PN-ABX-013

# GHANA NATIONAL FAMILY PLANNING PROGRAM
**Project Number 641-0131**

# STRENGTHENING CONTRACEPTIVE LOGISTICS SYSTEMS
**1994 - 2005**


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Note to Readers: This document offers suggestions for strengthening the various contraceptive logistics management systems of the Ghana national family planning program, in anticipation of continued dramatic increases in contraceptive prevalence over the next decade. These suggestions are based on findings of FPLM field work throughout 1993, and most specifically on the November 1993 visit to Ghana by the authors. It is hoped that this document accurately reflects the views and statements of the several organizations and many staff interviewed during this process. The authors wish to take this opportunity to thank all of them for their cooperation and support, and for sharing their insights with us.

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# I. EXECUTIVE SUMMARY

Ghana's family planning and AIDS control programs have experienced extremely rapid growth during the time period 1988 through 1993, as demonstrated by the service statistics and experience of the various family planning and AIDS service providers, and by the 1993 Consumer Baseline Survey. All indications are that this growth is likely to continue for the foreseeable future, though at some point (as in any program) the rate of growth can be expected to slow.

At present, almost all commodities are distributed by three major players: the Ministry of Health's Maternal and Child Health/Family Planning (MCH/FP) Division, the Ghana Social Marketing Foundation (GSMF), and the Planned Parenthood Association of Ghana (PPAG). Very little purely private contraceptive distribution has been found, though of course GSMF products (and in many cases MCH/FP and PPAG products) are distributed through commercial networks. Provision of services through private physicians may also be significant; since the focus of this assessment was logistics for supply methods, these services were not examined.

The in-country distribution systems of the three organizations are generally adequate for the quantities of contraceptive commodities currently flowing through them, though there are supply imbalances in some places. Stockouts experienced in recent years have been due primarily to problems in obtaining products from abroad and to difficulties in port clearance once commodities arrived in Ghana. These issues are largely resolved, though there are still periodic shortages of several items provided by UNFPA and IPPF.

In anticipation of continued dramatic program growth, both the service providers and the donor agencies have questioned whether existing distribution systems will be able to handle vastly increased quantities of contraceptive products, as well as what those quantities are likely to be. This document constitutes an analysis of the family planning and AIDS control commodity requirements during the time period 1993 - 2005, and provides suggestions for strategies to ensure that the commodity distribution and management capacity in both public and private sectors is adequate to meet those needs.

Section II of this document presents in summary fashion the overall strategies and recommended actions deriving from the analyses in this report. These strategies and actions are described in more detail in Section V.

Section III briefly describes the current distribution systems. In summary, it appears that the MOH, GSMF, and PPAG will be able to meet projected demand under several scenarios of continued rapid growth, presuming that:

- distribution systems are modified and strengthened in ways suggested here;

- commodity pricing policies are rationalized to encourage the flow of commodities through GSMF and pure private sector commercial outlets; and

- necessary commodities can be procured through a combination of donor funds and Government of Ghana (GOG) resources.

Storage and handling facilities, including initial port clearance capacity for incoming commodities, are generally adequate to handle quantities needed under any of the scenarios of projected growth, *if and only if* MCH/FP's reordering policies at all levels of the in-country pipeline are modified as proposed here.

As family planning programs mature, a natural shift in method mix tends to occur -- from traditional toward modern methods, from less effective modern methods toward more effective modern methods, and from temporary supply methods toward permanent methods. It is expected that Ghana will also experience this progression, and it is desirable to foster it. In addition to programmatic implications, such changes have important consequences for logistics management: providing five Couple-Years of Protection (CYP) with condoms requires much more storage capacity, transport capacity, and service delivery capacity than providing five CYP with two IUCDs. Section IV describes three alternate scenarios of program growth and method mix change, and quantifies implications for commodity requirements.

Section V provides additional details of and the rationale for strategic approaches for meeting these commodity needs, and Section VI provides specific recommendations for strengthening existing distribution systems. Since donor and GOG resources are limited and will eventually become insufficient, some changes in public sector programs are needed which will foster growth of an unsubsidized private sector market for contraceptive commodities.

## II. STRATEGIES AND RECOMMENDED ACTIONS

Major strategies and recommended actions are as follows:

*STRATEGY A: Use the comparative advantages of each distribution system (MOH, GSMF, PPAG, private sector) so that each is providing the types of services for which it is best suited and none are overwhelmed as volumes increase.*

Specifically,

For MCH/FP:

- Emphasize service provision and follow-up of clinical methods at MCH/FP SDPs, including VSC and NORPLANT®.
- Continue initial screening for oral contraceptive clients, but encourage subsequent resupply through social marketing.
- Encourage condom and VFT users to obtain their supplies through social marketing and, eventually, through the private sector.
- Target underserved groups which are easy to reach within the MOH service delivery network, as detailed in Section V of this report.
- Ensure that services at remote MOH facilities are as comprehensive as possible.
- Continue to provide technical support (in terms of orientation, training, and medical backup) to the other family planning organizations and the private sector.

For GSMF:

- Continue to emphasize provision of current non-clinical supply methods, particularly condoms (for AIDS prevention as well as family planning).
- Expand distribution to include additional, more effective, methods (Depo-Provera®, IUCDs) as appropriate.

- Target underserved groups that are easy to reach through GSMF's current networks, as detailed below.

For PPAG:

- Emphasize clinical family planning services, including VSC and NORPLANT®.

- Target underserved groups that are easy to reach through PPAG's existing networks, as detailed in Section V.

- Continue to expand access through CBD efforts, particularly in high population density areas.

***STRATEGY B:*** ***Rationalize public sector pricing policies to encourage commodity movement through the social marketing system and to foster growth of private sector distribution channels, while ensuring that price does not become a barrier to contraceptive use.***

Specifically,

- Establish a price policy working group at the national level, including representatives of the MOH, MCH/FP, GSMF, PPAG, and the pure private sector, to regularly review price differentials for contraceptives and consider changes where appropriate.

- Undertake a small, well-controlled operational research test of increased MCH/FP commodity prices to determine what effect such changes have on utilization and what measures might be taken to ensure access for the near-poor and indigent.

***STRATEGY C:*** ***Concentrate service expansion efforts on accessible populations to encourage continued rapid program growth.***

Specifically,

- Post-partum and antenatal clients: this audience is very likely to be receptive to family planning messages, and is already largely captured by the MOH system and the private maternity hospitals.

- Employees of larger corporations: this audience tends to be more educated and very aware of the monetary cost of additional children, as are their employers, and would be an easy target for both GSMF and PPAG.

- Youth: these important members of the sexually-active population are likely to be underserved by the traditional health care system, and are easy to find, not only at school, but also at sporting events, youth groups, and so forth; the MOH, GSMF, and PPAG may all have access to significant portions of this population.

- Urban areas: these populations are by definition easier to serve than rural populations, and may be reached by some of the same techniques (e.g., urban CBD) but with less complicated logistics support; GSMF and PPAG together are well positioned to target urban areas with a comprehensive range of services.

- Anywhere large numbers of people congregate: the MOH and other service providers already target market day populations in both urban and rural areas; other possible targets include bus stops, church groups, women's development groups, and athletic events.

***STRATEGY D: Encourage use of the most effective methods (which also require a smaller storage and transport capacity) through changes in counselling and service delivery patterns.***

Specifically,

- Establish or improve clinical capability in the MOH and PPAG to deliver and provide medical follow-up for VSC, IUCD and NORPLANT® services.

- Train private practitioners to deliver VSC, IUCD, and NORPLANT® (as well as Depo-Provera® and other supply methods) where service volumes warrant.

- Modify or strengthen IEC efforts and campaigns to emphasize more effective methods.

- Improve counselling skills and service protocols at all SDPs to ensure informed choice and access to all methods for all clients.

- Train field workers who deliver supply methods to refer clients to MOH, PPAG, and eventually private facilities for clinical methods; ideally GSMF outlets, chemists, pharmacists, and others should be similarly trained.

***STRATEGY E:*** ***Decentralize resources needed for program operations in the MCH/FP service delivery system.***

Specifically,

- Encourage policies that keep funding generated from contraceptive sales where it is most needed. A policy of 50 percent retention at the sub-district, 30 percent at the district, and 20 percent at the regional level appears much more appropriate, for example, than most current practices.

***STRATEGY F:*** ***Continue to integrate specific MOH family planning logistics functions with essential drug distribution functions only where appropriate.***

Specifically,

- Carefully reexamine the desirability of financial integration with the essential drug scheme during the next decade.

***STRATEGY G:*** ***Move cautiously toward self-sufficiency in contraceptive procurement in the government program.***

Specifically,

- Constitute a procurement task force consisting of GOG, MOH, GSMF, and PPAG staff, along with representatives of concerned donor agencies to refine cost estimates for contraceptive commodities, determine likely donor commitments for procurement, and identify relative price advantages of each organization.

- Undertake an analysis of MOH capabilities in contraceptive procurement, and institute needed measures to strengthen those capabilities, as discussed in Section V of this report.

- For procurements to be undertaken by the GOG, determine what procurement strategy -- direct procurement by international tender or use of a procurement agent -- is most cost effective.

- Strengthen or institute systems in the GOG for ensuring product quality for items procured under international tender.

***STRATEGY H:*** ***Strengthen the MOH, GSMF, and PPAG in-country distribution systems in the specific ways discussed in Section VI.***

Specifically,

For MCH/FP:

- Review MCH/FP's procedures for international procurement, identifying and implementing any steps necessary to ensure adequate capacity in product specification, international tendering, compliance testing, and product inspection.

- Calculate the desired number of months of stock used for reordering on the basis of the past three months of dispensed-to-client data at the sub-district level, and on the basis of the last two quarters at the district, regional, and central levels.

- Base order quantities at each level of the distribution system only on the desired inventory at that level; do not routinely order enough to top up all lower levels as well.

- Clean the in-country pipeline of expired stock, and ensure that regular disposal policies are followed in the future.

- Renovate and equip stores at district and sub-district facilities where necessary.

- Regularize transport mechanisms at all levels of the MCH/FP distribution system, and ensure that adequate resources are available at each level.

- Delay implementation of the new LMIS monthly/quarterly report in order to determine further modifications needed due to proposed distribution policy changes.

- Enhance the automated LMIS at the central level of MCH/FP, and reprogram it in appropriate database management software.

For GSMF:

- Improve central level capability in forecasting, requirements estimation, and the preparation of USAID Contraceptive Procurement Tables.

- Include the GSMF in the development and periodic review of a coherent overall pricing policy that will support a strategy for segmenting Ghana's contraceptive distribution.

- Provide training to pharmacists and chemical sellers in AIDS prevention and family planning counselling.

For PPAG:

- Improve central capability in forecasting, requirements estimation, and the preparation of USAID Contraceptive Procurement Tables.

- Ensure functional storage capacity in the PPAG central office.

- Improve storekeeping and inventory control practices at the regional level.

- Ensure consistency between PPAG logistics reporting and MOH reporting systems.

- Include PPAG in the development and periodic review of a coherent overall pricing policy that will support a strategy for segmenting Ghana's contraceptive distribution.

USAID/Ghana expects to support these efforts through its new Project with the Ghana national family planning program.

## III. STATUS OF CURRENT LOGISTICS SYSTEMS

This section briefly describes the current status of logistics systems in MCH/FP, GSMF, PPAG, and the private sector, concluding with a summary of the important strengths and weaknesses of each.

### A. THE MINISTRY OF HEALTH

MOH services are provided through a network of some 900 service delivery points (SDPs) including hospitals, clinics, health posts, and villages served through outreach activities. All SDPs provide some level of MCH/FP services, ranging from the full gamut of clinical services to, at minimum, motivational outreach efforts. These sub-district level services are managed by multi-disciplinary District Health Management Teams (DHMTs). The 110 districts are in turn supervised by ten Regional Health Management Teams (RHMTs) under the direction of the Regional Medical Officers (RMOs) and Principal Nursing Officers (PNOs). PNOs also report to the central MCH/FP Division in Accra for family planning and MCH activities.

Contraceptive distribution is accomplished through a requisition or "pull" system at all levels, although in practice commodities issued are often less than quantities requisitioned due to the methodology used at all levels to calculate quantity requirements, which tends to overfill the pipeline. At the sub-district level, these calculations are performed monthly. At the district and region, a quarterly resupply schedule is in effect, but staff at these levels tend to order more or less frequently depending on need and product availability. Forecasting at the national level is done annually by MCH/FP staff, with some external technical assistance provided by USAID and, until recently, by UNFPA. The national commodity situation is monitored quarterly by MCH/FP and donor staff. All of these forecasts are based on quantities dispensed to clients at the sub-district level, as described below.

MCH contraceptives have to date been provided exclusively by donor organizations, as follows:

| | |
|---|---|
| USAID | Lo Femenal, Ovrette, CuT 380A, Non-colored, no-logo condoms, Conceptrol, NORPLANT® |
| UNFPA | Microgynon, Micronovum or Micronor, NeoSampoon, Depo-Provera® |

USAID has agreed to provide Depo-Provera® in the future. NORPLANT® stocks have to date been supplied for the trial phase, and additional quantities for implementation are on order. The MOH has agreed to begin procurement of contraceptives through its own

funding, and funds for an initial international tender have been included in the current budget.

At the central level, MCH/FP commodities are stored in a separate section of the Central Medical Store (CMS), and managed by the same system used for drugs and other MOH commodities, but with decision-making responsibilities shared by the MCH/FP Division and the Supply and Procurement Division. This same strategy is followed at Regional Medical Stores (RMSs) where appropriate, with the Regional Pharmacist managing the physical stocks and the PNOs responsible for distribution decisions. In the case of Brong Ahafo Region, where the RMS is inconveniently located, the PNO's designate maintains separate storage facilities of her own.

Storage capacity for MCH/FP commodities at these stores is generally adequate for current volumes, and most stores visited have room for some expansion. The MOH has been renovating and equipping the CMS and the RMSs, and plans to complete these renovations within about one year. Storage conditions are generally good, though better climate control in the form of insulation, ventilation or air-conditioning would be desirable in most cases.

At the district and sub-district level, storage capacity and storage conditions are more variable, but were found to be adequate for current volumes in sites visited for the purpose of this analysis. MCH/FP commodities are in some cases stored separately, and in some cases commingled with other products. The Ministry has no current plans for storeroom renovation at these levels.

Good storekeeping practices are generally observed at all levels. Products are separated by brand and date, usually stacked and labelled neatly, and usually protected from environmental hazards. Stock records (tally cards) are up to date and generally accurate, though in some sites duplicate records in the form of stock ledgers are needlessly kept. Tally cards and transaction records verified in the course of this analysis were very accurate at all levels. First-expiry, first-out stock rotation procedures are generally observed.

As mentioned above, distribution decisions at all levels are based on quantities dispensed to clients at the SDPs. Sub-district staff prepare requests monthly, with assistance from the DHMT as needed, and must travel to the district store to obtain supplies. Both travel and commodity transport are usually accomplished by public transportation, as MOH vehicles are infrequently available at this level. Where large quantities are involved, sub-district staff will take a small quantity with them on public transportation, and the DHMT will deliver the remainder during the next supervisory visit. In accordance with current policy, sub-district facilities request enough stock each month to bring their balances up to four months of supply of each commodity, based on quantities dispensed in the month just ended. Similar procedures are followed at the district level, but on a quarterly basis. At the district, cumulative totals of all sub-district activity for the three months just ended are calculated, and a request for enough stock to bring all SDPs up to four months of supply plus enough to bring the district store up to six months of supply is prepared. These requests are taken to the regional level for discussion with the PNO, and supplies are brought back.

Vehicles are generally available at the district level. However, funds for operational costs are very limited and MCH/FP tends to get lower priority than other MOH programs in obtaining the vehicle. Joint trips with other programs to obtain supplies are organized to the extent that there is room in the truck, but capacity is limited. There is generally only one vehicle at the district level, with no backup procedure during times when it is off-road for repairs.

The regional resupply process is the same as the district process. Each region's quarterly request includes quantities sufficient to bring its own stocks up to nine months of supply, in addition to quantities necessary to completely resupply all district and sub-district facilities. These requests must be discussed and approved by the Senior PNO at MCH/FP Division headquarters in Accra before commodities can be collected from the CMS in Tema. Regional staff report difficulty in coordinating the approval and issue process between Accra and Tema, and further state that the need to stop in Accra limits the willingness of other MOH program staff to share transport at this level.

Ministry-owned transport is available at the regional level, but here again MCH/FP receives low priority for vehicle use, unless they can provide funds to purchase fuel. The CMS has used its own vehicles to deliver to RMSs in cases where the regional vehicle cannot be made available.

The central desired stock level is set by policy at twelve months. Thus in total the theoretical length of the in-country MCH/FP pipeline is 31 months (4 at the sub-district plus 6 at the district plus 9 at the region plus 12 at the central level). In practice these quantities of stock are rarely available, and logistics managers at all levels allocate lesser quantities based on availability and actual need.

The MCH/FP Logistics Management Information System (LMIS) is separate from the global health MIS now under development, though it is consistent with the requirements of the larger system. As mentioned above, dispensed-to-client data are reported in aggregate form all the way up the system to Accra. These reports are usually timely, and are felt to be accurate. Logistics data are tracked centrally by MCH/FP staff using a complex array of LOTUS spreadsheets on a personal computer. The LMIS reporting format has been recently revised with technical assistance from UNFPA, though implementation of the new format is not complete. Several of the distribution system strategies discussed in Sections V and VI will allow additional modifications to this reporting format to make it easier to use.

## B. THE GHANA SOCIAL MARKETING FOUNDATION

USAID supplies Non-Colored Panther Condoms, Non-Colored Blue Gold Condoms (sold as Protector), Norquest orals (sold as Secure) and Flower foaming tablets (sold as Kamal) to the GSMF. Product is cleared from port by the local agent of USAID's U.S. freight forwarder and delivered to GIHOC Pharmaceuticals' warehouse. GIHOC is responsible for central level warehousing and repackaging. Their facilities are spacious and well-organized, with adequate storage capacity and personnel to ensure the proper handling of AID-supplied

products. Adequate additional space is available to allow for program expansion well into the future.

The technical assistance contractor under USAID's current bilateral project is responsible for contracting with local firms to ensure that sufficient quantities of repackaging materials (3-packs for Protector condoms, single-cycle packs and inserts for orals and 8-packs and inserts for foaming tablets) are available to GIHOC. Repackaging is done in th/e same GIHOC facility where the product is warehoused.

GIHOC then releases quantities of product to three distributors for distribution through their respective networks. The three distributors are DANAFCO (distributing primarily to pharmacies), STARWIN (distributing to pharmacies and other chemical sellers) and Johnson's Wax (distributing to sellers of other Johnson's Wax household products). Each of these distributors has a central warehouse in Accra from which products are transported to the regions. Each distributor also has representatives in some of the regions, and its own network of salespeople, stockpeople and retail outlets. The total number of retail outlets of the three distributors combined is now slightly over 4,000. In theory all of these retail outlets should be carrying GSMF products; however, since STARWIN and Johnson's Wax only began GSMF distribution in August of 1993, some of their sellers have not yet begun GSMF sales. A closer estimate of the current number of actual sales points would be 3,500.

Competition among the distributors to enlist pharmacists and chemical sellers into their networks has lead to improved performance by each distributor's regional representatives. Pricing is more competitive and increased efforts are made to ensure that the individual sellers are resupplied on a timely basis. This was less the case when the GSMF had only a single distributor.

Product requirements are derived from projected sales which in turn are based on historical sales patterns and future program plans. When USAID prepares the yearly Contraceptive Procurement Tables, the technical assistance contractor under the bilateral project participates in the estimates of future GSMF commodity requirements.

Sales data pass through each distributor's network from the field up to the central office. Data are then centralized at GIHOC, and regularly transmitted to the bilateral technical assistance contractor. Funds generated by the sales of GSMF products are also passed backup through the networks after the appropriate profit margins are retained. These funds are then deposited into a bank account in Accra under the technical assistance contractor's responsibility.

Previously, the GSMF distributor's management system did not make regional breakdowns of sales by product readily available. This refinement of the GSMF's information system is currently being introduced by GIHOC, and will be a valuable asset in strategic program planning. GIHOC also provides the contractor with monthly reports of stocks on hand of repackaged product, unrepackaged product and the various repackaging materials.

## C. THE PLANNED PARENTHOOD ASSOCIATION OF GHANA

PPAG operates in seven regions, with some 25 clinic sites and 447 CBD workers. Program operations are controlled by the PPAG central office in Accra, and supervised through regional offices in seven of the ten regions.

PPAG's forecasting for commodities follows IPPF standard annual planning procedures. Requirements estimates are based on historical usage rates adjusted for annual program plans. Contraceptives are provided both by IPPF and most recently by the World Bank, as follows:

| | |
|---|---|
| IPPF | NeoSampoon, condoms, Koromex jelly, Delfen foam, CuT 380A, Nordette, Microgynon, Eugynon, Neogynon, Depo-Provera® |
| World Bank | Depo-Provera®, CuT 380A, NeoSampoon, Microgynon, condoms |

In addition, PPAG occasionally purchases from the MOH when stocks from other sources run low, most notably buying condoms, Lo Femenal, and Conceptrol.

USAID has already identified two sites (Koforidua and Takoradi) to finance renovation and training to give PPAG Voluntary Surgical Contraception (VSC) capability. For Koforidua, a contract has already been signed, and a gynecologist identified for training. No specific plans for NORPLANT® training have as yet been included in USAID's plans for assistance to the PPAG, but the Mission is open to the idea.

PPAG family planning nurses in six of the seven regions where PPAG operates are already performing IUCD insertions, both in the clinics located in the regional capitals, and during their monthly or bi-weekly rounds to the 18 district MOH facilities where PPAG has established representation. PPAG's CBD agents refer prospective IUCD clients to these facilities, and arrange appointments to coincide with the regional nurse's scheduled rounds. They also arrange appointments for first time orals clients, and clients requiring clinical back up visits.

Brong Ahafo Region, the seventh of the PPAG regions, does not currently have a family planning nurse on staff, but is in the process of recruiting one, and that region will soon have IUCD insertion capacity as well.

Once the IPPF annual workplan is approved, PPAG knows the quantities of each commodity it will receive in the coming year, but not the specific dates on which products can be expected to arrive. Each product is shipped directly from the manufacturer to PPAG, and may arrive at any time during the year. IPPF has some ability to change the manufacturers' shipping schedules where stockouts are anticipated. Total budgets for IPPF commodities are limited.

The World Bank agreement to procure contraceptives for PPAG has been in place for some time, but there have been extended delays in establishing this new procurement channel. UNFPA now acts as procurement agent for contraceptives obtained with these funds. Some products (Depo-Provera® and IUCDs) have recently arrived, and additional shipments are expected in the near future. The current agreement extends only to 1996, but the Bank has indicated willingness to consider supplying commodities beyond that time period, given delays in the process to date.

The delay in Bank procurement and variability of IPPF schedules have historically caused significant stock shortages for PPAG facilities. On a number of occasions PPAG has been forced to purchase substantial quantities of contraceptives from the MOH in order to avoid stockouts. Such purchases have occurred at central, regional, district, and local levels. Where MCH/FP staff have felt that their own stocks were insufficient for MOH needs, PPAG's requests have been refused.

Storage capacity at the PPAG central facility is sufficient for current needs, but there is little room for expansion. In the past, PPAG staff have allocated commodities to their regional stores (based on past usage levels) as soon as they were received, due to the overall shortage of supplies. Only small quantities of emergency stocks have been maintained centrally. Storekeeping practices are good. Stock records are kept up to date and are reasonably accurate.

The storage situation at the regional level varies from place to place. In one of the offices visited for purposes of this analysis, storage capacity was sufficient and storage conditions were excellent. In the other, stocks were not well organized, though the store was secure and proper records were maintained.

Distribution from the central to the regional level is the responsibility of central stores management staff. When stock shortages occur at the regions, staff try to borrow from other regional offices or attempt to procure from the MOH.

For the MOH district facilities where PPAG has representation, the PPAG regional family planning nurse delivers contraceptives while making her monthly or bi-weekly rounds, based on her knowledge of each facility's distribution rates. When she delivers products, the district PPAG representatives provide her with data on use of quantities of products previously supplied and quantities of stock on hand. Since these rounds are scheduled in advance so that the nurse can perform IUCD insertions and clinical backup visits for orals and injectables clients, district PPAG representatives can contact the regional office prior to the nurse's visit to communicate any particular supply needs.

For the PPAG CBD agents, either the agents come to the Regional office for resupply, or they are resupplied by the regional nurse when she makes her rounds.

PPAG follows standard IPPF reporting and monitoring procedures for stocks and other program activities. These administrative systems and the PPAG MIS appear to function well.

## D. THE PRIVATE SECTOR

Very little purely private sector contraceptive distribution is evident in Ghana at the present time, though the subsidized social marketing products of GSMF of course move though private sector distribution channels. Prices for these products vary from place to place, usually within the following ranges:

| | |
|---|---|
| Panther condoms | 30 - 50 cedis (each) |
| Protector condoms | 150 - 200 cedis (3 pack) |
| Kamal VFTs[1] | 135 - 200 cedis (8 pack) |
| Secure orals | ± 150 cedis (cycle) |

It is also common to find MOH and sometimes PPAG products available through chemical sellers and pharmacists. In some cases Ministry staff will sell product to such retailers only when they know that there is no other readily available source of supply. In other cases, MOH staff have actually recruited chemical sellers and pharmacists to provide additional outlets, providing them with training and gathering and reporting data on the services they provide. Again, prices vary considerably, usually within the following ranges:

| | |
|---|---|
| Condoms (plain) | 20 - 50 cedis (each) |
| NeoSampoon condoms | 200 cedis (4 pack) |
| Lo Femenal | 200 cedis (cycle) |

This practice effectively creates another subsidized distribution channel, with prices at the low end of the range.

## E. IMPORTANT STRENGTHS AND WEAKNESSES OF CURRENT SYSTEMS

Each of these existing distribution systems has particular strengths and weaknesses, which suggest or limit strategies for program growth.

### 1. The Ministry of Health

Particular strengths of the MOH distribution system include the following:

- MOH coverage is nationwide.
- Staff at all levels are committed, dedicated, and well-trained, and are able to develop ad hoc but rational solutions to special logistics problems and routine systemic inconsistencies.

[1] Vaginal Foaming Tablets

- Data needed for logistics management (stock levels, lead times, dispensed-to-client data) are accurately recorded and reported routinely.

- Resupply decisions are based on dispensed-to-client data at all levels, generally assuring product availability at SDPs unless there are nationwide shortages.

These conditions are rare in public sector programs, and are particularly praiseworthy in light of the continuing rapid expansion of services. Weaknesses of the current system include the following:

- All requisitions for contraceptives are based on dispensed-to-user data for the time period just ended (month at the sub-district, quarter at higher levels) resulting in extreme fluctuations in quantities requested.

- The current desired stock level policy attempts to create an in-country pipeline 31 months long, which drastically increases the chance of product expiry or damage in storage.

- The policy of ordering enough product at each level to fully stock the entire pipeline below that level every quarter needlessly strains and frequently exceeds both storage and transport capacity throughout the system.

- Quantities of most products supplied through UNFPA are insufficient to meet total demand, resulting in stockouts, rationing, and shortages, and leading to frequent brand switching by MOH clients.

- Transport procedures are not systematized at any level, resulting in ad hoc transport schemes which will be severely strained if commodity volume increases as expected.

- Financial resources at lower levels are insufficient for program operating expenses, including transportation of products, supervision activities, and program services such as outreach.

## 2. The Ghana Social Marketing Foundation

Particular strengths of the GSMF distribution system include the following:

- Contraceptive distribution is a function of market demand, and uses existing proven distribution channels.

- GSMF's current strategy of using three competing distributors has lead to more aggressive distribution, and an improvement in service provided to retail outlets.

- Transportation and storage problems are minimal.

- At least in principle, there is no limit to expansion of this distribution system.

- Social marketing distribution represents an interim step toward self-sufficiency.

Weaknesses of the current system are:

- GSMF products are perceived by some as too expensive, at least for some segments of the target population.

- Lower prices at MOH and PPAG outlets, and availability of MOH and PPAG products to private outlets, limits GSMF's ability to expand its market share for contraceptives.

## 3. The Planned Parenthood Association of Ghana

PPAG as an organization is perceived by many as *the* specialist in provision of family planning services. Strengths include the following:

- As an independent, single-purpose organization, PPAG is well situated to concentrate efforts on specific target populations.

- Similarly, PPAG has the flexibility to target service delivery to more effective methods.

- Transportation capacity of the current PPAG distribution system is good.

- Management and reporting procedures, both for logistics and service delivery, function well.

Weaknesses include the following:

- The IPPF and World Bank procurement issues discussed above make PPAG commodity planning difficult, resulting in inconsistent supply at the service level.

- The current procedure of shipping product immediately to the regional level increases the necessity of inter-regional transfers and therefore costs of transportation.

- The World Bank funding commitment for contraceptive commodities extends only through 1996, leading to the possibility that past shortages will recur after this time.

## 4. The Private Sector

Strengths of the private sector include the following:

- In a number of places, excellent cooperation and collaboration between public sector and private sector providers already exists.

- Contraceptive distribution is a function of market demand, and uses existing proven distribution channels; no donor or GOG costs are involved.

- Transportation and storage problems are minimal.

- With adequate sales revenues, there is no limit to expansion of this distribution system.

- The high end of the price structure for currently available contraceptive products is almost high enough to make unsubsidized private sector products commercially viable.

Weaknesses include the following:

- There is no history of large-scale importation of purely private family planning commodities into Ghana.

- Inexpensive products available from MCH/FP, GSMF, and PPAG may limit market share accessible to purely private enterprises.

The strategies for strengthened commodity management presented in Sections V and VI attempt to build on these strengths and minimize these weaknesses.

## IV. ALTERNATE SCENARIOS OF PROGRAM GROWTH

A 1993 survey has revealed that the Contraceptive Prevalence Rate (CPR) in Ghana has reached nearly 15 percent for modern methods. Given its baseline level of barely 5 percent in 1988, this is a remarkable achievement To evaluate the performance and constraints of Ghana's contraceptive commodity logistics system and its ability to handle future loads, three specific scenarios[2] of projected contraceptive demand were developed. All three scenarios involved continued rapid growth in the CPR.

All three scenarios call for the modern method CPR to reach 25 percent by the year 2000 and 30 percent by the year 2005. The scenarios differ substantially in contraceptive method mix used to achieve this CPR. Within the scenarios there are also differences in source of supply.

### A. SCENARIO 1: CONTINUATION OF CURRENT TRENDS

Scenario 1 reflects a direct continuation of the recent trend in Ghana's contraceptive consumption pattern. This trend has shown a rapid increase in the CPR through vast increases in the use of condoms and significant increases in the use of oral contraceptives. These two methods accounted for nearly nine percentage points of the overall ten percentage point gain in the CPR. The historic values and the projected values used for the scenario are shown in Table 1.

The method mix that results from these prevalence values is shown in Table 2.

Given assumptions about the total population (which are constant over the three scenarios) and the number of married women of reproductive age (MWRA), it is possible to calculate the number of users of the various methods. The results of these user calculations are shown in Table 3.

[2] The three scenarios were modeled on TARGET software. The detailed description of scenario parameters for each scenario can be found in Attachments 2, 3, and 4 of this document.

Table 1 - Method Prevalence
Historic Pattern and Scenario 1 Projection
(percent of MWRA)

| | 1988 | 1993 | 2000 | 2005 |
|---|---|---|---|---|
| Condom | 0.3 | 5.9 | 11.6 | 14.4 |
| Female VSC | 1.0 | 0.3 | 0.3 | 0.2 |
| Injectable | 0.3 | 1.8 | 3.3 | 4.0 |
| IUCD | 0.5 | 0.8 | 1.0 | 1.1 |
| NORPLANT® | 0.0 | 0.0 | 0.0 | 0.0 |
| Oral | 1.8 | 5.0 | 8.0 | 9.5 |
| VFT | 1.3 | 1.0 | 0.8 | 0.7 |
| Total | 5.2 | 14.8 | 25.0 | 30.0 |

Table 2 - Method Mix for Scenario 1
(percent of Modern Methods)

| | 1993 | 2000 | 2005 |
|---|---|---|---|
| Condom | 39.9 | 46.4 | 48.1 |
| Female VSC | 2.0 | 1.0 | 0.7 |
| Injectable | 12.2 | 13.2 | 13.4 |
| IUCD | 5.4 | 4.1 | 3.8 |
| NORPLANT® | 0.0 | 0.0 | 0.0 |
| Oral | 33.8 | 32.0 | 31.5 |
| VFT | 6.8 | 3.4 | 2.5 |

Table 3 - Number of Users by Method for Scenario 1
(thousands)

| | 1993 | 2000 | 2005 |
|---|---|---|---|
| Condom | 143 | 346 | 502 |
| Female VSC | 7 | 7 | 7 |
| Injectable | 44 | 99 | 140 |
| IUCD | 19 | 31 | 40 |
| Oral | 121 | 239 | 329 |
| VFT | 24 | 25 | 26 |
| | --- | --- | --- |
| Total | 358 | 747 | 1,044 |

Given these figures and assumptions about contraceptive use rates, the annual consumption of the various supply-method contraceptives may be calculated. The available data indicate that the current ratio of the number of condoms used to the number of reported users is somewhat low at 55. It is assumed that this use rate would probably increase with continued emphasis on condom effectiveness against AIDS and other sexually transmitted diseases. For the purposes of Scenario 1 this ratio is gradually increased to a value of 70 in the year 2005. The resulting total annual commodity consumption values for Scenario 1 are shown in Table 4.

Table 4 -
Total Annual Commodity Consumption for Scenario 1
(millions except where noted)

| | 1993 | 2000 | 2005 |
|---|---|---|---|
| Condom | 7.8 | 22.1 | 35.1 |
| Injectable | 0.2 | 0.4 | 0.6 |
| IUCD (thousands) | 6.2 | 8.5 | 12.1 |
| Oral | 1.8 | 3.6 | 4.9 |
| VFT | 3.6 | 3.8 | 3.9 |

Given these values and assumptions about the sources of the various methods it is possible to calculate the number of contraceptives that would be flowing annually through each of the distribution systems. Because the capacity of the MOH distribution system is generally considered to be the most severely space-constrained, it was of particular interest for the purposes of this strategic assessment. Within Scenario 1 it is assumed that the historic patterns of source will be maintained during the projection period. Rough levels of these

source percentages[3] for the major supply methods show MOH distribution of about 30 percent of condoms and VFTs and 40 percent of oral contraceptives. The amounts of contraceptive commodities flowing annually through the MOH system under the assumptions of Scenario 1 are shown in Table 5.

Table 5 -
MOH Annual Commodity Consumption for Scenario 1
(millions except where noted)

| | 1993 | 2000 | 2005 |
|---|---|---|---|
| Condom | 2.4 | 6.6 | 10.5 |
| Injectable | 0.1 | 0.3 | 0.5 |
| IUCD (thousands) | 6.2 | 8.5 | 12.1 |
| Oral | 0.7 | 1.4 | 2.0 |
| VFT | 1.1 | 1.1 | 1.2 |

These quantities are used below to calculate the space and transport requirements for the MOH system. Complete details of the TARGET model parameters for this scenario are included in Attachment 2.

## B. SCENARIO 2: IMPROVED METHOD MIX

Scenario 2 is an extension of a projection done by USAID/Accra as part of the development of the Project Paper for the new family planning and AIDS prevention project. This method mix reflects a continued growth in the use of supply methods but also a dramatic shift toward the use of more effective and longer-lasting methods. Although that projection extended only to the year 2000 the method mix that had been established at that end point was used for the additional five years of this scenario. The substantial increases in the method share of Female VSC, Injectables, and the IUCD are reflected in substantial share decreases for condoms and oral contraceptives. The projected method mix is shown in Table 6 below:

[3] Source data for supply methods between MOH, Social Marketing, and PPAG were based on recent issue data from each organization. Values used for private sector sources are based on an informal survey of stocks available at pharmacies and chemical sellers. Private sector supply of clinical methods may be substantially greater than the value listed but does not affect the logistics analysis, which is focused primarily on supply methods.

Table 6 - Method mix for Scenario 2
(percent of Modern Methods)

| | 1993 | 2000 | 2005 |
|---|---|---|---|
| Condom | 40 | 27 | 27 |
| Female VSC | 2 | 5 | 5 |
| Injectable | 12 | 25 | 25 |
| IUCD | 5 | 9 | 9 |
| NORPLANT® | 0 | 1 | 1 |
| Oral | 34 | 27 | 27 |
| VFT | 6 | 6 | 6 |

Given assumptions about the total population, the prevalence rate, and the method mix above, one can determine the number of users as was done previously for Scenario 1. The number of users is shown in Table 7.

Table 7 - Number of Users for Scenario 2
(thousands)

| | 1993 | 2000 | 2005 |
|---|---|---|---|
| Condom | 143 | 202 | 282 |
| Female VSC | 7 | 37 | 52 |
| Injectable | 44 | 187 | 261 |
| IUCD | 19 | 67 | 94 |
| Oral | 121 | 202 | 282 |
| NORPLANT® | 0 | 7 | 10 |
| VFT | 23 | 45 | 63 |
| | --- | --- | --- |
| Total | 357 | 747 | 1044 |

Once the number of users is determined, only an average annual commodity use rate is required to determine the total annual commodity requirement for each method. Unlike Scenario 1, the annual use rate for condoms is assumed to remain at a constant 55 throughout the period of Scenario 2, consistent with USAID's original assumptions. The annual commodity consumption values are shown in Table 8.

Table 8 -
Total Annual Commodity Consumption for Scenario 2
(millions except where noted)

| | 1993 | 2000 | 2005 |
|---|---|---|---|
| Condom | 7.8 | 11.1 | 15.5 |
| Injectable | 0.2 | 0.7 | 1.0 |
| IUCD (thousands) | 9.1 | 19.6 | 30.2 |
| Oral | 1.8 | 3.0 | 4.2 |
| NORPLANT® (thousands) | 0.6 | 2.0 | 3.1 |
| VFT | 3.4 | 6.7 | 9.4 |

Using assumptions about the sources for these commodities the flow through the various systems can again be calculated. Scenario 2 uses the same source assumptions as Scenario 1, i.e., continuation of the historic source pattern. The commodities that will flow through the MOH system under these assumptions are shown in Table 9.

Table 9 -
MOH Annual Commodity Consumption for Scenario 2
(millions except where noted)

| | 1993 | 2000 | 2005 |
|---|---|---|---|
| Condom | 2.4 | 3.3 | 4.6 |
| Injectable | 0.1 | 0.6 | 0.9 |
| IUCD (thousands) | 9.1 | 19.6 | 30.2 |
| Oral | 0.7 | 1.2 | 1.7 |
| NORPLANT® (thousands) | 0.6 | 2.0 | 3.1 |
| VFT | 1.0 | 2.0 | 2.8 |

As was true with Scenario 1, these values are used for the analysis of storage and transport presented below. Details of the TARGET model input parameters for this scenario are included in Attachment 3.

## C. SCENARIO 3: INTERMEDIATE METHOD MIX

Within Scenarios 1 and 2, virtually all supply-method commodities were assumed to be supplied to consumers by the three currently dominant sectors: MOH, Contraceptive Social Marketing, and PPAG. In other words, the pure private sector makes virtually no contribution in the movement of the logistically significant supply methods. Within Scenario 3, there are changes in both the method mix and some participation by the pure private sector among the sources.

The method mix of Scenario 3 reflects some change from the current trend toward the dominance of condoms but not as dramatic a shift toward longer-lasting methods as is assumed for Scenario 2. Although significant gains are made by injectables and IUCDs, condoms continue to dominate the method mix and, as a consequence, the supply lines. The assumed method mix for Scenario 3 is shown in Table 10 below.

Table 10 - Method Mix for Scenario 3
(percent of Modern Methods)

| | 1993 | 2000 | 2005 |
|---|---|---|---|
| Condom | 40 | 37 | 35 |
| Female VSC | 2 | 5 | 5 |
| Injectable | 12 | 18 | 23 |
| IUCD | 5 | 6 | 7 |
| NORPLANT® | 0 | 1 | 1 |
| Oral | 34 | 27 | 24 |
| VFT | 6 | 5 | 5 |

Going through the process in a similar fashion to the previous scenarios we can calculate the number of users for each method (shown in Table 11) and the total commodity consumption for each method (shown in Table 12). As was the case in Scenario 1, the yearly use rate for condoms is assumed to increase from 55 to 70 over the projection period.

Table 11 - Number of Users for Scenario 3
(thousands)

| | 1993 | 2000 | 2005 |
|---|---|---|---|
| Condom | 143 | 276 | 365 |
| Female VSC | 7 | 37 | 52 |
| Injectable | 44 | 138 | 240 |
| IUCD | 19 | 47 | 73 |
| Oral | 121 | 203 | 251 |
| NORPLANT® | 0 | 7 | 10 |
| VFT | 23 | 37 | 51 |
| | --- | --- | --- |
| Total | 357 | 745 | 1,042 |

Table 12 - Total Annual Commodity Consumption for Scenario 3
(millions except where noted)

| | 1993 | 2000 | 2005 |
|---|---|---|---|
| Condom | 7.8 | 17.6 | 25.6 |
| Injectable | 0.2 | 0.6 | 1.0 |
| IUCD (thousands) | 7.5 | 15.3 | 24.9 |
| Oral | 1.8 | 3.0 | 3.8 |
| NORPLANT® (thousands) | 0.6 | 2.0 | 3.1 |
| VFT | 3.4 | 5.5 | 7.7 |

Within Scenario 3 there is also an assumption about distribution through the private sector. This assumption is that five percent of condoms and one percent of oral contraceptives will be distributed through pure private sector means by the end of the projection period. Both percentages reduce the volume being handled within the MOH system. Given this assumption and the other data shown above, the commodity consumption within the MOH system can be computed. These values are shown in Table 13.

