FERTILITY TREND IN NIGERIA: AN ASSESSMENT USING PERIOD PARITY PROGRESSION RATIOS

BY

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DEDICATION

This project is dedicated to Oyinloye Emily Oluseyi who has been a rock!

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Special gratitude goes to Professor Olusola Ayeni for his exceptional support and wonderful supervision throughout the course of the study, also I'd like to thank him for the thoroughness and rigor with which the work was scrutinized. Furthermore I want to a say an exclusive thank you to Dr Babatunde Gbadebo – my other supervisor – for his kind words of encouragement and for noticing the "small things" that otherwise I would have overlooked.

Special thanks to the Head, Department of Epidemiology and Medical Statistics, Professor O.I. Fawole and to all the academic and Non-academic staff for their valuable input directly and indirectly. I will like to extend my appreciation to Dr S.A. Adebowale whose inputs into the study were of immense quality and for pushing me to always "add" and for constantly expanding the scope to see beyond what was right before my eyes. I also wish to thank Dr J.O. Akinyemi who would usually ask how I was progressing during the course of the research. I want to say another big thank you to Dr R.F. Afolabi whose office doors was never closed to me.

I cannot do but mention the vital contributions of Dr Andrew Hinde of the University of Southampton who responded to the mail of a total stranger and provided what I have since named "the syntaxes of life" and for simplifying the procedures with kind words of advice.

I want to say a big thank you to my siblings – Femi and Otolorin – you guys really rock and you're the best! I also wish to show appreciation to someone I can only describe as my adopted sister – Iboro – thank you for an amazing 18 months.

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CERTIFICATION PAGE

I certify that this work was carried out by Gbeminiyi Omotayo, Oyinloye in the Department of Epidemiology and Medical Statistics, University of Ibadan

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ABSTRACT

Nigeria had only successfully reduced total fertility rate by 0.5 children for the period of a quarter of a century using values derived from age-based measurements. Age-based measures of fertility such as the total fertility rate is *unreliable* in establishing trend because of tempo effect – displacement of births forward or backward, furthermore, given the high prevalence of age errors in Nigerian data, a measure such as the total fertility rate that uses age as the standardizing factor is incompetent in establishing trend. The objective of the present study is to assess fertility trend in Nigeria using period parity progression ratios.

Using the 2013 Nigeria Demographic and Health Survey, synthetic parity cohort approach to the computation of period parity progression is used to measure the fertility trend in Nigeria. Conventional age-based measure from the Demographic and Health Survey programme is compared with what derives from the period parity progression ratios.

A single calendar year trend in fertility was established from 1992 till 2012 which showed on an overall basis that fertility was constant for ten years from 1992 - 2002 at a level in the region of 6.2 births per woman (there were outstanding years in between, where fertility rose as high as 6.5 births and fell to 5.8 births per woman). The second half of the 20-year period from 2002 – 2012 saw gains in fertility decline up to 5.1 births in 2011.

The measures provided in this paper points to the fact that fertility has been declining but very slowly and it also revealed there has been notable decline in the number of women going on to have the more than 5 children, the proportion of women who have remained childless in the population has not changed much over the years. Another vital discovery was that the fraction of women with exactly 4 children has risen steadily from the 1990s going forward.

Key Words: Period parity progression ratios, Synthetic parity cohort, Total fertility rate, Nigeria.

Word Count: 312

CHAPTER ONE

INTRODUCTION

1.1. Background

Among the ten most populous countries in the world, one is in Africa (Nigeria), five are in Asia (Bangladesh, China, India, Indonesia, and Pakistan), two are in Latin America (Brazil and Mexico), one is in Northern America (United States of America), and one is in Europe (Russian Federation). Amongst these, Nigeria's population, the 7th largest in the world in 2015 with a population of 182 million people is growing the most rapidly with an annual growth rate of 2.67% (United Nations Department of Economic and Social Affairs Population Division 2015). Consequently, the population of Nigeria is projected to surpass that of the United States by about 2050, at which point it would become the third (3rd) most populous country in the world with a staggering 398 million people! (United Nations Department of Economic and Social Affairs Population Division 2015)

Fertility is one of the dynamics that influence population alongside mortality, migration and some other factors, but then, the most important difference between fertility and mortality is choice, (very few people ever make the choice to die) and the most significant aspect of this, is the choice in the number of children that people decide to have (Hinde 2014). Nigerians get married to have children, and marriage has meaning only when a child is born or survives, it is viewed as unusual if a child fails to show within the first year of marriage (Isiugo_Abanihe 1994). Although recent statistics indicates signs of decline in fertility, this decline is indeed very slow and disproportionately allocated across the country with the South-South region of the country having the lowest Total Fertility Rate (4.3) and the North-West having the highest (6.7) (National Population Commission (NPC) [Nigeria] & ICF International 2014).

Total Fertility Rate is by far the most widely used measure of fertility because of the simplicity in its calculation and also the ease in communicating the result to non – specialist audiences. Some other reasons for measuring total fertility rate is to look forward to future fertility and also to explain fertility in time trends (Bhrolchain 2006). It is a synthetic rate not based on the fertility of any real group of women since this

would involve waiting until they had all completed childbearing, nor is it based on counting up the total number of children actually born over their lifetime. Instead, the Total fertility Rate is based on the Age-Specific fertility rates of women in their childbearing years which in conventional international statistical usage are 15-49 years. The average number of children that would be born alive to a woman (or group of women) during her lifetime if she were to pass through her childbearing years conforming to the age-specific fertility rates of a given year (Population Reference Bureau 2015). The total fertility rate represents the average number of children a woman would potentially have, were she to fast-forward through all her childbearing years in a single year, under all the age-specific fertility rates for that year. In other words, this rate is the number of children a woman would have if she was subject to prevailing fertility rates at all ages from a single given year, and survives throughout all her childbearing years (Detels *et al*. 2002).

Total fertility rate uses age as the standardizing factor because the age structure of the population changes from year to year such that if the trend in the total number of births is used, there could be a distorted view of the rate at which women are having children. A concentration of women in the peak ages of childbearing would mean that births would tend to rise simply because of the change in age structure. It therefore means that Total Fertility Rate can rise and fall with changes in the time that women have their various births, *tempo*, independently of changes in the number of births that they eventually have. However, age is not the only structural feature of a population that may influence the number of births in a given year, another very important structural element is the distribution of women according to the number of children that they already have, that is, their parity and the time since the most recent birth (Hosseini-chavoshi et al. 2006).

Period parity progression ratios measure the probability that a woman at a specific parity in a particular period will have another birth, because a move to the next parity usually denotes a choice informed by ideal family size and other factors. The progression ratios reflect the incremental family building process as it unfolds through time compared to other period fertility measures they capture a more refined and complete historical outcome and support a breakdown of period fertility behaviour by parity (Sweeney 2013). Parity Progression Ratios may be calculated on a period or cohort basis and its measures can help in understanding completed family sizes, that is, the proportion of

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women with no children, one child, two children and so on by the end of childbearing. Calculation of parity progression ratios on a period basis which is the application of the measure to particular times provides a whole new outlook on fertility analysis (Hinde 2014).

The timing of births has a great impact on what is seen as changes in fertility. The parity progression model provides an alternative to conventional age-based approaches to studying fertility where the control used is the number of children that a woman has already had in association with the time since the most recent birth (Feeney & Yu 1987). More and more people are actively making decisions about the appropriate number of children to have (United Nations Department of Economic and Social Affairs Population Division 2015) also, it has been argued that analysis by parity facilitates interpretation of fertility trends because people make their decisions about having a child based on the number of children that they already have rather than simply on how old they are (Hosseini-chavoshi et al. 2006).

1.2. Problem Statement

In developing countries for example, Nigeria, there are errors in data that fundamentally affect measures of fertility, these errors originate usually from faults in the reports of the timing of births, *Tempo effects*, and how many births a woman eventually produces, *Quantum of fertility*, giving a false impression of the status of fertility at that time (Bhrolchain 1996; Bhrolchain 2006). In addition to data errors, the total fertility rate in itself is not adequately standardized largely because it is not generated from parity specific rate, such that it gives a biased account of period change in overall fertility.

A further difficulty with total fertility rate is that it is based on a hypothetical cohort principle: it generates an estimate of the result of a life-time's childbearing experience on the basis of a single year's rate. Also the interpretation of total fertility rate is usually faulty, since it has been seen as providing the foundation for statements about long term growth in a population (Bhrolchain 2006).

Even though the total fertility rate can provide information on change in the average number of children per woman, it cannot give insight into the nature of change provided by parity progression ratios, which measures the proportion of women moving from one parity to the next (Mboup & Saha 1998).

1.3. Justification

The basis for this study is that despite the growing concern about the reduction in the stride of fertility in Nigeria, the methods used for assessing recent fertility trends in previous studies were overly simplistic and used without careful consideration of the nature and potential errors in the data as it relates with the measurement of Total Fertility rate, which is known to be affected by *tempo effects*. The use of overly simple estimation methods may have produced misleading estimates of recent fertility levels and trends. There is a clear need for more robust methods.

Many of the complications that surround total fertility rate measurement arise from an attempt to expand its time reference into the future which is potentially unrepresentative especially when making policies on fertility (Sobotka & Lutz 2011). Because of the need to anticipate future prospects for fertility and population growth, there is need for a measure that is devoid of temporal effects.

After several years of neglect, only in recent years has the population issue started to receive more attention due to the apparent stalling fertility declines and growing concerns about maternal health. Therefore, it is a crucial moment for demographers to provide sufficient and accurate information on recent fertility trends to policy makers to help supply suitable family planning services to the people most in need.

This research will essentially provide not only a substantive contribution to the demographic literature in Nigeria, but more specifically to the debate on the recent fertility. The results will be useful for policy makers, giving them access to more accurate trend estimates, which may help in assessing the current levels and monitoring the progress of fertility in general.

1.4. Objectives

1.4.1. Main Objective

To assess the fertility trend in Nigeria using Period Parity Progression Ratios 1992 – 2012.

1.4.2. Specific Objectives

- To determine the proportion of women progressing from one parity to the next in Nigeria.
- To determine the proportion of women progressing from one parity to the next according to geopolitical zones, educational Attainment and place of Residence in Nigeria.
- To determine the proportion of women having exact parity (0, 1, 2, 3.....) according to geopolitical zones, educational Attainment and place of Residence in Nigeria.
- To compare age –based total fertility rate and parity – based total fertility rate.

CHAPTER TWO

LITERATURE REVIEW

2.1. The Study of Populations

Although the first scientific study of any population was conducted in England in the 17th century by John Graunt (Landry 1945; Hartmann 2009), in a study he titled "Natural and Political Observations on the Bills of Mortality". The word 'Demography' did not emerge until nearly 200 years later by a Belgian named Achille Gulliard in 1855 (Shryock & Siegel 1976) when he published *Eléments de statistique humaine, ou démographie comparée* (Elements of human statistics or comparative Demography) and he defined demography as "the natural and social history of the human species or the mathematical knowledge of population, of their general changes, and of their physical, civil, intellectual, and moral condition. The definition of demography has since evolved owing to the broadening of interest in the subject matter and also with developments of various demographic methods that aided its exploration. In 1959, Hauser and Duncan considered the field of demography as comprising of a narrow and broad scope that they referred to as demographic analysis and population studies respectively, they argued that demographic analysis is restricted to the study of components of population variation and change and that population studies are concerned with population variables such as the political, genetic, biological, social, economic, geographical etc. and their relationship with population changes (Hauser & Duncan 1959). The sphere of population studies looks at determinants and consequences of population trends (Shryock & Siegel 1976). One of the most important aspect of population studies is fertility which has gained much attention in the past few decades owing to the shift in emphasis on mortality analysis as the driving force of population growth.

2.2. Empirical Findings on Fertility till date.

2.2.1. Unpredictable Fertility in Populations not using Contraceptives

In populations not using contraceptives or abortion, fertility varies substantially. Natural fertility results if there are no attempts to control family size. In practice, however, natural fertility is frequently operationalized as involving no contraception or abortion (Henry 1961). Fertility is high in natural fertility populations – but how high? Females can have children as early as the mid-teens and can continue until the late 40s. Theoretically, women could have nearly one birth per year. Thus the theoretical

maximum fertility, in the absence of all behavioural constraints, could be as high as 35 births! In fact, no population has averaged anywhere close to this theoretical maximum level of fertility. Instead the classic example of a high-fertility population, the Hutterites, has fertility one third this high. From 1880 to 1950, the US/Canadian Hutterite population increased from 443 to 8542 persons (Eaton & Mayer 1953). This is the world's fastest known natural growth rate (4.21% annually), with families averaging around 10 to 12 children (Ingoldsby 2001).

On the other end of the natural fertility spectrum lie the Dobe !Kung hunter-gatherers, residents of the Kalahari Desert in Africa prior to 1975 (Howell 1979; Howell 2000). The reported TFR for this natural fertility population was about 4.5 births per woman. Thus, the question, "how can natural fertility populations be so different from each other, and why are even the highest observed rates much lower than the theoretical maximum?" The answer to both questions relies heavily on the *proximate determinants of fertility*. All known societies have encouraged practices that, through biological mechanisms, reduce fertility well below maximum levels. Key features are norms about union formation and dissolution (specifically, marriage) that impact coital frequency and the risk of pregnancy. Late marriage (indicating the postponement of sexual intercourse) reduces the years available for childbearing and thus the number of births. Another important determinant of these differences in fertility is breastfeeding and postpartum amenorrhea (Bongaarts & Potter 1983). It is now well established that breastfeeding leads to a substantially longer postpartum period without ovulation than the typical 1.5 to 2 months interval that is experienced by women who do not breast feed (Leridon 1977). Also, the intensity of breastfeeding affects the likelihood of ovulation women who exclusively breast feed their children have a significantly lower chance of ovulating than do women who supplement breastfeeding with other food. The !kung typically breastfeed for three years and Hutterite women, less than half this period (Howell 1979; Eaton & Mayer 1953).

2.2.2. Fertility Transition Timing is Highly Variable

Demographic transition theory attributes fertility change to the process of economic development, especially the transition from a rural agrarian society to an urban industrial one. This leaves unanswered the question of what part of this process was most crucial for fertility decline. Was it changed occupations, urban living, or increases

educational attainment that produced fertility decline? Further, what level of change in these aspects of economic development or its correlates was necessary to initiate a fertility decline? (Morgan & Hagewen 2006). The current consensus is that this view is overly mechanistic. There are no "threshold levels" of these macroeconomic indicators that consistently predict the onset of the transition. Some argue that these findings must be interpreted cautiously, and one should not imply that economic development plays no causal role. Specifically, if multiple causes of decline are acknowledged, and if one views industrialization and urbanization as fundamental but distal causes (that need not produce synchronous change), then the role of economic development would receive greater support (Mason 1997).

2.2.3. Existing Institutions Influence Fertility Transition

Some of the reasons for the "loose" connections between socioeconomic change and fertility lie in pre-existing differences in cultures and social institutions. For example, (Greenhalgh 1988) argues that Chinese populations were among the first to experience fertility decline compared to others at similar levels of development. She attributes this to a historical and institutional context that made number and sex composition of children a focal point of family strategy. In short, the Chinese populations began with a historical legacy that legitimated family size control and linked mobility strategies to number of children. Chinese groups quickly adopted modern contraception as a modern technology consistent with more costly traditional ones (including infanticide). In the Chinese context, the adoption of contraception was for limiting family size (specifically adopted by older women at higher parities).

In contrast, traditional African fertility regimes have been more concerned with a wide spacing of births as opposed to their number (Caldwell et al. 1992). The link between limiting the number of children and upward social mobility was less apparent in these contexts. Institutions such as child fosterage may have played a role by spreading the costs of children across families, reducing the immediate impacts of rising child costs. Thus the adoption of contraception was attractive as a substitute for postpartum abstinence and with the ideas that healthy children were produced by wide spacing (that could be aided by contraceptive use). As a result, the initial adoption of contraception in Africa tended to be simultaneous across ages and parities (Morgan & Hagewen 2006). In short, Chinese and African family traditions influenced the speed and nature of their

fertility transition. Chinese institutions hastened the transition (by its traditional emphasis on the size and composition of families and its use of postnatal control, explicitly, infanticide). African extended family and lineage institutions retarded change. The nature of the transition was also influenced. In Chinese populations fertility decline fell almost entirely due to contraceptive use after the desired number and composition of children were born. In Africa, fertility fell because of the wider spacing of births and birth limitation.(Morgan & Hagewen 2006).

2.2.4. Fertility Transition Involves an evaluative assessment of social conditions

In an attempt to explain contemporary fertility transitions, (Bongaarts & S.C. Watkins 1996) replicated the claim of a modest relationship between development indicators and changes in fertility. However, they argue that the diffusion of information about birth control techniques and ideas that legitimate small family size are important determinants of the timing of fertility change. Once a region of a country began a fertility transition, neighbouring regions that shared a common language experienced a fertility decline shortly thereafter, regardless of the region's level of development. In this spirit, (Bongaarts & S.C. Watkins 1996) conclude that social interaction in the form of exchanging information and ideas, evaluating their meaning in a given context, and social influences that encourage or discourage certain behaviours are significant factors in the transition from high to low fertility. Their measures of societal contact added significant explanatory power to their model of fertility transition. Watkins' work in contemporary African settings describes at a micro-level how women's conversations helped to construct an understanding that fertility control was safe, appropriate, and advantageous. (Morgan & Hagewen 2006)

2.2.5. Fertility does not stop until attaining near two children in Fertility Transition

A well-known finding from the European Fertility Project is that once a 10% decline in fertility decline occurs (for any province), an irreversible transition was underway (Coale & S.C. Watkins 1986). Data in the Bongaarts and Watkins study (1996) also show remarkably steady tendencies toward decline once the process is underway.

2.2.6. Fertility change is a period, not a cohort phenomenon

The cohort perspective posits that trajectories of experience are frequently set by events early in life and are resistant to change subsequently. Cohort explanations stress the unique experience of a specified birth cohort. Change by cohort replacement comes slowly and steadily over time as new cohorts, in an orderly way, replace older ones (Morgan & Hagewen 2006). Period explanations, on the other hand, emphasize the idea that shifts in fertility seem to affect all age groups at the same time. For example, shifts and changes in family attitudes and values may broadly impact nearly everyone's lives at once. Thus, the effects of these shifts are not unique to any one age group of people (Bhrolchain 1992).

2.2.7. Fertility delay is fundamentally anti-natalist

Although not invariant in magnitude, the timing of fertility is linked consistently to the number (or quantum) of births. This timing-number link can be seen for individual women and cumulates in completed cohort fertility. A different dynamic operates between timing and quantum in period rates (Morgan & Hagewen 2006). Women who bear children early have larger numbers of children ever born (Morgan & Rindfuss 1999; Kohler et al. 2002). There are several reasons for this association, and if all are operative in a particular setting, their cumulative effect can be substantial. Given a relatively fixed mean age at menopause, a later start leaves less room for subsequent birth intervals (regardless of their mean length). This fact explains the powerful influence of marriage/union formation as a proximate determinant of natural fertility. But this mechanism can remain active in controlled settings because of the chance of contraceptive failure. Given a fixed number of children and fixed birth intervals, an earlier birth implies longer periods of exposure to an unintended pregnancy following the last intended birth. In addition, fecundity declines with age so that postponement can lead to couples being unable to have all of the children they intend. Finally, there are two potentially powerful social mechanisms. The first is a selective mechanism: those who desire more children and place a high priority on children may be less likely to postpone childbearing and thus start having them earlier. The second is more substantially interesting and follows from the sequential decision-making approach outlined earlier. Postponement can bring experience that competes with childbearing

and increases the chance of additional postponement. Additional postponement can, in time, become a decision to have no (or no more) children (Morgan & Hagewen 2006).

Within a period framework, fertility postponement (in year *t*) is also associated with lower fertility in (year *t*). This is true even if the cohorts contributing to period fertility rates eventually have equivalent levels of completed fertility. For simplicity, assume a constant cohort level of childbearing. Fertility delay, a later age pattern of childbearing, can be viewed as postponing births into the subsequent year. This postponement lowers the number of births in year *t* by delaying them into year *t* + 1. (Bongaarts & Feeney 1998) describe this process and show that the effects on period rates, including the widely used TFR, can be substantial and can operate for several decades. In fact, a major factor producing the very low contemporary TFR rates is a dramatic and continuing postponement of fertility.

2.2.8. Reliable Retrospective Fertility Histories can be collected from Women

Women's fertility is revealed across a 30 to 35 year period of the life cycle. To collect information, one could collect data through an ongoing surveillance system. However, demographers have learned that in many settings retrospective reports mirror those produced by vital registration systems or data sources. These retrospective histories have allowed for a wealth of cross-national data on fertility levels, trends, and differentials. Fertility has many characteristics that make it an ideal event to be reported retrospectively: it is a discrete event that occurs at a clear point in time, births are usually positively sanctioned (increasing the respondent's willingness to report the event), recalling the exact date is often aided by celebrations (i.e. birthdays), and the event is recorded on administrative records (allowing verification) (Morgan & Hagewen 2006; Fu et al. 1998; Henshaw 1998).

2.2.9. Fertility Intentions are not Reliable Indicators of Future Fertility

An important question in fertility surveys asks women how many children they have now and how many more they intend to have. The sum of these is referred to as their *intended parity*. With longitudinal data one can ask how well these intentions predict subsequent fertility. Note that this question assumes a one-time decision model, instead of the sequential model favoured in earlier discussions. Nevertheless, let us evaluate

this model vis-à-vis accumulated evidence. One reason for such an exercise is to evaluate the one-time and sequential decision models (Morgan & Hagewen 2006).

