Francoprovençal: a spatial analysis of 'partitive articles' and potential correlates in Swiss and Italian varieties

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Abstract

In this paper, we focus on partitive articles (PAs), i.e., determiners which, generally, have an indefinite interpretation, and on one of their potential correlates, i.e., invariable DE, in Francoprovençal, a non-standardized, highly endangered Gallo-Romance language (cf. Zulato, Kasstan & Nagy 2018), and show the fine-grained spatial distribution of these elements in the Swiss and Aosta Valley (Italy) varieties.

Presenting several maps based on fieldwork data from Valais (Switzerland) and the Aosta Valley (Italy), we demonstrate that the spatial distribution of PAs and DE is more complex than reported in the literature: we complement the basic subdivision of Francoprovençal into two types, Francoprovençal A and B (cf. Kristol 2014, 2016), with a more nuanced picture, in which the morphosyntactic features of PAs play a crucial role: in Francoprovençal A, the presence of PAs depends on the syntactic context whereas, in Francoprovençal B, their presence is limited mainly to two areas, in which singular and plural PAs do not occur together (one area only has singular PAs whereas the other one only has plural PAs). We also show that there is no correlation between phonologically overt plural marking on nouns and absence of PAs; however, we found a correlation between overt *sigmatic* number marking on nouns and absence of PAs.

Keywords: Francoprovençal, partitive articles, spatial distribution, overt number marking on nouns, quantifier, negation

1. Introduction

Francoprovençal is a non-standardized and highly endangered Gallo-Romance language spoken today by about 110,000 to 160,000 speakers in France, Switzerland, and Italy (cf. Zulato, Kasstan & Nagy 2018: 13). It was never the official language of an administrative entity and never saw standardization. Nowadays, all speakers of Francoprovençal are bilingual, and for Swiss varieties, most of them are older than 70 years, with the notable exception of Evolène in the canton Valais in Switzerland where the local variety of Francoprovençal is still transmitted to the next generation (cf. Kristol 2016: 351). In the Aosta Valley, in Italy, due to successful language policy promoting the use of Francoprovençal, we also still find competent native speakers of all ages. Not only geographically, but also typologically, Francoprovençal can be considered a 'bridge' between French, Occitan and Italian dialects, but it is relatively underresearched in terms of its morphological or syntactic properties (but see e.g., Diémoz 2007 for subject pronouns and subsequent publications).

Since 2018, a binational project focusing on so-called 'partitive articles' (henceforth PA) in Francoprovençal varieties and Northern Italian Dialects (NIDs)[1] has contributed to a better understanding of the nominal morphosyntax of Francoprovençal varieties. In an important antecedent study to this project, Kristol (2014, 2016) has already shown a subdivision of French, Swiss and Italian varieties into two types according to their determiner systems: "Francoprovençal A", which comprises the Western varieties of the Valais (Switzerland) and the Northern varieties (in France and Switzerland), and "Francoprovençal B", which comprises

Southern Francoprovençal, that is, the Southern varieties spoken in France, the Eastern varieties in the Swiss canton of Valais and the Aosta Valley in Italy.

Francoprovençal A varieties have a gender distinction on plural definite articles (masc. *lu(z)*—fem. *le(z)*), like in Ibero-Romance systems, and they possess a fully-fledged PA, like French (which, however, does not seem to be categorically used, in the sense that invariable DE is also available, see Stark & Gerards 2020, Davatz & Stark 2021). In contrast to French, however, PAs in Francoprovençal A are also attested after quantifiers/quantity expressions like Fr. *beaucoup* 'a lot' and under the scope of sentential negation (cf. Kristol 2014: 40). Francoprovençal B varieties do not show, like French and unlike Italian, any gender distinction on the plural definite article (*le(z)*, with a sort of *liaison* consonant [z] realized only in front of vocalic onsets of the following word); correlated with this morphology, these varieties only have an obligatory (cf. Stark & Gerards 2020) invariable DE for indefinite mass singulars and indefinite plurals (with an optional allomorph *de-[z]* in the plural before vocalic onset). In addition, definite articles in some localities of the Francoprovençal B area (e.g., eastern Valais, Switzerland) exhibit the remains of an older subject vs oblique case system when they are singular, as illustrated in Table 1 (in Evolène, Valais, the plural definite article also has different forms - *lɣ* 'the.NOM' vs *lɛ* 'the.OBL' - in the masculine; cf. Kristol 2016: 11) (cf. Diémoz & Kristol 2014: 174-178, Kristol 2013).

In sum, the two main types of Francoprovençal are different with respect to some main features of the nominal domain:

Table 1. Differences between Francoprovençal A and B in the article system

Francoprovençal A	Francoprovençal B
Fully-fledged PAs: M.SG.: [dy] ([dɛ]); F.SG.: [dla] ([dɛ]) M.PL.: [de, de z]; F.PL.: [dle, dle z] ([dɛ])	Invariable DE: M.SG. and F.SG.: ([dɛ, d]) M.PL. and F.PL.: ([dɛ, dɛ z])
Gender distinction with plural determiners E.g., definite article: M.PL.: [lu, luz] F.PL.: [le, lez]	No gender distinction with plural determiners E.g., definite article: M.PL.: [le, lez] F.PL.: [le, lez]
No case distinction with singular definite articles: M.SG.: [lu, li, le, l] 'the.NOM/OBL' F.SG.: [la, l] 'the.NOM/OBL'	Partly preserved case distinction with singular definite articles: M.SG.: [lɣ] 'the.NOM' vs [lɔ] 'the.OBL' F.SG.: [lɣ] 'the.NOM' vs [la] 'the.OBL'

Source: Kristol 2014: 31, 36, 38-39; Kristol 2016: 11

This paper focuses on the first property, illustrated in (1) and (2), where the nouns *kwə ˈzən* 'cousins' and *te* 'tea' are preceded by a PA and the invariable DE, respectively:

(1)   (Troistorrents variety, from Kristol 2016:358)
         ˈɑʋo   *d le*   *kwə ˈzən*
         I.had   PA.F.SG   cousins
         'I had (female) cousins.'

(2)   Arbaz variety (Kristol 2014: 37; our glossing and translation)
       oe   kɔntrɑ   ɑ   tˈʊ   fo   fɹɪe   *de te*
       hmm   against   the   cough   has.to   to.make   DE tea […]
       'Hmm, against a cough one has to make tea…'

We will show the fine-grained spatial distribution of this property in Swiss Francoprovençal varieties and the Aosta Valley, based on fieldwork data assembled in the ALAVAL, an audiovisual atlas of Swiss varieties, plus additional data from fieldwork in the Aosta Valley in 2017 (cf. Ihsane 2018, Stark & Gerards 2020) and in Evolène, in Valais, in 2019 (cf. Davatz, Ihsane & Stark accepted); see section 2.1. We will present several maps in order to complement Kristol's basic subdivision with a more nuanced geographical picture and also to determine the spatial distribution of some morphosyntactic features of PAs like their number (singular vs. plural; also explicit number marking on nouns) and their appearance in certain syntactic contexts, in comparison also with invariable DE.

The study of number is central to a historical, but also typological explanation of the functional motivation of PAs and their semantic properties. First, there has been a lively debate on the functional relation between the singular and the plural PA in French – do they form a paradigm or are they split in modern French (for e.g., *des* could be the semantic plural of the indefinite article *un*)? The following set of examples shows unmarked uses of singular and plural PAs in French ((3a) and (3c)) and of the indefinite article *un* (3b):

(3)   a.   Je   cherche   du   vin   pour la fête.
             I   look.for   PA.M.SG   wine   for the party
             'I am looking for (some) wine for the party.' (specific reading
             impossible)
       b.   Je   cherche   un   vin   pour la fête.
             I   look.for   a   wine   for the party (= some
             sort, bottle etc; specific reading possible)
             'I am looking for a wine for the party.' (specific reading possible)
       c.   Je   cherche   des   boissons   pour la fête.
             I   look.for   PA.PL   beverages   for the party
             'I am looking for (some) beverages for the party.' (specific reading
             possible, cf. Ihsane 2008, 2013)

Morphology and diachrony (the PA stems historically from a fusion of the preposition *de* plus demonstrative/definite article, see Carlier 2007) indicate a paradigm du_{SG} – des_{PL} (cf. Anscombre 1996, Galmiche 1986, Kupferman 1998; Cardinaletti & Giusti 2016 for Italian *dei*). However, important differences between singular and plural PAs in their semantics (mass vs. count; impossibility vs. possibility to have a specific interpretation, respectively: cf. Ihsane 2008), but also in their syntactic distribution (as subjects, for instance, see e.g., Anscombre 1996, Ihsane 2018, 2021) suggest that du_{SG} – des_{PL} do not form a paradigm. If this is the case, it predicts that some varieties/languages may have only the singular or only the plural form of the PA (even though the morphosyntactic regularities of such varieties would not be directly transferable to varieties with both singular and plural PAs): the existence of such systems would show the possibility in Romance

to grammaticalize only one function (singular PAs as markers of the mass reading vs. plural PAs as markers of the plural indefinite count interpretation), which weakens the conception of the partitive article as one functional element with two different inflected forms.