Table 13 - MOH Annual Commodity Consumption for Scenario 3
(millions except where noted)

| | 1993 | 2000 | 2005 |
|---|---|---|---|
| Condom | 2.4 | 4.8 | 6.4 |
| Injectable | 0.1 | 0.5 | 0.8 |
| IUCD (thousands) | 7.5 | 15.3 | 24.9 |
| Oral | 0.7 | 1.2 | 1.5 |
| NORPLANT® (thousands) | 0.6 | 2.0 | 3.1 |
| VFT | 1.0 | 1.6 | 2.3 |

As was true with Scenarios 1 and 2, these values are used for the analysis of storage and transport capacity presented below. Details of the TARGET model input parameters for this scenario are included in Attachment 4.

## D. ANALYSIS OF MOH STORAGE AND TRANSPORT CAPACITY

Because the MOH distribution system is the most difficult to expand, a special concern is MCH/FP's capability to handle the projected demands of continued growth. A series of projections of the requirements for space at the regional and central levels were prepared in order to see whether the MOH distribution system's capacity is likely to become a constraint

to program expansion. Attachment 7 provides a discussion of the process for calculating the projected space requirements that formed the basis of this analysis.

The starting point for the projection was current issues data for the twelve months ending 6/30/93. A conversion was then performed to determine the volume occupied by the various contraceptive commodities. These space requirements are shown in Table 14.

Table 14 - Space Consumption of Annual Client Issues
(cubic meters for the year ending 6/30/93)

| | Condoms | Orals | VFTs | IUCDs | Injectables | Total |
|---|---|---|---|---|---|---|
| Ashanti | 11.8 | 2.3 | 1.6 | 0.6 | 1.9 | 18.1 |
| Brong Ahafo | 6.2 | 5.6 | 2.9 | 0.4 | 1.0 | 16.1 |
| Central | 9.0 | 2.0 | 2.3 | 0.1 | 0.6 | 14.0 |
| Greater Accra | 5.1 | 1.2 | 1.1 | 0.7 | 0.6 | 8.8 |
| Eastern | 6.7 | 1.4 | 1.9 | 0.3 | 0.9 | 11.2 |
| Northern | 1.5 | 0.7 | 0.5 | 0.2 | 0.2 | 3.1 |
| Upper East | 3.2 | 1.5 | 0.5 | 0.2 | 0.4 | 5.7 |
| Upper West | 2.3 | 0.2 | 0.9 | 0.1 | 0.2 | 3.9 |
| Volta | 4.4 | 0.9 | 1.8 | 0.2 | 0.6 | 7.8 |
| Western | 4.5 | 0.8 | 1.5 | 0.1 | 0.4 | 7.3 |
| Total | 54.6 | 16.7 | 14.9 | 2.9 | 6.9 | 96.0 |

During the data collection portion of the contraceptive commodity assessment the team visited the CMS and the facilities of the five regions representing the greatest demand for contraceptives. In these regions storage facilities, transport and recordkeeping were examined at the region, district and sub-district level.

At the CMS, one fourth of the available bay space is equipped with heavy-duty shelves and reserved for contraceptives. This shelved space provides storage for up to roughly 200 cubic meters of commodities. One-half of the total space in the bay is supposed to be for the storage of contraceptives, so 400 cubic meters of space is already reserved, including the shelved portion. It can be seen that this space should be adequate for current storage requirements as well as expansion in the near future. The remaining half of the bay is fully suitable for contraceptives and contains no barriers or impediments that would prohibit its use for this purpose. Thus, 800 cubic meters in total could be provided at the central location. In addition, there are adjoining bays within the same warehouse structure and covered exterior spaces that are quite adequate for short-term storage during overflow conditions.

Though delays in customs clearance procedures once plagued Ghana's contraceptive supply system, door-to-door shipments have now been established, and these problems seem to have been resolved. Shipments can now be cleared in as little as two to three weeks, whereas

prior to door-to-door shipping these procedures could take up to six months. With the uncertainties and administrative burden for each shipment now reduced, several shipments can be scheduled per year without undue strain on the system rather than the previous practice of limiting shipments to twice a year to avoid constantly being involved in the complicated port clearance process. With more frequent regular shipments, quantities per shipment can be reduced, lowering the quantity of commodities in the pipeline at any given time, and thus decreasing the risk of expiry.

The new clearing agent claims that the only limiting factor on the volume of commodities that he can handle is the capacity of the MOH to receive the goods into the CMS warehouse in a timely fashion. Given the space available at the CMS, as long as shipments do not exceed five 20-foot containers per delivery, CMS staff can absorb them without incurring delays that would lead to extra charges on the rental of the containers. As will be shown in the discussion below, if three to four shipments are spread out over the course of the year, Ghana's contraceptive supply needs through the year 2005 can be met without exceeding this 5-container limit.

At the regional level the capacities shown in Table 15 were found.

Table 15 - Dimensions and Usable Storage Volume of Warehouses and Storerooms Visited

| MOH Regional Warehouses | Dimensions (meters) | Usable Cubic Meters* |
|---|---|---|
| Greater Accra | 11.7 X 6.1 | 89.21 |
| Ashanti | 12.1 X 6.0 | 90.75 |
| (Overflow storeroom) | 8.9 X 6.0 | 66.75 |
| Brong Ahafo | 4.4 X 3.7 | 20.35 |
| Eastern | 16.0 X 6.7 | 134.00 |
| Central | 5.4 X 5.0 | 33.75 |

* USABLE CUBIC METERS = Square meters of floor space divided by 2 (to allow space for handling and stock rotation) and multiplied by 2.5 (optimal stacking height)

Under a typical resupply procedure, the space required at the regional level would be computed as roughly three-fourths of the regional annual space consumption. In a mature logistics system it is not necessary to accumulate this requirement with the space requirements for all lower points in the system as the current methodology requires.

Comparison of the space available in each of the large-volume regions and the annual volumes shown in Table 15 shows that no region should be operating under a current space constraint.

The cumulative nature of the current ordering methodology and its amplification of normal demand variability result in the request of such large quantities that there have, in fact, been instances in which the warehouses have had insufficient capacity. This does not appear to be a problem of storage space as much as an artifact of the resupply methodology itself. Even in these cases of oversupply, the regions have found the necessary temporary storage space. For the remainder of this analysis, space comparisons will assume that the stock requirement at the regional level is nine months on a non-cumulative basis. The effects of this assumption are discussed further in Section VI.

Similar conditions were found for the regional transport capability. Each region has a truck available for the transport of contraceptives and other supplies. The capacity of this vehicle is typically on the order of eight and one-half cubic meters. At the current level of demand this capacity should be sufficient for a regular quarterly supply run. In an exceptional quarter, a second run might be required. At present vehicle availability is such that this does not seem to impose a significant constraint. Again, the ordering methodology results in over-capacity requests being made more frequently than necessary, but arrangements are made when this occurs.

Of more concern during this assessment was the long term possibility that either storage or transport (or both) might become a constraining factor on the expansion of contraceptive supply. Of the growth scenarios described above, Scenario 2 most closely reflects the intended evolution of the contraceptive commodity demand pattern in Ghana over the next decade. Evaluation of regional storage capacity within this scenario began with the calculation of expected year 2005 annual regional distribution volumes. While these calculations are presented in greater detail in Attachment 7, the resulting values are summarized in Table 16.

The total annual requirement represents only eight 20 foot container shipments. Assuming that the arrival of the containers is spaced throughout the year, the port facilities and the customs clearing agent should have no difficulty handling this volume.

With a total annual requirement of 229 cubic meters, the capacity of the current configuration of the CMS is slightly exceeded if 12 months of stock are maintained at this level. This level of stock is probably not required at the CMS given regular supply shipments from USAID/Washington and other suppliers. In addition, twice the current capacity is available for ready use and reserved for contraceptives should it be needed.

Table 16
Scenario 2: Annual Contraceptive Commodity Volume Requirements
(cubic meters in year 2005)

| | Condoms | Orals | VFTs | IUCDs | Injectables | Total |
|---|---|---|---|---|---|---|
| Ashanti | 19.8 | 7.7 | 3.1 | 1.3 | 12.3 | 44.1 |
| Brong Ahafo | 10.5 | 19.2 | 5.7 | 0.8 | 6.3 | 42.5 |
| Central | 15.2 | 6.8 | 4.5 | 0.3 | 3.7 | 30.4 |
| Greater Accra | 8.6 | 4.2 | 2.1 | 1.6 | 4.0 | 20.4 |
| Eastern | 11.3 | 4.8 | 3.7 | 0.6 | 6.1 | 26.4 |
| Northern | 2.4 | 2.5 | 0.9 | 0.5 | 1.4 | 7.7 |
| Upper East | 5.3 | 5.0 | 1.0 | 0.4 | 2.9 | 14.5 |
| Upper West | 3.9 | 0.8 | 1.9 | 0.3 | 1.4 | 8.3 |
| Volta | 7.4 | 3.1 | 3.5 | 0.3 | 4.1 | 18.3 |
| Western | 7.6 | 2.6 | 3.0 | 0.1 | 2.9 | 16.2 |
| Total | 92.0 | 56.7 | 29.2 | 6.0 | 45.0 | 228.9 |

At the regional level some possible constraints become apparent when the capacity is evaluated against the projected increased demand. In particular, the current storage being used by Brong Ahafo region is inadequate for the projected storage requirement of the year 2005. This is because they are not storing their contraceptives at the Regional Medical Store (which is in Kintampu, approximately 75 miles away from the regional capital at Sunyani). A new clinic facility is planned within the same complex as the present storeroom. This facility would result in the doubling of available storage capacity from its present level of slight over 20 cubic meters to 40 cubic meters. At 40 cubic meters the capacity would be just adequate for the roughly 32 cubic meters of material that are needed (9 months of stock at an annual level of 42.5 cubic meters). Of course, this analysis only applies if the ordering methodology in place at the time calls for stock levels in the cited range rather than the current 19 month (cumulative) level.

Another region that might approach capacity within this time-frame and scenario is the Central Region. While the area currently being renovated for contraceptives at the Central Region RMS has a capacity of only 34 cubic meters, this space is located within the RMS complex which has plenty of perfectly adequate overflow space available.

With respect to regional transport capacity it is clear that the Scenario 2 analysis involves amounts that exceed the single-load transport capacity of the typical regional supply vehicle (approximately 8.5 cubic meters) in the largest regions (Ashanti, Brong Ahafo, and to a lesser degree, Central). This limitation can easily be remedied through the use of multiple trips or through the use of the larger vehicles that are available at the CMS. Given the age of the current fleet, consideration should be given to replacing the current 7 ton trucks used by these regions (when replacement is due) with larger capacity vehicles.

More constraints are apparent if scenarios involving less success in shifting method mix toward more effective (and less bulky) methods are evaluated. For this analysis the assumptions of Scenario 1 were used. The regional volume requirements for this scenario are shown in Table 17 below.

Table 17
Scenario 1: Annual Contraceptive Commodity Volume Requirements
(cubic meters in year 2005)

| | Condoms | Orals | VFTs | IUCDs | Injectables | Total |
|---|---|---|---|---|---|---|
| Ashanti | 45.3 | 9.1 | 1.3 | 0.5 | 6.8 | 63.0 |
| Brong Ahafo | 23.9 | 22.5 | 2.4 | 0.3 | 3.5 | 52.7 |
| Central | 34.7 | 8.0 | 1.9 | 0.1 | 2.0 | 46.7 |
| Greater Accra | 19.6 | 4.9 | 0.9 | 0.6 | 2.2 | 28.3 |
| Eastern | 25.7 | 5.6 | 1.6 | 0.2 | 3.4 | 36.6 |
| Northern | 5.6 | 2.9 | 0.4 | 0.2 | 0.8 | 9.8 |
| Upper East | 12.1 | 5.9 | 0.4 | 0.2 | 1.6 | 20.1 |
| Upper West | 9.0 | 1.0 | 0.8 | 0.1 | 0.8 | 11.7 |
| Volta | 16.8 | 3.6 | 1.5 | 0.1 | 2.3 | 24.3 |
| Western | 17.3 | 3.1 | 1.3 | 0.0 | 1.6 | 23.3 |
| Total | 210.0 | 66.7 | 12.5 | 2.4 | 25.0 | 316.6 |

Port clearance capacity and capacity at the CMS are still adequate given this scenario as it represents the handling of eleven 20-foot containers through the course of a year. At the Regional level, however, the storage capacity of Brong Ahafo and Central Regions will be strained though not beyond the capacity of their available overflow. Warehouse operations might begin to impinge on the smooth availability of supplies if overflow space has to be used on a continuing basis; in such a situation additional space would have to be obtained.

Transport capacity at the regional level would be regularly exceeded in the top four Regions and the majority of regions would experience requirements that exceed their single-run transport capacity periodically during the typical year. These exceptions would be easily remedied by an extra run or a larger vehicle. Again, this analysis reflects the adoption of a less reactive ordering methodology.

While using Scenario 1 as the worst case (logistically) provides a considerable amount of useful information, the simple average calculations do not adequately reflect the dynamic nature of a logistics system or the constraints that such a system might impose. It is important to incorporate the impact of continuing growth in the system and variability over time that is the nature of actual operations. Specifically, two considerations are required. First, a factor is needed to account for the continual increase in demand. Values reflecting this factor are shown in Table 18, below, in the column titled "Qtrly Need (Growth Model)"

Second, an estimate of the variability of demand is required to evaluate the needed transport (because the transport has to be able to accommodate the restocking requirements of a good quarter, not just an average quarter). Values reflecting this variability (the demand level of a moderate-probability good quarter) are shown in the column titled "Likely Good Qrtr".

Table 18 - Projected Regional Scenario 1 Space Requirement
(cubic meters in year 2005)

| | Annual Demand Basis | Req'd Stock Level (9 mos) | Qtrly Need (Growth mode) | Likely Good Qrtr | Req'd Stock (Current Method) |
|---|---|---|---|---|---|
| Ashanti | 63.0 | 47.2 | 21.8 | 31.0 | 196.4 |
| Brong Ahafo | 52.7 | 39.6 | 19.6 | 40.7 | 257.5 |
| Central | 46.7 | 35.0 | 14.1 | 21.1 | 133.9 |
| Greater Accra | 28.3 | 21.2 | 8.1 | 13.6 | 86.4 |
| Eastern | 36.6 | 27.4 | 11.6 | 26.4 | 167.2 |
| Northern | 9.8 | 7.4 | 3.0 | 4.9 | 31.3 |
| Upper East | 20.1 | 15.1 | 7.7 | 15.0 | 95.2 |
| Upper West | 11.7 | 8.7 | 5.5 | 16.9 | 107.2 |
| Volta | 24.3 | 18.3 | 8.8 | 13.1 | 83.1 |
| Western | 23.3 | 17.5 | 8.6 | 17.8 | 112.8 |
| Total | 316.6 | 237.4 | 108.8 | 200.5 | 1271.0 |

The "Likely Good Qrtr" values are used for two purposes. First, they represent the amounts that the regional transport systems would likely have to be able to handle according to the scenario. Second, they represent amounts that could potentially be withdrawn from the regional stores within a quarter. As such, they should be compared to the stock levels shown in column 2. This comparison indicates that, in general, the nine month stock policy would be adequate to support the continued growth of the system. In the case of the Upper West Region where the calculation shows inadequate stocks, it is likely that another ten years of operation will increase both the stability and the knowledge of the operations so that such a stockout situation could be avoided.

Particular attention should be given to the last column titled "Req'd Stock (Current Method)". This column provides the required restocking level using the existing stock management formula. It is easily seen that the stock need determined using this methodology vastly exceeds the true nine month stock requirement. It also exceeds the capacities of virtually all the regional warehouses. If an additional 12 months of stock (800 cubic meters for a total of nearly 2100 cubic meters) is added at the central level (as the current formula

requires) the level also exceeds the capacity of the CMS. To satisfy this storage space requirement there would have to be a new central warehouse of nearly 800 square meters - nearly 30 meters on a side. A less reactive restocking methodology requires 240 cubic meters at the CMS -- a value that is not cumulative with that kept in the regional stores and is readily available at the present facility.

Needless to say, the current method stock levels exceed the available regional transport capacity. They would also represent seventy 20-foot containers to be handled per year which would inevitably put a strain on the port clearance and handling capabilities. To avoid exceeding the "5 containers at a time" rule-of-thumb, at least 14 shipments would have to be scheduled per year.

The level of detail available during the data collection effort does not allow a district by district analysis similar to the regional analysis performed above. As with the regions, the level of variability between a high volume district and a low volume district is substantial. The limited sample taken indicated that space was generally available at the district level if the space were used for contraceptive storage alone. In those cases where space was not available or so constrained that the storeroom had to serve for other functions (such as client services), covered space generally appeared to be available within the facility. A portion of this covered space (perhaps 3 by 3 meters) could easily be enclosed to meet storage requirements.

At the sub-district level the small storage requirements can generally be met with a cabinet or the corner of a room. The high volume sub-districts where this is not the case tend to be coincidentally located in district or regional capitals where extra space is generally available and extra supply trips are not a severe burden because they frequently mean only a walk across the compound.

Transport between the sub-district and the district is not generally a constraint because public transport is used. Trips are taken frequently for other purposes and piggy-backing of trip purposes is common. Each district has a double cab pick-up that can carry approximately 1 cubic meter of cargo in the back. If the volume of contraceptives to be picked up by a sub-district is more than the service provider can comfortably carry on public transportation, the current practice is to carry back a portion and leave the remainder at the district to be brought out with the district vehicle during the next supervisory visit. As the district vehicle is in nearly constant circulation between the regional capital, the district capital and the sub-districts, opportunities for deliveries of this type can be scheduled without unduly overburdening the vehicle.

## V. STRATEGIES FOR STRENGTHENED COMMODITY MANAGEMENT

It is unlikely that the next decade will see the results shown in Scenario 1, because worldwide experience suggests that a natural shift in method mix toward more effective and permanent modern methods can be expected as any program matures. However, it is equally unlikely that the "ideal" method mix of Scenario 2 will be achieved unless very active steps are taken to foster the change. This section discusses general strategies that the Ghana national family planning program might employ to encourage movement toward a programmatically desirable method mix and source mix, and to ensure that the current rate of overall program growth continues. Section VI discusses specific steps which must be taken to strengthen current distribution systems under any of the three scenarios.

### A. USE COMPARATIVE ADVANTAGES OF EACH DISTRIBUTION SYSTEM

Section III details some of the strengths and weaknesses of the current distribution systems and touches on strengths of the service delivery organizations themselves. Each organization will of course want to maintain a comprehensive range of high quality services throughout its service network. However, the strengths of each organization are complementary, and can be used to advantage in furthering program service goals while minimizing strain on the individual commodity distribution channels.

#### 1. The Ministry of Health

The MOH is widely (and accurately) perceived as a comprehensive medical and preventive service provider. Moreover, MCH/FP currently has the best capability for provision of clinical methods (and follow-up for orals, injectables, and clinical methods), and the broadest geographic coverage in remote areas. It is the only source of affordable care for the truly indigent. At the same time, the Ministry's distribution system is the most capacity constrained and the most difficult to expand.

For these reasons MCH/FP should consider the following strategies:

- Emphasize service provision and follow-up of clinical methods at MCH/FP SDPs, including VSC and NORPLANT®.
- Continue initial screening for oral contraceptive clients, but encourage subsequent resupply through social marketing.
- Encourage condom and VFT users to obtain their supplies through social marketing or eventually, through the private sector.

- Target underserved groups which are easy to reach within the MOH service delivery network, including post-partum and antenatal clients and STD patients.

- Ensure that services at remote MOH facilities are as comprehensive as possible.

- Continue to provide technical support (in terms of orientation, training, and medical backup) to the other family planning organizations and the private sector.

## 2. The Ghana Social Marketing Foundation

The GSMF has the organizational flexibility to expand its distribution networks easily, both in terms of numbers of outlets and quantities transported, and is directly linked to the dynamic private sector. It is in the best position of current organizations to ensure easy access to products, at least for those who can afford them, and it is at liberty to focus distribution efforts wherever necessary.

For these reasons, GSMF should consider the following strategies:

- Continue to emphasize provision of current non-clinical supply methods, particularly condoms (for AIDS prevention as well as family planning).

- Expand distribution to include additional, more effective, methods (Depo-Provera®, IUCDs) as appropriate.

- Target underserved groups that are easy to reach through GSMF's current networks (e.g., employers, private physicians and midwives, maternity hospitals).

## 3. The Planned Parenthood Association of Ghana

PPAG has the ability to provide comprehensive family planning services and the flexibility to target services as it sees fit. Its current facilities are located mainly in urban areas. PPAG also has the best current ability to administer and supervise CBD workers. Distribution system expansion for PPAG is limited only by the availability of financial resources and commodities.

For these reasons, PPAG should consider the following strategies:

- Emphasize clinical family planning services, including VSC and NORPLANT®.

- Target underserved groups that are easy to reach through PPAG's existing networks (e.g., urban groups, employees, youth).

- Continue to expand access through CBD efforts, particularly in high population density areas.

## B. RATIONALIZE PRICING POLICIES

The current sale price for contraceptives in Ghana, taking into account both public and social marketing channels, provides high-quality supply methods in a range of prices that appear adequate for most target population segments, including the near-poor and the indigent. Moreover, cooperation between public and private outlets in the family planning effort has been extremely good, and continuation of this cooperation is a major objective of the national program.

Over time, however, GSMF and PPAG have gradually raised the sale price of their products, in keeping with inflation and the actual costs of delivery. MOH prices for contraceptives have remained constant since 1988, when they were first set as part of the cash and carry distribution strategy. This has resulted in the current pricing structure, which has two unintended effects:

- A significant flow of MCH/FP and some PPAG products into private outlets, since the MOH commodity price is typically considerably lower than the social marketing wholesale price.

- A flow of clients away from the private sector into the MOH delivery system, due to the price differential between MOH and social marketing retail prices.

This situation doubly burdens the Ministry: the MCH/FP distribution system stores, handles, and delivers products that would be more appropriately handled by GSMF, and sees clients who do not require the full range of MOH services for simple resupply visits. In addition, it depresses both demand and price for social marketing and eventually private sector products, thus prolonging the program's effort to achieve some measure of self-sufficiency.

It is desirable, then, for both short- and long-term reasons to gradually change client and provider behavior so that bulky methods that require no medical backup (e.g., condoms and VFTs) are routinely delivered through non-public channels that are both more accessible and better adapted to moving the goods. In theory this change could be engendered by simply raising the public sector price.

Two cautions pertain to this strategy, however. First and foremost, there is a clear danger of losing the lowest income segments of the population if all products sell at social marketing rates. In a 1990 study of an essential drug cost recovery program in the Ashanti and Volta

regions[4] it was shown that a 1985 price increase resulted in a decline in utilization which had not recovered completely by 1988. These data suggest that any price increases at MCH/FP may need to be accompanied by procedures for reduced-price sales to the indigent.

Second, there are many locations reached by the MOH network which are underserved or not served at all by the social marketing sector. In addition, people who travel from remote areas to MOH facilities often carry products back for further distribution, sometimes on a commercial basis and sometimes on a non-commercial basis. These activities can be viewed as a no-cost extension of the MOH delivery system, and should not, in general, be discouraged.

As current experience demonstrates, price changes are very likely to have unanticipated consequences, and thus must be carefully made. Two strategies to consider are as follows:

- Establish a price policy working group at the national level, including representatives of the MOH, MCH/FP, GSMF, PPAG, and the pure private sector, to regularly review price differentials for contraceptives and consider changes where appropriate.

- Undertake a small, well-controlled operational research test of increased MCH/FP commodity prices to determine what effect such changes have on utilization and what measures might be taken to ensure access for the near-poor and indigent.

## C. CONCENTRATE ON ACCESSIBLE POPULATIONS

Ensuring access to services is a major concern of family planning programs throughout the world, and substantial energy is focused on reducing or eliminating barriers to provision of quality services. These barriers take many forms, from rude staff to short clinic hours to high prices. For many programs, however, "access" has come to mean simply close physical proximity of SDPs or field workers to their intended clients.

One result of this view is the proliferation of SDPs. This strategy is commonly seen in public sector programs, where the true cost of such service networks may be partially hidden from decision-makers and where political as well as technical considerations apply (e.g., there must be one sub-district health post for each village development tract). A program may expend most of its limited staff and management energy in maintaining a far-flung network of service sites, invest much of its limited financial resources in storing and transporting commodities, and yet still see little return of services actually provided. In the worst case of this strategy, several thousand low-volume clinics may produce less

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[4] Waddington, C.J., and Enimayew, K. A Price to Pay: The Impact of User Charges in the Ashanti-Akim District of Ghana, and A Price to Pay, Part 2: The Impact of User Charges in the Volta Region of Ghana. International Journal of Health Planning and Management, Vol. 4, 1990.

contraceptive prevalence than a handful of well-run facilities located near a large number of prospective clients.

A more effective strategy may be to concentrate service delivery efforts initially on target populations that are easy to reach and likely to be receptive. Such a strategy might be especially appropriate at this stage in the development of the Ghana national family planning program for several reasons:

- Access does not appear to be a significant barrier to services: the 1993 Consumer Baseline Survey reported that only 2 percent of non-pregnant currently married women who do not use family planning methods listed access or cost as a reason for non-use.

- Moreover, the most frequent reason given for non-use by these women was lack of knowledge (35 percent), and the second most frequent reason was fear of side effects (14 percent); both of these barriers can be reduced by concentrated education and outreach efforts.

- A major program goal of all concerned is to ensure that recent rapid program growth continues; as with any program, each percentage point of prevalence increase is harder to achieve than the previous.

- Concentrated outreach efforts can more easily foster the desired switch to more effective contraceptive methods.

There are a significant number of potential target populations that might be candidates for such an intensive focus, and that are within easy reach of existing service delivery systems. Some of these are mentioned above; a more complete list includes at least the following:

- Post-partum and antenatal clients: this audience is very likely to be receptive to family planning messages, and is already largely captured by the MOH system and the private maternity hospitals.

- Employees of larger corporations: this audience tends to be more educated and very aware of the monetary cost of additional children, as are their employers, and would be an easy target for both GSMF and PPAG.

- Youth: these important members of the sexually-active population are likely to be underserved by the traditional health care system, and are easy to find, not only at school, but also at sporting events, youth groups, and so forth; the MOH, GSMF, and PPAG may all have access to significant portions of this population.

- Urban areas: these populations are by definition easier to serve than rural populations, and may be reached by some of the same techniques

(e.g., urban CBD) but with less complicated logistics support; GSMF and PPAG together are well positioned to target urban areas with a comprehensive range of services.

- Anywhere large numbers of people congregate: the MOH and other service providers already target market day populations in both urban and rural areas; other possible targets include bus stops, church groups, women's development groups, and athletic events.

## D. ENCOURAGE USE OF THE MOST EFFECTIVE METHODS

The natural progression of method mix from less to more effective methods obviously depends on availability of the more effective contraceptives, and of the delivery and backup support systems for clinical methods. Efforts to put these systems in place are already underway. As the above discussion implies, these service delivery strategies include the following:

- Establish or improve clinical capability in the MOH and PPAG to deliver and provide medical follow-up for VSC, IUCD and NORPLANT® services.

- Train private practitioners to deliver VSC, IUCD, and NORPLANT® (as well as Depo-Provera® and other supply methods) where service volumes warrant.

- Modify or strengthen IEC efforts and campaigns to emphasize more effective methods.

In the 1993 Situation Analysis it was reported that only 26 percent of new clients were asked by the provider if they had a method preference, and 17 percent reported that only one method was discussed. This result suggests another essential strategy:

- Improve counselling skills and service protocols at all SDPs to ensure informed choice and access to all methods for all clients.

The strategies for a coordinated approach to service delivery that use the comparative advantages of each organization imply a greater level of cooperation among service delivery channels than has been required in the past. This cooperation ideally would extend to referrals outside a worker's own organization; in particular, efforts should be made to:

- Train field workers who deliver supply methods to refer clients to MOH, PPAG, and eventually private facilities for clinical methods; ideally GSMF outlets, chemists, pharmacists, and others should be similarly trained.

## E. DECENTRALIZE RESOURCES NEEDED FOR PROGRAM OPERATIONS

A strategic issue particular to the Ministry program is decentralization. As implied in Section III, decentralization of management functions has already occurred, and has worked remarkably well, particularly in terms of distribution system management. Staff at all levels are well-trained and conscientious, and quite capable of rational ordering and storekeeping.

Other resources needed for program operations are more problematic. Vehicles are usually available at the district level and above, but funds for public transport, allowances, fuel, and out-of-pocket expenses associated with the distribution system and other program activities are very limited. MCH/FP staff frequently report use of monies generated by MCH fees to pay for family planning commodity deliveries.

Current policies for funds generated by contraceptive sales exacerbate this situation. In the case of USAID commodity sales, a significant portion of the funds must be passed up to higher levels and even to Accra. As the most severe constraints are at the lowest levels, this policy seems inappropriate. Monies returned to the central level are in principle available for MCH/FP's use, but in fact are administratively difficult to access. Worse, funds generated from USAID commodity sales are handled differently from those generated by UNFPA product sales, doubling the bookkeeping required at every facility in the system.

There is at present no fixed practice regarding retention and use of funds at lower levels, and in keeping with the principle of decentralization it is probably best to leave some discretion at regional and district levels to set such policies. Nonetheless, one strategy for increasing operational resources is:

- Encourage policies that keep funding generated from contraceptive sales where it is most needed. A policy of 50 percent retention at the sub-district, 30 percent at the district, and 20 percent at the regional level appears much more appropriate, for example, than most current practices.

Every effort should be made to allow funds generated by sales of USAID and UNFPA products to be handled in the same way.

This step alone will not solve the Ministry's resource problems, as the total revenue generated from product sales is very small. Additional strategies for alleviating these constraints should also be sought, using both GOG and donor resources.

## F. INTEGRATE SPECIFIC LOGISTICS FUNCTIONS WHERE APPROPRIATE

Another MOH-specific issue is integration of MCH/FP logistics activities with those of other Ministry programs such as the drug cash and carry scheme. The goal of such an integration effort is to avoid duplication of costs, while not overloading distribution or management systems to the point of collapse.

It appears that this goal has largely been met. As discussed above, contraceptives are stored and managed together with other commodities at the central level, and at regional, district and sub-district levels where appropriate. Resupply decisions are made jointly by MCH and Supply and Procurement staff at all levels, a sound strategy which helps ensure that family planning does not lose its priority to other programs. Transport, with some exceptions, is also shared, though capacity constraints make multiple trips inevitable, as they would be in any management structure. In terms of service delivery and supervision, family planning is already integrated with MCH and in some cases with other services as well.

Thus the three major areas of potential cost savings -- staffing, storage, and transport -- are already integrated with the essential drugs program to the extent that they should be. Only the financial aspects of the two programs remain completely separate.

The financial goal of the essential drug cash and carry program is to develop completely self-sustaining revolving funds for drug resupply. Ideally, contraceptives would also be purchased through such revolving funds. A recent evaluation of the cash and carry program[5], however, suggests that it may not be meeting its financial goals, and that in fact some of the revolving funds are decapitalizing. If true, this would suggest fundamental flaws in the system, and perhaps the need for significant change.

The cash and carry system must therefore be considered to be in a state of transition, and it is strongly suggested that no effort be made to integrate MCH/FP financial functions until the essential drug system is stable.

Moreover, contraceptives are fundamentally different from essential drugs in that they are preventive rather than curative. Among other things, this is likely to mean that total demand is less for contraceptives than for medications, and that clients are much more likely to do without them as prices increase. Similarly, decision-makers are more likely to allocate resources for curative rather than preventive commodities where resources are constrained. Unlike a curative program, which aims to meet existing demand, preventive programs, especially this one, wish to create (and fulfill) additional demand.

These facts suggest that the pricing structure for contraceptives is likely to always be lower than the pricing structure for other items. In this even more constrained environment, it is unlikely that Ghana can achieve self-sufficiency in contraceptive supply by the essential drug program's meaning of the term.

It should thus be expected that subsidies for contraceptive purchases (either from GOG or donor funds) will be required for the entire time period covered by this plan. Under these circumstances, it is suggested that the desirability of financial integration with the essential drug scheme at any time in the next decade be carefully reexamined.

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[5] Rankin, James, et.al. Ministry of Health of Ghana, Rational Pharmaceutical Management Project, Ghana Pharmaceutical Sector Assessment, Final Report. Management Sciences for Health, draft, August 1993.

## G. MOVE CAUTIOUSLY TOWARD SELF-SUFFICIENCY IN CONTRACEPTIVE PROCUREMENT

As the above discussion implies, one of the next steps in moving toward contraceptive self-sufficiency should be to define what "self-sufficiency" means in the context of contraceptive commodities. If it is true that contraceptives must be subsidized for the foreseeable future, then the magnitude and source of the subsidies must be determined.

Given the three alternative scenarios of program growth shown in Section IV, cost estimates for contraceptives can be calculated for any set of assumptions regarding unit costs of commodities. Since the actual sources of supply for the next decade are not known, these unit costs cannot be estimated with accuracy. However, a calculation using current USAID unit costs inflated at about 2 percent per year yields the results shown in Table 14.

Table 19 - Estimated Commodity Costs
(Millions of US$)

| Scenario | 1993 | 2000 | 2005 |
|---|---|---|---|
| Scenario 1 | 1.3 | 3.0 | 4.7 |
| Scenario 2 | 1.3 | 3.1 | 4.7 |
| Scenario 3 | 1.3 | 3.0 | 4.8 |

Two obvious conclusions can be drawn from these figures. First, the total funds required for contraceptive purchase will increase dramatically, by more than a factor of three under these unit cost assumptions. Second, the commodity costs do not differ substantially from one scenario to the next. However, a more sophisticated analysis might reveal this latter conclusion to be in error. Current USAID prices differ substantially from UNFPA's for example, and GOG prices are likely to be altogether different. An estimation using differing prices for each funding source might therefore yield quite different results.

Early strategies for moving toward self-sufficiency in commodity procurement might include the following:

- Constitute a procurement task force consisting of GOG, MOH, GSMF, and PPAG staff, along with representatives of concerned donor agencies to refine cost estimates for contraceptive commodities, determine likely donor commitments for procurement, and identify relative price advantages of each organization.

- Undertake an analysis of MOH capabilities in contraceptive procurement, and institute needed measures to strengthen those capabilities, as discussed in Section VI of this report.

- For procurements to be undertaken by the GOG, determine what procurement strategy -- direct procurement by international tender or use of a procurement agent -- is most cost effective.

- Strengthen or institute systems in the GOG for ensuring product quality for items procured under international tender.

These steps can gradually lead to self-sufficiency in the process of procurement, which is a large next step on the path to full financial self-sufficiency. Support for expansion of the GSMF, and rationalization of contraceptive prices, will foster development of the true private sector, the next important transition toward complete self-reliance.

# VI. ACTIONS FOR LOGISTICS SYSTEM IMPROVEMENT

In addition to the general strategies discussed above, a number of more immediate steps might be taken by MCH/FP, GSMF, and PPAG to strengthen their existing distribution channels. This section summarizes these specific actions.

## A. THE MINISTRY OF HEALTH

Suggestions for MCH/FP's consideration include system enhancements in the areas of procurement and forecasting, storekeeping, distribution, and LMIS.

### 1. Procurement and Forecasting

Although the Ministry of Health procures a wide variety of commodities through both local and international tenders, contraceptive commodities have to date always been donated. This year's MOH budget includes a line item for contraceptive purchase, in compliance with USAID's condition precedent requiring the GOG to begin contraceptive procurement. An immediate suggestion for action, therefore, is

- Review MCH/FP's procedures for international procurement, identifying and implementing any steps necessary to ensure adequate capacity in product specification, international tendering, compliance testing, and product inspection.

Staff of the Supply and Procurement Division anticipate that existing government procedures will be used for purchase of contraceptives. Under these procedures, MCH/FP would be responsible for providing product specifications to the Ghana Supply Commission, which would purchase the product(s) on the international market. GOG regulations reportedly do not require that the lowest bid be accepted, so that MCH/FP could specify that procurement be limited to currently used brands. Further investigation is needed to see whether this is, in fact, the case.

There are many questions which should be answered before this process proceeds.

The most basic short-term question is, of course, which product(s) should be purchased with the currently allocated budget. The obvious strategy is to select items for which there are still anticipated shortages. From the longer-term perspective, it would be useful to choose a product which is relatively easy to purchase, thereby providing experience in the procurement process at a minimum of effort. NeoSampoon might be considered, for example.

Second, MCH/FP should review GOG procurement procedures to determine whether an international procurement agent such as UNFPA or IPPF can be used to make the purchase; such a strategy, if feasible, is likely to result in lower commodity costs than an independent international procurement. Should independent procurement be needed, it will be necessary to determine whether tendering can be limited to specific brands and manufacturers, or whether open competition takes precedence over clients' needs. In the latter case, MCH/FP may wish to seek external technical assistance in preparation of product specifications for the tender(s), to ensure that products eventually purchased are clinically and logistically equivalent to current brands.

In any case, staff of the Supply and Procurement Division stated that compliance inspection will be the responsibility of MCH/FP, which may require strengthening MCH/FP's capacity to undertake such inspections.

External technical assistance in many of these matters can be made available by USAID/Accra, through USAID's Family Planning Logistics Management (FPLM) Project. UNFPA and IPPF are also likely sources for technical assistance.

Section III of this report describes MCH/FP's current system for forecasting and resupply, and the summary analysis of Section IV shows that storage and transport capacity is sufficient for any of the growth scenarios if and only if the resupply policy is changed. Of more immediate concern, the current policy causes staff at all levels to order far more than is actually needed to ensure availability of supply. When these excessive orders cannot be filled, supply managers become needlessly anxious, and lose confidence in the distribution system's ability to ensure product availability.

Modifications needed are as follows:

- Calculate the desired number of months of stock used for reordering on the basis of the past three months of dispensed-to-client data at the sub-district level, and on the basis of the last two quarters at the district, regional, and central levels.

Using dispensed-to-client data for only a single month (at the sub-district level) or a single quarter (at the higher levels), as current procedures require, introduces significant fluctuations in order quantities that become more and more pronounced at higher levels in the system. This effect is shown in graphical form in Attachment 5. The graphs labelled "System 1" model the current resupply policy. Slight and temporary changes in demand at the lowest level cause large and lengthy fluctuations at the top, with very large orders followed by very small orders to compensate for initial overreaction. This systemic behavior can be largely eliminated by using an average of quantities dispensed to clients over several previous time periods in the calculations, which effectively smooths temporary fluctuations in demand. "System 2" of Attachment 5 shows the effect of such a change using a twelve month rolling average instead of a one month average. As the graphs show, system performance is much more stable.

Given the rate of increase in commodity distribution in the MCH/FP system, a twelve month rolling average would risk underestimation of actual needs; until performance begins to level out, the three-month, two-quarter rule is recommended.

- Base order quantities at each level of the distribution system only on the desired inventory at that level; do not routinely order enough to top up all lower levels as well.

In a normal Max-Min inventory control system, each storage facility orders stock only on the basis of its own needs. Lower level facilities are allowed to vary between their maximum and minimum quantities, and in turn order as necessary to replenish their stocks. The current policy of filling the pipeline completely at each quarterly resupply interval, though appropriate in the initial and unstable stages of MCH/FP's development, causes the system to overreact in much the same fashion as above.

"System 3" of Attachment 5 models a system which bases orders at each level only on that level's needs. As can be seen from the graphs, this system is <u>much</u> more stable than MCH/FP's current system, and still ensures that stock is always available at the SDP.

These proposed changes are mathematically simple, but will have a profound effect on performance of the distribution system. For this reason, an analysis of quarterly distribution data for condoms (the most volatile method) from 1987 to the present at the national and regional levels was undertaken, in order to determine what the performance of a system based on the decision rules proposed here would have been. This analysis is presented in Attachment 6. As can be seen from the data presented there, the proposed decision rules would have been inadequate in the early years of the program, but in the recent past would have been entirely acceptable. Since 1991 only three regional level stockouts (in two regions) would have occurred if the proposed resupply policy had been in effect. All three of these extreme changes in demand were due to special promotional campaigns which were known in advance to the regional storekeepers, who presumably would have made special arrangements to meet the exceptional demand.

Disaggregated data to perform a similar analysis at lower levels of the distribution system were not readily available at the time of this assessment; similar results from changes at these levels could be expected.

Further justification for the proposed change in resupply policy is contained in Attachment 7, which shows quantity and space requirements for the end point of the three growth scenarios of Section IV.

These changes would effectively shorten the in-country pipeline by speeding products through. However, the theoretical maximum length would still be 31 months, a figure which is far too high for the stability and shelf-life of the contraceptives. Once the above changes have been shown to work, desired inventory policy at each level should be gradually reduced to 21 months total (9 months at the central level, 6 at the region, 4 at the district, and 2 at the sub-district). As an interim step, a policy of 24 months (9-6-6-3) could be tested.

