Project MAP:
Measuring Access and Performance
Lessons Learned and Recommendations
PSI Research Division
2005

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Executive Summary

Since 1998, Population Services International has relied upon a survey of outlets in its distribution systems to measure the proportion of outlets in which PSI products are available and to gather information about the functioning of the system. Project MAP was designed in August 2003 as a pilot effort to test an alternative to the distribution survey. Project MAP’s primary aim was to define improved measures of proximity to PSI products and services and to lower the cost of collecting and reporting this information. This report summarizes lessons learned and recommendations after 12 months of Project MAP implementation during which measures of coverage, quality of coverage, access or equity of access were measured across six countries.

Project MAP was piloted in two of PSI’s five regions, and six of PSI’s 63 active programs. The pilot was conducted in projects addressing HIV/AIDS, family planning and malaria that deliver condoms, lubricants, oral contraceptives, injectable contraceptives, insecticide treated nets, insecticide retreatment kits, malaria diagnostic kits and malaria treatment. Project MAP has not yet been applied to services. Coverage of PSI products across geographically defined areas ranged from less than 15 percent to 80 percent. Quality of coverage was defined and measured in three countries using standards that were not comparable. Access and equity of access were defined and measured in two countries, Laos and Thailand. Access ranged from seven percent (men who have sex with men in Laos) to 88 percent (female sex workers in Thailand). Inequity of access was found in both locations. Standard definitions and methods for collecting and reporting data are presented. Project MAP is inexpensive, rapid and feasible to install in PSI countries.

The report recommends that by the end of 2006 a minimum of the non-GIS (geographic information system) version of Project MAP be installed in all countries with a view to eventually installing the GIS version. Demand among PSI programs for the GIS version appears to be currently in excess of seven countries per year, which is beyond PSI’s capacity to install it. Additional installation technical capacity should be added in the first six months of 2005.

The report sets out two expansions to Project MAP in 2005. The first is to define catchment areas in terms of purchase and use behavior from population based surveys in an effort to test and improve the validity of the coverage, quality of coverage and access measures and improve the setting of standards, location and service delivery maintenance decision making. The second is the documentation of applications of GIS to improve the efficiency of PSI product and service delivery.
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**Introduction**

Project MAP (Measuring Access and Performance) is a PSI Research pilot effort begun in August 2003 that aims to increase the coverage, quality, access, equity of access and efficiency of social marketing product and service delivery systems (Chapman, 2003). These measures reflect different dimensions of the opportunity populations have to benefit from social marketing interventions, and have a proven association with six key social marketing performance indicators: behavior change or effectiveness, cost-effectiveness, equity, and halo and substitution effects (positive and negative unintended consequences of social marketing on health systems performance) (Chapman, 2004; Sulzbach, et al., 2002; Rosero-Bixby. 2003; Duncan, Jones, & Moon. 1996; Taket. 1989; Bedimo, Pinkerton, Cohen, Gray, & Farley. 2002; Adetunji & Meekers. 2001).

PSI distribution surveys produce a measure of penetration, the proportion of selected retail-level outlets that stock social marketing products, whose association with behavior change has not to date been shown. Evidence of the value of the distribution survey’s penetration measure in decision making terms is limited. A study in urban Tanzania used penetration trend information over a three-year period to monitor the availability of social marketing condoms during a program aimed at shifting traditional outlets, such as pharmacies and groceries, to restocking through wholesalers, thereby permitting sales agents to increase their efforts to recruit new non-traditional outlets, such as kiosks, into the condom retail network (Meekers & Agha, 2001). Trends showed that the proportion of traditional outlets restocking through wholesalers grew during the program period, as did the proportion of non-traditional outlets selling condoms. A study in Zambia documented penetration levels by outlet type and concluded that condom availability in non-traditional outlets accounted for relatively higher levels of consumer access to condoms for users of low socio-economic status (Agha, 2002). This provided confirmatory information to decision makers undertaking a strategy to reduce inequities in condom availability within an HIV prevention program. A distribution survey in Nigeria found that a high percentage of retail outlets did not adhere to the recommended price for condoms, providing evidence that an increase in the project’s wholesale price would unlikely result in higher retail prices, but would increase project cost recovery substantially. Additional evidence of the utility of the penetration measure is anecdotal. More commonly, analysts are unable to conclude whether a penetration level of, say, 30 percent is adequate or inadequate, based on the data, rendering the results inactionable.

PSI distribution surveys require sample sizes in most settings of between 1,000 and 2,500 outlets, depending on the number of outlet types used by the social marketing project, resulting in costs of survey implementation of between $15,000 and $65,000 and a duration of 9.5 to 12.5 weeks to plan, conduct and
report (Richter & Meekers, 2000). These time and financial costs create a barrier to routine use of the survey for decision making; most social marketing programs conduct them no more frequently than every two years.

PSI distribution surveys are not comparable across countries, eliminating the possibility of benchmarking style analyses. The surveys have not and likely cannot easily be applied to two channels through which social marketing increasingly works. These are social franchising interventions that seek to improve the coverage, quality and equity of access of private sector health service and product provision and community-level interventions that aim to improve the coverage and quality of peer and faith-based interpersonal communications.

Project MAP is designed to overcome these decision making limitations by shifting the unit of analysis from the outlets to a geographic unit defined by the population censuses or areas where groups at high risk congregate. Doing so should permit a sampling strategy based on probability proportional to size, thereby establishing opportunity measures that apply equally to all members of a population of interest. It is organized into four phases, the first two of which were piloted in the first year.

- Phase 1 aimed to define and measure coverage and quality indicators based on publicly available geographic maps, the population census, and the use of lot quality assurance sampling.
- Phase 2 aimed to define and measure coverage, quality of coverage, access and equity of access indicators using existing GIS population layers and specially created maps of hot zones.
- Phase 3 is intended to define and measure access subjectively, using information on purchase and use behavior from population-based surveys for defining catchment areas.
- Phase 4 is intended to increase the efficiency of PSI field activities through development of applications of GIS to reduce the cost of location decision making and distribution and field force management, and to increase the quality and utility of management information systems that monitor activities and inform stakeholders.

The Project MAP pilot sought to measure these indicators using a simple, low cost approach known as lot quality assurance sampling and, in Phase 2, to test the application, HealthMapper, a geographic information system developed by the World Health Organization (World Health Organization, 2004; Askew & Berer, 2003; Spector, 1992; Hovland, 2003).

This paper has three aims:
1. Document the process and outputs of pilot activities from six countries in which Project MAP was installed between November 2003 and November 2004
2. Review the lessons learned and
3. Make recommendations for standardizing definitions and analysis.

**Coverage**

The first objective of the Project MAP’s pilot phase was to define and measure coverage.

**Definition:** Coverage is the proportion of geographically defined residential areas or hot zones in which a minimum standard of product or service availability is present.

Instead of reporting that social marketing products are available in, say, 50 percent of retail outlets as could be measured in a distribution survey, the coverage indicator is an estimate of the proportion of a population, say 50 percent, that resides in an area where the social marketing product or service is delivered, providing crude evidence of proximity to the product or service which is expected to be correlated with purchase and use. The primary use of the coverage indicator is in determining whether proximity of populations to PSI products and services is increasing or decreasing over time. This measure of proximity is however crude due to heterogeneity in the density and distribution of population across geographic areas relative to product or service delivery point.

Coverage gives insight into the spatial distribution of social marketing products and services, which, when combined with epidemiological and organizational capacity information, permits the social marketing decision maker to determine whether 50 percent coverage is adequate. If this level of coverage is not deemed adequate, the decision maker can set a higher standard, say 70 percent coverage, allocate resources toward expanding distribution, and then conduct a Project MAP survey again to estimate whether the 70 percent coverage target was achieved. Adequacy of this level of coverage can then again be evaluated. In the event that it is deemed adequate, the social marketer can then seek ways of lowering the cost of maintaining this level of coverage, creating the opportunity to reallocate resources toward other marketing instruments, such as promotion, and increasing intervention cost-effectiveness.

