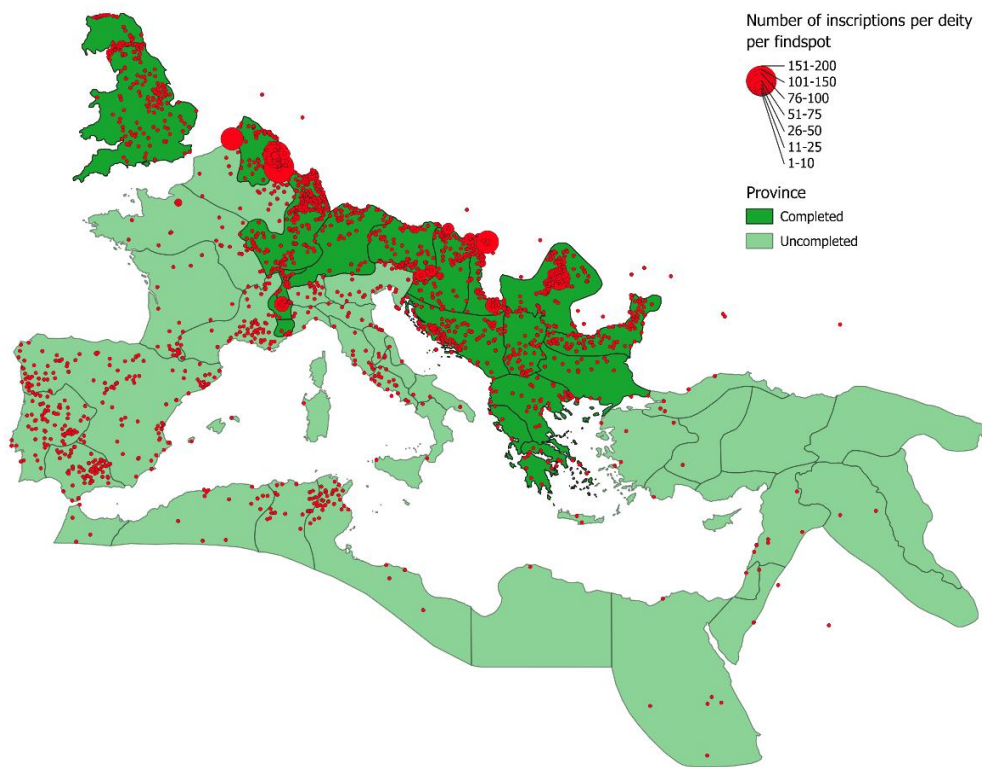


Figure 6: Number of inscriptions per deity per findspot.

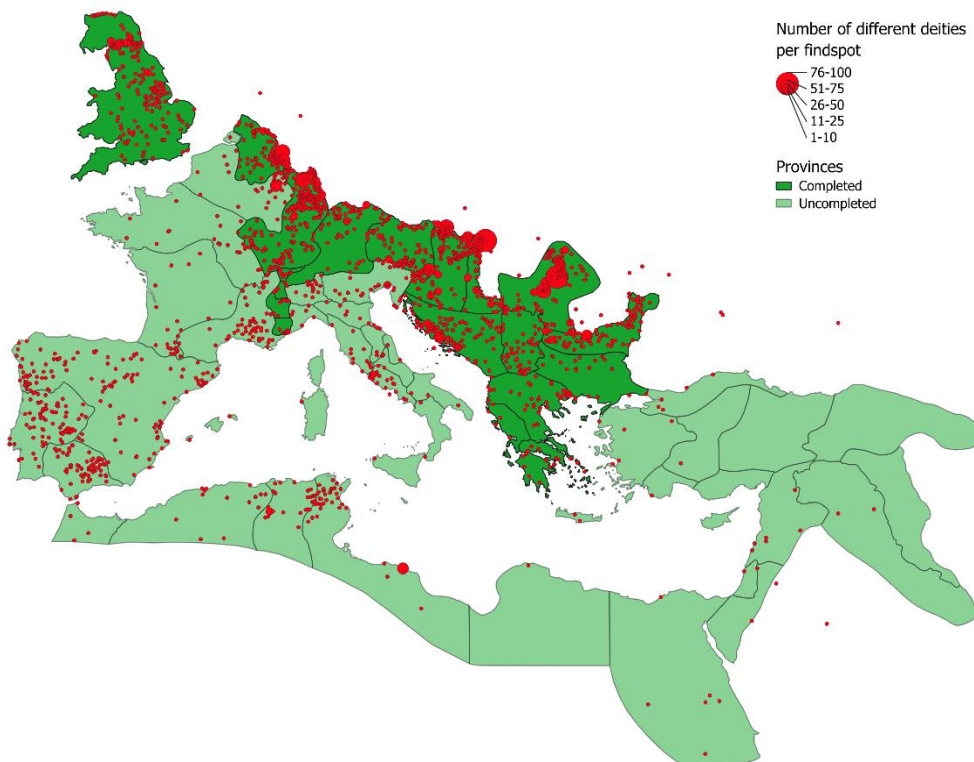


Figure 7: Number of different deities per findspot.

Because of the great number of different deities, their distribution over the provinces could not be displayed in tables. To study the relationships between the deities and the provinces, a correspondence analysis was carried out. This helps to reveal important differences and relations between deities and provinces and therefore contributes to answering questions about the geographical distribution of the deities. Inscriptions with the classifications *Greek* and *none* were eliminated. This research deals with deities mentioned in Latin inscriptions, and Greek deities usually occur in Greek inscriptions. The group *none* is irrelevant to the research, and because of its large size (2971 inscriptions) it would have an unwelcome influence on the outcomes of a correspondence analysis. For the dataset without these two groups, the minimum number of records per deity and per province included in the analysis was set at 4, meaning that all provinces with less than 4 inscriptions and deities that occur in less than 4 provinces are excluded from the analysis. The inclusion of rare gods and provinces with few deities would have a disruptive effect on the analysis.

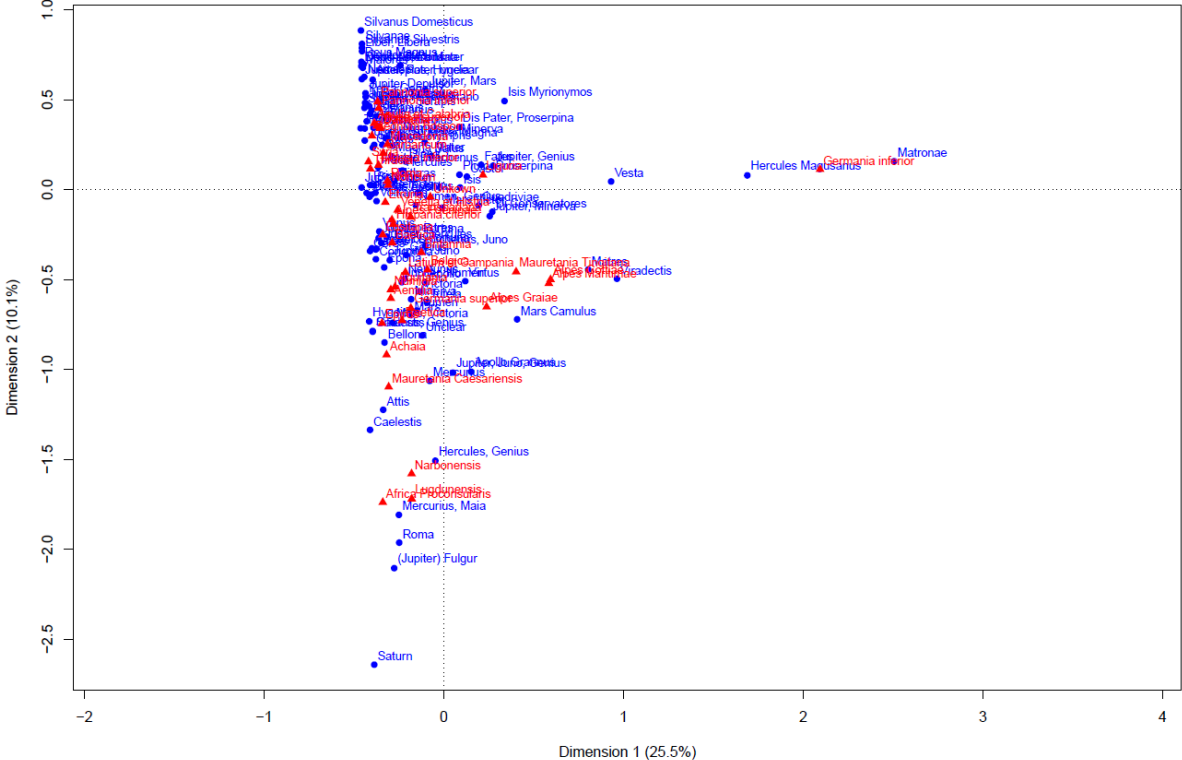


Figure 8: Result of a correspondence analysis of the relation between deities and provinces, displaying 35.6% of the variation within the dataset.

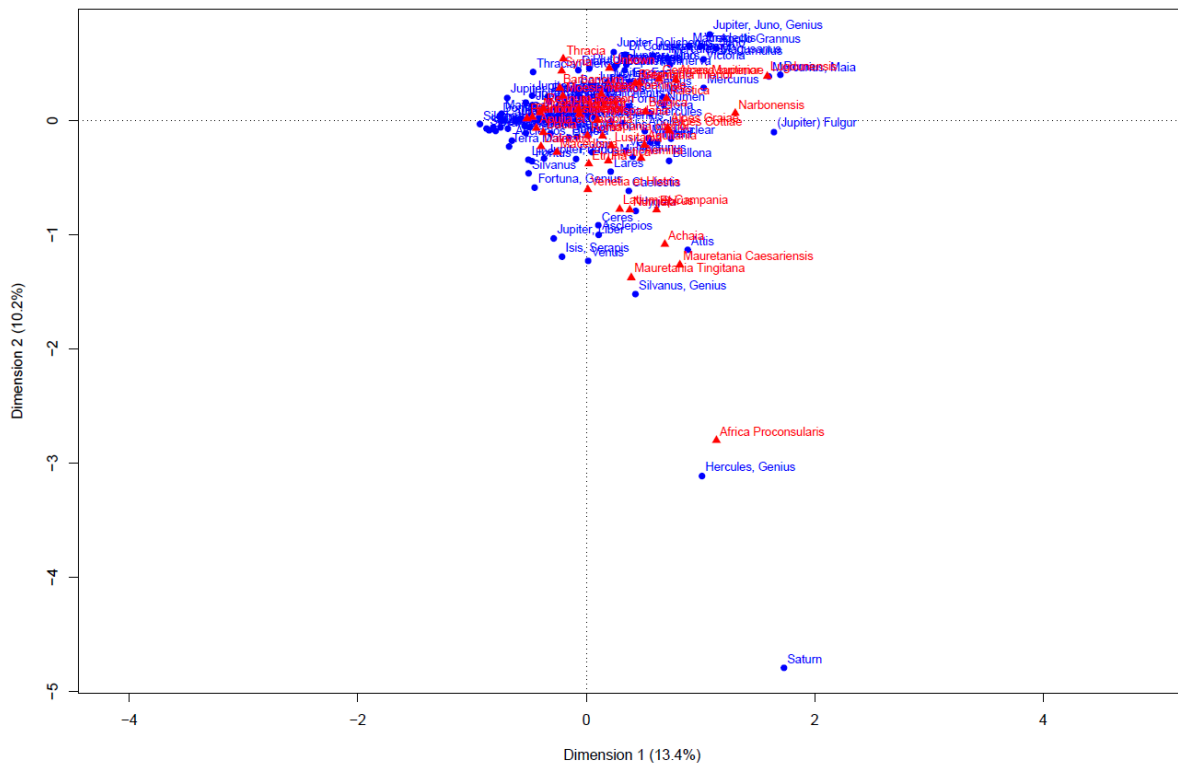


Figure 9: Result of a correspondence analysis of the relation between deities and provinces, without *Matronae*, displaying 23.6% of the variation within the dataset.

The visual output of a correspondence analysis can only be properly interpreted with the help of the so-called ‘diagnostics’, the numerical output revealing which types and units have the largest contribution to their arrangement in the diagram. From the diagnostics of the first analysis (appendix A1), it is clear that the distribution of the *Matronae* deviates strongly from those of all other deities, with a very strong presence in Germania inferior. The remaining deities and provinces are relatively densely clustered.

In order to clarify the associations within the dense cluster to the left of figure 8, the *Matronae* were removed from the dataset (diagnostics in appendix A2). In the resulting diagram of figure 9, the deity with the largest deviation is *Mercurius*, with a strong presence in Germania superior. This can also be concluded from the first analysis, where the diagnostics show that this deity and this province have the largest deviation after *Matronae* and Germania inferior. *Mercurius* is more much more widespread over the Roman Empire than the *Matronae*, who is highly concentrated in Germania superior. Nevertheless, *Mercurius* also has a concentration of inscriptions in the northern part of Germania superior. This is reflected in the data, where most inscriptions dedicated to *Mercurius* (158) are located in Germania superior. Of these 158 inscriptions, 28 were found in the a Roman area called Civitas Tribocorum. The same problem occurs here as mentioned with the maps above: these 28 inscriptions are divided over eight modern place names. Another 20 inscriptions were found in Mogontiacum, modern Mainz. These places are not far from each other and this concentration of inscriptions dedicated to *Mercurius* could therefore be an indication of a *Mercurius* sanctuary.

In figure 10, the distribution of the places of worship of *Mercurius* and its relation to three different site types, settlement, fort and sanctuary, is shown. It can be seen that there is indeed a high concentration of inscriptions with *Mercurius* in the north of Germania superior, which strengthens the possibility of a sanctuary. No place name categorised as site type sanctuary is situated in the area with a high concentration of inscriptions mentioning *Mercurius*. Instead, there are some forts and even more settlements in the area. However, in the data from EDH it can be read that some place names (e.g. Gunderstoffen and Niederbronn-les-Bains) are categorized as a *Mercurius* sanctuary. For other place names, there is a possibility that there was no *Mercurius* sanctuary but instead, the worship of *Mercurius*, as a god of war, was connected to military camps or to villages related to soldiers (e.g.

previous military camps that became permanent villages after the soldiers left). *Mercurius* is followed at considerable distance by *Silvanus Domesticus* (Pannonia Superior), *Jupiter* (Pannonia inferior, Pannonia superior and Germania superior) and *Saturnus* (Africa Proconsularis).

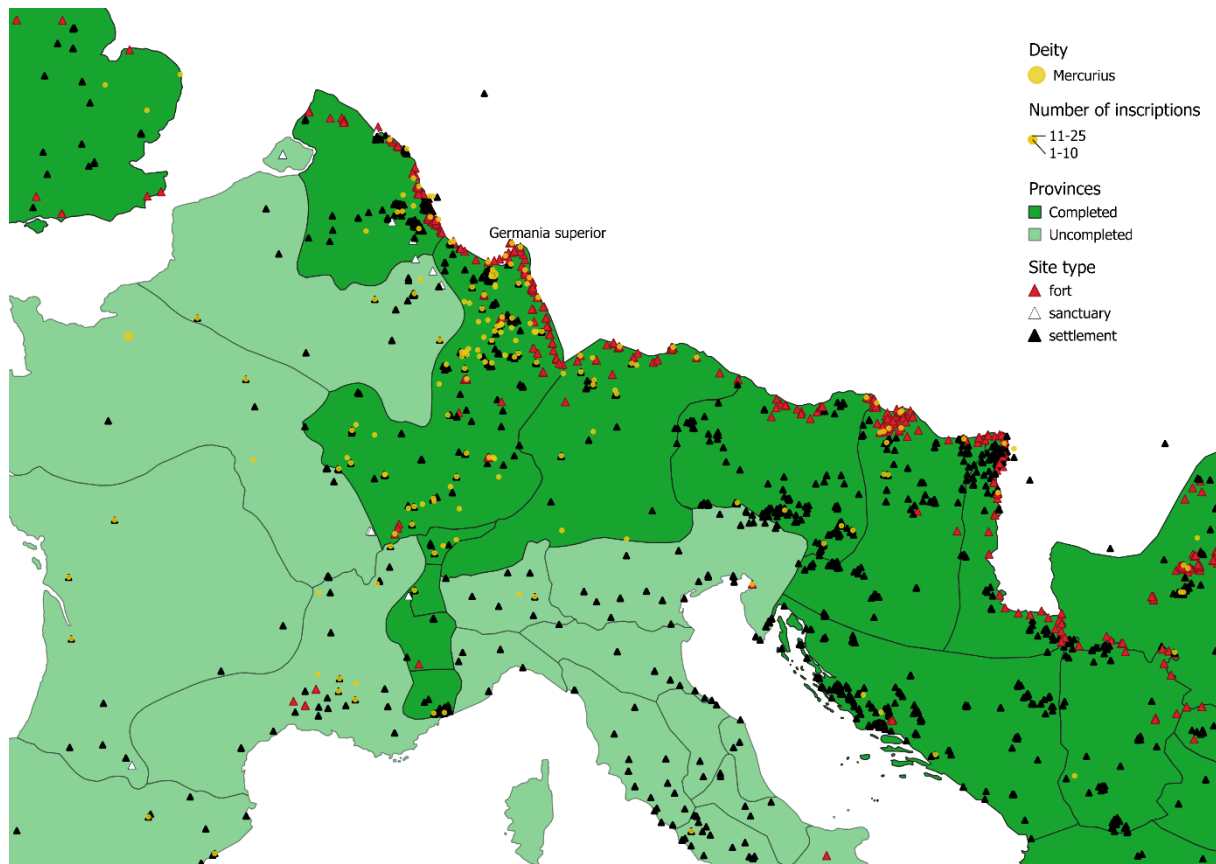


Figure 10: Distribution of the places where *Mercurius* is worshipped and its relation to three site types: fort, sanctuary and settlement.

In addition to studying the geographical distribution, the aim of this research is to also analyse the chronological distribution. This is done by establishing dating curves. To give a general overview of the chronological distribution of all votive inscriptions per province, the dating curves from the ten provinces with the largest numbers of these inscriptions, shown in figure 11, are analysed. The dating curves represent percentages, summing up to 100% for each province. At several half-century and century intervals, large increases in numbers can be seen in the graph. These peaks are affected by the way in which the dates are recorded, e.g. 51-100 and 101-300. The whole and half centuries always start after the first year of that century (so 101, 151, 201 etc.) and they end in the first year (100, 150, 200 etc.). In this way, the increases and decreases of the curves on these dates can be overly strong, which should not be interpreted as sudden decreases or increases. However, the trends seen in the graph certainly reflect real patterns, although in reality it would have been more spread out over time rather than a sudden change.

A number of things stand out. First of all, almost all provinces display the same general pattern: the numbers of inscriptions increase around AD 150, decrease around AD 250, and then drop to almost zero after AD 300. Dalmatia, however, deviates from this pattern. Here, the number of inscriptions increases strongly at the beginning of the Common Era, continues without major peaks, and then drops around AD 300. The early increase can be explained by the early Roman interference in the area. After Dalmatia, Noricum is the curve with the highest value for inscriptions in the period 0-75, which is also caused by an early Roman presence in this area. Further analysing the curves is

difficult if they are shown together in one figure. To make the overview somewhat clearer, the provinces have been split in two groups, based on the numbers of inscriptions, and shown again in figures 12 and 13.

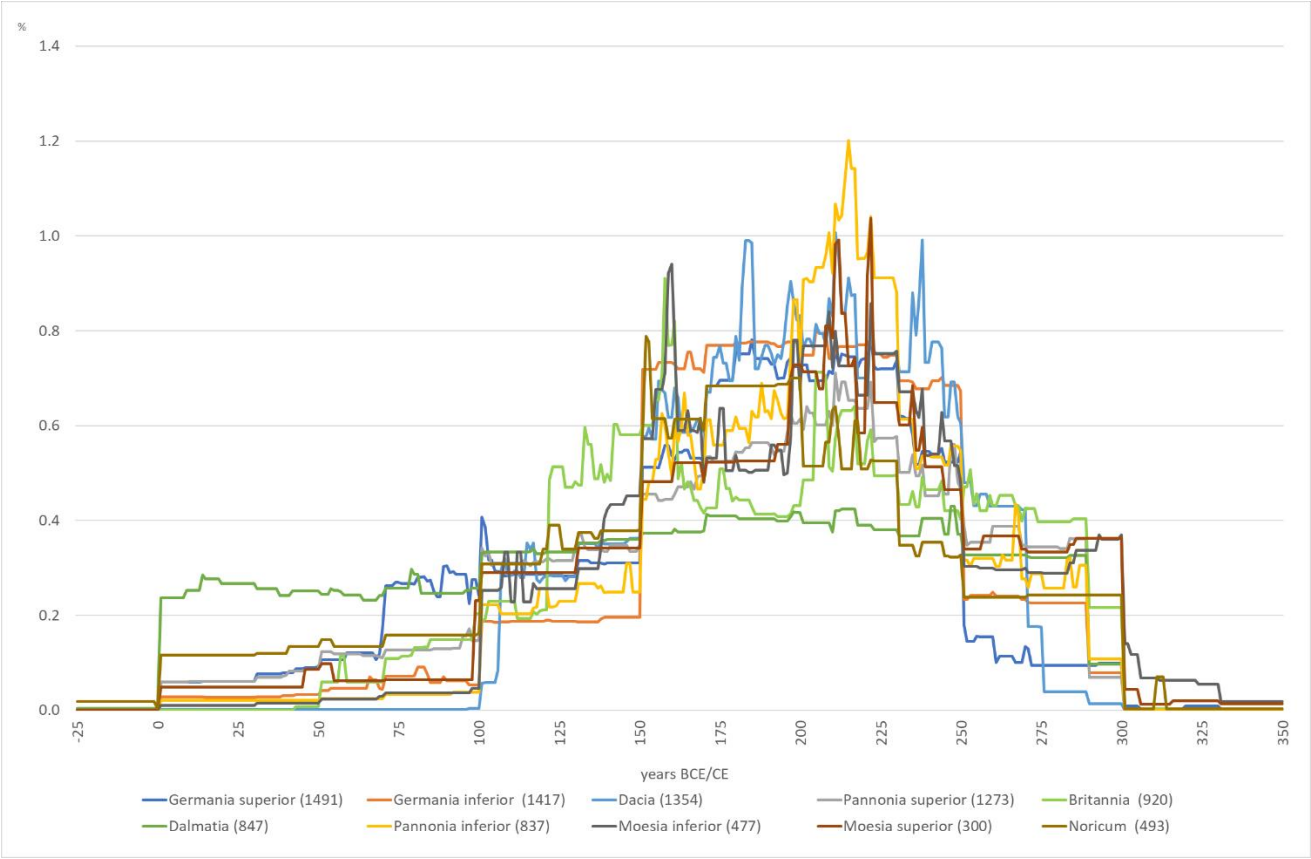


Figure 11: Chronological distribution of the votive inscriptions from the ten provinces with the largest numbers of these inscriptions.