## 2. Storekeeping

As described in Section III, storekeeping practices at all levels are very good, though of course continued effort in training new staff and retraining existing staff will always be needed. Two areas require attention:

- Clean the in-country pipeline of expired stock, and ensure that regular disposal policies are followed in the future.

Considerable quantities of expired stock were found in three of the five regions visited for the purposes of this analysis. In one region, 100,000 cycles of Lo Femenal which had expired two years ago were still in the store; in another, 10,000 IUCDs, 300,000 tablets of conceptrol, and several thousand cycles of orals were found, some of which had expired in 1988. These commodities take up space which is needed for current working stocks.

- Renovate and equip stores at district and sub-district facilities where necessary.

Storage constraints are greatest at the lower levels of the MCH/FP distribution system, and the MOH's current plans for renovation end at the regional level. As volumes increase, facilities which now make do with only a cabinet or a drawer will require shelving for bulk storage and perhaps renovations to storerooms to ensure security and protection from environmental hazards.

## 3. Distribution

Resupply policy is fully discussed above. One additional distribution issue requires attention:

- Regularize transport mechanisms at all levels of the MCH/FP distribution system, and ensure that adequate resources are available at each level.

MCH/FP should move to formalize the transportation arrangements currently in effect, or if necessary to change them. If staff of lower level facilities are to continue collecting product from higher level facilities, they should be made officially responsible for this function, and steps should be taken to ensure that funds and vehicles are available for this purpose.

As shown in Section IV, this current practice should continue to work well, except at the sub-district level, where MOH-owned transport is not routinely available. Strategies for increasing funding for the current system of local transport are detailed in Section V; it may also be desirable to experiment with alternate delivery strategies below the district level. One alternative, for example, would be a regular replenishment system, in which district staff were made responsible for visiting each sub-district facility on a regular basis, say

quarterly, to deliver supplies and perform any other needed supervisory functions. Such alternatives would of course affect the desired stock level at the sub-district.

Transport capability at the district level is also fragile, because in general each district has only one vehicle. Consideration should also be given to backup strategies at this level. For example a small pool of spare vehicles might be maintained at the regional level, to be loaned to districts whose own vehicles were under repair.

## 4. Logistics MIS

Several enhancements to the LMIS should be considered:

- Delay implementation of the new LMIS monthly/quarterly report in order to determine further modifications needed due to proposed distribution policy changes.

The proposed Inter-Agency Monthly/Quarterly Report shown in Attachment 1 embodies the current reordering policy in its format. If some or all of the changes proposed above are implemented, the format would require further changes (which could in fact make the report easier to complete and more useful to managers). If funds generated by sales of USAID and UNFPA contraceptives can be treated alike, the format could be simplified further still. It is therefore suggested that implementation be delayed until these proposals can be studied.

It is further suggested that the format finally chosen be pretested prior to nationwide implementation. Depending on the magnitude of the changes made (in distribution policy as well as recording and reporting), a significant training effort may be required.

- Enhance the automated LMIS at the central level of MCH/FP, and reprogram it in appropriate database management software.

The current automated LMIS reports contain all of the information needed for logistics management at the central level, but they are very difficult to read, and the LOTUS spreadsheets used to generate them are difficult to maintain. Worse, any spreadsheet database can be corrupted with a few keystrokes, accidentally or intentionally, and such errors are likely to go undetected. It is suggested that a redesign process be undertaken at the national level to develop more readable reporting formats, and that the system be reprogrammed in a modern database management language which can ensure the integrity of the data. There are several existing automated systems which might prove usable or easily adaptable to MCH/FP's needs. In the longer term, automation at the regional level might be appropriate.

An additional potential automation application is the central medical store. Software for warehouse management also exists which might be applicable to CMS, and eventually RMS needs.

USAID/Accra can arrange technical assistance in analysis of manual or automated LMIS needs through FPLM if desired.

## B. THE GHANA SOCIAL MARKETING FOUNDATION

Suggestions for GSMF's consideration include the following:

- Improve central level capability in forecasting, requirements estimation, and the preparation of USAID Contraceptive Procurement Tables.

Currently, the development of estimated future product requirements is handled largely by the technical assistance contractor. These skills should be passed on to the various local firms involved with the GSMF so that the need for cutside assistance gradually diminishes. The donor community is deploying considerable resources in strategies to encourage expansion of the demand for contraceptives. The local firms involved with the GSMF need to be made aware of these strategies and brought into the process of their implementation. The social marketing of contraceptives therefore differs from the other strictly commercial ventures that these local firms handle.

As USAID will continue to be a major supplier of GSMF products for the foreseeable future, these local firms also need to become better acquainted with USAID's forecasting methodology. Their participation in the data collection for and preparation of the yearly CPTs and mid-year reviews would be a good first step in bringing them into USAID's commodity management process.

- Include the GSMF in the development and periodic review of a coherent overall pricing policy that will support a strategy for segmenting Ghana's contraceptive distribution.

Need for a rational pricing policy is discussed in Section V. The development of such a policy should be a collaborative effort involving all the major actors currently active in contraceptive distribution.

- Provide training to pharmacists and chemical sellers in AIDS prevention and family planning counselling.

Training could be provided for pharmacists and chemical sellers, particularly in AIDS prevention. Such training would enable them to provide a valuable service by reaching a clientele who may not frequent public health facilities on a regular basis. They should have an incentive to actively pursue such training as these skills could enable them to recruit new customers.

Pharmacists and chemical sellers could also be trained in the basics of contraceptive technology to enable them to better respond to questions concerning the possible side effects of oral contraceptives, and to be able to refer potential IUCD, injectable, and eventually

NORPLANT® clients to MOH or PPAG facilities for more thorough counselling, thus fostering the shift from supply methods to more effective methods.

## C. THE PLANNED PARENTHOOD ASSOCIATION OF GHANA

Suggestions for PPAG include the following:

- Improve central capability in forecasting, requirements estimation, and the preparation of USAID Contraceptive Procurement Tables.

PPAG has been plagued by stock shortages in the past, due to the irregularity of supply from their donors. Distribution has been more a function of what limited funding could supply than what their program could ideally have accomplished. Now that contraceptives funded by the World Bank have begun to arrive, PPAG should be able to monitor organizational performance in a situation unbiased by supply constraints, and therefore better evaluate the success of current strategies for expansion.

When supplies have been sufficient, PPAG has been a major player in the expansion of Ghana's family planning program. USAID should consider providing contraceptive commodity support to the PPAG if World Bank support will not continue beyond the completion of its on-going commitment in 1996. In order to prepare for such an eventuality, and to promote collaboration among the main actors in Ghana's contraceptive distribution, PPAG should be encouraged to become familiar with USAID's CPT preparation and commodity management processes.

- Ensure functional storage capacity in the PPAG central office.

PPAG is contemplating moving from the headquarters office that they now rent to a building they will purchase. When PPAG relocates, it is essential that sufficient storage capacity be available to allow maintenance of central stocks. Without central storage capability (and sufficient commodity supply), the central office will continue to have difficulty responding to the needs of the regional offices.

USAID should consider assisting PPAG in ensuring that there is sufficient storage capacity at the new central offices. This might involve minor renovation, furnishings, and equipment.

- Improve storekeeping and inventory control practices at the regional level.

In one of the PPAG regional offices visited, storekeeping and inventory control practices were inadequate. If USAID is to supply contraceptives to PPAG, assurance will be needed that stocks can be properly handled and accounted for.

- Ensure consistency between PPAG logistics reporting and MOH reporting systems.

PPAG currently uses the IPPF reporting system. The logistics data captured by this system detail quantities distributed, quantities received, and quantities on hand, but future needs are calculated only annually and then only at the central level, probably due to the fact that past shortages have forced PPAG into a simple allocation process. Now that PPAG's supply will hopefully be more regular, a system of quarterly or semiannual regional requisitions, based on past consumption and designed to keep stock levels between predetermined minimum and maximum levels, could be instituted. Such a system would facilitate the monitoring of program growth.

If indicators such as CYP, "new acceptors" and "continuing users" are to be helpful for program evaluation, the same definitions of terms must be used by all of the distribution networks to enable aggregation of indicators and cross-comparison between programs. This is particularly true if USAID decides to provide commodity support to the PPAG and therefore needs to total their program results with those of the MOH to obtain a global picture of the impact of USAID support.

- Include PPAG in the development and periodic review of a coherent overall pricing policy that will support a strategy for segmenting Ghana's contraceptive distribution.

Like GSMF, PPAG should be a full partner in such discussions, and in the long-range effort to move towards a more effective method mix, and to eventual program self-sufficiency.

ATTACHMENT 1: INTER-AGENCY MONTHLY/QUARTERLY REPORT

Clinic _____ AGENCY _____

District _____

Region _____

Report to be submitted monthly to DHMT or quarterly to RHMT with copies to relevant agency

Inter-Agency

# FAMILY PLANNING

## Monthly / Quarterly Report

circle one = Clinic District Region

Month/Quarter = _____ 19 _____

DISTRICT & REGION ONLY:

a. total clinics _____

b. w/ FP _____

c. % w/ FP (#b/#a*100) _____%

d. reports expected _____

e. reports received _____

f. % reporting (#c/#d*100) _____%

| Source of Supply (Insert as Appropriate) | | TOTAL | USAID | | | | | UNFPA | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BRAND/ METHOD = (Insert appropriate names) | | | Lo-Fem | Ovrette | Conceptrol | Condoms | IUCD | Micro-G | Micro-N | Sampoom | Depo | VSC |
| STOCK BALANCES | | | | | | | | | | | | |
| 1 | Beginning Balance | | | | | | | | | | | |
| 2 | Received | | | | | | | | | | | |
| 3 | Issued | | | | | | | | | | | |
| 4 | Transferred (Circle one) (MOH/GRMA/PPAG/CC/Priv/_____) | | | | | | | | | | | |
| 5 | Loss/Demonstration | | | | | | | | | | | |
| 6 | Ending Balance (line 1+2-3-4-5) (Check physical Stock) | | | | | | | | | | | |
| STOCK REQUIRED | | | | | | | | | | | | |
| 7 | Line 3+4+5 x number of months required (eg.SDHT x4; DHMT x6; RHMTx9) | | | | | | | | | | | |
| 8 | Quantity Required (line 7-6) | | | | | | | | | | | |
| FUNDS COLLECTED | | | | | | | | | | | | |
| 9 | Unit Price (Cedis) (If not an MOH agency, Insert agency price and skip to line 14) | | 15 | 15 | 12/25 | 2.5 | 100 | 15 | 15 | 1 | 40 | |
| 10 | USAID Cedis collected (line (3+4) x line 9) | | | | | | | | | | | |
| 11 | UNFPA Cedis Collected (line (3+4) x line 9) | | | | | | | | | | | |
| 12 | USAID Cedis retained (10 x 20 %) | | | | | | | | | | | |
| 13 | UNFPA Cedis retained (line 11 x 100%) | | | | | | | | | | | |
| 14 | Cedis submitted (lines 10+11-12-13) | | | | | | | | | | | |
| PROGRAMME PERFORMANCE | | | | | | | | | | | | |
| 15 | ACCEPTORS by METHOD (New + Continuing) | | | | | | | | | | | |
| 16 | TOTAL VISITS (from tally sheet) | | | | | | | | | | | |
| 17 | Couple Years of Protection | Total | line 4/13 | line 4/13 | line 4/100 | line 4/100 | line 4x2.5 | line 4/13 | line 4/13 | line 4/100 | line 4/4 | line 16 x 12.5 |

Signature _____ Title _____ DATE _____

MOH, bc 12/5/93

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ATTACHMENT 2: INPUT PARAMETERS FOR TARGET MODEL FOR SCENARIO 1

ATTACHMENT 2 : INPUT PARAMETERS FOR TARGET MODEL FOR SCENARIO 1

Ghana: Scenario 1 
November 17, 1993 18:42:49 Target-Cost Model Version 1.14

==========PROGRAM PARAMETERS==========

| | |
|---|---|
| Title | Ghana: Scenario 1 |
| First Year | 1993 |
| Last Year | 2005 |
| Solve For | TFR |

==========METHOD MIX==========

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Condom | 39.9% | 40.8% | 41.8% | 42.7% |
| Female Sterilization | 2.0% | 1.9% | 1.7% | 1.6% |
| Injectable | 12.2% | 12.3% | 12.5% | 12.6% |
| IUD | 5.4% | 5.2% | 5.0% | 4.8% |
| Norplant | 0.0% | 0.0% | 0.0% | 0.0% |
| Oral | 33.8% | 33.5% | 33.3% | 33.0% |
| Vaginal Tablets | 6.8% | 6.3% | 5.8% | 5.3% |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Condom | 43.6% | 44.5% | 45.5% | 46.4% |
| Female Sterilization | 1.4% | 1.3% | 1.1% | 1.0% |
| Injectable | 12.8% | 12.9% | 13.1% | 13.2% |
| IUD | 4.7% | 4.5% | 4.3% | 4.1% |
| Norplant | 0.0% | 0.0% | 0.0% | 0.0% |
| Oral | 32.8% | 32.5% | 32.3% | 32.0% |
| Vaginal Tablets | 4.9% | 4.4% | 3.9% | 3.4% |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Condom | 46.7% | 47.1% | 47.4% | 47.8% |
| Female Sterilization | 0.9% | 0.9% | 0.8% | 0.8% |
| Injectable | 13.2% | 13.3% | 13.3% | 13.4% |
| IUD | 4.0% | 4.0% | 3.9% | 3.9% |
| Norplant | 0.0% | 0.0% | 0.0% | 0.0% |
| Oral | 31.9% | 31.8% | 31.7% | 31.6% |
| Vaginal Tablets | 3.2% | 3.0% | 2.9% | 2.7% |

| | 2005 |
|---|---|
| Condom | 48.1% |
| Female Sterilization | 0.7% |
| Injectable | 13.4% |
| IUD | 3.8% |
| Norplant | 0.0% |
| Oral | 31.5% |
| Vaginal Tablets | 2.5% |

==========PROXIMATE DETERMINANTS OF FERTILITY==========

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Number of WRA | 3543571 | 3684489 | 3825408 | 3966326 |
| % WRA Married | 68.1% | 67.8% | 67.5% | 67.2% |
| Post Partum | 13.1 mths | 12.9 mths | 12.7 mths | 12.5 mths |
| Total Abortion Rate | 0.0 | 0.0 | 0.0 | 0.0 |
| Sterility | 3.0% | 3.0% | 3.0% | 3.0% |
| TFR | 6.0 | 5.9 | 5.8 | 5.7 |
| Prevalence | 14.8% | 16.3% | 17.7% | 19.2% |

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| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Number of WRA | 4107245 | 4248163 | 4389082 | 4530000 |
| % WRA Married | 66.8% | 66.5% | 66.2% | 65.9% |
| Post Partum | 12.4 mths | 12.2 mths | 12.0 mths | 11.8 mths |
| Total Abortion Rate | 0.0 | 0.0 | 0.0 | 0.0 |
| Sterility | 3.0% | 3.0% | 3.0% | 3.0% |
| TFR | 5.6 | 5.5 | 5.5 | 5.4 |
| Prevalence | 20.6% | 22.1% | 23.5% | 25.0% |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Number of WRA | 4660000 | 4800000 | 4950000 | 5090000 |
| % WRA Married | 65.7% | 65.5% | 65.4% | 65.2% |
| Post Partum | 11.8 mths | 11.7 mths | 11.7 mths | 11.6 mths |
| Total Abortion Rate | 0.0 | 0.0 | 0.0 | 0.0 |
| Sterility | 3.0% | 3.0% | 3.0% | 3.0% |
| TFR | 5.3 | 5.2 | 5.1 | 5.1 |
| Prevalence | 26.0% | 27.0% | 28.0% | 29.0% |

| | 2005 |
|---|---|
| Number of WRA | 5350000 |
| % WRA Married | 65.0% |
| Post Partum | 11.6 mths |
| Total Abortion Rate | 0.0 |
| Sterility | 3.0% |
| TFR | 5.0 |
| Prevalence | 30.0% |

==========METHOD ATTRIBUTES==========

Method: Condom

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Effectiveness | 83.0% | 83.0% | 83.0% | 83.0% |
| Discontinuation | 40.0% | 40.0% | 40.0% | 40.0% |
| Average Age | 25.40 | 25.40 | 25.40 | 25.40 |
| Unit/CYP | 55.00 | 56.25 | 57.50 | 58.75 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Effectiveness | 83.0% | 83.0% | 83.0% | 83.0% |
| Discontinuation | 40.0% | 40.0% | 40.0% | 40.0% |
| Average Age | 25.40 | 25.40 | 25.40 | 25.40 |
| Unit/CYP | 60.00 | 61.25 | 62.50 | 63.75 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Effectiveness | 83.0% | 83.0% | 83.0% | 83.0% |
| Discontinuation | 40.0% | 40.0% | 40.0% | 40.0% |
| Average Age | 25.40 | 25.40 | 25.40 | 25.40 |
| Unit/CYP | 65.00 | 66.25 | 67.50 | 68.75 |

| | 2005 |
|---|---|
| Effectiveness | 83.0% |
| Discontinuation | 40.0% |
| Average Age | 25.40 |
| Unit/CYP | 70.00 |

Method: Female Sterilization

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Effectiveness | 100.0% | 100.0% | 100.0% | 100.0% |
| Discontinuation | 1.0% | 1.0% | 1.0% | 1.0% |
| Average Age | 30.50 | 30.50 | 30.50 | 30.50 |
| Percent 45-49 | 0.00% | 0.00% | 0.00% | 0.00% |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Effectiveness | 100.0% | 100.0% | 100.0% | 100.0% |
| Discontinuation | 1.0% | 1.0% | 1.0% | 1.0% |
| Average Age | 30.50 | 30.50 | 30.50 | 30.50 |
| Percent 45-49 | 0.00% | 0.00% | 0.00% | 0.00% |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Effectiveness | 100.0% | 100.0% | 100.0% | 100.0% |
| Discontinuation | 1.0% | 1.0% | 1.0% | 1.0% |
| Average Age | 30.50 | 30.50 | 30.50 | 30.50 |
| Percent 45-49 | 0.00% | 0.00% | 0.00% | 0.00% |

| | 2005 |
|---|---|
| Effectiveness | 100.0% |
| Discontinuation | 1.0% |
| Average Age | 30.50 |
| Percent 45-49 | 0.00% |

Method: Injectable

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Effectiveness | 98.0% | 98.0% | 98.0% | 98.0% |
| Discontinuation | 20.0% | 20.0% | 20.0% | 20.0% |
| Average Age | 35.80 | 35.80 | 35.80 | 35.80 |
| Unit/CYP | 4.00 | 4.00 | 4.00 | 4.00 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Effectiveness | 98.0% | 98.0% | 98.0% | 98.0% |
| Discontinuation | 20.0% | 20.0% | 20.0% | 20.0% |
| Average Age | 35.80 | 35.80 | 35.80 | 35.80 |
| Unit/CYP | 4.00 | 4.00 | 4.00 | 4.00 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Effectiveness | 98.0% | 98.0% | 98.0% | 98.0% |
| Discontinuation | 20.0% | 20.0% | 20.0% | 20.0% |
| Average Age | 35.80 | 35.80 | 35.80 | 35.80 |
| Unit/CYP | 4.00 | 4.00 | 4.00 | 4.00 |

| | 2005 |
|---|---|
| Effectiveness | 98.0% |
| Discontinuation | 20.0% |
| Average Age | 35.80 |
| Unit/CYP | 4.00 |

Method: IUD

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Effectiveness | 97.0% | 97.0% | 97.0% | 97.0% |
| Discontinuation | 20.0% | 20.0% | 20.0% | 20.0% |
| Average Age | 35.70 | 35.70 | 35.70 | 35.70 |
| Unit/CYP | NA | NA | NA | NA |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Effectiveness | 97.0% | 97.0% | 97.0% | 97.0% |
| Discontinuation | 20.0% | 20.0% | 20.0% | 20.0% |
| Average Age | 35.70 | 35.70 | 35.70 | 35.70 |
| Unit/CYP | NA | NA | NA | NA |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Effectiveness | 97.0% | 97.0% | 97.0% | 97.0% |
| Discontinuation | 20.0% | 20.0% | 20.0% | 20.0% |
| Average Age | 35.70 | 35.70 | 35.70 | 35.70 |
| Unit/CYP | NA | NA | NA | NA |

| | 2005 |
|---|---|
| Effectiveness | 97.0% |
| Discontinuation | 20.0% |
| Average Age | 35.70 |
| Unit/CYP | NA |

---

Method: Norplant

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Effectiveness | 98.0% | 98.0% | 98.0% | 98.0% |
| Discontinuation | 20.0% | 20.0% | 20.0% | 20.0% |
| Average Age | 0.00 | 0.00 | 0.00 | 0.00 |
| Unit/CYP | NA | NA | NA | NA |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Effectiveness | 98.0% | 98.0% | 98.0% | 98.0% |
| Discontinuation | 20.0% | 20.0% | 20.0% | 20.0% |
| Average Age | 0.00 | 0.00 | 0.00 | 0.00 |
| Unit/CYP | NA | NA | NA | NA |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Effectiveness | 98.0% | 98.0% | 98.0% | 98.0% |
| Discontinuation | 20.0% | 20.0% | 20.0% | 20.0% |
| Average Age | 0.00 | 0.00 | 0.00 | 0.00 |
| Unit/CYP | NA | NA | NA | NA |

| | 2005 |
|---|---|
| Effectiveness | 98.0% |
| Discontinuation | 20.0% |
| Average Age | 0.00 |
| Unit/CYP | NA |

---

Method: Oral

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Effectiveness | 94.0% | 94.0% | 94.0% | 94.0% |
| Discontinuation | 20.0% | 20.0% | 20.0% | 20.0% |
| Average Age | 31.00 | 31.00 | 31.00 | 31.00 |
| Unit/CYP | 15.00 | 15.00 | 15.00 | 15.00 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Effectiveness | 94.0% | 94.0% | 94.0% | 94.0% |
| Discontinuation | 20.0% | 20.0% | 20.0% | 20.0% |
| Average Age | 31.00 | 31.00 | 31.00 | 31.00 |
| Unit/CYP | 15.00 | 15.00 | 15.00 | 15.00 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Effectiveness | 94.0% | 94.0% | 94.0% | 94.0% |
| Discontinuation | 20.0% | 20.0% | 20.0% | 20.0% |
| Average Age | 31.00 | 31.00 | 31.00 | 31.00 |
| Unit/CYP | 15.00 | 15.00 | 15.00 | 15.00 |

| | 2005 |
|---|---|
| Effectiveness | 94.0% |
| Discontinuation | 20.0% |
| Average Age | 31.00 |
| Unit/CYP | 15.00 |

---

Method: Vaginal Tablets

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Effectiveness | 83.0% | 83.0% | 83.0% | 83.0% |
| Discontinuation | 60.0% | 60.0% | 60.0% | 60.0% |
| Average Age | 0.00 | 0.00 | 0.00 | 0.00 |
| Unit/CYP | 150.00 | 150.00 | 150.00 | 150.00 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Effectiveness | 83.0% | 83.0% | 83.0% | 83.0% |
| Discontinuation | 60.0% | 60.0% | 60.0% | 60.0% |
| Average Age | 0.00 | 0.00 | 0.00 | 0.00 |
| Unit/CYP | 150.00 | 150.00 | 150.00 | 150.00 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Effectiveness | 83.0% | 83.0% | 83.0% | 83.0% |
| Discontinuation | 60.0% | 60.0% | 60.0% | 60.0% |
| Average Age | 0.00 | 0.00 | 0.00 | 0.00 |
| Unit/CYP | 150.00 | 150.00 | 150.00 | 150.00 |

| | 2005 |
|---|---|
| Effectiveness | 83.0% |
| Discontinuation | 60.0% |
| Average Age | 0.00 |
| Unit/CYP | 150.00 |

---

==========SOURCE DISTRIBUTION==========

Method: Condom

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Public Sector | 30.0% | 30.0% | 30.0% | 30.0% |
| PPAG | 10.0% | 10.0% | 10.0% | 10.0% |
| Private Sector | 0.0% | 0.0% | 0.0% | 0.0% |
| Social Marketing | 60.0% | 60.0% | 60.0% | 60.0% |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Public Sector | 30.0% | 30.0% | 30.0% | 30.0% |
| PPAG | 10.0% | 10.0% | 10.0% | 10.0% |
| Private Sector | 0.0% | 0.0% | 0.0% | 0.0% |
| Social Marketing | 60.0% | 60.0% | 60.0% | 60.0% |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Public Sector | 30.0% | 30.0% | 30.0% | 30.0% |
| PPAG | 10.0% | 10.0% | 10.0% | 10.0% |
| Private Sector | 0.0% | 0.0% | 0.0% | 0.0% |
| Social Marketing | 60.0% | 60.0% | 60.0% | 60.0% |

| | 2005 |
|---|---|
| Public Sector | 30.0% |
| PPAG | 10.0% |
| Private Sector | 0.0% |
| Social Marketing | 60.0% |

---

Method: Female Sterilization

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Public Sector | 95.0% | 95.0% | 95.0% | 95.0% |
| Private Sector | 5.0% | 5.0% | 5.0% | 5.0% |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Public Sector | 95.0% | 95.0% | 95.0% | 95.0% |
| Private Sector | 5.0% | 5.0% | 5.0% | 5.0% |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Public Sector | 95.0% | 95.0% | 95.0% | 95.0% |
| Private Sector | 5.0% | 5.0% | 5.0% | 5.0% |

| | 2005 |
|---|---|
| Public Sector | 95.0% |
| Private Sector | 5.0% |

---

Method: Injectable

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Public Sector | 85.0% | 85.0% | 85.0% | 85.0% |
| PPAG | 15.0% | 15.0% | 15.0% | 15.0% |
| Private Sector | 0.0% | 0.0% | 0.0% | 0.0% |
| Social Marketing | 0.0% | 0.0% | 0.0% | 0.0% |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Public Sector | 85.0% | 85.0% | 85.0% | 85.0% |
| PPAG | 15.0% | 15.0% | 15.0% | 15.0% |
| Private Sector | 0.0% | 0.0% | 0.0% | 0.0% |
| Social Marketing | 0.0% | 0.0% | 0.0% | 0.0% |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Public Sector | 85.0% | 85.0% | 85.0% | 85.0% |
| PPAG | 15.0% | 15.0% | 15.0% | 15.0% |
| Private Sector | 0.0% | 0.0% | 0.0% | 0.0% |
| Social Marketing | 0.0% | 0.0% | 0.0% | 0.0% |

| | 2005 |
|---|---|
| Public Sector | 85.0% |
| PPAG | 15.0% |
| Private Sector | 0.0% |
| Social Marketing | 0.0% |

---

Method: IUD

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Public Sector | 100.0% | 100.0% | 100.0% | 100.0% |
| PPAG | 0.0% | 0.0% | 0.0% | 0.0% |
| Private Sector | 0.0% | 0.0% | 0.0% | 0.0% |
| Social Marketing | 0.0% | 0.0% | 0.0% | 0.0% |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Public Sector | 100.0% | 100.0% | 100.0% | 100.0% |
| PPAG | 0.0% | 0.0% | 0.0% | 0.0% |
| Private Sector | 0.0% | 0.0% | 0.0% | 0.0% |
| Social Marketing | 0.0% | 0.0% | 0.0% | 0.0% |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Public Sector | 100.0% | 100.0% | 100.0% | 100.0% |
| PPAG | 0.0% | 0.0% | 0.0% | 0.0% |
| Private Sector | 0.0% | 0.0% | 0.0% | 0.0% |
| Social Marketing | 0.0% | 0.0% | 0.0% | 0.0% |

| | 2005 |
|---|---|
| Public Sector | 100.0% |
| PPAG | 0.0% |
| Private Sector | 0.0% |
| Social Marketing | 0.0% |

---

Method: Norplant

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Public Sector | 100.0% | 100.0% | 100.0% | 100.0% |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Public Sector | 100.0% | 100.0% | 100.0% | 100.0% |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Public Sector | 100.0% | 100.0% | 100.0% | 100.0% |

| | 2005 |
|---|---|
| Public Sector | 100.0% |

---

Method: Oral

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Public Sector | 40.0% | 40.0% | 40.0% | 40.0% |
| PPAG | 20.0% | 20.0% | 20.0% | 20.0% |
| Private Sector | 0.0% | 0.0% | 0.0% | 0.0% |
| Social Marketing | 40.0% | 40.0% | 40.0% | 40.0% |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Public Sector | 40.0% | 40.0% | 40.0% | 40.0% |
| PPAG | 20.0% | 20.0% | 20.0% | 20.0% |
| Private Sector | 0.0% | 0.0% | 0.0% | 0.0% |
| Social Marketing | 40.0% | 40.0% | 40.0% | 40.0% |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Public Sector | 40.0% | 40.0% | 40.0% | 40.0% |
| PPAG | 20.0% | 20.0% | 20.0% | 20.0% |
| Private Sector | 0.0% | 0.0% | 0.0% | 0.0% |
| Social Marketing | 40.0% | 40.0% | 40.0% | 40.0% |

| | 2005 |
|---|---|
| Public Sector | 40.0% |
| PPAG | 20.0% |
| Private Sector | 0.0% |
| Social Marketing | 40.0% |

---

Method: Vaginal Tablets

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Public Sector | 30.0% | 30.0% | 30.0% | 30.0% |
| PPAG | 10.0% | 10.0% | 10.0% | 10.0% |
| Private Sector | 0.0% | 0.0% | 0.0% | 0.0% |
| Social Marketing | 60.0% | 60.0% | 60.0% | 60.0% |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Public Sector | 30.0% | 30.0% | 30.0% | 30.0% |
| PPAG | 10.0% | 10.0% | 10.0% | 10.0% |
| Private Sector | 0.0% | 0.0% | 0.0% | 0.0% |
| Social Marketing | 60.0% | 60.0% | 60.0% | 60.0% |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Public Sector | 30.0% | 30.0% | 30.0% | 30.0% |
| PPAG | 10.0% | 10.0% | 10.0% | 10.0% |
| Private Sector | 0.0% | 0.0% | 0.0% | 0.0% |
| Social Marketing | 60.0% | 60.0% | 60.0% | 60.0% |

| | 2005 |
|---|---|
| Public Sector | 30.0% |
| PPAG | 10.0% |
| Private Sector | 0.0% |
| Social Marketing | 60.0% |

---

==========COSTS PER USER==========

Method: Condom
Source: Public Sector

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.049 | 0.050 | 0.051 | 0.052 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.053 | 0.054 | 0.055 | 0.056 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.057 | 0.058 | 0.059 | 0.060 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 0.061 |
| Fee | 0.000 |

---

Method: Condom
Source: PPAG

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.049 | 0.050 | 0.051 | 0.052 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.053 | 0.054 | 0.055 | 0.056 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.057 | 0.058 | 0.059 | 0.060 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 0.061 |
| Fee | 0.000 |

---

Method: Condom
Source: Private Sector

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 0.000 |
| Fee | 0.000 |

---

Method: Condom
Source: Social Marketing

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.049 | 0.050 | 0.051 | 0.052 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.053 | 0.054 | 0.055 | 0.056 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.057 | 0.058 | 0.059 | 0.060 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 0.061 |
| Fee | 0.000 |

---

Method: Female Sterilization
Source: Public Sector

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 0.000 |
| Fee | 0.000 |

---

Method: Female Sterilization
Source: Private Sector

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 0.000 |
| Fee | 0.000 |

---

Method: Injectable
Source: Public Sector

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.000 | 1.021 | 1.042 | 1.063 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.083 | 1.104 | 1.125 | 1.146 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.167 | 1.188 | 1.208 | 1.229 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 1.250 |
| Fee | 0.000 |

---

Method: Injectable
Source: PPAG

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.000 | 1.021 | 1.042 | 1.063 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.083 | 1.104 | 1.125 | 1.146 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.167 | 1.188 | 1.208 | 1.229 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 1.250 |
| Fee | 0.000 |

---

Method: Injectable
Source: Private Sector

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 0.000 |
| Fee | 0.000 |

---

Method: Injectable
Source: Social Marketing

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.000 | 1.021 | 1.042 | 1.063 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.083 | 1.104 | 1.125 | 1.146 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.167 | 1.188 | 1.208 | 1.229 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 1.250 |
| Fee | 0.000 |

---

Method: IUD
Source: Public Sector

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.087 | 1.110 | 1.132 | 1.155 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.178 | 1.201 | 1.224 | 1.246 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.269 | 1.292 | 1.315 | 1.337 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 1.360 |
| Fee | 0.000 |

---

Method: IUD
Source: PPAG

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.087 | 1.110 | 1.132 | 1.155 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.178 | 1.201 | 1.224 | 1.246 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.269 | 1.292 | 1.315 | 1.337 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 1.360 |
| Fee | 0.000 |

---

Method: IUD
Source: Private Sector

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 0.000 |
| Fee | 0.000 |

---

Method: IUD
Source: Social Marketing

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.087 | 1.110 | 1.132 | 1.155 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.178 | 1.201 | 1.224 | 1.246 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.269 | 1.292 | 1.315 | 1.337 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 1.360 |
| Fee | 0.000 |

---

Method: Norplant
Source: Public Sector

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 23.120 | 23.602 | 24.083 | 24.565 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 25.047 | 25.528 | 26.010 | 26.492 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 26.973 | 27.455 | 27.937 | 28.418 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 28.900 |
| Fee | 0.000 |

---

Method: Oral
Source: Public Sector

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.178 | 0.182 | 0.186 | 0.190 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.194 | 0.198 | 0.202 | 0.205 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.209 | 0.213 | 0.217 | 0.221 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 0.225 |
| Fee | 0.000 |

---

Method: Oral
Source: PPAG

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.178 | 0.182 | 0.186 | 0.190 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.194 | 0.198 | 0.202 | 0.205 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.209 | 0.213 | 0.217 | 0.221 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 0.225 |
| Fee | 0.000 |

---

Method: Oral
Source: Private Sector

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 0.000 |
| Fee | 0.000 |

---

Method: Oral
Source: Social Marketing

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.270 | 0.276 | 0.281 | 0.287 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.292 | 0.298 | 0.303 | 0.309 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.315 | 0.320 | 0.326 | 0.331 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 0.337 |
| Fee | 0.000 |

---

Method: Vaginal Tablets
Source: Public Sector

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.101 | 0.103 | 0.105 | 0.107 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.109 | 0.111 | 0.114 | 0.116 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.118 | 0.120 | 0.122 | 0.124 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 0.126 |
| Fee | 0.000 |

---

Method: Vaginal Tablets
Source: PPAG

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.101 | 0.103 | 0.105 | 0.107 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.109 | 0.111 | 0.114 | 0.116 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.118 | 0.120 | 0.122 | 0.124 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 0.126 |
| Fee | 0.000 |

---

Method: Vaginal Tablets
Source: Private Sector

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 0.000 |
| Fee | 0.000 |

Method: Vaginal Tablets
Source: Social Marketing

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.101 | 0.103 | 0.105 | 0.107 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.109 | 0.111 | 0.114 | 0.116 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.118 | 0.120 | 0.122 | 0.124 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 0.126 |
| Fee | 0.000 |

END OF DATA FOR SCENARIO 1

Clinic _____ AGENCY _____

District _____

Region _____

Report to be submitted monthly to DHMT or quarterly to RHMT with copies to relevant agency

Inter-Agency

# FAMILY PLANNING

## Monthly / Quarterly Report

circle one = Clinic District Region

Month/Quarter = 19

DISTRICT & REGION ONLY

a. total clinics _____

b. w/ FP _____

c % w/ FP (#b/#a*100) _____ %

d reports expected

e reports received

f % reporting (#e/#d*100) _____ %

| Source of Supply (Insert as Appropriate) | | TOTAL | USAID | | | | | UNFPA | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BRAND/ METHOD = (Insert appropriate names) | | | Lo-Fem | Ovrette | Conceptrol | Condoms | IUCD | Micro-G | Micro-N | Sampoon | Depo | VSC |
| STOCK BALANCES | | | | | | | | | | | | |
| 1 | Beginning Balance | | | | | | | | | | | |
| 2 | Received | | | | | | | | | | | |
| 3 | Issued | | | | | | | | | | | |
| 4 | Transferred (Circle one) (MOH/GRMA/PPAG/CC/Priv/_____) | | | | | | | | | | | |
| 5 | Loss/Demonstration | | | | | | | | | | | |
| 6 | Ending Balance (line 1+2-3-4-5) (Check physical Stock) | | | | | | | | | | | |
| STOCK REQUIRED | | | | | | | | | | | | |
| 7 | Line 3+4+5 x number of months required (eg.SDHT x4; DHMT x6; RHMTx9) | | | | | | | | | | | |
| 8 | Quantity Required (line 7-6) | | | | | | | | | | | |
| FUNDS COLLECTED | | | | | | | | | | | | |
| 9 | Unit Price (Cedis) (If not an MOH agency, Insert agency price and skip to line 14) | | 15 | 15 | 12/25 | 2.5 | 100 | 15 | 15 | 1 | 40 | |
| 10 | USAID Cedis collected (line (3+4) x line 9) | | | | | | | | | | | |
| 11 | UNFPA Cedis Collected (line (3+4) x line 9) | | | | | | | | | | | |
| 12 | USAID Cedis retained (10 x 20 %) | | | | | | | | | | | |
| 13 | UNFPA Cedis retained (line 11 x 100%) | | | | | | | | | | | |
| 14 | Cedis submitted (lines 10+11-12-13) | | | | | | | | | | | |
| PROGRAMME PERFORMANCE | | | | | | | | | | | | |
| 15 | ACCEPTORS by METHOD (New + Continuing) | | | | | | | | | | | |
| 16 | TOTAL VISITS (from tally sheet) | | | | | | | | | | | |
| 17 | Couple Years of Protection | Total | line 4/13 | line 4/13 | line 4/100 | line 4/100 | line 4x2.5 | line 4/13 | line 4/13 | line 4/100 | line 4/4 | line 16 x 12.5 |

Signature _____ Title _____ DATE _____

MOH, bc 12/5/93

ATTACHMENT 3: INPUT PARAMETERS FOR TARGET MODEL FOR SCENARIO 2

ATTACHMENT 3: INPUT PARAMETERS FOR TARGET MODEL OF SCENARIO 2

Ghana: Scenario 2 
November 17, 1993 18:14:25 Target-Cost Model Version 1.14

==========PROGRAM PARAMETERS==========

| | |
|---|---|
| Title | Ghana: Scenario 2 |
| First Year | 1993 |
| Last Year | 2005 |
| Solve For | TFR |

==========METHOD MIX==========

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Condom | 39.9% | 38.1% | 36.2% | 34.4% |
| Female Sterilization | 2.0% | 2.4% | 2.9% | 3.3% |
| Injectable | 12.2% | 14.0% | 15.9% | 17.7% |
| IUD | 5.4% | 5.9% | 6.4% | 6.9% |
| Norplant | 0.0% | 0.1% | 0.3% | 0.4% |
| Oral | 33.8% | 32.8% | 31.9% | 30.9% |
| Vaginal Tablets | 6.3% | 6.3% | 6.2% | 6.2% |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Condom | 32.5% | 30.7% | 28.8% | 27.0% |
| Female Sterilization | 3.7% | 4.1% | 4.6% | 5.0% |
| Injectable | 19.5% | 21.3% | 23.2% | 25.0% |
| IUD | 7.5% | 8.0% | 8.5% | 9.0% |
| Norplant | 0.6% | 0.7% | 0.9% | 1.0% |
| Oral | 29.9% | 28.9% | 28.0% | 27.0% |
| Vaginal Tablets | 6.1% | 6.1% | 6.0% | 6.0% |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Condom | 27.0% | 27.0% | 27.0% | 27.0% |
| Female Sterilization | 5.0% | 5.0% | 5.0% | 5.0% |
| Injectable | 25.0% | 25.0% | 25.0% | 25.0% |
| IUD | 9.0% | 9.0% | 9.0% | 9.0% |
| Norplant | 1.0% | 1.0% | 1.0% | 1.0% |
| Oral | 27.0% | 27.0% | 27.0% | 27.0% |
| Vaginal Tablets | 6.0% | 6.0% | 6.0% | 6.0% |

| | 2005 |
|---|---|
| Condom | 27.0% |
| Female Sterilization | 5.0% |
| Injectable | 25.0% |
| IUD | 9.0% |
| Norplant | 1.0% |
| Oral | 27.0% |
| Vaginal Tablets | 6.0% |

