WILCOX COUNTY ALABAMA: Needs Assessment

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FORWARD

Two Master's students, Ms. Erin Branigan and Mrs. Amy Badham, from the School of Public Health at the University of Alabama at Birmingham (UAB) conducted their field research projects in Wilcox County, Alabama during the fall and winter of 1992. Investigating a possible association between poor sanitation and childhood morbidity, they spent August through October in the county interviewing key informants, visiting local service agencies and schools, administering provider surveys to local health care professionals, collecting chart audit data from four rural health clinics, and conducting a household survey in Vredenburgh. In late October they returned to the county with professors from the School of Public Health to set up a stool sample survey at the four rural health clinics. In December, accompanied by four other students, they visited the county again to complete the household survey in the remainder of the county. In February of 1993, due to some questions concerning chart audit data and the stool sample survey, Ms. Branigan and Mrs. Badham visited the Alberta health clinic to conduct a follow-up chart audit.

Since beginning their research in Wilcox County , the two researchers have presented their findings and impressions in the form of an oral presentation to two groups of faculty and staff at the UAB School of Public Health. Ms. Branigan has submitted a pre-proposal to the Thrasher Foundation for a grant to set up a demonstration project in the county utilizing intermediate technologies to remedy the problem of inadequate sanitation that plagues many poor residents. Ms. Branigan also worked on the full proposal to complete her Master's level paper. The Thrasher Foundation has recently requested that a full proposal for this project be submitted in July 1993. Mrs. Badham has completed this Needs Assessment of the county which focuses on health care and sanitation. Both Ms. Branigan and Mrs. Badham are currently working with the School of Public Health and the Alabama Cooperative Extension to set up and conduct a focus group in August 1993, to formally present the data from the Needs Assessment and initiate further discussion about perceived needs of the community, and a town metting in the fall, to facilitate public policy deliberation amongst county leaders concerning water and sanitation problems.

ACKNOWLEDGMENTS

The two researchers and the UAB School of Public Health would like to thank the residents of Wilcox County for their cooperation in making this project a success. In particular, we want to thank Dr. Sharon Farley and Ms. Sheryl Threadgill and the rest of the staff of the Kellogg for serving as such wonderful hosts during the time we spent in the county.

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EXECUTIVE SUMMARY

This Needs Assessment of Wilcox County, Alabama examines the relationship between enteric diseases among children under 10 and conditions associated with poverty in the rural South. A representative county-wide household survey, a health care provider survey, chart audits at the 4 rural health clinics, and a clinic-based stool sample survey are the methods used to examine this relationship. This Needs Assessment also identifies the basic perceived needs of the residents, the health care providers, and many key informants in the county. Problem areas that are identified include: widespread poverty and unemployment, poor housing conditions, a lack of transportation, a weak public school system, a lack of access to prenatal care and delivery services, and a serious lack of an adequate water supply, plumbing, and sewage disposal.

The Household Surveys show that 15% of households do not have a standard flush indoor toilet; 35% use some method other than public sewer or septic system for sewerage disposal with 16% piping sewage out onto the ground near the house; and 69% see existing toilet facilities as a problem. In Vredenburgh, a significant relationship is seen between enteric diseases in children under 10 and inadequate sewage disposal (O.R.=6, $p<.05$).

The health care providers cited a poor water supply, poor sanitation, unsanitary living conditions, and poor personal hygiene as the major causes of diarrhea. They felt that the prevalence of enteric disease in young children is average to high. The age group they consider to be the most susceptible is younger than 10 years. Specific communities that they identified as having an excess of enteric disease are Alberta, Boykin, Pine Hill, and Vredenburgh. These are the same communities that the county sanitarian pointed out as problem areas.

The chart audit revealed an excess of enteric disease; particularly in the northwest portion of the county. At the Alberta Clinic 33.7% of patients under 10 years old seen during the 1991-1992 fiscal year were diagnosed with intestinal helminths.

Suggested interventions for the county include: development of a health education curriculum for the schools focusing on nutrition and hygiene, a pilot project using intermediate technology to remedy the sewage disposal problems; continuing education for the health care providers focusing on diagnosis and treatment of enteric disease. Future research should include: looking at the prenatal care and pregnancy outcomes of women in Wilcox County following the implementation of the Medicaid Waiver; studying the constructed wetland project (an alternative to a standard septic system) at the elementary school in Pine Apple to determine whether it may be a practical solution to some of the sanitation problems in this region of Alabama; and following up of the sanitation pilot project to determine whether the use of intermediate technologies is a feasible solution to the lack of adequate sanitation and using this information to institute policy change at the state level.

INTRODUCTION AND STATEMENT OF PURPOSE

The 1980's witnessed a disturbing increase in the percentage of children living in poverty, the rate climbing to over 22%. At present it is estimated that approximately one in five children residing in the United States lives in poverty. Nearly one half of all black children live in families with incomes below the poverty level. At present one in five families in the United States is headed by a woman; with approximately half of all poor children living in female-headed households (1).

Childhood poverty has been linked to a variety of specific health problems. It can be seen as elevating the likelihood of poor health by two possible mechanisms: the enhancement of risk for poor health and the reduction of access to those interventions effective at minimizing the impact of this elevated risk (1).

The major acute conditions for children under the age of five reported in the most recent National Health Interview Survey, an ongoing project of the National Center of Health Statistics, were respiratory conditions (including colds and the flu), acute ear infections, infectious and parasitic diseases, and injuries (2). Children of poor families experience more time lost from school and more days of restricted activity due to these illnesses than do those who are not poor. The inadequacy of their diet often produces significantly elevated rates of iron-deficiency anemia and failure to thrive among poor children. Inadequate housing conditions also affect morbidity, as lead poisoning is heavily concentrated in poor children. Poverty's influence on childhood morbidity also can be conveyed by the reduced utilization of effective clinical interventions (1).

Non-metropolitan areas have higher poverty rates than other geographic areas. In 1988, the poverty rate in non-metropolitan areas was 16% compared with 13.1% across the nation and 12.2% in metropolitan areas. In 1984-85, 25.9% of children and youth under 21 in rural areas were poor. This is in contrast to 19.3% in metropolitan areas. Children in rural areas were also found to visit the physician less often (2).

In the late spring of 1992, a group of faculty from the University of Alabama at Birmingham (UAB) School of Public Health who had a common interest in doing research in Wilcox County, Alabama began making plans to perform a preliminary study of the county. Their interest had been sparked by Dr. Sharon Farley, a professor in the School of Nursing at Auburn University at Montgomery (AUM), who also directs the Kellogg Project which is an ongoing community development project in Wilcox and Lowndes counties. During the course of the project, Dr. Farley noticed that there may be an excess of enteric diseases amongst the children living in Wilcox County. Dr. Farley in conjunction with the UAB faculty decided that the best approach to begin investigating this hypothesis would be to send two researchers (Ms. Erin Branigan and Mrs. Amy Badham, the author) into the county to conduct a Needs Assessment, looking into these particular claims and perhaps substantiating them.

The principal purpose of this project was to collect data on enteric diseases among children of Wilcox County. These diseases, while not reportable to the State, often represent a considerable amount of morbidity. Most of them affect nutritional status of the infected child, and since they are recurrent, may result in considerable treatment cost, loss of energy, and loss of learning capacity in the affected children.

The goals of the project were identified as the following:

1. To collect data on enteric diseases among children under 10 years old in Wilcox County, Alabama;
2. To determine whether there is a correlation between the incidence of poor sanitation/hygiene and the incidence of these diseases; and
3. To determine the perceived needs of the community related to morbidity and sanitation.

In order to accomplish these goals our specific objectives were to:

1. Develop, pre-test, and administer a household questionnaire county-wide to gather data on childhood morbidity and sanitary/hygienic practices and conditions;

2. Interview key informants, including health care providers, to determine perceived problems;

3. Review existing data on enteric morbidity through chart audits at the rural health clinics;

4. Perform stool analyses for children less than 10 years old to determine the current prevalence of enteric disease; and

5. Identify geographic clusters of enteric disease or diseases associated with poor housing and examine their relationship with inadequate sewage disposal.

All of this information would be gathered with the intention of using the data to design interventions for prevention of enteric disease.

The Alma-Ata Conference has defined primary health care as "Essential health care made accessible to individuals and families in the community by means acceptable to them, through their full participation and at a cost that the community can afford." Appraisal of the impact of a primary health care system on household health knowledge, attitudes, and practices makes little sense unless the essential elements of the system are available to the community. The Alma-Ata Conference recommended that primary health care include at least "education concerning prevailing health problems and the methods of identifying, preventing, and controlling them; promotion of food supply and proper nutrition, an adequate supply of safe water and basic sanitation; maternal and child health care; immunization against the major infectious diseases; prevention and control of locally endemic disease; appropriate treatment of common diseases and injuries; promotion of mental health and provision of essential drugs." Noticeably, most of the recommendations emphasize health promotion and disease prevention rather than the curative services that tend to be the primary concern of national health care delivery systems worldwide (3). In the Needs Assessment of Wilcox County the adequacy of these essential elements will be focused on.

NATIONAL AND REGIONAL BACKGROUND INFORMATION

Poverty

Nearly 19% of Alabama's 4.2 million residents live at or below the poverty level (4). The Center on Budget and Policy Priorities in Washington recently reported that "Alabama ranks 51st, or last among the 50 states including the District of Columbia, in the levels of Aid to Dependent Children (ADC) benefits it provides to poor families with children. Not only are Alabama welfare payments the nation's lowest, the system discourages recipients from getting jobs. The program does not allow any ADC assistance to families in which both parents live in the home. Also the income levels to qualify for ADC are so unrealistically low that they encourage fraud. And the state Medicaid program is tied to ADC, which severely limits medical benefits for many of Alabama's poor residents.

Nationwide, the single most important health program for low-income children is Medicaid. It accounts for over 55% of all public expenditures for child health, 26% of all hospital payments for children under the age of 6 years, and 10% of all payments for pediatric ambulatory care (1).

However even with the existence of such entitlement programs as Medicaid, data from the Population Survey of the U.S. Bureau of the Census show that in 1985, 17% of the population under age 65 years -- nearly 37 million people -- lacked any form of insurance for medical care, including Medicaid. One third of the uninsured were children. Among uninsured children 39% live below the federal poverty line, 10% live at 100 to 124 percent of poverty, and 22% live at 125 to 199 percent of poverty. Those most likely to lack health insurance are the children of the working poor; two-thirds of uninsured children live in families headed by a worker; and roughly half of these families are single-parent households (1).

Some studies have shown that thousands of Alabamians who live below the poverty level fail to find the little help that they do qualify for. Because many of them live in the rural areas and have no transportation and little access to information about social services, more than a third of them fail to receive food stamps, subsidized housing, and school lunches (4).

Enteric Disease

Childhood poverty has often been linked to morbidity and mortality. When national mortality data for 1973 through 1983 were reviewed to assess the importance of diarrheal disease as a cause of preventable childhood death in the United States it was discovered that an average of 500 children aged 1 month to 4 years died each year with diarrhea reported as the cause of death. These diarrheal deaths were most common among children who were younger than 1 year of age, black, low birth weight, and living in the South. Both race and region of residence were most strongly associated with diarrheal mortality. Black infants were four times more likely to die of diarrhea than were white infants. In some Southern states, diarrheal mortality for black infants was ten times that for whites (Appendix A). In Mississippi, review of fatal cases of diarrhea found that maternal factors (black race, young age, unmarried status, low level of education, and little prenatal care) were associated with diarrheal death in the child. These findings suggest that diarrheal deaths may be preventable and that targeted interventions could contribute to improved child survival in the United States on the whole (5).

Another group of enteric diseases that are often linked to poverty are intestinal parasites. The southeastern United States has a subtropical climate where the temperatures are mild and the humidity is high, the moist soil providing an environment conducive to the survival and transmission of several parasitic organisms. Thus a large number of parasitic diseases might be expected. Several investigators have assessed the prevalence of intestinal parasites and the morbidity and mortality arising therefrom,

providing definitive documentation that parasitic diseases are still prevalent in the United States (6).

Ascariasis or roundworm infection is a common and important infection: it is estimated that perhaps a quarter of the world's population is burdened with it. Infections are most common in circumstances where people are crowded together under unsanitary conditions. The prevalence and intensity of infection rises rapidly in early childhood (7). In a study looking at the effect of ascariasis upon the nutritional status of children, it was found that children who had ascaris were 2.1 centimeters shorter in height, 0.6 cm thinner for mid-arm circumference, and 0.38 kilograms lighter in weight compared to matched children who were not infected. It has also been concluded that ascariasis contributes significantly to malnutrition where both coexist (8). In a second study that looked at the effects of parasitic infection on the cognitive processes of children, the pattern of results was consistent with the hypothesis that parasitic infections combine with nutritional deficits to impair the efficiency of cognitive processes, in particular the attentional processes (9). Even with the evidence that parasitic infections have long-term effects on the growth and development of children, there are those who consider parasitic infections such as Ascaris unimportant because they do not usually cause acute and obvious disease. And due to the fact that reinfection is often highly likely infections may be left untreated (7).

Water and Sanitation

Safe water and basic sanitation are two essential elements of the primary health care system. However, much of rural Alabama remains without public water and sewage services. While each year more Alabamians have gained basic water service via millions of dollars in government grants, some 600,000 -- almost one-seventh -- of the state's residents aren't on a water system according to the Alabama Department of Environmental Management (10). Since many Alabamians obtain their water from shallow wells and

ground water sources, the quality is often questionable.

According to 1980 Census Data on sewage disposal options in the United States; only 53% of Alabamians were on public sewers, 42% were on septic tanks or cesspools, and 5% used other means. These figures compare with the following averages for the United States: 74% on public sewers, 24% on septic tanks or cesspools, and 2% using other means. According to the same data for 1990; 54.5% of Alabamians were on public sewers and 45.5% used septic tanks, cesspools, or other means of disposal. While the percent of people served by public sewer is rising, there is still a large group of people who lack an adequate means of disposing of sewage. It is this group that uses "other means" or that lacks an adequate means that may be at a greater risk for fecal-oral transmitted diseases.

Maternal and Child Health

Finally, in a state where the infant mortality rate is higher than the national average and where the prevalence of low birth weight infants compares with that of developing countries it is no surprise that as many as a third of Alabama mothers who gave birth in 1990 did not receive adequate prenatal care. In some counties the number of women receiving inadequate prenatal care reached as high as 69%, about twice the national average.

The lack of adequate prenatal care is just one of many maternal-child health problems currently facing the state. Maternal delivery services were only available in 38 of the 67 counties in Alabama in 1990. It has also been discovered that in 36 counties more than one fifth of babies born in 1990 had teenage mothers. And about 30% of all births in Alabama were to unmarried women, as compared to a nationwide average of 27%. Five counties, however, had more than twice the state average of unmarried mothers. These counties included: Bullock, Greene, Lowndes, Macon, and Wilcox (11,12).

DESCRIPTION OF STUDY COMMUNITIES

Wilcox County was selected as the study community because of anecdotal information that was relayed to faculty of UAB School of Public Health by members of the Kellogg project, an community development project in Wilcox County funded by the Kellogg Foundation, concerning the possibility of a disproportionate amount of enteric disease amongst young children in the county. The possibility that this may have a relationship to the large amount of inadequate and inappropriate sewage disposal was confirmed by the county's sanitarian.

Demographics

Wilcox County is located in the southern part of the Alabama in what is known as the Black Belt, due to the fertility of the soil in this region (Appendix B). The county's land area is 581,171 acres most of which is forest land owned by timber companies. In fact 72.4% of the county's land area is forest, 23.1% is agricultural, and a mere 0.6% is considered urban or "built up" (13).

A population of 13,568 reside in Wilcox County, Alabama. The racial breakdown of the county is 31% of the residents are white and 69% are black. It is ranked among the poorest counties in the nation with 45% of its population living below the poverty line (14,15). Other statistical indicators give a broader picture of this rural county (Appendix C).

In 1980, Wilcox County, Alabama was ranked the 6th poorest county in the United States based on the percentage of people living below the federal poverty line, defined as an income of up to $13,924 for a family of four. Nearly half of the county's residents were living below that level. In 1990 according to the Census Bureau, Wilcox's ranking moved up to 25th in the nation, however, 45.2% of the population still live below the federal poverty line (15).

Wilcox County is a rather large rural county with its population spread throughout. Many of the residents are without any form of transportation. No federal highways run through the county, only state and county roads. This creates a serious problem with access to health care for many patients, as well as isolating the county from external revenues and employment opportunities. The county has several phone companies that operate within its borders, so many inter-county calls -- perhaps to the doctor -- are long-distance.

The county's main industry is forestry. The largest industrial employer is MacMillan Bloedel, a Canadian paper company. They employ 1,500-2,000 county residents. MacMillan Bloedel provides more than just jobs and revenue to the county. They support the hospital in Camden by buying expensive equipment for it and they fully fund a summer reading program for the county's children.

The median household income is $12,237. This compares to $23,597 for the state and $30,056 for the nation. The percent of families living below the federal poverty line is the highest in the state, 45.2%. This compares with the state average of 14.8%. Unemployment in the county in October 1992 was 12.3 %; also the highest in the state of Alabama. The state's rate was 6.1% and the national average was 7.2% (16)

Medicaid eligibility serves as another good indicator of poverty. Currently, 34.7% of the county's residents are Medicaid eligible. This, once again, is the highest rate in the state of Alabama and compares with a state rate of 11.9% and a national rate of 8.6% (Appendix D).

Services

There are many services available in the county for individuals and families in need. Some of the services available to poor county residents include: Aid to Dependent Children, the Food Stamp program, the commodities program, the school lunch program, a summer feeding program for children, and Medicaid. Some of the health care services

that are available through the Wilcox County Health Department include: family planning services, maternity care, WIC (Special Supplemental Food for Women, Infants, and Children) and EPSDT (Early and Periodic Screening, Diagnosis, and Treatment). The Kellogg Project does community development work with the elderly and the low-income. The project has set up tutoring sites throughout the county and work to spread health information out into the community through lay people. They also sponsor a program to train and certify low income women as nursing assistants. The Interagency Health Council, another of the county's service organizations, consists of the two school nurses, the health care providers, and the members of social service organizations. Their aim is the networking of many agencies for common welfare of the county. Programs that they sponsored include: a career fair at the high school, a women's health conference, a county resource handbook, and an AIDS coalition.

Schools

In Wilcox County there are two separate and distinct school systems. There is the public school system made up of 6 schools; 3 elementary schools, 1 Kindergarten-8th grade school, 1 middle school, and 1 high school. The public schools enroll approximately 2,850 students; 99.2% of which are black. There are also two private schools, Kindergarten-12th, in the county. Together these private schools enroll approximately 570 students, 100% of which are white (Appendix E). In the county, 19.1% of students are enrolled in private schools. This compares with a state average of 11.6% (13). There are also some students who go to school in Thomasville which is in a neighboring county.

Of the county's population over 25 years old, 41.7% have graduated from high school and 9.5% have graduated from college. The state averages are 56.5% and 12.2% respectively (13). The graduation rate for the 1990-1991 school year for the county was 51.8%. This was lower than the state rate which was 66.8% (17).

The school system also has many other significant problems. Over the last ten years there has been a serious problem with mismanagement of funds (18). The county recently built a $7.5 million high school. This occurred when many of the basic needs of the other schools in the system were not being met. This is a school system where many sinks and toilets are dysfunctional and where raw sewage until late ran out onto the playground at two elementary schools. Building this new high school as well as closing and consolidating many of the other schools in the county has led to increasing centralization which is said to harm the children's education (Appendix F).

Wilcox County's public school system ranked the lowest in the state according to the scores of high school juniors on the Alabama High School Graduation Exam. With only 56% passing reading, 50% passing math, and 39% passing language, Wilcox County students trailed students in most other systems by significant margins (20).

The Alabama Department of Education's report last June on the Wilcox County schools cited a "general deterioration of many facets of the educational process" in the system and said it was caused "mainly by the lack of leadership on the part of the administration." Many shortcomings were noted in the report including: no scheduled maintenance program for facilities, no regular monitoring of teaching programs, a serious shortage of textbooks, and employment of some teachers without state certification (18).

In September 1992, the Wilcox County Board of Education approved a plan that gave the State Superintendent of Education final approval on all spending. This agreement was the final step in what is seen as a virtual takeover by the state of a public school system heavily in debt and among the worst in the nation academically (19).

Another major problem facing the school system is that two public elementary schools, Alberta and W.J. Jones, almost didn't open for the 1992-1993 school year because of sanitation problems. The septic tanks serving the schools had to be pumped daily in order to keep raw sewage from seeping out on top of the ground. The schools were given 90 days to remedy the problem. Alberta Elementary received a new septic

system and W.J. Jones Elementary received a constructed wetland system to remedy their sanitation problems.

Water and Sanitation

There are approximately 2,056 households in the unincorporated area of Wilcox County that are without public water service. Those who are not served rely mainly on shallow wells and surface water sources of generally poor quality and unreliable quantity. The majority of those lacking public water service are of moderate and low income due to the very high percentage of those persons living in the unincorporated portion of the county. (21). Wilcox County, with the financial help of the Kellogg Foundation, has recently provided safe water to many areas not previously served by a public supply. There are plans to extend the public water lines to reach even more of the county's residents. However, one of the obstacles that will need to be overcome is that 28.4% percent of homes lack complete plumbing. This is the highest rate in the state which has an overall average of 4.2% (13).

Also, problems of inadequate waste disposal remain in many of the unincorporated areas and within poorer neighborhoods of Camden. The community health centers in Vredenburgh and Alberta and the county health department report that this situation may cause diarrhea and parasitic infections. Even the schools have had problems maintaining adequate, safe water and waste disposal. Just four years ago, eight schools had a positive outflow of sewage onto the ground. A middle school in the community of Annie Manie was closed a few years ago because of a high fecal coliform (E-coli) count in the water supply. Also as mentioned previously, two elementary schools had a problem with raw sewage running out onto the playground or backing up into the cafeteria before receiving new sewage treatment systems this year.

There are five municipalities in Wilcox County. The two largest, Camden and Pine Hill have public sewer systems that have recently been upgraded. The three others, Pine

Apple, Oak Hill, and Yellow Bluff rely on septic tanks and other means of sewage disposal (Appendix E). Septic tanks provide the main waste water disposal facilities in Wilcox County. County-wide problems with septic tank use are associated with variable soils restricting percolation and having seasonally high water tables. It is estimated that between 50% and 75% of the households in the county experience problems of some type with waste disposal (22).

Of the 13,568 residents of Wilcox County, 2,895 (21%) are served by existing sewer systems. There are 17 communities within Wilcox County identified by the Alabama-Tombigbee Regional Planning Commission (ATRPC) currently in need of sewage disposal systems. This includes 3,745 county residents, or 28% of the county that is in need. Of this number approximately 2,244 (60%) of the residents are classified as low or moderate income persons (22). The unincorporated sections of Wilcox County contain 10,673 (79%) of the residents. There are no sewer systems serving any of these rural areas.

Poverty contributes to these sewage problems. Present regulation of the sanitary code limits the way wastes may be handled to methods that exceed the budgets of many rural households. The average cost of a septic tank and drain field is reported to be approximately $3,000 in Wilcox County.

Health Facilities

There are four rural health clinics in the county. Two of them, the Vredenburgh Clinic and Alberta Clinic are financed by the Catholic order of the Fathers of Saint Edmund. The other two health clinics, the Pine Apple Clinic and the Yellow Bluff Clinic, are operated by the Rural Health Initiative out of Selma. Pine Apple and Yellow Bluff are staffed full-time by a physician. Alberta and Vredenburgh are staffed full-time by a nurse-practitioner and have a physician come in to see patients one day a week. The Pine Apple and Vredenburgh clinics, both staffed by nuns, also provide a number of other outreach

services for their communities. Some of these services include: adult and child day care, tutoring, transportation, and elderly feeding sites.

The J. Paul Jones Hospital is the only hospital in the county. It was opened in Camden in 1957. This 32 bed hospital provides in-patient care and emergency services. The hospital stopped delivering babies in 1985. Pregnant women must now travel to a neighboring county and some drive as far as Mobile or Montgomery. The hospital is staffed by 40 employees including: 7 R.N.s, 5 L.P.N.s, 4 aides, 2 orderlies, and 6 home-health employees. All of the physicians in the county take call with the exception of Dr. Nettles, a semi-retired doctor who practices part-time. The county also has a private ambulance service.

The Wilcox County Health Department is also located in Camden. They provide approximately 200 well-child health visits per month. It is estimated that the Wilcox County Department of Health sees 88% of the children in the county. Other services provided include: immunizations, the Supplemental Feeding Program for Women, Infants, and Children (WIC), family planning, cancer screening and a hypertension clinic. The health department does not provide any primary care to its clients. Sick patients are referred to the private physicians or the rural health clinics.

The health department was recently named the preferred provider of prenatal care for Wilcox County under the Medicaid Waiver. This means that they are the only provider in the county that will be reimbursed by Medicaid for providing prenatal care. This has created a serious problem with staffing since the health department must now serve four times the number of prenatal patients as before when the rural health clinics could also be reimbursed for providing this service. The health department employs eight full-time staff including: one nurse, one sanitarian, five clerks, and one aid. Supplementing this staff are a couple of temporary nurses; a WIC nutritionist twice a week; a physician from Monroeville a few times a month to see high-risk prenatal patients; and Dr. White, a physician who has a private practice in Camden, two Thursdays a month to do the family

planning clinic.

Currently there are five doctors practicing medicine in Wilcox County. They are Dr. Blackmon, Dr. Cook, Dr. Moskovich, Dr. Nettles, and Dr. White. Dr. Blackmon and Dr. White are private MD's who have offices in Camden next to the county hospital. Dr. White also works twice a month at the Wilcox County Health Department and one day a week at the Alberta Clinic. Dr. Nettles is a semi-retired doctor who runs a small practice in Arlington, located in the western region of the county. He is still willing to barter for his medical services. He has been known to accept quilts or peas for services rendered. Dr. Moskovich, the acting physician at the Yellow Bluff Health Clinic, is working in the county to repay her medical school loans. Dr. Cook is a nun who has been working at the Pine Apple Clinic for nearly eight years. She also spends one day a week working at the Vredenburgh Clinics (Appendix G).