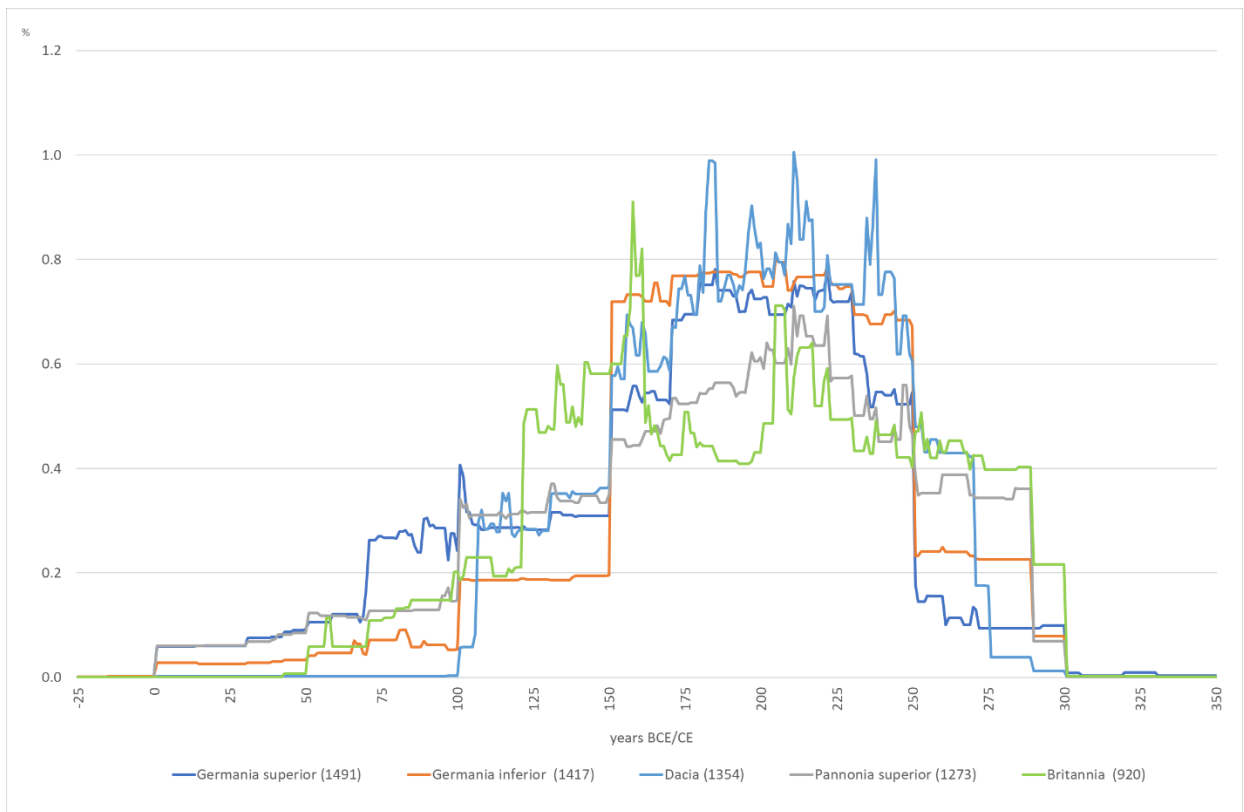


Figure 12: Chronological distribution of the votive inscriptions from Germania superior, Germania inferior, Dacia, Pannonia superior and Britannia.

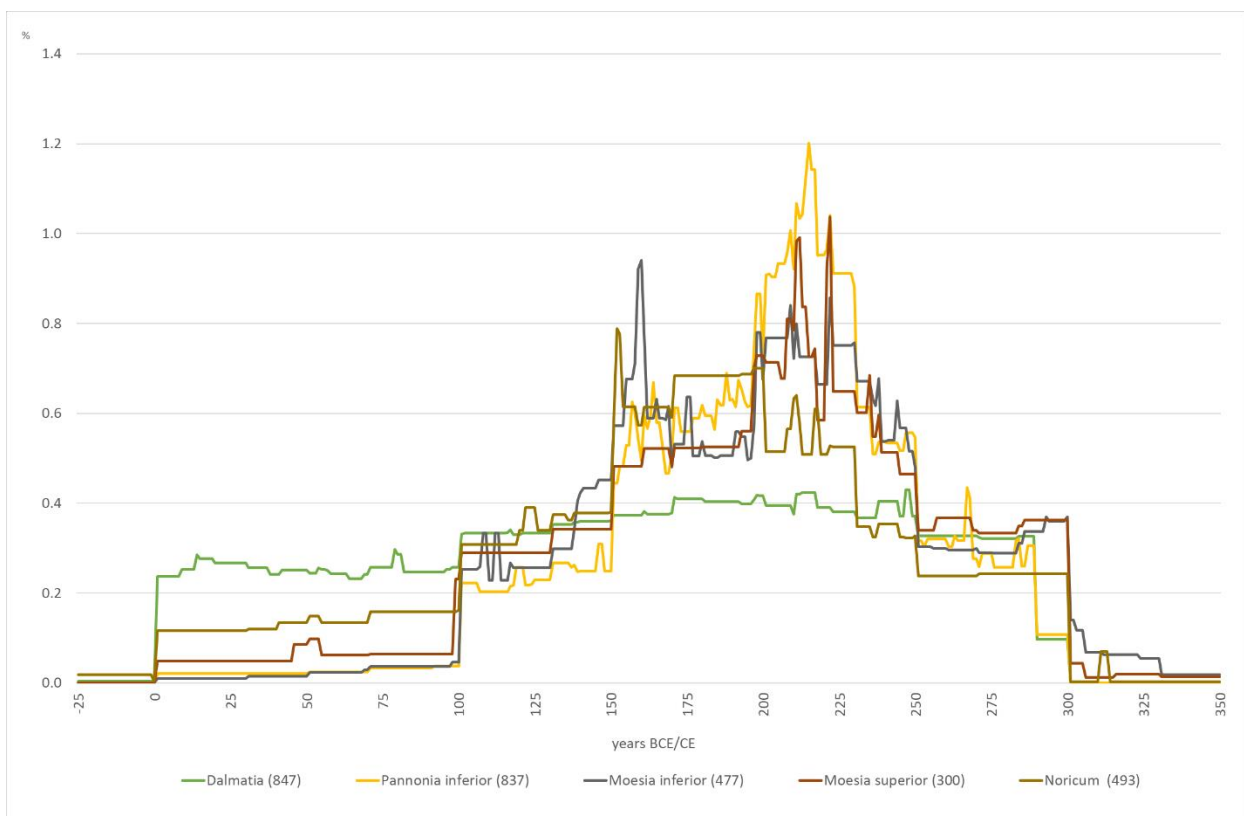


Figure 13: Chronological distribution of the votive inscriptions from Dalmatia, Pannonia inferior, Moesia inferior, Moesia superior and Noricum.

In figure 12 it can be seen that the curve of Dacia rises only shortly after 100. The simple reason is that Dacia only became a Roman province in the year 106. Dacia rises again after 150, drops at 250 and has three major peaks in between: around 184, around 211 and 238. Germania superior and Germania inferior both have one broad peak starting around 150 and no high outliers like the other provinces. For Germania inferior, this high rise after 150 is caused by an abundance of *Matronae* inscriptions, 516 of the 818 inscriptions with a dating. Most of these inscriptions have a start date of 151 and an end date of 250, which explains the increase and the drop of the curve from that province. Pannonia inferior has a steep rise around 200 and its curve has the highest peak of all ten curves at 215. Around 230, the curve drops.

It is somewhat difficult to see in figure 13, but Britannia has two peaks: one broad peak between 120-160 with its highest point at 158 and one smaller peak between 200-230. The rise of the first peak around 120 can be explained by the construction of Hadrian's Wall, which started around 122. The second part of that peak can be explained by the construction of the Antonine Wall, which started in 142. The curve then slopes steeply downwards again around 160. The Antonine Wall was abandoned around 162, which explains this sharp decline. The curve of Moesia inferior starts rising after 150, with its highest peak at 160, after which it drops. The curve of this province has another sharp rise after 196 till roughly 222, from where the curve slowly declines. Noricum's curve starts to rise after 150 and, with some peaks in between, drops after 230. The curve of Moesia superior has two small steep peaks around 211 and 222.

Various peaks and strong increases and decreases have been discussed above. The related analysis methods chi-square test and correspondence analysis often show that the statistically most important differences in a dataset are not hidden in groups with high absolute values, but in groups with low values that differ relatively strongly from each other. This is also the case here. The most important differences between the curves do not occur in the period 150-250, but before and after that. The peaks in this chronological distribution show interesting data and can sometimes be explained by the underlying data, but they do not automatically indicate the most significant differences. Moreover, most of the high rises have another underlying reason which cannot directly be found in the data. Many of the described peaks may have been the result of the repair or reconstruction of a road network, the building of settlements or the passing of an army. To further investigate and explain these dating curves, the historical context of the provinces should be looked into.

4.2 Pantheon: Greco-Roman versus regional

For this part, the pantheon to which deities belong and their geographical and chronological spread have been analysed. The results will be used to answer the first sub-question: *What is the geographical and chronological distribution of deities classified by pantheon?* In order to analyse the geographical distribution, the pantheon groups were divided over the provinces, which is shown in tables. In addition, the geographical distribution is shown in maps, where the number of gods per group is shown per findspot. To analyse the chronological distribution, dating curves were used, which are shown in a graph. The results of these analyses are shown below. For this variable, the deities were grouped into classical gods, meaning the Greco-Roman pantheon, and regional gods. A more extended definition of these groups has been given in section 3.4

Provinces	Classical	Regional	Both	Total
Germania superior	798	418	145	1361
Dacia	847	230	67	1144
Pannonia superior	737	300	84	1121
Germania inferior	219	815	65	1099
Britannia	338	379	47	764
Pannonia inferior	590	122	52	764
Dalmatia	539	112	44	695
Noricum	205	195	35	435
Moesia inferior	274	101	23	398
Moesia superior	185	66	16	267
Belgica	80	163	14	257
Hispania citerior	143	96	3	242
Raetia	120	44	5	169
Baetica	122	32	2	156
Africa Proconsularis	106	26	14	146
Alpes Cottiae	29	79	4	112
Lusitania	51	58		109
Narbonensis	59	24	2	85
Venetia et Histria	58	23		81
Macedonia	55	17	8	80
Numidia	43	13	4	60
Alpes Poeninae	16	40	3	59
Lugdunensis	37	18	1	56
Roma	31	12	1	44
Achaia	28	8	4	40
Aquitania	29	11		40
Transpadana	25	3	1	29
Etruria	22	5		27
Latium et Campania	22	4	1	27
Alpes Maritimae	9	12	2	23
Mauretania Caesariensis	15	4	2	21
Barbaricum	14	4	1	19
Thracia	8	5		13
Syria	5	2	5	12
Aemilia	8	2	1	11
Mauretania Tingitana	5	6		11
Regnum Bospori	6	5		11
Samnium	8	2		10
Unkown	4	6		10
Alpes Graiae	4	2	1	7
Asia	5	2		7
Liguria	5	2		7
Epirus	6			6
Umbria	3	2		5
Apulia et Calabria	4			4
Galatia	3	1		4
Bithynia et Pontus	3			3
Aegyptus	2			2
Arabia		2		2
Bruttium et Lucania	1	1		2
Iudaea	2			2
Picenum	1	1		2
Cappadocia	1			1
Cyrene	1			1
Lycia et Pamphylia		1		1
Sicilia, Melita	1			1
Tuscia et Umbria	1			1
Total	5933	3476	657	10066

Table 7: The number of votive inscriptions per pantheon group per province. The provinces are ordered by the total number of votive inscriptions classified as classical, regional or both.

Provinces in grey are completed. Colour scale: the highest numbers are marked red, the lowest are marked green.

Provinces	Classical	Regional	Both	Total
Germania superior	0.47	0.25	0.09	0.81
Dacia	0.60	0.16	0.05	0.82
Pannonia superior	0.53	0.22	0.06	0.81
Germania inferior	0.15	0.55	0.04	0.74
Britannia	0.35	0.39	0.05	0.79
Pannonia inferior	0.61	0.13	0.05	0.78
Dalmatia	0.61	0.13	0.05	0.78
Noricum	0.38	0.36	0.07	0.81
Moesia inferior	0.49	0.18	0.04	0.72
Moesia superior	0.53	0.19	0.05	0.77
Belgica	0.27	0.54	0.05	0.86
Hispania citerior	0.40	0.27	0.01	0.68
Raetia	0.58	0.21	0.02	0.82
Baetica	0.54	0.14	0.01	0.69
Africa Proconsularis	0.48	0.12	0.06	0.66
Alpes Cottiae	0.10	0.27	0.01	0.38
Lusitania	0.33	0.38	0.00	0.71
Narbonensis	0.43	0.17	0.01	0.62
Venetia et Histria	0.59	0.23	0.00	0.82
Macedonia	0.37	0.11	0.05	0.53
Numidia	0.57	0.17	0.05	0.79
Alpes Poeninae	0.20	0.51	0.04	0.75
Lugdunensis	0.54	0.26	0.01	0.81
Roma	0.40	0.15	0.01	0.56
Achaia	0.21	0.06	0.03	0.30
Aquitania	0.46	0.17	0.00	0.63
Transpadana	0.71	0.09	0.03	0.83
Etruria	0.43	0.10	0.00	0.53
Latium et Campania	0.51	0.09	0.02	0.63
Alpes Maritimae	0.32	0.43	0.07	0.82
Mauretania Caesariensis	0.43	0.11	0.06	0.60
Barbaricum	0.61	0.17	0.04	0.83
Thracia	0.20	0.13	0.00	0.33
Syria	0.25	0.10	0.25	0.60
Aemilia	0.67	0.17	0.08	0.92
Mauretania Tingitana	0.38	0.46	0.00	0.85
Regnum Bospori	0.38	0.31	0.00	0.69
Samnium	0.50	0.13	0.00	0.63
Unkown	0.31	0.46	0.00	0.77
Alpes Graiae	0.40	0.20	0.10	0.70
Asia	0.33	0.13	0.00	0.47
Liguria	0.50	0.20	0.00	0.70
Epirus	0.27	0.00	0.00	0.27
Umbria	0.33	0.22	0.00	0.56
Apulia et Calabria	0.50	0.00	0.00	0.50
Galatia	0.60	0.20	0.00	0.80
Bithynia et Pontus	0.23	0.00	0.00	0.23
Aegyptus	0.20	0.00	0.00	0.20
Arabia	0.00	0.25	0.00	0.25
Bruttium et Lucania	0.50	0.50	0.00	1.00
Iudaea	0.40	0.00	0.00	0.40
Picenum	0.17	0.17	0.00	0.33
Cappadocia	1.00	0.00	0.00	1.00
Cyrene	1.00	0.00	0.00	1.00
Lycia et Pamphylia	0.00	0.25	0.00	0.25
Sicilia, Melita	1.00	0.00	0.00	1.00
Tuscia et Umbria	0.50	0.00	0.00	0.50

Table 8: The ratio between the number of inscriptions per pantheon group and the total number of votive inscriptions, per province. The provinces are ordered in the same order as table 7. Provinces in grey are completed. Colour scale: the highest ratios are marked red, the lowest are marked green.

In table 7, the number of inscriptions per pantheon group per province is listed to show the geographical distribution of this group over the provinces. The total number of inscriptions here amounts to 10,066 and not to 13,340 (the total number of votive inscriptions in this study) because inscriptions with an 'unclear' affiliation were not included and the categories *Greek* and *none* were also left out.

In table 8, the ratio between the number of inscriptions per group and the total number of votive inscriptions in a province is displayed. This is a suitable way to look at relative differences between the provinces. However, since more than a third of the provinces are only represented by 10 or less inscriptions, it is difficult to draw significant conclusions. In table 8, it can be seen that several provinces have a ratio of 1.00 in the column 'Classical', but the numbers of inscriptions registered for these provinces are very limited, which is why they will not be further discussed.

The provinces that have values exceeding one standard deviation above the mean (in this case 314) in the column 'Classical' of table 7 and thus have a high representation of classical deities in absolute numbers are Dalmatia, Pannonia inferior, Britannia, Pannonia superior, Dacia and Germania superior. For the regional deities in table 7 (threshold value 219) these are Dacia, Pannonia superior, Britannia, Germania superior and Germania inferior.

The provinces with the highest numbers of inscriptions for classical deities in table 7 do not necessarily have the highest ratios for that group in table 8 (threshold value 0.57, excluding ratios of 1.00). Of the provinces with high absolute numbers of classical deities, only Dacia, Dalmatia and Pannonia inferior have high ratios. For the regional deities, the provinces with a ratio above 0.34 have a high share of inscriptions with regional deities as compared to the total number of votive inscriptions. Of the already mentioned provinces with high absolute numbers of regional deities, only Germania inferior and Britannia have ratios higher than 0.34 in table 8. The latter also applies to six provinces that do not have particularly high absolute numbers of regional deities, demonstrating the importance of calculating the ratio. These provinces are Belgica, Alpes Poeninae, Mauretania Tingitana, Alpes Maritimae, Lusitania and Noricum. The share of regional deities in their total number of inscriptions is high. The high ratio of Belgica (0.54) is due to the goddess *Nehalennia*, who appears in 100 of the 300 inscriptions in that province. On the other side, some provinces with particularly high absolute numbers of inscriptions with regional deities, such as Germania superior and Pannonia superior, have only average ratios in table 8. This shows that absolute numbers are not always a satisfactory representation of the distribution of inscriptions across the provinces.

Figure 14 displays the geographical distribution of classical and regional deities in votive inscriptions over the Roman provinces. Because the data on the maps is based on findspots, it gives more insight into concentrations of deities and into the variation within a province than tables 9 and 10 give. The map shows a great contrast between the large number of high concentrations of classical deities in the northeast versus the large number of concentrations of regional deities in the northwest. In figures 15 and 16, the differences between the two groups are more clear. In figure 15, the difference between complete and incomplete provinces is clearly visible. Furthermore, the provinces Pannonia inferior, Dacia, Pannonia superior and Germania superior have the most findspots with high concentrations of classical deities. The four largest points are Budapest (Pannonia inferior), Alba Iulia (Dacia), Bad Deutsch-Altenburg (Pannonia superior) and Mainz (Germania superior). Inscriptions from Budapest, Alba Iulia and Mainz are often dedicated to *Jupiter*, inscriptions from Bad Deutsch-Altenburg to *Jupiter* and *Silvanus Domesticus*.

For regional deities, Germania inferior is the province having the most findspots with high concentrations of inscriptions. The four largest points on the map are Nettersheim, Morken-Harff, Köln (all Germania inferior) and Colijnsplaat (Belgica). The latter has 99 inscriptions with regional deities, all dedicated to *Nehalennia*. The three large points in Germania inferior are mostly caused by inscriptions dedicated to *Matronae*. The large number of classical deities in Germania inferior that can be seen in table 7, is somewhat less visible on the map. The main reason for this is the fact that in Germania inferior, the classical deities are more spread out over different places, which also applies to Dalmatia. In Pannonia Superior, Pannonia inferior and Dacia, the inscriptions are much more concentrated in a few places.

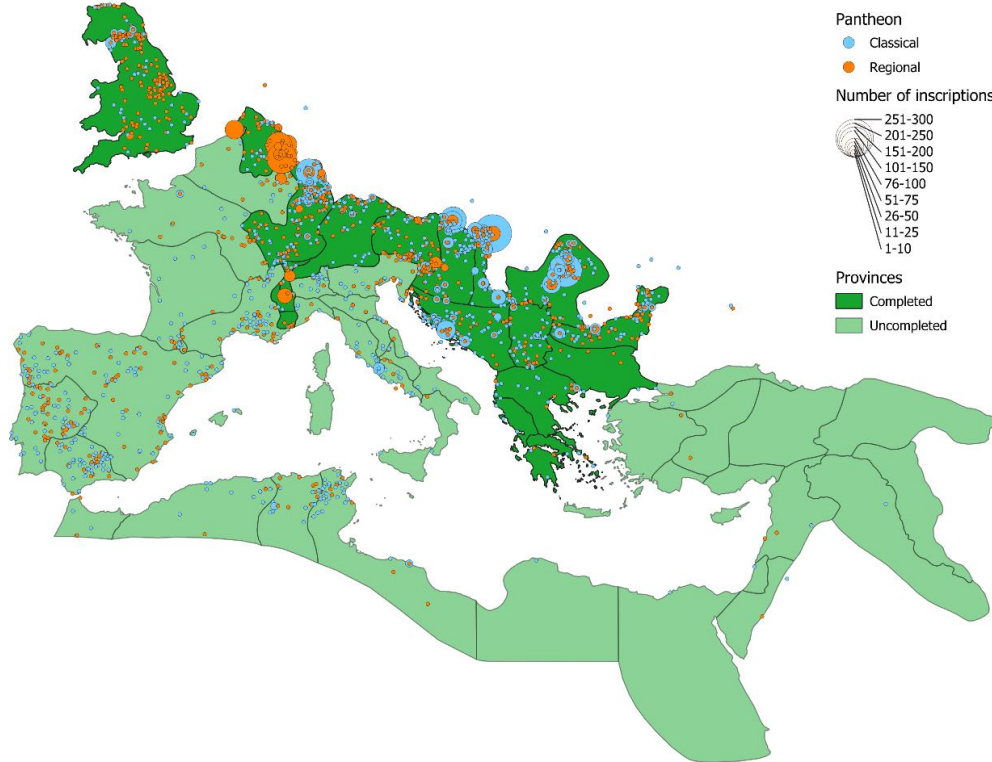


Figure 14: Map of the distribution of classical and regional deities in votive inscriptions over the provinces of the Roman Empire.