In Figure 1, country X has four residential areas or hot zones. An auditor travels to the geographic or population center of the area or zone and is given instructions for determining whether PSI’s product is available. In area or zone A, B, and C, the PSI product is found. In area or zone D, the PSI product cannot be found. Coverage then equals 75 percent.
Figure 1: Coverage example

Coverage

Country X

● ► PSI Outlet A
● ► PSI Outlet B

Country X has four residential areas or “hot zones” (areas where high risk groups meet).

• In three of these areas or zones, PSI products meet a minimum standard, which as shown here is the presence of a PSI product in at least one outlet.

• Coverage then here is 75% -- PSI's product is present in three of four residential areas or hot zones

Case Study: Coverage in Burkina Faso

PROMACO was the first PSI program to implement Project MAP Phase 1 in November 2003. The survey was conducted to monitor condom availability in rural areas and specifically to test the hypothesis that Prudence condoms were available in at least 65 percent of rural villages. Coverage was defined as the presence, within the village, of one or more outlets that sell Prudence condoms. The PROMACO team divided the country up into four regions and used lot quality assurance sampling to select 19 villages in each region, with probability of selection proportional to village population size. Training, sample selection and pre-testing of data collection instruments were done by the local team with technical assistance from the regional researcher. Data collection concentrated on the coverage indicator. Table 1 presents the results of this exercise over three rounds.

Table 1: Burkina Faso, rural areas, coverage from November 2003 to November 2004

<table>
<thead>
<tr>
<th>Regions</th>
<th>Villages with at least at least one Prudence sales point out of 19</th>
<th>November 2003</th>
<th>June 2004</th>
<th>November 2004</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Decision Rule = 10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Equivalent Percentage = ( _% )</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>North</td>
<td>13 (80%)</td>
<td>11 (70%)</td>
<td>10 (65%)</td>
<td></td>
</tr>
<tr>
<td>Center-South</td>
<td>14 (85%)</td>
<td>11 (70%)</td>
<td>12 (75%)</td>
<td></td>
</tr>
<tr>
<td>East</td>
<td>8  (55%)</td>
<td>13 (80%)</td>
<td>13 (80%)</td>
<td></td>
</tr>
<tr>
<td>West</td>
<td>16 (95%)</td>
<td>13 (80%)</td>
<td>15 (90%)</td>
<td></td>
</tr>
</tbody>
</table>
PROMACO concluded from the November 2003 round that the benchmark coverage of 65 percent was reached in all but the eastern region. It decided to concentrate efforts to create additional sales points in that region using a rural radio campaign encouraging retailers to stock condoms. Just prior to the June 2004 round, supply problems led to rationing and the survey measured a decline in coverage in all regions but the eastern one. Since the supply problems were resolved in June 2004, PROMACO decided to do nothing at retail level and monitor coverage again in November 2004. By then, coverage had fallen below the decision rule of 10 in the north. PROMACO has decided to use radio and a short period of retail level sales in the north to increase coverage above the standard. In the next survey round, PROMACO will include urban areas, nationally. PROMACO has used Project MAP to increase its efficiency. Prior to installation of Project MAP, sales and distribution cost the program US$ 200,000 to $300,000 per year, with little feedback on whether this expenditure was resulting in increased distribution coverage. PROMACO estimates that in 2004 it spent approximately $45,000 on sales, distribution, retail promotion and Project MAP, with the remaining funds being reallocated to promotional activities.

Measuring Coverage

- Defining a residential area. Residential areas are defined as the smallest geographic area reported within a population census for which the population size is reported. These are generally called enumeration areas, but may be a locality, neighborhood or village depending on the country.

- Defining a hot zone. Hot zones are areas where high risk groups are present. An example of a hot zone is a street where sex workers operate, a truck stop or a collection of bars in a neighborhood or city center where men who have sex with men meet. A hot zone can also be a malarial endemic area. A hot zone is different than a hot spot. A hot spot is a precise physical location, such as a bar or brothel; a hot zone is a collection of hot spots. The perimeters of a hot zone are defined by epidemiological information or knowledgeable informants – persons such as members of the high risk group itself, NGO workers who deliver services to the high risk groups, owners or workers of establishments who serve one or more high risk groups, or others who live and work in the zone.

- Estimating the population of a hot zone. The size of the high risk population should be estimated. This can be done through mapping these populations, which is a systematic process of using knowledgeable informants to identify hot spots where high risk groups meet, the population sizes of these groups per hot spot, and then to group these hot spots into hot zones. This may be in many instances difficult and expensive to do accurately. If so, then estimating the relative size of the
population in hot zones should be done. In simplest terms, hot zones could be categorized as large or small, with large being roughly two times the population size of a small zone. Increasing the number of categories to three -- large, medium and small -- implies that large is roughly three times the population size and medium is roughly two times the population size of a small zone.

- **Sampling.** When the number of residential areas or hot zones is greater than 19, lot quality assurance sampling should be used to draw a sample of 19 areas or zones in which an audit will take place. For residential areas and hot zones for which population sizes have been estimated, samples will be randomly drawn with the probability of selection being proportional to the size of the population. For hot zones for which population size estimates, either in absolute or relative terms, are not available, then a sample can still be randomly drawn with all hot zones having an equal probability of selection. The resulting indicator of coverage however is in statistical terms unweighted and should be referred to as such. The number of areas in which a minimum standard of the PSI product or service is present is equal to a percentage set forth in Table 2 and equals coverage.

**Table 2: Lot quality assurance sampling equivalent percentages**

| # meeting standard | 0  | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
|-------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Equivalent %      | <20| 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 | 90 | 95 | >95| >95| >95|

- **Stratification into supervision areas.** Stratification is the division of a population into two or more groups. Stratification should be done in a manner consistent with the way PSI organizes and manages its field operations such that each strata is equivalent to a supervision area, an area where a sales agent or promotional team is active. When there are more than 19 residential areas or hot zones in a supervision area, then samples of 19 residential areas or hot zones should be drawn. This way, coverage levels can be compared across supervision areas.

- **Estimating national coverage levels from more than one supervision area.** Coverage levels across supervision areas can be combined to produce a national coverage estimate. Where some supervision areas have more than 19 residential areas or hot zones and some have fewer, then sampling can be done in those supervision areas with more than 19 residential areas or hot zones and all areas or zones should be selected in those areas with nineteen. For those areas with fewer than 19, but more than seven, equivalent percentages are available to estimate coverage in those supervision areas. No supervision area can have fewer than seven residential areas or hot zones. In this case, a national...
coverage estimate can be estimated using population weights, but only if population sizes have been estimated.

**Case Study: Coverage in Urban and Rural Guinea**

The MAP survey was conducted in January 2004 as part of a larger study designed to evaluate use of hormonal contraceptives. The country was stratified into urban and rural areas and used a lot quality assurance sampling approach to select 19 enumeration areas in each of the two strata. Coverage in Guinea was defined as the presence, within the enumeration area, of one or more outlets that sell Planyl (the PSI oral contraceptive brand) and Depo PSI (the PSI injectable brand). Data were collected on coverage as presented in Table 3. The decision rule was set at 12 or 75 percent; Planyl coverage was below standard in rural areas.

