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Using IOM Flow Monitoring Data to Describe Migration in West and Central Africa

Feyaad Allie, Darin Christensen, Guy Grossman, and Jeremy Weinstein

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Feyaad Allie*
Darin Christensen†
Guy Grossman‡
Jeremy Weinstein§

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1. IOM Flow Monitoring Data

The IOM maintains the largest infrastructure for collecting data on flows of people across West and Central Africa. Over our sample period (Jan. 2018–Dec. 2019) they ran 36 Flow Monitoring Points (FMPs) across 6 countries in West and Central Africa (see Figure 1(a)).¹ FMPs are stationed along major transit routes and transportation bottlenecks to avoid missing major flows of migrants. For example, Arlit, Niger is a common transit point on the way to Algeria while Madama, Niger is a common transit point to Libya.

We utilize two types of data collected at FMPs. First, field staff record every vehicle (e.g., bus or taxi) that passes through the FMP carrying migrants. They record the number of migrants in each vehicle, their gender, and their nationality, as well as the departure and destination points for the vehicle. This data is based on direct observation and counting of people in transit, along with obtaining numbers through key informants (e.g., bus or taxi drivers, police officers) at selected points of origin, transit points (e.g., border crossings, bus stations, harbors), and destination points (e.g., markets, public squares, areas where migrants look for work). We refer to this as the flow monitoring counts. Second, FMPs periodically mount survey efforts, in which they randomly select migrants passing through the FMP and administer a short survey.² We refer to these as flow monitoring surveys (FMS), and they include modules about the migrant’s demographics, motivations, route, and challenges. During our study period, IOM’s flow monitoring counts totaled 4,588,212 migrants; IOM staff administered 88,169 a FMS to randomly selected migrants (see Figure 1(b)).³

*Department of Political Science, Stanford University; Immigration Policy Lab, Stanford University

†Department of Public Policy and Department of Political Science, University of California, Los Angeles

‡Department of Political Science, University of Pennsylvania

§Department of Political Science, Stanford University; Immigration Policy Lab, Stanford University

¹A typical FMP has a staff of 6 enumerators.

²We verify that the proportion of men and different nationalities sampled for the FMS is consistent with random sampling from the migrants observed passing through an FMP.

³IOM administered a total of 106,044 surveys. We remove individuals who were traveling as part of their daily commute or to attend a family event as they are not considered migrants.

Figure 1: IOM Flow Monitoring

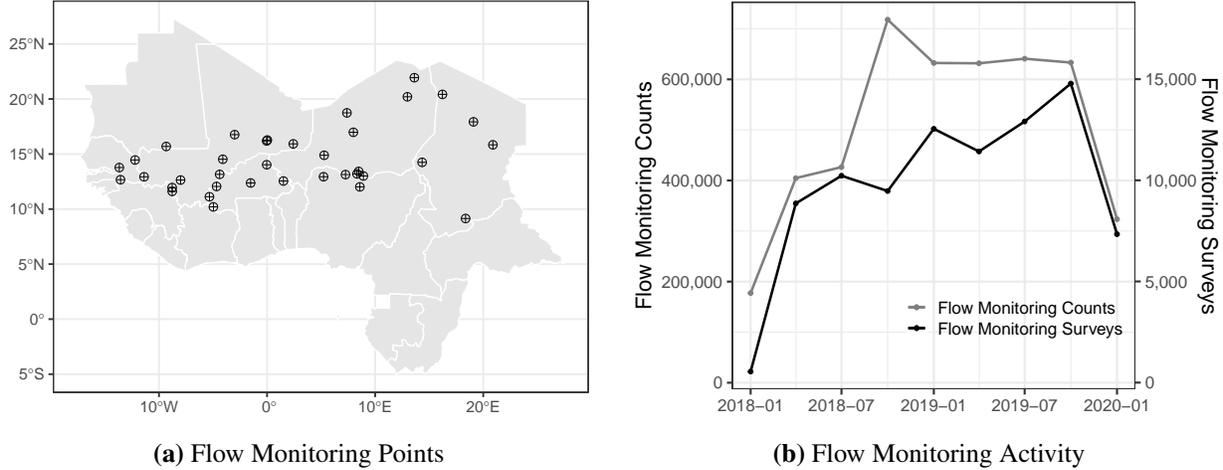


Figure 1: Equatorial Guinea is not included in IOM’s West and Central Africa region. Cape Verde (not pictured) is considered part of the region but does not host any Flow Monitoring Points.