==========PROXIMATE DETERMINANTS OF FERTILITY==========

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Number of WRA | 3543571 | 3684489 | 3825408 | 3966326 |
| % WRA Married | 68.1% | 67.8% | 67.5% | 67.2% |
| Post Partum | 13.1 mths | 12.9 mths | 12.7 mths | 12.5 mths |
| Total Abortion Rate | 0.0 | 0.0 | 0.0 | 0.0 |

| | | | | |
|---|---|---|---|---|
| Sterility | 3.0% | 3.0% | 3.0% | 3.0% |
| TFR | 6.0 | 5.9 | 5.8 | 5.7 |
| Prevalence | 14.8% | 16.3% | 17.7% | 19.2% |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Number of WRA | 4107245 | 4248163 | 4389082 | 4530000 |
| % WRA Married | 66.8% | 66.5% | 66.2% | 65.9% |
| Post Partum | 12.4 mths | 12.2 mths | 12.0 mths | 11.8 mths |
| Total Abortion Rate | 0.0 | 0.0 | 0.0 | 0.0 |
| Sterility | 3.0% | 3.0% | 3.0% | 3.0% |
| TFR | 5.6 | 5.5 | 5.4 | 5.3 |
| Prevalence | 20.6% | 22.1% | 23.5% | 25.0% |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Number of WRA | 4660000 | 4800000 | 4950000 | 5090000 |
| % WRA Married | 65.7% | 65.5% | 65.4% | 65.2% |
| Post Partum | 11.8 mths | 11.7 mths | 11.7 mths | 11.6 mths |
| Total Abortion Rate | 0.0 | 0.0 | 0.0 | 0.0 |
| Sterility | 3.0% | 3.0% | 3.0% | 3.0% |
| TFR | 5.2 | 5.2 | 5.1 | 5.0 |
| Prevalence | 26.0% | 27.0% | 28.0% | 29.0% |

| | 2005 |
|---|---|
| Number of WRA | 5350000 |
| % WRA Married | 65.0% |
| Post Partum | 11.6 mths |
| Total Abortion Rate | 0.0 |
| Sterility | 3.0% |
| TFR | 4.9 |
| Prevalence | 30.0% |

==========METHOD ATTRIBUTES==========

Method: Condom

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Effectiveness | 83.0% | 83.0% | 83.0% | 83.0% |
| Discontinuation | 40.0% | 40.0% | 40.0% | 40.0% |
| Average Age | 25.40 | 25.40 | 25.40 | 25.40 |
| Unit/CYP | 55.00 | 55.00 | 55.00 | 55.00 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Effectiveness | 83.0% | 83.0% | 83.0% | 83.0% |
| Discontinuation | 40.0% | 40.0% | 40.0% | 40.0% |
| Average Age | 25.40 | 25.40 | 25.40 | 25.40 |
| Unit/CYP | 55.00 | 55.00 | 55.00 | 55.00 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Effectiveness | 83.0% | 83.0% | 83.0% | 83.0% |
| Discontinuation | 40.0% | 40.0% | 40.0% | 40.0% |
| Average Age | 25.40 | 25.40 | 25.40 | 25.40 |
| Unit/CYP | 55.00 | 55.00 | 55.00 | 55.00 |

| | 2005 |
|---|---|
| Effectiveness | 83.0% |
| Discontinuation | 40.0% |
| Average Age | 25.40 |
| Unit/CYP | 55.00 |

Method: Female Sterilization

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Effectiveness | 100.0% | 100.0% | 100.0% | 100.0% |
| Discontinuation | 1.0% | 1.0% | 1.0% | 1.0% |
| Average Age | 30.50 | 30.50 | 30.50 | 30.50 |
| Percent 45-49 | 0.00% | 0.00% | 0.00% | 0.00% |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Effectiveness | 100.0% | 100.0% | 100.0% | 100.0% |
| Discontinuation | 1.0% | 1.0% | 1.0% | 1.0% |
| Average Age | 30.50 | 30.50 | 30.50 | 30.50 |
| Percent 45-49 | 0.00% | 0.00% | 0.00% | 0.00% |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Effectiveness | 100.0% | 100.0% | 100.0% | 100.0% |
| Discontinuation | 1.0% | 1.0% | 1.0% | 1.0% |
| Average Age | 30.50 | 30.50 | 30.50 | 30.50 |
| Percent 45-49 | 0.00% | 0.00% | 0.00% | 0.00% |

| | 2005 |
|---|---|
| Effectiveness | 100.0% |
| Discontinuation | 1.0% |
| Average Age | 30.50 |
| Percent 45-49 | 0.00% |

Method: Injectable

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Effectiveness | 98.0% | 98.0% | 98.0% | 98.0% |
| Discontinuation | 20.0% | 20.0% | 20.0% | 20.0% |
| Average Age | 35.80 | 35.80 | 35.80 | 35.80 |
| Unit/CYP | 4.00 | 4.00 | 4.00 | 4.00 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Effectiveness | 98.0% | 98.0% | 98.0% | 98.0% |
| Discontinuation | 20.0% | 20.0% | 20.0% | 20.0% |
| Average Age | 35.80 | 35.80 | 35.80 | 35.80 |
| Unit/CYP | 4.00 | 4.00 | 4.00 | 4.00 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Effectiveness | 98.0% | 98.0% | 98.0% | 98.0% |
| Discontinuation | 20.0% | 20.0% | 20.0% | 20.0% |
| Average Age | 35.80 | 35.80 | 35.80 | 35.80 |
| Unit/CYP | 4.00 | 4.00 | 4.00 | 4.00 |

| | 2005 |
|---|---|
| Effectiveness | 98.0% |
| Discontinuation | 20.0% |
| Average Age | 35.80 |
| Unit/CYP | 4.00 |

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Method: IUD

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Effectiveness | 97.0% | 97.0% | 97.0% | 97.0% |
| Discontinuation | 20.0% | 20.0% | 20.0% | 20.0% |
| Average Age | 35.70 | 35.70 | 35.70 | 35.70 |
| Unit/CYP | NA | NA | NA | NA |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Effectiveness | 97.0% | 97.0% | 97.0% | 97.0% |
| Discontinuation | 20.0% | 20.0% | 20.0% | 20.0% |
| Average Age | 35.70 | 35.70 | 35.70 | 35.70 |
| Unit/CYP | NA | NA | NA | NA |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Effectiveness | 97.0% | 97.0% | 97.0% | 97.0% |
| Discontinuation | 20.0% | 20.0% | 20.0% | 20.0% |
| Average Age | 35.70 | 35.70 | 35.70 | 35.70 |
| Unit/CYP | NA | NA | NA | NA |

| | 2005 |
|---|---|
| Effectiveness | 97.0% |
| Discontinuation | 20.0% |
| Average Age | 35.70 |
| Unit/CYP | NA |

Method: Norplant

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Effectiveness | 98.0% | 98.0% | 98.0% | 98.0% |
| Discontinuation | 20.0% | 20.0% | 20.0% | 20.0% |
| Average Age | 0.00 | 0.00 | 0.00 | 0.00 |
| Unit/CYP | NA | NA | NA | NA |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Effectiveness | 98.0% | 98.0% | 98.0% | 98.0% |
| Discontinuation | 20.0% | 20.0% | 20.0% | 20.0% |
| Average Age | 0.00 | 0.00 | 0.00 | 0.00 |
| Unit/CYP | NA | NA | NA | NA |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Effectiveness | 98.0% | 98.0% | 98.0% | 98.0% |
| Discontinuation | 20.0% | 20.0% | 20.0% | 20.0% |
| Average Age | 0.00 | 0.00 | 0.00 | 0.00 |
| Unit/CYP | NA | NA | NA | NA |

| | 2005 |
|---|---|
| Effectiveness | 98.0% |
| Discontinuation | 20.0% |
| Average Age | 0.00 |
| Unit/CYP | NA |

Method: Oral

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Effectiveness | 94.0% | 94.0% | 94.0% | 94.0% |
| Discontinuation | 20.0% | 20.0% | 20.0% | 20.0% |
| Average Age | 31.00 | 31.00 | 31.00 | 31.00 |
| Unit/CYP | 15.00 | 15.00 | 15.00 | 15.00 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Effectiveness | 94.0% | 94.0% | 94.0% | 94.0% |
| Discontinuation | 20.0% | 20.0% | 20.0% | 20.0% |
| Average Age | 31.00 | 31.00 | 31.00 | 31.00 |
| Unit/CYP | 15.00 | 15.00 | 15.00 | 15.00 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Effectiveness | 94.0% | 94.0% | 94.0% | 94.0% |
| Discontinuation | 20.0% | 20.0% | 20.0% | 20.0% |
| Average Age | 31.00 | 31.00 | 31.00 | 31.00 |
| Unit/CYP | 15.00 | 15.00 | 15.00 | 15.00 |

| | 2005 |
|---|---|
| Effectiveness | 94.0% |
| Discontinuation | 20.0% |
| Average Age | 31.00 |
| Unit/CYP | 15.00 |

Method: Vaginal Tablets

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Effectiveness | 83.0% | 83.0% | 83.0% | 83.0% |
| Discontinuation | 60.0% | 60.0% | 60.0% | 60.0% |
| Average Age | 0.00 | 0.00 | 0.00 | 0.00 |
| Unit/CYP | 150.00 | 150.00 | 150.00 | 150.00 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Effectiveness | 83.0% | 83.0% | 83.0% | 83.0% |
| Discontinuation | 60.0% | 60.0% | 60.0% | 60.0% |
| Average Age | 0.00 | 0.00 | 0.00 | 0.00 |
| Unit/CYP | 150.00 | 150.00 | 150.00 | 150.00 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Effectiveness | 83.0% | 83.0% | 83.0% | 83.0% |
| Discontinuation | 60.0% | 60.0% | 60.0% | 60.0% |
| Average Age | 0.00 | 0.00 | 0.00 | 0.00 |
| Unit/CYP | 150.00 | 150.00 | 150.00 | 150.00 |

| | 2005 |
|---|---|
| Effectiveness | 83.0% |
| Discontinuation | 60.0% |
| Average Age | 0.00 |
| Unit/CYP | 150.00 |

==========SOURCE DISTRIBUTION==========

Method: Condom

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Public Sector | 30.0% | 30.0% | 30.0% | 30.0% |
| PPAG | 10.0% | 10.0% | 10.0% | 10.0% |
| Private Sector | 0.0% | 0.0% | 0.0% | 0.0% |
| Social Marketing | 60.0% | 60.0% | 60.0% | 60.0% |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Public Sector | 30.0% | 30.0% | 30.0% | 30.0% |
| PPAG | 10.0% | 10.0% | 10.0% | 10.0% |
| Private Sector | 0.0% | 0.0% | 0.0% | 0.0% |
| Social Marketing | 60.0% | 60.0% | 60.0% | 60.0% |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Public Sector | 30.0% | 30.0% | 30.0% | 30.0% |
| PPAG | 10.0% | 10.0% | 10.0% | 10.0% |
| Private Sector | 0.0% | 0.0% | 0.0% | 0.0% |
| Social Marketing | 60.0% | 60.0% | 60.0% | 60.0% |

| | 2005 |
|---|---|
| Public Sector | 30.0% |
| PPAG | 10.0% |
| Private Sector | 0.0% |
| Social Marketing | 60.0% |

---

Method: Female Sterilization

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Public Sector | 95.0% | 95.0% | 95.0% | 95.0% |
| Private Sector | 5.0% | 5.0% | 5.0% | 5.0% |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Public Sector | 95.0% | 95.0% | 95.0% | 95.0% |
| Private Sector | 5.0% | 5.0% | 5.0% | 5.0% |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Public Sector | 95.0% | 95.0% | 95.0% | 95.0% |
| Private Sector | 5.0% | 5.0% | 5.0% | 5.0% |

| | 2005 |
|---|---|
| Public Sector | 95.0% |
| Private Sector | 5.0% |

---

Method: Injectable

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Public Sector | 85.0% | 85.0% | 85.0% | 85.0% |
| PPAG | 15.0% | 15.0% | 15.0% | 15.0% |
| Private Sector | 0.0% | 0.0% | 0.0% | 0.0% |
| Social Marketing | 0.0% | 0.0% | 0.0% | 0.0% |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Public Sector | 85.0% | 85.0% | 85.0% | 85.0% |
| PPAG | 15.0% | 15.0% | 15.0% | 15.0% |
| Private Sector | 0.0% | 0.0% | 0.0% | 0.0% |
| Social Marketing | 0.0% | 0.0% | 0.0% | 0.0% |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Public Sector | 85.0% | 85.0% | 85.0% | 85.0% |
| PPAG | 15.0% | 15.0% | 15.0% | 15.0% |
| Private Sector | 0.0% | 0.0% | 0.0% | 0.0% |
| Social Marketing | 0.0% | 0.0% | 0.0% | 0.0% |

| | 2005 |
|---|---|
| Public Sector | 85.0% |
| PPAG | 15.0% |
| Private Sector | 0.0% |
| Social Marketing | 0.0% |

---

Method: IUD

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Public Sector | 100.0% | 100.0% | 100.0% | 100.0% |
| PPAG | 0.0% | 0.0% | 0.0% | 0.0% |
| Private Sector | 0.0% | 0.0% | 0.0% | 0.0% |
| Social Marketing | 0.0% | 0.0% | 0.0% | 0.0% |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Public Sector | 100.0% | 100.0% | 100.0% | 100.0% |
| PPAG | 0.0% | 0.0% | 0.0% | 0.0% |
| Private Sector | 0.0% | 0.0% | 0.0% | 0.0% |
| Social Marketing | 0.0% | 0.0% | 0.0% | 0.0% |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Public Sector | 100.0% | 100.0% | 100.0% | 100.0% |
| PPAG | 0.0% | 0.0% | 0.0% | 0.0% |
| Private Sector | 0.0% | 0.0% | 0.0% | 0.0% |
| Social Marketing | 0.0% | 0.0% | 0.0% | 0.0% |

| | 2005 |
|---|---|
| Public Sector | 100.0% |
| PPAG | 0.0% |
| Private Sector | 0.0% |
| Social Marketing | 0.0% |

---

Method: Norplant

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Public Sector | 100.0% | 100.0% | 100.0% | 100.0% |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Public Sector | 100.0% | 100.0% | 100.0% | 100.0% |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Public Sector | 100.0% | 100.0% | 100.0% | 100.0% |

| | 2005 |
|---|---|
| Public Sector | 100.0% |

---

Method: Oral

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Public Sector | 40.0% | 40.0% | 40.0% | 40.0% |
| PPAG | 20.0% | 20.0% | 20.0% | 20.0% |
| Private Sector | 0.0% | 0.0% | 0.0% | 0.0% |
| Social Marketing | 40.0% | 40.0% | 40.0% | 40.0% |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Public Sector | 40.0% | 40.0% | 40.0% | 40.0% |
| PPAG | 20.0% | 20.0% | 20.0% | 20.0% |
| Private Sector | 0.0% | 0.0% | 0.0% | 0.0% |
| Social Marketing | 40.0% | 40.0% | 40.0% | 40.0% |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Public Sector | 40.0% | 40.0% | 40.0% | 40.0% |
| PPAG | 20.0% | 20.0% | 20.0% | 20.0% |
| Private Sector | 0.0% | 0.0% | 0.0% | 0.0% |
| Social Marketing | 40.0% | 40.0% | 40.0% | 40.0% |

| | 2005 |
|---|---|
| Public Sector | 40.0% |
| PPAG | 20.0% |
| Private Sector | 0.0% |
| Social Marketing | 40.0% |

---

Method: Vaginal Tablets

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Public Sector | 30.0% | 30.0% | 30.0% | 30.0% |
| PPAG | 10.0% | 10.0% | 10.0% | 10.0% |
| Private Sector | 0.0% | 0.0% | 0.0% | 0.0% |
| Social Marketing | 60.0% | 60.0% | 60.0% | 60.0% |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Public Sector | 30.0% | 30.0% | 30.0% | 30.0% |
| PPAG | 10.0% | 10.0% | 10.0% | 10.0% |
| Private Sector | 0.0% | 0.0% | 0.0% | 0.0% |
| Social Marketing | 60.0% | 60.0% | 60.0% | 60.0% |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Public Sector | 30.0% | 30.0% | 30.0% | 30.0% |
| PPAG | 10.0% | 10.0% | 10.0% | 10.0% |
| Private Sector | 0.0% | 0.0% | 0.0% | 0.0% |
| Social Marketing | 60.0% | 60.0% | 60.0% | 60.0% |

| | 2005 |
|---|---|
| Public Sector | 30.0% |
| PPAG | 10.0% |
| Private Sector | 0.0% |
| Social Marketing | 60.0% |

---

==========COSTS PER USER==========

Method: Condom
Source: Public Sector

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.049 | 0.050 | 0.051 | 0.052 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.053 | 0.054 | 0.055 | 0.056 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.057 | 0.058 | 0.059 | 0.060 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 0.061 |
| Fee | 0.000 |

---

Method: Condom
Source: PPAG

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.049 | 0.050 | 0.051 | 0.052 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.053 | 0.054 | 0.055 | 0.056 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.057 | 0.058 | 0.059 | 0.060 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

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| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 0.061 |
| Fee | 0.000 |

---

Method: Condom
Source: Private Sector

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 0.000 |
| Fee | 0.000 |

---

Method: Condom
Source: Social Marketing

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.049 | 0.050 | 0.051 | 0.052 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.053 | 0.054 | 0.055 | 0.056 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.057 | 0.058 | 0.059 | 0.060 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 0.061 |
| Fee | 0.000 |

---

Method: Female Sterilization
Source: Public Sector

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 0.000 |
| Fee | 0.000 |

---

Method: Female Sterilization
Source: Private Sector

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 0.000 |
| Fee | 0.000 |

---

Method: Injectable
Source: Public Sector

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.000 | 1.021 | 1.042 | 1.063 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.083 | 1.104 | 1.125 | 1.146 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.167 | 1.188 | 1.208 | 1.229 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 1.250 |
| Fee | 0.000 |

---

Method: Injectable
Source: PPAG

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.000 | 1.021 | 1.042 | 1.063 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.083 | 1.104 | 1.125 | 1.146 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.167 | 1.188 | 1.208 | 1.229 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 1.250 |
| Fee | 0.000 |

---

Method: Injectable
Source: Private Sector

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 0.000 |
| Fee | 0.000 |

---

Method: Injectable
Source: Social Marketing

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.000 | 1.021 | 1.042 | 1.063 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.083 | 1.104 | 1.125 | 1.146 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.167 | 1.188 | 1.208 | 1.229 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 1.250 |
| Fee | 0.000 |

---

Method: IUD
Source: Public Sector

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.087 | 1.110 | 1.132 | 1.155 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.178 | 1.201 | 1.224 | 1.246 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.269 | 1.292 | 1.315 | 1.337 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

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| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 1.360 |
| Fee | 0.000 |

---

Method: IUD
Source: PPAG

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.087 | 1.110 | 1.132 | 1.155 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.178 | 1.201 | 1.224 | 1.246 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.269 | 1.292 | 1.315 | 1.337 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 1.360 |
| Fee | 0.000 |

---

Method: IUD
Source: Private Sector

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 0.000 |
| Fee | 0.000 |

---

Method: IUD
Source: Social Marketing

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.087 | 1.110 | 1.132 | 1.155 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.178 | 1.201 | 1.224 | 1.246 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.269 | 1.292 | 1.315 | 1.337 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 1.360 |
| Fee | 0.000 |

---

Method: Norplant
Source: Public Sector

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 23.120 | 23.602 | 24.083 | 24.565 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 25.047 | 25.528 | 26.010 | 26.492 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 26.973 | 27.455 | 27.937 | 28.418 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 28.900 |
| Fee | 0.000 |

---

Method: Oral
Source: Public Sector

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.178 | 0.182 | 0.186 | 0.190 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.194 | 0.198 | 0.202 | 0.205 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.209 | 0.213 | 0.217 | 0.221 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 0.225 |
| Fee | 0.000 |

---

Method: Oral
Source: PPAG

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.178 | 0.182 | 0.186 | 0.190 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.194 | 0.198 | 0.202 | 0.205 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.209 | 0.213 | 0.217 | 0.221 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 0.225 |
| Fee | 0.000 |

---

Method: Oral
Source: Private Sector

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 0.000 |
| Fee | 0.000 |

---

Method: Oral
Source: Social Marketing

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.270 | 0.276 | 0.281 | 0.287 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.292 | 0.298 | 0.303 | 0.309 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.315 | 0.320 | 0.326 | 0.331 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 0.337 |
| Fee | 0.000 |

---

Method: Vaginal Tablets
Source: Public Sector

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.101 | 0.103 | 0.105 | 0.107 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.109 | 0.111 | 0.114 | 0.116 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.118 | 0.120 | 0.122 | 0.124 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

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| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 0.126 |
| Fee | 0.000 |

---

Method: Vaginal Tablets
Source: PPAG

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.101 | 0.103 | 0.105 | 0.107 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.109 | 0.111 | 0.114 | 0.116 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.118 | 0.120 | 0.122 | 0.124 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 0.126 |
| Fee | 0.000 |

---

Method: Vaginal Tablets
Source: Private Sector

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 0.000 |
| Fee | 0.000 |

Method: Vaginal Tablets
Source: Social Marketing

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.101 | 0.103 | 0.105 | 0.107 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.109 | 0.111 | 0.114 | 0.116 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.118 | 0.120 | 0.122 | 0.124 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 0.126 |
| Fee | 0.000 |

**END OF DATA FOR SCENARIO 2**

ATTACHMENT 4: INPUT PARAMETERS FOR TARGET MODEL FOR SCENARIO 3

ATTACHMENT 4: INPUT PARAMETERS FOR TARGET MODEL FOR SCENARIO 3

Ghana: Scenario 3
November 17, 1993 18:33:24 Target-Cost Model Version 1.14



==========PROGRAM PARAMETERS==========

| | |
|---|---|
| Title | Ghana: Scenario 3 |
| First Year | 1993 |
| Last Year | 2005 |
| Solve For | TFR |

==========METHOD MIX==========

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Condom | 39.9% | 39.5% | 39.1% | 38.7% |
| Female Sterilization | 2.0% | 2.4% | 2.9% | 3.3% |
| Injectable | 12.2% | 13.1% | 14.0% | 14.9% |
| IUD | 5.4% | 5.5% | 5.7% | 5.8% |
| Norplant | 0.0% | 0.1% | 0.3% | 0.4% |
| Oral | 33.8% | 32.9% | 32.0% | 31.1% |
| Vaginal Tablets | 6.3% | 6.4% | 6.1% | 5.8% |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Condom | 38.3% | 37.9% | 37.5% | 37.0% |
| Female Sterilization | 3.7% | 4.1% | 4.6% | 5.0% |
| Injectable | 15.8% | 16.7% | 17.6% | 18.5% |
| IUD | 5.9% | 6.1% | 6.2% | 6.3% |
| Norplant | 0.6% | 0.7% | 0.9% | 1.0% |
| Oral | 30.2% | 29.3% | 28.4% | 27.2% |
| Vaginal Tablets | 5.5% | 5.2% | 4.9% | 4.9% |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Condom | 36.6% | 36.2% | 35.8% | 35.4% |
| Female Sterilization | 5.0% | 5.0% | 5.0% | 5.0% |
| Injectable | 19.4% | 20.3% | 21.2% | 22.1% |
| IUD | 6.5% | 6.6% | 6.7% | 6.9% |
| Norplant | 1.0% | 1.0% | 1.0% | 1.0% |
| Oral | 26.6% | 26.0% | 25.4% | 24.7% |
| Vaginal Tablets | 4.9% | 4.9% | 4.9% | 4.9% |

| | 2005 |
|---|---|
| Condom | 35.0% |
| Female Sterilization | 5.0% |
| Injectable | 23.0% |
| IUD | 7.0% |
| Norplant | 1.0% |
| Oral | 24.1% |
| Vaginal Tablets | 4.9% |

==========PROXIMATE DETERMINANTS OF FERTILITY==========

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Number of WRA | 3543571 | 3684489 | 3825408 | 3966326 |
| % WRA Married | 68.1% | 67.8% | 67.5% | 67.2% |
| Post Partum | 13.1 mths | 12.9 mths | 12.7 mths | 12.5 mths |
| Total Abortion Rate | 0.0 | 0.0 | 0.0 | 0.0 |

| | | | | |
|---|---|---|---|---|
| Sterility | 3.0% | 3.0% | 3.0% | 3.0% |
| TFR | 6.0 | 5.9 | 5.8 | 5.7 |
| Prevalence | 14.8% | 16.3% | 17.7% | 19.2% |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Number of WRA | 4107245 | 4248163 | 4389082 | 4530000 |
| % WRA Married | 66.8% | 66.5% | 66.2% | 65.9% |
| Post Partum | 12.4 mths | 12.2 mths | 12.0 mths | 11.8 mths |
| Total Abortion Rate | 0.0 | 0.0 | 0.0 | 0.0 |
| Sterility | 3.0% | 3.0% | 3.0% | 3.0% |
| TFR | 5.6 | 5.5 | 5.4 | 5.3 |
| Prevalence | 20.6% | 22.1% | 23.5% | 25.0% |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Number of WRA | 4660000 | 4800000 | 4950000 | 5090000 |
| % WRA Married | 65.7% | 65.5% | 65.4% | 65.2% |
| Post Partum | 11.8 mths | 11.7 mths | 11.7 mths | 11.6 mths |
| Total Abortion Rate | 0.0 | 0.0 | 0.0 | 0.0 |
| Sterility | 3.0% | 3.0% | 3.0% | 3.0% |
| TFR | 5.3 | 5.2 | 5.1 | 5.0 |
| Prevalence | 26.0% | 27.0% | 28.0% | 29.0% |

| | 2005 |
|---|---|
| Number of WRA | 5350000 |
| % WRA Married | 65.0% |
| Post Partum | 11.6 mths |
| Total Abortion Rate | 0.0 |
| Sterility | 3.0% |
| TFR | 4.9 |
| Prevalence | 30.0% |

==========METHOD ATTRIBUTES==========

Method: Condom

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Effectiveness | 83.0% | 83.0% | 83.0% | 83.0% |
| Discontinuation | 40.0% | 40.0% | 40.0% | 40.0% |
| Average Age | 25.40 | 25.40 | 25.40 | 25.40 |
| Unit/CYP | 55.00 | 56.25 | 57.50 | 58.75 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Effectiveness | 83.0% | 83.0% | 83.0% | 83.0% |
| Discontinuation | 40.0% | 40.0% | 40.0% | 40.0% |
| Average Age | 25.40 | 25.40 | 25.40 | 25.40 |
| Unit/CYP | 60.00 | 61.25 | 62.50 | 63.75 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Effectiveness | 83.0% | 83.0% | 83.0% | 83.0% |
| Discontinuation | 40.0% | 40.0% | 40.0% | 40.0% |
| Average Age | 25.40 | 25.40 | 25.40 | 25.40 |
| Unit/CYP | 65.00 | 66.25 | 67.50 | 68.75 |

| | 2005 |
|---|---|
| Effectiveness | 83.0% |
| Discontinuation | 40.0% |
| Average Age | 25.40 |
| Unit/CYP | 70.00 |

Method: Female Sterilization

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Effectiveness | 100.0% | 100.0% | 100.0% | 100.0% |
| Discontinuation | 1.0% | 1.0% | 1.0% | 1.0% |
| Average Age | 30.50 | 30.50 | 30.50 | 30.50 |
| Percent 45-49 | 0.00% | 0.00% | 0.00% | 0.00% |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Effectiveness | 100.0% | 100.0% | 100.0% | 100.0% |
| Discontinuation | 1.0% | 1.0% | 1.0% | 1.0% |
| Average Age | 30.50 | 30.50 | 30.50 | 30.50 |
| Percent 45-49 | 0.00% | 0.00% | 0.00% | 0.00% |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Effectiveness | 100.0% | 100.0% | 100.0% | 100.0% |
| Discontinuation | 1.0% | 1.0% | 1.0% | 1.0% |
| Average Age | 30.50 | 30.50 | 30.50 | 30.50 |
| Percent 45-49 | 0.00% | 0.00% | 0.00% | 0.00% |

| | 2005 |
|---|---|
| Effectiveness | 100.0% |
| Discontinuation | 1.0% |
| Average Age | 30.50 |
| Percent 45-49 | 0.00% |

Method: Injectable

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Effectiveness | 98.0% | 98.0% | 98.0% | 98.0% |
| Discontinuation | 20.0% | 20.0% | 20.0% | 20.0% |
| Average Age | 35.80 | 35.80 | 35.80 | 35.80 |
| Unit/CYP | 4.00 | 4.00 | 4.00 | 4.00 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Effectiveness | 98.0% | 98.0% | 98.0% | 98.0% |
| Discontinuation | 20.0% | 20.0% | 20.0% | 20.0% |
| Average Age | 35.80 | 35.80 | 35.80 | 35.80 |
| Unit/CYP | 4.00 | 4.00 | 4.00 | 4.00 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Effectiveness | 98.0% | 98.0% | 98.0% | 98.0% |
| Discontinuation | 20.0% | 20.0% | 20.0% | 20.0% |
| Average Age | 35.80 | 35.80 | 35.80 | 35.80 |
| Unit/CYP | 4.00 | 4.00 | 4.00 | 4.00 |

| | 2005 |
|---|---|
| Effectiveness | 98.0% |
| Discontinuation | 20.0% |
| Average Age | 35.80 |
| Unit/CYP | 4.00 |

Method: IUD

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Effectiveness | 97.0% | 97.0% | 97.0% | 97.0% |
| Discontinuation | 20.0% | 20.0% | 20.0% | 20.0% |
| Average Age | 35.70 | 35.70 | 35.70 | 35.70 |
| Unit/CYP | NA | NA | NA | NA |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Effectiveness | 97.0% | 97.0% | 97.0% | 97.0% |
| Discontinuation | 20.0% | 20.0% | 20.0% | 20.0% |
| Average Age | 35.70 | 35.70 | 35.70 | 35.70 |
| Unit/CYP | NA | NA | NA | NA |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Effectiveness | 97.0% | 97.0% | 97.0% | 97.0% |
| Discontinuation | 20.0% | 20.0% | 20.0% | 20.0% |
| Average Age | 35.70 | 35.70 | 35.70 | 35.70 |
| Unit/CYP | NA | NA | NA | NA |

| | 2005 |
|---|---|
| Effectiveness | 97.0% |
| Discontinuation | 20.0% |
| Average Age | 35.70 |
| Unit/CYP | NA |

Method: Norplant

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Effectiveness | 98.0% | 98.0% | 98.0% | 98.0% |
| Discontinuation | 20.0% | 20.0% | 20.0% | 20.0% |
| Average Age | 0.00 | 0.00 | 0.00 | 0.00 |
| Unit/CYP | NA | NA | NA | NA |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Effectiveness | 98.0% | 98.0% | 98.0% | 98.0% |
| Discontinuation | 20.0% | 20.0% | 20.0% | 20.0% |
| Average Age | 0.00 | 0.00 | 0.00 | 0.00 |
| Unit/CYP | NA | NA | NA | NA |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Effectiveness | 98.0% | 98.0% | 98.0% | 98.0% |
| Discontinuation | 20.0% | 20.0% | 20.0% | 20.0% |
| Average Age | 0.00 | 0.00 | 0.00 | 0.00 |
| Unit/CYP | NA | NA | NA | NA |

| | 2005 |
|---|---|
| Effectiveness | 98.0% |
| Discontinuation | 20.0% |
| Average Age | 0.00 |
| Unit/CYP | NA |

---

Method: Oral

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Effectiveness | 94.0% | 94.0% | 94.0% | 94.0% |
| Discontinuation | 20.0% | 20.0% | 20.0% | 20.0% |
| Average Age | 31.00 | 31.00 | 31.00 | 31.00 |
| Unit/CYP | 15.00 | 15.00 | 15.00 | 15.00 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Effectiveness | 94.0% | 94.0% | 94.0% | 94.0% |
| Discontinuation | 20.0% | 20.0% | 20.0% | 20.0% |
| Average Age | 31.00 | 31.00 | 31.00 | 31.00 |
| Unit/CYP | 15.00 | 15.00 | 15.00 | 15.00 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Effectiveness | 94.0% | 94.0% | 94.0% | 94.0% |
| Discontinuation | 20.0% | 20.0% | 20.0% | 20.0% |
| Average Age | 31.00 | 31.00 | 31.00 | 31.00 |
| Unit/CYP | 15.00 | 15.00 | 15.00 | 15.00 |

| | 2005 |
|---|---|
| Effectiveness | 94.0% |
| Discontinuation | 20.0% |
| Average Age | 31.00 |
| Unit/CYP | 15.00 |

---

Method: Vaginal Tablets

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Effectiveness | 83.0% | 83.0% | 83.0% | 83.0% |
| Discontinuation | 60.0% | 60.0% | 60.0% | 60.0% |
| Average Age | 0.00 | 0.00 | 0.00 | 0.00 |
| Unit/CYP | 150.00 | 150.00 | 150.00 | 150.00 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Effectiveness | 83.0% | 83.0% | 83.0% | 83.0% |
| Discontinuation | 60.0% | 60.0% | 60.0% | 60.0% |
| Average Age | 0.00 | 0.00 | 0.00 | 0.00 |
| Unit/CYP | 150.00 | 150.00 | 150.00 | 150.00 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Effectiveness | 83.0% | 83.0% | 83.0% | 83.0% |
| Discontinuation | 60.0% | 60.0% | 60.0% | 60.0% |
| Average Age | 0.00 | 0.00 | 0.00 | 0.00 |
| Unit/CYP | 150.00 | 150.00 | 150.00 | 150.00 |

| | 2005 |
|---|---|
| Effectiveness | 83.0% |
| Discontinuation | 60.0% |
| Average Age | 0.00 |
| Unit/CYP | 150.00 |

==========SOURCE DISTRIBUTION==========

Method: Condom

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Public Sector | 30.0% | 29.6% | 29.2% | 28.8% |
| PPAG | 10.0% | 10.0% | 10.0% | 10.0% |
| Private Sector | 0.0% | 0.4% | 0.8% | 1.3% |
| Social Marketing | 60.0% | 60.0% | 60.0% | 60.0% |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Public Sector | 28.3% | 27.9% | 27.5% | 27.1% |
| PPAG | 10.0% | 10.0% | 10.0% | 10.0% |
| Private Sector | 1.7% | 2.1% | 2.5% | 2.9% |
| Social Marketing | 60.0% | 60.0% | 60.0% | 60.0% |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Public Sector | 26.7% | 26.2% | 25.8% | 25.4% |
| PPAG | 10.0% | 10.0% | 10.0% | 10.0% |
| Private Sector | 3.3% | 3.8% | 4.2% | 4.6% |
| Social Marketing | 60.0% | 60.0% | 60.0% | 60.0% |

| | 2005 |
|---|---|
| Public Sector | 25.0% |
| PPAG | 10.0% |
| Private Sector | 5.0% |
| Social Marketing | 60.0% |

---

Method: Female Sterilization

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Public Sector | 95.0% | 95.0% | 95.0% | 95.0% |
| Private Sector | 5.0% | 5.0% | 5.0% | 5.0% |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Public Sector | 95.0% | 95.0% | 95.0% | 95.0% |
| Private Sector | 5.0% | 5.0% | 5.0% | 5.0% |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Public Sector | 95.0% | 95.0% | 95.0% | 95.0% |
| Private Sector | 5.0% | 5.0% | 5.0% | 5.0% |

| | 2005 |
|---|---|
| Public Sector | 95.0% |
| Private Sector | 5.0% |

---

Method: Injectable

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Public Sector | 85.0% | 85.0% | 85.0% | 85.0% |
| PPAG | 15.0% | 15.0% | 15.0% | 15.0% |
| Private Sector | 0.0% | 0.0% | 0.0% | 0.0% |
| Social Marketing | 0.0% | 0.0% | 0.0% | 0.0% |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Public Sector | 85.0% | 85.0% | 85.0% | 85.0% |
| PPAG | 15.0% | 15.0% | 15.0% | 15.0% |
| Private Sector | 0.0% | 0.0% | 0.0% | 0.0% |
| Social Marketing | 0.0% | 0.0% | 0.0% | 0.0% |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Public Sector | 85.0% | 85.0% | 85.0% | 85.0% |
| PPAG | 15.0% | 15.0% | 15.0% | 15.0% |
| Private Sector | 0.0% | 0.0% | 0.0% | 0.0% |
| Social Marketing | 0.0% | 0.0% | 0.0% | 0.0% |

| | 2005 |
|---|---|
| Public Sector | 85.0% |
| PPAG | 15.0% |
| Private Sector | 0.0% |
| Social Marketing | 0.0% |

---

Method: IUD

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Public Sector | 100.0% | 100.0% | 100.0% | 100.0% |
| PPAG | 0.0% | 0.0% | 0.0% | 0.0% |
| Private Sector | 0.0% | 0.0% | 0.0% | 0.0% |
| Social Marketing | 0.0% | 0.0% | 0.0% | 0.0% |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Public Sector | 100.0% | 100.0% | 100.0% | 100.0% |
| PPAG | 0.0% | 0.0% | 0.0% | 0.0% |
| Private Sector | 0.0% | 0.0% | 0.0% | 0.0% |
| Social Marketing | 0.0% | 0.0% | 0.0% | 0.0% |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Public Sector | 100.0% | 100.0% | 100.0% | 100.0% |
| PPAG | 0.0% | 0.0% | 0.0% | 0.0% |
| Private Sector | 0.0% | 0.0% | 0.0% | 0.0% |
| Social Marketing | 0.0% | 0.0% | 0.0% | 0.0% |

| | 2005 |
|---|---|
| Public Sector | 100.0% |
| PPAG | 0.0% |
| Private Sector | 0.0% |
| Social Marketing | 0.0% |

---

Method: Norplant

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Public Sector | 100.0% | 100.0% | 100.0% | 100.0% |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Public Sector | 100.0% | 100.0% | 100.0% | 100.0% |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Public Sector | 100.0% | 100.0% | 100.0% | 100.0% |

| | 2005 |
|---|---|
| Public Sector | 100.0% |

---

Method: Oral

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Public Sector | 40.0% | 39.9% | 39.8% | 39.7% |
| PPAG | 20.0% | 20.0% | 20.0% | 20.0% |
| Private Sector | 0.0% | 0.1% | 0.2% | 0.3% |
| Social Marketing | 40.0% | 40.0% | 40.0% | 40.0% |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Public Sector | 39.7% | 39.6% | 39.5% | 39.4% |
| PPAG | 20.0% | 20.0% | 20.0% | 20.0% |
| Private Sector | 0.3% | 0.4% | 0.5% | 0.6% |
| Social Marketing | 40.0% | 40.0% | 40.0% | 40.0% |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Public Sector | 39.3% | 39.2% | 39.2% | 39.1% |
| PPAG | 20.0% | 20.0% | 20.0% | 20.0% |
| Private Sector | 0.7% | 0.8% | 0.8% | 0.9% |
| Social Marketing | 40.0% | 40.0% | 40.0% | 40.0% |

| | 2005 |
|---|---|
| Public Sector | 39.0% |
| PPAG | 20.0% |
| Private Sector | 1.0% |
| Social Marketing | 40.0% |

---

Method: Vaginal Tablets

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Public Sector | 30.0% | 30.0% | 30.0% | 30.0% |
| PPAG | 10.0% | 10.0% | 10.0% | 10.0% |
| Private Sector | 0.0% | 0.0% | 0.0% | 0.0% |
| Social Marketing | 60.0% | 60.0% | 60.0% | 60.0% |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Public Sector | 30.0% | 30.0% | 30.0% | 30.0% |
| PPAG | 10.0% | 10.0% | 10.0% | 10.0% |
| Private Sector | 0.0% | 0.0% | 0.0% | 0.0% |
| Social Marketing | 60.0% | 60.0% | 60.0% | 60.0% |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Public Sector | 30.0% | 30.0% | 30.0% | 30.0% |
| PPAG | 10.0% | 10.0% | 10.0% | 10.0% |
| Private Sector | 0.0% | 0.0% | 0.0% | 0.0% |
| Social Marketing | 60.0% | 60.0% | 60.0% | 60.0% |

| | 2005 |
|---|---|
| Public Sector | 30.0% |
| PPAG | 10.0% |
| Private Sector | 0.0% |
| Social Marketing | 60.0% |

---

==========COSTS PER USER==========

Method: Condom
Source: Public Sector

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.049 | 0.050 | 0.051 | 0.052 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.053 | 0.054 | 0.055 | 0.056 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.057 | 0.058 | 0.059 | 0.060 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 0.061 |
| Fee | 0.000 |

---

Method: Condom
Source: PPAG

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.049 | 0.050 | 0.051 | 0.052 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.053 | 0.054 | 0.055 | 0.056 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.057 | 0.058 | 0.059 | 0.060 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 0.061 |
| Fee | 0.000 |

---

Method: Condom
Source: Private Sector

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 0.000 |
| Fee | 0.000 |

---

Method: Condom
Source: Social Marketing

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.049 | 0.050 | 0.051 | 0.052 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.053 | 0.054 | 0.055 | 0.056 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.057 | 0.058 | 0.059 | 0.060 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 0.061 |
| Fee | 0.000 |

103

---

Method: Female Sterilization
Source: Public Sector

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 0.000 |
| Fee | 0.000 |

---

Method: Female Sterilization
Source: Private Sector

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 0.000 |
| Fee | 0.000 |

---

Method: Injectable
Source: Public Sector

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.000 | 1.021 | 1.042 | 1.063 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.083 | 1.104 | 1.125 | 1.146 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.167 | 1.188 | 1.208 | 1.229 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 1.250 |
| Fee | 0.000 |

---

Method: Injectable
Source: PPAG

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.000 | 1.021 | 1.042 | 1.063 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.083 | 1.104 | 1.125 | 1.146 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.167 | 1.188 | 1.208 | 1.229 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 1.250 |
| Fee | 0.000 |

---

Method: Injectable
Source: Private Sector

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 0.000 |
| Fee | 0.000 |

---

Method: Injectable
Source: Social Marketing

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.000 | 1.021 | 1.042 | 1.063 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.083 | 1.104 | 1.125 | 1.146 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.167 | 1.188 | 1.208 | 1.229 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 1.250 |
| Fee | 0.000 |

---

Method: IUD
Source: Public Sector

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.087 | 1.110 | 1.132 | 1.155 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.178 | 1.201 | 1.224 | 1.246 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.269 | 1.292 | 1.315 | 1.337 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 1.360 |
| Fee | 0.000 |

---

Method: IUD
Source: PPAG

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.087 | 1.110 | 1.132 | 1.155 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.178 | 1.201 | 1.224 | 1.246 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.269 | 1.292 | 1.315 | 1.337 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 1.360 |
| Fee | 0.000 |

---

Method: IUD
Source: Private Sector

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 0.000 |
| Fee | 0.000 |

---

Method: IUD
Source: Social Marketing

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.087 | 1.110 | 1.132 | 1.155 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.178 | 1.201 | 1.224 | 1.246 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 1.269 | 1.292 | 1.315 | 1.337 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 1.360 |
| Fee | 0.000 |

---

Method: Norplant
Source: Public Sector

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 23.120 | 23.602 | 24.083 | 24.565 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 25.047 | 25.528 | 26.010 | 26.492 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 26.973 | 27.455 | 27.937 | 28.418 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 28.900 |
| Fee | 0.000 |

---

Method: Oral
Source: Public Sector

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.178 | 0.182 | 0.186 | 0.190 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.194 | 0.198 | 0.202 | 0.205 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.209 | 0.213 | 0.217 | 0.221 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 0.225 |
| Fee | 0.000 |

---

Method: Oral
Source: PPAG

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.178 | 0.182 | 0.186 | 0.190 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.194 | 0.198 | 0.202 | 0.205 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.209 | 0.213 | 0.217 | 0.221 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 0.225 |
| Fee | 0.000 |

---

Method: Oral
Source: Private Sector

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 0.000 |
| Fee | 0.000 |

---

Method: Oral
Source: Social Marketing

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.270 | 0.276 | 0.281 | 0.287 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.292 | 0.298 | 0.303 | 0.309 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.315 | 0.320 | 0.326 | 0.331 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 0.337 |
| Fee | 0.000 |

---

Method: Vaginal Tablets
Source: Public Sector

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.101 | 0.103 | 0.105 | 0.107 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.109 | 0.111 | 0.114 | 0.116 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.118 | 0.120 | 0.122 | 0.124 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 0.126 |
| Fee | 0.000 |

---

Method: Vaginal Tablets
Source: PPAG

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.101 | 0.103 | 0.105 | 0.107 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.109 | 0.111 | 0.114 | 0.116 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.118 | 0.120 | 0.122 | 0.124 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 0.126 |
| Fee | 0.000 |

---

Method: Vaginal Tablets
Source: Private Sector

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.000 | 0.000 | 0.000 | 0.000 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 0.000 |
| Fee | 0.000 |

Method: Vaginal Tablets
Source: Social Marketing

| | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.101 | 0.103 | 0.105 | 0.107 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.109 | 0.111 | 0.114 | 0.116 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Cost per user | 0.0 | 0.0 | 0.0 | 0.0 |
| Commodity Cost | 0.118 | 0.120 | 0.122 | 0.124 |
| Fee | 0.000 | 0.000 | 0.000 | 0.000 |

| | 2005 |
|---|---|
| Cost per user | 0.0 |
| Commodity Cost | 0.126 |
| Fee | 0.000 |

END OF DATA FOR SCENARIO 3

# ATTACHMENT 5: ANALYSIS OF ALTERNATIVE COMMODITY MANAGEMENT METHODOLOGIES

## ATTACHMENT 5: ANALYSIS OF ALTERNATIVE COMMODITY MANAGEMENT METHODOLOGIES

During the assessment of Ghana's contraceptive commodity logistics system it became clear that many points in the system were being strained by large fluctuations in stock quantities requested through the current quarterly restocking process. An analysis of the request levels indicated that the stock management methodology had been designed with two features that were contributing to these large fluctuations. First, because contraceptive demand patterns had not been established, the methodology was designed to ensure a rapid response to increases in demand at the client level. Second, because suppliers had proved unreliable, the methodology was designed to restock all levels of the system whenever stocks were available. During the early years of operation of Ghana's family planning program this methodology has served well in providing some stability of supplies at the SDP level.

