Urban Fertility in Zambia at the turn of the 20th Century: Understanding Fertility Decline amidst de-Urbanization

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Introduction

Zambia has often been cited as an example of rapid African urbanization driven by industrialization, and prior to the 1980s held up as an African example of Western patterns of urbanization and modernization (Ferguson, 1999). However, the majority of the urban population is poor and has seen real decreases in their wages in the 1990s and 2000s. Urban livelihoods had long been constrained by shortages of goods and a shrinking formal economy, and structural adjustment policies exacerbated these constraints while ending programs that provided an urban safety net. Furthermore, Zambian urban growth is being driven by circular migration and natural increase, rather than permanent rural-urban flows (Potts, 2009). As a result, "urban" in the Zambian context cannot be considered to provide the economic benefits generally associated with urban residence and calls into question whether the mechanisms assumed to reduce fertility in an urban setting would apply in this context.

Fertility rates in Zambia remain high, with a total fertility rate estimated to be 6.2 in 2007 (CSO et al, 2009). Fertility rates in urban areas were higher than rural areas in 1980, though by 1990 there was very little difference in fertility rates. Between 1990 and 2000 urban total fertility rates dropped by 22% while rural fertility rates remained stable. Potts (2005) attributes urban fertility decline to extreme urban poverty and the effect of HIV mortality. Fertility declines between the 1970s and 2000 occurred along with declines in living standards and rising child mortality (Potts and Marks, 2001) instead of in response

to industrialization and reduced child mortality. While the Copperbelt has experienced de-urbanization due to the dramatic decline of the copper mining industry, Lusaka has continued to maintain its level of urbanization and grow in more recent years. The objective of this research is compare fertility and proximate determinants of fertility between urban and rural populations, and between urban Copperbelt and urban Lusaka to understand how changes in fertility at the turn of the 20th century were being effected by these different urbanization processes.

Data

Zambia Demographic and Health Survey (ZDHS) data from 1992, 1996, 2001-02 and 2007 will be used to explore differentials in urban-rural fertility and the proximate determinants of fertility during Zambia's counter-urbanization (ZDHS 1992; ZDHS 1996; ZDHS 2001-02; ZDHS 2007). In 1992, 39.5% of the sample was living in urban areas and declined to 22% in 2001-02 before increasing to 30% in the 2007 sample. The proportion of the urban sample living in the Copperbelt Province consistently declined over this period from 45.5% in 1992 to 19% in 2007; the proportion of the urban sample living in Lusaka also declined over this period though not as sharply, from 30% to 21%.

Methods

Proximate determinants of fertility are compared between urban and rural areas in all of Zambia as well as between Copperbelt and Lusaka urban areas for each of the four ZDHS surveys using a Wald test to compare means or chi square to test for statistical difference between the areas. To further examine the role of residence within these different urban areas, discrete-time event history analysis is used to model the probability of giving birth over time and age with covariates for living in the relevant urban centers.

Results

Preliminary analysis looking at proximate determinants of fertility, shown in Table 1, indicate that there are substantial differences in the proximate determinants of fertility between urban and rural areas in Zambia. However, differences between urban Copperbelt and urban Lusaka are not nearly as pronounced, generally with measures of the proximate determinants similar in both areas and also similar to the measures for the overall urban population. However, for some indicators, such as age at first marriage, the difference between urban Copperbelt and urban Lusaka was statistically significant at least one year. In the case of age at first marriage it appeared that while similar, the ages at first marriage in the Copperbelt are slightly lower than Lusaka's. Differences across urban areas in the proportion using modern contraception were small though still statistically significant. While not conclusive these results do indicate a strong difference in urban and rural fertility behaviors as well as point towards some level of difference between Copperbelt and Lusaka fertility behaviors. Data from the four ZDHS reports for the total fertility rates (TFR) for women age 15 to 44 years (shown in Table 2) also indicate that in addition to some substantial differences between urban and rural TFRs, there is some difference between Copperbelt and Lusaka TFRs. Additionally, the trajectory of TFR decline for the Copperbelt and Lusaka are different, with Lusaka staying in step with overall urban population reductions while the Copperbelt reduction is slower, though still faster than many other regions of Zambia (and rural Zambia).

Discussion

Preliminary analysis has indicated that while urban Copperbelt and urban Lusaka exhibit similar fertility behaviors when measured with proximate determinants of fertility, there

are still some differences and suggest that fertility behaviors in these two areas are changing differently over time. During this period the Copperbelt has seen de-urbanization, as the area has de-industrialized and workers have returned to the countryside while Lusaka has less pronounced urban decline. While living in either of these urban situations may work to suppress fertility, it is unclear that the same processes would be at work. Modeling how living in one of these areas as well as age and time and other key characteristics that affect women's probability of birth in Zambia at the turn of the 20th century will provide insight into how these different urban landscapes are interacting with fertility behaviors as well as the persistence of very high fertility in Zambia.