1.1 Addressing Limitations of the IOM Data

While the IOM data is unique in its coverage, it presents several methodological challenges.

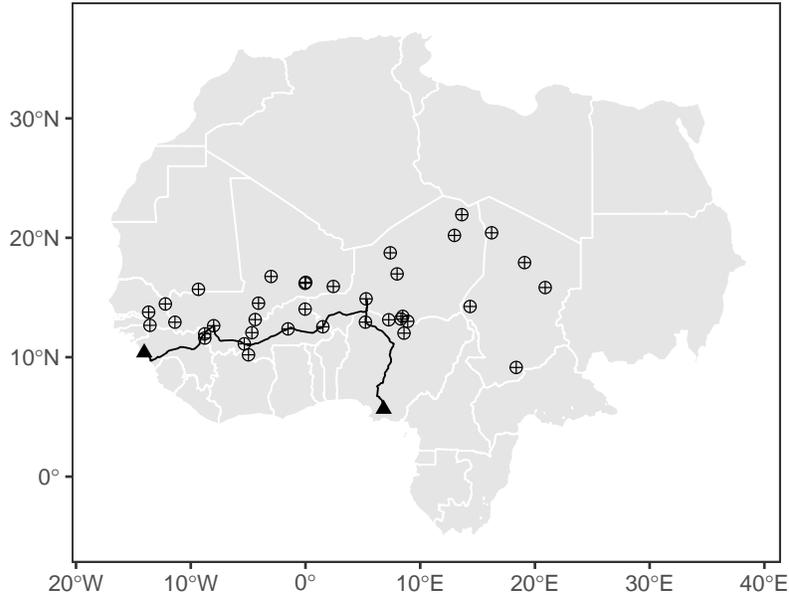
Survey Weights. First, IOM does not peg the number of FMS administered to total flows through an FMP. As a consequence, the probability of being sampled varies dramatically in aggregate across locations, from a low of 0.29% in Kantchari, Burkina Faso to a high of 33.00% in Bamako, Mali. Yet, the FMS data does not provide these survey weights. We compute these for each FMP-month by looking at the ratio of migrants who pass through a given FMP to the number of FMS administered (i.e., the inverse sampling probability).

Repeated Sampling. Second, some migrants pass through multiple FMPs and, thus, have repeated opportunities to be sampled for the FMS. Consider two individuals traveling to Tahoua, Niger: one departs from western Guinea and the other from southern Nigeria. Along their optimal route, we estimate that the Guinean would pass six FMPs, while the Nigerian would pass just one FMP before reaching Tahoua (see Figure 2).

At the first FMP that a migrant passes, their probability of being sampled is what we compute above (one over the number migrants in that FMP-month). Yet, once they move beyond that first FMP, their sampling probability increases. And because we do not know when they pass through each subsequent FMP along their route, we cannot confidently estimate their cumulative probability of being sampled. Our solution is to restrict attention to migrants surveyed at a “first FMP”:

- We build a full network of roads across Central, West, and North Africa using Open Street Map and supplemental roads from the UN Office for the Coordination of Humanitarian Affairs (OCHA).

Figure 2: Routes from Western Guinea (Boffa Prefecture) and Southern Nigeria (Oguta LGA) to Tahoua, Niger



- We then compute the optimal route along this network from every departure location (i.e., second-level administrative unit) to every FMP, penalizing travel along less-developed, smaller roads.
- We only retain an FMS if the migrant would not have previously passed another FMP along their optimal route. Figure 3 shows the first FMPs that the migrant from Western Guinea (Boffa Prefecture) reaches; we drop any FMS respondents from that prefecture observed beyond these four FMPs.