Now that the program has matured, however, the methodology appears to represent an impediment to expansion in many areas. To verify this observation and evaluate the impact of some alternate management methodologies, a small modelling exercise was undertaken. This exercise involved the creation of a simulation model of the various methodologies and examination of the response of the model to a series of stimuli. The model was created in a spreadsheet format for ease of manipulation. In structure, it consists of monthly "issues to clients" that result in restocking requests at the SDP level and two higher levels (Districts and Regions). The general observation of interest is the nature of stock request at the top level in response to changes in the "issues to client" level. Changes in the maximum, minimum, and average age of stock were also calculated in some cases.

Three commodity management methodologies were evaluated:

> The methodology labelled as "System 1" models the current commodity management methodology.
>
> "System 2" incorporates a smoothing function into the required stock levels by computing these levels on a twelve month rolling basis rather than treating each quarter independently.
>
> "System 3" incorporates the same smoothing function as "System 2" and adds a policy of level-specific restocking at the Region level (as opposed to the current policy of system-wide restocking).

For each system a series of six patterns of "issues to client" was evaluated:

Pattern 1 represents a stable pattern of issuing 100 units per month.

Pattern 2 shows the stable issue pattern perturbed by one month of issue at the 200 unit level.

Pattern 3 shows the stable issue pattern perturbed by one month of higher than normal issue (150 units) followed immediately by lower than normal issue (50 units). For this Pattern, both the high and low month of issues are within the same quarterly reporting period.

Pattern 4 also shows the stable issue pattern perturbed by one month of higher than normal issue (150 units) followed immediately by lower than normal issue (50 units). For this Pattern, however, the high and low month of issues are in different quarterly reporting periods. Patterns 3 and 4 are both designed to model the type of perturbance that frequently occurs simply due to reporting dates (for example, when one month contains 5 Fridays and the next month only 4).

Pattern 5 shows the stable issue pattern perturbed by gradually increasing issues and followed by a sudden return to the unperturbed level. This pattern is designed to model the behavior of issues that is typical when there are two similar products and one of them experiences a stock-out - causing clients to temporarily shift to the other product (for example, switching between Microgynon and Lo Femenal).

Pattern 6 shows an irregular pattern of high and low issues.

The modelling exercise shows that the present stock management methodology generates stock requests that greatly exceed the size of the stimulus. As a consequence of these large requests the methodology also tends to oscillate wildly between a large request and no request at all. Using a longer computation base (as shown in System 2) greatly reduces both the volume of the response and the fluctuations. Coupling the longer computational base with a level-specific (rather than cumulative) restocking policy further reduces the volume of the response at the top level.

The series of Graphs and Tables that follow show the modelling efforts. They are in sets of three Graphs followed by the three Tables from which the Graphs were generated. The Graphs and Tables are as follows:

First Set

Graph 5.1.1 : System 1; Pattern 1 - Current Method; Stable Issues

Graph 5.1.2 : System 2; Pattern 1 - 12 Month Computational Base; Stable Issues

Graph 5.1.3 : System 3; Pattern 1 - 12 Month Computational Base with Regional Restocking; Stable Issues

Table 5.1.1 : System 1; Pattern 1 - Current Method; Stable Issues

Table 5.1.2 : System 2; Pattern 1 - 12 Month Computational Base; Stable Issues

Table 5.1.3 : System 3; Pattern 1 - 12 Month Computational Base with Regional Restocking; Stable Issues

Second Set

Graph 5.2.1 : System 1; Pattern 2 - Current Method; Single "Good" Month of Issues

Graph 5.2.2 : System 2; Pattern 2 - 12 Month Computational Base; Single "Good" Month of Issues

Graph 5.2.3 : System 3; Pattern 2 - 12 Month Computational Base with Regional Restocking; Single "Good" Month of Issues

Table 5.2.1 : System 1; Pattern 2 - Current Method; Single "Good" Month of Issues

Table 5.2.2 : System 2; Pattern 2 - 12 Month Computational Base; Single "Good" Month of Issues

Table 5.2.3 : System 3; Pattern 2 - 12 Month Computational Base with Regional Restocking; Single "Good" Month of Issues

Third Set

Graph 5.3.1 : System 1; Pattern 3 - Current Method; One "Good", One "Bad" Month of Issues

Graph 5.3.2 : System 2; Pattern 3 - 12 Month Computational Base; One "Good", One "Bad" Month of Issues

Graph 5.3.3 : System 3; Pattern 3 - 12 Month Computational Base with Regional Restocking; One "Good", One "Bad" Month of Issues

Table 5.3.1 : System 1; Pattern 3 - Current Method; One "Good", One "Bad" Month of Issues

Table 5.3.2 : System 2; Pattern 3 - 12 Month Computational Base; One "Good", One "Bad" Month of Issues

Table 5.3.3 : System 3; Pattern 3 - 12 Month Computational Base with Regional Restocking; One "Good", One "Bad" Month of Issues

Fourth Set

Graph 5.4.1 : System 1; Pattern 4 - Current Method; One "Good", One "Bad" Month of Issues - Straddle Quarter

Graph 5.4.2 : System 2; Pattern 4 - 12 Month Computational Base; One "Good", One "Bad" Month of Issues - Straddle Quarter

Graph 5.4.3 : System 3; Pattern 4 - 12 Month Computational Base with Regional Restocking; One "Good", One "Bad" Month of Issues - Straddle Quarter

Table 5.4.1 : System 1; Pattern 4 - Current Method; One "Good", One "Bad" Month of Issues - Straddle Quarter

Table 5.4.2 : System 2; Pattern 4 - 12 Month Computational Base; One "Good", One "Bad" Month of Issues - Straddle Quarter

Table 5.4.3 : System 3; Pattern 4 - 12 Month Computational Base with Regional Restocking; One "Good", One "Bad" Month of Issues - Straddle Quarter

Fifth Set

Graph 5.5.1 : System 1; Pattern 5 - Current Method; Increasing Issues, then Return

Graph 5.5.2 : System 2; Pattern 5 - 12 Month Computational Base; Increasing Issues, then Return

Graph 5.5.3 : System 3; Pattern 5 - 12 Month Computational Base with Regional Restocking; Increasing Issues, then Return

Table 5.5.1 : System 1; Pattern 5 - Current Method; Increasing Issues, then Return

Table 5.5.2 : System 2; Pattern 5 - 12 Month Computational Base; Increasing Issues, then Return

Table 5.5.3 : System 3; Pattern 5 - 12 Month Computational Base with Regional Restocking; Increasing Issues, then Return

Sixth Set

Graph 5.6.1 : System 1; Pattern 6 - Current Method; High and Low Issues

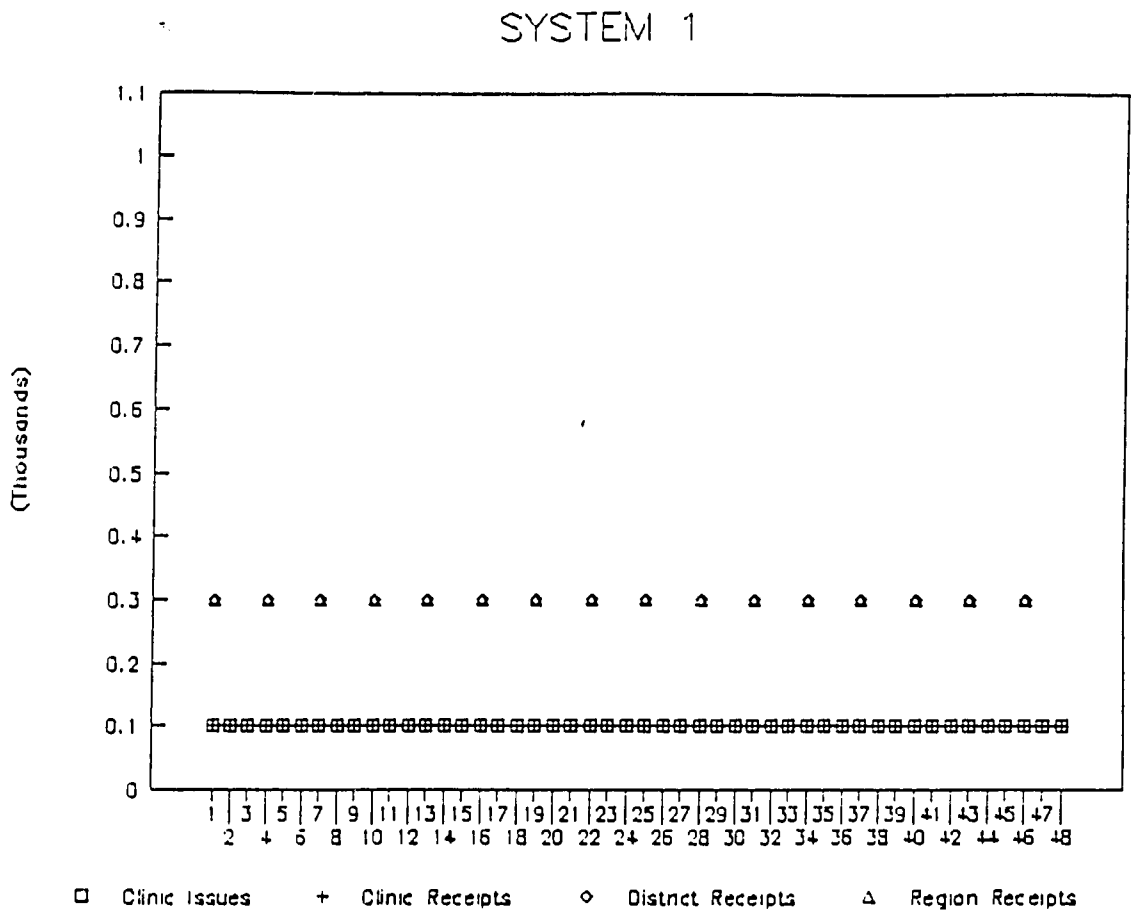
Graph 5.6.2 : System 2; Pattern 6 - 12 Month Computational Base; High and Low Issues

Graph 5.6.3 : System 3; Pattern 6 - 12 Month Computational Base with Regional Restocking; High and Low Issues

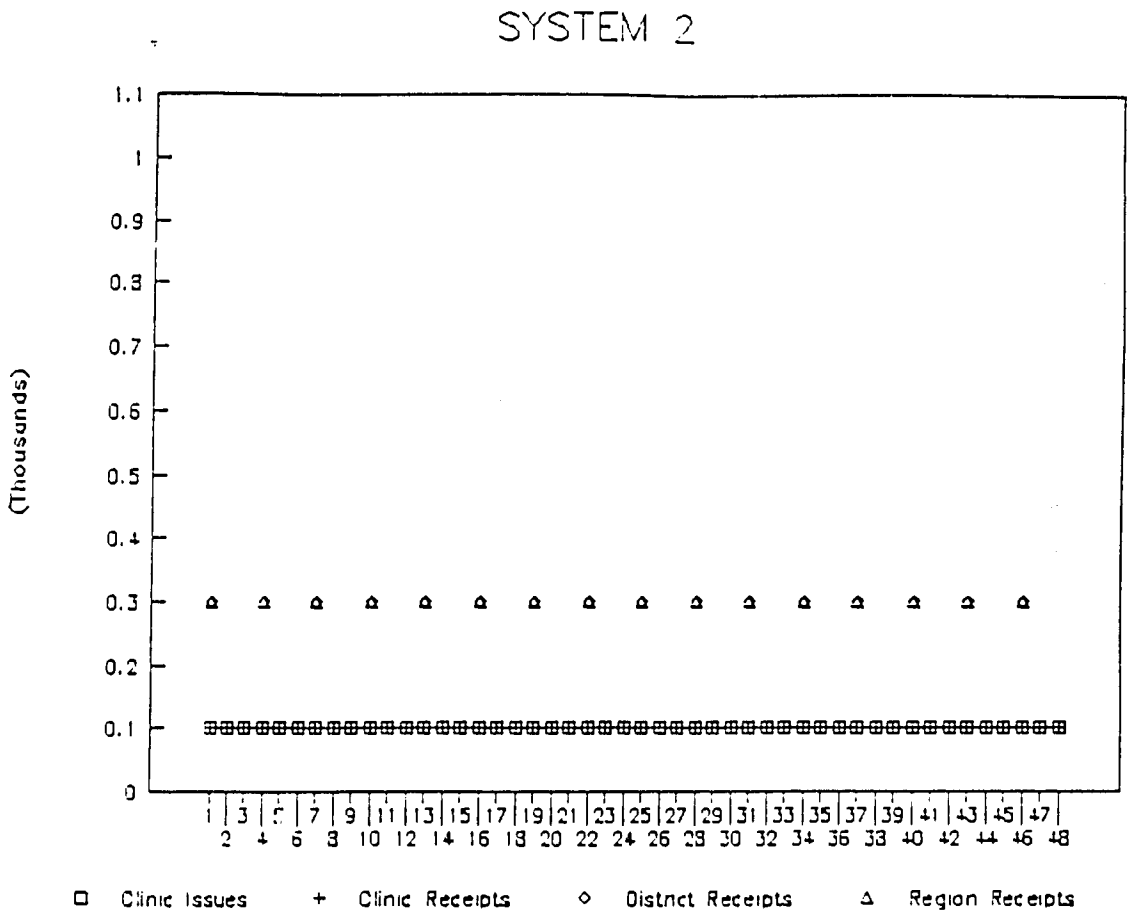
Table 5.6.1 : System 1; Pattern 6 - Current Method; High and Low Issues

Table 5.6.2 : System 2; Pattern 6 - 12 Month Computational Base; High and Low Issues

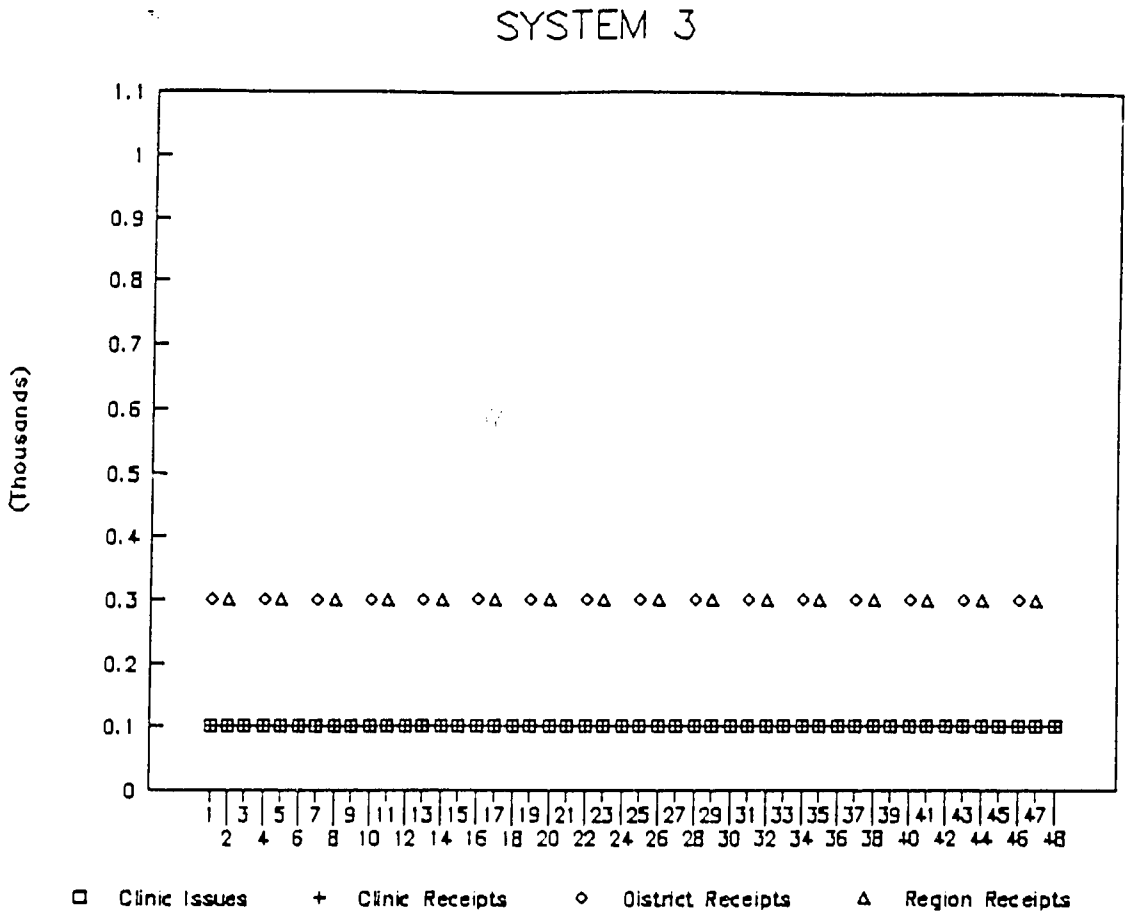
Table 5.6.3 : System 3; Pattern 6 - 12 Month Computational Base with Regional Restocking; High and Low Issues




Graph 5.1.1 : System 1; Pattern 1 - Current Method; Stable Issues




Graph 5.1.2 : System 2; Pattern 1 - 12 Month Computational Base; Stable Issues




Graph 5.1.3 : System 3; Pattern 1 - 12 Month Computational Base with Regional Restocking; Stable Issues

Current Distribution System

| | Monthly Issues | Clinic Stock | Clinic Request | Clinic Receipt | District Stock | District Receipts | Region Stock | Region Receipts | Total Stock | Desired Levels: Clinic Stock | Desired Levels: District Stock | Desired Levels: Region Stock | Desired Levels: Total Stock | Total Need |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Month 1 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 2 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 3 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 4 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 5 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 6 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 7 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 8 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 9 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 10 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 11 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 12 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 13 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 14 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 15 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 16 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 17 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 18 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 19 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 20 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 21 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 22 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 23 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 24 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 25 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 26 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 27 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 28 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 29 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 30 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 31 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 32 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 33 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 34 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 35 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 36 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 37 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 38 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 39 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 40 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 41 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 42 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 43 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 44 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 45 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 46 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 47 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 48 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Max level | 100 | 300 | 100 | 100 | 500 | 300 | 900 | 300 | 1700 | | | | | |
| Min level | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | | | | | |

AGE: 17 MIN

19 MAX

Table 5.1.1 : System 1; Pattern 1 - Current Method; Stable Issues

Current Distribution using 12 month Base

| | Monthly Issues | Clinic Stock | Clinic Request | Clinic Receipt | District Stock | District Receipts | Region Stock | Region Receipts | Total Stock | Desired Levels: Clinic Stock | Desired Levels: District Stock | Desired Levels: Region Stock | Desired Levels: Total Stock | Total Need |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Month 1 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 2 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 3 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 4 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 5 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 6 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 7 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 8 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 9 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 10 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 11 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 12 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 13 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 14 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 15 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 16 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 17 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 18 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 19 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 20 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 21 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 22 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 23 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 24 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 25 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 26 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 27 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 28 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 29 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 30 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 31 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 32 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 33 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 34 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 35 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 36 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 37 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 38 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 39 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 40 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 41 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 42 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 43 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 44 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 45 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 46 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 47 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 48 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Max level | 100 | 300 | 100 | 100 | 500 | 300 | 900 | 300 | 1700 | | | | | |
| Min Level | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | | | | | |

AGE: 17 MIN

19 MAX

Table 5.1.2 : System 2; Pattern 1 - 12 Month Computational Base; Stable Issues

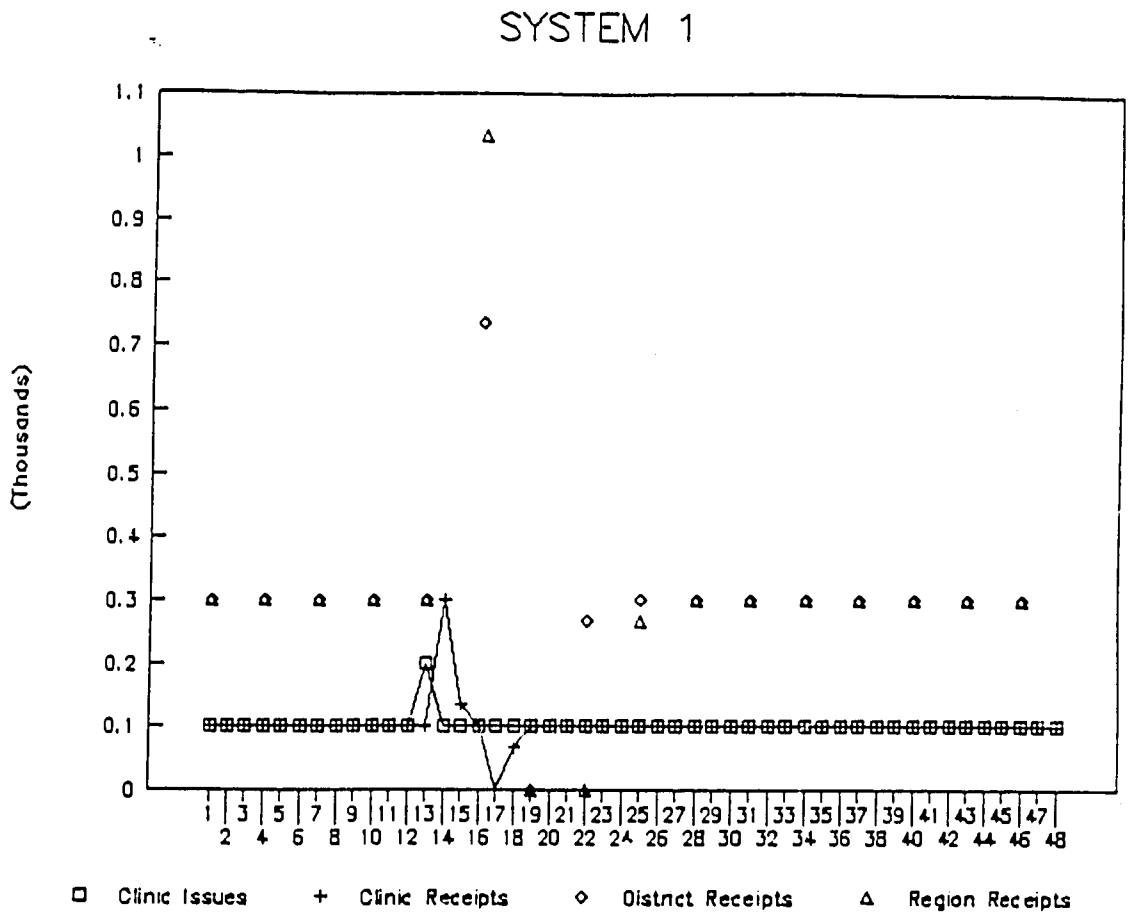
Sequential Pull at region with 12 month Base

| | Monthly Issues | Clinic Stock | Clinic Request | Clinic Receipt | District Stock | District Receipts | Region Stock | Region Receipts | Total Stock | Desired Levels: Clinic Stock | Desired Levels: District Stock | Desired Levels: Region Stock | Desired Levels: Total Stock | Total Need |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Month 1 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 2 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 3 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 4 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 5 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 6 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 7 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 8 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 9 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 10 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 11 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 12 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 13 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 14 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 15 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 16 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 17 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 18 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 19 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 20 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 21 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 22 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 23 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 24 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 25 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 26 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 27 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 28 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 29 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 30 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 31 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 32 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 33 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 34 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 35 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 36 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 37 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 38 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 39 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 40 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 41 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 42 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 43 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 44 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 45 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 46 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 47 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 48 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Max level | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | | | | | |
| Min level | 100 | 300 | 100 | 100 | 200 | | 600 | 300 | 1100 | | | | | |

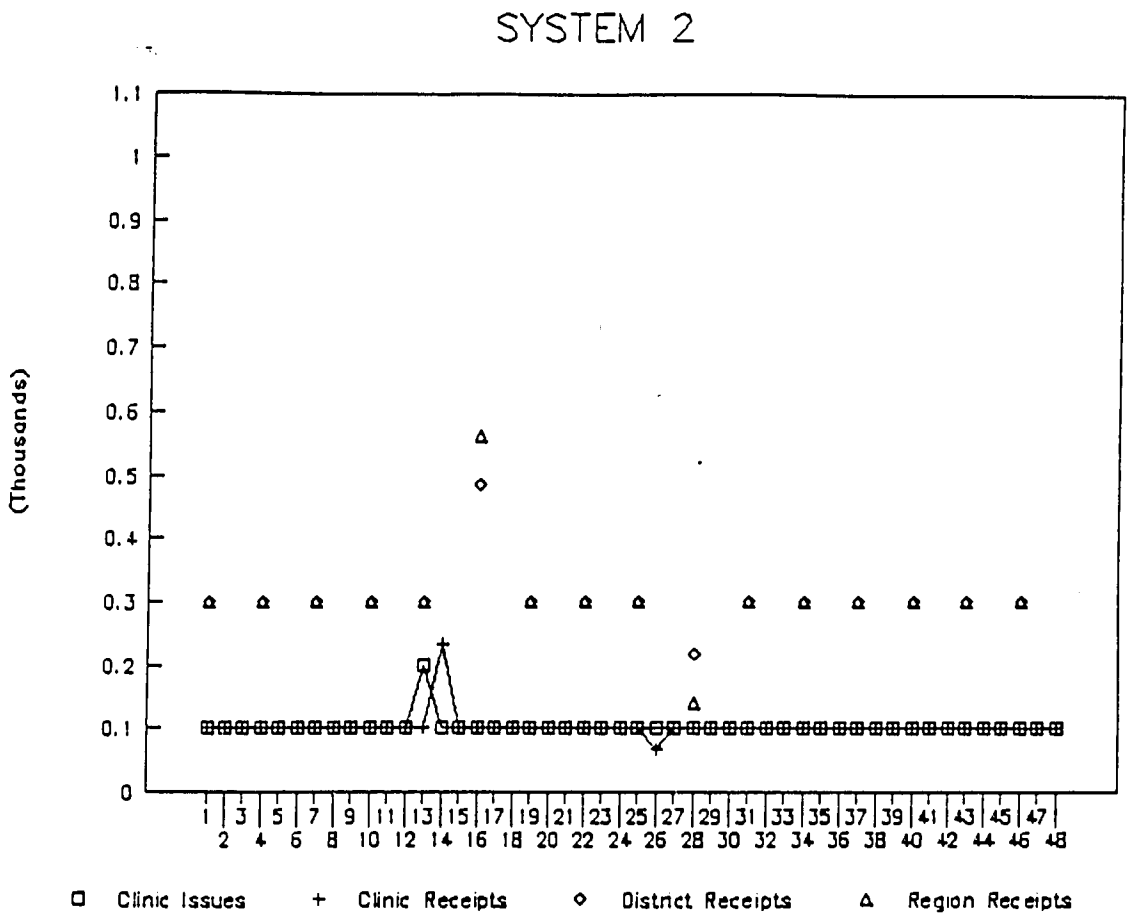
ACE: 15 MIN

17 MAX

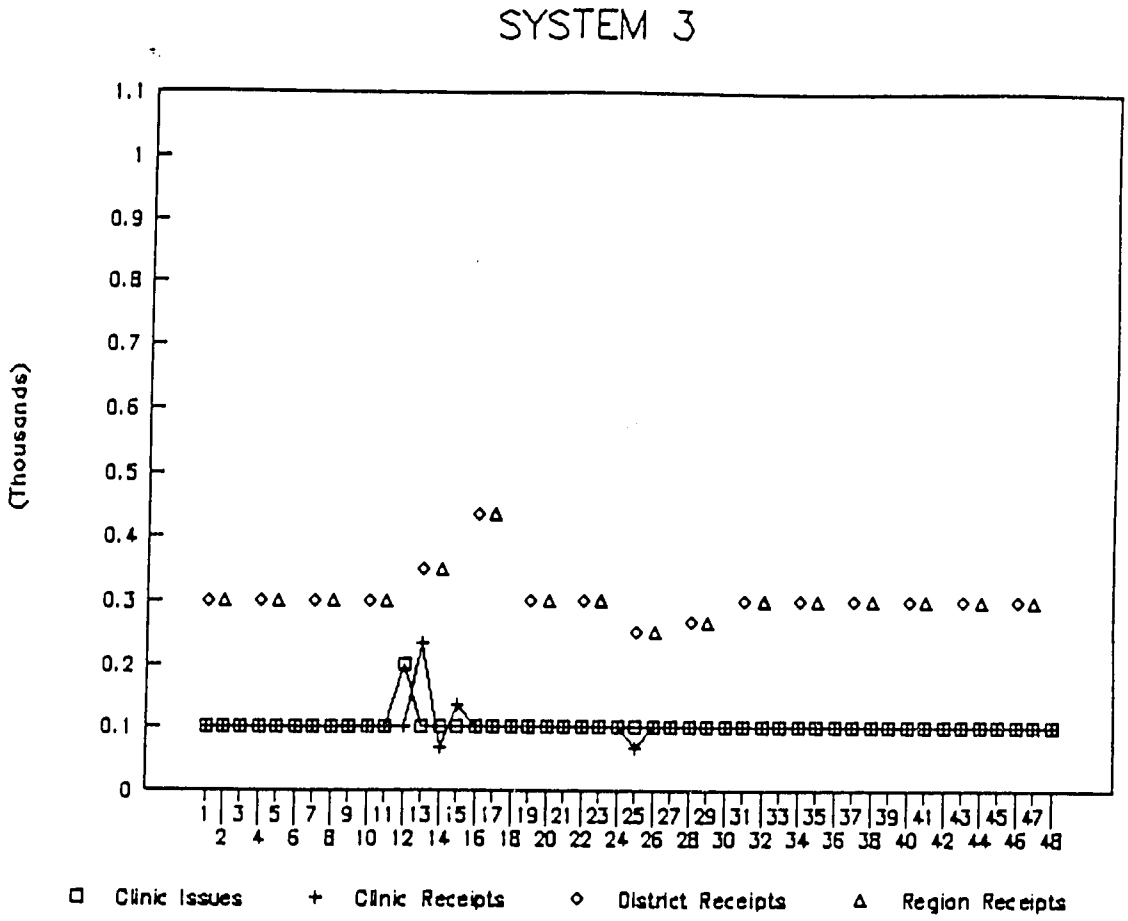
Table 5.1.3 : System 3; Pattern 1 - 12 Month Computational Base with Regional Restocking; Stable Issues




Graph 5.2.1 : System 1; Pattern 2 - Current Method;
Single "Good" Month of Issues




Graph 5.2.2 : System 2; Pattern 2 - 12 Month Computational Base; Single "Good" Month of Issues




Graph 5.2.3 : System 3; Pattern 2 - 12 Month Computational Base with Regional Restocking; Single "Good" Month of Issues

Current Distribution System

| | Monthly Issues | Clinic Stock | Clinic Request | Clinic Receipt | District Stock | District Receipts | Region Stock | Region Receipts | Total Stock | Desired Levels: Clinic Stock | Desired Levels: District Stock | Desired Levels: Region Stock | Desired Levels: Total Stock | Total Need |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Month 1 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 2 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 3 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 4 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 5 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 6 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 7 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 8 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 9 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 10 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 11 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 12 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 13 S | 200 | 200 | 333 | 100 | 300 | 300 | 900 | 300 | 1400 | 533 | | | | |
| Month 14 | 100 | 400 | 133 | 300 | 300 | | 900 | | 1600 | 533 | | | | |
| Month 15 Q | 100 | 433 | 100 | 133 | 167 | | 900 | | 1500 | 533 | 800 | 1200 | 2533 | 1033 |
| Month 16 S | 100 | 433 | 0 | 100 | 67 | 733 | 1200 | 1033 | 1700 | 400 | | | | |
| Month 17 | 100 | 333 | 67 | 0 | 800 | | 1200 | | 2333 | 400 | | | | |
| Month 18 Q | 100 | 300 | 100 | 67 | 733 | | 1200 | | 2233 | 400 | 600 | 900 | 1900 | 0 |
| Month 19 S | 100 | 300 | 100 | 100 | 633 | 0 | 1200 | 0 | 2133 | 400 | | | | |
| Month 20 | 100 | 300 | 100 | 100 | 533 | | 1200 | | 2033 | 400 | | | | |
| Month 21 Q | 100 | 300 | 100 | 100 | 433 | | 1200 | | 1933 | 400 | 600 | 900 | 1900 | 0 |
| Month 22 S | 100 | 300 | 100 | 100 | 333 | 267 | 933 | 0 | 1567 | 400 | | | | |
| Month 23 | 100 | 300 | 100 | 100 | 500 | | 933 | | 1733 | 400 | | | | |
| Month 24 Q | 100 | 300 | 100 | 100 | 400 | | 933 | | 1633 | 400 | 600 | 900 | 1900 | 267 |
| Month 25 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 267 | 1500 | 400 | | | | |
| Month 26 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 27 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 28 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 29 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 30 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 31 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 32 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 33 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 34 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 35 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 36 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 37 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 38 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 39 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 40 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 41 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 42 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 43 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 44 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 45 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 46 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 47 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 48 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Max level | 200 | 433 | 333 | 300 | 800 | 733 | 1200 | 1033 | 2333 | | | | | |
| Min level | 100 | 200 | 0 | 0 | 67 | 0 | 900 | 0 | 1400 | | | | | |

CAUSE

EFFECT

AGE: 16 MIN.