There are also two school nurses that attend to the basic medical needs of the over 2,850 students enrolled in the public school system. One of them is for the Chapter 1 students. Chapter 1 is a supplemental instructional program that helps children in grades pre-Kindergarten through 8th to improve their reading, speaking, and writing skills. These students are identified by academic/behavioral characteristics, grades, or teacher recommendation as needing some extra help and support. Between 70 and 80% of the students in the public elementary and middle schools are in this program. The second nurse is for students enrolled in Special Education. Their role is to strengthen the educational process by assisting students to improve or adapt their health status through detection, improvement, maintenance of their overall health. They refer sick children to the rural health clinics or the private providers for treatment. They also do some health education activities.

Vredenburgh

The community of Vredenburgh is located on the county line between Wilcox and Monroe County. It is a unique community with a population of 433, most of whom live at or below the poverty level. Vredenburgh is the third poorest community in the state of Alabama with a per capita income of $3,435. Vredenburgh was the site of a large paper mill until it burnt down in 1978, leaving the community without any employment opportunities. Physical and social isolation along with the lack of transportation are some of the most critical problems of this community following the lack of employment. The current unemployment rate is 18.6%.

The community is physically divided by race. The white community occupies the old mill homes. However, only 12 of these 31 homes are occupied year-round. The black community, 90% of the residents in Vredenburgh, live in what is known as the Maple Street Neighborhood or the Quarter which literally lies on the other side of the tracks from the white section of town (Appendix H).

The Quarter is divided into two distinct areas by the Wilcox/Monroe county line. The distinction is that in 1986 when Monroe County put in a public sewer system for the town, the sewer lines stopped at the county line. So the Wilcox residents of Vredenburgh lack adequate sewage disposal. Many of these homes pipe their sewage into a drainage ditch. It has been noted by the health care providers at the Vredenburgh Clinic that the children who live in this area have a higher rate of skin disorders than the children who have proper sewage disposal in their households.

Because "the housing conditions in Vredenburgh had reached a crisis state with many being extremely unsafe for occupancy" (23), the town urged by Sisters who run and work out of the Vredenburgh Health Clinic applied for and received a number of Community Development Block Grants (CDBG). In 1984 a public water system was constructed. In 1986 a municipal sewer system was put in for Monroe County residents. And in 1990, fifteen houses were renovated, eight by acquisition and relocation and seven

by rehabilitation.

Currently, 64% of the occupied housing units are substandard, classified as either dilapidated or seriously deteriorated. There are 78 persons living in this housing that is inadequate for human habitation. Although 100% of the population has access to the municipal water system, there is a serious inadequacy in the plumbing fixtures of many of homes. There are eleven occupied units that lack complete plumbing facilities. Standpipes in the yard are the source of water and latrines or a neighbor's bathroom serve as toilet facilities for these households (23).

A sanitary survey of the Quarter in Vredenburgh was conducted by the Alabama Department of Public Health on January 23 1990. The report concluded that a lack of complete plumbing fixtures, the lack of adequate sewer connections, and the condition of the housing "has all of the ingredients for serious health problems if left unattended (23)." The researchers spent a considerable amount of time in this community and the data that was collected from this area was analyzed separately from the rest of the county.

RESEARCH METHODS

The Wilcox County Needs Assessment consisted of a number of separate types of research. Surveys of households with children under the age of ten were conducted. Provider surveys were administered to 10 local health care practitioners. Chart audits were conducted at the four rural health centers. And a stool sample survey at the rural health clinics followed the chart audits in hope of reinforcing their findings.

Household Surveys

The Vredenburgh Survey.

This survey took place during the first week in October 1992, included 30 households with children under the age of 10. The sample was selected with the help of outreach workers from the local rural health center. These outreach workers identified all of the households in the area that contained children under the age of 10. This represented 40 of the 90 households in the immediate area. The two interviewers sampled 30 of the 40 identified. The missing households were due to no one being home. Seventy children under the age of 10 were included in this sample.

The Christmas Survey.

The two original interviewers along with four additional Master's students returned to the county in December 1992 to administer household questionnaires throughout the county.(Thus the name the Christmas sample.) The four students underwent training to familiarize themselves with the questionnaire and the proper procedure for administering it. This process was carried out over a seven day period.

The sample size of the Christmas sample was based on 1990 Census data (2,000 children in the county under 10 years old). To get 90% confidence the sample needed to contain 238 children. The sample that was obtained contained 268 children from 129 households.

The sampling method that was used consisted of:

- Identification of the geographic area of interest; **(Wilcox County)**
- Identification of the age group of interest; **(Children under 10 years)**
- Random selection of 42 sites, using a map of the area (clusters of homes denoted by a town, a school, a church, or a road were pulled "from a hat"); **(6 census tracts were predefined in the county; the populations of the census tracts determined the number of sites selected in each)**
- Random selection of a starting point, "household" within each site;**(by the interviewers upon arrival to the site)** and
- Selection of 7 individuals of the appropriate age from within each of the 42 sites. Selection began in the starting household and then continued to the next nearest household until the total number of individuals was obtained. All individuals of the appropriate age living in the last household falling into the sample were included, even if this meant including more than 7 individuals from a site (24,25).

TABLE 1

Christmas Sample
Comparison of the Actual Number Sampled vs. the Weighted Sample

Number of households/tract against census	Actual # Sampled	Out of total children <10	Weighted Sample
ALBERTA	34	310	40
CAMDEN	48	412	49
COY-FATAMA	25	134	17
PINE APPLE/OAK HILL	23	182	23
PINE HILL/Y. BLUFF	87	670	86
CAMDEN TOWN	51	384	53
Total	268	2092	268

The Questionnaire.

The household questionnaire that was used for this survey was based on a questionnaire used in Zaire, Africa for a similar purpose. After making the appropriate changes, the questionnaire was pretested in Lowndes County, a county bordering Wilcox on the west with similar demographics, to determine whether it was effective. The pretest consisted of visiting homes and administering the questionnaire to the head of a household in a similar manner to that which would by used in Wilcox County. Following the administration phase the interviewers discussed the problems they had seen. Changes were made as needed before the questionnaire was administered in Vredenburgh and county-wide (Appendix I). Using this questionnaire, information about the household was gathered. This information included: household characteristics, child morbidity data, health care information, water and sanitation information, and perceived needs.

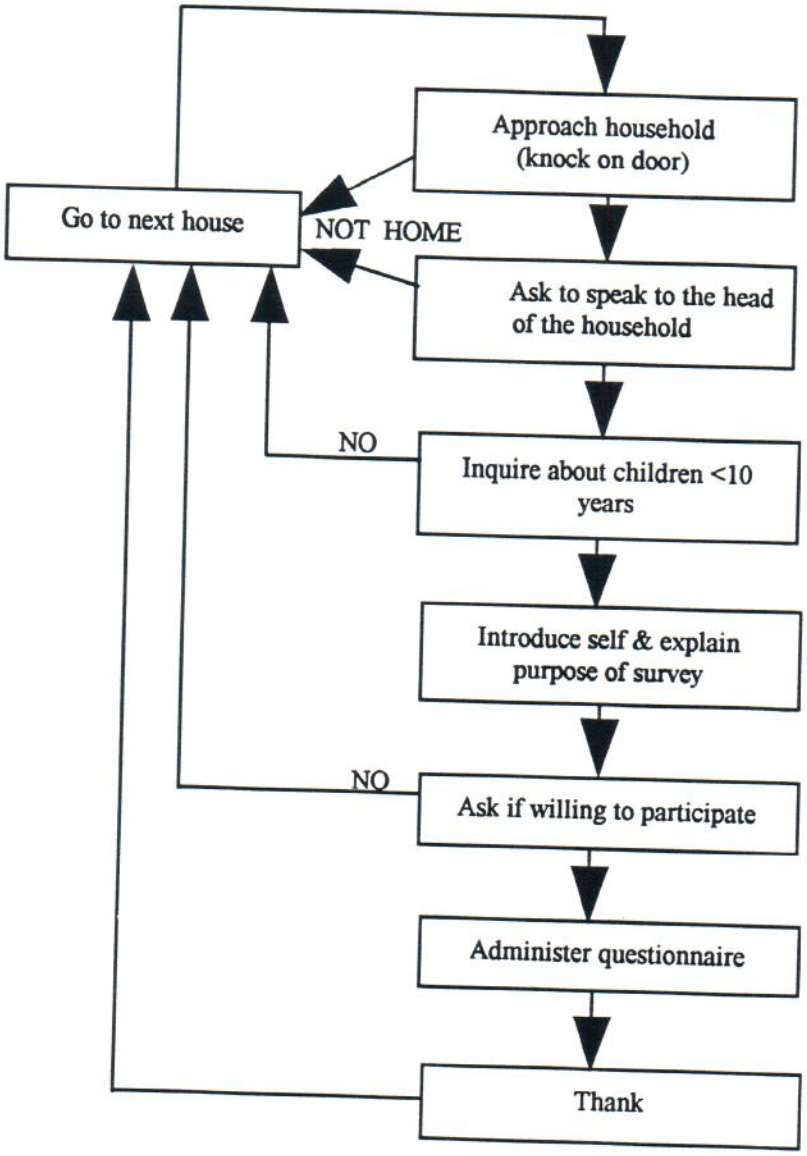
The protocol that was used to perform an individual household survey is shown in Figure 1.

Data Analysis.

To perform the data analysis of the household questionnaire data a Chi-square test with Yates' correction (28) was used to assess which variables appeared to be associated with enteric diseases (diarrhea and intestinal helminths). Furthermore, point and 95% interval estimates of Odds Ratio (OR) were calculated to determine the magnitude of association between enteric diseases and other variables (29).

FIGURE 1

HOUSEHOLD QUESTIONNAIRE PROTOCAL



Health Care Provider Surveys

All five physicians, along with the two school nurses, the head nurse at the Health Department, and two nurse practitioners who work in the rural health centers participated in the Provider Survey. The methodology that was used to survey a provider consisted of the two researchers setting up an appointment with the provider. One of the researchers would administer the questionnaire while the other observed.

The two researchers developed the Provider Questionnaire based upon the recommendations of Scrimshaw and Hurtado (3). This questionnaire (Appendix J) was pretested on the Kellogg project nurse to be sure that the questions were clear and the correct information was being obtained.

Basic information concerning the practice of the provider was obtained. Questions were also asked about prevalence of childhood morbidity, in particular questions about the diagnosis and treatment of enteric disease (diarrhea and intestinal parasites). Providers were then asked to discuss the biggest needs of the county and barriers to health care for the general population.

Service Utilization Information and Client Information was then obtained from other clinic personnel, usually a clerk. Information in this section of the survey included: data about the practice, service statistics, and acceptable payment procedures. Finally observations were made by the researchers about the waiting room.

Chart Audits

Chart audits were performed at the each of the 4 rural clinics to determine the amount of enteric disease among patients under the age of 10. The information that was extracted from the charts included: date of birth, date of visit, sex, race, zip code, and diagnosis. The incidence of enteric disease for two of the clinics, Yellow Bluff and Pine Apple, was made available by the Rural Health Initiative out of Selma. However, at the

Vredenburgh and Alberta Clinics encounter forms for the 1991 fiscal year were gone through by hand by the two researchers.

At the Alberta Health Center there was a very large percentage (33%) of children that had been treated for intestinal helminths. Because of this, each individual chart was reviewed to determine the method of diagnosis. The nurse-practitioner had identified the cases using a rectal smear, but was no longer working in the area to explain her method in person.

The method has been described in the literature (26, 27) and is as follows: a small sample of stool from a digital rectal exam is mixed with water and the eggs are viewed under low power with intermediate objective (45X), the eggs can easily be identified. The technique is at least as accurate, but not as sensitive, as more standard laboratory methods that concentrate the ova before microscopic examination. The intensity of infection correlates with the number of eggs per gram of stool (26). In this manner the presence or absence of the following intestinal nematodes may be determined: 1)Ascaris lumbricoides, 2)Trichuris trichuria, 3)Enterobius vermicularis, 4)hookworm species, and 5)Strongyloides stercoralis (27). However, the past nurse practitioner at the Alberta health center recorded her results as being positive for roundworms or flatworms.

Stool Samples

Reports from health care providers interviewed in Wilcox County along with the outcome of the chart audits performed at the rural health clinics indicated that gut helminth infections may be a health problem among children in the county. Interviews with the local health officials also indicated that many dwellings do not have sanitary sewerage disposal systems. Conditions for transmission of intestinal parasites were optimal.

To initiate the stool sample survey, health care practitioners at the four rural health clinics were contacted and asked to collect specimens from their patients. All four clinics consented. Then each clinic was visited and supplied with the necessary materials and directions for how to collect the specimens (Appendix K).

All subjects under 10 who visited the four rural health clinics were be eligible to enter the study, regardless of the reason for the visit. Written consent was solicited from the parent or guardian of children under 7 years of age and from both the subject and the parent or guardian in older children. The study was explained by a physician, nurse practitioner, or nurse at each clinic. Each subject was provided with an opaque stool cup, a tongue depressor, and a sticker with their clinic record number, age, sex, zip code, and the date of the clinic visit. When the filled stool cup was returned to the clinic, a portion of the stool was mixed with 10% buffered formalin in a vial. The filled vials were collected intermittently by a School of Public Health faculty member. The contents were then analyzed in the Department of International Health laboratory using a simple flotation method.

Approximately 1 gram of stool was thoroughly mixed with 15 milliliters saturated sodium nitrate and allowed to sit undisturbed for 10 minutes in a test tube filled to the top. A cover slip was then touched to the top of the inverted meniscus. This method concentrated any helminth ova present. Helminth ova were identified using direct microscopic examination. Positive results were returned to the health clinics, so the subject could be treated.

Based upon the number of patients under 10 years who were seen at each clinic and with an estimated helminth prevalence of 5% and 95% confidence limits of 3% it was estimated that the needed sample size was 211.

RESULTS and DISCUSSION

Household Surveys

The results of the household surveys from both Vredenburgh and the Christmas sample were combined to form a County data set. These three sets of data in the form of frequencies describing the samples are described in Appendix L. The results are broken down into the following categories: physical characteristics of the household, characteristics of the residents, breastfeeding, childhood morbidity, health care, transportation, source of income, pets, water and sanitation, solid waste disposal, existing latrines and septic tanks, interest in building a septic tank or latrine, and observations.

According to our survey, 23.3% of the households sampled in Vredenburgh are without water in the house; 11% in the Christmas sample. The number of residents per household was found to be quite high with over 6 per household in Vredenburgh and nearly 5.5 in the Christmas sample. Both samples consisted of a higher percentage of nonwhite households than the county on the whole. In Vredenburgh this was because only the Quarter was sampled. There are between 1% and 7% of the households that are without a regular source of medical care. Approximately 66% of the households are on Medicaid, 16 % have private insurance, and 17% paid individually for the health care of their children.

About 17% of the households in Vredenburgh and 12% of the households in the Christmas sample do not have a standard indoor toilet. Approximately 35% of the County sample use a method other than a sewer system or a septic tank to dispose of waste; 16% pipe their sewage out onto the ground near their home, 20% use a cesspool or some other means of disposal. Of those households that use septic tanks, 75% were not working in Vredenburgh and 23% were not working in the Christmas sample. Sixty-nine percent of the households surveyed perceived their existing toilet facilities as a problem. Of those households that had inadequate sewage disposal, 70% expressed an interest in building a

latrine, a septic tank, or both if someone were available to help them put in a low-cost facility.

From the Vredenburgh survey 18.6% of the children were found to have had diarrhea in the last month; 6.3% from the Christmas survey. The results of the questionnaires for the children who had diarrhea in the last month were also analyzed separately and are described in Appendix M. According to these results, a large portion of the children with diarrhea were found in the Camden census tract. Interestingly, nearly all of these children were found to have water in the house and a working indoor toilet. In Vredenburgh, 54% of these children who had diarrhea were on the public sewer; but 46% piped their sewage into the yard or used some other means. In the Christmas sample 77% used either public sewer or a septic tank; 6% piped sewage into the yard; and 17% used another means. Sixty-seven percent of those in Vredenburgh and 44% of those in the rest of the county perceived their toilet facilities to be a problem. In the Vredenburgh data set when the cases and controls are looked at in relationship to city sewer vs. inadequate sewage disposal in a 2x2 Chi-square table, the Odds ratio=6 and the 95% Confidence Interval=(1.74-20.66) with a $p<.05$ (Figure 2).

Table 2 describes the children sampled in Vredenburgh. The cases are the children who had an enteric disease, either diarrhea or intestinal parasites, in the last month or six months respectively. The controls are the children who had not had an enteric disease during the prescribed time. The sample consists of relatively young children, with an average age of approximately three years among both cases and controls. The mean number of children in the home under the age of ten is significantly lower for the cases, as is the mean number of total residents. The mean age and education of the caretaker are almost identical for the two groups. The socioeconomic characteristics of this study population are lower than for the county on the whole (more households on social welfare and fewer working). The cases are less likely to be on city sewer and more likely to pipe sewage into the yard thus increasing exposure to enteric pathogens. However, cases are

more likely to have a water source and toilet in the house. Indoor plumbing should not increase exposure to enteric pathogens, unless local contamination of piped water is a problem. The cases also have more problems with mice, rats, and roaches, and they are more likely to have an inadequate means of solid waste disposal. These factors may not directly increase exposure to enteric pathogens, but for social and economic reasons may be more common in households where such exposure is increased for other reasons.

Table 3 describes the children sampled in the Christmas survey. The definition for cases and controls is the same as in Table 2. Camden town, shows a higher percentage of cases than did the other areas sampled. The mean age of cases and controls is between 3 and 5 years. The mean number of children under 10 in the home and the mean number of residents is lower for the cases than the controls. The mean age and education of the caretaker are similar for both the cases and the controls. Fifteen percent of the white children are cases compared with only 7% of black children. The socioeconomic characteristics are similar for the two groups and right on target for the county overall. In this survey the cases are less likely to have a problem with pests, less likely to have an inadequate form of sewerage disposal, and less likely to have an inadequate form of solid waste disposal. These findings differ from the Vredenburgh sample. The cases in the Christmas sample were also more likely to have a toilet in the house and city water in the house than were the participants in the Vredenburgh sample.

Tables 4, 5, and 6 summarize the results of the statistical analysis between major variables and enteric disease for the County as a whole and for the Vredenburgh and Christmas data sets, respectively. In the County data set, the only statistically significant items are: more than five children under the age of ten in the household and more than six residents in the household. It is possible that these two variables are significant due to the increased likelihood of transmission among children or to increased transmission due to crowding. Trends were seen linking the risk of enteric disease to the absence of running water (a well-known risk factor for person-to-person transmission of enteric pathogens),

the absence of a standard indoor toilet, and the presence of flies (which can serve as vectors for enteric pathogens), in the home. It is interesting to note that, although children under 3 are normally at greater risk for enteric disease this was not the case in this survey. Also, although the presence of animals in the home or yard where children play often serves as a reservoir for certain pathogens such conditions were not seen as significant in this case.

In the Vredenburgh data set, the statistically significant item was: family not owning their home. This could be due to the family not willing to invest in improvement of a home that is not theirs (eg. improved sewage disposal). In the Christmas data set, there were no statistically significant items.

FIGURE 2

VREDENBURGH SURVEY
2x2 TABLE
CHI-SQUARE

	Enteric Disease +	Enteric Disease -
Wilcox County + exposure (no sewer)	6 a	7 b
Monroe County - exposure (sewer)	7 c	50 d

Odds Ratio = 6
95% C.I. (1.74-20.66)
$p<.05$

TABLE 2

Comparison of Socioeconomic, Demographic, and Environmental Characteristics of Cases and Controls in Vredenburgh Survey

Variable	Cases (children w/ enteric disease) N	(%)	Controls (children without enteric disease) N	(%)
Mean Age in Months (S.D.)	33.77 (23.2)		37.79 (29.9)	
Mean Number of Children <10 in home	2.77		3.65	
Mean Number of Residents in home	6.15		7.11	
Mean Age of Caretaker in yrs (S.D.)	34.38 (6.4)		33.30 (9.6)	
Mean Education of Caretaker	10.46		10.33	
Family's Income				
Aid for Dependent Children	8	61.5	42	73.7
Food Stamps	11	84.6	51	89.5
Work	6	46.2	21	36.8
Family Owns Home	11	84.6	30	52.6
Telephone in home	6	46.2	14	24.6
Washer in home	10	76.9	25	43.9
Animals/Pests				
Animals in House	1	7.7	4	7.0
Animals in Yard	11	84.6	42	73.7
Problem with Flies	2	15.4	15	26.3
Problem with Mice/Rats	10	76.9	31	54.4
Problem with Roaches	12	92.3	49	86.0
Type of Sewerage Disposal				
City Sewer	7	53.8	41	71.9
Non-functioning Septic	0	0	1	1.8
Piped into Yard	5	38.5	7	12.3
Other	1	7.7	8	14
Inadequate Sewerage Disposal	6	46.2	16	28.1
Toilet in Home	13	100	43	75.4
Water Source in Home	13	100	41	71.9
City Water	13	100	57	100

Inadequate Solid Waste Disposal	3	23.1	5	8.8
Mean Cleanliness of Interior (S.D.)	2.38 (1.4)		2.31 (1.1)	
Mean Cleanliness of Yard (S.D.)	2.85 (1.5)		3.33 (1.2)	

TABLE 3

Comparison of Socioeconomic, Demographic, and Environmental Characteristics of Cases and Controls in Christmas Survey

Variable	Cases (children with enteric disease) N	(%)	Controls (children without enteric disease) N	(%)
Census Tract:				
Alberta	1	4.5	29	12.0
Camden District	5	22.7	43	17.8
Coy-Fatama	2	9.1	23	9.5
Pine Apple/Oak Hill	1	4.5	22	9.1
Pine Hill/Yellow Bluff	4	18.2	83	34.3
Camden town	9	40.9	42	17.4
Mean Age in Months (S.D.)	58.41 (26.6)		40.86 (28.7)	
Mean Number of Children <10 in home	2		2.77	
Mean Number of Residents in home	4.82		6.17	
Mean Age of Caretaker in yrs. (S.D.)	36.77 (11.4)		36.81 (14.1)	
Mean Education of Caretaker	11.09		11.20	
Race				
White	6	27.3	33	13.6
Nonwhite	16	72.7	209	86.4
Family's Income:				
Aid to Dependent Children	12	54.5	112	46.3
Food Stamps	14	63.6	160	66.1
Working	11	50.0	129	53.3
Family Owns Home	12	54.5	173	71.5
Telephone in Home	16	72.7	149	61.6
Washer in Home	13	59.1	157	64.9
Dryer in Home	8	36.4	72	29.8
Animals/Pests:				
Animals in House	5	22.7	63	26.0
Animals in Yard	21	95.5	221	91.3
Problem with Flies	4	18.2	84	34.7
Problem with Mice/Rats	6	27.3	91	37.6
Problem with Roaches	11	50.0	152	62.8

Type of Sewerage Disposal:				
City Sewer	6	27.3	45	18.6
Functioning Septic	7	31.8	78	32.2
Nonfunctioning Septic	3	13.6	24	9.9
Piped into Yard	1	4.5	46	19.0
Other	5	22.7	49	20.2
Inadequate Sewerage Disposal	9	40.9	119	49.2
Toilet in Home	20	90.9	209	86.4
Water Source:				
City	17	77.3	163	67.4
Well	4	18.2	70	28.9
Other	1	4.5	9	3.7
Water Source in Home	20	90.9	213	88.0
Inadequate Solid Waste Disposal	4	18.2	55	23.8
Mean Cleanliness of Interior (S.D.)	2.07 (0.8)		2.40 (1.2)	
Mean Cleanliness of Yard (S.D.)	2.68 (1.2)		3.13 (1.2)	

TABLE 4
County Data Set
Association Between Major Variables and Enteric Diseases

	OR	(95% C.I.)	P-value
A. Household Characteristics			
1. Race Non white	0.600	(.233, 1.540)	.288
2. Absence of dryer	1.090	(.474, 2.507)	.839
3. Absence of telephone	0.708	(.344, 1.456)	.348
4. Don't own home	0.906	(.433, 1.899)	.795
5. Number of children <10			
1 child	0.556	(.219, 1.410)	.216
3 children	0.370	(.143, .960)	.041
4 children	0.261	(.063, 1.093)	.066
≥5 children	0.156	(.041, .596)	.007
6. Age of child			
< 6 months	0.607	(.062, 5.937)	.668
6-11 months	0.538	(.138, 2.103)	.373
24-35 months	0.919	(.211, 4.001)	.910
36-47 months	1.317	(.336, 5.602)	.660
48-59 months	0.850	(.174, 4.149)	.841
60-71 months	1.466	(.358, 5.997)	.595
72-83 months	1.889	(.486, 7.340)	.358
7. Age of caretaker			
25-29 years	0.262	(.038, 1.817)	.175
40-49 years	0.921	(.314, 2.695)	.880
50-59 years	0.592	(.129, 2.728)	.502
≥ 60 years	0.524	(.115, 2.379)	.403
8. Education of caretaker			
< 9th grade	1.333	(.439, 4.048)	.612
9th -11th grade	1.752	(.755, 4.065)	.191
>12th grade	1.804	(.632, 5.147)	.270
9. Number of residents per household			
4-5 residents	.458	(.169, 1.237)	.124
6-7 residents	.217	(.071, .662)	.007
≥ 8 residents	.253	(.085, .755)	.014
B. Household Income			
1. ADC Recipients	1.255	(.619, 2.545)	.528
2. Food Stamp Recipients	1.043	(.480, 2.264)	.916
3. Absence of work income	1.066	(.529, 2.150)	.858