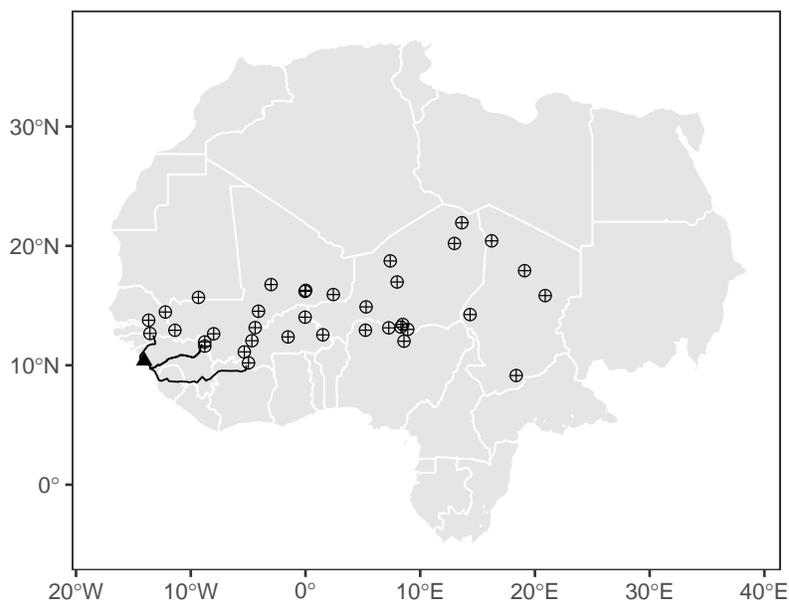
This procedure sacrifices observations (we retain 46.50% of flow monitoring surveys or 41,002 observations), but those are observations for which we cannot construct credible survey weights.

Non-random Attrition. Certain types of migrants may be more likely to stop their journeys (e.g., families). This generates non-random attrition: the migrants we observe further along a route may systematically differ from the population of migrants that embarked.

Restricting attention to first FMPs also addresses attrition. By only focusing on migrants sampled in the FMPs closest to their departure location we avoid over-sampling the types of migrants who journey further. This is an admittedly partial solution: we cannot account for attrition that occurs before migrants reach these first sampling points. Our empirical claims, thus, only pertain to the population of migrants that make it at least as far as their closest FMP.⁴

⁴Considering only departure locations in IOM’s West and Central Africa region, the average distance to a “first FMP” is 1417.15 kilometers (median: 1278.94 kilometers).

Figure 3: First FMPs for Migrant from Western Guinea (Boffa Prefecture)



2. Descriptive Characteristics of Migrants in West and Central Africa

2.1 Migrant Motivations

Why do individuals in West and Central Africa choose to migrate? When asked about their *primary* motivations for migrating, respondents overwhelmingly select economic reasons (69.5%) and then family-related reasons (19.1%).⁵ Still, several factors can influence an individual’s decision to leave. To capture this, migrants are asked to indicate their reason(s) for selecting their particular destination and can cite several factors.

Table 1 shows the range of reasons for migrating.⁶ Even when citing multiple reasons for migrants, economic reasons dominate (73.8%) followed by family (25.4%). Only 3.5% of migrants directly cite safety as a motivator for migrating. Individuals can only report what they perceive to be influencing their decision. However, the reasons they report could be influenced by other “root” causes. For example, a migrant may indicate that they chose to migrate for economic reasons, such as better job prospects; yet, violence could have impacted their local economy and, ultimately, reduced their job prospects. The respondent’s self-reported economic motivation is actually due to instability brought on by violence. Any characterization of migrants’ motivations should consider this limitation of self-reported data.