<table>
<thead>
<tr>
<th>Place of residence</th>
<th>Urban</th>
<th>Rural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Enumeration Areas selected</td>
<td>19</td>
<td>19</td>
</tr>
<tr>
<td>Decision rule$^2$</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Pills coverage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All pills</td>
<td>15 (90%)</td>
<td>13 (80%)</td>
</tr>
<tr>
<td>Planyl</td>
<td>14 (85%)</td>
<td>9 (60%)</td>
</tr>
<tr>
<td>Injectable coverage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All injectables</td>
<td>17 (&gt;95%)</td>
<td>12 (75%)</td>
</tr>
<tr>
<td>Dépo PSI</td>
<td>17 (&gt;95%)</td>
<td>12 (75%)</td>
</tr>
</tbody>
</table>

- Setting minimum standards of availability. The lowest minimum standard of availability is the presence of at least one outlet in the area that delivers any product or service that PSI also delivers. As such, if only a public sector outlet delivers condoms and a public sector outlet is present in an area or zone, that area could be considered covered. In Guinea, PSI set a minimum standard that at least one outlet in the area delivers the PSI oral contraceptive and audited those areas to determine if that is the case. PSI Guinea also monitored whether any non-PSI delivered oral contraceptive was available in order to measure whether oral contraceptive coverage existed in addition to that which was provided by PSI.

- What minimum standard should be set? This is for the social marketer to decide. Any standard between the lowest and highest can be selected.

- Penetration. Penetration represents the highest minimum standard of coverage. It is defined in terms of the proportion of outlets in an area or hot zone that carries a PSI product or service. After an area or hot zone is selected for auditing, then all outlets in an area or zone are identified and mapped. The

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$^2$ For a benchmark of 70% presence of product
auditor can then be instructed either to audit all outlets to determine whether the PSI product or service is available or a sample of outlets. Coverage then is measured as the proportion of areas in which penetration exceeds a minimum level, which might be for example that 80% of pharmacies in an area or hot zone carry the PSI condom.

**Figure 2: Coverage**

**Coverage**

Proportion of villages in malaria endemic areas where insecticide-treated nets are available for sale in at least one outlet, Cambodia

10 out of 25 villages have at least one sales point for nets – Coverage = 55% (LQAS decision rule)

- **Auditing.** Auditing is the process of verifying whether the minimum standard is met in a residential area or hot zone. Auditors should be given precise instructions on how to determine whether the minimum standard is met. For example, an auditor might be instructed to go to the center of a residential area or hot zone and to ask persons whether and where the PSI condom can be found within the area. If the auditor is unable to find the PSI condom within the 30 minutes, then the area is categorized as not covered. Different standards can be used in urban and rural residential areas.

- **Report.** A table is used to present findings. The rows of the report are the supervision areas and the column of the report is the survey date (as in Table 1). The cells include the number covered and the denominator, usually 19, and the equivalent percentage.
Figure 3: Penetration

Penetration
Proportion of target audience hotspots where PSI condoms (Number One) are available, Champasack province, Laos

16 out of 47 target audience hotspots have Number One available on site – Penetration = 34%

- The cost of implementing the study should be monitored. An example from Burkina Faso of how to do so is Table 4, where Phase 1 of MAP was piloted with technical assistance from the regional researcher. The total cost of installing MAP phase 1 was $11,770. The second round, which did not require technical assistance to execute, cost $6,000.

Table 3: Example of cost analysis from Burkina Faso

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Per Diem Data Collection</td>
<td>1,098,000</td>
</tr>
<tr>
<td>Per Diem Supervision</td>
<td>265,000</td>
</tr>
<tr>
<td>Fuel</td>
<td>640,000</td>
</tr>
<tr>
<td>Personnel Costs (Salaries, Fringes, etc…)</td>
<td>1,350,000</td>
</tr>
<tr>
<td>Analysis/Report/Data Set Up Admin 5% of total</td>
<td>167,850</td>
</tr>
<tr>
<td>TA from Regional Research Manager &amp; CR</td>
<td>2,600,000</td>
</tr>
<tr>
<td>Amortization of vehicles</td>
<td>702,307</td>
</tr>
<tr>
<td><strong>TOTAL F CFA</strong></td>
<td><strong>6,120,650</strong></td>
</tr>
<tr>
<td><strong>TOTAL $ US</strong></td>
<td><strong>$ 11,770.48</strong></td>
</tr>
<tr>
<td><strong>TOTAL EURO</strong></td>
<td><strong>9,344.50 €</strong></td>
</tr>
</tbody>
</table>

Quality of Coverage

Project MAP also set out in its first year to define and measure quality of coverage.

Definition: Quality of coverage is the proportion of residential areas or hot zones with coverage, in which the PSI product or service delivery system conforms to additional minimum standards.
In marketing plans, social marketers set product and service quality standards that relate to adherence to recommended prices, merchandising, promotion, hours of availability, cleanliness, waiting times and provider type, knowledge, skill, readiness, record keeping and inventory and other criteria that may influence the delivery, purchase and use of a social marketing product or service. By setting minimum standards for these criteria and then monitoring their presence or absence in a geographic area, Project MAP intends to provide actionable location-specific guidance for decision makers relating to pricing, distribution, training, and promotion. Based on a review of the pilot phase in three countries, recommended best practice in the definition and measurement are set forth here.

Figure 4: Quality of coverage example

Figure 3: Quality of Coverage

Country X

<table>
<thead>
<tr>
<th>Residential Area or Hot Zone A</th>
<th>Residential Area or Hot Zone B</th>
</tr>
</thead>
<tbody>
<tr>
<td>● PSI Outlet A Meets Minimum Quality Standard</td>
<td>● PSI Outlet B Does Not Meet Minimum Quality Standard</td>
</tr>
<tr>
<td>Residential Area or Hot Zone C</td>
<td>Residential Area or Hot Zone D</td>
</tr>
<tr>
<td>● PSI Outlet C Meets Minimum Quality Standard</td>
<td></td>
</tr>
</tbody>
</table>

Quality of Coverage = 66%

- Country X has four residential areas or “hot zones”. Coverage = 75%
- In two of these three areas or zones covered, PSI products meet a minimum quality standard, such as the sale of a PSI condom at the recommended price. In one, the PSI condom is sold at a price above that which is recommended.
- Quality of Coverage then here is 66% — PSI’s product is present and conforms to the minimum quality standard in two of three areas or hot zones

In Figure 4, quality of coverage is 50 percent, two of three areas or hot zones covered meet a minimum quality standard.
Figure 5: Quality of coverage

Quality of coverage
Proportion of outlets where PSI condoms (One condom) are available and where PSI promotion material is displayed, Chiang Mai hotzones, Thailand

4 out of 50 PSI sales points have promotion material displayed – Quality of coverage = 8%

- Setting minimum quality standards. Quality standards should be set according to marketing plan objectives relating to the 4Ps or marketing: product, price, place and promotion. Some social marketers refer to additional Ps, such as people, processes, and physical plant. In the example above, PSI’s marketing plan stated a recommended retail price for the condom. The quality standard then becomes whether the product, where available, is sold for the recommended price. Examples of quality standards relating to the Ps of marketing are:
  
  o Product.
    
    - The PSI product is not older than the recommended date of purchase or use – the expiry date.
    
    - In areas where PSI products are available, similar public sector and or commercial products are available.

  o Price.
    
    - The PSI product or service is sold at the recommended price
    
    - The retailer purchased the PSI product at the recommended wholesale price
In areas where PSI products and services are available, similar public sector and or commercial products are available at recommended prices.

- Place
  - The average number of people purchasing per week is above a pre-set level.
  - The product is sold to high risk or other groups “often” or “sometimes”.
  - The number of PSI product units in stock is above a pre-set level.
  - The retailer restocked his current inventory directly from a wholesaler.
  - The retailer purchased last time a minimum amount of product.
  - The retailer received a visit from a PSI sales agent within the past quarter.
  - The retailer has not had a stock out in the past four weeks.