Table 1. Proximate Determinants of Fertility for Urban Zambia, Rural Zambia, Urban Copperbelt and Urban Lusaka, by year

Mean Age at First Marriage

	All Rural	All Urban	Copperbelt Urban	Lusaka Urban
1992*	16.9 (16.8-17.1)	17.4 (17.2-17.5)	17.2 (16.9-17.4)	17.6 (17.3-17.9)
1996*#	17.1 (16.9-17.2)	17.9 (17.7-18.1)	17.7 (17.4-18.0)	18.4 (18.0-18.9)
2001-02*	17.3 (17.2-17.4)	17.9 (17.7-18.2)	17.9 (17.4-18.4)	17.9 (17.5-18.4)
2007*	17.4 (17.3-17.6)	18.5 (18.2-18.8)	18.5 (17.8 - 19.2)	18.7 (18.1-19.3)

Proportion Married

	All Rural	All Urban	Copperbelt Urban	Lusaka Urban
1992*	0.69 (0.67-0.71)	0.58 (0.56-0.59)	0.58 (0.55-0.61)	0.58 (0.55-0.61)
1996*	0.66 (0.64-0.68)	0.55 (0.53-0.57)	0.56 (0.52-0.59)	0.55 (0.51-0.59)
2001-02*	0.66 (0.64-0.68)	0.54 (0.51-0.57)	0.54 (0.49-0.60)	0.55 (0.51-0.60)
2007*	0.69 (0.67-0.71)	0.51 (0.48-0.54)	0.52 (0.48-0.56)	0.51 (0.45-0.57)

Mean Duration of post-partum abstinence (in months)

	All Rural	All Urban	Copperbelt Urban	Lusaka Urban
1992*	6.6 (6.2-7.0)	6.2 (5.8-6.5)	5.9 (5.3-6.5)	6.0 (5.5-6.5)
1996*	7.1 (6.8-7.3)	6.5 (6.0-7.0)	6.2 (5.1-7.2)	6.0 (5.5-6.5)
2001-02	7.2 (6.9-7.5)	6.7 (6.3-7.1)	6.0 (5.3-6.7)	6.6 (6.0-7.1)
2007	6.0 (5.7-6.3)	6.1 (5.6-6.7)	5.1 (4.2-5.9)	6.7 (5.7-7.8)

Mean Breastfeeding Duration (in months)

	All Rural	All Urban	Copperbelt Urban	Lusaka Urban
1992*	13.4 (13.1-13.8)	12.5 (12.1-12.8)	12.5 (12.0-13.0)	12.5 (11.9-13.0)
1996	14.0 (13.7-14.3)	14.1 (13.7-14.5)	13.8 (13.1-14.5)	14.1 (13.5-14.7)
2001-02	14.7 (14.4-15.0)	14.7 (14.2-15.3)	14.9 (14.1-15.7)	14.7 (13.6-15.8)
2007*	14.4 (14.1-14.7)	13.7 (13.3-14.0)	13.2 (12.8-13.6)	13.6 (12.7-14.5)

Proportion of women ever using modern contraception

	All Rural	All Urban	Copperbelt Urban	Lusaka Urban
1992*	0.13 (0.11-0.15)	0.32 (0.30-0.34)	0.32 (0.29-0.34)	0.36 (0.32-0.40)
1996*#	0.23 (0.21-0.25)	0.44 (0.42-0.47)	0.45 (0.41-0.48)	0.48 (0.44-0.51)
2001-02*#	0.37 (0.35-0.38)	0.59 (0.57-0.61)	0.60 (0.56-0.64)	0.62 (0.59-0.65)
2007*#	0.53 (0.50-0.55)	0.61 (0.59-0.64)	0.62 (0.57-0.67)	0.61 (0.57-0.66)

*Denotes that rural and urban differences were significant at the 0.01 level; # Denotes that differences between urban areas were significant at the 0.01 level.

Table 2.Total Fertility Rate for women age 15-44 years

	Rural	Urban	Copperbelt	Lusaka
1992	7.1	5.8	6.2	5.5
1996	6.7	5.04	5.59	4.87
2001-02	6.9	4.3	4.5	4.3
2007	7.5	4.3	4.8	4.1

Source: 1992 ZDHS Final Report, 1996 ZDHS Final Report, 2001-02 ZDHS Final Report, 2007 ZDHS Final Report