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Complex Trajectories of Legal Status among Senegalese Migrants in Europe

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Abstract

This paper will examine how European contexts of reception produce irregularity among Senegalese migrants. What are the trajectories of legal status of Senegalese migrants? What factors can explain the complexity and turbulence of these trajectories? How do these trajectories vary by context of reception? How do the social origins of migrants influence their trajectories of legal status? Using longitudinal life-history data from the MAFE-Senegal project, this paper will employ sequence analysis techniques to analyze these complex trajectories. Preliminary results indicate that initially undocumented Senegalese migrants more time undocumented, but tend to access legal status at some point, while even Senegalese migrants who arrive legally spend some time in undocumented statuses. Measures of both transversal and longitudinal entropy are higher in France and among initially documented migrants. Analysis of sequence distances reveals four types of legal status trajectories, with an undocumented trajectory more common in France and among initially undocumented migrants.

Irregular migration to Europe has attracted political outcry and media attention, with irregular flows from sub-Saharan Africa in particular provoking fears of an “invasion” of “fortress Europe.” Despite this concern, irregular migration in Europe in general and irregularity among African migrants in particular are poorly understood phenomena. This paper will examine how European contexts of reception produce irregularity among Senegalese migrants.

Existing theories of the production and consequences of undocumented migration built on a unitary context of reception and a simplified conceptualization of irregularity cannot satisfactorily explain irregular migration and its consequences in Europe. This research will fill these gaps by asking how multiple contexts of reception produce complex trajectories of migrant irregularity. While this research is vital for understanding irregular migration in Europe, it will also help open new theoretical perspectives valuable for future research on irregular migration in other contexts. It will also lead to further research on how complex trajectories of legal status shape the integration of Senegalese migrants into their host societies as well as their ongoing participation in the development of their sending societies.

Literature Review

This paper will analyze the legal-status trajectories of Senegalese migrants in Europe. While many empirical studies operationalize legal status as a simple dichotomy of undocumented vs. documented, this strategy can mask significant and potentially meaningful heterogeneity in legal status that arises from non-overlapping policy domains. In cross-sectional terms, an undocumented status can result from any combination of illegal entry, residence, or work. Jandl (2004) employs these distinctions to generate a typology that includes six categories of clandestinity and argues that no accurate accounting of illegal migrant flows and stocks can occur without such a fine-grained conceptualization. Ruhs and Anderson (2010) distinguish between compliance, semi-compliance, and non-compliance in examining the labor-market participation of immigrants in the United Kingdom. They argue that migrants, employers, and the state recognize distinctions between different kinds of illegality, and demonstrate that the state of semi-compliance (legal residence combined with working in violation of employment restrictions) allows both migrants and employers to benefit while attracting little attention from the state.

They also find that non-compliance stemming from illegal entry attracts the most severe sanctions by the state and provokes the most fear among migrants; this leads to interesting theoretical questions about how different legal statuses might be linked to different kinds of stigma or different *habitués* among migrants. These studies show that a simple legal/illegal dichotomy would suppress important findings.

Considering longitudinal change over time also makes a simple legal-status dichotomy unappealing. While illegal entry can only occur at one point in time for any given spell in a destination country, illegal status can obviously be regularized after entry. Migrants could also conceivably experience changes in legality of residence and work multiple times even following legal entry or regularization. Recent research focusing on irregular migration “careers” explicitly accounts for change over time in legal status and argues that differences in career trajectories can shed light on systematic properties of migration flows (Cvajner and Sciortino 2010). An approach that recognizes the longitudinal nature of legal statuses is especially important in the European context, where migrants are subject to a jumble of national and supra-national policies including periodic regularizations (Jandl 2004).

Research Questions and Hypotheses

There is evidence that Senegalese migrants in Europe experience complex trajectories of legal status. French immigration policy separated work and residence permits for immigrants in 1945, and instituted entry visas in 1974 (Hargreaves 2007). Spain and Italy also started requiring visas in the early 1990s (de Haas 2008), and all three countries have undertaken a variety of regularizations. There have thus been ample opportunities over time for changes in legal status among Senegalese migrants. Indeed, change seems to be the norm, as most research contends that the majority of irregular African migrants actually enter Europe legally and become irregular only later when they overstay their visas (de Haas 2008; Lessault and Beauchemin 2009).

The research questions for this paper are the following: What are the trajectories of legal status of Senegalese migrants? What factors can explain the complexity and turbulence of these trajectories? How do these trajectories vary by context of reception, both in terms of country and historical period? How do

these trajectories vary by legal status upon entry? How do the social origins of migrants—including class, family composition, and region of origin—influence their trajectories of legal status?

This paper will thus analyze the complex legal-status trajectories of Senegalese migrants in Europe in a way that takes into account both multiple domains of legality and change in statuses over time with the objective of uncovering distinctive patterns of legal statuses. This paper will hypothesize that:

1. Legal-status trajectories of Senegalese migrants will vary by context of reception: increased turbulence will be evident in the new destinations of Italy and Spain as well as in post-1974 France;
2. Legal status trajectories of Senegalese migrants will vary by legal status upon entry, with those entering illegally subject to more turbulence than those entering legally;
3. Legal status trajectories of Senegalese migrants will vary by social origins, with lower-class, urban, single, male migrants experiencing increased turbulence.

Data and Methods

This paper will use longitudinal life-history data from the Migrations between Africa and Europe (MAFE)-Senegal project. This project interviewed 603 current Senegalese migrants in France, Italy, and Spain, along with 59 returned migrants (from Europe) in Dakar, Senegal. While some migrants in all of the study countries had experience in a variety of destinations, this study will only investigate time spent in France, Italy, or Spain. The retrospective life histories collected include the complete year-by-year residential and administrative histories of each respondent. We use the administrative histories to extract information on migrants' legal statuses in the following legal domains: entry, residence, work, and citizenship. We dichotomize entry status into visa (V) and no visa (NV) and residence status into residence permit (RP) and no residence permit (NRP). For the legal domain of work, a migrant can declare a work permit (WP), a special work permit (SWP), or no work permit (NWP). All migrants, by design of the study, are currently or formerly of Senegalese citizenship; if a migrant declares being a citizen of France, Italy, or Spain, we code this as "EU" (for "European Union"). We further assume that EU status supersedes all other declared legal statuses since destination-country citizenship confers full

rights of entry, work, and residence. We concatenated the strings representing migrants' statuses in these four legal domains to form a composite legal status for each migrant in each year. Although twenty-four combinations are possible among these four domains, our resultant categorical variable contains 13 legal statuses. An example may help to clarify: if a migrant of Senegalese citizenship in her third year in Italy declares not having a visa, but having a residence permit and a work permit, her legal status would be coded as "NV_RP_WP." Note that Senegalese citizenship is implicit. Table 1 provides additional information on the wording of the questions that elicited these statuses and the coding of responses. Since some of these migrants spent time in multiple destination countries, separation of migration spells yielded 716 legal-status sequences.

[Insert Table 1 about here]

I propose describe the complex trajectories of these legal statuses using a set of analytical techniques known as sequence analysis (SA). Introduced to the social sciences by Abbott and colleagues (Andrew Abbott 1995; Andrew Abbott and Tsay 2000), SA permits the examination of complex holistic trajectories comprising sequences of data and can help answer "questions about whether some process or series of events typically happens in a particular order" (Andrew Abbott and Tsay 2000:3). SA has been used in sociological analyses of the life course and careers (occupational, organizational, and criminal) and has started to be used in demography. Contrary to standard event-history approaches, SA is a data-driven approach that makes no assumptions about the stochastic process generating the data, thus allowing the emergence of insights that could be obscured by the very assumptions of more standard techniques. While SA is an evolving toolkit (see Aisenbrey and Fasang 2010 for a review of recent innovations), an algorithm known as optimal matching (OM) underlies most approaches to SA. OM allows the computation of distances between individual sequences, which are then typically subjected to cluster analysis to identify common patterns (Andrew Abbott 1995).

Our methods include examining aggregate measures of legal status, which do not explicitly account for order of states or time spent in destination. We shall refine the analysis by presenting transversal measures of sequence distributions and diversity, thus accounting for the evolution of

sequences over the time spent in destination. Our analysis will also include longitudinal measures, which account for both time spent in destination and individual ordering of legal-status states.

Preliminary Results

Aggregate Measures

Preliminary analyses of the MAFE-Senegal biographical data (see Figures 1-3) indicate that initially undocumented Senegalese migrants spend a higher proportion of their time undocumented, but do tend to access legal status at some point (i.e., they do not spend all of their time undocumented). Even those Senegalese migrants who arrive legally in Europe spend some time in undocumented statuses. This shows that trajectories of legal status are potentially complex and not reducible to legal status upon entry or to legal status at any one point in time.

[Insert Figures 1-3 about here]

Tables 2 and 3 demonstrate that considering multiple legal domains simultaneously yields a complex conceptualization of legal status that goes well beyond a simple dichotomy of documented vs. undocumented. Table 2 suggests a categorization of the legal statuses along Ruhs and Anderson's (2010) compliance continuum, and shows that considering multiple domains can complicate both a documented-undocumented dichotomy and a trichotomy of compliance levels. Indeed, it is clear that compliance depends in part on context. Nonetheless, taking their categorization as a guide, Table 4 shows that a fully undocumented (i.e. non-compliant) state accounts for 26.5% of all person-years across the three destinations and is the second most prevalent state among Senegalese migrants. Fully compliant states account for only 41.3% of all person years, and semi-compliant legal statuses make up almost a third of all statuses.

[Insert Tables 2 and 3 about here]

Transversal (Cross-Sectional) Measures

Figure 4 displays the distribution of legal statuses in the year of arrival at destination. Across all three destinations, approximately 31% of Senegalese migrants declare only a visa in their first year of residence, while 24% combine visas with either residence or work permits. Among the 45% not declaring

a visa, the majority (about 25% of the total) have neither residence or work permits. The figure also portrays variation in initial legal status across destinations. Migrants to Spain and France are more likely to combine visas with either residence or work permits, while migrants to Italy are more likely to enter on a simple visa. Undocumented entry is prevalent in all three destinations, ranging from about 20% in France and Spain to about 35% in Italy. All three countries demonstrate high levels of entropy in initial legal status, meaning that individuals are distributed across relatively many states. Interestingly, and contrary to our hypotheses, entropy is highest in France during the first year of migration, which suggests that migrants are taking advantage of more avenues of access into this established country of immigration than in the new destinations of southern Europe. Figure 5 presents the distribution of states in the year of the survey (2008). The differences between this distribution and the distribution of states in the first year of migration reflect the heterogeneity of durations of migration of the sample. In the year of the survey, the majority of migrants were in a documented status, but undocumented statuses were also common.

[Insert Figures 4 and 5 about here]

Figure 6 presents the transversal state distribution of the legal statuses of Senegalese migrants in France, Italy, and Spain. Time is measured from a common origin of the first year in any of these three destinations; the figure thus combines migrants from different contexts of reception and cohorts. The figure suggests that legal status is quite diverse in the first two years after arrival. From about the third year on, however, three states make up a large proportion of the total: a residence permit combined with a work permit and Senegalese citizenship (NV_RP_WP), a residence permit and Senegalese citizenship without a work permit (NV_RP_NWP), and an undocumented state (NV_NRP_NWP).

This evolution and stabilization of legal status is reflected in the transversal entropy plot (Figure 7). Transversal entropy is a measure of the diversity of states at a given time position, and is calculated as

$$h(p_1, \dots, p_s) = - \sum_{i=1}^s p_i \ln(p_i)$$

where p_i is the proportion of cases in state i at the given time position and s is the size of the alphabet of states. Figure 4 shows a high level of entropy during the first year in destination, followed by a sharp

spike in the second year, and a gradual decline thereafter. Thus, the diversity of states tends to decrease as migrants spend more time in the destination, suggesting a stabilization of legal status over time.

[Insert Figures 6 and 7 about here]

Figure 8 shows the transversal state distributions for each destination. These distributions demonstrate the same general pattern as the overall distribution, but some differences are apparent. The undocumented state (NV_NRP_NWP) accounts for a larger share of the total in Italy and Spain than in France during the early years in destination. While this state seems to decrease rapidly in the southern European countries, its prevalence remains higher in France. This may be due to differing regularization policies among these countries. Special work permits in conjunction with residence permits are most common in France and practically non-existent in Spain; this may be due to relatively large flows of students to France, who have limited rights to work while there. Access to host-country citizenship seems extremely limited across the board. Figure 9 presents the transversal entropy plots for each destination. All destinations show a spike in the early years of residence, indicating a diversification of legal statuses following entry. This diversity declines precipitously in Spain and less rapidly in Italy and France. Again contrary to our hypotheses, transversal is higher at all durations in France than in Italy or Spain.