26 MAX

Table 5.2.1 : System 1; Pattern 2 - Current Method; Single "Good" Month of Issues

Current Distribution using 12 month Base

| | Monthly Issues | Clinic Stock | Clinic Request | Clinic Receipt | District Stock | District Receipts | Region Stock | Region Receipts | Total Stock | Desired Levels: Clinic Stock | Desired Levels: District Stock | Desired Levels: Region Stock | Desired Levels: Total Stock | Total Need |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Month 1 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 2 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 3 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 4 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 5 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 6 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 7 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 8 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 9 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 10 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 11 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 12 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 13 S | 200 | 200 | 233 | 100 | 300 | 300 | 900 | 300 | 1400 | 433 | | | | |
| Month 14 | 100 | 333 | 100 | 233 | 367 | | 900 | | 1600 | 433 | | | | |
| Month 15 Q | 100 | 333 | 100 | 100 | 267 | | 900 | | 1500 | 433 | 650 | 975 | 2058 | 558 |
| Month 16 S | 100 | 333 | 100 | 100 | 167 | 483 | 975 | 558 | 1475 | 433 | | | | |
| Month 17 | 100 | 333 | 100 | 100 | 550 | | 975 | | 1858 | 433 | | | | |
| Month 18 Q | 100 | 333 | 100 | 100 | 450 | | 975 | | 1758 | 433 | 650 | 975 | 2058 | 300 |
| Month 19 S | 100 | 333 | 100 | 100 | 350 | 300 | 975 | 300 | 1658 | 433 | | | | |
| Month 20 | 100 | 333 | 100 | 100 | 550 | | 975 | | 1858 | 433 | | | | |
| Month 21 Q | 100 | 333 | 100 | 100 | 450 | | 975 | | 1758 | 433 | 650 | 975 | 2058 | 300 |
| Month 22 S | 100 | 333 | 100 | 100 | 350 | 300 | 975 | 300 | 1658 | 433 | | | | |
| Month 23 | 100 | 333 | 100 | 100 | 550 | | 975 | | 1858 | 433 | | | | |
| Month 24 Q | 100 | 333 | 100 | 100 | 450 | | 975 | | 1758 | 433 | 650 | 975 | 2058 | 300 |
| Month 25 S | 100 | 333 | 67 | 100 | 350 | 300 | 975 | 300 | 1658 | 400 | | | | |
| Month 26 | 100 | 300 | 100 | 67 | 583 | | 975 | | 1858 | 400 | | | | |
| Month 27 Q | 100 | 300 | 100 | 100 | 483 | | 975 | | 1758 | 400 | 600 | [illegible] | [illegible] | 142 |
| Month 28 S | 100 | 300 | 100 | 100 | 383 | 217 | 900 | 142 | 1583 | 400 | | | | |
| Month 29 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 30 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | [illegible] | [illegible] | 300 |
| Month 31 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 32 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 33 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | [illegible] | [illegible] | 300 |
| Month 34 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 35 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 36 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | [illegible] | [illegible] | 300 |
| Month 37 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 38 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 39 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | [illegible] | | 300 |
| Month 40 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 41 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 42 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | [illegible] | | 300 |
| Month 43 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 44 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 45 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | [illegible] | | 300 |
| Month 46 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 47 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 48 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | [illegible] | | 300 |
| Max level | 200 | 333 | 233 | 233 | 583 | 483 | 975 | 558 | 1858 | | | | | |
| Min Level | 100 | 200 | 67 | 67 | 167 | 217 | 900 | 142 | 1400 | | | | | |

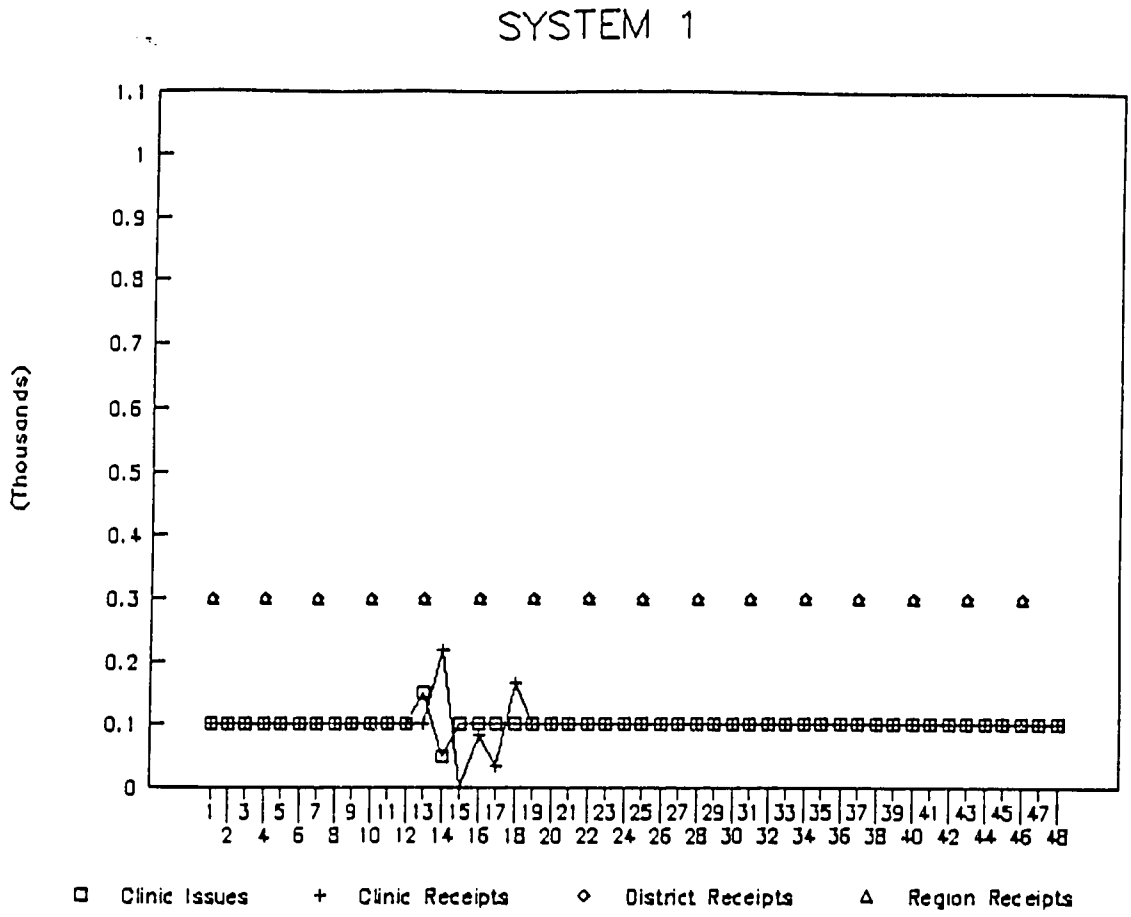
Table 5.2.2 : System 2; Pattern 2 - 12 Month Computational Base
Single "Good" Month of Issues

Sequential Pull at region with 12 month Base

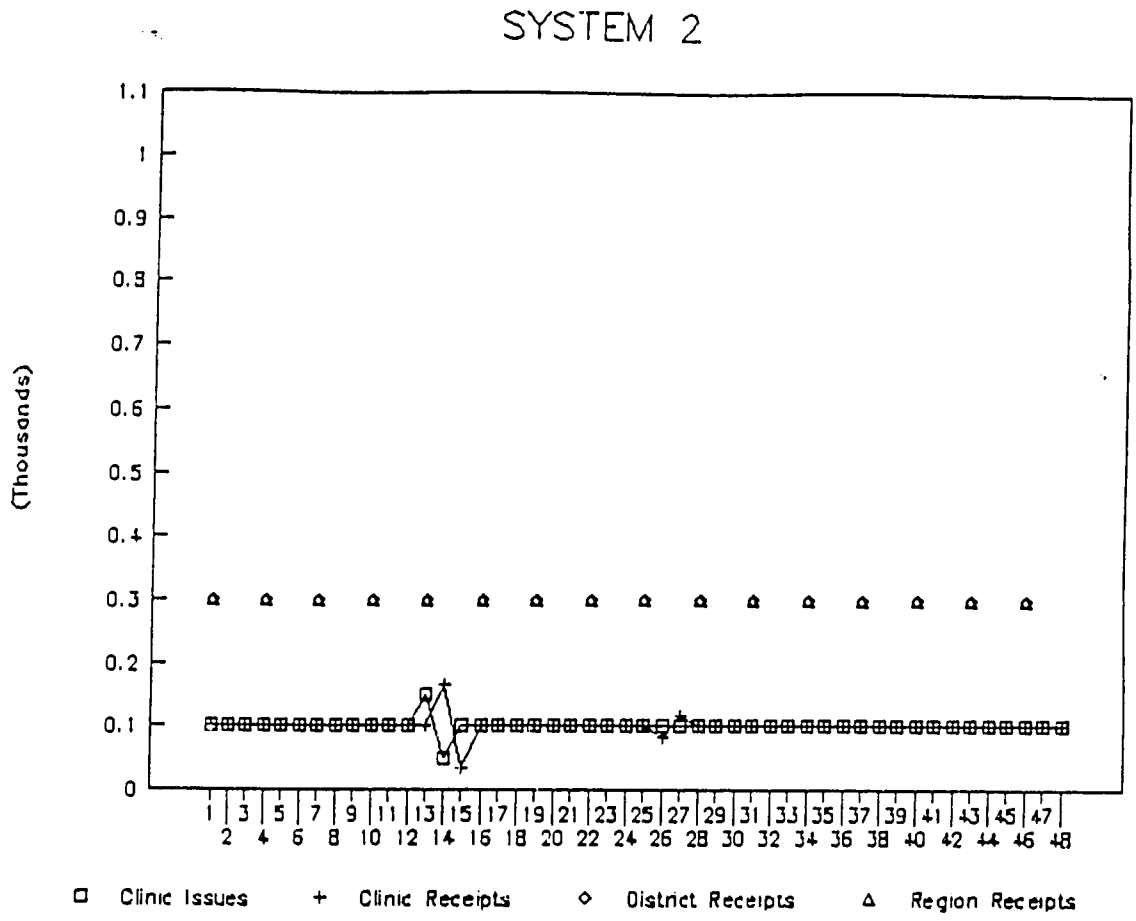
| | Monthly Issues | Clinic Stock | Clinic Request | Clinic Receipt | District Stock | District Receipts | Region Stock | Region Receipts | Total Stock | Desired Levels: Clinic Stock | Desired Levels: District Stock | Desired Levels: Region Stock | Desired Levels: Total Stock | Total Need |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Month 1 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 2 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 3 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 4 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 5 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 6 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 7 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 8 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 9 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 10 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 11 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 12 Q | 200 | 200 | 233 | 100 | 300 | | 900 | EFFECT | 1400 | 433 | 650 | 975 | 2058 | 75 |
| Month 13 S | 100 | 333 | 100 | 233 | 67 | 350 | 550 | | 950 | 433 | | | | |
| Month 14 | 100 | 300 | 133 | 67 | 350 | | 900 | 350 | 1550 | 433 | | | | |
| Month 15 Q | 100 | 333 | 100 | 133 | 217 | | 900 | | 1450 | 433 | 650 | 975 | 2058 | 75 |
| Month 16 S | 100 | 333 | 100 | 100 | 117 | 433 | 467 | | 917 | 433 | | | | |
| Month 17 | 100 | 333 | 100 | 100 | 450 | | 900 | 433 | 1683 | 433 | | | | |
| Month 18 Q | 100 | 333 | 100 | 100 | 350 | | 900 | | 1583 | 433 | 650 | 975 | 2058 | 75 |
| Month 19 S | 100 | 333 | 100 | 100 | 250 | 300 | 600 | | 1183 | 433 | | | | |
| Month 20 | 100 | 333 | 100 | 100 | 450 | | 900 | 300 | 1683 | 433 | | | | |
| Month 21 Q | 100 | 333 | 100 | 100 | 350 | 133 | 900 | | 1583 | 433 | 650 | 975 | 2058 | 75 |
| Month 22 S | 100 | 333 | 100 | 100 | 250 | 300 | 600 | | 1183 | 433 | | | | |
| Month 23 | 100 | 333 | 100 | 100 | 450 | | 900 | 300 | 1683 | 433 | | | | |
| Month 24 Q | 100 | 333 | 67 | 100 | 350 | | 900 | | 1583 | 400 | 600 | 900 | 1900 | 0 |
| Month 25 S | 100 | 300 | 100 | 67 | 283 | 250 | 650 | | 1233 | 400 | | | | |
| Month 26 | 100 | 300 | 100 | 100 50 | 433 | | 900 | 250 | 1633 | 400 | | | | |
| Month 27 Q | 100 | 300 | 100 | 100 | 333 | | 900 | | 1533 | 400 | 600 | 900 | 1900 | 0 |
| Month 28 S | 100 | 300 | 100 | 100 | 233 | 267 | 633 | | 1167 | 400 | | | | |
| Month 29 | 100 50 | 300 | 100 | 100 | 400 | | 900 | 267 | 1600 | 400 | | | | |
| Month 30 Q | 100 | 300 | 100 | 100 | 300 | 50 | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 31 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 32 | 100 | 300 | 100 | 100 83 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 33 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 34 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 35 | 100 83 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 36 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 37 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 38 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 39 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 40 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 41 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 42 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 43 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 44 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 45 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 46 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 47 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 48 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Max level | 200 | 333 | 233 | 233 | 450 | | 900 | 433 | 1683 | AGE: 14 MIN | | | | |
| Min level | 100 | 200 | 67 | 67 | 67 | | 467 | 250 | 917 | 18 MAX | | | | |

CAUSE

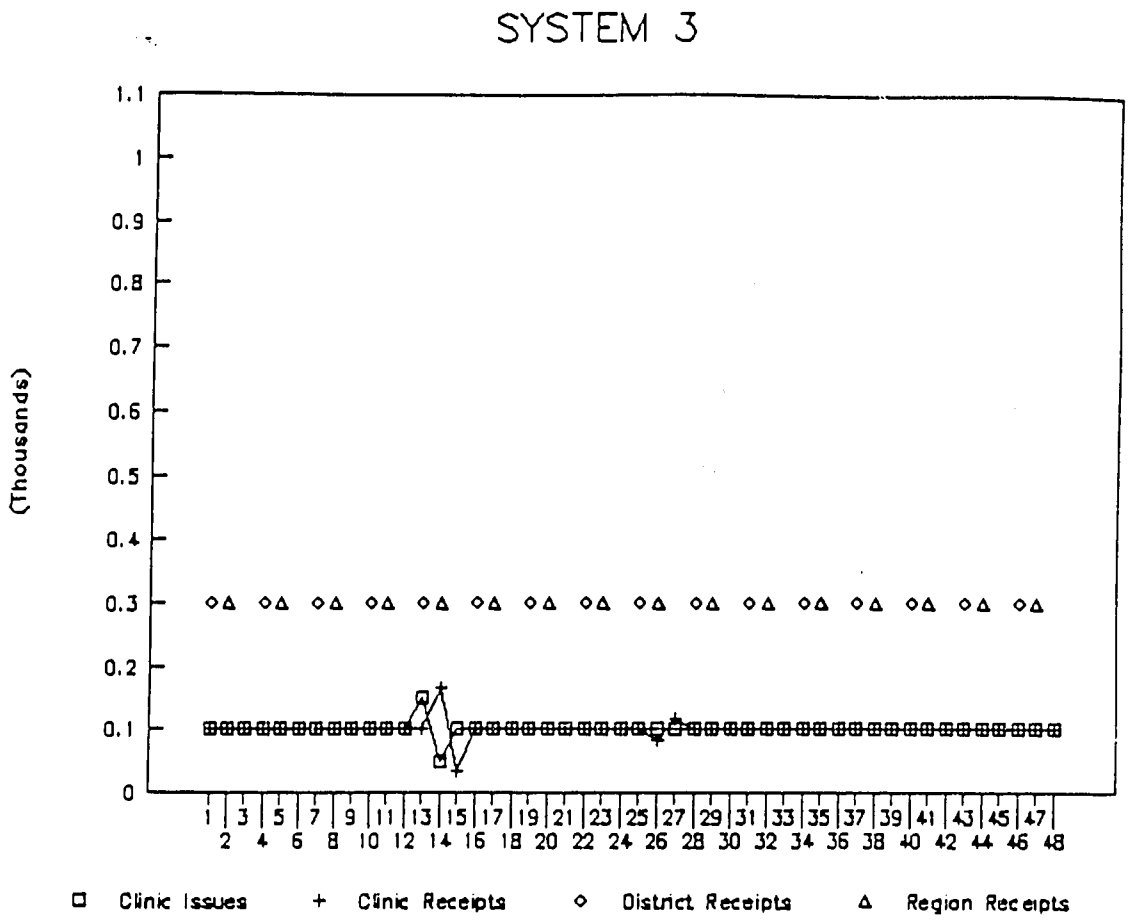
Table 5.2.3 : System 3; Pattern 2 - 12 Month Computational Base with Regional Restocking; Single "Good" Month of Issues




Graph 5.3.1 : System 1; Pattern 3 - Current Method; One "Good", One "Bad" Month of Issues




Graph 5.3.2 : System 2; Pattern 3 - 12 Month Computational Base; One "Good", One "Bad" Month of Issues




Graph 5.3.3 : System 3; Pattern 3 - 12 Month Computational Base with Regional Restocking; One "Good", One "Bad" Month of Issues

Current Distribution System

| | Monthly Issues | Clinic Stock | Clinic Request | Clinic Receipt | District Stock | District Receipts | Region Stock | Region Receipts | Total Stock | Desired Levels: Clinic Stock | Desired Levels: District Stock | Desired Levels: Region Stock | Desired Levels: Total Stock | Total Need |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Month 1 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 2 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 3 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1300 | 300 |
| Month 4 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 5 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 6 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 7 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 8 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 9 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1300 | 300 |
| Month 10 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 11 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 12 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1300 | 300 |
| Month 13 S | 150 | 250 | 217 | 100 | 300 | 300 | 900 | 300 | 1450 | 467 | | | | |
| Month 14 | 50 | 417 | 0 | 217 | 383 | | 900 | | 1700 | 400 | | | | |
| Month 15 Q | 100 | 317 | 83 | 0 | 383 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 16 S | 100 | 300 | 33 | 83 | 300 | 300 | 900 | 300 | 1500 | 333 | | | | |
| Month 17 | 100 | 233 | 167 | 33 | 567 | | 900 | | 1700 | 400 | | | | |
| Month 18 Q | 100 | 300 | 100 | 167 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 19 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 20 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 21 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 22 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 23 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 24 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 25 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 26 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 27 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 28 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 29 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 30 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 31 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 32 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 33 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 34 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 35 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 36 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 37 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 38 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 39 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 40 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 41 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 42 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 43 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 44 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 45 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 46 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 47 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 48 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Max level | 150 | 417 | 217 | 217 | 567 | 300 | 900 | 300 | 1700 | | | | | |
| Min level | 50 | 233 | 0 | 0 | 300 | 300 | 900 | 300 | 1450 | | | | | |

AGE: 17 Min
19 Max

Table 5.3.1 : System 1; Pattern 3 - Current Method; One "Good", One "Bad" Month of Issues

Current Dirstibution using 12 month Base

| | Monthly Issues | Clinic Stock | Clinic Request | Clinic Receipt | District Stock | District Receipts | Region Stock | Region Receipts | Total Stock | Desired Levels: Clinic Stock | Desired Levels: District Stock | Desired Levels: Region Stock | Desired Levels: Total Stock | Total Need |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Month 1 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 2 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 3 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 4 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 5 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 6 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 7 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 8 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 9 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 10 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 11 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 12 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 13 S | 150 | 250 | 167 | 100 | 300 | 300 | 900 | 300 | 1450 | 417 | | | | |
| Month 14 | 50 | 367 | 33 | 167 | 433 | | 900 | | 1700 | 400 | | | | |
| Month 15 Q | 100 | 300 | 100 | 33 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 16 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 17 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 18 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 19 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 20 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 21 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 22 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 23 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 24 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 25 S | 100 | 300 | 83 | 100 | 300 | 300 | 900 | 300 | 1500 | 383 | | | | |
| Month 26 | 100 | 283 | 117 | 83 | 517 | | 900 | | 1700 | 400 | | | | |
| Month 27 Q | 100 | 300 | 100 | 117 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 28 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 29 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 30 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 31 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 32 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 33 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 34 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 35 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 36 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 37 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 38 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 39 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 40 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 41 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 42 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 43 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 44 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 45 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 46 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 47 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 48 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Max level | 150 | 367 | 167 | 167 | 517 | 300 | 900 | 300 | 1700 | | | | | |
| Min Level | 50 | 250 | 33 | 33 | 300 | 300 | 900 | 300 | 1450 | | | | | |

AGE: 17 MIN

19 MAX

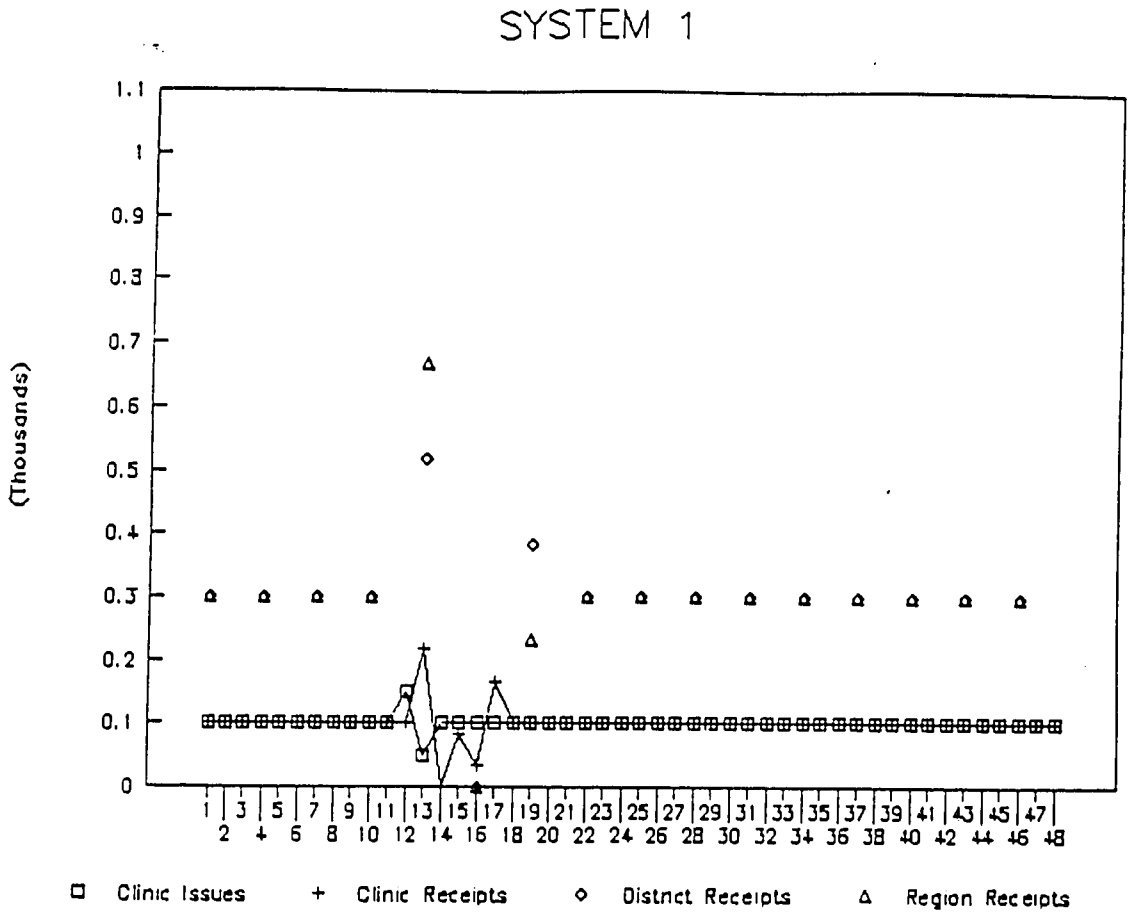
Table 5.3.2 : System 2; Pattern 3 - 12 Month Computational Base; One "Good", One "Bad" Month of Issues

Sequential Pull at region with 12 month Base

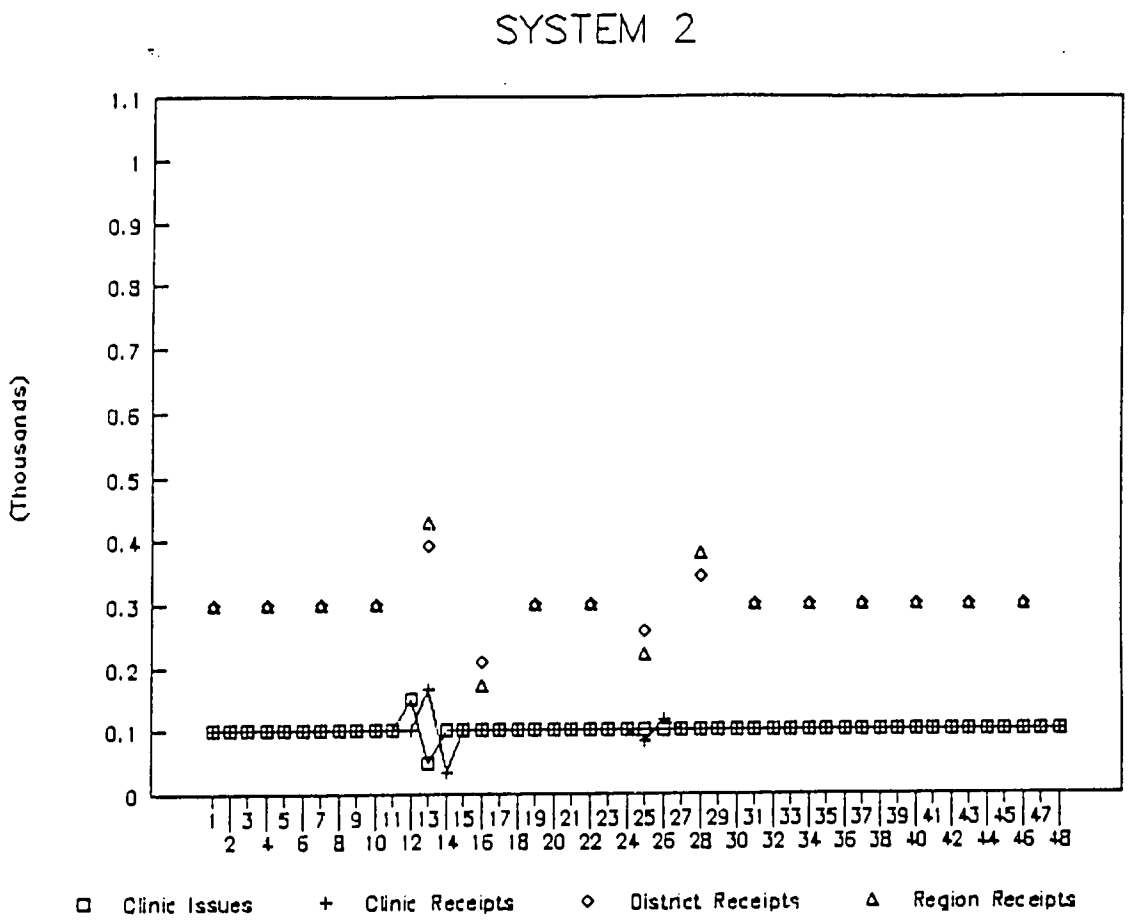
| | Monthly Issues | Clinic Stock | Clinic Request | Clinic Receipt | District Stock | District Receipts | Region Stock | Region Receipts | Total Stock | Desired Levels: Clinic Stock | Desired Levels: District Stock | Desired Levels: Region Stock | Desired Levels: Total Stock | Total Need |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Month 1 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 2 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 3 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 4 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 5 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 6 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 7 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 8 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 9 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 10 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 11 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 12 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 13 S | 150 | 250 | 167 | 100 | 200 | 300 | 600 | | 1050 | 417 | | | | |
| Month 14 | 50 | 367 | 33 | 167 | 333 | | 900 | 300 | 1600 | 400 | | | | |
| Month 15 Q | 100 | 300 | 100 | 33 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 16 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 17 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 18 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 19 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 20 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 21 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 22 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 23 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 24 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 25 S | 100 | 300 | 83 | 100 | 200 | 300 | 600 | | 1100 | 383 | | | | |
| Month 26 | 100 | 283 | 117 | 83 | 417 | | 900 | 300 | 1600 | 400 | | | | |
| Month 27 Q | 100 | 300 | 100 | 117 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 28 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 29 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 30 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 31 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 32 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 33 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 34 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 35 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 36 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 37 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 38 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 39 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 40 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 41 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 42 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 43 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 44 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 45 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 46 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 47 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 48 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Max level | 150 | 367 | 167 | 167 | 417 | | 900 | 300 | 1600 | | | | | |
| Min level | 50 | 250 | 33 | 33 | 200 | | 600 | 300 | 1050 | | | | | |

AGE: 15 MIN
17 MAX

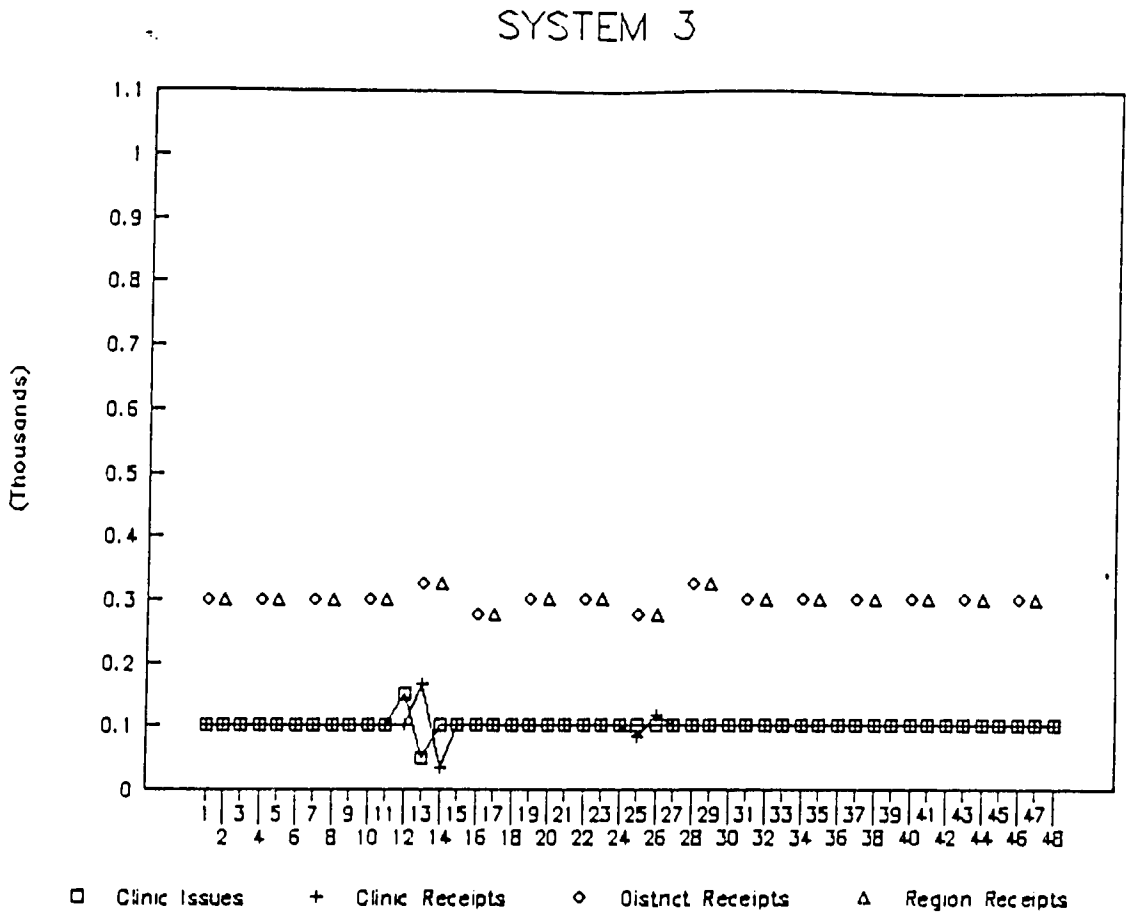
Table 5.3.3 : System 3; Pattern 3 - 12 Month Computational Base with Regional Restocking; One "Good", One "Bad" Month of Issues




Graph 5.4.1 : System 1; Pattern 4 - Current Method; One "Good", One "Bad" Month of Issues - Straddle Quarter




Graph 5.4.2 : System 2; Pattern 4 - 12 Month Computational Base; One "Good", One "Bad" Month of Issues - Straddle Quarter




Graph 5.4.3 : System 3; Pattern 4 - 12 Month Computational Base with Regional Restocking; One "Good", One "Bad" Month of Issues - Straddle Quarter

Current Distribution System

| | Monthly Issues | Clinic Stock | Clinic Request | Clinic Receipt | District Stock | District Receipts | Region Stock | Region Receipts | Total Stock | Desired Levels: Clinic Stock | Desired Levels: District Stock | Desired Levels: Region Stock | Desired Levels: Total Stock | Total Need |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Month 1 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 2 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 3 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 4 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 5 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 6 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 7 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 8 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 9 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 10 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 11 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 12 Q | 150 | 250 | 217 | 100 | 400 | | 900 | | 1550 | 467 | 700 | 1050 | 2217 | 667 |
| Month 13 S | 50 | 417 | 0 | 217 | 183 | 517 | 1050 | 667 | 1650 | 400 | | | | |
| Month 14 | 100 | 317 | 83 | 0 | 700 | | 1050 | | 2067 | 400 | | | | |
| Month 15 Q | 100 | 300 | 33 | 83 | 617 | | 1050 | | 1967 | 333 | 500 | 750 | 1583 | 0 |
| Month 16 S | 100 | 233 | 167 | 33 | 583 | 0 | 1050 | 0 | 1867 | 400 | | | | |
| Month 17 | 100 | 300 | 100 | 167 | 417 | | 1050 | | 1767 | 400 | | | | |
| Month 18 Q | 100 | 300 | 100 | 100 | 317 | | 1050 | | 1667 | 400 | 600 | 900 | 1900 | 233 |
| Month 19 S | 100 | 300 | 100 | 100 | 217 | 383 | 900 | 233 | 1417 | 400 | | | | |
| Month 20 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 21 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 22 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 23 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 24 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 25 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 26 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 27 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 28 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 29 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 30 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | | | 300 |
| Month 31 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 32 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 33 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | | | 300 |
| Month 34 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 35 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 36 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | | | 300 |
| Month 37 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 38 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 39 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | | | 300 |
| Month 40 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 41 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 42 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | | | 300 |
| Month 43 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 44 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 45 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | | | 300 |
| Month 46 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 47 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 48 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | | | 300 |
| Max level | 150 | 417 | 217 | 217 | 700 | 517 | 1050 | 667 | 2067 | | | | | |
| Min level | 50 | 233 | 0 | 0 | 183 | 0 | 900 | 0 | 1417 | | | | | |

Table 5.4.1 : System 1; Pattern 4 - Current Method; One "Good" Month of Issues - One "Bad" Month of Issues - Straddle Quarter

Current Dirstibution using 12 month Base

| | Monthly Issues | Clinic Stock | Clinic Request | Clinic Receipt | District Stock | District Receipts | Region Stock | Region Receipts | Total Stock | Desired Levels: Clinic Stock | Desired Levels: District Stock | Desired Levels: Region Stock | Desired Levels: Total Stock | Tot. Nee |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Month 1 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 2 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 3 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 3( |
| Month 4 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 5 | 100 | 300 | 100 | 100 | 500 | | 300 | | 1700 | 400 | | | | |
| Month 6 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 3( |
| Month 7 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 8 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 9 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 3( |
| Month 10 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 11 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 12 Q | 150 | 250 | 167 | 100 | 400 | | 900 | | 1550 | 417 | 625 | 938 | 1979 | 42 |
| Month 13 S | 50 | 367 | 33 | 167 | 233 | 392 | 938 | 429 | 1538 | 400 | | | | |
| Month 14 | 100 | 300 | 100 | 33 | 592 | | 938 | | 1829 | 400 | | | | |
| Month 15 Q | 100 | 300 | 100 | 100 | 492 | | 938 | | 1729 | 400 | 600 | 900 | 1900 | 17 |
| Month 16 S | 100 | 300 | 100 | 100 | 392 | 208 | 900 | 171 | 1592 | 400 | | | | |
| Month 17 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 18 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 30 |
| Month 19 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 20 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 21 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 30 |
| Month 22 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 23 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 24 Q | 100 | 300 | 83 | 100 | 400 | | 900 | | 1600 | 383 | 575 | 863 | 1821 | 22 |
| Month 25 S | 100 | 283 | 117 | 83 100 | 317 | 258 | 863 | 221 | 1463 | 400 | | | | |
| Month 26 | 100 | 300 | 100 | 117 | 458 | | 863 | | 1621 | 400 | | | | |
| Month 27 Q | 100 | 300 | 100 | 100 | 358 | 129 | 863 | | 1521 | 400 | 600 | 900 | 1900 | 37 |
| Month 28 S | 100 | 300 | 100 | 100 | 258 | 342 | 900 | 379 | 1458 | 400 | | | | |
| Month 29 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 30 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 30( |
| Month 31 S | 100 | 300 | 100 | 100 29 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 32 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 33 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 30( |
| Month 34 S | 100 29 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 35 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 36 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 30( |
| Month 37 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 38 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 39 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 30( |
| Month 40 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 41 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 42 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1300 | 300 |
| Month 43 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 44 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 45 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 46 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 47 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 48 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1300 | 300 |
| Max level | 150 | 367 | 167 | 167 | 592 | 392 | 938 | 429 | 1829 | AGE: 17 MIN | | | | |
| Min Level | 50 | 250 | 33 | 33 | 233 | 208 | 863 | 171 | 1458 | 21 MAX | | | | |

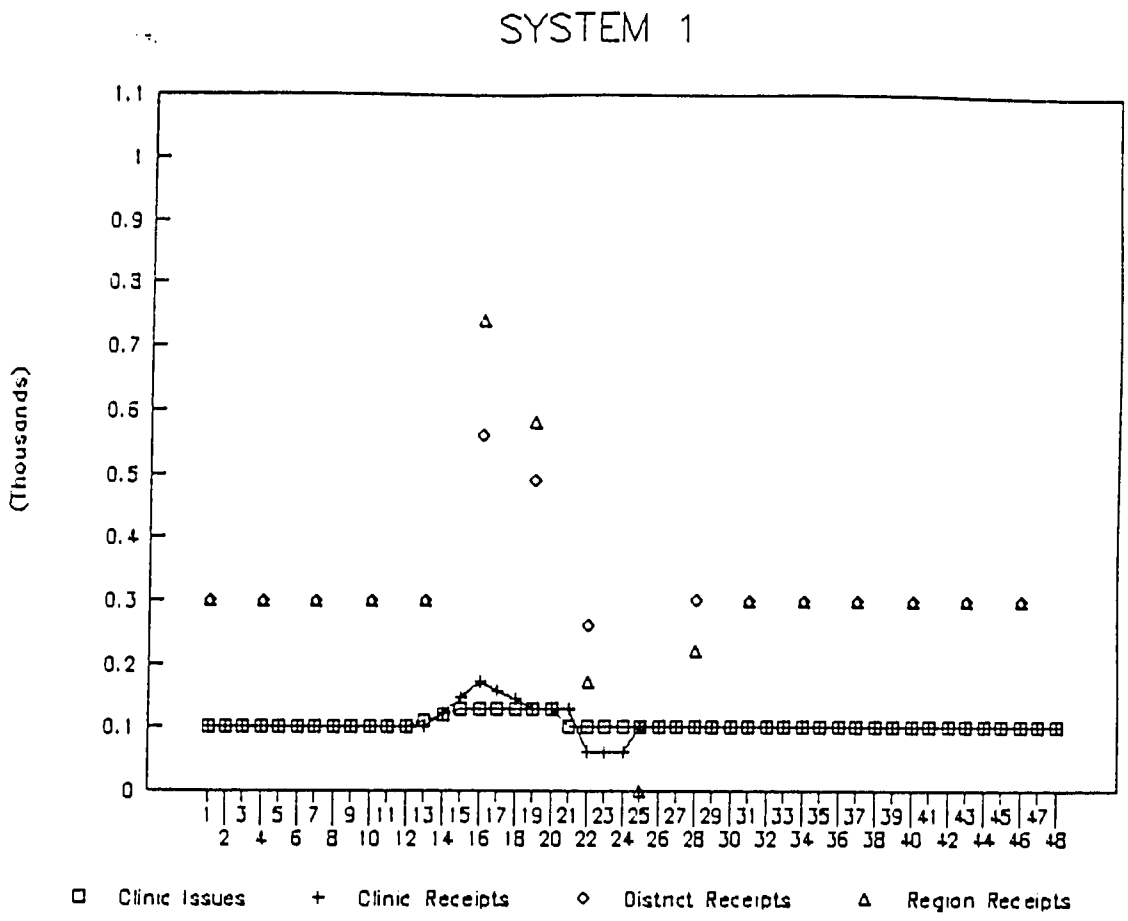
Table 5.4.2 : System 2; Pattern 4 - 12 Month Computational Base; One "Good", One "Bad" Month of Issues - Straddle Quarter

Sequential Pull at region with 12 month Base

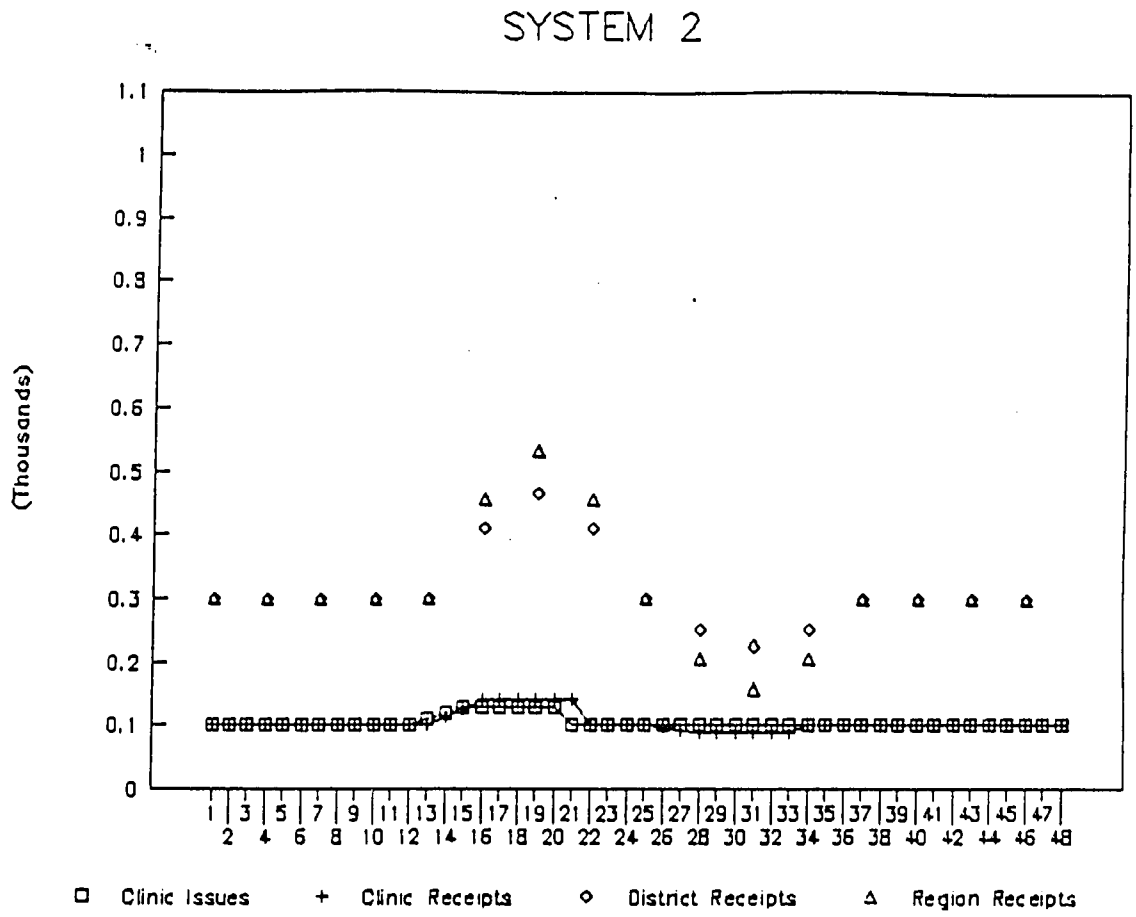
| | Monthly Issues | Clinic Stock | Clinic Request | Clinic Receipt | District Stock | District Receipts | Region Stock | Region Receipts | Total Stock | Desired Levels: Clinic Stock | Desired Levels: District Stock | Desired Levels: Region Stock | Desired Levels: Total Stock | Total Need |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Month 1 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 2 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 3 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 4 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 5 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 6 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 7 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 8 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 9 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 10 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 11 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 12 Q | 150 | 250 | 167 | 100 | 300 | | 900 | | 1450 | 417 | 625 | 938 | 1979 | 38 |
| Month 13 S | 50 | 367 | 33 | 167 | 133 | 325 | 575 | | 1075 | 400 | | | | |
| Month 14 | 100 | 300 | 100 | 33 | 425 | | 900 | 325 | 1625 | 400 | | | | |
| Month 15 Q | 100 | 300 | 100 | 100 | 325 | | 900 | | 1525 | 400 | 600 | 900 | 1900 | 0 |
| Month 16 S | 100 | 300 | 100 | 100 | 225 | 275 | 625 | | 1150 | 400 | | | | |
| Month 17 | 100 | 300 | 100 | 100 | 400 | | 900 | 275 | 1600 | 400 | | | | |
| Month 18 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 19 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 20 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 21 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 22 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 23 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 24 Q | 100 | 300 | 83 | 100 | 300 | | 900 | | 1500 | 383 | 575 | 863 | 1821 | 0 |
| Month 25 S | 100 | 283 | 117 | 83 | 217 | 275 | 625 | | 1125 | 400 | | | | |
| Month 26 | 100 | 300 | 100 | 117 | 375 | | 900 | 275 | 1575 | 400 | | | | |
| Month 27 Q | 100 | 300 | 100 | 100 | 275 | 25 | 900 | | 1475 | 400 | 600 | 900 | 1900 | 0 |
| Month 28 S | 100 | 300 | 100 | 100 | 175 | 325 | 575 | | 1050 | 400 | | | | |
| Month 29 | 100 | 300 | 100 | 100 25 | 400 | | 900 | 325 | 1600 | 400 | | | | |
| Month 30 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 31 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 32 | 100 25 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 33 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 34 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 35 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 36 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 37 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 38 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 39 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 40 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 41 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 42 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 43 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 44 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 45 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 46 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 47 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 48 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Max level | 150 | 367 | 167 | 167 | 425 | | 900 | 325 | 1625 | | | | | |
| Min level | 50 | 250 | 33 | 33 | 133 | | 575 | 275 | 1050 | | | | | |