- Promotion
  - PSI point of purchase materials are available at the outlet.
  - The PSI product is visible to the consumer.

- People
  - In PSI franchises, staff have received minimum level of training

- Processes
  - In PSI franchises, staff greet clinic attendees as trained
  - In PSI franchises, waiting time is less than 15 minutes.
  - In PSI franchises, counseling is done according to standards
  - In PSI franchises, infection control procedures are adhered to.

- Physical Plant
- In PSI franchises, sign boards are present, adequate and clean.
- In PSI franchises, toilets are clean
- In PSI franchises, required equipment and supplies are present.

**Case Study: Quality of Coverage in Mali**

In November 2004, PSI Mali conducted a MAP survey as part of a study designed to assess barriers to access to condoms by high risk groups in Mali. More specifically, the study set out to identify and describe target high risk meeting places in terms of opportunity factors, such as any condom availability (any brand coverage), Protector condom availability (the PSI condom brand), and where minimum Protector condom delivery standards are being met in terms of Protector being sold at the recommended price, Protector being stocked in a visible location, Protector promotional materials available, and whether the retailer had experienced a stock-out.

PSI Mali used high risk meeting places as the geographic area that defines the unit of analysis. Coverage was defined as the presence of condoms within the premises of the high risk meeting place or less than five minutes walking distance from there. Random samples of 19 high risk meeting places in each of six regions were drawn proportionally to place size from an exhaustive list of 517 high risk meeting places that were identified during a place identification census. No benchmark coverage level was set. The results are presented in the following table.

<table>
<thead>
<tr>
<th>Region</th>
<th># places selected</th>
<th>Coverage: Condoms available</th>
<th>Quality of coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>on premises</td>
<td>within 5mn walk</td>
<td>% Condoms visible</td>
</tr>
<tr>
<td>Kayes</td>
<td>19</td>
<td>14 (85%)</td>
<td>17 (&gt;95%)</td>
</tr>
<tr>
<td>Sikasso</td>
<td>19</td>
<td>16 (95%)</td>
<td>19 (&gt;95%)</td>
</tr>
<tr>
<td>Ségou</td>
<td>19</td>
<td>12 (75%)</td>
<td>15 (90%)</td>
</tr>
<tr>
<td>Mopti</td>
<td>19</td>
<td>8 (55%)</td>
<td>19 (&gt;95%)</td>
</tr>
<tr>
<td>Gao</td>
<td>19</td>
<td>7 (50%)</td>
<td>11 (70%)</td>
</tr>
<tr>
<td>Bamako</td>
<td>19</td>
<td>12 (75%)</td>
<td>19 (&gt;95%)</td>
</tr>
</tbody>
</table>

- Auditing for quality. Three auditing techniques can be used for measuring quality of coverage. One or more techniques can be used for the same audit.
  - Inspection. The auditor is explicit to the retailer or service provider about the purpose of the visit and inspects the delivery point overtly.
Mystery client. The auditor covertly conducts the audit. Within franchises, franchisees should consent to mystery client audits before agreeing to establish the franchise.

Exit interview. The auditor intercepts clients of the delivery point and asks questions to determine whether standards have been met.

• Report. A table is used to present findings. The rows of the report are the supervision areas and the column of the report is the survey date. The cells include both the number meeting the quality standard and the denominator, usually 19, and the equivalent percentage.

Access and Equity of Access

Project MAP aimed to define and measure potential geographic access: the proportion of a population segment in a geographically defined residential area or hot zone that is within the catchment area of a service delivery point, and equity of access: equal access to delivery points of a minimum standard among populations with equal levels of need or demand. Access in health is a complex construct that includes both geographic and social dimensions and measures relating to potential access (the presence of enabling resources), realized access (the use of health products and services) and equity of access (Andersen. 1995; Donabedian, 1973). Project MAP’s access measure in the pilot phase is defined specifically as potential geographic access and aims to measure both supply (coverage or quality of coverage) and demand (the size of the population to be served and the needs of that population in terms of products, services and convenience) (Rosero-Bixby. 2003). Project MAP’s equity of access measure in the pilot phase compares access across population segments deemed to have equivalent need. Based on a review of the pilot phase in three countries, recommended best practice in the definition and measurement is set forth here.

Definition: Access is the proportion of a population segment in a geographically defined residential area or hot zone that is within the catchment area of a service delivery point. The catchment area is defined based on expert judgment and in terms of time or geographic distance and or quality.

• As a first step to defining access and equity of access, coverage and quality of coverage definitions from above are used. Prior to the audit, a GIS layer of the perimeter of the residential area or hot zone is created and the population or high risk group size recorded.

• Catchment area size. The size of the catchment area is decided by the social marketer based on the marketing objective. Marketing objectives differ by product. Condoms are considered impulse items or “fast moving consumer goods” for which consumers are not expected to travel long distances to buy. For condoms, the marketing objective is usually to make condoms widely available and to
assume small catchment areas, such as 500 meters or less. Purchases of mosquito nets, oral contraceptives, or IUDs delivered by franchises, are less likely to be purchased on impulse, and consumers may be expected to travel further than for condoms, for example to transportation hubs. In these cases, marketing objectives may assume large catchment areas, such as the distance someone could travel over 30 minutes by foot (approximately three kilometers) or by bus (10 or more kilometers).

- In Figure 6, a catchment area is defined in terms of geographic distance. A 500 meter radius is drawn around the PSI outlet in the areas or hot zones covered.

**Figure 6: Access with catchment area defined as distance**

**Access with Catchment Area Defined as Distance**

<table>
<thead>
<tr>
<th>Country X</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image.png" alt="Figure" /></td>
</tr>
<tr>
<td>Access = 22.5%</td>
</tr>
</tbody>
</table>

*Country X has four residential areas or “hot zones” in which the population size per area is 1000.

A catchment area with a radius of 500 meters is drawn around each PSI outlet. Within that catchment area, 30% of the population resides or 30% of high risk groups meet in hotspots – specific locations where high risk activity is conducted or negotiated. 70% is outside the catchment area.

Access here is 22.5% -- Numerator is 300 (Area A) + 300 (Area B) + 300 (Area C) = 900.
Denominator is 1000 x 4 = 4000. 900/4000 = 22.5%.

- Measuring access in residential areas. To measure access in residential areas, a GIS layer containing household location and sizes is desirable, but not required. Where such a layer is not available, the GIS can rasterize the area, a process by which an equal distribution of the population is created within a very small geographic unit. By both methods, the proportion of the population within the catchment area can be estimated. If the population segment of interest is defined by sex or age, a GIS layer containing this information is desirable, but again not required; the proportion of the entire population that constitutes the segment can be estimated.
• Measuring access in hot zones. To measure access in hot zones, the population segment size by hot spot is desirable, but not required. In Figure 7, the population size by hot spot in Chiang Mai, Thailand is not known; there 64% of hotspots are within 500 meters of an outlet where a PSI product is available. In Figure 8, the population size by hot spot in Vientiene, Laos, is known; there 33% of hotspots have a PSI condom present in the hotspot itself.

Figure 7: Access with population of hot spot not defined

Access
Proportion of target audience sites (hotspots) which are located within 500 meters of a PSI condom sales point, Chiang Mai hotzones, Thailand

797 out of 1250 target audience hotspots have access to PSI condoms within 500 meters – Access – 64%
Figure 8: Access with catchment area defined as the hotspot itself

Access
Proportion of target audience in hotspots where PSI condoms (Number One) are available on site, Vientiane, Laos

2616 out of 7994 people in target audience hotspots have access to Number One – Access = 33% (Laos)

- Measuring access in terms of product or service quality. In Figure 10, access is defined in terms of product or service quality. This is a stricter standard than that of physical distance, such that, in the example, an outlet in which a PSI product is available, but not at the required standard, is considered not to have a catchment area. An example here would be that the PSI product was expired.
Access with catchment area defined as product or service quality

Country X has four residential areas or “hot zones” in which the population size per area is 1000. A catchment area with a radius of 500 meters is drawn around each PSI outlet that meets minimum standards. Only A and B meet that standard. Outlet C does not. Within the catchment areas in A and B, 30% of the population resides or 30% of high risk groups meet in hotspots – specific locations where high risk activity is conducted or negotiated. 70% is outside the catchment area.

