

Analysis of Kebele Proximity on Reported RLAS Transactions

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Contents

Acknowledgements.....	2
Introduction	3
Previous Research Conducted: the RLAS Transaction Survey	3
Research Conducted for this Note: Analysis of Kebele Proximity on Reported Transactions	3
Sample Selection.....	4
Description of Transaction Density Analysis	4
Findings	5
Key Finding.....	7
Woredas with Special Features	7
Findings from the RLAS Transaction Survey	8

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Introduction

LIFT's 2018 Annual Review recommended that the project conducts further quantitative studies to evaluate the percentage of subsequent land transactions that are formally registered (compared with non-registration or informal registration practices) for each type of transaction considering social and economic factors, and specifically the proximity to the WLAO.

Previous Research Conducted: the RLAS Transaction Survey

A large-scale household survey was conducted in June/July 2019, interviewing 9,600 households across Oromia, Amhara, SNNPR, and Tigray to estimate the percentage of formal transactions as compared to non-registration or informal registration practices – allowing to compare social and economic factors of households that do, or do not formally register land transactions. This study followed a **mixed methods approach**, applying both quantitative and qualitative research methods. The survey methodology categorised sampling locations by proximity and remoteness. For each household, proximity to the woreda capital was noted as being:

- Within 10 km of woreda capital;
- within 20 km of woreda capital;
- within 30 km of woreda capital; or
- more than 30 km from woreda capital.

Furthermore, the proximity to road infrastructure was noted and each household was categorised as:

- proximate to primary or asphalt road; or
- remote, secondary roads or tertiary roads only.

This allowed to compare the likelihood of formally registering a land transaction for households that live in more remote areas with households that live in proximity of Woreda centres or asphalt roads. It was found that Landholders are much more likely to formally register transactions in locations closer to the woreda centre or an all-weather road as compared to landholders living in remote locations. A clear difference between remote and non-remote locations was found. Landholding households in proximate locations were 50% more likely to have registered a transaction, at 15.6% versus 10.1%. These findings are statistically significant and show that landholders in more remote locations follow informal practices much more frequently than landholders in locations proximate to a woreda centre or an all-weather road. Findings from this research relating to proximity are discussed in more detail in Section 4 below. For a full account of the findings of this research please see *LIFT's RLAS Transaction Survey report, 2019*.

Research Conducted for this Note: Analysis of Kebele Proximity on Reported Transactions

To complement findings from the RLAS transaction survey, LIFT conducted a desk analysis of recorded RLAS transaction data in iWORLAIS¹, focusing on the distribution of transactions by woreda. LIFT has access to detailed data back-ups across all operational RLAS woredas, which includes detailed geo-spatial data of parcels for which a transaction was registered. Note that this includes **all transactions** that were formally registered in iWORLAIS since RLAS has been installed by LIFT. It is therefore possible to map all transactions registered in iWORLAIS by the location of the parcel, and by the Kebele the parcel is located more specifically. This allows to analyse whether more transactions are registered in parcels that are located closer to the woreda centre or a main road or asphalt road. To visualise the density of transactions in more remote and more proximate locations, LIFT has prepared detailed maps for 12 woredas across Amhara, SNNPR, Tigray, and Oromia that show transaction density across Kebeles in that woreda. The findings are clearly pronounced – Kebeles that are further away from the Woreda centre have a much lower density of parcels, where a transaction was formally registered in RLAS and then in iWORLAIS. The difference in density of transactions is however even more pronounced when looking at the distance from main roads or asphalt roads, highlighting the importance of road accessibility to Kebeles as the main factor correlating with transaction density.

Section 2 below described the methodology applied for this research, while section 3 highlights findings.