C. Water/Sanitation			
1. Absence of running water in house	0.342	(.084, 1.389)	.133
2. Water source			
Well water	0.419	(.147, 1.198)	.104
Other	0.815	(.100, 6.663)	.849
3. Inadequate sewage disposal	0.911	(.449, 1.850)	.797
4. Absence of standard indoor toilet	0.325	(.081, 1.310)	.114
5. Type of sewage disposal			
Septic system (functioning)	0.594	(.227, 1.556)	.289
Septic system (nonfunctioning)	0.794	(.209, 3.016)	.735
Piped into yard	0.749	(.268, 2.091)	.581
Other (cesspool, latrine, etc.)	0.696	(.250, 1.936)	.488
6. Inadequate solid waste disposal	1.053	(.438, 2.530)	.909
D. Animals & Pests			
1. Animals in house	0.716	(2.86, 1.794)	.476
2. Animals in yard	1.460	(.427, 4.989)	.546
3. Roaches in house	0.934	(.446, 1.958)	.858
4. Flies in house	0.418	(.172, 1.017)	.055
5. Mice/Rats around house	1.222	(.604, 2.470)	.577
E. Observation			
1. Very unclean yard	0.294	(.075, 1.150)	.079
2. Very unclean interior of house	0.859	(.171, 4.314)	.853

TABLE 5
Vredenburgh Data Set
Association Between Major Variables and Enteric Diseases

	OR	(95% C.I.)	P-value
A. Household Characteristics			
1. Absence of telephone	0.380	(.111, 1.298)	.123
2. Don't own home	4.950	(1.110, 22.065)	.036
B. Household Income			
1. ADC Recipients	0.571	(.62, 2.020)	.385
2. Food Stamp Recipients	0.647	(.115, 3.649)	.622
3. Lack of work income	0.681	(.201, 2.307)	.537
C. Water/Sanitation			
1. Inadequate sewage disposal	0.455	(.134, 1.551)	.208
D. Animals & Pests			
1. Animals in house	1.104	(.111, 10.956)	.933
2. Animals in yard	1.964	(.394, 9.797)	.410
3. Roaches in house	1.959	(.227, 16.877)	.540
4. Flies in house	0.509	(.102, 2.539)	.410
5. Mice/Rats around house	2.796	(.715, 10.930)	.139

TABLE 6
Christmas Data Set
Association Between Major Variables and Enteric Diseases

	OR	(95% C.I.)	P-value
A. Household Characteristics			
1. Race Non white	0.421	(.157, 1.127)	.085
2. Absence of Dryer	0.741	(.298, 1.842)	.519
3. Absence of telephone	0.601	(.229, 1.580)	.302
4. Don't own home	0.479	(.200, 1.143)	.097
B. Household Income			
1. ADC Recipients	1.393	(.581, 3.341)	.458
2. Food Stamp Recipients	0.897	(.361, 2.228)	.815
3. Lack of work income	1.142	(.476, 2.736)	.767
C. Water/Sanitation			
1. Inadequate sewage disposal	1.397	(.577, 3.386)	.459
2. Absence of standard indoor toilet	0.633	(.143, 2.810)	.548
3. Absence of running water in house	0.734	(.164, 3.298)	.687
D. Animals & Pests			
1. Animals in house	0.836	(.296, 2.361)	.735
2. Animals in yard	1.995	(.265, 15.052)	.503
3. Roaches in house	0.592	(.248, 1.413)	.237
4. Flies in house	0.418	(.141, 1.241)	.116
5. Mice/Rats around house	0.622	(.236, 1.638)	.337

Health Care Provider Surveys

The results of the provider surveys are described in Table 7. Seventy percent of the respondents have worked in Wilcox County for at least five years. The most common childhood illnesses they report seeing are: upper respiratory infections, skin infections, nutrition-related illnesses (failure to thrive, iron-deficiency anemia, etc.), ear infections, and diarrhea. In rating conditions according to their prevalence on a five point scale diarrhea was rated 2.75 (average to high prevalence); intestinal parasite infection 2.38 (average to high);and acute respiratory infection 1.69 (high to very high).

These providers cited the major causes of diarrhea as viral, poor water supply, poor sanitation, unsanitary living conditions, poor personal hygiene, daycare, antibiotics, food poisoning, and allergic reactions. The treatments they recommend most often are clear liquids for 24 hours, Imodium, Kaopectate, or Pedialite.

The major intestinal parasites that they report seeing are Ascaris and pinworms. About one half of the providers report that they run tests to confirm their diagnosis. Vermox is the most common treatment used.

The age group that they report is the most susceptible to diarrhea and/or intestinal parasites is < 10 years. The most common time of year for these enteric diseases is summer. Communities that were mentioned as having higher prevalences of these conditions include: Alberta, Boykin, Pine Hill, and Vredenburgh.

The average number of patient visits in each of these health care facilities in 1991 was approximately 5,000 ranging from 1,802 to nearly 10,000.

All of the providers felt strongly about making health care as accessible to their patients as possible. All of the health care providers accept Medicaid and uninsured clients. The 4 rural health centers, the Health Department, and Dr. Nettles have sliding fee scales for there patients. All the providers accept walk-ins as well as scheduled appointments. Many of the providers have office hours after 5:00 p.m. and on weekends.

These health providers reported that on average 33% of their clients are uninsured ranging for 8%-56%; 39% are covered by Medicaid ranging from 15% to 75%; 13% are covered by Medicare ranging from 3% to 24%; and 14% are insured ranging from 4% to 25%. Two of the rural health clinics reported that 90-93% of their patients are living at or below the federal poverty level.

The providers identified poverty and poor education as the two biggest problems facing Wilcox County. They felt that the greatest barriers to health care were poverty, lack of transportation, and ignorance.

Dr. Cook identified the biggest problems of her patients associated with the poverty as the nutritional problems. "Poor people eat cheaper food which includes many fatty and high salt items that add to blood pressure and diabetes problems (Appendix P)."

Table 7

Results of the Provider Surveys

1.	Job title/position	
	Doctor	5 (50%)
	Nurse Practitioner	2 (20%)
	Nurse	1 (10%)
	School Nurse	2 (10%)
2.	Race	
	White	8 (80%)
	Non white	2 (20%)
3.	Sex	
	Male	3 (30%)
	Female	7 (70%)
4.	Number of years working in county	
	< 1 year	1 (10%)
	1- 4 years	2 (20%)
	5-10 years	4 (40%)
	10-20 years	1 (10%)
	>20 years	2 (20%)
5.	Where work	
	Private practice	3 (30%)
	Rural Clinic	5 (50%)
	Health Department	2 (20%)
	Schools	2 (20%)
	Hospital	5 (50%)
6.	MCH services provided	
	Pediatric care	10 (100%)
	Immunizations	7 (70%)
	Prenatal care	3 (30%)
	Family Planning	10 (100%)
7.	Most common childhood illnesses seen (1 provider did not answer)	
	Upper Respiratory Infections	9 (100%)
	Skin Infections	6 (67%)
	Nutrition-related illnesses	2 (22%)
	Ear Infections	4 (47%)
	Diarrhea	4 (47%)
	Intestinal Parasites	2 (22%)
	Seizures	1 (11%)
	Asthma	1 (11%)
	Injuries	1 (11%)

8. Prevalence of following conditions
(Ranked on 1-5 scale. 1=very high, 3= average, 5=very low)

Diarrhea	2.75 (average-high)
Intestinal Parasites	2.38 (average-high)
Acute Respiratory Infections	1.69 (high-very high)
Scabies	3.63 (average-low)
Conjunctivitis	3.75 (average-low)
Lead Poisoning	4.38 (low-very low)

9. Definition of diarrhea from clinical perspective

liquid runny stools	4 (50%)
>5 watery stool/day	2 (25%)
6-8 loose stools/day	1 (12.5%)
watery stool; 1/hour	1 (12.5%)

10. Major causes of diarrhea

Viral	4 (50%)
Poor water supply	1 (12.5%)
Poor sanitation	2 (25%)
Unsanitary living conditions	1 (12.5%)
Poor personal hygiene	1 (12.5%)
Daycare (fecal-oral transmission)	1 (12.5%)
Antibiotics	1 (12.5%)
Food poisoning	1 (12.5%)
Allergic reactions	1 (12.5%)

11. Major intestinal parasites

Ascaris	6 (66.5%)
Pinworms	7 (78%)
Hookworms	3 (33%)
Tape worms	2 (22%)
None	1 (11%)

12. Tests run to confirm diagnosis of intestinal worms

YES	4 (44%)
NO	5 (56%)

13. Treatment for diarrhea

Clear liquids for 24 hours	3 (33%)
Imodium	2 (22%)
Kaopectate	1 (11%)
Pedialite or equivalent	1 (11%)
Refer to physician	3 (33%)

14. Treatment for intestinal parasites

Vermox	4 (50%)
Antiminth (if insured)	1 (12.5%)
Piperazine	1 (12.5%)
Refer to physician	2 (25%)

15.	Recommend home treatment of diarrhea	
	YES	8 (100%)
	(forcing fluids, pepto bismal most common Rx recommended)	
	NO	0
16.	When diarrhea becomes serious enough to seek treatment in a health care facility	
	After 24 hours	3 (37.5%)
	Dehydration	5 (62.5%)
17.	How often are children hospitalized for dehydration (5-point scale; 1=very often 5=never)	3.88 (seldom)
18.	Deaths associated with dehydration	
	None	7 (100%)
19.	Age group most susceptible to diarrhea and/or intestinal parasites	
	< 6 years	3 (43%)
	6 months to 8 years	1 (14%)
	2-10 years	2 (29%)
	No particular	1 (14%)
20.	Seasonal variation in these conditions	
	YES	5 (71%)
	NO	2 (29%)
20a.	When most common	
	Summer	4 (80%)
	Fall/Winter	1 (20%)
21.	Communities with higher prevalences of these conditions	
	Alberta	1 (14%)
	Boykin	1 (14%)
	Pine Hill	1 (14%)
	Vredenburgh	1 (14%)
	Low income, poor sewage	2 (29%)
	No	3 (43%)
22.	Biggest problems facing Wilcox County	
	Poverty	4 (50%)
	Poor education	4 (50%)
	Lack of access to health care ($)	2 (25%)
	HIV	2 (25%)
	No transportation	1 (12.5%)
	Teenage Pregnancy	1 (12.5%)
	Low parental involvement in health & education	1 (12.5%)

23. Barriers to health care

Money	4 (57%)
Transportation	3 (43%)
Ignorance	3 (43%)
Unconcerned parents	3 (43%)
Too few doctors	1 (14%)
None	1 (14%)

Chart Audits

The results of the chart audits to determine the incidence of enteric disease among children at the four rural health clinics are as follows. At the Yellow Bluff Clinic the incidence of enteric disease diagnoses in children under 12 during 1991 were 1.4% with gastroenteritis and 0.7% with intestinal helminths. At the Pine Apple Clinic the incidence of enteric disease diagnoses in children under 12 during 1991 were 2.6% with diarrhea or gastroenteritis and 1.6 % with intestinal helminths. At the Vredenburgh Clinic the incidence of enteric disease in children under 10 during the fiscal year 1991-1992 were 2.5% with diarrhea, 3.3% with gastritis, and 5.0% with intestinal parasites. At the Alberta Clinic the incidence of enteric disease in children under 10 during the fiscal year 1991-1992 were 9.5% with gastroenteritis and 33.7% with intestinal helminths. Because of the extraordinarily high rate of intestinal helminths found at the Alberta Clinic during the original chart audit, a follow- up audit was conducted to determine the number of cases that had been diagnosed based on a positive laboratory test (Appendix N).

The results of the original chart audit had identified 120 children who had been diagnosed with and treated for intestinal helminths during the 1991-1992 fiscal year. A very significant portion of these children (117 out of 120 or 97.5%) who were treated for helminths had tested positive at least once during the year with a rectal smear performed in the office (procedure described). Thirty-one of these children (26%) had tested positive for helminths more than once during the study period. One hundred and fifty-two cases (91.5%) of helminths were treated following a positive rectal smear. Fourteen cases (8.5%) were treated without a positive test. These cases were based on symptoms, mother's wishes, or the actual passing or vomiting a worm.

J. Paul Jones Hospital, the county hospital's inpatient admissions of children under 12 during 1991 showed that 12.5% of admissions for this age group were for dehydration, 4.2% were for diarrhea, and 1.4% were for intestinal parasites.

Stool Samples

A total of 81 samples were collected and analyzed. The clinics distributed the cups to obtain samples, however, there was a very low return rate. Thirty-nine stool samples were analyzed from the Alberta Clinic with 2 showing up positive for ascaris. Nine were analyzed from the Pine Apple Clinic with 0 positives. Twenty-six were analyzed from the Vredenburgh Clinic with 0 positives, however, one roundworm, ascaris, was brought in. Seven stool samples were analyzed for the Yellow Bluff Clinic with 0 positives.

The rate of positives for Ascaris at the Alberta Clinic is 5.1%. The rate for the all the clinics combined is 3.7%. Although the rate at the Alberta Clinic is not as high as what was seen in the chart audit data (33.7%), it is significantly higher than the rate (0.7%) seen for Alabama according to the state diagnostic laboratory in 1987. And it is higher than the national percentage of positives (0.8%) for *Ascaris lumbricoides* seen in that same study (31).

In a chart review of the 39 subjects from the Alberta Clinic that were included in the stool sample survey 37 charts were pulled; 2 of the charts were missing. Fourteen children (38%) had no recorded medical history of intestinal helminths prior to the survey. Eleven of the subjects (30%) had tested positive for intestinal helminths in the last year. Eleven subjects (30 %) had been treated for intestinal helminths in the last year. Twenty-one of the subjects (57%) have tested positive for intestinal helminths at some time in the past. Nineteen of the subjects (51%) have been treated at some time in the past. Twelve of the subjects (32%) have history's of multiple helminth infections. Of the three subjects who tested positive in the stool sample survey, two had history's of a helminth infection; one in 1987 and the other in 1991.

Collection of stool specimens may be especially difficult among the pediatric age group. This is significant because it is this age group that has the highest risk of harboring intestinal parasites. These factors may lead to poor patient cooperation, increased physician frustration, and decreased diagnosis of intestinal parasites. This may result in a

tendency for the physician to treat patients without a specific diagnosis (27). Many of the health care providers in the area based treatment of intestinal parasites on the suspicion of the parent rather than a positive diagnostic test.

CONCLUSIONS AND RECOMMENDATIONS FOR PROGRAMS AND FUTURE RESEARCH

Based on this Needs Assessment the major health-related problems in Wilcox County include: widespread poverty and unemployment, poor housing conditions, a lack of transportation, a weak public school system, a lack of access to prenatal care and delivery services, and a serious lack of an adequate water supply, plumbing, and sewage disposal methods. The Household Surveys determined that 15% of households do not have a standard indoor toilet; 35% use some method other than public sewer or septic system for sewerage disposal with 16% piping sewage out onto the ground near the house; and 69% see existing toilet facilities as a problem. In Vredenburgh, a significant relationship was seen between enteric diseases in children under 10 and inadequate sewage disposal (O.R.=6, $p<.05$). The health care providers cited amongst the major causes of diarrhea: poor water supply, poor sanitation, unsanitary living conditions, and poor personal hygiene. And they categorized the prevalence of enteric disease in young children as average to high. The age group they consider to be the most susceptible is children less than 10 years old. Specific communities that they identified as having an excess of enteric disease are Alberta, Boykin, Pine Hill, and Vredenburgh. These are the same communities that the county sanitarian pointed out as problem areas. The chart audit survey revealed an excess of enteric disease; particularly in the northwest portion of the county. At the Alberta Clinic 33.7% of patients under 10 years old seen during the 1991-1992 fiscal year were diagnosed with intestinal helminths.

Suggested interventions for the county include: development of a health education curriculum for the schools focusing on nutrition and hygiene, a pilot project using intermediate technology to remedy the sewage disposal problems; and continuing education for the health care providers focusing on diagnosis and treatment of enteric disease.

Since enteric diseases and nutrition-related illnesses (especially hypertension and diabetes) are some of the most common seen, a health education curriculum tailored to the needs of the teachers in the Wilcox County public school system could meet many needs. It should be integrated into the regular subjects, serving to complement the skills that are already being taught. A lunch room component would definitely have some additional impact since 92% of the students are on the free or reduced lunch program. Focusing on behavior changes in the areas of personal hygiene and nutrition, especially in the lower grades could potentially have some long-term effects in the county.

Trial interventions with intermediate technology to help remedy the sanitation problems should be undertaken in the county. These will include: 1) development and trial of physical methods to improve sanitary waste disposal and supply safe water in the house; 2) providing directed messages on health education aimed at reducing the spread of fecal-orally transmitted disease among household members; 3) raising community awareness of the inter-family nature of and mode of spread of this group of diseases; and 4) promoting community hygiene practices aimed at disrupting the fecal-oral cycle for diarrhea and intestinal parasites.

SIFAT, (Serving In Faith And Technology or the Southern Institute For Appropriate Technology), is a training site for missionaries prior to serving overseas and foreign nationals. It is located in Lineville, Alabama where appropriate technology intended for use in the Third World is set up and tested. They should be accessed for assistance with setting up the demonstration project. They have already had some interaction with the county through the outreach workers in the Vredenburgh area.

Acute gastroenteritis is the leading cause of death worldwide in children under 4 years of age, as well as the second most common nonsurgical reason for pediatric admission to hospitals in the industrialized nations. The advent of oral glucose-electrolyte solutions in the last 25 years has revolutionized the treatment of dehydration that is secondary to acute diarrheal illnesses (30). Despite the wealth of accumulated knowledge,

pediatricians' experience with oral rehydration in the United States is limited. Wilcox County could serve as a good place to offer some continuing education on Oral Rehydration Therapy to the physicians and study the outcomes.

Future research should include: looking at the prenatal care and pregnancy outcomes of women in Wilcox County following the implementation of the Medicaid Waiver; studying the constructed wetland project at the elementary school in Pine Apple to determine whether it may be a practical solution to some of the sanitation problems in this region of Alabama; and following up of the sanitation pilot project to determine whether the use of intermediate technologies is a feasible solution to the lack of adequate sanitation and using this information to institute policy change at the state level.

The effects of the newly instituted Medicaid Waiver on prenatal care and birth outcomes in the county should be monitored closely. Wilcox County has some of the poorest indicators for pregnancy and birth outcomes in the state; 62.3% of children are born to unmarried women, 22.9% of births are to teens, and 11.7% of babies born are low birth weight. Prior to the passage of the Medicaid Waiver, 47.8% of pregnant women were not getting adequate prenatal care. At that time they were able to receive care at any of the health care providers. Since the Wilcox County Health Department located in Camden has recently become the preferred provider for Medicaid reimbursement, and since there is such a gross lack of transportation amongst the poor many providers fear that now many more of their patients may not get adequate prenatal care.

The constructed wetlands recently installed as the primary sewage treatment and disposal method for W.J. Jones Elementary School in Pine Apple is an example of alternative technology. This system should be monitored closely and successes and failures should be documented carefully. Since a large number of Alabama residents are not served by public sewer systems and failed septic systems are relatively common due to the problems with adequate percolation and low lying areas, the wetlands may be a sewage disposal system very much suited to the needs of this region and the state.

Technology for sewage treatment and disposal used in the developing world, while far from perfect, provides improvement over direct discharge into yards and areas where children play and attend school. If use of these systems were permitted in Wilcox County, even on a temporary basis, some reduction of enteric disease would be expected. Success with one or more interventions in the pilot test program mentioned earlier could be used as the basis to develop several demonstration projects in selected communities. Use of many of these systems in the United States would represent a departure from the sanitary code of most states. Thus, the physical interventions that might be incorporated into demonstration projects would have to be coordinated, and approved by the local and state health departments before this technology could be used. If successful, the precedent could be established for instituting policy changes in the sanitary codes, potentially benefiting many areas where the lack of adequate sewage disposal is related to poverty.

APPENDICES

APPENDIX A
Resource: (5)

Table 3.—Postneonatal Diarrheal Mortality in the United States, 1973 Through 1983[1]

	Whites		Blacks	
Region	Total No. of Deaths	Mortality Rate*	Total No. of Deaths	Mortality Rate*
Northeast	349	5.8	215	21.4
North-Central	531	6.4	326	28.9
South	936	10.8	1141	39.1
West	521	9.4	96	20.8
Total†	**2337**	8.2	**1778**	32.2

*Mortality rate is the number of diarrheal deaths among infants aged 1 through 11 months per 100 000 live births.
†Two hundred four deaths in other minority groups are not included.

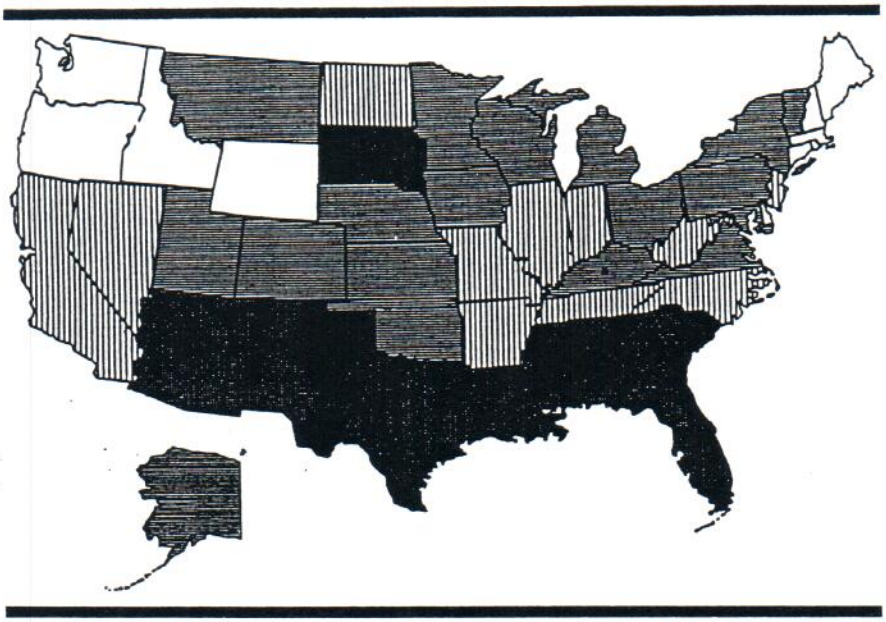


Fig 3.—Postneonatal infant mortality associated with diarrhea, by state, 1973 to 1983. Mortality rate is calculated as number of deaths among infants aged 1 to 11 months per 100 000 live births and is shown as follows: open areas indicate less than 5; horizontally slashed areas, five to nine; vertically slashed areas, ten to 14; and crosshatched areas, 15 or more.[16]

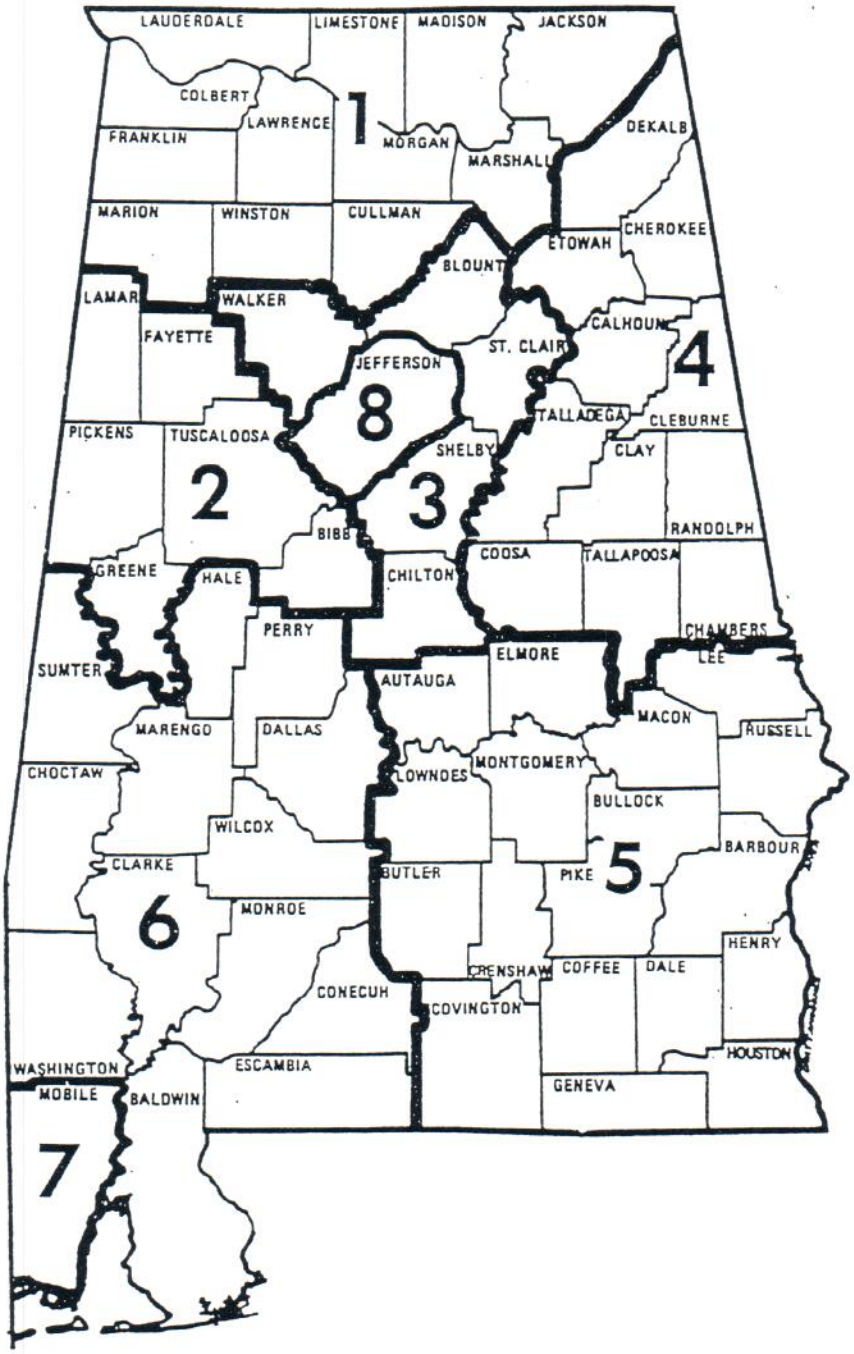
Table 4.—Postneonatal Diarrheal Mortality* in 1980 Birth Cohort

	Birth Weight			
	<2500 g		≥2500 g	
Region	White	Black	White	Black
Northeast	12.5	58.6	1.4	7.0
North-Central	24.1	39.4	0.5	4.8
South	42.9	89.5	2.9	10.7
West	32.6	80.1	2.3	2.1
Total	30.1	72.6	1.8	8.1

*Mortality rate is the number of diarrheal deaths per 100 000 postneonatal survivors. Data are from the National Infant Mortality Surveillance project.