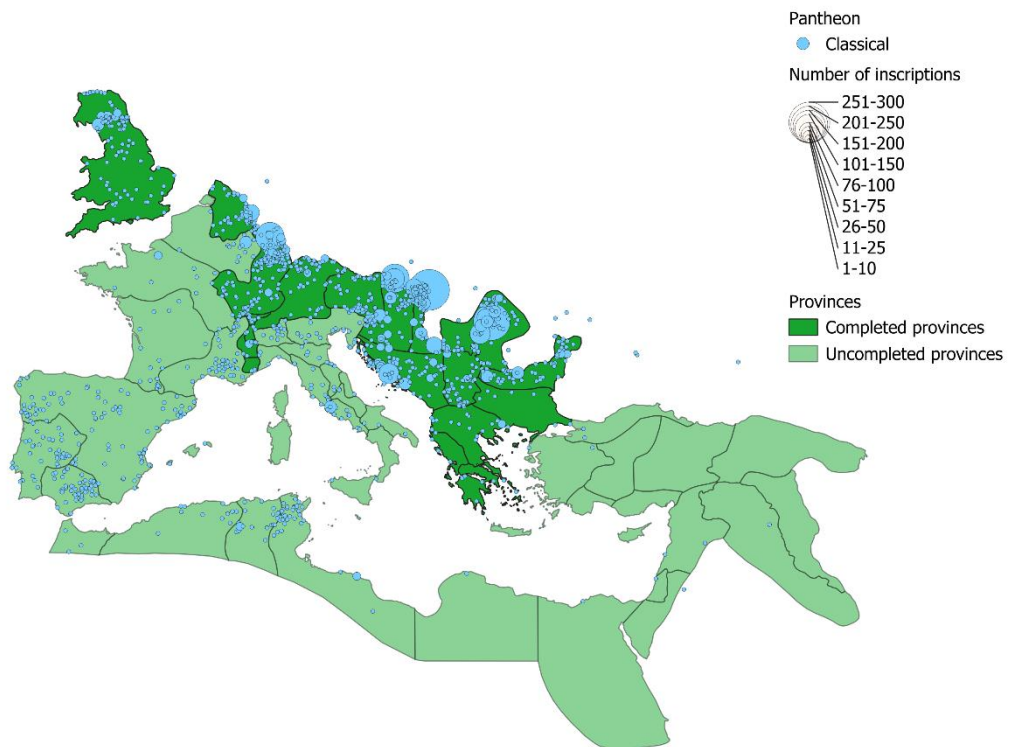


Figure 15: Map of the distribution of classical deities in votive inscriptions over the Roman Empire.

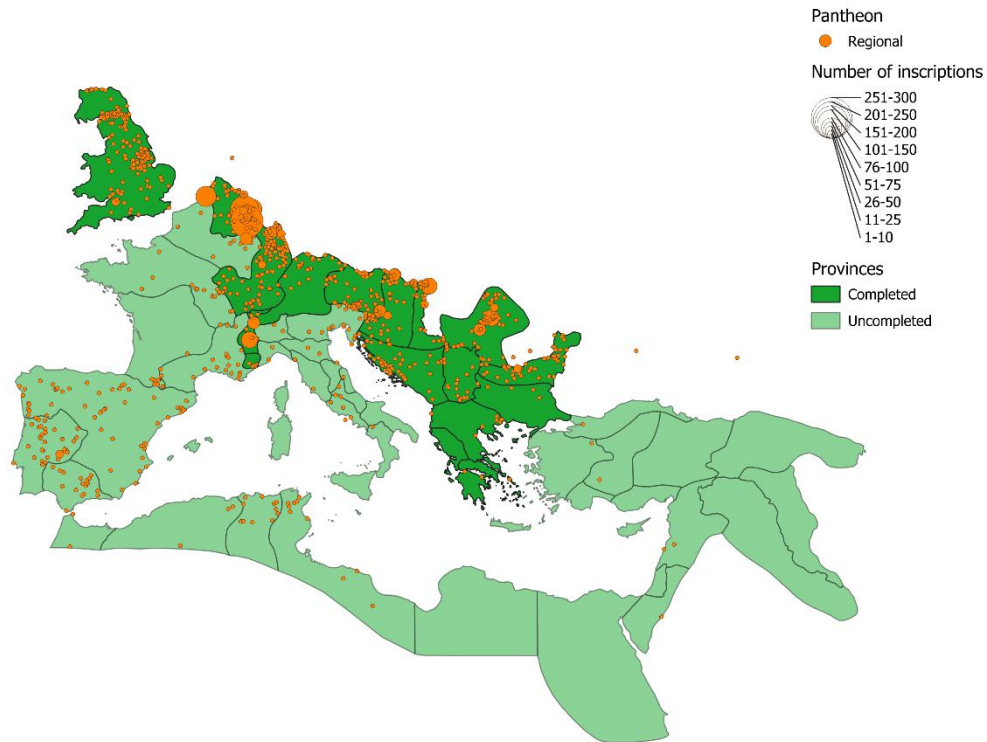


Figure 16: Map of the distribution of regional deities in votive inscriptions over the Roman Empire.

Tables 9 and 10 only show the number of inscriptions that have been classified as classical or regional. They do not show how many different classical or regional deities are mentioned in the inscriptions. The number of different classical gods can for example be much lower than the number of different regional gods. An example: if Jupiter is mentioned in 200 inscriptions, this is counted as 200 inscriptions in table 7, but as 1 in the sum of unique classical deities. The classical category consists of 379 unique deities, while the regional group counts 553 unique deities. The number of unique gods per province, sorted by pantheon group, is shown in table 9. It should be noted that inscriptions with multiple deities count as a separate unique individual. For example, Juno can appear in two different ways: alone in an inscription or in combination with another god, e.g. Jupiter. All the inscriptions with Juno alone count as one unique deity and all the inscriptions with Juno, Jupiter then also count as one unique deity. This selection would thus have a total of two unique deities. In other words: inscriptions with multiple deities count as one record. What is striking is the large number of unique regional deities in Germania Superior. In addition, Dacia has the largest number of unique classical deities.

However, these numbers depend on the total number of votive inscriptions in the provinces. Namely, if there are only a few regional gods in a province, it does not necessarily imply that there are only a few inscriptions. In that way, table 9 can give a distorted picture. To show the relative frequency of a group of deities in a province, table 10 has been created. In that table the number of votive inscriptions per group is divided by the number of unique deities per group. For example: Achaia has 4 unique regional deities and 8 inscriptions mentioning regional deities and thus an average of 2 inscriptions per regional individual deity (mentioned individually or as part of a combination of deities). Alpes Cottiae almost has 20 inscriptions per regional deity because it has 4 unique regional deities and 79 inscriptions mentioning a regional deity. Of these 79 inscriptions, 64 are dedicated to *Albiorix* and found in the modern place of Sauze d'Oulx (ancient Ad Martis). Almost all inscriptions dedicated to *Albiorix* are found on pottery. The high concentration of *Albiorix* in this place explains the high value of Alpes Cottiae. Germania superior loses its importance for regional deities, with only 3.8 inscriptions per deity. On the contrary, the province has a high number of inscriptions per god for the

classical deities, 10.8. This means that in general, the classical deities are well-represented in Germania superior.

The same applies to regional deities in Germania inferior, where every deity appears on average in 12 inscriptions. This means that regional deities are not rare in inscriptions in this province. The high average is caused by a concentration of *Matronae* in this province (624 of 815 inscriptions for regional deities). For the total of all the provinces together, the average of inscriptions per classical deity is 15.6, while the average for regional deities is 6.3. This shows that in general, regional deities are represented with fewer inscriptions. However, classical deities were worshipped throughout the Empire, which makes the fact that these empire-wide deities appear more often on inscriptions not necessarily an outstanding result.

Provinces	Classical	Regional
Achaia	20	4
Aegyptus	2	0
Aemilia	8	1
Africa Proconsularis	39	15
Alpes Cottiae	8	4
Alpes Graiae	4	2
Alpes Maritimae	6	10
Alpes Poeninae	9	8
Apulia et Calabria	4	0
Aquitania	14	11
Arabia	0	2
Asia	5	2
Baetica	40	13
Barbaricum	8	4
Belgica	29	36
Bithynia et Pontus	3	0
Britannia	53	88
Bruttium et Lucania	1	1
Cappadocia	1	0
Cyrene	1	0
Dacia	98	71
Dalmatia	76	31
Epirus	6	0
Etruria	16	5
Galatia	3	1
Germania inferior	56	67
Germania superior	74	110
Hispania citerior	35	42
Iudaea	2	0
Latium et Campania	14	4
Liguria	3	2
Lugdunensis	15	14
Lusitania	20	33
Lycia et Pamphylia	0	1
Macedonia	18	11
Mauretania Caesariensis	9	2
Mauretania Tingitana	3	4
Moesia inferior	60	29
Moesia superior	44	27
Narbonensis	19	15
Noricum	37	52
Numidia	25	6
Pannonia inferior	80	36
Pannonia superior	79	58
Picenum	1	1
Raetia	30	26
Regnum Bospori	3	2
Roma	15	8
Samnium	5	2
Sicilia, Melita	1	0
Syria	5	1
Thracia	5	3
Transpadana	11	3
Tuscia et Umbria	1	0
Umbria	2	2
Unkown	4	3
Venetia et Histria	28	12

Table 9: Numbers of unique classical and regional deities, per province.

Provinces	Classical	Regional
Achaia	1.4	2.0
Aegyptus	1.0	0.0
Aemilia	1.0	2.0
Africa Proconsularis	2.7	1.7
Alpes Cottiae	3.6	19.8
Alpes Graiae	1.0	1.0
Alpes Maritimae	1.5	1.2
Alpes Poeninae	1.8	5.0
Apulia et Calabria	1.0	0.0
Aquitania	2.1	1.0
Arabia	0.0	1.0
Asia	1.0	1.0
Baetica	3.1	2.5
Barbaricum	1.8	1.0
Belgica	2.8	4.5
Bithynia et Pontus	1.0	0.0
Britannia	6.4	4.3
Bruttium et Lucania	1.0	1.0
Cappadocia	1.0	0.0
Cyrene	1.0	0.0
Dacia	8.6	3.2
Dalmatia	7.1	3.6
Epirus	1.0	0.0
Etruria	1.4	1.0
Galatia	1.0	1.0
Germania inferior	3.9	12.2
Germania superior	10.8	3.8
Hispania citerior	4.1	2.3
Iudaea	1.0	0.0
Latium et Campania	1.6	1.0
Liguria	1.7	1.0
Lugdunensis	2.5	1.3
Lusitania	2.6	1.8
Lycia et Pamphylia	0.0	1.0
Macedonia	3.1	1.5
Mauretania Caesariensis	1.7	2.0
Mauretania Tingitana	1.7	1.5
Moesia inferior	4.6	3.5
Moesia superior	4.2	2.4
Narbonensis	3.1	1.6
Noricum	5.5	3.8
Numidia	1.7	2.0
Pannonia inferior	7.4	3.4
Pannonia superior	9.3	5.2
Picenum	1.0	1.0
Raetia	4.0	1.7
Regnum Bospori	2.0	2.5
Roma	2.1	1.5
Samnium	1.6	1.0
Sicilia, Melita	1.0	0.0
Syria	1.0	2.0
Thracia	1.6	1.7
Transpadana	2.3	1.0
Tuscia et Umbria	1.0	0.0
Umbria	1.5	1.0
Unkown	1.0	2.0
Venetia et Histria	2.1	1.9

Table 10: The average number of inscriptions per unique classical and regional deity, per province. Numbers in red are high averages, numbers in green low averages.

To study the chronological distribution for the group pantheon, the dating curves of classical and regional inscriptions, which are displayed in figure 17, are investigated. In that way, a comparison between the different groups can be made. Most inscriptions are dated within the same timeframe, from roughly AD 100 – 300. However, in 150-250, the inscriptions with regional deities are proportionally better represented, while the inscriptions with classical deities are better represented up to 150. The sharp increase in 150 is caused by the way dates are recorded, as discussed earlier. In reality this increase would have been more spread out. However, it does show a change in pattern: a turn in which the regional group is better represented. After 250, the classical deities are somewhat more numerous. Besides that, both groups are following the same time path. For inscriptions with deities from both groups it is different. These inscriptions appear most often between 175 and 250. Between 250-275, the group both is better represented than the classical and regional group.

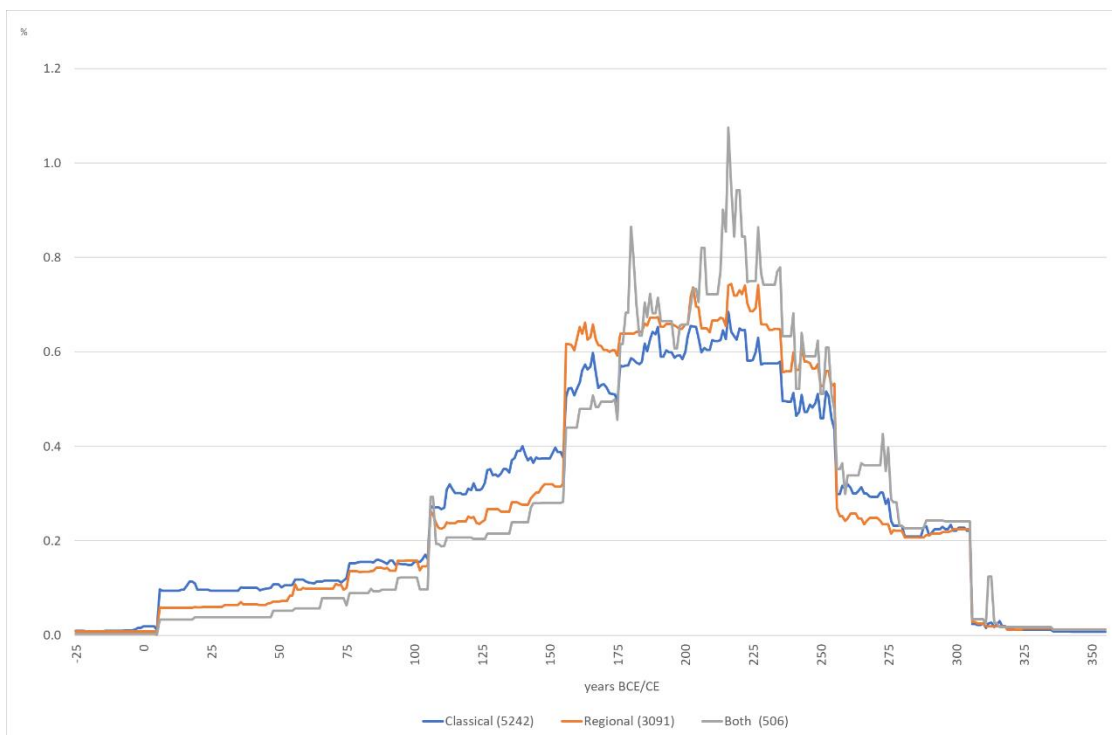


Figure 17: Chronological distribution of votive inscriptions with classical inscriptions, regional inscriptions and inscriptions with both groups.

4.3 Gender

For this part, the gender to which deities belong and their geographical and chronological spread have been analysed. The results will be used to answer the first sub-question: *What is the geographical and chronological distribution of deities classified by gender?* In order to analyse the geographical distribution, inscriptions with male and female deities were divided over the provinces, which is shown in tables. In addition, the geographical distribution is shown in maps, where the number of gods per gender is shown per findspot. To analyse the chronological distribution, dating curves were used, which are shown in a graph. The results of these analyses are shown below.

Province	Female	Male	Both	Total
Germania superior	290	720	358	1368
Dacia	230	739	184	1153
Pannonia superior	221	752	152	1125
Germania inferior	798	211	91	1100
Pannonia inferior	78	556	136	770
Britannia	187	510	72	769
Dalmatia	167	478	64	709
Noricum	99	275	67	441
Moesia inferior	66	246	89	401
Moesia superior	40	190	38	268
Belgica	128	104	26	258
Hispania citerior	76	137	29	242
Raetia	30	107	34	171
Baetica	55	78	24	157
Africa Proconsularis	36	89	25	150
Lusitania	38	65	10	113
Alpes Cottiae	15	90	7	112
Narbonensis	22	54	10	86
Venetia et Histria	34	42	6	82
Macedonia	18	50	13	81
Numidia	14	30	16	60
Alpes Poeninae	7	50	2	59
Lugdunensis	6	41	9	56
Roma	9	28	7	44
Achaia	12	19	11	42
Aquitania	6	30	3	39
Transpadana	9	18	2	29
Etruria	9	14	4	27
Latium et Campania	12	11	4	27
Alpes Maritimae	5	16	2	23
Mauretania Caesariensis	5	10	7	22
Barbaricum	3	11	5	19
Thracia	1	10	3	14
Syria		6	6	12
Aemilia	3	4	4	11
Mauretania Tingitana	3	5	3	11
Regnum Bosphori		10	1	11
Samnium	1	9		10
Unkown	2	8		10
Alpes Graiaae	1	5	2	8
Epirus	2	4	2	8
Liguria	5	2	1	8
Asia	3	4		7
Umbria	1	3	1	5
Apulia et Calabria	1	3		4
Bithynia et Pontus	2	2		4
Galatia	3	1		4
Arabia		3		3
Aegyptus	1	1		2
Bruttium et Lucania	2			2
Iudaea		2		2
Picenum	2			2
Cappadocia		1		1
Cyrene	1			1
Lycia et Pamphylia	1			1
Sicilia, Melita	1			1
Tuscia et Umbria		1		1
Total	2761	5855	1530	10146

Table 11: The numbers of votive inscriptions per gender, per province. Provinces in grey are completed. Colour scale: the highest numbers are marked red, the lowest are marked green.

Province	Female	Male	Both	Total
Germania superior	0.17	0.43	0.21	0.81
Dacia	0.16	0.53	0.13	0.82
Pannonia superior	0.16	0.55	0.11	0.82
Germania inferior	0.54	0.14	0.06	0.74
Pannonia inferior	0.08	0.57	0.14	0.79
Britannia	0.19	0.53	0.07	0.80
Dalmatia	0.19	0.54	0.07	0.80
Noricum	0.19	0.51	0.13	0.82
Moesia inferior	0.12	0.44	0.16	0.72
Moesia superior	0.11	0.54	0.11	0.77
Belgica	0.43	0.35	0.09	0.86
Hispania citerior	0.21	0.39	0.08	0.68
Raetia	0.14	0.52	0.16	0.83
Baetica	0.24	0.35	0.11	0.70
Africa Proconsularis	0.16	0.40	0.11	0.68
Lusitania	0.25	0.42	0.06	0.73
Alpes Cottiae	0.05	0.31	0.02	0.38
Narbonensis	0.16	0.39	0.07	0.62
Venetia et Histria	0.34	0.42	0.06	0.83
Macedonia	0.12	0.33	0.09	0.54
Numidia	0.18	0.39	0.21	0.79
Alpes Poeninae	0.09	0.63	0.03	0.75
Lugdunensis	0.09	0.59	0.13	0.81
Roma	0.12	0.36	0.09	0.56
Achaia	0.09	0.14	0.08	0.32
Aquitania	0.10	0.48	0.05	0.62
Transpadana	0.26	0.51	0.06	0.83
Etruria	0.18	0.27	0.08	0.53
Latium et Campania	0.28	0.26	0.09	0.63
Alpes Maritimae	0.18	0.57	0.07	0.82
Mauretania Caesariensis	0.14	0.29	0.20	0.63
Barbaricum	0.13	0.48	0.22	0.83
Thracia	0.03	0.25	0.08	0.35
Syria	0.00	0.30	0.30	0.60
Aemilia	0.25	0.33	0.33	0.92
Mauretania Tingitana	0.23	0.38	0.23	0.85
Regnum Bosphori	0.00	0.63	0.06	0.69
Samnium	0.06	0.56	0.00	0.63
Unkown	0.15	0.62	0.00	0.77
Alpes Graiaae	0.10	0.50	0.20	0.80
Epirus	0.09	0.18	0.09	0.36
Liguria	0.50	0.20	0.10	0.80
Asia	0.20	0.27	0.00	0.47
Umbria	0.11	0.33	0.11	0.56
Apulia et Calabria	0.13	0.38	0.00	0.50
Bithynia et Pontus	0.15	0.15	0.00	0.31
Galatia	0.60	0.20	0.00	0.80
Arabia	0.00	0.38	0.00	0.38
Aegyptus	0.10	0.10	0.00	0.20
Bruttium et Lucania	1.00	0.00	0.00	1.00
Iudaea	0.00	0.40	0.00	0.40
Picenum	0.33	0.00	0.00	0.33
Cappadocia	0.00	1.00	0.00	1.00
Cyrene	1.00	0.00	0.00	1.00
Lycia et Pamphylia	0.25	0.00	0.00	0.25
Sicilia, Melita	1.00	0.00	0.00	1.00
Tuscia et Umbria	0.00	0.50	0.00	0.50

Table 12: The ratio between the numbers of votive inscriptions per gender and the total numbers of votive inscriptions, per province. Provinces in grey are completed. Colour scale: the highest ratios are marked red, the lowest are marked green.

Provinces	Female	Male
Achaia	6	13
Aegyptus	1	1
Aemilia	3	5
Africa Proconsularis	13	20
Alpes Cottiae	3	5
Alpes Graiae	0	4
Alpes Maritimae	1	5
Alpes Poeninae	4	5
Apulia et Calabria	1	3
Aquitania	5	8
Asia	3	2
Baetica	16	19
Barbaricum	1	4
Belgica	8	14
Bithynia et Pontus	2	1
Britannia	14	17
Bruttium et Lucania	1	0
Cappadocia	0	1
Cyrene	1	0
Dacia	19	31
Dalmatia	24	35
Epirus	1	5
Etruria	5	9
Galatia	2	1
Germania inferior	16	21
Germania superior	18	23
Hispania citerior	13	18
Iudaea	0	2
Latium et Campania	6	8
Liguria	2	1
Lugdunensis	4	5
Lusitania	8	9
Macedonia	5	12
Mauretania Caesariensis	3	5
Mauretania Tingitana	0	2
Moesia inferior	13	27
Moesia superior	10	19
Narbonensis	6	9
Noricum	13	15
Numidia	8	11
Pannonia inferior	13	37
Pannonia superior	16	28
Picenum	1	0
Raetia	7	12
Regnum Bospori	0	2
Roma	5	8
Samnium	0	5
Sicilia, Melita	1	0
Syria	0	3
Thracia	1	2
Transpadana	4	7
Tuscia et Umbria	0	1
Umbria	0	1
Venetia et Histria	14	10

Table 13: The number of unique classical deities, per province.

