Interim Evaluation of Project No. 11-W-00057/4
SC Family Planning Waiver: Expansion of Medicaid Benefits for Women Below 185% FPL (SFYs 1995-2006)

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Executive Summary

The conceptual model on page 4 of this report shows the major factors that affect fertility outcomes. The model is complex and shows the many forces at play – and highlights the limitations of an intervention solely focused on increasing access. While a number of process indicators have improved over time, for most, it is becoming increasingly difficult to attribute these changes solely to the waiver.

	SFY 1992	**SFY 2006**
Average Monthly Medicaid FP Clients	5,646	25,613
Total Title X/Medicaid FP Clients	155,549	151,398
Continuity of Medicaid FP Care	23.5%	45.9%
Average Monthly Private FP Providers	271	546
Average Monthly Private Provider FP Clients	1,704	9,362
	SFY 1998	**SFY 2006**
Average Monthly FPW FQHC Clients	234	271
	CY 1996	**CY 2006**
Age at First Birth (OCWI/SOBRA women – FPW target)	20.5	22.0

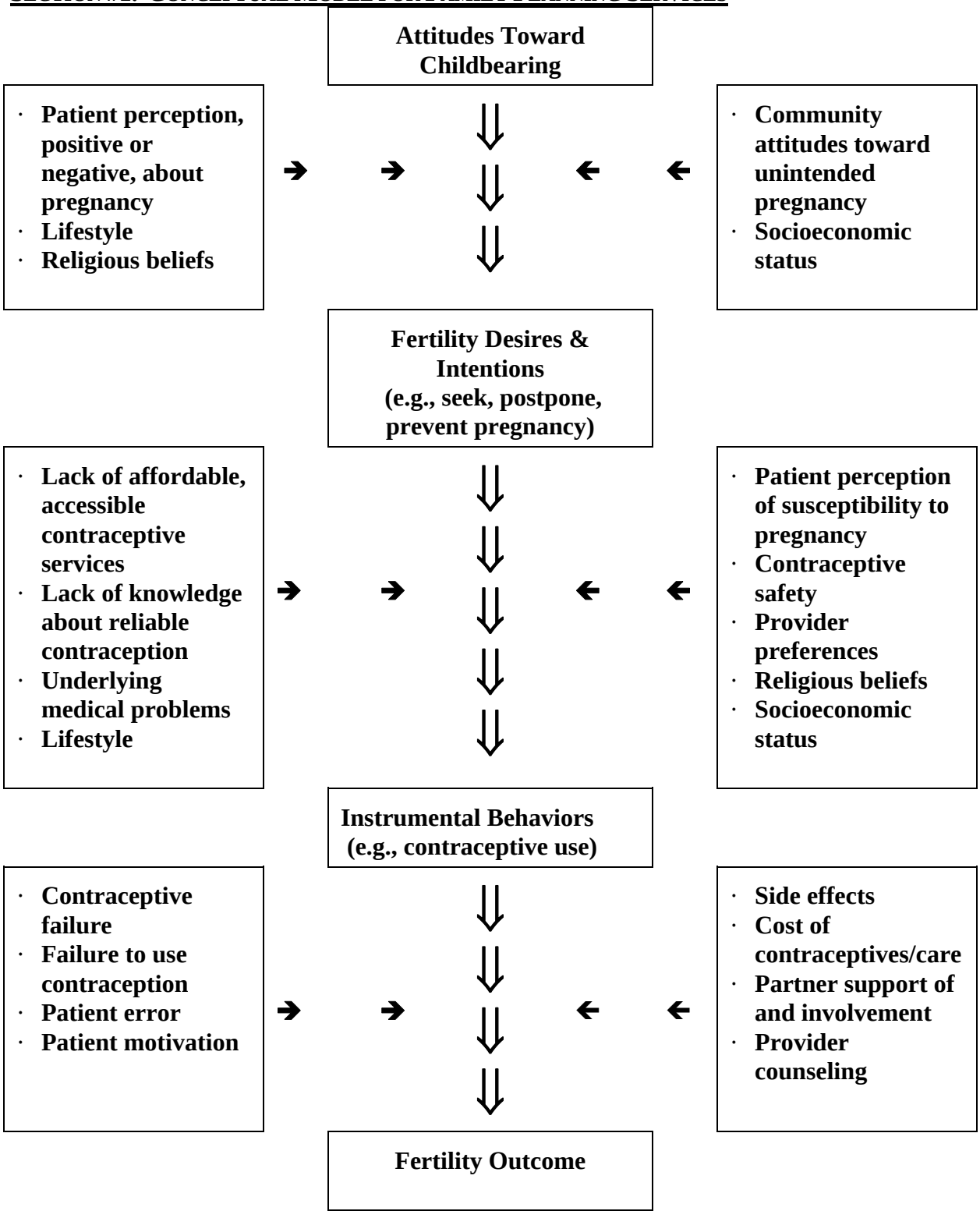
Other important indicators have not showed an effect of the waiver or showed a strong initial effect of the waiver, but those gains have been almost all lost:

	SFY 1993	**SFY 2005**
Postpartum FP Visit Within 24 Months	91%	91%
	SFY 1993	**SFY 2004**
Repeat Conception Within 18 Months	11.4%	13.1%
Repeat Conception Within 24 Months	15.9%	19.2%

One major disappointment has been the dramatic decline in Title X patients seen by the health department, from over 113,000 in SFY 1992 to just under 42,000 in SFY 2006. This has offset much of the gains one would expect from the dramatic increase in Medicaid family planning clients. Decreases in the number of regular Medicaid family planning clients between SFY 2005 and 2006 have not helped the situation. Another disappointment has been the lack of any effect on pregnancy intention, at least as measured through the PRAMS data.

And finally, a Medicaid 1115 Research & Demonstration Waiver must demonstrate budget neutrality. According to the methods specified in the 2005-2007 Terms and Conditions and revised during the most recent renewal request, CY 2006 is budget neutral. While federal costs total $11.6 million, federal savings are $21.3 million.

SECTION #1. CONCEPTUAL MODEL FOR FAMILY PLANNING SERVICES



SECTION #2. PROJECT BACKGROUND

Through a special program, optional coverage for women and infants (OCWI), South Carolina (SC) provides Medicaid coverage of health services for pregnant women with family incomes at or below 185% of the federal poverty level. Eligibility for OCWI Medicaid coverage ends two months after the birth of the child unless the women are able to meet the much more stringent income limits for the regular Medicaid program (roughly 50% of poverty). Given that, through OCWI, the Medicaid program was likely to be financially responsible for these women if they again became pregnant, in June 1993, the SC Department of Health & Human Services (SCDHHS) asked permission to extend Medicaid coverage of post-partum family planning services to the women for an additional 22 months in an effort to avert or delay subsequent pregnancies. The request was submitted to the Centers for Medicare & Medicaid Services (CMS, formerly known as the Health Care Financing Administration or HCFA, the agency within the US Department of Health & Human Services responsible for the Medicaid program). It was approved as a five year research and demonstration waiver in December 1993. The SC Medicaid program implemented the new waiver program effective with SFY 1994-95. The end date for the waiver was December 31, 1998.

In May 1996, SCDHHS contracted with the Center for Health Services & Policy Research, at the University of South Carolina to:

- design and deliver an evaluation of the original waiver to extend eligibility for family planning services to post-partum women with family incomes at or below 185% of the federal poverty level; and
- assist in developing an amendment to the original waiver to expand services to all women at or below 185% of poverty.

The planned expansion was based on the fact that through OCWI the Medicaid program would be financially responsible for <u>any</u> women with family income at or below 185% of poverty who became pregnant. So the state sought permission to amend the waiver to extend Medicaid coverage of family planning services to <u>all</u> women, regardless of prior pregnancy history, with family income at or below 185% of poverty. This request was submitted to CMS in April 1996, and was approved as an amendment to the original waiver in January 1997. In addition to expanding eligibility, the approved amendment introduced budget neutrality requirements and expanded evaluation activities. The SC Medicaid program implemented the expanded coverage allowed by the amended waiver effective with state SFY 1998. The end date for the waiver was not changed from December 31, 1998.

The SC Medicaid program implemented the expanded coverage allowed by the waiver amendment within six months of receiving approval. However, the December 31, 1998, end date allowed only 18 months of such coverage before the waiver ended. Concerned that a longer time period was needed for a reliable evaluation of the expanded coverage, SCDHHS asked CMS to extend the time period for the demonstration for an additional three years, through December 31, 2001. CMS authorized a six month extension until June 30, 1999, while it considered the

request.

Prior to a decision on the three year extension of the amended waiver, CMS required an interim evaluation report that included an assessment to date of budget neutrality, up to date discussion of evaluation plans, and a preliminary process and outcome evaluation. The original project evaluator from the Center for Health Services & Policy Research was replaced in the spring of 1999 and the interim evaluation report was delivered in June 1999. CMS subsequently approved the three year extension of the amended waiver. Based on feedback from SCDHHS and CMS staff, and more comprehensive statistical analyses of the data, the final evaluation report for SFYs 1995-1997 was completed in early 2000. Under a new contract, evaluation staff agreed to design and deliver an interim evaluation report on waiver participants through SFY 2001. Some revisions were needed to reflect the expanded coverage allowed by the waiver amendment during SFY 1998 – SFY 2001.

During SFY 2002, the waiver was renewed for three years and further amended to add a new objective -- to promote the increased utilization of primary care services by waiver participants. SCDHHS collaborated with community health centers (e.g., Federally Qualified Health Centers (FQHCs), and Rural Health Centers (RHCs)) to promote primary medical care homes for waiver participants. In January 2006, retroactive to January 2005, the waiver was renewed for another three years. And, on January 1, 2008, the waiver was renewed for another three-year period (through 2010).

SECTION #3. PROJECT OBJECTIVES & ACTIVITIES

Project Objectives

1) To increase the number of reproductive age women at or below 185% of poverty receiving Title XIX funded family planning services.

To allow affected women the opportunity to choose if and when to have children.

2) Reduce the number of inadequately spaced [less than 24 months] pregnancies among mothers eligible for maternity services under the expanded eligibility provisions of Medicaid.
3) Reduce the number of unintended and unwanted pregnancies among women eligible for Medicaid.

4) To estimate the overall savings in Medicaid spending attributable to providing family planning services to women for two years postpartum.

5) To promote primary medical care homes for waiver participants through collaboration with community health centers and other primary care providers.

Implementation Activities

Target Population. The waiver extended Medicaid coverage for all Medicaid family planning services to women who have family income at or below 185% of the federal poverty level.

Project Activities. There are several key components of the project needed to accomplish the objectives:

A) Inform eligible women of the availability of Medicaid coverage for family planning services:
    1) SC Department of Health and Human Services (DHHS) caseworkers to inform these women of the available family planning services and provide a full description of them before or after delivery;
    2) Information about the project to be placed in all DHHS correspondence available to all Medicaid recipients;
    3) Providers informed of the availability of these services through a Medicaid bulletin explaining the services available and population eligible.
    4) Providers furnished with brochures explaining the additional benefit and asked to discuss the project during the initial postpartum visit; and
    5) SC Department of Health & Environmental Control (DHEC) to use family planning outreach to encourage participation and coordinate where necessary.

B) Enrolling eligible women in the waiver

C) Linking enrolled women to family planning providers;

D) Ensuring continuing and comprehensive reproductive health care through increased choice of providers, especially private physicians.
    1) Provide a medical home, leading to better coordination of services; and
    2) Increase continuity of family planning care.

E) Encouraging waiver participants to access comprehensive primary care services.
    1) Current waiver enrollees were notified by mail of the locations and how to access the primary medical care services.
    2) Outreach workers were given a list of community health centers and instructed to incorporate referrals for primary medical care into outreach activities. The outreach workers are signing each waiver application after discussing the promotion of primary care with the potential waiver clients.
    3) On February 25, 2002, SCDHHS mailed Medicaid Bulletins to all Medicaid providers regarding notification of the waiver renewal.

Covered Services

Women enrolled in the waiver are eligible for all family planning services covered by the SC Medicaid program. These services include: all medical and counseling services related to alternatives for birth control and pregnancy prevention services prescribed and rendered by physicians, hospitals, clinics, pharmacies, and other Medicaid providers. Medicaid pays for all methods of contraception, both prescription and nonprescription.

SECTION #4. EVALUATION METHODS

To avoid confusion, the following terms are used to reference different subsets of women for whom the waiver is intended:

Women eligible for the waiver refers to all women who meet the eligibility criteria for waiver services, regardless of whether they are enrolled in the program.

Women enrolled in the waiver refers to the subset of women eligible for the waiver who have applied and been approved for Medicaid coverage of family planning services.

Women receiving services under the waiver, or "participants," refers to the subset of women enrolled in the waiver who actually received Medicaid reimbursed family planning services. Not all women who are eligible for the waiver actually apply for coverage, and not all women who are approved for coverage actually receive Medicaid reimbursed family planning services.

Evaluation data are drawn from four sets of state specific data:

Vital records of births, deaths, and abortions, maintained by DHEC. A key limitation of this database is the length of time which passes before this data is available for analysis. Data for calendar years through 2004 are now available.

Medicaid Management Information System data, including eligibility files and claims for reimbursement of services delivered, maintained by SCDHHS. The claims files are shared with the Office of Research & Statistics (ORS) of the SC Budget & Control Board. The Office was responsible for preparing the data subsets needed for analyses of the evaluation hypotheses. Most of the time series analyses rely on monthly claims data regarding family planning services and births from July 1, 1991 through June 30, 2006. This allows comparison of data trends for the three state fiscal years prior to implementation of the waiver to the data trends after implementation of the waiver.

SC Pregnancy Risk Assessment Monitoring System (PRAMS) survey data, maintained by the DHEC. SC PRAMS is an ongoing mail or telephone survey that obtains information from new mothers shortly after they deliver. About 2100 mothers are sampled from the state's live birth registry each year. PRAMS data are reported on a calendar year basis.

UB-92 inpatient hospital claims data base, maintained by the Office of Research & Statistics of the SC Budget & Control Board. By state law, all general nonfederal hospitals in the state are required to submit to the Office copies of each inpatient bill for each person discharged from that hospital. Data are expected to meet strict completeness (99%) and accuracy (99.5%) requirements, and the Office has a very detailed editing and "unduplication" process to prepare the data files for analysis. At the close of each calendar quarter, these billing data are merged with medical record abstract data for each patient.

Statistical analyses

Due to the lack of adequate control or comparison groups within the state, or in other states, evaluation staff preferred time series analyses to simpler statistical designs which might compare a single value on a pre-intervention measure to a post-intervention value on the measure. To gain statistical power, monthly data were used to allow better tracking of trends instead of just a single data point for each of the pre and post intervention years.

Statistical methods generally used for the analysis of time series data include autoregressive integrated moving average (ARIMA) modeling. This is due to the problem that data collected over time often do not satisfy key assumptions for regular regression analysis, specifically the independence of observations. ARIMA models estimate and control for autocorrelation among observations in time series regressions. ARIMA models are based only on the mathematical properties of the series, the nature of the observed event is irrelevant.

In this study, data for each hypothesis were graphed over time to observe any trends, and the autocorrelation structure of the time series was analyzed to see if sufficient autocorrelation existed to require ARIMA modeling instead of regular regression analysis. If ARIMA modeling was required, the data were transformed if necessary to ensure the time series was stationary with respect to mean and variance.

A regular ARIMA model can include two sets of terms: Aautoregressive@ (AR) terms related to the significant partial autocorrelations in the series, and Amoving average@ (MA) terms related to the significant autocorrelations in the series. For this study, a special kind of ARIMA model (an intervention model) which includes the values of another variable (called an input series) was used. In an intervention model, the input series is an indicator variable containing discrete values that flag the occurrence of an event affecting the original series. Intervention models are used to analyze the impact of the intervention. In the case of continuing interventions, the input variable identifies periods before and after the intervention. If the effect of the intervention is thought to be immediate, the input variable would be zero before the intervention and one after the intervention. If, as in the case of the present study, the effect of the intervention is assumed to be gradual, the input variable is zero before the intervention and then gradually increases to one over the time it takes for the intervention to reach full effect. Since past expansions of Medicaid eligibility have taken about 18 months to fully mature, the input variable for the

original waiver increased gradually from zero before the intervention to one over the course of 18 months. The input variable for the later amendment gradually increased from zero to one over the course of six months.

For each hypothesis, different ARIMA models were tested to estimate the parameters of the AR terms, the MA terms, and the intervention. The residuals for each model were checked to see if they were uncorrelated, or if they contained additional information that could be accounted for using a more complex model. Once the best model was identified, t-tests were used to determine the significance of parameter estimates, including the intervention input series.

General Notation for ARIMA Models. The order of an ARIMA model is usually denoted by the notation ARIMA (p,d,q) where:

p is the order of the autoregressive part
d is the order of the differencing (if needed to make the series stationary)
q is the order of the moving average process

Regression and ARIMA models, and how well those models fit the data for each hypothesis, are presented graphically:

- Actual data are represented by "*".
- Forecast data are represented by a middle line.
- The 95% confidence interval is represented by the upper and lower bounds.

Because specific point values may be hard to read on the graphs, tables in Appendix A provide some reference data.

Time Period for Data Analyses. In general, Medicaid claims data from SFY 1992 through SFY 2006 (July 1991 through June 2006) are presented. However, certain analyses require tracking clients for a subsequent period of months (up to 15 months for Figures #3a and #3b, up to 18 months for Figure #6a, and up to 24 months for Figures #1b and #6b). In these cases, the time period for data presented is shortened accordingly. Also, data from vital records and PRAMS are reported (and therefore presented) on a calendar year basis.

Exclusion of Data on Some Participants. In some of the analyses, as appropriate, data on certain participants have been excluded. These include participants who only had pharmacy claims, or participants who only received limited specialized services (such as counseling or education) from a state agency, such as the Department of Social Services or the Department of Disabilities and Special Needs.

Telephone Survey
To obtain information about the Medicaid Family Planning Waiver not otherwise available through existing evaluation databases, during the summer of 2006 telephone surveys were conducted with three groups of women: eligible but not enrolled (n=310), enrolled but not participating (n=209), and waiver participants (n=209). (Medicaid client files on births were used to identify a group of women who were eligible but not enrolled.) In addition, during the late summer and early fall of 2006, a mail survey was conducted with three groups of OB/GYN and Family Practice physicians: public-sector providers (n=211), private providers who see Medicaid waiver patients (n=199), and private providers who do not see Medicaid patients at all (n=64).

Supplemental Analyses of Hypothesis 6
This goal of this supplemental evaluation of the South Carolina Medicaid Family Planning Waiver was to provide more information on behavior and health outcomes associated with long-term waiver participation. This analysis is related to hypothesis 6 and addressed the following evaluation question:

- Do more regular participants in Medicaid family planning waiver services have more adequate pregnancy intervals, more adequate prenatal care and better infant outcomes (decreased chances of preterm birth, low and very low birth weight, and small for gestational age infants) over time as compared to women who did not use waiver services as often?

A full report on these analyses can be in Appendix B.

SECTION #5. EVALUATION HYPOTHESES & FINDINGS

To maintain continuity with the previous evaluations of the waiver, this evaluation is based on the original waiver objectives and hypotheses, with revisions as appropriate.

OBJECTIVE #1: Assure that all women who want and need publicly supported family planning services receive such services.

Hypothesis 1: The number of women obtaining Medicaid family planning services, including postpartum women, will increase after implementation of the waiver until unmet demand for services is satisfied.

Analyses related to this hypothesis include:

- assessing the number of eligible women who are enrolled in the waiver;
- assessing the number of enrolled women who participate in the waiver;
- identifying barriers to enrollment and participation;
- continuing to assess the number of eligible postpartum women who enroll and participate in the waiver; and
- monitoring the effect of the waiver on the Title X program.

Statistical Analysis. Statistical analysis was conducted on the monthly increase in Medicaid family planning clients. Given the continued increase in total clients in years subsequent to the waiver expansion, a model was not able to be fitted to these data. This means that the increases in monthly Medicaid family planning clients cannot be explained by the waiver alone. However, an ARIMA (0,0,4) model of the data through July 1, 2000 (before the increases, and more recent decreases, begin, see Figure 1a) indicate that the intervention variables for both the original waiver and the later expansion were significant. The intervention variable for the original waiver was significant with a t-ratio of 24.58 ($p<0.0001$), and the intervention variable for the expanded population was significant with a t-ratio of 16.52 ($p<0.001$).