APPENDIX B
Resource: (32)

MAP OF ALABAMA
PUBLIC HEALTH AREAS AND COUNTIES



APPENDIX C

Resource: (13)

WILCOX COUNTY FACT SHEET

Based on 1990 Census Data

1. Population 1990 - 13,568
   - Under 5 — 1,075
   - Under 18 — 4,612 (34.0%)
   - 18-64 — 6,810 (50.2%)
   - 65 and over — 2,146 (15.8%)

2. Racial Breakdown - 31% white, 69% nonwhite
   State - 74% white, 26% nonwhite

3. Total Live Births 1990 - 249

4. Crude Birth Rate - 18.4/1,000 population
   State - 15.7/1,000

5. % Births to Unmarried Women - 62.3%
   State - 30.1%

6. % Births to Teens - 22.9%
   State - 18.2%

7. % Low Birth Weight Rate - 11.7%
   State - 8.4%

8. % Without Adequate Prenatal Care - 47.8%
   State - 33.5%

9. Crude Death Rate - 11.3/1,000 population
   State - 9.7/1,000

10. # Physicians - 5 (1/2,713 population)

11. # Hospital Beds - 23.6/1,000 population
    State - 51.4/1,000

12. % Medicaid Eligible - 34.7%
    State - 11.9%

13. Per capita Income - $ 6,552
    State - $11,486

14. Poverty: Families Below Poverty Level - 39.3%
    State - 14.3%
    Under 18 Below Poverty Level - 57.4%
    State - 24.0%

15. Female-Headed Households - 31%
State - 22%

16. Unemployment Rate - 14.3%
State - 6.9%

17. High School Graduation Rate - 51.8%
State - 66.8%

18. Public School Lunch Program Participation
Free - 89%
Reduced - 3%
Paid - 8%

19. Plumbing: 5,119 Housing Units in the County

Lack complete indoor plumbing - 11.0%
State - 1.6%

On City Water - 63.5%
State - 87.1%

On Public Sewer - 28.5%
State - 54.5%

Lack Kitchen Facilities - 8.4%
State - 1.3%

APPENDIX C (continued)

1990 PROFILE OF ALABAMA

1990 CENSUS POPULATION		NATALITY		MORTALITY	
Total:	4,040,587	Total Live Births:	63,420	Total Deaths:	39,335
White:	2,975,797	Teenage Mothers:	11,552	Infant Deaths:	689
Black & Other:	1,064,790	Unmarried Mothers:	19,099	Postneonatal Deaths:	228
Rank Among Counties:	—	Low Weight Births:	5,331	Neonatal Deaths:	461
Per Square Mile:	79.6	Median Age of Mother:	25	Perinatal Deaths:	721
Median Age:	33.0	MARRIAGE/DIVORCE		Fetal Deaths:	680
		Marriages:	43,050		
		Dissolutions:	25,678		

NATALITY

ALL BIRTHS

	Total		White		Black & Other	
	No.	Rate	No.	Rate	No.	Rate
Live Births	63,420	15.7	41,072	13.8	22,348	21.0
	No.	Ratio	No.	Ratio	No.	Ratio
Unmarried Mothers	19,099	301.2	4,902	119.4	14,197	635.3
Low Weight	5,331	84.1	2,546	62.0	2,785	124.7

NOTE: Rate is per 1,000 population and ratio per 1,000 live births in specified group.

BIRTHS TO TEENAGE MOTHERS

	Total		White		Black & Other	
	No.	Rate	No.	Rate	No.	Rate
Live Births	11,552	37.9	5,905	29.5	5,647	54.3
	No.	Ratio	No.	Ratio	No.	Ratio
Unmarried Mothers	7,289	631.0	2,032	344.1	5,257	930.9
Low Weight	1,231	106.6	456	77.2	775	137.2

MORTALITY

	Total	Male	Female	White	White Male	White Female	Black and Other	Black and Other Male	Black and Other Female
Deaths	39,335	20,665	18,670	28,685	15,075	13,610	10,650	5,590	5,060
Mortality Rate	9.7	10.7	8.9	9.6	10.4	8.9	10.0	11.4	8.8

Age In Years

	Under 1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-44	45-54	55-64	65-74	75+	Unk.
Total Deaths	689	124	87	106	381	451	516	551	1,520	2,419	5,041	8,832	18,618	—
White Male	187	43	33	40	191	218	219	221	600	1,052	2,311	3,953	6,007	—
White Female	151	29	18	23	77	54	85	94	314	564	1,286	2,653	8,262	—
Black and Other Male	197	33	21	30	90	144	160	157	392	467	803	1,187	1,909	—
Black and Other Female	154	19	15	13	23	35	52	79	214	336	641	1,039	2,440	—

NOTE: Mortality rate is per 1,000 population in specified group.

INFANT AND PERINATAL RELATED MORTALITY

	All Deaths			Teenage Mothers		
	Total	White	Black and Other	Total	White	Black and Other
Infant Deaths	689	338	351	171	77	94
Rate per 1,000 Live Births	10.9	8.2	15.7	14.8	13.0	16.6
Postneonatal Deaths	228	105	123	51	25	26
Rate per 1,000 Live Births	3.6	2.6	5.5	4.4	4.2	4.6
Neonatal Deaths	461	233	228	120	52	68
Rate per 1,000 Live Births	7.3	5.7	10.2	10.4	8.8	12.0
Perinatal Deaths	721	380	341	147	67	80
Rate per 1,000 Deliveries	11.3	9.2	15.2	12.7	11.3	14.1
Fetal Deaths	680	333	347	128	51	77
Ratio per 1,000 Live Births	10.7	8.1	15.5	11.1	8.6	13.6
Maternal Deaths	10	5	5	—	—	—
Rate per 10,000 Live Births	1.6	1.2	2.2	—	—	—

NOTE: Rates/ratio are based on live births in specified group. Deliveries are live births plus fetal deaths of 28 or more weeks gestation.

LEADING CAUSES OF DEATH

	Total		White		Black and Other	
	Number	Rate	Number	Rate	Number	Rate
Diseases of the Heart	12,893	319.1	9,778	328.6	3,115	305.2
Malignant Neoplasms	8,697	215.2	6,485	217.9	2,212	216.7
Cerebrovascular Diseases	2,931	72.5	1,992	66.9	939	92.0
Accidents	2,299	56.9	1,697	57.0	602	59.0
Chronic Obst. Pul. Dis. & All. Cond.	1,504	37.2	1,297	43.6	207	20.3
Pneumonia and Influenza	1,258	31.1	970	32.6	288	27.0
Diabetes Mellitus	850	21.0	507	17.0	343	33.6
Diseases of the Arteries	706	17.5	540	18.1	166	16.3
Homicide	562	13.9	207	7.0	355	34.8
All Other Causes, Residual	7,635	189.0	5,212	175.1	2,423	227.6

NOTE: Rate is per 100,000 population in specified group.

MARRIAGE

	No. of Marriages	Rate
Total	43,050	10.7
White	34,861	11.7
Black and Other	8,189	7.7

NOTE: Rate is per 1,000 population in specified group.

DIVORCE

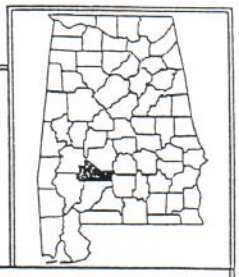
	Number
Total Dissolutions	25,678
Divorces	25,513
Annulments	165
Rate	6.4

NOTE: Rate is per 1,000 population.

NOTE: See formula in Technical Notes of Introduction Section. All data is by residence except for marriages and divorces which is by place of occurrence. Caution should be exercised in using rates which are derived from small numbers or apply to small populations. Rates denoted by an "*" apply to small populations and may not be stable.

APPENDIX C (continued)

1990 PROFILE OF WILCOX COUNTY



1990 CENSUS POPULATION		NATALITY		MORTALITY	
Total:	13,568	Total Live Births:	249	Total Deaths:	153
White:	4,203	Teenage Mothers:	57	Infant Deaths:	1
Black & Other:	9,365	Unmarried Mothers:	155	Postneonatal Deaths:	—
Rank Among Counties:	60	Low Weight Births:	29	Neonatal Deaths:	1
Per Square Mile:	15.4	Median Age of Mother:	24	Perinatal Deaths:	3
Median Age:	30.4	MARRIAGE/DIVORCE		Fetal Deaths:	5
		Marriages:	105		
		Dissolutions:	42		

NATALITY

ALL BIRTHS

	Total		White		Black & Other	
	No.	Rate	No.	Rate	No.	Rate
Live Births	249	18.4	43	10.2	206	22.0
	No.	Ratio	No.	Ratio	No.	Ratio
Unmarried Mothers	155	622.5	5	116.3*	150	728.2
Low Weight	29	116.5	1	23.3*	28	135.9

NOTE: Rate is per 1,000 population and ratio per 1,000 live births in specified group.

BIRTHS TO TEENAGE MOTHERS

	Total		White		Black & Other	
	No.	Rate	No.	Rate	No.	Rate
Live Births	57	42.5	4	16.4*	53	48.3
	No.	Ratio	No.	Ratio	No.	Ratio
Unmarried Mothers	53	929.8	3	750.0*	50	943.4
Low Weight	7	122.8	1	250.0*	6	113.2

MORTALITY

	Total	Male	Female	White	White Male	White Female	Black and Other	Black and Other Male	Black and Other Female
Deaths	153	93	60	50	24	26	103	69	34
Mortality Rate	11.3	14.7	8.3	11.9	11.9	11.9	11.0	16.0	6.7

Age In Years

	Under 1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-44	45-54	55-64	65-74	75+	Unk.
Total Deaths	1	1	1	—	1	—	3	2	4	5	23	37	75	—
White Male	—	—	—	—	—	—	—	—	1	1	6	10	6	—
White Female	1	—	—	—	—	—	—	1	—	—	2	6	16	—
Black and Other Male	—	1	—	—	—	—	2	1	3	4	9	13	36	—
Black and Other Female	—	—	1	—	1	—	1	—	—	—	6	8	17	—

NOTE: Mortality rate is per 1,000 population in specified group.

INFANT AND PERINATAL RELATED MORTALITY

	All Deaths			Teenage Mothers		
	Total	White	Black and Other	Total	White	Black and Other
Infant Deaths	1	1	—	1	1	—
Rate per 1,000 Live Births	4.0	23.3*	—	17.5	250.0*	—
Postneonatal Deaths	—	—	—	—	—	—
Rate per 1,000 Live Births	—	—	—	—	—	—
Neonatal Deaths	1	1	—	1	1	—
Rate per 1,000 Live Births	4.0	23.3*	—	17.5	250.0*	—
Perinatal Deaths	3	1	2	1	1	—
Rate per 1,000 Deliveries	12.0	23.3*	9.6	17.5	250.0*	—
Fetal Deaths	5	—	5	1	—	1
Ratio per 1,000 Live Births	20.1	—	24.2	17.5	—	18.9
Maternal Deaths	—	—	—	—	—	—
Rate per 10,000 Live Births	—	—	—	—	—	—

NOTE: Rates/ratio are based on live births in specified group. Deliveries are live births plus fetal deaths of 28 or more weeks gestation.

LEADING CAUSES OF DEATH

	Total		White		Black and Other	
	Number	Rate	Number	Rate	Number	Rate
Diseases of the Heart	48	353.8	11	261.7	37	395.1
Malignant Neoplasms	30	221.1	10	237.9	20	213.6
Pneumonia & Influenza	12	88.4	5	119.0	7	74.7
Cerebrovascular Diseases	10	73.7	5	119.0	5	53.4
Accidents	10	73.7	4	95.2	6	64.1
Homicide	3	22.1	—	—	3	32.0
Nephritis, Neph. Syn. & Nephrosis	3	22.1	—	—	3	32.0
Chronic Obst. Pul. Dis. & All. Cond.	2	14.7	—	—	2	21.4
Diabetes Mellitus	2	14.7	—	—	2	21.4
Chronic Liver Disease and Cirrhosis	2	14.7	—	—	2	21.4
All Other Causes, Residual	31	228.5	15	356.9	16	170.8

NOTE: Rate is per 100,000 population in specified group.

MARRIAGE

	No. of Marriages	Rate
Total	105	7.7
White	36	8.6
Black and Other	69	7.4

NOTE: Rate is per 1,000 population in specified group.

DIVORCE

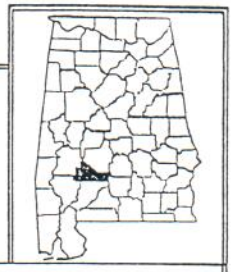
	Number
Total Dissolutions	42
Divorces	39
Annulments	3
Rate	3.1

NOTE: Rate is per 1,000 population.

NOTE: See formula in Technical Notes of Introduction Section. All data is by residence except for marriages and divorces which is by place of occurrence. Caution should be exercised in using rates which are derived from small numbers or apply to small populations. Rates denoted by an "*" apply to small populations and may not be stable.

APPENDIX C (continued)

1991 PROFILE OF WILCOX COUNTY



1991 POPULATION		NATALITY		MORTALITY	
Total:	13,732	Total Live Births:	267	Total Deaths:	174
White:	4,232	Teenage Mothers:	65	Infant Deaths:	6
Black & Other:	9,500	Unmarried Mothers:	179	Postneonatal Deaths:	1
Rank Among Counties:	60	Low Weight Births:	25	Neonatal Deaths:	5
Per Square Mile:	15.6	Median Age of Mother:	23	Perinatal Deaths:	3
Median Age:	30.4	MARRIAGE/DIVORCE		Fetal Deaths:	1
		Marriages:	74		
		Dissolutions:	41		

NATALITY

ALL BIRTHS

	Total		White		Black & Other	
	No.	Rate	No.	Rate	No.	Rate
Live Births	267	19.4	42	9.9	225	23.7
	No.	Ratio	No.	Ratio	No.	Ratio
Unmarried Mothers	179	670.4	1	23.8*	178	791.1
Low Weight	25	93.6	3	71.4*	22	97.8

BIRTHS TO TEENAGE MOTHERS

	Total		White		Black & Other	
	No.	Rate	No.	Rate	No.	Rate
Live Births	65	48.9	4	16.7*	61	56.0
	No.	Ratio	No.	Ratio	No.	Ratio
Unmarried Mothers	58	892.3	—	—	58	950.8
Low Weight	6	92.3	—	—	6	98.4

NOTE: Rate is per 1,000 population and ratio per 1,000 live births in specified group.

MORTALITY

	Total	Male	Female	White	White Male	White Female	Black and Other	Black and Other Male	Black and Other Female
Deaths	174	93	81	55	31	24	119	62	57
Mortality Rate	12.7	14.6	11.0	13.0	15.3	10.9	12.5	14.2	11.1

	Age In Years													
	Under 1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-44	45-54	55-64	65-74	75+	Unk.
Total Deaths	6	2	—	2	4	3	1	4	7	10	21	45	69	—
White Male	—	—	—	—	2	1	—	—	2	—	5	7	14	—
White Female	1	—	—	—	—	—	—	—	—	—	4	5	14	—
Black and Other Male	4	1	—	—	2	2	1	4	2	8	6	16	16	—
Black and Other Female	1	1	—	2	—	—	—	—	3	2	6	17	25	—

NOTE: Mortality rate is per 1,000 population in specified group.

INFANT AND PERINATAL RELATED MORTALITY

	All Deaths			Teenage Mothers		
	Total	White	Black and Other	Total	White	Black and Other
Infant Deaths	6	1	5	—	—	—
Rate per 1,000 Live Births	22.5	23.8*	22.2	—	—	—
Postneonatal Deaths	1	—	1	—	—	—
Rate per 1,000 Live Births	3.7	—	4.4	—	—	—
Neonatal Deaths	5	1	4	—	—	—
Rate per 1,000 Live Births	18.7	23.8*	17.8	—	—	—
Perinatal Deaths	3	1	2	—	—	—
Rate per 1,000 Deliveries	11.2	23.3*	8.9	—	—	—
Fetal Deaths	1	1	—	—	—	—
Ratio per 1,000 Live Births	3.7	23.8*	—	—	—	—
Maternal Deaths	—	—	—	—	—	—
Rate per 10,000 Live Births	—	—	—	—	—	—

NOTE: Rates/ratio are based on live births in specified group. Deliveries are live births plus fetal deaths of 28 or more weeks gestation.

LEADING CAUSES OF DEATH

	Total		White		Black and Other	
	Number	Rate	Number	Rate	Number	Rate
Diseases of the Heart	45	327.7	13	307.2	32	336.8
Malignant Neoplasms	29	211.2	10	236.3	19	200.0
Cerebrovascular Diseases	18	131.1	9	212.7	9	94.7
Accidents	17	123.8	2	47.3	15	157.9
Diseases of the Arteries	7	51.0	3	70.9	4	42.1
Nephritis, Neph. Syn. & Nephrosis	6	43.7	1	23.6	5	52.6
Diabetes Mellitus	6	43.7	—	—	6	63.2
Pneumonia & Influenza	5	36.4	3	70.9	2	21.1
Homicide	5	36.4	—	—	5	52.6
All Other Causes, Residual	36	262.2	14	330.8	22	231.6

NOTE: Rate is per 100,000 population in specified group.

MARRIAGE

	No. of Marriages	Rate
Total	74	5.4
White	37	8.7
Black and Other	37	3.9

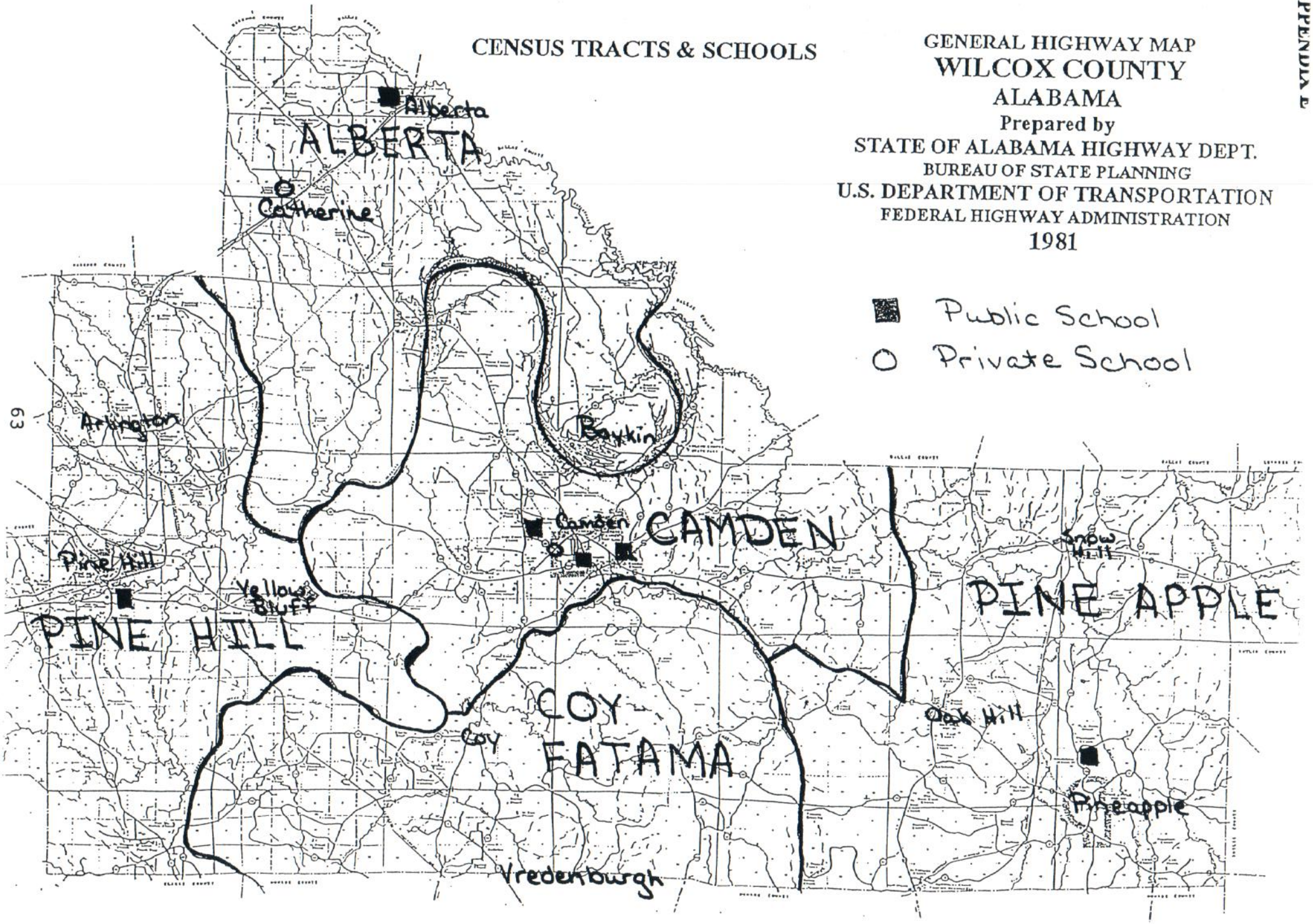
NOTE: Rate is per 1,000 population in specified group.

DIVORCE

	Number
Total Dissolutions	41
Divorces	41
Annulments	—
Rate	3.0

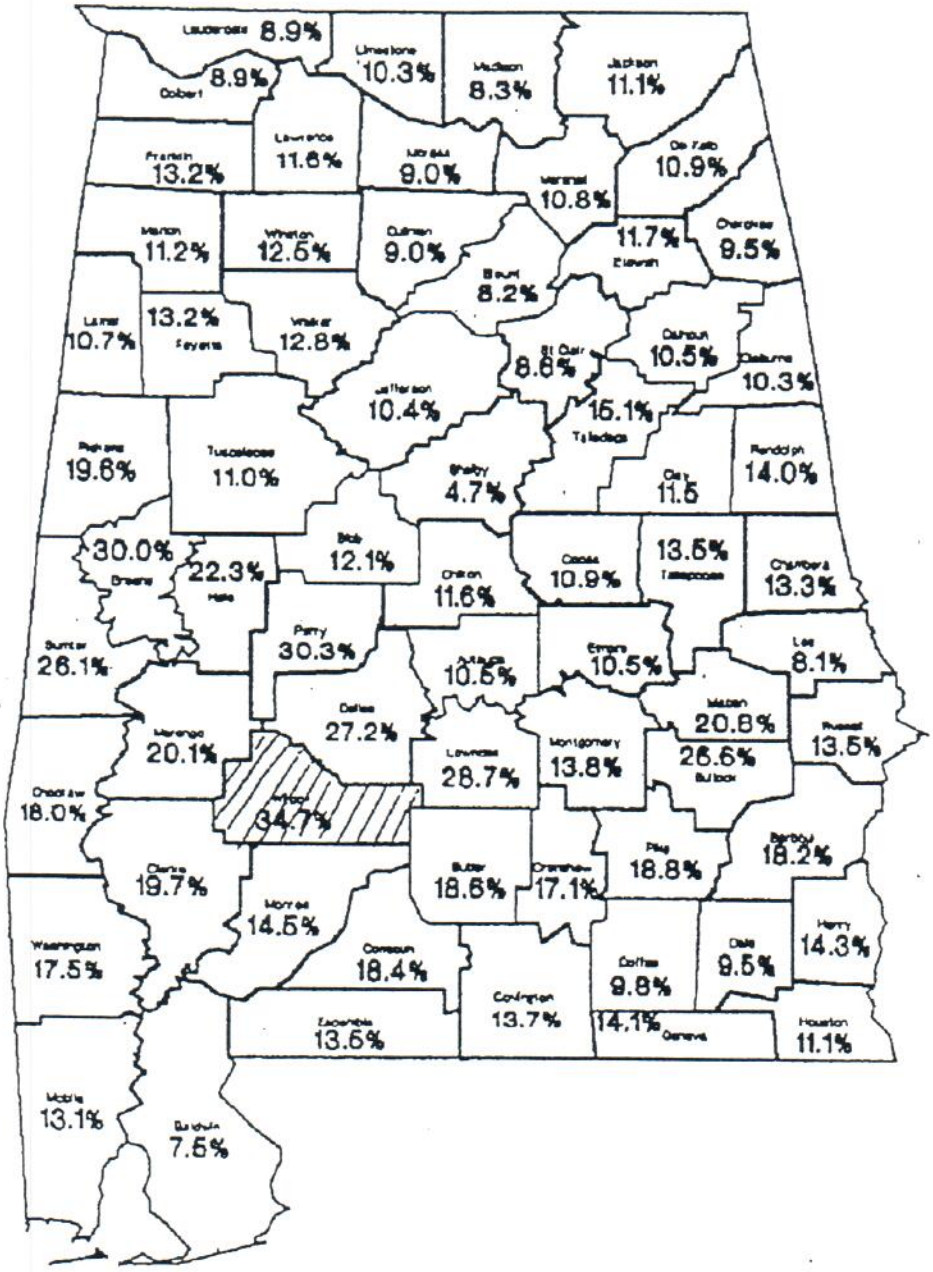
NOTE: Rate is per 1,000 population.

