Table 1: Associations between NURHI program elements and modern contraceptive use in Kaduna and Oyo states by place of residence

	Other urban areas N=2,215			All rural areas N=2,331		
Program exposure variables	OR	95% CI	p-value	OR	95% CI	p-value
Community level radio exposure	5.55	2.10-14.70	0.001	4.08	1.64-10.17	0.003
General TV	0.92	0.70-1.20	0.516	0.89	0.46-1.71	0.722
Exposure to NURHI radio	1.19	0.87-1.62	0.274	1.17	0.83-1.67	0.371
Exposure to NURHI outreach	0.83	0.63-1.08	0.164	1.67	1.19-2.34	0.003
Exposure to NURHI badge	1.85	1.32-2.58	0.000	0.81	0.39-1.66	0.559
Exposure to family planning print media	1.04	0.76-1.42	0.810	1.65	0.79-3.44	0.185
Distance to NURHI program facility	0.97	0.95-0.99	0.001	0.99	0.98-1.01	0.421
Distance to facility located in a program city, offering informational or educational materials	1.07	0.93-1.23	0.325	0.95	0.92-0.98	0.004
Distance to any facility (rural or urban) offering reproductive health services	1.01	0.91-1.13	0.792	0.98	0.95-1.01	0.128
Travel to a NURHI study city	1.02	0.72-1.45	0.911	1.45	0.87-2.44	0.155

*Models control for marital status, age, religion, primary language spoken at home, education, wealth, and state of residence, and adjusted for the clustered survey design.

Later models, not shown, indicated endogeneity in the program exposure variables (NURHI radio, NURHI outreach, NURHI badge, and print media). This suggests that, while there may be an association between a woman responding that she had been exposed to a program element and her mCPR use, this may be due to individual characteristics rather than program effect, as women who use modern contraceptive methods may be more likely to remember being exposed to family planning programming. These models therefore do not necessarily suggest a causal relationship between NURHI programming and mCPR in rural and other urban areas but rather are indicative of associations. Variables measuring distance to family planning resources or travel to a study city are less prone to endogeneity, suggesting that access to family planning resources may be an important predictor of modern contraceptive use, particularly in rural areas.

MLE Measurement, Learning & Evaluation Project for the Urban Reproductive Health Initiative
Research Brief

DIFFUSION OF NURHI PROGRAMMING OUTSIDE OF STUDY CITIES AND MODERN CONTRACEPTIVE USE IN NIGERIA, 2015

A NURHI designed umbrella promoting family planning is pictured from atop as traffic passes through the 'Oja Oba' market in Ilorin metropolis in Nigeria's central state of Kwara, November 6, 2012. © Akintunde Akinleye/NURHI.

Key Points:

- Women living outside of NURHI study cities (i.e., other urban areas and rural areas of Kaduna and Oyo states) were exposed to NURHI program activities; exposure was lowest in rural areas.
- There is high mobility in Nigeria with women visiting other urban areas and rural areas. Mobility is a manner by which NURHI program activities and messages may diffuse outside of the original study sites.
- Various NURHI program activities were associated with modern contraceptive use in other urban areas and rural areas. This is suggestive of the effect of NURHI program diffusion outside the implementation cities.

Background

The Nigerian Urban Reproductive Health Initiative (NURHI) sought to increase modern contraceptive use via a variety of program elements in six cities. In 2015, the Measurement, Learning & Evaluation (MLE) Project for the Urban Reproductive Health Initiative conducted a cross-sectional survey in Oyo and Kaduna states in Nigeria to study whether NURHI program elements diffused from implementation cities in these states (the cities of Ibadan and Kaduna, respectively) to other urban or rural areas. Diffusion of program elements may contribute to sustainability of increased modern contraceptive use.

The Urban Reproductive Health Initiative defined diffusion as, "the spread and adoption of new information, ideas, beliefs, or social norms capable of influencing family planning decisions and behaviors that occur through social interaction and influence, either at the interpersonal level or through impersonal channels such as the mass media." A social multiplier

effect may amplify the direct program effect as information networks can increase the speed of change in fertility behavior already taking place. This brief explores ways that program elements may have diffused via these interpersonal or mass media channels.