Suppose that more distal social, economic, and psychological variables are linked to fertility only through fertility intentions. In other words, all relevant factors affect intentions directly, and intentions mediate these more distal effects. Indeed, numerous studies show that fertility intentions predict the subsequent behaviour of individuals far better than do demographic and social indicators. However, evidence also clearly indicates a more complex process that produces a patterned inconsistency between intentions and behaviour. Specifically, some groups (married women) are better than others (unmarried women) at predicting their future behaviour. In other words, the link between intent and behaviour can vary across groups (O'Connell & Rogers 1983; Van de Giessen 1992). In addition, some subgroups and periods have higher fertility than others, net of intentions. That is to say, there is a direct effect of group membership and period that bypasses the proximate intention variable (Thompson 1997; Schoen et al. 1999). The fact that fertility differences or changes are not always foreshadowed by different or changed intentions challenges the usefulness of intention data for fertility forecasts (Campbell 1981).

2.2.10. Fertility Intentions of Men and Women are Similar

There has always been speculations that the motivations for having children differed between men and women and that these differences made women (or men) more pro-natalist. (Mason & Taj 1987) have discussed these reasons, including the greater burden that women bear in pregnancy, birth, and childbearing (that might make women more willing to limit births than men) or the greater wealth and prestige that men might accrue through children (that might make men less willing to limit births than women). Mason and Taj's evidence shows, across a range of developing countries that intended parity or desired family size varies little by gender. These results emphasize the social context that strongly and similarly influences the desires/intentions of both men and women. Results for couples show similar results in a number of Asian countries (Mason & Smith 2000).

2.3. Period Fertility

There are several reasons for requiring period fertility measures: to explain fertility time-trends, to anticipate future fertility, to construct theoretical models, and to convey

information on fertility trends to non-specialist audiences. The measures most suitable for each of these objectives, and the criteria for assessing them, differ. Fertility indices that are adjusted for period change in the timing of childbearing—tempo adjusted measures—may be appropriate for some purposes, but not others. No one fertility index or set of indices is best suited to all purposes. The unexpectedly low levels reached by fertility in developed countries in recent decades have provoked much discussion of fertility prospects (Antonio 1998; Bongaarts 2002; Sobotka & Lutz 2011; Morgan 2003) That debate has centred partly on timing effects and also on measurement, stimulated by the elegant and sophisticated adjustment to the total period fertility rate proposed by (Bongaarts & Feeney 1998).

The issue of indicators has been a matter of debate—arguably because of a lack of clarity about the variety of reasons for measuring period fertility and about how fertility indices should be evaluated. A further source of difficulty is that the "fertility" to be measured is widely thought of as, in some sense, the average number of children women have, a formulation which in a period context gives rise to measures based on the synthetic cohort principle. Such indices are peculiarly unsuited to fertility in its period aspect. A final difficulty is that the ideas of quantum and tempo are thought to be straightforwardly applicable to period fertility phenomena, whereas they are, in fact, poorly defined in a period context. The recent literature on adjusting fertility measures for tempo effects has little to say about any of these difficulties. By and large it ignores the differing objectives of period analysis, the likely multiplicity of corresponding indices, the intellectual hazards of thinking in terms of synthetic cohort indicators, and the problematic nature of the period concepts of quantum and tempo (Bhrolchain 2006).

The focus is on period fertility indicators because it is these that present the greatest difficulties in relation to measurement. Indices that represent fertility in consecutive calendar periods are less transparent in meaning, and more contentious, than measures of cohort fertility. Although, the relative merits of a period versus a cohort perspective on fertility are not at all central but incidental. The starting point is, rather, the uncontroversial fact that measures of period fertility are widely used in the demographic literature; period measures are used by scholars on each side of the period/cohort debate, as well as by those who are agnostic on the subject.

information on fertility trends to non-specialist audiences. The measures most suitable for each of these objectives, and the criteria for assessing them, differ. Fertility indices that are adjusted for period change in the timing of childbearing—tempo adjusted measures—may be appropriate for some purposes, but not others. No one fertility index or set of indices is best suited to all purposes. The unexpectedly low levels reached by fertility in developed countries in recent decades have provoked much discussion of fertility prospects (Antonio 1998; Bongaarts 2002; Sobotka & Lutz 2011; Morgan 2003) That debate has centred partly on timing effects and also on measurement, stimulated by the elegant and sophisticated adjustment to the total period fertility rate proposed by (Bongaarts & Feeney 1998).

The issue of indicators has been a matter of debate—arguably because of a lack of clarity about the variety of reasons for measuring period fertility and about how fertility indices should be evaluated. A further source of difficulty is that the "fertility" to be measured is widely thought of as, in some sense, the average number of children women have, a formulation which in a period context gives rise to measures based on the synthetic cohort principle. Such indices are peculiarly unsuited to fertility in its period aspect. A final difficulty is that the ideas of quantum and tempo are thought to be straightforwardly applicable to period fertility phenomena, whereas they are, in fact, poorly defined in a period context. The recent literature on adjusting fertility measures for tempo effects has little to say about any of these difficulties. By and large it ignores the differing objectives of period analysis, the likely multiplicity of corresponding indices, the intellectual hazards of thinking in terms of synthetic cohort indicators, and the problematic nature of the period concepts of quantum and tempo (Bhrolchain 2006).

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2.4. The Total Fertility Rates as a Measure of Fertility

Births and deaths, the core events in demography, focus on observable events that relatively easily measured, naturally quantifiable, highly structured, and can be easily incorporated into accounting frameworks or represented by descriptive demographic models (Morgan & Lynch 2001). Births are biologically based and are thus fixed in a universally accepted truth. Another important characteristic of births is that they are categorical by nature and thus naturally quantifiable, making measurement reliability attainable. The actual occurrence of a birth is universally recognised, although the actual meaning and consequences of a birth may be socially constructed. Therefore, valid cross-national and cross-temporal measurement of fertility is feasible. This is not to say that fertility measurement is easy or error free. But the inherent features of fertility provide a leverage for good measurement that is not found for many other concepts (Morgan & Lynch 2001).

The interest in fertility data for administrative purposes aids fertility measurement, increases data availability and improves data quality. The importance of fertility data for administrative has led to wide-scale collection. The usefulness of comparable fertility data across administrative units encourages the codification of definitions and standardization of measurement procedures. While births are events to be measured, the concept of an event/exposure rate is fundamental to all demographic measurement. The additional key concept needed for rate calculation is the *population at risk* or *person-years* of exposure. The essential measurement task is to estimate the risk of a specific event (e.g. birth, first birth, a non-marital birth). The accepted strategy utilizes a ratio of a count of events (births to a specified group) to an estimate of the *person-years* exposed to the risk of an event in a given time period (Preston et al. 2001).

The two most commonly used period measures of fertility are age-specific fertility rates (ASFR) and the total fertility rate (TFR). When calculating age-specific fertility rates, the numerator is restricted to births occurring to women of a specified age interval, and the denominator is restricted to the number of *person-years* lived by women in the age interval (Preston et al. 2001).

The total fertility rate is the most frequently used indicator of period fertility; it is the simple sum of the age-specific fertility rates across the childbearing years. Thus, the total fertility rate is an age-standardized, single value, summary measure of fertility.

Specifically, the total fertility rate is the number of children a woman would bear if she experienced, at each age, the current period age-specific fertility rates (and she survived to the end of her reproductive cycle). In the absence of mortality, a total fertility rate of 2.0 would be equal replacement level fertility. This means that the women are having enough births to replace themselves and their male partner (Morgan & Hagewen 2006).

2.5. Parity Progression Ratios

Parity progression ratios (PPRs) are a rather different way of measuring fertility. They are not well appreciated outside of demography. Parity progression ratios measure the proportion of women with n children who go on to have n+1 children. So parity progression ratios are order-specific and come in sets, rather than being single summary measures such as the total fertility rate, which has made it unattractive for *non-specialist audience* interested in fertility. For developing countries such as Nigeria, the value in analysing parity progression ratios lie in detecting fertility decline due to modern contraception which is usually marked by drops in the higher order parity progression ratios. Evidence collected in this way is largely devoid of worries about the apparent falls in fertility merely being changes in *tempo* - and therefore temporary. Parity progression ratios come into their own when women start to make choices about limiting their families. In a situation of natural fertility, a set of parity progression ratios would show a smooth decline but this would be determined only by the pattern of fecundity with age. Once women make choices to limit their family size the higher parity ratios drop dramatically and this trend continues with time until family sizes reach a norm for that population. (Hinde 2014; Bhrolchain 2011; Bhrolchain 1996; Pullum 2003)

Fertility is a very important aspect of demography where many theories exist to describe fertility change, especially focusing on how and why fertility decline commences and when we consider the historical context of fertility indicators, the defects of Gross Reproduction Rates and Net Reproduction Rates as measures of period fertility were clearly recognised in the 1940s and 1950s. Reproduction rates had been routinely used as indices of time trends up to then, but rapid shifts in fertility in the 1930s and 1940s brought the realisation that the stable assumptions underwriting their quantitative relevance did not hold in empirical populations. In addition, fertility series were seen to

be heterogeneous, dependent on parity and personal time (age or duration). (Bhrolchain 2011)

A number of alternatives were suggested to replace them; parity and age- or duration-specific measures, cohort analysis and period parity progression ratios (Whelpton 1946; Stolnitz & Ryder 1949; Henry 1953). If these methods had been adopted as standard, the TFR, (a reproduction rate in all but name), would not have its current prominence. But the TFR has been the leading fertility indicator since the 1960s, its widespread use being in Brass's view attributable to "simplicity, convenience and propaganda" (Brass 1990). William Brass believed that the attractions of the TFR were due to the misconceived desire for a single figure summary index. And he said that "If the demand for a simple index is relaxed there is no great problem in providing an array of measures which in combination show the characteristics and dynamics of a population's fertility." However this leaves the burden of the interpretation to the user. The search for the single index is a part of the process of simple presentation to non-demographers of the evidence on what is happening to fertility, and consequently, on what might be its path in the future."

2.5.1. Period Parity Progression Ratios

Period parity progression ratios are estimated for a single sample of data and can be used to characterize decades of fertility behaviour prior to the year of data collection. As concern over potentially stalled fertility transitions builds and becomes the focus of academic research, it would seem that progression ratios provide a perfect means for such assessments.

Recent extensions of parity progression ratios to incorporate tempo-effects (Kohler & Ortega 2002) and applications have focused on low fertility regimes in Europe and are generally based on comprehensive data archives or registry systems. There are relatively few applications to developing countries, beyond the original work of (Feeney & Yu 1987) where the data is restricted to national-level sample surveys such as the World Fertility Surveys – WFS, Demographic Health Surveys – DHS, and Reproductive Health Surveys – RHS. Existing applications such as Hinde (1998) use single DHS or RHS samples and rely on standard direct estimators that yield estimates for approximately 20 years prior to the sample up to the date of the survey.

2.6. Survey Data in Nigeria

In considering the available data that can be used to study fertility, the usually available data is the Demographic Health Survey (DHS). Each woman in a household between the ages of 15-49 (44 in some countries or surveys) is asked a series of detailed questions about her reproductive history and date of first union. Some of the surveys are self-weighting, but the most are based on complex survey designs and include person weights. The number of surveys available in any country vary, but it is almost always the case that spacing between survey years is irregular (Sweeney 2013).

Since Nigeria gained independence in 1960, there has been a paucity of reliable population and health data at the national level. Vital registration data are virtually non-existent and those data are of questionable accuracy. Lack of data has resulted from the inherent difficulties of data collection in a country so culturally diverse and in which population data are politically sensitive. Notwithstanding such difficulties, several sample survey had taken place in the country from the Rural Demographic Sample Survey of 1965/1966, a milestone in the collection of demographic data was reached with the 1981 Nigerian Fertility Survey in which the household survey approach was employed to obtain high-quality data from 9,727 female respondents. It was preceded by the National Demographic Sample Survey (NDSS) in 1980 and followed by the Health Module of the National Integrated Survey of Households (NISH) in 1983 (HANSS). The 1990 NDHS represents another milestone for Nigeria in which rigorous procedures were employed to obtain high- quality data with the survey approach. On this occasion an even more detailed set of information was obtained on demographic and maternal and child health practices for 8,781 female respondents. (Federal Office of Statistics & IRD/Macro International Inc. 1992). Succeeding these surveys was the 1992 Family Planning component of the Quarterly National Integrated Survey of Households (NISH/FP) and the Beeline Sentinel Survey of the National Population Program (BSS) of 1994, there was also another survey called the Integrated Baseline Health Survey (IBHS 1995). Since that time, there has been numerous surveys including series of Demographic and Health Surveys, Multiple Indicator Cluster Survey and some others.

2.6.1. Sample Survey Data

As vehicles for the collection of demographic statistics, the sample surveys have certain advantages and disadvantages, and their purposes and applications differ somewhat from those of censuses. One advantage of sample surveys is the possibility of experimenting with new questions. The fact that a new question is not altogether successful is less critical in the case of a sample survey than in that of a census, where the investment is much larger and where failure cannot be remedied until after the lapse of 5 or 10 years. In a continuing survey new features can be introduced not only in the questions proper but also in the instructions to the canvassers, the coding, the editing, and the tabulations. Since a national population census is a multipurpose statistical project, a fairly large number of different topics must be investigated and no one of them can be explored in any great depth. In a survey, even when there is a nucleus o items that have to be included on the form every time, it is feasible in supplements, or occasional rounds, to probe a particular topic with a "battery" of related questions at relatively moderate additional cost (Shryock & Siegel 1976). Among disadvantages of surveys, sampling error is probably the major one. This disadvantage is offset to some extent, however, by the ability to compute the sampling error for estimates of various sizes and thus describe the limits of reliability, whereas the magnitude of some other types of errors in both censuses and surveys may remain undetermined. The size of the sample is usually such that reliable statistics can be shown only in very limited geographic detail and for relatively broad cross-tabulations. For this reason, the census returns are the principal source of data for small areas and detailed cross-classifications of population characteristics. There is also usually some sampling bias arising from the design of the survey or from failure to carry out the design precisely. As to the design, it may not be practical to sample the entire population even when that is desirable, so that coverage is not extended to certain population subgroups (nomadic or tribal populations, persons living in group quarters, etc.). The public may not cooperate as well in a sample survey as in a national census, which receives a great deal of publicity with attendant patriotic appeal. On the other hand, the data from a regular survey program may be superior in some respects to those from a census. The field staff is retained from month to month or year to year. The smaller size of the survey operation makes it possible to do the work with a smaller and, therefore, more select staff and to maintain closer surveillance and control of procedures. The shorter time interval

between surveys makes them more suitable for studying population growth and household formation and those population characteristics which change frequently in some countries, such as fertility and employment status. With observations taken more frequently, it is much more feasible to analyse time trends in the statistics. The analyst can delineate seasonal movements if the survey is conducted monthly or quarterly. Even when the survey data are available only annually, cyclical movements can be delineated more precisely than from censuses, and turning points in trends are more accurately located. The response of demographic phenomena to economic changes and to political events can also be studied more satisfactorily. The uses of censuses and surveys are sometimes interrelated. The use of the sample survey for testing new questions has already been mentioned. New procedures may also be tested. Census statistics may serve as benchmarks for analysing and evaluating survey data. The census can be used as a sampling frame for selecting the population to be included in a survey or may be a means of selecting a specific population group, such as persons in specified occupations, for a later special survey (Shryock & Siegel 1976).

2.6.2. Sample Survey Methods and Sample Estimation

The quality of the statistics from sample surveys depend heavily upon the design of the sample and its faithful execution; and the usefulness of the statistics obtained is enhanced by a knowledge of their degree of reliability, as expressed in the standard deviation of the sample estimates.

The derivation of a final estimate from the sample returns requires an additional processing step for sample surveys and for those portions of a census that are based on a sample. The sampling ratio itself determines the basic weights to be applied to the record for each person in the sample. The figures produced by the application of these weights, however, are often subjected to other adjustments to obtain the final estimates. The adjustments may be made to account for population not covered because of failure to obtain an interview. Also, independent population controls often are available to which the sample results are adjusted. In a census, the data obtained on a sample basis may be adjusted to the 100-percent population counts by means of a ratio estimation procedure. The ratios of complete-count figures for specified age-sex categories to the sample figures for the same groups are computed and used for adjusting the tabulations based on the sample (Shryock & Siegel 1976; ICF International 2012).

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CHAPTER 3

METHODOLOGY

3.1. Data

The data used in this study derives from the Nigeria Demographic and Health Survey of 2013 which was implemented by the National Population Commission. It is the fifth in the series of Demographic and Health Surveys conducted so far in Nigeria; previous surveys were conducted in 1990, 1999, 2003, and 2008. The resources for the conduct of the survey were provided by the United States Agency for International Development (USAID), the United Nations Population Fund (UNFPA), the United Kingdom Department for International Development (DFID) (through the Partnership for Transforming Health Systems Phase II [PATHS2]), and the government of Nigeria (through the NPC). ICF International provided technical support throughout the duration of the survey.

The Nigeria Demographic and Health Survey of 2013 was intended to provide data to monitor the population and health situation in Nigeria with an explicit goal of providing dependable information about maternal and child health and family planning services. The primary objective of the survey was to provide current information on fertility levels, marriage, fertility preferences, awareness and use of family planning methods, child feeding practices, nutritional status of women and children, adult and childhood mortality, awareness and attitudes regarding HIV/AIDS, and domestic violence. This information is intended to assist policymakers and programme managers in evaluating and designing programmes and strategies for improving health and family planning services in the country.

3.2. Survey and Sample Design

The survey made use of sample that was nationally representative and covered the entire population residing in non-institutional dwelling units in the country. The survey used as a sampling frame the list of enumeration areas (EAs) prepared for the 2006 Population Census of the Federal Republic of Nigeria, provided by the National Population Commission. The sample was designed to provide population and health indicator estimates at the national, zonal, and state levels. The sample design allowed

for specific indicators to be calculated for each of the six zones, 36 states, and the Federal Capital Territory, Abuja.

Administratively, Nigeria is divided into states. Each state is subdivided into local government areas (LGAs), and each LGA is divided into localities. In addition to these administrative units, during the 2006 population census, each locality was subdivided into census enumeration areas. The primary sampling unit (PSU), referred to as a cluster in the 2013 NDHS, is defined on the basis of EAs from the 2006 EA census frame. The 2013 NDHS sample was selected using a stratified three-stage cluster design consisting of 904 clusters, 372 in urban areas and 532 in rural areas. A representative sample of 40·680 households was selected for the survey, with a minimum target of 943 completed interviews per state.

A complete listing of households and a mapping exercise were carried out for each cluster from December 2012 to January 2013, with the resulting lists of households serving as the sampling frame for the selection of households. All regular households were listed. The NPC listing enumerators were trained to use Global Positioning System (GPS) receivers to calculate the coordinates of the 2013 NDHS sample clusters.

A fixed sample take of 45 households were selected per cluster. All women age 15-49 who were either permanent residents of the households in the 2013 NDHS sample or visitors present in the households on the night before the survey were eligible to be interviewed. In a subsample of half of the households, all men age 15-49 who were either permanent residents of the households in the sample or visitors present in the households on the night before the survey were eligible to be interviewed.

3.3. Methods

In this project, the Synthetic Parity Cohort approach to the calculation of Period Parity Progressing Ratios for the analysis of fertility was used, as described by (Feeney & Yu 1987; Hinde 2014). In this calculation, all women who had a birth of a given parity in a particular year were brought together and the measure of the probability of such a birth occurring by time elapsed since the previous birth was measured. All of the probabilities were then combined into a summary synthetic measure for all durations since the previous birth.

3.3.1. Calculation of Period Parity Progression Ratios using Synthetic Parity Cohort

Let

a = Number of women who had their *j*th birth in the *x*th year before the current year and had their (*j* + 1)th birth in the current year

b = Total number of women who had a *j*th birth in the *x*th year before the current year

c = Number of these women who have already had their (*j* + 1)th birth before the start of the current year

Therefore;

$$q_x = \frac{a}{b-c}$$

The quantity q_x, is the probability that a woman of parity *j* moves to parity (*j* + 1) in the year(s) after the *j*th birth – all based on the fertility experience of women in year *x*. q_x is similar to that used in the analysis of mortality in the life table, (the q_x in the original life table denotes the proportions of those still alive at the beginning of the current year who die during the year). In relation to the first birth, the *year of first cohabitation* was used to find the progression to the first birth.

The Period Parity Progression from the *j*th birth to the (*j* + 1)th birth was then calculated as

$$a_j = 1 - (1 - q_0)(1 - q_1)(1 - q_2)\ldots..$$

3.3.2. Determination of the proportion of women with exact parity *j*

If the Parity Progression ratio from parity *j* to parity *j* + 1 is a_j, then the proportion of a cohort who have exactly zero children, n_0, is equal to $1 - a_0$. For $j > 0$, the proportion of a cohort who have exactly *j* children, n_j, is given by

$$n_j = \left[\prod_{k=0}^{j-1} a_k\right](1 - a_j)$$

3.3.3. Derivation of Total Fertility Rate from Parity Progression Ratio

The total fertility rate is given by the following formula as proposed by Feeney and Yu (1987)

$$TFR = a_0 + a_0a_1 + a_0a_1a_2 + a_0a_1a_2a_3 + a_0a_1a_2a_3a_4 \ldots..$$

The calculation excludes the progression ratios of higher order births because of the instability caused by small number of women reaching higher parities, in spite of the large sample size. The totals used here excludes fertility due to eight and higher birth orders.

CHAPTER FOUR

RESULTS

4.1. Period Parity Progression Ratios for Nigeria: 1992 – 2012

Progression ratios to first birth from *year of first cohabitation* is virtually high over the 20 year period with an average of 0.9787 for the entire duration, there was also little change across the whole period with the overall progression ratios between 0.9606 and 0.9914 which suggests that the proportion of women in the population who remain childless was very little; 1 – 4%, and given that age at first cohabitation is relatively very low in Nigeria, a higher proportion of women were found to have become mothers.