[Insert Figures 8 and 9 about here]

Results thus far have confirmed variation in trajectories of legal status by context of reception, albeit in ways contrary to our expectations. Figure 7 presents variation in trajectories of legal status by initial dichotomous legal status (defined as the state of “NV_NRP_NWP” in the first year of migration). These transversal state distributions suggest that the prevalence of undocumented status is much higher at any duration for initially undocumented migrants than for those that enter legally. Nonetheless, this prevalence declines precipitously after the first year, suggesting that many of these so-called clandestine migrants are able to regularize their status once in the destination. Conversely, initially documented migrants experience an increase in undocumented status after the first year. Figure 10 confirms these trends: entropy for the initially undocumented rises from 0 in the first year (because all individuals are, by definition, in the same state) to about .5, suggesting that these migrants quickly diversify their legal

statuses. Nonetheless, entropy is higher among the initially documented, suggesting that they have access to more forms of legal status (including semi- and non-compliant statuses) than those who enter illegally. It thus seems that our second hypothesis of increased turbulence for the initially undocumented is not supported by the data.

[Insert Figure 10 about here]

Longitudinal (Within-Sequence) Measures

This section will investigate properties of individual sequences. We will first consider transitions between different legal-status states. One simple measure of within-sequence turbulence is the number of transitions. Table 4 shows that there are no statistically significant differences in migrants' number of transitions between destinations. Initially undocumented migrants, however, experience fewer transitions ($p < 0.001$). Table 5 presents a matrix of transition probabilities between legal statuses and is useful for examining the stability of different states. The leftmost column displays the origin states, while the top row displays the destination states; as a result, the matrix is not symmetric. Cells where no transitions were observed in the data are filled with a hyphen to increase readability. The diagonal of the matrix (highlighted in blue) shows the probability of remaining in a given state and is thus a measure of state stability. The most stable state is having EU citizenship, followed by the fully compliant "NV_RP_WP." States involving a residence permit or a work permit in the absence of other legal documents—which are either fully or semi-compliant, depending on the context—were also very stable. These results suggest that compliant legal statuses are durable. The non-compliant state (NV_NRP_NWP) was also very stable, with 91% remaining undocumented. This state also absorbed 25% of those originating in the visa-only state. Many of the other transitions involve losing a visa but retaining either work or residence permits; this suggests a progression from control of entry to control of residence and work as time in destination increases. Finally, transitions to EU citizenship were extremely rare, again suggesting that the destination States limit Senegalese migrants' ability to access naturalization.

[Insert Tables 4 and 5 about here]

Within-sequence complexity

We now turn to investigation of complexity within individual sequences. We have calculated within-sequence entropy, Elzinga's (2010) turbulence, and Gabadinho et al.'s (2011) complexity measures. Within-sequence entropy is analogous to transversal entropy, and can be interpreted as the uncertainty of predicting states within a given sequence. We compute entropy using the formula

$$h(\pi_1, \dots, \pi_s) = - \sum_{i=1}^s \pi_i \ln(\pi_i)$$

where s is the size of the alphabet and π_i is the proportion of the occurrences of the i th state in a given sequence (Gabadinho et al. 2009). Entropy is 0 when the sequence comprises only one state, while it is 1 when the sequence includes each possible state in the alphabet for the same duration. While this measure summarizes the diversity of states within a given sequence, it does not account for the ordering of states. Elzinga's turbulence, in contrast, is based on the number of distinct subsequences in each sequence of states and thus takes ordering into account. It is computed as

$$T(x) = \log_2 \left(\phi(x) \frac{s_{t,max}^2(x) + 1}{s_t^2(x) + 1} \right)$$

where s_t^2 is the variation of the state-duration for sequence x and $s_{t,max}^2$ is the maximum value of this variance given the total duration of the sequence. Higher differences in state durations lead to a higher variance and a less complex sequence, while a small duration variance leads to higher complexity. We calculate a final index proposed by Gabadinho et al.'s (2011), which they call complexity. It is a composite measure based on both the number of transitions in the sequence and the sequence's longitudinal entropy. Its formula is

$$C(x) = \sqrt{\frac{\ell_d(x) h(x)}{\ell(x) h_{max}}}$$

where h_{max} is the theoretical maximum longitudinal entropy of the sequence. The minimum value of 0 occurs when a sequence has a single distinct state, while the maximum occurs when the sequence

contains each state in the alphabet, each state has the same duration, and the number of transitions is equal to the length of the sequence minus one.

While calculated differently (especially with regard to the order of states), these measures are highly correlated (Pearson's r is greater than 0.88 for all three measures). Table 6 shows that that mean within-sequence complexity is generally higher in France, with no difference between the southern European countries¹. While this again runs counter to our hypotheses, it is an interesting finding that suggests that migrants in France have either more experiences or more resources to access a wider variety of legal statuses.

[Insert Table 6 about here]

Table 7 reports preliminary multivariate OLS regressions of each complexity measure on a variety of predictors, including initial dichotomous legal status, destination, and sociodemographic and social-class background characteristics. For two of the three within-sequence complexity measures, we find that Italy and Spain both have lower mean complexity than France, supporting the bivariate descriptive findings. Level of education was strongly positively associated with complexity. Being from Dakar (the Senegalese capital) was the sole sociodemographic background factor associated with significantly higher complexity scores, while having a parent still alive was associated with significantly lower within-sequence complexity. Being a returned migrant is associated with significantly lower complexity scores; what is unclear is what role this relative stability legal-status trajectories played in migrants' decisions to return to Senegal. Initial dichotomous undocumented status is associated with lower entropy and complexity, while it has no significant association with turbulence, lending some support to the previous findings that initial undocumented status is a relatively stable state.

[Insert Table 7 about here]

Sequence alignment techniques

¹ While the F-tests of between-destination differences vary in statistical significance, two-sample t-tests confirm that there are significant differences between France and Italy and France and Spain, with no differences between Italy and Spain.

We apply two techniques of calculating distances between categorical sequences: Elzinga's (2003) Longest Common Subsequence (LCS) measure of sequence distance, and Optimal Matching, popularized by Abbott (1995). While these two techniques have different analytical bases, they often give similar results. We applied both algorithms to our sequence data, thus creating a pairwise distance matrix to which we applied a clustering algorithm. The resultant cluster dendograms are displayed in Figure 12. These suggest a high degree of similarity in the distance matrices and are supportive of a four-cluster solution. Figures 13 through 15 display characteristics of the sequences in the four resultant clusters. These figures suggest that Type 1 sequences are dominated by the "NV_RP_WP" state, which indicates that migrants falling into this category are, for the most part, fully compliant. Type 2 sequences are dominated by the "NV_RP_NWP" state, indicating that migrants in this group experience trajectories marked by legal residence without a work permit. The "NV_NRP_NWP" state dominates Type 3 sequences, which suggests that migrants in this group experience an uncompliant or undocumented trajectory. Type-4 sequences display more diversity and are harder to classify, and as such may represent a residual category.

[Insert Figures 12-15 about here]

How do these types of trajectories of legal status vary by context of reception and initial undocumented status? Figure 16 presents the relationship between destination and type of trajectory. Type 1 is more prevalent in Spain and Italy than in France, while Type 3 is more prevalent in France than in the southern European countries. Given the literature that asserts that irregularity is a persistent facet of these new immigrant destinations, the fact that the "undocumented" trajectory is more common in France is somewhat surprising. Figure 17 displays the bivariate association between initial dichotomous legal status and type of trajectory. Perhaps not surprisingly, those entering with an undocumented status are more heavily clustered in the undocumented trajectory, while the majority of documented enterers have trajectories more marked by regularity of status. That said, approximately 45% of initially undocumented migrants to fall into documented trajectories, while approximately 15% of initially documented migrants can be classified in the undocumented trajectory.

[Insert Figures 16 and 17 about here]

We further explore the correlates of our typology of legal status in Table 8, which reports the results of a multinomial logistic regression. Type 1 serves as the reference outcome; the coefficients thus represent the change in the log-odds of associated with the predictor of being classified into the type under examination compared to type 1. The Spanish context of reception is significantly negatively associated with the log-odds of having a Type 2 trajectory, while there is no significant difference in the log odds of this type of trajectory between Italy and France. Being initially undocumented also is not significantly associated with the log odds of having a Type 2 trajectory. There is no association between context of reception and the log-odds of having a Type 4 trajectory, while initially undocumented status is associated with a lower log odds of falling into this category. Both context of reception and initially undocumented status have the strongest associations with having a Type 3 trajectory: migrants in Spain and Italy have significantly lower log-odds of having a Type 3 trajectory compared to migrants in France, and initially undocumented status is associated with a higher risk of having a Type 3 trajectory. These results thus confirm the bivariate results that showed that the undocumented (Type 3) trajectory is more common in France than in the southern European destinations and among initially undocumented migrants.

[Insert Table 8 about here]

Discussion

Migration research has demonstrated the importance of contexts of reception for understanding migrants' integration into destination societies. This research has assumed that immigration policies are a key facet of the context of reception as it is the main factor that mediates migrants' access to important social institutions in the destination country. Despite this importance, the complexity of legal status in both cross-sectional and longitudinal terms has not been fully theorized or explored. Different kinds of legal status can have different implications for different social institutions, and the evolution of

trajectories of legal status over time can impact migrants' trajectories of incorporation. It is thus important to expand the field's overly simplified and static notions of legal status.

This research attempts to fill these conceptual and empirical gaps by examining the cross-sectional and longitudinal complexity of legal statuses of Senegalese migrants in Europe. While popular perceptions of sub-Saharan African migration in general and Senegalese migration in particular link Africans with irregularities of legal status, this research has shown that undocumented legal status is only one of many states experienced by Senegalese migrants. The diversity of legal statuses that the migrants experience over time is high, although it does decline over time as migrants settle into their destinations.

This research has also attempted to link variation in national contexts of reception to transversal and longitudinal complexity of legal statuses. In keeping with prior research on the evolution of migration policies in Europe, we hypothesized that legal statuses of Senegalese migrants would be more diverse in the new destination countries of Italy and Spain, where migration controls have been more lax and regularizations more frequent, than in the traditional destination of France, where migration controls have been strict for many years. Our findings ran contrary to this hypothesis and suggested that diversity of statuses is higher in France. In addition, migrants in France experienced higher longitudinal within-sequence complexity. This unexpected diversity could indicate that migrants respond to stricter migration controls by strategically shifting status when such a transition is available, while laxer controls might result in less pressure to change status. The familiarity of Senegalese migrants with both the bureaucratic structures and the language of France due to a shared colonial past may also mean that it is easier for them to navigate the immigration-control regime, resulting in more instability in status.

Our research also points to important variation between initially documented and undocumented migrants. While we had hypothesized that initially undocumented migrants' trajectories would be less stable, we found that those who entered with documented status experience a greater transversal diversity of statuses and more longitudinal complexity. These results suggest that undocumented status is a more "durable" state than undocumented status, although it is important to note that substantial minorities of both entry types eventually experience changes in compliance. Our findings also point to a quadripartite

typology of trajectories of legal status, with a clearly defined undocumented type differentiated from other types of compliant and semi-compliant statuses. While most research suggests that undocumented or irregular status is more common in southern Europe than in countries with longer histories of immigration, our results show that the undocumented type is more common among Senegalese migrants in France than in Italy or Spain. This result is robust to controlling for time period and within-sequence complexities, and thus suggests a systematic difference between these contexts of reception. Future refinements to this research will attempt to untangle the factors that make these contexts of receptions distinct.