¹ iWORLAIS – is an interim electronic mass registration system whereby subsequent transaction can be recorded

Sample Selection

12 Woredas were selected for the analysis across the four programme regions Amhara, Oromia, SNNPR, and Tigray using the following criteria:

- **Transaction size:** A minimum number of transactions is needed to conduct the analysis in the first place and be able to reliably compare transaction density across different Kebeles. Further, Woredas with relatively high and low number of transactions were included to be able to get a cross-section across more active and inactive Woredas.
- **Topography:** A mix of Woredas with either rugged, flat or mixed topography was selected.
- **Distance to major city:** Woredas as such were categorised as remote or proximate to a major economic hub. This is because more remote Woredas have different characteristics compared to less remote Woredas, especially when it comes to road infrastructure
- **Number of major asphalt roads in Woreda:** A mix of Woredas with and without major asphalt roads was selected.

Using a mix of Woredas with different attributed allows to triangulate findings and check, whether trends hold even across these different types of woredas, and across regions. Table 1 below shows the 12 selected woredas and their selection attributes.

Table1: Selected Woredas by selection criteria

Region	Woreda	Number of transactions	Topography	Close to Major City?	Distance to closest Major City	Number of asphalt roads
Amhara	Machakel	78	Flat	Yes	28 km from Deberemarkos	1
	Gozamn	11	Mixed	Yes	0km from Debere Markos	1
	Enarj Enawuga	226	Rugged	No	113 km from Deberemarkos	0
Oromia	Lode Hetosa	1,082	Mixed	Yes	39 km from Asela	0
	Guduru	126	Rugged	Yes	42km from Shambu	0
	Wenchi	1390	Mixed	Yes	10 km from Woliso	1
SNNPR	Meskan	1,144	Mixed	No	78 km from welqite	3
	Mirab Badiwacho	64	Flat	No	73 km from Hosana	0
	Kachabira	425	Mixed	Yes	15 km from Durame	1
Tigray	Doguatemben	2,307	Rugged	Yes	38 km From Mekele	0
	Laelay Michew	413	Mixed	Yes	0km from Aksum Town	1
	Hintalowajerat	1,804	Rugged	Yes	45 km from Mekele	2

Description of Transaction Density Analysis

Number of transactions per Kebeles were analysed across several dimensions:

1. **Analysis 1 – Dot density:** For each woreda, a dot density map was created using spatial data of Kebeles and Woredas. Each dot represents one transaction and maps were saved as a pdf for electronic transmission.
2. **Analysis 2 – Number of transactions per Kebele:** For each Woreda a map was created that represents each Kebele through single graduated colour symbology indicating the volume of transactions in the kebele. The graduation intervals are adapted in proportion to the overall number of transactions in each Woreda, with a minimum of three intervals and maximum of six intervals.
3. **Analysis 3 – Percentage of transactions per Kebele:** For each woreda a map with similar symbology in compared to Analysis 2 but indicating the percentage of transactions in the Kebele. Darker shades represent higher transaction percentages.
4. **Analysis 4 – Distance from Woreda town:** For each woreda a map indicating an equal interval buffer around the woreda town. The number and width of the intervals depend on the overall area of the woreda and are specified in each map respectively. Each interval is symbolised with a graduated colour symbology indicating the density of transactions in the interval. A minimum of three intervals and maximum of six intervals is used. Darker shades represent higher transaction volumes.

5. **Analysis 5 – Distance from major road:** For each woreda a map indicating an equal interval buffers around principal roads running through the Woreda. The number and width of the intervals depends on the overall area of the woreda. Each interval is symbolised with a graduated colour symbology indicating the density of transactions in the interval. A minimum of three intervals and maximum of six intervals is used. Darker shades represent higher transaction volumes.

Findings

Results from Analysis 1-5 Across Woredas

For each Woreda and across the regions, the produced for Analysis 1-5 were studied in detail. Results are similar across Woreda and region and will therefore be discussed by type of analysis below.