Progression ratios from first birth to second birth was high and relatively stable in the 90s with about 97% of women continuing to second birth. A spike occurred in year 2000 which then leveled out in the following years with a progressive sometimes oscillating decline.

Progression ratios from second birth to third birth shows an average of 0.9681, a steady decline from previous values. In 2001 there was sharp decline in the proportion of women progressing to third births with only 94% of women doing so at the time. A rebound followed in the subsequent years with a steady rise in those proportions up till 2011 when again a very sharp decline which saw just 91% of women progressing to third birth. Progression ratios from third births to fourth birth revealed an average of about 95% of women, but this rather high value may give a false impression of the happenings in the 20 year period. in the 90s the progression to fourth birth were very much high in values comparable to progression to the first birth and sometimes more than that, although a curious situation was seen in 1996 where just about 93% of women went on to have their fourth birth. But then, the new millennium ushered in a new era where the ratios dropped steadily till there was a recovery in 2012.

Progression from the fourth birth to the fifth birth has for the first time dipped below 95% to about 93% of women in the population, even though throughout the 90s through to the mid-2000s the progression ratios were still in the high values of above 0.9 but coming up to the second half of the decade the values dropped to below the 90% mark and reached 0.8656 in 2011.

Progression from the fifth birth to the sixth birth was also similar to that above, only that the pace of decrement was somewhat higher and it went as low as 0.7944 in year 2011. Progression from the sixth birth to the seventh birth had an average of 0.8926 which shows that only about 11% of women in the country advanced to the seventh birth.

Table 4.1.1. Period Parity Progression Ratios and Parity-based TFR for Nigeria, NDHS 2013

Year	a_0	a_1	a_2	a_3	a_4	a_5	a_6	TFR
1992	0.9814	0.9769	0.9834	0.9871	0.9503	0.9233	0.8838	6.2
1993	0.9842	0.9728	0.9952	0.9711	0.9860	0.9768	0.9141	6.4
1994	0.9606	0.9817	0.9931	0.9737	0.9598	0.8650	0.9634	6.1
1995	0.9686	0.9695	0.9771	0.9860	0.9554	0.9642	0.9393	6.2
1996	0.9704	0.9704	0.9680	0.9363	0.9253	0.9819	0.8438	5.9
1997	0.9847	0.9778	0.9636	0.9534	0.9455	0.9722	0.9034	6.1
1998	0.9670	0.9726	0.9748	0.9545	0.9814	0.9224	0.9423	6.1
1999	0.9681	0.9784	0.9749	0.9774	0.9586	0.9764	0.8921	6.2
2000	0.9875	0.9919	0.9869	0.9906	0.9664	0.9388	0.9543	6.5
2001	0.9668	0.9709	0.9481	0.9460	0.9166	0.8949	0.9746	5.8
2002	0.9851	0.9766	0.9670	0.9742	0.9517	0.9344	0.9682	6.2
2003	0.9869	0.9738	0.9817	0.9451	0.9623	0.9462	0.9270	6.2
2004	0.9775	0.9767	0.9834	0.9405	0.9489	0.9360	0.9104	6.1
2005	0.9897	0.9763	0.9805	0.9616	0.9610	0.9160	0.9290	6.2
2006	0.9879	0.9809	0.9643	0.9577	0.9250	0.9156	0.8912	6.0
2007	0.9718	0.9661	0.9444	0.9318	0.8873	0.8806	0.8251	5.5
2008	0.9908	0.9714	0.9651	0.9321	0.9089	0.8796	0.8675	5.8
2009	0.9827	0.9432	0.9602	0.9226	0.8653	0.8136	0.7670	5.4
2010	0.9842	0.9670	0.9477	0.9072	0.8802	0.8304	0.8336	5.5
2011	0.9645	0.9485	0.9120	0.9207	0.8656	0.7944	0.7678	5.1
2012	0.9914	0.9748	0.9583	0.9370	0.8831	0.8703	0.8455	5.7
Average PPR	0.9787	0.9723	0.9681	0.9527	0.9326	0.9111	0.8926	

4.2.Period Parity Progression Ratios for Place of Residence in Nigeria: 1992 – 2012

4.2.1. Urban Areas of Nigeria

Period parity progression ratios for the urban areas of Nigeria and the accompanying parity-based total fertility rate is presented in Table 4.2.1, the pattern of change in the urban areas is very similar to that in the country at large, except that the ratios are lower in the urban areas and that total fertility rate declined to 4.7 in 2011 from a high of 6.1 in 1993; a very rapid decline given the overall nature of the Nigerian situation.

Table 4.2.1. Period Parity Progression Ratios and Parity-based TFR, Urban areas Nigeria, NDHS 2013

Year	a_0	a_1	a_2	a_3	a_4	a_5	a_6	TFR
1992	0.9909	0.9658	0.9347	0.9480	0.9516	0.8681	0.8267	5.8
1993	0.9953	0.9700	0.9950	0.9428	0.9791	0.9290	0.7222	6.1
1994	0.9436	0.9579	0.9713	0.9197	0.8637	0.8728	0.8709	5.4
1995	0.9830	0.9567	0.9504	0.9717	0.9172	0.8606	0.9304	5.8
1996	0.9534	0.9383	0.9755	0.9714	0.9054	0.9956	0.8202	5.7
1997	0.9858	0.9644	0.9752	0.9794	0.9325	0.8777	0.8451	6.0
1998	0.9868	0.9459	0.9784	0.9434	0.9663	0.8829	0.9423	6.0
1999	0.9930	0.9664	0.9835	0.9260	0.9142	0.8228	0.7976	5.8
2000	0.9971	0.9908	0.9923	0.9827	0.9814	0.8969	0.9255	6.5
2001	0.9888	0.9504	0.8975	0.9482	0.8358	0.7672	0.8420	5.2
2002	0.9788	0.9618	0.9175	0.9721	0.9139	0.9175	0.9448	5.8
2003	0.9910	0.9619	0.9670	0.8948	0.9169	0.9229	0.8384	5.7
2004	0.9341	0.9717	0.9604	0.9084	0.9261	0.8932	0.8870	5.5
2005	0.9702	0.9659	0.9700	0.9142	0.9237	0.8921	0.8022	5.6
2006	0.9819	0.9592	0.9345	0.9413	0.9023	0.9010	0.8560	5.6
2007	0.9644	0.9496	0.9198	0.8659	0.7875	0.8343	0.7395	4.9
2008	0.9773	0.9659	0.9660	0.8710	0.8559	0.7679	0.8153	5.3
2009	0.9798	0.9395	0.9637	0.8877	0.8107	0.7227	0.6260	5.0
2010	0.9828	0.9536	0.9405	0.8633	0.8406	0.7869	0.7675	5.1
2011	0.9675	0.9483	0.8814	0.8986	0.8010	0.7232	0.7208	4.7
2012	0.9865	0.9788	0.9289	0.8901	0.7937	0.8287	0.8164	5.2
Average PPR	0.9777	0.9601	0.9525	0.9258	0.8914	0.8554	0.8256	

4.2.2. Rural Areas of Nigeria

Table 4.2.2. displays the situation for rural areas that account for about 70% of the total population of Nigeria, the image for the rural areas of the country is a totally different scenario from what has been observed for Nigeria as a whole and the urban areas which is not totally surprising except for the exceptionally high values of progression which appears to be consistent over the entire period. The parity-based total fertility rate are no exception, in that they hovered around the 6.5 mark with the highest value of 6.5 observed for 1993, 2000, 2002, 2003 and 2005. The lowest fertility rate was 5.3 in 2011.

Table 4.2.2. Period Parity Progression Ratios and Parity-based TFR, Rural areas Nigeria, NDHS 2013

Year	a_0	a_1	a_2	a_3	a_4	a_5	a_6	TFR
1992	0.9777	0.9873	0.9905	0.9891	0.9457	0.9408	0.8861	6.3
1993	0.9818	0.9786	0.9923	0.9774	0.9859	0.9788	0.9467	6.5
1994	0.9566	0.9914	0.9941	0.9873	0.9870	0.8788	0.9560	6.3
1995	0.9562	0.9800	0.9774	0.9801	0.9739	0.9767	0.9308	6.2
1996	0.9726	0.9854	0.9654	0.9067	0.9308	0.9640	0.8304	5.9
1997	0.9852	0.9845	0.9588	0.9426	0.9323	0.9768	0.9347	6.1
1998	0.9516	0.9868	0.9827	0.9619	0.9726	0.9279	0.9367	6.1
1999	0.9478	0.9877	0.9657	0.9852	0.9642	0.9791	0.9194	6.2
2000	0.9785	0.9932	0.9882	0.9953	0.9596	0.9596	0.9527	6.5
2001	0.9559	0.9765	0.9621	0.9125	0.9442	0.9352	0.9770	5.8
2002	0.9842	0.9892	0.9836	0.9903	0.9658	0.9423	0.9672	6.5
2003	0.9839	0.9828	0.9904	0.9697	0.9850	0.9637	0.9544	6.5
2004	0.9793	0.9861	0.9939	0.9574	0.9644	0.9498	0.9119	6.3
2005	0.9924	0.9888	0.9859	0.9824	0.9824	0.9352	0.9625	6.5
2006	0.9873	0.9928	0.9808	0.9590	0.9392	0.9182	0.9135	6.2
2007	0.9719	0.9834	0.9609	0.9593	0.9377	0.8916	0.8594	5.9
2008	0.9942	0.9783	0.9716	0.9592	0.9384	0.9209	0.9012	6.2
2009	0.9858	0.9498	0.9649	0.9408	0.9003	0.8508	0.8315	5.6
2010	0.9860	0.9803	0.9591	0.9199	0.8972	0.8505	0.8778	5.7
2011	0.9687	0.9474	0.9226	0.9291	0.8930	0.8337	0.8000	5.3
2012	0.9934	0.9711	0.9753	0.9585	0.9253	0.8926	0.8541	6.0
Average PPR	0.9758	0.9810	0.9746	0.9602	0.9488	0.9270	0.9097	

4.2.3. Comparing the parity-based total fertility rate for place of residence in Nigeria

In Figure 1, total fertility rate derived from parity progression ratios was compared and it shows an enormous gap in the number of children women had across the 20-year period, it shows that on the average 'rural women' had close to 2 more children than their urban counterparts.

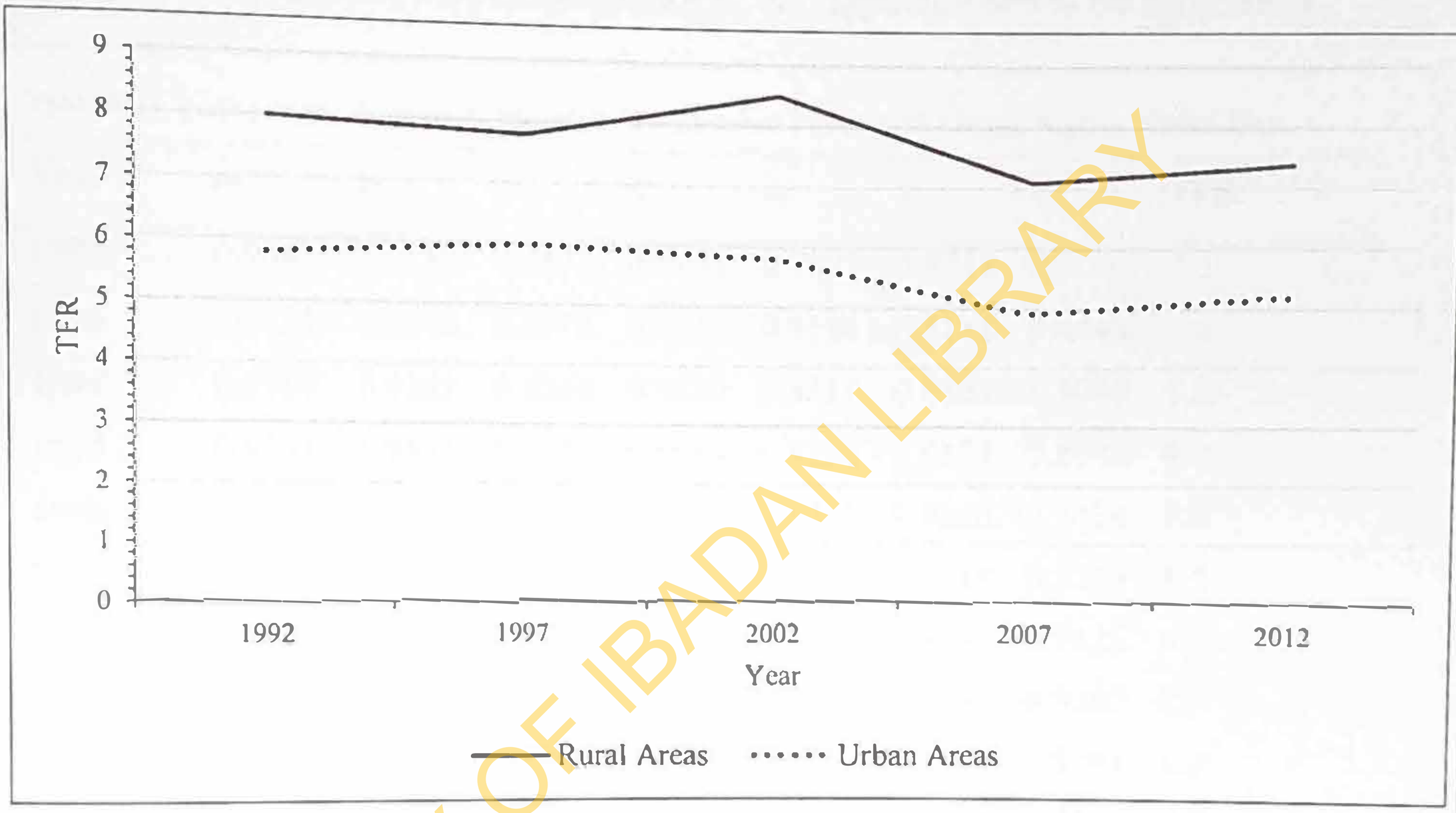

Figure 1. Comparisons of TFRs for rural and urban areas – Nigeria, NDHS 2013

4.3.Period Parity Progression Ratios for the geopolitical zones of Nigeria

4.3.1. North Central Nigeria

Table 4.3.1. show the trend in the period parity progression ratios and total fertility rate for the North Central Zone of Nigeria, the progression ratios were lower in the 90s compared to the early 2000s. Furthermore, total fertility rate also followed the same pattern of lower figures in the 90s compared with the bigger numbers in the early 2000s

Table 4.3.1. Period Parity Progression Ratios and Parity-based TFR, North Central Nigeria, NDHS 2013

Year	a_0	a_1	a_2	a_3	a_4	a_5	a_6	TFR
1992	0.9863	0.9788	0.9571	0.9151	0.7692	0.9213	0.6000	5.3
1993	0.9423	0.9640	0.9073	0.9319	0.9534	0.8118	0.4444	5.0
1994	0.9787	0.9182	0.9260	0.9410	0.8311	0.6804	0.9000	5.0
1995	0.9708	0.9882	0.9440	0.9614	0.9556	0.9374	0.8942	6.0
1996	0.9778	0.9691	0.8945	0.8644	0.8703	0.9660	0.3636	5.0
1997	0.9672	0.9924	0.9432	0.9264	0.8635	0.7719	0.5526	5.3
1998	0.9893	0.9770	0.9807	0.9176	0.9826	0.8572	0.9121	6.0
1999	0.9707	0.9721	0.9646	0.9888	0.9334	0.8753	0.9380	6.0
2000	0.9971	0.9717	0.9922	0.9965	0.9812	0.8571	0.9092	6.4
2001	0.9957	0.9859	0.9705	0.9485	0.8888	0.9077	0.5210	5.7
2002	0.9540	0.9693	0.9858	0.9709	0.9078	0.9594	0.9214	6.0
2003	0.9955	0.9665	0.9973	0.9504	0.9633	0.8836	0.9000	6.2
2004	0.9761	0.9706	0.9845	0.9471	0.8252	0.7034	0.8471	5.4
2005	0.9936	0.9885	0.9416	0.9469	0.9629	0.8424	0.9124	6.0
2006	0.9918	0.9945	0.9933	0.9666	0.9112	0.9187	0.7651	6.2
2007	0.9908	0.9851	0.9522	0.9624	0.8783	0.8476	0.6914	5.7
2008	0.9974	0.9019	0.9485	0.9403	0.9422	0.8218	0.8061	5.4
2009	0.9975	0.9665	0.9244	0.8751	0.8729	0.7566	0.7222	5.2
2010	0.9943	0.9373	0.9623	0.8981	0.8826	0.8769	0.7716	5.4
2011	0.9833	0.9793	0.9474	0.9183	0.9158	0.7837	0.6601	5.5
2012	0.9971	0.6761	0.9706	0.9273	0.8434	0.8110	0.6987	4.1
Average PPR	0.9832	0.9549	0.9566	0.9379	0.9016	0.8472	0.7491	

4.3.Period Parity Progression Ratios for the geopolitical zones of Nigeria

4.3.1. North Central Nigeria

Table 4.3.1. show the trend in the period parity progression ratios and total fertility rate for the North Central Zone of Nigeria, the progression ratios were lower in the 90s compared to the early 2000s. Furthermore, total fertility rate also followed the same pattern of lower figures in the 90s compared with the bigger numbers in the early 2000s

Table 4.3.1. Period Parity Progression Ratios and Parity-based TFR, North Central Nigeria, NDHS 2013

Year	a_0	a_1	a_2	a_3	a_4	a_5	a_6	TFR
1992	0.9863	0.9788	0.9571	0.9151	0.7692	0.9213	0.6000	5.3
1993	0.9423	0.9640	0.9073	0.9319	0.9534	0.8118	0.4444	5.0
1994	0.9787	0.9182	0.9260	0.9410	0.8311	0.6804	0.9000	5.0
1995	0.9708	0.9882	0.9440	0.9614	0.9556	0.9374	0.8942	6.0
1996	0.9778	0.9691	0.8945	0.8644	0.8703	0.9660	0.3636	5.0
1997	0.9672	0.9924	0.9432	0.9264	0.8635	0.7719	0.5526	5.3
1998	0.9893	0.9770	0.9807	0.9176	0.9826	0.8572	0.9121	6.0
1999	0.9707	0.9721	0.9646	0.9888	0.9334	0.8753	0.9380	6.0
2000	0.9971	0.9717	0.9922	0.9965	0.9812	0.8571	0.9092	6.4
2001	0.9957	0.9859	0.9705	0.9485	0.8888	0.9077	0.5210	5.7
2002	0.9540	0.9693	0.9858	0.9709	0.9078	0.9594	0.9214	6.0
2003	0.9955	0.9665	0.9973	0.9504	0.9633	0.8836	0.9000	6.2
2004	0.9761	0.9706	0.9845	0.9471	0.8252	0.7034	0.8471	5.4
2005	0.9936	0.9885	0.9416	0.9469	0.9629	0.8424	0.9124	6.0
2006	0.9918	0.9945	0.9933	0.9666	0.9112	0.9187	0.7651	6.2
2007	0.9908	0.9851	0.9522	0.9624	0.8783	0.8476	0.6914	5.7
2008	0.9974	0.9019	0.9485	0.9403	0.9422	0.8218	0.8061	5.4
2009	0.9975	0.9665	0.9244	0.8751	0.8729	0.7566	0.7222	5.2
2010	0.9943	0.9373	0.9623	0.8981	0.8826	0.8769	0.7716	5.4
2011	0.9833	0.9793	0.9474	0.9183	0.9158	0.7837	0.6601	5.5
2012	0.9971	0.6761	0.9706	0.9273	0.8434	0.8110	0.6987	4.1
Average PPR	0.9832	0.9549	0.9566	0.9379	0.9016	0.8472	0.7491	

4.3.2. North West Nigeria

The North Western part of Nigeria has held the unwanted title of the highest fertility rate since the inception of the Demographic and Health Survey program in 1990 up till the most recent one in 2013. It is no surprise then, given the high rate of the parity progression ratio over the years that the following values were observed from Table 4.3.2.

Table 4.3.2.Period Parity Progression Ratios and Parity-based TFR, North Western Nigeria, NDHS 2013

Year	a_0	a_1	a_2	a_3	a_4	a_5	a_6	TFR
1992	0.9919	0.9964	0.9742	0.9990	0.9887	0.9405	0.9008	6.6
1993	0.9971	0.9915	0.9975	0.9914	0.9822	0.9799	0.9014	6.7
1994	0.9210	0.9834	0.9938	0.9822	0.9935	0.8890	0.9817	6.0
1995	0.9424	0.9896	0.9749	0.9776	0.9434	0.9612	0.9277	6.1
1996	0.9320	0.9774	0.9743	0.9191	0.9831	0.9752	0.8508	5.8
1997	0.9825	0.9953	0.9807	0.9710	0.9469	0.9613	0.9832	6.4
1998	0.9698	0.9952	0.9616	0.9857	0.9757	0.9791	0.9720	6.4
1999	0.9705	0.9928	0.9708	0.9979	0.9778	0.9690	0.9614	6.5
2000	0.9796	0.9950	0.9925	0.9940	0.9807	0.9707	0.9815	6.6
2001	0.9768	0.9653	0.9145	0.8866	0.9151	0.9569	0.9631	5.6
2002	0.9798	0.9958	0.9876	0.9829	0.9715	0.9660	0.9858	6.6
2003	0.9890	0.9952	0.9932	0.9694	0.9836	0.9878	0.9706	6.6
2004	0.9797	0.9948	0.9922	0.9827	0.9909	0.9875	0.9366	6.6
2005	0.9937	0.9890	0.9944	0.9845	0.9874	0.9922	0.9928	6.7
2006	0.9781	0.9964	0.9901	0.9616	0.9622	0.9628	0.9544	6.4
2007	0.9576	0.9723	0.9565	0.9577	0.9372	0.8938	0.8720	5.8
2008	0.9947	0.9851	0.9747	0.9571	0.9629	0.9538	0.9597	6.4
2009	0.9839	0.9690	0.9927	0.9691	0.9590	0.8823	0.9207	6.2
2010	0.9838	0.9899	0.9779	0.9459	0.9588	0.8575	0.9021	6.1
2011	0.9323	0.9397	0.9184	0.9215	0.8619	0.8086	0.8560	5.0
2012	0.9962	0.9983	0.9942	0.9794	0.9587	0.9492	0.9061	6.6
Average PPR	0.9730	0.9861	0.9765	0.9674	0.9629	0.9440	0.9372	

4.3.4. South East Nigeria

As shown in Table 4.3.4., the progression ratios for this region is relatively low from birth progression from the fourth birth and onward, the biggest drop was seen in 1999 where 0.4762 was observed for the progression from the sixth birth to the seventh birth.