References

- Abbott, A. 1995. "Sequence analysis: new methods for old ideas." *Annual Review of Sociology* 21:93–113.
- Abbott, Andrew. 1995. "Sequence Analysis: New Methods for Old Ideas." *Annual Review of Sociology* 21:93-113.
- Abbott, Andrew, and Angela Tsay. 2000. "Sequence Analysis and Optimal Matching Methods in Sociology." *Sociological Methods & Research* 29(1):3 -33.
- Aisenbrey, Silke, and Anette E. Fasang. 2010. "New Life for Old Ideas: The 'Second Wave' of Sequence Analysis Bringing the 'Course' Back Into the Life Course." *Sociological Methods & Research* 38(3):420 -462.
- Cvajner, M., and G. Sciortino. 2010. "A tale of networks and policies: prolegomena to an analysis of irregular migration careers and their developmental paths." *Population, Space and Place* 16(3):213–225.
- Elzinga, Cees H. 2010. "Complexity of Categorical Time Series." *Sociological Methods & Research* 38(3):463 -481.
- Elzinga, Cees H. 2003. "Sequence Similarity: A Nonaligning Technique." *Sociological Methods & Research* 32(1):3 -29.
- Gabardinho, Alexis, Gilbert Ritschard, and Matthias Studer. 2011. "Analyzing and Visualizing State Sequences in R with TraMineR." *Journal Of Statistical Software* 40(4):1-37.
- Gabardinho, Alexis, Gilbert Ritschard, Matthias Studer, and Nicolas S. Müller. 2009. *Mining sequence data in R with the TraMineR package: A user's guide for version 1.21*. University of Geneva.
- de Haas, Hein. 2008. *Irregular migration from West Africa to the Maghreb and the European Union: an overview of recent trends*. Geneva: International Organization for Migration.

- Hargreaves, Alec G. 2007. *Multi-Ethnic France: Immigration, Politics, Culture and Society*. 2nd ed. New York: Routledge.
- Jandl, M. 2004. "The Estimation of Illegal Migration in Europe." *Studi Emigrazione/Migration Studies* 41(153):141–155.
- Lessault, David, and Cris Beauchemin. 2009. "Ni invasion, ni exode. Regards statistiques sur les migrations d'Afrique subsaharienne." *Revue Européenne des Migrations Internationales* 25(1):163-194.
- Ruhs, Martin, and Bridget Anderson. 2010. "Semi-compliance and illegality in migrant labour markets: an analysis of migrants, employers and the state in the UK." *Population, Space and Place* 16(3):195-211.

Tables

Legal domain	Question	Modalities	State Codes
Entry	“When you arrived in [destination country], did you have a visa? And then? Did your situation change?”	Yes No	V: Visa NV: No visa
Residence	“When you arrived in [destination country], did you have a residence permit? And then? Did your situation change?”	Yes No	RP: Residence permit NRP: No residence permit
Work	“As for work, when you arrived in [destination country], did you have a work permit? And then? Did your situation change?”	Work permit: Yes/No Special work permit: Yes/No	WP: Work permit SWP: Special work permit NWP: No work permit (neither WP nor SWP)
Citizenship	“During your life, have you changed nationality or acquired a new nationality? When did you change nationality? At that time, what nationalities did you have?”	Senegalese French Italian Spanish Others	EU: Citizenship of France, Italy, or Spain (can be in conjunction with Senegalese nationality) Missing: Senegalese citizenship

Non-compliant	Semi-compliant	Fully compliant
NV_NRP_NWP	V_RP_NWP (if working)	EU
	V_NRP_WP	V_RP_WP
	V_NRP_SWP	V_RP_SWP
	V_NRP_NWP	NV_RP_WP
	NV_RP_NWP (if working)	NV_RP_SWP
	NV_NRP_WP	
	NV_NRP_SWP	

Legal Status	France			Italy			Spain			Total		
	N	Col %	Row %	N	Col %	Row %	N	Col %	Row %	N	Col %	Row %
NV_RP_WP	1,032	28.1	36.7	824	34.1	29.3	953	45.4	33.9	2,809	34.3	100
NV_NRP_NWP	1,209	32.9	55.8	590	24.5	27.2	369	17.6	17	2,168	26.5	100
NV_RP_NWP	640	17.4	47.8	530	22	39.6	169	8.1	12.6	1,339	16.4	100
V_NRP_NWP	162	4.4	31.8	177	7.3	34.8	170	8.1	33.4	509	6.2	100
EU	150	4.1	47.2	56	2.3	17.6	112	5.3	35.2	318	3.9	100
V_RP_NWP	154	4.2	52.2	46	1.9	15.6	95	4.5	32.2	295	3.6	100
V_RP_WP	99	2.7	43.8	13	0.5	5.8	114	5.4	50.4	226	2.8	100
NV_RP_SWP	117	3.2	63.6	67	2.8	36.4	0	0	0	184	2.2	100
NV_NRP_WP	27	0.7	20.6	15	0.6	11.5	89	4.2	67.9	131	1.6	100
V_NRP_WP	19	0.5	22.6	52	2.2	61.9	13	0.6	15.5	84	1	100
V_RP_SWP	51	1.4	71.8	8	0.3	11.3	12	0.6	16.9	71	0.9	100
V_NRP_SWP	14	0.4	41.2	20	0.8	58.8	0	0	0	34	0.4	100
NV_NRP_SWP	4	0.1	19	15	0.6	71.4	2	0.1	9.5	21	0.3	100
Total	3,678	100	44.9	2,413	100	29.5	2,098	100	25.6	8,189	100	100

Source: MAFE-Senegal biographical data

Table 4. Number of transitions, by destination and legal status

<i>Number of transitions</i>		
	Mean	SD
<i>Destination</i>		
France	1.170	1.050
Italy	1.004	1.015
Spain	1.042	0.939
Significance		
<i>Initial legal status</i>		
Documented	1.187	1.021
Undocumented	0.764	0.901
Significance		***
<i>Total</i>	1.080	1.008

Notes : # $p < .1$, * $p < .05$, ** $p < .01$, *** $p < .001$; "Significance" is p-value of F-test for differences in means by destination and t-test for differences in means by legal status

Table 5. Longitudinal transition matrix between legal statuses

Origin State	Destination State												
	EU	NV_NRP P_NWP	NV_NRP P_SWP	NV_NRP P_WP	NV_NRP NWP	NV_NRP SWP	NV_NRP WP	V_NRP NWP	V_NRP SWP	V_NRP WP	V_NRP N	V_NRP S	V_NRP WP
EU	1.00	-	-	-	-	-	-	-	-	-	-	-	-
NV_NRP NWP	-	0.91	-	-	0.02	-	0.06	-	-	-	-	-	-
NV_NRP SWP	-	0.10	0.50	-	0.05	0.25	0.10	-	-	-	-	-	-
NV_NRP WP	-	0.03	-	0.95	0.01	-	0.02	-	-	-	-	-	-
NV_NRP NWP	-	0.02	-	-	0.95	-	0.03	-	-	-	-	-	-
NV_NRP SWP	-	0.04	-	-	0.04	0.86	0.07	-	-	-	-	-	-
NV_NRP WP	-	0.01	-	-	0.01	-	0.97	-	-	-	-	-	-
V_NRP NWP	-	0.25	-	0.03	0.01	-	0.01	0.57	-	0.01	0.10	0.01	0.01
V_NRP SWP	-	0.03	-	-	-	-	0.03	-	0.81	-	-	0.12	-
V_NRP WP	0.01	0.03	-	0.03	-	-	0.01	0.01	-	0.81	-	-	0.09
V_NRP NWP	-	-	-	-	0.17	-	0.14	0.01	-	-	0.63	0.03	0.01
V_NRP SWP	0.01	-	-	-	0.01	0.39	0.09	0.01	-	-	-	0.49	-
V_NRP WP	0.01	-	-	-	-	-	0.23	-	-	0.01	0.01	-	0.72

Source: MAFE-Senegal biographical data

Table 6. Within-sequence measures of complexity, by destination and initial legal status

	<i>Entropy</i>		<i>Turbulence</i>		<i>Complexity</i>	
	Mean	SD	Mean	SD	Mean	SD
<i>Destination</i>						
France	0.192	0.154	3.009	1.797	0.065	0.053
Italy	0.162	0.153	2.590	1.655	0.055	0.053
Spain	0.172	0.146	2.679	1.521	0.058	0.049
Significance		#		*		
<i>Initial legal status</i>						
Documented	0.194	0.154	2.847	1.631	0.066	0.053
Undocumented	0.125	0.133	2.576	1.812	0.042	0.045
Significance		***		#		***
<i>Total</i>	0.177	0.152	2.778	1.681	0.060	0.052

Notes : # $p < .1$, * $p < .05$, ** $p < .01$, *** $p < .001$; "Significance" is p-value of F-test for differences in means by destination and t-test for differences in means by legal status

Table 7: OLS regression of measures of within-sequence complexity

Predictor	Measure of within-sequence complexity					
	Entropy		Turbulence		Complexity	
Initially undocumented	-0.054***	(-4.14)	-0.133	(-0.93)	-0.020***	(-4.40)
<i>Context of reception</i>						
Destination (ref: France)						
Italy	-0.044**	(-2.88)	-0.623***	(-3.72)	-0.013*	(-2.50)
Spain	-0.029*	(-1.99)	-0.378*	(-2.32)	-0.008	(-1.62)
Migration cohort: 1980s-2000s	0	(-0.93)	0	(-0.03)	0	(-0.31)
<i>Social, human, and financial capital</i>						
Migration paid for by family	-0.01	(-0.83)	-0.229	(-1.68)	-0.003	(-0.79)
Number of previous migrations	-0.008	(-1.09)	-0.036	(-0.43)	-0.002	(-0.69)
Number of contacts at destination	0.002	(-0.67)	0.073*	(-2.38)	0.001	(-1.07)
Education (ref: no schooling)						
Primary school	0.051*	(-2.48)	0.617**	(-2.71)	0.017*	(-2.45)
Middle school	0.024	(-1.36)	0.366	(-1.87)	0.008	(-1.26)
Secondary school	0.039*	(-2.08)	0.397	(-1.94)	0.013*	(-2.11)
Some university	0.051*	(-2.29)	0.461	(-1.87)	0.015	(-1.95)
3+ years university	0.090***	(-4.24)	1.006***	(-4.26)	0.031***	(-4.23)
<i>Sociodemographic characteristics</i>						
Age at migration	-0.001	(-0.62)	-0.024*	(-2.46)	-0.001	(-1.86)
Ethnicity: Wolof	0.011	(-0.92)	0.138	(-1.03)	0.002	(-0.53)
Religion: Mouride	-0.014	(-1.07)	-0.08	(-0.57)	-0.003	(-0.81)
Male	0.012	(-0.97)	0.125	(-0.91)	0.006	(-1.37)
Married	0.018	(-1.26)	0.264	(-1.7)	0.008	(-1.64)
Has children	0.02	(-1.39)	0.312*	(-1.98)	0.008	(-1.62)
Eldest in family	0	(-0.02)	0.003	(-0.02)	0	(-0.02)
Has siblings	0.025	(-0.55)	0.424	(-0.86)	0.011	(-0.75)
Parent alive	-0.030*	(-2.26)	-0.615***	(-4.16)	-0.012*	(-2.57)
<i>Social-class origins</i>						
Dakar origin	0.044***	(-3.8)	0.437***	(-3.4)	0.016***	(-3.97)
Father's education: less than secondary school	0.007	(-0.58)	0.058	(-0.42)	0.004	(-0.87)
Father's employment at migrant age 15: unemployed	0.009	(-0.57)	0.052	(-0.31)	0.002	(-0.36)
Return migrant	-0.135***	(-6.62)	-1.579***	(-7.00)	-0.048***	(-6.83)
Constant	-0.556	(-0.68)	2.706	(-0.3)	-0.013	(-0.05)
R-squared	0.188		0.195		0.198	
N	715		715		715	

* p < .05, ** p < .01, *** p < .001

T statistics in parentheses

Table 8: Multinomial logistic regression of measures of types of legal status trajectories