NOTE: See formula in Technical Notes of Introduction Section. All data is by residence except for marriages and divorces which is by place of occurrence. Caution should be exercised in using rates which are derived from small numbers or apply to small populations. Rates denoted by an "*" apply to small populations and may not be stable.


CENSUS TRACTS & SCHOOLS
GENERAL HIGHWAY MAP
WILCOX COUNTY
ALABAMA
Prepared by
STATE OF ALABAMA HIGHWAY DEPT.
BUREAU OF STATE PLANNING
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
1981
Public School
Private School
Alberta
ALBERTA
Catherine
Arlington
Baykin
Camden
CAMDEN
Snow Hill
Pine Hill
Yellow Bluff
PINE HILL
PINE APPLE
COY
COY
FATAMA
Oak Hill
Pineapple
Vredenburgh

APPENDIX D
Resource: (14)

PERCENT OF POPULATION ELIGIBLE FOR MEDICAID
FISCAL YEAR 1991



The Birmingham News Birmingham Post-Herald

Saturday

S SATURDAY, AUGUST 29, 1992 PRICE:

Wilcox County school system's woes are legion

Board's influence on hiring like 'cronyism' to state board

By Bill Plott
News staff writer

CAMDEN — Wilcox County Central High School is one of the most modern and attractive schools in Alabama.

The $7.5 million building, completed three years ago, has a 25-meter, Olympic-size indoor swimming pool, an 847-seat auditorium, a vocational wing with computer and other labs, a modern gymnasium and a library easily accessible to clustered classrooms.

The sparkling, brightly colored building replaces three rundown high schools in the Black Belt county.

But the high school is an anomaly in a system frequently called one of the worst in the state.

The system's problems were so serious that earlier this summer, at the request of state Superintendent of Education Wayne Teague, the local Board of Education fired Superintendent S.E. Collier. Teague then appointed a Camden banker as custodian of funds and a former Bullock County school official as acting superintendent.

The moves fell just short of a complete takeover of the system by Teague and the state Department of Education.

Teague lashed out at a lack of leadership in the system, which he said is also in "financial chaos."

The Wilcox County Board of Education fueled the long-running controversy over the school system's leadership when it immediately rehired Collier as assistant superintendent of education with no change in salary and benefits.

It then removed state Rep. James Thomas as principal of Wilcox Central High School, a position he had held since the school opened in 1989.

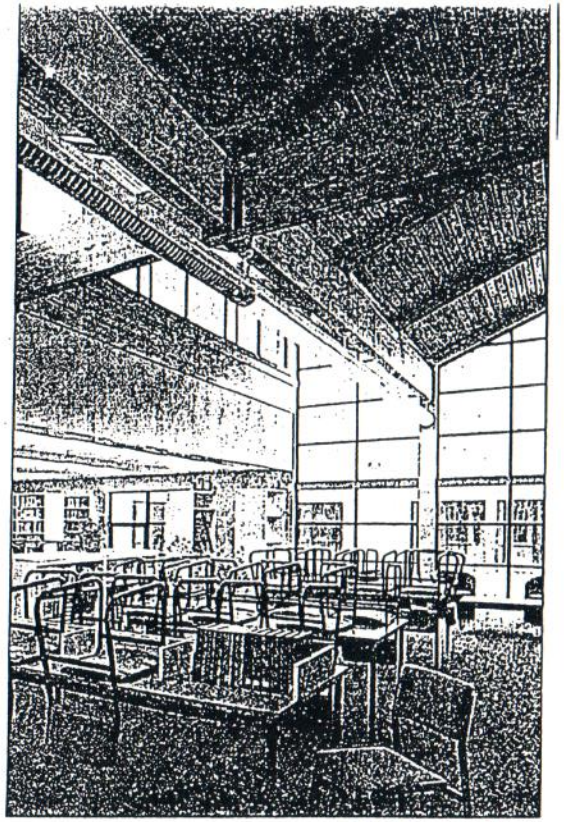
Although Teague has distanced himself from the Thomas situation, he made it clear that he was unhappy over the rehiring of Collier, who received marks of "unsatisfactory" or "needs improvement" last spring in each of eight evaluation categories listed in a state Board of Education report.

Collier, who twice has been accused of altering grades to the advantage of his daughters, obviously has strong support from a majority of board members. Although a former superintendent sought to have him removed as principal in one of the incidents, the board protected him. Nothing came of the second incident.

Three years ago Thomas apparently enjoyed that kind of support, and he defeated Collier for the Wilcox Central position.

In 1989, over the objections of then-Superintendent Odell Tumblin, Thomas was named principal.

See Wilcox, Page 10A



NEWS STAFF PHOTO/JOE SONGER

Wilcox County Central High library in Camden has skylights, paneled ceilings.

Wilcox

From Page 1A

Today, armed with Alabama Education Association attorneys, he has filed suit to regain the job, which was stripped away in June.

Thomas' fall from grace seems to typify the politics that permeate the Wilcox County School System.

That situation was noted in the state Department of Education's June progress report on the system.

The department's team cited undue influence by some board members "on the selection of personnel to be employed, often ignoring the recommendations of the superintendent, telling the superintendent who to recommend and then taking action."

"This procedure goes against all acceptable educational standards for the employment of personnel and gives the appearance of political cronyism," the report said.

Brooks Holleman, a retired Montgomery investment banker and staunch supporter of public education, said the politics of the 1989 dispute over Thomas' hiring cost Dr. Tumblin her job as superintendent.

"Dr. Tumblin had a Ph.D. from Harvard. She worked hard, and I tried to help her," Holleman said. "Oh, she overdid some things, like hiring too many teachers. She hired 32 teachers above what the state required to try and get the educational process going."

That overhiring is said to have cost $500,000 and is cited by some as one of the root causes of the system's economic problems today. The system may be as much as $2 million in debt. But Holleman said Dr. Tumblin's biggest problem was "she made enemies."

"She suspended Collier from his job at Pine Hill because he admitted changing his daughter's grades so she could be valedictorian. They (the school board) put him back in," Holleman said.

Dr. Tumblin declined to talk about her experiences with the Wilcox County system. However, her attorney, Rick Williams of Montgomery, said the Thomas incident was essentially what brought about her downfall.

William Pompey, a former school board member and now attorney for the board, said the grade-changing accusation against Collier is false.

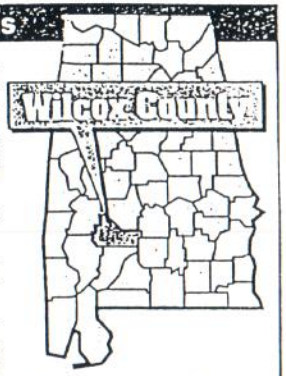
Pompey said Collier changed the grading system, affecting all grades across the board, rather than just the grade of his daughter.

SYSTEM SHORTCOMINGS

The state Department of Education's report last June on Wilcox County schools cited a "general deterioration of many facets of the educational process" in the system and said it was caused "mainly by the lack of leadership on the part of the administration."

Among the shortcomings noted by the report:

- No scheduled maintenance program for buildings and other facilities.
- Inefficient data reporting system, resulting in inaccurate and untimely reports to federal agencies and the state Department of Education.
- No regular monitoring of teaching programs.
- A serious shortage of textbooks at the beginning of the school year.



- Some teacher units not being filled until late September or early October.
- Inadequate inspection program for school buses.
- Employment of some teachers without state certification.

Pompey also said the system's financial problems have been exaggerated. He said Collier inherited indebtedness amounting to about $2 million and has reduced it to $500,000.

Since his removal as superintendent, Collier has declined to discuss the school situation with news media.

Thomas said he does not understand why he is no longer in favor with the school board, but he blames Holleman, who remains a close friend of Dr. Tumblin and also opposed the legislator's appointment at the high school.

"But she was going pretty good until James Thomas, a vocational agriculture teacher who had no experience or training to be a principal, declared he wanted to be principal of the new $7.5 million comprehensive high school, which is as fine as any high school in the country," Holleman said.

Holleman said Dr. Tumblin opposed Thomas primarily because his duties as a legislator would cause him to be absent from school too often.

Although Thomas had a contract that granted him up to 65 days per year of legislative service leave, he maintains that no school business went unattended. He said he had assistants to fill in during his absences.

"I'm not for a school teacher being a member of the Legislature, period," Holleman said. "The principal of a big high school needs to be there 12 hours a day, six days a week. He needs to be in charge from top to bottom."

"The board can't hire a principal without the superintendent's recommendation, though, and Dr. Tumblin got fired because she wouldn't recommend Thomas as principal," Holleman said.

Dr. Tumblin was terminated in the spring of 1989, and Thomas subsequently was hired on the recommendation of an interim superintendent.

Dr. Tumblin later sued the board in federal court for $350,000 in damages. After several days of testimony in 1990, the case was settled for an undisclosed amount.

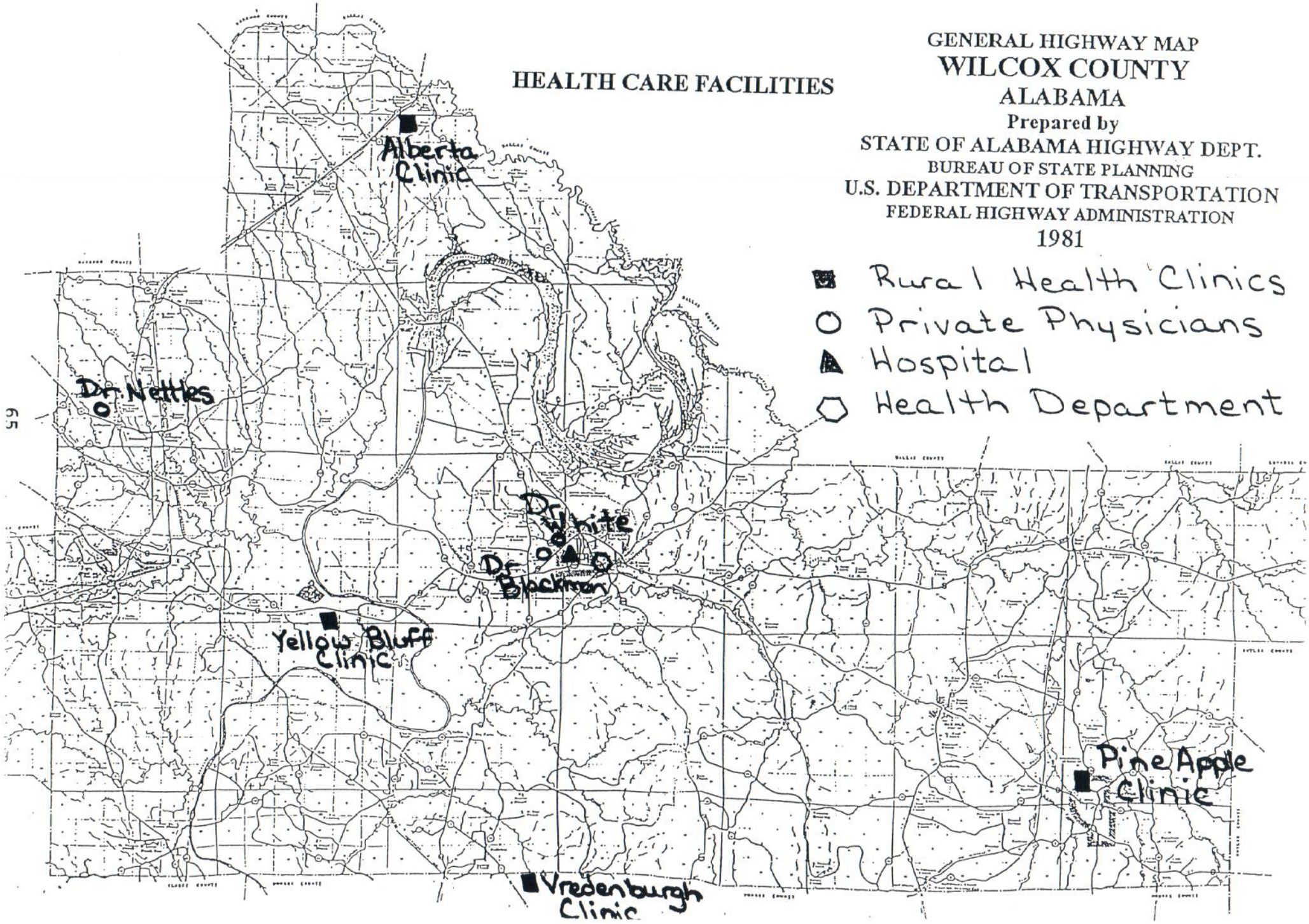
While the political infighting goes on, the system continues to suffer from financial problems and poor achievement test scores.

Per-student spending by the system compares favorably with that of many school districts in Alabama — $3,896 a year, compared to a state average of $3,757. But its local revenues of $497 per student fall below the statewide average of $741.

Teague described the overall financial situation as "chaos," saying state officials could not determine a bottom line balance for funds available.

There was slight improvement in Stanford Achievement Test scores last spring, but the system remains among the worst in the state.

This year's testing saw Wilcox eighth-grade students ahead of only those in neighboring Lowndes County. For fourth-graders, Wilcox was among the 10 lowest in the state.


HEALTH CARE FACILITIES
GENERAL HIGHWAY MAP
WILCOX COUNTY
ALABAMA
Prepared by
STATE OF ALABAMA HIGHWAY DEPT.
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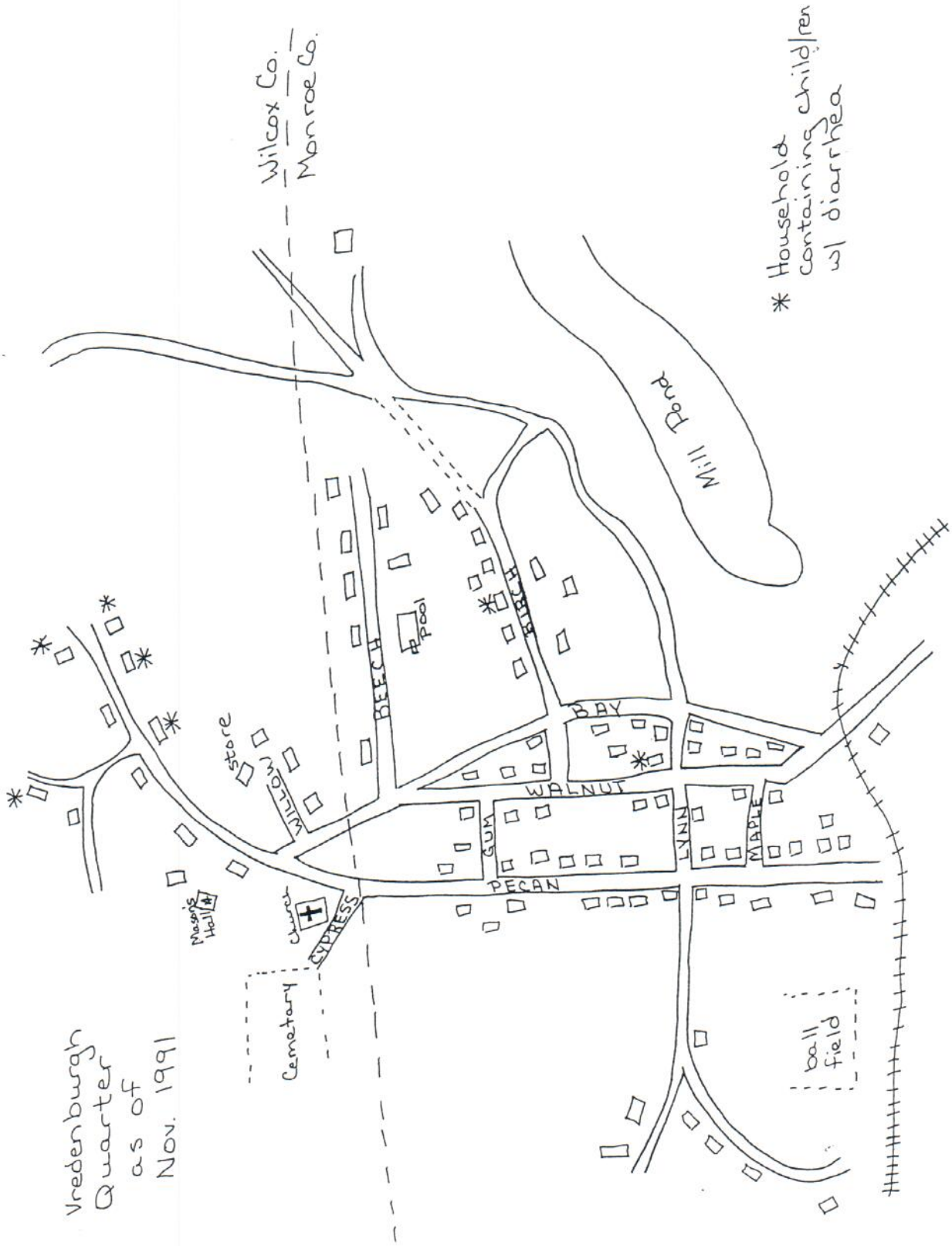
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
1981
Rural Health Clinics
Private Physicians
Hospital
Health Department
Alberta Clinic
Dr. Nettles
Dr. White
Dr. Blackman
Yellow Bluff Clinic
Pine Apple Clinic
Vredenburgh Clinic

APPENDIX H
Resource: Sisters at Vredeburgh Clinic



APPENDIX I

WILCOX COUNTY COMMUNITY NEEDS ASSESSMENT
Household Questionnaire

I. INFORMATION ON THE INTERVIEW

1. Date of Interview ___/___/
mo day yr

2. Interviewer's Name _____

II. HOUSEHOLD IDENTIFICATION

3. Census tract _____
   1. Alberta
   2. Camden town
   3. Coy-Fatama
   4. Pine Apple/Oak Hill
   5. Pine Hill/Yellow Bluff
   6. Camden District

4. Neighborhood _____
5. Street Name _____
6. City _____
7. Zip Code

III. INFORMATION ON THE HOUSEHOLD

A. Type, size, and quality of housing

8. Type of Housing _____
   1. wood
   2. brick
   3. masonry
   4. mobile home
   5. other _____

9. Number of Rooms _____
   Number of Bedrooms _____
10. Electricity? 1. YES 2. NO _____
11. Air Conditioning? 1. YES 2. NO _____
12. Heating? 1. YES 2. NO _____
    Describe _____

13. Telephone? 1. YES 2. NO _____
14. Refrigeration? 1. YES 2. NO _____
15. Cooking facilities 1. stove/oven _____
    2. other _____

16. Water Source in House? 1. YES 2. NO _____
17. Hot water Heater? 1. YES 2. NO _____
18. Washer/Dryer? 1. YES 2. NO _____

B. Members of Household

19. Number currently residing in house? _____

List members of household below:

relation-ship to Interviewee	sex M/F	race NW/W	date of birth Mo/Yr	education*	occupation**
1. Interviewee					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					

* What is the highest grade you have completed? (number of years) 12=high school graduate
16=college graduate
include preschool=PS; Head Start=HS; Kindergarten=K

** Do you work?; What is your job?

IV. INFORMATION ON BREASTFEEDING

20. No. of children under one year of age in the household? If 0, go to #23.

21. Were any of these children breastfed or are you breastfeeding any now? 1. YES 2. NO _____
If YES, how many? _____

22. At what age is breastfeeding stopped? (months) _____

23. Why was breastfeeding stopped or not started? _____
Indicate all that apply.
1. not enough milk
2. mother was ill
3. infant too old
4. infant could not latch on
5. work outside the home
6. uncomfortable/painful
7. did not want to be tied down
8. other_____

24. If infant formula is used, is it 1. liquid 2. powder _
3. other_____

25. At what age is water first given to infant (months)? _

26. At what age is solid food first given to infant (mos.)?_

27. What was the first food you gave your baby? _____

V. ATTITUDES & PRACTICES OF MOTHER TOWARD CHILDHOOD ILLNESS

28. No. of children under 10 years in household _____

29. Have any of your children under 10 been sick in the last month? 1. YES 2. NO _____
If YES, list age and illness below.

AGE	ILLNESS
1.	
2.	
3.	
4.	

30. Are any of your children taking vitamins or iron supplements? 1. YES 2. NO _____

31. Have any of the children in the household who are under 10 years had diarrhea in the last month? 1. YES 2. NO _

If YES, complete the following items for each child.
If NO, go to #33.

DIARRHEA CHILD #

32a. Age of the child at time of illness (yrs/mos) ___/

32b. Type of diarrhea _____
1. soft 4. watery
2. bloody 5. greasy
3. don't know

32c. Duration of diarrhea (days) _____

32d. No. of bowel movements/day _____

32e. Place of treatment _____
1. home 2. health center _____
3. other _____
4. none received (go to 32g)

32f. Treatment received _____
1. home remedy (specify)_____
2. Pedialite or equivalent
3. medicine (specify)_____
4. other_____

32g. Reason for not treating _____
1. lack of medicine 3. lack of money
2. not serious enough 4. no transportation
5. other _____

32h. Do you know the cause of the diarrhea? _____
1. YES (specify)_____ 2. NO

32i. If YES, do you know what might be done to keep your child from getting diarrhea? _____
1. YES (specify)_____ 2. NO

33. Have any of your children under 10 had worms in the last 6 months? _____

WORMS CHILD # __

34a. Age of child at time of illness (yrs/mos) _____/_____

34b. What kind of "worms" did your child have? _____
1. roundworm 4. hookworm
2. tapeworm 5. pinworm
3. don't know 6. other _____

34c. Place of treatment _____
1. home 2. health center _____
3. other _____
4. none (go to 34e)

34d. Treatment received (go to 34f) _____
1. home remedy (specify)_____
2. medicine (specify)_____
3. other_____

34e. Reason for not treating _____
1. lack of medicine 3. lack of money
2. not serious enough 4. no transportation
5. other_____

34f. Do you know how your child got worms? _____
1. YES (specify)_____ 2. NO

34g. If YES, do you know how to keep your child from getting worms? _____
1. YES (specify)_____ 2. NO

VI. SOURCE OF MEDICAL CARE

35. Where do you usually take your children for health care? _____
    1. private physician (specify)_____
    2. hospital emergency room (specify)_____
    3. health department
    4. community health clinic (specify)_____
    5. don't have a regular source of care
    6. other _____

    COMMENTS _____

36. Where do you get medicine for your children? _____
    1. pharmacy/drugstore (specify) _____
    2. clinic or doctor (specify) _____
    3. other _____

37. How do you pay for health care for your children? _____
    1. Medicaid
    2. private health insurance
    3. self pay
    4. VA benefits
    5. other _____

38. Have any of your children used any of these services in the last 6 months? (Circle all that apply.)
    1. Summer Feeding Program for Children
    2. Head Start
    3. Health Department
    4. Rural Clinic / Physician
    5. Day Care
    6. After-school tutoring program (REEP, Kellogg)
    7. Hospital

VII. TRANSPORTATION

39. What is your main form of transportation? _____
    1. own car
    2. public transportation (specify) _____
    3. walk
    4. friend's or family member's car for free
    5. friend's or family member's car for money

40. If you must pay, what does a round trip to the doctor cost? $_____

41. Do you ever use public transportation (WAHS van or buses)? 1. YES 2. NO _____
    If YES, specify._____
    If NO, why not? _____

VIII. FAMILY INCOME

42. What are your sources of income (for the household)?

1. Work	1. YES	2. NO	_____
2. Unemployment Benefits	1. YES	2. NO	_____
3. ADC	1. YES	2. NO	_____
4. Food Stamps	1. YES	2. NO	_____
5. WIC	1. YES	2. NO	_____
6. SSI	1. YES	2. NO	_____
7. Social Security	1. YES	2. NO	_____
8. Other _____	1. YES	2. NO	_____

43. Do you own your own house? _____
   1. Yes, fully paid
   2. Yes, making payments
   3. No, renting
   4. No, living with family/friends

IX. DOMESTIC ANIMALS

44. Do you keep domestic animals?

a. dog	1. YES	2. NO	_____
b. cat	1. YES	2. NO	_____
c. pig	1. YES	2. NO	_____
d. poultry	1. YES	2. NO	_____
e. other _____			

45. Do animals come into the house? 1. YES 2. NO _____
46. Do animals come into the yard? 1. YES 2. NO _____

Comments: _____

47. Do you have a problem with the following pests?

1. Mice/Rats	1. YES	2. NO	_____
2. Roaches	1. YES	2. NO	_____
3. Flies	1. YES	2. NO	_____
4. other _____	1. YES	2. NO	_____

X. INFORMATION ON WATER USE

48. Where did the household get its water yesterday? _____
   1. city water in house
   2. city water with outside tap (stand pipe)
   3. well water with inside tap
   4. well water with pump
   5. open well without pump
   6. other _____

   If water source inside house, go to #52.

49. Distance from house to water supply (feet) _____

50. Time from house to water supply (minutes) _____

51. How many times did you make this trip in the last week (7 days)? _____

52. Do you drink this water? 1. YES 2. NO _____
   If NO, where do you get your drinking water? _____

53. Where do you bathe? _____
   1. shower/tub (inside house)
   2. other _____

XI. WASTE DISPOSAL

54. Type of excreta disposal

54a. Where do you go to the bathroom?