Table 4.3.4.Period Parity Progression Ratios and Parity-based TFR,South Eastern Nigeria, NDHS 2013

Year	a_0	a_1	a_2	a_3	a_4	a_5	a_6	TFR
1992	0.9902	0.9209	0.9640	0.9341	0.8035	0.7879	0.9231	5.3
1993	0.9972	0.9594	0.9908	0.8333	0.9572	0.8644	0.6667	5.5
1994	0.9709	0.9583	0.9831	0.9319	0.8295	0.9158	0.9202	5.6
1995	0.9861	0.9749	0.9803	0.9934	0.9553	0.8471	0.7907	6.1
1996	0.9956	0.9906	0.9257	0.9408	0.8716	0.9903	0.6991	5.8
1997	0.9957	0.9784	0.9676	0.9302	0.9437	0.9096	0.8575	6.0
1998	0.9083	0.9272	0.9857	0.9454	0.9685	0.6661	0.9825	5.1
1999	0.9743	0.9676	0.9787	0.8533	0.7165	0.8582	0.4762	4.9
2000	0.9701	0.9892	0.9724	0.9884	0.9642	0.9734	0.7962	6.2
2001	0.8946	0.9531	0.9417	0.9766	0.9210	0.8551	0.7206	5.1
2002	0.9907	0.9285	0.9400	0.9488	0.9798	0.9343	0.8762	5.8
2003	0.9628	0.9022	0.9814	0.8813	0.8772	0.7302	0.8484	5.0
2004	0.9462	0.9642	0.9969	0.9363	0.9289	0.9347	0.9005	5.8
2005	0.9685	0.9005	0.9359	0.9513	0.9665	0.7203	0.7452	5.1
2006	0.9312	0.9602	0.9102	0.9748	0.9718	0.9506	0.9035	5.6
2007	0.9959	0.9596	0.8143	0.9424	0.9209	0.9284	0.8543	5.3
2008	0.9928	0.9476	0.9730	0.9193	0.8779	0.8000	0.7588	5.5
2009	0.9510	0.8807	0.9138	0.9181	0.7746	0.7349	0.6338	4.5
2010	0.9144	0.9544	0.9431	0.8635	0.8438	0.8253	0.8251	4.8
2011	0.9593	0.9514	0.8778	0.8807	0.8119	0.7950	0.7048	4.7
2012	0.9911	0.9786	0.9563	0.9323	0.8339	0.8973	0.8281	5.7
Average PPR	0.9660	0.9499	0.9492	0.9274	0.8913	0.8533	0.7958	

4.3.3. North East Nigeria

Progression ratios for all the births were consistently high (above 90%) for most of the entire period except for year 2010 and 2011 where the progression ratio from the fifth birth to the sixth birth and progression from the sixth to the seventh birth were in the lower 80%.

Table 4.3.3.Period Parity Progression Ratios and Parity-based TFR, North Eastern Nigeria, NDHS 2013

Year	a_0	a_1	a_2	a_3	a_4	a_5	a_6	TFR
1992	0.9489	0.9662	0.9965	0.9668	0.8274	0.8549	0.5294	5.3
1993	0.9520	0.9658	0.9667	0.9635	0.9899	0.9591	0.9059	6.0
1994	0.8887	0.9877	0.9367	0.9314	0.9765	0.8683	0.8485	5.3
1995	0.9315	0.9887	0.9733	0.9429	0.9772	0.9693	0.9349	6.0
1996	0.9709	0.8765	0.9430	0.9259	0.7265	0.9841	0.8302	4.9
1997	0.9807	0.9842	0.9659	0.9671	0.9674	0.9727	0.8169	6.2
1998	0.8976	0.9772	0.9846	0.9481	0.9439	0.9679	0.9422	5.7
1999	0.9033	0.9959	0.9838	0.9705	0.9513	0.9912	0.9052	5.9
2000	0.9714	0.9870	0.9926	0.9824	0.9534	0.9188	0.9590	6.3
2001	0.9151	0.8871	0.9699	0.9270	0.9412	0.8293	0.8636	5.0
2002	0.9723	0.9854	0.9849	0.9941	0.9622	0.9339	0.9423	6.4
2003	0.9664	0.9883	0.9927	0.9923	0.9901	0.9701	0.9753	6.5
2004	0.9619	0.9878	0.9879	0.9609	0.9663	0.9763	0.9539	6.3
2005	0.9952	0.9893	0.9955	0.9823	0.9959	0.9710	0.9393	6.7
2006	0.9868	0.9585	0.9832	0.9589	0.9925	0.9340	0.9747	6.3
2007	0.9272	0.9766	0.9742	0.9055	0.9634	0.9315	0.9430	5.7
2008	0.9886	0.9570	0.9827	0.9456	0.9726	0.9412	0.9477	6.2
2009	0.9801	0.9683	0.9736	0.9298	0.9440	0.8940	0.8779	5.9
2010	0.9805	0.9582	0.9436	0.9439	0.9012	0.9034	0.8046	5.6
2011	0.9832	0.9817	0.8367	0.9087	0.9037	0.8260	0.8862	5.2
2012	0.9865	0.9795	0.9418	0.9024	0.9531	0.9067	0.9147	5.8
Average PPR	0.9566	0.9689	0.9671	0.9500	0.9428	0.9287	0.8903	

4.3.5. South West Nigeria

As shown in Table 4.3.5., about 75% of women in the south west did not proceed to give birth to the seventh child in 1997 and more 50% in 2011. Overall, the proportion of women that became mothers over the years has remained virtually unchanged.

Table 4.3.5.Period Parity Progression Ratios and Parity-based TFR, South Western Nigeria, NDHS 2013

Year	a_0	a_1	a_2	a_3	a_4	a_5	a_6	TFR
1992	0.9022	0.8423	0.9206	0.8630	0.9113	0.5313	0.3333	3.9
1993	0.9957	0.9965	0.9916	0.8731	0.9059	0.9150	0.1111	5.4
1994	0.9526	0.8990	0.9768	0.8892	0.4982	0.7397	0.1818	4.1
1995	0.9768	0.9406	0.8895	0.8971	0.8619	0.7460	0.6635	4.9
1996	0.9105	0.8896	0.9975	0.8982	0.7036	0.6795	0.8831	4.4
1997	0.9759	0.9259	0.8982	0.8866	0.7359	0.6539	0.2500	4.4
1998	0.9985	0.9293	0.9205	0.8517	0.8176	0.6449	0.5852	4.7
1999	0.9992	0.9584	0.9662	0.9484	0.8759	0.7955	0.6667	5.5
2000	0.9965	0.9962	0.9875	0.9811	0.9480	0.8155	0.8565	6.2
2001	0.9376	0.9876	0.9578	0.8881	0.8385	0.8219	0.9474	5.3
2002	0.9837	0.9695	0.9321	0.9464	0.8632	0.7826	0.9325	5.5
2003	0.9757	0.9670	0.8832	0.9028	0.8586	0.9015	0.8893	5.3
2004	0.9890	0.9759	0.9590	0.8617	0.9077	0.9002	0.8378	5.6
2005	0.9447	0.9729	0.9719	0.9349	0.8626	0.8688	0.5642	5.3
2006	0.9750	0.9740	0.8521	0.8855	0.7881	0.7798	0.7212	4.8
2007	0.9947	0.9477	0.9152	0.9031	0.8043	0.8246	0.7578	5.1
2008	0.9571	0.9757	0.9580	0.8745	0.8111	0.4890	0.6390	4.7
2009	0.9861	0.9639	0.9470	0.8825	0.7595	0.6084	0.4290	4.8
2010	0.9886	0.9754	0.9042	0.8349	0.6822	0.7063	0.6517	4.6
2011	0.9984	0.9721	0.9262	0.9031	0.8053	0.7592	0.4846	5.1
2012	0.9898	0.9797	0.9325	0.8839	0.7407	0.6054	0.6556	4.8
Average PPR	0.9728	0.9542	0.9375	0.8948	0.8086	0.7414	0.6210	

4.3.6. South – South Nigeria

Progression ratio to higher birth orders i.e. progression to fifth, sixth and seventh birth was low compared to other regions of the countries even though the proportion of women who became mothers was still very high.

Table 4.3.6.Period Parity Progression Ratios and Parity-based TFR, South-South Nigeria, NDHS 2013

Year	a_0	a_1	a_2	a_3	a_4	a_5	a_6	TFR
1992	0.9705	0.9345	0.9745	0.7776	0.6905	0.5190	0.6160	4.3
1993	0.9779	0.8980	0.9664	0.9810	0.8887	0.7443	0.5625	5.1
1994	0.9459	0.9309	0.9939	0.9245	0.8429	0.8147	0.4643	5.0
1995	0.9895	0.9181	0.9041	0.8933	0.9583	0.8689	0.9367	5.3
1996	0.9863	0.9774	0.8703	0.9514	0.8969	0.8492	0.7846	5.4
1997	0.9956	0.9053	0.9722	0.8726	0.6748	0.7704	0.6591	4.7
1998	0.9654	0.9675	0.9756	0.9603	0.8995	0.8516	0.8830	5.7
1999	0.9223	0.9485	0.9536	0.8059	0.8885	0.7285	0.6827	4.6
2000	0.9857	0.9869	0.9421	0.9115	0.9494	0.9745	0.8303	5.9
2001	0.9843	0.9721	0.9269	0.9190	0.9375	0.7611	0.8140	5.5
2002	0.9964	0.8836	0.9210	0.9207	0.7967	0.8309	0.9073	5.0
2003	0.9917	0.9466	0.9661	0.9284	0.8626	0.9196	0.7182	5.6
2004	0.9547	0.9347	0.9728	0.8820	0.9073	0.7848	0.6121	5.1
2005	0.9550	0.9316	0.9736	0.9494	0.9224	0.7738	0.8211	5.4
2006	0.9962	0.9600	0.9660	0.9625	0.8242	0.8416	0.8071	5.6
2007	0.9728	0.9684	0.9728	0.9264	0.8114	0.8363	0.6368	5.3
2008	0.9955	0.9068	0.9477	0.8985	0.7970	0.7950	0.7579	5.0
2009	0.9540	0.9180	0.9251	0.8922	0.7869	0.7898	0.5233	4.6
2010	0.9997	0.9183	0.9522	0.8840	0.8580	0.7620	0.7483	5.1
2011	0.9961	0.8854	0.8888	0.9322	0.8537	0.7851	0.4913	4.7
2012	1.0000	0.9379	0.8760	0.8693	0.7917	0.7900	0.8166	4.9
Average PPR	0.9779	0.9348	0.9449	0.9068	0.8495	0.7996	0.7178	

4.3.7. Comparing the parity-based total fertility for the geopolitical zones in Nigeria

According to Figure 2, fertility rate was generally lower in the among south western women throughout the 90s only for a bump in year 2000 which soon steadied and remained almost constant for the remainder of time.

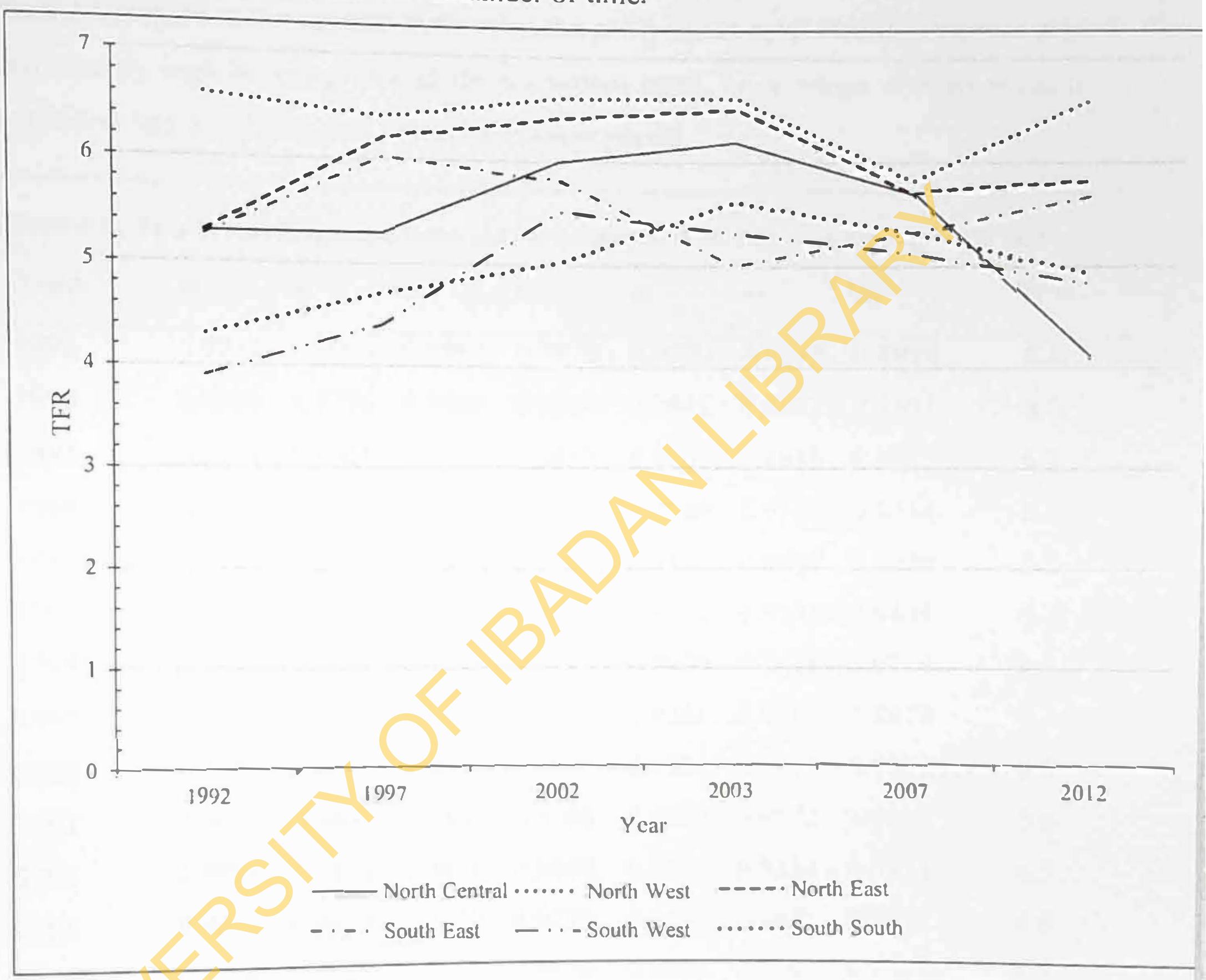

Figure 2. Comparisons of TFRs for the geopolitical zones – Nigeria, NDHS 2013

4.4.Period Parity Progression Ratios for Educational Attainment in Nigeria: 1992 – 2012

4.4.1. No Education

Women in Nigeria who had no education according to Table 4.4.1. had higher progression still on till even the seventh birth, such that even in 2012 close to 90% of them progressed to the seventh birth. Also the parity-based total fertility rate was also consistently high hovering around the 6 children mark, on average, women without education had 6 children over the entire 20-year period.

Table 4.4.1. Period Parity Progression Ratios and Parity-based TFR, No Education Nigeria, NDHS 2013

Year	a_0	a_1	a_2	a_3	a_4	a_5	a_6	TFR
1992	0.9712	0.9906	0.9863	0.9979	0.9770	0.9318	0.8998	6.4
1993	0.9789	0.9776	0.9954	0.9867	0.9842	0.9853	0.9533	6.5
1994	0.9514	0.9961	0.9708	0.9853	0.9865	0.8885	0.9702	6.2
1995	0.9333	0.9880	0.9921	0.9757	0.9589	0.9766	0.9334	6.1
1996	0.9639	0.9498	0.9512	0.9486	0.9434	0.9798	0.8929	5.8
1997	0.9888	0.9952	0.9588	0.9711	0.9551	0.9536	0.9438	6.3
1998	0.9406	0.9861	0.9822	0.9713	0.9939	0.9628	0.9714	6.2
1999	0.9520	0.9958	0.9682	0.9976	0.9201	0.9781	0.8879	6.1
2000	0.9769	0.9954	0.9935	0.9979	0.9774	0.9474	0.9782	6.6
2001	0.9642	0.9691	0.9603	0.9168	0.9500	0.9572	0.9620	5.9
2002	0.9820	0.9856	0.9936	0.9868	0.9765	0.9334	0.9614	6.5
2003	0.9853	0.9934	0.9932	0.9775	0.9825	0.9841	0.9647	6.6
2004	0.9796	0.9922	0.9912	0.9630	0.9648	0.9693	0.9539	6.4
2005	0.9946	0.9917	0.9929	0.9833	0.9909	0.9470	0.9681	6.7
2006	0.9887	0.9908	0.9913	0.9502	0.9719	0.9621	0.9486	6.4
2007	0.9721	0.9872	0.9620	0.9483	0.9417	0.9026	0.8886	6.0
2008	0.9920	0.9819	0.9808	0.9331	0.9720	0.9433	0.9450	6.3
2009	0.9855	0.9746	0.9819	0.9476	0.9329	0.9060	0.8778	6.0
2010	0.9847	0.9899	0.9676	0.9023	0.8949	0.8610	0.9127	5.8
2011	0.9631	0.9444	0.9032	0.8961	0.8956	0.8287	0.8194	5.1
2012	0.9884	0.9892	0.9793	0.9427	0.9567	0.9251	0.8888	6.2
Average PPR	0.9732	0.9840	0.9760	0.9609	0.9584	0.9392	0.9296	

4.4.2. Primary Education

Table 4.4.2. shows the parity progression ratios from *year of first cohabitation* to first birth was high across the period. The year 2011 had the biggest drop in progression ratios especially from the 4th child to the 5th child, also from the 5th child to the 6th child and on to the progression to the 7th child with values of 0.8790, 0.7775 and 0.6697 respectively. Parity-based total fertility rate across the entire period was also high, with primary school educated women having on average 6.6 children in the year 2000 and 5.6 in 2012 – a decrease of only 1 child.

Table 4.4.2.Period Parity Progression Ratios and Parity-based TFR, Primary Education Nigeria, NDHS 2013

Year	a_0	a_1	a_2	a_3	a_4	a_5	a_6	TFR
1992	0.9951	0.9321	0.9837	0.8401	0.8892	0.9599	0.6494	5.4
1993	0.9988	0.9981	0.9938	0.9736	0.9540	0.8061	0.5949	6.1
1994	0.9782	0.9241	0.9975	0.9096	0.8959	0.8094	0.7288	5.4
1995	0.9962	0.9566	0.9401	0.9688	0.9664	0.8281	0.9684	5.9
1996	0.9863	0.9858	0.9868	0.9668	0.9312	0.9728	0.7893	6.2
1997	0.9776	0.9711	0.9896	0.9345	0.9126	0.9422	0.7769	5.9
1998	0.9915	0.9870	0.9958	0.9407	0.9794	0.8504	0.8035	6.1
1999	0.9907	0.9581	0.9489	0.9053	0.9863	0.9503	0.9278	5.9
2000	0.9994	0.9876	0.9944	0.9854	0.9703	0.9539	0.9198	6.6
2001	0.9686	0.9604	0.9612	0.9436	0.9486	0.8161	0.9456	5.7
2002	0.9898	0.9923	0.9856	0.9861	0.8988	0.9362	0.9674	6.3
2003	0.9657	0.9826	0.9757	0.9461	0.9268	0.8242	0.9169	5.8
2004	0.9839	0.9671	0.9904	0.9550	0.9230	0.9010	0.8563	6.0
2005	0.9428	0.9896	0.9794	0.9679	0.9700	0.9478	0.9333	6.1
2006	0.9911	0.9935	0.9634	0.9592	0.9044	0.8699	0.9486	6.1
2007	0.9217	0.9581	0.9254	0.9509	0.8931	0.8986	0.7763	5.2
2008	0.9927	0.9908	0.9742	0.9657	0.9112	0.8861	0.7483	6.0
2009	0.9744	0.9319	0.9830	0.9418	0.8276	0.7355	0.6446	5.2
2010	0.9767	0.9736	0.9692	0.9364	0.8651	0.8058	0.8157	5.6
2011	0.9767	0.9476	0.9513	0.9494	0.8790	0.7775	0.6697	5.3
2012	0.9886	0.9875	0.9602	0.8895	0.8874	0.8538	0.8334	5.6
Average PPR	0.9803	0.9703	0.9738	0.9436	0.9200	0.8727	0.8198	

4.4.3. Secondary Education

In table 4.4.3., we see that the progression ratio to higher order births of 5, 6 and 7 children has started to reduce over the period. Such that the parity-based total fertility rate was also low compared with women without education and those with primary education.