Predictor	Type of legal status trajectory (ref: Type 1)					
	Type 2		Type 3		Type 4	
Initially undocumented	-0.272	(-0.79)	2.022***	(7.10)	-1.482***	(-3.31)
<i>Context of reception</i>						
Destination (ref: France)						
Italy	0.566	(1.67)	-1.327***	(-3.77)	-0.030	(-0.09)
Spain	-1.230***	(-3.50)	-1.873***	(-5.90)	0.053	(0.18)
Migration cohort: 1980s-2000s	-0.010	(-1.08)	0.014	(1.47)	-0.007	(-0.69)
<i>Social, human, and financial capital</i>						
Migration paid for by family	0.027	(0.10)	-0.153	(-0.55)	0.250	(0.89)
Number of previous migrations	-0.301	(-1.01)	-0.045	(-0.24)	0.322*	(1.99)
Number of contacts at destination	0.076	(0.97)	-0.088	(-1.06)	0.101	(1.24)
Education (ref: no schooling)						
Primary school	0.803	(1.77)	-0.101	(-0.23)	-0.239	(-0.49)
Middle school	0.163	(0.39)	0.120	(0.33)	0.183	(0.44)
Secondary school	0.152	(0.34)	-0.162	(-0.43)	-0.024	(-0.06)
Some university	0.413	(0.77)	0.619	(1.34)	0.532	(1.16)
3+ years university	0.795	(1.57)	-0.037	(-0.07)	1.055*	(2.23)
<i>Sociodemographic characteristics</i>						
Age at migration	-0.017	(-0.76)	0.036	(1.80)	-0.025	(-1.26)
Ethnicity: Wolof	-0.042	(-0.16)	-0.017	(-0.06)	0.151	(0.55)
Religion: Mouride	-0.113	(-0.40)	-0.223	(-0.83)	-0.130	(-0.45)
Male	-0.901***	(-3.30)	-0.367	(-1.29)	-0.196	(-0.72)
Married	0.715*	(2.55)	-0.383	(-1.35)	-0.228	(-0.81)
Has children	0.078	(0.26)	-0.374	(-1.20)	-0.099	(-0.33)
Eldest in family	0.203	(0.69)	0.057	(0.20)	0.584*	(2.07)
Has siblings	0.813	(0.60)	-0.295	(-0.34)	-0.227	(-0.26)
Parent alive	0.757	(1.70)	0.668	(1.54)	0.285	(0.74)
<i>Social-class origins</i>						
Dakar origin	-0.018	(-0.07)	0.164	(0.63)	0.334	(1.29)
Father's education: less than secondary school	0.288	(1.00)	-0.006	(-0.02)	0.051	(0.19)
Father's employment at migrant age 15: unemployed	0.751*	(2.13)	0.457	(1.42)	0.439	(1.19)
Return migrant	1.374**	(2.59)	-0.304	(-0.65)	0.467	(0.90)
Within-sequence entropy	-0.650	(-0.39)	-2.921	(-1.63)	1.302	(0.65)
Number of transitions	-0.115	(-0.47)	-0.193	(-0.71)	-1.193***	(-3.53)
Constant	18.294	(0.99)	-27.436	(-1.47)	14.616	(0.70)
Pseudo R-squared			0.2032			
N			714			