Second, number marking on nouns is highly relevant to understand a variety's 'classification' system (cf. Herslund 1998), more precisely, its morphosyntactic inventory to mark the mass-count distinction (see e.g., Borer 2005: 108-109). For Romance, the corresponding hypothesis formulated several times in the literature on the reason for the existence of PAs (for diachrony see Carlier 2007, Carlier & Lamiroy 2014, for synchronic variation in (Gallo-)Romance see Stark 2008a and b, 2016, Gerards & Stark 2020) goes as follows: PAs compensate for the absence/loss of overt plural marking on nouns (weaker version); PA compensate for the absence/loss of a non-ambiguous sigmatic plural suffix (stronger version; based on the 'classificatory function' of PAs vs. *un* in the singular, see Borer 2005). In the latter version, the PA, at least in the singular, is analyzed as the 'mirror' exponent of overt (agglutinative) number (plural) morphemes in Romance nominals, as it indicates a mass reading as opposed to a count reading signaled by e.g., Spanish -*s* (see Stark 2008a and 2016 and Stark & Gerards 2020 for a first application of this analysis to Francoprovençal data, see also Pinzin & Poletto 2021 on NIDs). In Borer's 2005 analysis, either a plural suffix -*s* (as in English) or classifiers (as in Chinese) indicate a count reading of a nominal root (in a 'classification projection', a functional layer). Comparative work on Romance shows that there is a complementary distribution between Romance varieties with sigmatic plural marking on nouns on the one hand and those with PAs on the other[2] – which leads to the postulation of a functional complementarity of these elements. The weaker version of the hypothesis predicts the absence of PAs in varieties with overt plural marking on nouns (cf. Carlier 2007, Carlier & Lamiroy 2014), whereas the stronger version predicts the absence of PAs only in varieties with nouns overtly marked by a dedicated plural morpheme (agglutinative morphology, no portmanteau morphemes). In this respect, the Francoprovençal variety of Evolène is particularly interesting: it differs from other Francoprovençal varieties in showing such an overt plural marking: there exists a phonologically overt sigmatic plural suffix -s, restricted to masculine nouns: *tsɛˈva* 'horse'- *tsɛˈvas* 'horses'; *'tsat* 'cat' - *'tsas* 'cats' (cf. Paciaroni, Ihsane & Stark in prep.).[3] Feminine nouns may have a non-sigmatic plural form (vocalic plural marking), depending on the class of the noun: *'mata* 'daughter' - *'matɛ* 'daughters'; *'vatsə* 'cow' - *'vatsɛ* 'cows' (cf. Paciaroni, Ihsane & Stark in prep.). As the vocalic plural marking only appears on feminine nouns in Francoprovençal whereas the sigmatic suffix -*s* only appears on masculine nouns (in Evolène), the question whether the gender of the

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[2]   Note that in French, the plural -*s* on nouns is not pronounced. For instance, *jours* 'days' is pronounced /ʒur/ like *jour* 'day'.

[3]   In Evolène, the plural suffix -*s* appears on the masculine nouns of two inflectional classes, one in which the root does not change when it is suffixed (*tsɛˈva* 'horse'- *tsɛˈvas* 'horses') and another one in which the root changes (*'tsat* 'cat' - *'tsas* 'cats'). Note that there is another sigmatic suffix in Evolène, namely - ʃ, which appears on both masculine and feminine nouns. But when they are overtly marked for plural, feminine nouns in Francoprovençal generally have a non-sigmatic form, as mentioned in the text (see e.g., Paciaroni, Ihsane & Stark in prep.).

nouns that are overtly marked for number plays a role in the use of PAs arises and is thus correlated to the type of plural marking on N. Focusing on NIDs, Pinzin & Poletto (2022), for instance, observe that the absence of BNs does not correlate with the absence of plural marking on Ns, in general, but only with the absence of plural marking on masculine Ns; it is thus in the languages in which masculine nouns do not have an overt contrast between plural and singular that PAs are used. The authors therefore conclude that "the presence of plural marking on feminine Ns is irrelevant to the link with BNs." (Pinzin & Poletto 2022: 8).

Against the background provided above, we present three guiding hypotheses to be verified or falsified by means of our spatial analysis of Francoprovençal fieldwork data (see section 3):

1. We find PAs only in the Francoprovençal A area, including in constructions with quantifiers and negation.
2. Plural and singular PAs can show a different spatial distribution and do not necessarily always occur together.
3. a. There is a complementary spatial correlation between the distribution of overt number marking on nouns and PAs in our Francoprovençal data (weak version).
   b. There is a complementary spatial correlation between the distribution of overt *sigmatic* number marking on nouns and PAs in our Francoprovençal data (strong version).

The paper is structured as follows: after this introduction, we give an overview of our data and the methodology underlying our spatial analysis in section 2. In section 3, we present 12 maps on the spatial distribution of PAs and DE and the different morphosyntactic phenomena mentioned in hypotheses 1-3, and in section 4 we discuss their spatial distribution against the three hypotheses and previous findings in the literature. A short conclusion closes the paper.

2. Data and methodology

2.1. The data

Our study focuses on the Francoprovençal data in the *DiFuPaRo database* (https://difuparo.linguistik.uzh.ch/). This database is structured around 'partitive nominal groups', which are tagged for 83 different morphosyntactic features (e.g., presence/absence of a PA; syntactic function; gender, number and case; co-occurrence with a quantifier, with a sentence negation, etc.). The Francoprovençal examples in this database come from two sources: i) the ALAVAL (*Atlas Linguistique Audiovisuel du Francoprovençal Valaisan,* http://alaval.unine.ch/), an audiovisual atlas of Swiss Francoprovençal varieties, and ii) fieldwork. Those data were mainly collected via translation tasks, often leading to guided semi-spontaneous interviews.

The data from the atlas (i) represent all the ALAVAL examples containing a nominal group relevant to the study of partitive elements, i.e., 3,385 different noun phrases. The data gathered in fieldwork (ii) come from a session in the Aosta Valley

in 2017 (cf. Stark & Gerards 2020) and from another one in Evolène in 2019 (cf. Davatz, Ihsane & Stark accepted), resulting together in 1,664 nominals (added to the DiFuPaRo database by April 2021). In the former fieldwork session, a translation task was used to collect data, and, in the latter, both a translation task and a grammaticality judgment test were done. Although the DiFuPaRo database focuses on partitive noun phrases, it also includes, for instance, partitive pronouns and nominals resulting from a translation task with a PA in the test items but for which the informants produced nominals without a PA (see the Guide to the DiFuPaRo database: https://difuparo.linguistik.uzh.ch/). Such examples have not been taken into account in the present study. In order to study a homogeneous set of examples, we only considered the examples gathered via translation tasks. As such examples are tagged QUEST in the database, the term 'questionnaire data' is sometimes used in this paper. The data stemming from the semi-spontaneous interviews and from the grammaticality judgment test have been ignored.

The total number of Francoprovençal nominal groups relevant for our study and taken into account in this paper is 2,607: we considered positive contexts with a quantifier, positive contexts without a quantifier, and negative contexts, i.e., with a clausal negation (see sections 1 and 2.2).

For our spatial analyses, we considered data from 30 different local varieties of Francoprovençal, namely, the entry points of the ALAVAL and of our fieldwork (see Figure 1 for all the varieties and their locations). These varieties belong to the linguistic branches of Western Valais, Eastern Valais and Valdostan Francoprovençal. The top half of Figure 1 represents the Swiss canton of Valais (see Figure 1') whereas the lower half of Figure 1 is the Italian region of Aosta. In Switzerland, Francoprovençal is sporadically spoken in the red area of Figure 1', where French is the main language. The green circle in Figure 1' corresponds to the Francoprovençal A area (see section 1).