Table 4.4.3. Period Parity Progression Ratios and Parity-based TFR, Secondary Education Nigeria, NDHS 2013

Year	a_0	a_1	a_2	a_3	a_4	a_5	a_6	TFR
1992	0.9869	0.9720	0.9683	0.9095	0.9218	0.2385	0.6571	4.8
1993	0.9502	0.9090	0.9872	0.8298	0.9092	0.8247	0.6667	4.9
1994	0.9707	0.9717	0.9812	0.9694	0.8725	0.8990	0.5625	5.6
1995	0.9802	0.9673	0.9535	0.9789	0.8157	0.9706	0.8714	5.8
1996	0.9863	0.9519	0.9541	0.8797	0.8556	0.9321	0.5022	5.2
1997	0.9929	0.9298	0.9174	0.9552	0.9158	0.5367	0.7787	5.0
1998	0.9891	0.9450	0.9653	0.9500	0.7857	0.6526	0.9186	5.2
1999	0.9906	0.9798	0.9900	0.8914	0.8392	0.7874	0.7514	5.5
2000	0.9809	0.9901	0.9592	0.9701	0.9638	0.8372	0.7929	6.0
2001	0.9309	0.9850	0.9165	0.9332	0.8139	0.8151	0.6554	5.0
2002	0.9762	0.9334	0.8965	0.9512	0.9421	0.8572	0.8851	5.4
2003	0.9895	0.9427	0.9452	0.9118	0.8595	0.8666	0.6475	5.3
2004	0.9687	0.9731	0.9753	0.8974	0.9109	0.9172	0.7457	5.6
2005	0.9748	0.9341	0.9603	0.9249	0.9032	0.7280	0.7612	5.2
2006	0.9814	0.9679	0.9191	0.9604	0.8643	0.8775	0.6470	5.4
2007	0.9866	0.9648	0.9531	0.9240	0.8005	0.7278	0.7516	5.2
2008	0.9876	0.9685	0.9605	0.8762	0.8452	0.6078	0.7494	5.1
2009	0.9864	0.9253	0.9560	0.8790	0.7926	0.6592	0.6622	4.8
2010	0.9911	0.9255	0.9355	0.8910	0.8304	0.7382	0.6695	4.9
2011	0.9783	0.9562	0.9175	0.9122	0.8675	0.7438	0.6925	5.1
2012	0.9976	0.9595	0.9340	0.9129	0.7444	0.7427	0.7253	5.1
Average PPR	0.9799	0.9549	0.9498	0.9194	0.8597	0.7600	0.7187	

4.4.4. Higher Education

Table 4.4.4., shows that the probability that women who had higher education had another child was low across the years, such that in year 2001 only about 86% of women in this category became mothers compared to women who had lower education status whose proportion was high close to 100%. The parity-based total fertility rate also followed a similar pattern with women in this category having on average, 4 children over the 20 year period

Table 4.4.4.Period Parity Progression Ratios and Parity-based TFR, Higher Education Nigeria, NDHS 2013

Year	a_0	a_1	a_2	a_3	a_4	a_5	a_6	TFR
1992	0.8595	0.9634	0.9035	0.9091	0.4777	0.8889	0.0000	3.7
1993	0.9717	0.7206	0.9012	0.8661	0.8817	0.3333	0.0000	3.5
1994	0.9176	0.8002	0.8375	0.8760	0.5600	0.6667	0.0000	3.3
1995	0.9450	0.8855	0.9357	0.8500	0.9002	0.7917	0.4375	4.5
1996	0.9292	0.9934	0.9252	0.7393	0.8259	0.7600	0.6000	4.5
1997	0.9697	0.9350	0.9661	0.9554	0.6825	0.7692	0.3750	4.8
1998	0.9865	0.9257	0.9489	0.7063	0.5417	0.6944	0.9583	4.2
1999	0.8784	0.8674	0.9738	0.7533	0.7247	0.9271	0.4667	3.9
2000	0.9940	0.9783	0.9735	0.9476	0.9348	0.7968	0.8667	5.9
2001	0.8675	0.9090	0.8554	0.9463	0.8446	0.6686	0.3333	4.0
2002	0.9821	0.9583	0.8369	0.8310	0.6823	0.8848	0.3981	4.4
2003	0.9879	0.9592	0.9892	0.7765	0.8097	0.8311	0.8324	5.1
2004	0.8266	0.9175	0.8863	0.8638	0.9004	0.7019	0.6538	4.0
2005	0.9420	0.9025	0.9231	0.8876	0.7769	0.5493	0.3864	4.2
2006	0.9808	0.8462	0.8917	0.7592	0.6871	0.8061	0.8815	4.1
2007	0.9578	0.8816	0.8156	0.6721	0.6517	0.8697	0.5313	3.7
2008	0.9173	0.9379	0.9325	0.7771	0.4961	0.6282	0.5837	3.8
2009	0.9448	0.8472	0.7257	0.7175	0.6192	0.4531	0.1728	3.1
2010	0.9515	0.9610	0.8502	0.7265	0.8678	0.7457	0.5273	4.3
2011	0.9024	0.8925	0.8525	0.9015	0.4844	0.6978	0.7721	3.7
2012	0.9767	0.9809	0.9157	0.8635	0.6861	0.5404	0.1000	4.4
Average PPR	0.9376	0.9078	0.8971	0.8250	0.7160	0.7145	0.4703	

4.4.5. Comparing the parity-based total fertility rate for Education Nigeria

Figure 3, shows the trend in parity-based total fertility rate according to educational status for Nigeria 1992 – 2012. There was no much difference between the primary educated women and women with no education. The biggest difference (as expected) was between the higher educated women and the rest of the pack especially from the late 90s onwards. For the secondary educated women, their fertility rate appears to be nearly constant around 5 children throughout the period.

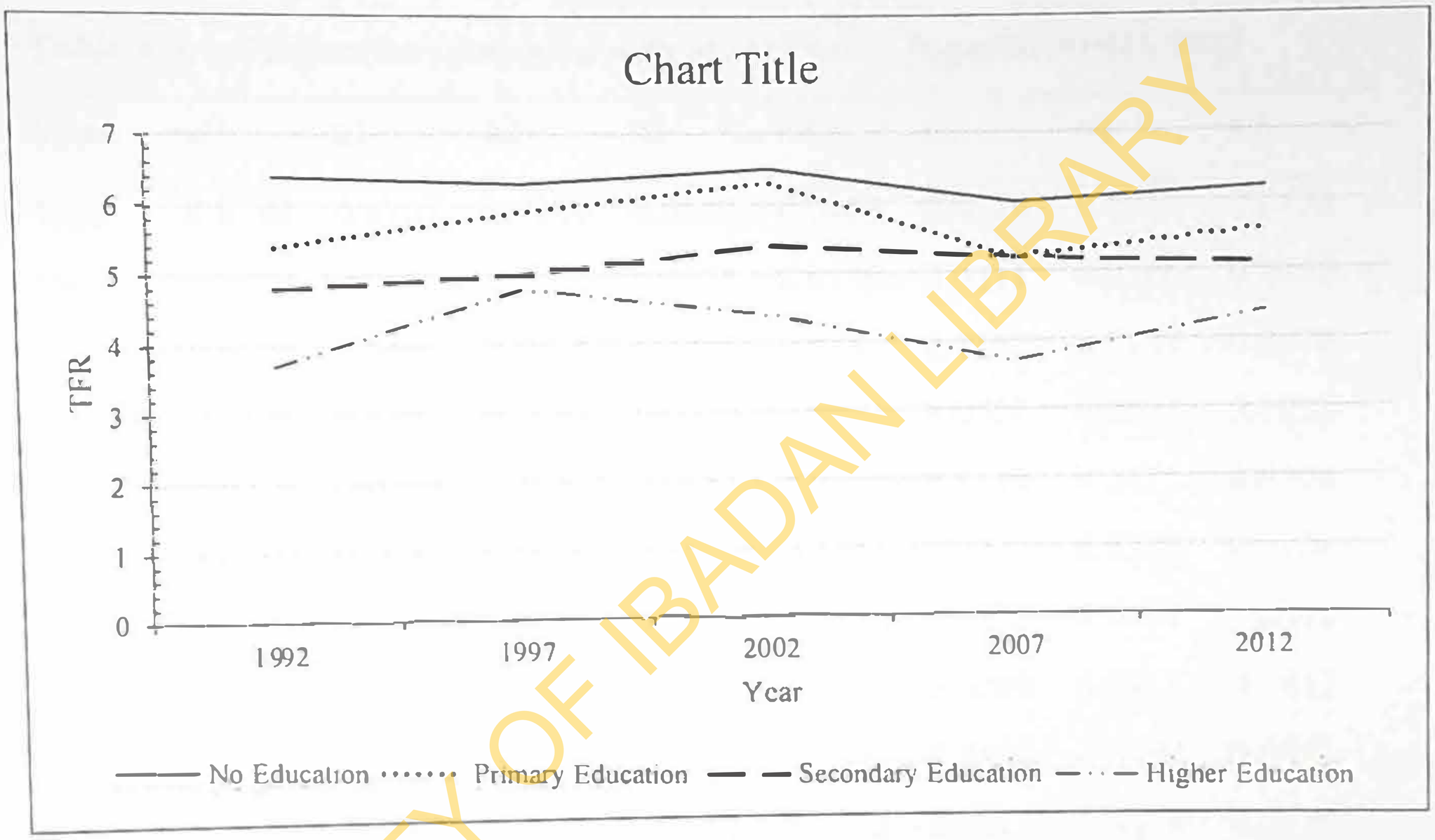

Figure 3. Comparisons of TFRs for Education – Nigeria, NDHS 2013

4.4.5. Comparing the parity-based total fertility rate for Education Nigeria

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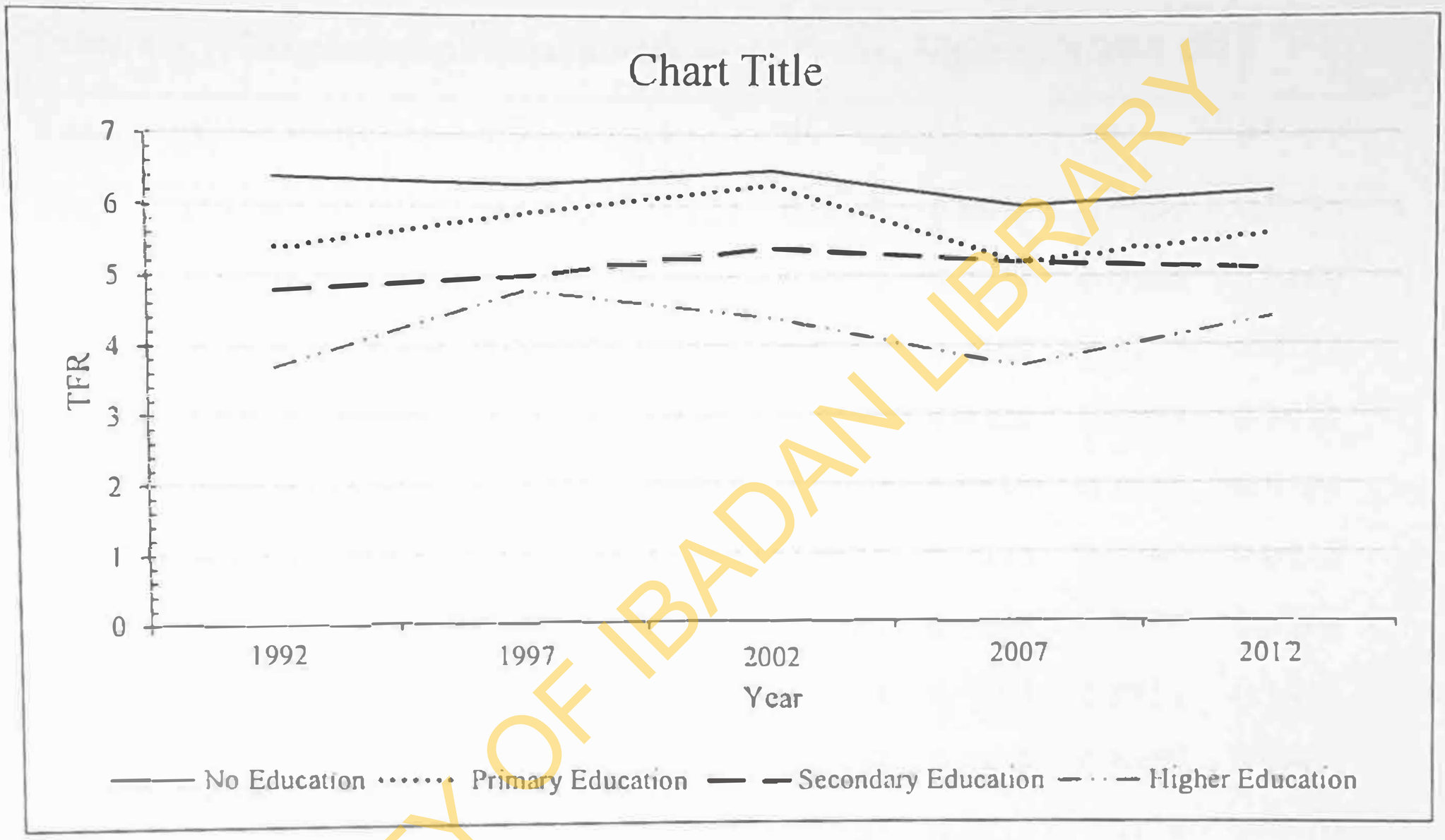

Figure 3. Comparisons of TFRs for Education – Nigeria, NDHS 2013

4.5.Proportion of Women with Exact Parity in Nigeria: 1992 – 2012

The tables below, show the proportion of women in Nigeria with exact parity throughout the entire twenty year period, they are also disaggregated into the various geopolitical zones, according to educational status and also according to place of residence. Overall, as it has been shown in the parity progression ratios that progression to first birth was quite high all round; as expected, the proportion of women who had no children in reverse was low throughout the entire period.

Table 4.5.1. Proportion of women with exact Parity, Nigeria, NDHS 2013

Year	n0	n1	n2	n3	n4	n5	n6	n7
1992	0.0186	0.0227	0.0159	0.0122	0.0463	0.0679	0.0949	0.0535
1993	0.0158	0.0268	0.0046	0.0275	0.0129	0.0211	0.0766	0.0460
1994	0.0394	0.0176	0.0065	0.0246	0.0367	0.1181	0.0277	0.0328
1995	0.0314	0.0295	0.0215	0.0129	0.0403	0.0309	0.0506	0.1031
1996	0.0296	0.0287	0.0301	0.0581	0.0637	0.0143	0.1211	0.0705
1997	0.0153	0.0219	0.0351	0.0432	0.0482	0.0232	0.0785	0.0734
1998	0.0330	0.0265	0.0237	0.0418	0.0163	0.0666	0.0457	0.0599
1999	0.0319	0.0209	0.0238	0.0208	0.0374	0.0204	0.0911	0.1412
2000	0.0125	0.0080	0.0128	0.0091	0.0322	0.0567	0.0397	0.0681
2001	0.0332	0.0281	0.0487	0.0481	0.0702	0.0811	0.0175	0.0710
2002	0.0149	0.0231	0.0318	0.0240	0.0438	0.0566	0.0256	0.0625
2003	0.0131	0.0258	0.0176	0.0518	0.0336	0.0461	0.0593	0.0640
2004	0.0225	0.0228	0.0158	0.0558	0.0451	0.0536	0.0703	0.0865
2005	0.0103	0.0235	0.0189	0.0363	0.0355	0.0736	0.0570	0.0643
2006	0.0121	0.0189	0.0346	0.0395	0.0671	0.0698	0.0824	0.0856
2007	0.0282	0.0329	0.0522	0.0605	0.0931	0.0875	0.1129	0.1105
2008	0.0092	0.0283	0.0336	0.0631	0.0789	0.0947	0.0917	0.1042
2009	0.0173	0.0559	0.0369	0.0689	0.1106	0.1324	0.1347	0.0975
2010	0.0158	0.0325	0.0497	0.0837	0.0981	0.1222	0.0995	0.1148
2011	0.0355	0.0497	0.0805	0.0662	0.1032	0.1367	0.1226	0.1183
2012	0.0086	0.0250	0.0403	0.0583	0.1014	0.0994	0.1030	0.0865

4.6.Proportion of Women with Exact Parity according to Geopolitical zones in Nigeria: 1992 – 2012

4.6.1. Proportion of Women with Exact Parity, North Central Nigeria: 1992 – 2012

One stand out value for North central Nigeria was that there was a dwindling in the proportion of women who had exact number of children of higher parities, we see that in 1994 about 40% of women had exactly 7 children but nearly two decades later only 7.6% of the population of women had the same number.

Table 4.6.1.Proportion of women with exact Parity, North Central, NDHS 2013

Year	n0	n1	n2	n3	n4	n5	n6	n7
1992	0.0137	0.0209	0.0414	0.0785	0.1951	0.0512	0.2397	0.1798
1993	0.0577	0.0339	0.0842	0.0561	0.0358	0.1378	0.3303	0.1321
1994	0.0213	0.0801	0.0665	0.0491	0.1322	0.2080	0.0443	0.3985
1995	0.0292	0.0115	0.0537	0.0349	0.0387	0.0521	0.0825	0.2354
1996	0.0222	0.0302	0.0999	0.1150	0.0950	0.0217	0.3920	0.0369
1997	0.0328	0.0074	0.0545	0.0667	0.1145	0.1652	0.2500	0.0463
1998	0.0107	0.0227	0.0187	0.0781	0.0151	0.1220	0.0644	0.3798
1999	0.0293	0.0271	0.0334	0.0102	0.0599	0.1047	0.0456	0.0958
2000	0.0029	0.0282	0.0076	0.0033	0.0180	0.1343	0.0731	0.2324
2001	0.0043	0.0141	0.0290	0.0491	0.1005	0.0741	0.3492	0.0283
2002	0.0460	0.0293	0.0131	0.0266	0.0816	0.0326	0.0606	0.0229
2003	0.0045	0.0334	0.0026	0.0476	0.0335	0.1022	0.0776	0.2152
2004	0.0239	0.0287	0.0147	0.0493	0.1544	0.2162	0.0784	0.2256
2005	0.0064	0.0114	0.0573	0.0491	0.0325	0.1329	0.0622	0.0500
2006	0.0082	0.0054	0.0066	0.0327	0.0841	0.0702	0.1862	0.1186
2007	0.0092	0.0148	0.0467	0.0349	0.1088	0.1197	0.2055	0.1507
2008	0.0026	0.0978	0.0464	0.0509	0.0464	0.1347	0.1205	0.1552
2009	0.0025	0.0334	0.0729	0.1113	0.0991	0.1656	0.1431	0.1305
2010	0.0057	0.0623	0.0352	0.0914	0.0945	0.0875	0.1424	0.1783
2011	0.0167	0.0203	0.0507	0.0746	0.0706	0.1660	0.2043	0.0979
2012	0.0029	0.3230	0.0198	0.0476	0.0950	0.0967	0.1250	0.0765

4.6.2. Proportion of Women with Exact Parity, North East Nigeria: 1992 – 2012

North Eastern Nigeria has one of the highest fertility rates in the country owing to several factors and as shown in Table 4.6.2., higher birth orders are very much peculiar. In 2004 for example the proportion of women who remained childless was just about 4%, the ones who had just one child was 1% and as the birth orders increases the proportion of women in that array also increases.

Table 4.6.2. Proportion of women with exact Parity, North East, NDHS 2013

Year	n0	n1	n2	n3	n4	n5	n6	n7
1992	0.0511	0.0320	0.0032	0.0303	0.1524	0.1060	0.2940	0.0254
1993	0.0480	0.0326	0.0306	0.0324	0.0087	0.0346	0.0765	0.0347
1994	0.1113	0.0110	0.0555	0.0564	0.0180	0.0985	0.0984	0.3214
1995	0.0685	0.0105	0.0246	0.0512	0.0193	0.0254	0.0521	0.1934
1996	0.0291	0.1199	0.0485	0.0595	0.2032	0.0086	0.0902	0.0185
1997	0.0193	0.0155	0.0329	0.0306	0.0294	0.0238	0.1554	0.0600
1998	0.1024	0.0205	0.0135	0.0448	0.0459	0.0248	0.0432	0.0771
1999	0.0967	0.0037	0.0146	0.0261	0.0419	0.0072	0.0768	0.0648
2000	0.0286	0.0126	0.0071	0.0167	0.0436	0.0724	0.0336	0.0188
2001	0.0849	0.1033	0.0244	0.0575	0.0429	0.1173	0.0777	0.0548
2002	0.0277	0.0142	0.0144	0.0056	0.0354	0.0597	0.0486	0.1619
2003	0.0336	0.0113	0.0070	0.0073	0.0093	0.0279	0.0223	0.1228
2004	0.0381	0.0117	0.0115	0.0367	0.0304	0.0206	0.0393	0.1597
2005	0.0048	0.0107	0.0045	0.0173	0.0040	0.0278	0.0565	0.0414
2006	0.0132	0.0410	0.0159	0.0382	0.0067	0.0584	0.0209	0.0486
2007	0.0728	0.0217	0.0233	0.0833	0.0292	0.0527	0.0409	0.0398
2008	0.0114	0.0425	0.0164	0.0506	0.0241	0.0503	0.0421	0.1450
2009	0.0199	0.0311	0.0251	0.0648	0.0481	0.0859	0.0885	0.0613
2010	0.0195	0.0410	0.0530	0.0498	0.0826	0.0728	0.1331	0.1059
2011	0.0168	0.0180	0.1576	0.0737	0.0706	0.1154	0.0623	0.1221
2012	0.0135	0.0202	0.0562	0.0888	0.0385	0.0731	0.0605	0.0600

4.6.3. Proportion of Women with Exact Parity, North Western Nigeria: 1992 – 2012

As it has been noted earlier this region of the country has consistently over the years had the highest fertility rates in the country, it is also evident from table 4.6.3., because we can see that the proportion of women who had exactly 7 children was low across board suggesting that those women have higher parities, all-in-all, in 2012 just 27% of women had parities from 0 – 7 children, the remaining women, from parities 8 and above were in the majority with a staggering 73% of them.