Figure #1a: Total Medicaid Family Planning Clients by Month

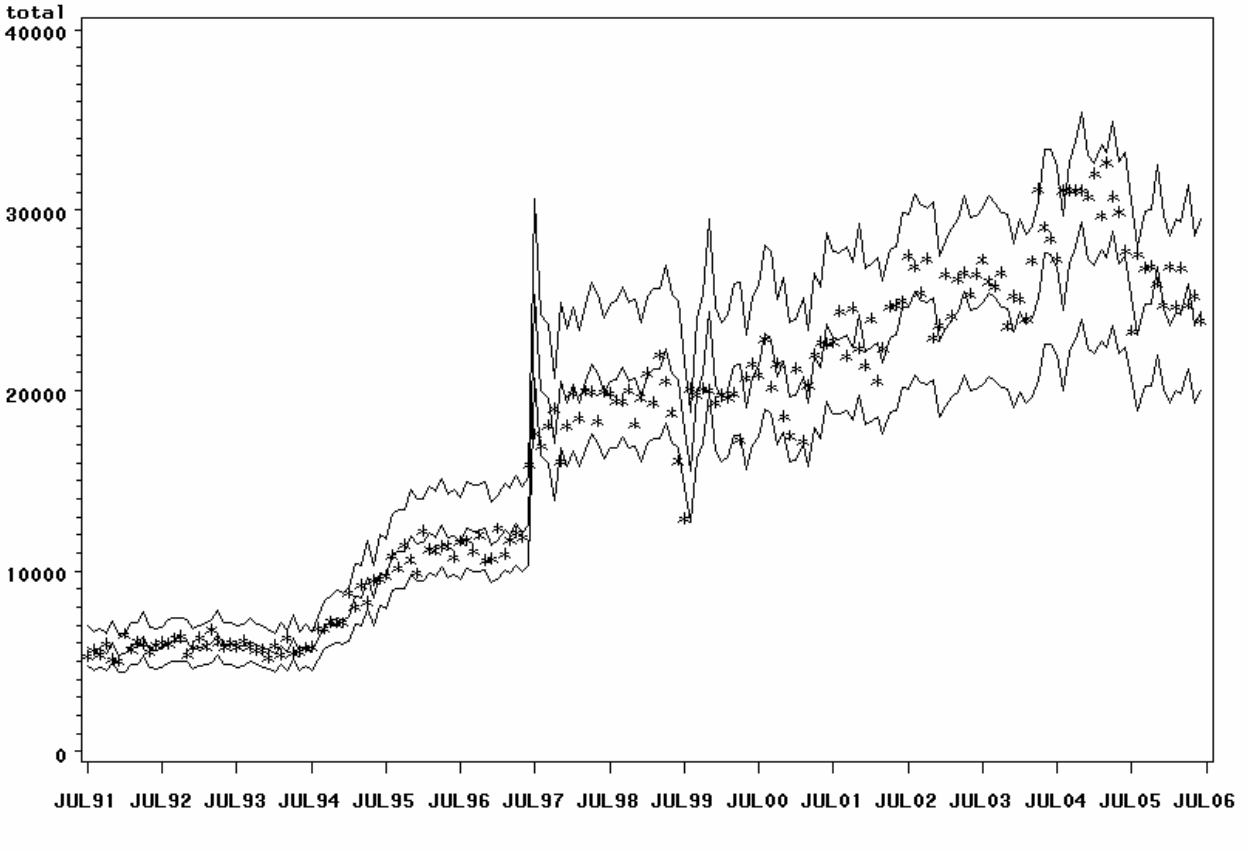


Figure #1a shows the number of women actually receiving Medicaid (waiver and regular program) family planning services (*), by month, based on Medicaid claims data. It also shows the trend predicted by the ARIMA model. See Data Table #1a in Appendix A for reference data.

Statistical analysis was conducted on the percentage of postpartum women who received a Medicaid family planning visit within 24 months of giving birth. Using July 1, 1991 as the baseline (see Figure #1b), an ARIMA (1,0,2) model, that included an intervention variable for only the original waiver fit the data well. (Since the waiver expansion would not have affected

postpartum women, the intervention variable for the expanded population was not included in the model.) However, since the percentage has now declined below the original pre-waiver levels, the intervention variable for the original waiver continues to be non-significant (t-ratio of -0.12, p=.91). A close look at Figure #1b shows that the percentage rose substantially from July 1991 through early 1993, then paused for most of the year before rising again coincident with the original waiver. Given the early pre-waiver increase and the later post-1997 decrease, it is hard to attribute the 1994-95 increase solely to the waiver.

Figure #1b: Percent of Postpartum Women with Family Planning Visit Within 24 Months

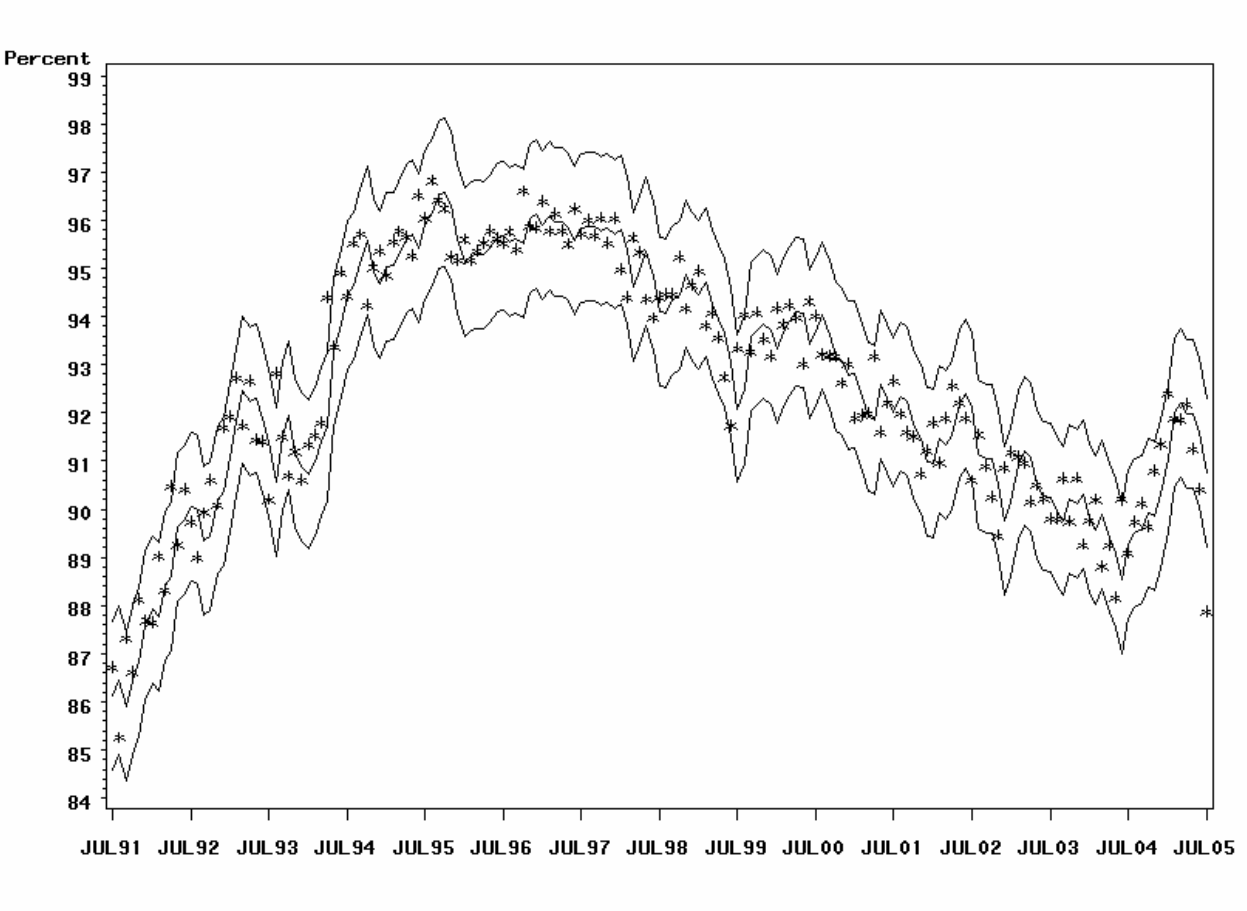


Figure #1b shows the percent of women giving birth in a given month who later received Medicaid (waiver and regular program) family planning services (*) within 24 months of the delivery, based on Medicaid claims data. It also shows the trend predicted by the ARIMA model. See Data Table #1b in Appendix A for reference data.

Discussion. In looking at Figures #1a and #1b, it is obvious that the original waiver was successful at significantly increasing the monthly number of women receiving Medicaid family planning services. The waiver was also initially successful in significantly increasing the percent of postpartum women receiving family planning services within 24 months of delivery (though this latter increase has not been sustained).

As expected, the expansion of the waiver to non-postpartum women further significantly increased the monthly number of women receiving Medicaid family planning services, while having no effect on the percent of postpartum women receiving services.

The continued increase through SFY 2005 in total Medicaid family planning clients by month, while no longer (in a statistical sense) directly attributable to the waiver, does meet the goal of increasing access to family planning services. The downturn in total Medicaid family planning clients seen between SFY 2005 and SFY 2006 is indicative of a decrease in regular Medicaid family planning clients. While beyond the scope of this evaluation, more research is needed to why the number of family planning waiver clients is growing, while the number of regular Medicaid family planning clients is shrinking.

A matter of some concern is the gradual decline in percent of postpartum women receiving family planning services within 24 months in years after the original implementation of the waiver. The average percent of postpartum women receiving family planning services within 24 months in SFY 2004 was 90% – slightly less than the average percentage in SFY 1993 (one year before implementation of the waiver) – and less than the 96% seen in 1996 and 1997. So while the waiver had an initial significant effect, the effect has worn off. This decrease could be due to shifting program priorities, or it may be affected by an increase of tubal ligations or hysterectomies immediately after delivery. However the latter potential cause can be ruled out – the percent of women receiving such procedures declined by 2.5% between 1991 and 2002.

Figure #1c highlights the relationship between the significant increase in Medicaid clients covered for family planning services and the number of Title X clients covered for family planning services. In SFY 1994, there were roughly 146,000 publicly supported family planning clients. By SFY 2005, this has increased to 167,628. In SFY 2006, both Medicaid (mostly attributable to the decrease in regular Medicaid clients as mentioned previously) and Title X clients declined. More research is needed to understand the relationship between Title X and family planning waiver participation at the funding and individual levels.

Figure #1c: Total Publicly Supported Family Planning Clients

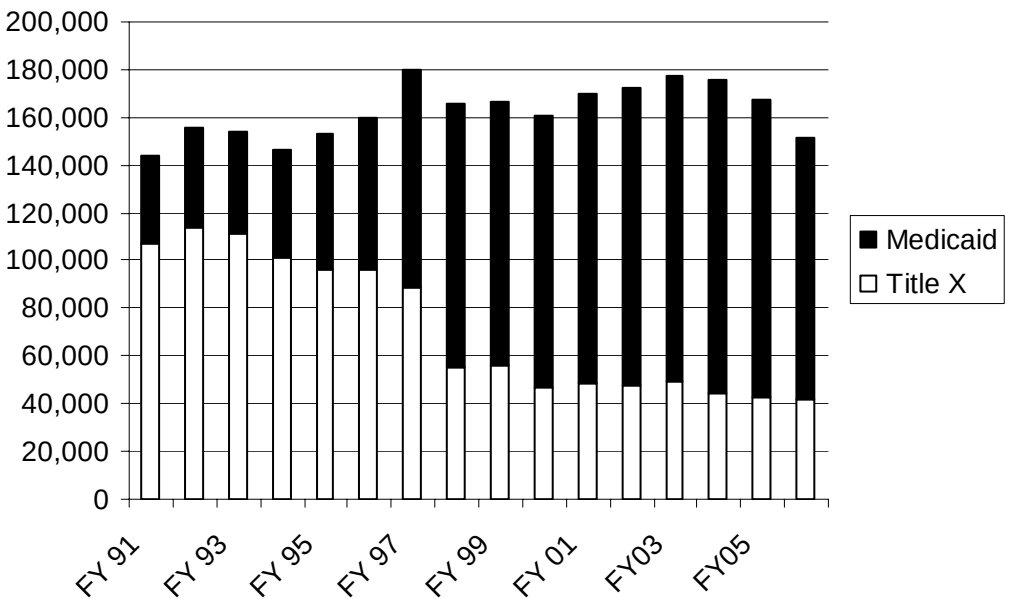
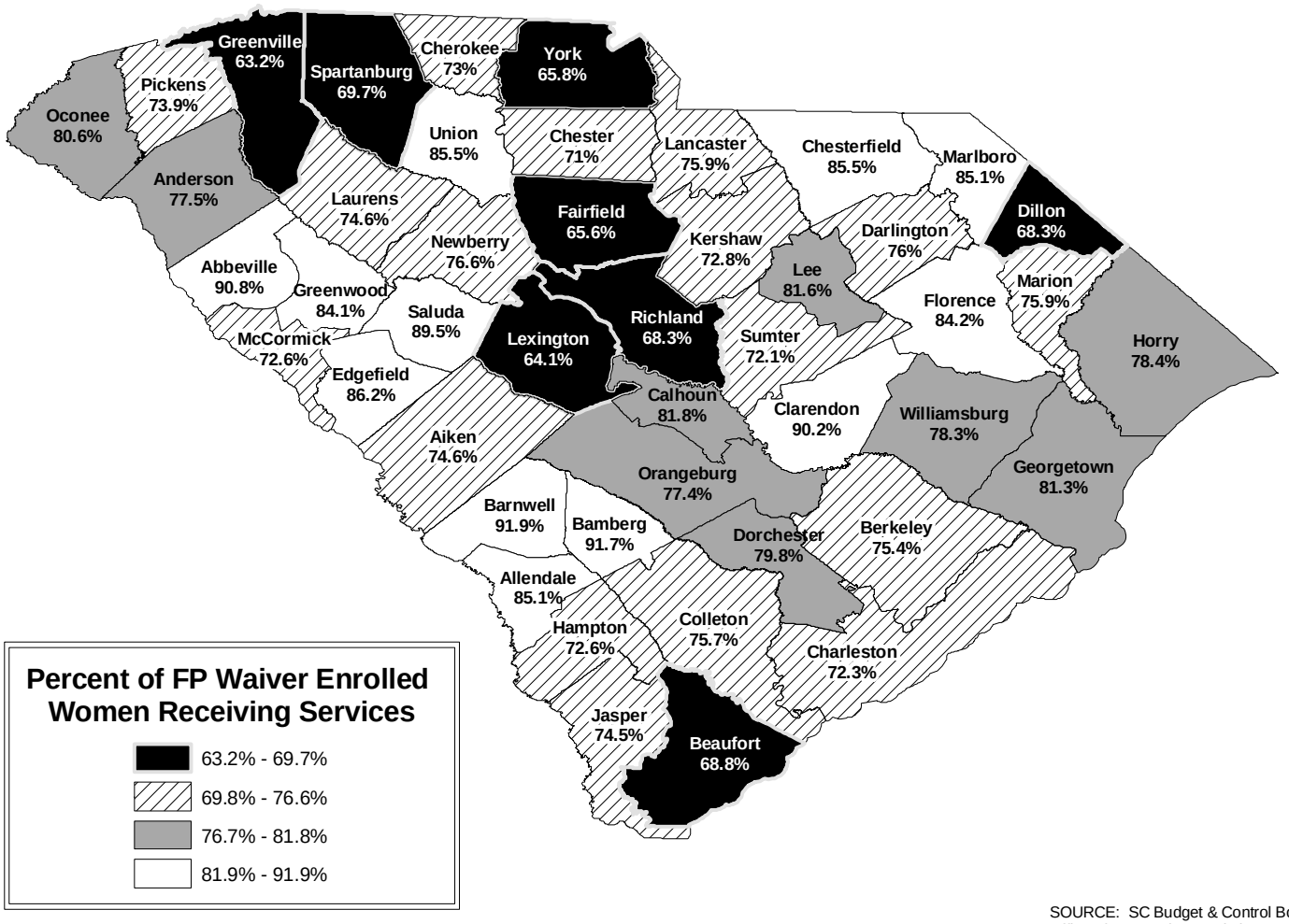


Figure #1c shows the total number of women receiving Medicaid (waiver and regular program) family planning services or Title X family planning services by state fiscal year. Since the figure is based on Medicaid claims data and Title X records which cannot be unduplicated, it is likely that the same women may be counted twice in the year they became eligible for Medicaid (if they received Title X services early in the fiscal year and Medicaid family planning services later in the year). This is likely the case in FY 1997.

Figure #1d shows the wide range of waiver participation by enrollees across the state.

Figure #1d: Percent of FP Waiver Enrolled Women Receiving Services - SFY 2006



SOURCE: SC Budget & Control Board
Office of Research & Statistics

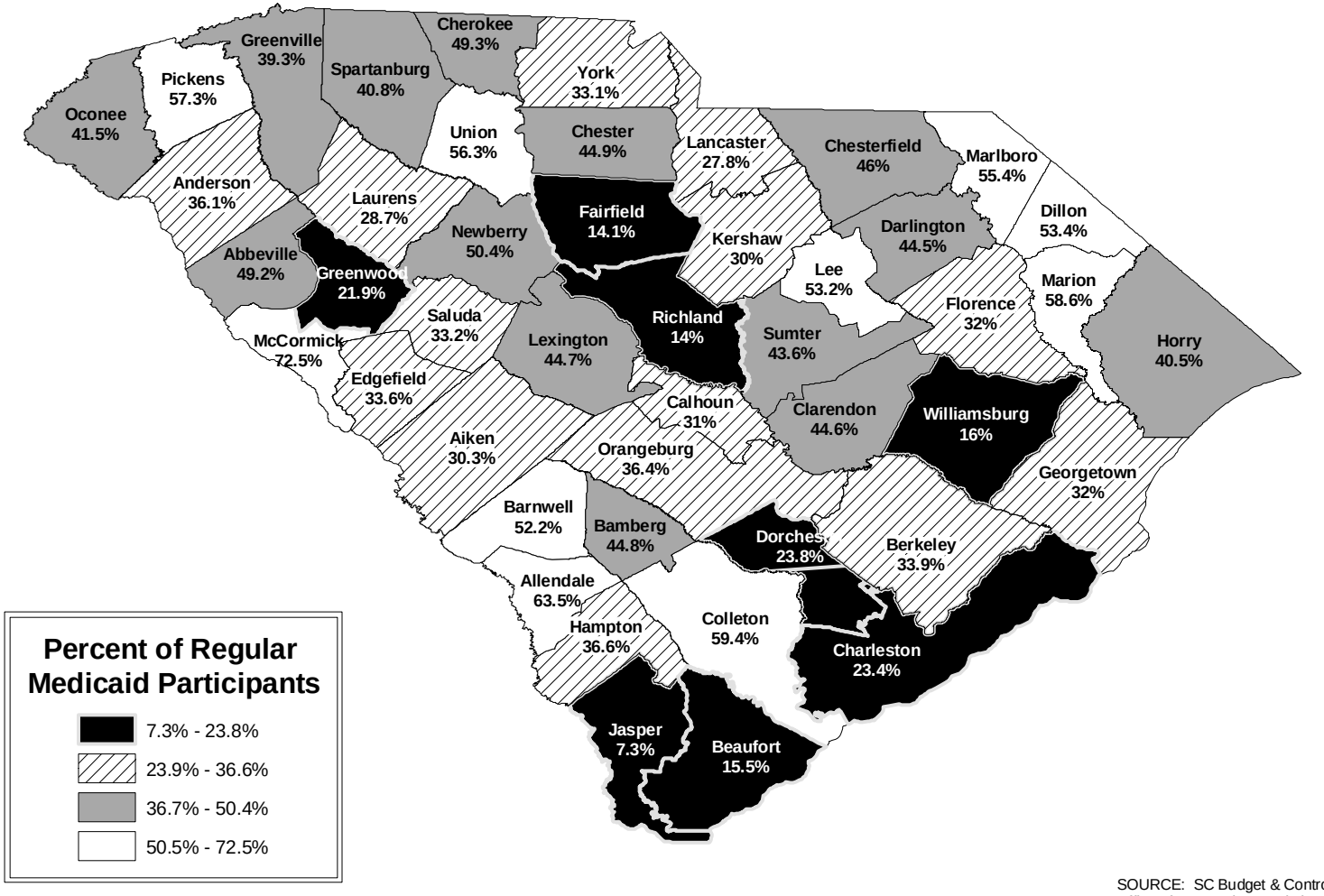
Hypothesis 2: The proportion of eligible women enrolled and participating in the waiver in a given county will not vary due to differences in the amount of publicly or privately provided family planning services rendered in the county.

In an attempt to identify any barriers to family planning services or Medicaid eligibility which might be related to the type of service provider (public or private), and the need for special outreach efforts, analysis was conducted to assess the proportion of family planning clients in the county served by public providers (family planning clinics run by DHEC).

Discussion: This hypothesis was intended to assess any potential bias that might exist in counties based on the notion that counties with more publicly provided services would do a better job of referring potentially eligible women for enrollment. Previous statistical analysis of data through 1999 had shown a statistically significant, but practically insignificant relationship between the proportion of publicly provided services and the proportion of eligible women served. Given that the proportion of publicly provided services has declined since 1999 while the number of Medicaid family planning clients has not, this bias is no longer a concern. Data shown in the discussion of Hypothesis 4 support this, showing continued increases in the number of privately provided services statewide.

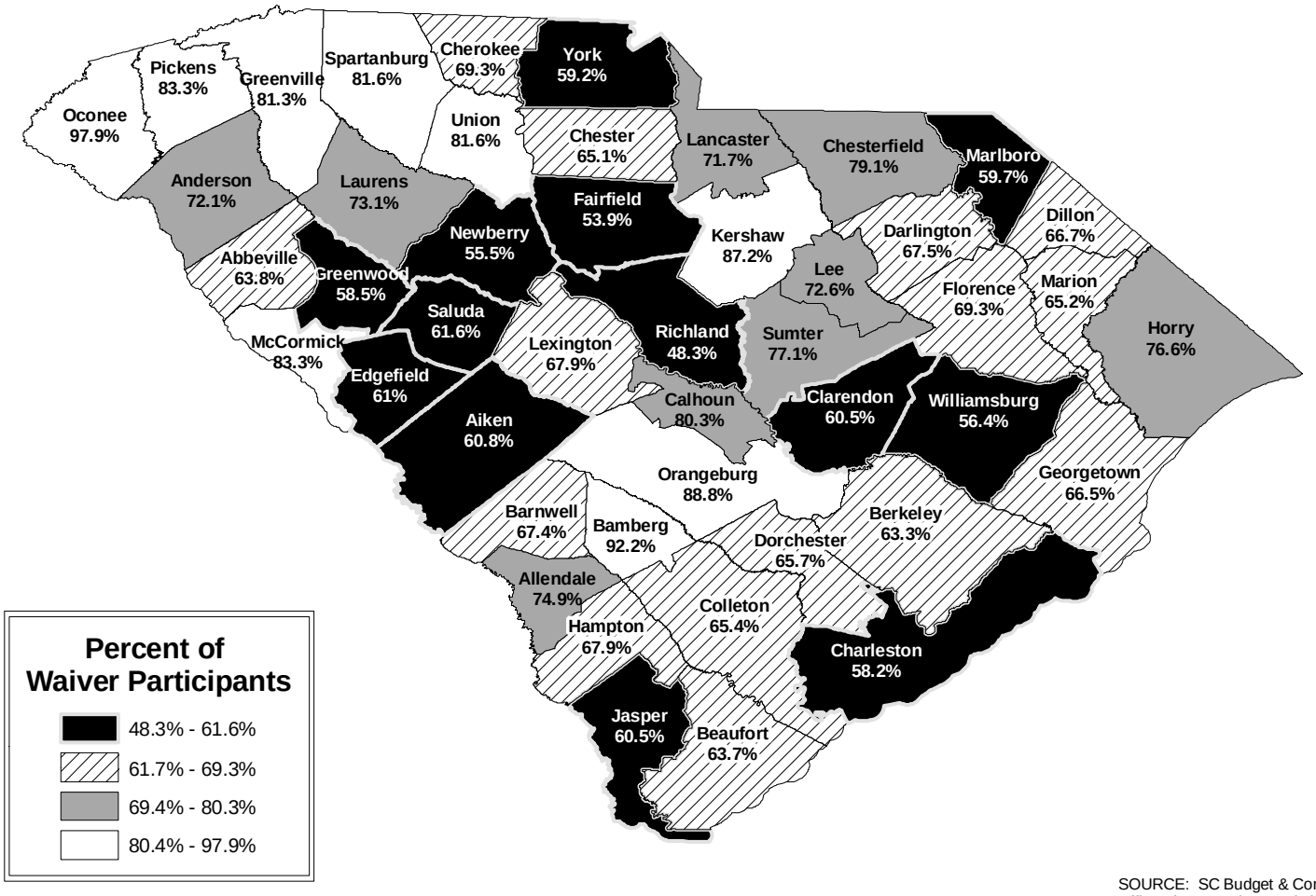
Figures #2a and #2b show the wide variation in the amount of publicly (DHEC) provided family planning services across the state. Given the emphasis on providing family planning services in a "medical home" (see discussion for Hypotheses 4 and 9), the heavy reliance on DHEC clinics in some counties means that these women are at risk for medical needs related to, but not covered by, the waiver. These might include medical follow-up for complications due to family planning methods or for treatment of problems discovered during a family planning visit.