⁵This survey question asks: “what is the main reason for your journey?” Respondents must choose one of the following options: natural disasters (i.e. floods, drought, earthquake, etc.); war/conflict; targeted violence or persecution; economic reasons; access to services; re-join family; attend family event (wedding, funeral, etc.); or other.

⁶This question asks: “why did you specifically choose this destination country?” Respondents can choose multiple reasons from the following options: ease of access to asylum procedures; appealing socio-economic conditions (i.e. education and welfare systems, social security); job opportunities; family/relatives in the desired destination country; well established network of co-nationals; the only available/feasible choice (i.e. policy, geographic constraints); safety; followed friends and family (travel in group); seasonal migration; and returning to my country

Table 1: Migrants' reasons for their intended destination

Reason	Percent
Economic (73.8%)	
Job opportunities	57.14
Socio-economic appeal	28.15
Seasonal migration	8.69
Family (25.4%)	
Family / relatives in destination	21.52
Followed friends and family (travel in a group)	5.70
Safety (3.5%)	
Access to asylum	2.36
Safety	1.16
Other (15.1%)	
Returning to my country	10.90
Network of co-nationals	3.16
Only choice	1.55

¹ Respondents can select multiple answers so percentages do not sum to 100.

² Category percentages represent the percent of respondents who selected at least one reason within each category.

³ Sample: all respondents

2.2 A Snapshot of Migrant Profiles

Using migrant motivations along with other key differentiating factors such as gender and intended destination, Figure 4 summarizes characteristics of specific profiles of West and Central African migrants.

The FMS asks respondents about their intended final destination. We do not know whether migrants reach this intended destination; we can only report on their self-reported aspirations. Overall, only about 1 in 10 African migrants (10%) intend to travel to Europe. Compared to migrants who intend to stay within Africa, individuals with intentions to migrate to Europe are more likely to be single and unemployed, but also more highly educated (91% have secondary education or above compared to 42% of within-Africa migrants).

Figure 4: Profiles of Migrants

	Overall	Europe-bound (10%)	Within Africa (89%)	Male (83%)	Female (17%)	Economic (74%)	Safety (3%)	Family (25%)	Seasonal Migrant (9%)	Asylum Seeker (2%)
Age	29.83	28.9	29.94	30.08	28.59	29.31	31.9	29.12	34.43	31.54
Male	0.83	0.79	0.83	1	0	0.89	0.87	0.71	0.96	0.89
Sec. School or Above	0.48	0.91	0.42	0.45	0.58	0.48	0.41	0.49	0.21	0.45
Self-Employed	0.47	0.14	0.51	0.49	0.38	0.46	0.58	0.47	0.75	0.55
Single	0.56	0.74	0.54	0.57	0.48	0.61	0.55	0.5	0.41	0.61
Unemployed	0.37	0.8	0.31	0.38	0.28	0.45	0.24	0.23	0.18	0.32
Traveling to Neighboring Country	0.62	0	0.7	0.63	0.58	0.57	0.7	0.63	0.91	0.6
Already Attempted to Migrate	0.28	0.28	0.28	0.27	0.35	0.28	0.53	0.32	0.36	0.56
Wants to Return	0.84	0.59	0.87	0.83	0.86	0.82	0.85	0.92	0.68	0.79
Traveling in Group	0.3	0.28	0.31	0.27	0.46	0.29	0.55	0.37	0.38	0.52

Figure 4: The coloring for each tile is based on how much it deviates from the value in the overall sample of migrants. Darker red colors indicate a deviation less than the overall sample value and Darker blue colors indicate a deviation greater than the overall sample value. Economic, Safety, and Family labels indicate those who cited each category as a motivator for migrating.

Among migrants who reported that they intend to stay within Africa, we can determine whether migrants are intend to travel to neighboring countries or further. Of all migrants who intend to stay in Africa, 70% report that they intend to move to a neighboring country (a country that is connected by a border to their departure country). Table 5 shows the differences between the characteristics of migrants who intend to migrate to a neighboring country compared to migrating beyond a neighboring country. Single, more highly educated, and unemployed individuals are more likely to intend to travel beyond a neighboring country.