Table 4.6.3. Proportion of women with exact Parity, North West, NDHS 2013

Year	n0	n1	n2	n3	n4	n5	n6	n7
1992	0.0081	0.0036	0.0255	0.0010	0.0108	0.0565	0.0887	0.0500
1993	0.0029	0.0085	0.0025	0.0085	0.0174	0.0193	0.0928	0.1578
1994	0.0790	0.0153	0.0057	0.0160	0.0058	0.0975	0.0143	0.0164
1995	0.0576	0.0098	0.0234	0.0204	0.0503	0.0325	0.0582	0.0811
1996	0.0680	0.0210	0.0234	0.0718	0.0138	0.0199	0.1167	0.1365
1997	0.0175	0.0046	0.0189	0.0278	0.0494	0.0341	0.0143	0.0885
1998	0.0302	0.0046	0.0371	0.0133	0.0222	0.0187	0.0244	0.0332
1999	0.0295	0.0070	0.0281	0.0020	0.0207	0.0283	0.0341	0.2064
2000	0.0204	0.0049	0.0073	0.0058	0.0185	0.0277	0.0169	0.0892
2001	0.0232	0.0339	0.0806	0.0978	0.0649	0.0302	0.0247	0.0378
2002	0.0202	0.0041	0.0121	0.0165	0.0270	0.0312	0.0127	0.0290
2003	0.0110	0.0047	0.0067	0.0299	0.0155	0.0114	0.0271	0.0259
2004	0.0203	0.0051	0.0076	0.0168	0.0086	0.0117	0.0589	0.0602
2005	0.0063	0.0110	0.0055	0.0151	0.0121	0.0074	0.0068	0.0134
2006	0.0219	0.0035	0.0096	0.0370	0.0350	0.0332	0.0392	0.0532
2007	0.0424	0.0265	0.0405	0.0377	0.0535	0.0849	0.0914	0.0746
2008	0.0053	0.0148	0.0248	0.0410	0.0339	0.0407	0.0339	0.0668
2009	0.0161	0.0305	0.0070	0.0292	0.0376	0.1036	0.0615	0.0839
2010	0.0162	0.0099	0.0215	0.0516	0.0371	0.1230	0.0725	0.1038
2011	0.0677	0.0562	0.0715	0.0631	0.1024	0.1223	0.0744	0.1340
2012	0.0038	0.0017	0.0058	0.0204	0.0400	0.0471	0.0828	0.0738

4.6.4. Proportion of Women with Exact Parity, South-Southern Nigeria: 1992 – 2012

In the Nigeria Demographic and Health Survey of 2013, South-South Nigeria had the lowest total fertility rate, it is evident also in table 18 that majority of the women have exact parities inside of 5 children. For example in 2012 more than 40% of the women were in these group.

Table 4.6.4. Proportion of women with exact Parity, South-South, NDHS 2013

Year	n0	n1	n2	n3	n4	n5	n6	n7
1992	0.0295	0.0636	0.0231	0.1966	0.2127	0.2283	0.0946	0.1264
1993	0.0221	0.0998	0.0295	0.0162	0.0926	0.1892	0.2409	0.1652
1994	0.0541	0.0653	0.0054	0.0661	0.1271	0.1264	0.2977	0.1612
1995	0.0105	0.0811	0.0871	0.0877	0.0306	0.0921	0.0387	0.2289
1996	0.0137	0.0223	0.1250	0.0407	0.0823	0.1080	0.1309	0.2385
1997	0.0044	0.0942	0.0250	0.1117	0.2487	0.1185	0.1355	0.0414
1998	0.0346	0.0313	0.0228	0.0362	0.0880	0.1168	0.0784	0.1480
1999	0.0777	0.0475	0.0406	0.1619	0.0750	0.1622	0.1381	0.0522
2000	0.0143	0.0130	0.0563	0.0811	0.0423	0.0202	0.1311	0.1080
2001	0.0157	0.0274	0.0699	0.0719	0.0510	0.1825	0.1081	0.1292
2002	0.0036	0.1160	0.0696	0.0643	0.1518	0.1006	0.0458	0.0380
2003	0.0083	0.0529	0.0318	0.0649	0.1157	0.0584	0.1882	0.0597
2004	0.0453	0.0623	0.0242	0.1025	0.0710	0.1495	0.2115	0.0678
2005	0.0450	0.0653	0.0235	0.0438	0.0638	0.1716	0.1050	0.2255
2006	0.0038	0.0398	0.0325	0.0346	0.1564	0.1161	0.1190	0.2651
2007	0.0272	0.0307	0.0256	0.0674	0.1602	0.1128	0.2092	0.0537
2008	0.0045	0.0928	0.0472	0.0868	0.1561	0.1256	0.1179	0.0824
2009	0.0460	0.0782	0.0656	0.0873	0.1540	0.1196	0.2142	0.0559
2010	0.0003	0.0817	0.0438	0.1014	0.1097	0.1578	0.1272	0.0264
2011	0.0039	0.1142	0.0980	0.0531	0.1069	0.1340	0.2492	0.0992
2012	0.0000	0.0621	0.1163	0.1074	0.1488	0.1187	0.0819	0.0639

4.6.5. Proportion of Women with Exact Parity, South Western Nigeria: 1992 – 2012

Proportion of women in the population who had exactly 2 children was high (comparatively to other regions) throughout the 20 year span, also here, most women had their children inside of the fifth order births.

Table 4.6.5. Proportion of women with exact Parity, South West, NDHS 2013

Year	n0	n1	n2	n3	n4	n5	n6	n7
1992	0.0978	0.1423	0.0603	0.0958	0.0535	0.2579	0.1949	0.0487
1993	0.0043	0.0035	0.0083	0.1248	0.0809	0.0662	0.6329	0.0527
1994	0.0474	0.0962	0.0198	0.0927	0.3733	0.0965	0.2243	0.0249
1995	0.0232	0.0580	0.1015	0.0841	0.1012	0.1605	0.1587	0.3128
1996	0.0895	0.1005	0.0020	0.0823	0.2151	0.1637	0.0406	0.1532
1997	0.0241	0.0723	0.0920	0.0920	0.1901	0.1833	0.2597	0.0636
1998	0.0015	0.0706	0.0738	0.1266	0.1327	0.2112	0.1591	0.1871
1999	0.0008	0.0415	0.0324	0.0477	0.1089	0.1572	0.2038	0.0951
2000	0.0035	0.0038	0.0124	0.0185	0.0500	0.1682	0.1067	0.1197
2001	0.0624	0.0117	0.0390	0.0993	0.1272	0.1177	0.0285	0.3857
2002	0.0163	0.0300	0.0647	0.0476	0.1150	0.1579	0.0384	0.3511
2003	0.0243	0.0322	0.1102	0.0810	0.1064	0.0636	0.0645	0.1294
2004	0.0110	0.0239	0.0396	0.1280	0.0736	0.0722	0.1057	0.0301
2005	0.0553	0.0256	0.0259	0.0582	0.1147	0.0945	0.2728	0.1312
2006	0.0250	0.0254	0.1404	0.0926	0.1518	0.1244	0.1228	0.0736
2007	0.0053	0.0520	0.0799	0.0836	0.1525	0.1099	0.1252	0.2422
2008	0.0429	0.0232	0.0392	0.1122	0.1478	0.3243	0.1120	0.0650
2009	0.0139	0.0356	0.0504	0.1057	0.1910	0.2362	0.2096	0.0472
2010	0.0114	0.0244	0.0923	0.1440	0.2314	0.1459	0.1221	0.0633
2011	0.0016	0.0279	0.0716	0.0871	0.1580	0.1574	0.2558	0.1326
2012	0.0102	0.0201	0.0655	0.1050	0.2072	0.2336	0.1235	0.0714

4.6.6. Proportion of Women with Exact Parity, South Eastern Nigeria: 1992 – 2012

In 2001 approximately 11% of the total population of women were childless according to table 20, this was the highest for the period of 20 years under study, and furthermore, the proportion of women with fourth and fifth births was rather high.

Table 4.6.6. Proportion of women with exact Parity, South East, NDHS 2013

Year	n0	n1	n2	n3	n4	n5	n6	n7
1992	0.0098	0.0783	0.0329	0.0579	0.1614	0.1399	0.0400	0.1599
1993	0.0028	0.0405	0.0088	0.1581	0.0338	0.1025	0.2179	0.2421
1994	0.0291	0.0405	0.0158	0.0623	0.1453	0.0595	0.0517	0.1192
1995	0.0139	0.0248	0.0189	0.0062	0.0419	0.1367	0.1586	0.1909
1996	0.0044	0.0094	0.0733	0.0540	0.1102	0.0073	0.2231	0.0416
1997	0.0043	0.0215	0.0316	0.0658	0.0494	0.0748	0.1072	0.1942
1998	0.0917	0.0661	0.0121	0.0453	0.0248	0.2538	0.0089	0.1239
1999	0.0257	0.0315	0.0201	0.1354	0.2232	0.0800	0.2536	0.0248
2000	0.0299	0.0105	0.0265	0.0109	0.0331	0.0236	0.1764	0.0606
2001	0.1054	0.0420	0.0497	0.0188	0.0620	0.1047	0.1725	0.0894
2002	0.0093	0.0708	0.0552	0.0443	0.0166	0.0528	0.0930	0.1055
2003	0.0372	0.0942	0.0161	0.1012	0.0923	0.1778	0.0729	0.0372
2004	0.0538	0.0338	0.0028	0.0579	0.0605	0.0517	0.0736	0.1591
2005	0.0315	0.0964	0.0559	0.0397	0.0260	0.2099	0.1377	0.1276
2006	0.0688	0.0370	0.0803	0.0205	0.0224	0.0381	0.0707	0.1660
2007	0.0041	0.0402	0.1775	0.0448	0.0580	0.0484	0.0914	0.2807
2008	0.0072	0.0521	0.0254	0.0739	0.1028	0.1477	0.1426	0.0913
2009	0.0490	0.1135	0.0722	0.0627	0.1584	0.1443	0.1465	0.1024
2010	0.0856	0.0417	0.0497	0.1123	0.1110	0.1048	0.0866	0.1045
2011	0.0407	0.0466	0.1115	0.0956	0.1327	0.1174	0.1345	0.0884
2012	0.0089	0.0212	0.0423	0.0628	0.1436	0.0741	0.1112	0.1478

4.6.7. Comparison of the Proportion of Women with Exact Parity in the Geopolitical Zones

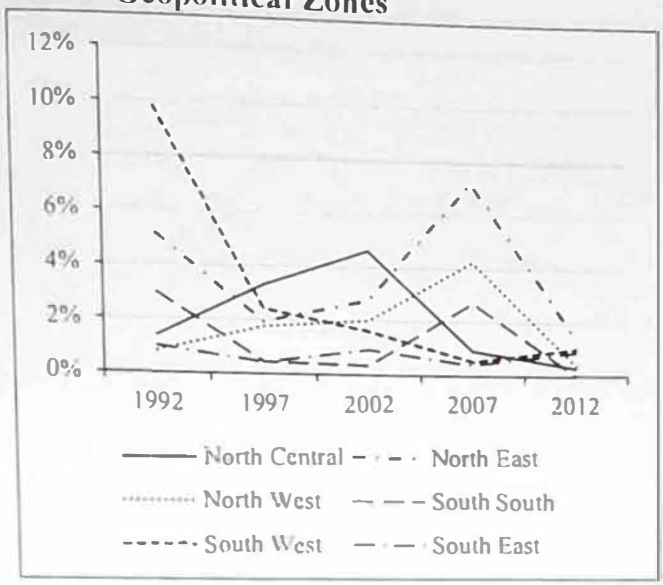

Figure 4 Proportion of women without children in the geopolitical zones of the country

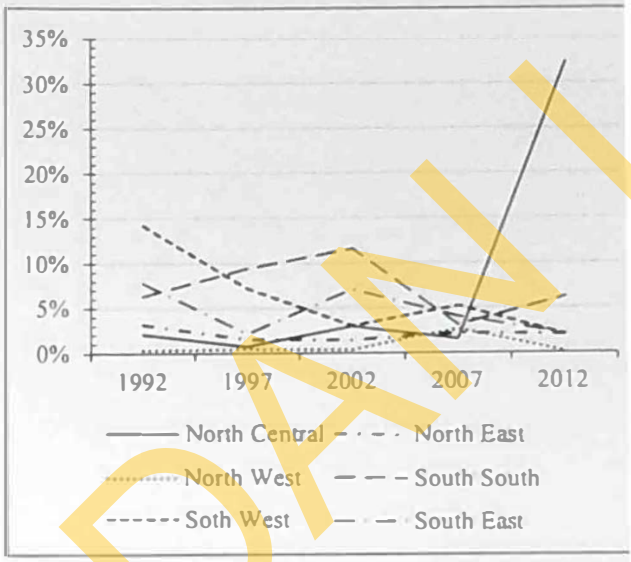

Figure 5 Proportion of women with one child in the geopolitical zones of the country

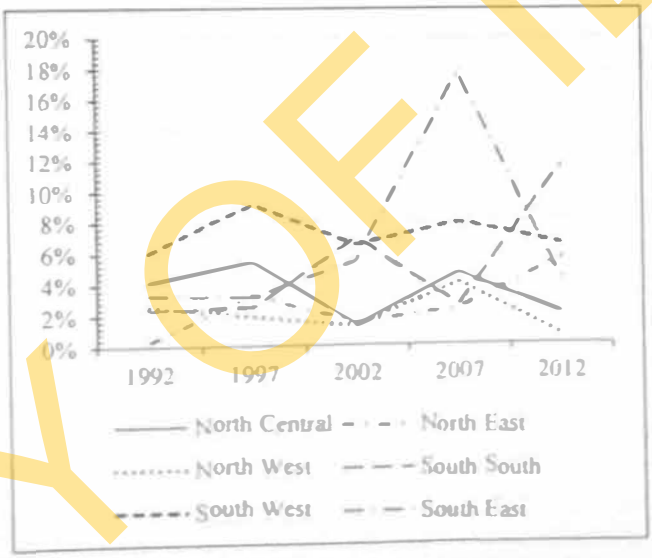

Figure 6 Proportion of women with two children in the geopolitical zones of the country

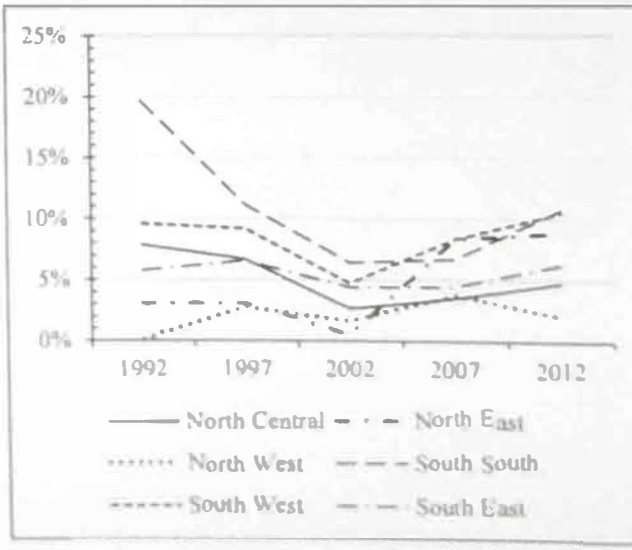

Figure 7 Proportion of women with three children in the geopolitical zones of the country

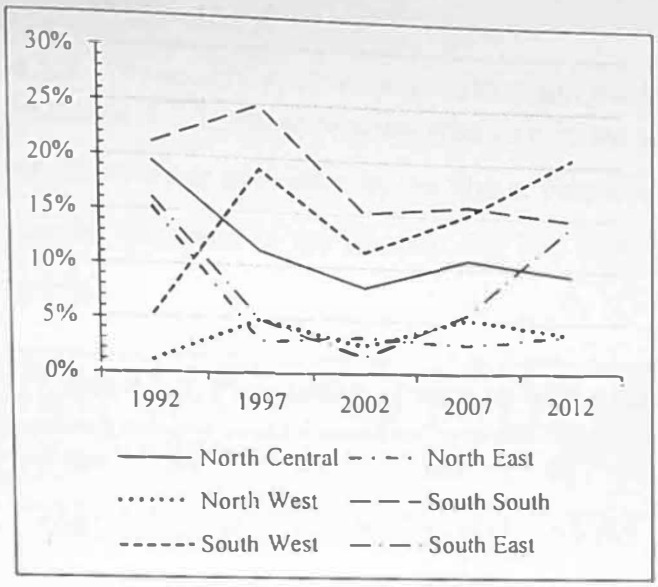

Figure 8. Proportion of women with four children in the geopolitical zones of the country

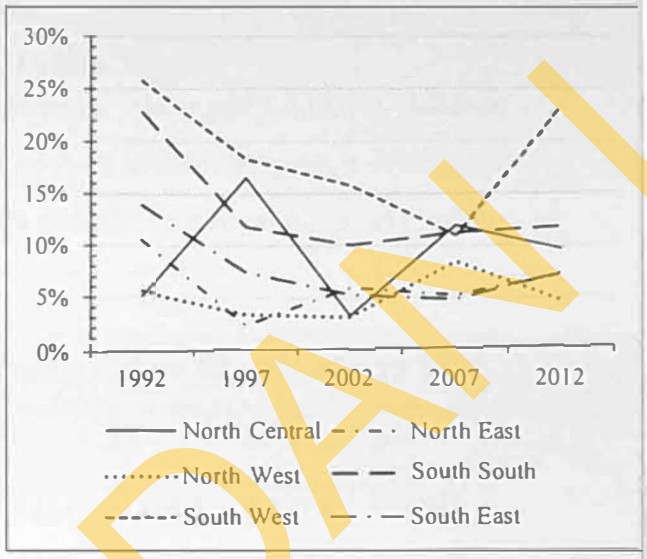

Figure 9. Proportion of women with five children in the geopolitical zones of the country

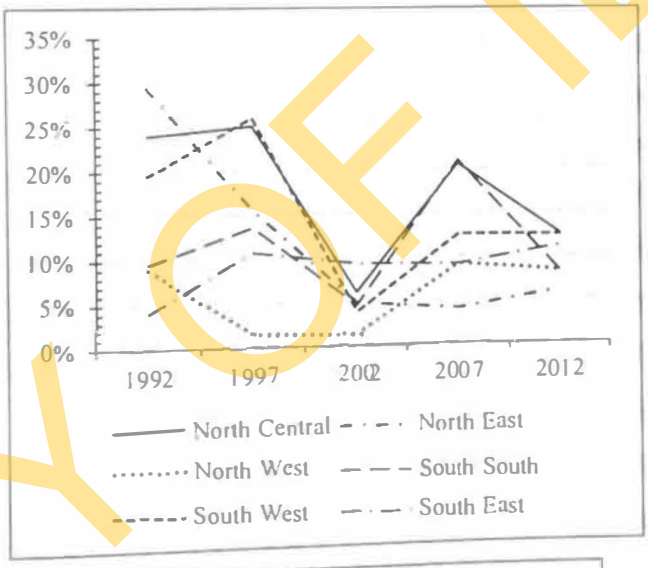

Figure 10. Proportion of women with six children in the geopolitical zones of the country

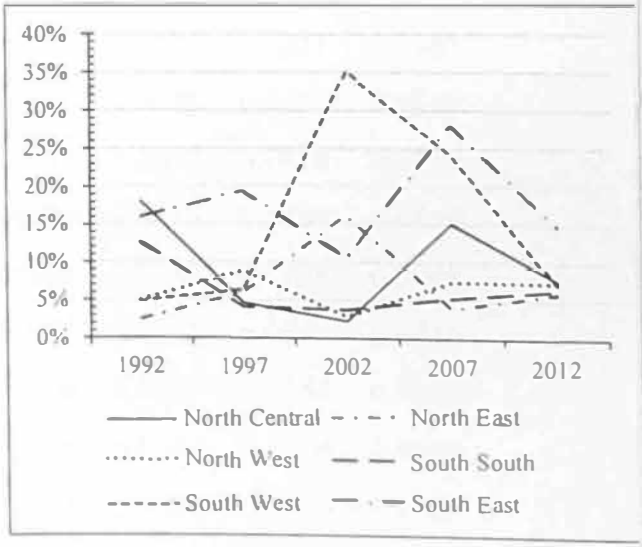

Figure 11. Proportion of women with seven children in the geopolitical zones of the country

4.7.Proportion of Women with Exact Parity, Place of Residence, Nigeria: 1992 – 2012

4.7.1. Proportion of women with exact Parity, Urban Nigeria

In Table 4.7.1., most women who live in the urban areas had mostly 4 and 5 children on the average as evident by the higher proportions of them in that category, a decrement can be observed in the fraction that had 6 children and above over the entirety of the period.