Figure #2a: Percent of Regular Medicaid Participants Who Use FP Services from a DHEC Clinic - SFY 2006



SOURCE: SC Budget & Control Board
Office of Research & Statistics

Figure #2b: Percent of Waiver Participants Who Use FP Services from a DHEC Clinic - SFY 2006



SOURCE: SC Budget & Control Board
Office of Research & Statistics

Hypothesis 3: Continuous Medicaid coverage for family planning services will lead to improved continuity rates among family planning clients in the regular Medicaid and Medicaid waiver population.

Analyses will include:

- assessing continuity rates;
- identifying interruptions in continuity rates related to Medicaid sponsored births;

Statistical Analysis: An ARIMA model no longer fits the data on continuity rates (see Figure #3a). Prior models indicate a significant effect of both the original waiver and later expansion. Using data through July 2002, an ARIMA (1,0,4) model fits the data well. The intervention variable for the original waiver significantly increased continuity (t-ratio of 8.94, $p<0.0001$), and the intervention variable for the expanded population had a somewhat smaller, but still significant effect (t-ratio of 3.64, $p=0.0004$). Subsequent decreases in continuity, after increases through SFY 2002 cannot be attributed solely to the waiver. The data indicate that the percent of women receiving family planning services within 9-15 months is declining; more research is needed to find out why that is happening.

Figure #3b shows a plot of the continuity rates for family planning services, also including births. (A woman may interrupt her continuity in family planning to give birth – this does not mean her overall reproductive health care is interrupted.) An ARIMA model no longer fits these data due to the decline in the percent of women with birth or subsequent family planning services within 9-15 months. Data through FY 2004 indicate a significant impact of the waiver; however, the decline seen since that time is not explained by the current model. Other factors that are not currently measured are apparently having an effect on continuity.

Figure #3a: Percent of Women Receiving Subsequent FP Service Within 9-15 Months

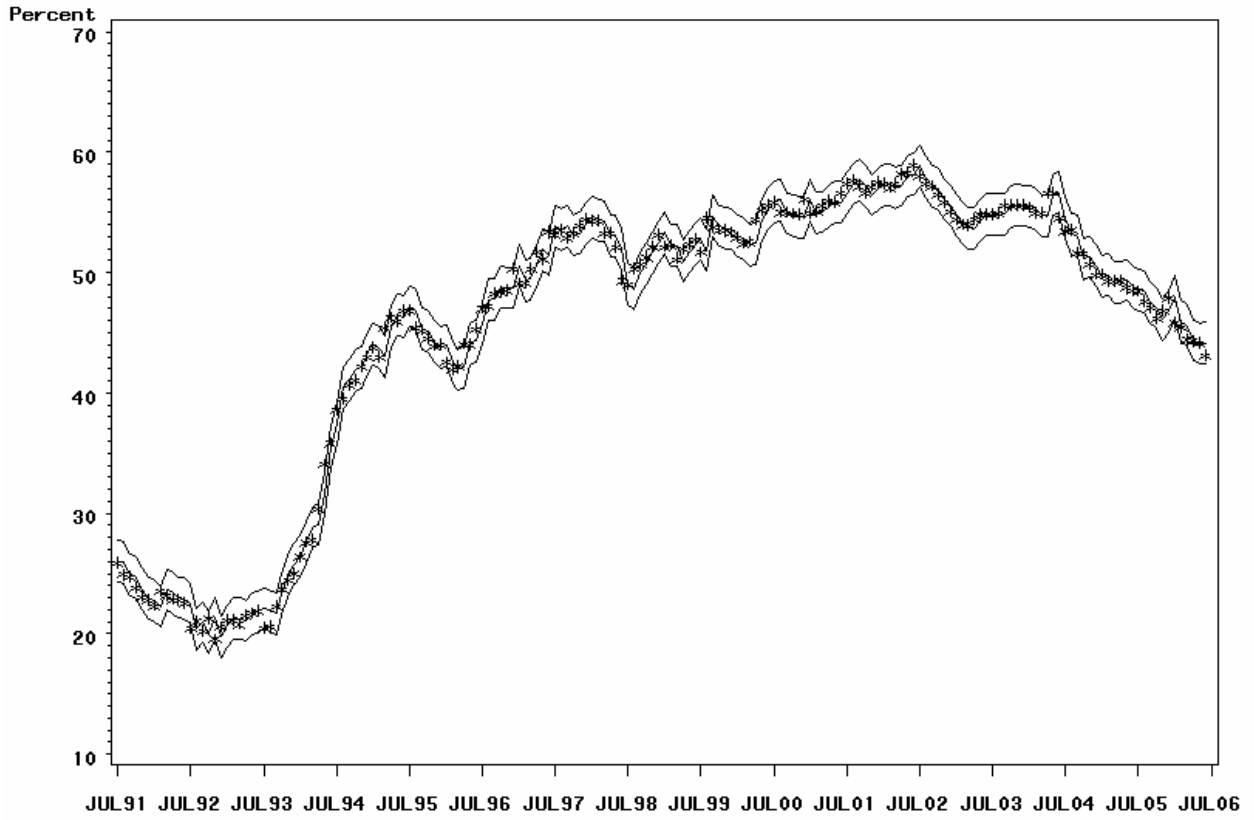


Figure #3a shows the percent of women receiving Medicaid (waiver and regular program) family planning services (*) in a given month who later received a Medicaid family planning services 9-15 months later, based on Medicaid claims data. It also shows the trend predicted by the ARIMA model. See Data Table #3a in Appendix A for reference data.

Figure #3b: % of Women With Birth or Subsequent FP Service Within 9-15 Months

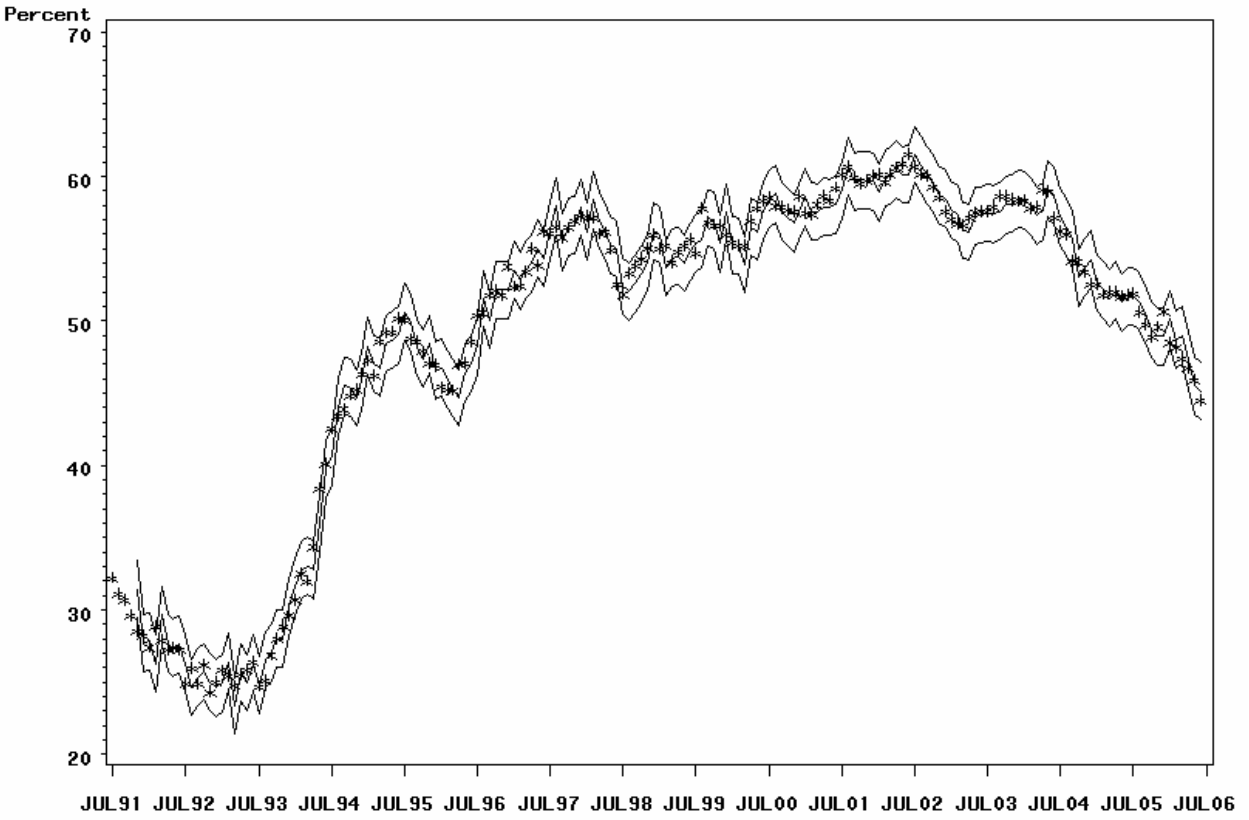
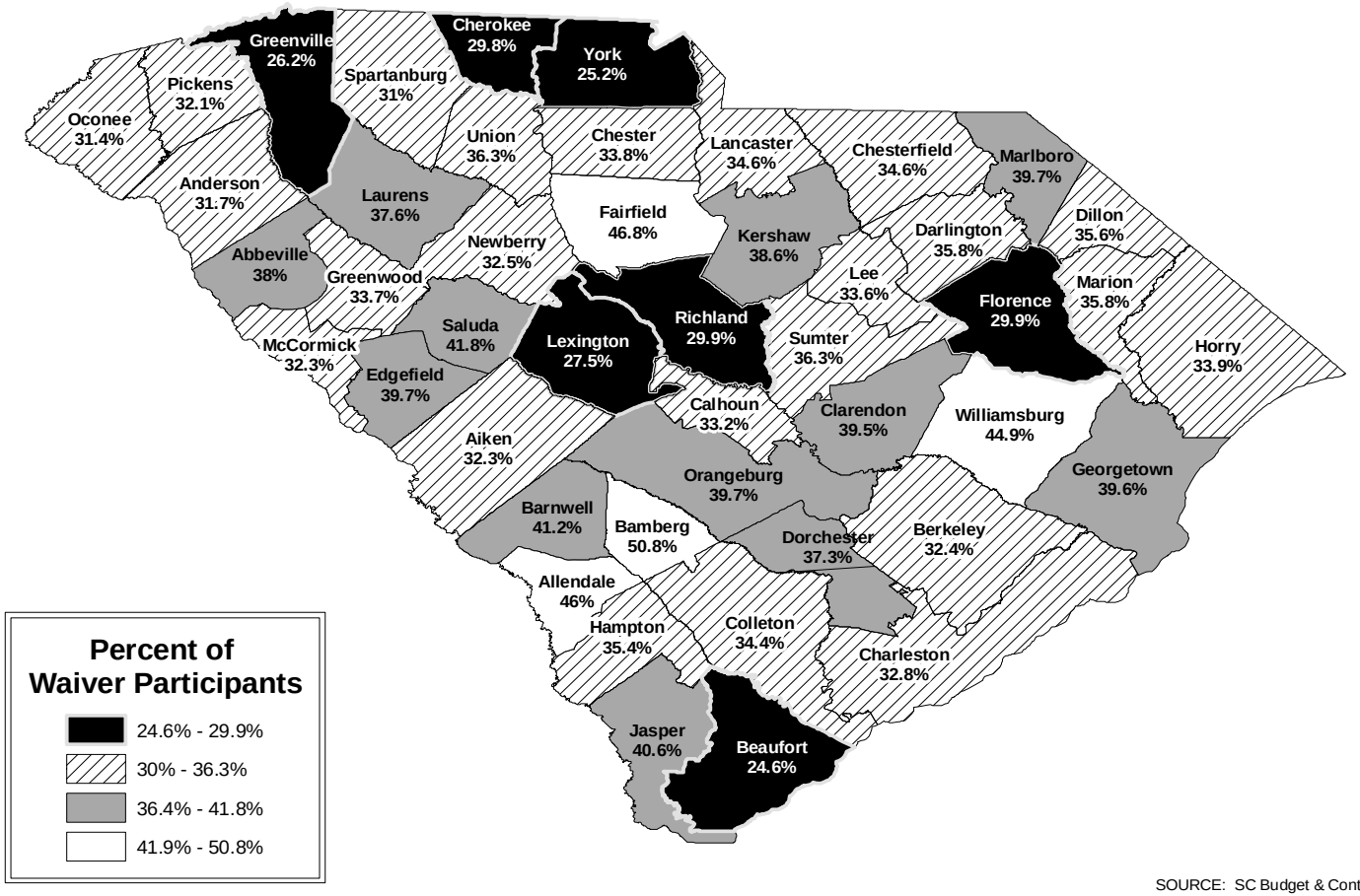


Figure #3b shows the percent of women receiving Medicaid (waiver and regular program) family planning services (*) in a given month who later gave birth or received a Medicaid family planning services 9-15 months later, based on Medicaid claims data. It also shows the trend predicted by the ARIMA mode. See Data Table #3b in Appendix A for reference data.

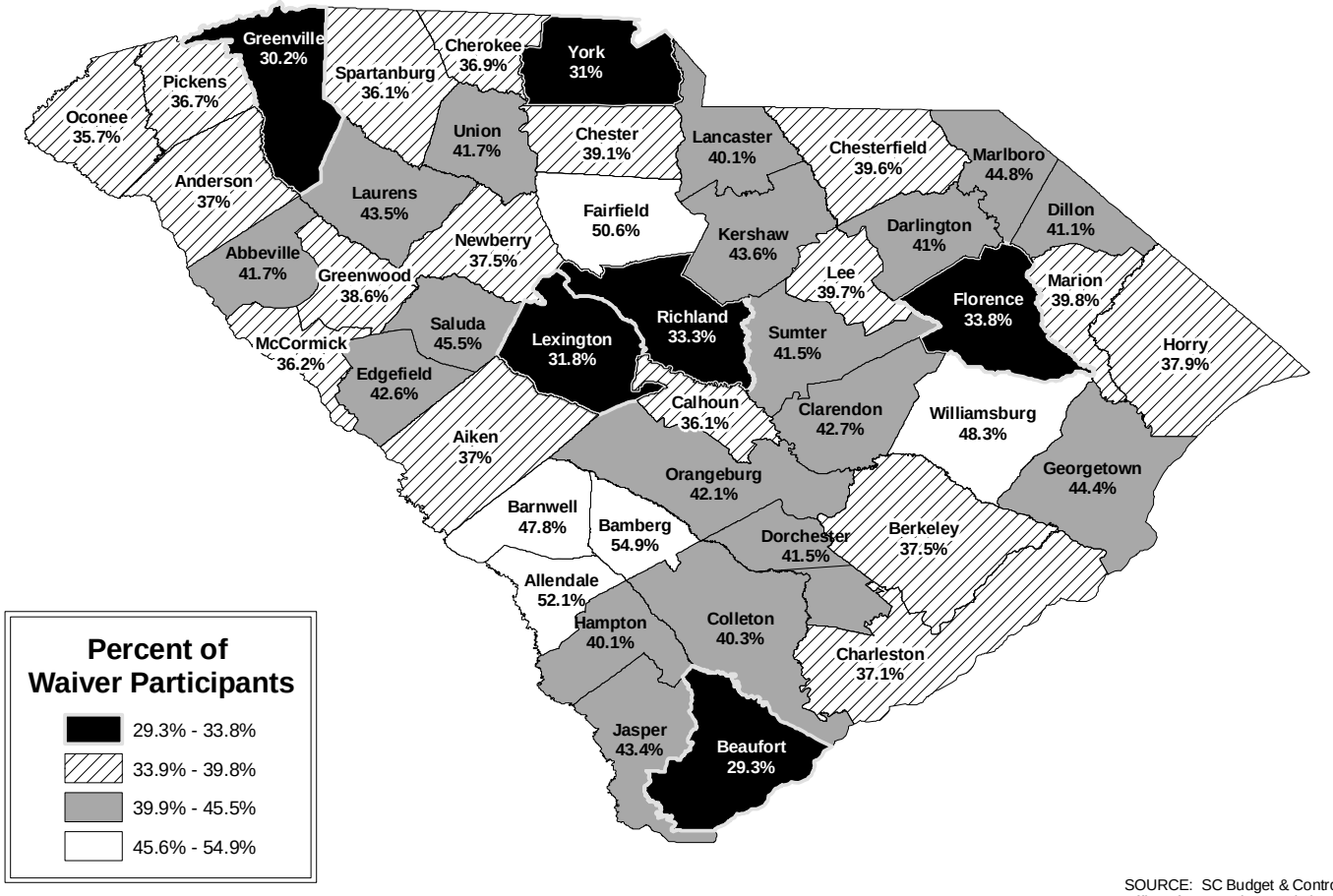
Discussion: Continuity rates are calculated by determining what percent of women receiving family planning services in one year continue to receive services in the next year (9-15 months later in these analyses). Through FY 2004, the original waiver, and to a lesser extent the expansion, resulted in significant increases in continuity rates. For example, the continuity rates for Medicaid family planning services have increased from a monthly average of 20.9% in SFY 1993 to over 49.4% in SFY 2005. However, continuity is decreasing. Current models no longer fit the data well and indicate other, unmeasured, factors are causing the continuity rates to decline. Figures #3c and #3d present the data by county.

Figure #3c: Percent of Waiver Participants During 2005 Receiving a FP Waiver Service the Following Year



SOURCE: SC Budget & Control Board
Office of Research & Statistics

Figure #3d: Percent of Waiver Participants During 2005 Receiving a FP Waiver Service or Giving Birth the Following Year



SOURCE: SC Budget & Control Board
Office of Research & Statistics

Hypothesis 4: As private providers and their patients become more aware of the original and amended waiver, more regular Medicaid and Medicaid waiver family planning clients will seek services from private providers, and more private providers will provide such services.

Analyses will include:

- assessing the number of clients receiving privately provided family planning services;
- assessing the number and volume of family planning services rendered by private providers;
- identifying provider characteristics associated with privately rendered services; and
- identifying barriers affecting clients or providers which limit the amount of privately provided family planning services.

Figure #4a: Increase in Monthly Private FP Providers

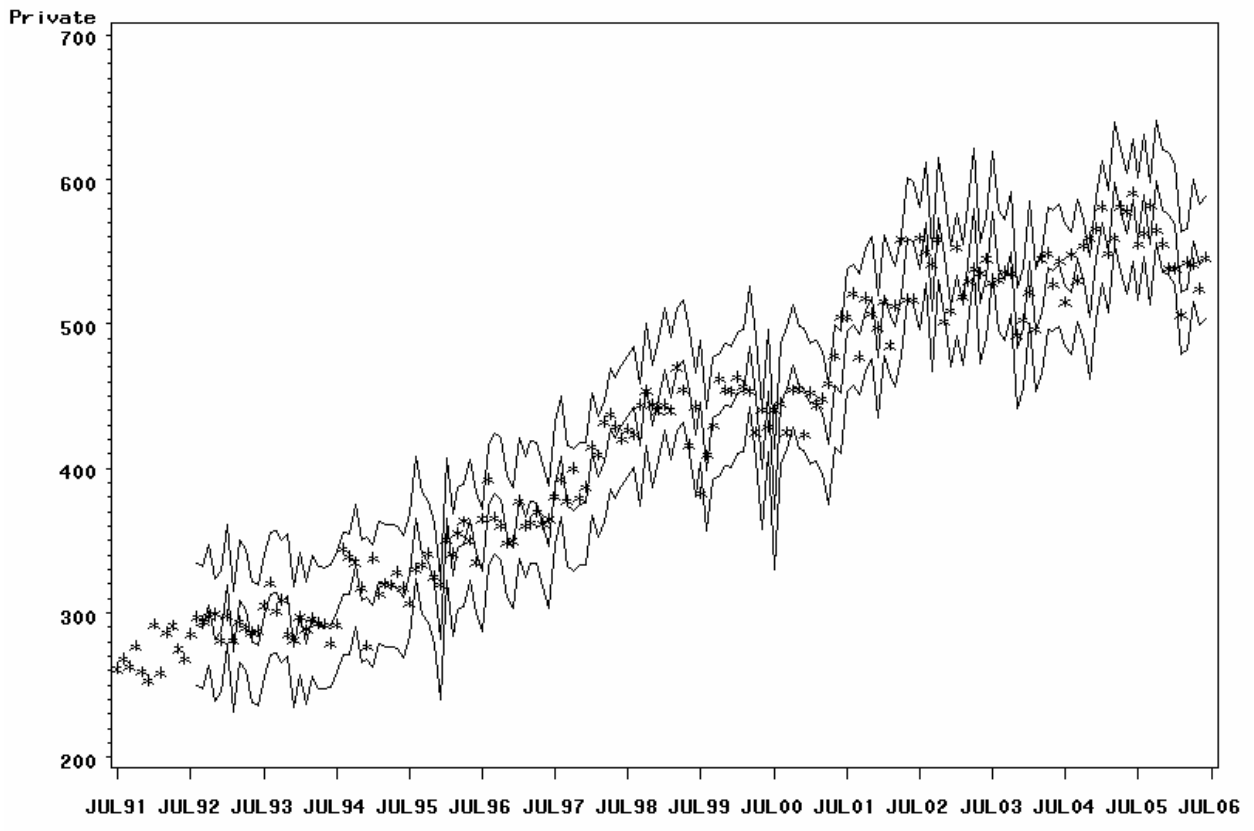


Figure #4a shows the number of private providers who provided Medicaid (waiver and regular program) family planning services (*) in a given month, based on Medicaid claims data. It also shows the trend predicted by the ARIMA model. See Data Table #4a in Appendix A for reference data.