* p < .05, ** p < .01, *** p < .001; t statistics in parentheses

Figures

Figure 1

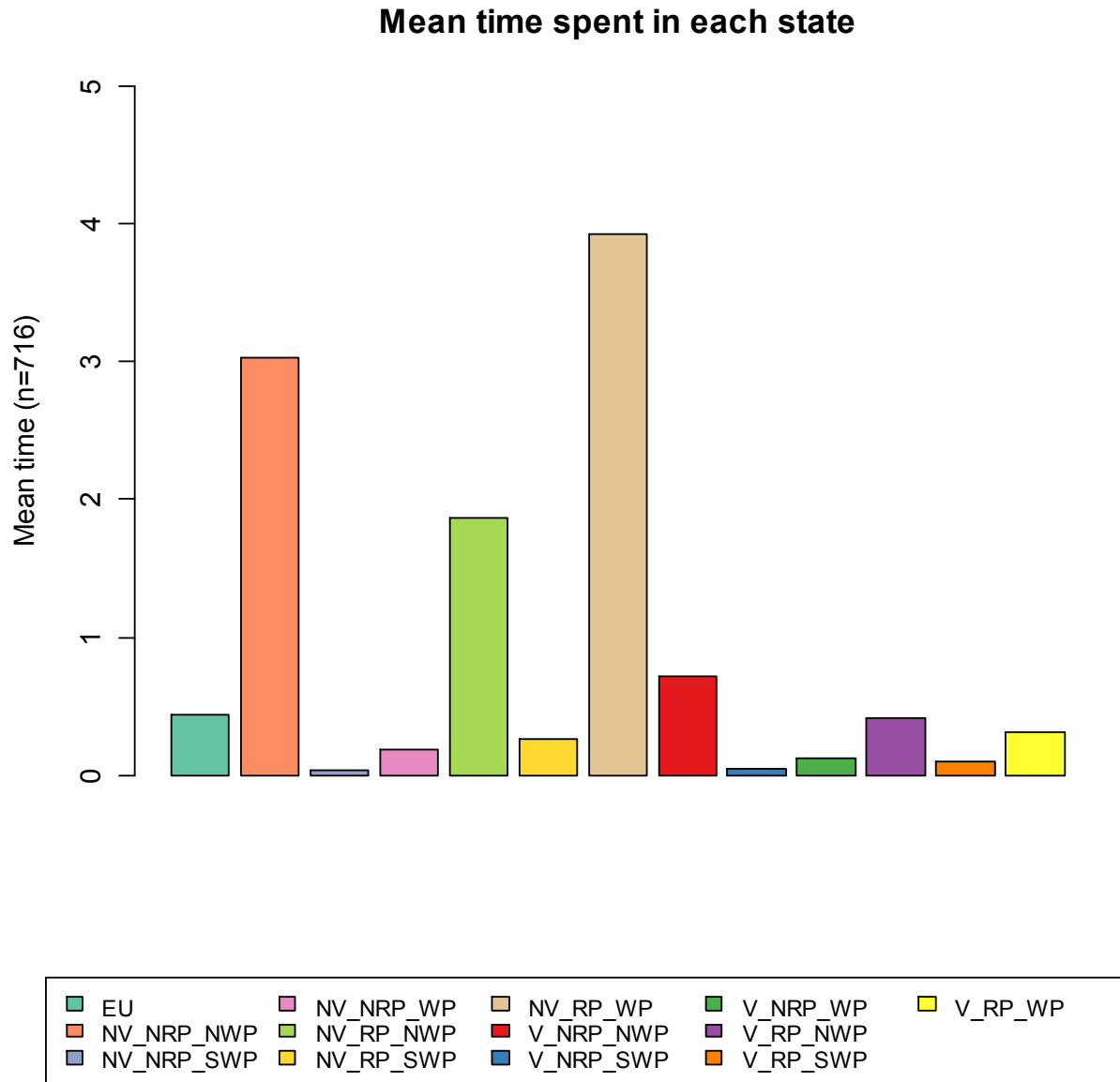


Figure 2. Mean time spent in each state, by country

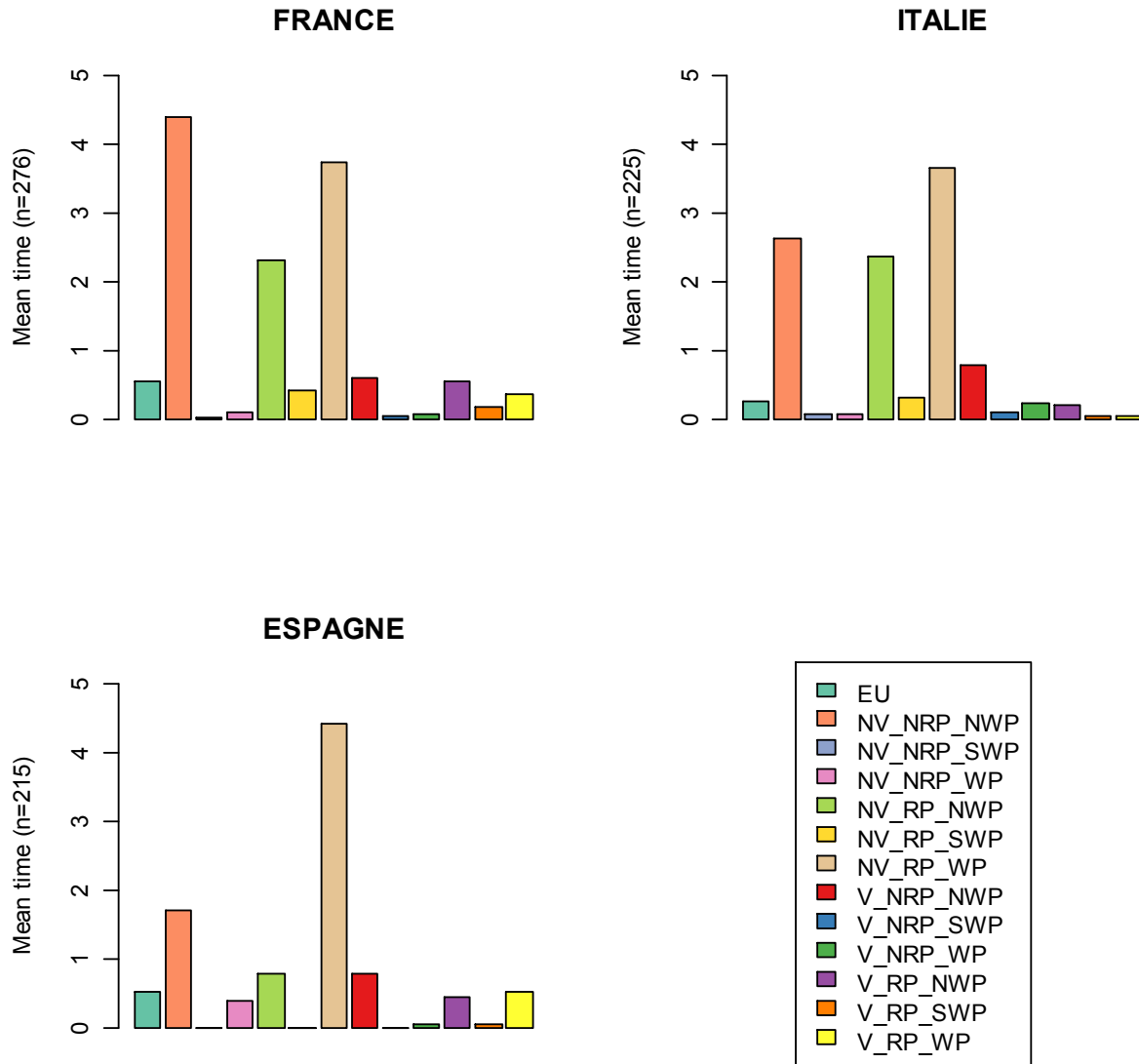


Figure 3 Mean time spent in each state, by initial dichotomous legal status

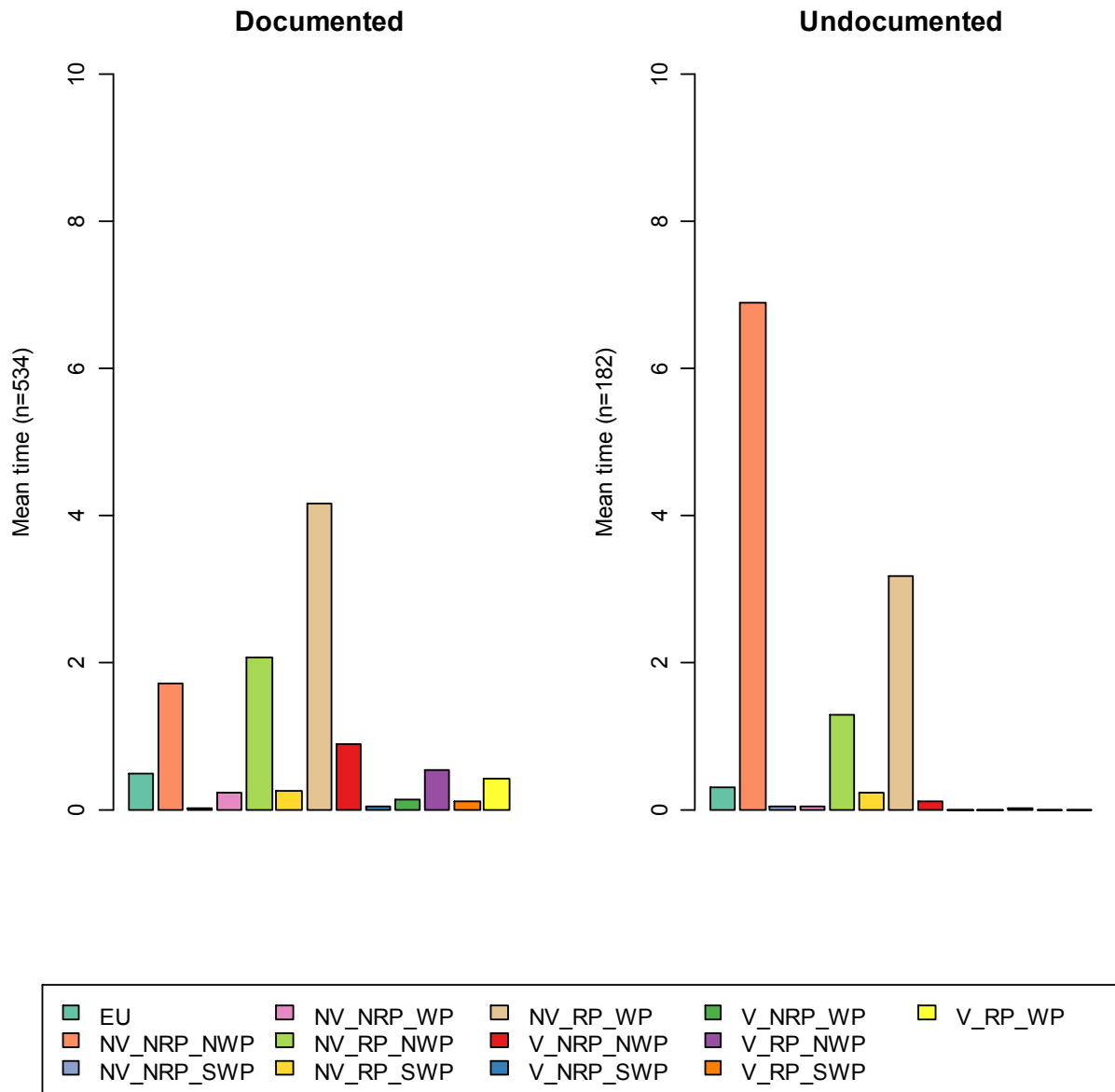
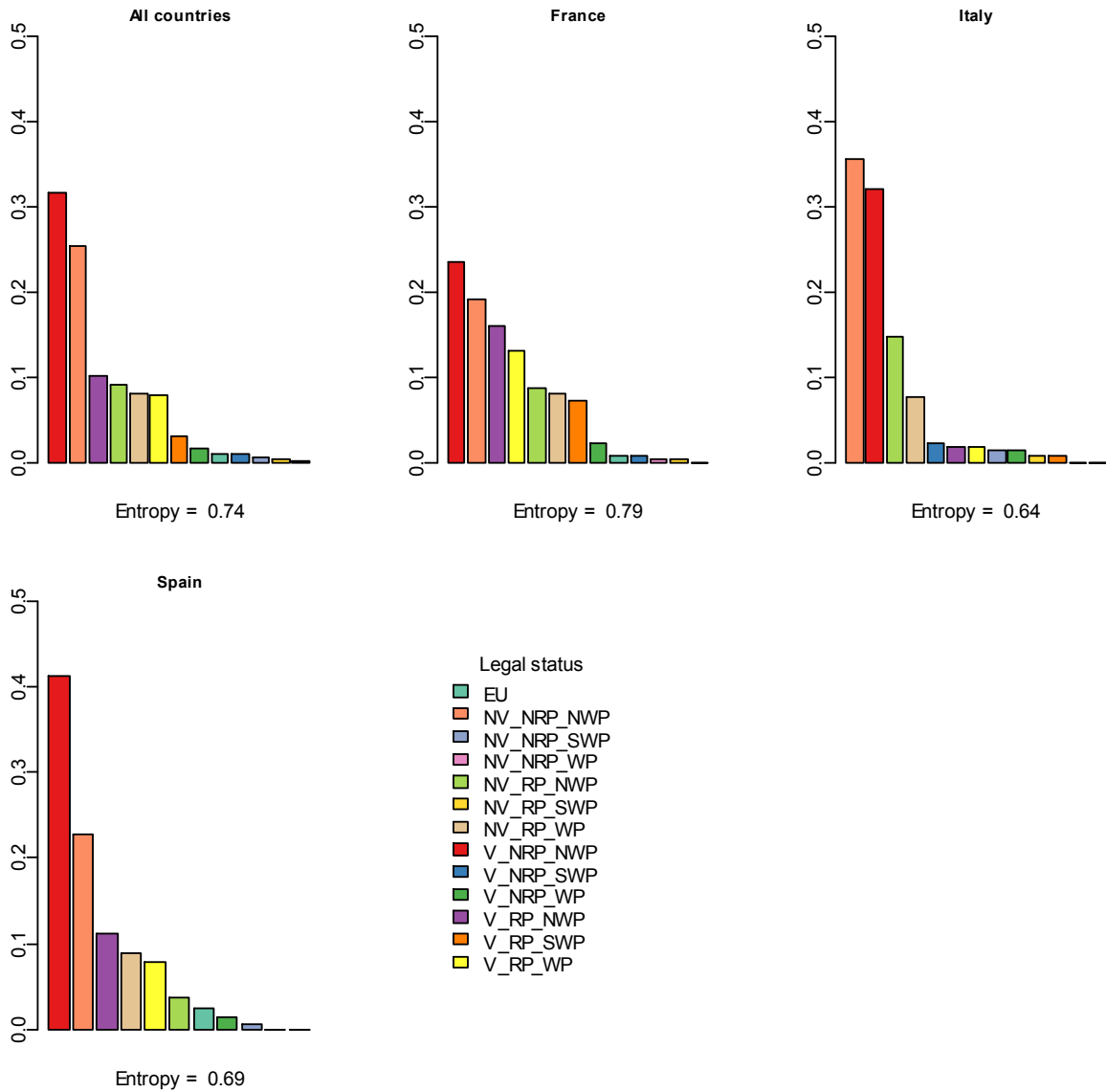


Figure 4.

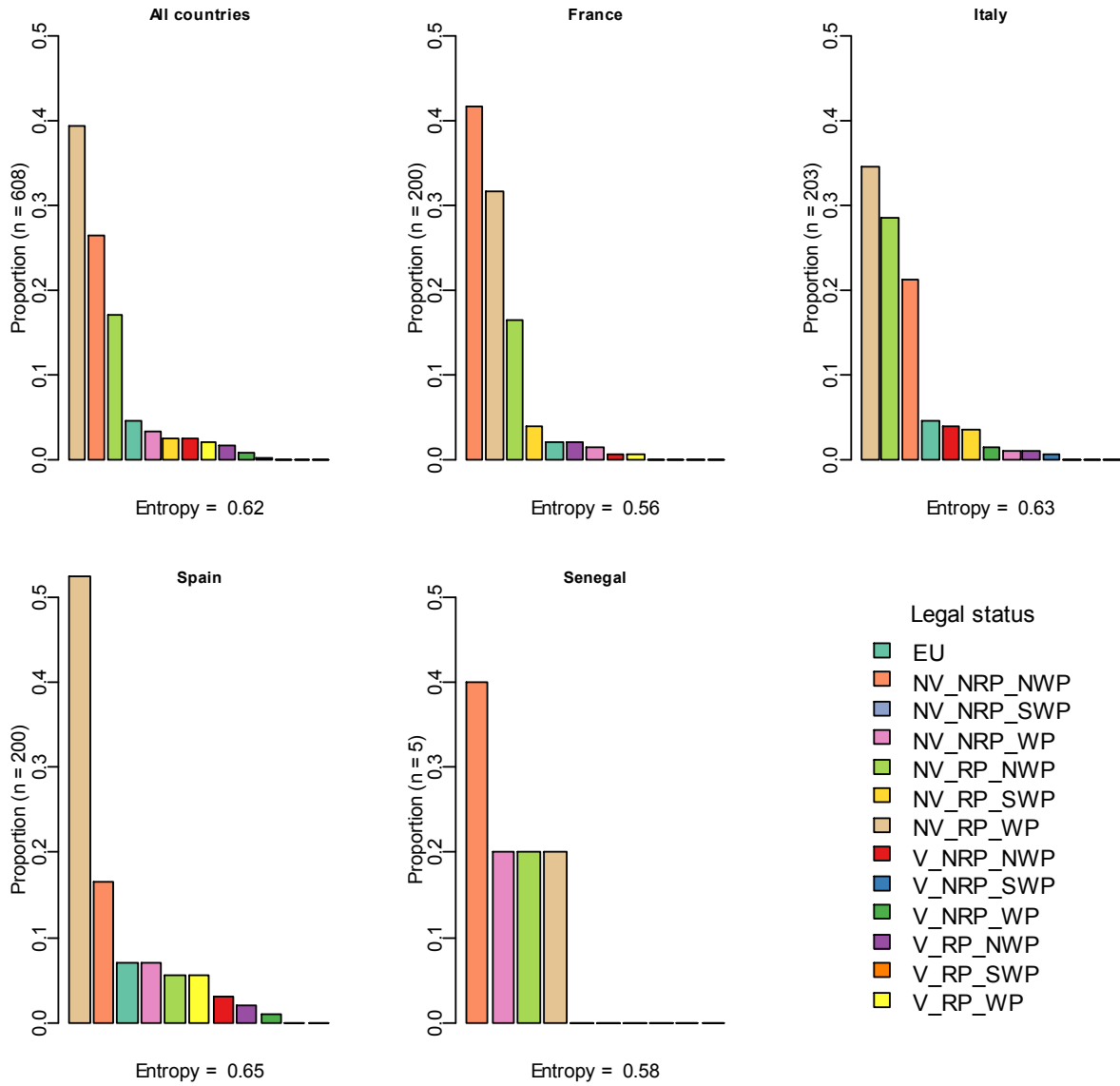
Distribution of states in first year of migration, by country



Source: MAFE-Senegal biographical data

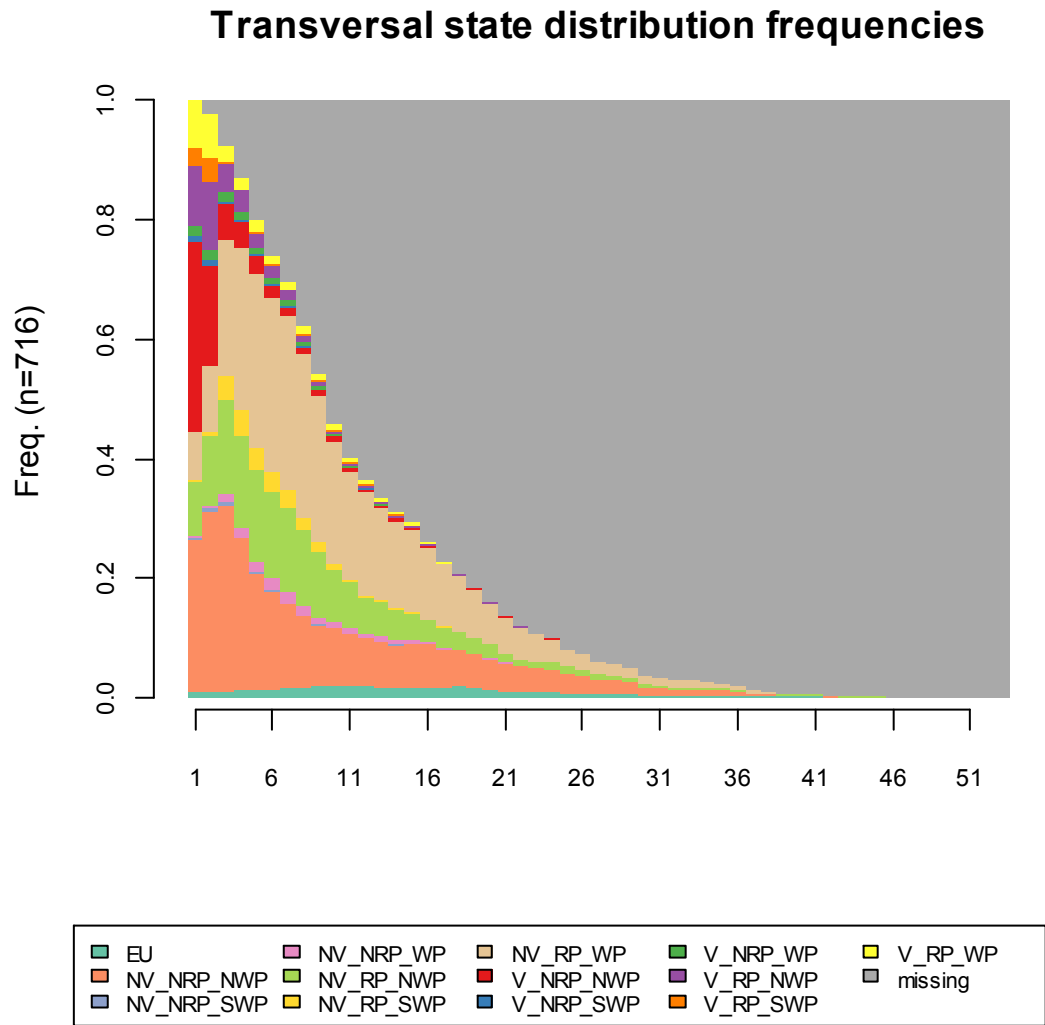
Figure 5.