Table 4.7.1. Proportion of women with exact Parity, Urban Nigeria, NDHS 2013

Year	n0	n1	n2	n3	n4	n5	n6	n7
1992	0.0091	0.0339	0.0625	0.0465	0.0411	0.1064	0.1214	0.0891
1993	0.0047	0.0298	0.0048	0.0549	0.0189	0.0629	0.2289	0.2169
1994	0.0564	0.0397	0.0260	0.0705	0.1101	0.0887	0.0786	0.0168
1995	0.0170	0.0426	0.0467	0.0253	0.0719	0.1110	0.0477	0.1987
1996	0.0466	0.0588	0.0219	0.0250	0.0802	0.0033	0.1374	0.0574
1997	0.0142	0.0351	0.0236	0.0191	0.0613	0.1036	0.1151	0.1010
1998	0.0132	0.0534	0.0202	0.0516	0.0290	0.0975	0.0424	0.1053
1999	0.0070	0.0334	0.0158	0.0698	0.0750	0.1416	0.1331	0.1067
2000	0.0029	0.0092	0.0076	0.0169	0.0179	0.0975	0.0631	0.0824
2001	0.0112	0.0490	0.0964	0.0437	0.1313	0.1556	0.0810	0.0749
2002	0.0212	0.0374	0.0777	0.0241	0.0723	0.0633	0.0389	0.0889
2003	0.0090	0.0378	0.0314	0.0970	0.0686	0.0583	0.1128	0.0948
2004	0.0659	0.0264	0.0360	0.0798	0.0585	0.0783	0.0741	0.0710
2005	0.0298	0.0331	0.0281	0.0780	0.0634	0.0828	0.1354	0.0327
2006	0.0181	0.0400	0.0617	0.0517	0.0810	0.0740	0.0970	0.0740
2007	0.0356	0.0486	0.0735	0.1130	0.1550	0.0951	0.1249	0.1001
2008	0.0227	0.0333	0.0321	0.1176	0.1144	0.1578	0.0964	0.0888
2009	0.0202	0.0593	0.0334	0.0996	0.1491	0.1770	0.1726	0.0931
2010	0.0172	0.0456	0.0557	0.1205	0.1213	0.1363	0.1170	0.1053
2011	0.0325	0.0500	0.1088	0.0820	0.1446	0.1611	0.1175	0.0906
2012	0.0135	0.0209	0.0687	0.0986	0.1647	0.1086	0.0964	0.1023

4.7.2. Proportion of women with exact Parity, Rural Nigeria

In Table 4.7.2., a higher percentage of the women are found in the upper parities such that fewer of them are in the categories of those with fewer than 5 children.

Table 4.7.2. Proportion of women with exact Parity, Rural Nigeria, NDHS 2013

Year	n0	n1	n2	n3	n4	n5	n6	n7
1992	0.0223	0.0124	0.0092	0.0104	0.0514	0.0529	0.0958	0.0431
1993	0.0182	0.0210	0.0074	0.0215	0.0131	0.0195	0.0479	0.0074
1994	0.0434	0.0082	0.0055	0.0120	0.0121	0.1114	0.0355	0.2827
1995	0.0438	0.0192	0.0212	0.0182	0.0235	0.0204	0.0591	0.0974
1996	0.0274	0.0142	0.0331	0.0863	0.0580	0.0281	0.1276	0.0876
1997	0.0148	0.0152	0.0399	0.0534	0.0593	0.0189	0.0522	0.0594
1998	0.0484	0.0126	0.0163	0.0351	0.0243	0.0623	0.0507	0.0611
1999	0.0522	0.0116	0.0322	0.0134	0.0318	0.0180	0.0678	0.1418
2000	0.0215	0.0066	0.0114	0.0045	0.0386	0.0371	0.0416	0.0752
2001	0.0441	0.0225	0.0353	0.0786	0.0458	0.0502	0.0167	0.0601
2002	0.0158	0.0106	0.0160	0.0093	0.0325	0.0529	0.0283	0.0465
2003	0.0161	0.0169	0.0093	0.0290	0.0139	0.0332	0.0402	0.0493
2004	0.0207	0.0136	0.0058	0.0409	0.0327	0.0445	0.0742	0.1024
2005	0.0076	0.0111	0.0138	0.0170	0.0167	0.0605	0.0327	0.0898
2006	0.0127	0.0072	0.0188	0.0394	0.0561	0.0708	0.0688	0.0877
2007	0.0281	0.0161	0.0373	0.0374	0.0549	0.0896	0.1036	0.1069
2008	0.0058	0.0216	0.0276	0.0385	0.0558	0.0673	0.0774	0.1072
2009	0.0142	0.0495	0.0329	0.0535	0.0847	0.1142	0.1097	0.1006
2010	0.0140	0.0194	0.0396	0.0743	0.0876	0.1144	0.0795	0.1247
2011	0.0313	0.0510	0.0711	0.0601	0.0842	0.1168	0.1171	0.1357
2012	0.0066	0.0287	0.0238	0.0391	0.0673	0.0896	0.1086	0.0788

4.7.3. Comparison of the Proportion of women with exact Parity according to Place of Residence in Nigeria

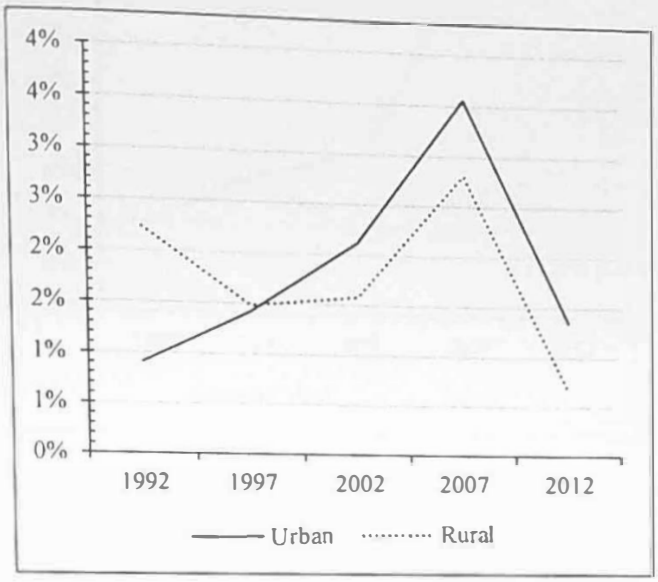

Figure 12 Proportion of women with no children according to place of residence in Nigeria

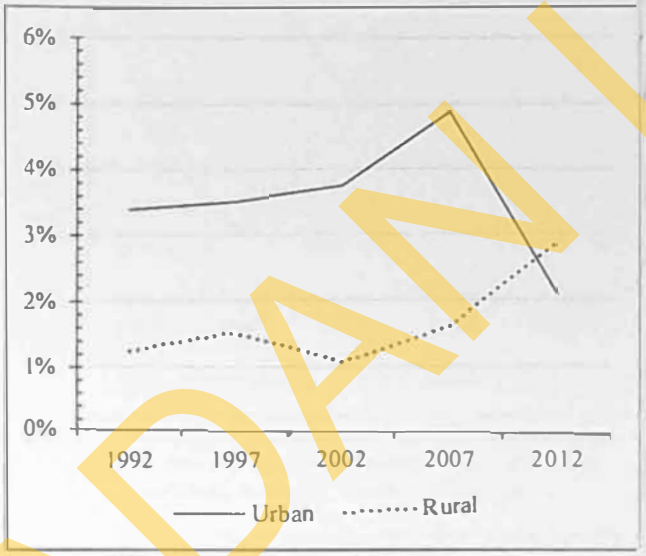

Figure 13 Proportion of women with one child according to place of residence in Nigeria

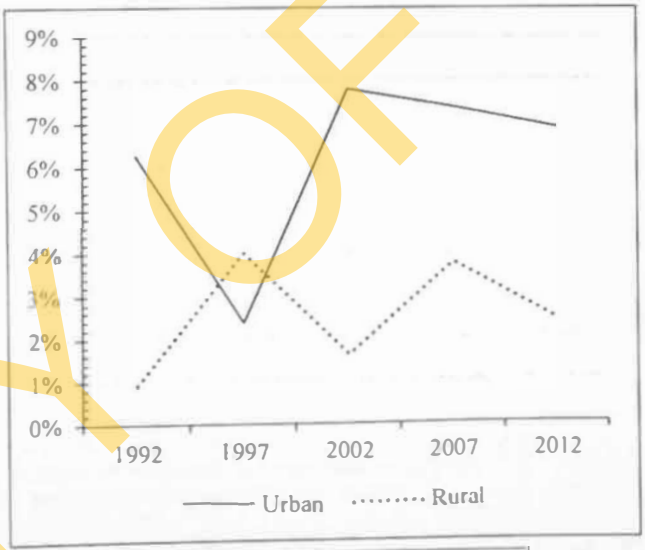

Figure 14 Proportion of women with two children according to place of residence in Nigeria

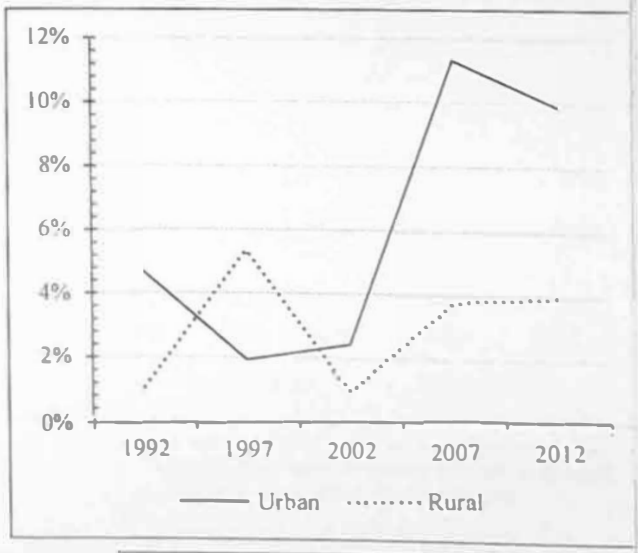

Figure 15 Proportion of women with three children according to place of residence in Nigeria

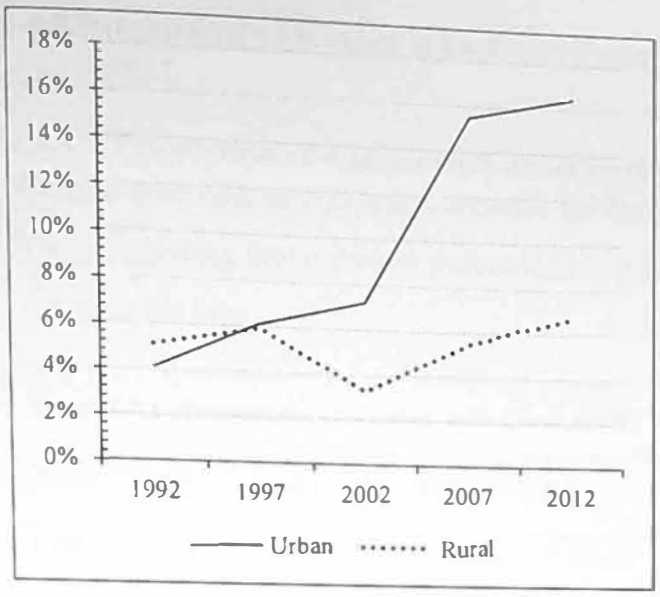

Figure 16 Proportion of women with four children according to place of residence in Nigeria

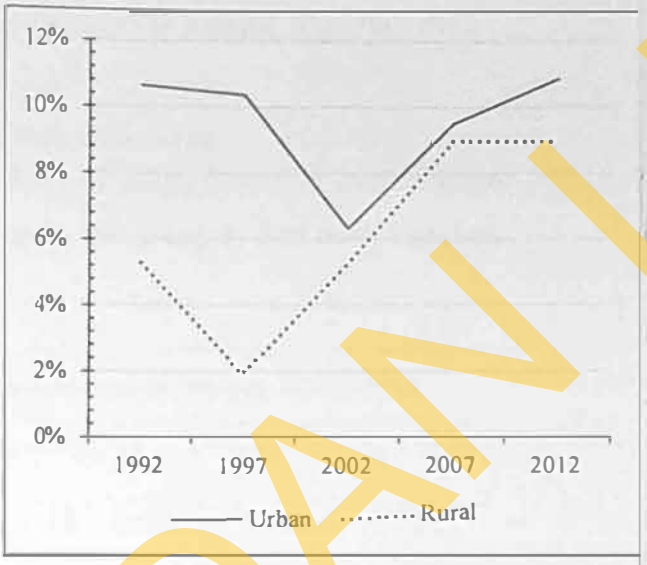

Figure 17 Proportion of women with five children according to place of residence in Nigeria

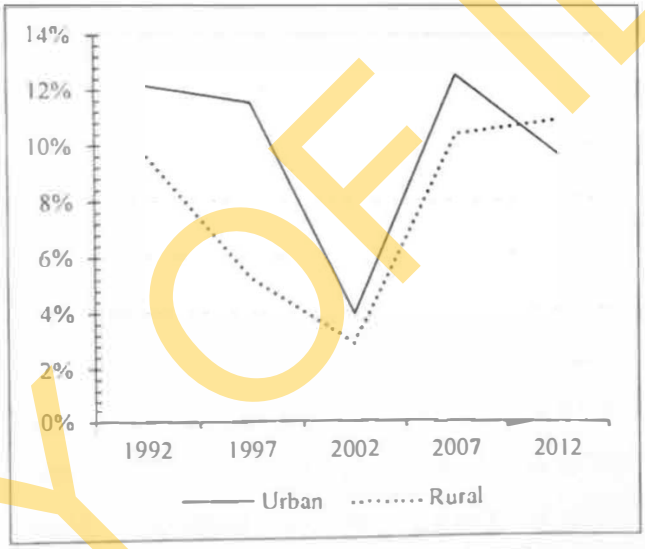

Figure 18 Proportion of women with six children according to place of residence in Nigeria

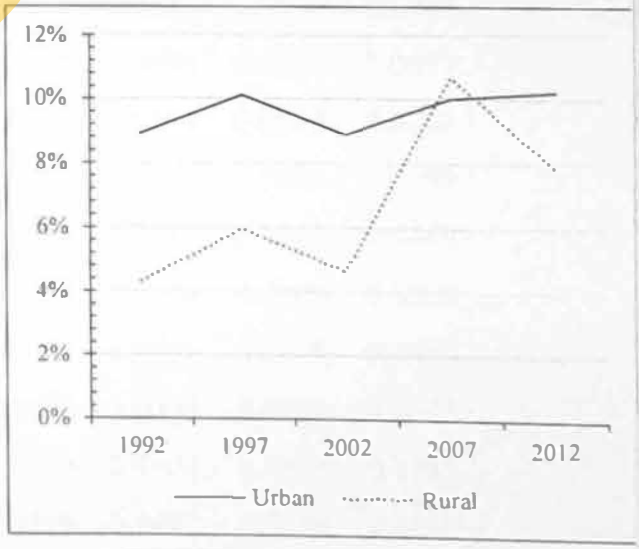

Figure 19 Proportion of women with seven children according to place of residence in Nigeria

4.8.Proportion of Women with Exact Parity, Educational Status, Nigeria: 1992 – 2012

4.8.1. Proportion of women with exact parity, Non-Educated

Women who had no education account for about 35% of births from 0 – 7 children in 2012 suggesting that a greater percentage of women in this category had more children of higher parities.

Table 4.8.1. Proportion of women with exact Parity Non-Educated in Nigeria, NDHS 2013

Year	n0	n1	n2	n3	n4	n5	n6	n7
1992	0.0288	0.0091	0.0132	0.0020	0.0218	0.0631	0.0864	0.0518
1993	0.0211	0.0219	0.0044	0.0126	0.0149	0.0136	0.0426	0.0357
1994	0.0486	0.0037	0.0277	0.0135	0.0123	0.0997	0.0237	0.0369
1995	0.0667	0.0112	0.0073	0.0222	0.0366	0.0200	0.0557	0.1083
1996	0.0361	0.0484	0.0446	0.0448	0.0468	0.0157	0.0818	0.0755
1997	0.0112	0.0048	0.0406	0.0272	0.0412	0.0406	0.0469	0.0619
1998	0.0594	0.0131	0.0165	0.0261	0.0054	0.0327	0.0242	0.0811
1999	0.0480	0.0040	0.0302	0.0022	0.0732	0.0185	0.0924	0.1587
2000	0.0231	0.0045	0.0063	0.0020	0.0218	0.0496	0.0195	0.0407
2001	0.0358	0.0298	0.0371	0.0747	0.0411	0.0334	0.0284	0.0771
2002	0.0180	0.0142	0.0062	0.0127	0.0223	0.0618	0.0334	0.0791
2003	0.0147	0.0065	0.0066	0.0219	0.0166	0.0149	0.0325	0.0448
2004	0.0204	0.0076	0.0086	0.0356	0.0326	0.0274	0.0400	0.1025
2005	0.0054	0.0083	0.0070	0.0164	0.0087	0.0506	0.0288	0.0453
2006	0.0113	0.0091	0.0085	0.0483	0.0259	0.0340	0.0443	0.0974
2007	0.0279	0.0125	0.0364	0.0477	0.0510	0.0803	0.0829	0.1115
2008	0.0080	0.0179	0.0187	0.0639	0.0249	0.0492	0.0450	0.1111
2009	0.0145	0.0250	0.0174	0.0495	0.0600	0.0784	0.0923	0.1027
2010	0.0153	0.0100	0.0316	0.0921	0.0894	0.1059	0.0572	0.1077
2011	0.0369	0.0536	0.0880	0.0854	0.0768	0.1129	0.0986	0.1343
2012	0.0116	0.0107	0.0202	0.0548	0.0391	0.0646	0.0889	0.0734

4.8.2. Proportion of women with exact parity, Primary Education

Table 4.8.2., shows that primary school educated women preferred averagely about 6 children, given the higher proportion of them found in that array. In 1993 about 30% of all women gave birth to exactly 30 children, in a similar approach, about 25% of women with primary school education gave birth to exactly 7 children.

Table 4.8.2. Proportion of women with exact Parity, Primary Education, NDHS 2013

Year	n0	n1	n2	n3	n4	n5	n6	n7
1992	0.0049	0.0676	0.0151	0.1459	0.0850	0.0273	0.2294	0.1416
1993	0.0012	0.0019	0.0062	0.0262	0.0444	0.1784	0.3005	0.2206
1994	0.0218	0.0743	0.0022	0.0815	0.0853	0.1401	0.1613	0.0542
1995	0.0038	0.0433	0.0570	0.0280	0.0292	0.1442	0.0219	0.2102
1996	0.0137	0.0140	0.0129	0.0318	0.0639	0.0235	0.1771	0.1405
1997	0.0224	0.0282	0.0099	0.0615	0.0768	0.0463	0.1684	0.1764
1998	0.0085	0.0129	0.0041	0.0578	0.0189	0.1343	0.1501	0.1018
1999	0.0093	0.0415	0.0485	0.0853	0.0112	0.0400	0.0552	0.0701
2000	0.0006	0.0124	0.0055	0.0144	0.0288	0.0433	0.0718	0.0724
2001	0.0314	0.0384	0.0361	0.0504	0.0433	0.1472	0.0355	0.1241
2002	0.0102	0.0076	0.0141	0.0135	0.0966	0.0548	0.0262	0.1246
2003	0.0343	0.0168	0.0230	0.0499	0.0641	0.1427	0.0556	0.0559
2004	0.0161	0.0324	0.0092	0.0424	0.0693	0.0822	0.1076	0.1531
2005	0.0572	0.0098	0.0192	0.0294	0.0265	0.0448	0.0542	0.2405
2006	0.0089	0.0064	0.0360	0.0387	0.0870	0.1071	0.0368	0.1703
2007	0.0783	0.0386	0.0659	0.0401	0.0831	0.0704	0.1395	0.2537
2008	0.0073	0.0091	0.0253	0.0329	0.0822	0.0960	0.1881	0.1138
2009	0.0256	0.0664	0.0154	0.0520	0.1449	0.1840	0.1819	0.1332
2010	0.0233	0.0258	0.0293	0.0586	0.1164	0.1450	0.1109	0.1255
2011	0.0233	0.0512	0.0451	0.0445	0.1012	0.1634	0.1887	0.1054
2012	0.0114	0.0124	0.0389	0.1036	0.0939	0.1081	0.1053	0.1452

4.8.3. Proportion of women with exact parity, Secondary Education

According to Table 4.8.3., close to 21% of women in year 2012 had exactly 4 children compared with about 7% 20 years earlier, conversely, nearly 60% had exactly 5 children in 1992 compared with 15% in 2012 a slump from highs of the early 90s.

Table 4.8.3. Proportion of women with exact Parity, Secondary Education, NDHS 2013

Year	n0	n1	n2	n3	n4	n5	n6	n7
1992	0.0131	0.0277	0.0304	0.0841	0.0661	0.5930	0.0637	0.0610
1993	0.0498	0.0864	0.0110	0.1451	0.0643	0.1128	0.1768	0.2829
1994	0.0293	0.0275	0.0177	0.0283	0.1144	0.0791	0.3079	0.2639
1995	0.0198	0.0321	0.0441	0.0190	0.1632	0.0213	0.0901	0.2220
1996	0.0137	0.0475	0.0431	0.1078	0.1138	0.0458	0.3129	0.0552
1997	0.0071	0.0697	0.0762	0.0379	0.0681	0.3433	0.0880	0.0265
1998	0.0109	0.0544	0.0324	0.0451	0.1837	0.2340	0.0358	0.0694
1999	0.0094	0.0200	0.0097	0.1044	0.1377	0.1528	0.1407	0.1119
2000	0.0191	0.0098	0.0396	0.0278	0.0327	0.1418	0.1510	0.1607
2001	0.0691	0.0139	0.0766	0.0561	0.1459	0.1180	0.1793	0.1776
2002	0.0238	0.0650	0.0943	0.0399	0.0450	0.1046	0.0721	0.1290
2003	0.0105	0.0567	0.0511	0.0778	0.1130	0.0922	0.2111	0.1057
2004	0.0313	0.0261	0.0233	0.0944	0.0735	0.0623	0.1752	0.0314
2005	0.0252	0.0642	0.0361	0.0657	0.0783	0.1987	0.1270	0.0944
2006	0.0186	0.0315	0.0768	0.0346	0.1138	0.0888	0.2245	0.0459
2007	0.0134	0.0347	0.0447	0.0690	0.1673	0.1826	0.1213	0.2019
2008	0.0124	0.0311	0.0377	0.1137	0.1246	0.2668	0.1037	0.0998
2009	0.0136	0.0737	0.0401	0.1056	0.1591	0.2072	0.1354	0.1079
2010	0.0089	0.0738	0.0591	0.0935	0.1297	0.1662	0.1549	0.1649
2011	0.0217	0.0428	0.0772	0.0753	0.1038	0.1740	0.1553	0.0909
2012	0.0024	0.0404	0.0632	0.0778	0.2086	0.1563	0.1239	0.1026

4.8.4. Proportion of women with exact parity, Higher Education

In Table 4.8.4., a bigger portion of women fell within exactly 4 children for example in 2012, close to 50% were in the range of zero to four children.