Statistical Analysis: Figure #4a shows a plot of the number of private providers who provided Medicaid family planning services in a given month. An ARIMA model no longer fits these data. While initially the increases in the private providers could be attributed to the waiver, the continued increase in private providers in years subsequent to the waiver expansion is making it more difficult to fit a model that adequately explains the changes and associates them with the waiver.

Figure #4b shows a plot of the monthly Medicaid family planning clients served by private providers. An ARIMA model no longer fits these data. While initially the increases in the percent of Medicaid family planning clients seen by private providers could be attributed to the waiver, the continued increase in clients seen by private providers in years subsequent to the waiver expansion is making it more difficult to fit a model that adequately explains the changes and associates them with the waiver.

Figure #4b: Increase in Monthly Medicaid FP Clients Served by Private Providers

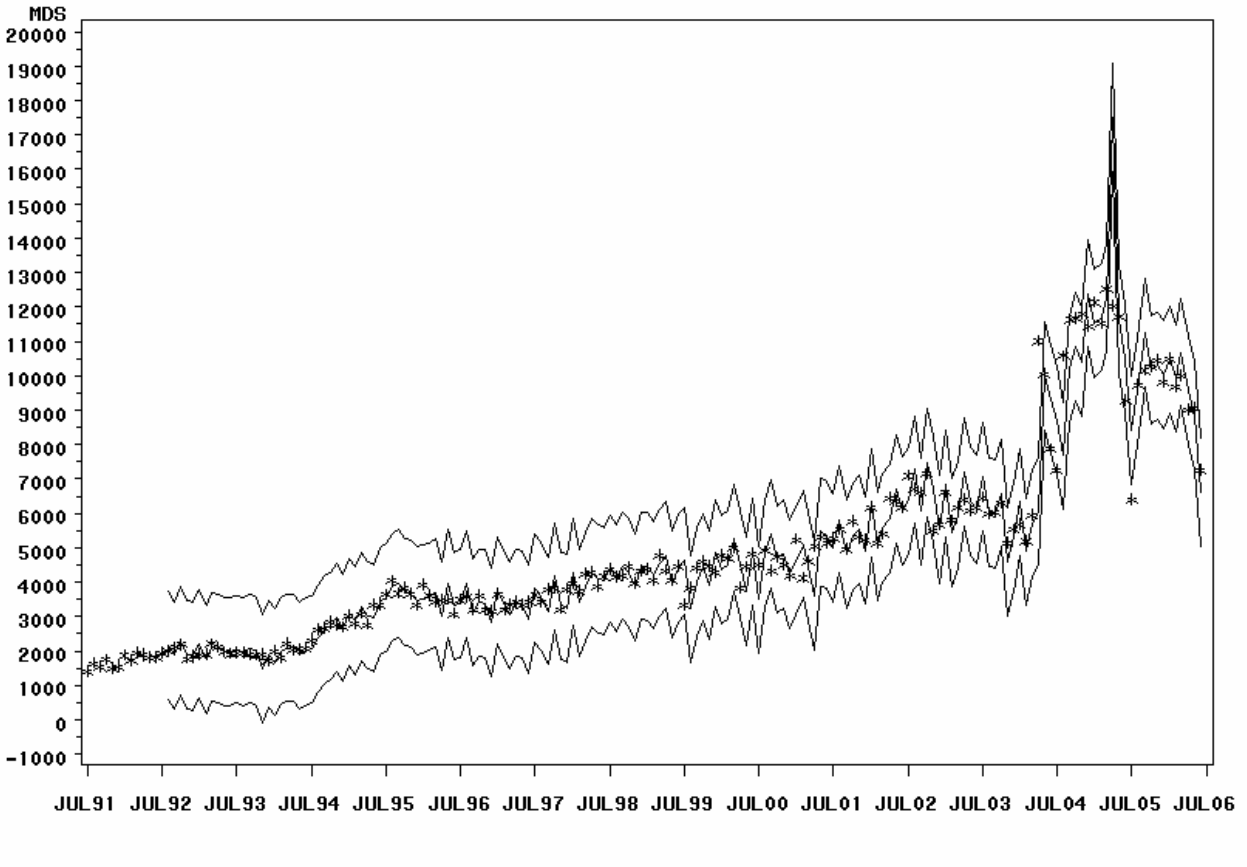


Figure #4b shows the number of women receiving Medicaid (waiver and regular program) family planning services (*) from a private provider in a given month, based on Medicaid claims data. It also shows the trend predicted by the ARIMA model. See Data Table #4b in Appendix A for reference data.

Discussion: Figure #4a shows a substantial increase in private provider participation from July 1991 through June 2005. Since the trend preceded both the original waiver and later expansion, the continued increase makes it difficult to fit a model that attributes these increases solely to the waiver. Also, fitting a statistical model is further made difficult by the unexplained (in the statistical sense) increase in private providers during SFYs 2001 through 2005. Figure #4b shows a more obvious effect of the waiver on the increase in the number of family planning clients seen by private providers. Again however, increases in the number of private clients after 2001 make it harder to attribute increases solely to the waiver.

The above analyses show that the waiver has been successful in its efforts to increase not only the number of participating private providers, but in the number of Medicaid family planning clients seen by those providers. This increase in the number of private providers and privately seen clients is important for several reasons. One is that the DHEC family planning clinics were

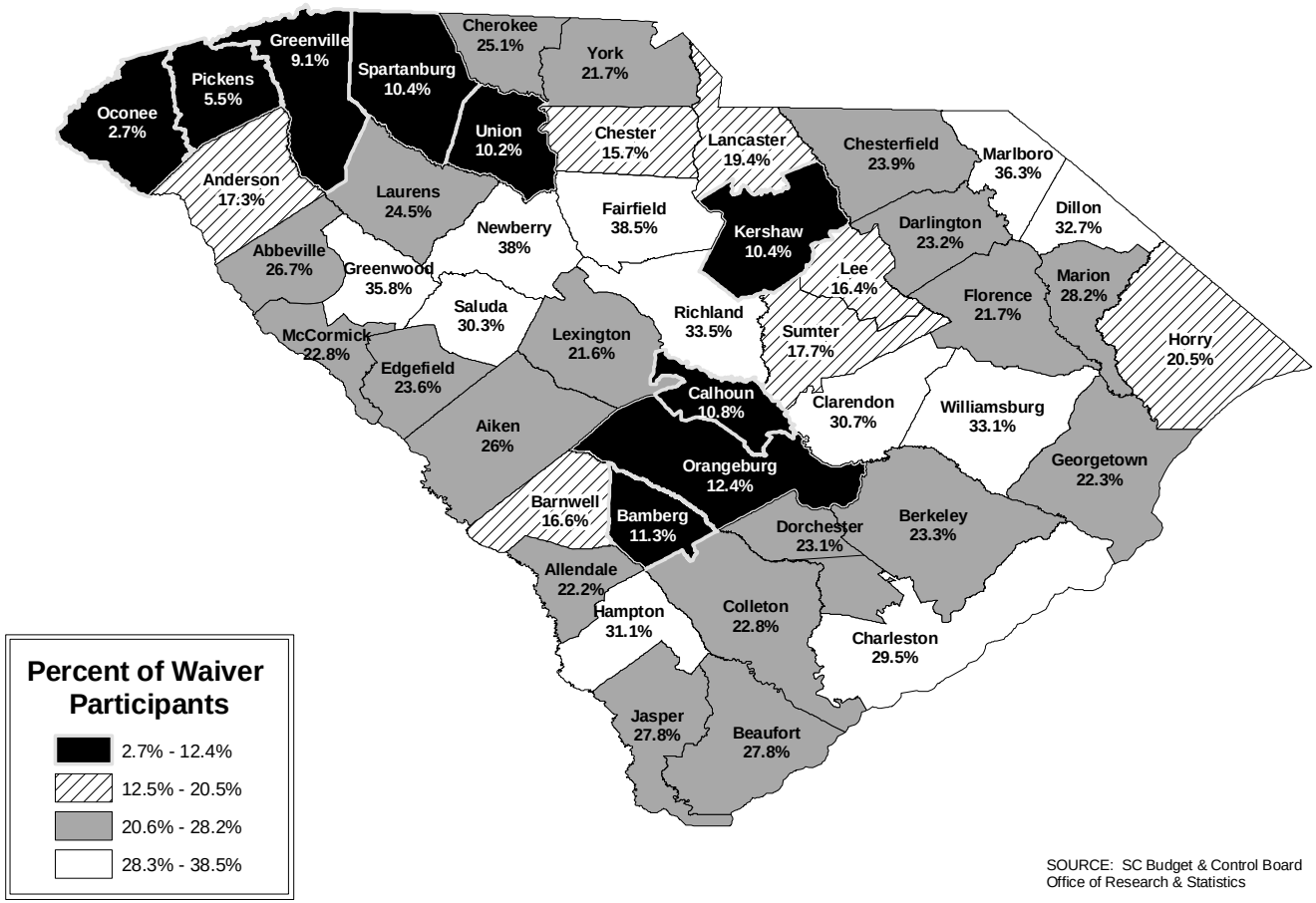
running at capacity prior to waiver implementation, so efforts to increase the total number of publicly supported family planning clients had to involve increased capacity in the private sector. A second reason is that DHEC clinics do not necessarily offer medical care related to complications due to family planning methods or follow-up for problems like an abnormal pap smear, a breast lump, infections, etc. Since the waiver does not cover such services, waiver participants already in a "medical home" for reproductive health are somewhat more likely to receive the care.

This issue of coverage for family planning related services was highlighted by the telephone survey of women and physicians (see more results from the 2006 surveys in the 1995-2005 Interim Evaluation Report):

- 87% of participants, 85% of enrollees, and 87% of eligible women said they would be interested in health coverage for medical follow-up for complications due to family planning methods or follow-up for problems like an abnormal pap smear, a breast lump, etc.
- When asked about what they disliked about the waiver program the most frequent complaint (21% of participants) was about service limits.
- Strong majorities of both public and private providers saw lack of coverage for referrals, follow-up and complications as barriers to providing services and said such coverage was very important.

Figure #4c shows the wide variation in the amount of privately provided family planning services across the state.

Figure #4c: Percent of Waiver Participants Who Received a FP Service from a Private Provider During FY 2006



SOURCE: SC Budget & Control Board
Office of Research & Statistics

OBJECTIVE #2: Increase the age at first birth and reduce inadequately spaced subsequent live births among all women eligible for family planning services under the waiver.

The primary activity of the waiver is to increase access to publicly funded family planning services. To make significant changes in fertility intentions and outcomes will require a more comprehensive approach than just increasing access to services.

Hypothesis 5: The mother's age at first birth among women eligible for services under the waiver will increase following implementation of the waiver.

Analyses will include:

- assessing changes in the age at first birth among women eligible for the waiver;
- assessing changes in the age at first birth among women participating in the waiver; and
- determining the effect other variables, such as mother's age, number of previous births, and amount and type of services received under the waiver.

Statistical Analysis: Figure #5a shows the increase in age of first birth for women covered by OCWI Medicaid (the population targeted by the waiver) during the time period between the waiver expansion and present. (Obviously, the original waiver for which only postpartum women qualified would not be expected to affect age at first birth.) While a model fits these data through FY 2005, more recent data make it difficult to fit a model that attributes the increase in age of first birth solely to the waiver. Figure #5b documents the average age at first birth for women whose delivery was covered by regular Medicaid, OCWI Medicaid, and all others, and indicates more general trends in age of first birth.

Figure #5a: Age at First Birth for Women Covered by OCWI Medicaid

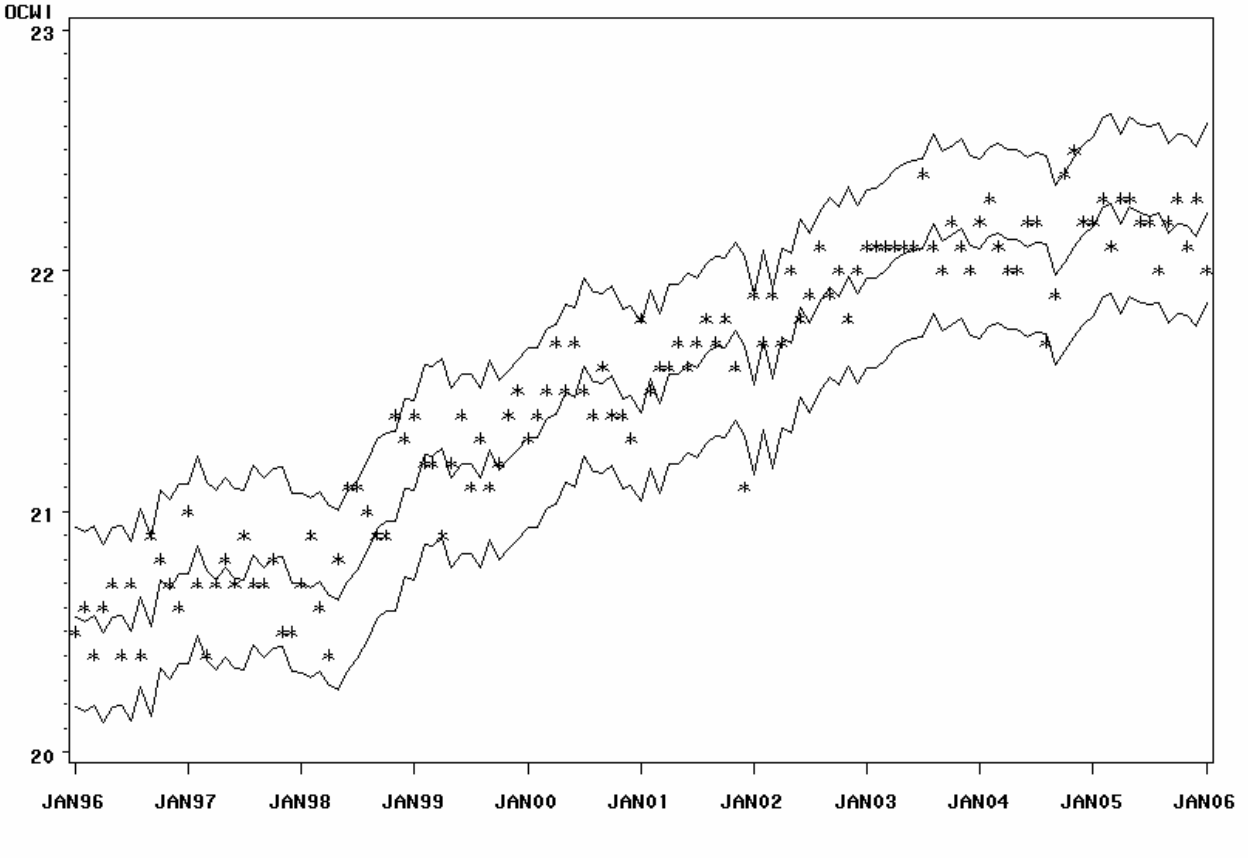


Figure #5a shows the average age at first birth, for women whose delivery was covered by OCWI Medicaid, in a given month, based on Medicaid claims and birth certificate data. It also shows the trend predicted by the ARIMA model (+). See Data Table #5a in Appendix A for reference data.

Figure #5b: Age at First Birth for Regular Medicaid, OCWI Medicaid, & All Other

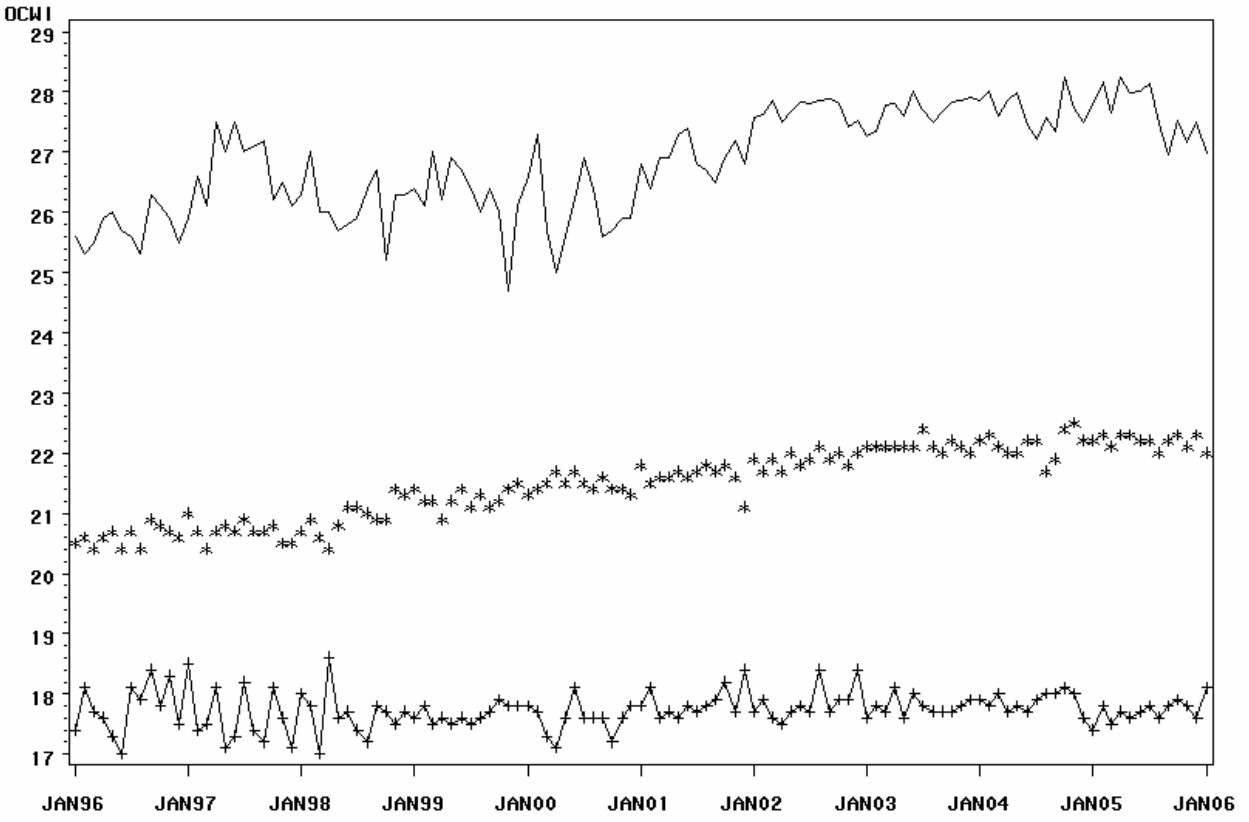


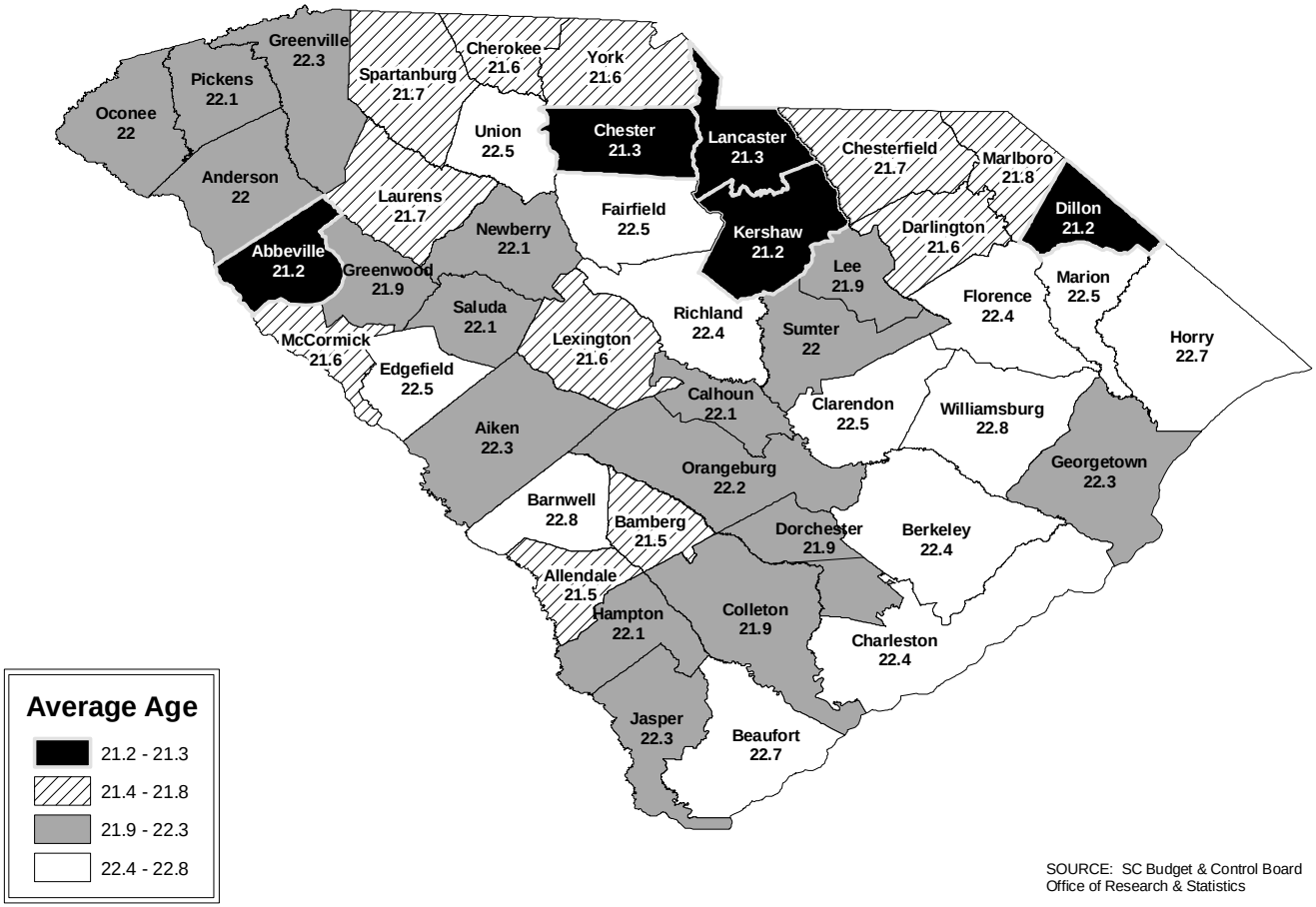
Figure #5b shows the average age at first birth for women whose delivery was covered by regular Medicaid (+), OCWI Medicaid (*), and all other(top line), in a given month, based on Medicaid claims and birth certificate data. See Data Table #5b in Appendix A for reference data.