Access = 15%  
•Access here is % -- Numerator is 300 (Area A) + 300 (Area B) = 600. Denominator is 1000 x 4 = 4000. 600/4000 = 15%

Definition: Equity of access is, among populations with equal levels of need, risk or demand, equal access to delivery points of a minimum standard.

In Figure 10, access is measured across four populations assumed to have equal levels of need, risk or demand. Access ranges from 40 percent in Area A to zero in Area D. This variation in access levels represents inequity of access. If access were equal to 40 percent in all areas, equity of access would occur. Figures 11 and 12 present inequity of access in Chiang Mai across migrant populations, sex workers and men who have sex with men.
Country X has four residential areas or “hot zones” in which the population size per area is 1000.

A catchment area with a radius of 500 meters is drawn around each PSI outlet that meets minimum standards. Areas A, B, and C meet that standard. In area A, 40% of the population segment with need resides in the catchment area. In B, 30% does; in C, 20%.

There is inequity of access. The population in A has a higher level of access than B, and A and B have higher levels of access than the population in C.

Figure 11: Equity of access in Chiang Mai, migrant workers and migrant youth

Equity of Access

Comparison between the proportion of migrant workers and the proportion of migrant youth sites which are located within 500 meters of a PSI condom sales point, Chiang Mai hotzones, Thailand.
Figure 12: Equity of access in Chiang Mai, sex workers and men who have sex with men.

Equity of Access

Comparison between the proportion of sex workers and the proportion of MSM sites which are located within 500 meters of a PSI condom sales point, Chiang Mai hotzones, Thailand

Lot Quality Assurance Sampling

Project MAP’s pilot phase sought to test the feasibility of measuring coverage and quality of coverage in a simple, low cost manner, using lot quality assurance sampling techniques to reduce the time and financial costs and organizational capacity required for monitoring product and service delivery. Lot quality assurance sampling has been used in industry for approximately eighty years (Sarin & Wakker. 1994). A lot refers to a homogenous set of inputs to or outputs from the manufacturing process. Quality assurance standards are set and binomial statistics used in a manner that permits the decision maker to accept or reject the lot with known and small probabilities of error based on the examination of a small batch of samples, now commonly 19 units, randomly selected and tested against pre-determined criteria (Wong, Rindfleisch, & Burroughs. 2003). Lot quality assurance is easy to use to plan a study and generates results in terms of coverage and quality that do not require statistical training to produce or interpret. Lot quality assurance sampling techniques were first applied in health systems research 15 years ago and have since been used to measure immunization coverage (Onwujekwe & Nwagbo. 2002; Hovland. 2003; Wierenga, Bruggen, & Staelin. 1999), quality of care, child survival, nutritional status,
community health worker performance, and the functioning of health information systems (Sarin & Wakker. 1994).

The LQAS method was found to be relatively easy to learn through approximately one week of technical assistance, during which the method is explained, census information is gathered and a sample drawn and the supervision and enumeration areas are defined. Analysis does not require technical assistance and can be performed in minutes once data are collected. The cost of installing the system is approximately $5,000. Training manuals for participants and the trainer are high quality and available over the internet in English, French and Spanish.

**Geographic Information System**

Lastly, the Project MAP pilot worked to develop, install and evaluate the cost effectiveness of HealthMapper, a geographic information system developed by the World Health Organization, for purposes of measuring access and equity of access. PSI and the World Health Organization are entering into a partnership agreement that establishes data sharing and capacity building rights and responsibilities in exchange for free use of HealthMapper. GIS development was also intended to lay the groundwork for measuring access using population-based information for the definition of catchment areas and to apply GIS for improving efficiency.

The cost of installing a geographic information system is approximately $15,000. Approximately six weeks are required to do so. The installation process starts with approximately seven days of technical assistance to collect locally existing GIS layers from international and government agencies and to elaborate a data collection plan. Data are then collected. Separately, the geographer prepares the data base and final report format. A second approximately ten day technical assistance visit is then conducted to prepare the reports and build capacity to operate HealthMapper independently.

This approach is adequate for subsequent maintenance of HealthMapper and likely adequate for slight modification to include additional data sources over time. It is however preferable that further regionally-based training in HealthMapper be made available on an annual basis to update skills and to apply best practices learned in subsequent Project MAP implementation to those countries in which MAP was previously installed. Additional technical assistance is required to implement Phases 3 and 4 of MAP as described in the recommendations section below.
Summary Results

Results from the Project MAP pilot phase are reported here for three countries in West Africa, Burkina Faso, Guinea, and Mali, in which Phase 1, the simple, low cost, lot quality assurance based system, was implemented and reports received. Other countries that have started Phase 1 activities are Angola, Lesotho, and Swaziland. For Phase 2, the GIS based system, results are reported for three countries in Asia, Cambodia, Laos and Thailand. Other countries that have started Phase 2 activities are Burundi, Guinea and Nepal.

Table 6 presents summary results in a manner intended to increase the comparability of measures over time and the actionability of results. Overall, Project MAP was piloted in two of PSI’s five regions, and six of PSI’s 63 active programs. The pilot was conducted in projects addressing malaria (Cambodia), HIV/AIDS (Laos, Thailand, Burkina Faso, Guinea and Mali), and family planning (Guinea). The pilot was conducted only on product based projects that delivered condoms, lubricants, oral contraceptives, injectable contraceptives, insecticide treated nets, insecticide retreatment kits, malaria diagnostic kits and malaria treatment. Project MAP has not yet been applied to services.

Coverage measures were defined and measured in all six countries and coverage rates varied from less than 15 percent to 80 percent. Coverage was defined in terms of presence of at least one outlet in the geographically defined area in all six countries. In three of the countries, penetration was also measured. Populations were defined geographically in three countries and in terms of hot zones in three countries.

Quality of coverage was defined and measured in three countries. In Mali, quality of coverage was defined in terms of adherence to the recommended price and merchandising requirements of product visibility and presence of point of purchase promotional materials. In Laos and Thailand, quality of coverage was defined in terms of the presence of point of purchase promotional materials only.

Access and equity of access were defined and measured in two countries, Laos and Thailand. Access ranged from seven percent (men who have sex with men in Laos) to 88 percent (female sex workers in Thailand). Inequity of access was found in both locations.
Table 6: Results