Table 4.8.4. Proportion of women with exact Parity, Higher Education, NDHS 2013

Year	n0	n1	n2	n3	n4	n5	n6	n7
1992	0.1405	0.0315	0.0799	0.0680	0.3552	0.0361	0.2888	0.0000
1993	0.0283	0.2715	0.0692	0.0845	0.0647	0.3212	0.1606	0.0000
1994	0.0824	0.1833	0.1193	0.0762	0.2370	0.1006	0.2011	0.0000
1995	0.0550	0.1082	0.0538	0.1175	0.0664	0.1248	0.2668	0.2075
1996	0.0708	0.0061	0.0690	0.2227	0.1099	0.1251	0.1585	0.2378
1997	0.0303	0.0630	0.0308	0.0390	0.2657	0.1318	0.2746	0.1648
1998	0.0135	0.0733	0.0467	0.2545	0.2805	0.1013	0.0096	0.2206
1999	0.1216	0.1164	0.0200	0.1830	0.1539	0.0295	0.2003	0.1402
2000	0.0060	0.0216	0.0257	0.0496	0.0585	0.1704	0.0891	0.1086
2001	0.1325	0.0789	0.1141	0.0362	0.0992	0.1787	0.2403	0.0300
2002	0.0179	0.0410	0.1535	0.1331	0.2079	0.0514	0.2378	0.0983
2003	0.0121	0.0403	0.0102	0.2095	0.1385	0.0995	0.0821	0.2039
2004	0.1734	0.0682	0.0863	0.0916	0.0578	0.1558	0.1270	0.0540
2005	0.0580	0.0919	0.0654	0.0882	0.1554	0.2439	0.1824	0.0985
2006	0.0192	0.1508	0.0899	0.1782	0.1758	0.0749	0.0369	0.0392
2007	0.0422	0.1134	0.1557	0.2258	0.1612	0.0393	0.1230	0.0406
2008	0.0827	0.0570	0.0581	0.1788	0.3141	0.1150	0.0809	0.0518
2009	0.0552	0.1443	0.2196	0.1641	0.1587	0.1411	0.0967	0.0034
2010	0.0485	0.0371	0.1370	0.2127	0.0747	0.1246	0.1728	0.1071
2011	0.0976	0.0970	0.1188	0.0677	0.3191	0.0906	0.0477	0.0831
2012	0.0233	0.0187	0.0808	0.1198	0.2378	0.2389	0.2528	0.0095

4.8.4. Proportion of women with exact parity, Higher Education

In Table 4.8.4., a bigger portion of women fell within exactly 4 children for example in 2012, close to 50% were in the range of zero to four children.

Table 4.8.4. Proportion of women with exact Parity, Higher Education, NDHS 2013

Year	n0	n1	n2	n3	n4	n5	n6	n7
1992	0.1405	0.0315	0.0799	0.0680	0.3552	0.0361	0.2888	0.0000
1993	0.0283	0.2715	0.0692	0.0845	0.0647	0.3212	0.1606	0.0000
1994	0.0824	0.1833	0.1193	0.0762	0.2370	0.1006	0.2011	0.0000
1995	0.0550	0.1082	0.0538	0.1175	0.0664	0.1248	0.2668	0.2075
1996	0.0708	0.0061	0.0690	0.2227	0.1099	0.1251	0.1585	0.2378
1997	0.0303	0.0630	0.0308	0.0390	0.2657	0.1318	0.2746	0.1648
1998	0.0135	0.0733	0.0467	0.2545	0.2805	0.1013	0.0096	0.2206
1999	0.1216	0.1164	0.0200	0.1830	0.1539	0.0295	0.2003	0.1402
2000	0.0060	0.0216	0.0257	0.0496	0.0585	0.1704	0.0891	0.1086
2001	0.1325	0.0789	0.1141	0.0362	0.0992	0.1787	0.2403	0.0300
2002	0.0179	0.0410	0.1535	0.1331	0.2079	0.0514	0.2378	0.0983
2003	0.0121	0.0403	0.0102	0.2095	0.1385	0.0995	0.0821	0.2039
2004	0.1734	0.0682	0.0863	0.0916	0.0578	0.1558	0.1270	0.0540
2005	0.0580	0.0919	0.0654	0.0882	0.1554	0.2439	0.1824	0.0985
2006	0.0192	0.1508	0.0899	0.1782	0.1758	0.0749	0.0369	0.0392
2007	0.0422	0.1134	0.1557	0.2258	0.1612	0.0393	0.1230	0.0406
2008	0.0827	0.0570	0.0581	0.1788	0.3141	0.1150	0.0809	0.0518
2009	0.0552	0.1443	0.2196	0.1641	0.1587	0.1411	0.0967	0.0034
2010	0.0485	0.0371	0.1370	0.2127	0.0747	0.1246	0.1728	0.1071
2011	0.0976	0.0970	0.1188	0.0677	0.3191	0.0906	0.0477	0.0831
2012	0.0233	0.0187	0.0808	0.1198	0.2378	0.2389	0.2528	0.0095

4.8.5. Comparison of the Proportion of women with exact parity according to educational Status, Nigeria

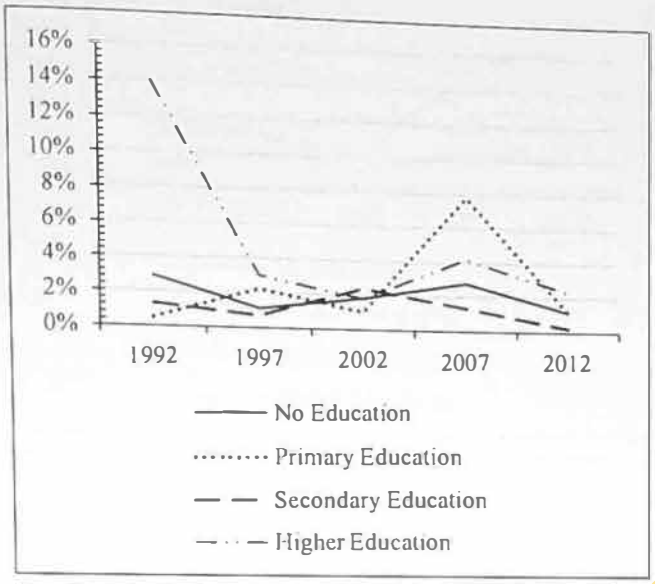

Figure 20 Proportion of women with no children according to educational attainment in Nigeria

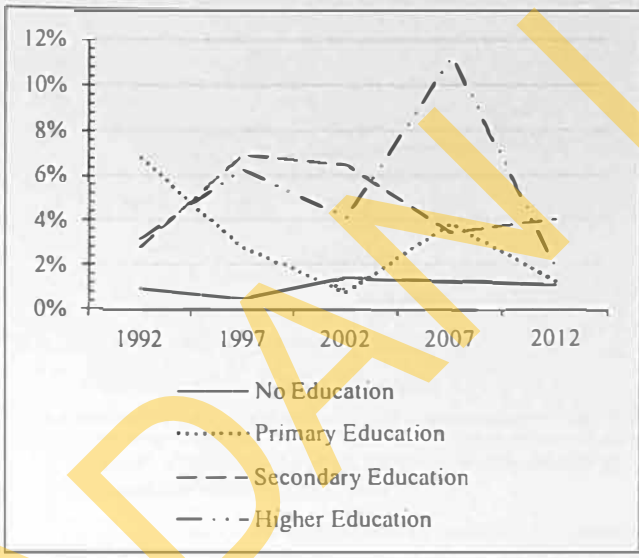

Figure 21 Proportion of women with one child according to educational attainment in Nigeria

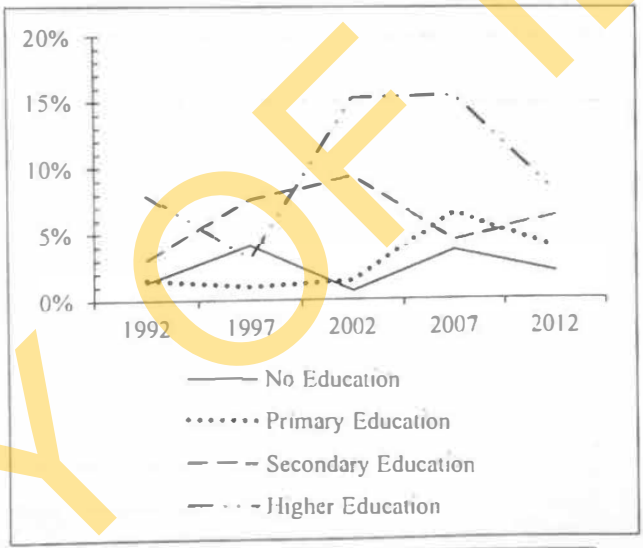

Figure 22 Proportion of women with two children according to educational attainment in Nigeria

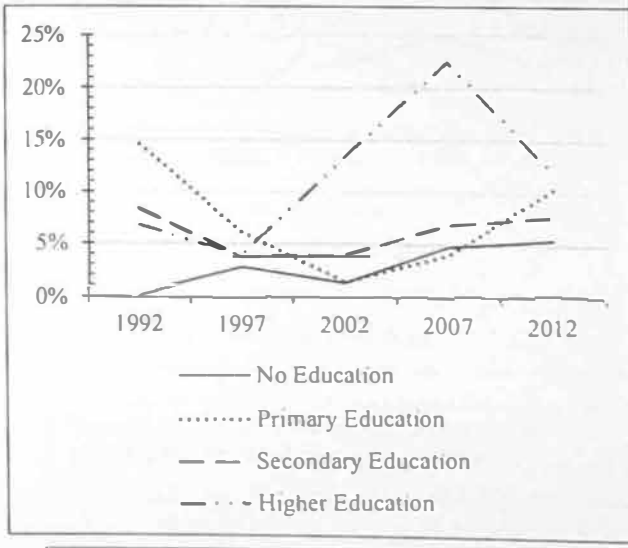

Figure 23 Proportion of women with three children according to educational attainment in Nigeria

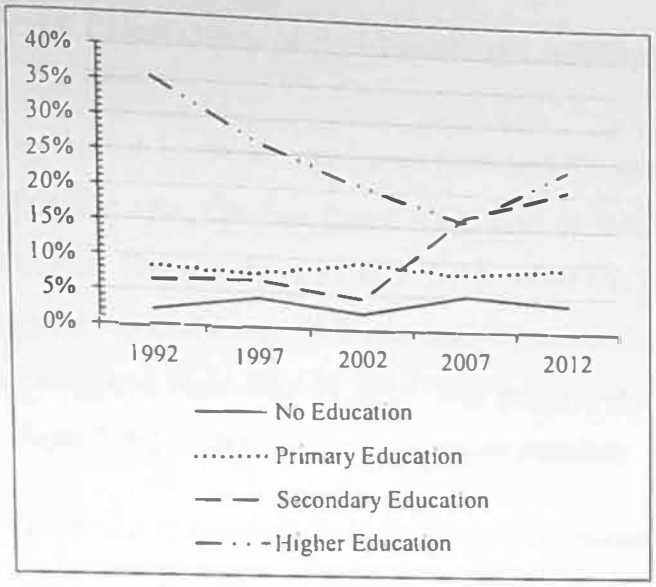

Figure 24. Proportion of women with four children according to educational attainment in Nigeria

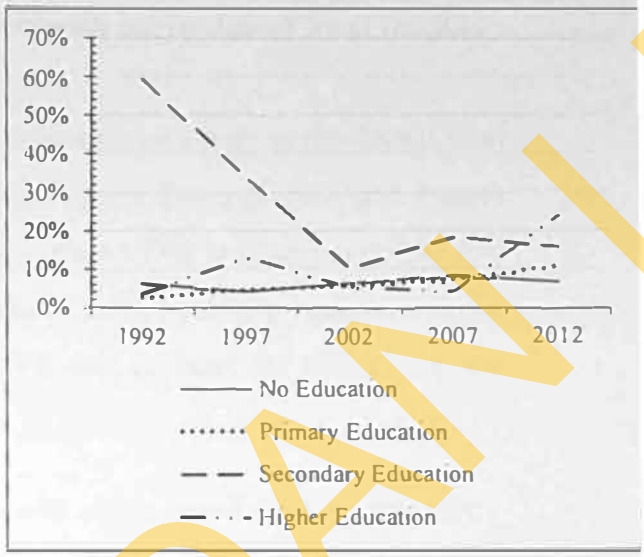

Figure 25. Proportion of women with five children according to educational attainment in Nigeria

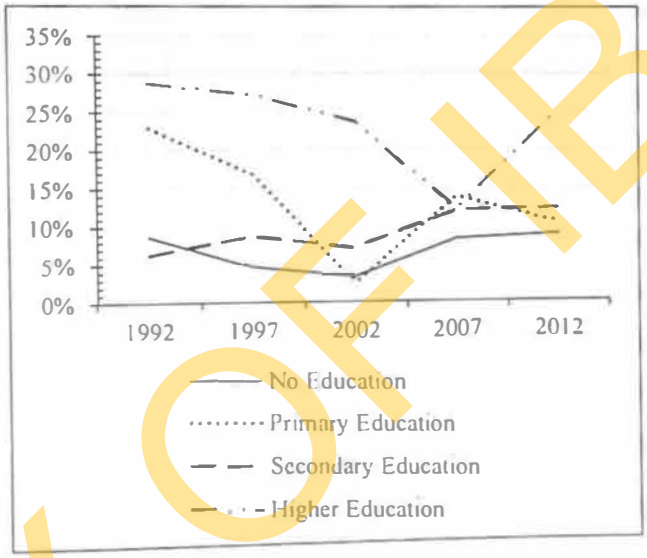

Figure 26. Proportion of women with six children according to educational attainment in Nigeria

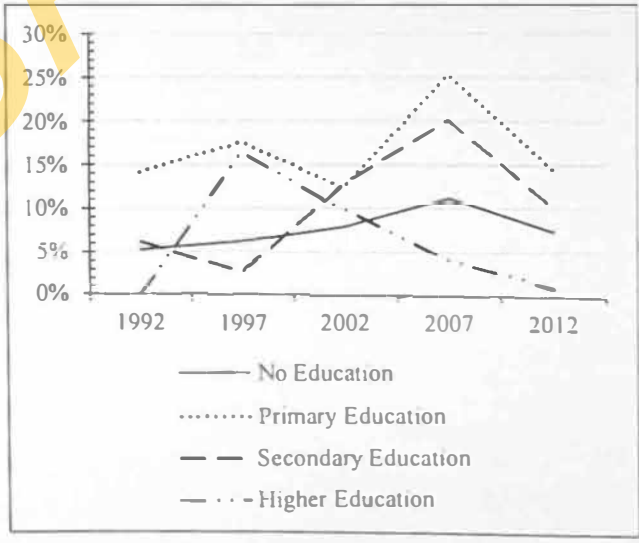

Figure 27. Proportion of women with seven children according to educational attainment in Nigeria

4.9. Comparison of Age-based total fertility rate with parity-based total fertility rate

Table 4.4.1., shows age-based total fertility rate as it compares with parity-based total fertility rate, the Age-based TFR used is from the Nigeria Demographic and Health Survey Reports from 1990 to 2013, while the parity-based TFR was sequenced to five years interval from 1992 obtained from the successive period parity progression ratios calculated from NDHS 2013. The parity-based TFR was constant for about 10 years from 1992 – 2002 and when viewed together.

Table 4.4.1. Age-based total fertility rate compares with parity-based total fertility rate

Age-Based (NDHS)		Parity-Based (NDHS)	
Year	TFR	Year	TFR
1990	6.0	1992	6.2
1999	4.9	1997	6.1
2003	5.7	2002	6.2
2008	5.7	2007	5.5
2013	5.5	2012	5.7

4.9.Comparison of Age-based total fertility rate with parity-based total fertility rate

Table 4.4.1., shows age-based total fertility rate as it compares with parity-based total fertility rate, the Age-based TFR used is from the Nigeria Demographic and Health Survey Reports from 1990 to 2013, while the parity-based TFR was sequenced to five years interval from 1992 obtained from the successive period parity progression ratios calculated from NDHS 2013. The parity-based TFR was constant for about 10 years from 1992 – 2002 and when viewed together.

Table 4.4.1. Age-based total fertility rate compares with parity-based total fertility rate

Age-Based (NDHS)		Parity-Based (NDHS)	
Year	TFR	Year	TFR
1990	6.0	1992	6.2
1999	4.9	1997	6.1
2003	5.7	2002	6.2
2008	5.7	2007	5.5
2013	5.5	2012	5.7

CHAPTER FIVE

DISCUSSION AND CONCLUSION

5.1. Discussion

This research project has tried to assess the trend of fertility in Nigeria going back 20 years. The fertility rate for each year beginning from 1992 was computed using the Nigeria Demographic and Health Survey data of 2013. Also computed was the period parity progression ratios for each year which was the main tool in computing these fertility rates. The proportion of women in the population who had a given number of children for successive years was calculated as well. These computations gave us an all-inclusive perspective on what has been happening over the years as regards fertility in Nigeria. The age-based total fertility rate has been criticised by many authors for many reasons, its persistent usage was referred to as "propaganda" by William Brass (1990). When the Nigeria Demographic and Health Survey program announced the total fertility rate for Nigeria in 1999 as 4.9, there was a lot of excitement in the research community and also among policy makers that fertility had dropped by about 1.1 children in just 9 years from the 6.0 recorded in 1990 only for the situation to head in the negative direction only 5 years later with a TFR of 5.7, *and naturally there were concerns as to what may have brought about the resurgence in fertility rates in just five years.*

This project has not tried to look at the question of 'why fertility is like it is presently?' and it has not tried to provide explanations for what Nigeria is currently experiencing. In 1987, Feeney and Yu felt that for high fertility populations such as Nigeria, the age-based approach to the measures of fertility was most appropriate and their reason was that women in those populations rarely use contraception, in other words that the fertility situation in those countries was more or less *Natural Fertility* (i.e. there are no attempts to control family size). But then again, the Demographic and Health Survey of Nigeria in 2013 reported that "knowledge of any contraceptive method is widespread in Nigeria, with 85 percent of all women and 95 percent of all men knowing at least one method of contraception." Given this high prevalence of contraceptive knowledge in the population it is probably evident that measures that were once thought to be appropriate only for low fertility countries can now be applied to Nigeria – a high fertility country. It makes more sense to use the Demographic and Health survey data in the computations because of the relative high standard employed in the execution

process. Although the data is beset with the 'traditional data errors' mostly of timing of events, it is more or less the best option available.

Period measures of fertility have a tendency to show disordered or muddled-up patterns especially when trying to establish trend and that was exactly what was observed in the results, which didn't show a "smooth" downward trend. That fertility has declined in Nigeria, is no longer news but what may be of interest is how it has risen and fallen over the years based on the number of women that have made a *conscious* decision as to whether to proceed to the next higher parity or not. The parity-based total fertility rate followed what may be referred to as a similar pattern with the age-based total fertility rate as reported by Nigeria Demographic and Health Survey 2013 albeit by some marked differences in year.

The differentials by place of residence in the period parity progression ratios for Nigeria was slightly on the large side, with the rural areas having higher progression ratios than the urban areas, for example in 2012, eighty nine percent of urban dwellers progressed to parity 4 compared to ninety six percent of rural dwellers. In addition, the figures seen for the other years followed a similar pattern of agreement with a wide disparity in those probabilities.

When educational status was considered as a differential, women with higher education had a relatively low total fertility rate that revolved around the 4.0 mark compared with women with no education at all whose total fertility rates was around the 6.0 mark, obviously the education of these women (or the lack of it) is a very important factor in the probability of having another child, women with higher education tend to go into marital union later, sometimes owing to the fact they would like to pursue their career to a reasonable conclusion before the commencement of childbearing, usually by the time they start giving birth, age is against them as they can only manage only a handful of children compared with their non-educated counterpart that go into marital union much more earlier and begin childbearing immediately.

The proportion of women in Nigeria moving to higher order parities has seen a marked decrease over the years even in the North West zone of the country and these points to the reality that more and more women are making a conscious decision to limit childbearing, now the question of how well they have achieved this, is beyond the reach of this study and also the question of what exactly they are doing to prevent themselves

from going ahead to have other children is equally not answered in the present study. But then, the evidence is clear that family-size-limiting measures are being taken by more and more women in the population. That wouldn't be too much of a surprise because as mentioned earlier, the knowledge of contraceptive methods is on the high side in the general population – men and women alike.

A very important dynamic to this study is the computation of the number of women who attain a specific parity and stay there till the end of their reproductive cycle, most especially stunning are the women with 4 children and less (i.e. n0, n1, n2, n3, n4). The trend has been a steady rise in the population from 1992 going forward, this discovery is of great significance as to what may be attributable to this pattern, and could it be the resultant effect of the "National Policy on Population for Development, Unity, Progress and Self-Reliance" of the Federal Military Government in 1988 that "restricted" births to 4 per woman? (Yaqub 1997).

5.2.Recommendations

To properly assess trend in fertility, many factors have to come into place. In several ways, researchers are at the mercy of the type of data that they have access to, the quality of those data and several times wrong conclusion may be drawn from *bad data*.

The obsession with a single index to represent fertility measurement should be looked into, even though it is convenient, we should not jeopardize quality with handiness. Policy makers should also look at the whole picture i.e. evaluate the different measures of fertility as it relates with the condition of the delineated area, consider the times and furthermore, they should have enough patience before announcing success when fertility is involved because it is one area that fluctuates a lot.

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