Discussion: The age at first birth for women covered by OCWI Medicaid has increased by over one and a half years from 1996 through 2006, growing from 20.5 years of age to 22 years of age. There are two possible explanations that prevent this increase from being attributed solely to the waiver. One is that over the same time period the age at first birth for women not covered by Medicaid also increased by over two years, from 25.6 to 27.7 (in 2005) years of age during this same time frame. So the increase in age for OCWI women might just reflect a change in social norms. Another potential explanation for the increase in age at first birth for women covered by OCWI Medicaid might be that, as more children have become covered by expansions of the regular Medicaid program (including the "Partners for a Healthy Tomorrow," South Carolina's Title XXI SCHIP Medicaid expansion), teen mothers that were included in the statistics for the OCWI program in 1996 might now be included in the statistics for the regular Medicaid program. This would have the effect of increasing the average age for the remaining OCWI clients. Regardless, this trend achieves the objective of the waiver. While celebrating

this progress, the difference in age at first birth for women with different family incomes remains striking (see Figure #5b). The difference in age at first birth between women on Medicaid (OCWI and regular) and all other women shows how much more change is potentially possible.

Figure #5c shows the variation in the age at first birth for women at or below 185% of poverty across the state.

Figure #5c: Average Age at First Birth for Women Below 185% of Poverty and State Medicaid Average - SFY 2006



SOURCE: SC Budget & Control Board
Office of Research & Statistics

Hypothesis 6: The rate of inadequate inter-pregnancy intervals among women eligible for services under the waiver will decline following implementation of the waiver.

Analyses will include:

- assessing changes in the birth to conception interval among women eligible for the waiver;
- assessing changes in the birth to conception interval among women participating in the waiver;
- determining the effect other variables, such as mother's age, number of previous births, and amount and type of services received under the waiver.

Per a request from CMS staff, analysis of the data is included for birth to conception intervals of less than 18 months and less than 24 months.

Statistical Analyses: An ARIMA model no longer fits the data (see Figure #6a for the data). Through SFY 2005, an ARIMA (3,0,0) model that, including the intervention variable for the original waiver, best fit the data for subsequent conceptions within 18 months. (The original waiver targeted postpartum women, so it and not the later expansion would be expected to affect birth interval.) The intervention variable for the original waiver was not statistically significant (t-ratio of -0.83, p=0.41).

Figure #6b shows the ARIMA (4,0,0) model which, including the intervention variable for the original waiver, best fit the data for subsequent conceptions within 24 months. The intervention variable for the original waiver was not statistically significant (t-ratio of 0.84, p=0.40).

Figure #6a: Percent of Repeat Births Conceived Within 18 Months

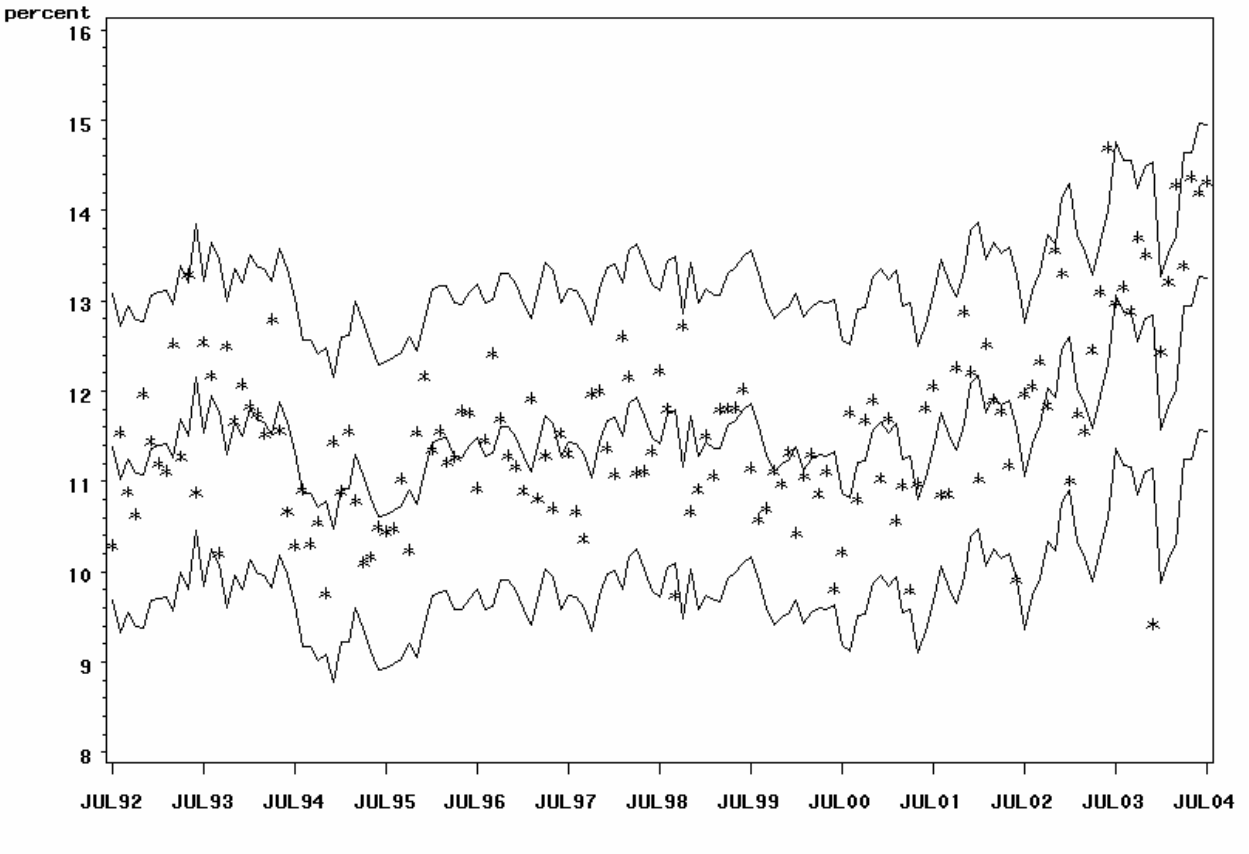


Figure #6a shows the percent of Medicaid women giving birth in a month who later conceived again within 18 months (*), based on Medicaid claims, hospital discharge, and birth certificate data. It also shows the trend predicted by the ARIMA model. See Data Table #6a in Appendix A for reference data.

Figure #6b: Percent of Repeat Births Conceived Within 24 Months

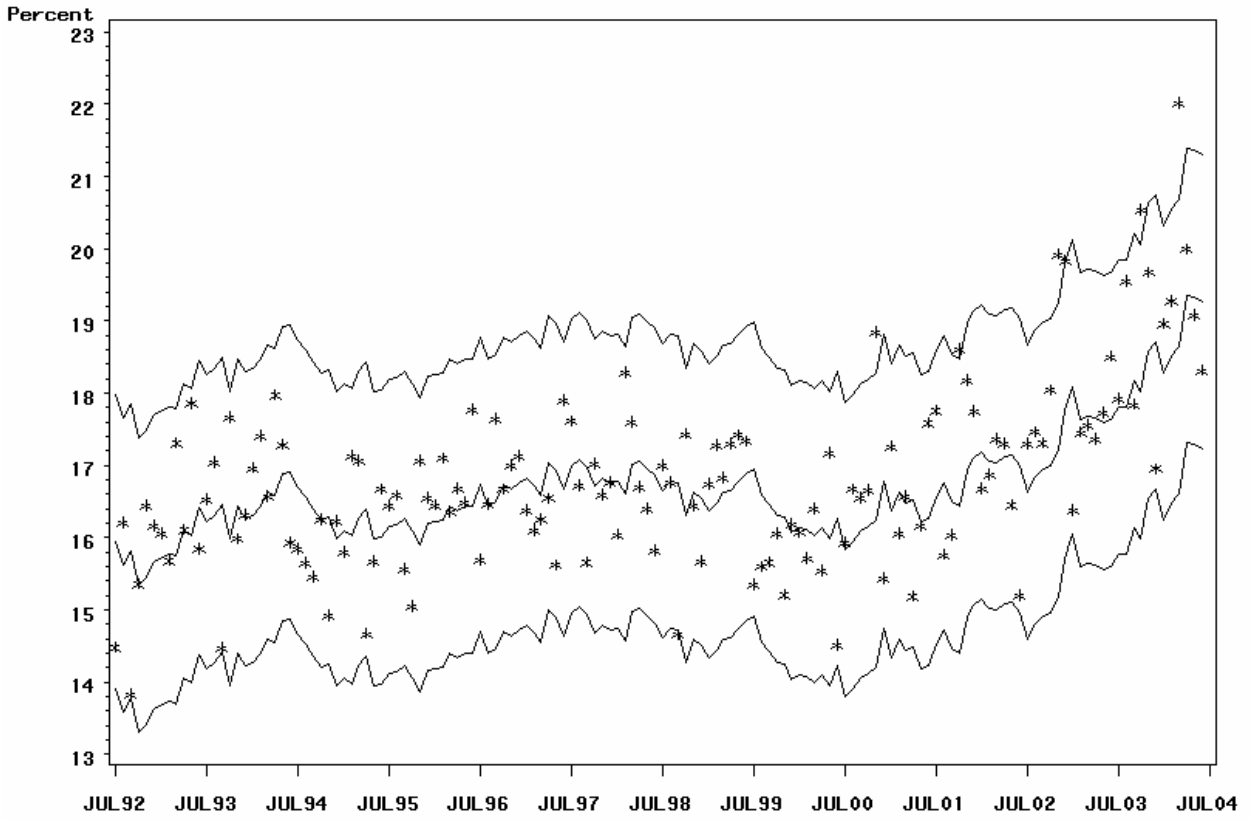


Figure #6b shows the percent of Medicaid women giving birth in a month who later conceived again within 24 months (*), based on Medicaid claims, hospital discharge, and birth certificate data. It also shows the trend predicted by the ARIMA model. See Data Table #6b in Appendix A for reference data.

Discussion: Prior analyses have demonstrated that the original waiver had a significant effect in lowering the percent of OCWI women who later gave birth within 18 and 24 months. These data indicate that the waiver has been successful in reducing rapid repeat pregnancies (since a birth interval of 18-24 months roughly translates to a birth to conception interval of 9-15 months). Recent research published in the Journal of the American Medical Association has demonstrated that birth to conception intervals of less than 18 months are associated with an increased prevalence of low birth weight, preterm birth and small for gestational age birth. In keeping with current literature, these analyses looked at birth to conception intervals within 18 and 24 months respectively. Here, there is no effect of the waiver with more recent data indicating an increase in the number of births conceived within 18 and 24 months.

Figure #6c shows a plot of repeat conceptions to waiver participants within 18 months. Note that this percent has decreased from 6.9% in 1995 to 4.2% in 2003. Of concern is the fact that

between 2003 and 2004, the percent of repeat conceptions within 18 months to waiver participants has increased to 5.1%. However, this percent is substantially lower than the percent within 18 months for all Medicaid women (13.1% in 2004).

Figure #6d shows a plot of repeat conceptions to waiver participants within 24 months. This percent had also decreased over time (from 11.1% in 1995 to 7.0% in 2003), but has increased to 8.4% in 2004. Again, in comparison it is substantially lower than the repeat rate within 24 months for all Medicaid women (19.2%).

Additional analyses on the relationship between waiver participation and increased birth to conception interval, among other outcomes, were performed in the spring of 2007. Results indicate that greater participation in Medicaid family planning waiver services is associated with longer birth to conception intervals. A full report on these analyses can be in Appendix B.

Figures #6e and #6f show the wide variation across the state in the repeat pregnancy rate (18 month inter-pregnancy interval) for all OCWI women and for waiver participants, respectively.

Figure #6c: Repeat Births Conceived Within 18 Months to Waiver Participants

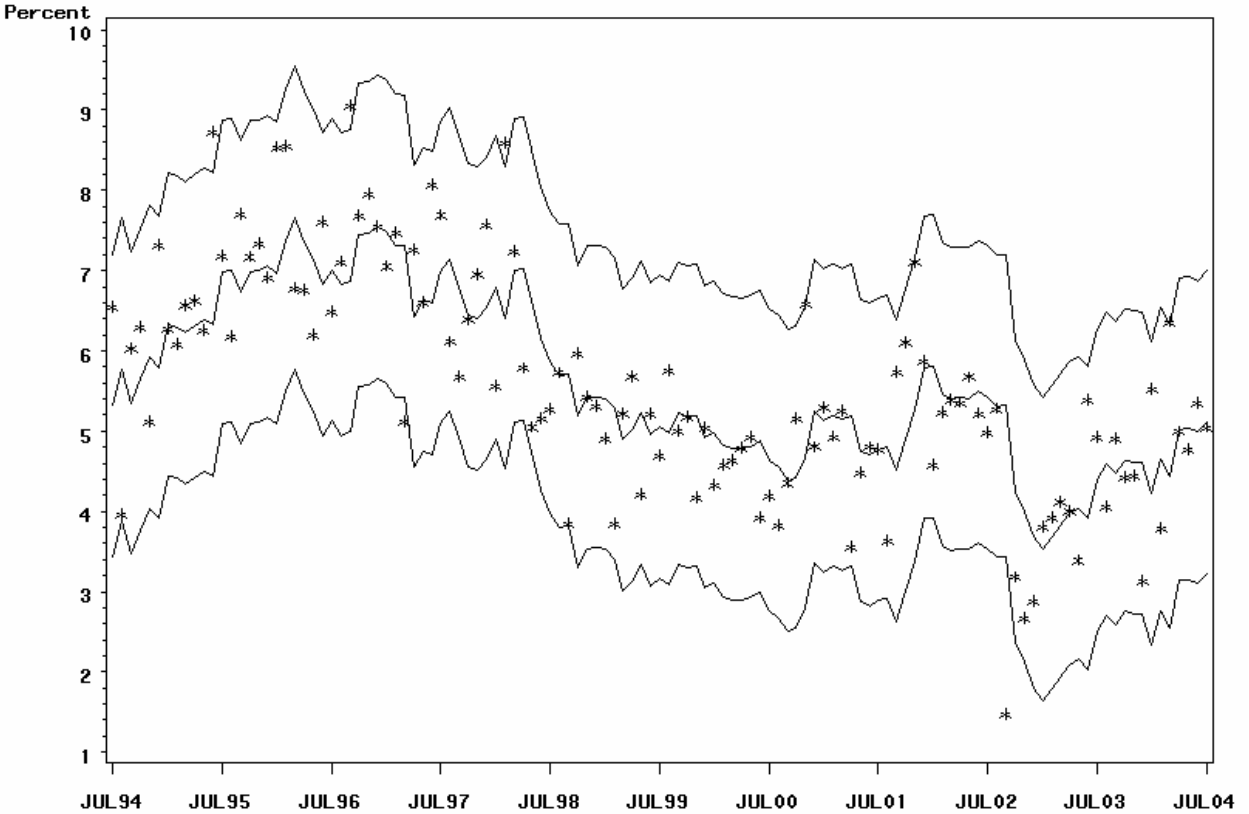


Figure #6c shows the percent of waiver participants giving birth in a month who conceived again within 18 months (*), based on Medicaid claims, hospital discharge, and birth certificate data. It also shows the trend predicted by the ARIMA model. See Data Table #6c in Appendix A for reference data.

Figure #6d: Percent of Repeat Births Conceived Within 24 Months to Waiver Participants

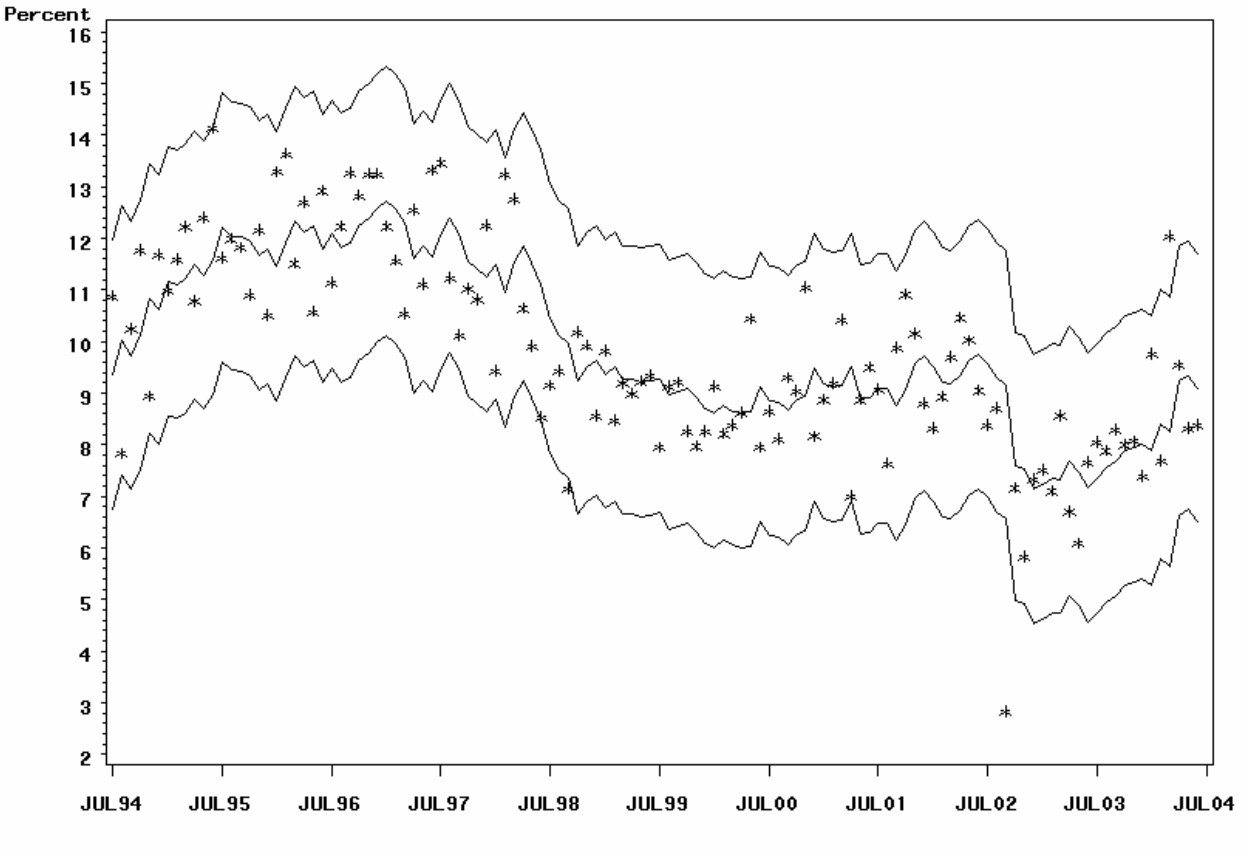
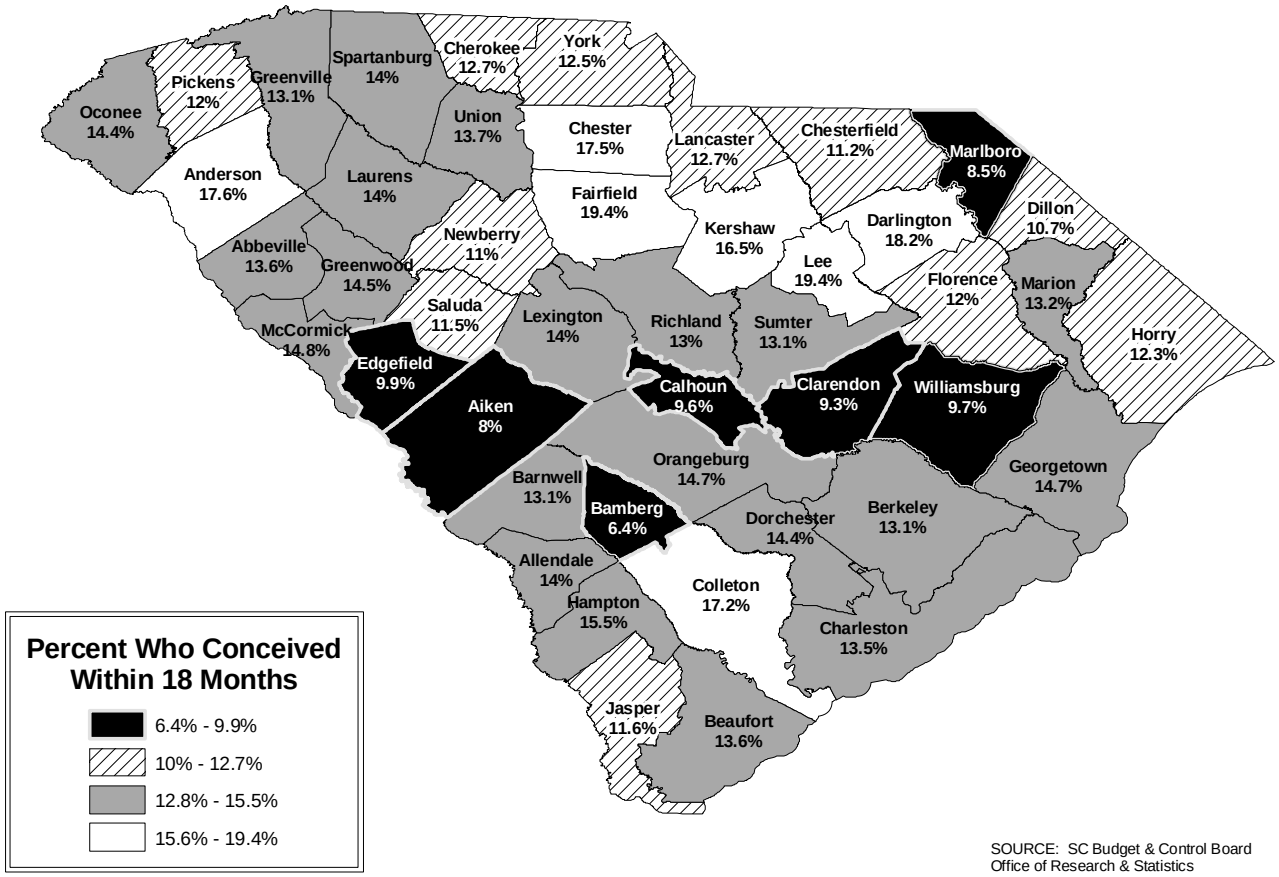