Figure 1. The 30 Francoprovençal varieties considered in the study
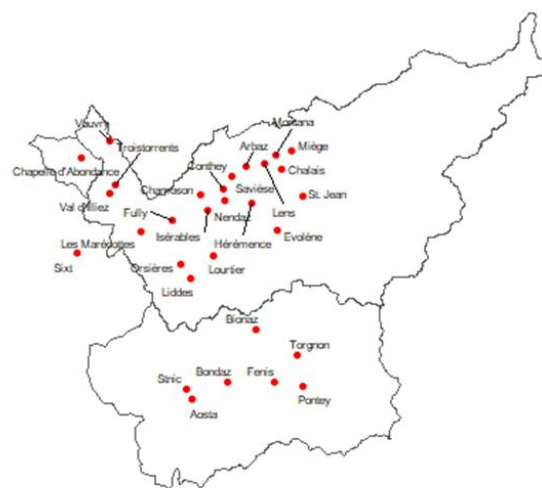

Francoprovençal varieties considered

Figure 1'. Official languages spoken in Valais, Switzerland: French (red) and German (green)[3]

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4   https://www.axl.cefan.ulaval.ca/EtatsNsouverains/valais.htm

How we divided the data into different sets for our analyses, and how we produced the maps presented in section 3 is reported in the next section.

2.2. The methodology

First, we extracted the questionnaire data (tagged QUEST), stemming from the ALAVAL and the fieldwork in the Aosta Valley and Evolène, from the DiFuPaRo database (https://difuparo.linguistik.uzh.ch/).[5] Then, for the purpose of the quantitative analyses, we divided this dataset (2,607 nominal groups) into different samples[6]:

1. One sample with *all* the nominal groups collected from the translation tasks. This set was used for the quantitative analyses of nominal number morphology, that is, the study of (non-)overt number marking on nouns (see section 3.2): 2,607 nominals.
2. One subsample of the dataset only consisting of nominal groups in positive contexts, without quantifiers like *beaucoup*, where in the Standard French counterpart the use of a PA is mandatory: 1,744 nominals. This subset was used to study the relative frequency of the PAs (i.e., the proportional frequency of PAs in comparison to all occurrences, PA and invariable DE) in the different Francoprovençal varieties.
3. One subsample of the dataset only consisting of nominal groups in positive contexts with quantifiers like *beaucoup*, where the use of the PA is ungrammatical in Standard French: 420 nominals. This subset was used to study the relative frequency of the PAs in contexts in which the presence of this element cannot be explained by its presence in the input, as there are no PAs in the Standard French input sentences.
4. One subsample of the dataset only consisting of nominal groups in negative contexts (without quantifier), where the PA is ungrammatical in Standard French: 413 nominals. This subset was used to study the relative frequency of the PAs in contexts in which the presence of this element cannot be explained by its presence in the input, as there are no PAs in the Standard French input sentences.
5. One subsample of the dataset only consisting of nominal groups in negative contexts with a quantifier: 30 nominals. In these contexts, the use of a PA is also ungrammatical in Standard French. This subset was used to study the relative frequency of the PAs in contexts in which the presence of this element cannot be explained by its presence in the input, as there are no PAs in the Standard French input sentences.

The dependent variables we were interested in are, first, the use of a PA vs. the use of invariable DE, and second, the phonologically overt number marking on the noun vs. the absence of phonologically number marking on the noun. As for the

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[5]   The R code with all the steps taken to transform the data and to build the respective maps is available at https://gitlab.uzh.ch/olivier-andreas.winistoerfer/difuparo.

[6]   The data used for the subsamples 2-5 can be found as Excel files at https://gitlab.uzh.ch/olivier-andreas.winistoerfer/difuparo. Sample 1, with all the nominal groups, is the total of these four Excel files.

independent variables, we considered the grammatical gender of the nominal group and the number of the nominal group. For each analysis of the spatial distributions, we counted the number of occurrences of the dependent variables with the independent variables, that is, with feminine/masculine noun phrases and with singular/plural noun phrases. We did this in order to see whether there is any correlation between the independent variables and the dependent variables.

For the relative frequencies of the dependent variables, we calculated the mean of occurrences of the variables for every single speaker (i.e., presence vs. absence of a PA or presence vs. absence of phonologically overt number marking on the noun) and then aggregated these means of the individual speakers in a grand mean for every single location, i.e., a mean of all the individual means of the speakers of one location. We did so in order to ensure valid comparisons between the data points in our analyses and to avoid overweighting of idiosyncratic tendencies since there are differences in the absolute numbers of occurrences for the individual speakers of the same location (as otherwise, the bigger number of absolute occurrences of one single speaker could have skewed the general tendencies of one datapoint, especially in the case of outliers).[7]

For the spatial visualization, we used *ggplot* (cf. Wickham 2016), an R package used to build graphics, and downloaded the shapefiles with all the geographical coordinates of France, Italy, and Switzerland (https://mapcruzin.com/) since the varieties of Francoprovençal considered in our study come from these three countries. In a second step, these shapefiles were reduced to the regions of Aosta Valley (Italy), Valais (Switzerland) and the specific villages from the administrative region Auvergne-Rhône-Alpes (France). These shapes were used as the ground layer for the graphics as they provide the contours of the region in question.

On this ground layer, the relative frequencies of the dependent variables were then projected as Voronoi polygons (a mathematical method to partition a plane into regions according to a given set of objects) with the R packages ggvoronoi (cf. Garrett et al. 2018) and ggrepel (cf. Slowikowski et al. 2018) for every single datapoint where data were available. Voronoi polygons are frequently used in spatial analyses to provide delimitation lines for spatial points (in our case local varieties of Francoprovençal) and to color them according to the values observed (cf. Sibler et al. 2012, Kretzschmar & Petrulevich 2020: 232). This way of data visualization is very common for geospatial inquiries that cover an area rather exhaustively (cf. Sibler et al. 2012: 8) - as is the case in our study of the Francoprovençal varieties in Valais, where the great majority of the local Francoprovençal varieties is considered. For the spatial points, the geographical location (longitude and latitude) of the varieties were used. The color range was chosen from tomato red (for 100%) to light grey (for 0%).[8] In the case of our spatial analyses, there are data for all of our locations (otherwise the locations would be colored in dark grey). In addition, to the bottom right of every map, we added bars with the total range of possible values as well as a color scale. These bars are

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[7]   See Appendix 1 for the total number of occurrences per speaker and location considered in this study.

[8]   This color scale is arbitrary but was chosen to ensure that differences in the relative frequencies are also visible to people with achromatopsia.

identical for every map so that the reader can put the color hues of the single varieties into context.

In a third step, a layer with all the municipalities which were not considered in the database was constructed and colored in white, e.g., the German speaking municipalities in the case of Valais (see Figure 1') or municipalities not considered in the Aosta Valley. This layer was built to make sure that the Voronoi polygons did not color regions which were not considered in the study.[9] Furthermore, three points of reference (Aosta, Martigny, Sierre) were added to render the maps clearer to readers who are not familiar with the geography of the region.

3. The results and the maps

In this section, we present our maps, which are based on the different (sub)samples of our questionnaire data (see section 2.2). In section 3.1, we focus on the maps representing the relative frequency of occurrences of the PA (in comparison to all occurrences, i.e., PAs and invariable DE) and in section 3.2 on the ones showing the overt number marking on nouns (in comparison to all occurrences, i.e., presence and absence of overt plural marking). We thus report the results for our two dependent variables in turn, first comparing proportions of PAs and invariable DE and then looking at the nouns of the dataset to see if they are overtly marked for plural or not.

3.1. The partitive article and invariable DE

The maps in this section are based on the subsamples 2-5 mentioned in section 2.2. They show the relative frequency of PAs in positive contexts without quantifier (§3.1.1), positive contexts with a quantifier (§3.1.2), and negative contexts (§3.1.3).

3.1.1. Positive contexts without quantifier

Figures 2-5 show that PAs are very frequently used in the local varieties of Chapelle d'Abondance, Troistorrents, Vauvry, Val d'Illiez, and Sixt, which correspond to the Francoprovençal A varieties, both in Haute-Savoie (France) for Chapelle d'Abondance and Sixt, and in the West of Valais (Switzerland) for the other varieties, see section 1. In this region, the PA is used in between 77.5% and 100% of the cases. Grammatical gender (Figures 2 and 3 for feminine vs. 4 and 5 for masculine) and number (Figures 2 and 4 for plural vs. 3 and 5 for singular) do not seem to play a role in the distribution of the PA in these varieties: only the masculine plural in Chapelle d'Abondance gets lower results (58.35%, Figure 4) in the Francoprovençal A area.