Figure 1: Dot density analysis for Laelay Mayichew, Tigray

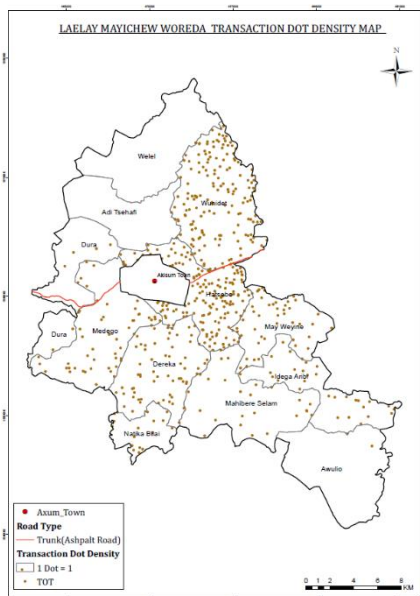
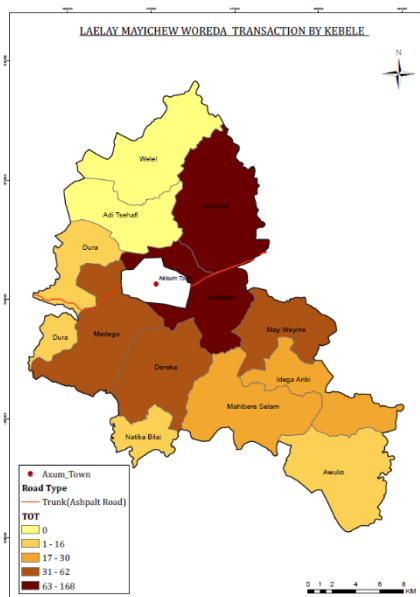


Figure 2: No. transactions per Woreda for Laelay Mayichew,



Analysis 1 – 3

Maps showing transaction density per Kebele through dots, where each dot symbolises a single transaction, are a good start to get an impression of how transactions are distributed across the Woreda. Here, already trends of transaction density can be eye-balled. Figure 1 below shows the dot density analysis for Laelay Mayichew Woreda in Tigray. Clear patterns of more transaction dots closer to the Asphalt road can be identified. While this gives a first impression of the distribution of transactions, findings will crystallise more thorough Analysis 4 and 5 outlined below.

Analysis 2 and 3 then translate the density of transaction into different colour codes, with darker colours showing more transactions (Analysis 2) or a higher percentage of overall transactions (Analysis 3). Figure 2 below shows the equivalent map for Laelay Mayichew Woreda in Tigray for number of transactions per Kebele (Analysis 2). Overall, trends identified across Woredas are similar and with only slight differences found between Analysis 2 and 3.

Analysis 4: Distance from Woreda town

While some trends can already clearly be identified when eyeballing maps from Analysis 1, 2 and 3, maps showing transaction density and number of transactions by distance from Woreda town help to analyse findings further. When comparing maps for Analysis 4, findings for most Woredas show a very clear pattern of much higher transaction density in intervals closer to the Woreda centre when compared to intervals in more distant intervals. Very clear examples are Laelay Mayichew, Hintalo Wajirat, Kachabira, and Wonchi. Figure 3 below shows the maps for Kachabira, where transaction density decreases with each additional interval that is further away from the Woreda town.

There are however two Woreda (Lode Hetosa and Mirab Badewacho), where the picture is not as clearly defined. For example, in Lode Hetosa transaction density does not seem to be primarily defined by proximity to Woreda town, but by proximity to roads. See Figure 4.