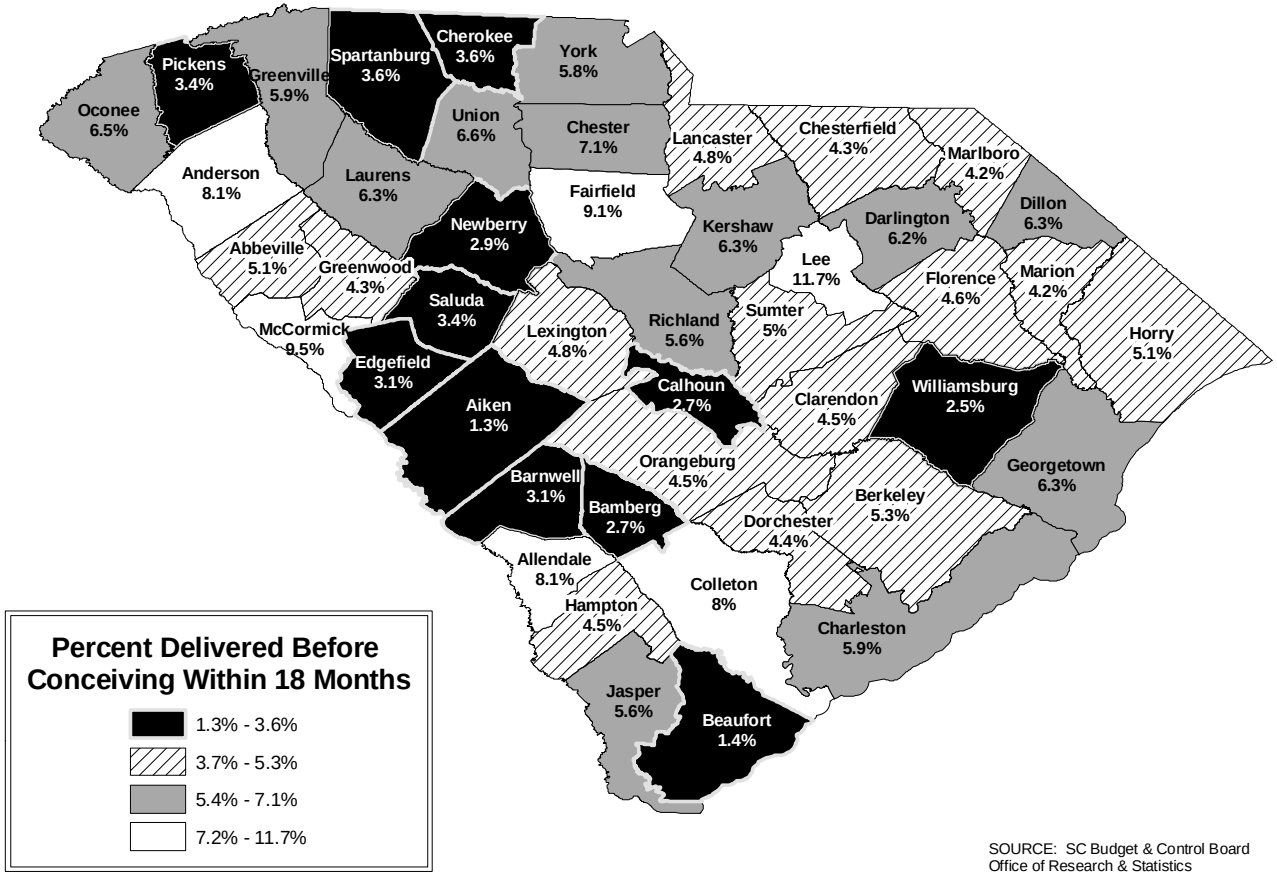
Figure #6d shows the percent of waiver participants giving birth in a month who later conceived again within 24 months (*), based on Medicaid claims, hospital discharge, and birth certificate data. It also shows the trend predicted by the ARIMA model. See Data Table #6d in Appendix A for reference data.

Figure #6e: Percent of OCWI Women Who Delivered in 2004 Who Conceived Within 18 Months



SOURCE: SC Budget & Control Board
Office of Research & Statistics

Figure #6f: Percent of OCWI Women Who Delivered in 2004 With a FP Waiver Service Before Conceiving Within 18 Months



SOURCE: SC Budget & Control Board
Office of Research & Statistics

OBJECTIVE #3: Reduce the number of unintended and unwanted pregnancies among women eligible for Medicaid.

The primary activity of the waiver is to increase access to publicly funded family planning services. To make significant changes in fertility intentions would require a more comprehensive approach than just increasing access to services. Pregnancy intention is a complex construct that is not solely determined by access to family planning services. Given the weaker link between the primary activity of the waiver and the accomplishment of this objective, data will be analyzed and reported for the following hypothesis, but failure to support the hypothesis is not an indication that the waiver is not accomplishing its primary activity.

Hypothesis 7: The rate of unintended (mistimed, i.e., "too soon," and unwanted) pregnancies reported by women eligible for Medicaid family planning services under the waiver will gradually decrease after implementation of the waiver.

Analyses will include:

- assessing changes in the rate of unintended pregnancies reported by women eligible for the waiver; and
- determining the effect other variables on intendedness, such as maternal characteristics and type of family planning method used prior to pregnancy among women eligible for the waiver.

Discussion: None of the data analyses since the beginning of the evaluation has found any effect of the waiver on pregnancy intention. As a result, data on pregnancy intention will be updated only every three years. The data presented in this report is copied from the FY 2004 report.

Figures #7a and #7b show that pregnancy intention in the target group (50-185% FPL) has not consistently declined. Figures #7c and #7d show that participation in the waiver appears to have no effect on pregnancy intention. Figures #7e, #7f, and #7g highlight factors associated with unwanted pregnancies – previous children, race, and marital status. Efforts to reduce unwanted pregnancies will have to focus on women in these groups to produce results.

Figure #7a: Percent of Unintended Pregnancies by Poverty (SC PRAMS)

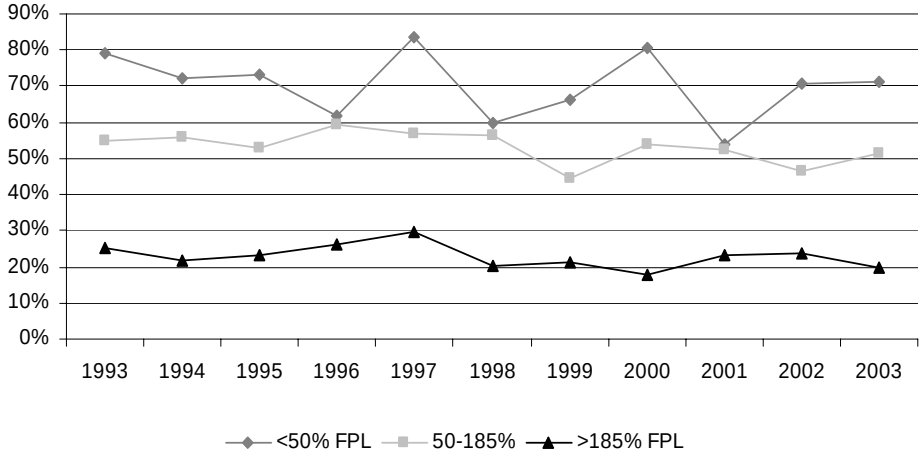


Figure #7b: Percent of Unwanted Pregnancies by Poverty (SC PRAMS)

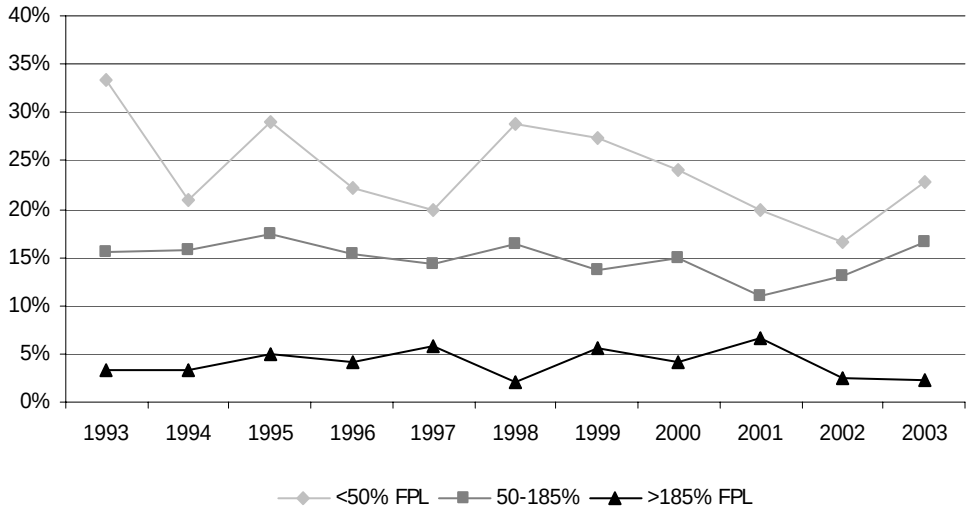


Figure #7c: Percent of Unintended Pregnancies by Waiver Participation (<50% FPL)

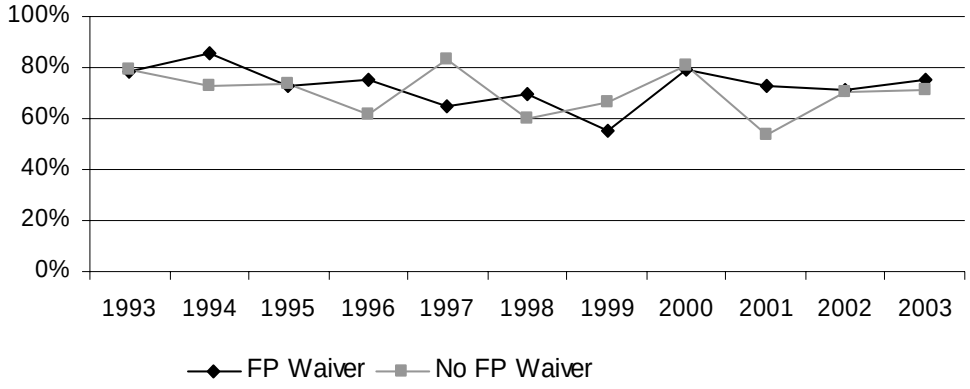


Figure #7d: Percent of Unintended Pregnancies by Waiver Participation (50-185% FPL)

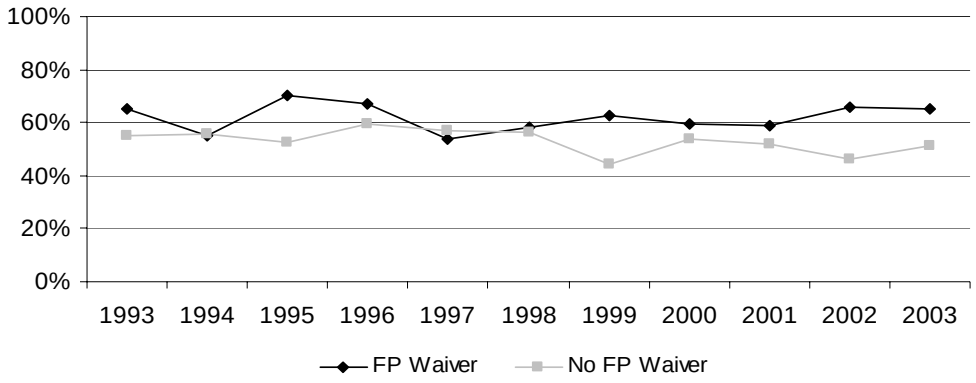


Figure #7e: Among 50-185% FPL, Percent Unwanted Pregnancies by Parity (SC PRAMS)

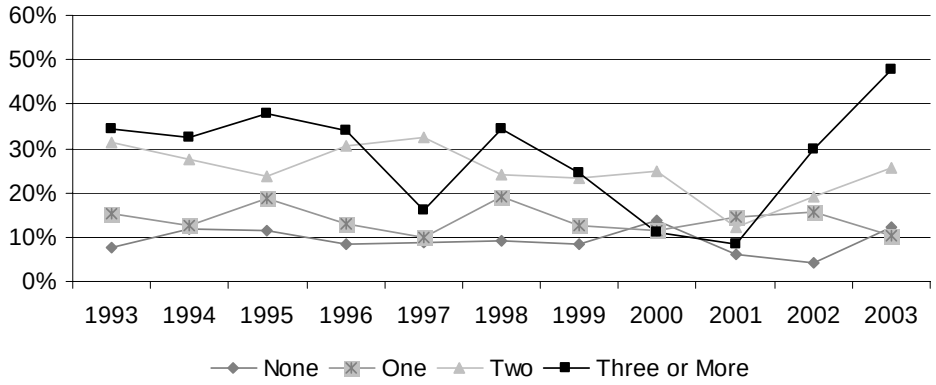


Figure #7f: Among 50-185% FPL, Percent Unwanted by Race (SC PRAMS)

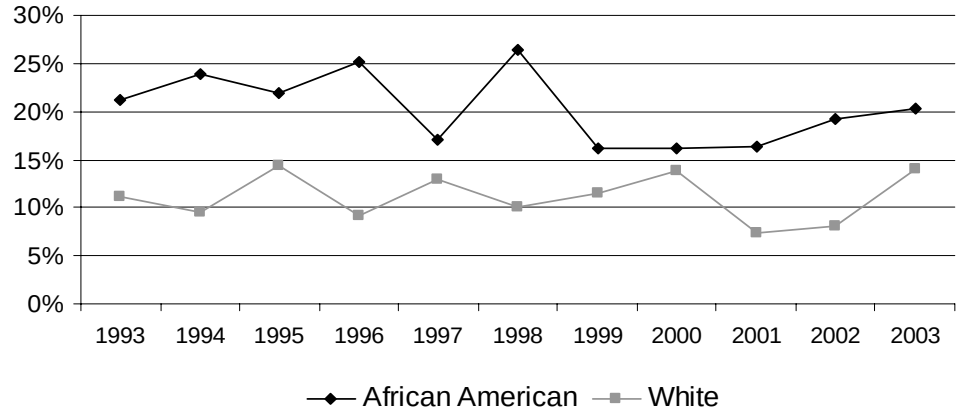
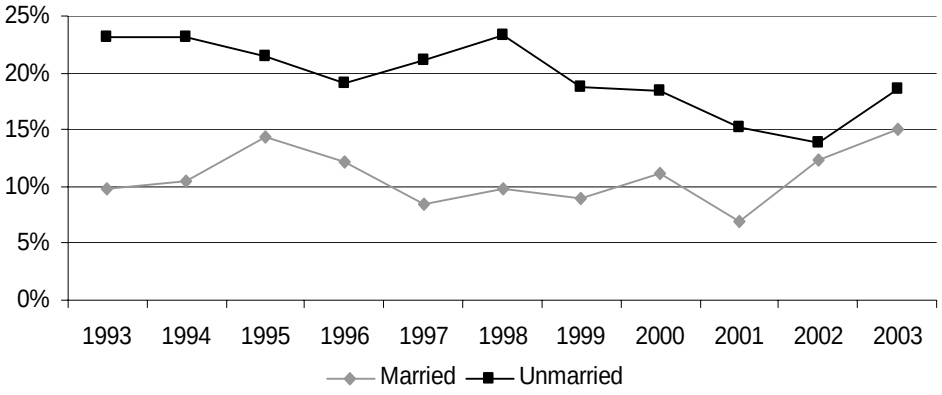


Figure #7g: Among 50-185% FPL, Percent Unwanted by Marital Status (SC PRAMS)



OBJECTIVE #4: Estimate the overall savings in Medicaid spending attributable to providing family planning services to women with family income at or below 185% of poverty.

Hypothesis 8: Family planning services delivered to women who qualify for Medicaid under the waiver will produce net Medicaid program savings, with the costs of family planning service delivery outweighed by the savings associated with averting births (where the costs of prenatal, delivery and postpartum care are considered).

Discussion: The analyses for this hypothesis are based on the revised methodology negotiated in 2001 among CMS, SCDHHS, and the evaluator; modifications contained in the 2005-2007 Terms and Conditions; and modifications requested during the current renewal period. These include:

- Only live births are used in the fertility rates.
- Given the inability to precisely estimate the base year fertility rate of women at or below 185% of poverty but not eligible for Medicaid, it is more appropriate to use the average of the base year fertility rate for all women, and for all women with family income at or below 185% of poverty. The former likely underestimates births averted while the latter likely overestimates births averted.
- All calculations (specified in the 2005 Terms and Conditions) subtracts actual births from expected births for a 12 month period. Previous underestimates (from using actual births from 15 months) are corrected for. This was applied to all years, and on a CY basis as specified in the renewal period.
- Costs averted (per CMS requests for the renewal period) are now also termed budget limits. In addition, the expenditures as a percent of the budget limit are presented.

Using the revised formula, Table #8.2 more accurately estimates net savings due to the waiver. Over the course of the SC waiver, it has been budget neutral. From CY 1995 - CY 2006, the

Medicaid program has saved at least $200 million due to the waiver. Furthermore, CY 2006 is budget neutral. While federal costs total $11.6 million, federal savings are $21.3 million. Additionally, the costs per participant for calendar year 2006 are also down, and indicate the implementation of cost control measures implemented in 2005 are reducing per participant costs. The lower per person costs also result in a lower annual budget limit percentage, when compared to CYs 2002-2005. In the past, CMS staff have questioned annual increases in per participant spending that exceed the Medical Consumer Price Index. Figure #8a compares the trend in actual expenditures per participant to the trend projected by the MCPI.

Figure #8a: Trend in Waiver Costs, Per Participant

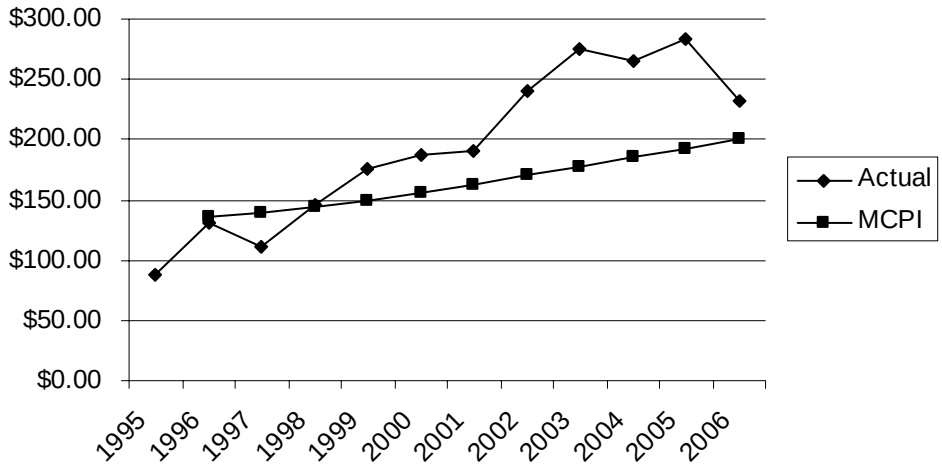


TABLE #8.2: BUDGET NEUTRALITY CALCULATIONS

CY 1995	Age 15-19	Age 20-24	Age 25-29	Age 30-34	Age 35-39	Age 40-44	Total	FFP
Estimated Base Year Delivery Rate	100.25	136.2	101.1	52.05	20.75	3.7		
Waiver Participants	4389	5897	2322	1000	328	44	13980	
Expected Births	440.0	803.2	234.8	52.1	6.8	0.2	1536.9	
Actual Births	279	288	91	28	9	0	695	
Births Averted	161.0	515.2	143.8	24.1	-2.2	0.2	841.9	
Average Prenatal/Delivery Cost	$2,921	$2,937	$3,122	$3,137	$3,279	$3,331		
Average Birth to 1 Yr Cost	$4,616	$3,318	$3,690	$3,676	$3,435	$6,418		
Total Costs Averted	$1,213,436	$3,222,397	$979,254	$163,853	-$14,731	$1,587	$5,565,796	$3,936,688
Total Waiver Expenditures							$1,233,875	$1,110,487
% Annual Budget Limit								28%

CY 1996	Age 15-19	Age 20-24	Age 25-29	Age 30-34	Age 35-39	Age 40-44	Total	FFP
Estimated Base Year Delivery Rate	100.25	136.2	101.1	52.05	20.75	3.7		
Waiver Participants	5805	8883	3840	1662	596	98	20884	
Expected Births	582.0	1209.9	388.2	86.5	12.4	0.4	2279.3	
Actual Births	429	536	158	66	23	3	1215	
Births Averted	153.0	673.9	230.2	20.5	-10.6	-2.6	1064.3	
Average Prenatal/Delivery Cost	$3,114	$3,174	$3,387	$3,459	$3,782	$3,888		
Average Birth to 1 Yr Cost	$3,826	$3,209	$3,659	$3,730	$4,842	$4,577		
Total Costs Averted	$1,061,482	$4,301,278	$1,622,158	$147,426	-$91,699	-$22,326	$7,018,319	$4,961,249
Total Waiver Expenditures							$2,747,499	$2,472,749
% Annual Budget Limit								50%