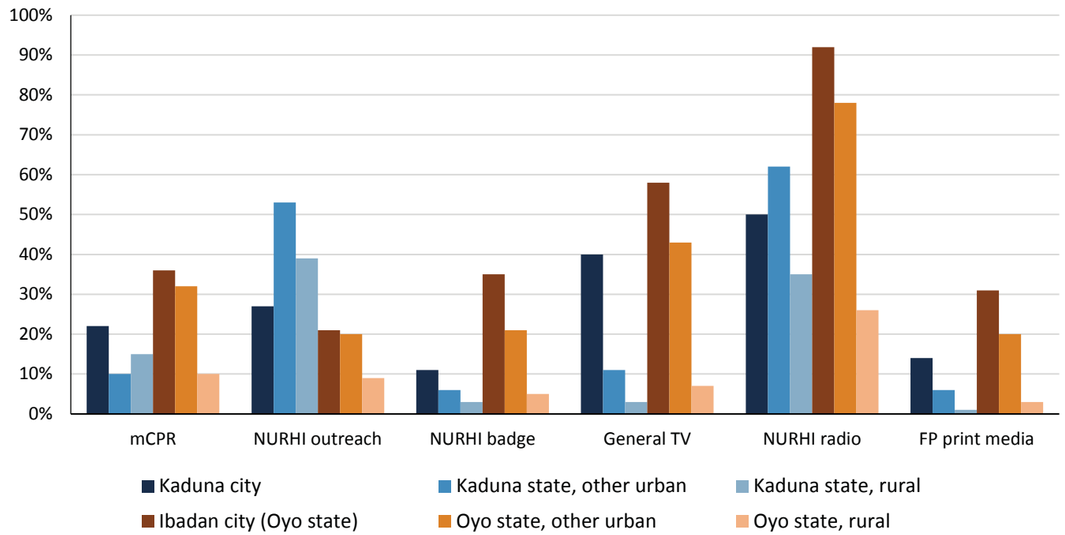
Modern contraceptive use and exposure to family planning program activities by area

As seen in Figure 1, modern contraceptive use (mCPR) and exposure to family planning program elements were generally higher in Oyo state than in Kaduna state. This is not unexpected given that in a previous survey (2010/2011), very few women in the northern city of Kaduna were using family planning as compared to the percentage using in the southern city of Ibadan; these are expected northern and southern patterns in Nigeria. Within each state, mCPR and exposure to family planning program activities was generally highest in NURHI program cities (Ibadan and Kaduna), slightly lower in other urban areas, and lower still in rural areas. This suggests that program diffusion followed a hierarchical pattern, starting in program cities, moving first to other nearby urban areas, and then into rural areas.

Possible mechanisms for diffusion of program elements to rural areas or other urban areas

One possible mechanism for diffusion of NURHI program elements to rural areas or other urban areas may be travel between program cities and other residential areas. As seen in Figure 2, 50% of rural women in Kaduna state had a friend from an urban area visit them, and 8% had a friend from an urban area talk about family planning during the visit. Similarly, 42% of rural women in Oyo state had a friend from an urban area visit them, and 11% had a friend from an urban area talk about family planning during the visit. Percentages of visitation from urban areas and discussion of family planning were higher among women living in Kaduna city, Ibadan city, and other urban areas in both states than in rural areas, which might help explain the higher exposure to program elements in other urban areas than in rural areas.

Figure 1. Exposure to NURHI program elements by place of residence in MLE endline cross-sectional survey, 2015



Associations between program elements and modern contraceptive use among women in other urban areas and rural areas of Kaduna and Oyo states.

We used logistic regression models that corrected for the clustered sampling design of the survey to consider the association between modern contraceptive use and exposure to family planning program activities and access to family planning services. Women can also be indirectly exposed to mass communication through social interaction. We test this by including the percent of women in a community that were exposed to mass communication via the radio in addition to women's direct exposure. As seen in Table 1, among women in other urban areas, exposure to a NURHI badge and community level exposure to family planning messages on the radio were significantly associated with mCPR; this is suggestive of diffusion of program effects. Distance to a NURHI program facility was negatively associated with mCPR, meaning that as distance to a program facility increased, the likelihood of using modern contraceptives decreased.

Among rural women, those who were exposed to NURHI outreach were more likely to use modern family planning. Other factors in rural areas that had positive but not significant associations included exposure to NURHI radio, family planning print media, and traveling to a NURHI study city in the last year. While individual radio exposure was not significant, community level exposure to family planning messages on the radio was significantly associated with increased mCPR and is suggestive of diffusion of radio messages. In addition, women who lived further from facilities offering information or educational materials on family planning or any facility offering reproductive health services were less likely to use modern family planning.

Figure 2. Percentage of women who visit other urban areas and rural areas and discussion of family planning when visiting by place of residence, MLE endline cross-sectional survey, 2015