Distribution of states in 2008, by country



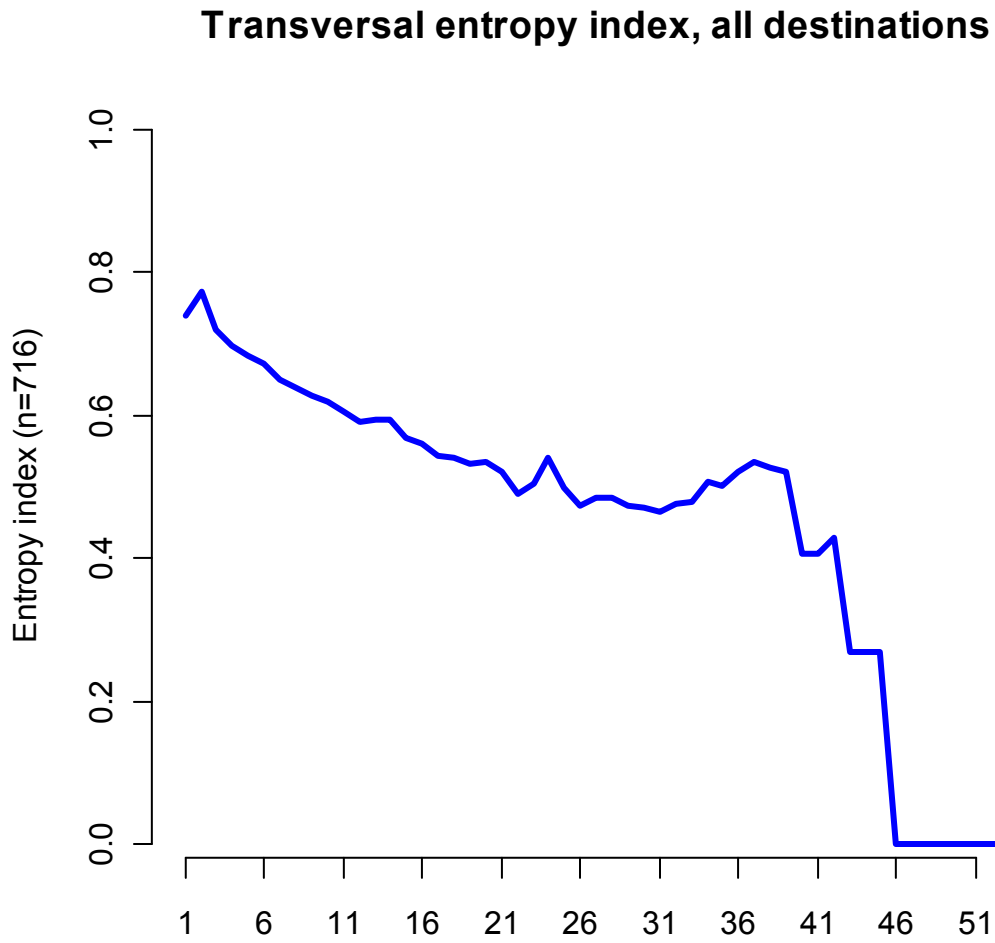
Source: MAFE-Senegal biographical data

Figure 6.



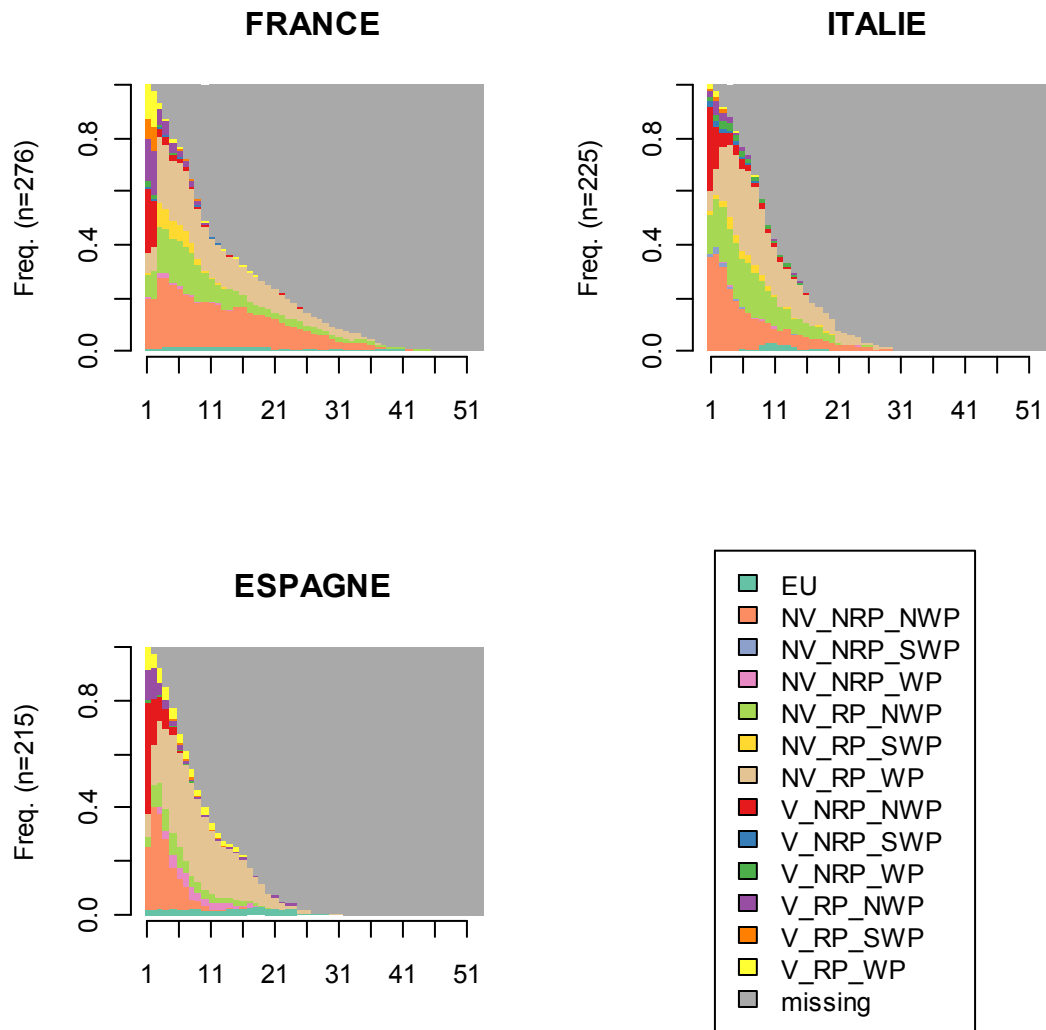
Source: MAFE-Senegal biographical data

Figure 7.