Figure 3: Transaction density by distance to Woreda centre for Kachabira, SNNPR

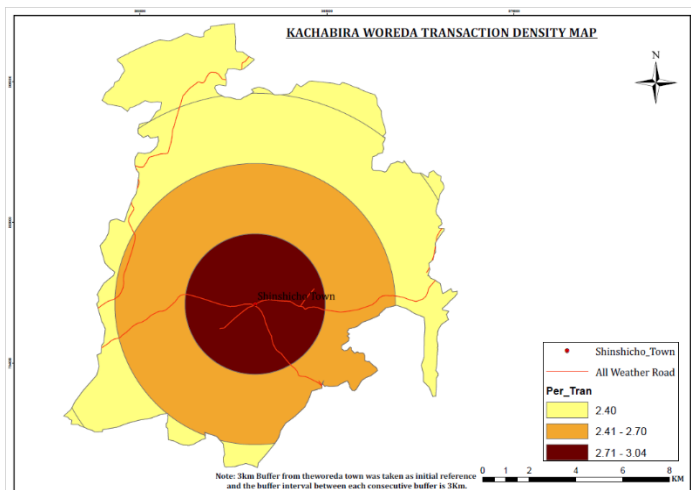
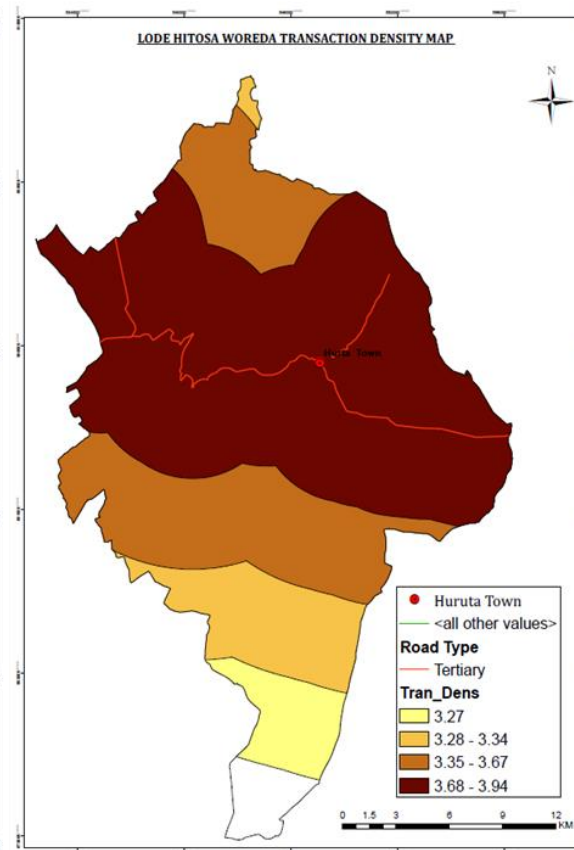
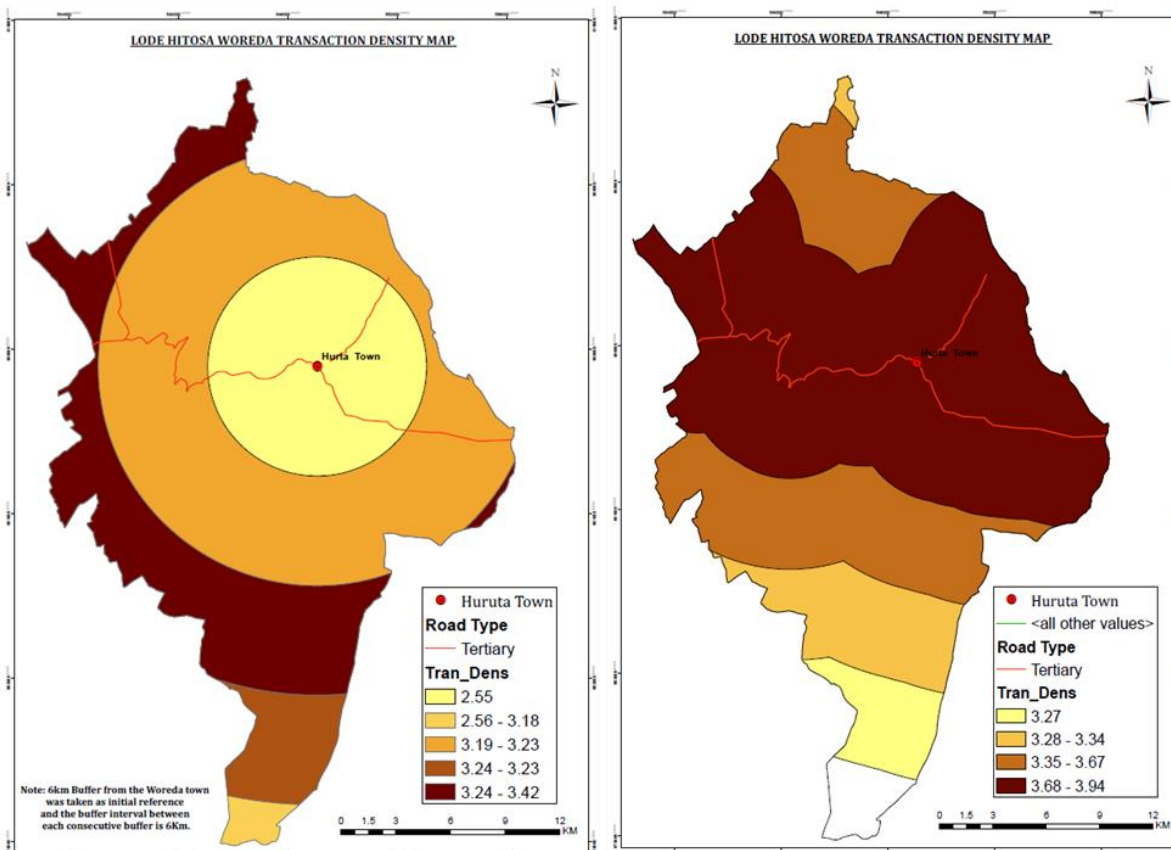