<table>
<thead>
<tr>
<th>Region/Country</th>
<th>Study date</th>
<th>Stratification</th>
<th>Population Segment / Target Audience</th>
<th>Geographically Defined Residential/Target Audience Area</th>
<th>Product / Service</th>
<th>Coverage</th>
<th>Penetration</th>
<th>Quality of coverage -- all standards</th>
<th>Access by population segment</th>
<th>Degree of inequity</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASIA</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cambodia</td>
<td>July 2004</td>
<td>None - malaria endemic provinces only</td>
<td>All (general population) Village</td>
<td>Malarine 3 (treatment)</td>
<td>20% 1% x</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Cambodia</td>
<td>July 2004</td>
<td>None - malaria endemic provinces only</td>
<td>All (general population) Village</td>
<td>Malarine 4 (treatment)</td>
<td>35% 2% x</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cambodia</td>
<td>July 2004</td>
<td>None - malaria endemic provinces only</td>
<td>All (general population) Village</td>
<td>Paracheck/ Malacheck (diagnostic)</td>
<td>&lt;15% 0% x</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cambodia</td>
<td>July 2004</td>
<td>None - malaria endemic provinces only</td>
<td>All (general population) Village</td>
<td>Insecticide Treated Nets</td>
<td>20% 4% x</td>
<td>-</td>
<td>-</td>
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<td></td>
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<tr>
<td>Laos</td>
<td>June 2004</td>
<td>Province (8/18)</td>
<td>MSM, Mobile Men, FSW</td>
<td>Number One Deluxe Condom (3 bundled condoms)</td>
<td>- 28% x</td>
<td>MSM 23%, Mobile Men 34%, FSW 30%</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
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<tr>
<td>Laos</td>
<td>June 2004</td>
<td>Province (8/18)</td>
<td>MSM, Mobile Men, FSW</td>
<td>Any PSI Condom</td>
<td>- 34% 16%</td>
<td>MSM 26%, Mobile Men 44%, FSW 36%, all 3 groups 33%</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Region/Country</td>
<td>Study date</td>
<td>Stratification</td>
<td>Population Segment / Target Audience</td>
<td>Geographically Defined Residential/ Target Audience Area</td>
<td>Product / Service</td>
<td>Coverage</td>
<td>Penetration</td>
<td>Quality of coverage -- all standards</td>
<td>Access by population segment</td>
<td>Degree of inequity</td>
</tr>
<tr>
<td>----------------</td>
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</tr>
<tr>
<td>Thailand</td>
<td>June 2004</td>
<td>None - Urban/Suburban Chiang Mai Only</td>
<td>MSM, Migrant Workers, MigrantYouth, FSW</td>
<td>Hotzone (concentration of target audience hotspots)</td>
<td>PSI Condom (“One”)</td>
<td>80%</td>
<td>11%</td>
<td>x</td>
<td>MSM 87%, FSWs 88%, Migrant Workers 67%, Migrant Youth 60% - All sites 64%</td>
<td>MSM -1%, Migrant Workers -21%, Migrant Youth -28%</td>
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<tr>
<td>Thailand</td>
<td>June 2004</td>
<td>None - Urban/Suburban Chiang Mai Only</td>
<td>MSM, Migrant Workers, MigrantYouth, FSW</td>
<td>Hotzone (concentration of target audience hotspots)</td>
<td>PSI Flavored Condom (One Flavored);</td>
<td>25%</td>
<td>1%</td>
<td>x x x</td>
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<td>Thailand</td>
<td>June 2004</td>
<td>None - Urban/Suburban Chiang Mai Only</td>
<td>MSM, Migrant Workers, MigrantYouth, FSW</td>
<td>Hotzone (concentration of target audience hotspots)</td>
<td>PSI Condom+Lubricant (One Lube)</td>
<td>&lt;20%</td>
<td>0%</td>
<td>x x x</td>
<td></td>
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<tr>
<td>Thailand</td>
<td>June 2004</td>
<td>None - Urban/Suburban Chiang Mai Only</td>
<td>MSM, Migrant Workers, MigrantYouth, FSW</td>
<td>Hotzone (concentration of target audience hotspots)</td>
<td>Any PSI Condom</td>
<td>80%</td>
<td>11%</td>
<td>1% x x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thailand</td>
<td>June 2004</td>
<td>None - Urban/Suburban Chiang Mai Only</td>
<td>MSM, Migrant Workers, MigrantYouth, FSW</td>
<td>Hotzone (concentration of target audience hotspots)</td>
<td>Any Condom (all brands)</td>
<td>80%</td>
<td>83%</td>
<td>x x x</td>
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<td></td>
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<td>Zimbabwe</td>
<td>Decemb er 2004</td>
<td>Provinces + Urban/Rural</td>
<td>Enumeration Areas</td>
<td>Condoms</td>
<td>79%</td>
<td>-</td>
<td>56%</td>
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<td>Burkina Faso</td>
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<td>Region</td>
<td>General Population</td>
<td>Village</td>
<td>Condoms</td>
<td>68%</td>
<td>-</td>
<td>- -</td>
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<tr>
<td>Burkina Faso</td>
<td>June 2004</td>
<td>Region</td>
<td>General Population</td>
<td>Village</td>
<td>Condoms</td>
<td>63%</td>
<td>-</td>
<td>- -</td>
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<tr>
<td>Burkina Faso</td>
<td>Nov 2004</td>
<td>Region</td>
<td>General Population</td>
<td>Village</td>
<td>Condoms</td>
<td>67%</td>
<td>-</td>
<td>- -</td>
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<tr>
<td>Guinea</td>
<td>Decemb er 2003</td>
<td>Urban/Rural</td>
<td>Women of Reproductive Age</td>
<td>Any OC/ (PSI)Planyl</td>
<td>66% (Any OC)</td>
<td>-</td>
<td>x</td>
<td>- -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Region/Country</td>
<td>Study date</td>
<td>Stratification</td>
<td>Population Segment / Target Audience</td>
<td>Geographically Defined Residential / Target Audience Area</td>
<td>Product / Service</td>
<td>Coverage</td>
<td>Penetration</td>
<td>Quality of coverage -- all standards</td>
<td>Access by population segment</td>
<td>Degree of inequity</td>
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<tr>
<td>Guinea</td>
<td>December 2003</td>
<td>Urban/Rural</td>
<td>Women of Reproductive Age</td>
<td>Locality (rural village / urban sector)</td>
<td>Any Injectable/ PSI Depo</td>
<td>79% (Any OC)</td>
<td>-</td>
<td>x</td>
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<td>-</td>
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<td>Guinea-Bissau</td>
<td>September 2004</td>
<td>Region</td>
<td>High Risk Groups</td>
<td>Hot zones</td>
<td>Condoms</td>
<td>92%</td>
<td>-</td>
<td>59%</td>
<td>-</td>
<td>-</td>
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<td>Mali</td>
<td></td>
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</table>
Recommendations

**Phases 1 and 2 Recommendations**

1. **Installation of Phase 2 in all PSI Countries.** Phase 2, the installation of HealthMapper, has been completed in three countries, is now underway in three more, and demand for it is known in at least seven more countries. Current capacity for installing Project MAP is approximately seven countries per year. As such, additional GIS installation capacity is needed. Given the cost of installation and likely decision making value of the results, this report concludes that eventual installation of Project MAP in all 63 PSI countries is desirable with all deliberate speed.

2. **Installation of Phase 1 where distribution surveys planned, but GIS not currently demanded.** Phase 1, the use of physical maps and lot quality assurance sampling, has been completed in three countries and is now underway in three more. Phase 1 should be installed in all countries where distribution surveys have been planned, trend information relating to past distribution surveys is not required and Phase 2 is not yet of interest to the PSI country. All PSI countries should have at least Phase 1 installed by the end of 2006.

3. **Capacity building in Lot Quality Assurance Sampling.** PSI Research should build capacity in all PSI countries through the Research 2 Action training program and technical assistance in the application of lot quality assurance sampling to the monitoring of both product and service delivery. Other LQAS applications, such as to monitoring populations in the event that full tracking surveys are infrequent and to monitoring the quality of management information systems, should be piloted and once proven included in the training program.

4. **Standardization of Implementation.** There is currently insufficient information to evaluate the reliability and validity of the coverage, quality, and access measures and to recommend standard implementation definitions such as a minimum standard of geographic availability. There are nevertheless near term opportunities to increase the comparability of measures across countries. For coverage, all countries should report 1) the proportion of geographic areas where at least one outlet carries a PSI product or service and 2) the proportion of geographic areas where at least one outlet carries any related product or service. For quality of coverage over the next year, all Phase 1 and 2 countries should report the broadest possible scope of 4P indicators in a manner consistent with the relevant marketing plan such that, in one year, minimum reporting requirements can be elaborated. For access, technical advisors should brief decision makers on the results in Table 1 to encourage increasing levels of standardization of implementation in the absence of strong alternative
preferences. A review of Project MAP should be conducted annually to review lessons learned and promote standardization of these measures.