Male migrants differ along several dimensions depending on whether they did or did not indicate that economic factors played a role in choosing their destination. In Table 6, we compare male migrants who cited economic reasons for their destination to male migrants who did not. The plot shows that economic male migrants are more likely to be single and unemployed compared to male migrants who are not motivated by economic factors.

Figure 5: Differences in Migrants by Intended Destination (Neighboring Country vs. Beyond Neighboring Country)

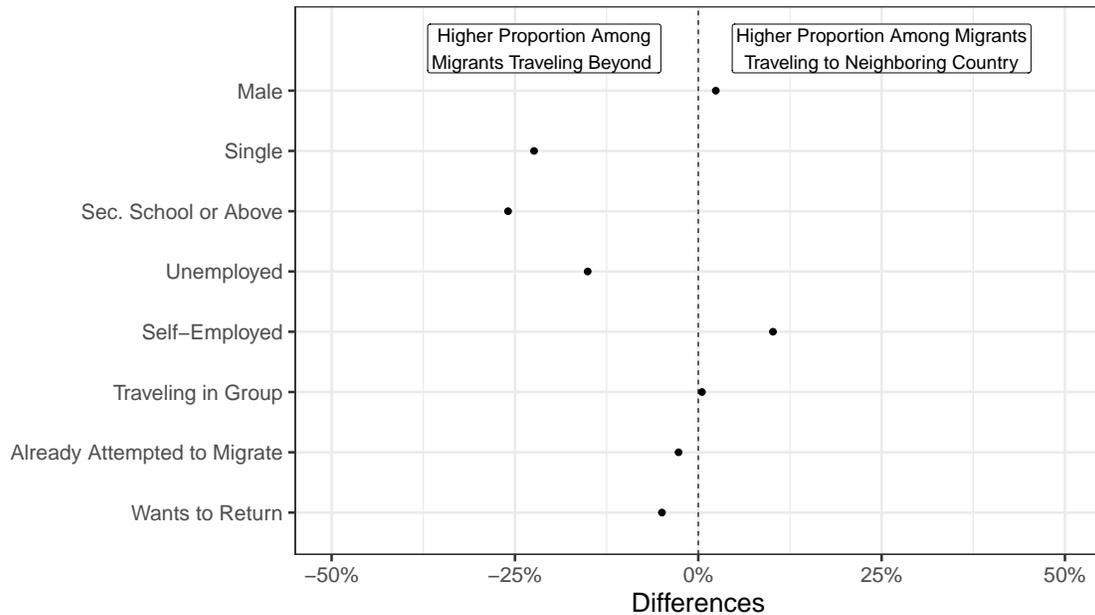


Figure 5: Each point indicates the difference between the average value of characteristics for migrants intending to travel to a neighboring country and migrants intending to travel beyond a neighboring country. Points on the right indicate higher averages among those who are traveling to a neighboring country and points on the left indicate higher averages among those who are traveling beyond a neighboring country.

Of all migrants, 9% of respondents indicate that they are seasonal migrants. Table 6 compares seasonal male migrants to other male economic migrants (those who selected their destination for job opportunities and/or socio-economic appeal). The results show that seasonal migrants are less likely to be single, less likely to have a secondary of higher education level, and more likely to identify as self-employed compared to other male migrants who are motivated by economic factors besides seasonal migration.