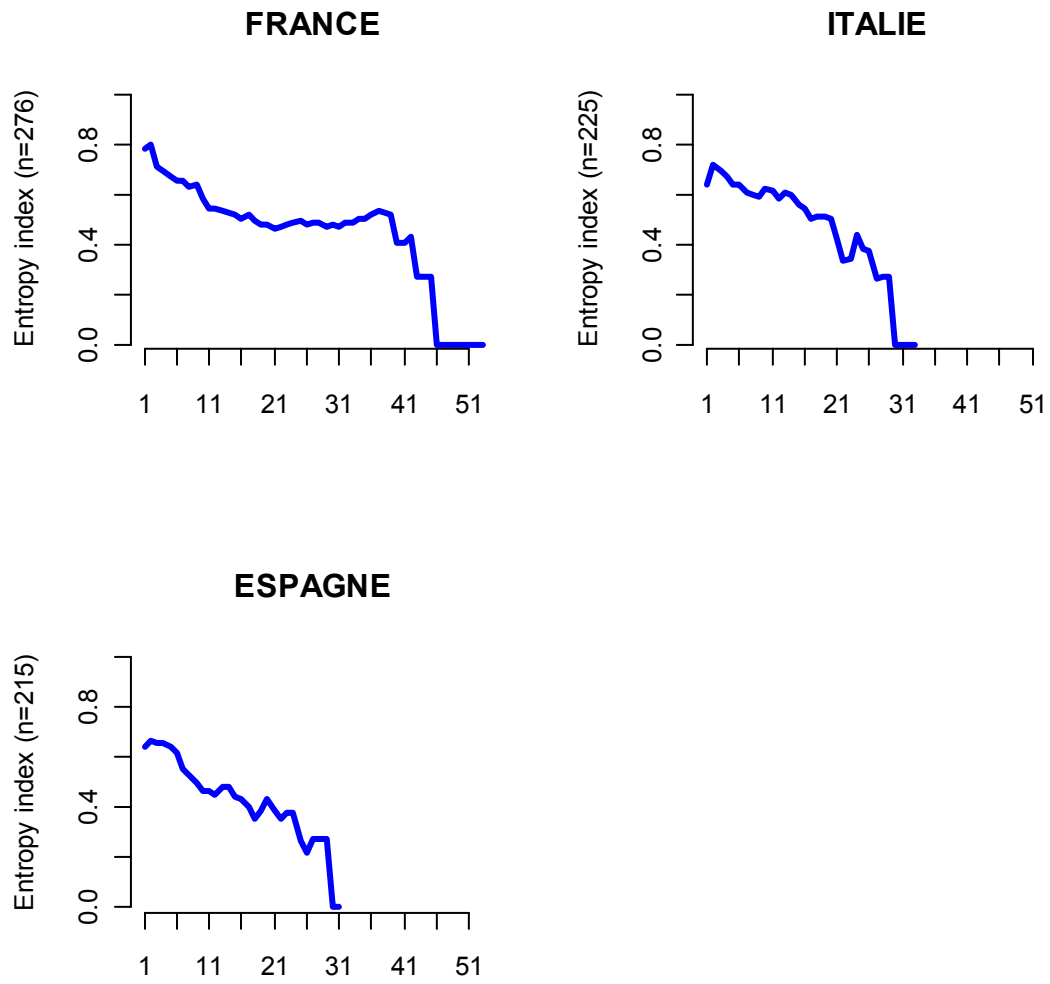
Source: MAFE-Senegal biographical data

Figure 8. Transversal state distribution frequencies, by destination



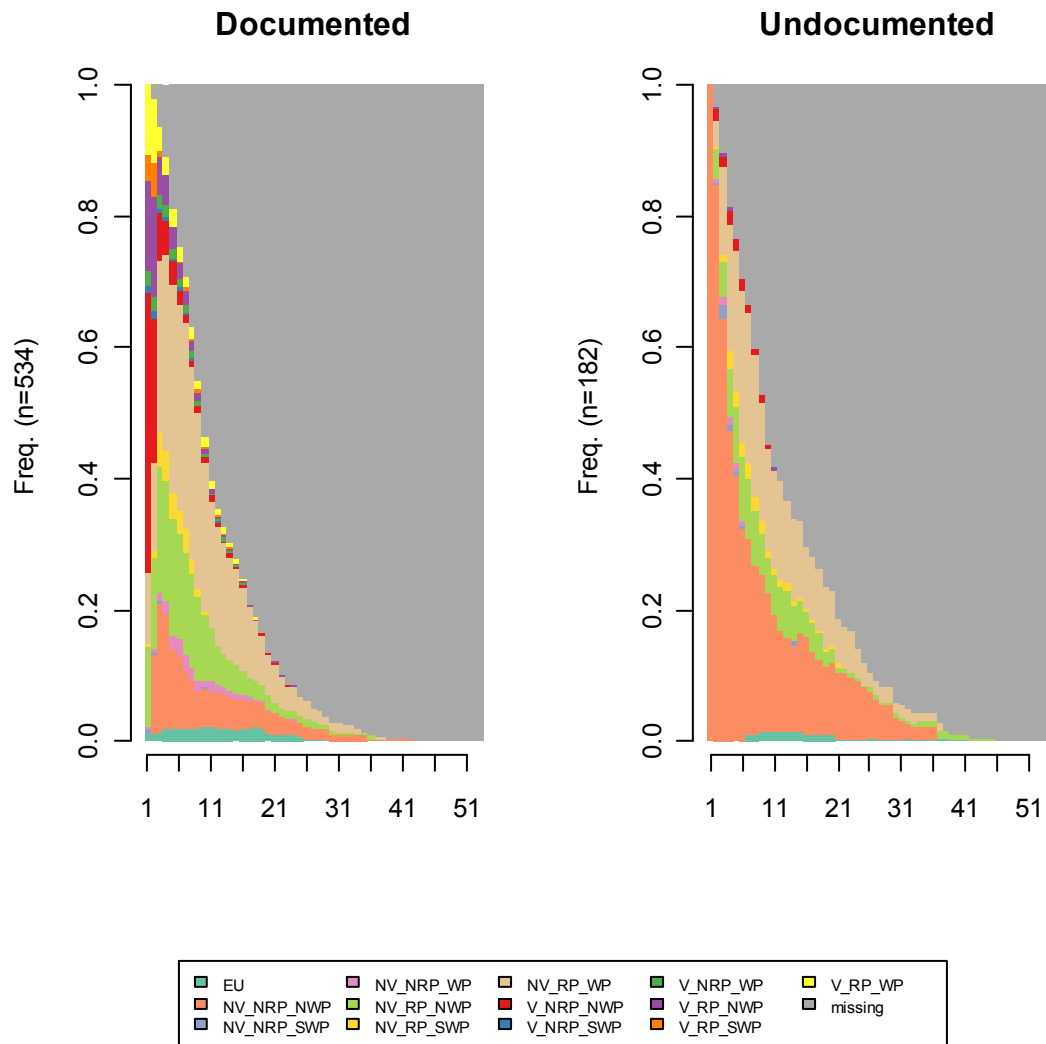
Source: MAFE-Senegal biographical data

Figure 9. Transversal entropy index by destination



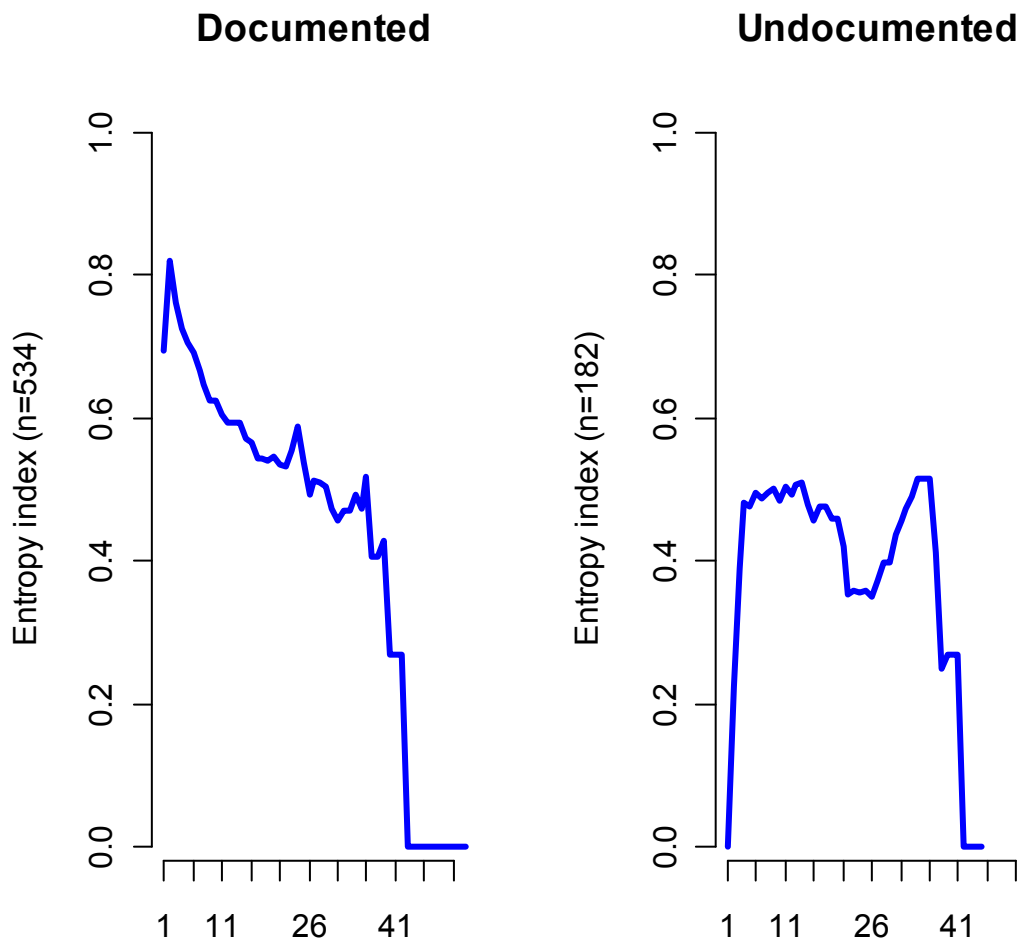
Source: MAFE-Senegal biographical data

Figure 10. Transversal state distributions, by initial dichotomous legal status



Source: MAFE-Senegal biographical data

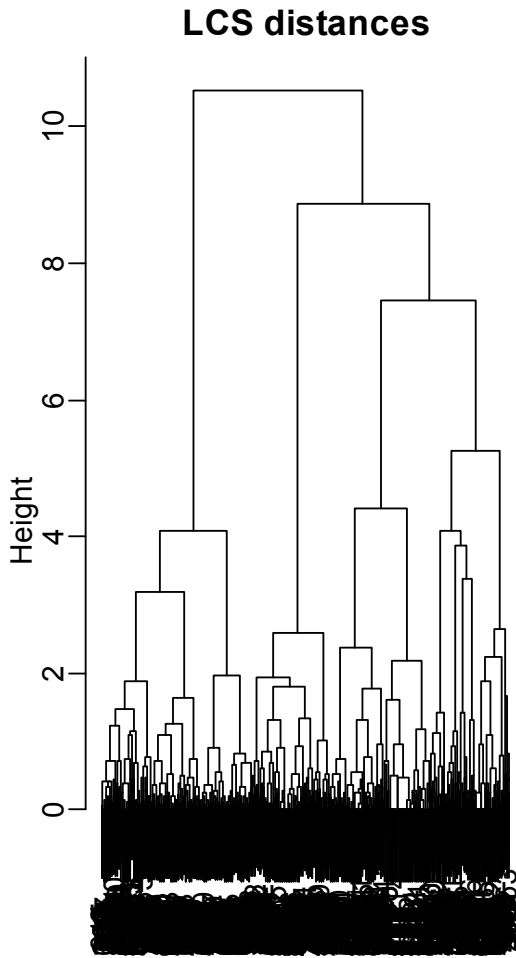
Figure 11. Transversal entropy index by initial dichotomous legal status



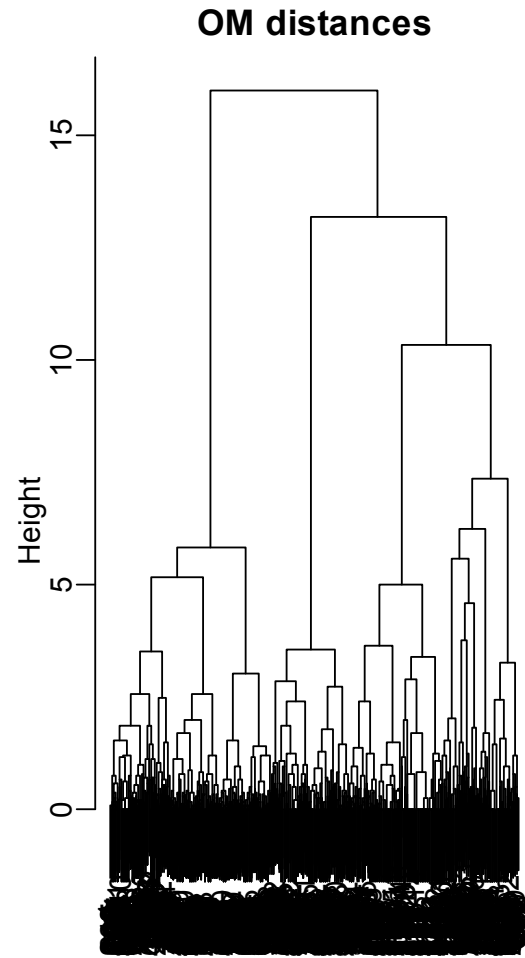
Source: MAFE-Senegal biographical data

Figure 12.