In table 11, the numbers of inscriptions per gender are listed. In table 12, the ratio between the number of inscriptions per gender and the total number of votive inscriptions in that province has been calculated. These tables help answering questions about the geographical distribution of female and male deities over the Empire. Germania inferior is the province with the highest number of inscriptions mentioning female deities. For inscriptions mentioning male deities, provinces with more than one standard deviation above the mean (i.e. 314) are Dalmatia, Britannia, Pannonia inferior, Pannonia superior, Dacia and Germania superior. The provinces with more than 700 inscriptions mentioning only male deities (Germania superior, Dacia and Pannonia superior) are also the provinces with the highest numbers of classical deities, as shown in table 7. A possible explanation for this relation is that these three provinces belong to the four provinces with the most inscriptions in absolute numbers. Only Germania inferior deviates from this four, because it has a large number of inscriptions with female deities instead of male deities.

To explain the possible relationship between classical and male deities that is present in the three provinces above, table 13 has been created. The table shows the numbers of unique classical deities mentioned in votive inscriptions, sorted by gender, per province. The counting of the number of different deities was handled differently here than in table 9. For all provinces, it has been checked how many different classical male or female deities were mentioned in the inscriptions. This means that inscriptions mentioning two different deities were not automatically counted as one individual. To explain this, the province of Aemilia is used as an example. Aemilia has 4 deities or combination of deities: *Caelestis*, *Faunus*, the combination *Jupiter*, *Hercules* and *Silvanus*. However, these are five different male deities and thus the number of unique classical male deities in Aemilia is 5 in table 13. Conversely, when deities are represented twice, the number is reduced: in Africa Proconsularis, *Virtus* and *Virtus*, *Honos* are both mentioned in inscriptions, which reduces the total number of different classical male deities. This was investigated for each province, both for male and female deities, and the result has been shown in table 13.

In Achaia, for example, six different unique classical female deities and thirteen different unique classical male deities appear in the inscriptions. The group 'both' is not included in this table. In the same way as the numbers in table 13 have been calculated, the total number of male and female classical deities has also been calculated. The group with classical deities contains more unique male deities (92) than unique female deities (67). This is reflected in table 13. Namely, in almost every province, the number of male deities is higher than the number of female deities. The relationship described above, that Germania superior, Dacia and Pannonia superior have the most inscriptions with male deities as well as with classical deities, can (partly) be explained by this table, because the group of classical deities in general counts more male deities than female deities.

When looking at table 12, eight provinces in the category both are one standard deviation above the mean (0.17). However, from these provinces, only Germania superior and Numidia have more than ten inscriptions in this category. For the provinces with female deities, six provinces have a ratio of one standard deviation above the mean (0.30, excluding ratios of 1.00), but only Germania inferior, Belgica and Venetia et Histria have more than ten inscriptions mentioning female deities. Three provinces (Bruttium et Lucania, Cyrene and Sicilia, Melita) have a ratio of 1.00, which is caused by the very small number of inscriptions in those provinces. For male deities, there are nine provinces with a high ratio (threshold 0.54), of which only one province has less than ten inscriptions: Samnium. Thus eight provinces have a high share of male deities: Alpes Poeninae, Regnum Bospori, Lugdunensis, Alpes Maritimae, Pannonia inferior, Pannonia superior, Moesia superior and Dalmatia. However, Alpes Poeninae, Regnum Bospori, Lugdunensis and Alpes Maritimae are provinces with few inscriptions, making it difficult to draw conclusions. The value of 1.00 of Cappadocia is caused by the small number of inscriptions in that province.

Figure 18 shows the geographical distribution of male and female deities over the Roman Empire. The high concentration of female deities in various findspots in Germania inferior and Belgica on the one hand and the large concentration of male deities in various findspots in Pannonia superior, Pannonia inferior and Dacia on the other hand are striking. There is a high concentration of female deities in Germania inferior in the places Nettersheim, Morken-Harff and Köln, with many inscriptions dedicated to *Matronae*. The high concentration of female deities in Belgica is situated in Colijnsplaat and caused by dedications to *Nehalennia*. In Pannonia superior, inscriptions mentioning male deities are concentrated in Petronell-Carnuntum and Bad Deutsch-Altenburg, where most inscriptions are dedicated to *Jupiter* and *Silvanus Domesticus*. In Pannonia inferior, inscriptions are concentrated in Budapest and in Dacia in Alba Iulia. Inscriptions in these places are often dedicated to *Jupiter*.

The large concentration of female deities in Germania inferior and the large concentration of male deities in Pannonia superior, Pannonia inferior and Dacia can also be seen in table 11. The high number of male deities in Germania superior that can be read from table 11 is less prominent on the map. The reason for this is because there are no sites here with an exceptionally high number of inscriptions dedicated to one specific deity. The map in figure 15 with classical deities corresponds in many ways with the map in figure 20 with male deities, which is understandable when looking at the deities that are behind the big points. For both maps, inscriptions dedicated to *Jupiter* and *Silvanus Domesticus*, two male classical deities, are concentrated in a few places, which results in two similar maps. In the same way, the map in figure 16 with the regional deities also corresponds on many points with the map in figure 19 with the female deities.

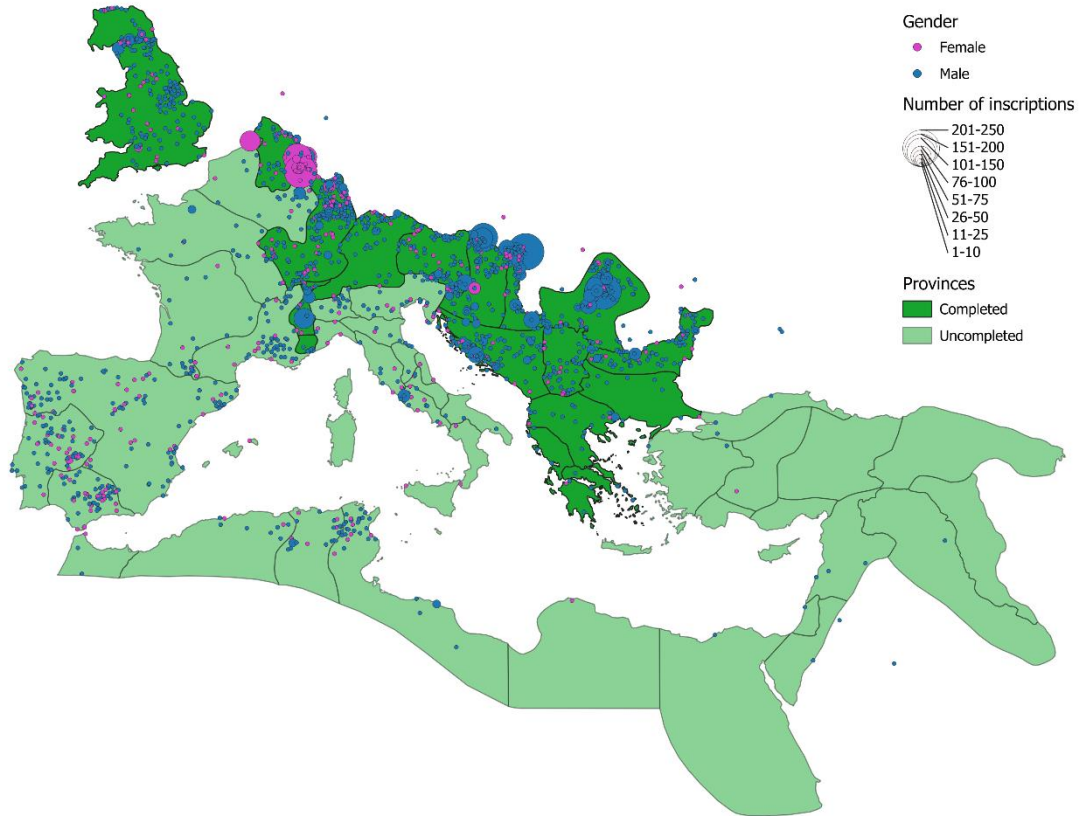


Figure 18: Map of the distribution of male and female deities in votive inscriptions over the Roman Empire.

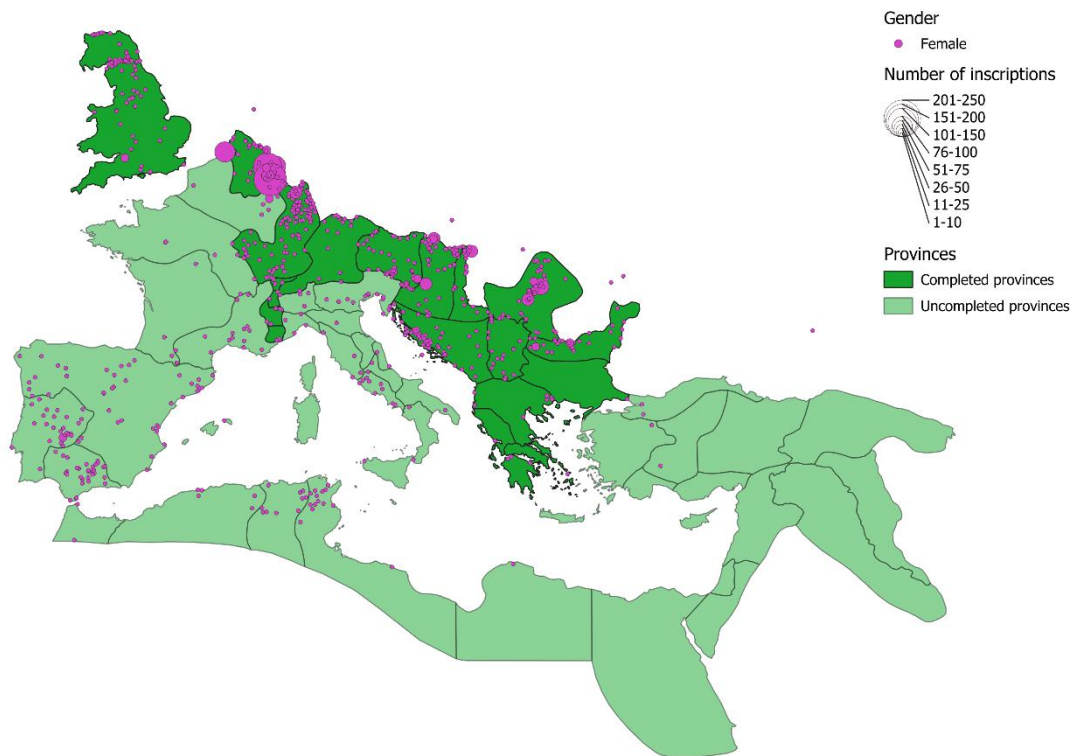


Figure 19: Map of the distribution of female deities in votive inscriptions over the Roman Empire.

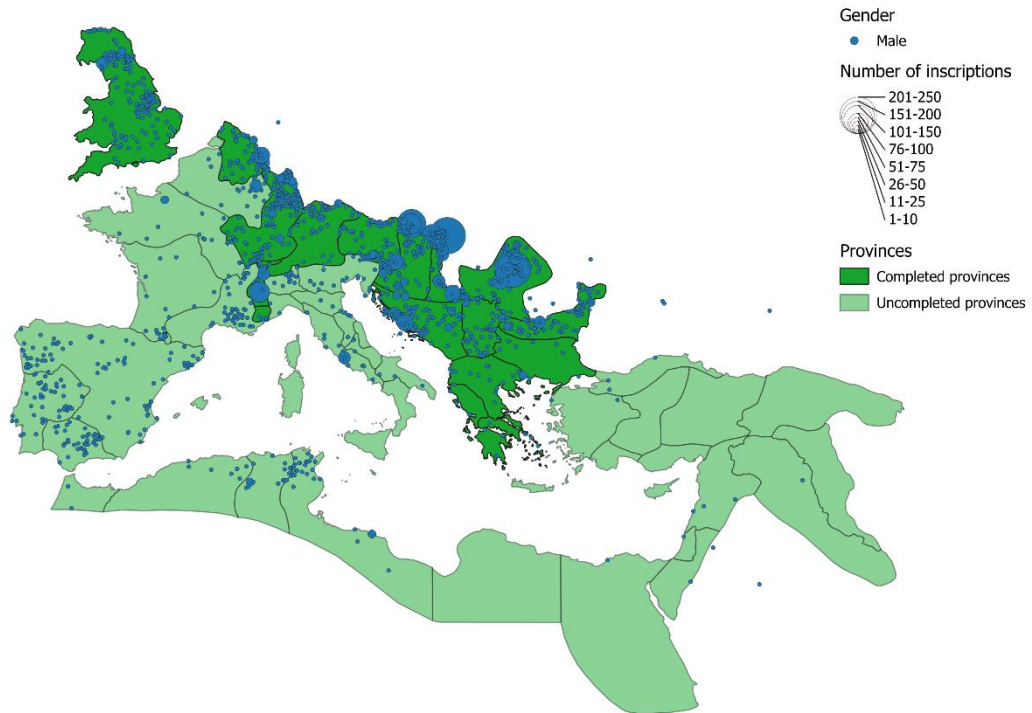


Figure 20: Map of the distribution of male deities in votive inscriptions over the Roman Empire.

In figure 21, the dating curves for inscriptions with female and male deities and inscriptions mentioning both are given. These curves are studied in order to get more insight into the distribution of male and female deities throughout the time. A slight difference is visible between inscriptions with male deities and inscriptions with female deities. Inscriptions mentioning female deities occur in somewhat larger quantities between 150-200, while inscriptions with male deities are more frequent between 250 and 300. The 'both' curve is slightly higher than the other two curves between 200 and 250, meaning that inscriptions mentioning both genders are relatively better represented in that period than only male or female deities.

Of the 2456 inscriptions with female deities and a dating, most are dedicated to *Matronae*, namely 652. Nearly all of these inscriptions – 612 in all – have a starting date of 151 in EDH, which may explain the steep increase in the dating curve of female deities around 150. Furthermore, most of these inscriptions have an end date of 250 or earlier, namely 517 of the 652 inscriptions. This may explain the steep drop of the female curve after 250. The total number of inscriptions with male deities with a dating is 5214. About half of these have an end date after 250. Many of the inscriptions in that category have a broad dating. For the 2456 female deities, the number of inscriptions with an end date after 250 is about a third, 835. Inscriptions in this category have a very broad dating as well. Most inscriptions with male deities are dedicated to *Jupiter*, namely 1572. 708 of them have an end date after 250. What also stands out in the collection of inscriptions with an end date after 250 are the deities *Silvanus* and *Silvanus Domesticus*, who are mentioned in sum in 316 inscriptions. However, inscriptions mentioning these deities also have a broad dating.

The question why the curve between 250-300 is higher for male than for female deities is difficult to answer because of this broad dating. It could be related to the findspot of the inscriptions. In table 14, the percentages of the numbers of inscriptions dated after 250 in relation to all inscriptions with a dating has been calculated for male deities. Only the ten provinces that contain the most votive inscriptions in the database are shown. The table shows that Britannia has the highest percentage and Germania superior the lowest. Of all the dated inscriptions from these ten provinces (2245), the

majority (1723) have an end date of 300. Moreover, the percentages of the provinces vary quite strongly. An explanation for this difference should therefore be sought at the provincial level. On the other hand, it also depends on the choices to arrive at a certain dating. It turns out that many male inscriptions have an end date of 300, while many female inscriptions have an end date of 250. To explain this difference, it must be investigated how these two end dates were chosen and which factors played a role in this.

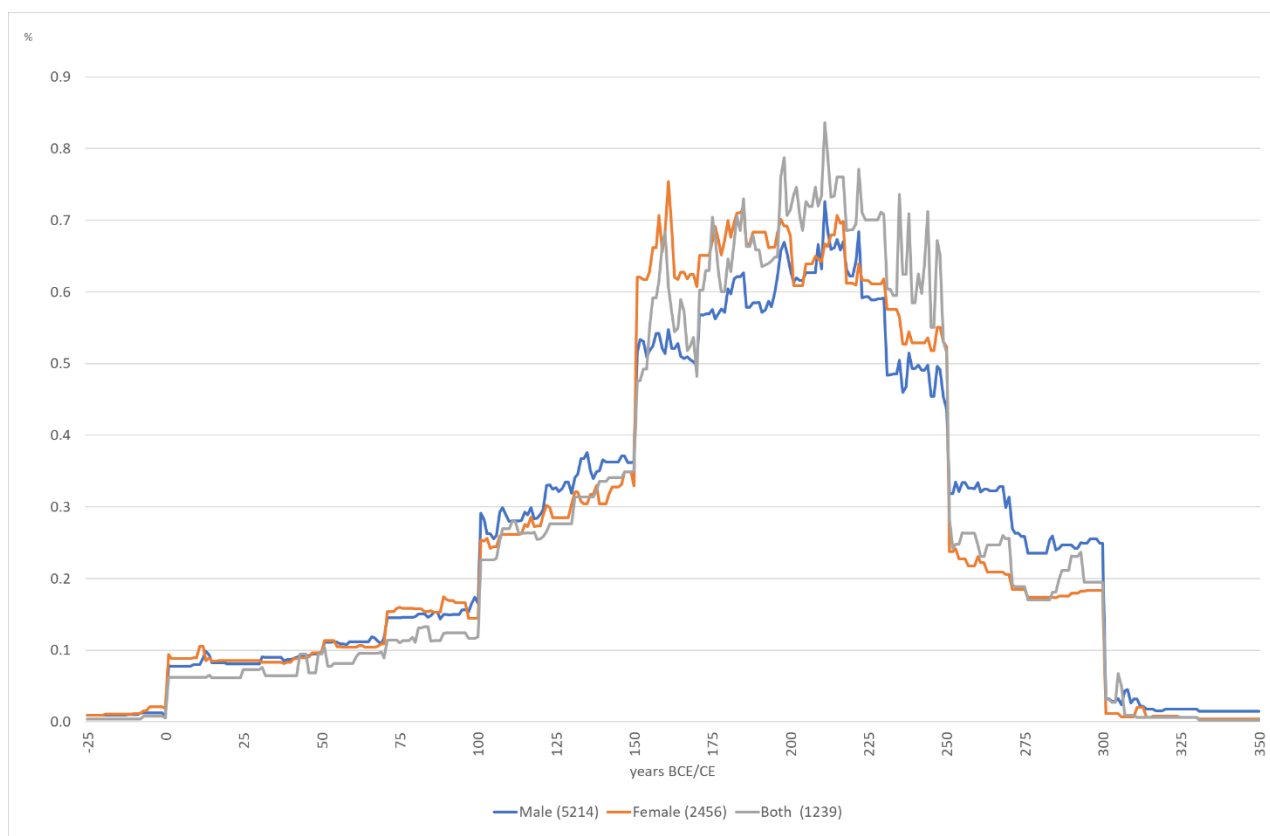


Figure 21: Chronological distribution of votive inscriptions with male deities, female deities and inscriptions with both.

Provinces	Male deities
Britannia	79%
Dalmatia	65%
Moesia superior	64%
Pannonia superior	61%
Dacia	53%
Moesia inferior	50%
Germania inferior	50%
Noricum	40%
Pannonia inferior	36%
Germania superior	22%

Table 14: Percentage of the votive inscriptions with male deities from the ten provinces with the largest numbers of votive inscriptions dated after 250 compared to all votive inscriptions with a dating.

4.4 Site type

This research also looked at the relationships between site types and different variables. As described in chapter 3.2, this research uses five different site types: bath, fort, sanctuary, settlement and station. Three types of relationships were investigated: between site type and the different deities, between site type and the pantheon groups and between site type and gender. The results of those analyses were used to answer the third sub-question: *How are the deities, both individual and classified by pantheon and gender, distributed over the site types?* To study the distribution of the deities over the site types and their mutual relationship, a correspondence analysis was used to explore the deviations and most important differences in this relationship. The pantheon groups and gender groups were divided over the site types in tables and the differences within these tables were studied with a chi-square test. For some site types, combined with pantheon and gender groups, the chronological distribution was studied with the help of dating curves. The results of these analyses are shown below.

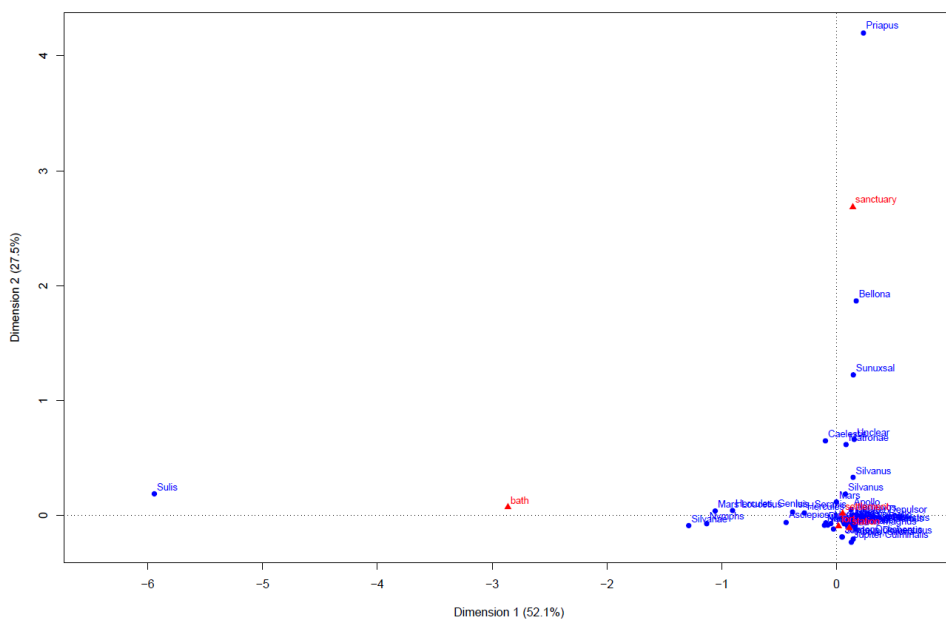


Figure 22: Result of a correspondence analysis of the relation between deities and site types, displaying 79.6% of the variation within the dataset

The study examined whether there are associations between certain deities and site types. For this analysis, the groups *none* and *Greek* were excluded, as in previous analyses. The minimum amount of records was set on 3, meaning that all deities with less than 3 inscriptions and deities that occur in less than 3 site types are excluded. In the diagnostics (appendix B) it can be read that *Sulis* has the largest deviation, followed by *Nymphs*. The site type with the largest deviation is bath, followed by sanctuary. However, both *Sulis* and these two site types are outliers. In the graph it can be seen that *Sulis* and bath are strongly associated, as are *Nymphs* and bath. The association of bath and *Nymphs* is reflected in the data, where most inscriptions in the category bath are dedicated to *Nymphs* (17). However, *Nymphs* is proportionally better represented in forts and settlements. In the dataset it can be seen that 8 of the 11 inscriptions with *Sulis* were found in a place with the type bath. This place is Aquae Sulis, modern Bath, and is situated in the province Britannia. *Sulis* is also worshipped as *Sulis Minerva*, which gives a total of 17 inscriptions dedicated to *Sulis/Sulis Minerva*. 14 of these inscriptions are classified as bath in the place Bath.