	SELF REPORT		OBSERVE, IF POSSIBLE		
	number	working Y/N	odors 1 2 3 4 5 none bad	cleanliness 1 2 3 4 5 good bad	distance from house (feet)
a. indoor toilet					
b. latrine					
c. chamber pot					
d. other					

54b. Where does the water from the toilet go?

e. septic tank _____

f. sewerage system _____

g. piped into yard _____

h. other _____

OBSERVATIONS, IF POSSIBLE:

toilet paper? 1. YES 2. NO _____

soap? 1. YES 2. NO _____

towels? 1. YES 2. NO _____

Comments: _____

55. Solid Waste Disposal _____

1. regular pick up
2. pit
3. dumpster
4. burn
5. landfill
6. compost
7. other _____

XII. ATTITUDES TOWARD BUILDING LATRINE AND/OR SEPTIC TANK

If household has latrine or septic tank (circle one):
If not, go to #60.

56. Who built your latrine/septic tank? _____

1. building contractor
2. friends/family unpaid
3. already there
4. friends/family paid
5. don't know
6. other _____

57. What made you decide to build your latrine/septic tank? _____

1. health reasons
2. told by health authorities
3. afraid of being fined
4. other _____

58. Do you think your toilet facilities are a problem?
1. YES 2. NO _____
If YES, why? _____

IF NO LATRINE OR SEPTIC TANK, ANSWER #59-62.

59. Would it be difficult for you to put in a latrine or septic tank? 1. YES 2. NO _____

60. If YES, why would it be difficult to put in a latrine or septic tank? _____
1. cost of construction materials
2. cost of labor
3. lack of information on how to build one
4. other _____

61. If someone were available to help you put in a low-cost facility, would you be interested in building a: _____
1. latrine
2. septic tank
3. both
4. neither (go to #63)

62. Would you be willing to contribute any of the following towards an improved toilet facility (latrine or septic tank):

1. labor	1. YES	2. NO	_____
2. construction materials	1. YES	2. NO	_____
3. money	1. YES	2. NO	_____
4. nothing	1. YES	2. NO	_____
5. other _____			

63. What is your family's biggest need right now?_____

_____

OBSERVATIONS:

64. Cleanliness of interior 1 2 3 4 5 _____
Good Bad
Describe_____

65. Yard Cleanliness 1 2 3 4 5 _____
Good Bad
Describe _____

66. Housing in need of repair? 1. YES 2. NO _____
Describe _____

APPENDIX J

HEALTH CARE PROVIDER SURVEY

Date of Interview _____
Interviewer _____
Place _____

NAME: _____

JOB TITLE/POSITION: _____

ADDRESS: _____

RACE: W NW SEX: M F APPROX. AGE ___

HOW LONG HAVE YOU BEEN WORKING IN WILCOX COUNTY? _years
Comments: _____

WHAT COMMUNITIES DOES YOUR PRACTICE SERVE? _____
_____

WHICH OF THESE MCH SERVICES DO YOU PROVIDE?

pediatric care?	Y	N
immunizations?	Y	N
prenatal care?	Y	N
family planning?	Y	N

If No, where do you refer your clients for these services? _____

WHAT PERCENTAGE OF YOUR PRACTICE IS UNDER FIVE? __

WHAT ARE THE MOST COMMON CHILDHOOD ILLNESSES THAT YOU SEE IN CHILDREN UNDER 5 IN YOUR PRACTICE? _____
_____
_____
_____

WHAT IS THE PREVALENCE OF THESE CONDITIONS IN YOUR COMMUNITY?

diarrhea	1 very hi	2 high	3	4 low	5 very low
intestinal parasites	1	2	3	4	5
ARI (acute resp. infection)	1	2	3	4	5
scabies	1	2	3	4	5
conjunctivitis	1	2	3	4	5
lead poisoning	1	2	3	4	5

WHAT IS CONSIDERED TO BE DIARRHEA FROM A CLINICAL PERSPECTIVE? (case definition) _____

_____

WHAT ARE THE MAJOR CAUSES OF DIARRHEA? _____

_____

WHAT ARE THE MAJOR INTESTINAL PARASITES? _____

_____

DO YOU DO TESTS TO CONFIRM YOUR DIAGNOSIS? Y N

Comments _____

HOW DO YOU TREAT DIARRHEA? _____

_____

HOW DO YOU TREAT INTESTINAL PARASITES? _____

_____

DO YOU RECOMMEND HOME TREATMENT FOR DIARRHEA? Y N

If so, what do you recommend? _____

_____

WHEN IS DIARRHEA SERIOUS ENOUGH FOR TREATMENT IN A HEALTH FACILITY? _____

_____

HOW OFTEN ARE CHILDREN HOSPITALIZED FOR DEHYDRATION ASSOCIATED WITH DIARRHEA?

1	2	3	4	5
very often	often		seldom	never

HAVE THERE BEEN ANY DEATHS ASSOCIATED WITH DIARRHEA IN THE LAST 5 YEARS? _____

IS THERE A PARTICULAR AGE GROUP THAT IS MOST SUSCEPTIBLE TO DIARRHEA AND/OR INTESTINAL PARASITES? Y N

Comments: _____

IS THERE SEASONAL VARIATION IN THE INCIDENCE OF THESE CONDITIONS? Y N Comments: _____

ARE THESE CONDITIONS MORE PREVALENT IN SOME COMMUNITIES/ NEIGHBORHOODS? Y N

If so, which ones? _____

_____

_____

WHAT DO YOU THINK ARE THE BIGGEST PROBLEMS FACING WILCOX COUNTY? _____

_____

_____

DO YOU THINK THERE ARE ANY BARRIERS TO THOSE SEEKING HEALTH CARE IN WILCOX COUNTY? Y N

If so, what are they? _____

_____

SERVICE UTILIZATION/CLIENT INFORMATION

RESPONDENT (if different): _____

WHAT DAYS AND HOURS IS YOUR PRACTICE OPEN? _____

_____

ARE THERE CERTAIN TIMES FOR PARTICULAR SERVICES? Y N

Specify: _____

_____

ARE ALL APPOINTMENTS SCHEDULED? Y N

DO YOU ACCEPT WALK-INS? Y N

What percentage of visits are walk-ins? _____

NUMBER OF STAFF WORKING IN FACILITY? ___

List by job title: _____

_____

_____

_____

_____

WHAT CLINICAL SERVICES DO NON-M.D. PERSONNEL PROVIDE?

_____

_____

HOW MANY PATIENTS DID YOU SERVE IN 1991? _____

HOW MANY TOTAL VISITS DID YOU HAVE IN 1991? _____

HOW MANY PATIENTS DO YOU SEE ON AVERAGE PER DAY?_____

WHAT PERCENTAGE OF YOUR VISITS ARE PEDIATRIC? _____

WHAT PERCENTAGE OF YOUR CLIENTS ARE WHITE?___ NONWHITE?_____

WHAT IS THE AVERAGE WAITING TIME FROM REGISTRATION TO BEING SEEN BY MEDICAL PERSONNEL? _____

IS OUR PATIENT LOAD: 1 2 3 4 5

too heavy right too light

DO YOU ACCEPT MEDICAID? Y N

PERCENT OF VISITS? _____

DO YOU ACCEPT UNINSURED CLIENTS? Y N

PERCENT OF VISITS? _____

DO YOU HAVE A SLIDING SCALE OF PAYMENT? Y N

CAN A PATIENT PAY ON INSTALLMENT? Y N

ARE THERE OTHER MEANS OF PAYMENT? Y N

If YES, specify: _____

WHERE DO YOUR PATIENTS GET THERE PHARMACEUTICALS?_____

OBSERVATIONS

WAITING ROOM:

Are there health promotion materials? **Y** **N**

Describe _____

Is the waiting room pleasant?

	1	2	3	4	5
	good		fair		bad
crowded?	1	2	3	4	5
temperature?	1	2	3	4	5

Is there something to entertain children? **Y** **N**

COMMENTS: _____

_____

_____

APPENDIX K

PREVALENCE OF INTESTINAL HELMINTHS
WILCOX COUNTY, ALABAMA

Participating Clinics/Practitioners

Alberta	Maureen Nichols	573-2493
Pine Apple	Dr. Cook	746-2197
Vredenburgh	Pat Hauser	337-4787
Yellow Bluff	Dr. Moskovich	963-4201

UAB School of Public Health (Laboratory)
(Call Dr. Stephensen if you have any questions.)

Charles Stephensen	934-1732
Pauline Jolly	934-1732
Walter Mason	934-1732

School of Public Health
106 Tidwell Hall
720 S. 20th Street
University of Alabama at Birmingham
Birmingham , Alabama 35294

Osman Banaga 293-4468 (Alabama State University)
Questions about treatment: Call Dr. Craig Wilson, Division of Geographic Medicine, UAB School of Medicine, Children's Hospital; 934-1630. Dr. Wilson is a pediatrician with extensive experience in medical parasitology.

Goal of Study: Determine the prevalence of infection with intestinal nematodes in children under 10 years old attending Alberta, Yellow Bluff, Vredenburgh, and Pine Apple Clinics.

Who will be asked to participate: All children under 10 years of age who come to the clinics, regardless of the reason for the visit. Children will be tested only once.

Starting date for recruiting subjects: October 26, 1992.

Number of subjects: 212 is the target, or 53 per clinic.

Consent procedure: The nurse, nurse practitioner, or physician seeing a patient will need to elicit written, informed consent from the parent or legal guardian of the child. The key elements of asking for consent are explaining the purpose of the study in simple language and indicating that participation is entirely voluntary and declining to participate will not affect their medical care. The study must be explained to the child as well and, if the child is 7 years old or older, he or she needs to sign the consent form as well. Two consent forms must be signed. Please give one to the parent and keep one in the notebook.

What to send home with the patient:

1. stool cup with 2 labels:
   - Label 1: Patient name or clinic ID code (remove this label before sending specimen to UAB)
   - Label 2: age
     sex
     zip code
     date of clinic visit
2. tongue depressor

When the specimen comes beck to the clinic:

1. Scoop no more than 5 g (about 5 ml) of stool into the 50 ml plastic screw-cap tube containing 20 ml of 10% neutral buffered formalin and mix well. The final volume will be about 25 ml. If you have sufficient stool, prepare one additional tube for each subject.
2. Transfer the label with the age, sex, zip code, and date of clinic visit to the screw-cap tube. (Screw the lid on tightly!)
3. Assign the specimen a study number (in chronological order) to the specimen and write this number both on the specimen tube and on your record sheet.
4. Store the specimen at room temperature until it is picked up or you send it to the lab.

Clinic	Study Numbers
Alberta	1001 - 1999
Pine Apple	2001 - 2999
Vredenburgh	3001 - 3999
Yellow Bluff	4001 - 4999

What happens in the lab: A simple flotation method will be used to concentrate any helminth ova. Helminth ova will then be examined by direct examination. This method that we will use is designed principally to identify Ascaris (roundworm) and hookworm ova. We plan to give you result (positive or negative for Ascaris or hookworm) within 2 weeks of receipt of the specimen.

APPENDIX L

Wilcox County
Results of Household Survey

		VRED.	X-MAS	COUNTY
1.	Number of households surveyed	30	129	159
2.	Total number of children <10	70	268	338

CHRISTMAS SAMPLE

3.	Number of households/tract against census	Actual # Sampled	Total # children <10	Weighted Sample
	ALBERTA	34	310	40
	CAMDEN	48	412	49
	COY-FATAMA	25	134	17
	PINE APPLE/OAK HILL	23	182	23
	PINE HILL/Y. BLUFF	87	670	86
	CAMDEN TOWN	51	384	53
	Total	268	2092	268

PHYSICAL CHARACTERISTICS OF HOUSEHOLD

		VRED.	X-MAS	COUNTY
4.	Frequency by type of housing			
	WOODEN	20 (67%)	53 (41%)	73 (46%)
	BRICK	1 (3%)	26 (20%)	27 (17%)
	MASONRY	0	1 (.8%)	1 (.6%)
	MOBILE HOME	9 (30%)	45 (35%)	54 (34%)
	OTHER	0	4 (.3%)	4 (2.5%)
5.	Freq. with telephone	10 (33%)	83 (64.4%)	93 (58.5%)
	Freq. without telephone	20 (67%)	46 (35.6%)	66 (41.5%)

		VRED.	X-MAS	COUNTY
6.	Frequency with air conditioning	6 (20%)	73 (57%)	79 (50%)
	Frequency without air cond.	24 (80%)	56 (43%)	80 (50%)
7.	Frequency by type of heating (may use a combination of methods)			
	GAS	13 (43%)	64 (50%)	77 (48%)
	ELECTRIC	5 (17%)	27 (21%)	32 (20%)
	WOOD	19 (63%)	46 (36%)	66 (42%)
	CENTRAL	2 (7%)	17 (13%)	19 (12%)
	KEROSENE	0	8 (6%)	8 (5%)
	SPACE HEATER	0	2 (1.5%)	2 (1%)
	HEAT PUMP	0	2 (1.5%)	2 (1%)
	OVEN	0	1 (.8%)	1 (.6%)
	OTHER	1 (3%)	1 (.8%)	2 (1%)
8.	Frequency water in house	23 (76.7%)	115 (89%)	138 (86.8%)
	Freq. without water in house	7 (23.3%)	14 (11%)	21 (13.2%)
9.	Frequency with hot water	18 (60%)	100 (77.5%)	118 (74.2%)
	Freq. without hot water	12 (40%)	29 (22.5%)	41 (25.8%)
10.	Frequency with refrigerator	23 (77%)	124 (96%)	147 (92%)
	Freq. without refrigerator	7 (23%)	5 (4%)	12 (8%)
11.	Frequency with washer	18 (60%)	85 (66%)	103 (64.7%)
	Freq. without washer	12 (40%)	44 (34%)	56 (35.3%)
12.	Frequency with dryer	1 (3.3%)	43 (33.3%)	44 (27.7%)
	Freq. without dryer	29 (96.7%)	86 (66.7%)	115 (72.3%)
13.	Number of residents/household	6.16	5.42	5.56
	Number of rooms/household	5.53	6.79	6.55
	Number of bedrooms/household	2.92	2.94	2.93
	Number of residents/bedroom	2.10	1.84	1.90

CHARACTERISTICS OF RESIDENTS

		VRED.	X-MAS	COUNTY
14.	Frequency by race			
	NONWHITE	30/30 (100%)	108/129 (83.7%)	38/159 (86.8%)
	WHITE	0/30 (0%)	21/129 (16.3%)	21/159 (13.2%)
15.	Number of children<10/household	2.33	2.07	2.12
16.	Frequency by relationship of caretaker			
	MOTHER	22 (73%)	101 (78%)	123 (77%)
	GRANDMOTHER	7 (23%)	19 (15%)	26 (16%)
	AUNT	1 (3%)	1 (.8%)	2 (1%)
	GR. GRANDMOT.	0	3 (2%)	3 (2%)
	SISTER	0	3 (2%)	3 (2%)
	FATHER	0	2 (1.5%)	2 (1%)
17.	Frequency by age of caretaker			
	< 18 years	0	1 (.8%)	1 (.6%)
	18-21 years	0	8 (6%)	8 (5%)
	22-29 years	10 (33%)	26 (21%)	36 (23%)
	30-39 years	11 (37%)	50 (39.2%)	61 (39%)
	40-49 years	4 (13%)	18 (14%)	22 (14%)
	50-59 years	4 (13%)	10 (8%)	14 (9%)
	>60 years	1 (3%)	14 (11%)	15 (10%)
17a.	Average age of caretaker	36 years	37	37
17b.	Range of ages of caretakers	22-61 years	16-78	16-78
18.	Average education of caretaker	10th grade	11th	11th
19.	Frequency of highest grade completed by caretaker by level of education			
	< 12 GRADE	20 (67%)	46 (36%)	66 (42%)
	= 12 GRADE	10 (33%)	59 (46%)	69 (43%)
	> 12 GRADE	0	24 (18%)	24 (15%)
20.	Average number of adults>18/ household	2.5	2.24	2.28

		VRED.	X-MAS	COUNTY
21.	Average number of adult males/ household (16-64 years)	.93	.74	.77
21a.	Frequency of adult males/ household			
	0 MALES/hh	9 (30%)	51 (40%)	60 (38%)
	1 MALE/hh	15 (50%)	66 (51%)	81 (51%)
	>1 MALES/hh	6 (20%)	12 (9%)	18 (11%)
22.	Number adults≥12 grade/ household	30 (40%)	175 (60.5%)	205 (56%)
23.	Frequency of households with			
	≥1 MEMBER WORKING*	16 (53%)	77 (60%)	93 (58%)
	NO ONE WORKING*	14 (47%)	52 (40%)	66 42%)
	(* outside of home)			

BREASTFEEDING

24.	Frequency of breastfeeding, of children <1 year	0/11 (0%)	6/20 (30%)	6/31 (19%)

CHILDHOOD MORBIDITY

25.	Frequency of children with diarrhea reported within last month	13 (18.6%)	17 (6.3%)	30 (8.9%)
	(Average age of child with diarrhea=4.27 years)			
26.	Frequency of children with worms reported within last 6 months	1 (1.4%)	4 (1.5%)	5 (1.5%)
	(However, 32 children had previous history of worms and 4 mothers treat regularly)			

HEALTH CARE

27.	Frequency of use of health care by provider			
	PMD	9 (30%)	92 (72%)	101 (64%)
	EMERGENCY ROOM	1 (3%)	28 (22%)	29 (18%)
	RURAL HEALTH CENTER	21 (70%)	49 (38%)	70 (44%)
	NO REGULAR SOURCE	2 (7%)	(<1%)	3 (2%)

	VRED.	X-MAS	COUNTY
28. Frequency where medicine is obtained by source (may be obtained from > 1 source)			
PHARMACY/DRUGSTORE	26 (87%)	121 (95%)	147 (93%)
CLINIC/DOCTOR	7 (23%)	25 (20%)	32 (20%)
OTHER	3 (10%)	8 (6%)	11 (7%)
29. Frequency of how health care is paid for (may use > 1 source)			
MEDICAID	22 (73%)	82 (65%)	104 (66%)
PRIVATE INSURANCE	1 (3%)	25 (20%)	26 (16%)
SELF PAY	7 (23%)	20 (16%)	27 (17%)
VA BENEFITS	0	0	0
30. Frequency of use of available services (in last 6 months)			
SUMMER FEEDING PROGRAM	0	42 (33%)	42 (27%)
HEALTH DEPARTMENT	21 (70%)	63 (49%)	84 (53%)
RURAL CLINIC/PHYSICIAN	23 (77%)	72 (56%)	95 (60%)
HOSPITAL	7 (23%)	27 (21%)	34 (22%)

TRANSPORTATION

31. Frequency by main form of transportation			
OWN CAR	12 (40%)	88 (68%)	100 (63%)
PUBLIC TRANSPORTATION	0	1 (.8%)	1 (.6%)
WALK	0	2 (2%)	2 (1%)
FRIEND/FAMILY FREE	5 (17%)	10 (8%)	15 (9%)
FRIEND/FAMILY PAY	13 (43%)	28 (22%)	41 (26%)
32. Of those who pay, average amount paid for a round trip to the doctor	$11.60	$8.80	$9.91
RANGE	($2-$20)	($3.50-$20)	
33. Frequency of use of public transportation (W. Alabama Health Services Van)	1/30 (3%)	10/118 (8.5%)	11/148 (7.4%)
34. Why public transportation not used; by frequency of most common answer			
ACCESS TO A CAR	11 (41%)	58 (57%)	69 (53%)
NOT AWARE OF	10 (37%)	9 (9%)	19 (15%)
THOUGHT FOR ELDERLY	1 (4%)	18 (18%)	19 (15%)
INCONVENIENT	5 (18%)	17 (16%)	22 (17%)

		VRED.	X-MAS	COUNTY

SOURCE OF INCOME

35. Frequency of source of income by type

WORK	14 (47%)	74 (57%)	88 (55%)
UNEMPLOYMENT	0	9 (7%)	9 (5.6%)
ADC	17 (57%)	56 (43%)	73 (46%)
FOOD STAMPS	24 (80%)	78 (61%)	102 (64%)
WIC	15 (50%)	50 (39%)	65 (41%)
SSI (Disability)	7 (23%)	33 (26%)	30 (19%)
SOCIAL SECURITY	8 (27%)	31 (24%)	39 (25%)
CHILD SUPPORT	1 (3%)	34 (26%)	35 (22%)

36. Frequency of house ownership

YES	18 (60%)	91 (71%)	109 (69%)
NO	12 (40%)	38 (29%)	50 (31%)

PETS & PESTS

37. Frequency of pet ownership

DOGS	14 (47%)	43 (33%)	57 (36%)
CATS	4 (13%)	26 (20%)	30 (19%)
PIGS	6 (20%)	9 (7%)	15 (9%)
POULTRY	7 (23%)	13 (10%)	20 (13%)

38. Frequency of animals in house

YES	3 (10%)	31 (24%)	34 (21%)
NO	27 (90%)	98 (76%)	125 (79%)

39. Frequency animals in yard

YES	23 (77%)	117 (91%)	140 (88%)
NO	7 (23%)	12 (9%)	19 (12%)

40. Frequency of pests in house

MICE/RATS	19 (63%)	49 (38%)	68 (43%)
ROACHES	27 (90%)	71 (55%)	98 (62%)
FLIES	9 (30%)	0	0
ANTS	3 (10%)	32 (25%)	33 (21%)

WATER & SANITATION

	VRED.	X-MAS	COUNTY
41. Frequency of source of water by type			
CITY WATER IN HOUSE	24 (80%)	76 (58.9%)	100 (62.9%)
CITY WATER/STANDPIPE	6 (20%)	6 (4.6%)	12 (7.5%)
WELL WATER/INSIDE TAP	0	38 (29.5%)	38 (23.9%)
WELL WATER/PUMP	0	2 (1.6%)	2 (1.3%)
OPEN WELL/NO PUMP	0	1 (.8%)	1 (.6%)
NO WATER	0	6 (4.6%)	6 (3.8%)
(NO WATER IN HOUSE)	6 (20%)	15 (11.6%)	21 (13.2%)
42. Frequency of type of toilet			
INDOOR-STANDARD	25 (83.3%)	114 (88.4%)	139 (87.4%)
POUR FLUSH	1	1	8
WOODS	0	1	1
NEIGHBOR	3	1	4
CHAMBER POT	0	2	2
LATRINE	1	4	5
(NO INDOOR STD. TOILET)	5 (16.7%)	15 (11.6%)	20 (12.5%)
43. Frequency of type of sewage disposal			
SEPTIC	1 (3.3%)	57 (44%)	58 (36.5%)
SEWER	19 (63%)	25 (19.4%)	44 (27.7%)
PIPED INTO YARD	5 (16.7%)	20 (15.5%)	25 (15.7%)
OTHER (ex. cesspool)	5 (16.7%)	27 (20.9%)	32 (20%)
(OTHER THAN SEPTIC/SEWER)	10 (33.3%)	47 (36.4%)	57 (35.8%)
44. Of those who have septic systems, frequency that are (determination not made at all households)			
WORKING	0 (0%)	36 (64%)	36 (62%)
NOT WORKING	1 (100%)	11 (20%)	12 (21%)
45. Frequency of working shower/bath in house	21 (70%)	115 (89%)	136 (86%)

SOLID WASTE DISPOSAL

46. Frequency of solid waste disposal by type			
REGULAR PICK UP	29 (97%)	29 (23%)	58 (37%)
DUMPSTER	0	88 (69%)	88 (56%)
BURN	3 (10%)	27 (21%)	30 (19%)

EXISTING LATRINES AND SEPTIC TANKS

		VRED.	X-MAS	COUNTY
47.	Frequency by who built the facility			
	PROFESSIONAL CONTRACTOR	0	13 (20%)	13 (20%)
	FRIENDS/FAMILY UNPAID	1 (33%)	13 (20%)	14 (22%)
	ALREADY THERE	2 (67%)	25 (39%)	27 (42%)
	FRIENDS/FAMILY PAID	0	11 (17%)	11 (17%)
48.	Frequency by "why the facility was built"			
	HEALTH REASONS	1 (100%)	12 (30%)	13 (33%)
	TOLD BY AUTHORITIES	0	10 (26%)	10 (25%)
	OTHER	0	17 (44%)	17 (42%)
49.	"Do you think that your toilet facilities are a problem?"			
	YES	11 (46%)	35 (28.5%)	46 (31%)
	NO	13 (54%)	88 (71.5%)	101 (69%)

INTEREST IN BUILDING A SEPTIC TANK OR LATRINE

Responses from households that have nothing or a septic system that is not working.