Figure 6: Differences in Migrants by Motivation

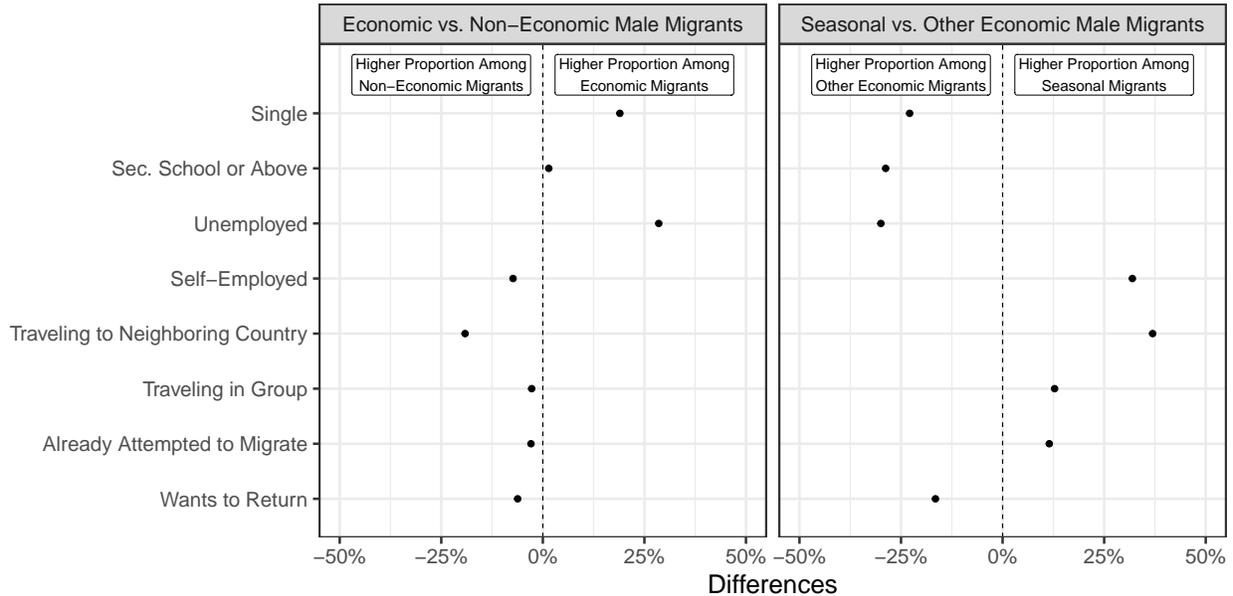


Figure 6: In the first panel, each point indicates the difference between the average value of characteristics for economic migrants and non-economic migrants. Points on the right indicate higher averages among economic migrants and points on the left indicate higher averages for non-economic migrants. In the second panel, each point indicates the difference between the average value of characteristics for seasonal migrants and other economic migrants. Points on the right indicate higher averages among seasonal migrants and points on the left indicate higher averages for other economic migrants.

The FMS asks migrants about their birth country, allowing us to determine which nationalities make up different sets of migrants. Nigerian migrants disproportionately make-up Europe-bound migrants: while Nigerians make-up 78% of Europe-bound migrants, they only make up 16% of all migrants.

Only 17% of within-Africa migrants are women. Female migrants are more likely travel in a group than their male counterparts. Moreover, female migrants make up a larger share of the migrants who are motivated by family reasons compared to those motivated by economic or safety reasons. Overall, 47% of female migrants cite family as one of their motivations for migrating while only 23% of male migrants cite family as one of their motivations.

3. Differences in Approaches

As we described above, we weight the IOM survey data based on estimated sampling probabilities. We also focus only on surveys from those migrants observed at their first FMP, avoiding the over-sampling those who pass multiple FMPs. This approach yields a few key differences in our results compared to an unweighted approach:

- An unweighted approach finds that 23% of migrants intend to go to Europe compared to 10% in a weighted approach.

- By the weighted approach, 78% of Europe-bound migrants are Nigerian while 16% of all migrants are Nigerian. Using an unweighted approach, 34% of Europe bound migrants are Nigerian (still the highest nationality among Europe-bound) while 17% of all migrants are Nigerian.
- We find that 3.5% of respondents select safety as at least one reason for migrating while an unweighted aggregation of the surveys finds this to be 5.4

Our approach to the data seeks to limit any over-sampling of migrants who travel further and make it through more FMPs. As such, we see lower estimates of migrants who intend to go to Europe since such migrants will be repeatedly sampled along their longer journeys north.