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[9]   In the case of the Aosta Valley, we decided to also apply the administrative borders of the locations considered, on top of the Voronoi polygons, as the local varieties studied would not cover the area as densely as in the case of the Francoprovençal varieties in Valais. By this, we wanted to avoid misinterpretations.

Figure 2. Relative frequency of the PA with feminine plurals

Figure 3. Relative frequency of the PA with feminine singulars

Figure 4. Relative frequency of the PA with masculine plurals

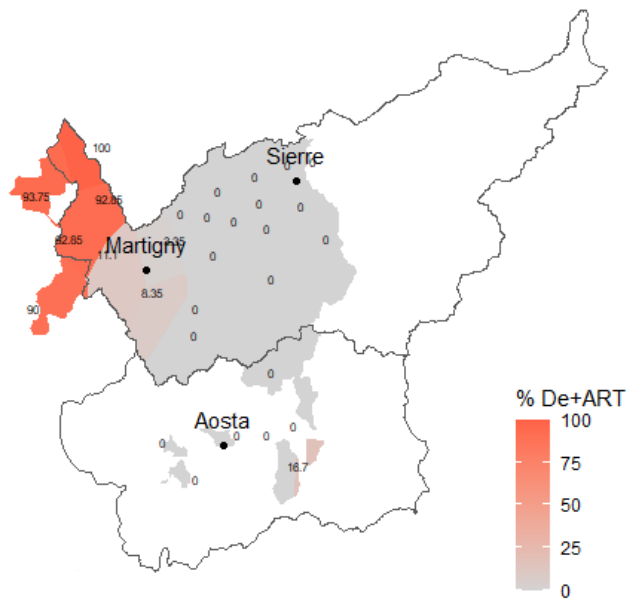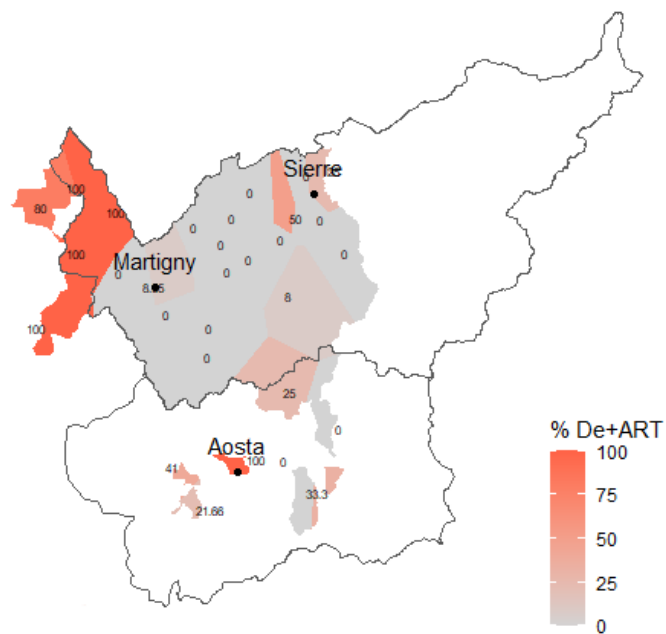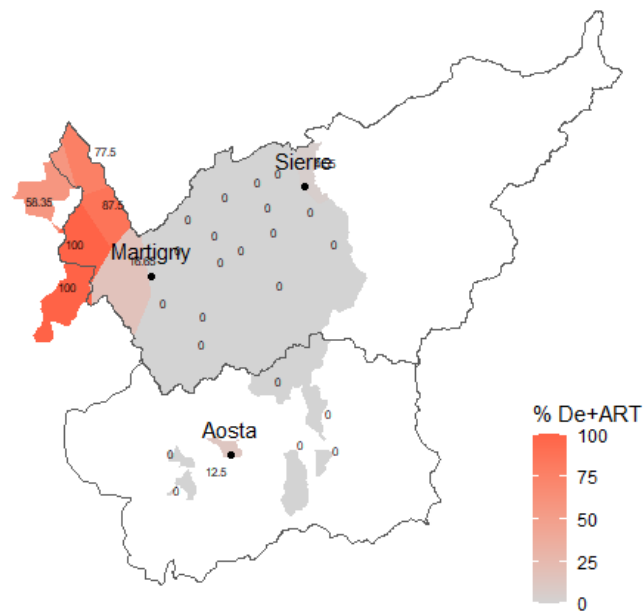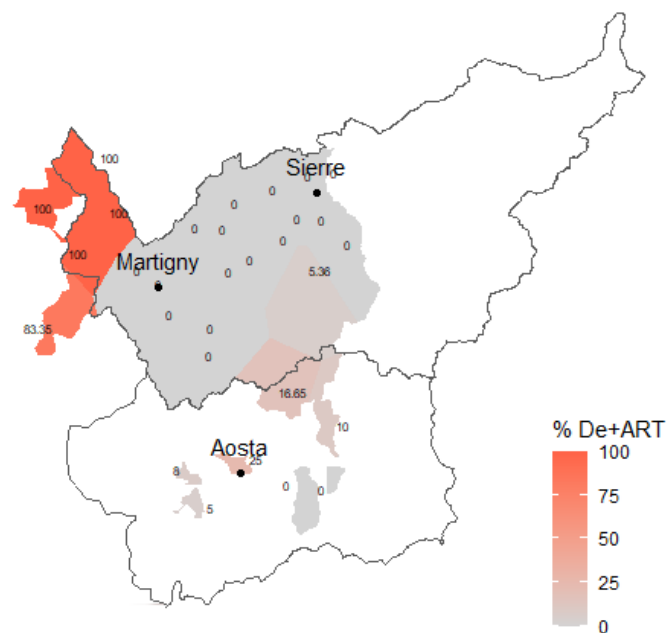Percentage of De+ART masculine PL - QUEST (POSIT)

Figure 5. Relative frequency of the PA with masculine singulars

Percentage of De+ART masculine SG - QUEST (POSIT)

Figures 2-5 show that, in addition to the Francoprovençal A area, there are several zones in the Francoprovençal B area where the PA is also attested. For instance, in Figure 2, we can observe that in the adjacent varieties of Fully and Les Marécottes, PAs are used with feminine plurals, even if the percentages are not high (Fully: 8.35%; Les Marécottes: 11.1%). Furthermore, in the variety of Pontey

(Aosta Valley), PAs can be observed in 16.7% of the cases with feminine plurals. With feminine nouns in the singular (Figure 3), one can observe considerably high frequencies in some of the Eastern varieties in Valais (Lens: 50%; Miège 25%) and in the varieties in the Aosta Valley (Aosta: 21.66%, Bionaz: 25%; Bondaz: 100%; Pontey: 33.3%; St. Nicolas 41%). If we turn to the masculine nominal groups in the plural (Figure 4), we get a picture quite similar to Figure 2, with rather low frequencies in Les Marécottes (16.65%) and in Bondaz (12.5%). None of the other Francoprovençal varieties (except Francoprovençal A) has PAs with the masculine plural. In the masculine singular (Figure 5), the trends get closer to the feminine singular, as there are PAs in the varieties of Aosta (5%), Bionaz (16.65%), Bondaz (25%), Saint Nicolas (8%), Torgnon (10%), although the numbers are considerably lower than with the feminine singular.

 Thus, to summarize, PAs are found in the Francoprovençal A varieties, but also in Francoprovençal B: in the Aosta Valley in the singular, and, in the plural, in the varieties of Fully and Les Marécottes, which are adjacent to the region where PAs are predominant.

3.1.2. Positive contexts with a quantifier

Interestingly, we can also observe the use of PAs with quantifiers (like *beaucoup*) in positive contexts, i.e., without a clausal negation. This is the case in Val d'Illiez (25%), and to a lesser extent in Chapelle d'Abondance (12.5%) and Sixt (6.25%). In the other varieties, the PA is not used in this context. Consider Figure 6.