Looking at the sanctuary data it is striking that of the 195 inscriptions, 99 are dedicated to *Nehalennia*, all from the *Nehalennia* sanctuary of Colijnsplaat (Netherlands). These are also all the inscriptions that exist for *Nehalennia*, except for three inscriptions. Two of these inscriptions have fort as site type and were found in Köln in a Late Roman fort, which was probably not the primary context of these inscriptions. The third inscription has no assigned site type but is one of the *Nehalennia* stones

found in Domburg (The Netherlands) and probably part of another *Nehalennia* sanctuary. The other stones from this sanctuary are not included in EDH. The relationship between sanctuary and *Nehalennia* does not emerge in this correspondence analysis, because *Nehalennia* only occurs in two site types and is therefore not included in the selection (because the minimum amount of records was set on 3). If the analysis is conducted with a minimum number of records of 2, this relationship does become very visible, both in the diagnostics and in the graph. Except for the 2 inscriptions in Köln, all *Nehalennia* inscriptions are situated in the province of Belgica.

Site type	Classical	Regional	Both	Total
bath	45	59	6	110
fort	1620	822	208	2650
sanctuary	19	124	3	146
settlement	2986	1324	328	4638
station	62	60	14	136
Total	4732	2389	559	7680

Table 15: Distribution of classical and regional deities mentioned in votive inscriptions over five different site types.

To study the distribution of deities grouped per pantheon and to investigate the relationship between this variable and the site types, the distribution is displayed in tables. In table 15, it becomes clear that most votive inscriptions were found in settlements and forts. This does not differ for regional or classical deities. In order to be able to compare the groups properly, table 16 has also been created with the distribution of the variable pantheon over the site types expressed as column percentages.

Site type	Classical	Regional	Both
bath	1%	2%	1%
fort	34%	34%	37%
sanctuary	0%	5%	1%
settlement	63%	55%	59%
station	1%	3%	3%

Table 16: Distribution of classical and regional deities mentioned in votive inscriptions over five different site types, expressed as column percentages.

	Classical	Regional	Both	Row total
Bath	7.65	17.95	0.50	26.11
Fort	0.10	0.01	1.18	1.29
Sanctuary	55.97	135.98	5.47	197.42
Settlement	5.76	9.77	0.27	15.80
Station	5.67	7.40	1.70	14.77
Total				255.39

Figure 23: Results of the chi-square test per group of the variation of the variable pantheon over the site types.

In general, more inscriptions with classical deities were found in settlements than inscriptions with regional deities. Interestingly, the percentage of inscriptions associated with a fort is exactly the same for classical and regional deities. To explore if the differences noticed in tables 17 and 18 are statistically significant, a chi-square test was performed. The result of the chi-square test of table 15 are shown in figure 23. With a certainty of 0.5, it can be seen that the differences between the distribution of the three categories (classical, regional, both) over the site types are significant, because the cumulative chi-square value of 255.4 greatly exceeds the threshold value of 15.5 defined by the size of the table and the p-value of 0.5 (figure 23). The largest contribution to this significance is clearly made by sanctuary, in particular by the representation of regional deities in this site category. Besides the already mentioned case of *Nehalennia*, this is caused by 17 inscriptions dedicated to

Matronae or *Matres*.⁹² This explains the large difference between the classical and regional deities for this site type.

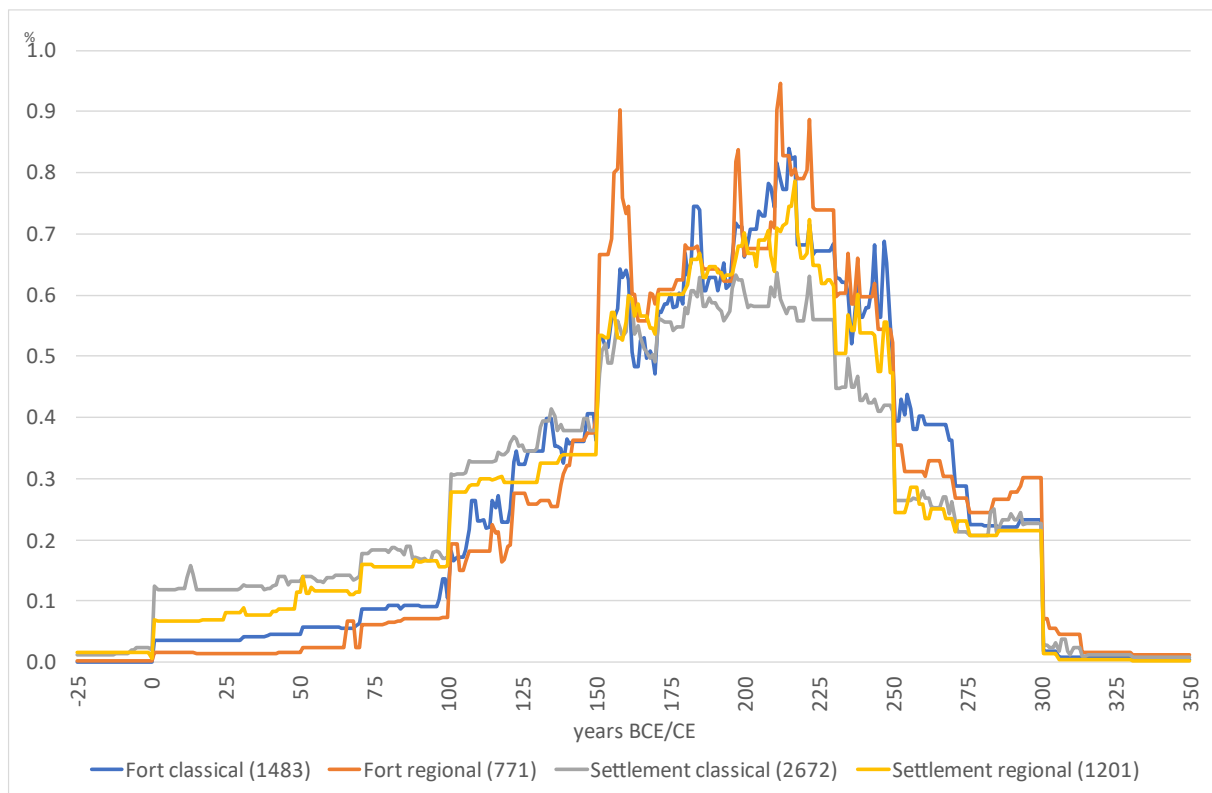


Figure 24: Chronological distribution of a combination of variables: fort classical, fort regional, settlement classical and settlement regional.

To investigate the chronological distribution of classical and regional deities in both forts and settlements, the dating curves for four combinations of variables are given in figure 24. In this figure, the two largest groups of site types can be compared, whereas also a distinction is made between classical and regional deities, so that these groups can also be compared. The four curves are very similar.

The largest differences in this pattern are between 1 and 120, where both settlement groups are higher than both fort groups. Around 150-160, the fort regional curve has a large peak, with the highest value being 158. The large increase around 150 can be caused by *Matronae* and *Jupiter Dolichenus* inscriptions, because many of these inscriptions are dated from 151. The high peak from 151 to about 163 is caused by other gods. The highest value at 158 is caused by a number of tightly dated inscriptions. In addition, the figure shows several more peaks between roughly 150 and 250. These peaks are caused by well-dated inscriptions, for example by the names of army commanders. It is possible that this type of information is less available before and after this period. Another difference is visible between roughly 200 and 300, where settlement classical is low and then, from about 250, fort classical is high. Finally, a difference is visible between 301-313, where the fort regional curve is higher.

For the variable gender, the distribution over the site types also has been investigated. The results are shown in table 17.

⁹² It should be noted that the majority of the dedications to *Matres* and *Matronae* from the sanctuary at Nettersheim (Germany) have not been included in this calculation, because of incomplete findspot data in EDH.

Site type	Female	Male	Both	Total
bath	54	36	21	111
fort	572	1648	449	2669
sanctuary	122	21	4	147
settlement	1149	2726	794	4669
station	18	101	17	136
Total	1915	4532	1285	7732

Table 17: Distribution of female and male deities in votive inscriptions over five different site types.

Inscriptions with female deities occur most often in settlements, just as inscriptions with male deities. In absolute numbers, there are more male deities from fort contexts than female deities. On the other hand, there are more female deities in a sanctuary. The distribution for this variable is also shown in percentages in table 18.

Site type	Female	Male	Both
bath	3%	1%	2%
fort	30%	36%	35%
sanctuary	6%	0%	0%
settlement	60%	60%	62%
station	1%	2%	1%

Table 18: Distribution of female and male deities in votive inscriptions over five different site types, expressed in percentages.

	Female	Male	Both	Row total
Bath	25.56	12.98	0.35	38.89
Fort	11.99	4.47	0.07	16.53
Sanctuary	201.22	49.28	17.09	267.59
Settlement	0.05	0.04	0.42	0.51
Station	7.30	5.68	1.39	14.37
Total				337.89

Figure 25: Results of the chi-square test per group of the variation of the variable gender over the different site types.

Interestingly, the distribution of inscriptions with female deities over the site types is almost the same as the distribution of inscriptions with male deities. Relatively, there is no difference between male and female deities in inscriptions in settlements, since the percentage of both categories is 60. A difference of 6% is observable for both the site type fort and sanctuary. For the site type fort, it can only be stated that a slightly larger part of the inscriptions concerns male deities. For sanctuary, a larger part of the inscriptions concerns female deities. For table 17, a chi-square test was performed as well, again with a certainty of 0.5, which is shown in figure 25. In that test it can be seen that the differences between the three categories (female, male, both) are significant. The largest contribution to this significance is again made by the site type sanctuary. The differences between these categories have the same explanation as the difference between classical and regional deities in sanctuaries. The deities that appear most frequently in the sanctuary group are *Nehalennia* and *Matronae/Matres*, together 116 of the 195 inscriptions.⁹³ Besides being regional deities, they are also female goddesses. This explains the evidently highly significant difference of 6%.

⁹³ As noted before, because the findspot data in EDH is incomplete, not all inscriptions are included. The majority of dedications to *Matres/Matronae* from the sanctuary in Nettersheim are also absent in this calculation.

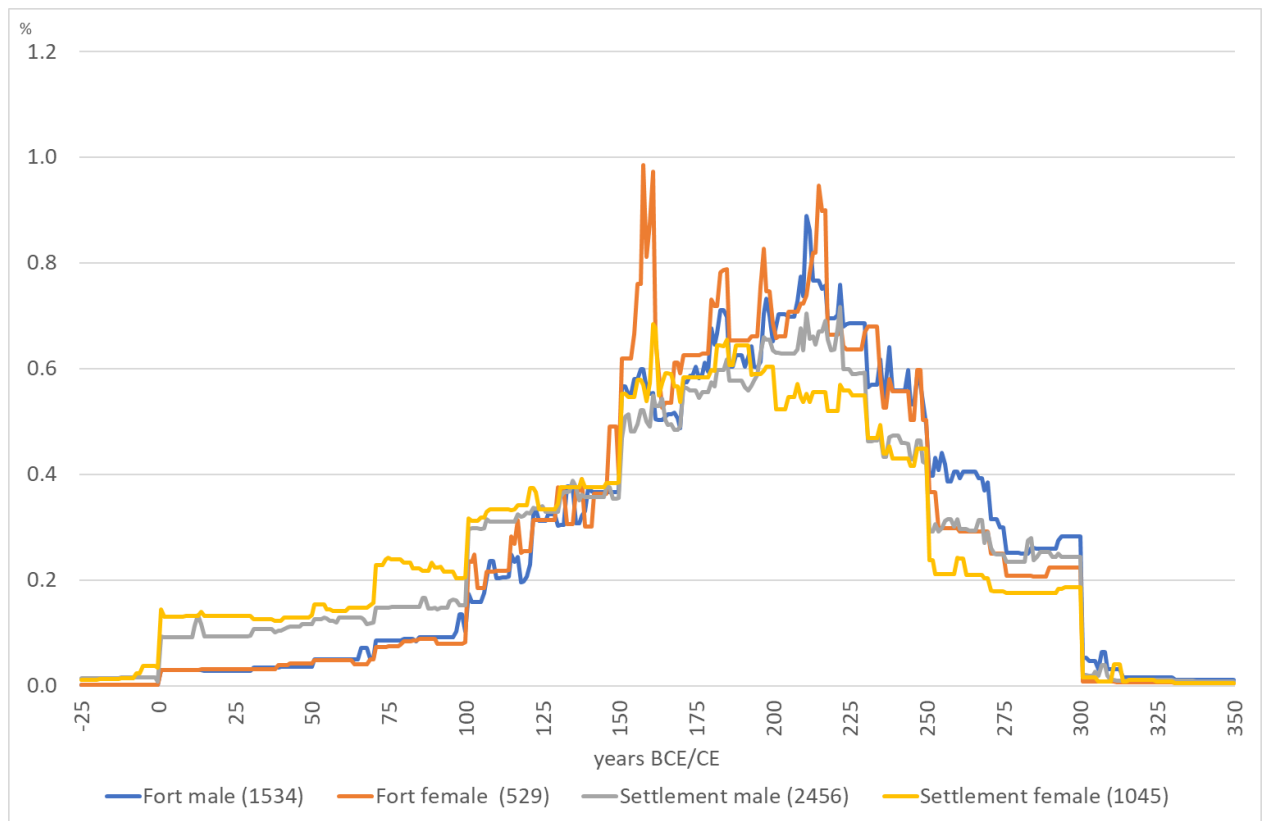


Figure 26: Dating curves of a combination of variables: fort female, fort male, settlement female, settlement male.

In figure 26 the dating curves of fort and settlement combined with male and female deities are shown to investigate the temporal distribution of these variables. As in figure 24, the four curves follow a similar pattern. The largest differences can be seen between approximately 1-120, where both settlement groups are higher than both fort groups. Two other differences are between 158-161, which is the high peak of fort female, probably also due to a coincidental clustering of sharply dated inscriptions, and around 201-313, where settlement female is low and fort male high. Up to 200, the pattern of figure 26 is similar to the pattern of figure 24. This means that fort classical corresponds to fort male, fort regional to fort female, settlement classical to settlement male, and settlement regional to settlement female. After 200, this still applies to the curves of fort, but the curves of the settlement groups are reversed. The curve of settlement classical then corresponds to the curve of settlement female and the curve of settlement regional corresponds to settlement male. From 250 onwards, it seems to be fairly similar again.

4.5 Excluded variables

As mentioned in section 3.4, the four groups that were excluded from the general analyses have been briefly studied. To study the geographical distribution of the excluded groups, the inscriptions were divided over the provinces and shown in tables. To study the chronological distribution of the groups, dating curves were used.

4.5.1 Augustus

Province	Inscriptions <i>Augustus</i>
Pannonia superior	147
Dalmatia	123
Noricum	118
Dacia	90
Africa Proconsularis	80
Britannia	68
Pannonia inferior	61
Baetica	44
Germania superior	42
Hispania citerior	25
Venetia et Histria	25
Lugdunensis	21
Numidia	17
Moesia superior	16
Moesia inferior	15
Raetia	11
Belgica	9
Achaia	8
Mauretania Caesariensis	5
Roma	5
Aquitania	3
Germania inferior	3
Alpes Poeninae	2
Barbaricum	2
Macedonia	2
Aemilia	1
Alpes Graiae	1
Cyrene	1
Epirus	1
Etruria	1
Galatia	1
Latium et Campania	1
Liguria	1
Lusitania	1
Mauretania Tingitana	1
Narbonensis	1
Umbria	1
Unkown	1
Total	955

Table 19: Number of votive inscriptions mentioning *Augustus/Augusta*, per province.

Province	Ratio <i>Augustus</i>
Pannonia superior	0.11
Dalmatia	0.14
Noricum	0.22
Dacia	0.06
Africa Proconsularis	0.36
Britannia	0.07
Pannonia inferior	0.06
Baetica	0.20
Germania superior	0.02
Hispania citerior	0.07
Venetia et Histria	0.25
Lugdunensis	0.30
Numidia	0.22
Moesia superior	0.05
Moesia inferior	0.03
Raetia	0.05
Belgica	0.03
Achaia	0.06
Mauretania Caesariensis	0.14
Roma	0.06
Aquitania	0.05
Germania inferior	0.00
Alpes Poeninae	0.03
Barbaricum	0.09
Macedonia	0.01
Aemilia	0.08
Alpes Graiae	0.10
Cyrene	1.00
Epirus	0.05
Etruria	0.02
Galatia	0.20
Latium et Campania	0.02
Liguria	0.10
Lusitania	0.01
Mauretania Tingitana	0.08
Narbonensis	0.01
Umbria	0.11
Unkown	0.08

Table 20: Ratio between number of votive inscriptions mentioning *Augustus/Augusta* and total number of votive inscriptions, per province.

In table 19, the number of votive inscriptions mentioning *Augustus* or *Augusta* is shown. The provinces with more than 64 of such inscriptions (i.e. more than one standard deviation above the mean) are Britannia, Africa Proconsularis, Dacia, Noricum, Dalmatia and Pannonia superior. In table 20, the ratio of the number of inscriptions with *Augustus* or *Augusta* following the name of a deity and the total number of votive inscriptions is shown. It shows that Cyrene has a very high ratio (1.00), but that is because Cyrene only has 1 votive inscription and can therefore be omitted from this analysis. The province that has the largest share of inscriptions with *Augustus* is Africa Proconsularis. Two neighbouring provinces of this province, Mauretania Caesariensis and Numidia, also have quite high ratios, which could point to a spatial pattern for inscriptions with *Augustus/Augusta* in the south of the Empire. Moreover, six provinces have a ratio of one standard deviation above the mean (0.18, excluding ratios of 1.00),

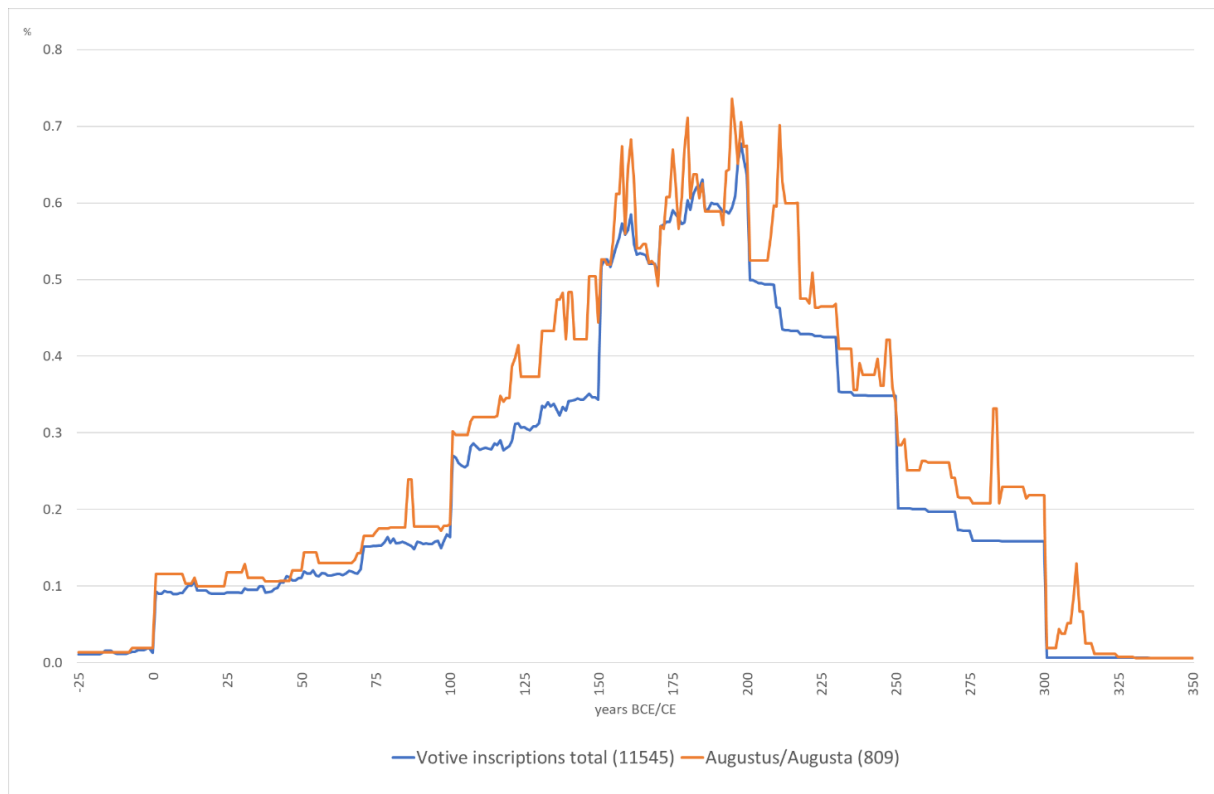


Figure 27: Chronological distribution of the total number of votive inscriptions and inscriptions mentioning *Augustus/Augusta*.