5. **Organization and Reporting.** The GIS consultant will be responsible for updating Table 5 monthly with Phase 2 results. The Project MAP coordinator will be responsible for updating Table 5 with Phase 1 and 2 results. The Deputy Director for Technical Assistance will be responsible for achieving the replication and standardization objectives set forth above and for publishing results organization wide annually and to regional directors quarterly.

### Phase 3 Recommendations

Project MAP Phase 3 is intended to measure access subjectively, using information on purchase and use behavior from population-based surveys for defining catchment areas. Both supply and demand characteristics are expected to influence purchasing behavior among users. Rosero-Bixby (2003) sets out a method for defining access in terms of service delivery quality and geographic distance. That method should be piloted in 2005 in one country in which Phase 2 is already installed or about to be installed and the results compared to access measures defined objectively.

Phase 3 is expected to increase the validity of the coverage, quality of coverage and access measures and improve the setting of standards, location and service delivery maintenance decision making and eventually the efficiency of maintaining access. Under Phases 1 and 2, coverage, quality of coverage and access measures are defined objectively, to a large degree based on the judgments of those involved in designing and maintaining the service delivery system. While those judgments are based in part on population information, they also reflect assumptions about organizational capacity and the role of the social marketing delivery system within the overall health system. Phase 3 formally tests those judgments.

Modifications to the Rosero-Bixby method will be required. Identifying the precise outlet where usual purchases are made is not likely possible. As such, the type of outlet and the average quality level of those types of outlets in the location will need to be substituted for the specific facility information used by Rosero-Bixby. Further, time to location and mode of transportation will need to be substituted for the objective distance information used in the original study.

Phase 3 will result in methodological improvements to both Project MAP and TRaC (Tracking Results Continuously), PSI’s population-based tracking survey program. In the latter, multi-level modeling can then be applied to determine the importance of access in influencing use.
Phase 4 Recommendations

Project MAP Phases 1-3 are intended to increase the effectiveness of social marketing interventions. The purpose of Phase 4 is to increase the efficiency of PSI operations through applications of GIS to reduce the cost of location decision making and distribution and field force management, and to increase the quality and utility of management information systems that monitor activities and inform stakeholders.

In 2005, case studies on the use of GIS information for location decision making and for allocating resources to distribution or other field activities will be documented to identify and describe opportunities for stopping or changing current activities in response to the new information. Best practices in the use of maps to describe sales, promotional and other activities as part of routine reporting will be documented. This information will be incorporated into the training and technical assistance activities as it comes available.
References


Appendix

Case Studies

Thailand

Thailand served as a demonstration site for Phase 2 of Project MAP in June 2004. The survey was conducted to measure the availability of condoms and water-based lubricant within hot zones and target populations’ accessibility to those products. The target populations are commercial sex workers, men who have sex with men, migrant youth, and migrant workers. The study took place in urban and suburban areas of Chiang Mai, a northern Thai town. Project MAP was used to measure coverage and set realistic benchmarks for future programs in other provinces throughout Thailand. For the purposes of this study, the team defined coverage as the presence of One condom in a hot spot (place where high risk persons are) or an outlet within 500 meters of a hot spot. Concentrations of hot spots were combined into 19 hot zones and a census of outlets was conducted in each hot zone.

Training and sample selection were completed by the local team. A research agency pre-tested data collection instruments and conducted fieldwork. Technical assistance was provided by the SE Asia and WCA Regional Researchers as well as a GIS Consultant. Data collection concentrated on product availability and one measure of quality, the presence of promotional materials.

Table 4: Thailand, coverage in June 2004

<table>
<thead>
<tr>
<th>Hot zone</th>
<th>One condom available in at least one hotspot or outlet within 500 meters of hotspot</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Yupparat</td>
<td>+</td>
</tr>
<tr>
<td>2 Thapae and Loykroh</td>
<td>+</td>
</tr>
<tr>
<td>3 Chiangmai Land</td>
<td>+</td>
</tr>
<tr>
<td>4 Rakaeng</td>
<td>+</td>
</tr>
<tr>
<td>5 Nattasilpa</td>
<td>+</td>
</tr>
<tr>
<td>6 Tippanate</td>
<td>-</td>
</tr>
<tr>
<td>7 Sibsong Huay Kaew &amp; Santitham</td>
<td>+</td>
</tr>
<tr>
<td>8 Ratchabhat-Chiangmai University</td>
<td>+</td>
</tr>
<tr>
<td>9 Along Ping River</td>
<td>+</td>
</tr>
<tr>
<td>10 Behind Tesco Lotus (Kad Kamthiang)</td>
<td>-</td>
</tr>
<tr>
<td>11 Nimmnan-haemin</td>
<td>-</td>
</tr>
<tr>
<td>12 Kanklong Chonpathan</td>
<td>+</td>
</tr>
<tr>
<td>13 Changkien</td>
<td>+</td>
</tr>
<tr>
<td>14 Behind Chiangmai University</td>
<td>-</td>
</tr>
<tr>
<td>15 Front of Payap University</td>
<td>+</td>
</tr>
<tr>
<td>16 Behind Payap University</td>
<td>-</td>
</tr>
<tr>
<td>17 Hangdong Outer Ring</td>
<td>-</td>
</tr>
<tr>
<td>18 Front of Maejo University</td>
<td>+</td>
</tr>
<tr>
<td>19 Northern Industrial Estate</td>
<td>+</td>
</tr>
</tbody>
</table>

Total Hotzones Covered: 13/19
Coverage: 80%
In total, *One* condoms were found in 50 outlets. All were traditional outlets, with drug stores being the most common, followed by convenience stores/mini-marts, alcohol stores and retail stores/groceries. Out of the 19 hot zones, 6 did not have any sales point. In terms of quality of coverage, only 4 outlets had PSI promotional materials on display. As a result of this study, PSI/Thailand has decided to increase its presence in program areas, adopt a higher standard of coverage (“One condoms available in at least X traditional outlets and X non-traditional outlets in a hot zone”), and prioritize coverage to the most densely populated hot zones. Density will be measured either by the concentration of hotspots or target populations.

Other lessons learned during this study include:

- Estimates of access and equity of access should be interpreted with caution. It appears that fieldworkers had difficulty identifying which target populations frequented which hotspots and may have “lumped” hotspots into the “migrant youth/worker” category when in doubt. Only 16 hotspots were listed as sites with CSWs and 30 sites with MSM.

- In subsequent studies, alternative sampling strategies will be used in lieu of conducting a census of outlets in each hotzone.

- Information about hotspot size should be collected in order to calculate weighted coverage and prioritize distribution to the largest sites within hot zones.

- Sales agents as well as key informants will be used to identify hot spots and hot zones. It is imperative that such data be updated regularly since existing hotspots may change, others may appear, or target populations’ preferences or locations change.

### Laos

Laos also served as a demonstration site for Project MAP Phase 2. The survey was conducted to measure the availability of condoms and combination packets within hot spots as well as target populations’ accessibility to those products. Target populations are female sex workers, men who have sex with men (Katoey) and mobile men. The study took place in eight provinces with a census of hot spots in each province. Project MAP was used to measure coverage and identify areas where distribution could be improved. For the purposes of this study, the Laos team measured penetration of *Number One* condoms, *Number One Deluxe* condoms (3 condoms bundled together) and *Number One Deluxe Plus* (2 condoms bundled with water-based lubricant – the newest product) in hot spots. The local team oversaw training,
sample design, instrument pre-testing, and fieldwork. Data collection concentrated on product availability and one measure of quality, the presence of promotional materials.