Figure 6. Relative frequency of PAs with quantifiers

Percentage of De+ART with quantifier (QUEST - POSIT)
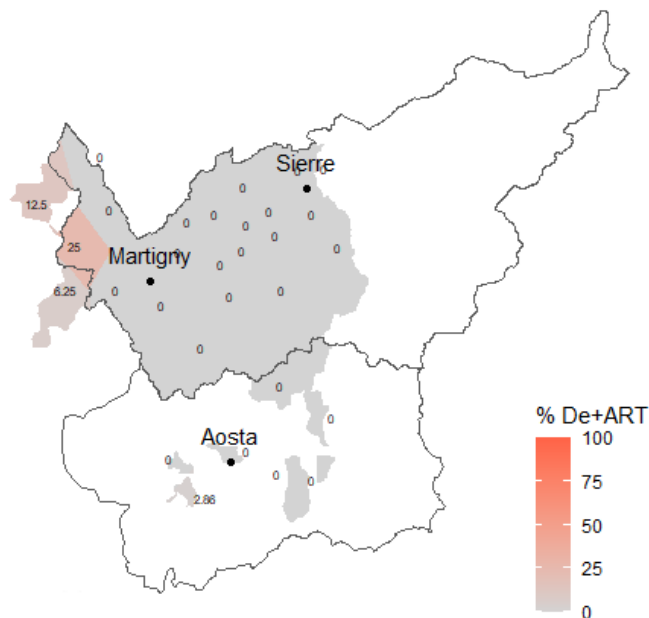
3.1.3. Negative contexts

PAs are also quite frequent in negative contexts, i.e., in the scope of a clausal negation. In the varieties of Francoprovençal A, there are occurrences, although the

PA is, in most cases, not the predominant form: Chapelle d'Abondance: 8.35%; Sixt: 33.3%; Troistorrents: 30.95%; Val d'Illiez: 57.5%; Vauvry: 20%. In the Francoprovençal B area, there are also three zones in which PAs are used in negative contexts: one in central Valais (Chamoson 10%), one in eastern Valais, representing three localities (Miège 10%, Chalais 14.3%, and Lens 16.65%), and one in the Aosta Valley (Aosta 4%, St-Nicolas 9%, Bondaz 33.3%).

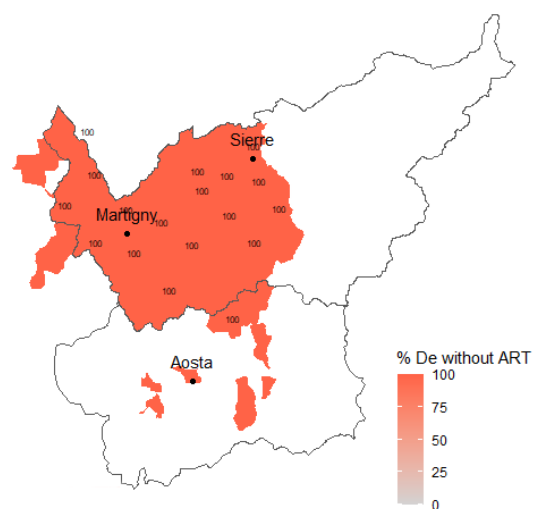**Figure 7.** Relative frequency of PAs in negative contexts
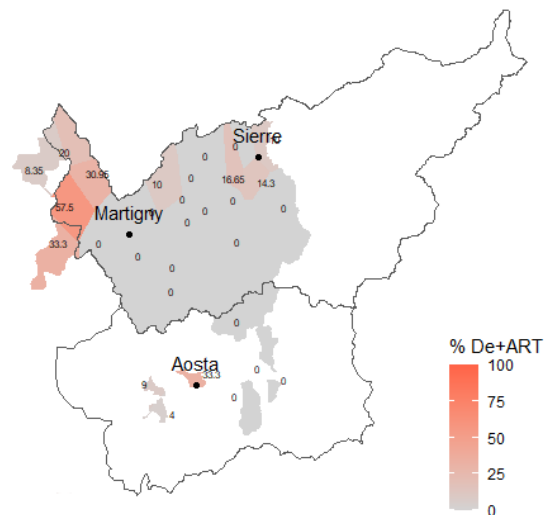
The above picture is completely different in negative contexts with quantifiers (Figure 8). Here, only invariable DE could be observed.

Figure 8. Relative frequency of invariable DE with quantifiers in negative contexts

3.2. Number marking on nouns

In this subsection, we report the relative frequency of phonologically overt number marking on nouns. The maps are based on sample 1 mentioned in section 2.2, namely *all* the 2,607 nominal groups collected from the translation tasks.

As Figure 9 shows, the range of the relative frequencies with overt plural marking on feminine nouns is quite large. While plural marking is completely absent in one variety (Sixt), it is either very frequent or predominant in the majority of the varieties. One can also observe that the relative frequencies in the Aosta Valley tend to be higher.

**Figure 9.** Relative frequencies of phonologically overt plural marking on feminine nouns
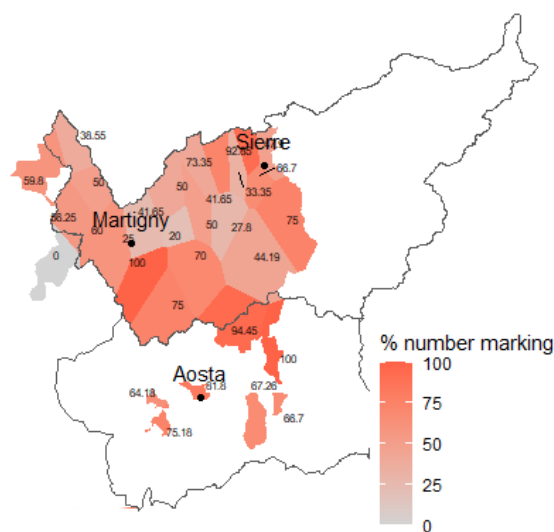
In Figure 10, on the other hand, one can observe that phonologically overt plural marking on masculine nouns is only found in the variety of Evolène, where the marking is sigmatic (see section 1). Here, the overt plural marking reaches a predominance in the speech of the informants with 57.6%.

Figure 10. Relative frequencies of phonologically overt plural marking on masculine nouns

Percentage of plural marking at N with M - QUEST (all)
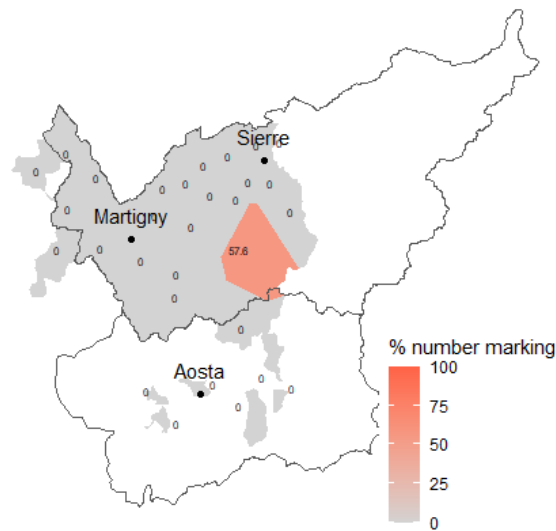
Since there may be a correlation between plural marking with respect to the gender of the noun, in particular the masculine, and the presence/absence of the PA (see section 1), we provide, below, a figure for the masculine nouns without a dedicated form for the singular.

Figure 11. Relative frequencies of masculine nouns without a dedicated form for the singular
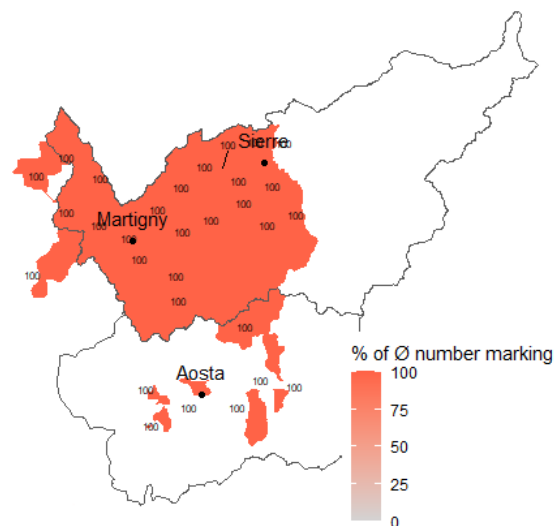
Null marking of singular at N with M - QUEST (all)

Figure 11 shows that, in the areas studied here, masculine nouns never have a dedicated form for singular number.[10] There are no exceptions.

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[10]   Figure 11 indicates the *absence* of phonologically overt singular marking on masculine Ns rather than the *overt* marking. The reason is that, in our data, there is not a

Let us now examine the combinations of our two dependent variables, i.e., presence/absence of a PA in the nominal group and presence/absence of overt number marking on the noun, to determine if there are any correlations. We focus on positive contexts (without quantifier) because considering several different syntactic contexts would interfere with our two variables.