In figure 27, the dating curves for all votive inscriptions and inscriptions with *Augustus/Augusta* following the name of a deity are shown. Between 100-150 and 200-325, inscriptions with *Augustus/Augusta* are better represented than the total of votive inscriptions. At 300, both curves have a steep decrease. Interestingly, the curve for all votive inscriptions is zero after 300, while the curve for *Augustus/Augusta* has a peak between 300-313. This peak is being caused by three tightly dated inscriptions. While the votive inscriptions continue until about 700, there are only 13 (out of 809) inscriptions with *Augustus/Augusta* with an end date after 300. Moreover, the earliest starting date of inscriptions with *Augustus/Augusta* is 30 BC. For the total number of votive inscriptions, the earliest starting date is 530 BC. In other words, the timeline for votive inscriptions is much longer than the timeline for inscriptions with *Augustus/Augusta*, which could explain why the curve for *Augustus/Augusta* is at almost all points higher than the curve for all votive inscriptions.

4.5.2 Pro salute & In honorem domus divinae

Provinces	Inscriptions <i>pro salute</i>
Dacia	232
Pannonia superior	202
Pannonia inferior	158
Moesia inferior	136
Germania superior	88
Moesia superior	71
Noricum	56
Britannia	46
Dalmatia	44
Africa Proconsularis	43
Germania inferior	36
Raetia	21
Hispania citerior	18
Numidia	18
Roma	14
Baetica	8
Belgica	7
Macedonia	6
Mauretania Caesariensis	6
Syria	6
Venetia et Histria	6
Barbaricum	5
Etruria	4
Arabia	3
Latium et Campania	3
Lugdunensis	3
Mauretania Tingitana	3
Regnum Bospori	3
Achaia	2
Alpes Maritimae	2
Alpes Poeninae	2
Lusitania	2
Samnium	2
Thracia	2
Umbria	2
Alpes Graiae	1
Aquitania	1
Asia	1
Bithynia et Pontus	1
Iudaea	1
Unkown	1
Total	1266

Table 22: Number of votive inscriptions mentioning *pro salute*, per province.

Province	Ratio
Dacia	0.17
Pannonia superior	0.15
Pannonia inferior	0.16
Moesia inferior	0.25
Germania superior	0.05
Moesia superior	0.20
Noricum	0.10
Britannia	0.05
Dalmatia	0.05
Africa Proconsularis	0.20
Germania inferior	0.02
Raetia	0.10
Hispania citerior	0.05
Numidia	0.24
Roma	0.18
Baetica	0.04
Belgica	0.02
Macedonia	0.04
Mauretania Caesariensis	0.17
Syria	0.30
Venetia et Histria	0.06
Barbaricum	0.22
Etruria	0.08
Arabia	0.38
Latium et Campania	0.07
Lugdunensis	0.04
Mauretania Tingitana	0.23
Regnum Bospori	0.19
Achaia	0.02
Alpes Maritimae	0.07
Alpes Poeninae	0.03
Lusitania	0.01
Samnium	0.13
Thracia	0.05
Umbria	0.22
Alpes Graiae	0.10
Aquitania	0.02
Asia	0.07
Bithynia et Pontus	0.08
Iudaea	0.20
Unkown	0.08

Table 23: Ratio between number of votive inscriptions mentioning *pro salute* and total number of votive inscriptions, per province.

Provinces	Inscriptions <i>In honorem</i>
Germania superior	271
Belgica	40
Raetia	36
Germania inferior	32
Pannonia superior	11
Dacia	6
Hispania citerior	6
Noricum	5
Pannonia inferior	4
Macedonia	3
Baetica	3
Lugdunensis	3
Britannia	2
Dalmatia	2
Achaia	1
Alpes Maritimae	1
Alpes Poeninae	1
Moesia inferior	1
Venetia et Histria	1
Barbaricum	1
Numidia	1
Total	431

Table 24: Number of votive inscriptions mentioning IHDD per province.

Province	Ratio
Germania superior	0.16
Belgica	0.13
Raetia	0.17
Germania inferior	0.02
Pannonia superior	0.01
Dacia	0.00
Hispania citerior	0.02
Noricum	0.01
Pannonia inferior	0.00
Macedonia	0.02
Baetica	0.01
Lugdunensis	0.04
Britannia	0.00
Dalmatia	0.00
Achaia	0.01
Alpes Maritimae	0.04
Alpes Poeninae	0.01
Moesia inferior	0.00
Venetia et Histria	0.01
Barbaricum	0.04
Numidia	0.01

Table 25: Ratio between number of votive inscriptions mentioning IHDD and total number of votive inscriptions, per province.

In table 22, the number of votive inscriptions mentioning *pro salute* has been shown. In table 23, the ratio between these inscriptions and the total number of votive inscriptions is calculated. The same has been done in tables 24 and 25 for *in honorem domus divinae* (IHDD). The provinces with more than 85 (one standard deviation above the mean) inscriptions with *pro salute* are Dacia, Pannonia superior, Pannonia inferior, Moesia inferior and Germania superior. For inscriptions with IHDD Germania superior is by far the best represented, with the most inscriptions (40) concentrated in Mainz. However, inscriptions with IHDD only occur in 21 provinces, with 16 provinces having less than 10 inscriptions with the formula. It is therefore difficult to draw conclusions for this formula. When looking at the ratios between inscriptions with the two mentioned formulae and all votive inscriptions, Arabia, Syria, Moesia inferior, Numidia, Mauretania Tingitana, Umbria and Barbaricum have high ratios of inscriptions with *pro salute* (threshold value 0.21), while the provinces of Raetia, Germania superior and Belgica have high ratios of inscriptions with *in honorem domus divinae* (threshold value 0.09). The figures for *pro salute* and *in honorem domus divinae* inscriptions differ clearly from those for *Augustus/Augusta* inscriptions.

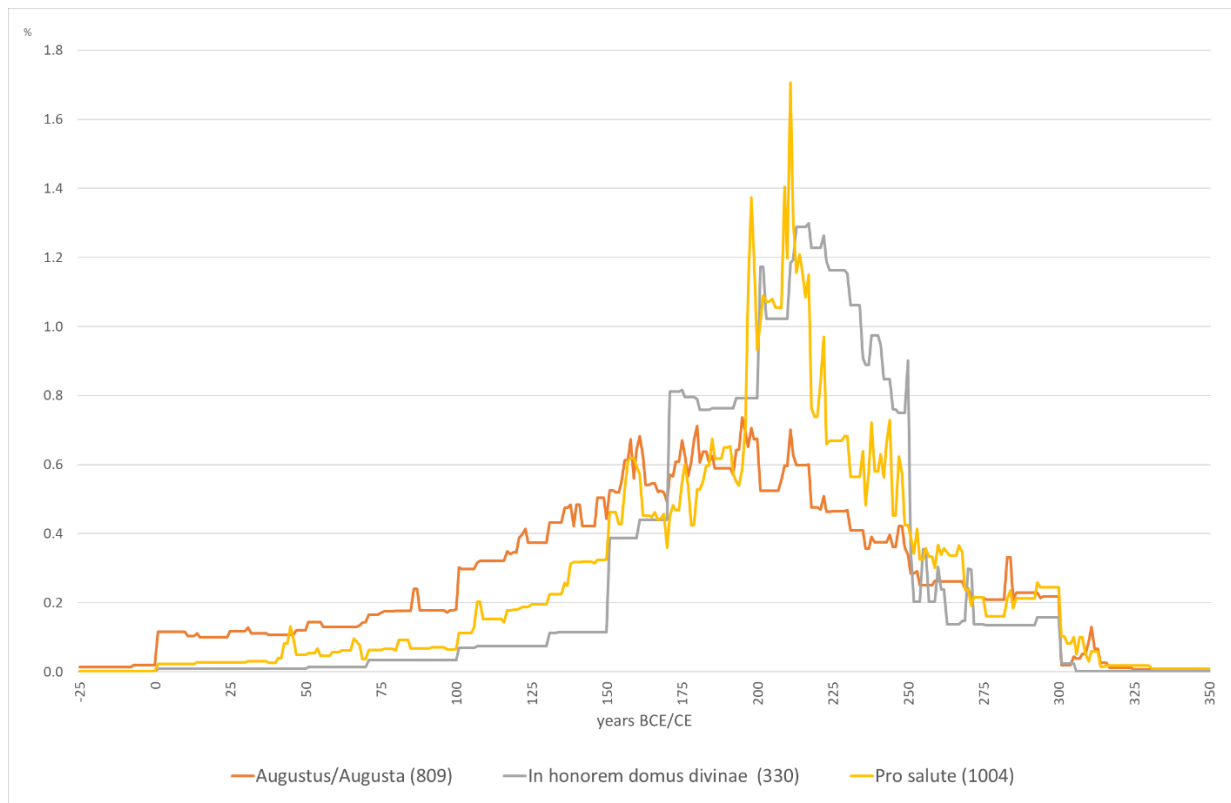


Figure 28: Chronological distribution of inscriptions mentioning Augustus/Augusta, in honorem domus divinae and pro salute.

In figure 28, the dating curves for *pro salute* and *in honorem domus divinae* are compared to the curve for *Augustus/Augusta*. From 0-150, the dating curve for *Augustus/Augusta* is higher than the other two curves, while from 200-250, this curve is lower than the curves of IHDD and *pro salute*. In addition, from 300-311, *Augustus/Augusta* and *pro salute* are relative high compared to IHDD. The peaks of *pro salute* and IHDD are much higher and sharper than the peaks of *Augustus/Augusta*. The curve for IHDD has a few sharp increases, at 151, 171 and 201 and a drop after 250, which are all the result of broadly dated inscriptions and the way the dates are recorded. The curve for *pro salute* has increases on the edges of broad time periods as well, but also some peaks at dates that are not edges of time periods, such as the peaks in 198 and 211, which can be related to the rules of emperors. Furthermore, few inscriptions of all three formulas survive after AD 300. This could mean that in votive inscriptions, the imperial cult occurs most often in inscriptions dated roughly between 175 and 250 and are (almost) no longer present after the year 300.

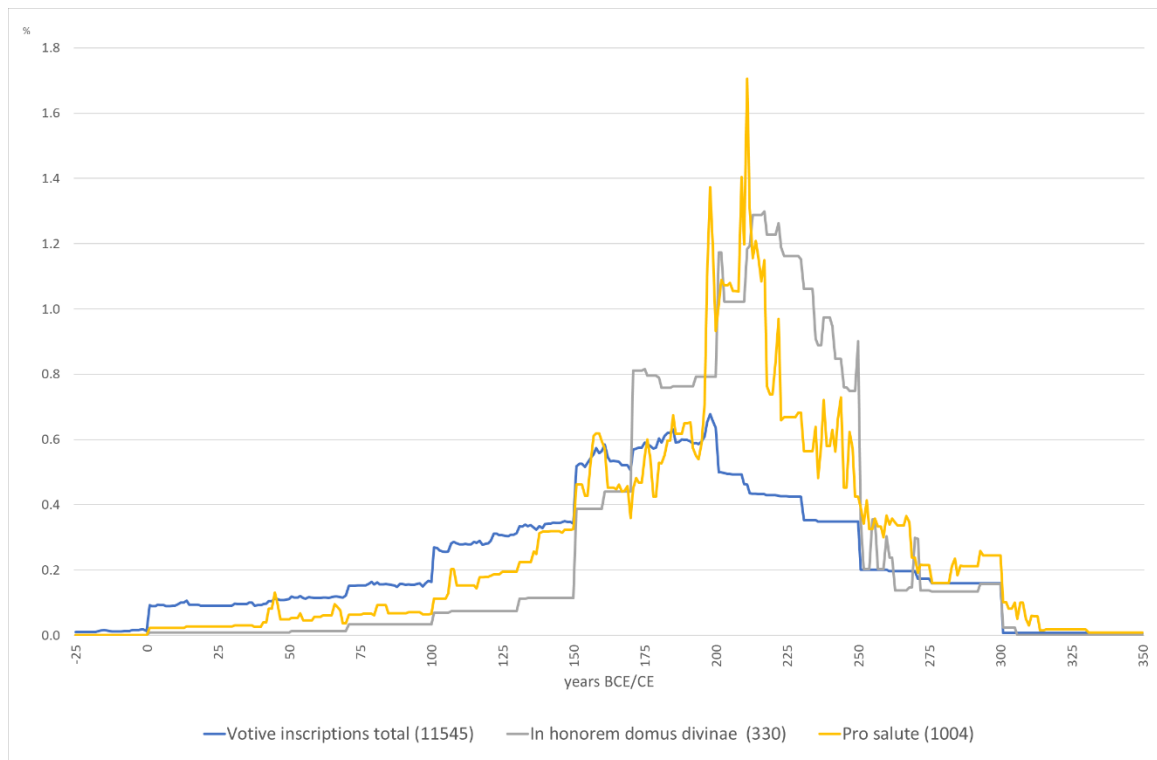


Figure 29: Chronological distribution of the total number of votive inscriptions, inscriptions mentioning in honorem domus divinae and pro salute.

In figure 29, the dating curves for the two formulas are compared to the dating curve for all votive inscriptions. It is clearly visible that both formulas are better represented in inscriptions between the periods 196-250 and 301-313 compared to all votive inscriptions. This graph also shows that after 300, few inscriptions with these formulas occur anymore.

4.5.3 Dis deabusque

Province	Inscriptions <i>deabus</i>
Germania superior	45
Pannonia inferior	25
Noricum	23
Dacia	18
Pannonia superior	13
Moesia superior	12
Germania inferior	10
Raetia	7
Britannia	7
Dalmatia	5
Hispania citerior	5
Moesia inferior	2
Alpes Poeninae	2
Numidia	2
Lugdunensis	2
Alpes Maritimae	1
Mauretania Tingitana	1
Venetia et Histria	1
Narbonensis	1
Transpadana	1
Mauretania Caesariensis	1
Total	184

Table 26: Number of inscriptions mentioning *dis deabusque*, per province.

Province	Ratio
Germania superior	0.03
Pannonia inferior	0.03
Noricum	0.04
Dacia	0.01
Pannonia superior	0.01
Moesia superior	0.03
Germania inferior	0.01
Raetia	0.03
Britannia	0.01
Dalmatia	0.01
Hispania citerior	0.01
Moesia inferior	0.00
Alpes Poeninae	0.03
Numidia	0.03
Lugdunensis	0.03
Alpes Maritimae	0.04
Mauretania Tingitana	0.08
Venetia et Histria	0.01
Narbonensis	0.01
Transpadana	0.03
Mauretania Caesariensis	0.03

Table 27: Ratio between number of votive inscriptions mentioning *dis deabusque* and total number of votive inscriptions, per province.

In table 26, the numbers of votive inscriptions mentioning *dis deabusque* is shown. Table 27 shows the ratio between these inscriptions and the total number of votive inscriptions. The province with the most inscriptions with *dis deabusque* is Germania superior. The province with the highest ratio is Mauretania Tingitana. However, there are only 21 provinces with this formula, of which only seven provinces have 10 or more inscriptions. Drawing conclusions over the spread of this formula over the whole Empire is therefore difficult.

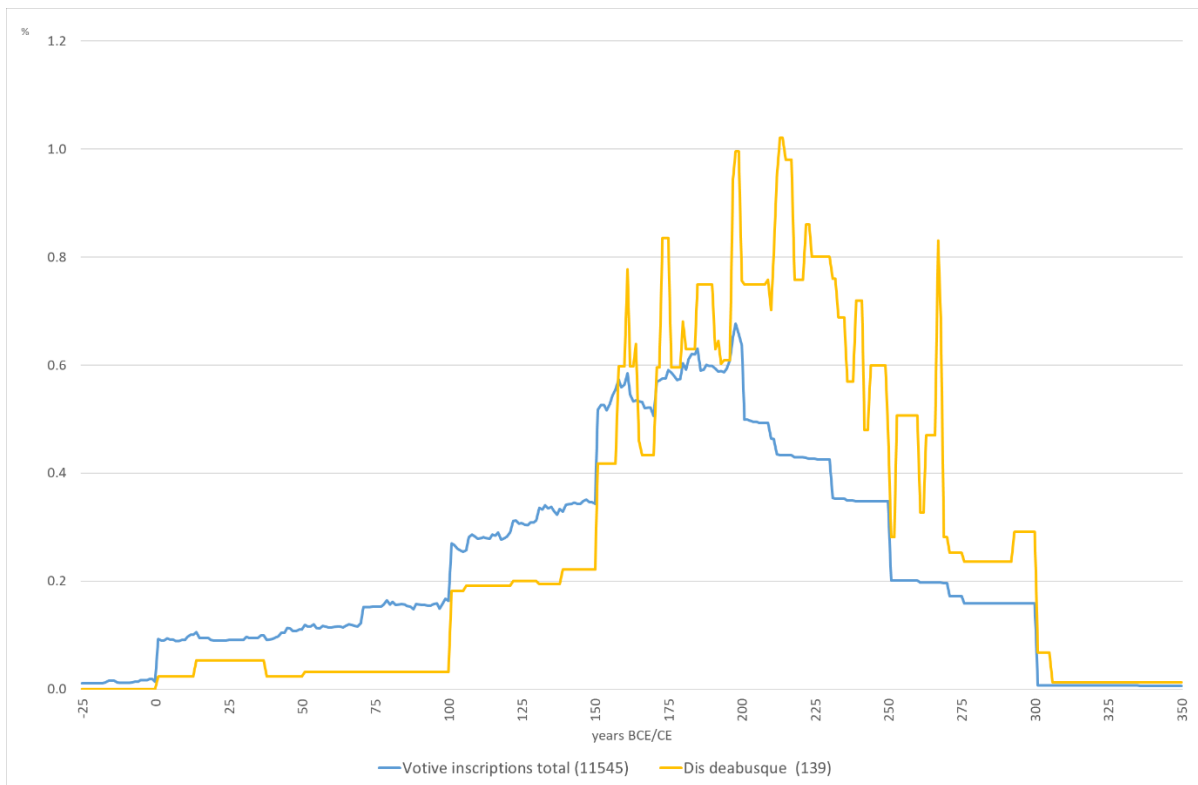


Figure 30: Chronological distribution of inscriptions mentioning *dis deabusque* and of the total number of votive inscriptions.

Figure 30 shows the dating curve for inscriptions mentioning *dis deabusque* and the dating curve for all votive inscriptions. The figure shows that the curve for *dis deabusque* starts to rise relatively late compared to the curve for all votive inscriptions. The differences between the two curves are greatest between 200-300.

4.5.4 Deae

Provinces	Inscriptions with <i>deae</i>
Belgica	113
Britannia	87
Germania superior	83
Germania inferior	56
Dacia	34
Lusitania	15
Moesia superior	14
Pannonia superior	12
Pannonia inferior	11
Africa Proconsularis	5
Moesia inferior	5
Dalmatia	4
Hispania citerior	4
Narbonensis	4
Raetia	4
Baetica	3
Lugdunensis	3
Noricum	2
Roma	2
Bithynia et Pontus	1
Etruria	1
Numidia	1
Venetia et Histria	1
Total	465

Table 28: Number of votive inscriptions mentioning *deae*, per province.

Province	Ratio
Belgica	0.38
Britannia	0.09
Germania superior	0.05
Germania inferior	0.04
Dacia	0.02
Lusitania	0.10
Moesia superior	0.04
Pannonia superior	0.01
Pannonia inferior	0.01
Africa Proconsularis	0.02
Moesia inferior	0.01
Dalmatia	0.00
Hispania citerior	0.01
Narbonensis	0.03
Raetia	0.02
Baetica	0.01
Lugdunensis	0.04
Noricum	0.00
Roma	0.03
Bithynia et Pontus	0.08
Etruria	0.02
Numidia	0.01
Venetia et Histria	0.01

Table 29: Ratio between votive inscriptions mentioning *deae* and total number of votive inscriptions, per province.

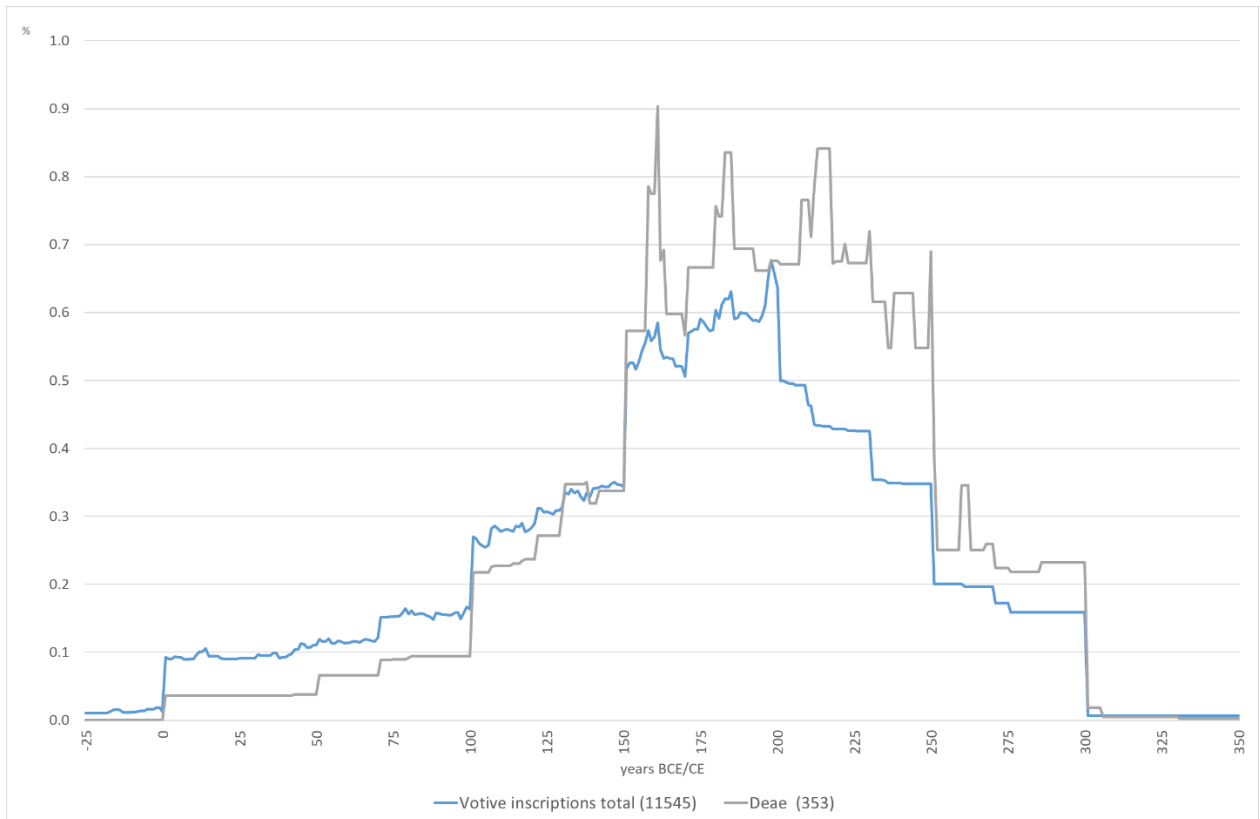


Figure 31: Chronological distribution of *deae* and of all votive inscriptions.