50.	"Would it be difficult for you to put in a latrine or septic tank?"			
	YES	8 (89%)	34 (89.5%)	42 (89%)
	NO	1 (11%)	4 (10.5%)	5 (11%)
51.	"Why would it be difficult?"			
	COST OF MATERIALS	4 (40%)	27 (79%)	31 (44%)
	COST OF LABOR	4 (40%)	21 (69%)	25 (35%)
	NO INFORMATION	1 (10%)	5 (15%)	6 (8%)
	SOIL WON'T PERCOLATE	3 (30%)	0	3 (4%)
	RENTING	1 (40%)	5 (15%)	6 (8%)
52.	"If someone were available to help you put in a low-cost facility, would you be interested in building a:			
	LATRINE	2 (20%)	2 (5%)	4 (8%)
	SEPTIC TANK	5 (50%)	26 (67%)	31 (63%)
	BOTH	0	1 (3%)	1 (2%)
	NEITHER	3 (30%)	10 (26%)	13 (27%)

	VRED.	X-MAS	COUNTY
53. "What would you be willing to contribute?"			
LABOR	4 (57%)	23 (79%)	27 (67.5%)
CONSTRUCTION MATERIALS	2 (29%)	4 (14%)	6 (15%)
MONEY	1 (14%)	2 (7%)	3 (7.5%)
NOTHING	1 (14%)	3 (10%)	4 (10%)
54. Family's biggest need right now (most common answers)			
HOUSE REPAIRED	6 (22%)	22 (17%)	28 (18%)
NEW HOUSE	2 (7%)	10 (8%)	12 (8%)
MORE ROOM	3 (11%)	11 (9%)	14 (9%)
MONEY	0	24 (19%)	24 (15%)
BATHROOM (including water, toilet, septic, etc.)	4 (15%)	10 (8%)	14 (9%)
HEAT	5 (19%)	0	5 (3%)
CLOTHES	2 (7%)	12 (9%)	14 (9%)
FOOD	1 (4%)	2 (1.5%)	3 (2%)
CAR	0	5 (3%)	5 (3%)
JOB	0	4 (3%)	4 (2.5%)
NOTHING	4 (15%)	17 (13%)	21 (13%)

OBSERVATIONS

55. Cleanliness of house (5-point scale) based on overall condition of house, including need of repairs			
1=good	5 (20%)	35 (29%)	40 (27%)
2	11 (44%)	39 (32%)	50 (34%)
3	5 (20%)	29 (24%)	34 (23%)
4	2 (8%)	12 (10%)	14 (10%)
5=poor	2 (8%)	6 (5%)	8 (6%)
56. Cleanliness of yard based on presence of rubbish, standing sewage/water, animals, etc.			
1=good	3 (10%)	18 (14%)	21 (13%)
2	5 (17%)	29 (23%)	34 (22%)
3	6 (20%)	37 (29%)	43 (28%)
4	8 (26.5%)	25 (20%)	33 (21%)
5=poor	8 (26.5%)	17 (13%)	25 (16%)

APPENDIX M

Results of Household Survey
for
CHILDREN WITH DIARRHEA

		Vredenburgh	Christmas
HOUSEHOLD CHARACTERISTICS			
1.	Tract		
	ALBERTA		1 (6%)
	CAMDEN		3 (17%)
	COY-FATAMA		2 (11%)
	PINE HILL		4 (22%)
	CAMDEN TOWN		8 (44%)
	(VREDENBURGH)	13 (100%)	
2.	City		
	ARLINGTON		1 (5.5%)
	BOYKIN		1 (5.5%)
	CAMDEN		11 (61%)
	COY		2 (11%)
	PINE HILL		3 (17%)
	(VREDENBURGH)	13 (100%)	
3.	Zip code		
	36435 (Coy)		2 (11%)
	36481 (Vredenburgh)	13 (100%)	
	36720 (Arlington)		1 (5.5%)
	36722 (Boykin)		1 (5.5%)
	36726 (Camden)		11 (61%)
	36769 (Pine Hill)		3 (17%)
4.	Telephone in household		
	YES	6 (46%)	14 (78%)
	NO	7 (54%)	4 (22%)
5.	Water inside of house		
	YES	13 (100%)	17 (94%)
	NO	0	1 (6%)
6.	Hot water in household		
	YES	11 (85%)	15 (83%)
	NO	2 (15%)	3 (17%)

		Vredenburgh	Christmas
7.	Washing machine owned by household		
	YES	10 (77%)	11 (61%)
	NO	3 (23%)	7 (39%)
8.	Average number of residents in household	6.15	4.9
9.	Race of children		
	NON WHITE	13 (100%)	12 (67%)
	WHITE	0	6 (33%)
10.	Average number of children <10 in household	2.8	2.1
CARETAKER CHARACTERISTICS			
11.	Average age of caretaker	34.5 years	36.4 years
11a.	Range of ages of caretaker	26-47 years	23-61 years
12.	Relationship of caretaker		
	MOTHER	10 (77%)	15 (83%)
	GRANDMOTHER	3 (23%)	3 (17%)
13.	Average education of caretaker	11th grade	11th grade
13a.	Education of caretaker		
	<12th GRADE	8 (61.5%)	8 (44%)
	=12th GRADE	5 (38.5%)	5 (28%)
	>12th GRADE	0	5 (28%)
ADULTS IN HOUSEHOLD			
14.	Frequency of males (16-64) in household		
	0 MALES	6 (46%)	8 (44%)
	1 MALE	6 (46%)	10 (56%)
	>1 MALE	1 (7%)	0
15.	Frequency of households with at least one member working	7 (54%)	11 (61%)

		Vredenburgh	Christmas
16.	Frequency of adults in household with ≥ 12th grade education	7 (54%)	12 (67%)

CHILDHOOD MORBIDITY

17.	Average age at illness		
	< 12 months	3 (23%)	1 (5.5%)
	12-23 months	0	1 (5.5%)
	24-35 months	3 (23%)	2 (11%)
	36-47 months	1 (8%)	2 (11%)
	48-59 months	3 (23%)	0
	60-71 months	1 (8%)	5 (28%)
	72-83 months	1 (8%)	4 (22.5%)
	84-95 months	0	2 (11%)
	96-107 months	0	0
	108-119 months	1 (8%)	1 (5.5%)
18.	Type of Diarrhea		
	SOFT	1 (7.7%)	8 (44.4%)
	BLOODY	0	1 (5.6%)
	WATERY	12 (92.3%)	7 (39%)
	GREASY	0	0
	DON'T KNOW	0	2 (11%)
19.	Average duration of diarrhea	3.7 days	5.3 days
20.	Duration of diarrhea		
	< 7 days	12 (92.3%)	13 (88.9%)
	≥ 7 days	1 (7.7%)	5 (11.1%)
21.	Average number of bowel movements per day	6.15/day	5.8/day
22.	Bowel movements per day		
	< 4/day	2 (16.7%)	4 (26.6%)
	4-6/day	4 (33.3%)	9 (60%)
	7-10/day	5 (41.7%)	1 (6.7%)
	>10/day	1 (8.3%)	1 (6.7%)
23.	Place of treatment		
	HOME	8 (61.5%)	11 (61%)
	HEALTH CENTER	4 (30.8%)	2 (11%)
	OTHER	0	1 (6%)
	NONE RECEIVED	1 (7.7%)	4 (22%)

	Vredenburgh	Christmas
24. Treatment received (Respondents could give more than one answer)		
HOME REMEDY	3 (23%)	1 (5.6%)
PEDIALITE (or equivalent)	2 (15%)	0
MEDICINE	11 (85%)	14 (77.7%)
OTHER	5 (38.5%)	3 (16.7%)
24a. Home Remedies include: juice, soup, crackers, flour, and water.		
24b. Types of Medicine given:		
PEPTO BISMAL	9 (69%)	9 (50%)
KAOPECTATE	2 (15%)	3 (17%)
DONAGEL	2 (15%)	0
ALIMENTUM	1 (8%)	0
ANTIBIOTICS	0	1 (6%)
MYLANTA	0	1 (6%)
24c. Other treatments given include: fluids, "regular" food, no water, soda, crackers, bananas, warm milk, and black draught syrup.		
25. Reasons for not treating		
LACK OF MEDICINE	0	1 (25%)
NOT SERIOUS ENOUGH	1 (100%)	1 (25%)
LACK OF MONEY	0	0
NO TRANSPORTATION	0	0
OTHER	0	2 (50%)
25a. OTHER reasons for not treating include: called the doctor and late at night.		
26. Knew the cause of the diarrhea		
YES	3 (31%)	11 (61%)
NO	9 (69%)	7 (39%)
26a. If YES, what was the cause		
VIRUS	3 (75%)	5 (46%)
JUICE/SWEETS	1 (25%)	1 (9%)
ANTIBIOTICS	0	2 (18%)
SPICY FOOD	0	2 (18%)
TEETHING	0	1 (9%)

		Vredenburgh	Christmas
26b.	If YES, do you know what be done to keep child from getting diarrhea		
	YES	1 (25%)	0
	NO	3 (75%)	12 (100%)
27.	Child has had worms in last 6 months		
	YES	1 (8%)	0
	NO	12 (92%)	18 (100%)

HEALTH CARE

28.	How is health care for the child paid for? (may be more than 1 source)		
	MEDICAID	10 (77%)	10 (56%)
	HEALTH INSURANCE	0	7 (39%)
	SELF PAY	5 (39%)	5 (28%)

FAMILY INCOME

29.	Sources of income for the household		
	WORK	6 (46%)	10 (56%)
	ADC	8 (62%)	9 (50%)
	FOOD STAMPS	11 (85%)	10 (56%)
30.	Do you own your home?		
	YES	11 (85%)	11 (61%)
	NO	2 (15%)	7 (39%)

PETS/ANIMALS

31.	Do you keep any domestic animals?		
	DOGS	5 (39%)	6 (33%)
	CATS	2 (15%)	4 (22%)
	PIGS	5 (39%)	0
	POULTRY	5 (39%)	1 (6%)
31a.	Do animals come in the house?		
	YES	1 (8%)	4 (22%)
	NO	12 (92%)	14 (78%)
31b.	Do animals come in the yard?		
	YES	11 (85%)	18 (100%)
	NO	2 (15%)	0

		Vredenburgh	Christmas
PESTS			
32.	Have a problem with the following		
	MICE/RATS	10 (77%)	4 (22%)
	ROACHES	12 (92%)	9 (50%)
WATER & SANITATION			
33.	Where household got its water yesterday		
	CITY WATER IN HOUSE	13 (100%)	14 (78%)
	WELL WATER (inside tap)	0	3 (17%)
	NEIGHBOR'S	0	1 (6%)
34.	Type of excreta disposal		
	INDOOR TOILET	13 (100%)	17 (94%)
	LATRINE	0	1 (6%)
35.	Toilet working		
	YES	12 (92%)	15 (83%)
	NO	1 (8%)	3 (17%)
36.	Type of sewage disposal		
	SEPTIC TANK	0	8 (44%)
	SEWERAGE SYSTEM	7 (54%)	6 (33%)
	PIPED INTO YARD	5 (39%)	1 (6%)
	OTHER	1 (7%)	3 (17%)
36a.	OTHER forms of sewage disposal include: cesspool, latrine, bucket, and don't know		
37.	Sewage disposal working		
	YES	6 (67%)	8 (73%)
	NO	3 (33%)	3 (27%)
38.	Is your toilet facility a problem?		
	YES	6 (67%)	8 (44%)
	NO	3 (33%)	10 (56%)

		Vredenburgh	Christmas

SOLID WASTE DISPOSAL

39.	Solid waste disposal		
	REGULAR PICKUP	13 (100%)	9 (50%)
	DUMPSTER	0	6 (33%)
	BURN	3 (23%)	4 (22%)
	PILE BEHIND HOUSE	0	2 (67%)

PERCEIVED NEEDS

40.	Family's biggest need right now		
	MORE ROOM	4 (33%)	1 (6%)
	MONEY	0	10 (56%)
	HOUSING REPAIRS	4 (33%)	2 (11%)
	CHEAP BABYSITTER	0	2 (11%)
	HEAT	1 (8%)	0
	TOILET	0	1 (6%)
	NONE	3 (25%)	2 (11%)
41.	Cleanliness of interior (5 point scale)		
	GOOD 1	4 (31%)	6 (33%)
	2	5 (38%)	8 (44%)
	FAIR 3	1 (8%)	3 (17%)
	4	1 (8%)	1 (6%)
	BAD 5	2 (15%)	0
42.	Cleanliness of yard (5 point scale)		
	GOOD 1	3 (23%)	4 (22%)
	2	3 (23%)	6 (33%)
	FAIR 3	2 (15%)	4 (22%)
	4	3 (23%)	3 (17%)
	BAD 5	2 (15%)	1 (6%)

APPENDIX N

Chart Audit Data- Alberta Clinic

Patients under 10 seen 7/91-6/92
Diagnosis=Enteric Pathogen
Original Audit 10/92, Follow-Up 2/93

Pt. #: assigned by researchers
Sex: M=male, F=female
Age: in years unless specifies months
Zip: last 2 numbers of zip code

D.O.V: date of visit
Diagnosis: RS=rectal smear; +=positive for
RW=round worms
FW=flat worms
Treatment: drug used

Pt. #	Sex	Age	Zip	D.O.V.	Diagnosis	Treatment
1	M	9	20	10/18/91	RS + RW, FW	DICYCLOMENE
				12/31/91	RS + RW	PIPERAZINE
2	M	4	20	4/22/92	RS + RW, FW	PIPERAZINE
3	M	4 mos	28	6/19/92	RS + RW	PIPERAZINE
				11/2/92	DIARRHEA	KAOPECTATE/G'ADE
4	M	5 mos	28	6/4/92	RS + RW	PIPERAZINE
5	F	5	28	4/6/92	RS + RW	PIPERAZINE
6	M	3	83	5/14/92	RS + RW	PIPERAZINE
7	F	4	69	1/9/92	RS + RW	PIPERAZINE
8	F	8	20	4/27/92	RS + RW	PIPERAZINE
9	M	4	73	1/7/92	RS + RW	PIPERAZINE
10	F	8	20	4/6/92	RS + RW	PIPERAZINE
11	M	9	20	8/20/91	RS + FW	ANTIMINTH
12	M	6	20	8/19/91	RS + RW	PIPERAZINE
				2/18/92	RS + RW	PIPERAZINE
13	M	2	20	2/4/92	RS + RW	PIPERAZINE
				3/5/92	RS + RW	PIPERAZINE
				6/18/92	RS + RW	ANTIMINTH

14	M	2	20	2/4/92 3/5/92 4/9/92 12/28/92	RS + RW RS + RW RS + RW, FW STOOL CUP +	PIPERAZINE PIPERAZINE PIPERAZINE VERMOX
15	M	3	73	11/6/91	RS + RW	PIPERAZINE
16	M	8	20	8/15/91	RS + RW	PIPERAZINE
17	M	5	20	2/27/92 3/26/92	RS + RW RS + RW	PIPERAZINE PIPERAZINE
18	M	6	28	3/12/92	RS + RW	PIPERAZINE
19	F	1	20	3/12/92	RS + RW	PIPERAZINE
20	M	6	20	1/9/92	RS + RW	PIPERAZINE
21	M	9	28	5/11/92	RS + RW, FW	PIPERAZINE
22	F	6	23	1/27/92 9/24/92	RS + RW MOM THINKS	PIPERAZINE VERMOX
23	M	5	28	10/10/91	RS + RW	PIPERAZINE
24	M	5	28	3/16/92	RS + RW	PIPERAZINE
25	M	6	20	11/22/91	RS + RW	PIPERAZINE
26	F	3	20	3/24/92	RS + RW	PIPERAZINE
27	M	1	20	6/8/92 8/12/92 10/21/92 1/21/93	RS + RW G'ma thinks G'ma thinks/no test G'ma thinks Stool cup given, not returned	PIPERAZINE VERMOX
28	F	4	20	11/15/91	RS + RW	PIPERAZINE
29	F	3	NO CHART			
30	F	7	28	1/30/92	RS + RW	PIPERAZINE
31	F	5	23	3/23/92	RS + RW	PIPERAZINE
32	M	4	20	1/23/92	Mom thinks	VERMOX
33	F	2	28	1/24/92	RS + RW	PIPERAZINE
34	M	9	20	1/13/92	RS + RW, FW	PIPERAZINE
35	F	1	20	1/9/92 6/24/92	RS + RW RS + RW	PIPERAZINE PIPERAZINE

36	M	2	20	2/17/92	RS + gross amt. RW	PIPERAZINE
37	F	4	67	10/3/91	RS + MANY RW	PIPERAZINE
				3/2/92	RS + RW	PIPERAZINE
38	M	3	NO CHART			
39	M	3	20	4/22/92	RS + gross # RW	PIPERAZINE
40	M	4	20	12/18/91	RS + RW	PIPERAZINE
41	F	1	83	3/11/92	RS + MANY LG. RW	PIPERAZINE
				5/1/92	RS + RW	ANTIMINTH
42	F	2	28	10/16/91	RS + RW	ANTIMINTH
				1/8/92	RS + RW	PIPERAZINE
				10/6/92	MOM THINKS	PIPERAZINE
43	M	2	28	3/23/92	RS + RW	PIPERAZINE
44	M	1	73	8/16/91	RS + RW	PIPERAZINE
45	M	4	28	2/21/92	RS + RW	PIPERAZINE
46	M	6	28	11/6/91	RS + MANY RW	PIPERAZINE
47	M	7	NO CHART			
48	F	1	20	2/4/92	RS + RW	PIPERAZINE
49	F	6	20	11/8/91		RX FOR PINWORMS
				6/8/92	RS + RW	PIPERAZINE
50	F	1	20	10/3/91	RS + FW	
				4/13/92	RS + RW	PIPERAZINE
51	F	7	20	5/14/92	RS + RW	PIPERAZINE
52	F	4	20	4/13/92	RS + FW	PIPERAZINE
53	F	9	20	3/20/92	RS + RW	PIPERAZINE
				4/15/92	RS + RW	PIPERAZINE
54	M	1	20	10/28/91	Passed FW	
					RS + FW	PIPERAZINE
				2/27/92	RS + RW	PIPERAZINE
				5/13/92	RS + RW	PIPERAZINE
55	M	3	20	4/16/91	RS + MANY RW	ANTIMINTH
				2/27/92	RS + RW	PIPERAZINE
				4/15/92	RS + RW	PIPERAZINE
56	F	2	20	12/13/91	RS + RW	ANTIMINTH

57	F	3	20	3/5/92	RS + RW	PIPERAZINE
58	M	5	20	1/15/92	RS + RW	PIPERAZINE
59	M	1	20	9/18/91 4/13/92	RS + FW RS + MANY RW	PIPERAZINE PIPERAZINE
60	M	9	23	1/28/92	RS + RW	PIPERAZINE
61	F	8	20	3/16/92	RS + RW	PIPERAZINE
62	F	7	20	6/5/92	RS + RW	PIPERAZINE
63	F	1	20	3/23/92 3/27/92	RS + RW DIARRHEA	PIPERAZINE KAOPECTATE/G'ADE
64	M	2	20	2/17/92 3/5/92	RS + RW VOM./DIARRHEA RS + MANY RW	PIPERAZINE PIPERAZINE
65	M	8 mos	NO CHART			
66	F	9	23	7/8/91	RS + MANY FW	ANTIMINTH
67	F	5	23	7/15/91	RS + MANY LG. FW	PIPERAZINE
68	F	5	28	10/10/91	RS + MANY LG. RW	ANTIMINTH
69	F	3	28	1/6/92	RS + MANY LG. RW	PIPERAZINE
70	M	8 mos	NO CHART			
71	F	4	28	2/16/92	RS + MANY FW	ANTIMINTH
72	M	9	23	8/31/91	RS + MANY RW	PIPERAZINE
73	F	2	23	2/11/92 4/24/92	RS + RW RS + RW	PIPERAZINE PIPERAZINE
74	M	10	NO CHART			
75	M	3	23	10/29/91	DIARRHEA/VOM RS + MANY LG RW	 ANTIMINTH
76	M	5	23	8/27/91	SIBLING HAS RS + MANY LG. FW	 PIPERAZINE
77	F	4	NO CHART			
78	M	3	23	10/17/91 2/1/92	RS + MANY LG. RW MOM'S REQUEST	PIPERAZINE VERMOX
79	M	3	28	3/3/92	DIARRHEA/G.E.	PARAPENTOLIN

80	F	4	23	2/17/92	RS + RW	PIPERAZINE
				3/25/92	RS + MANY RW	PIPERAZINE
81	M	6	20	2/7/92	RS + MANY RW	PIPERAZINE
82	M	5	23	9/9/91	RS + RW	PIPERAZINE
83	M	1	23	9/30/91	RS + MANY RW	PIPERAZINE
84	M	6	23	10/10/91	RS + MANY RW	ANTIMINTH
				5/1/92	RS + RW	ANTIMINTH
				7/30/92	ASCARIS	VERMOX
85	M	2	23	1/6/92	RS + RW	PIPERAZINE
86	F	2	23	2/12/92	RS + RW	PIPERAZINE
				5/27/92	RS + RW	PIPERAZINE
				6/4/92	NO TEST	PIPERAZINE
87	F	4	23	9/24/91	RS + RW	PIPERAZINE
88	M	4	23	1/27/92	RS + RW	ANTIMINTH
				4/21/92	RS + RW	PIPERAZINE
89	F	3	23	2/17/92	RS + RW	PIPERAZINE
				4/7/92	RS + RW	PIPERAZINE
90	M		23	4/8/92	RS + RW	PIPERAZINE
91	F		23	4/8/92	RS + RW	PIPERAZINE
92	M	1	73	8/12/92	MOM'S REQUEST	PIPERAZINE
93	M	4	23	6/17/92	RS + RW, FW	PIPERAZINE
94	F	6	20	2/10/92	RS + RW	ANTIMINTH
				6/15/92	RS +MANY LG RW, FW	PIPERAZINE
95	M	3	23	10/22/91	RS + FW	PIPERAZINE
				2/9/92	NO TEST	VERMOX
96	M	3	20	1/21/92	RS + RW	PIPERAZINE
97	F	9	28	12/9/91	RS + RW	PIPERAZINE
98	F	1	01	9/13/91	RS + RW	PIPERAZINE
				6/2/92	RS + RW	PIPERAZINE
				6/16/92	RS + RW	PIPERAZINE
99	F	2	28	7/17/91	RS + RW	PIPERAZINE
100	F	2	28	3/16/92	RS + RW	PIPERAZINE
101	F	9	28	2/4/92	RS + RW	PIPERAZINE

				5/20/92	RS + RW	PIPERAZINE
102	M	2	20	3/16/92	RS + RW	PIPERAZINE
103	F	11 mos	20	3/16/92	RS + RW	PIPERAZINE
104	F	2	28	3/18/92	RS + RW	PIPERAZINE
				3/20/92		PIPERAZINE
				4/23/92	RS + RW	PIPERAZINE
105	F	6	28	3/16/92	RS + RW	PIPERAZINE
106	F	4	28	10/10/91	RS + RW	PIPERAZINE
				2/4/92	RS + RW	PIPERAZINE
				6/4/92	RS + RW	PIPERAZINE
				6/16/92	NO TEST	PIPERAZINE
107	M	1	20	6/23/92	RS + RW	PIPERAZINE
108	F	2	20	6/23/92	RS + RW	PIPERAZINE
109	M	7	28	10/14/91	RS + RW	ANTIMINTH
110	M	9	28	5/18/ 92	RS + RW , FW RED, BLUE, GRAY	PIPERAZINE
111	M	2	28	10/2/91	RS -	
				10/14/91	MOM BRINGS WORM	PIPERAZINE
				1/2/92	RS + RW	PIPERAZINE
				9/22/92	VOM. 2 WORMS	VERMOX
112	M	1	28	1/24/92	RS +	PIPERAZINE
				12/15/92	Scratching/PINWORMS	VERMOX
113	F	2	28	9/13/91	RS + RW	PIPERAZINE
				10/28/91	RS + RW	PIPERAZINE
114	M	3	28	1/2/92	RS + RW	PIPERAZINE
				4/24/92	RS + RW	PIPERAZINE
115	F	5	28	6/4/92	RS + RW	PIPERAZINE
116	F	5	28	11/12/91	RS + RW	PIPERAZINE
				1/29/92	RS + RW	PIPERAZINE
117	F	3	20	8/19/91	RS + RW	PIPERAZINE
118	F	7	20	10/16/91	RS + RW	PIPERAZINE
119	F	10	20	10/24/91	DIARRHEA	PARAPENTOLIN/FLUID
120	F	2	20	6/24/92	RS + RW	PIPERAZINE

121	F	4	20	6/5/92	RS + RW	PIPERAZINE
122	M	6	23	6/15/92	RS + RW	PIPERAZINE
123	M	1	73	1/9/92	RS + RW	PIPERAZINE
124	F	2	NO CHART			
125	F	1	20	10/30/91	RS + RW	PIPERAZINE
126	F	1	20	7/8/91	RS + RW	PIPERAZINE
				11/19/91	RS + RW	PIPERAZINE
				6/3/92	RS + RW	PIPERAZINE
127	F	2	NO CHART			
128	F	1	20	3/2/92	RS + RW	PIPERAZINE
				5/4/92	RS + RW	PIPERAZINE

RESULTS

128 CHILDREN IDENTIFIED WITH ENTERIC PATHOGEN (7/91-6/92) IN ORIGINAL AUDIT 10/92 AT THE ALBERTA CLINIC.
8 CHARTS MISSING AT FOLLOW-UP.

TESTING:
117 CHILDREN **(97.5%)** TESTED POSITIVE WITH A RECTAL SMEAR FOR HELMINTHS AT LEAST ONCE DURING THE STUDY PERIOD (7/91-6/92).

31 CHILDREN **(26%)** TESTED POSITIVE FOR HELMINTHS MORE THAN ONCE DURING THE STUDY PERIOD.

20 CHILDREN TESTED POSITIVE FOR FLATWORMS.

TREATMENT:
152 CASES **(91.5%)** OF HELMINTHS WERE TREATED FOLLOWING A POSITIVE RECTAL SMEAR.

14 CASES **(8.5%)** WERE TREATED WITHOUT A POSITIVE TEST. (based on symptoms, mother's wishes, or actual passing or vomiting a worm)

DRUG TREATMENT:
PIPERAZINE WAS USED TO TREAT THE HELMINTH INFECTIONS **85.5%** OF THE TIME (142 out of 166 treatments).

ANTIMINTH WAS USED 14 TIMES **(8.4%).**

VERMOX WAS USED 9 TIMES **(5.4%)**.

DICYCLOMENE WAS USED ONCE **(0.1%)**.