Figure 4: Transaction density by distance to Woreda centre and by distance to roads for Lode Hetosa, Oromia



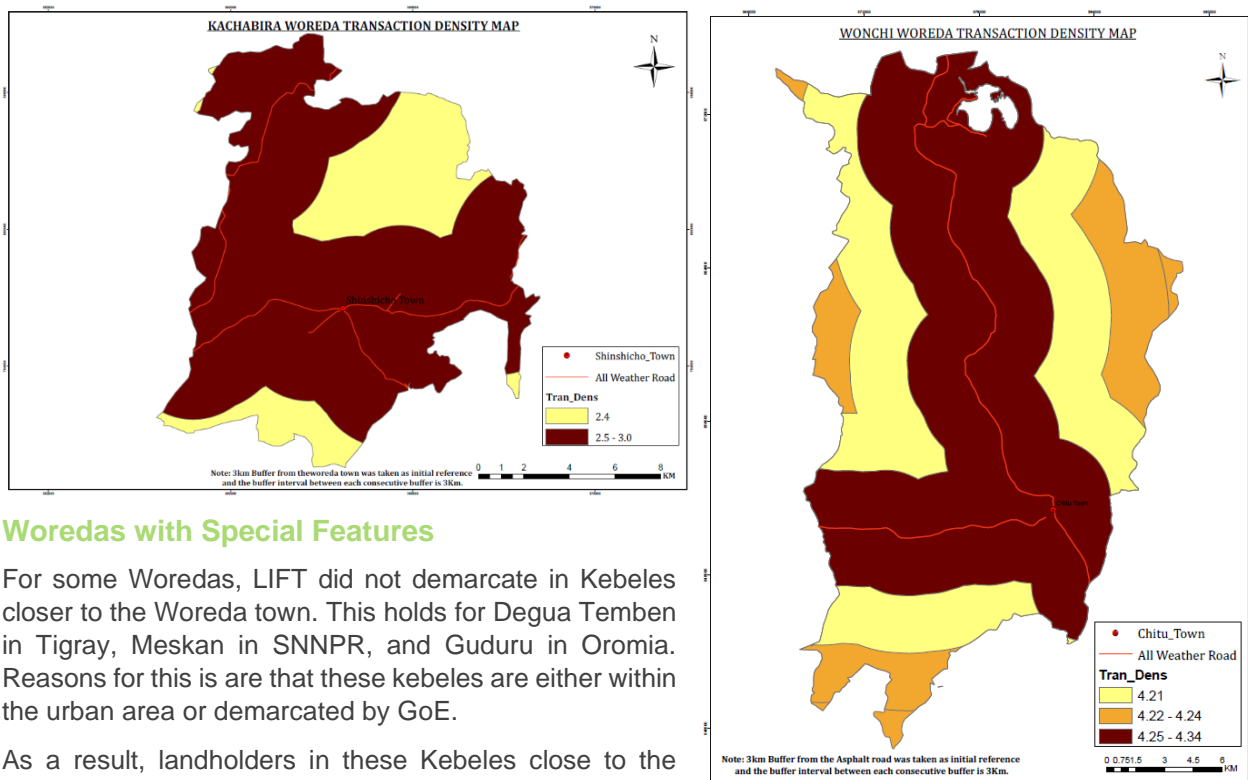
Analysis 5: Distance from Roads

While, as described above, there are some few exemptions to the consistency comparing distance to the Woreda town with transactions density, findings for Analysis 5, comparing transaction density with distance to roads, are all but consistent with all Woredas showing clearly pronounced trends. For all Woreda maps, the highest transaction density can be found within immediate proximity of any road that crosses the Woreda, pointing at Kebele accessibility as a key constraint to registering land transactions. Figure 5 shows the equivalent maps for Kachabira Woreda in SNNPR and Hintalo Wajirat in Tigray. Both maps show very distinct density patterns following the roads crossing the Woreda.

Key Finding

Overall it can be concluded that while the distance to the Woreda town certainly is a determining factor, the distance to roads seems to be more consistently coming-out as the key constraint to registering transactions. This analysis especially feed into the upcoming Mobile Back Office Centre (MBOC) intervention, which will be piloted in Model Offices. Here distance from roads will be especially taken into consideration when determining the location for MBOCs.

Figure 5: Transaction density by distance to road for Kachabira, SNNPR and Hintalo Wajirat, Tigray



Woredas with Special Features

For some Woredas, LIFT did not demarcate in Kebeles closer to the Woreda town. This holds for Degua Temben in Tigray, Meskan in SNNPR, and Guduru in Oromia. Reasons for this is are that these kebeles are either within the urban area or demarcated by GoE.

As a result, landholders in these Kebeles close to the Woreda town were not able to conduct any land transactions. This partly distorts the proximity analysis for these Woredas, since no transactions close to the Woreda town will have been registered. Interestingly, trends do however continue in the same pattern as for other Woredas, when disregarding these specific Kebeles, for which no SLLC is available. Findings are therefore still consistent with other Woredas, meaning that transaction density decreases the further a Kebele is away from the Woreda town or from a major road.

Figure 6: Number of transactions per Kebele for Meskan, SNNPR (Analysis 2)