### Table 5: Laos, coverage in June 2004

<table>
<thead>
<tr>
<th>Province</th>
<th># of Sites</th>
<th>Coverage Number One</th>
<th>Coverage Deluxe</th>
<th>Coverage Deluxe Plus</th>
<th>Weighted Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vientiane Municipality</td>
<td>219</td>
<td>16.89</td>
<td>14.16</td>
<td>5.48</td>
<td>21.91</td>
</tr>
<tr>
<td>Luang Namtha</td>
<td>26</td>
<td>92.31</td>
<td>61.54</td>
<td>46.15</td>
<td>96.14</td>
</tr>
<tr>
<td>Oudomxay</td>
<td>28</td>
<td>35.71</td>
<td>32.14</td>
<td>3.57</td>
<td>46.54</td>
</tr>
<tr>
<td>Luang Prabang</td>
<td>29</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Vientiane</td>
<td>43</td>
<td>79.07</td>
<td>69.77</td>
<td>16.28</td>
<td>82.14</td>
</tr>
<tr>
<td>Khammouane</td>
<td>30</td>
<td>66.67</td>
<td>43.33</td>
<td>26.67</td>
<td>69.12</td>
</tr>
<tr>
<td>Savannakhet</td>
<td>60</td>
<td>38.33</td>
<td>38.33</td>
<td>0</td>
<td>40.95</td>
</tr>
<tr>
<td>Champasack</td>
<td>47</td>
<td>34.04</td>
<td>29.79</td>
<td>10.64</td>
<td>35.66</td>
</tr>
</tbody>
</table>

A total of 482 hot spots were identified: beer shops were the most common followed by restaurants, night clubs/discos/karaoke bars, and guest houses/hotels. Coverage in all provinces was greatest for *Number One* (the product sold longest) and least for *Number One Deluxe Plus* (the more recent product). Large differences in penetration were apparent across regions: for example, no hot spots in Luang Prabang carried *Number One*, but in Luang Namtha, the product was available in 92 percent of sites. It is likely that some hotspots were excluded from the sample, skewing study results. It is also important to note that the Lao survey only assessed the availability of PSI condoms *inside* the hotspot, without looking at the presence of condoms with street vendors or in outlets in the immediate vicinity of the hotspot. Other study findings of interest were: a third of existing sales points experienced a stock-out at the time of the survey (again, with significant local variations); only two hotspots sold other condom brands; nearly half of existing sales points had PSI promotion materials displayed; and in some cases promotional materials were present in sites not currently selling Number One. As a result of this study, PSI/Laos decided to focus distribution efforts on provinces where coverage was lowest (e.g., Luang Prabang and Vientiane Municipality), address the problem of stock-outs, and refine its coverage indicator to include the presence of PSI products in kiosks and pharmacies near hotspots.

Other lessons learned during this study include:

- PSI/Laos will continue to pursue a coverage indicator of penetration within (or near) hot spots. Given the low number of hot spots and PSI’s market share in Laos, this measurement is possible. If, however, 100% coverage proves impossible, it is suggested that the program use a measure of weighted coverage (see table) to prioritize areas for improvement.
- Only a few key informants were consulted when identifying hotspots, which resulted in too few sites identified. This could account for such low measures of coverage in certain provinces,
especially Luang Prabang. In the future, sales agents as well as more key informants will be used to identify hot spots.

- Estimates of access and equity of access should be interpreted with caution. It appears that fieldworkers had difficulty identifying which target populations frequented which hotspots and may have “lumped” hotspots into the “mobile” category when in doubt.
- Project MAP will be conducted every 6 months to monitor distribution. The team found the first wave of data collection invaluable for decision-making.
- Better measures of hot spot size will be used to measure weighted coverage.
- Future rounds of Project MAP will include more training and supervision of fieldworkers to improve the quality of data collection. Likewise, additional (and clearer) questions will be added to the audit sheet to improve the detail of data collected.
- The team felt that routine sales data as well as information about behavior change communication activities could be linked to GIS to assist with program planning and departmental management.

Cambodia

In Cambodia, Project MAP Phase 2 was used to obtain baseline levels of malaria product availability prior to Global Fund program implementation. The study measured the availability of PSI’s malaria diagnosis and treatment products as well as any brand of net or insecticide in endemic areas of the country. In addition to providing information about coverage, this study demonstrated the utility of integrating health indicator information (in this case malaria prevalence) into GIS databases.

Since there had been a limited launch of most PSI malaria products, it was assumed that coverage would be very low, especially in hard-to-reach areas of Cambodia. All malaria endemic areas were pooled and LQAS was used to select 25 villages. A sample of 25 was required in order to detect the minimal level of coverage possible using LQAS (15 percent or less). The team defined coverage as the presence of any untreated net, treated net, insecticide, Paracheck (PSI testing kit), Malarine 3 (PSI child treatment), or Malarine 4 (PSI adult treatment) in at least one outlet in a village.

A Research Consultant assisted the local team with training, sample selection, instrument pre-testing, fieldwork, and supervision. Data collection concentrated on product availability and two measures of quality: availability of IEC materials and the presence of illegitimate malaria treatment regimes, including fake drugs.

Table 6: Cambodia, coverage in June 2004
<table>
<thead>
<tr>
<th>Product</th>
<th># of villages with product</th>
<th>Baseline Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt; 15%</td>
<td>15%</td>
</tr>
<tr>
<td>Malarine 3</td>
<td>2</td>
<td>x</td>
</tr>
<tr>
<td>Malarine 4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Paracheck</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Mosquito Nets</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Insecticide</td>
<td>1</td>
<td>x</td>
</tr>
</tbody>
</table>

In total, 232 outlets were surveyed, most of which were convenience stores, followed by market stalls and pharmacies. One village was found to have no outlet at all. Coverage for each of the malaria products ranged from less than 15 percent to 55 percent, according to the LQAS decision rule table. *Malarine 3* and *Malarine 4* were higher than expected, with 20 percent and 35 percent, respectively. Mosquito nets (any brand) were found to be available in 10 out of the 25 villages, resulting in a 55 percent baseline coverage. On the other hand, only one outlet carried insecticide for the treatment of nets and none of the surveyed outlets carried *Paracheck*. Drug samples obtained during fieldwork will not be tested as intended, due to a lack of laboratory facilities in-country, however, the finding that there was 40% coverage of “irrelevant regimes” (those not approved by the Ministry of Health) is important. Project MAP confirmed PSI/Cambodia’s decision to increase its distribution efforts and formally launch *Paracheck*, *Malarine 3*, and *Malarine 4* in endemic areas. The program also decided to market a long-lasting treated net since so few were currently available on the Cambodian market.

Other lessons learned during this study include:

- PSI/Cambodia may adopt different coverage benchmarks for different areas of Cambodia. While priority will be given to endemic areas where coverage should be highest, the team would also like to achieve modest coverage levels in non-endemic or urban areas in order to reach mobile populations or individuals who procure products in urban areas. Project MAP could also be used to measure product availability in market areas or to monitor partner NGO intervention areas.
- The GIS database for Cambodia is very comprehensive and highly detailed. It includes map layers with recent population estimates and socio-economic attributes for each village. These data could help measure equity of access in the future, or could be used to monitor activities at Sun Quality Health Clinics. In 2005, the program plans to use Phase II of Project Map to evaluate coverage of HIV prevention and birth spacing products.
- Future rounds of Project MAP for malaria should include another measure of quality of coverage: fieldworkers should check and record product expiration dates.
The sales team felt that they could use GIS to manage performance among sales agents and monitor distribution among retailers in each of their sales areas.