Inscriptions with *deae* mostly appear in absolute numbers in Belgica, Britannia Germania superior and Germania inferior (threshold value 53). The province with the highest share of inscriptions with *deae* is Belgica (threshold value 0.12). In figure 31, the dating curve for inscriptions with *deae* is compared to the dating curve for all votive inscriptions. The timeframe in which inscriptions with *deae* appear is roughly 200 years: from 100 till 300. From 201-251, there is a large difference between the curve for *deae* and the curve for all votive inscriptions. In addition, the curve for *deae* has various peaks: 158-163, 180-185 and 260-262.

5. Conclusion

5.1 Geographical and chronological distribution of the variables

The spread of religion in the Roman Empire is complex and studying this phenomenon is not an easy task. Votive inscriptions can be very helpful in this respect. As has been shown in this study, analysing votive inscriptions can reveal spatial and temporal patterns. The advantages of using inscriptions are mentioned in chapter 2: 1) an inscription can be treated as a distinct case, 2) it often allows for precise localizations and 3) it can, although less often, be dated. These advantages have also been proven in this research. The text of an inscription, its findspot (with coordinates) and its dating were crucial elements in conducting this study. Despite these benefits, there are also some disadvantages in using inscriptions. In this research, a difficulty in the analysis is related to the limitations of EDH. Of the 62 provinces in total, 43 have not been fully processed. Moreover, the provinces in EDH contained a lot less inscriptions than the provinces in EDCS (Epigraphik-Datenbank Clauss-Slaby), another database with Latin inscriptions. However, EDCS does not provide coordinates, which is why this database could not be used for this study. Multiple properties of EDH, like the coordinates and the fact that it can be downloaded as a database, makes it suitable for this research.

In almost all analyses, the provinces containing the most inscriptions were often the provinces fully processed in EDH. This gives a distorted picture of the distribution of religion and must therefore be mentioned as a limitation of this research. Nevertheless, it has been tried to take the missing data into account while interpreting the results as much as possible. Despite the missing data, relationships and patterns could be discovered. The most important patterns will be discussed here in the conclusion. The analyses were carried out per sub-question, so that all variables could be investigated and presented separately. This subdivision will only be used to shortly discuss the most important outcomes per sub-question, after which general patterns are presented, as was the aim of this research.

1. What is the geographical and chronological distribution of deities classified by pantheon?

Of all provinces, Dalmatia and Pannonia inferior have the highest share of inscriptions mentioning classical deities. Findspots with high concentrations of classical deities are mainly situated in the northeast of the Western Roman Empire, although it is difficult to be certain because of the missing data. Findspot with a lot of regional deities, on the contrary, are more concentrated in the northwest of the Empire, mostly because of the strong presence of these deities in Germania inferior. This province has the largest share of regional deities, which is being caused by the Matronae. The second highest share of regional deities belongs to Belgica, an uncompleted province, which is caused by *Nehalennia*. There is also a concentration of findspots with regional deities in the south of modern-day France. Until 150, inscriptions with classical deities are better represented than inscriptions with regional deities. From 150-250, regional deities are better represented in the dataset. From 250 to 300, classical deities have a higher value again. It is important to note that steep increases and decreases are caused by the way the dates are recorded, with strong preferences for whole and half centuries.

The average number of inscriptions per classical deity is 15.6, while the average for regional deities is 6.3, indicating that, in general, regional deities are represented with fewer inscriptions. However, this can be explained by the fact that classical deities were worshipped throughout the Roman Empire, which makes it logical that these empire-wide deities appear more often in inscriptions. With an average of 10.8, Germania superior has the most inscriptions per classical deity, followed by Pannonia superior with an average of 9.3. Classical deities are thus well-represented in these provinces. Alpes Cottiae has the highest average (19.9) of inscriptions with regional deities, followed by Germania inferior (12.2).

2. What is the geographical and chronological distribution of deities classified by gender?

The highest share of female deities can be found in Germania inferior and the findspots with the highest concentrations of inscriptions with female deities are somewhat better represented in the northwest of the Western Empire. The province with the highest share of inscriptions with male deities is Pannonia inferior. Findspots with high concentrations of inscriptions with male deities are situated

in the northeast of the Western Empire. In addition, some findspots with many male deities are situated in the southeast of present-day France. It was found that the group with classical deities contains more unique male deities (92) than unique female deities (67), which points to a relationship between classical deities and male deities. The chronological distribution of inscriptions with male and female deities show almost the same pattern until the year 150. From 150-200, however, female deities are better represented in inscriptions, caused by large numbers of *Matronae* inscriptions which are mostly dated from 150 onwards. After the year 250, inscriptions with male deities are more strongly present in the dataset.

3. How are the deities, both individual and classified by pantheon and gender, distributed over the site types?

The site type settlement is best represented in the database. In this settlement, there are relatively more inscriptions with classical deities than regional deities. The share of inscriptions with female deities and male deities in a settlement is the same. For the site type fort, the share of classical and regional deities is the same. However, the share of inscriptions with male deities in fort is higher than the share of female deities in fort. For sanctuary, the share of regional deities as well as female deities is higher than for classical deities and male deities. There appears to be a strong relationship between *Nehalennia* and sanctuary, which could explain the higher share for female and regional deities in that site type.

The chronological distribution of fort classical corresponds with the chronological distribution of fort male. The same counts for fort regional and fort female, for settlement classical and settlement male and for settlement regional and settlement female. However, from 200-250, this relationship is reversed for the curves of settlement: settlement classical then corresponds to settlement female and settlement regional corresponds to settlement male. In general, all curves for settlement are higher than the curves for regional from 0-120. From 150-200, the regional deities are better represented in both settlement and fort than the classical deities. In the same period, the female deities are also better represented in both settlement and fort than the male deities.

5.2 Patterns in the spread of religion

Answering the above sub-questions contribute to answering the main research question: *How can the spread of religion over the Roman Empire be investigated using inscriptions and what patterns become visible in this spread?*

Most votive inscriptions are spread over the Latin-speaking provinces, with a concentration of inscriptions close to the borders of the Empire (fig. 4). In general, most inscriptions are from the provinces completely covered by EDH, with some exceptions in the Iberina Peninsula and Africa. The border region consists of multiple findspots with a high number of inscriptions. The highest numbers of different deities per findspot can be found in the northern provinces, close to the borders (fig. 0d). In addition, the highest concentration of inscriptions per findspot mentioning the same deity can be found in the northwest of the Empire (fig. 0c). These high numbers of inscriptions dedicated to one deity can indicate a sanctuary to that deity.

Most inscriptions can be dated between 150-250 (fig. 11), which aligns with the “epigraphic habit” discussed in chapter 2.3. The epigraphic habit is a term created for the period from the first century to the third century AD, in which the Empire saw an explosion of inscriptions. In the first and second centuries AD, the number of inscriptions rose, while it declined in the third century AD. However, some provinces deviate from this general pattern. Dalmatia has the most early inscriptions, followed by Noricum. Dacia, on the other hand, has the fewest early inscriptions. The presence of many early inscriptions in Dalmatia may be related to early Roman interference in that province. In the same way, the absence of early inscriptions in Dacia can be explained by the fact that it did not become a Roman province until 106. Deviating patterns can therefore be explained by the annexation or abolition of a province. Britannia and Moesia superior have the highest share of late inscriptions (dated between 276-300), which may be related to the fact that these provinces remained part of the Roman Empire for a long time. A geographical pattern can also be recognized in the chronological

distribution. The provinces of Dacia and Moesia superior, the first with few early and the second with many late inscriptions, are situated next to each other. The abandonment of Dacia around 270 could be a reason for an increase in inscriptions in Moesia inferior because inhabitants fled to this neighbouring province. Moreover, Dalmatia and Noricum, the provinces with the most early inscriptions, are also close to each other.

In general, high numbers of inscriptions with female deities per findspot are concentrated in the northwest, while inscriptions with male deities have a high concentration in findspots in the northeast of the Western Empire. From 150-200, female deities are better represented, while after 250, male deities are better represented in inscriptions. It has been found that the spatial distribution of male deities strongly resembles the distribution of classical deities (figs 15 and 20). The same relationship is true for female deities and regional deities (figs 16 and 19). It can therefore be concluded that there is a relationship between the geographical distribution of the gender of a deity and the pantheon to which it belongs. This can be confirmed by table 13, which shows that for almost all provinces, the number of unique male deities is higher than the number of unique female deities. This can also explain the relationship found in Germania superior, Dacia and Pannonia superior, namely that they have the most classical deities and at the same time more than 700 inscriptions mentioning male deities.

For the chronological distribution of gender and pantheon, this pattern is also visible. The dating curves for classical and male deities follow somewhat the same pattern, as is true for regional and female deities (figs 17 and 21). This relationship between gender and the pantheon group can be (partly) explained by a few findspots. The sites where female deities appear most often in inscriptions are Nettersheim, Morken-Harff, Köln and Colijnsplaat. These are the same four sites where regional deities appear most often, since the female deities involved belong to the regional pantheon. For the male deities the sites with the highest numbers of inscriptions are Petronell-Carnuntum/Bad Deutsch-Altenburg, Budapest and Alba Iulia, which are also among the sites with most inscriptions of classical deities, because the male deities involved belong to the Greco-Roman pantheon. This relationship between sites and variables can explain why many results from the analyses of these two variables align.

When analysing relationships between deities and provinces, different relationships stand out. A number of deities have proven to be very important for different provinces in the results of the analyses. For example, inscriptions with *Matronae* and *Nehalennia* provide for a high share of regional deities in Germania inferior and Belgica respectively. These provinces also have a high proportion of inscriptions with female deities because of these two deities. In addition, there are a number of sites with a high concentration of inscriptions dedicated to one deity. For example, the four largest points on the map with classical deities (fig. 15) are almost all caused by inscriptions to Jupiter. One particular relationship that stands out is between *Matronae* and Germania inferior. Germania inferior has the highest share of regional deities and the highest share of female deities. Moreover the dating curve of Germania inferior and the dating curves of regional deities and female deities show somewhat the same pattern, all with a high rise at 150, the starting date of most *Matronae* inscriptions. It can thus be concluded that the presence of *Matronae* in Germania inferior is an important element in the explanation of the distribution patterns. Another important relationship is between *Mercurius* and Germania superior. Findspots with inscriptions of *Mercurius* are mostly situated in the northwest of the Western Empire, spread over multiple provinces but with a concentration in northern Germania superior. *Matronae* is, however, much more concentrated in one area, namely the southeastern part of Germania inferior.

5.3 Reflection

The aim of this research was to provide a stepping stone for future research and to show that the methodology that was used is useful for research into the spread of religion. The approach that was used in this study has indeed proven to be suitable. The database is suitable for the objectives of this study because of the presence of the coordinates and the dating of the inscriptions. The added variables have also proven to be useful. By subdividing the deities into the variables “pantheon” and “gender”, the deities could be studied at a more general level. In addition to the fact that the variable “deities”

was important for the further grouping, it has also proven useful in investigating patterns. Patterns or conspicuousness could namely be (partly) explained by looking back into the dataset to see which specific deities were behind a certain pattern. Moreover, this variable was also used for identifying relationships between a deity and a province.

To visualize the results, distribution maps were created. The maps in this research are based on findspot. An advantage of this is that distribution patterns can be made visible at a very detailed level. At the same time, this also causes a limitation for larger, more general distribution patterns. For example, inscriptions from neighbouring findspots, which belonged to the same complex in Roman times, are shown separately. The presence of a deity or a group of deities in a larger area can then only be determined by looking further into the data, but not on the basis of the given maps. Namely, the points on the map have been created by adding up the inscriptions per findspot, not per region or per variable.

As already mentioned, the incomplete state of EDH resulted in an incomplete dataset used in this study. Besides missing data for 43 provinces, the completed provinces (19) also had less inscriptions in EDH than in the EDCS database. This is the most important limitation of the research, because it gives an incomplete picture of distribution patterns over the entire Roman Empire. Another limitation is related to Pleiades: many inscriptions (3025 in total) do not have a feature type associated with them in Pleiades and therefore also no site type. Therefore, the results of the analyses for the variable site type also give an incomplete picture.

Besides this, using inscriptions to investigate the spread of religion has several limitations. Firstly, not all inscriptions were preserved, i.e. we can only draw conclusions based on what has remained or what has been documented. Secondly, inscriptions were mostly set up by the elite, causing distribution patterns to be mostly applicable to this societal group instead of all citizens and inhabitants of the Roman Empire. Thirdly, the dating of inscriptions is sometimes very broad or even absent, making chronological distribution patterns difficult to analyse. These three limitations show that there will always be missing data in doing research based archaeological data. This study has tried to overcome these limitations as much as possible, in order to draw realistic conclusions.

5.4 Recommendations

The dataset would be even more valuable if it were complete, i.e. if all provinces were fully processed. In this way, true values of all documented inscriptions could be displayed and the distribution patterns would show something about the entire Roman Empire – or at least the Western Empire, in case of Latin inscriptions. A recommendation for future research is therefore to expand the dataset with other available sources, so that all inscriptions to which a findspot has been assigned are included in the dataset. The analyses could then be performed again, which would provide a more complete picture. The aim of this research was to provide a stepping stone for future research and to show that the methodology that was used is useful for research into the spread of religion. In future research, this methodology can be used for generic studies with a more complete dataset as well as for specific studies into individual deities.

As mentioned before, some deities appear to be highly concentrated in a specific area, such as *Matronae* and *Mercurius*. The reason for this concentration could be an interesting subject for further research. With the use of coordinates and dating in the database created for this research, worship patterns could be explored, such as the geographical movement of a worship or its duration. This is an example of how this research can contribute to a further understanding of the worship of individual deities.

Another recommendation is to combine this study with political, military or trade networks and to search for relationships. Inserting this dataset into a network study could help network studies to prevail on the one side, and could enhance connections between religion and other socio-political or socio-economic aspects on the other side. In that way, the dataset and the findings from this research can contribute to broader scientific debates, such as those on “Romanisation” and globalisation, by shedding light on the role of religion.

6. Literature

- Alföldy, G., Witschel, C., Cowey, J.M.S., Feraudi-Gruénais, F., Gräf, B., Grieshaber, F., Klar, R., & Osnabrügge, J. (1997). Epigraphic Database Heidelberg. EDH. <http://edh-www.adw.uni-heidelberg.de/>
- Bendlin, A. (1997). Peripheral centres—central peripheries: religious communication in the Roman empire. In H. Cancik, & J. Rüpke (Eds.), *Römische Reichsreligion und Provinzialreligion* (pp. 35-68). Tübingen: Mohr Siebeck
- Chalupa, A., Výtvarová, E., Mertel, A., Fousek, J., & Hampejs, T. (2021). The network(s) of Mithraism: discussing the role of the Roman army in the spread of Mithraism and the question of interregional communication. *Religio*, 29, pp. 107-131. <https://hdl.handle.net/11222.digilib/144790>
- Collar, A. (2013). *Religious Networks in the Roman Empire*. Cambridge: Cambridge University Press
- Derks, T. (1998). *Gods, Temples and Ritual Practices : the Transformation of Religious Ideas and Values in Roman Gaul*. Amsterdam: Amsterdam University Press
- Fousek, J., Kaše, V., Mertel, A., Výtvarová, E., & Chalupa, A. (2018). Spatial constraints on the diffusion of religious innovations: The case of early Christianity in the Roman Empire. *PLoS ONE*, 13. <https://doi.org/10.1371/journal.pone.0208744>
- Glomb, T. (2021). The spread of the cult of Asclepius in the context of the Roman army benefited from the presence of physicians: A spatial proximity analysis. *PLoS One*, 16. <https://doi.org/10.1371/journal.pone.0256356>
- Glomb, T., Kaše, V., & Heřmánková, P. (2022). Popularity of the cult of Asclepius in the times of the Antonine Plague: Temporal modeling of epigraphic evidence. *Journal of Archaeological Science: Reports*, 43 <https://doi.org/10.1016/j.jasrep.2022.103466>
- Glomb, T., Kaše, V., & Zavřel, V. (2023). Iconographic Trends in Roman Imperial Coinage in the Context of Societal Changes in the Second and Third Centuries CE: A Small-Scale Test of the Affluence Hypothesis. *Open Archaeology*, 9. <https://doi.org/10.1515/opar-2022-0308>
- Greenacre, M. (2007). *Correspondence Analysis in Practice*. New York: Chapman & Hall/CRC
- Haensch, R. (2007). Inscriptions as Sources of Knowledge for Religions and Cults in the Roman World of Imperial Times. In J. Rüpke (Ed.), *A Companion to Roman Religion* (pp. 176-187). <https://doi.org/10.1002/9780470690970.ch13>
- Halamus, M. (2018). Annexing the Near East and the Long-Lasting Bosphoran Autonomy. *EOS CV 2018*, (pp. 221-238). Wrocław: Polskie Towarzystwo Filologiczne i Uniwersytet Wrocławski.
- Kajava, M. (2015). Religion in Rome and Italy. In C. Bruun, & J Edmondson (Eds.), *The Oxford Handbook of Roman Epigraphy* (pp. 397-419). Oxford: Oxford University Press.
- Knappett, C. (2017). Globalization, connectivities and networks: an archaeological perspective. In T. Hodos (Eds.), *The Routledge Handbook of Archaeology and Globalization* (pp. 29-41). London: Routledge
- Lipka, M. (2009). *Roman Gods: A Conceptual Approach*. Leiden; Boston: Brill

- Lloris, F. B. (2015a). Latin Epigraphy: The Main Types of Inscriptions. In C. Bruun, & J. Edmondson (Eds.), *The Oxford Handbook of Roman Epigraphy* (pp. 89-110). Oxford: Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780195336467.001.0001>
- Lloris, F. B. (2015b). The “Epigraphic Habit” in the Roman world. In C. Bruun, & J. Edmondson (Eds.), *The Oxford Handbook of Roman Epigraphy* (pp. 131-148). Oxford: Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780195336467.001.0001>
- MacMullen, R. (1982). The Epigraphic Habit in the Roman empire. *The American Journal of Philology*, 103, pp. 233-246. <https://doi.org/10.2307/294470>
- Meyer, E. A. (1990). Explaining the Epigraphic Habit in the Roman Empire: The Evidence of Epitaphs, *The Journal of Roman Studies*, 80, pp. 75-96. <https://doi.org/10.2307/300281>
- Orlin, E. (2007). Urban Religion in the Middle and Late Republic. In J. Rüpke (Ed.), *A companion to Roman religion* (pp. 58-70). Malden, Oxford, Victoria: Blackwell Publishing.
- Phillips, C. R. (2007). Approaching Roman Religion: The Case for *Wissenschaftsgeschichte*. In J. Rüpke (Ed.), *A companion to Roman religion* (pp. 10-28). Malden, Oxford, Victoria: Blackwell Publishing.
- Raepsaet-Charlier, M. (1975). La datation des inscriptions latines dans les provinces occidentales de l'Empire Romain d'après les formules «IN H(ONOREM) D(OMUS) D(IVINAE)» et «DEO, DEAE». In H. Temporini (Ed.), *Band 3 Politische Geschichte (Provinzen und Randvölker: Allgemeines; Britannien, Hispanien, Gallien)* (pp. 232-283). Berlin, Boston: De Gruyter. <https://doi.org/10.1515/9783110882070-008>
- Rives, J. B. (2009). Graeco-Roman Religion in the Roman Empire: Old Assumptions and New Approaches. *Currents in Biblical Research*, 8, pp. 240-299. <https://doi.org/10.1177/1476993X09347454>
- Rives, J (2014). Religion in the Roman Provinces. In C. Bruun, & J Edmondson (Eds.), *The Oxford Handbook of Roman Epigraphy* (pp. 420-444). Oxford: Oxford University Press
- Scheid, J. (2003). *An Introduction to Roman Religion*. Edinburgh: Edinburgh University Press.
- Scheid, J. (2004). Religions in contact. In S. I. Johnston (Eds.), *Religions of the Ancient World* (pp. 112-126). Cambridge: The Belknap Press of Harvard University Press
- Van Alten, D. C. D. (2017). Glocalization and Religious Communication in the Roman Empire: Two Case Studies to Reconsider the Local and the Global in Religious Material Culture. *Religions*, 8. <https://doi.org/10.3390/rel8080140>
- Versluys, M. J. (2021). Romanisation as a theory of friction. In O. Belvedere & J. Bergemann (Eds.), *Imperium Romanum: Romanization between Colonization and Globalization* (pp. 33-48). Palermo: Palermo University Press
- Weiland, J. (2021). *Review: Pleiades*. <https://classicalstudies.org/scs-blog/jon-weiland/review-pleiades>
- Witcher, R. (2016). The globalized Roman world. In T. Hodos (Eds.), *The Routledge Handbook of Archaeology and Globalization* (pp. 634-651). London: Routledge
- Woolf, G. (1996). Monumental Writing and the Expansion of Roman Society in the Early Empire. *The Journal of Roman Studies*, 86, pp. 22-39. doi:10.2307/300421