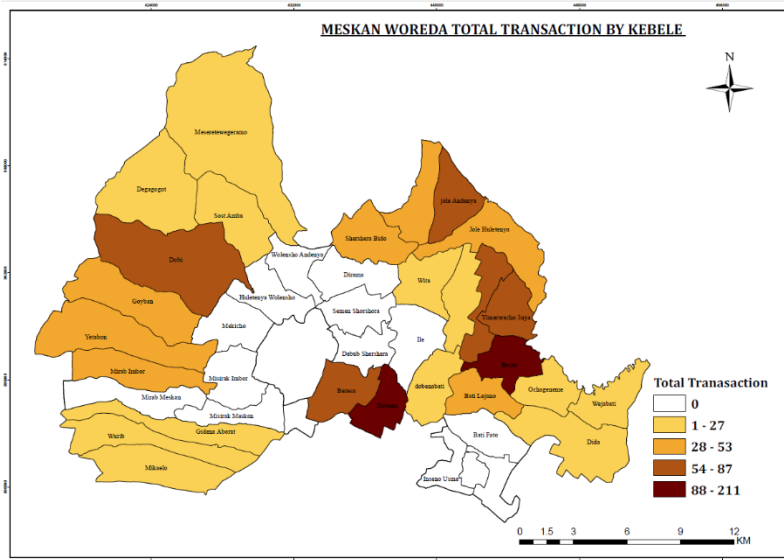
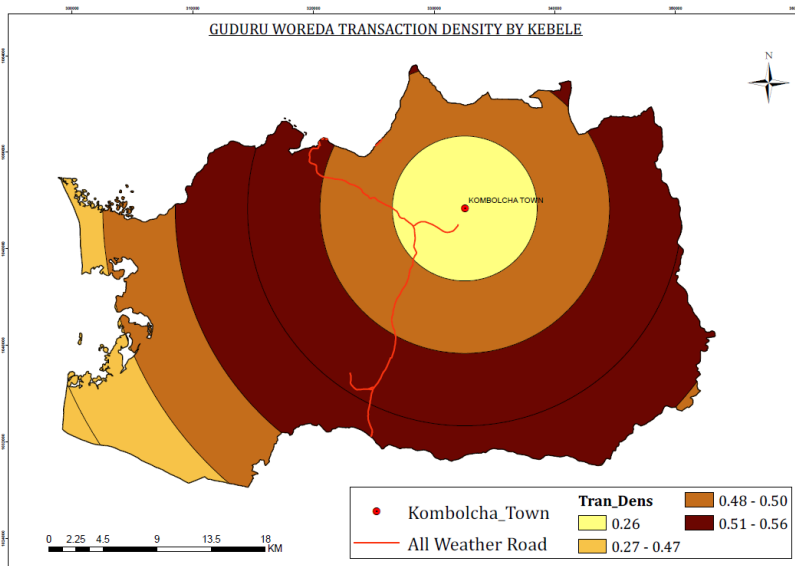


Figure 7: Transaction density by distance to Woreda town for Guduru, Oromia



See for example Figure 6 and Figure 7 below for Meskan in SNNP. In Figure 6, it can be seen that there are some Kebeles close to the Woreda town that have zero transactions. It was confirmed by LIFT that these Kebeles were indeed not demarcated. Therefore, by definition, no transactions can be expected in these Kebeles.

Figure 7 shows the transaction density by distance to the Woreda town for Guduru, where 7 Kebeles close to the Woreda town were not demarcated either. The impact of this can be seen through the low transaction density close to Woreda town. When, however, looking at the 3rd to 6th intervals away from the Woreda town, a clear pattern of decreasing density with further distance can be observed again. It can be stated that even for these Woredas, where transaction data is missing close to the Woreda town, number of transactions are decreasing with distance to Woreda town or roads.

Findings from the RLAS Transaction Survey

LIFT's RLAS transaction survey² conducted in June/July 2019 found that Landholders are much more likely to formally register transactions in locations closer to the woreda centre or an all-weather road as compared to landholders living in remote locations. A clear difference between remote and non-remote locations can be found. Landholding households in proximate locations were 50% more likely to have registered a transaction, at 15.6%

versus 10.1%. These findings are statistically significant and show that landholders in more remote locations follow informal practices much more frequently than landholders in locations proximate to a woreda centre or an all-weather road. Higher transaction costs and weaker awareness outreach come-out as some of the main reasons for this from the qualitative research.

Two measures of remoteness/non-remoteness were calculated, one comprising proximity to the woreda centre, the other comprising proximity to all-weather roads infrastructure. If a kebele met either or both criteria of within 20kms of the woreda centre or having an all-weather road reach the woreda, it was classified as 'proximate'. If it met neither criteria, it was classified as 'remote'. Almost half fell into each category (48.4% proximate, 51.6% remote), allowing for statistically powerful comparisons between the two groups. The likelihood of undertaking any transaction, be it a formal or informal transaction, is shown by proximate and remote locations in Figure 8 below.

² See LIFT's *RLAS transaction survey report, 2019* for more detail on methodology and overall findings.