APPENDIX O

CHART AUDIT OF
Children in UAB Stool Sample Survey

Study #	D.O.V	Age	Zip	Sex	Problem/Diag.
1001	10/28/92	5	23	M	No recent history
1002	10/29/92	7	23	M	Diarrhea (8/5/92)
1003	10/30/92	2	28	M	No recent history
1004	10/30/92	6	28	F	R.S. + F.W. and R.W. Rx-Antiminth (2/20/91)
1005 (UAB+)	11/2/92	8	23	F	UAB + for worms Rx-Piperazine (12/22/92)
1006	11/2/92	7	28	F	No recent history
1007	11/2/92	9	23	F	No recent history
1008	11/13/92	2	20	F	Cold RS + RW (3/11/91) Cold, Abd. Pain RS + RW (3/6/92)
1009	11/3/92	4	23	M	Vom. R.S. + many R.W. Rx-Antiminth (1/27/92) Mom wants checked R.S. + R.W Rx-Piperazine (4/21/92) Nasal Con, Scratch Diag.-Pinworms Rx-Vermox (10/2/92) Vom. 1 wk., Scratch Rx-after worm study (1/4/93)
1010	11/13/92	3	20	F	Cold, Abd. Pain RS + FW Rx-Antiminth (3/11/91) Cold, loss of appetite RS + RW Rx-Antiminth (4/17/91) Cold, Abd. Pain RS + RW

					Rx- Piperazine (3/5/92)
1011	11/4/92	10	20	M	No recent history
1012	11/4/92	10	20	M	R.S. + many worms Rx-Antiminth (8/7/89)
1013	11/4/92	4	20	F	Abd Pain, Nausea, Vom R.S. + R.W. Rx-Piperazine (2/17/92)
					Abd Pain, Nausea, Vom RS + many RW Rx-Piperazine (3/25/92)
1014	11/4/92	9	20	F	Missing chart
1015	11/4/92	3	28	F	RS + many Ascaris Rx-Antiminth (9/7/90)
					RS + many RW Rx- Antiminth (11/12/90)
					Cough, Elev. Temp RS + many RW Rx-Antiminth (3/4/91)
1016	11/4/92	5	28	F	Vom, Abd. Pain R.S. + R.W. Rx-Piperazine (1/29/92)
1017					Missing Chart
1018	11/16/92	5	20	M	Teacher saw worm in stool RS + many worms Rx-Antiminth (6/15/89)
					RS + many RW Rx-Piperazine (3/16/92)
					cold, nausea, Vom, diarrhea Rx-Force fluids (2/1/93)
1019	11/16/92	6	20	M	Mom thinks has worms RS + FW Rx- Antiminth (6/15/89)
1020 (UAB +)	11/16/92	8	20	F	UAB + RW (12/21/92)
					Mom saw lg. white worm Antiminth (11/18/87)
1021	11/17/92	4	23	F	No recent history

1022	11/19/92	2	20	F	Vom. RS + RW Rx-Antiminth (6/16/91) Elev. temp., shaking RS + RW Rx-Piperazine (1/18/92) P.M. grunting, Vom. Mom thinks has worms Rx-Piperazine (10/6/92)
1023	11/30/92	4	23	M	Gut worms, G'ma saw Rx-Vermox (11/9/92)
1024	12/1/92	4	20	F	Diarrhea-KP (no result) Parapentolin + Fluids (10/24/91)
1025	12/2/92	6	20	M	Elev. Temp. RS + many worms Rx- Antiminth (9/22/89) Anemia, Fail. to thrive RS + many FW (10/5/90) RS + many RW RX-Piperazine (8/19/91) Congestion RS + RW Rx-Piperazine (2/18/92)
1026	12/4/92	1 1/2	69	F	No recent history
1027	12/8/92	1 1/2	20	M	Elev. Temp. RS + many FW Rx-Piperazine (9/18/91) Vom. RS + many RW Rx-Piperazine (4/13/92)
1028	12/11/92	3	20	F	RS + many ascaris (5/16/91)
1029	12/11/92	1	20	F	No recent history
1030	12/14/92	1 1/2	20	F	Abd. Cramps RS + RW Rx-Piperazine (10/30/91)
1031 (UAB +)	12/30/92	3	23	M	UAB + RW Rx-Vermox (2/9/93) Vom. RS + many long FW Rx-Piperazine (10/22/91)

1032	12/30/92	6	23	F	Vom, Abd Pain Pepto Bismal at home RS + many RW (3/11/91) RS + many RW (12/14/90)
1033	12/30/92	7	23	M	Abd. Pain, Loss Appetite RS + RW (11/8/90)
1034	12/30/92	6	28	M	Rectal itching RS + RW (1/5/89) RS + many eggs and RW (1/26/90) Cough, Vom, Chest Con. RS + RW Rx-Antiminth (1/22/91)
1035	12/30/92	9 mos	28	F	No recent history
1036	1/11/93	1	20	M	Cold, Chest Congestion RS + RW Rx-Piperazine (6/16/92)
1037	1/11/93	4	20	M	No recent history
1038	1/26/92	2	20	M	Elev. temp. RS + RW Rx- Piperazine (6/8/92) Grit teeth, Vom., Elev. temp G'ma thinks has worms (8/12/92) Sleeps on knees, scratch G'ma thinks has worms Rx-Vermox (10/21/92) Cold, G'ma thinks has worms Stool sample to UAB (1/21/93) No Rx
1039	2/9/93	2	23	F	No recent history

RESULTS

Chart review of subjects (1001-1039) from the Alberta Clinic that are included in the UAB stool sample survey.

37 CHARTS PULLED 2 CHARTS MISSING

14 CHILDREN **(38%)** HAD NO HISTORY OF HELMINTHS PRIOR TO UAB STUDY.

11 CHILDREN **(30%)** TESTED POSITIVE FOR HELMINTHS WITHIN THE LAST YEAR. (1 child tested positive, but there is no documentation to show that she was treated)

11 CHILDREN **(30 %)** WERE TREATED FOR HELMINTHS WITHIN THE LAST YEAR. (1 child was treated without a rectal smear, because the grandmother saw the worm)

21 CHILDREN **(57%)** HAVE TESTED POSITIVE FOR HELMINTHS IN THE PAST. (4 children tested positive without documentation of treatment)

19 CHILDREN **(51%)** HAVE BEEN TREATED FOR HELMINTHS IN THE PAST. (2 children were treated without a rectal smear, because the caretakers saw the worms.)

12 CHILDREN **(32%)** HAVE HISTORY'S OF MULTIPLE (more than one) HELMINTH INFECTIONS.

UAB POSITIVES

Subject # 1005- NO HISTORY OF HELMINTH INFECTION

Subject # 1020- TREATED FOR HELMINTHS IN 1987.

Subject #1031- TREATED FOR HELMINTHS 10/22/91.

APPENDIX P
Resource: (16)

More than prescriptions

NEWS STAFF PHOTO/JOE SONGER

Dr. Cook dresses sore on leg of 83-year-old Melvin Stallworth, a shut-in who depends on relatives to bring him medicine.

■ Dr. Roseanne Cook, a nun, and her clinic serve 2,500 people in isolated Wilcox County.

■ Despite public efforts to recruit more doctors like her, few stay long at poor, rural practices.

■ Throughout the nation, there are counties like Wilcox, where people have no money, no insurance, and little access to health care.

Nun struggles against poverty in Wilcox medical practice

By **Betsy Butgereit**
News staff writer

PINE APPLE — Far from the University of Alabama at Birmingham's brick towers, far from the snarled urban traffic, far from the packed malls crowded with holiday shoppers is the concrete-block Grace Busse Health Clinic.

Here, a doctor doesn't tote around a fancy black bag or briefcase. She hauls her supplies to house calls in a Sears "Where America Shops" plastic bag.

Here, families return the prescriptions of their recently deceased relatives so the clinic can reuse the plastic bottles. Here, patients are likely to leave toting their prescription drugs in a cleaned-up Frosty Acres frozen black-eyed peas bag.

And here is Dr. Roseanne Cook, 54, a Roman Catholic nun who went to medical school at age 40 and has been serving in Wilcox County's Third World conditions of sickness and poverty for seven years.

One of four doctors serving the county's 14,000 mostly poor people, she jumped from nun as biology teacher at Fontbonne College in St. Louis, to nun as doctor at the suggestion of some of her fellow Sisters of St. Joseph.

Her days begin early, end late and often are surprising.

For example, as she heads out the clinic door at mid-morning to make a house call, Frank Partin stops her.

Gift from a friend

A courtly man given to kissing the hands of women as a greeting, he softly asks, "Are you leaving now?" She says yes.

"Well, I have something for you," he says. She follows him to his beat-up gray pickup truck, where he presents her with a Winn Dixie plastic bag that's lumpy at the bottom.

"Whatcha got there?" she asks, then realizes it's sweet potatoes that he has dug up for her.

"These look like great ones," she tells him and stashes the bag in her car. He's pleased that she's pleased.

Dr. Cook met Partin shortly after she was recruited to Pine Apple by Sister Jane Kelly, a nurse practitioner also of the Sisters of St. Joseph. Partin's wife, Miss Laura, was dying from cancer and Dr. Cook made many house calls before she died.

Partin, a logger who qualifies for Medicare in May, can't read or write, she says, "but he comes around every year with a Christmas card because the writing's already on it, and he hands it to you, so you know who it's from."

He loves Dr. Cook, he says, because she came to see his wife without even being called. A devout Baptist, he's got no problems with a nun who goes doctoring.

"Denomination don't spell nothing with me," he says. "In my mind, if everybody joined the church of Christ that's within," and he taps his chest with his right hand, "it would be all right. Denominations don't spell Christ."

This clinic is 25 miles from Camden and about 30 from Greenville and their hospitals. It's the kind of rural setting that the medical community now is gnashing its teeth over how to serve.

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From Page 1A

For many here, the Pine Apple clinic is the only health-care facility they can reach or afford. The clinic has a sliding scale based on income, with the lowest fee at $7. If patients can't pay, they don't have to, and since everyone knows everyone, the clinic staff knows who can't and who won't pay.

Many times, they pay with food, like Partin's sweet potatoes. One woman brought in a big tub of cooked corn. "We just stopped everything and everyone had some corn," Dr. Cook recalled.

The waiting-room atmosphere is more like a friendly community center than a doctor's office. Patients greet each other as friends. They swap gossip. One woman who loves peppermint candy hands cellophane-wrapped discs out to everyone in the room. People stroll through simply to see who's there.

The clinic is more than a community center, Partin says. He opens his mouth to describe it, then snaps it shut with an embarrassed look.

"I started to say something, but I'm not going to," he says. "The most important thing in the world is to have Jesus. I started to say, to have the clinic here in Pine Apple is the most important thing, but it's not." He pauses.

"I come that close. Can you tell how important it is to me?"

House call

Today, Dr. Cook is stopping by the disintegrating home of 83-year-old, wheelchair-bound Melvin Stallworth, one of her many favorite patients. He's suffering from a leg sore, and Dr. Cook wants to change his dressing.

She zips along in her new blue Cavalier, which has 21,000 miles on it, pointing out where her patients live and describing their lives. She traded in her old blue Cavalier, which rolled up 120,000 miles in three years driving around Wilcox County.

Outside Stallworth's four-room, tin-roofed house, she pauses to play with Bess and Bessie, two mutts who raucously greet her. She gave the dogs to Stallworth, who lives alone, to keep him company. Someone had abandoned them near the clinic.

"Everyday I passed them and saw them getting a little bit skinnier and a little bit more scruffy, and I finally picked them up," she said.

She regularly brings Stallworth a 50-pound bag of dog food so the dogs won't be a burden.

"There's a lot more to medicine," Dr. Cook will say later, "than prescriptions."

A wintry chill sweeps into the sitting room as Dr. Cook opens the door between it and his kitchen.

"Still have this hole in the floor in here?" she asks over the suctiony sound of his "ice box" pulling open. Yes, he tells her, but his son, who lives down the road, plans to cover it with a piece of plywood.

Some of his older leftovers go to the dogs outside, allowing Dr. Cook to settle down with the leg. She pulls supplies from her Sears bag and pulls on plastic gloves in the room in which Stallworth sits about a foot from his small wood-burning stove, the house's only source of heat.

A single light bulb glares from overhead, its on-off pull string carefully threaded to a tiny bed on the opposite wall from the stove. A brace and triangular-shaped pull-handle above the bed allow Stallworth, who has a bad back and bad knees, to maneuver in and out of bed.

The room and its old furniture are littered with clothing and household debris. Only the stove is new, installed by Stallworth's son to replace an old "dangerous" model, Dr. Cook says. Stallworth got running water only in the last two years, she says.

Stallworth dropped a piece of wood on his leg as he was trying, from his wheelchair, to fish a log out of his indoor pile for his stove.

As Dr. Cook peels back a plastic patch, the doctor clearly is alarmed at what she sees. The weeping wound, a bright pink and nasty yellow, has spread to palm-size and seems badly infected.

"It looks angry to me," she tells him. "It's gone into a cellulitis (an infection of the skin) and it's spread."

Cellulitis, he doesn't understand. Angry, he does.

"Has it been hurting?" she asks.

"It keeps me company at night when I go to sleep," he tells her.

She cleans the wound and gently wraps it with dry gauze. While she does, Stallworth talks about his life as a sawmill worker. "Light never did see us home," he said.

Dr. Cook returned in the late afternoon to finish cleaning and bandaging the wound.

"I didn't realize it had gotten this bad since the last time I saw it," she explains as she leaves in the morning. "I don't have the right tools."

She tells him he needs an antibiotic to fight the infection, and asks if anyone will be coming by who can pick up a prescription for him. His son and granddaughter check on him daily and regularly bring him meals.

Not today, he says. They're all at work or have some kind of appointments. When she returns, she says, she'll bring him some drug samples to tide him over.

"It feels better already, doc," he reassures her as she heads out.

"I appreciate this old age, but I can't hardly handle it," he says.

Dr. Cook grins. "It beats the alternative, though, doesn't it?" As she will throughout the day, she repeats herself in simpler words.

"It beats not growing old, doesn't it?" she says.

He grins at her and says, a little sadly, a little proudly, "Mighty few in my crowd reached the age I am."

Doctor and community

The Grace Busse clinic serves 2,500 people like Stallworth.

Ninety-seven percent of them are black, 3 percent white. Ninety-three percent have income below federal poverty levels, and 52 percent have no health insurance.

They live precarious lives in many ways, but they seem to value basics such as friends, family and honesty more than people who have more money and things, Dr. Cook said.

She has many patients older than 100, she said, and she believes it's because they live in a true community. As with Stallworth, she said, kin often live nearby and people look out for each other.

"They're very much at peace with their lot, which is nothing fancy. In fact, by most people's standards, very poor. But they have very lasting relationships, deep faith and, with all that, I think there's a peacefulness that you just can't buy. I think that's the real secret of Christmas," Dr. Cook says.

The annual orgy of the season annoys her.

"There's not anything Christ about it any more," she said. "It's a pagan holiday — all this buying and glitz. The real cause of Christmas has been lost.

"They ought to change the name, because Christ has left it, or been left behind. I'm really not sure if He left it, or we left Him behind."

Dr. Cook seems at peace with the choices she's made, and she works in an even-keeled, kind manner that is both soothing and inspiring to those around her.

She has the clean-scrubbed, no-nonsense look of a nun, with a wide toothy grin that splits her face when she smiles. Her wide-rimmed glasses sit on a broad face framed by short-cropped blond hair. Her white doctor's coat tops an inexpensive navy blue outfit.

Her mother and office workers swear she rarely gets angry.

"I get angry when I see how inaccessible our health care is," she says with feeling. "Our medical system is very prejudiced against the sick. For instance, when a person gets medical disability, they can't work anymore.

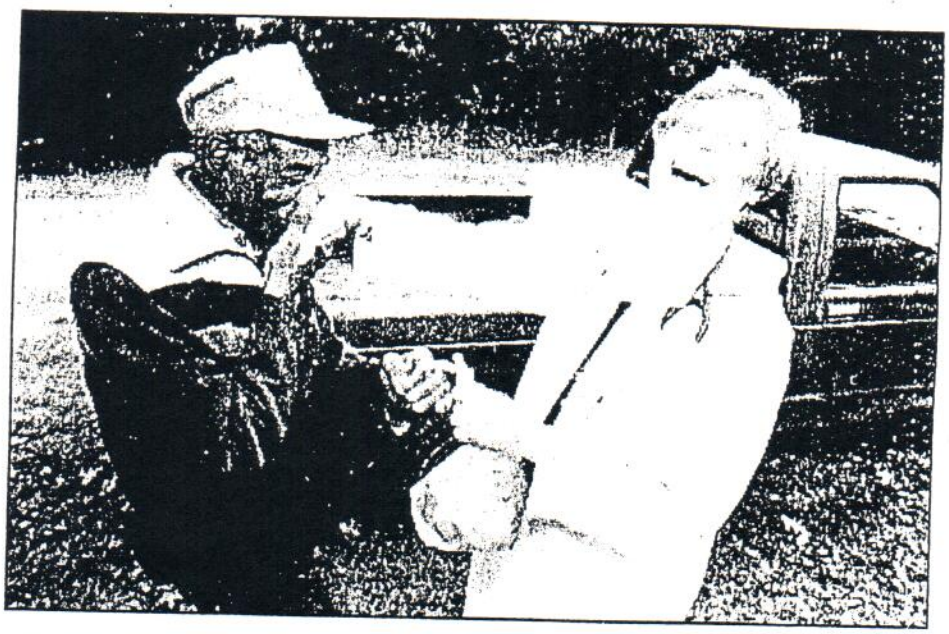
"Do you know how long it takes before the program allows them to have Medicare? Twenty-four months. There's no way to buy health insurance with their little disability checks, but it's too much to get Medicaid."

Dr. Cook specializes in family medicine, the kind of primary-care practice that experts say must be emphasized to provide cost-effective health care in the 21st century. These doctors, the experts say, spend less money on tests and catch health problems early, before they become expensive to treat.

"You don't have to have a nephrologist (kidney specialist) for a diabetic patient if the patient is kept under control," she says.

Dr. Cook's Grace Busse Clinic, part of Selma-based Rural Health Medical Program Inc., is one of more than 50 federally funded rural health clinics around Alabama. The Pine Apple clinic survives on a $300,363 budget, which includes all expenses, including salaries for its staff of six.

The clinic tries to provide non-nar-



NEWS STAFF PHOTO/JOE SONGER

Frank Partin offers sweet potatoes and gallantry. Partin loves Dr. Cook, he said, because of the care she gave his wife, who died of cancer.

cotic prescription drugs to patients. Most are samples donated by drug companies. Many are forwarded by a fellow nun from a Tutwiler, Miss., clinic that's gotten lots of donations in the wake of national publicity.

The federal government sends doctors to Wilcox County through its National Health Service Corps, which pays doctors' medical school tuition.

The doctors agree to serve in rural areas for a few years to work off the tuition; the government hopes the doctors choose to stay. Some do, most don't, experts say.

When Dr. Cook arrived, she replaced a Corps doctor who left without fulfilling his debt to the government, she said. He kept short office hours and often would disappear before he left for good, she said.

"One of the first questions the patients asked me when I came was how long are you going to stay, because there had been a succession of doctors," she said. "I didn't owe the government anything. I came out of need and plan to stay because of the same reason."

Living in hope

After the office staff takes a lunch break to celebrate the 32nd birthday of staff member Daisy Davis, Dr. Cook decides to check on Andrew Thomas, an 82-year-old patient who has heart trouble and emphysema.

He and his wife Lucille live in a trailer off a few dirt roads. It looks weathered from outside, with six tabby cats lolling all over the wooden porch, but inside it's nicely paneled and very neat.

Mrs. Thomas opens the door, and her husband, a thin black man with prominent checkbones and gray hair, is sitting on the bed in thermal underwear. With a trembling hand held over his heart, he describes how weak he feels.

"I ain't doing good a'tall," he says. His heart is beating irregularly, she says with a worried look.

The Thomases are watching a television news broadcast. They're very worried about the starving children in Somalia.

Dr. Cook asks about Thomas's medicine and finds out that an antibiotic seems to make him feel bad. She stops that medicine, increases another and asks if they can get to a drugstore today.

They can't. Neither drive, and "it's so hard to get somebody to do something for you today," Mrs. Thomas said. Dr. Cook says she'll get someone to bring it out from the clinic.

Dr. Cook tells Mrs. Thomas to be sure that her husband is drinking enough water and eating enough. If he doesn't feel like eating a solid breakfast, she says, get him to drink a Carnation Instant Breakfast.

"It has lots of extra minerals and vitamins in it," she says. Also, she notes, it can be found easily in grocery stores.

She listens to Thomas's heart a second time.

"Well, I think it's settled down a bit," she says.

Mrs. Thomas gives her a big hug as she leaves.

"You come back real soon, OK?" Mrs. Thomas asks. "We do love our doctor, you hear what I'm saying? She really did bring him a long way."

This is the kind of thing that medi-

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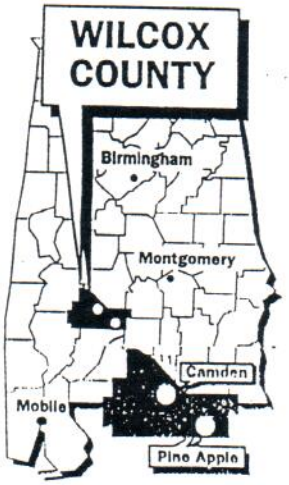

Population: 13,568; 4,203 white; 9,353 black.

Median household income: $12,437.

Major industry: Forestry.

Biggest industrial employer: MacMillan Bloedel, 1,500-2,000 employees.

Unemployment: 12.3 percent in October 1992, highest in state.

Most common causes of death: heart disease, cancer, stroke, accidents and kidney problems.

FROM PAGE ONE

Nun

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cal school students need to see, Dr. Cook insists as she drives away.

"They need to be exposed to an area like this and see how grateful people are. There's a lot of doctors who are burnt out because of the rat race," she said.

"They feel their patients are almost their adversaries. They worry about lawsuits. They practice defensive medicine. They have to market their practice. I don't have to market my practice.

"They need to be exposed to how medicine can be. There's a real art to medicine and it has many aspects."

In Thomas's case, she said, "I felt going out to visit him and listen to him probably has made him feel better than any medicine I could have sent back to him."

Her presence, she said, helps counteract the feelings of helplessness and isolation she believed he was feeling by reassuring him that help was there if he needed it.

"One lives in hope," she said.

Wilcox's problems

Wilcox County's economic woes add to its health problems.

Located 125 miles south of Birmingham, Wilcox County had the highest unemployment rate in the state, 12.3 percent, in October 1992, the last month for which statistics are available. It was more than double the state's 6.1 rate that month and significantly more than the national 7.2 percent.

The median household income in Wilcox County, meaning half are above it and half are below it, was $12,437, according to the 1990 census. That compares to $23,597 for the state and $30,056 for the nation.

Dr. Cook says many of her middle-aged patients are illiterate because they either quit school to work or had to quit school to take care of family members while someone else worked.

Poor people eat cheaper food, which includes many fatty and high-salt items that add to blood pressure and diabetes problems, Dr. Cook and others say.

Special diets are expensive and impractical for the poor, she notes.

"If you're hungry, you eat what you got," she said.

The county's main industry is forestry. Accidents rank among the top five causes of death in Wilcox County, according to the state.

Logging is one of the three most dangerous occupations, says Dr. Will Deal, associate dean of the UAB School of Medicine. He has visited Wilcox County and is familiar with its health care.

No federal highways run through Wilcox County, only state and county roads, he notes. That creates problems for patients getting to doctors and for nurses or ambulances getting to patients, Deal said.

The county has several phone companies, so many calls — perhaps to a doctor — are long-distance, and many areas don't have running water, he said.

And the school system is having problems. Many graduates are functional illiterates who can't fill out job applications, Dr. Cook said. That's a double whammy, she says. First, students are unlikely to learn much about health, and second, such schools can't help attract young doctors with families.

On the plus side, Deal said, Wilcox County's biggest industrial employer, Canadian paper company MacMillan Bloedel, generously supports the Camden hospital by buying expensive equipment for it.

That's the sort of private support that rural areas will need in order to attract proper health care, he said.

That's nice, and getting more primary-care doctors to rural areas will help, Dr. Cook says. But more will have to be done.

"We're trying to Band-Aid approach this thing, and I believe we're going to have to start all over from scratch," she said.

The country must have national health insurance, or the gap between haves and have-nots will only widen, she said.

"There's no money, no insurance, no access and this is not just Wilcox County," Dr. Cook said. "This is throughout the nation.

"We have rationed health care in our country. Nobody should question that. You just go to a doctor's office without an insurance card and you'll find out how much it's rationed."

Simple lifestyle

The Grace Busse Clinic is named for a Florida woman whose husband sent small donations to the clinic after reading a brief mention about it in McCall's magazine. The first $100 donation came addressed simply to "Dr. Cook, Pine Apple, Ala."

When Mrs. Busse died from cancer in 1991, her husband, John, wanted to help the clinic. What the clinic really needed, Dr. Cook told Busse, was a new bathroom.

"But I also told them I wasn't sure that they wanted a plaque up that said, 'Grace Busee Memorial Bathroom,' " Dr. Cook said. Instead, Busse offered $50,000 to remodel the clinic building, including new bathrooms for patients and staff.

He died before he could see the results. Photos of the couple hang in the entrance hall.

Incidents like the Busse donation convince Dr. Cook that Americans want to care for their countrymen, but they don't know how.

Dr. Cook plans to stay in Pine Apple until she retires or dies, she said, and she doesn't plan to do either at age 65.

"I've witnessed the wonderful faith of the people I'm taking care of. They have a goodness about them, in spite of all the obstacles. The cheerfulness and thankfulness they express — it's really very rewarding," she said.

To a person, her patients credit Dr. Cook and the Lord with keeping them going. She laughs at being mentioned in such company.

"I'm glad they put the Lord in there, because I'm sure the Lord is doing more than I am," she says.

She does feel pressure sometimes, she says, but "the gratitude helps reinforce why I'm here in the first place. When I feel these echoes, I feel like, 'yes, Lord, I'm doing what You want me to do,' and that's a real blessing."

Dr. Cook is paid $70,000 by the agency she works for She lives on a budget of $8,000 a year and said she sends the rest to her religious order in St. Louis.

She laughs at the notion that sl could — or should — keep more.

"I prefer continuing the way am," she said. "I don't have time go shopping. You need food, shelt and a peaceful heart. You ne friends and companions.

"I think people who put their ho in things will always be dissatisfie That's why they always need to b things. People who are content with simple life are far more happy."

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APPENDIX Q

WILCOX COUNTY PHONE LIST

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