Figure 12. PAs with nouns that have a dedicated form in the singular

Percentage of De+ART (with overt N SG) - QUEST (POSIT)
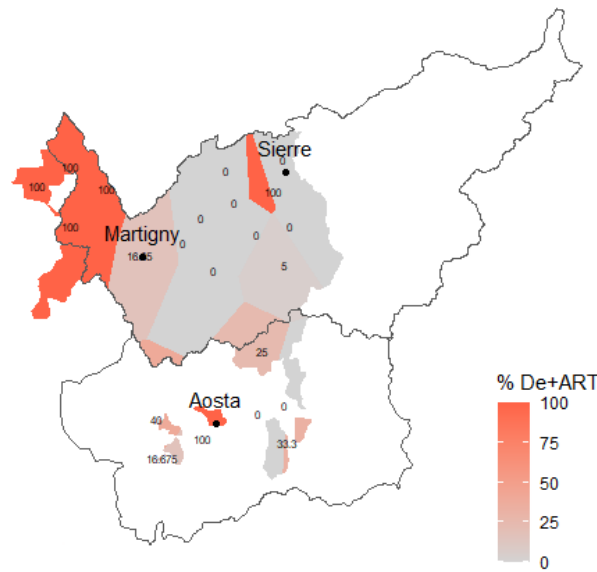
In Figure 12, one can see the relative frequencies of PAs with *feminine* nouns that have a dedicated form in the singular (since masculine nouns in the singular do not have such forms, see Figure 11), i.e., that build minimal pairs as to the phonological realization of their final vowel. This is only found for feminine nouns in our data, e.g., (4) (from Paciaroni, Ihsane & Stark in prep.):

(4)		Singular	Plural	Gloss	Location
	a.	ˈpɔmːa	ˈpɔmːə	'apple'	Saint-Nicolas, Aosta Valley, Italy
	b.	ˈvatːsœ	ˈvatːsɛ	'cow'	Fénis, Aosta Valley, Italy
	c.	ˈmata	ˈmatɛ	'daughter'	Evolène, Valais, Switzerland
	d.	ˈfavɔ	ˈfavɛ	'fava bean'	Saint-Martin-la-Porte, France

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single case of overt singular marking on masculine nouns, a result that cannot be represented in ggplot. Indeed, the complete absence of a feature (here, overt singular marking on masculine Ns) cannot be depicted in ggplot. Instead of representing the absence of overt number marking, Figure 11 thus gives the percentages of no marking for this feature.

As Figure 12 shows, in the Francoprovençal A area, as well as in Lens (north-east of Valais), and in Bondaz (Aosta Valley), the nouns that have a dedicated form for the singular co-occur with a PA in 100% of the cases. In other zones, the PA occurs less frequently with nouns with a dedicated form for the singular: this is the case of Les Marécotes (16.65%), adjacent to the Francoprovençal A area, and of the Aosta Valley (Aosta 16.67%, Bionaz 25%, Pontey 33.3%, and St-Nicolas 40%). Please note that the 'number marking phoneme' in these cases conveys also information on declension class and gender, i.e., it is a portmanteau morpheme (cf. Paciaroni, Ihsane & Stark in prep.).

Figure 13. PAs with phonologically overt plural marking (both linguistic genders)
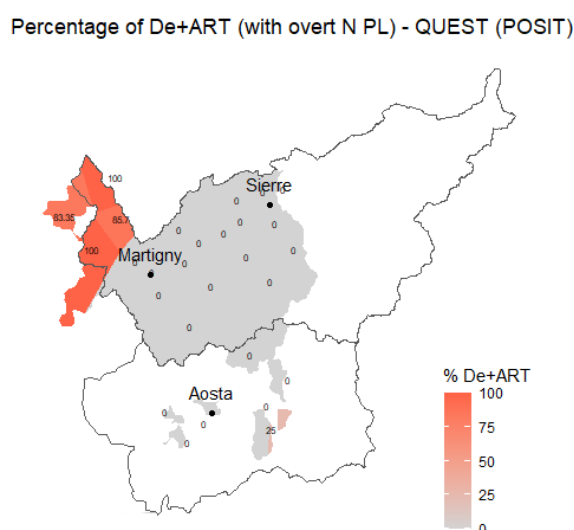

Figure 13 shows the relative frequencies of PAs with nouns of both linguistic genders that show phonologically overt plural marking. In the Francoprovençal A area, the nouns that are overtly marked for plural occur with a PA in 83.35%-100% of the cases. In the Aosta Valley, it is only the case in Pontey (25%). Since a dedicated agglutinative (sigmatic) plural suffix is only found on masculine nouns in Evolène (Figure 10), it means that all the marked areas in Figure 13 represent non-sigmatic plural marking on feminine nouns.

4. Discussion

The maps and descriptions provided in the previous section deepen our knowledge of the spatial distribution of the PA and invariable DE in Francoprovençal, not only in positive contexts, but also in sentences with a clausal negation or a quantifier (like *beaucoup*), and of overt number marking on nouns. They allow us to evaluate the role of gender and number, our independent variables, in this distribution and to investigate empirically the correlation between presence/absence of PA and number marking on nouns. In this section, we will discuss our findings against the hypotheses we formulated in section 1 in the light of the spatial information provided in section 3.

4.1. The PA and invariable DE

The maps representing the distribution of PAs and DE (Figures 2-5) show that there is one area in which PAs are prevalent, namely the west-most part of Valais (Troistorrents, Vauvry, Val d'Illiez) and the two data points in France (Chapelle d'Abondance and Sixt). Although this area corresponds to Kristol's Francoprovençal A area (see section 3.1.1), our maps show that Francoprovençal varieties do not represent two sharply-split geographic zones, with Francoprovençal A and Francoprovençal B varieties clearly separated in space. Indeed, in the 'Francoprovençal A area', DE is used next to PAs, sometimes even predominantly, depending on the syntactic construction, and, in the Francoprovençal B area, there are varieties in which PAs are found, even if this element is not prevalent. Let us take the facts in turn.

In the Francoprovençal A area, PAs are used predominantly but only in the positive constructions without quantifier (around 80-100%, with only one lower percentage, 56.35% for the masculine plural in Chapelle d'Abondance; see Figure 4). In negative sentences and in positive contexts with a quantifier, PAs and DE are both attested: PAs are most used in Val d'Illiez, with peaks of PAs at 57.5% in the former construction and at 25% in the latter. This means that DE is found in around 40% of the examples, or more frequently, in negative sentences, and in 75% of the examples, or more frequently, in positive contexts with a quantifier, that is, in inverse proportions to PAs. DE is therefore far from being excluded from the Francoprovençal A varieties.

The fact that, in constructions with a sentential negation and the ones with a quantifier, PAs are most frequent in Val-d'Illiez also implies that they are not used uniformly in the Francoprovençal A area, unlike in positive sentences without quantifier (around 80-100% everywhere, except in one variety). In negative contexts, the percentages of PAs decrease, from Val-d'Illiez (57.5%), towards the north (30.95% in Troistorrents and 20% in Vaudry) and south (33.3% in Sixt) of the Francoprovençal A area; there is also a clear decrease from Val-d'Illiez (57.5%) to the north-west, that is, Chapelle d'Abondance (8.35%); see Figure 7. In positive sentences with a quantifier, PAs are not used everywhere in the Francoprovençal A area (see Figure 6): they are mainly found in Val-d'Illiez (25%), but crucially, they are absent to its north (Troistorrents and Vaudry: 0%) and very little used to its south (Sixt: 6%). There is also a clear decrease towards the north-west of Val-d'Illiez (Chapelle d'Abondance: 12.5%). In other words, in Val-d'Illiez, some speakers use PAs in all three syntactic contexts, whereas to its north and to its south, PAs are used in positive sentences without a quantifier and, in a minority of cases (around 20-30%), in negative constructions; in these localities, speakers do not use PAs in positive contexts with a quantifier (or very little in Sixt, 6%). The situation in Chapelle d'Abondance is slightly different, as speakers use PAs in positive contexts without quantifier (but somewhat less often with masculine plural nouns: 56.35%), and significantly less both with a negation (8.35%) and a quantifier (12.5%). In sentences containing a negation and a quantifier, PAs are not used at all in any of the varieties under study, in Switzerland, Italy and France (see Figure 8): in these contexts, only DE is attested, which corroborates our observation that DE is found also in the Francoprovençal A varieties.

The above remarks lead to two conclusions, which are interconnected. First, there is an implicational scale in the use of PAs in the Francoprovençal A area:

(5)   If PAs are used in positive contexts with a quantifier, they are also used in negative contexts and in positive contexts without a quantifier.

          This is the situation in Val-d'Illiez. In the rest of the Francoprovençal A area, if the PA is used in negative contexts, it is also used in positive contexts without a quantifier. Since the percentages of PAs with a negation are rather low (decreasing from around 30% to 20%), it may also be that PAs are used only in positive contexts without a quantifier. In Chapelle d'Abondance, it seems that the use of PAs is analogous in negative and positive contexts with a quantifier (8.35% and 12.5% respectively): therefore, if a speaker uses PAs in one of these contexts, they generally also use PAs in the other one, plus in positive contexts without a quantifier.

