Understanding Barriers to Vital Events Registration in Burkina Faso through Language Use: Integrating Field Research and Machine Learning Approach

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Purpose

The language system represents thoughts and attitudes on births, marriages and deaths. Hence, understanding barriers to vital events registration can be achieved through careful study of language use.

This study used Natural Language Processing (NLP) to understand key issues discussed in publications on Birth, Marriage and Death registration in Burkina Faso. The findings of the NLP are then iteratively combined with information gathered in the field, through interviews, focus group discussions, and mappings conducted in rural Burkina Faso.

Description

- The dataset used consisted of 33 texts from a desk review of various online publications on Birth, Marriage and Death registration in Burkina Faso.
- The first publications found on vital events registration in Burkina Faso date from 2004, indicating that the issue has been topical for more than 15 years. The majority of them focus on births and marriages registration. Deaths registration is rarely discussed **(Figure 1)**.
- Tokenization is a process that uses an algorithm to transform a text into a set of single words or a "bag of words". It was used to reveal the most frequently used words and to put the dataset in a suitable format for modelling.
- The word count revealed **"femme"** *(woman)* as the most used word across all publications. This draws attention to the central role that women play in the registration of vital events in Burkina Faso **(Figure 1)**.
- Information gathered in the field suggested that physical accessibility, religion, and level of education affect the registration of vital events.
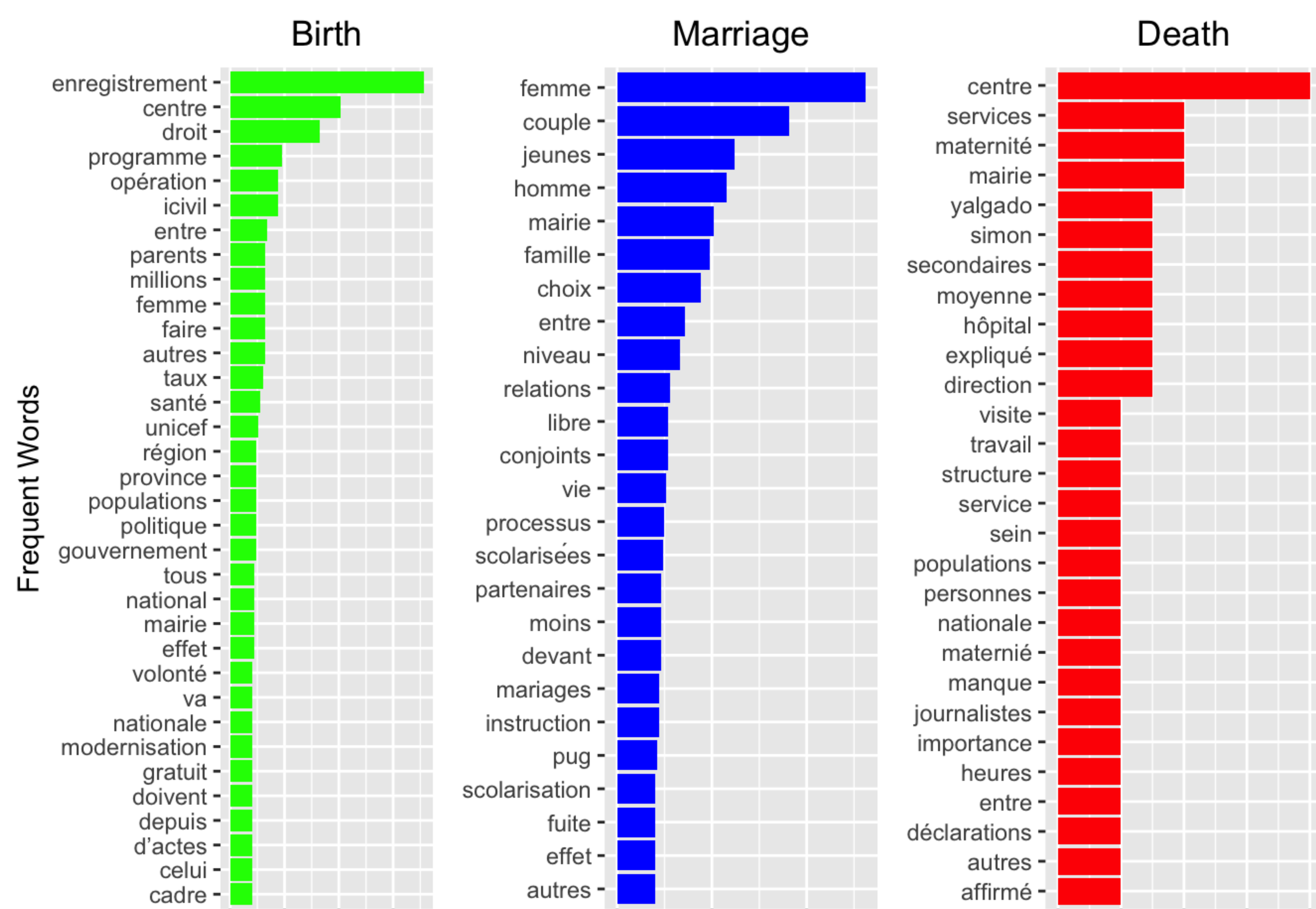