AGE: 15 MIN
18 MAX

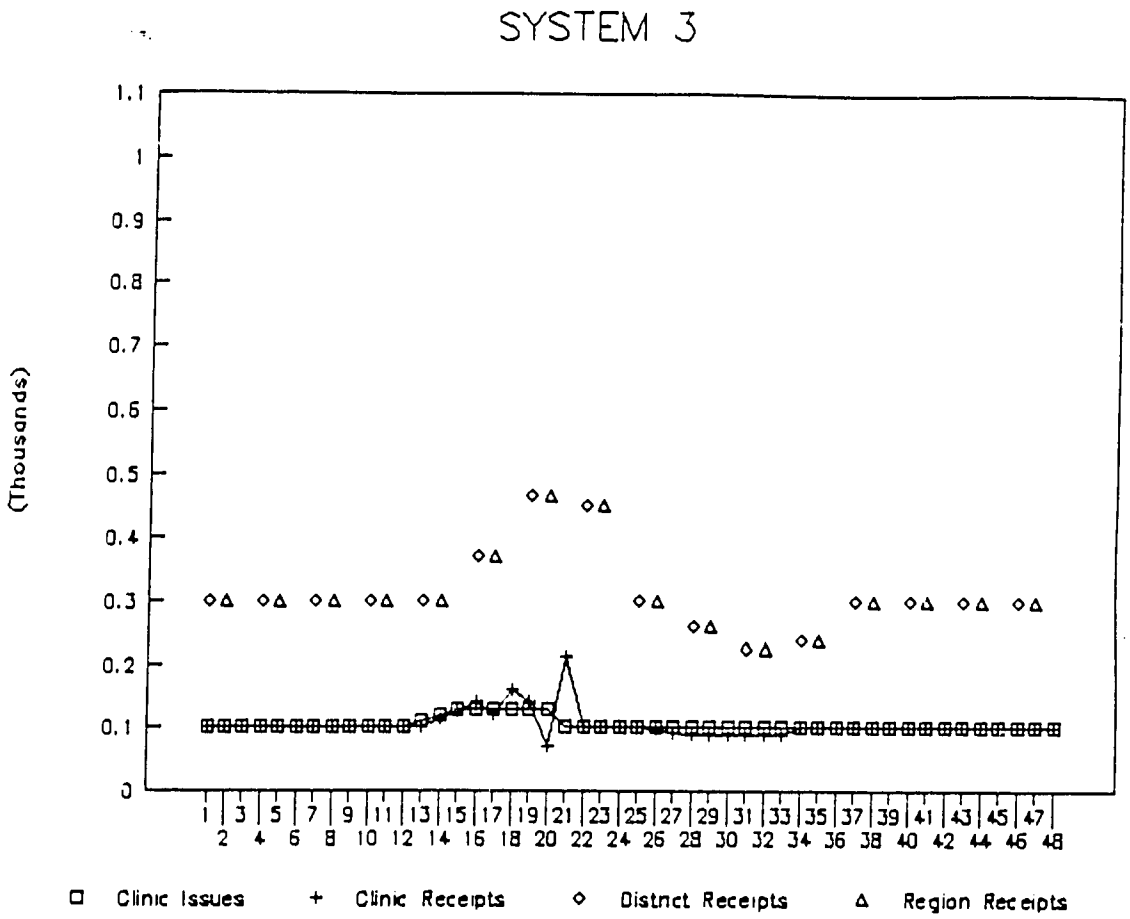
Table 5.4.3 : System 3; Pattern 4 - 12 Month Computational Base with Regional Restocking; One "Good", One "Bad" Month of Issues - Straddle Quarter




Graph 5.5.1 : System 1; Pattern 5 - Current Method; Increasing Issues, then Return




Graph 5.5.2 : System 2; Pattern 5 - 12 Month Computational Sa...
Increasing Issues, then Return




Graph 5.5.3 : System 3; Pattern 5 - 12 Month Computational Base with Regional Restocking; Increasing Issues, then Return

Current Distribution System

| | Monthly Issues | Clinic Stock | Clinic Request | Clinic Receipt | District Stock | District Receipts | Region Stock | Region Receipts | Total Stock | Desired Levels: Clinic Stock | Desired Levels: District Stock | Desired Levels: Region Stock | Desired Levels: Total Stock | Total Need |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Month 1 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 2 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 3 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 4 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 5 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 6 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 7 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 8 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 9 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 10 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 11 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 12 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 13 S | 110 | 290 | 123 | 100 | 300 | 300 | 900 | 300 | 1490 | 413 | | | | |
| Month 14 | 120 | 293 | 147 | 123 | 477 | | 900 | | 1670 | 440 | | | | |
| Month 15 Q | 130 | 310 | 170 | 147 | 330 | | 900 | | 1540 | 480 | 720 | 1080 | 2280 | 740 |
| Month 16 S | 130 | 350 | 157 | 170 | 160 | 560 | 1080 | 740 | 1590 | 507 | | | | |
| Month 17 | 130 | 377 | 143 | 157 | 563 | | 1080 | | 2020 | 520 | | | | |
| Month 18 Q | 130 | 390 | 130 | 143 | 420 | | 1080 | | 1890 | 520 | 780 | 1170 | 2470 | 580 |
| Month 19 S | 130 | 390 | 130 | 130 | 290 150 | 490 | 1170 | 580 | 1850 | 520 | | | | |
| Month 20 | 130 | 390 | 130 | 130 | [illegible] | | 1170 | | 2210 | 520 | | | | |
| Month 21 Q | 100 | 420 | 60 | 130 | 520 | | 1170 | | 2110 | 480 | 720 | 1080 | 2280 | 170 |
| Month 22 S | 100 | 380 | 60 | 60 | 460 | 260 | 1080 | 170 | 1920 | 440 | | | | |
| Month 23 | 100 | 340 | 60 | 60 | 660 | | 1080 | | 2080 | 400 | | | | |
| Month 24 Q | 100 | 300 | 100 | 60 | 600 | | 1080 | | 1980 | 400 | 600 | 900 | 1900 | 0 |
| Month 25 S | 100 | 300 | 100 | 100 | 500 | 100 | 980 | 0 | 1780 | 400 | | | | |
| Month 26 | 100 | 300 | 100 | 100 10 | 500 | | 980 | | 1780 | 400 | | | | |
| Month 27 Q | 100 | 300 | 100 | 100 | 400 | | 980 | | 1680 | 400 | 600 | 900 | 1900 | 220 |
| Month 28 S | 100 | 300 | 100 | 100 | 300 230 | 300 | 900 | 220 | 1500 | 400 | | | | |
| Month 29 | 100 10 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 30 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 31 S | 100 | 300 | 100 | 100 20 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 32 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 33 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 34 S | 100 30 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 35 | 100 | 300 | 100 | 100 30 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 36 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 37 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 38 | 100 30 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 39 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 40 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 41 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 42 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 43 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 44 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 45 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 46 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 47 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 48 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Max level | 130 | 420 | 170 | 170 | 660 | 560 | 1170 | 740 | 2210 | | | | | |
| Min level | 100 | 290 | 60 | 60 | 160 | 100 | 900 | 0 | 1490 | | | | | |

ACE: 14 M...

22 ...

Table 5.5.1 : System 1; Pattern 5 - Current Method; Increasing Issues, then Return

Current Dirstibution using 12 month Base

| | Monthly Issues | Clinic Stock | Clinic Request | Clinic Receipt | District Stock | District Receipts | Region Stock | Region Receipts | Total Stock | Desired Levels: Clinic Stock | Desired Levels: District Stock | Desired Levels: Region Stock | Desired Levels: Total Stock | Total Need |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Month 1 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 2 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 3 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 4 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 5 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 6 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 7 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 8 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 9 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 10 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 11 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 12 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 13 S | 110 | 290 | 113 | 100 | 300 | 300 | 900 | 300 | 1490 | 403 | | | | |
| Month 14 | 120 | 283 | 127 | 113 | 487 | | 900 | | 1670 | 410 | | | | |
| Month 15 Q | 130 | 280 | 140 | 127 | 360 | | 900 | | 1540 | 420 | 630 | 945 | 1995 | 455 |
| Month 16 S | 130 | 290 | 140 | 140 | 220 | 410 | 945 | 455 | 1455 | 430 | | | | |
| Month 17 | 130 | 300 | 140 | 140 | 490 | | 945 | | 1735 | 440 | | | | |
| Month 18 Q | 130 | 310 | 140 | 140 | 350 | | 945 | | 1605 | 450 | 675 | 1013 | 2138 | 533 |
| Month 19 S | 130 | 320 | 140 | 140 | 210 | 465 | 1013 | 533 | 1543 | 460 | | | | |
| Month 20 | 130 | 330 | 140 | 140 | 535 | | 1013 | | 1878 | 470 | | | | |
| Month 21 Q | 100 | 370 | 100 | 140 | 395 | | 1013 | | 1778 | 470 | 705 | 1058 | 2233 | 455 |
| Month 22 S | 100 | 370 | 100 | 100 | 295 | 410 | 1058 | 455 | 1723 | 470 | | | | |
| Month 23 | 100 | 370 | 100 | 100 | 605 | | 1058 | | 2033 | 470 | | | | |
| Month 24 Q | 100 | 370 | 100 | 100 | 505 | 230 | 1058 | | 1933 | 470 | 705 | 1058 | 2233 | 300 |
| Month 25 S | 100 | 370 | 97 | 100 | 405 | 300 | 1058 | 300 | 1833 | 467 | | | | |
| Month 26 | 100 | 367 | 93 | 97 | 608 | | 1058 | | 2033 | 460 | | | | |
| Month 27 Q | 100 | 360 | 90 | 93 | 515 | | 1058 | | 1933 | 450 | 675 | 1013 | 2138 | 205 |
| Month 28 S | 100 | 350 | 90 | 90 | 425 | 250 | 1013 | 205 | 1788 | 440 | | | | |
| Month 29 | 100 | 340 | 90 | 90 | 585 | | 1013 | | 1938 | 430 | | | | |
| Month 30 Q | 100 | 330 | 90 | 90 75 | 495 | | 1013 | | 1838 | 420 | 630 | 945 | 1995 | 158 |
| Month 31 S | 100 | 320 | 90 | 90 | 405 | 225 | 945 | 158 | 1670 | 410 | | | | |
| Month 32 | 100 | 310 | 90 | 90 | 540 | | 945 | | 1795 | 400 | | | | |
| Month 33 Q | 100 55 | 300 | 100 | 90 | 450 | 53 | 945 | | 1695 | 400 | 600 | 900 | 1900 | 205 |
| Month 34 S | 100 | 300 | 100 | 100 | 350 | 250 | 900 | 205 | 1550 | 400 | | | | |
| Month 35 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 36 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 37 S | 100 | 300 | 100 | 100 78 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 38 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 39 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 40 S | 100 78 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 41 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 42 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 43 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 44 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 45 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Month 46 S | 100 | 300 | 100 | 100 | 300 | 300 | 900 | 300 | 1500 | 400 | | | | |
| Month 47 | 100 | 300 | 100 | 100 | 500 | | 900 | | 1700 | 400 | | | | |
| Month 48 Q | 100 | 300 | 100 | 100 | 400 | | 900 | | 1600 | 400 | 600 | 900 | 1900 | 300 |
| Max level | 130 | 370 | 140 | 140 | 608 | 465 | 1058 | 533 | 2033 | | | | | |
| Min Level | 100 | 280 | 90 | 90 | 210 | 225 | 900 | 158 | 1455 | | | | | |

AGE: 16 MIN

21 MAX

Table 5.5.2 : System 2; Pattern 5 - 12 Month Computational Base; Increasing Issues, then Return

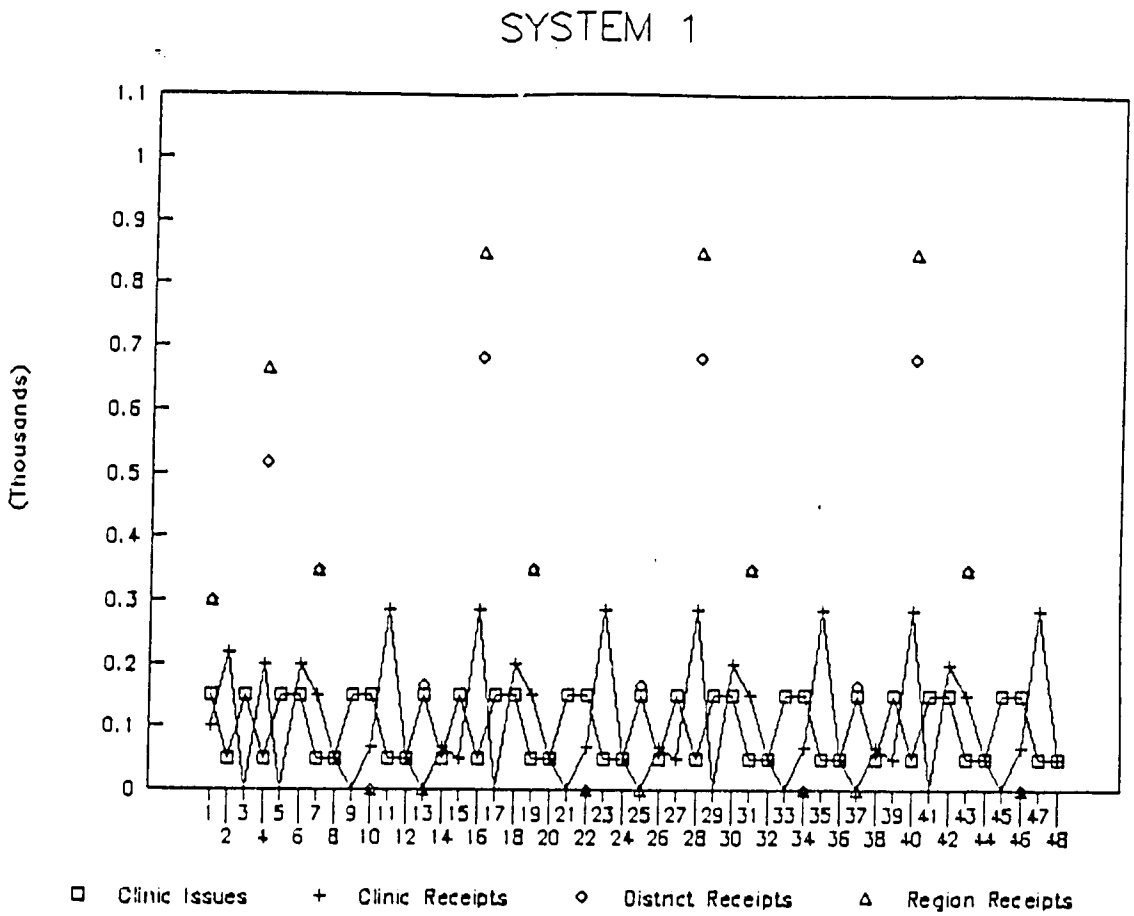
Sequential Pull at region with 12 month Base

| | Monthly Issues | Clinic Stock | Clinic Request | Clinic Receipt | District Stock | District Receipts | Region Stock | Region Receipts | Total Stock | Desired Levels: Clinic Stock | Desired Levels: District Stock | Desired Levels: Region Stock | Desired Levels: Total Stock | Total Need |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Month 1 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 2 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 3 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 4 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 5 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 6 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 7 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 8 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 9 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 10 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 11 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 12 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 13 S | 110 | 290 | 113 | 100 | 200 | 300 | 600 | | 1090 | 403 | | | | |
| Month 14 | 120 | 283 | 127 | 113 | 387 | | 900 | 300 | 1570 | 410 | | | | |
| Month 15 Q | 130 | 280 | 140 | 127 | 250 | | 900 | | 1440 | 420 | 630 | 945 | 1995 | 45 |
| Month 16 S | 130 | 290 | 140 | 140 | 120 | 370 | 530 | | 940 | 430 | | | | |
| Month 17 | 130 | 280 | 160 | 120 | 370 | | 900 | 370 | 1550 | 440 | | | | |
| Month 18 Q | 130 | 310 | 140 | 160 | 210 | | 900 | | 1420 | 450 | 675 | 1013 | 2138 | 113 |
| Month 19 S | 130 | 320 | 140 | 140 | 70 | 465 | 435 | | 825 | 460 | | | | |
| Month 20 | 130 | 260 | 210 | 70 | 465 | | 900 | 465 | 1625 | 470 | | | | |
| Month 21 Q | 100 | 370 | 100 | 210 | 255 | 15 | 900 | | 1525 | 470 | 705 | 1058 | 2233 | 158 |
| Month 22 S | 100 | 370 | 100 | 100 | 155 | 450 | 450 | | 975 | 470 | | | | |
| Month 23 | 100 | 370 | 100 | 100 | 505 | | 900 | 450 | 1775 | 470 | | | | |
| Month 24 Q | 100 | 370 | 100 | 100 | 405 | | 900 | | 1675 | 470 | 705 | 1058 | 2233 | 158 |
| Month 25 S | 100 | 370 | 97 | 100 | 305 | 300 | 600 | | 1275 | 467 | | | | |
| Month 26 | 100 | 367 | 93 | 97 | 508 | | 900 | 300 | 1775 | 460 | | | | |
| Month 27 Q | 100 | 360 | 90 | 93 | 415 | | 900 | | 1675 | 450 | 675 | 1013 | 2138 | 113 |
| Month 28 S | 100 | 350 | 90 | 90 10 | 325 | 260 | 640 | | 1315 | 440 | | | | |
| Month 29 | 100 | 340 | 90 | 90 | 495 | | 900 | 260 | 1735 | 430 | | | | |
| Month 30 Q | 100 | 330 | 90 | 90 | 405 | 150 | 900 | | 1635 | 420 | 630 | 945 | 1995 | 45 |
| Month 31 S | 100 | 320 | 90 | 90 | 315 | 225 | 675 | | 1310 | 410 | | | | |
| Month 32 | 100 30 | 310 | 90 | 90 | 450 | | 900 | 225 | 1660 | 400 | | | | |
| Month 33 Q | 100 | 300 | 100 | 90 | 360 | | 900 | | 1560 | 400 | 600 | 900 | 1900 | 0 |
| Month 34 S | 100 | 300 | 100 | 100 | 260 | 240 | 660 | | 1220 | 400 | | | | |
| Month 35 | 100 | 300 | 100 | 100 95 | 400 | | 900 | 240 | 1600 | 400 | | | | |
| Month 36 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 37 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 38 | 100 35 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 39 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 40 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 41 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 42 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 43 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 44 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 45 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 46 S | 100 | 300 | 100 | 100 | 200 | 300 | 600 | | 1100 | 400 | | | | |
| Month 47 | 100 | 300 | 100 | 100 | 400 | | 900 | 300 | 1600 | 400 | | | | |
| Month 48 Q | 100 | 300 | 100 | 100 | 300 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Max level | 130 | 370 | 210 | 210 | 508 | | 900 | 465 | 1775 | | | | | |
| Min level | 100 | 260 | 90 | 70 | 70 | | 435 | 225 | 825 | | | | | |

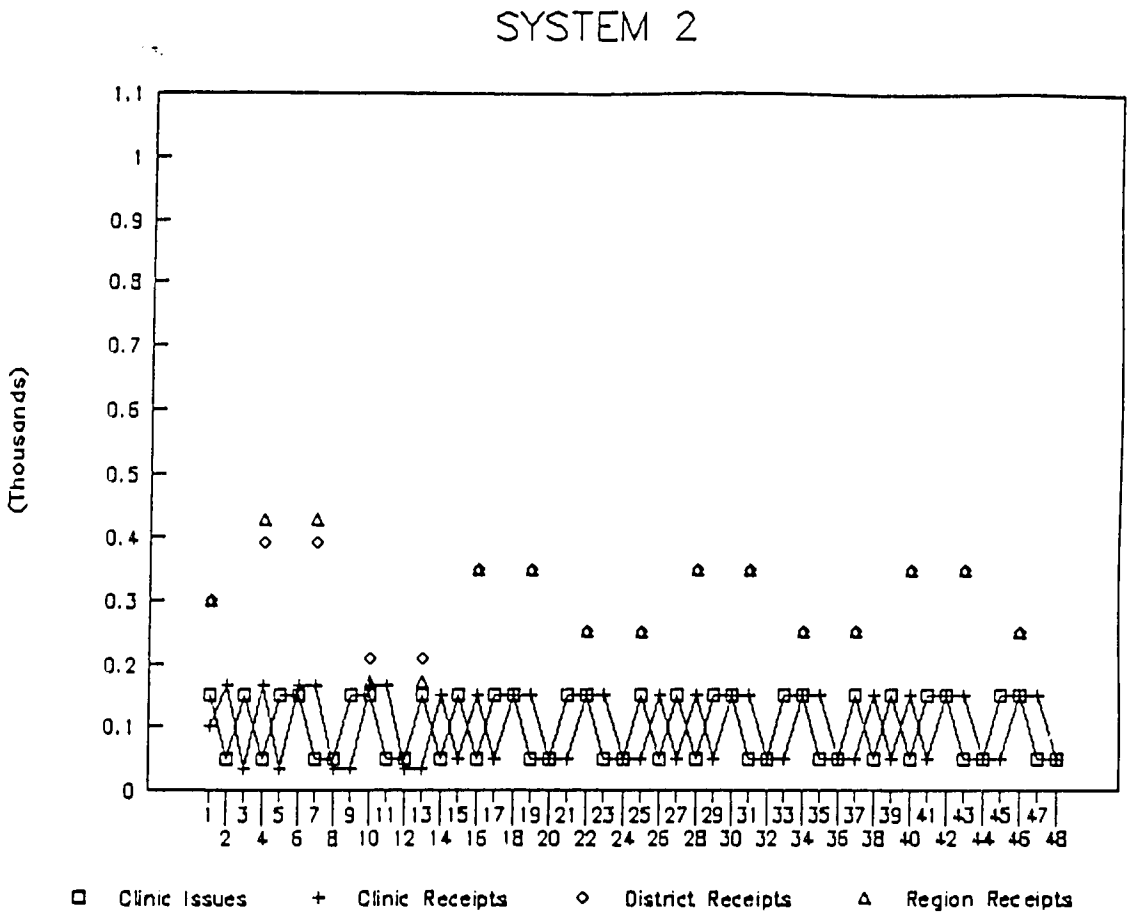
AGE: 14

16

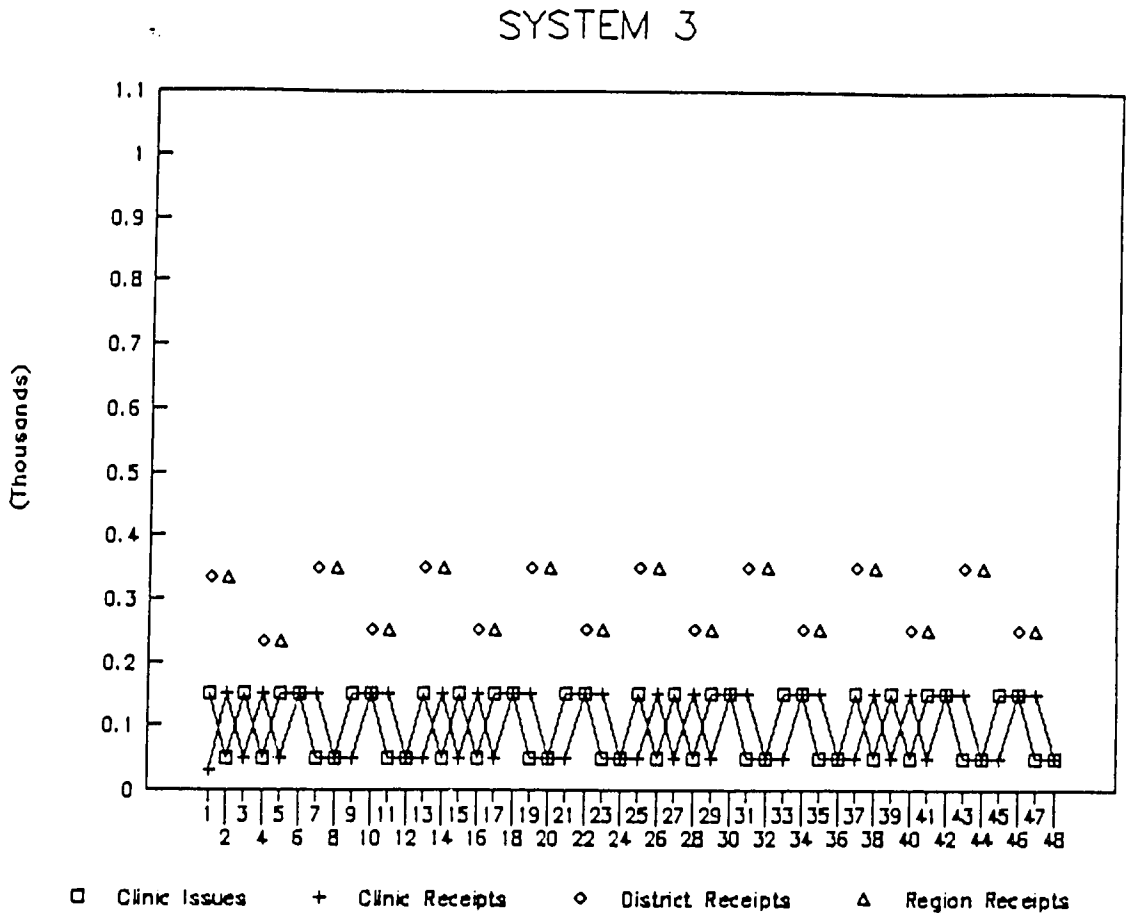
Table 5.5.3 : System 3; Pattern 5 - 12 Month Computational Base with Regional Restocking; Increasing Issues, then Return




Graph 5.6.1 : System 1; Pattern 6 - Current Method; High and Low Issues




Graph 5.6.2 : System 2; Pattern 6 - 12 Month Computational Base; High and Low Issues




Graph 5.6.3 : System 3; Pattern 6 - 12 Month Computational Base with Regional Restocking; High and Low Issues

Current Distribution System

| | Monthly Issues | Clinic Stock | Clinic Request | Clinic Receipt | District Stock | District Receipts | Region Stock | Region Receipts | Total Stock | Desired Levels: Clinic Stock | Desired Levels: District Stock | Desired Levels: Region Stock | Desired Levels: Total Stock | Total Need |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Month 1 S | 150 | 250 | 217 | 100 | 300 | 300 | 900 | 300 | 1450 | 467 | | | | |
| Month 2 | 50 | 417 | 0 | 217 | 383 | | 900 | | 1700 | 400 | | | | |
| Month 3 Q | 150 | 267 | 200 | 0 | 383 | | 900 | | 1550 | 467 | 700 | 1050 | 2217 | 667 |
| Month 4 S | 50 | 417 | 0 | 200 | 183 | 517 | 1050 | 667 | 1650 | 333 | | | | |
| Month 5 | 150 | 267 | 200 | 0 | 700 | | 1050 | | 2017 | 467 | | | | |
| Month 6 Q | 150 | 317 | 150 | 200 | 500 | | 1050 | | 1867 | 467 | 700 | 1050 | 2217 | 350 |
| Month 7 S | 50 | 417 | 50 | 150 | 350 | 350 | 1050 | 350 | 1817 | 467 | | | | |
| Month 8 | 50 | 417 | 0 | 50 | 650 | | 1050 | | 2117 | 333 | | | | |
| Month 9 Q | 150 | 267 | 67 | 0 | 650 | | 1050 | | 1967 | 333 | 500 | 750 | 1583 | 0 |
| Month 10 S | 150 | 183 | 283 | 67 | 583 | 0 | 1050 | 0 | 1817 | 467 | | | | |
| Month 11 | 50 | 417 | 50 | 283 | 300 | | 1050 | | 1767 | 467 | | | | |
| Month 12 Q | 50 | 417 | 0 | 50 | 250 | | 1050 | | 1717 | 333 | 500 | 750 | 1583 | 0 |
| Month 13 S | 150 | 267 | 67 | 0 | 250 | 167 | 883 | 0 | 1400 | 333 | | | | |
| Month 14 | 50 | 283 | 50 | 67 | 350 | | 883 | | 1517 | 333 | | | | |
| Month 15 Q | 150 | 183 | 283 | 50 | 300 | | 883 | | 1367 | 467 | 700 | 1050 | 2217 | 850 |
| Month 16 S | 50 | 417 | 0 | 283 | 17 | 683 | 1050 | 850 | 1483 | 333 | | | | |
| Month 17 | 150 | 267 | 200 | 0 | 700 | | 1050 | | 2017 | 467 | | | | |
| Month 18 Q | 150 | 317 | 150 | 200 | 500 | | 1050 | | 1867 | 467 | 700 | 1050 | 2217 | 350 |
| Month 19 S | 50 | 417 | 50 | 150 | 350 | 350 | 1050 | 350 | 1817 | 467 | | | | |
| Month 20 | 50 | 417 | 0 | 50 | 650 | | 1050 | | 2117 | 333 | | | | |
| Month 21 Q | 150 | 267 | 67 | 0 | 650 | | 1050 | | 1967 | 333 | 500 | 750 | 1583 | 0 |
| Month 22 S | 150 | 183 | 283 | 67 | 583 | 0 | 1050 | 0 | 1817 | 467 | | | | |
| Month 23 | 50 | 417 | 50 | 283 | 300 | | 1050 | | 1767 | 467 | | | | |
| Month 24 Q | 50 | 417 | 0 | 50 | 250 | | 1050 | | 1717 | 333 | 500 | 750 | 1583 | 0 |
| Month 25 S | 150 | 267 | 67 | 0 | 250 | 167 | 883 | 0 | 1400 | 333 | | | | |
| Month 26 | 50 | 283 | 50 | 67 | 350 | | 883 | | 1517 | 333 | | | | |
| Month 27 Q | 150 | 183 | 283 | 50 | 300 | | 883 | | 1367 | 467 | 700 | 1050 | 2217 | 850 |
| Month 28 S | 50 | 417 | 0 | 283 | 17 | 683 | 1050 | 850 | 1483 | 333 | | | | |
| Month 29 | 150 | 267 | 200 | 0 | 700 | | 1050 | | 2017 | 467 | | | | |
| Month 30 Q | 150 | 317 | 150 | 200 | 500 | | 1050 | | 1867 | 467 | 700 | 1050 | 2217 | 350 |
| Month 31 S | 50 | 417 | 50 | 150 | 350 | 350 | 1050 | 350 | 1817 | 467 | | | | |
| Month 32 | 50 | 417 | 0 | 50 | 650 | | 1050 | | 2117 | 333 | | | | |
| Month 33 Q | 150 | 267 | 67 | 0 | 650 | | 1050 | | 1967 | 333 | 500 | 750 | 1583 | 0 |
| Month 34 S | 150 | 183 | 283 | 67 | 583 | 0 | 1050 | 0 | 1817 | 467 | | | | |
| Month 35 | 50 | 417 | 50 | 283 | 300 | | 1050 | | 1767 | 467 | | | | |
| Month 36 Q | 50 | 417 | 0 | 50 | 250 | | 1050 | | 1717 | 333 | 500 | 750 | 1583 | 0 |
| Month 37 S | 150 | 267 | 67 | 0 | 250 | 167 | 883 | 0 | 1400 | 333 | | | | |
| Month 38 | 50 | 283 | 50 | 67 | 350 | | 883 | | 1517 | 333 | | | | |
| Month 39 Q | 150 | 183 | 283 | 50 | 300 | | 883 | | 1367 | 467 | 700 | 1050 | 2217 | 850 |
| Month 40 S | 50 | 417 | 0 | 283 | 17 | 683 | 1050 | 850 | 1483 | 333 | | | | |
| Month 41 | 150 | 267 | 200 | 0 | 700 | | 1050 | | 2017 | 467 | | | | |
| Month 42 Q | 150 | 317 | 150 | 200 | 500 | | 1050 | | 1867 | 467 | 700 | 1050 | 2217 | 350 |
| Month 43 S | 50 | 417 | 50 | 150 | 350 | 350 | 1050 | 350 | 1817 | 467 | | | | |
| Month 44 | 50 | 417 | 0 | 50 | 650 | | 1050 | | 2117 | 333 | | | | |
| Month 45 Q | 150 | 267 | 67 | 0 | 650 | | 1050 | | 1967 | 333 | 500 | 750 | 1583 | 0 |
| Month 46 S | 150 | 183 | 283 | 67 | 583 | 0 | 1050 | 0 | 1817 | 467 | | | | |
| Month 47 | 50 | 417 | 50 | 283 | 300 | | 1050 | | 1767 | 467 | | | | |
| Month 48 Q | 50 | 417 | 0 | 50 | 250 | | 1050 | | 1717 | 333 | 500 | 750 | 1583 | 0 |
| Max level | 150 | 417 | 283 | 283 | 700 | 683 | 1050 | 850 | 2117 | | | | | |
| Min level | 50 | 183 | 0 | 0 | 17 | 0 | 883 | 0 | 1367 | | | | | |

AGE: 14 MIN

22 MAX

Table 5.6.1 : System 1; Pattern 6 - Current Method; High and Low Issues

Current Distribution using 12 month Base

| | Monthly Issues | Clinic Stock | Clinic Request | Clinic Receipt | District Stock | District Receipts | Region Stock | Region Receipts | Total Stock | Desired Levels: Clinic Stock | Desired Levels: District Stock | Desired Levels: Region Stock | Desired Levels: Total Stock | Total Need |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Month 1 S | 150 | 250 | 167 | 100 | 300 | 300 | 900 | 300 | 1450 | 417 | | | | |
| Month 2 | 50 | 367 | 33 | 167 | 433 | | 900 | | 1700 | 400 | | | | |
| Month 3 Q | 150 | 250 | 167 | 33 | 400 | | 900 | | 1550 | 417 | 625 | 938 | 1979 | 429 |
| Month 4 S | 50 | 367 | 33 | 167 | 233 | 392 | 938 | 429 | 1538 | 400 | | | | |
| Month 5 | 150 | 250 | 167 | 33 | 592 | | 938 | | 1779 | 417 | | | | |
| Month 6 Q | 150 | 267 | 167 | 167 | 425 | | 938 | | 1629 | 433 | 650 | 975 | 2058 | 429 |
| Month 7 S | 50 | 383 | 33 | 167 | 258 | 392 | 975 | 429 | 1617 | 417 | | | | |
| Month 8 | 50 | 367 | 33 | 33 | 617 | | 975 | | 1958 | 400 | | | | |
| Month 9 Q | 150 | 250 | 167 | 33 | 583 | | 975 | | 1808 | 417 | 625 | 938 | 1979 | 171 |
| Month 10 S | 150 | 267 | 167 | 167 | 417 | 208 | 938 | 171 | 1621 | 433 | | | | |
| Month 11 | 50 | 383 | 33 | 167 | 458 | | 938 | | 1779 | 417 | | | | |
| Month 12 Q | 50 | 367 | 33 | 33 | 425 | | 938 | | 1729 | 400 | 600 | 900 | 1900 | 171 |
| Month 13 S | 150 | 250 | 150 | 33 | 392 | 208 | 900 | 171 | 1542 | 400 | | | | |
| Month 14 | 50 | 350 | 50 | 150 | 450 | | 900 | | 1700 | 400 | | | | |
| Month 15 Q | 150 | 250 | 150 | 50 | 400 | | 900 | | 1550 | 400 | 600 | 900 | 1900 | 350 |
| Month 16 S | 50 | 350 | 50 | 150 | 250 | 350 | 900 | 350 | 1500 | 400 | | | | |
| Month 17 | 150 | 250 | 150 | 50 | 550 | | 900 | | 1700 | 400 | | | | |
| Month 18 Q | 150 | 250 | 150 | 150 | 400 | | 900 | | 1550 | 400 | 600 | 900 | 1900 | 350 |
| Month 19 S | 50 | 350 | 50 | 150 | 250 | 350 | 900 | 350 | 1500 | 400 | | | | |
| Month 20 | 50 | 350 | 50 | 50 | 550 | | 900 | | 1800 | 400 | | | | |
| Month 21 Q | 150 | 250 | 150 | 50 | 500 | | 900 | | 1650 | 400 | 600 | 900 | 1900 | 250 |
| Month 22 S | 150 | 250 | 150 | 150 | 350 | 250 | 900 | 250 | 1500 | 400 | | | | |
| Month 23 | 50 | 350 | 50 | 150 | 450 | | 900 | | 1700 | 400 | | | | |
| Month 24 Q | 50 | 350 | 50 | 50 | 400 | | 900 | | 1650 | 400 | 600 | 900 | 1900 | 250 |
| Month 25 S | 150 | 250 | 150 | 50 | 350 | 250 | 900 | 250 | 1500 | 400 | | | | |
| Month 26 | 50 | 350 | 50 | 150 | 450 | | 900 | | 1700 | 400 | | | | |
| Month 27 Q | 150 | 250 | 150 | 50 | 400 | | 900 | | 1550 | 400 | 600 | 900 | 1900 | 350 |
| Month 28 S | 50 | 350 | 50 | 150 | 250 | 350 | 900 | 350 | 1500 | 400 | | | | |
| Month 29 | 150 | 250 | 150 | 50 | 550 | | 900 | | 1700 | 400 | | | | |
| Month 30 Q | 150 | 250 | 150 | 150 | 400 | | 900 | | 1550 | 400 | 600 | 900 | 1900 | 350 |
| Month 31 S | 50 | 350 | 50 | 150 | 250 | 350 | 900 | 350 | 1500 | 400 | | | | |
| Month 32 | 50 | 350 | 50 | 50 | 550 | | 900 | | 1800 | 400 | | | | |
| Month 33 Q | 150 | 250 | 150 | 50 | 500 | | 900 | | 1650 | 400 | 600 | 900 | 1900 | 250 |
| Month 34 S | 150 | 250 | 15[illegible] | 150 | 350 | 250 | 900 | 250 | 1500 | 400 | | | | |
| Month 35 | 50 | 350 | 50 | 150 | 450 | | 900 | | 1700 | 400 | | | | |
| Month 36 Q | 50 | 350 | 50 | 50 | 400 | | 900 | | 1650 | 400 | 600 | 900 | 1900 | 250 |
| Month 37 S | 150 | 250 | 150 | 50 | 350 | 250 | 900 | 250 | 1500 | 400 | | | | |
| Month 38 | 50 | 350 | 50 | 150 | 450 | | 900 | | 1700 | 400 | | | | |
| Month 39 Q | 150 | 250 | 150 | 50 | 400 | | 900 | | 1550 | 400 | 600 | 900 | 1900 | 350 |
| Month 40 S | 50 | 350 | 50 | 150 | 250 | 350 | 900 | 350 | 1500 | 400 | | | | |
| Month 41 | 150 | 250 | 150 | 50 | 550 | | 900 | | 1700 | 400 | | | | |
| Month 42 Q | 150 | 250 | 150 | 150 | 400 | | 900 | | 1550 | 400 | 600 | 900 | 1900 | 350 |
| Month 43 S | 50 | 350 | 50 | 150 | 250 | 350 | 900 | 350 | 1500 | 400 | | | | |
| Month 44 | 50 | 350 | 50 | 50 | 550 | | 900 | | 1800 | 400 | | | | |
| Month 45 Q | 150 | 250 | 150 | 50 | 500 | | 900 | | 1650 | 400 | 600 | 900 | 1900 | 250 |
| Month 46 S | 150 | 250 | 150 | 150 | 350 | 250 | 900 | 250 | 1500 | 400 | | | | |
| Month 47 | 50 | 350 | 50 | 150 | 450 | | 900 | | 1700 | 400 | | | | |
| Month 48 Q | 50 | 350 | 50 | 50 | 400 | | 900 | | 1650 | 400 | 600 | 900 | 1900 | 250 |
| Max level | 150 | 383 | 167 | 167 | 617 | 392 | 975 | 429 | 1958 | | | | | |
| Min Level | 50 | 250 | 33 | 33 | 233 | 208 | 900 | 171 | 1450 | | | | | |