CY 1997	Age 15-19	Age 20-24	Age 25-29	Age 30-34	Age 35-39	Age 40-44	Total	FFP
Estimated Base Year Delivery Rate	100.25	136.2	101.1	52.05	20.75	3.7		
Waiver Participants	11993	17596	9549	5153	2325	564	47180	
Expected Births	1202.3	2396.6	965.4	268.2	48.2	2.1	4882.8	
Actual Births	634	845	255	103	33	5	1875	
Births Averted	568.3	1551.6	710.4	165.2	15.2	-2.9	3007.8	
Average Prenatal/Delivery Cost	$3,219	$3,215	$3,390	$3,562	$3,797	$3,978		
Average Birth to 1 Yr Cost	$3,798	$3,552	$3,588	$3,651	$4,725	$6,804		
Total Costs Averted	$3,987,749	$10,499,509	$4,957,198	$1,191,686	$129,907	-$31,410	$20,734,640	$14,593,039
Total Waiver Expenditures							$5,554,273	$4,998,846
% Annual Budget Limit								**34%**

CY 1998	Age 15-19	Age 20-24	Age 25-29	Age 30-34	Age 35-39	Age 40-44	Total	FFP
Estimated Base Year Delivery Rate	100.25	136.2	101.1	52.05	20.75	3.7		
Waiver Participants	14559	24283	14047	7809	3884	1080	65662	
Expected Births	1459.5	3307.3	1420.2	406.5	80.6	4.0	6678.1	
Actual Births	969	1357	522	192	62	4	3106	
Births Averted	490.5	1950.3	898.2	214.5	18.6	0.0	3572.1	
Average Prenatal/Delivery Cost	$3,253	$3,313	$3,489	$3,545	$3,779	$4,020		
Average Birth to 1 Yr Cost	$4,185	$3,444	$3,936	$4,205	$4,631	$6,773		
Total Costs Averted	$3,648,635	$13,178,478	$6,668,776	$1,662,053	$156,367	-$43	$25,314,266	$17,755,426
Total Waiver Expenditures							$10,907,078	$9,816,370
% Annual Budget Limit								**55%**

CY 1999	Age 15-19	Age 20-24	Age 25-29	Age 30-34	Age 35-39	Age 40-44	Total	FFP
Estimated Base Year Delivery Rate	100.25	136.2	101.1	52.05	20.75	3.7		
Waiver Participants	13379	25556	14551	7983	4342	1307	67118	
Expected Births	1341.2	3480.7	1471.1	415.5	90.1	4.8	6803.5	
Actual Births	843	1505	549	194	72	5	3168	
Births Averted	498.2	1975.7	922.1	221.5	18.1	-0.2	3635.5	
Average Prenatal/Delivery Cost	$3,395	$3,465	$3,613	$3,733	$4,061	$4,502		
Average Birth to 1 Yr Cost	$4,297	$4,082	$4,204	$4,886	$5,384	$6,774		
Total Costs Averted	$3,832,499	$14,910,813	$7,208,103	$1,909,239	$170,921	-$1,850	$28,029,725	$19,587,172
Total Waiver Expenditures							$11,904,448	$10,714,003
% Annual Budget Limit								**55%**

CY 2000	Age 15-19	Age 20-24	Age 25-29	Age 30-34	Age 35-39	Age 40-44	Total	FFP
Estimated Base Year Delivery Rate	100.25	136.2	101.1	52.05	20.75	3.7		
Waiver Participants	12148	25879	14110	7669	4427	1523	65756	
Expected Births	1217.8	3524.7	1426.5	399.2	91.9	5.6	6665.7	
Actual Births	662	1435	503	205	53	2	2860	
Births Averted	555.8	2089.7	923.5	194.2	38.9	3.6	3805.7	
Average Prenatal/Delivery Cost	$3,602	$3,692	$3,815	$3,988	$4,288	$4,563		
Average Birth to 1 Yr Cost	$4,756	$4,367	$4,168	$5,309	$4,721	$9,255		
Total Costs Averted	$4,645,686	$16,841,052	$7,372,468	$1,805,212	$350,092	$50,230	$31,064,739	$21,767,063
Total Waiver Expenditures							$11,847,450	$10,662,705
% Annual Budget Limit								**49%**

CY 2001	Age 15-19	Age 20-24	Age 25-29	Age 30-34	Age 35-39	Age 40-44	Total	FFP
Estimated Base Year Delivery Rate	100.25	136.2	101.1	52.05	20.75	3.7		
Waiver Participants	11619	26870	13372	7587	4470	1725	65643	
Expected Births	1164.8	3659.7	1351.9	394.9	92.8	6.4	6670.4	
Actual Births	625	1417	508	176	41	13	2780	
Births Averted	539.8	2242.7	843.9	218.9	51.8	-6.6	3890.4	
Average Prenatal/Delivery Cost	$3,708	$3,776	$3,870	$3,982	$4,173	$4,821		
Average Birth to 1 Yr Cost	$5,050	$4,302	$4,587	$4,862	$4,834	$8,848		
Total Costs Averted	$4,727,610	$18,116,482	$7,136,940	$1,935,981	$466,135	-$90,455	$32,292,694	$22,659,783
Total Waiver Expenditures							$13,472,205	$12,124,985
% Annual Budget Limit								**54%**

CY 2002	Age 15-19	Age 20-24	Age 25-29	Age 30-34	Age 35-39	Age 40-44	Total	FFP
Estimated Base Year Delivery Rate	100.25	136.2	101.1	52.05	20.75	3.7		
Waiver Participants	10757	26707	13344	7558	4288	1969	64623	
Expected Births	1078.4	3637.5	1349.1	393.4	89.0	7.3	6554.6	
Actual Births	612	1544	558	198	68	8	2988	
Births Averted	466.4	2093.5	791.1	195.4	21.0	-0.7	3566.6	
Average Prenatal/Delivery Cost	$4,328	$4,328	$4,395	$4,421	$4,732	$5,184		
Average Birth to 1 Yr Cost	$5,028	$4,764	$5,034	$5,696	$4,927	$6,822		
Total Costs Averted	$4,363,538	$19,034,042	$7,459,078	$1,976,800	$202,607	-$8,581	$33,027,485	$22,940,891
Total Waiver Expenditures							16,607,051	$14,946,346
% Annual Budget Limit								**65%**

CY 2003	Age 15-19	Age 20-24	Age 25-29	Age 30-34	Age 35-39	Age 40-44	Total	FFP
Estimated Base Year Delivery Rate	100.25	136.2	101.1	52.05	20.75	3.7		
Waiver Participants	10276	27287	13386	7449	4193	2048	64639	
Expected Births	1030.2	3716.5	1353.3	387.7	87.0	7.6	6582.3	
Actual Births	539	1819	613	199	54	13	3237	
Births Averted	491.2	1897.5	740.3	188.7	33.0	-5.4	3345.3	
Average Prenatal/Delivery Cost	$4,823	$4,751	$4,739	$4,902	$5,335	$5,579		
Average Birth to 1 Yr Cost	$5,704	$5,057	$5,282	$5,401	$6,448	$7,005		
Total Costs Averted	$5,170,536	$18,610,576	$7,418,793	$1,944,387	$388,895	-$68,235	$33,464,951	$23,860,510
Total Waiver Expenditures							$16,555,878	$14,900,290
% Annual Budget Limit								**62%**

CY 2004	Age 15-19	Age 20-24	Age 25-29	Age 30-34	Age 35-39	Age 40-44	Total	FFP
Estimated Base Year Delivery Rate	100.25	136.2	101.1	52.05	20.75	3.7		
Waiver Participants	11073	27662	13502	7226	3876	2083	65422	
Expected Births	1110.1	3767.6	1365.1	376.1	80.4	7.7	6706.9	
Actual Births	597	1792	651	204	59	6	3309	
Births Averted	513.1	1975.6	714.1	172.1	21.4	1.7	3397.9	
Average Prenatal/Delivery Cost	$4,944	$4,894	$4,969	$5,005	$5,179	$5,405		
Average Birth to 1 Yr Cost	$5,739	$5,629	$5,290	$5,227	$7,605	$6,334		
Total Costs Averted	$5,481,108	$20,788,864	$7,325,462	$1,761,063	$273,923	$20,040	$35,650,460	$25,433,038
Total Waiver Expenditures							$19,248,743	$17,323,869
% Annual Budget Limit								**68%**

CY 2005	Age 15-19	Age 20-24	Age 25-29	Age 30-34	Age 35-39	Age 40-44	Total	FFP
Estimated Base Year Delivery Rate	100.25	136.2	101.1	52.05	20.75	3.7		
Waiver Participants	10623	28064	14152	7201	3797	2082	65919	
Expected Births	1065.0	3822.3	1430.8	374.8	78.8	7.7	6779.3	
Actual Births	617	1991	773	235	60	7	3683	
Births Averted	448.0	1831.3	657.8	139.8	18.8	0.7	3096.3	
Average Prenatal/Delivery Cost	$5,095	$5,050	$5,105	$5,065	$5,655	$5,377		
Average Birth to 1 Yr Cost	$5,197	$5,109	$5,109	$5,947	$5,831	$5,644		
Total Costs Averted	$4,610,361	$18,604,347	$6,718,434	$1,539,610	$215,796	$7,752	$31,696,301	$22,108,170
Total Waiver Expenditures							$17,452,072	$15,706,865
% Annual Budget Limit								**71%**

CY 2006	Age 15-19	Age 20-24	Age 25-29	Age 30-34	Age 35-39	Age 40-44	Total	FFP
Estimated Base Year Delivery Rate	100.25	136.2	101.1	52.05	20.75	3.7		
Waiver Participants	8758	25298	13545	6267	3435	1842	59145	
Expected Births	878.0	3445.6	1369.4	326.2	71.3	6.8	6097.3	
Actual Births	525	1712	675	166	53	3	3134.0	
Births Averted	353.0	1733.6	694.4	160.2	18.3	3.8	2963.3	
Average Prenatal/Delivery Cost	$5,050	$5,085	$5,249	$5,367	$5,387	$5,681		
Average Birth to 1 Yr Cost	$5,012	$5,094	$5,552	$5,487	$6,923	$8,934		
Total Costs Averted	$3,551,780	$17,646,188	$7,500,209	$1,738,782	$224,981	$55,762	$30,717,702	$21,311,942
Total Waiver Expenditures							$12,976,255	$11,678,630
% Annual Budget Limit								**55%**

OBJECTIVE #5: Partnership with community health centers and other primary care providers will promote primary medical care homes for waiver participants.

Hypothesis 9: The increase in primary medical care homes for waiver participants will increase access to services related to family planning, such as follow-up on diagnostic tests (such as an abnormal PAP smear) and treatment for complications associated with contraceptive methods and sexually transmitted disease.

Statistical Analyses: This amendment to the waiver did not take effect until February 2002, so only a limited amount of post-intervention data is available. Figure #9a shows the ARIMA (0,0,4) model that, including the intervention variable for the primary care amendment, best fit the data for waiver participants obtaining family planning services from primary care centers. The intervention variable for this is significant (t-ratio of 2.84, p=0.006).

Figure #9a: Waiver Participant Use of FQHCs for Family Planning Services

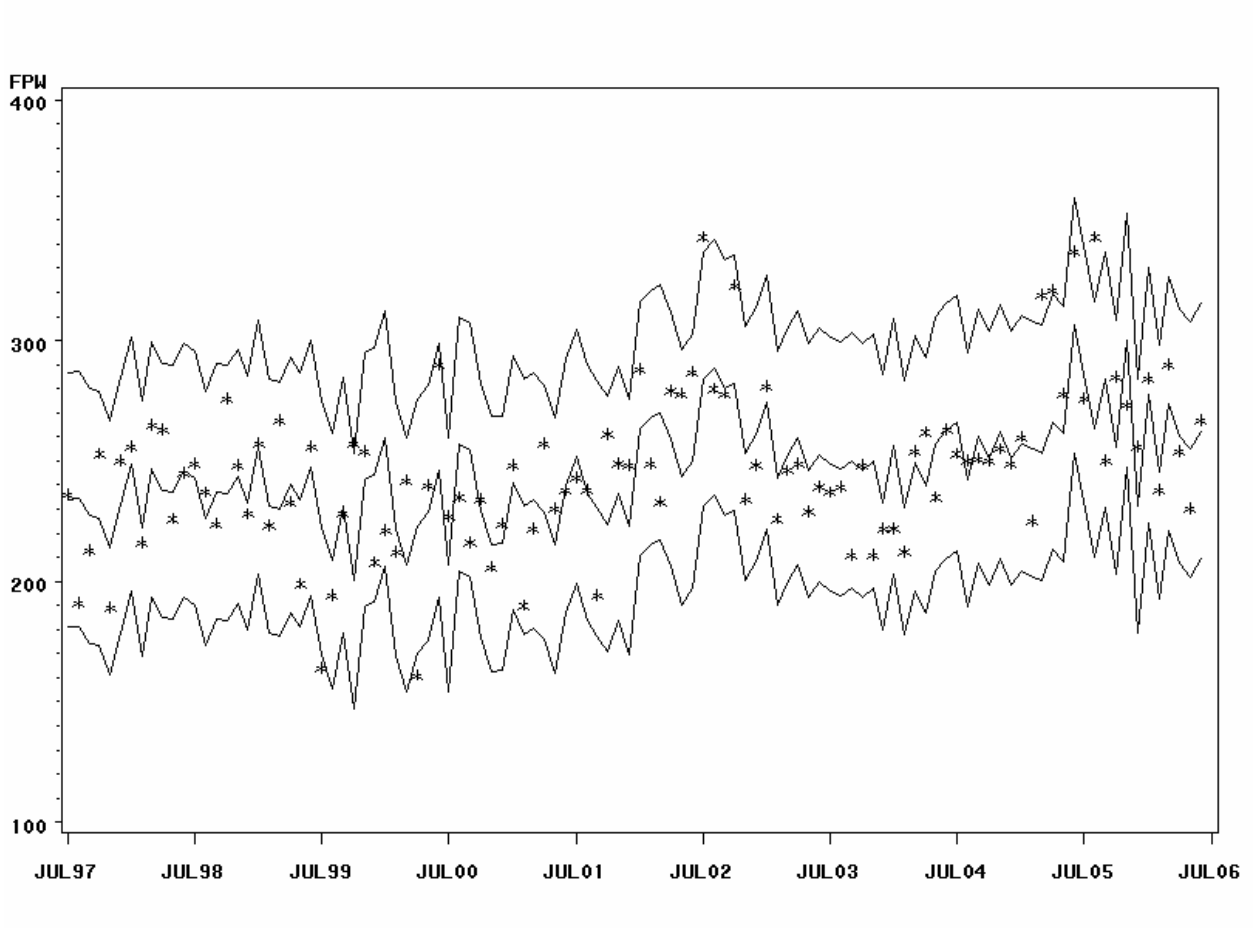


Figure #9a shows the number of waiver participants using federal primary care centers for family planning services (*), based on Medicaid claims. It also shows the trend predicted by the ARIMA model.

Discussion: Despite the fact that the baseline data showed no trend, the intervention appears to have had the effect of increasing the number of waiver participants receiving family planning services from primary care centers from a monthly average of 227 just prior to the policy taking effect (SFY 2001) to 271 in SFY 2006.

SECTION #6. SUMMARY OF RESULTS FROM THE 2006 TELEPHONE SURVEYS

Background

To obtain information about the Medicaid Family Planning Waiver not otherwise available through existing evaluation databases, during the summer of 2006 telephone surveys were conducted with three groups of women: eligible but not enrolled (n=310), enrolled but not participating (n=209), and waiver participants (n=209). (Medicaid client files on births were used to identify a group of women who were eligible but not enrolled.) In addition, during the late summer and early fall of 2006, a mail survey was conducted with three groups of OB/GYN and Family Practice physicians: public-sector providers (n=211), private providers who see Medicaid waiver patients (n=199), and private providers who do not see Medicaid patients at all (n=64).

Key Findings from Survey of Women

Please see the Interim Evaluation of Project No. 11-W-00057/4 SC Family Planning Waiver: Expansion of Medicaid Benefits for Women Below 185% FPL (SFYs 1995-2005) report for complete results.

- Awareness of the waiver is a key concern and more attention should be paid to informing women in all three groups about the waiver and the services covered under it.
- Among all three groups of women, most went to a private provider for their family planning services
- Financial difficulties and lack of need of services were found to be the two important reasons why women did not receive family planning services that they needed.
- Overall, participants and eligible women who did not intend to have any more children were significantly more likely to also report not using birth control.
- Overall, a majority of women from all three groups said expressed satisfaction with their current method of birth control.
- They also reported satisfaction with their current provider of primary health care services.
- The most important reason participating women saw a private doctor instead of a public medical provider was due to their good relationship with the doctor, while among those participating women who saw a public provider, the primary reason for doing so was financial difficulty.

Key Findings from Survey of Providers

Please see the Interim Evaluation of Project No. 11-W-00057/4 SC Family Planning Waiver: Expansion of Medicaid Benefits for Women Below 185% FPL (SFYs 1995-2005) report for complete results.

- Of the 474 surveys mailed out to providers, 144 (30.4%) were returned. The response rates for these various groups are likely a measure of awareness of and interest in the Medicaid Family Waiver program. Among the public providers, 111 completed questionnaires were returned, a response rate of 52.6%; for the private providers who saw Medicaid patients, 28 completed questionnaires were returned, a response rate of 14.1%; and among private providers who did not see Medicaid patients, five surveys were completed, a response rate of 7.8%.

- Both public and private providers who returned the survey are aware of the wavier and the services it covers.

- Public providers are more likely to: see more Medicaid clients, be aware of which clients are Medicaid, explain the waiver to clients, have waiver applications available, and cite a greater understanding of what the waiver covers.

- The fact that the waiver does not cover referral or follow-up was cited as the biggest barrier to care for both the providers and the women seeking services.

- Providers felt that these were very important services to cover.

SECTION #7. CONCLUSIONS/RECOMMENDATIONS

The conceptual model on page 4 of this report shows the major factors that affect fertility outcomes. The model is complex and shows the many forces at play – and highlights the limitations of an intervention solely focused on increasing access. While a number of process indicators have improved over time, for most, it is becoming increasingly difficult to attribute these changes solely to the waiver.

	SFY 1992	**SFY 2006**
Average Monthly Medicaid FP Clients	5,646	25,613
Total Title X/Medicaid FP Clients	155,549	151,398
Continuity of Medicaid FP Care	23.5%	45.9%
Average Monthly Private FP Providers	271	546
Average Monthly Private Provider FP Clients	1,704	9,362
	SFY 1998	**SFY 2006**
Average Monthly FPW FQHC Clients	234	271
	CY 1996	**CY 2006**
Age at First Birth (OCWI/SOBRA women – FPW target)	20.5	22.0

Other important indicators have not showed an effect of the waiver or showed a strong initial effect of the waiver, but those gains have been almost all lost:

	SFY 1993	**SFY 2005**
Postpartum FP Visit Within 24 Months	91%	91%
	SFY 1993	**SFY 2004**
Repeat Conception Within 18 Months	11.4%	13.1%
Repeat Conception Within 24 Months	15.9%	19.2%

One major disappointment has been the dramatic decline in Title X patients seen by the health department, from over 113,000 in SFY 1992 to just under 42,000 in SFY 2006. This has offset much of the gains one would expect from the dramatic increase in Medicaid family planning clients. Decreases in the number of regular Medicaid family planning clients between SFY 2005 and 2006 have not helped the situation. Another disappointment has been the lack of any effect on pregnancy intention, at least as measured through the PRAMS data.

And finally, a Medicaid 1115 Research & Demonstration Waiver must demonstrate budget neutrality. According to the methods specified in the 2005-2007 Terms and Conditions and revised during the most recent renewal request, CY 2006 is budget neutral. While federal costs total $11.6 million, federal savings are $21.3 million.

Future evaluations of the waiver must look at what factors are affecting the implementation of waiver services and how those factors affect outcomes. Many of the initial models in this study

no longer fit the data. That the models no longer fit the data has more to do with not knowing what in the environment is affecting the waiver, and does not necessarily reflect the waivers' success or failure. Clearly, implementation factors – including outreach strategies, the recruitment and retention of women and providers – and demographic factors impact the behavioral and other outcomes under study. In the next renewal cycle, efforts are underway to qualitatively assess how the waiver is being implemented, with the goal of identifying the factors that may be modifying the key health and behavioral outcomes of interest.

APPENDIX A

Data Table #1a. (Provided for reference purposes only.)

SFY	Average Monthly Medicaid FP Clients
1992	5,646
1993	6,052
1994	5,702
1995	7,841
1996	10,901
1997	11,877
1998	18,505
1999	19,512
2000	19,241
2001	20,609
2002	23,202
2003	25,720
2004	26,601
2005	30,417
2006	25,613

Data Table #1b. (Provided for reference purposes only.)

SFY	Average Monthly Medicaid Deliveries	Postpartum FP Visit W/in 24 Months	Percent
1992	2151	1893	88%
1993	2133	1942	91%
1994	2086	1918	92%
1995	2012	1918	95%
1996	1943	1861	96%
1997	2009	1927	96%
1998	2086	1989	95%
1999	2107	1982	94%
2000	2182	2046	94%
2001	2130	1974	93%
2002	2107	1933	92%
2003	2175	1972	91%
2004	2304	2067	90%
2005	2412	2192	91%

Data Table #1c. (Provided for reference purposes only.)

SFY	Title X FP Clients	Medicaid FP Clients	Total
1991	107,332	36,402	143,734
1992	113,468	42,081	155,549
1993	111,265	42,731	153,996
1994	101,551	44,843	146,394
1995	96,166	57,192	153,358
1996	95,954	63,858	159,812
1997	88,882	91,288	180,170
1998	55,085	110,546	165,631
1999	55,751	110,382	166,133
2000	46,504	114,493	160,997
2001	48,133	121,624	169,757
2002	47,412	125,175	172,587
2003	48,963	128,783	177,746
2004	44,222	131,912	176,134
2005	42,499	125,129	167,628
2006	41,915	109,483	151,398

Data Table #3a & #3b. (Provided for reference purposes only.)