Figure 1: Word count

Results

Physical accessibility as a barrier to civil registration

The word count for birth registration revealed repeated use of words such as "province" or "region" **(Figure 1)**. Cross-checked with field research data, we identified that the remoteness of civil registration centers is a perceived impediment to vital registration, especially births. As shown in **Figure 2**, in vast regions such as Sahel and Est, populations travel greater distances to find a civil registration center.
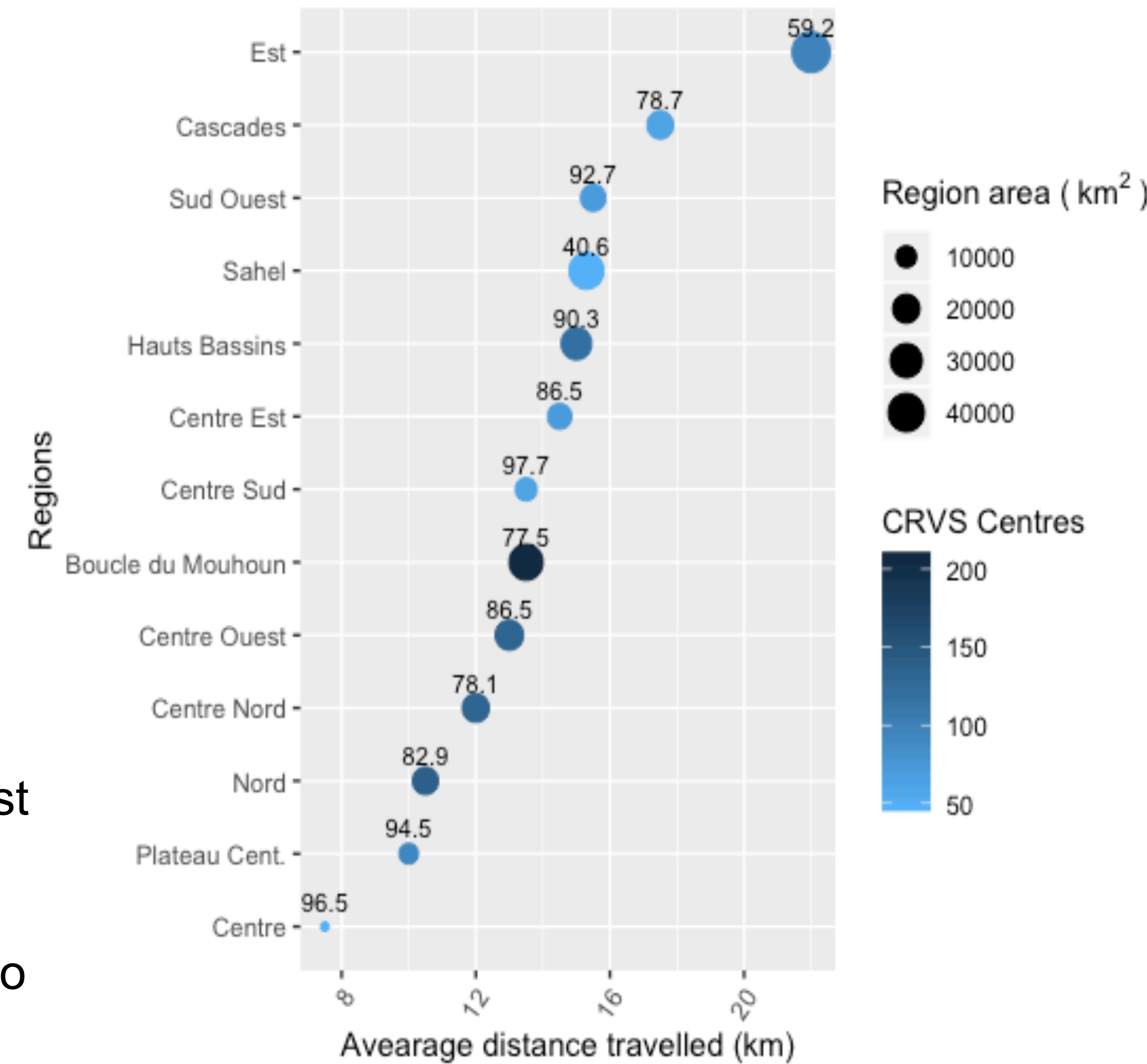