Appendix A1: Diagnostics deities/provinces

Rows:

	name	mass	qlt	inr	k=1	cor	ctr	k=2	cor	ctr
1	JptrFl	2	96	37	-276	2	0	-2105	94	34
2	Apl1	19	82	27	-104	3	0	-517	78	21
3	AplG	2	143	5	153	3	0	-1013	140	7
4	Ascl	5	92	6	-400	55	1	-326	37	2
5	AscH	8	186	10	-395	55	2	611	131	12
6	Atts	1	177	2	-337	12	0	-1224	165	4
7	Blln	2	52	11	-330	7	0	-850	45	5
8	BnsE	1	32	3	-403	32	0	-27	0	0
9	Clst	1	156	1	-395	31	0	-786	124	1
10	Clst	1	137	6	-410	12	0	-1336	125	7
11	Cmps	1	115	1	-318	69	0	-261	47	0
12	Cstr	1	4	2	129	3	0	72	1	0
13	Cats	2	94	2	-395	70	1	234	24	1
14	Ctpt	2	209	2	-445	60	0	698	149	3
15	Cers	3	67	5	-410	39	1	-341	27	1
16	Cncr	1	41	2	-378	20	0	-387	21	0
17	DsAt	3	236	3	-455	71	1	693	165	5
18	DsMg	1	251	1	-458	74	0	711	178	1
19	DCns	1	50	0	270	41	0	-123	9	0
20	Dian	28	89	9	-212	58	2	156	31	3
21	DnAp	2	19	8	-413	19	1	-39	0	0
22	DsPP	1	51	1	86	3	0	347	48	0
23	DmnD	1	380	1	-459	117	0	687	262	2
24	Epon	4	203	3	-331	75	1	-432	128	3
25	Fats	1	16	2	208	11	0	138	5	0
26	Fnts	2	58	4	-429	32	1	380	25	1
27	Frtn	27	285	4	-103	28	0	-312	257	11
28	FrtG	1	25	4	-440	16	0	340	9	0
29	Gens	42	379	8	-209	94	3	-364	285	23
30	Hekt	1	19	2	-364	17	0	124	2	0
31	Hrc1	34	107	8	-230	88	3	106	19	2
32	HrcM	2	657	3	1689	655	9	79	1	0
33	HrcG	1	128	7	-47	0	0	-1508	128	9
34	Hyge	1	73	4	-415	18	0	-733	55	2
35	Isis	6	3	6	91	3	0	12	0	0
36	IssM	1	182	0	338	58	0	493	124	0
37	IssS	2	40	4	-429	40	1	-19	0	0
38	Juno	10	37	2	-146	36	0	-20	1	0
39	Jptr	223	776	17	-285	448	29	244	327	54
40	JptA	1	195	1	-438	88	0	483	107	1
41	JptrDp	3	152	4	-435	60	1	536	92	3
42	JptrDl	26	142	11	-363	126	6	128	16	2
43	JpDJ	1	6	12	-374	4	0	-328	3	0
44	JptrHl	2	14	24	-414	6	1	464	8	2
45	JptrFr	1	82	1	-362	53	0	-269	29	0
46	JptG	20	217	3	275	176	2	133	41	1
47	JptrHr	1	7	9	-347	4	0	-296	3	0
48	JptJ	26	132	20	-300	49	4	-392	83	16
49	JpJG	4	244	6	51	1	0	-1018	244	15
50	JpJM	7	209	3	-323	117	1	286	92	2
51	JptL	1	60	1	-457	59	0	12	0	0
52	JptrMr	1	185	1	-100	6	0	550	179	1
53	JptrMn	1	74	0	256	56	0	-147	18	0
54	JptN	3	43	8	-234	7	0	-515	36	3
55	JptP	2	38	15	-456	13	1	615	24	4
56	JptrSr	1	79	2	-402	36	0	441	43	1
57	JptrSlv	1	52	4	-429	23	0	477	29	1

58	JuptrSl	1	5	15	-439	3	0	273	1	0
59	Lars	3	23	14	-378	13	1	-332	10	1
60	Libr	18	231	11	-410	112	5	422	118	13
61	LbrL	6	391	5	-455	101	2	770	290	13
62	Luna	2	11	10	-380	11	0	-18	0	0
63	MgnM	4	146	1	-288	104	1	184	42	1
64	Mairs	1	259	1	-450	79	0	678	180	2
65	Mars	24	499	10	-182	32	1	-698	468	47
66	MrsC	1	51	4	408	12	0	-721	38	1
67	MarsVictor	1	2	2	-8	0	0	-101	2	0
68	MarsVictori	3	131	6	-283	17	0	-740	114	6
69	MtrM	1	18	2	-106	2	0	263	15	0
70	Mtrs	13	243	19	804	186	14	-445	57	10
71	Mtrn	84	997	220	2506	993	854	158	4	9
72	Mrcr	48	584	38	-78	3	0	-1064	581	219
73	MrcM	2	323	7	-250	6	0	-1809	317	22
74	MnrV	15	449	5	-181	37	1	-609	413	22
75	Mthr	35	135	8	-277	132	4	46	4	0
76	Nmss	11	534	5	-442	177	4	627	356	18
77	Nptn	6	178	4	-217	29	0	-495	150	6
78	Numn	6	173	7	-150	8	0	-672	165	11
79	NmnG	1	4	2	-155	3	0	-87	1	0
80	Nymp	17	141	7	-246	58	2	292	83	6
81	PtrG	1	139	1	-435	58	0	516	81	1
82	PltP	1	2	2	87	1	0	83	1	0
83	Prps	1	4	10	-410	4	0	26	0	0
84	Qdrv	5	53	2	194	43	0	-89	9	0
85	Roma	1	192	9	-248	3	0	-1963	189	16
86	Sals	1	6	3	-70	1	0	187	5	0
87	Strn	4	207	58	-387	4	1	-2642	202	115
88	Sdts	1	27	2	-389	26	0	24	0	0
89	Srps	1	130	2	-441	63	0	455	67	1
90	Silvn	3	237	4	-455	57	1	811	181	7
91	Slvns	8	131	8	-375	60	2	409	71	6
92	Slvns	32	311	11	-322	123	5	399	188	21
93	SlvD	25	461	22	-461	98	9	885	363	79
94	SlvS	6	565	4	-455	141	2	790	424	16
95	SlvG	1	147	1	-396	29	0	-790	118	1
96	SlvN	1	36	2	-387	25	0	249	11	0
97	Sol	12	259	4	-342	169	2	249	90	3
98	SlMt	14	554	4	-363	199	3	486	355	13
99	Syri	1	92	1	-391	52	0	345	40	1
100	TrrM	4	295	3	-241	32	0	692	263	7
101	ThrH	4	21	27	-463	13	1	341	7	2
102	Tutl	2	16	16	-94	0	0	-628	15	2
103	Uncl	4	88	11	-120	2	0	-811	86	9
104	Vens	8	33	19	-359	23	2	-232	10	2
105	Vest	1	70	5	931	69	1	45	0	0
106	Vctr	11	168	9	-133	9	0	-567	159	14
107	Vrdc	1	252	1	964	199	1	-496	53	1
108	Vrts	2	107	2	120	6	0	-509	101	2
109	Vlkn	3	50	4	-374	49	1	-64	1	0

Columns:

	name	mass	qlt	inr	k=1	cor	ctr	k=2	cor	ctr
1	Etrr	3	21	7	-325	20	1	-70	1	0
2	Grmns	133	504	51	-183	36	7	-659	468	235
3	LtmC	3	29	12	-213	5	0	-459	24	3
4	Pnnns	122	489	39	-368	177	27	489	312	119
5	Aqtn	4	38	16	-271	8	0	-541	30	5
6	Hspn	23	41	27	-281	28	3	-192	13	3

7		Nrbn		8	172	50		-179	2	0		-1580	169	83	
8		Acha		4	107	13		-318	11	1		-919	96	12	
9		Aeml		1	16	12		-295	3	0		-604	13	2	
10		AlpC		5	58	23		594	34	3		-500	24	6	
11		Brtn		53	87	35		-124	10	1		-350	77	27	
12		Daci		125	444	29		-354	224	25		351	220	62	
13		Dlmt		75	258	29		-354	134	15		342	124	36	
14		Grmn		121	998	221		2093	996	860		113	3	6	
15		Mcdn		8	42	12		-314	25	1		251	16	2	
16		Msnf		44	57	48		-363	50	9		136	7	3	
17		Mssp		29	133	24		-371	70	6		354	63	15	
18		Nrcm		43	79	22		-309	79	7		24	0	0	
19		Pnnnn		84	515	23		-361	200	18		453	315	70	
20		Ratc		18	225	19		-232	21	2		-727	205	39	
21		AfrP		14	243	74		-339	9	3		-1739	234	171	
22		Batc		16	59	19		-287	29	2		-295	30	6	
23		Blgc		12	69	15		-91	3	0		-446	67	10	
24		Numd		6	134	7		-295	29	1		-556	105	8	
25		Syri		1	1	43		-419	1	0		156	0	0	
26		Eprs		1	31	6		-343	5	0		-743	25	1	
27		Lstn		6	28	16		-339	18	1		-251	10	2	
28		VntH		8	16	16		-257	13	1		-114	3	0	
29		RgnB		1	18	7		-399	11	0		299	6	0	
30		Roma		4	21	8		-312	21	1		48	0	0	
31		Ligr		1	14	1		218	12	0		81	2	0	
32		Trns		3	20	4		-184	12	0		-152	8	0	
33		Unkw		1	0	8		-75	0	0		-39	0	0	
34		Lgdn		5	292	20		-178	3	0		-1720	289	56	
35		AlpP		4	21	8		-288	15	0		-167	5	0	
36		Thrc		1	14	7		-408	13	0		115	1	0	
37		MrtC		2	164	7		-306	12	0		-1097	152	11	
38		AlpG		1	49	4		238	6	0		-652	43	2	
39		AlpM		2	196	2		585	109	1		-521	87	2	
40		MrtT		1	70	3		403	31	0		-457	39	1	
41		AplC		1	8	8		-387	4	0		369	4	0	
42		Brbr		2	19	6		-337	14	0		203	5	0	

Appendix A2: Diagnostics deities/provinces

Rows:

	name	mass	qlt	inr	k=1	cor	ctr	k=2	cor	ctr
1	JptrFl	2	73	38	1643	72	21	-104	0	0
2	Apl1	20	71	41	513	69	21	-95	2	1
3	AplG	2	242	7	1141	186	10	629	57	4
4	Ascl	5	457	6	109	5	0	-1003	452	28
5	AscH	9	180	12	-650	167	15	-178	13	1
6	Atts	1	250	3	888	95	2	-1133	155	5
7	Blln	2	49	13	725	39	4	-355	9	1
8	BnsE	2	18	4	-82	1	0	276	16	1
9	Clst	20	271	20	373	72	11	-618	199	39
10	Cmps	2	223	1	248	48	0	475	175	2
11	Cstr	1	1	2	79	1	0	24	0	0
12	Cats	2	45	3	-273	38	1	112	6	0
13	Ctpt	2	189	3	-734	189	4	-3	0	0
14	Cers	3	229	6	106	3	0	-918	226	14
15	DsAt	3	225	4	-750	223	6	-63	2	0
16	DsMg	1	251	1	-793	248	2	-93	3	0
17	DCns	1	211	1	342	55	0	575	156	1
18	Dian	30	43	11	-175	43	4	-10	0	0
19	DnAp	2	24	10	-69	1	0	439	23	2
20	DsPP	1	31	1	-201	15	0	201	15	0
21	DmnD	1	365	1	-759	365	3	32	1	0
22	Epon	5	201	3	380	113	3	334	88	3
23	Fats	1	3	3	-5	0	0	106	3	0
24	Fnts	2	70	5	-475	45	2	-358	26	1
25	Frtn	29	381	6	361	343	15	121	39	2
26	FrtnG	1	56	4	-452	21	1	-589	35	1
27	Gens	46	267	9	318	266	18	-24	1	0
28	Hekt	1	5	3	-157	4	0	107	2	0
29	Hrc1	36	26	10	-113	26	2	-9	0	0
30	HrcM	2	79	11	713	50	4	541	29	3
31	HrcG	1	679	9	1013	65	4	-3114	614	56
32	Hyge	1	93	5	434	21	1	-794	72	4
33	Isis	6	29	9	51	1	0	-279	28	3
34	IssM	1	38	1	-249	24	0	192	14	0
35	IssS	2	359	5	-212	11	0	-1194	348	16
36	Juno	10	32	3	11	0	0	-131	31	1
37	Jptr	239	641	13	-256	630	62	34	11	1
38	JptA	1	136	1	-529	130	1	-112	6	0
39	JptrDp	3	134	5	-616	134	5	-1	0	0
40	JptrDl	28	64	13	-186	38	4	153	26	3
41	JpDJ	1	11	16	240	2	0	596	10	2
42	JptrHl	2	10	31	-474	9	2	216	2	1
43	JptrFr	1	64	1	183	15	0	331	49	1
44	JptG	21	108	10	64	5	0	305	103	10
45	JptrHr	1	2	12	220	2	0	-6	0	0
46	JptJ	27	214	25	351	73	13	488	141	34
47	JpJG	4	434	8	1082	293	18	751	141	11
48	JpJM	8	331	3	-369	182	4	-333	148	4
49	JptL	1	373	1	-285	26	0	-1034	347	5
50	JptrMr	1	149	1	-492	147	1	-59	2	0
51	JptrMn	1	194	1	337	72	0	439	122	1
52	JptN	3	98	10	586	51	4	567	47	5
53	JptP	2	32	21	-691	30	5	196	2	0
54	JptrSr	1	61	2	-472	56	1	133	4	0
55	JptrSlv	1	42	5	-529	39	1	156	3	0

56	JuptrS1	1	3	19	-339	2	0	206	1	0
57	Lars	3	27	17	214	5	1	-449	22	4
58	Libr	19	289	13	-506	198	19	-345	92	12
59	LbrL	6	377	6	-814	374	16	-61	2	0
60	Luna	2	2	13	-84	1	0	-145	2	0
61	MgnM	4	54	1	-187	54	1	-4	0	0
62	Mairs	1	244	1	-741	242	2	58	1	0
63	Mars	26	553	12	673	507	47	203	46	6
64	MrsC	1	108	5	1027	85	3	534	23	1
65	MarsVictor	2	77	3	267	18	0	484	59	2
66	MarsVictori	3	177	7	734	123	6	488	54	4
67	MtrM	1	13	3	-228	12	0	74	1	0
68	Mtrs	14	250	36	900	164	45	651	86	31
69	Mrcr	51	648	48	1028	602	214	284	46	22
70	MrcM	2	308	8	1599	291	18	384	17	1
71	MnrV	16	407	7	544	377	19	-155	31	2
72	Mthr	38	103	10	-71	10	1	213	93	9
73	Nmss	12	509	6	-686	503	23	-73	6	0
74	Nptn	6	195	5	407	121	4	-320	74	3
75	Numn	7	190	9	677	182	12	136	7	1
76	NmnG	1	13	4	177	4	0	267	9	0
77	Nymp	19	93	9	-291	93	6	-2	0	0
78	PtrG	1	112	1	-572	112	1	14	0	0
79	PltP	1	31	3	27	0	0	453	31	1
80	Prps	1	4	11	-89	0	0	-339	4	0
81	Qdrv	5	225	3	249	51	1	457	173	6
82	Roma	1	173	10	1699	164	13	399	9	1
83	Sals	1	7	4	-152	4	0	-151	4	0
84	Strn	4	847	72	1731	98	52	-4793	749	528
85	Sdts	1	5	3	-94	2	0	133	3	0
86	Srps	2	107	2	-540	106	2	-50	1	0
87	Silvn	3	235	5	-873	233	9	-72	2	0
88	Slvns	9	220	10	-505	119	9	-464	101	10
89	Slvns	34	255	13	-423	255	24	0	0	0
90	SlvD	27	451	27	-931	451	92	-33	1	0
91	SlvS	7	574	5	-850	568	20	-88	6	0
92	SlvG	1	538	1	431	40	0	-1521	498	7
93	SlvN	1	21	2	-313	19	0	-116	3	0
94	Sol	13	152	3	-275	152	4	-2	0	0
95	SlMt	15	478	4	-504	476	15	35	2	0
96	Syri	1	43	2	-325	34	0	162	9	0
97	TrrM	4	306	4	-676	274	7	-230	32	1
98	ThrH	4	27	34	-465	15	4	423	12	4
99	Tutl	2	19	18	621	17	2	-192	2	0
100	Uncl	4	87	14	742	83	8	-161	4	1
101	Vens	9	296	24	17	0	0	-1230	296	71
102	Vest	1	13	7	347	8	0	-266	5	0
103	Vctr	12	169	12	562	167	15	60	2	0
104	Vrdc	1	226	2	1005	160	3	650	67	2
105	Vrts	2	147	2	562	132	2	-189	15	0
106	Vlkn	4	1	5	-27	0	0	53	1	0

Columns:

	name	mass	qlt	inr	k=1	cor	ctr	k=2	cor	ctr
1	Etrr	4	33	8	22	0	0	-380	33	3
2	Grmns	143	663	62	638	503	232	360	160	97
3	LtmC	3	78	16	293	10	1	-779	68	11
4	Pnnns	133	434	44	-519	434	143	16	0	0
5	Aqtn	5	41	21	510	35	5	-216	6	1
6	Hspn	25	17	31	143	9	2	-137	8	3
7	Nrbn	10	157	56	1305	157	65	63	0	0

8	Acha	5	244	17	688	70	9	-1085	174	29
9	AlpC	5	33	39	724	33	9	-90	1	0
10	Brtn	57	205	44	430	130	42	327	75	32
11	Daci	135	366	30	-376	339	76	-105	26	8
12	Dlmt	82	267	34	-396	200	51	-229	67	23
13	Grmn	46	185	43	464	124	40	327	62	26
14	Mcdn	9	42	16	-256	19	2	-279	23	4
15	Msnf	47	37	60	-205	18	8	213	19	11
16	Mssp	31	92	31	-404	89	21	68	3	1
17	Nrcm	47	13	27	-67	4	1	97	9	2
18	Pnnnn	92	440	25	-471	439	81	27	1	0
19	Ratc	20	228	24	703	212	39	193	16	4
20	AfrP	16	889	86	1140	126	81	-2802	763	649
21	Batc	17	70	21	193	16	3	-354	54	11
22	Blgc	14	106	19	520	104	15	75	2	0
23	Numd	7	285	9	382	55	4	-784	230	21
24	Syri	1	2	55	-215	0	0	432	1	1
25	Eprs	1	72	7	616	27	1	-784	44	3
26	Lstn	8	20	20	220	10	1	-224	10	2
27	VntH	8	84	20	14	0	0	-605	84	16
28	RgnB	1	11	10	-374	11	1	103	1	0
29	Aeml	1	13	16	481	9	1	-331	4	1
30	Lgdn	5	297	25	1584	280	52	386	17	4
31	Roma	5	5	10	11	0	0	-134	5	0
32	Ligr	1	1	2	-61	1	0	56	1	0
33	Trns	3	3	5	97	3	0	4	0	0
34	Unkw	1	9	10	202	1	0	456	7	1
35	AlpP	4	14	10	132	4	0	229	11	1
36	Thrc	1	28	9	-201	3	0	538	25	2
37	MrtC	2	313	9	820	93	6	-1264	221	20
38	AlpG	1	42	5	713	41	2	-65	0	0
39	AlpM	2	168	4	785	140	4	355	29	1
40	MrtT	1	276	4	394	21	1	-1376	255	11
41	AplC	1	6	10	-437	6	0	-69	0	0
42	Brbr	2	17	8	-231	7	0	284	10	1

Appendix B: Diagnostics deities/site type

Rows:

	name	mass	qlt	inr	k=1	cor	ctr	k=2	cor	ctr
1	Apl1	19	311	5	127	266	2	52	45	1
2	AplS	1	28	9	145	9	0	-207	19	1
3	Ascl	6	76	7	146	76	1	1	0	0
4	AscH	11	928	10	-439	910	18	-62	18	1
5	Blln	2	966	32	171	8	0	1867	958	112
6	Clst	20	995	36	-97	22	2	649	973	129
7	DsMg	1	19	9	166	12	0	-119	6	0
8	Dian	29	486	3	-94	328	2	-65	158	2
9	DnAp	3	84	3	143	71	0	-60	13	0
10	Frtn	35	354	6	-26	17	0	-119	337	8
11	Gens	54	525	3	60	273	2	-57	252	3
12	Hrc1	39	995	13	-281	990	25	20	5	0
13	HrcG	1	792	7	-906	790	10	42	2	0
14	IssS	3	375	5	-383	373	4	29	2	0
15	Juno	11	216	4	131	195	2	-43	21	0
16	Jptr	269	925	22	97	493	21	-91	432	35
17	JptC	1	43	8	129	10	0	-234	33	1
18	JptrDp	3	28	14	167	28	1	-15	0	0
19	JptrDl	35	162	35	50	11	1	-188	151	19
20	JptG	25	167	6	67	76	1	-73	90	2
21	JptJ	32	683	4	122	484	4	-78	199	3
22	Libr	21	149	11	135	143	3	-29	7	0
23	Mars	26	340	4	-1	0	0	117	340	5
24	MrsL	1	864	7	-1057	863	12	38	1	0
25	Mtrs	15	58	13	99	50	1	-40	8	0
26	Mtrn	49	965	84	83	17	3	616	948	289
27	Mrcr	45	379	4	-50	123	1	-71	256	4
28	MnrV	16	866	1	-76	387	1	-84	479	2
29	Mthr	43	588	4	88	324	3	-79	264	4
30	Nmss	15	852	2	120	560	2	-87	292	2
31	Nptn	7	745	1	119	411	1	-108	334	1
32	Numn	7	531	1	-105	318	1	-86	213	1
33	NmnG	1	22	7	163	17	0	-87	5	0
34	Nymp	21	991	118	-1131	987	224	-72	4	2
35	Prps	1	959	74	234	3	0	4199	956	257
36	Silvn	3	967	25	-1288	963	46	-89	5	0
37	Slvns	10	719	8	144	114	2	331	605	18
38	Slvns	39	438	15	77	64	2	185	373	21
39	SlvD	35	142	39	47	8	1	-188	134	19
40	SlvS	7	513	1	126	381	1	-74	132	1
41	SlMt	17	539	3	123	405	2	-71	134	1
42	Suls	2	997	312	-5942	996	597	187	1	1
43	Snxs	1	907	11	146	13	0	1223	894	35
44	ThrH	4	232	2	130	160	1	-87	72	0
45	Uncl	3	661	8	154	34	1	661	627	18
46	Vctr	13	747	2	121	439	2	-101	308	2

Columns:

	name	mass	qlt	inr	k=1	cor	ctr	k=2	cor	ctr
1	fort	350	134	101	17	4	1	-93	130	48
2	snct	8	979	266	142	3	1	2684	976	945
3	sttl	612	149	56	53	134	14	18	15	3
4	sttn	16	26	65	111	13	2	-110	13	3
5	bath	15	999	513	-2862	999	982	72	1	1