SFY	Average Monthly Repeat FP Visit W/in 9-15 Months	Average Monthly Total (FP+Birth) Percent
1992	23.5%	28.9%
1993	20.9%	25.4%
1994	26.5%	30.9%
1995	43.0%	46.4%
1996	44.2%	47.3%
1997	49.5%	52.8%
1998	53.2%	56.1%
1999	51.6%	54.5%
2000	53.6%	56.4%
2001	55.5%	58.1%
2002	57.5%	60.2%
2003	55.5%	58.2%
2004	55.4%	58.2%
2005	50.5%	53.2%
2006	45.9%	48.5%

Data Table #4a & #4b. (Provided for reference purposes only.)

SFY	Average Monthly Private FP Providers	Average Monthly Private Provider FP Clients
1992	271	1704
1993	291	1988
1994	296	1953
1995	320	2854
1996	338	3600
1997	365	3391
1998	405	3838
1999	442	4298
2000	438	4377
2001	452	4724
2002	511	5654
2003	537	6344
2004	526	6771
2005	559	11,133
2006	546	9362

Data Table #5a & #5b. (Provided for reference purposes only.)

		Age at First Birth		
Year	Month	Medicaid	OCWI	Other
1996	1	17.4	20.5	25.6
1997	1	18.5	21	25.9
1998	1	18	20.7	26.3
1999	1	17.6	21.4	26.4
2000	1	17.8	21.3	26.6
2001	1	17.8	21.8	26.8
2002	1	17.7	21.9	27.6
2003	1	17.6	22.1	27.3
2004	1	17.9	22.2	27.9
2005	1	17.4	22.2	27.8
2006	1	18.1	22.0	27.0

Data Table #6a & #6b. (Provided for reference purposes only.)

SFY	Average Monthly OCWI Births	Repeat Conceptions W/in 18 Months	Percent	Repeat Conceptions W/in 24 Months	Percent
1993	1601	183	11.4%	255	15.9%
1994	1607	189	11.8%	268	16.7%
1995	1582	168	10.6%	252	15.9%
1996	1568	176	11.2%	259	16.5%
1997	1639	186	11.3%	272	16.6%
1998	1766	202	11.4%	296	16.8%
1999	1740	200	11.5%	291	16.7%
2000	1738	189	10.9%	274	15.8%
2001	1642	183	11.1%	273	16.6%
2002	1515	176	11.6%	258	17.0%
2003	1566	195	12.5%	280	17.9%
2004	1762	231	13.1%	338	19.2%

Data Table #6c & #6d. (Provided for reference purposes only.)

SFY	Average Monthly Participant Births	Repeat Conceptions W/in 18 Months	Percent	Repeat Conceptions W/in 24 Months	Percent
1995	924	68	6.9%	103	11.1%
1996	991	76	7.5%	119	12.1%
1997	1027	73	6.8%	127	12.3%
1998	1071	62	5.7%	120	11.1%
1999	1054	53	4.9%	97	9.1%
2000	1074	50	4.7%	94	8.6%
2001	1006	50	5.1%	92	9.0%
2002	898	38	4.3%	86	9.4%
2003	845	38	4.2%	62	7.0%
2004	983	53	5.1%	85	8.4%

Data Table #9a. (Provided for reference purposes only.)

SFY	Average Monthly FPW FQHC Clients
1998	234
1999	241
2000	223
2001	227
2002	254
2003	265
2004	235
2005	271
2006	271

APPENDIX B

Interim Evaluation of Project No. 11-W-00057/4, SC Family Planning Waiver: Expansion of Medicaid Benefits for Women Below 185% FPL (SFYs 1995-2005)

Supplemental Evaluation Report on Hypothesis 6
April 2007

Study Background

This goal of this supplemental evaluation of the South Carolina Medicaid Family Planning Waiver was to provide more information on behavior and health outcomes associated with long-term waiver participation. This analysis is related to hypothesis 6 and addressed the following evaluation question:

- Do more regular participants in Medicaid family planning waiver services have more adequate pregnancy intervals, more adequate prenatal care and better infant outcomes (decreased chances of preterm birth, low and very low birth weight, and small for gestational age infants) over time as compared to women who did not use waiver services as often?

To avoid confusion, the following terms are used to reference different subsets of women for whom the waiver is intended:

Women enrolled in the waiver, or "enrollees," refers to the subset of women eligible for the waiver who have applied and been approved for Medicaid coverage of family planning services.

Women receiving services under the waiver, or "participants," refers to the subset of women enrolled in the waiver who actually received Medicaid reimbursed family planning services. Not all women who are enrolled in the waiver actually receive Medicaid reimbursed family planning services.

Methods

Research Design

This study is a retrospective cohort study, encompassing the time period from July 1994 to June 2003, the first ten years of the SC Medicaid Family Planning Waiver.

Data Sources

Medicaid claims data were used to select waiver enrollees who had given birth after at least 36 months of consecutive waiver enrollment, excluding women who gave birth within 36 months of their date of enrollment and women for whom this birth was a multiple birth (twins, etc.). Data on the main independent variable of interest - family planning waiver participation - was collected from Medicaid claims data, counting the number of family planning annual visits received via the waiver in the years prior to birth. Data on the number of annual visits received between the first waiver birth and the subsequent waiver birth (for those women with two births while enrolled in the waiver) were also collected.

Outcomes measures on adequacy of prenatal care, birth weight, preterm birth and small for gestational age (SGA) came from the live birth certificate (1/1/1992 version). The 1992 version of the birth certificate was chosen as it was used consistently during the time period of interest (July 1994 – June 2003). The South Carolina Office of Research and Statistics (ORS) linked family planning waiver enrollees who had given birth after at least 36 months of waiver enrollment to their corresponding live birth certificate files for their first and, where applicable, second births occurring during the ten year period. ORS pulled the sample since identifying information was used to link between live births to a given family planning waiver mother. A de-identified data set was obtained from ORS. Institutional Review Board aproval was sought from the University of South Carolina for this study, as well as from DHEC. Approval was granted from both institutions in the fall of 2006.

Measures

The main independent variable of interest in this analysis is the frequency of obtaining family planning services via the Medicaid Family Planning Waiver prior to giving birth and in the interval between two births. The frequency of obtaining family planning services via the Medicaid Family Planning Waiver prior to giving birth is a continuous variable representing the number of annual family planning visits billed to Medicaid under the waiver in the 36 month period (minimum) before the birth. This minimum interval was identified by the researcher through discussion with those familiar with women seeking services under the waiver as well as what has been identified in a prior study (Jamieson & Buescher, 1992). The number of annual family planning visits billed to Medicaid under the waiver between the index birth and a subsequent birth, for those women with two births during the study period, was also obtained. Several dependent variables of interest were evaluated against the independent variable. These consisted of both maternal and infant outcomes including the birth to conception interval between the index birth and a subsequent birth, the adequacy of prenatal care, low birth weight, preterm birth, and small for gestational age.

Since it is hypothesized that certain outcomes may be affected by the "birth to conception" interval, some analyses focused on the second birth to waiver women. For outcomes not expected to be affected by birth to conception interval, data from the first birth was used. For each dependent variable, it is noted which birth in the data set is of interest.

Birth to Conception Interval. Birth to conception interval was defined as the period of time between the index birth and the next conception (related to the second birth in these data). Birth to conception interval was calculated in months by ORS using the date of birth of the second child, minus its gestational age. This variable was provided as a continuous variable.

Adequacy of Prenatal Care. The Kotelchuck Index was used to evaluate the adequacy of prenatal care. Adequacy of prenatal care was also used as a modifier for birth interval. Of interest was the adequacy of prenatal care for the first birth on the waiver. The Kotelchuck

Index assesses adequacy by looking at when in the pregnancy prenatal care began and how many prenatal visits occurred. ORS calculated this variable using two variables obtained from birth certificate data-when prenatal care began (initiation) and the number of prenatal visits from when prenatal care began until delivery (received services). The Kotelchuck Index classifies the adequacy of initiation as follows: pregnancy months 1 and 2, months 3 and 4, months 5 and 6, and months 7 to 9, with the underlying assumption that the earlier prenatal care begins the better. To classify the adequacy of received services, the number of prenatal visits is compared to the expected number of visits for the period between when care began and the delivery date. The expected number of visits is based on the American College of Obstetricians and Gynecologists prenatal care standards for uncomplicated pregnancies and is adjusted for the gestational age when care began and for the gestational age at delivery. A ratio of observed to expected visits is calculated and grouped into four categories-Inadequate (received less than 50% of expected visits), Intermediate (50%-79%), Adequate (80%-109%), and Adequate Plus (110% or more). The final Kotelchuck index measure combines these two dimensions (initiation and adequacy) into one of four categories defined as follows:

Adequate Plus: Prenatal care begun by the 4th month and 110% or more of recommended visits received.

Adequate: Prenatal care begun by the 4th month and 80%-109% of recommended visits received.

Intermediate: Prenatal care begun by the 4th month and 50%-79% of recommended visits received.

Indadequate: Prenatal care begun after the 4th month or less than 50% of recommended visits received (South Carolina Community Assessment Network; Kotelchuck, 1994).

Low Birth Weight/Very Low Birth Weight. Low birth weight refers to infants born weighing less than 2,500 grams. Very low birth weight refers to an infant born weighing less than 1,500 grams. Birth weight was collected as a continuous variable on the birth certificate. For analysis purposes, low and very low birth weight were treated as dichotomous variables. Birth weight from the second birth in the data was used to analyze the effect of the waiver on birth weight.

Preterm Birth. To determine whether an infant was considered preterm, the clinical estimate of weeks gestation on the birth certificate was used. Infants born at less than 37 weeks gestation were considered preterm. While weeks gestation was provided by ORS as a continuous variable, it was dichotomized for analysis purposes. Preterm birth data from the second birth in the data was used in this study.

Small for Gestational Age. Small for gestational age can be defined as a baby who is smaller than expected (in the bottom 10th percentile) for the number of weeks of pregnancy. SGA was calculated by ORS as an infant in the bottom tenth percentile for the number of weeks gestation and was provided as a dichotomous variable. The second birth in the data was used to calculate SGA for this study.

Control variables included demographic and behavioral variables that cloud the relationship between waiver participation and the outcomes under study. This means that there is some association between a certain demographic characteristic or behavior and the outcomes under study. These variables included: the mother's race/ethnicity, age, education level, marital status, urban/rural residence, parity, and tobacco and alcohol use during pregnancy.

Data Analysis

Descriptive data analyses were used to describe the population under study. To account for the covariates, multiple linear regression was used to evaluate the relationship between family planning waiver participation and birth to conception interval (the only continuous outcome of interest). Ordered logistic regression was used to evaluate the relationship between family planning waiver participation and adequacy of prenatal care (an ordinal variable). Logistic regression models were used to evaluate the relationship between family planning waiver participation and the dichotomous outcomes of interest (low and very low birth weight, preterm birth, and SGA).

Results

Description of the Samples

Tables 1 and 2 present data on the women and their infants from their first and second waiver births respectively. Approximately 10% of the total group of women gave birth a second time while on the waiver. In both the overall sample as well as the smaller subsample of women, about half were African-American and half were white. Between 77-79% of both groups were either single or married but not living with that partner. Alcohol and tobacco use was low.

Overall participation in waiver services was extremely low. Most women, though enrolled in the waiver, did not participate in obtaining family planning waiver services at all. Over the ten year time period, over 70% of women had no family planning annual visits at all. Only 20% had one annual visit in the 3 years (minimum) prior to their first birth. Just under 9% obtained 2 or more visits before their first birth – a more ideal schedule according to recommended family planning guidelines. The adequacy of prenatal care was less than the SC average, with only 57.5% of women during their first waiver pregnancy and 51.7% of women during their second waiver pregnancy obtaining "adequate plus" levels of prenatal care. Moreover, close to 11% of first waiver pregnancies and 20% of second waiver pregnancies had inadequate levels of prenatal care.

The average birth to conception interval was 14.7 months for the sample of women with two waiver births during the time period. There was wide variation in birth to conception interval, ranging from 0-55 months. The prevalence of low birth weight and preterm birth for the first infant born under the waiver was 8.5% and 12.4% respectively. These figures closely mirror national averages of 8.1% and 12.5%. However, the percent of low birth weight and preterm for the second waiver birth jumped to 9.6% and 17.0% respectively. SGA accounted for 10.1% of

first births and 8.6% of second births; however, there is no national prevalence data available for comparison purposes. Fifteen percent of second births were to mothers whose first waiver birth was preterm or of low birth weight.

Outcomes

Results of the multivariate analyses indicate that after controlling for key demographic and behavioral variables, greater participation in family planning waiver services is associated with increased adequacy of prenatal care (see Table 3). Specifically, for each additional family planning waiver annual visit, a person has 1.172 the odds of having adequate prenatal care, compared to a person having received fewer family planning annual visits. An increase of two additional family planning visits increases ones' odds of adequate prenatal care by 1.37. In addition to the number of family planning visits, years of education, number of prior births, alcohol use, marital status, and rural were significant predictors of prenatal care within the waiver-enrolled population.

In addition, greater participation in family planning waiver services is associated with longer birth to conception intervals (see Table 4).

In the literature a longer birth to conception interval is strongly associated with a decreased risk of low birth weight, preterm birth, and/or small for gestational age. However, in this study, there was no association between participation in family planning waiver services and the outcomes of low birth weight, preterm birth, and small for gestational age, and these results were not modified by birth to conception interval. See Tables 5-8 for the results of the final models of these analyses.

Conclusions

Greater participation in Medicaid family planning waiver services is associated with better prenatal care and longer birth to conception intervals. These findings suggest that the waiver has a long-term impact on women who consistently use such services. That the adequacy of prenatal care was improved in women with more family planning visits supports the goals of the waiver program to get more women into medical homes. A woman who feels she has a trusted provider is more likely to seek care from that provider. That provider can then provide referrals to other parts of the healthcare sector so that the individual can get the services needed.

A concern is that overall participation in waiver services was extremely low. Most women, though enrolled in the waiver, did not participate in obtaining family planning waiver services at all. This supports prior findings that outreach is needed to move more women from enrollment in services to utilizing services. More research is also needed to understand what outreach strategies are most effective for recruiting and retaining low-income women in waiver services so that the positive results found in this study may be more widespread throughout the waiver.

An additional limitation is that women who participated in more services were motivated to seek

that care, thus signifying a potential selection bias. This selection bias was not measured. Therefore, the positive results of this study see with regard to prenatal care and birth to conception intervals may only be applicable to these motivated women who sought services. Finally, the sample of women who were enrolled in the waiver over a certain time period (22,317 over any consistent 36-month period within 10 years) is relatively small compared to over 60,000 participants in 2006.

Table 1. Maternal and Child Characteristics of All Study Women

Maternal and Child Characteristics	Overall Sample (N=22,317)	
	Mean*	**St. Dev.***
Age (years)	26.0	4.6
Years of education	12.5	1.8
Number of prior births	1.2	0.9
	Frequency*	**Valid Percent***
Race/ethnicity		
African-American	10,866	48.7
White	11,272	50.5
Other	179	0.8
Urban/rural		
Urban	13,485	60.9
Rural	8,647	39.1
Marital status		
Married and living together	4,019	20.6
Single or married and not living together	15,480	79.4
Alcohol use		
No	22,103	99.2
Yes	177	0.8
Tobacco use		
No	18,410	82.6
Yes	3,878	17.4
Number of family planning visits before first birth		
0	15,860	71.1
1	4,502	20.2
2	1,787	8.0
3	166	0.7
4	2	0.01
Adequacy of prenatal care (Kotelchuck Index)		
Adequate Plus	12,687	57.5
Adequate	5,856	26.5
Intermediate	1,111	5.0
Inadequate	2,413	10.9
Birth weight		
Normal birth weight	20,421	91.5
Low birth weight	1,550	6.9
Very low birth weight	346	1.6
Preterm birth		
No	19,555	87.6
Yes	2,762	12.4
Small for gestational age		
No	20,062	89.9
Yes	2,255	10.1

* Does not include missing responses

Table 2. Maternal and Child Characteristics of Women with a Second Birth

Maternal and Child Characteristics	Overall Sample (N=2,268)	
	Mean*	**St. Dev.***
Age (years)	26.0	3.9
Years of education	12.2	1.8
Number of prior births	2.1	0.9
Birth to conception interval (months)	14.7	10.6
	Frequency*	**Valid Percent***
Race/ethnicity		
African-American	1,125	49.6
White	1,132	49.9
Other	9	0.4
Urban/rural		
Urban	1,393	62.0
Rural	855	38.0
Marital status		
Married and living together	452	22.4
Single or married and not living together	1,566	77.6
Alcohol use		
No	2,241	99.0
Yes	23	1.0
Tobacco use		
No	1,834	81.0
Yes	430	19.0
Number of family planning visits before first birth and between first and second birth		
0	1,597	70.4
1	447	19.7
2	179	7.9
3	37	1.6
4	6	0.3
5	2	0.1
Adequacy of prenatal care (Kotelchuck Index)		
Adequate Plus	1,133	51.7
Adequate	504	23.0
Intermediate	123	5.6
Inadequate	430	19.6
Birth weight		
Normal birth weight	2,051	90.4
Low birth weight	166	7.3
Very low birth weight	51	2.3
Preterm birth		
No	1,883	83.0
Yes	385	17.0

Maternal and Child Characteristics	Frequency*	Valid Percent*
Small for gestational age		
No	2,044	91.4
Yes	192	8.6
Most recent prior birth was preterm or low birth weight		
No	1,927	85.0
Yes	341	15.0

* Does not include missing responses

Table 3. Results of Ordered Logistic Regression Model for the Probability of Having More Adequate Prenatal Care

Variable	Odds Ratio	95% Confidence Interval
Total number of family planning visits before first birth on waiver	1.172	(1.122, 1.223)*
Mother's age	1.000	(0.993, 1.007)
Years of education	0.952	(0.935, 0.968)*
Number of prior births	0.871	(0.842, 0.901)*
Tobacco use	1.041	(0.960, 1.129)
Alcohol use	0.576	(0.427, 0.775)*
Black race	0.939	(0.882, 1.000)
Single/not living with married partner	0.915	(0.848, 0.986)*
Rural (Check coding direction)	1.211	(1.143, 1.284)*

*Significant, $p<0.05$

Table 4. Results of Linear Regression Model for Birth to Conception Interval

Variable	Df	F	P-value
Total number of family planning visits before first birth on waiver	1	22.46	<0.0001*
Mother's age	1	13.52	0.0002*
Years of education	1	0.52	0.4701
Number of prior births	1	6.02	0.0142*
Tobacco use	1	5.39	0.0204*
Alcohol use	1	0.14	0.7111
Race/ethnicity	1	3.67	0.0556
Marital status	1	18.41	<0.0001*
Urban/rural	1	0.01	0.9168
Adequacy of prenatal care (Kotelchuck Index)	3	0.45	0.7185

*Significant, $p<0.05$

Table 5. Results of Logistic Regression Model for the Probability of Low Birth Weight

Variable	Odds Ratio	95% Confidence Interval
Total number of family planning visits before first birth and between first and second birth	0.889	(0.692, 1.142)
Birth to conception interval	0.995	(0.978, 1.012)
Mother's age	1.010	(0.959, 1.063)
Years of education	0.932	(0.831, 1.046)
Number of prior births	1.097	(0.896, 1.342)
Tobacco use	2.924	(1.887, 4.530)*
Alcohol use	1.223	(0.322, 4.715)
Black race	1.820	(1.196, 2.770)*
Single/not living with married partner	1.044	(0.652, 1.672)
Rural	1.170	(0.820, 1.671)
Most recent prior birth was preterm or low birth weight	5.228	(3.649, 7.489)*
Adequacy of prenatal care	1.169	(1.000, 1.367)*

*Significant, $p<0.05$

Table 6. Results of Logistic Regression Model for the Probability of Very Low Birth Weight

Variable	Odds Ratio	95% Confidence Interval
Total number of family planning visits before first birth and between first and second birth	0.718	(0.393, 1.311)
Birth to conception interval	0.995	(0.960, 1.030)
Mother's age	1.076	(0.969, 1.194)
Years of education	1.002	(0.790, 1.272)
Number of prior births	0.892	(0.584, 1.364)
Tobacco use	1.968	(0.708, 5.471)
Alcohol use	1.088	(0.104, 11.428)
Black race	2.979	(1.142, 7.768)*
Single/not living with married partner	1.461	(0.471, 4.525)
Rural	1.130	(0.533, 2.396)
Most recent prior birth was preterm or low birth weight	4.966	(2.351, 10.491)*
Adequacy of prenatal care	1.752	(1.139, 2.696)*

*Significant, $p<0.05$

Table 7. Results of Logistic Regression Model for the Probability of Preterm Birth

Variable	Odds Ratio	95% Confidence Interval
Total number of family planning visits before first birth and between first and second birth	0.926	(0.773, 1.110)
Birth to conception interval	1.003	(0.990, 1.016)
Mother's age	0.995	(0.956, 1.035)
Years of education	0.932	(0.854, 1.016)
Number of prior births	1.083	(0.925, 1.269)
Tobacco use	1.808	(1.282, 2.549)*
Alcohol use	0.340	(0.071, 1.639)
Black race	1.518	(1.119, 2.060)*
Single/not living with married partner	1.214	(0.850, 1.734)
Rural	1.318	(1.012, 1.717)*
Most recent prior birth was preterm or low birth weight	3.044	(2.258, 4.104)*
Adequacy of prenatal care	0.934	(0.837, 1.041)

*Significant, $p<0.05$

Table 8. Results of Logistic Regression Model for the Probability of Small for Gestational Age

Variable	Odds Ratio	95% Confidence Interval
Total number of family planning visits before first birth and between first and second birth	0.868	(0.687, 1.097)
Birth to conception interval	0.996	(0.980, 1.012)
Mother's age	1.004	(0.958, 1.053)
Years of education	0.977	(0.878, 1.086)
Number of prior births	1.208	(1.003, 1.454)*
Tobacco use	2.619	(1.711, 4.008)*
Alcohol use	1.882	(0.547, 6.070)
Black race	2.887	(1.932, 4.285)*
Single/not living with married partner	0.909	(0.588, 1.406)
Rural	1.376	(0.994, 1.906)
Most recent prior birth was preterm or low birth weight	1.871	(1.283, 2.729)*
Adequacy of prenatal care	0.965	(0.845, 1.102)

*Significant, $p<0.05$