Figure 2: Coverage of civil registration centers

In Seguedin, one of the villages in the field study, there are related obstacles in addition to the average distance travelled. These include the absence of good roads and the presence of natural barriers such as rivers and other watercourses.

This reduces women's ability to register their children's births in rainy seasons, despite their motivation to do so. They are mainly dependent on men who have adapted transportation means.
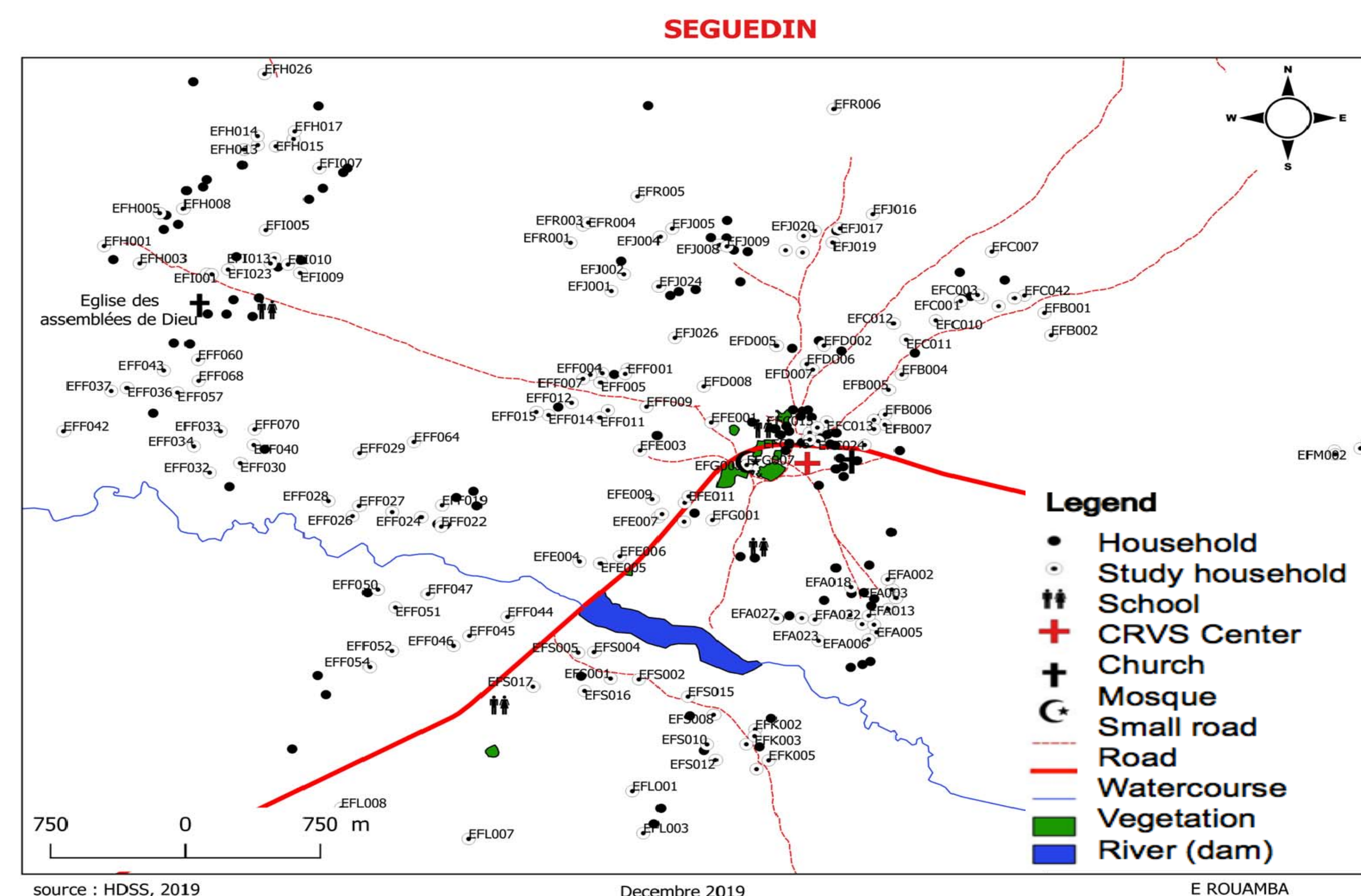

Figure 3: Map of Seguedin, Nanoro Province

Socio-cultural factors affecting vital events registration

Latent Dirichlet Allocation (LDA) technique was used to identify patterns of words occurring together consistently across the collection of publications and then classify them under the same underlying topic. The identified topics and keywords were then thoroughly researched to understand their likely relationship to the factors that impede the registration of vital events (Table).

Table: Key socio-cultural factors affecting civil registration

Birth Registration	Marriage Registration	Death Registration
• In Burkina Faso, 20% of births occur outside health facilities. So the civil registration system needs to accommodate these vital events. • The importance of having a birth certificate is not well known by the population.	• Marriage registration is perceived as an esoteric practice • It is unknown to most people that the Persons and Family Code of Burkina Faso legitimizes polygamous marriages. • Educated young women tend to be more likely to consider registering their marriage.	• The importance of a death certificate is unknown to most of the population. • Deaths are registered when the deceased leaves a large inheritance, access to which requires a death certificate • Some believe that having such a certificate can be a source of sadness every time it is seen.

Key Messages

- Burkina Faso is engaged in the modernization of its CRVS system through technology to address the issue of distance.

- There are socio-cultural factors that technology alone cannot overcome. For example, a technology that focuses only on births occurring in health facilities will not be able to capture births that still take place at home.

- Moreover, one thing is to systematically register a vital event, but the other is to obtain the related certificate – which requires travel to a civil registration center.

- To achieve 100% possession of vital events registration certificates in Burkina Faso, it would be necessary to inform communities of its importance. Thus, a multiplicity of socio-cultural factors require actions to change the attitudes, behavior and practices of communities, mainly in rural areas.