Figure 8: Levels of Transactions (formal + informal) by Remoteness

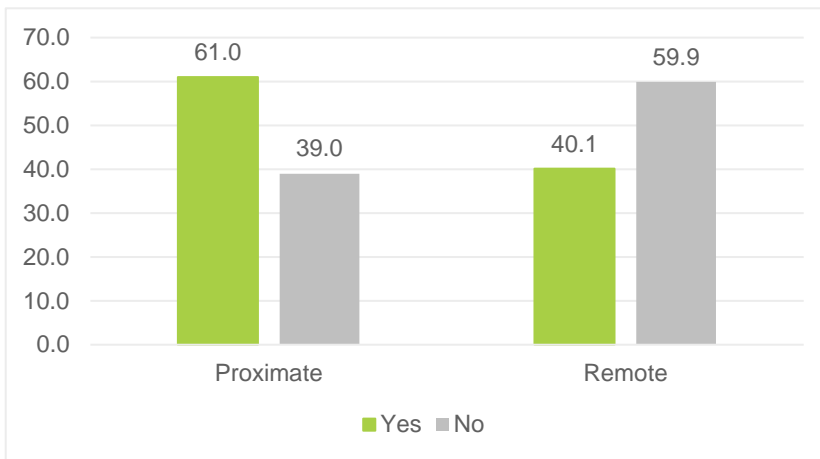
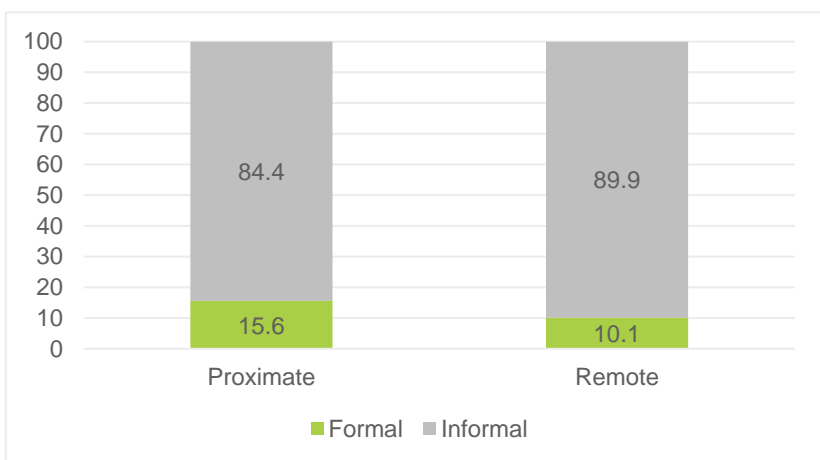


Figure 9: Percentage of formal and informal transactions by remoteness



The likelihood of engaging in a transaction, be it a formalised or an informal transaction, was significantly higher in woreda that were proximate to the woreda centre or all-weather roads infrastructure than those that were not, at 61% versus 40.1%, respectively. This hints at a higher activity of land transactions in less remote woredas **in general**, as compared to remote areas – indicating a more active rural land market.

Next, the likelihood of registration of transactions against this proximity or remoteness was calculated and is summarised in the following figure for all transaction types merged, including sharecropping. Results are shown in Figure 9 below.

A clear difference between remote and proximate locations can be found. Landholding households in proximate locations were 50% more likely to have registered a transaction, at 15.6% versus 10.1%. These findings are statistically significant and show that landholders in more remote locations follow informal practices much more frequently than landholders in locations proximate to a woreda centre or an all-weather road.

This implies that to improve registration practices in more remote areas, additional efforts are necessary to close the gap to more proximate locations.

Key Finding:

Comparing the likelihood of formally registering a land transaction between remote and less remote locations using the RLAS transaction survey data yields similar results compared to the proximity analysis conducted using registered transactions in iWORLAIS/ISLA. While it can be concluded that the distance to either Woreda centre or major road has a clear impact on formally registering transactions, it was found through the proximity analysis above that distance to roads plays an even larger role than just distance to Woreda centre. This also confirms qualitative research conducted, where most landholders indicated that travel is the one of the biggest disincentives to registering transactions.