Table 5.6.2 : System 2; Pattern 6 - 12 Month Computational Base; High and Low Issues

Sequential Pull at region with 12 month Base

| | Monthly Issues | Clinic Stock | Clinic Request | Clinic Receipt | District Stock | District Receipts | Region Stock | Region Receipts | Total Stock | Desired Levels: Clinic Stock | Desired Levels: District Stock | Desired Levels: Region Stock | Desired Levels: Total Stock | Total Need |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Month 1 S | 150 | 250 | 150 | 32 | 233 | 335 | 565 | | 1048 | 400 | | | | |
| Month 2 | 50 | 350 | 50 | 150 | 418 | | 900 | 335 | 1668 | 400 | | | | |
| Month 3 Q | 150 | 250 | 150 | 50 | 368 | | 900 | | 1518 | 400 | 600 | 900 | 1900 | 0 |
| Month 4 S | 50 | 350 | 50 | 150 | 218 | 232 | 668 | | 1236 | 400 | | | | |
| Month 5 | 150 | 250 | 150 | 50 | 400 | | 900 | 232 | 1550 | 400 | | | | |
| Month 6 Q | 150 | 250 | 150 | 150 | 250 | | 900 | | 1400 | 400 | 600 | 900 | 1900 | 0 |
| Month 7 S | 50 | 350 | 50 | 150 | 100 | 350 | 550 | | 1000 | 400 | | | | |
| Month 8 | 50 | 350 | 50 | 50 | 400 | | 900 | 350 | 1650 | 400 | | | | |
| Month 9 Q | 150 | 250 | 150 | 50 | 350 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 10 S | 150 | 250 | 150 | 150 | 200 | 250 | 650 | | 1100 | 400 | | | | |
| Month 11 | 50 | 350 | 50 | 150 | 300 | | 900 | 250 | 1550 | 400 | | | | |
| Month 12 Q | 50 | 350 | 50 | 50 | 250 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 13 S | 150 | 250 | 150 | 50 | 200 | 350 | 550 | | 1000 | 400 | | | | |
| Month 14 | 50 | 350 | 50 | 150 | 400 | | 900 | 350 | 1650 | 400 | | | | |
| Month 15 Q | 150 | 250 | 150 | 50 | 350 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 16 S | 50 | 350 | 50 | 150 | 200 | 250 | 650 | | 1200 | 400 | | | | |
| Month 17 | 150 | 250 | 150 | 50 | 400 | | 900 | 250 | 1550 | 400 | | | | |
| Month 18 Q | 150 | 250 | 150 | 150 | 250 | | 900 | | 1400 | 400 | 600 | 900 | 1900 | 0 |
| Month 19 S | 50 | 350 | 50 | 150 | 100 | 350 | 550 | | 1000 | 400 | | | | |
| Month 20 | 50 | 350 | 50 | 50 | 400 | | 900 | 350 | 1650 | 400 | | | | |
| Month 21 Q | 150 | 250 | 150 | 50 | 350 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 22 S | 150 | 250 | 150 | 150 | 200 | 250 | 650 | | 1100 | 400 | | | | |
| Month 23 | 50 | 350 | 50 | 150 | 300 | | 900 | 250 | 1550 | 400 | | | | |
| Month 24 Q | 50 | 350 | 50 | 50 | 250 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 25 S | 150 | 250 | 150 | 50 | 200 | 350 | 550 | | 1000 | 400 | | | | |
| Month 26 | 50 | 350 | 50 | 150 | 400 | | 900 | 350 | 1650 | 400 | | | | |
| Month 27 Q | 150 | 250 | 150 | 50 | 350 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 28 S | 50 | 350 | 50 | 150 | 200 | 250 | 650 | | 1200 | 400 | | | | |
| Month 29 | 150 | 250 | 150 | 50 | 400 | | 900 | 250 | 1550 | 400 | | | | |
| Month 30 Q | 150 | 250 | 150 | 150 | 250 | | 900 | | 1400 | 400 | 600 | 900 | 1900 | 0 |
| Month 31 S | 50 | 350 | 50 | 150 | 100 | 350 | 550 | | 1000 | 400 | | | | |
| Month 32 | 50 | 350 | 50 | 50 | 400 | | 900 | 350 | 1650 | 400 | | | | |
| Month 33 Q | 150 | 250 | 150 | 50 | 350 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 34 S | 150 | 250 | 150 | 150 | 200 | 250 | 650 | | 1100 | 400 | | | | |
| Month 35 | 50 | 350 | 50 | 150 | 300 | | 900 | 250 | 1550 | 400 | | | | |
| Month 36 Q | 50 | 350 | 50 | 50 | 250 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 37 S | 150 | 250 | 150 | 50 | 200 | 350 | 550 | | 1000 | 400 | | | | |
| Month 38 | 50 | 350 | 50 | 150 | 400 | | 900 | 350 | 1650 | 400 | | | | |
| Month 39 Q | 150 | 250 | 150 | 50 | 350 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 40 S | 50 | 350 | 50 | 150 | 200 | 250 | 650 | | 1200 | 400 | | | | |
| Month 41 | 150 | 250 | 150 | 50 | 400 | | 900 | 250 | 1550 | 400 | | | | |
| Month 42 Q | 150 | 250 | 150 | 150 | 250 | | 900 | | 1400 | 400 | 600 | 900 | 1900 | 0 |
| Month 43 S | 50 | 350 | 50 | 150 | 100 | 350 | 550 | | 1000 | 400 | | | | |
| Month 44 | 50 | 350 | 50 | 50 | 400 | | 900 | 350 | 1650 | 400 | | | | |
| Month 45 Q | 150 | 250 | 150 | 50 | 350 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Month 46 S | 150 | 250 | 150 | 150 | 200 | 250 | 650 | | 1100 | 400 | | | | |
| Month 47 | 50 | 350 | 50 | 150 | 300 | | 900 | 250 | 1550 | 400 | | | | |
| Month 48 Q | 50 | 350 | 50 | 50 | 250 | | 900 | | 1500 | 400 | 600 | 900 | 1900 | 0 |
| Max level | 150 | 350 | 150 | 150 | 418 | | 900 | 350 | 1668 | | | | | |
| Min level | 50 | 250 | 50 | 32 | 100 | | 550 | 232 | 1000 | | | | | |

Table 5.6.3 : System 3; Pattern 6 - 12 Month Computational Base with Regional Restocking; High and Low Issues

ATTACHMENT 6: ANALYSIS OF CONDOM ISSUES DATA

## ATTACHMENT 6. ANALYSIS OF CONDOM ISSUES DATA

To determine the recommended stock level policy for the MOH, an analysis was performed on a series of issues data. The data consist of quarterly issues of condoms (to clients) at each of ten regions and for the country as a whole. Within each data set, an evaluation was conducted of the relationship between each quarter's issues and the sum of the previous three quarters' issues. This analysis was designed to show the adequacy of a stock policy that maintains nine months stock on hand at the Regional level calculated on the previous nine months' issues. Issues data for condoms were chosen because consumption of this product has shown the greatest volatility. The issues data, the nine month rolling stock computation, and the ratio (expressed as months of issues) are shown in Table 6.1, below.

The analysis shows that the changes in quarterly issues were too uncertain during the early years of the program (1987 to 1989) for a policy of nine months stock-on-hand to have been successful in avoiding stockouts. It also shows vastly increased stability since that time in most regions and at the central level.

For each region and for the country as a whole the Mean and Standard Deviation of the ratio of quarterly issues to the previous nine months were computed using data beginning in 1990. Table 6.2, which follows, shows these values.

In five of the regions and for the country as a whole, a stock policy of nine months would have included all issues within three Standard Deviations of the Mean. In four of the Regions a stock policy of 12 months would have been required. For one region, the Upper West Region, a stock policy of 24 months would have been required to accommodate all issues within three Standard Deviations of the Mean. Further analysis reveals that the particular issues in question were seasonal (based on annual promotional activities) and were probably predictable. Therefore, stocks for these specific events would have been handled through special procedures rather than an adjustment in stock policy as a whole.

Another examination was conducted on the data to determine how many stockouts would have occurred at the regional and central levels had the nine month policy been in place. This examination showed that there would have been a total of six stockouts at the regional level if this policy had been practiced since 1990 - three of which were due to special campaign activities. If the policy had been followed since 1991, however, only three stockouts would have occurred - all due to the previously mentioned promotional campaigns. No stockouts would have occurred at the central level under this policy.

Table 6.1 - Quarterly Issues and Required Stock Levels

| | Ashanti Region | | | Brong Ahafo Region | | | Central Region | | | Greater Accra Region | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Issues | 9 month Base | Months of Issues | Issues | 9 month Base | Months of Issues | Issues | 9 month Base | Months of Issues | Issues | 9 month Base | Months of Issues |
| 1987 | 0 | | | 945 | | | 13,028 | | | 70 | | |
| | 0 | | | 615 | | | 5,060 | | | 27 | | |
| | 0 | 0 | | 996 | 2,556 | | 62,400 | 80,488 | | 543 | 640 | |
| V | 0 | 0 | N/A | 0 | 2,556 | 0.00 | 0 | 80,488 | 0.00 | 0 | 640 | 0.00 |
| 1988 | 0 | 0 | N/A | 0 | 2,556 | 0.00 | 0 | 80,488 | 0.00 | 0 | 640 | 0.00 |
| | 0 | 0 | N/A | 0 | 2,556 | 0.00 | 0 | 80,488 | 0.00 | 107 | 640 | 1.50 |
| | 0 | 0 | N/A | 4,312 | 6,868 | 15.18 | 4,350 | 84,838 | 0.49 | 1,097 | 1,737 | 15.43 |
| V | 3,079 | 3,079 | N/A | 5,124 | 11,992 | 6.71 | 9,791 | 94,629 | 1.04 | 7,213 | 9,057 | 37.37 |
| 1989 | 10,741 | 13,820 | 31.40 | 37,326 | 46,762 | 28.01 | 26,437 | 40,578 | 2.51 | 18,709 | 27,019 | 18.59 |
| | 12,427 | 26,247 | 8.09 | 9,810 | 52,260 | 1.89 | 29,656 | 65,884 | 6.58 | 14,109 | 40,031 | 4.70 |
| | 12,160 | 35,328 | 4.17 | 3,456 | 50,592 | 0.60 | 32,603 | 88,696 | 4.45 | 31,657 | 64,475 | 7.12 |
| V | 23,116 | 47,703 | 5.89 | 10,645 | 23,911 | 1.89 | 41,014 | 103,273 | 4.16 | 28,988 | 74,754 | 4.05 |
| 1990 | 27,074 | 62,350 | 5.11 | 17,142 | 31,243 | 6.45 | 59,003 | 132,620 | 5.14 | 22,795 | 83,440 | 2.74 |
| | 20,752 | 70,942 | 3.00 | 39,572 | 67,359 | 11.40 | 34,880 | 134,897 | 2.37 | 26,997 | 78,780 | 2.91 |
| | 21,884 | 69,710 | 2.78 | 12,135 | 68,849 | 1.62 | 46,753 | 140,636 | 3.12 | 44,378 | 94,170 | 5.07 |
| V | 23,092 | 65,728 | 2.98 | 29,456 | 81,163 | 3.85 | 41,280 | 122,913 | 2.64 | 32,037 | 103,412 | 3.06 |
| 1991 | 26,824 | 71,800 | 3.67 | 21,445 | 63,036 | 2.38 | 36,129 | 124,162 | 2.65 | 33,090 | 109,505 | 2.88 |
| | 31,002 | 80,918 | 3.89 | 36,855 | 87,756 | 5.26 | 48,487 | 125,896 | 3.51 | 32,029 | 97,156 | 2.63 |
| | 37,007 | 94,833 | 4.12 | 47,339 | 105,639 | 4.85 | 48,706 | 133,322 | 3.48 | 50,809 | 115,928 | 4.71 |
| V | 47,322 | 115,331 | 4.49 | 24,688 | 108,882 | 2.10 | 74,203 | 171,396 | 5.01 | 67,944 | 150,782 | 5.27 |
| 1992 | 65,083 | 149,412 | 5.08 | 51,800 | 123,827 | 4.28 | 93,874 | 216,783 | 4.93 | 89,273 | 208,026 | 5.33 |
| | 76,736 | 189,141 | 4.62 | 37,128 | 113,616 | 2.70 | 63,007 | 231,084 | 2.62 | 58,049 | 215,266 | 2.51 |
| | 116,381 | 258,200 | 5.54 | 55,416 | 144,344 | 4.39 | 110,204 | 267,085 | 4.29 | 86,577 | 233,899 | 3.62 |
| V | 153,932 | 347,049 | 5.37 | 70,284 | 162,828 | 4.38 | 93,405 | 266,616 | 3.15 | 39,570 | 184,196 | 1.52 |
| 1993 | 147,460 | 417,773 | 3.82 | 111,223 | 236,923 | 6.15 | 111,500 | 315,109 | 3.76 | 77,996 | 204,143 | 3.81 |
| | 171,028 | 472,420 | 3.68 | 74,244 | 255,751 | 2.82 | 135,668 | 340,573 | 3.87 | 50,328 | 167,894 | 2.22 |
| V | | | | | | | | | | | | |
| | Mean | | 4.15 | | | 4.47 | | | 3.61 | | | 3.45 |
| | Standard Deviation | | 0.88 | | | 2.39 | | | 0.91 | | | 1.17 |
| | Mean + 2 S.D. | | 5.90 | | | 9.25 | | | 5.42 | | | 5.80 |
| | Mean + 3 S.D | | 6.78 | | | 11.64 | | | 6.33 | | | 6.97 |

Table 6.1 - Quarterly Issues and Required Stock Levels (cont.)

| | Eastern Region | | | Northern Region | | | Upper East Region | | | Upper West Region | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Issues | 9 month Base | Months of | Issues | 9 month Base | Months of | Issues | 9 month Base | Months of | Issues | 9 month Base | Months of |
| 1987 | 0 | | | 0 | | | 7,872 | | | 0 | | |
| | 0 | | | 0 | | | 384 | | | 0 | | |
| | 0 | 0 | | 0 | 0 | | 616 | 8,872 | | 0 | 0 | |
| V | 0 | 0 | N/A | 0 | 0 | N/A | 0 | 8,872 | 0.00 | 0 | 0 | N/A |
| 1988 | 0 | 0 | N/A | 0 | 0 | N/A | 340 | 8,872 | 0.34 | 0 | 0 | N/A |
| | 0 | 0 | N/A | 0 | 0 | N/A | 243 | 8,872 | 0.25 | 200 | 200 | N/A |
| | 3,302 | 3,302 | N/A | 0 | 0 | N/A | 248 | 9,120 | 0.25 | 0 | 200 | 0.00 |
| V | 4,409 | 7,711 | 12.02 | 2,122 | 2,122 | N/A | 1,663 | 11,026 | 1.64 | 1,158 | 1,358 | 52.11 |
| 1989 | 6,885 | 14,596 | 8.04 | 3,817 | 5,939 | 16.19 | 1,384 | 3,295 | 1.13 | 491 | 1,649 | 3.25 |
| | 22,039 | 33,333 | 13.59 | 4,291 | 10,230 | 6.50 | 2,261 | 5,308 | 6.18 | 498 | 2,147 | 2.72 |
| | 31,191 | 60,115 | 8.42 | 3,672 | 11,780 | 3.23 | 2,632 | 6,277 | 4.46 | 895 | 1,884 | 3.75 |
| V | 39,515 | 92,745 | 5.92 | 6,345 | 14,308 | 4.85 | 2,692 | 7,585 | 3.86 | 1,138 | 2,531 | 5.44 |
| 1990 | 33,434 | 104,140 | 3.24 | 6,979 | 16,996 | 4.39 | 8,352 | 13,676 | 9.91 | 1,450 | 3,483 | [illegible] |
| | 22,486 | 95,435 | 1.94 | 8,985 | 22,309 | 4.76 | 12,716 | 23,760 | 8.37 | 1,471 | 4,059 | [illegible] |
| | 11,552 | 67,472 | 1.09 | 9,674 | 25,638 | 3.90 | 8,339 | 29,407 | 3.16 | 2,082 | 5,003 | [illegible] |
| V | 79,643 | 113,681 | 10.62 | 10,065 | 28,724 | 3.53 | 9,464 | 30,519 | 2.90 | 2,667 | 6,223 | [illegible] |
| 1991 | 14,571 | 105,766 | 1.15 | 13,474 | 33,213 | 4.22 | 12,182 | 29,985 | 3.59 | 1,596 | 6,345 | [illegible] |
| | 29,001 | 123,215 | 2.47 | 8,014 | 31,553 | 2.17 | 17,310 | 38,956 | 5.20 | 2,746 | 7,[illegible] | [illegible] |
| | 20,604 | 64,176 | 1.50 | 8,040 | 29,528 | 2.29 | 16,796 | 46,288 | 3.88 | 3,360 | 7,[illegible] | [illegible] |
| V | 35,637 | 85,242 | 5.00 | 10,060 | 26,114 | 3.07 | 24,238 | 58,344 | 4.71 | 2,357 | 8,453 | [illegible] |
| 1992 | 53,296 | 119,537 | 6.68 | 19,907 | 38,007 | 6.86 | 31,746 | 72,780 | 4.90 | 13,870 | 19,[illegible] | [illegible] |
| | 48,635 | 147,568 | 3.66 | 17,975 | 47,942 | 4.26 | 18,936 | 74,920 | 2.34 | 6,206 | 22,[illegible] | [illegible] |
| | 72,559 | 184,490 | 4.43 | 15,194 | 53,076 | 2.85 | 53,780 | 104,462 | 6.46 | 10,556 | 30,[illegible] | [illegible] |
| V | 70,240 | 191,434 | 3.43 | 18,691 | 51,860 | 3.17 | 26,663 | 99,379 | 2.30 | 80,204 | 96,[illegible] | [illegible] |
| 1993 | 85,597 | 228,396 | 4.02 | 21,570 | 55,455 | 3.74 | 33,802 | 114,245 | 3.06 | 11,270 | 102,[illegible] | [illegible] |
| | 106,460 | 262,297 | 4.20 | 17,141 | 57,402 | 2.78 | 43,279 | 103,744 | 3.41 | 14,947 | 106,[illegible] | [illegible] |
| V | | | | | | | | | | | | |
| | Mean | | 3.82 | | | 3.71 | | | 4.58 | | | [illegible] |
| | Standard Deviation | | 2.42 | | | 1.16 | | | 2.19 | | | [illegible] |
| | Mean + 2 S.D. | | 8.66 | | | 6.03 | | | 8.96 | | | [illegible] |
| | Mean + 3 S.D. | | 11.09 | | | 7.19 | | | 11.15 | | | [illegible] |

Table 6.1 - Quarterly Issues and Required Stock Levels (cont.)

| | Volta Region | | | Western Region | | | Total | | |
|---|---|---|---|---|---|---|---|---|---|
| | Issues | 9 month Base | Months of Issues | Issues | 9 month Base | Months of Issues | Issues | 9 month Base | Months of Issues |
| 1987 | 5,194 | | | 12,000 | | | 40,109 | | |
| | 18,500 | | | 12,685 | | | 37,271 | | |
| | 830 | 25,524 | | 1,968 | 26,653 | | 67,353 | 144,733 | |
| V | 0 | 25,524 | 0.00 | 0 | 26,653 | 0.00 | 0 | 104,624 | 0.00 |
| 1988 | 698 | 25,524 | 0.25 | 0 | 26,653 | 0.00 | 1,038 | 68,391 | 0.09 |
| | 2,123 | 25,524 | 0.75 | 0 | 26,653 | 0.00 | 2,673 | 3,711 | 0.35 |
| | 2,415 | 27,939 | 0.85 | 0 | 26,653 | 0.00 | 15,724 | 19,435 | 38.13 |
| V | 2,385 | 32,447 | 0.77 | 0 | 26,653 | 0.00 | 36,944 | 55,341 | 17.11 |
| 1989 | 3,029 | 7,829 | 0.84 | 8,100 | 34,753 | 2.74 | 116,919 | 169,587 | 19.01 |
| | 3,492 | 8,906 | 4.01 | 6,140 | 14,240 | 1.59 | 104,723 | 258,586 | 5.56 |
| | 6,931 | 13,452 | 7.00 | 7,706 | 21,946 | 4.87 | 132,903 | 354,545 | 4.63 |
| V | 2,982 | 13,405 | 2.00 | 6,819 | 20,665 | 2.80 | 163,254 | 400,880 | 4.14 |
| 1990 | 9,513 | 19,426 | 6.39 | 9,055 | 23,580 | 3.94 | 194,797 | 490,954 | 4.37 |
| | 7,604 | 20,099 | 3.52 | 8,377 | 24,251 | 3.20 | 183,840 | 541,891 | 3.37 |
| | 14,628 | 31,745 | 6.55 | 8,497 | 25,929 | 3.15 | 179,922 | 558,559 | 2.99 |
| V | 11,766 | 33,998 | 3.34 | 8,542 | 25,416 | 2.96 | 248,012 | 611,774 | 4.00 |
| 1991 | 14,458 | 40,852 | 3.83 | 7,211 | 24,250 | 2.55 | 180,980 | 608,914 | 2.66 |
| | 15,914 | 42,138 | 3.51 | 11,543 | 27,296 | 4.28 | 232,901 | 661,893 | 3.44 |
| | 15,925 | 46,297 | 3.40 | 3,460 | 22,214 | 1.14 | 252,046 | 665,927 | 3.43 |
| V | 20,565 | 52,404 | 4.00 | 20,171 | 35,174 | 8.17 | 327,185 | 812,132 | 4.42 |
| 1992 | 26,820 | 63,310 | 4.61 | 30,159 | 53,790 | 7.72 | 485,828 | 1,065,059 | 5.38 |
| | 30,111 | 77,496 | 4.28 | 27,500 | 77,830 | 4.60 | 384,283 | 1,197,296 | 3.25 |
| | 49,201 | 106,132 | 5.71 | 16,143 | 73,802 | 1.87 | 586,011 | 1,456,122 | 4.41 |
| V | 51,426 | 130,738 | 4.36 | 76,805 | 120,448 | 9.37 | 681,220 | 1,651,514 | 4.21 |
| 1993 | 59,474 | 160,101 | 4.09 | 76,805 | 169,753 | 5.74 | 736,697 | 2,003,928 | 4.01 |
| | 58,448 | 169,348 | 3.29 | 55,873 | 209,483 | 2.96 | 727,416 | 2,145,333 | 3.27 |
| V | | | | | | | | | |
| | Mean | | 4.35 | | | 4.40 | | | 3.80 |
| | Standard Deviation | | 1.06 | | | 2.38 | | | 0.70 |
| | Mean + 2 S.D. | | 6.48 | | | 9.17 | | | 5.20 |
| | Mean + 3 S.D. | | 7.54 | | | 11.55 | | | 5.90 |

Based on this analysis it appears that distribution in most regions in Ghana is now sufficiently mature to allow stock policy at the regional and central level to be adjusted to a true nine month level. The exceptions to this are in the Upper East and Upper West Regions where special attention may be required to adjust for the highly irregular distribution patterns that they are experiencing.

Table 6.2 - Means, Standard Deviations and Hypothetical Stock-outs

| | Central | Ashanti | Br. Ah. | Central | Gr. Acc. | East. | North. | Up. E. | Up. W. | Volta | West. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mean | 3.80 | 4.15 | 4.47 | 3.61 | 3.45 | 3.82 | 3.71 | 4.58 | 5.67 | 4.35 | 4.40 |
| Standard Deviation | 0.70 | 0.88 | 2.39 | 0.91 | 1.17 | 2.42 | 1.16 | 2.19 | 5.88 | 1.06 | 2.38 |
| Mean + 2 S.D. | 5.20 | 5.90 | 9.25 | 5.42 | 5.80 | 8.66 | 6.03 | 8.96 | 17.42 | 6.48 | 9.17 |
| Mean + 3 S.D. | 5.90 | 6.78 | 11.64 | 6.33 | 6.97 | 11.09 | 7.19 | 11.15 | 23.30 | 7.54 | 11.55 |

Number of Stockouts that would have occurred with a nine-month stock policy:

| | Central | Ashanti | Br. Ah. | Central | Gr. Acc. | East. | North. | Up. E. | Up. W. | Volta | West. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Since 1990 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 2 | 0 | 1 |
| Since 1991 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | |

ATTACHMENT 7: PROJECTION OF MOH SPACE REQUIREMENTS

## ATTACHMENT 7: PROJECTION OF MOH SPACE REQUIREMENTS

The analysis of the capability of the MOH logistics system to handle the projected demands of continued growth involved a series of projections of the requirements for space at the regional and central levels. Section III provided an analysis of these space requirements compared to current and projected space and transport availability. This Attachment provides a more detailed discussion of the development of the projections that served as the basis for that analysis. The starting point was analysis of the current issues pattern, which is shown in Table 7.1, below.

Table 7.1 - Annual Issues to Clients
(12 months ending 6/30/93)

| | Condoms | Orals | VFTs | IUDs | Inject-ables |
|---|---|---|---|---|---|
| Ashanti | 588,801 | 68,174 | 149,480 | 3,035 | 37,886 |
| Brong-Ahafo | 311,167 | 169,454 | 276,885 | 1,953 | 19,595 |
| Central | 450,777 | 60,046 | 219,783 | 627 | 11,388 |
| Gr. Accra | 254,471 | 37,175 | 101,733 | 3,709 | 12,456 |
| Eastern | 334,856 | 42,235 | 181,118 | 1,406 | 18,839 |
| Northern | 72,596 | 21,866 | 44,700 | 1,085 | 4,227 |
| Upper East | 157,524 | 44,065 | 46,792 | 911 | 8,834 |
| Upper West | 116,977 | 7,477 | 90,595 | 669 | 4,222 |
| Volta | 218,549 | 27,414 | 169,713 | 757 | 12,662 |
| Western | 225,626 | 23,102 | 146,239 | 279 | 8,843 |
| Total | 2,731,344 | 501,008 | 1,427,038 | 14,431 | 138,952 |

Using the conversion factors for volume occupied by the various contraceptive commodities, these issue data could be converted into cubic meters of space occupied, shown in Table 7.2.

Table 7.2 - Cubic Meter Space Corresponding to Client Issues

| | Condoms | Orals | VFTs | IUDs | Inject. | Total |
|---|---|---|---|---|---|---|
| Ashanti | 11.8 | 2.3 | 1.6 | 0.6 | 1.9 | [illegible] |
| Brong-Ahafo | 6.2 | 5.6 | 2.9 | 0.4 | 1.0 | [illegible] |
| Central | 9.0 | 2.0 | 2.3 | 0.1 | 0.6 | [illegible] |
| Gr. Accra | 5.1 | 1.2 | 1.1 | 0.7 | 0.6 | [illegible] |
| Eastern | 6.7 | 1.4 | 1.9 | 0.3 | 0.9 | [illegible] |
| Northern | 1.5 | 0.7 | 0.5 | 0.2 | 0.2 | [illegible] |
| Upper East | 3.2 | 1.5 | 0.5 | 0.2 | 0.4 | [illegible] |
| Upper West | 2.3 | 0.2 | 0.9 | 0.1 | 0.2 | [illegible] |
| Volta | 4.4 | 0.9 | 1.8 | 0.2 | 0.6 | [illegible] |
| Western | 4.5 | 0.8 | 1.5 | 0.1 | 0.4 | [illegible] |
| Total | 54.6 | 16.7 | 14.9 | 2.9 | 6.9 | [illegible] |

For projection purposes and for the examination of areas of concentrated activity it is also useful to analyze these values in terms of percent of total (within method) as shown below in Table 7.3.

Table 7.3 - Percent of Space Consumption Within Method

| | Condoms | Orals | VFTs | IUDs | Inject. |
|---|---|---|---|---|---|
| Ashanti | 22% | 14% | 10% | 21% | 27% |
| Brong-Ahafo | 11% | 34% | 19% | 14% | 14% |
| Central | 17% | 12% | 15% | 4% | 8% |
| Gr. Accra | 9% | 7% | 7% | 26% | 9% |
| Eastern | 12% | 8% | 13% | 10% | 14% |
| Northern | 3% | 4% | 3% | 8% | 3% |
| Upper East | 6% | 9% | 3% | 6% | 6% |
| Upper West | 4% | 1% | 6% | 5% | 3% |
| Volta | 8% | 5% | 12% | 5% | 9% |
| Western | 8% | 5% | 10% | 2% | 6% |

Given these values, the various projections of required future space can be undertaken. One of the results of the scenario development presented in Section III was a projection for the total annual commodity flow through the MOH system in the year 2005. Specifically, the three scenarios resulted in the annual commodity flows shown in Table 7.4 below.

Table 7.4 - Projected Total National Distribution Through MOH System in the Year 2005

| | Condoms | Orals | VFTs | IUDs | Inject. |
|---|---|---|---|---|---|
| Scenario 1 | 10,500,000 | 2,000,000 | 1,200,000 | 12,000 | 500,000 |
| Scenario 2 | 4,600,000 | 1,700,000 | 2,800,000 | 30,200 | 900,000 |
| Scenario 3 | 6,400,000 | 1,500,000 | 3,100,000 | 24,800 | 800,000 |

By applying the percentages shown in Table 7.3, these total national commodity flow figures can be distributed among the regions. The result is the projected regional distribution data shown in Table 7.5 below.

Table 7.5 - Projected Regional Commodity Distribution Through the MOH System in the Year 2005

| | Condoms | Orals | VFTs | IUDs | Inject. |
|---|---|---|---|---|---|
| Scenario 1: | | | | | |
| Total | 10,500,000 | 2,000,000 | 1,200,000 | 12,000 | 500,000 |
| Ashanti | 2,263,505 | 272,147 | 125,698 | 2,524 | 136,328 |
| Brong-Ahafo | 1,196,207 | 676,452 | 232,833 | 1,624 | 70,510 |
| Central | 1,732,905 | 239,701 | 184,816 | 521 | 40,978 |
| Gr. Accra | 978,253 | 148,401 | 85,548 | 3,084 | 44,821 |
| Eastern | 1,287,274 | 168,600 | 152,303 | 1,169 | 67,790 |
| Northern | 279,078 | 87,288 | 37,588 | 902 | 15,210 |
| Upper East | 605,563 | 175,905 | 39,348 | 758 | 31,788 |
| Upper West | 449,690 | 29,848 | 76,182 | 556 | 15,192 |
| Volta | 840,159 | 109,435 | 142,712 | 629 | 45,562 |
| Western | 867,365 | 92,222 | 122,973 | 232 | 31,820 |
| Scenario 2: | | | | | |
| Total | 4,600,000 | 1,700,000 | 2,800,000 | 30,200 | 900,000 |
| Ashanti | 991,631 | 231,325 | 293,296 | 6,351 | 245,390 |
| Brong-Ahafo | 524,053 | 574,984 | 543,278 | 4,087 | 126,918 |
| Central | 759,177 | 203,746 | 431,238 | 1,312 | 73,761 |
| Gr. Accra | 428,568 | 126,141 | 199,611 | 7,762 | 80,678 |
| Eastern | 563,949 | 143,310 | 355,373 | 2,942 | 122,021 |
| Northern | 122,263 | 74,195 | 87,706 | 2,271 | 27,379 |
| Upper East | 265,294 | 149,520 | 91,811 | 1,906 | 57,218 |
| Upper West | 197,007 | 25,371 | 177,757 | 1,400 | 27,346 |
| Volta | 368,070 | 93,020 | 332,995 | 1,584 | 82,012 |
| Western | 379,989 | 78,389 | 286,936 | 584 | 57,277 |
| Scenario 3: | | | | | |
| Total | 6,400,000 | 1,500,000 | 3,100,000 | 24,800 | 800,000 |
| Ashanti | 1,379,660 | 204,111 | 324,720 | 5,216 | 218,124 |
| Brong-Ahafo | 729,117 | 507,339 | 601,486 | 3,356 | 112,816 |
| Central | 1,056,247 | 179,776 | 477,442 | 1,078 | 65,565 |
| Gr. Accra | 596,269 | 111,301 | 220,998 | 6,374 | 71,714 |
| Eastern | 784,624 | 126,450 | 393,448 | 2,416 | 108,463 |
| Northern | 170,105 | 65,466 | 97,103 | 1,865 | 24,336 |
| Upper East | 369,105 | 131,929 | 101,648 | 1,566 | 50,861 |
| Upper West | 274,097 | 22,386 | 196,802 | 1,150 | 24,308 |
| Volta | 512,097 | 82,077 | 368,673 | 1,301 | 72,900 |
| Western | 528,680 | 69,167 | 317,680 | 479 | 50,913 |

In a similar manner to the earlier calculation (see Table 7.2), these values can be converted into space requirements. These are shown in Table 7.6.

Table 7.6 - Projected Regional Commodity Space Consumption Within MOH System (cubic meters in year 2005)

| | Condoms | Orals | VFTs | IUDs | Inject. | Total |
|---|---|---|---|---|---|---|
| Scenario 1: | | | | | | |
| Ashanti | 45.3 | 9.1 | 1.3 | 0.5 | 6.3 | 63.0 |
| Brong-Ahafo | 23.9 | 22.5 | 2.4 | 0.3 | 3.5 | 52.7 |
| Central | 34.7 | 8.0 | 1.9 | 0.1 | 2.0 | 46.7 |
| Gr. Accra | 19.6 | 4.9 | 0.9 | 0.6 | 2.2 | 28.3 |
| Eastern | 25.7 | 5.6 | 1.6 | 0.2 | 3.4 | 36.6 |
| Northern | 5.6 | 2.9 | 0.4 | 0.2 | 0.8 | 9.8 |
| Upper East | 12.1 | 5.9 | 0.4 | 0.2 | 1.6 | 20.1 |
| Upper West | 9.0 | 1.0 | 0.8 | 0.1 | 0.8 | 11.7 |
| Volta | 16.8 | 3.6 | 1.5 | 0.1 | 2.3 | 24.3 |
| Western | 17.3 | 3.1 | 1.3 | 0.0 | 1.6 | 23.3 |
| Total | 210.0 | 66.7 | 12.5 | 2.4 | 25.0 | 316.6 |
| Scenario 2: | | | | | | |
| Ashanti | 19.8 | 7.7 | 3.1 | 1.3 | 12.3 | 44.1 |
| Brong-Ahafo | 10.5 | 19.2 | 5.7 | 0.8 | 6.3 | 42.5 |
| Central | 15.2 | 6.8 | 4.5 | 0.3 | 3.7 | 30.4 |
| Gr. Accra | 8.6 | 4.2 | 2.1 | 1.6 | 4.0 | 20.4 |
| Eastern | 11.3 | 4.8 | 3.7 | 0.6 | 6.1 | 26.4 |
| Northern | 2.4 | 2.5 | 0.9 | 0.5 | 1.4 | 7.7 |
| Upper East | 5.3 | 5.0 | 1.0 | 0.4 | 2.9 | 14.5 |
| Upper West | 3.9 | 0.8 | 1.9 | 0.3 | 1.4 | 8.3 |
| Volta | 7.4 | 3.1 | 3.5 | 0.3 | 4.1 | 18.3 |
| Western | 7.6 | 2.6 | 3.0 | 0.1 | 2.9 | 16.2 |
| Total | 92.0 | 56.7 | 29.2 | 6.0 | 45.0 | 228.9 |
| Scenario 3: | | | | | | |
| Ashanti | 27.6 | 6.8 | 3.4 | 1.0 | 10.9 | 49.7 |
| Brong-Ahafo | 14.6 | 16.9 | 6.3 | 0.7 | 5.6 | 44.1 |
| Central | 21.1 | 6.0 | 5.0 | 0.2 | 3.3 | 35.6 |
| Gr. Accra | 11.9 | 3.7 | 2.3 | 1.3 | 3.6 | 22.8 |
| Eastern | 15.7 | 4.2 | 4.1 | 0.5 | 5.4 | 29.9 |
| Northern | 3.4 | 2.2 | 1.0 | 0.4 | 1.2 | 8.2 |
| Upper East | 7.4 | 4.4 | 1.1 | 0.3 | 2.5 | 15.7 |
| Upper West | 5.5 | 0.7 | 2.1 | 0.2 | 1.2 | 9.7 |
| Volta | 10.2 | 2.7 | 3.8 | 0.3 | 3.6 | 20.7 |
| Western | 10.6 | 2.3 | 3.3 | 0.1 | 2.5 | 18.8 |
| Total | 128.0 | 50.0 | 32.3 | 5.0 | 40.0 | 255.3 |

As we saw in Table 7.2, the present system is handling commodities at a pace of nearly 100 cubic meters per year. It is interesting to

note that the scenarios call for this quantity to increase between 240 and 330 percent. This range represents a significant increase but not what one might expect from a 5-fold increase in contraceptive prevalence over barely more than a decade.

Using scenario 1 as our worst case (logistically), we can calculate the average quarterly stock movements (based on issues) and storage requirements (based on a stock level policy of nine months) at the central and regional levels. In calculating the quarterly stock flows at the regional level it is important to incorporate the impact of continuing growth in the system and the temporal variability that is the nature of real issues. While taking the total annual use and dividing by 12 will generate a true arithmetic mean for issues in the year 2005 (which would be used for estimating needed storage capacity), the variability about the mean is needed to estimate the needed transport (because the transport has to be able to accommodate the restocking required following a good quarter, not just an average quarter). In addition, the distribution data for the year 2005 will, in fact, be used to set the stock level for the year 2006. Under a growth scenario, one assumes that the distribution level will not be flat between years.

Using the quarterly issue data for condoms shown in Attachment 6, region-specific Mean and Standard Deviation levels were calculated. Because these data are for the product that has demonstrated the highest variability and because the data are for a limited period of time, the estimates generated using this information should provide a conservative estimate of space requirements. Table 7.7 below provides this information.

Table 7.7 - Projected Regional Scenario 1 Space Requirement
(cubic meters in year 2005)

| | Flat Qtrly Issue | Req'd Stock Level | Growth Qtrly Issue | Likely Good Qrtr | Current Stock Req't |
|---|---|---|---|---|---|
| Ashanti | 15.7 | 47.2 | 21.8 | 31.0 | 196.4 |
| Brong-Ahafo | 13.2 | 39.6 | 19.6 | 40.7 | 257.5 |
| Central | 11.7 | 35.0 | 14.1 | 21.1 | 133.9 |
| Gr. Accra | 7.1 | 21.2 | 8.1 | 13.6 | 86.4 |
| Eastern | 9.1 | 27.4 | 11.6 | 26.4 | 167.2 |
| Northern | 2.5 | 7.4 | 3.0 | 4.9 | 31.3 |
| Upper East | 5.0 | 15.1 | 7.7 | 15.0 | 95.2 |
| Upper West | 2.9 | 8.7 | 5.5 | 16.9 | 107.2 |
| Volta | 6.1 | 18.3 | 8.8 | 13.1 | 83.1 |
| Western | 5.8 | 17.5 | 8.6 | 17.8 | 112.8 |
| Total | 79.1 | 237.4 | 108.8 | 200.5 | 1271.0 |

The column titled "Flat Qtrly Issue" represents the average quarterly volume based on year 2005 issues. This would be the volume that would be used to compute the space requirements for the year 2006. These space requirements are shown in the column titled "Req'd Stock Level" and reflect the nine month stock policy. Because Scenario 1 is a growth scenario, the average issues in the year 2006 are expected to be higher than those for the year 2005. The analysis of the historic data shown in Attachment 5 indicates that the values range from about 3.5 months to nearly 6 months (based on the previous three quarters) per quarter. Using the mean values from that analysis one can generate the average issue level for 2006, which is shown in the column titled "Growth Qtrly Issue". The Standard Deviation values from the same analysis can be used to calculate the size of a "good", but likely, quarter. These values are computed as the mean plus two Standard Deviations and are shown in the column titled "Likely Good Qrtr".

The "Likely Good Qrtr" values are used for two purposes. First, they represent the amounts that the regional transport systems would likely have to be able to handle according to the scenario. Second, they represent amounts that could potentially be withdrawn from the regional stores within a quarter. As such, they should be compared to the stock levels shown in column 2. This comparison indicates that, in general, the nine month stock policy would be adequate to support the continued growth of the system. In the case of the Upper West Region, where the calculation shows an inadequate stock level it is likely that another ten years of operation will increase both the stability and the knowledge of the operations.

Particular attention should be given to the last column titled "Current Stock Req't". This column provides the required restocking level using the existing stock management formula (which is based on current-quarter issue data and accumulates requirements to the top of the system). It is easily seen that the stock need determined using this methodology vastly exceeds the true nine month stock requirement. Coincidentally, it also exceeds the capacities of virtually all the regional warehouses. If an additional 12 months of stock (800 cubic meters for a total of nearly 2100 cubic meters) is added at the central level (as the current formula requires) the level also exceeds the capacity of the central stores. To satisfy this storage space requirement there would have to be a new warehouse of nearly 800 square meters - nearly 30 meters on a side. A less reactive restocking methodology requires only an additional 240 cubic meters at the central store - a value that is not cumulative with that kept in the regional stores.