          Second, Figures 6 and 7 clearly show that the syntactic context with a quantifier and the one with a sentential negation should be differentiated: PAs are used differently in these contexts (except in Chapelle d'Abondance), which supports Strebel's (2022) findings for colloquial French. In her work, Strebel examines the (non-)availability of PAs in the data from the OFROM (http://www11.unine.ch/), a corpus of regional French, and shows that colloquial French, contrary to what is sometimes assumed in the literature (cf. Kristol 2014: 40; Vincent 2017: 731, a.o.), does not differ so much from Standard French when it comes to the presence/absence of PAs in the scope of a sentential negation or after a quantifier like *beaucoup.* In Standard French, PAs are ungrammatical in those contexts, and in the colloquial data studied by Strebel, they are attested in only 1.3% of the cases. However, Strebel identifies several factors that favor the use of PAs in her data, one of which being the presence of the negative particle *pas* 'not': in the scope of this element, the percentage of PAs rises to 5.6%, which represents a significant difference from the regularities observed for quantifiers that calls for an explanation. Interestingly, this shows that PAs are more frequent in negative contexts than with quantifiers like *beaucoup*, which is also the case in our Francoprovençal data and which may illustrate the implicational scale mentioned above. At a formal level, these results mean that the negative particle *pas* and quantifiers like *beaucoup* should not be treated on a par, in particular, that they do not occupy the same position in the syntactic structure (cf. Strebel 2022: 64; Ihsane 2008; vs. Gerards & Stark 2020; Strebel, Ihsane & Stark 2022).[11]

          Let us now investigate the presence of PAs in the Francoprovençal B area. Clearly, PAs are found outside the Francoprovençal A area (see Figures 2-5; also Stark & Davatz 2021).[12] However, they are not disseminated in the whole Francoprovençal B area: Figures 2-5 show that there are many localities, especially in the center of Valais, which do not have PAs at all. To see whether there is a pattern in the distribution of PAs, we examined our two independent variables in turn, grammatical gender and number. If we focus on the gender of the noun phrase (feminine in Figures 2 and 3 and masculine in Figures 4 and 5), no clear picture

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[11]   In addition, Strebel shows that the linear distance (1 or 2 words) between the negation *pas* 'not' and the DE/PA introducing the nominal group plays a role in the availability of PAs in negative constructions.

[12]   In negative contexts, the PA is also found in three small zones in the Francoprovençal B area, see Figure 7.

emerges: it is not possible to identify specific areas or varieties in which PAs are used in the feminine and/or in the masculine, although we can observe that PAs seem to be more widespread in the feminine than in the masculine. However, if we focus on the grammatical number of the noun phrase (plural in Figures 2 and 4 and singular in Figures 3 and 5), we see that, in the Francoprovençal B area, there are two main zones in which PAs occur, one to the south-east of the Francoprovençal A area (Fully and Les Marécottes; see Figures 2 and 4), and a second one, geographically non adjacent, to the south of Evolène, in the Aosta Valley (Bionaz and Bondaz; see Figures 3 and 5). Although PAs do not represent the prevalent option in these zones, their use is not negligible (between 8.35% and 16.65% in the first zone, taking into account both singular and plural, and between 16.65% and 25% in the second one, taking into account both singular and plural, with a peak at 100% in Bondaz for the feminine singular). Crucially, this sharply contrasts with other parts of the Francoprovençal B area, where the PA is not used at all (0%), as already mentioned.

The above discussion highlights a striking difference between the two zones with PAs identified in the Francoprovençal B area (i.e., south-east of the Francoprovençal A area and in the Aosta Valley, south of Evolène): indeed, the PAs in the former are exclusively plural, whereas the ones in the latter are exclusively singular (compare Figs. 2 and 4 with Figs. 3 and 5). Crucially, this means that grammatical number plays a major role in the distribution of PAs in the Francoprovençal B area, which is not the case in the Francoprovençal A area (recall Figures 2-5). Grammatical gender, in contrast, does not seem to play a role as both feminine and masculine PAs are attested in both zones. Furthermore, it is noticeable that feminine singular PAs are also found in two small zones in the north-east of Valais and in the Aosta Valley (Bondaz; see Figure 3), suggesting that feminine singular PAs may have special characteristics, an observation also made by Strebel (2022) for colloquial French. In her study she shows that, in contexts with a negation and in contexts with a quantifier, *du* 'of.the.MASC.SG' and *des* 'of.the.PL' are significantly less used (p=0.03) than *de l'* 'of the'[13] and *de la* 'of the.FEM.SG', which is precisely feminine singular. As the former two are contracted forms, in contrast to the latter two, Strebel proposes that it is their morphology that impacts their (non-)use: as contracted forms are not transparent (semantically and syntactically they represent one element vs. two for *de l'/de la*), they are less frequent than non-contracted forms that are transparent. A factor impacting the use of PAs, possibly also in Francoprovençal, could thus be their morpho(phono)logy.[14]

Having discussed our first dependent variable, namely the distribution of PAs and DE, let us now examine the second one, that is, number marking on nouns.

4.2. Number marking on nouns

In the previous section, we identified several areas where PAs are used: i) the Francoprovençal A area, with both singular and plural PAs, although there are clear distinctions depending on the syntactic contexts examined; ii) a zone to the south-

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[13]   *De l'*, with a contracted form of *le/la* 'the.SG', occurs before words starting with a vowel.

[14]   The specificities of the feminine singular will be examined in future work. For reasons of space, in this paper, we focus on the two areas where PAs are used both in the masculine and in the feminine in the Francoprovençal B area.

east of the Francoprovençal A area, with only plural PAs (both genders), and iii) a zone in the Aosta Valley, to the south of Evolène, with only singular PAs (both genders); see also footnote 14. The question we are tackling here is whether the distribution of PAs correlates with overt number marking on the noun. We first focus on overt plural marking on nouns since a prediction we are interested in is that Francoprovençal varieties with such marking do not have PAs (Hypothesis 3-a, the weaker version) or that Francoprovençal varieties with a dedicated plural morpheme (usually sigmatic in nature) do not have PAs (Hypothesis 3-b, the stronger version), and vice versa, i.e., varieties without phonologically overt plural marking on nouns or without a dedicated plural morpheme on nouns, respectively, have PAs.

What is striking when we examine the spatial distribution of overt plural marking on nouns without having a closer look at the type of plural marking (Figure 9 for feminine and Figure 10 for masculine) is that there is no clear correlation with the areas in which PAs are used (Figures 2-5): feminine nouns are overtly marked for plural in nearly all the areas covered by our study, to various degrees (with 1 exception; see Figure 9), and masculine nouns are overtly marked for plural only in Evolène, which is not in the PA-zones, (i)-(iii), mentioned above. This is interesting for several reasons. First, since feminine nouns are marked for plural everywhere, to some extent, it includes zones (i)-(iii). However, since, in these PA-zones, feminine nouns are not always marked for plural (e.g., between 39-60% in the Francoprovençal A area, except Sixt, 0%), and since two of these PA-zones, (ii-iii), have PAs as a minor option (compared to DE), it implies that all four logically possible combinations between presence/absence of PA and presence/absence of overt plural marking on the noun are attested with feminine nouns. For instance, some feminine nouns marked overtly for plural may occur with a PA (e.g., in the Francoprovençal A area) whereas others do not occur with a PA (e.g., in the eastern parts of Valais considered here, where only DE is used). Conversely, some feminine nouns not overtly marked for plural may occur with a PA (e.g., in zone (ii)), whereas others do not occur with a PA (e.g., in the center and south of Valais). Second, with masculine nouns, the situation is particular: indeed, masculine nouns are overtly marked for plural only in Evolène, where PAs are unavailable; this however does not imply that, with masculine nouns, PAs are only *un*available when nouns are marked overtly for plural: there are many varieties in which masculine nouns are not marked for plural (Figure 10) and in which PAs are not used (Figures 2-5): e.g., central Valais. Neither does it imply that, when masculine nouns are not overtly marked for plural, they occur with a PA: masculine nouns can be plural with no overt marking (i.e., outside Evolène) and occur with PAs, as in, for instance, the PA-zones (i)-(iii) we identified; masculine nouns can also be singular and occur with a PA (see the discussion of Figures 11 and 12 below). This means that in Francoprovençal, nominal groups can lack overt number marking altogether, something which is typologically striking and semantically strongly marked.