Clustering dendrograms for sequence distances



legstat.dist.lcs
Agglomerative Coefficient = 0.99



legstat.dist.om
Agglomerative Coefficient = 0.99

Figure 13. Sequence frequency plots, by type of legal-status trajectory

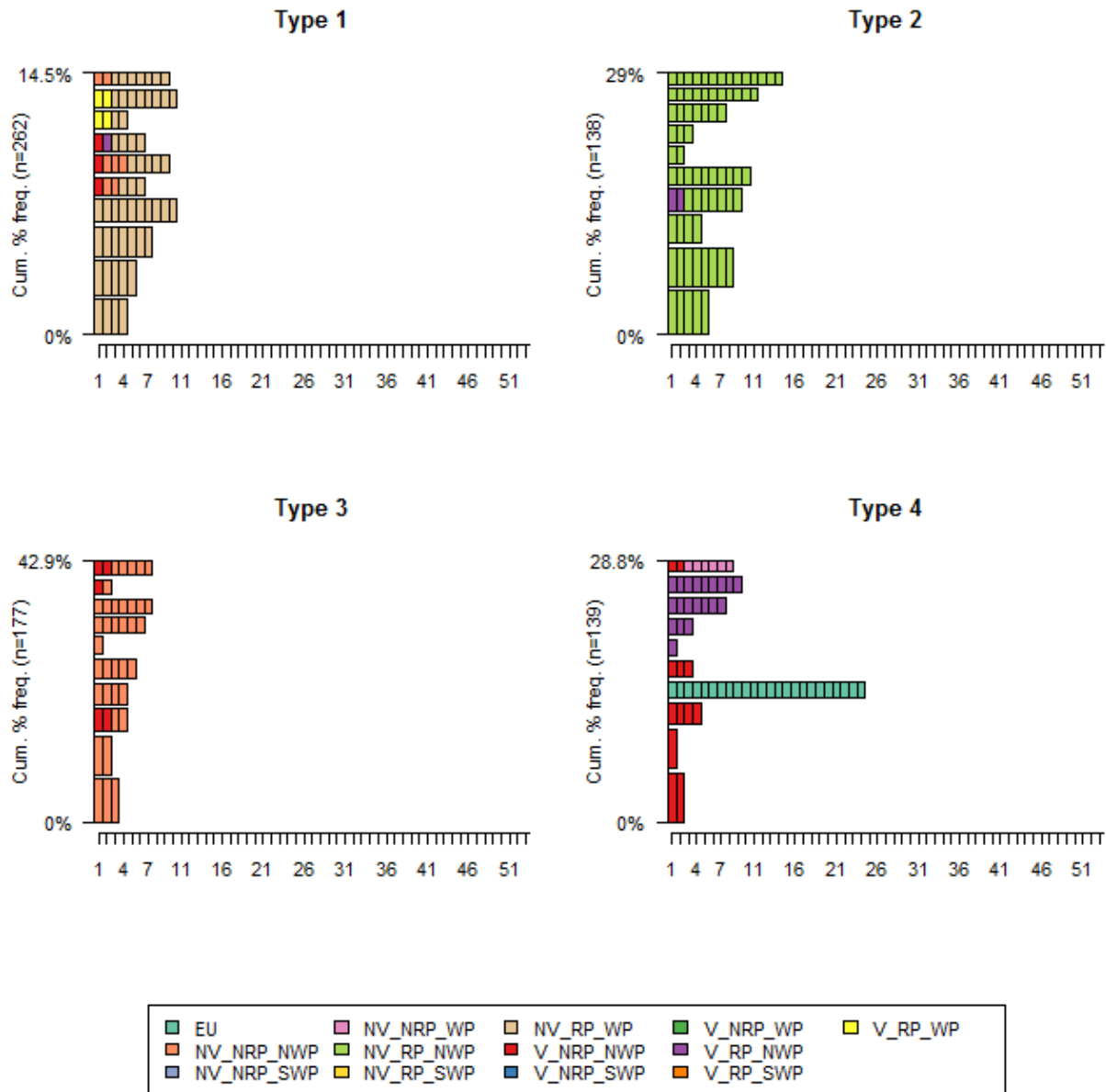


Figure 14. Mean time spent in each state, by type of legal status trajectory

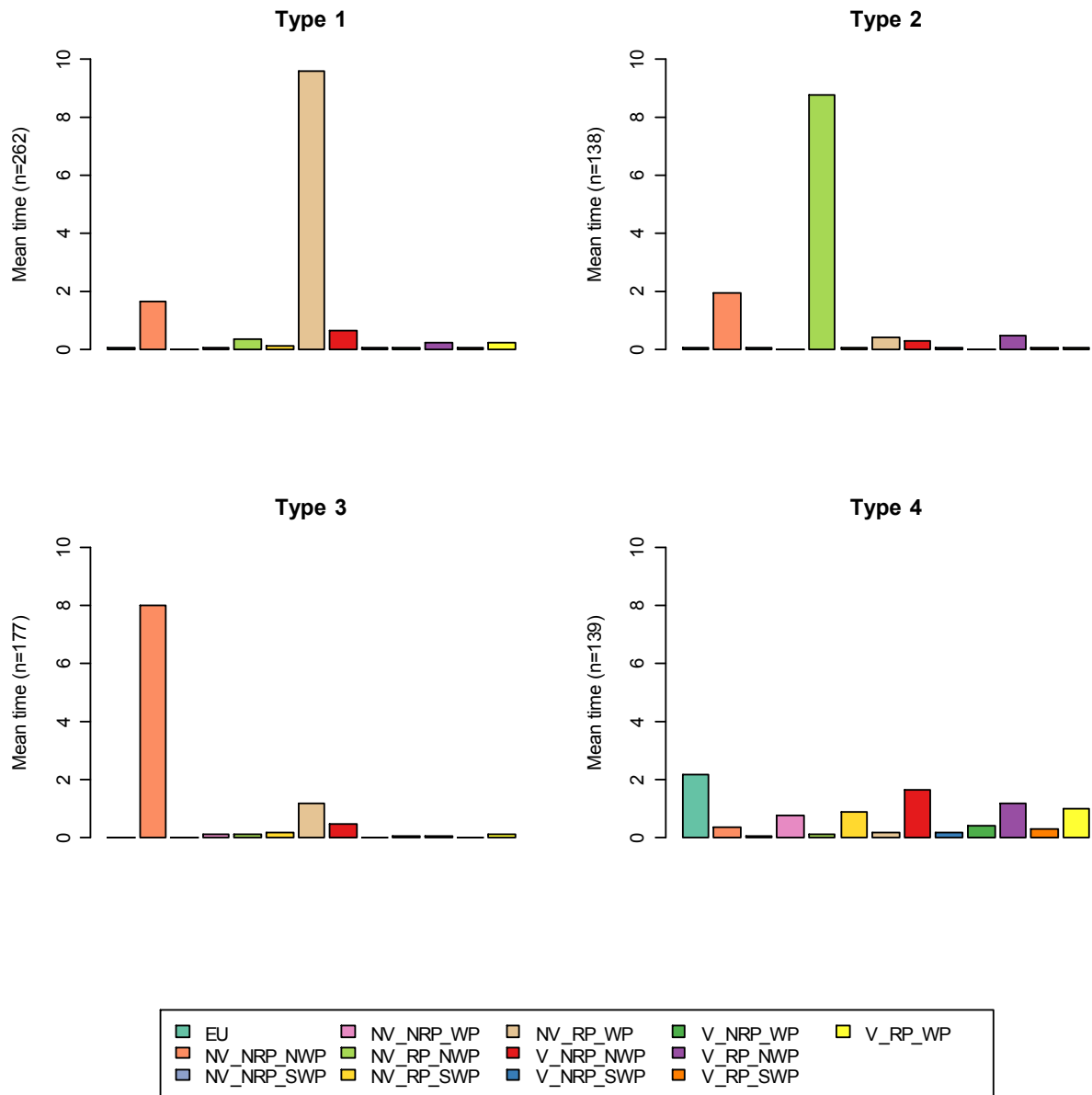


Figure 15. Sequence index plots, by type of legal status trajectory

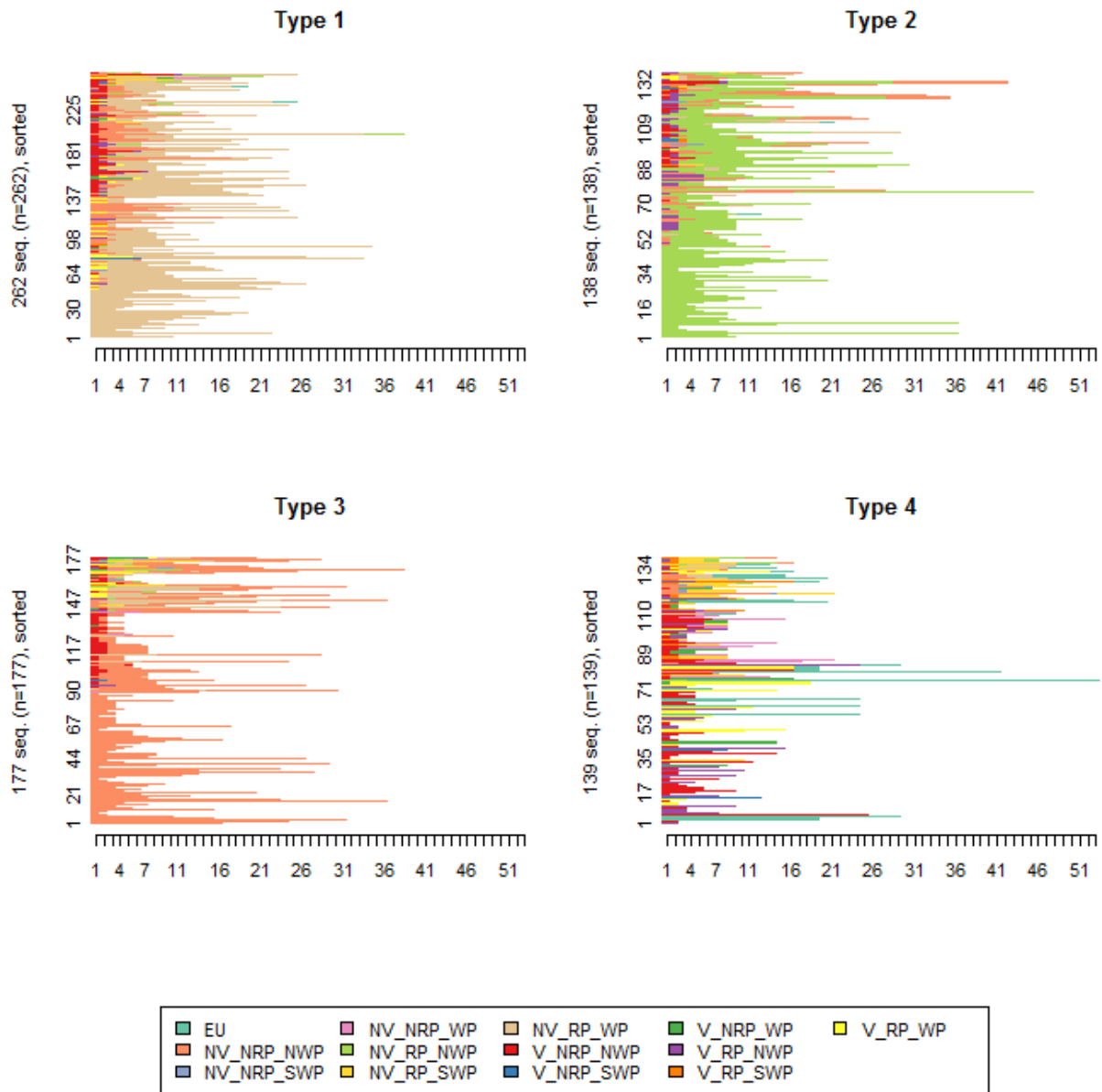


Figure 16.

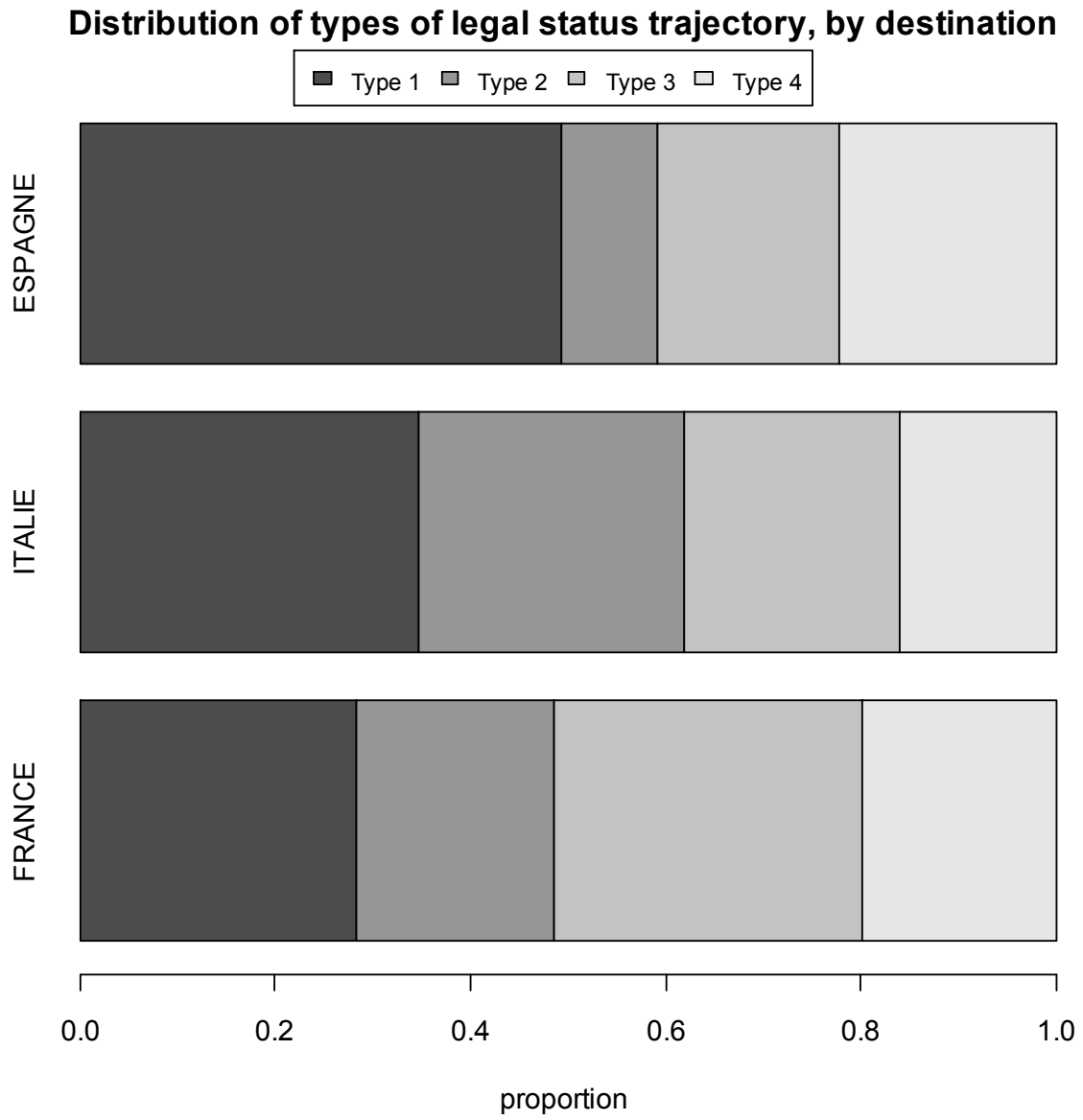


Figure 17.

Distribution of types of legal status trajectory, by initial legal status