In sum, except for Evolène where overt plural marking on masculine nouns and absence of PAs go hand in hand, our analyses show that there are no spatial correlations between overt plural marking on the noun and the (un-)availability of PAs. However, while we cannot state in a generalized way that Francoprovençal varieties with overt plural marking on nouns do not have PAs (or that the absence of plural marking on the noun leads to the necessity of using PAs (see also Pinzin

& Poletto (2022) for an analysis of NIDs)), it still holds that a dedicated form for the plural suffix (only attested in Evolène) does not cooccur with PAs, and vice versa, i.e., no variety with PAs also has unambiguous sigmatic plural marking on nouns.

Let us now focus on the (un-)availability of PAs in correlation with number marking, taking the nouns with a dedicated form for the singular and the ones with overt plural marking separately (for both genders; Figures 12 and 13). A general observation is that PAs and overt number marking on the noun are not in complementary spatial distribution, and this independently of the number of the nominal group (singular vs. plural). We will first consider all the nouns that have a dedicated singular form in clear opposition to the respective plural form and then all the nouns that are overtly marked for plural. What we can observe is that nouns that have a dedicated singular form occur with a PA in 100% of the cases in several areas (Francoprovençal A area, Lens in the north-east of Valais, and Bondaz in the Aosta Valley), and less often in Les Marécotes and the Aosta Valley (between 16.6%, in Les Marécotes and in Aosta, and 40% in St-Nicolas, with, in between, Bionaz 25% and Pontey 33.3%; see Figure 12). This indicates that having a dedicated singular form is probably not functionally linked to the existence of PAs (= they do not signal 'singular', but mass). We also see that nouns that are overtly marked for *plural* occur with a PA in the Francoprovençal A area (83.35%-100%) and in Pontey (25%); Figure 13.[15] Conversely, this means that DE is found with nouns overtly marked for number in inverse proportions to PAs. Interestingly, two areas can be identified where nouns have dedicated singular and plural forms and occur with a PA: the Francoprovençal A area and Pontey. This, of course, does not imply that in these varieties PAs do not occur with nouns that are not overtly marked for number. In sum, we can conclude that there is no spatial correlation between the availability of PAs and the distribution of overt number marking on nouns in Francoprovençal. This, however, only holds when both sigmatic and non-sigmatic plural markings on nouns are taken into consideration (Hypothesis 3-a, see section 1) but not when the two types of plural markings are distinguished (Hypothesis 3-b, see section 1) since sigmatic plural is found in only one location, in which there are no PAs.

The above discussion leads to two important general conclusions on number marking on noun phrases. First, in Francoprovençal, some noun phrases are overtly marked for number twice, once on the noun and once on the PA, and, second, some noun phrases are not overtly marked for number at all since the noun may be unmarked and occur with DE, which is invariable. Let us take double marking of number first and then total absence of number marking.

Double marking of plural is only possible in our data with a PA and a feminine noun. This is so because masculine nouns are not overtly marked for plural, except in Evolène, where PAs are unavailable (DE is invariable). Double marking of singular is only possible with a PA and, again, a feminine noun. This is so because masculine nouns do not have dedicated singular forms (as they are usually unmarked for number in Francoprovençal, Figure 11). Total absence of

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[15] Note however that, since masculine nouns are overtly marked for plural only in Evolène, the results for the plural in Figure 13 (outside Evolène) must concern feminine nouns.

overt plural marking in a noun phrase is possible when DE is used, independently of the gender of the noun: indeed, masculine nouns are not marked for plural (except in Evolène), and neither are some feminine nouns (see Figures 10 and 9, respectively).[16]

Having considered overt singular and overt plural marking on nouns, for both genders, we can now concentrate on masculine noun phrases. Indeed, according to Pinzin & Poletto (2022), it is the number marking on masculine nouns that is the relevant factor at play in the (un-)availability of PAs (section 1): the PA is used in languages in which masculine nouns do not have an overt contrast between plural and singular (to compensate for the absence of bare nouns). Let us see if our spatial analyses support this observation or not. Since masculine nouns are marked overtly for number only in Evolène (Figure 10 for plural, Figure 11 for singular), it means that only this variety has an overt contrast between the masculine singular and plural forms. According to Pinzin & Poletto, PAs should therefore be used in all the Francoprovençal varieties under study here, except in Evolène. Although it is true that PAs are not available in Evolène, where DE is used, it is not correct that PAs are used everywhere else, as discussed in section 4.1 (Figures 2-5). Furthermore, it is not the case that the Francoprovençal variety in Evolène has bare nouns, a property that would contrast with the other varieties: none of the varieties under study have bare nouns. The speakers of our study used DE where there was a PA in the French input sentences, never bare nouns, suggesting that DE should be systematically taken into account in the analysis of indefinite nominals. If we zoom out of the microlevel, however, and consider Francoprovençal in general, as one Gallo-Romance 'language', without focusing on each variety, then, generally, masculine nouns do not have an overt contrast between plural and singular (Evolène would be 'noise'). Consequently, the prediction that PAs should exist in Francoprovençal, at a macro level, is correct.

5. Conclusion

We formulated, at the end of section 1, three hypotheses that guided the spatial analysis of fieldwork data of the Francoprovençal area assembled in the DiFuPaRo database. They are repeated here, with ticks and crosses for illustrative purposes when they are confirmed or falsified, respectively:

1. We find PAs only in the Francoprovençal A area, including in constructions with quantifiers and negation. ☒
2. Plural and singular PAs can show a different spatial distribution and do not necessarily always occur together. ☑
3. a. There is a complementary spatial correlation between the distribution of overt number marking on nouns and PAs in our Francoprovençal data (weak version). ☒

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[16]   The map for feminine nouns with a dedicated singular form (not included in the paper for reasons of space) shows that feminine nouns do have such marking everywhere, except in two varieties (Sixt and a variety in central Valais), to various degrees (between 8.35% to 33.95% in Valais but with higher percentages in the Aosta Valley: 70.7-100%, with one exception at 39.3%).

b. There is a complementary spatial correlation between the distribution of overt *sigmatic* number marking on nouns and PAs in our Francoprovençal data (strong version). ☑

The above discussion allows us to reach firm conclusions for all three hypotheses. Let us start with Hypothesis 1, which is composed of two claims, first, that PAs are found only in the Francoprovençal A area, and, second, that PAs are used in constructions with sentential negation and in constructions with quantifiers like *beaucoup*. Both claims are falsified by our spatial analyses: since PAs are used in at least two zones of the Francoprovençal B area, the first claim is at least overgeneralizing; and since, in the Francoprovençal A area, PAs are not systematically used in constructions with a quantifier or a negation, the second claim is also not correct. Therefore, Hypothesis 1 has to be rejected.

As for Hypothesis 2, which speculates on the existence of a difference in the distribution of singular and plural PAs, it is verified. Indeed, we saw that, in the Francoprovençal B area, some varieties only have plural PAs, whereas others, in a non-adjacent area, only have singular PAs. Although, at this stage, we do not have an explanation for this distribution, it clearly shows that singular and plural PAs that point to a non-paradigmatic relation of the two, and, hence, that our hypothesis is confirmed.

Hypothesis 3 can be rejected in its weaker form (Hypothesis 3-a): there is no complementary spatial correlation between the non-marking of plural on nouns and the presence of PAs. There is, however, confirmation of the stronger form of the hypothesis (Hypothesis 3-b): in the only locality where sigmatic, unambiguous plural marking on (masculine) nouns is available, i.e., Evolène, we do not find PAs. And no Francoprovençal variety of our data set with PAs also possesses unambiguous sigmatic plural marking.

The absence of bare nouns and the role of invariable DE do not allow us to directly apply Pinzin & Poletto's (2022) findings to Francoprovençal, but we could confirm the general correlation they found for the NIDs also for our data, i.e., the absence of plural marking on masculine nouns and the existence of PAs.

Further research is needed now on at least two intriguing phenomena: the role and function of DE in the class of indefinite nominal determiners in Romance and the complete absence of number marking on noun phrases, which is highly marked typologically and semantically, at least for noun phrases in argument position.

List of abbreviations used in the article:

ART	Definite article (as component of the Partitive Article)
F	Feminine
M	Masculine
N	Noun
NID	Northern Italian Dialect
NOM	Nominative
OBL	Oblique
PA	Partitive Article
PL	Plural
POSIT	Positive sentence
QUEST	Questionnaire, a tag used in the DiFuPaRo database for data stemming from translation tasks and questionnaires
SG	Singular

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